CKD

Pneumatic Cylinders ③

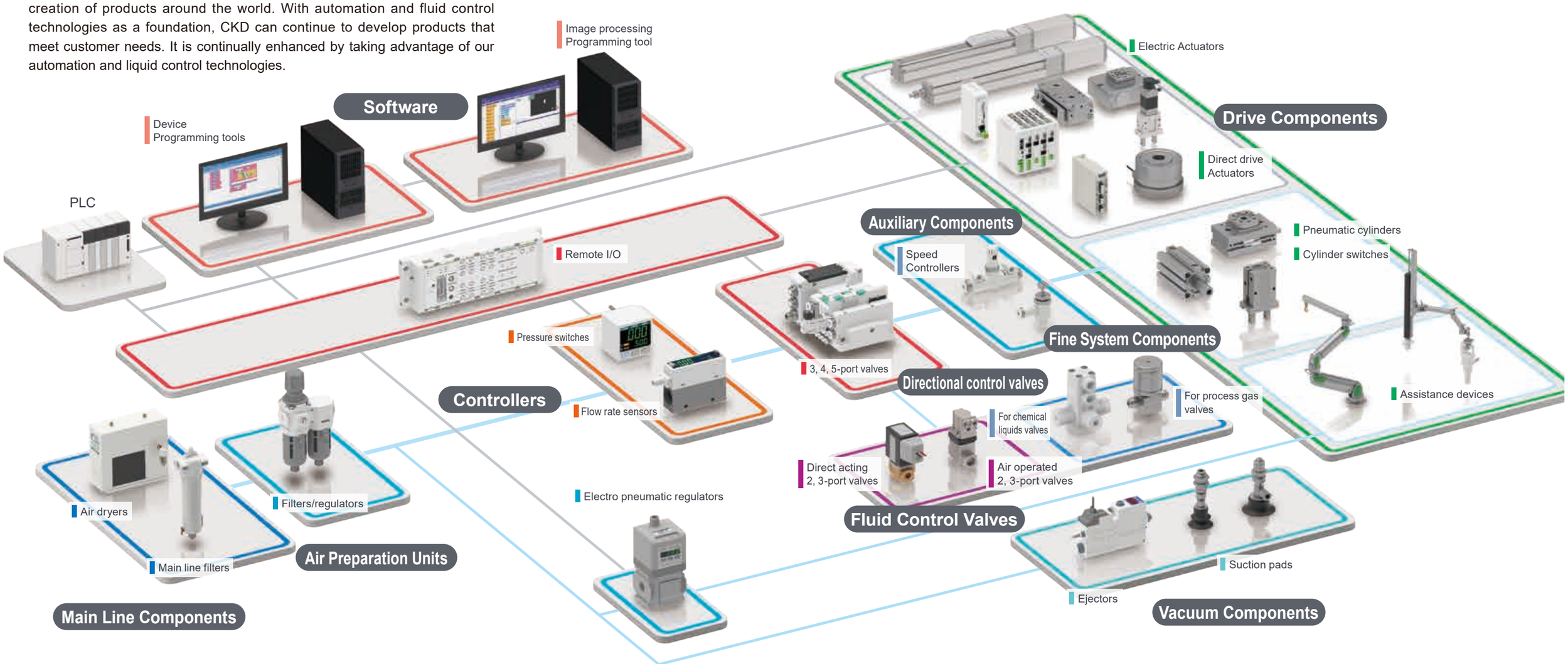
With Linear Guide

Guided

CKD products seen from their configuration images

Both Air and Electric. From software to I/O units

CKD's product lineup has been expanding steadily, contributing to the creation of products around the world. With automation and fluid control technologies as a foundation, CKD can continue to develop products that meet customer needs. It is continually enhanced by taking advantage of our automation and liquid control technologies.



CKD products by application

High Durability Components
HP Series

Long Service Life
Environmental Resistance

HP
HIGH PRODUCTIVITY

CC-1421A

For Food Manufacturing Processes
FP Series

FP Food Process™

CC-1271A

For Outdoor Use WP Series

WEATHER PROOF

CC-1276A

Rechargeable Battery Manufacturing Process P4 Series

Material
restrictions
1/5 or less dust
generation rate

CC-1226AA

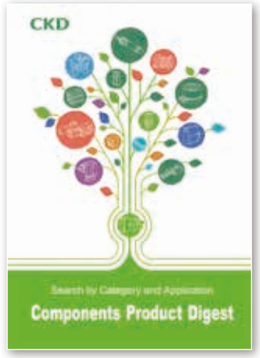
For Clean Components
P5/P7 Series

Low particle
generation
exhaust port

CB-033SA

Guide to the CKD catalog

Learn more about each product category in the booklet catalog



RJ-001AA

The Digest Catalog allows you to search for components you are looking for by overview

Detailed specifications are available in the respective Booklet and WEB catalogs.

Main Line Component Products
Gas Generators

Air Dryers | Main Line Filters | Condensate Drains | Nitrogen gas extraction units

RJ-009AA

Refining and pressure adjusting components
Auxiliary Components

Filters | Regulators | Pressure gauges | Speed controllers | Silencers | Fittings | Tubes

RJ-007

Sensors/Controllers

Pressure switches | Flow rate sensors | Flow rate controllers | Air sensors

RJ-008AA

Precision / Vacuum Components

Air bearings | Ejector systems | Vacuum pump systems | Suction Pads

RJ-010AA

Fluid Control Valves

Solenoid valves | Air operated valves | Ball valves

RJ-013AA

Wet Fine System/High Purity Chemical Liquid System

CB-031A

Dry Fine System/High Purity Gas Control System Components

CB-035A

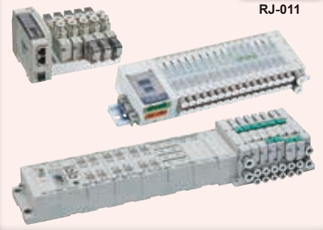
Learn more on the WEB

https://www.ckd.co.jp/kiki/en/

Directional Control Valves (1)

Plug-in Block Manifolds | 3, 4, 5-port valves | Remote I/O

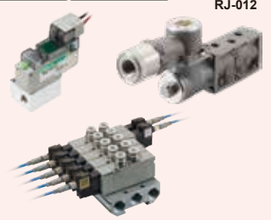
RJ-011



Directional Control Valves (2)

2, 3, 5-port valve | Explosion-proof | Air operated valve | Manual selector valve

RJ-012



Pneumatic Cylinder (1)

Standard

RJ-002AA

Pneumatic Cylinders (2)

Space saving structures

RJ-003AA

Pneumatic Cylinder (3)

With linear guide | With guide

RJ-004AA

Pneumatic Cylinders (4)

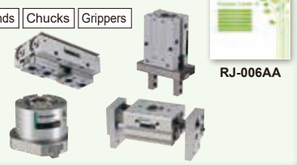
Rodless | With brake | Clamps | Oscillation / Rotation

RJ-005

Pneumatic Cylinders (5)

Hands | Chucks | Grippers

RJ-006AA



Visual Programming Tool for Image Processing

Facilea
CC-1548AA

Facilea AI
CC-1623A

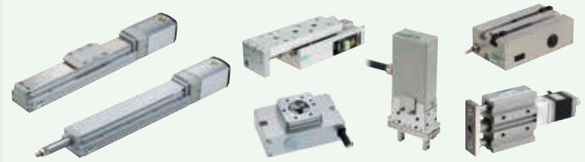
Device Visual Programming Tool

ExiaStudio
CC-1579AA

Electric Actuators

ROBODEX Pulse

RJ-014AA



Electric Actuators

ROBODEX Std.
CB-055A

Electric Actuators

ROBODEX Servo
CC-1275A CC-1436A

ABSODEX

ABSODEX
CC-1614AA

I N D E X

Search by Product Name/Model No.
Product Name Intro 1
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You can select by the appearance and product overview of each series.

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Circuit Diagram Symbol List
Posted on the CKD website.
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>>> P. 1

Guided Cylinder
>>> P. 343

Cylinder Switch
>>> P. 753

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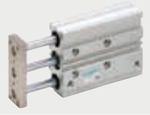	Guided Cylinder >>> P. 363	STG·STG-K	370
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Search by Product System List

Products can be selected by series appearance and product overview.

General-type >>> Pneumatic Cylinders Catalog ① No. RJ-002AA

Standard, small bore size cylinders **(ø2.5 to ø16)**

Pencil-type compact cylinder

Pencil Shaped Cylinder

SCP□3

Series	Also known as...	Bore size (ø)
SCPD3	Single Rod Type	6, 10, 16
SCPS	Single Acting, Push Type	2.5, 4
SCPS3	Single Acting, Push Type	6, 10, 16
SCPH3	Single Acting, Retracting Type	
SCPD3-T	Heat resistant type	6, 10, 16
SCPD3-□C	With Rubber Air Cushion	
SCPD3-F	Ultra Low Speed Type	
SCPD3-O	Low Speed Type	
SCPD3-D	Double rod type	
SCPD3-Z	With Speed Controller	10, 16
SCP□3-M	Non-Rotating Type	
SCPD3-K	High Load Type	6, 10, 16
SCP□3-V	With Valve	10, 16

Standard, medium bore size cylinders **(ø20 to ø40)**

Stainless steel tube for high corrosion resistance

Small bore size cylinder

CMK2

Series	Also known as...	Bore size (ø)
CMK2	Single rod type	20, 25, 32, 40
CMK2-S	Single Acting, Push Type	
CMK2-SR	Single Acting, Retracting Type	
CMK2-P	Stroke Adjustable Type (Push)	
CMK2-R	Stroke Adjustable Type (Pull)	
CMK2-T	Heat resistant type	
CMK2-□C	With Rubber Air Cushion	
CMK2-C	Air Cushion Type	
CMK2-Q	Drop prevention type	
CMK2-F	Ultra Low Speed Type	
CMK2-D	Double rod type	
CMK2-B	Back-to-Back Type	
CMK2-M	Non-Rotating Type	
CMK2-Z	Built-in Speed Controller Type	
CMK2-H	Low Hydraulic Pressure Type	
CMK2-G2/G3	Cutting Oil Resistant Type	
CMK2-JG2/JG3	Stainless Steel Type	

Standard, medium bore size cylinders **(ø20 to ø40)**

Serviceable type for maintenance

Small Bore Size Cylinder

CMA2

Series	Also known as...	Bore size (ø)
CMA2	Single rod type	20, 30, 40
CMA2-E	Direct Type	

General Type/Medium Bore Cylinder **(ø20 to ø100)**

Smart type with abundant bore sizes and options

Round shaped cylinder

SCM

Series	Also known as...	Bore size (ø)
SCM	Single Rod Type	20 to 100
SCM-X	Single Acting, Push Type	20 to 40
SCM-Y	Single Acting, Retracting Type	
SCM-P	Stroke Adjustable Type (Push)	20 to 63
SCM-R	Stroke Adjustable Type (Pull)	
SCM-T	Heat resistant type	20 to 100
SCM-Q	Drop prevention type	
SCM-F	Low speed type	20 to 40
SCM-O	Low Speed Type	20 to 100
SCM-U	Low Friction Type	
SCM-D	Double rod type	
SCM-B	Back-to-Back Type	20 to 63
SCM-W	Two-Stage Type	
SCM-W4	Tandem Type	
SCM-M	Non-Rotating Type	
SCM-LD	Direct Foot Type	

General Type/Medium Bore Cylinder **(ø32 to ø100)**

Environmentally friendly tie-rod cylinder

Tie Rod Cylinder

SCG

Series	Also known as...	Bore size (ø)
SCG	Single Rod Type	32 to 100
SCG-Q	Drop prevention type	
SCG-O	Low Speed Type	
SCG-U	Low Friction Type	
SCG-D	Double rod type	
SCG-M	Non-Rotating Type	32 to 63
SCG-G	Heavy-Duty Scraper Type	32 to 100
SCG-G2/G3	Cutting Oil Resistant Type	40 to 100
SCG-G4	Sputter adhesion prevention type	32 to 100

General Type/Medium Bore Cylinder **(ø40 to ø100)**

Robust type with No. 1 reliability

Medium Bore Size Cylinder

SCA2

Series	Also known as...	Bore size (ø)
SCA2	Single Rod Type	40, 50, 63, 80, 100
SCA2-P	Stroke Adjustable Type (Push)	
SCA2-R	Stroke Adjustable Type (Pull)	
SCA2-T	Heat resistant type	
SCA2-Q2	Drop prevention type	
SCA2-O	Low Friction Type	
SCA2-U	Low Friction Type	
SCA2-D	Double rod type	
SCA2-B	Back-to-Back Type	
SCA2-W	Two-Stage Type	
SCA2-K	Steel Tube Type	
SCA2-H	Low Hydraulic Pressure Type	
SCA2-G	Scraper Type	
SCA2-G2/G3	Cutting Oil Resistant Type	
SCA2-G1/G4	Sputter adhesion prevention type	
SCA2-V	With Valve	

Space-Saving Type >>> Pneumatic Cylinders ② Catalogs No. RJ-003AA

General Type/Large Bore Cylinder **(ø125 to ø250)**

Wide variations and high rigidity

Medium Bore Size Cylinder

SCS2

Series	Also known as...	Bore size (ø)
SCS2	Lubricated Type	125, 140, 160, 180, 200, 250
SCS2-N	Non-Lube Type	
SCS2-P	Stroke Adjustable Type (Push)	
SCS2-T	Heat resistant type	
SCS2-D	Double Rod Type/Lubricated Type	
SCS2-ND	Double Rod Type/Non-Lube Type	
SCS2-B	Back-to-Back Type	
SCS2-W	Two-Stage Type	
SCS2-H	Low Hydraulic Pressure Type	
SCS2-G	Heavy-Duty Scraper Type	

Space-Saving/Super Compact **(ø12 to ø200)**

Wide variations/Switch mountable on 4 surfaces compact type

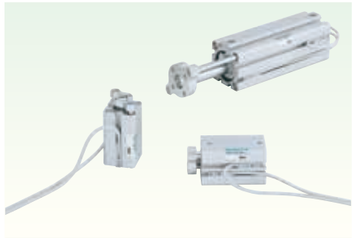
Compact Cylinder

SSD2

Series	Also known as...	Bore size (ø)
SSD2	Single Rod Type	12 to 200
SSD2-K	High Load Type	12 to 100
SSD2-L	Long stroke	
SSD2-X	Push Type	12 to 50
SSD2-Y	Retracting Type	
SSD2-T1	Heat resistant type	12 to 100
SSD2-T1L	With Heat Resistant Cylinder Switch	16 to 63
SSC2-K-□C	High Load Type/With Rubber Air Cushion	20 to 100
SSD2-Q	Drop prevention type	
SSD2-F/SSD2-KF	Fine Speed Type/High Load Fine Speed Type	12 to 100
SSD2-O	Low Speed Type	
SSD2-KU	High Load/Low Friction Type	20 to 100
SSD2-D	Double rod type	12 to 200
SSD2-B	Back-to-Back Type	12 to 100
SSD2-W	Two-Stage Type	
SSD2-M	Non-Rotating Type	12 to 63
SSD2-DM	Double Rod/Non-Rotating Type	
SSD2-G	Heavy-Duty Scraper Type	20 to 100
SSD2-G2/G3	Cutting Oil Resistant Type	16 to 100
SSD2-KG2/KG3	High Load/Cutting Oil Resistant Type	
SSD2-G1	Coil Scraper Type	25 to 100
SSD2-G4	Sputter adhesion prevention type	
SSD2-KG1	High Load/Coil Scraper Type	
SSD2-KG4	High Load/Spatter Adhesion Prevention Type	
SSD2-DG1	Double Rod/Coil Scraper Type	
SSD2-DG4	Double Rod/Spatter Adhesion Prevention Type	
SSD2-G5	Environment Resistant Scraper Type	20 to 100
SSD2-KG5	High Load/Environment Resistant Scraper Type	
SSD2-L4	With Strong Magnetic Field Resistant Switch	40 to 100
SSD2-G1L4	With Strong Magnetic Field Resistant Switch/With Coil Scraper	
SSD2-KL4	High Load/With Strong Magnetic Field Resistant Switch	
SSD2-KG1L4	High Load/With Strong Magnetic Field Resistant Switch/With Coil Scraper	

Space-Saving/Guided/Super Compact **(ø12 to ø100)**

SSD2 series equipped with guide rod



Guided Compact Cylinder

SSG

Series	Also known as...	Bore size (ø)
SSG	Single Rod Type	12 to 100

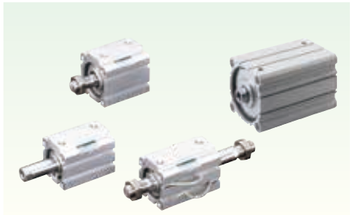
Search by Product System List

Products can be selected by series appearance and product overview.

Space-Saving Type >>> Pneumatic Cylinders ② Catalog No. RJ-003AA

Space-Saving/Super Compact **(ø12 to ø160)**

Compact type with abundant bore sizes and options



Compact Cylinder

SSD

Series	Also known as...	Bore size (ø)
SSD	Single Rod Type	12 to 160
SSD-K	Single Rod High Load Type	12 to 100
SSD-X	Single Acting, Push Type	12, 16, 20, 25, 32, 40, 50
SSD-Y	Single Acting, Retracting Type	
SSD-T	Heat resistant type	12 to 100
SSD-T1L	With Heat Resistant Cylinder Switch	16 to 63
SSD-K-□C	High Load Type/With Rubber Air Cushion	32 to 100
SSD-Q	Drop prevention type	16 to 100
SSD-F	Low speed type	12 to 100
SSD-KF	High Load Type/Fine Speed Type	
SSD-O	Low Speed Type	
SSD-KU	High Load/Low Friction Type	20 to 100
SSD-D	Double rod type	12 to 160
SSD-B	Back-to-Back Type	12 to 100
SSD-W	Two-Stage Type	
SSD-M	Non-Rotating Type	12 to 63
SSD-G2/G3	Cutting Oil Resistant Type	16 to 100
SSD-K G2/G3	High Load, Cutting Oil Resistant Type	
SSD-G1/G4	Sputter adhesion prevention type	25 to 100
SSD-K G1/G4	High Load, Spatter Adhesion Prevention Type	
SSD-D G1/G4	Double Rod, Spatter Adhesion Prevention Type	
SSD-G5	Environment Resistant Scraper Type	20 to 100
SSD-KG5	High Load/Environment Resistant Scraper Type	20 to 100
SSD-L4	With Strong Magnetic Field Resistant Switch	40 to 100
SSD-G1L4	With Strong Magnetic Field Resistant Switch/With Coil Scraper	
SSD-KL4	High Load Type With Strong Magnetic Field Resistant Switch	
SSD-KG1L4	High Load Type With Strong Magnetic Field Resistant Switch/With Coil Scraper	

Space-Saving/Compact Single Acting Type **(ø6 to ø15)**

Thumb-sized with fully threaded outer diameter

Cartridge Cylinder

CAT

Series	Also known as...	Bore size (ø)
CAT	Single Acting, Push Type	6, 10, 15

Space-Saving/Multi-Surface Mount Type **(ø6 to ø32)**

More compact than conventional products, direct mount

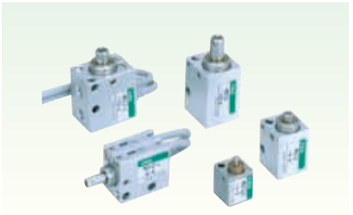
Compact cylinder

SMG

Series	Also known as...	Bore size (ø)
SMG	Single Rod Type	6 to 32
SMG-X	Push Type	
SMG-Y	Retracting Type	
SMG-F	Low speed type	
SMG-M	Non-Rotating Type	

Space-Saving/Direct Mount Type **(ø4 to ø10)**

Direct mounting possible from 4 directions



Compact Direct Cylinder

MDC2

Series	Also known as...	Bore size (ø)
MDC2	Single Rod Type	4, 6, 8, 10
MDC2-X	Push Type	
MDC2-Y	Retracting Type	
MDC2-F	Ultra Low Speed Type	

Space-Saving/Compact Cylinder **(ø6 to ø16)**

SSD small bore series. With high-precision guide also available

Compact Cylinder

MSD

Series	Also known as...	Bore size (ø)
MSD	Single Rod Type	6, 8
MSD-X	Single Acting, Push Type	
MSD-Y	Single Acting, Retracting Type	
MSD-K	High Load Type	6, 8, 12, 16
MSD-F	Low speed type	6, 8
MSD-KF	High Load Type/Fine Speed Type	6, 8, 12, 16

Space-Saving/Flat Type **(ø25 to ø63)**

Mountable even in narrow spaces. With rotation stop function

Flat Cylinder Compact Demi

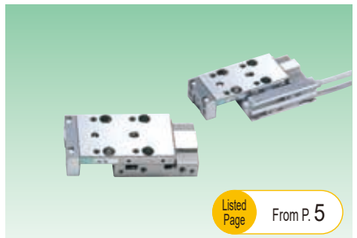
FC□

Series	Also known as...	Bore size (ø)
FCS	Single Acting, Push Type	25, 32, 40, Equivalent to 50, 63
FCH	Single Acting, Retracting Type	
FCD	Single Rod Type	
FCD-D	Double rod type	
FCD-K	With Cushion	

With Linear Guide Pneumatic Cylinders ③ Page 1

With High-Precision Guide **(ø4.5 to ø8)**

High precision and rigidity in a compact size



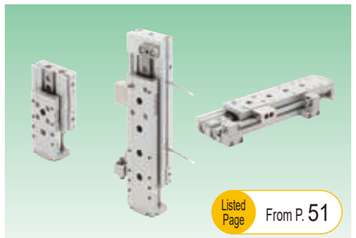
Linear Slide Cylinder

LCM

Series	Also known as...	Tube I.D. (ø)	Page
LCM	Single Rod Type	4.5 to 8	10
LCM-P	Stroke Adjustable Type (Push)		18
LCM-R	Stroke Adjustable Type (Push/Retract)		26
LCM-A	Side Mount Type		34

With High-Precision Guide **(ø6 to ø25)**

Thorough weight reduction, increased rigidity



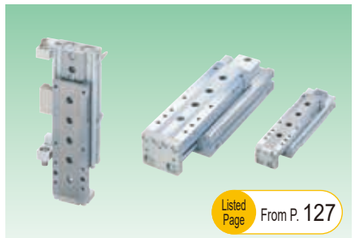
Linear Slide Cylinder

LCR

Series	Also known as...	Tube I.D. (ø)	Page
LCR	Basic type	6 to 25	56
LCR-Q	Drop prevention type	8 to 25	84
LCR-F	Low speed type	12, 16, 20, 25	104

With High-Precision Guide **(ø6 to ø25)**

Emphasis on high precision and high rigidity. Easier to use



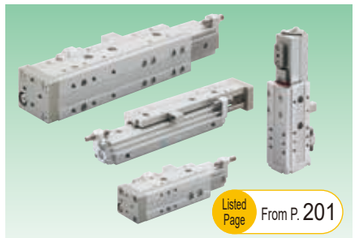
Linear Slide Cylinder

LCG

Series	Also known as...	Tube I.D. (ø)	Page
LCG	Single Rod Type	6 to 25	132
LCG-Q	Drop prevention type	8 to 25	162

With High-Precision Guide **(ø12 to ø20)**

Standardly equipped with specs frequently used by customers



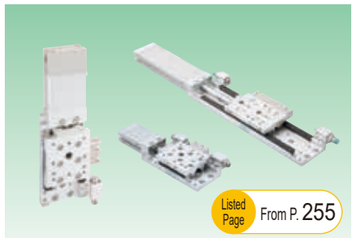
Linear Slide Cylinder

LCW

Series	Also known as...	Tube I.D. (ø)	Page
LCW	Single Rod Type	12 to 20	206
LCW-Q	Drop prevention type		224

With High-Precision Guide **(ø25, ø32)**

Ideal for space-saving applications due to thorough Low Profilening



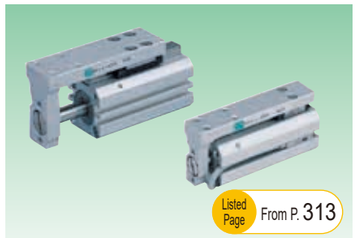
Low Profile Linear Slide Cylinder

LCX

Series	Also known as...	Tube I.D. (ø)	Page
LCX	Single Rod Type	25, 32	260
LCX-Q	Drop prevention type		270
LCX-□L	Long stroke		278
LCX-Q-□L	Fall Prevention Type/Long Stroke		288

Guided Compact Cylinder **(ø6 to ø16)**

SSD small bore series. With high-precision guide also available



Compact Cylinder with Compact Linear Guide

MSDG

Series	Also known as...	Tube I.D. (ø)	Page
MSDG-L	Guided Type	6, 8, 12, 16	320
MSDG-LF	Guided Type/Fine Speed Type	12, 16	328

Search by Product System List

Products can be selected by series appearance and product overview.

Guided >>> Pneumatic Cylinders ③ Page 343

Guided Cylinder **(ø6, ø10)**

Miniature guided space-saving type

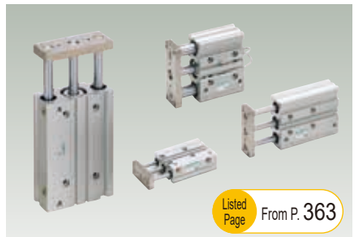
Cylinder with Compact Guide

STM

Series	Also known as...	Tube I.D. (ø)	Page
STM-M/B	Single Rod Type	6, 10	350

Guided Cylinder **(ø12 to ø100)**

Environmentally friendly product. Improved load resistance



Guided Cylinder

STG

Series	Also known as...	Tube I.D. (ø)	Page
STG-M/B	Single Rod Type	12 to 100	370
STG-M/B-□C	Rubber Air Cushion Type	32 to 63	384
STG-M/B C	Air Cushion Type	16 to 63	392
STG-M/B Q	Drop prevention type	20 to 63	402
STG-M/B G	Heavy-Duty Scraper Type		410
STG-M/B G1	Coil Scraper Type		410
STG-MG2/MG3	Cutting Oil Resistant Type		418
STG-M/B G4	Sputter adhesion prevention type	40 to 63	424
STG-MG5	Environment Resistant Scraper Type	20 to 100	430
STG-K	Heavy-Duty Guide Rod Type	32, 50	440

Guided Cylinder (ø8 to ø100)

Abundant bore sizes and variations

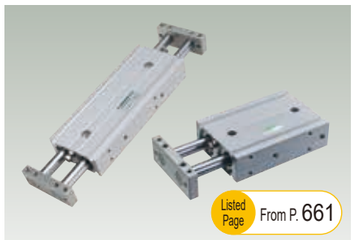
Guided Cylinder

STS/STL

Series	Also known as...	Tube I.D. (ø)	Page
ST S/L-M/B	Single Rod Type	8 to 100	482
ST S/L-M/B P	Stroke Adjustable Type (Push)	8 to 80	504
ST S/L-M/B T	Heat resistant type	12 to 80	520
ST S/L-M/B T2	Packing Material: Fluoro Rubber		528
ST S/L-M/B-□C	Rubber Air Cushion Type	32 to 80	536
ST S/L-M/B C	Air Cushion Type	25 to 80	544
ST S/L-M/B Q	Drop prevention type	20 to 80	556
ST S/L-M/B F	Low speed type	8 to 80	574
ST S/L-M/B O	Low Speed Type		578
ST S/L-M/B G	Heavy-Duty Scraper Type/	20 to 80	582
ST S/L-M/B G1	Coil Scraper Type		582
ST S/L-M/B G 2/3	Cutting Oil Resistant Type		602
ST S/L-M/B G4	Sputter adhesion prevention type	40 to 80	618
ST S/L-M/B V	Valve Mounted Type	20 to 63	628

Twin Rod Cylinder **(ø6 to ø32)**

High non-rotating accuracy with twin rods. For P&P applications



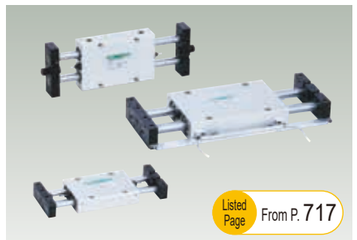
Twin Rod Cylinder

STR2

Series	Also known as...	Tube I.D. (ø)	Page
STR2-M/B	Standard type	6, 10, 16, 20, 25, 32	668
STR2-M/B Q	Drop prevention type	16, 20, 25, 32	676
STR2-M/B O	Low Speed Type	6, 10, 16, 20, 25, 32	684
STR2-M/B F	Low speed type	10, 16, 20, 25, 32	690
STR2-M/B D	Double rod type	6, 10, 16, 20, 25, 32	694

Unit Cylinder **(ø10 to ø32)**

Stable positioning accuracy with double/double rod structure



Unit Cylinder

UCA2

Series	Also known as...	Tube I.D. (ø)	Page
UCA2	Sleeve Bearing Type	10, 16, 25,	724
UCA2-B	Rolling Bearing Type	32	734

Cylinder Switch

>>> Pneumatic Cylinder ③ Page 753

Wide variety available

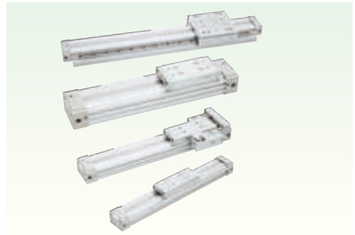
Cylinder Switch

Series	Page
2-Color Indicator Solid State Cylinder Switch	760
Strong Magnetic Field Resistant Cylinder Switch	761
M Series	764
R Series	766
T Series	768
Water-resistant Cylinder Switch	772
Magnetic Field Resistant Cylinder Switch	774
K Series	776
F Series	778
H Series	780
V Series	781
E Series	782

Rodless Type >>> Pneumatic Cylinders ④ Catalog No. RJ-005AA

Rodless Type/Basic Type **(ø12 to ø100)**

Abundant bore sizes and variations



Rodless Cylinder

SRL3

Series	Also known as...	Bore size (ø)
SRL3	Standard type	Equivalent to 12, 16, 20, 25, 32, 40, 50, 63, 80, 100
SRL3-J	Full Cowl Type	
SRL3-G	With Resin Guide	
SRL3-Q	With Fall Prevention Function	
SRL3-GQ	With Resin Guide/With Fall Prevention Function	

Rodless Type/With High-Precision Guide **(ø12 to ø25)**

Integrated high-precision LM guide

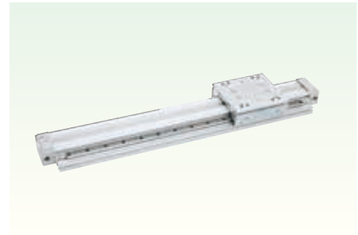
Rodless Cylinder with High-Precision Guide

SRG3

Series	Also known as...	Bore size (ø)
SRG3	Standard type	12, 16, Equivalent to 20, 25

Rodless Type/With High-Precision Guide **(ø25 to ø63)**

High-precision LM guide adopted on 2 axes. Rigidity also UP



Rodless Cylinder with High-Precision Guide

SRM3

Series	Also known as...	Bore size (ø)
SRM3	Double Acting Type	Equivalent to 25, 32, 40, 63
SRM3-Q	Double Acting Type/ Fall Prevention Type	

Magnet Type With High-Precision Guide **(ø10 to ø25)**

High-precision LM guide integrated into MRL2

Magnet Type Rodless Cylinder High-Precision Guide Type

MRG2

Series	Also known as...	Bore size (ø)
MRG2	Double Acting Type	10, 16, 25

Rodless Type/With Brake **(ø12 to ø63)**

Type with high-reliability brake

Rodless Cylinder with Brake

SRT3

Series	Also known as...	Bore size (ø)
SRT3	Double Acting Type	Equivalent to 12, 16, 20, 25, 32, 42, 50, 63

Rodless Type/Magnet Type **(ø6 to ø32)**

Rodless, further space-saving

Magnet Type Rodless Cylinder

MRL2

Series	Also known as...	Bore size (ø)
MRL2	Basic type	6, 10, 16, 20, 25, 32
MRL2-G	Simple Guide Type/1 Piston	
MRL2-W	Simple Guide Type/2 Pistons	
MRL2-F	Ultra Low Speed Type	

Rodless Type/Shuttle Mover **(ø25)**

Rodless with a curve. Flexible layout possible

Shuttle Mover Standard/High Load Type

SM-25

Series	Also known as...	Bore size (ø)
SM-25	Standard Type	25
	High Load Type	

Search by Product System List

Products can be selected by series appearance and product overview.

With Brake/With Lock >>> Pneumatic Cylinders ④ Catalog No. RJ-005AA

Small/Medium Bore with Brake **(ø16 to ø40)**

High-performance compact brake for pencil type, etc.

Brake Cylinder (small/medium bore size)

ULK

Series	Also known as...	Bore size (ø)
ULK	Single Rod Type	20, 25, 32, 40
ULK-V	With Valve	20, 25, 32, 40

Small/Medium Bore with Brake **(ø20 to ø40)**

Reliable brake equipped on CMK2/CMA2

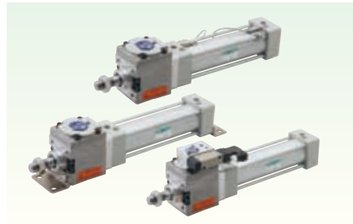
Brake Cylinder (small/medium bore size)

JSK2/JSM2

Series	Also known as...	Bore size (ø)
Crimped Type		
JSK2	Single Rod Type	20, 25, 32, 40
JSK2-V	With Valve	
Serviceable Type		
JSM2	Single Rod Type	20, 30, 40
JSM2-V	With Valve	

Medium Bore with Brake **(ø40 to ø100)**

Reliable brake mechanism equipped on SCG



Tie Rod Cylinder with Brake

JSG

Series	Also known as...	Bore size (ø)
JSG	Single Rod Type	40, 50
JSG-V	With Brake Release Valve	63, 80, 100

Medium/Large Bore with Brake **(ø40 to ø180)**

Brake equipped on reliable robust cylinder

Brake Cylinder (Medium/Large Bore)

JSC3/JSC4

Series	Also known as...	Bore size (ø)
JSC3	Single Rod Type	40 to 100
JSC4	Single Rod Type	125 to 180
JSC3-V	With Valve for Brake	40 to 100
JSC3-H	Low Hydraulic Pressure Type	40 to 100
JSC4-H	Low Hydraulic Pressure Type	125 to 180
JSC3-T	Heat resistant type	40 to 100
JSC4-T	Heat resistant type	125 to 180

With Fall Prevention **(ø20 to ø100)**

Compact SSD with Fall prevention function

Compact Cylinder with Drop Prevention

USSD

Series	Also known as...	Bore size (ø)
USSD	Single Rod Type	20, 25, 32, 40, 50, 63, 80, 100
USSD-K	High Load Type	

With Fall Prevention **(ø25 to ø63)**

Flat Cylinder with Fall prevention function FCD Series

Flat Cylinder with Free Position Drop Prevention

UFCD

Series	Also known as...	Bore size (ø)
UFCD-KL	Single Rod Type/ With Cushion	25 to 63

With Fall Prevention**(ø40 to ø100)**

Fall prevention possible at any position

Medium Bore Size Cylinder with Free Position Fall Prevention

USC

Series	Also known as...	Bore size (ø)
USC	Single Rod Type	40 to 100
USC-G1	With Coil Scraper	

Lock Unit >>> Pneumatic Cylinders ④ Catalog No. RJ-005AA

Light. Slim lock unit

Fixing, "Improved safety", "Drop prevention" possible

Lock Unit

UB

Series	Applicable Shaft Diameter
UB	8, 16

Brake Unit

Only the brake part of the Brake Cylinder is unitized

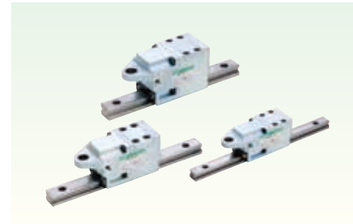
Brake Unit

JSB3

Series	Rod Diameter
JSB3	16, 20, 25, 30, 35, 40, 45

Brake for LM Guide

Reliable brake mounted on LM guide



Linear Guide Lock

LMB

Series
LMB

Lock Unit

Compact and high holding for linear guide

Linear Guide Lock

LML

Series
LML

With Valve >>> Pneumatic Cylinder ④ Catalogs No. RJ-005AA

With Valve/Medium Bore Cylinder **(ø20 to ø40)**

High-performance solenoid valve equipped on CMK2 series

Compact cylinder with valve

CKV2

Series	Also known as...	Bore size (ø)
CKV2	Single Rod Type	20, 25, 32, 40
CKV2-M	Non-Rotating Type	

With Valve (ø50, 75, 100)

Boasts long-standing reliability

Cell Cylinder

CAV2/COV$^{P}_{N}$2

Series	Also known as...	Bore size (ø)
CAV2	Double Solenoid/ Lubricated Type	50, 75, 100
COVP2	Single Solenoid/Energize to Extend Type/Lubricated Type	
COVN2	Single Solenoid/Energize to Retract Type/Lubricated Type	
CAV2-N	Double Solenoid/ Non-Lube Type	
COVP2-N	Single Solenoid/Energize to Extend Type/Non-Lube Type	
COVN2-N	Single Solenoid/Energize to Retract Type/Non-Lube Type	

Other with valve

In addition, the following "Cylinder with Valve" lineup is available.

Product Name	Series	Bore size (ø)	Catalog No.
Pencil Cylinder	SCPS3-V SCPD3-V	10, 16	RJ-002AA
Medium Bore Size Cylinder	SCA2-V	40, 50, 63, 80, 100	RJ-002AA
Guided Cylinder	ST S/L-M/B V	20 to 63	Page 628
Brake Cylinder	ULK-V	20, 25, 32, 40	RJ-005AA
	JSK2-V	20, 25, 32, 40	RJ-005AA
	JSM2-V	20, 25, 32, 40	RJ-005AA
	JSG-V	40, 50, 63, 80, 100	RJ-005AA
	JSC3-V	40, 50, 63, 80, 100	RJ-005AA
Selex Rotary	RV3S V/W RV3D V/W	0.98 to 66.6 (Torque size)	RJ-005AA

Search by Product System List

Products can be selected by series appearance and product overview.

Clamp >>> Pneumatic Cylinders ④ Catalog No. RJ-005AA

Clamp Cylinder **(ø40 to ø80)**

Dedicated clamp cylinder

Clamp Cylinder

CAC4

Series	Also known as...	Bore size (ø)
CAC4	Single Rod Type	40, 50, 63, 80
CAC4-G4	Sputter adhesion prevention type	40, 50, 63, 80

Clamp Cylinder with Fall Prevention **(ø50, ø63)**

Drop prevention function equipped on clamp cylinder

Clamp Cylinder with Fall Prevention

UCAC2

Series	Also known as...	Bore size (ø)
UCAC2	Single Rod Type	50, 63

Clamp Cylinder **(ø32, ø40)**

Dedicated for clamping, contributes to weight reduction of welding jigs

Lightweight Clamp Cylinder

CAC-N

Series	Also known as...	Bore size (ø)
CAC-N	Single Rod Type	32, 40

Clamp Cylinder with Fall Prevention **(ø32, ø40)**

Equipped with free position fall prevention function

Lightweight Clamp Cylinder

UCAC-N

Series	Also known as...	Bore size (ø)
UCAC-N	With Fall Prevention	32, 40

Rotary Clamp **(ø12 to ø63)**

Simple design for compact clamping

Rotary Clamp Cylinder

RCS2

Series	Also known as...	Bore size (ø)
RCS2	Single Rod Type	12 to 63
RCS2-T2	Packing Material Fluoro Rubber	
RCS2-G4	Sputter adhesion prevention type	32 to 63

Rotary Clamp **(ø16 to ø63)**

Ideal for clamping in limited spaces

Rotary Clamp Cylinder

RCC2

Series	Also known as...	Bore size (ø)
RCC2	Single Rod Type	16 to 63
RCC2-G4	Sputter adhesion prevention type	20 to 63

Pin Clamp Cylinder

Workpiece positioning and clamping possible with one unit

Pin Clamp Cylinder

PCC

Series	Also known as...	Bore size (ø)
PCC	Single Rod Type	50
PCC-Q	Drop prevention type	

Special >>> Pneumatic Cylinders ④ Catalog No. RJ-005AA

Space-Saving/Compact With Vacuum Pad **(ø6, ø10)**

Suction pad equipped on rod end

Compact Cylinder with Vacuum Pad

MVC

Series	Also known as...	Bore size (ø)
MVC	Single Rod Type	6, 10

Stopper Cylinder **(ø20 to ø50)**

Space-saving type with excellent lateral load resistance

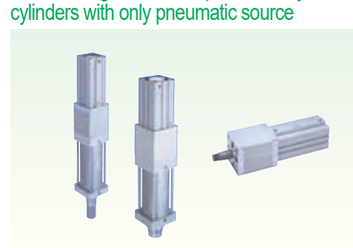
Stopper Cylinder

STK

Series	Also known as...	Bore size (ø)
STK	Rod End/Shape: Round Bar	20, 32, 40, 50
STK-Y	Single Acting, Retracting Type, Round Rod End Shape	
STK-Y1	Spring-loaded Type, Round Rod End Shap	
STK-M	Rod End Shape: Chamfered Type	
STK-MY	Single Acting, Retracting Type, Chamfered Rod End Shape	
STK-MY1	Spring-loaded Type, Chamfered Rod End Shape	
STK-JY	Single Acting, Retracting Type, Roller Rod End Shape	
STK-JY1	Spring-loaded Type, Roller Rod End Shape	

Mechanical Power Cylinder

Achieves high thrust comparable to hydraulic cylinders with only pneumatic source



Mechanical Power Cylinder

MCP

Series	Also known as...	Bore size (ø)
MCP-W	Fast Forward + Intensification	For 2t/For 5t
MCP-S	Intensifier Only	

Guideless Cylinder **(ø40 to ø100)**

Non-rotating without guide, excellent lateral load resistance

Guideless Cylinder

GLC

Series	Also known as...	Bore size (ø)
GLC	Single Rod Type	40 to 100

Balancer Unit **(ø50 to ø100)**

Lightly supports heavy objects with only air source

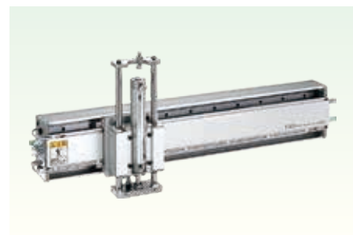
Balancer Unit

BBS

Series	Also known as...	Bore size (ø)
BBS-A	Automatic Pressure Adjustment Type	50 to 100
BBS-O	Fixed Pressure Adjustment Type	

Unit Components XZ-Axis Compound Unit

Selectable X-axis (payload), selectable Z-axis.



New Handling System

NHS

Series	Variation Name
NSR	X-axis Module
NHS-H	Z-axis Module (HRL)
NHS-S	Z-axis Module (STL-B)

Search by Product System List

Products can be selected by series appearance and product overview.

Special >>> Pneumatic Cylinders ④ Catalog No. RJ-005AA

Guided Single Axis Unit

Low Profile and high rigidity

Hybrid Robot

HRL

Series	Variation Name
HRL-1	Guided Single Axis Unit

Cylinder/Gripper with Length Measurement Function

Compact cylinder/Gripper with Length measurement function

Cylinder/Gripper with Linear Norm Sensor

LN

Series	Also known as...	Bore size (ø)
SSD-LN SSD-O-LN	Cylinder with Sensor Super Compact Type	12 to 50
BHA-LN	Cross Roller Parallel Gripper with Sensor	12, 16, 20, 25
BHG-LN	Cross Roller Parallel Gripper with Rubber Cover and Sensor	12, 16, 20, 25
BHE-LN	Centering Gripper with Sensor	12, 16, 20, 25

High Speed Type >>> Pneumatic Cylinder④ Catalog No. RJ-005AA

High Speed Type/High Speed Cylinder **(ø20 to ø63)**

High-speed operation at 2000 mm/s. High cushion capacity

High Energy Absorption Cylinder

HCM

Series	Also known as...	Bore size (ø)
HCM	Single Rod Type	20 to 63

High Speed Type/High Speed Cylinder **(ø20 to ø100)**

High-speed operation at 3000 mm/s. High cushion capacity

High Speed Cylinder

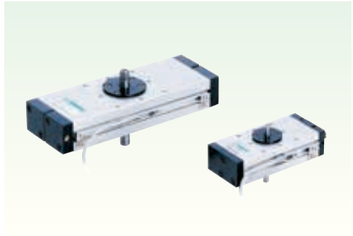
HCA

Series	Also known as...	Bore size (ø)
HCA	Single Rod	20, 25, 32, 40, 50, 63, 80, 100

Swinging/Rotating Type >>> Pneumatic Cylinders ④ Catalog No. RJ-005AA

Swinging/Rotating Type 0.7 to 5.6 N·m

Rack & pinion type, compact swinging type



Selex Rotary

RRC

Series	Variation Name	Torque Size
RRC	Rack & Pinion Type	0.7 to 5.6

*Torque size (N·m, at 0.5 MPa)

Swinging/Rotating Type 0.5 to 8.0 N·m

Table type actuator. High precision type also available

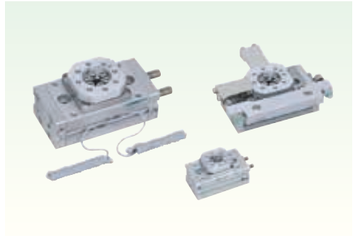


Table Type Rotary Actuator

GRC

Series	Variation Name	Torque Size
GRC	Basic type	0.5 to 8.1
GRC-K	High-Precision Type	1.0 to 8.1
GRC-F	Low speed type	0.5 to 8.1
GRC-KF	High-Precision Type/Low Speed Type	1.0 to 8.1

*Torque size (N·m, at 0.5 MPa)

Swinging/Rotating Type 0.12 to 0.66 N·m

Vane type. Abundant torque sizes.

Selex Rotary Vane Type

RV3□

Series	Variation Name	Torque Size
Compact		
RV3S	Single Vane Type	0.12 to 3.19
RV3D	Double Vane Type	0.28 to 7.70
RV3S V/W	Single Vane Type/With Valve	0.98 to 3.19
RV3D V/W	Double Vane Type/With Valve	2.11 to 7.70
RV3SA	Angle Adjustable Single Vane Type	0.31 to 3.19
RV3DA	Angle Adjustable Double Vane Type	0.71 to 7.70
Large		
RV3S (Large)	Single Vane Type	4.7 to 102
RV3D (Large)	Double Vane Type	10.1 to 206
RV3S V/W	Single Vane Type with Valve	4.7 to 27.9
RV3D V/W	Double Vane Type with Valve	10.1 to 66.6
RV3SH	Single Vane Type Low Hydraulic Pressure Type	4.7 to 102
RV3DH	Double Vane Type Low Hydraulic Pressure Type	10.1 to 206
RVC	Shock Absorber	

*Torque size (N·m, at 0.5 MPa)

Related Components >>> Pneumatic Cylinder④ Catalog No. RJ-005AA

Shock Absorber **(Absorption Capacity 1 to 720 J)**

3 models available to suit application

Shock Absorber

SKL, NCK, SCK, FCK

Series	Variation Name	Absorption Energy
Fixed Type		
SKL	–	0.2 to 3.6
NCK	–	1 to 200
Adjustable Type		
SCK	–	0.049 to 588
FCK-L	Low Speed Type	1.5 to 79.3
FCK-M	Medium Speed Type	1.8 to 720
FCK-H	High Speed Type	

Absorption Energy : J

Free Joint **(Size M3 to M45)**

For preventing misalignment when mounting cylinder. 3 types available

Free Joint

FJ

Series
FJ

Simple Type Floating Connector

For preventing misalignment when mounting cylinder. Simple type.

Simple Flow Controller

FK

Series
FK

Search by Product System List

Products can be selected by series appearance and product overview.

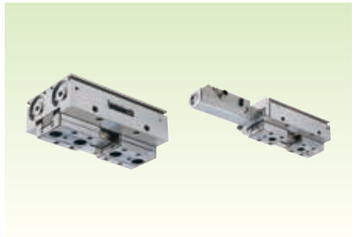
Hand (Gripper) >>> Pneumatic Cylinders ⑤ Catalog No. RJ-006AA

Wide variety available including Low Profile, lightweight, and wide types

Parallel Gripper

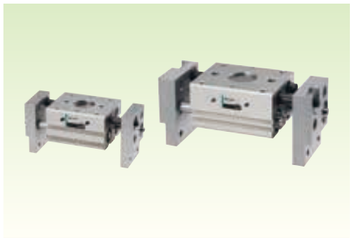
Series	Also known as...	Bore size (ø)
LSH-HP1 LSHL-HP1	Linear Slide Gripper (HP Series)	6 to 32
LSHM-HP2	Linear Slide Hand (Gripper) with Length Measurement Function (HP Series)	10 to 25
LSH	Linear Slide Gripper (Standard Type)	10 to 25
FH100	Feather Gripper (Mini Parallel Gripper)	10 to 25
BSA2	Ultra Compact Cross Roller Parallel Gripper	6
BHA	Compact Cross Roller Parallel Gripper	12 to 25
BHG	Compact Cross Roller Parallel Gripper with Rubber Cover	12 to 25

Series	Also known as...	Bore size (ø)
BHE	Centering Gripper	12 to 32
LHA	Linear Guide Gripper	6 to 32
LHAG	Linear Guide Gripper with Rubber Cover	12 to 32
HAP-1C	Parallel Gripper	15
HAP	Parallel Gripper	20 to 40
HKP	Cross Roller Parallel Gripper	32 to 80
HCP	Horizontal Parallel Gripper	12 to 32
HGP	Long Stroke Parallel Gripper	25



Low Profile Parallel Gripper

Series	Also known as...	Bore size (ø)
LST-HP1	Low Profile Long Stroke Gripper	8x2 to 20x2
LSTM-HP2	Low Profile Long Stroke Gripper with Length Measurement Function	12x2 to 20x2
HLF2	Long Stroke Low Profile Gripper	8x2 to 20x2
HLA/HLB	Low Profile Parallel Gripper	12 to 20
HLAG/ HLBG	Low Profile Parallel Gripper with Rubber Cover	12 to 20
HLC	Low Profile Long Stroke Parallel Gripper	8x2 to 30x2
HLD	Ultra Low Profile Parallel Gripper	8x4 to 20x4



Wide Parallel Gripper

Series	Also known as...	Bore size (ø)
HMC-HP1	Wide Parallel Gripper	10x2 to 40x2
HMF	Compact Wide Parallel Gripper	12x2 to 40x2
HMF-G	Cutting Oil Resistant Specification Compact Wide Parallel Gripper	16x2 to 25x2
HMFB	Large Wide Parallel Gripper with Linear Guide	25x2 to 40x2
HFP	Wide Parallel Gripper	16x2 to 40x2

Pivot Gripper

Series	Also known as...	Bore size (ø)
FH500	Feather Gripper (Mini Pivot Gripper)	10 to 20
HBL	Pivot Gripper	15 to 40
HJL	Toggle Gripper	32 to 63
HMD	180-degree Opening/Closing Low Profile Wide Angle Gripper	12 to 25
HDL	180-degree Opening/ Closing Wide Angle Gripper	25 to 40
HJD	180-degree Opening/Closing High Gripping Force Wide Angle Gripper	32 to 63

Mechanical Gripper

Series	Variation Name	Cylinder Bore (ø)
BHA-FC	Mechanical Gripper	12 to 32

Chuck >>> Pneumatic Cylinders ⑤ Catalog No. RJ-006AA

Compact and powerful. Wide variety available

3-Jaw Chuck

Series	Also known as...	Bore size (ø)
CKW-HP1	3-Jaw Chuck	16 to 50
CKWL-HP1	3-Jaw Long Stroke Chuck	16 to 40
CKL2	Powerful Chuck	16 to 100
CKLG2	Powerful Chuck with Rubber Cover	20 to 100
CKL2-HC	Drop Prevention Type Powerful Chuck	32 to 80
CKH2	High Gripping Force Powerful Chuck	50 to 100
CKLB2	2-Direction Powerful Chuck (Parallel Gripper)	20 to 100
CKG	3-Jaw Bearing Chuck	16 to 50
CK	3-Jaw Long Stroke Chuck	25 to 44
CKA	3-Direction Low Profile Chuck	16 to 100
CKS	Low Profile Chuck	8x3 to 32x3
CKS-F	Low Profile Chuck (Hollow Type)	16x3 to 50x3
CKF	Hollow Chuck	30 to 80
CKJ	Ultra Long Stroke Chuck	12x6 to 50x6

Mechanical Chuck

Series	Variation Name	Cylinder Bore (ø)
CKL2-FC	Mechanical Chuck	20 to 40

Robot Peripheral Components

>>> Pneumatic Cylinder⑤ Catalog No. RJ-006AA

Auto Gripper Changer

Series	Variation Name
CHC	Auto Gripper Changer

Gripper for Collaborative Robot

>>> Pneumatic Cylinders ⑤ Catalog No. RJ-006AA

Compact and lightweight with high gripping force due to air drive

Gripper for Collaborative Robot

Series	Also known as...	Bore size (ø)
RLSH/RHLF/ RCKL-UR	UNIVERSAL ROBOTS Official Certified Gripper	RLSH: ø20 RHLF: ø16x2 RCKL: ø40
RLSH/RHLF/ RCKL-TM	OMRON ROBOT Official Certified Gripper	
RLSH/RHLF/ RCKL-TM	TECHMAN ROBOT Official Certified Gripper	
RLSH/RHLF/ RCKL-FN	FANUC Robot Gripper compatible with CRX Series	
RLSH/RHLF/ RCKL-YS	YASKAWA MOTOMAN Robot Gripper compatible with HC10DTP Series	
RLSH/RHLF/ RCKL-JK	JAKA Robot Gripper compatible with Zu Series	
RLSH/RHLF/ RCKL-KW	Kawasaki Robot duAro Series K-AddOn Registered Gripper	

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Registration complete!

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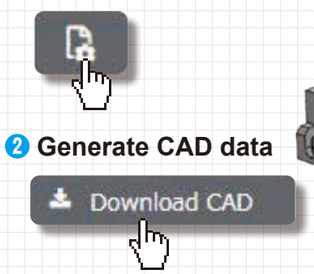
How to download CAD

STEP 1 Click on "3D CAD" from the product detail page

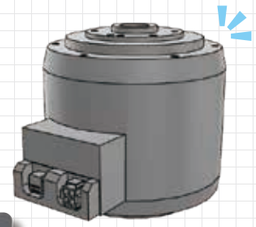
STEP 2. Select model No.

STEP 3 ❶ Specify CAD format

❷ Generate CAD data



Download complete!

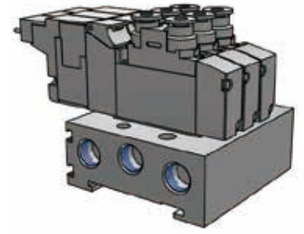


Pneumatic valve manifold specifications and CAD data are easily available on the Web.

Specifications are available

Manifold specifications for pneumatic valves can be prepared and shipped assembled to the customer.

Get CAD data

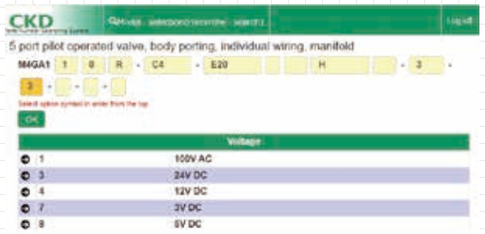


2D and 3D CAD data available for pneumatic valve manifold assemblies

Specifications and download method of CAD data

STEP 1 CKD components product TOP page > Product details page > Click "Manifold specifications sheet"

STEP 2. Select model No.



STEP 3 Create specifications sheet

STEP 4 Download complete!

●For specifications output, Specification output Click

●If downloading CAD data 2D/3D CAD Click

Significantly reduces work time

For details, please contact our nearest sales office.

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Catalogs	CAD	Instruction Manuals
Maintenance Parts	Software	Model Selection
FAQ	Technical Information	Standard Compliant Product Information
Columns	Event Information	Seminars

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About Using the Model Selection System

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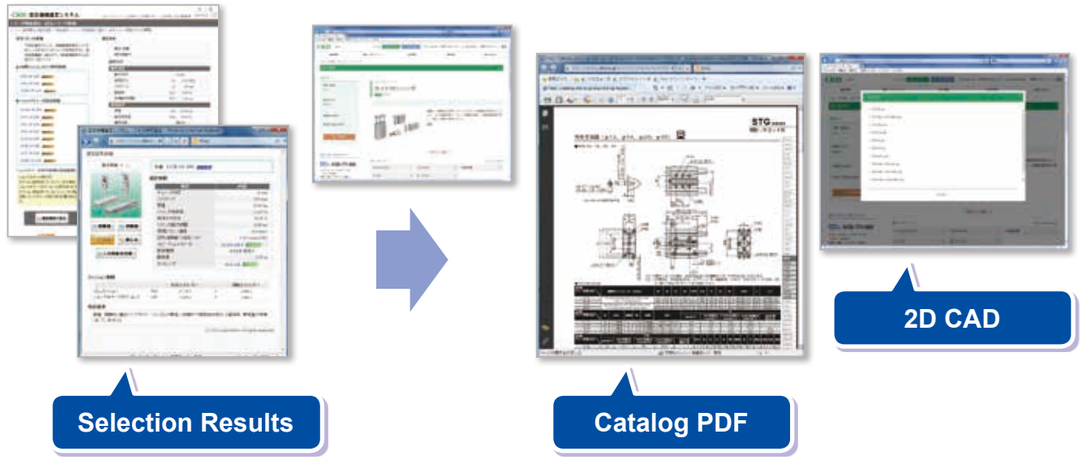
Published on our website

This system is for selecting products according to your application and operating conditions.

*Downloadable software may not be able to be downloaded due to your company's security policy. In that case, please contact us.

Link from selection results to catalog PDFs and CAD data!



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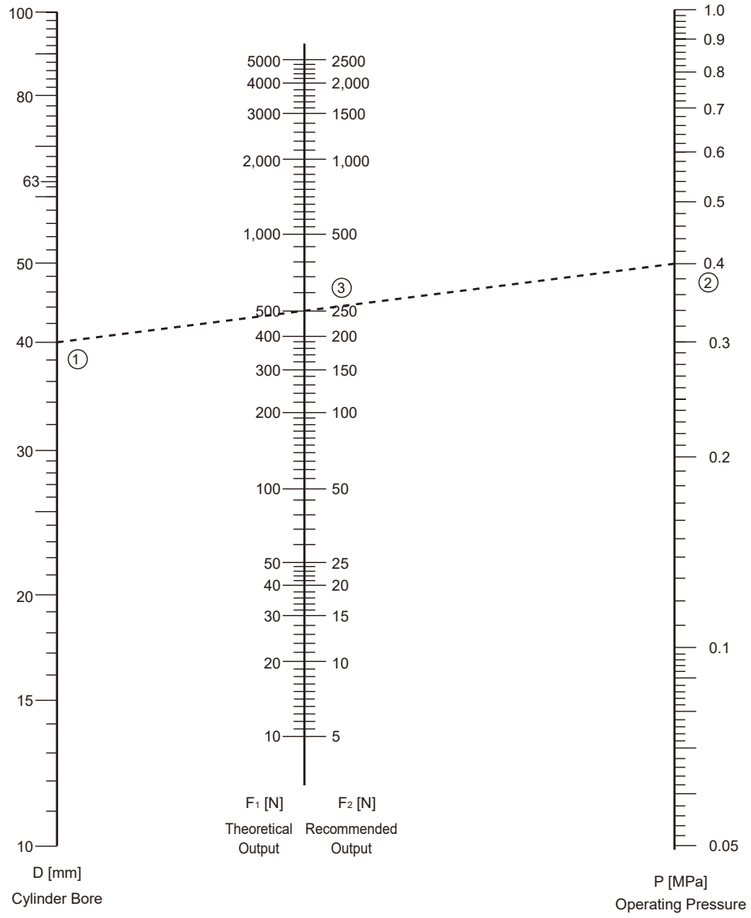
https://www.ckd.co.jp/en/

Technical Data

	Page
Cylinder Bore Selection Nomogram (1, 2)	Intro 23
Required Flow Rate during Cylinder Operation (3, 4)	Intro 25
Allowable Absorption Energy Value (5, 6)	Intro 27
Relationship values between dimensions by mounting type and maximum stroke (L) (7, 8)	Intro 29
How to Determine Cylinder Mounting Type (9)	Intro 31
Air Compressor, Air Tank Selection (10)	Intro 32
Dimensional Tolerances for Commonly Used Fits (11)	Intro 33

Cylinder Bore Selection Nomogram

● For bore 10 mm to 100 mm, rod push direction



This nomogram was created using the following formula.

$F1 = \frac{\pi}{4} xD^2 \cdot P$

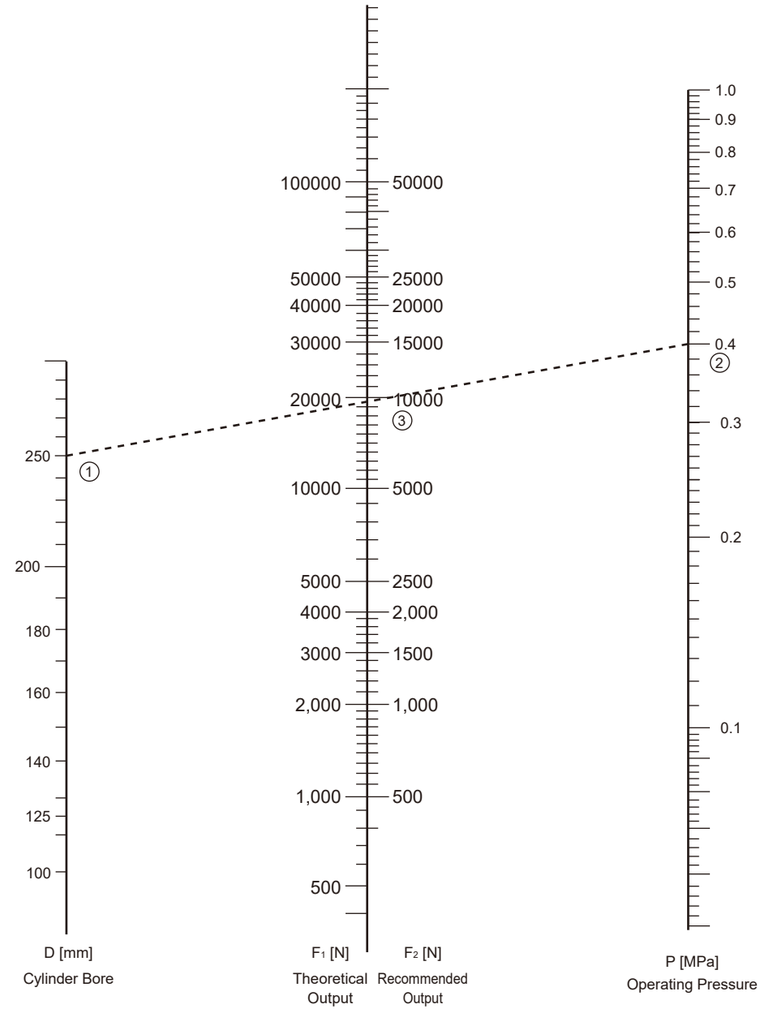
However, F_1 : Theoretical output [N]
F_2 : Recommended output (at 50% efficiency) [N]
D : Cylinder bore [mm]
P : Operating pressure [MPa]

(Example) What is the theoretical output when operating a ø40 bore cylinder at an air pressure of 0.4 MPa?
(Answer) Connect D and P to find the point on F, and obtain a theoretical output F ≈ 500 N.

Cylinder Bore Selection Nomogram

Cylinder Bore Selection Nomogram

● For bore 100 mm to 250 mm, rod push direction



This nomogram was created using the following formula.

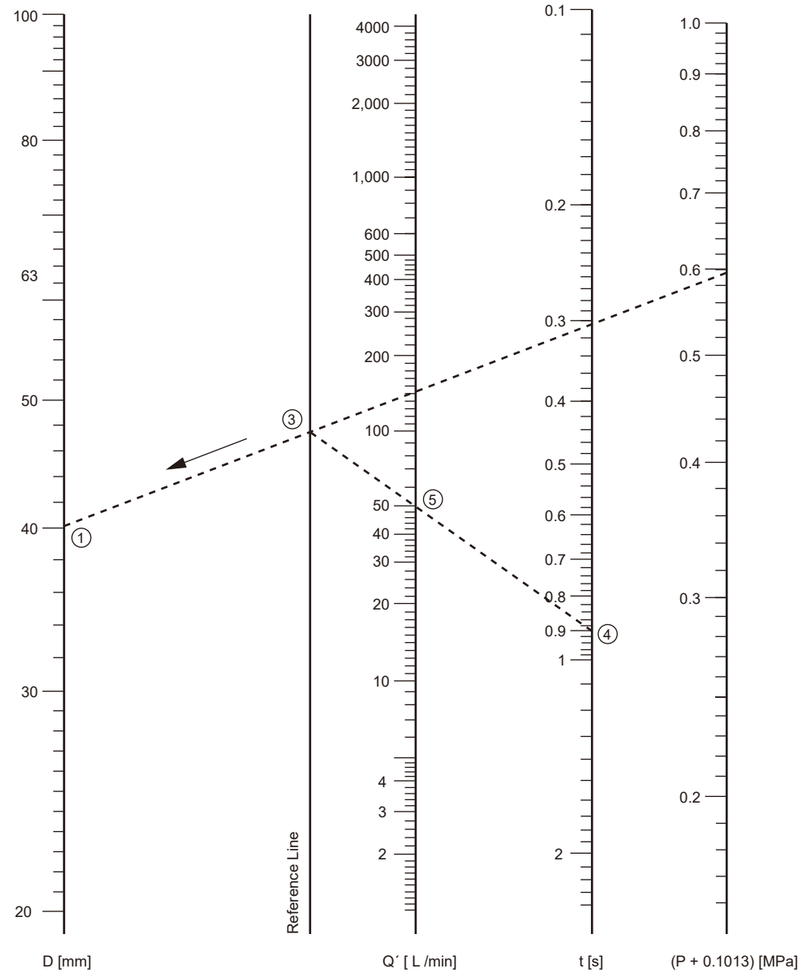
$F1 = \frac{\pi}{4} xD^2 \cdot P$

However, F_1 : Theoretical output [N]
F_2 : Recommended output (at 50% efficiency) [N]
D : Cylinder bore [mm]
P : Operating pressure [MPa]

(Example) What is the theoretical output when operating a ø250 bore cylinder at an air pressure of 0.4 MPa?
(Answer) Connect D and P to find the point on F, and obtain a theoretical output F ≈ 19000 N.

Required Flow Rate during Cylinder Operation (Bore 100 mm or less)

● Q : Required flow rate per 100 mm stroke L /min



1. Calculation Formula for Required Flow Rate during Cylinder Operation

The required flow rate is the instantaneous flow rate when the cylinder is operating.
This is different from the cylinder's air consumption, so please do not confuse them.

$$Q = \frac{\pi}{4} \cdot D^2 \frac{L}{t} \cdot \frac{P + 0.1013}{0.1013} \times 10^{-6} \times 60$$

Q : Flow rate [L /min] (ANR)
D : Cylinder bore [mm]
L : Stroke [mm]
t : Stroke travel time [s]
P : Operating Pressure (MPa)

(Example 1, figure above) What is the required flow rate when operating a ø40 bore cylinder at an air pressure of 0.5 MPa with a stroke of 100 mm per 0.9 s?

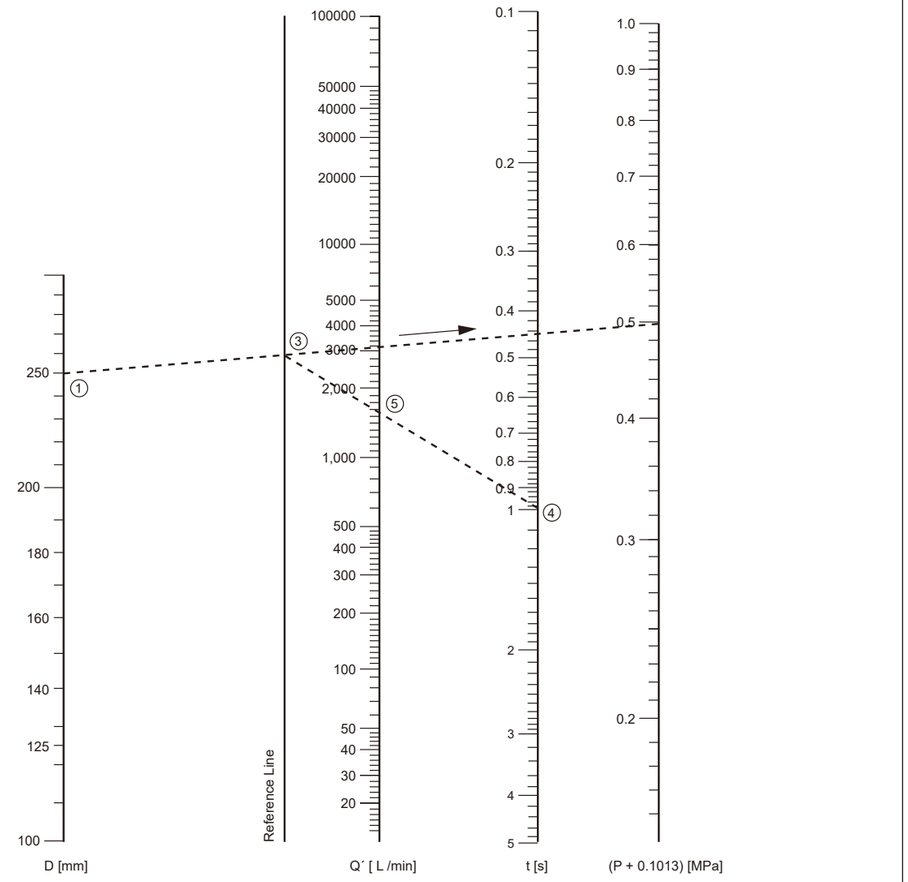
(Answer) Find the point on the relationship line from D and (P + 0.1013), and obtain Q' = 50 (L /min) from the point on the relationship line and t.

(Example 2, figure right) What is the required air volume when operating a ø250 bore cylinder at an air pressure of 0.4 MPa with a stroke of 100 mm per 1 s?

(Answer) Find the point on the relationship line from D and (P + 0.1013), and obtain Q' = 1450 (L /min) from the point on the relationship line and t.

Required Flow Rate during Cylinder Operation (Bore 100 to 250 mm)

● Q : Required flow rate per 100 mm stroke L /min



2. Cylinder Air Consumption Calculation Formula (per hour)

Air consumption per hour is the air consumption due to cylinder operation within a certain period, and it is the air volume consumed inside the cylinder and in the piping between the cylinder and the switching valve. Regardless of cylinder speed, it is different from the required air flow rate during operation.

$Q_T = (Q_1 + Q_2 + (2 \times Q_3)) \times n$ [For double acting cylinder]

Q_T : Air consumption per minute [L/min] (ANR)
n : Cylinder operations per minute [cycles/min]
Q_1 : Air consumption during push stroke [L] (ANR)
Q_2 : Air consumption during pull stroke [L] (ANR)
Q_3 : Piping volume from directional control valve to each port of the cylinder [L] (ANR)

$$Q_1 = \frac{\pi}{4} \cdot D^2 \times L \times 10^{-6} \times \left(\frac{P + 0.1013}{0.1013} \right)$$

$$Q_2 = \frac{\pi}{4} \cdot (D^2 - d^2) \times L \times 10^{-6} \times \left(\frac{P + 0.1013}{0.1013} \right)$$

$$Q_3 = \frac{\pi}{4} \cdot d_3^2 \times L_3 \times 10^{-6} \times \left(\frac{P}{0.1013} \right)$$

D : Cylinder bore [mm]
d : Piston rod outer diameter [mm]
L : Cylinder stroke [mm]
L_3 : Piping length from directional control valve to cylinder port [mm]
d_3 : Piping inner diameter from directional control valve to cylinder port [mm]
P : Operating pressure [MPa] (gauge pressure)
(Note : 1L = 1dm³.)

(Example) Cylinder bore 100 mm, Rod diameter 30 mm, Stroke 800 mm,
Operating pressure 0.5 MPa, 5 operations per minute
Piping tube inner diameter 7 mm, Piping tube length 2000 mm

$$Q_1 = \frac{\pi}{4} \times 100^2 \times 800 \times 10^{-6} \times \left(\frac{0.5 + 0.1013}{0.1013} \right) = 37.3$$

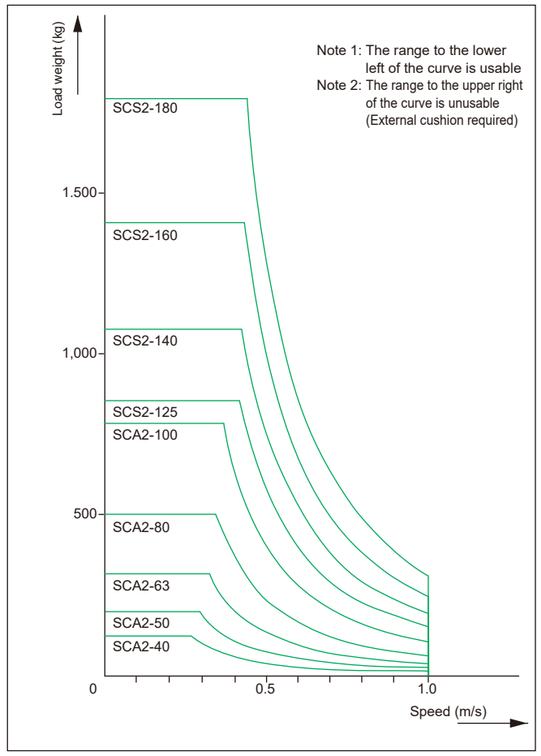
$$Q_2 = \frac{\pi}{4} \times (100^2 - 30\ 2\ ) \times 800 \times 10^{-6} \times \left(\frac{0.5 + 0.1013}{0.1013} \right) = 33.9$$

$$Q_3 = \frac{\pi}{4} \times 7^2 \times 2000 \times 10^{-6} \times \left(\frac{0.5}{0.1013} \right) = 0.4$$

$Q_T = (37.3 + 33.9 + (2 \times 0.4)) \times 5 = 360$ [L /min] (ANR)

Allowable absorption energy value: With Cushion

Allowable Absorption Energy Value Graph with Cushion



Note)

About how to calculate kinetic energy
The average speed of the cylinder is calculated by ua= $\frac{L}{T}$.

ua : Average speed (m/s)
L : Cylinder stroke (m)
T : Operating Time (s)

In response, the cylinder speed immediately before cushion impact can be determined by the following simplified formula.

um : = $\frac{L}{T}$ x (1 + 1.5 x w)

um : Speed just before entering cushion (m/s)
w : Decimal representation of cylinder load factor (0.3 for 30%, 0.5 for 50%)

When calculating kinetic energy or using a graph, use this value of um as the speed.

● Cushion

The purpose of the cushion is to absorb the kinetic energy held by the piston by utilizing the compressibility of air, and to prevent the piston and cover from impacting at the stroke end. Therefore, the cushion is not intended to operate the piston at low speed near the stroke end.
The table below shows the kinetic energy that can be absorbed by the cushion. If the kinetic energy exceeds this value or if you want to avoid bouncing due to air compressibility, please consider a separate shock absorber.

Kinetic energy (J) = $\frac{1}{2}$ x Load weight (kg) x [Speed (m/s)]²

Absorption Energy Value with Cushion

1.SCA2, JSC3

Tube I.D. (mm)	Effective Cushion Length (mm)	Allowable Absorption Energy (J)
ø40	14.6	4.29
ø50	16.6	8.37
ø63	16.6	15.8
ø80	20.6	27.9
ø100	23.6	49.8

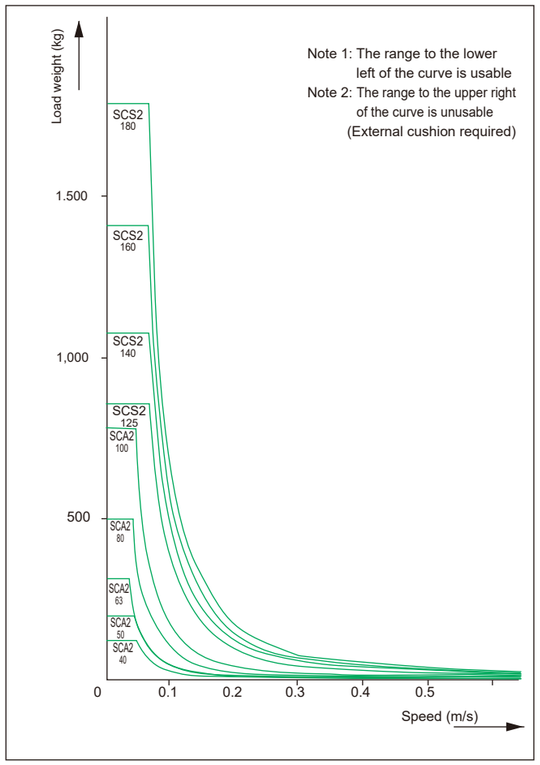
2.SCG, SCM, JSG

Tube I.D. (mm)	Effective Cushion Length (mm)	Allowable Absorption Energy (J)	Remarks
ø20	8.1	0.8	SCM
ø25	8.1	1.2	Only
ø32	8.6	2.5	
ø40	8.6	3.7	
ø50	13.4	8.0	
ø63	13.4	14.4	
ø80	15.4	25.4	
ø100	15.4	45.6	

3.SCS2, JSC4

Tube I.D. (mm)	Effective Cushion Length (mm)	Allowable Absorption Energy (J)
ø125	21.6	63.5
ø140	21.6	91.5
ø160	21.6	116
ø180	21.6	152
ø200	26.6	233
ø250	26.6	362

Allowable absorption energy value: Without Cushion



1. Allowable absorption energy without cushion

The allowable absorption energy for each model is as shown in the table below.

Allowable absorption energy without cushion

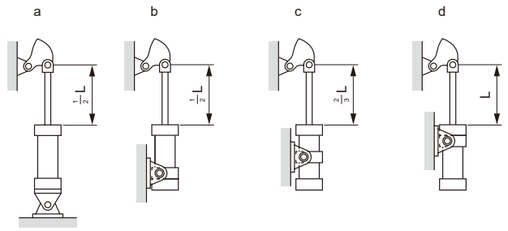
Unit: J

Code / Tube I.D. (mm)	SCM Note 1	SCA2	SCS2	CAV2/COV2
ø40	–	0.067	–	–
ø50	0.057	0.079	–	0.072
ø63	0.057	0.079	–	–
ø75	–	–	–	0.154
ø80	0.112	0.201	–	–
ø100	0.153	0.301	–	0.154
ø125	–	–	0.371	–
ø140	–	–	0.386	–
ø160	–	–	0.386	–
ø180	–	–	0.958	–
ø200	–	–	1.08	–
ø250	–	–	2.32	–

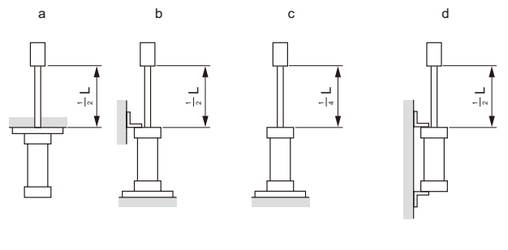
Note 1) This is the absorption energy without cushion for cushion symbols "R" and "H".

Relationship between Dimensions by Mounting Type and Max. Stroke (L)

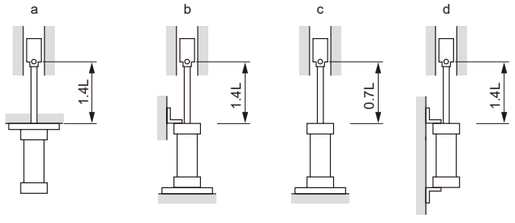
1 For double end pin joint



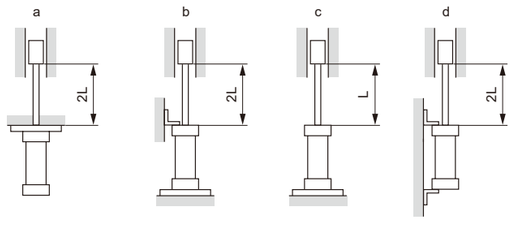
2 Rod end free



3 Rod end guided (pin joint)



4 Cylinder fixed, rod end guided



Max. Stroke

Pencil Shaped Cylinder SCP*3 Series			
D (mm) / F0 (N)	ø6	ø10	ø16
5	570		
10	405	720	
30	230	415	650
50		320	500
100			355

CMA2/CMK2/JSM2 Series			
D (mm) / F0 (N)	ø20	ø25, ø30, ø32	ø40
50	2020		
100	1440	2040	
200	1,000	1440	2,000
400		1,000	1500
600			1160
800			980

SCG/SCA2/JSG/JSC3					
D (mm) / F0 (N)	ø40	ø50	ø63	ø80	ø100
200	2600	4100			
400	1810	2900	2900		
600	1500	2400	2400	3600	
800	1280	2,000	2,000	3140	4500
1,000		1820	1820	2800	4000
1500			1480	2300	3300
2,000				1980	2840
2500				1760	2560
3000				1600	2300
3500					2140
4000					2,000
5000					1800

SCS2						
D (mm) / F0 (N)	ø125	ø140	ø160	ø180	ø200	ø250
1500	3700	3700				
2,000	3200	3200				
2500	2900	2900	4600			
3000	2600	2600	4100	5300		
3500	2400	2400	3800	5000	5900	
4000	2300	2300	3600	4600	5600	
5000	2,000	2,000	3200	4100	5000	7400
6000	1900	1900	2900	3800	4600	6800
7000	1700	1700	2700	3500	4200	6200
8000		1600	2500	3300	3900	5800
9000		1500	2400	3100	3700	5500
10000			2300	2900	3500	5200
15000				2400	2900	4200
20000					2500	3600
25000						3300
30000						3000

JSC4				
D (mm) / F0 (N)	ø125	ø140	ø160	ø180
1500	4600			
2,000	3900	3900		
2500	3500	3500	4600	
3000	3200	3200	4100	5300
3500	3000	3000	3800	5000
4000	2800	2800	3600	4600
5000	2500	2500	3200	4100
6000	2300	2300	2900	3800
7000	2100	2100	2700	3500
8000		2,000	2500	3300
9000		1880	2400	3100
10000			2300	2900
15000				2400

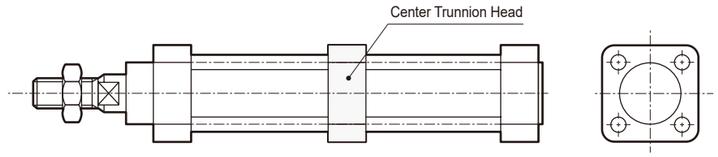
D : Cylinder bore [mm]
F0 : Load [N]
L : Max. Stroke [mm]

Request
The values in the table are calculated values. If the stroke exceeds the maximum stroke stated in the specifications section for each model, please consult us.

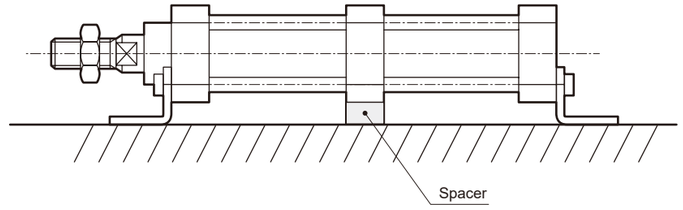
Precautions for Exceeding Max. Stroke

⚠ Caution : If exceeding the max. stroke described on the "Specifications" page for each model, note the following points.

1. Min. Operating Pressure
   Starting pressure increases due to deflection of the piston rod inside the cylinder.
2. Piston Rod Buckling
   It becomes difficult unless used in a state where the internal stopper that brings the piston into contact with the cylinder cover is effective. When using by hitting an external stopper, please refer to the technical data "Relationship between dimensions according to mounting type and maximum stroke (L) (Intro Page 29)".
3. Tie Rod Reinforcement
   A center trunnion head is inserted to prevent the tie rod from deflecting and touching the cylinder tube.

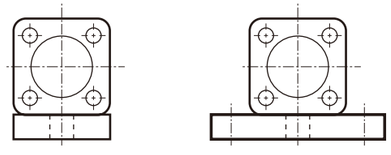


4. Cylinder Tube Deflection Prevention
   When mounted horizontally, tube deflection prevention is necessary.
   Consider deflection prevention using the center trunnion head inserted for tie rod reinforcement.



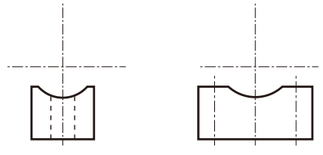
*The spacer in the diagram below is made to order.

Tie Rod Type



A Spacer B Spacer

Tie Rodless Type

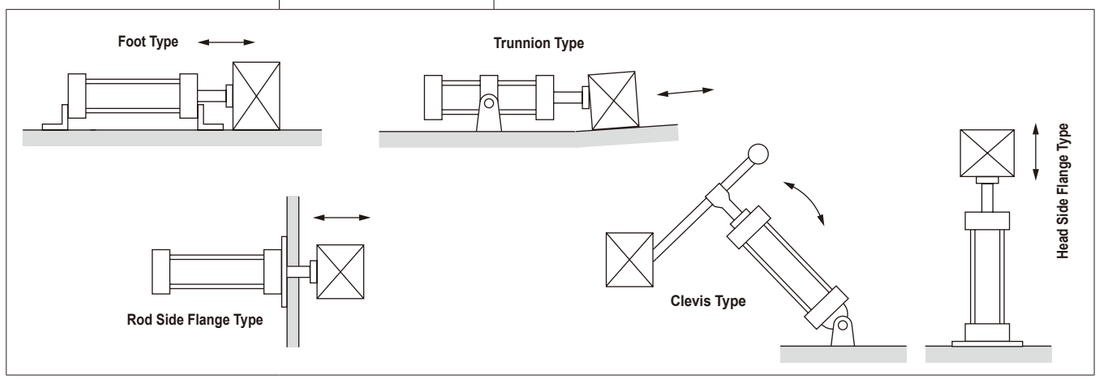


A Spacer B Spacer

How to Determine Cylinder Mounting Type

Since the piston of a cylinder moves in only one direction, select the cylinder mounting type according to the direction of load movement as shown below.

Direction of Load Movement	Mounting type	Precautions
During operation, the load moves linearly.	Foot Type Flange Type	Fix the cylinder body so that the direction of load movement and the direction of piston movement are parallel.
	Trunnion Type Clevis Type	Adopt the mounting type on the left if the stroke is long or if the direction of load movement and the direction of piston movement are not parallel and in the same direction. However, be careful not to apply lateral load to the piston rod or bushing.
During operation, the load swings within one plane.	Trunnion Type Clevis Type	Align the swinging direction of the clevis or trunnion supporting the cylinder with the swinging direction of the load. Also, align the swinging direction of the rod end fitting. When a lateral load acts on the bushing, the value of the lateral load should be within 1/20 of the cylinder output.
During operation, the load swings in all directions.	Trunnion Type Clevis Type	Use a knuckle for the connecting fitting between the rod and the load. When a lateral load acts on the bushing, the value of the lateral load should be within 1/20 of the cylinder output.



Bellows Max. Operating Temperature

Code	Bellows Material	Max. Ambient Temperature	Instantaneous Max. Temperature
J	Nylon Tarpaulin	60°C	100°C
	Polyolefin Elastomer	100°C	200°C
K	Neoprene Sheet	100°C	200°C
L	Silicone Rubber Glass Cloth	250°C	400°C

Instantaneous maximum temperature is the temperature when sparks, chips, etc. instantaneously hit the bellows.

Air Compressor, Air Tank Selection

For compressors and tanks, it is necessary to select a model that accounts for 10 to 20% leakage loss in piping and switching valves in addition to the actual air consumption.
Generally, the piston displacement described in compressor manufacturer catalogs is a theoretical value, so about 70% based on volumetric efficiency is the effective value. Therefore, select a compressor model with a piston displacement twice the air consumption.

Selection of Air Compressor for Intermittent Use (Operation)

For intermittent use, installing an air tank allows a small air compressor to perform a large amount of work. In other words, it is sufficient to install an air tank with a capacity that does not drop to the maximum operating pressure even if a pressure drop occurs due to high air consumption while cylinders, etc. are operating, and a compressor that can replenish compressed air by the time the cylinder performs its next operation.

Air Tank Capacity

$$Vt = \frac{Vs}{(Pt-Ps) \times 10.2}$$

Vt : Tank capacity (L)
Vs : Air consumption per cycle (L) (ANR)
Pt : Tank pressure (MPa)
Ps : Maximum cylinder operating pressure

Inspection of Type 2 pressure vessels

Based on the Ministry of Labour Ordinance, cylinders falling under the following categories must be inspected by the Japan Boiler Association.

① Cylinders with a rated pressure exceeding 0.2 MPa and an internal volume exceeding 0.04 m³
② A cylinder with a rated pressure exceeding 0.2 MPa, a cylinder tube inner diameter of 200 mm or more, and a body length (cylinder tube length) of 1000 mm or more.

$$V = \frac{D^2 \times S \times 3.14}{4 \times 10^9}$$

V : Cylinder internal volume (m³)
D : Tube Inner Diameter (mm)
S : Shell length (cylinder tube length) (mm)

Japan Boiler Association Website Address
http://www.jbanet.or.jp/

[Technical Reference Data] Dimensional Tolerances for Commonly Used Fits, Excerpted from JIS B 0401:1998

MEMO

Tolerances used for shafts

Classification of Basic Dimensions (mm)		Shaft Tolerance Class Unit: μm								
Over	Up to and including	d9	e8	e11	f7	f8	h6	h7	h8	h9	p6
-	3	-20 -45	-14 -28	-14 -74	-6 -16	-6 -20	0 -6	0 -10	0 -14	0 -25	+12 +6
3	6	-30 -60	-20 -38	-20 -95	-10 -22	-10 -28	0 -8	0 -12	0 -18	0 -30	+20 +12
6	10	-40 -76	-25 -47	-25 -115	-13 -28	-13 -35	0 -9	0 -15	0 -22	0 -36	+24 +15
10	14	-50 -93	-32 -59	-32 -142	-16 -34	-16 -43	0 -11	0 -18	0 -27	0 -43	+29 +18
14	18										
18	24	-65 -117	-40 -73	-40 -170	-20 -41	-20 -53	0 -13	0 -21	0 -33	0 -52	+35 +22
24	30										
30	40	-80 -142	-50 -89	-50 -210	-25 -50	-25 -64	0 -16	0 -25	0 -39	0 -62	+42 +26
40	50										
50	65	-100 -174	-60 -106	-60 -250	-30 -60	-30 -76	0 -19	0 -30	0 -46	0 -74	+51 +32
65	80										
80	100	-120 -207	-72 -126	-72 -292	-36 -71	-36 -90	0 -22	0 -35	0 -54	0 -87	+59 +37

Tolerances used for holes

Classification of Basic Dimensions (mm)		Shaft Tolerance Class Unit: μm					
Over	Up to and including	F7	H6	H7	H8	H9	H10
-	3	+16 +6	+6 0	+10 0	+14 0	+25 0	+40 0
3	6	+22 +10	+8 0	+12 0	+18 0	+30 0	+48 0
6	10	+28 +13	+9 0	+15 0	+22 0	+36 0	+58 0
10	14	+34 +16	+11 0	+18 0	+27 0	+43 0	+70 0
14	18						
18	24	+41 +20	+13 0	+21 0	+33 0	+52 0	+84 0
24	30						
30	40	+50 +25	+16 0	+25 0	+39 0	+62 0	+100 0
40	50						
50	65	+60 +30	+19 0	+30 0	+46 0	+74 0	+120 0
65	80						
80	100	+71 +36	+22 0	+35 0	+54 0	+87 0	+140 0

Regarding Notation Method for Flow Characteristics

1. Display of Flow Characteristics

The flow rate display in the specifications section of the catalog is shown as follows.

Target Components	Display	Unit	Standard
Pneumatic Components	Display compliant with New JIS	C, b	ISO 6358: 1989 "Pneumatic fluid power - Components using compressible fluids - Methods for testing the flow-rate characteristics" JIS B 8390: 2000 (ISO 6358 Translation)
	Conventional Display	S	JIS B 8373:1993 'Pneumatic 2-port solenoid valves' JIS B 8374:1993 "Pneumatic 3-port solenoid valves" JIS B 8375:1993 "Pneumatic 4, 5-port solenoid valves" JIS B 8379:1995 "Pneumatic silencers"
		Cv	ANSI (NFPA)T3. 21. 3:1990

2. Explanation

The flow rate characteristics of solenoid valves were conventionally displayed using effective area S, but JIS was revised (JIS B 8390: 2000), and they are now displayed by a pair of sonic conductance C and critical pressure ratio b.

● Sonic Conductance C : Value obtained by dividing the weight flow rate passing through equipment in a choked flow state by the product of the upper limit absolute pressure and the density in the standard state. (sonic conductance) S ≈ 5.0 C (Sizing as per conventional methods is possible with C.)

● Critical Pressure Ratio b : Pressure ratio (downstream pressure / upstream pressure) at which flow becomes choked when smaller than this value (critical pressure ratio)

● Effective cross-sectional area S (mm²) : The cross-sectional area value of an ideal orifice without friction or contraction, derived by calculation from the pressure change within an air tank when air is released in a choked flow state from equipment included to the air tank.

*Choked flow: Flow where upstream pressure is higher than downstream pressure and velocity reaches sonic speed at a certain point in the equipment. The weight flow rate of gas is proportional to the upstream pressure and does not depend on the downstream pressure. (Choked flow)

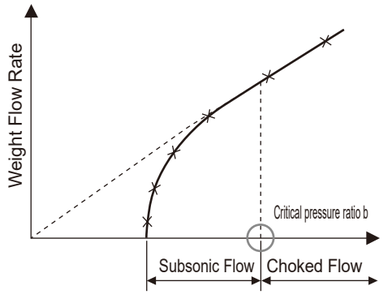


Fig. 1 Weight flow rate characteristics versus upstream pressure

Flow rate calculation formula

It is expressed as follows in practical units.

$\frac{P_2 + 0.1}{P_1 + 0.1} \leq b$, choked flow

$$Q = 600 \times C (P_1 + 0.1) \sqrt{\frac{293}{273 + t}} \quad \text{.....(1)}$$

$\frac{P_2 + 0.1}{P_1 + 0.1} > b$, subsonic flow

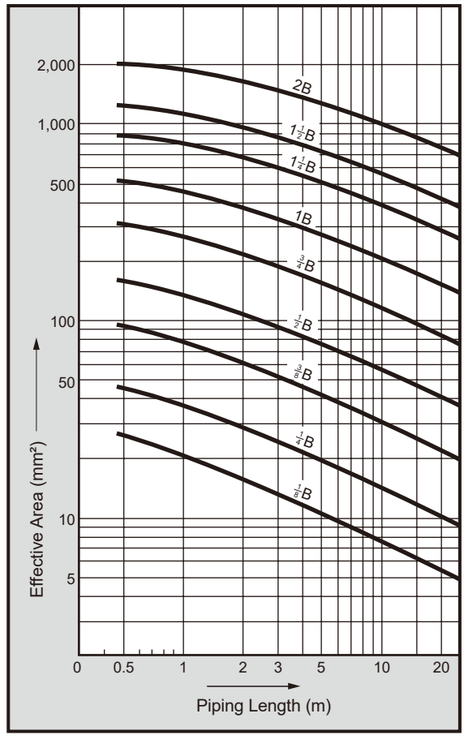
$$Q = 600 \times C (P_1 + 0.1) \sqrt{1 - \left[\frac{\frac{P_2 + 0.1}{P_1 + 0.1} - b}{1 - b}\right]^2} \sqrt{\frac{293}{273 + t}} \quad \text{.....(2)}$$

Q : Air Flow Rate [dm³/min (ANR)] :
The SI unit dm³ (cubic decimeter) may also be expressed as L (liter).
1 dm³ = 1 L
C : Sonic conductance [dm³/(s·bar)]
b : Critical pressure ratio [−]
P_1 : Upstream pressure [MPa]
P_2 : Downstream pressure [MPa]
t : Temperature [°C]

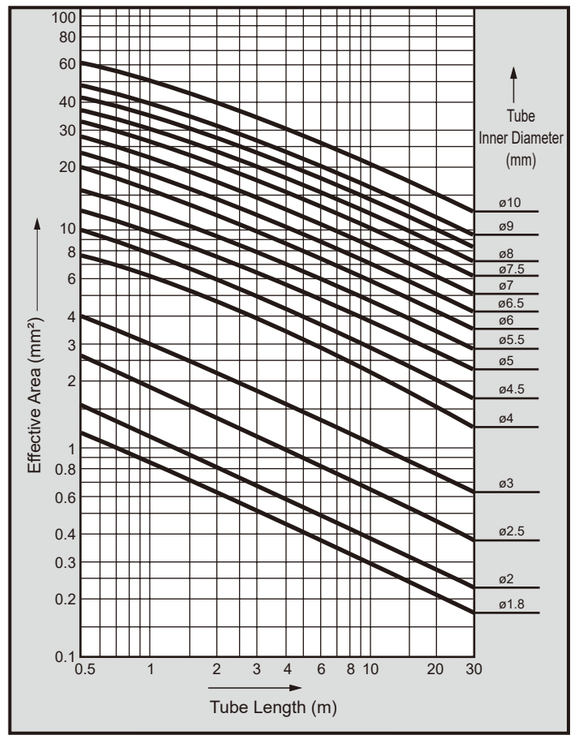
When calculating with the effective area S, substitute the value C obtained by C = S/5 into the above formula.
For subsonic flow, substitute b = 0.5 into equation (2).

Effective Area of Steel Pipe/Nylon Tube and Recommended Maximum Flow Rate Table for Gas Pipe

Effective Area of Steel Pipe



Effective Area of Nylon Tube



Recommended Maximum Flow Rate Table for Gas Pipe

Nominal Dimension	⅛B	¼B	⅜B	½B	¾B	1B	1¼B	1½B
Pressure Drop MPa*1	0.124	0.0707	0.0576	0.0425	0.0276	0.0209	0.0133	0.0105
Inlet Pressure MPa	Recommended Maximum Flow Rate (L/min)							
0.05	127	244	518	838	1,465	2,460	3,870	5,150
0.1	146	282	598	965	1,690	2,828	4,460	5,950
0.15	163	314	668	1,076	1,885	3,150	4,960	6,630
0.2	179	344	730	1,180	2,060	3,450	5,430	7,280
0.3	206	395	840	1,360	2,375	3,900	6,300	8,400
0.4	230	442	940	1,520	2,660	4,450	7,000	9,360
0.5	252	485	1,030	1,660	2,920	4,875	7,700	10,250
0.6	272	523	1,110	1,800	3,140	5,250	8,300	11,050
0.7	292	558	1,185	1,920	3,350	5,620	8,870	11,800
0.8	308	592	1,260	2,035	3,560	5,970	9,430	12,570
0.9	324	623	1,325	2,140	3,745	6,290	9,900	13,220
1.0	340	654	1,395	2,250	3,930	6,600	10,400	13,880
1.2	370	717	1,510	2,450	4,280	7,150	11,250	15,040
1.4	398	763	1,625	2,624	4,590	7,700	12,100	16,200
1.5	410	790	1,680	2,710	4,740	7,930	12,550	16,780

(*1 : Inlet Pressure = 0.5 MPa
Gas Pipe Length: 10 m)

(Remarks)
For main lines where the piping distance is long, it is necessary to consider the degree of pressure drop that occurs at the end of the main line when air flows. Recommended maximum flow rate means the maximum flow rate that can be recommended within a range where the pressure drop relative to the piping length is acceptable, judged from practical use. Therefore, it does not mean that no more flow can pass, but that flowing more will result in a larger pressure drop.

Protective Structure

● Protection Structure

■ IEC (International Electrotechnical Commission: International Electrotechnical Commission) Standard (IEC60529)

■ JIS C 0920 : 2003

IP − □ □

Protection Characteristic Code (International Protection)

First Characteristic Numeral
(Protection class against ingress of foreign solid objects)

First Characteristic Numeral	Degree of Protection	
0	No protection	
1	◯ø50 mm	Solid objects with a diameter of 50 mm or more do not ingress.
2	◯ø12.5 mm	Solid objects with a diameter of 12.5 mm or more do not ingress.
3	2.5 mm	Solid objects with a diameter of 2.5 mm or more do not ingress.
4	1 mm	Solid objects with a diameter of 1.0 mm or more do not ingress.
5	Dust-protected type	Dust does not ingress in a quantity sufficient to interfere with the normal operation and safety of the equipment.
6	Dust-tight type	No ingress of dust inside.

Second Characteristic Numeral
(Degree of protection against ingress of water)

Second Characteristic Numeral	Degree of Protection	
0	No protection	
1	Protection against vertically falling water drops	No harmful effects from vertically falling water drops.
2	Protection against vertically dripping water when tilted up to 15 degrees 15°	No harmful effects from water drops falling at an inclination of up to 15 degrees from vertical on either side.
3	Protection against spraying water	No harmful effects from water sprayed at an angle of up to 60 degrees from vertical on either side.
4	Protection against splashing water	No harmful effects from splashing water from any direction.
5	Protection against water jets	No harmful effects from water jets from a nozzle from any direction.
6	Protection against powerful water jets	No harmful effects from strong direct jets of water from any direction.
7	Protection against immersion in water	Water does not ingress when immersed in water under defined conditions.
8	Protection against continuous immersion in water	Can be used when continuously immersed in water.

MEMO

Safety Precautions

Be sure to read this section before use.

When designing and manufacturing equipment using CKD products, the manufacturer is obligated to ensure that the safety of the mechanism, pneumatic control circuit and/or water control circuit and the system that runs the electrical controls are secured.
It is important to select, use, handle and maintain CKD products appropriately to ensure their safe usage.
Observe warnings and precautions to ensure device safety.
Check that device safety is ensured, and manufacture a safe device.

WARNING

1 This product is designed and manufactured as a general industrial machine part. It must be handled by an operator having sufficient knowledge and experience.

2 Use this product in accordance with specifications.

This product must be used within its stated specifications. In addition, never modify or additionally machine this product.
This product is intended for use in general industrial machinery equipment or parts. It is not intended for use outdoors (except for products with outdoor specifications) or for use under the following conditions or environments. (Note that this product can be used when CKD is consulted prior to its usage and the customer consents to CKD product specifications. The customer should provide safety measures to avoid danger in the event of problems.)

❶ Use for applications requiring safety, including nuclear energy, railways, aircraft, marine vessels, vehicles, medical devices, devices or applications in contact with beverages or foodstuffs, amusement devices, emergency cutoff circuits, press machines, brake circuits, or safety devices or applications.
❷ Use for applications where life or assets could be significantly affected, and special safety measures are required.

3 Observe organization standards and regulations, etc., related to the safety of the device design and control, etc.

ISO4414,JIS B 8370(Pneumatic fluid power - General rules and safety requirements for systems and their components)
JFPS2008(Principles for pneumatic cylinder selection and use)
Including the High Pressure Gas Safety Act, Industrial Safety and Health Act, other safety rules, organization standards and regulations, etc.

4 Do not handle, pipe, or remove devices before confirming safety.

❶ Inspect and service the machine and devices after confirming safety of the entire system related to this product.
❷ Note that there may be hot or charged sections even after operation is stopped.
❸ When inspecting or servicing the device, turn OFF the energy source (air supply or water supply), and turn OFF power to the facility. Discharge any compressed air from the system, and pay enough attention to possible water leakage and leakage of electricity.
❹ When starting or restarting a machine or device that incorporates pneumatic components, make sure to secure system safety, such as pop-out prevention measures.

5 Observe the warnings and cautions on the following pages to prevent accidents.

■ Precautions are ranked as “DANGER”, “WARNING”, and “CAUTION” in this section.

DANGER:	In the case where the product operation is mishandled and/or when the urgency of a dangerous situation is high, it may lead to fatalities or serious injuries.
WARNING:	A dangerous situation may occur if handling is mistaken, leading to fatal or serious injuries.
CAUTION:	A dangerous situation may occur if handling is mistaken, leading to minor injuries or property damage.

Note that some items indicated with “CAUTION” may lead to serious results depending on the conditions.
All items contain important information and must be observed.

Warranty

1 Warranty period

The product specified herein is warranted for one (1) year from the date of delivery to the location specified by the customer.

2 Warranty coverage

If the product specified herein fails for reasons attributable to CKD within the warranty period specified above, CKD will promptly provide a replacement for the faulty product or a part thereof or repair the faulty product at one of CKD’s facilities free of charge.
However, following failures are excluded from this warranty:

1) Failure caused by handling or use of the product under conditions and in environments not conforming to those stated in the catalog, the Specifications, or the Instruction Manual.
2) Failure caused by use of the product exceeding its durability (cycles, distance, time, etc.) or caused by consumable parts.
3) Failure not caused by the product.
4) Failure caused by use not intended for the product.
5) Failure caused by modifications/alterations or repairs not carried out by CKD.
6) Failure caused by reasons unforeseen at the level of technology available at the time of delivery.
7) Failure caused by acts of nature and disasters beyond control of CKD.

The warranty stated herein covers only the delivered product itself. Any loss or damage induced by failure of the delivered product is excluded from this warranty.
Note: For details on the durability and consumable parts, contact your nearest CKD sales office.

3 Compatibility check

The customer is responsible for confirming the compatibility of CKD products with the customer’s systems, machines and equipment.

Precautions for export

1 Security Trade Control

The products in this catalog and their related technologies may require approval before export or provision.
For the sake of maintaining world peace and safety, there may be cases in which approval under the Foreign Exchange and Foreign Trade Control Law is required in advance, depending on the country to where the product or related technology is being exported or provided.
The scope of products and related technologies requiring approval are listed in the Export Trade Control Order Appendix Table 1 or Foreign Exchange Order Appendix Table.
The Export Trade Control Order Appendix Table 1 and Foreign Exchange Order Appendix Table contain the following two types of information.

· “List controls” specified for items 1 to 15
· “Catch-all controls” that do not indicate specifications by item, but restriction by application (Section 16)

Products that require authorization or the range of relevant technology

- List control, which is specified in item 1 to 15
  Listed in the “Export Trade Control Order Appendix Table 1” or “Foreign Exchange Order Appendix Table”
- Catch-all control restricted by application (item 16)
  Listed in the “Export Trade Control Order Appendix Table 1” or “Foreign Exchange Order Appendix Table”

An application for approval is received by the Security Export Licensing Division of the Ministry of Economy, Trade and Industry or local bureaus of the Ministry of Economy, Trade and Industry.

2 Products and related technologies in this catalog

The products and related technologies in this catalog are subject to the catch-all control of the Foreign Exchange and Foreign Trade Control Law.
When exporting or providing the products or related technologies in this catalog, ensure that they are not used for arms or weapons.

3 Contact

Contact your local CKD Sales Office for information on the Security Trade Control of products and related technologies in this catalog.

*For cylinder switches, please check P. 808.

During Design / Selection

1. Specification Confirmation

Warning

■ **Use within the product's specified operating range.**
The products described in this catalog are designed to be used only in compressed air systems. Do not use at pressures or temperatures outside the specification range, as this may cause damage or malfunction. (See specifications). If using fluids other than compressed air and low hydraulic pressure, please consult us.

■ **If product dimensional accuracy is required, please consult us separately.**
Dimensional tolerances for pneumatic cylinders are set based on JIS B8368. If accuracy is required, please inquire in advance.

2. Design for Safety

Warning

■ **If the force changes due to twisting of the sliding parts of the machine, there is a danger that the cylinder's piston rod may fly out.**
In such cases, there is a risk of injury to the human body, such as getting hands or feet caught, and damage to the machine, so make adjustments so that the machine moves smoothly and design it so that it does not cause injury to the human body.

■ **If there is a risk of danger to the human body, install a protective cover.**
If the drive part of the cylinder poses a risk of danger to personnel, install a protective cover. Design the structure so that personnel cannot enter the cylinder's operating range or directly touch that area.

■ **Consider the possibility of circuit pressure drop due to power outages, etc.**
When using a cylinder for a clamping mechanism, if the circuit pressure drops due to a power outage, etc., the clamping force will decrease and there is a risk that the workpiece may come off. Therefore, incorporate a safety device to prevent injury or damage to personnel or machinery. Lifting devices and lifts also require consideration for fall prevention.

■ **Consider the possibility of power source failure.**
For equipment controlled by power sources such as pneumatic, hydraulic, or electric, take measures to prevent injury or damage to personnel or equipment even if these power sources fail.

■ **Design a circuit to prevent flying out.**
When driving a cylinder with an exhaust center type directional control valve, or when starting after exhausting residual pressure in the circuit, if one side of the piston is pressurized from a state where the air in the cylinder is exhausted, the driven object will project at high speed. In such cases, there is a risk of injury to the human body, such as getting hands or feet caught, and damage to the machine, so design a fly-out prevention circuit.

■ **Consider the operating state during an emergency stop.**
When a safety device activates and the machine stops due to a system abnormality such as an emergency stop or power outage, design the system so that cylinder operation does not cause injury to personnel or damage to equipment/devices.

■ **Consider the operating state when restarting after an emergency stop or abnormal stop.**
Design the system so that restarting does not cause harm to personnel or damage to equipment. Also, if it is necessary to reset the cylinder to the starting position, design a safe control device.

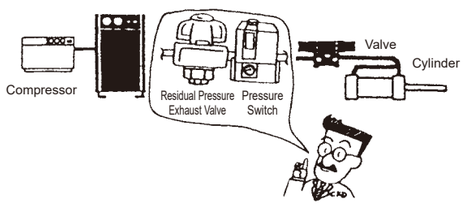
■ **Take necessary measures in advance to prevent adverse effects on people or Low Profilegs if this product malfunctions.**

Caution

■ **Use within a range where the piston does not collide and break at the stroke end.**
When a piston with inertial force collides with the cover at the stroke end and stops, use within the allowable absorption energy range.

■ **Install a speed controller on the cylinder.**
Use within the operating piston speed range of each cylinder.

■ **Install a "pressure switch" and "residual pressure exhaust valve" on the compressed air supply side of the equipment.**
- The pressure switch prevents operation if the set pressure is not reached. The residual pressure exhaust valve discharges the compressed air remaining in the pneumatic circuit and prevents accidents due to the operation of pneumatic equipment due to residual pressure.



■ **The load factor for fall prevention cylinders should be 50% or less.**

3. Design by Application

Warning

■ **When a deceleration circuit or shock absorber is necessary.**
If the speed of the driven object is high or its mass is large, it will be difficult to absorb the impact with only the cylinder's cushion. Therefore, provide a circuit to decelerate before entering the cushion, or use an external shock absorber to mitigate the impact. In this case, sufficiently consider the rigidity of the machinery.

■ **When inertia, vibration, etc. occur**
When mounting a cylinder on a moving object (X-axis module, pallet, etc.), design it considering the inertia, vibration, etc. that occur when the moving object stops.

■ **About intermediate stop**
When performing an intermediate stop of the cylinder piston with a 3-position closed center type directional control valve, it is difficult to stop at an accurate and precise position like low hydraulic pressure due to the compressibility of air. Also, since valves and cylinders do not guarantee zero air leakage, it may not be possible to hold the stop position for a long time. If long-term stop position holding is required, please consult us.

4. Operating Environment

Warning

■ **Install the product avoiding rain, water, direct sunlight, and high humidity.**

■ **Do not use the product in an atmosphere where there is a risk of corrosion.**
Use in such an environment will cause damage and malfunction. Also, even for plated materials used for piston rods, tie rods, etc. in cylinders, plating is not applied to machined parts (thread width, cut surface). Rust can occur even in a general environment, so take necessary measures.

■ **In dusty places, or places exposed to water droplets, oil droplets, cutting oil, or coolant, install a cover or similar protection.**
If there is a lot of dust, use a type with a heavy-duty scraper. If liquid scatters, use a cutting oil resistant type.

■ **If the ambient temperature is 5°C or less, moisture in the circuit may freeze, causing malfunctions such as operational failure, so remove moisture and prevent freezing.**

Caution

■ **When using a cylinder with a valve with AC voltage, humming noise may occur depending on the operating conditions. If humming noise is a problem depending on the operating environment, select DC voltage.**

■ **Oil-impregnated bearings are used for some models, and oil may be discharged to the outside of the cylinder. Be careful when using in locations where oil discharge is undesirable.**

5. Durability

Warning

■ **Durability varies depending on operating conditions and model characteristics.**

Caution

■ **Bellows are consumable parts.**
Replace as necessary.

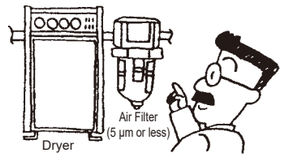
6. Pneumatic Source

Warning

■ **Use clean, dry compressed air.**
Do not use compressed air if it contains chemicals, synthetic oils containing organic solvents, salt, corrosive gases, etc., as this will cause damage or malfunction.

Caution

■ **Use dry compressed air that does not generate drain in the piping.**



- Drain occurs if there is a temperature drop inside pneumatic piping or pneumatic equipment.
- If the piping volume is larger than the cylinder volume (atmospheric pressure equivalent volume), condensed water droplets will accumulate as drain without the compressed air in the cylinder being completely discharged at each switching of the solenoid valve.
- Drain enters the air passages inside pneumatic equipment, momentarily blocking the passages and causing malfunction.
- Rust generated by drain will cause pneumatic equipment failure.
- Drain washes away lubricating oil, causing poor lubrication.

■ **Use of ultra-dry air is unsuitable for standard pneumatic equipment. Use equipment compatible with ultra-dry air.**
- Ultra-dry compressed air shortens the life of pneumatic equipment.
- Use DC voltage driven solenoid valves.

■ **Use compressed air free from oxidized oil, tar, carbon, etc., from the air compressor.**
- Oxidized oil, tar, carbon, etc., entering and adhering inside pneumatic equipment increases the resistance of sliding parts, causing malfunction.
- Lubricating oil mixed with oxidized oil, tar, carbon, etc., will wear down the sliding parts of pneumatic equipment.

■ **Use compressed air that does not contain solid foreign matter.**
- Solid contaminants in the compressed air can enter pneumatic equipment, causing wear on sliding parts or sticking phenomena; therefore, please install an air filter with a filtration rating of 5 µm or less.
- Perform regular maintenance inspections of the compressor.

7. Usage Method

Caution

■ **It is initially lubricated, so it can be used without lubrication. If lubricating, use turbine oil Class 1 (non-additive) ISO-VG32. Also, if lubrication is stopped midway, malfunction will occur due to the loss of the initial lubricant, so be sure to continue lubrication. It is necessary to decide whether to adopt a non-lubricated or lubricated specification for pneumatic equipment and ensure that the chosen method is reliably managed.**

■ **Provide intermediate support for long-stroke cylinders.**
For long stroke cylinders, provide intermediate support to prevent rod sag, tube deflection, and rod damage due to vibration or external load.

■ **Use within the maximum stroke according to the mounting type.**
Refer to Intro 30.

■ **Cylinders with air cushions experience speed changes at the beginning of movement.**

For cylinders with air cushion, speed changes occur when the cushion ring comes off the cushion packing at the beginning of movement. Depending on conditions such as speed controller placement and adjustment, piping diameter, air pressure, and cushion needle opening, the change may become large. If it is necessary to prevent this, please consult us.

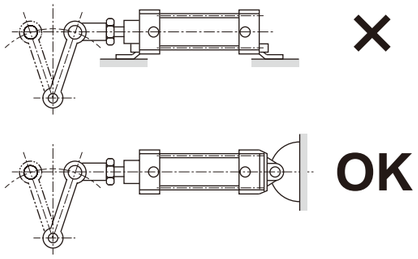
■ **Avoid using multiple cylinders synchronized as much as possible.**

Synchronization cannot be achieved, causing twisting of the piston rod and leading to malfunction. If synchronous operation is necessary, be sure to provide a separate guide device with rigidity.

■ **When installing clevises or trunnions, ensure they can rotate freely without interference during the full stroke operation of the cylinder before use.**

■ **If the direction of load movement changes with operation, use an oscillating type cylinder (clevis type, trunnion type) that allows the cylinder itself to rotate to a certain angle. Also, install the connecting fitting at the rod end so that it moves in the same direction as the cylinder body's movement.**

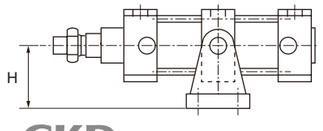
■ **Do not connect a fixed type cylinder to an arm that performs circular motion. In this case, connect it to an oscillating type cylinder.**



■ **To prevent breakage of the piston rod end thread, wear of the bushing, seizure, etc., connect the piston rod end and the load with a free joint or simple flow control valve, etc., so that it does not pry at any position of the stroke.**

■ **If the clearance between the clevis or trunnion and the mating bearing is large, a bending action will be applied to the pin or shaft. Therefore, do not make this clearance too large. (Recommended fit H10/e8)**

■ **In the diagram below, if the height H from the mounting surface of the bearing bracket to the bearing position is large, a large force will be generated at the mounting part of the bracket by the cylinder force, which may cause damage to bolts, etc.**



■ **Cylinders may have slight oil from sliding parts, packings, and gaskets. Be careful when using in locations where oil is undesirable.**

■ **Precautions for using the relief port**
Exhaust treatment type (P72) cannot be used for vacuum sweeping. And vice versa. This will cause particle scattering or defects, so absolutely do not do it.

8. Securing Space

⚠ Caution

■ **Secure space around the cylinder for mounting, removal, wiring, and piping work.**

9. Clearly Stated in Instruction Manual

⚠ Caution

■ **Clearly state the maintenance conditions in the equipment's instruction manual.**

● Depending on the usage conditions, operating environment, and maintenance, the product's functionality may significantly deteriorate, and safety may not be ensured. Proper maintenance allows the product to fully demonstrate its functions.

During Installation, Mounting and Adjustment

1. Installation

⚠ Warning

■ **When mounting the cylinder, protect the load from falling or tipping over.**

⚠ Caution

■ **Do not remove the cylinder packaging bag or the dust-proof port seal for the piping port until just before performing piping.**

● If the dust-proof port seal for the piping port is removed before piping connection work, foreign matter may enter the cylinder from the piping port, causing failure, malfunction, etc.

■ **If the cylinder weight is 15 kg or more, use lifting equipment.**

■ **Do not hit or grip objects with the cylinder tube and piston rod sliding parts, causing scratches or dents.**

The Bore size is manufactured with precise tolerances, so even slight deformation can cause malfunction. Scratches or dents on the piston rod sliding part will damage packings and cause air leakage.

■ **If the direction of load movement is not parallel to the piston rod axis, twisting may occur in the piston rod and main body (tube), posing a risk of the piston rod flying out. Twisting can also cause seizure, damage, etc. Be sure to align the piston rod axis with the direction of load movement.**

■ **Prevent seizure of rotating parts.**

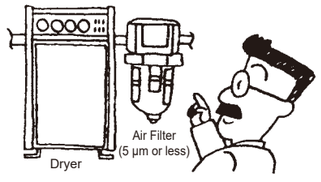
Apply grease to rotating parts (pins, etc.) to prevent seizure.

2. Pneumatic Source

⚠ Caution

■ **Install a pneumatic filter immediately before the circuit using the pneumatic equipment.**

● Install an air dryer and filter to remove moisture in the piping. Also, to remove rust, foreign matter, and drain, install a filter near the directional control valve (primary side).



■ **When supplying compressed air after completing pipe connections, supply it so that high pressure is not applied suddenly.**

● Piping connections may come off, and piping tubes may spring out, causing accidents.

● If compressed air is supplied too slowly, sealing pressure may not be generated depending on the solenoid valve's internal seal mechanism, potentially causing air leakage.

● The cylinder may operate suddenly.

3. Piping

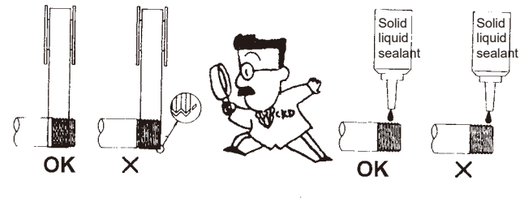
⚠ Caution

■ **When piping, refer to the instruction manual and ensure connection ports, etc., are not mistaken.**

● This will cause malfunction.

■ **When connecting piping, wrap sealing tape clockwise from a position two or more threads inward from the tip of the threaded part of the pipe.**

● If sealant tape protrudes beyond the threaded part of the piping, it will be cut by screwing in, and the cut piece will enter the interior, causing failure.



■ **Ensure that piping connected to the cylinder does not detach due to vibration, loosening, or pulling phenomena.**

● If the exhaust side piping of the pneumatic circuit detaches, cylinder speed control will become impossible.

● In the case of a chuck holding mechanism, the chuck will release, creating a dangerous situation.

■ **When using nylon tubes or urethane tubes, pay attention to the following.**

● In an atmosphere where spatter scatters, use flame-retardant tubes or metal pipes.

■ **Use corrosion-resistant piping materials such as galvanized pipes, stainless steel pipes, nylon tubes, rubber hoses, etc.**

■ **Tighten with the appropriate torque during piping connection.**

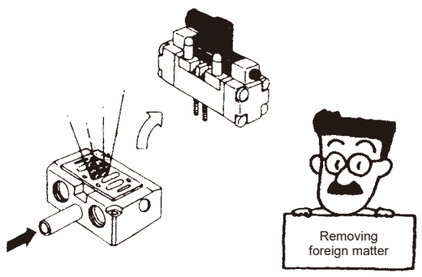
- The purpose is to prevent air leakage and screw damage.
- To avoid damaging the threads, start by hand Tighten by hand first, then use a tool for final tightening.

[Reference Value] See instruction manual.

Connection Thread	Tightening Torque (N·m)
M3	0.3 to 0.6
M5	1 to 1.5
Rc 1/8	3 to 5
Rc 1/4	6 to 8
Rc 3/8	13 to 15
Rc 1/2	16 to 18
Rc 3/4	19 to 40
Rc 1	41 to 70

■ **When piping, be sure to perform flushing immediately before connecting to pneumatic equipment.**

- It is necessary that foreign matter that entered during piping does not enter the pneumatic equipment.



4. Confirmation before Operation

⚠ Warning

■ **Before operating, confirm that there is no looseness or abnormality in the load or cylinder mounting fasteners.**

■ **Do not use until it is confirmed that the equipment operates properly.**
After installation, repair, or modification, connect compressed air or electricity, perform appropriate functional tests and leak tests, and confirm that installation is normal.

■ **Confirm that there is no mechanical interference or abnormality in the operating system.**

■ **Gradually increase and set the pressure while confirming that there is no abnormality in the operation of the equipment.**

■ **Starting with the exhaust side at atmospheric pressure is dangerous as the rod may fly out. When starting, always apply pressure to the exhaust side cylinder chamber.**

⚠ Caution

■ **When piping connection is complete and compressed air is supplied, be sure to confirm that there are no air leaks in all parts of the piping connection.**

- Apply leak detection fluid to the piping connection part with a brush to confirm that there is no air leakage.

■ **Be sure to read the instruction manual.**
Read carefully and understand the contents before using the product. Also, keep it so that you can check it at any time.

5. Adjustment

⚠ Warning

■ **When adjusting speed with a speed controller, adjust by gradually opening the needle from the closed state.**
Starting speed adjustment in the open state is dangerous as the rod may fly out.

■ **The effectiveness of the cushion with air cushion is adjusted at the time of shipment, but readjust it with the cushion needle according to the load and piston speed when using.**
Gradually open the needle from the closed state to adjust the cushioning effect. Note that if the cushion needle is loosened too much, there will be no cushioning effect, and it may fall off. After adjustment, tighten and fix the needle nut (hexagon nut). Use within the allowable kinetic energy value. If used exceeding the allowable value, the product may be damaged.

■ **When the cylinder is driven, do not enter the driving range of the cylinder or put your hands in.**

During Use / Maintenance

1. Maintenance and Inspection

⚠ Warning

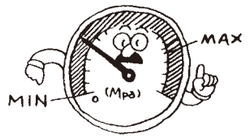
■ **Perform maintenance inspections carefully according to the instruction manual.**
Mishandling will cause damage or malfunction of equipment or devices.

⚠ Caution

■ **Implement daily and periodic inspections systematically so that maintenance management is performed correctly.**

- Insufficient maintenance management will significantly impair product functionality, leading to reduced lifespan, damage, malfunction, and other defects or accidents.

① Supply Compressed Air Pressure Management
- Is the set pressure being supplied?
  Does the pressure gauge indicate the set pressure while the equipment is operating?



② Pneumatic Filter Management
- Is drain being discharged normally?
  Is the contamination status of the bowl and element normal?

③ Compressed Air Leakage Management at Piping Connections
- Is the condition of the connection parts of moving parts, in particular, normal?

④ Solenoid Valve Operating Status Management
- Is there any delay in operation, and is the exhaust state normal?

⑤ Pneumatic Actuator Operating Status Management
- Is operation smooth?
  Is the end-of-stroke stop status normal?
  Is the connection with the load normal?

⑥ Lubricator Management
- Is oil level adjustment normal?

⑦ Lubricating Oil Management
- Is the supplied lubricating oil genuine?

■ **If air leakage increases or equipment does not operate normally, do not use.**

- After repair or modification, connect compressed air or electricity, perform appropriate functional inspections and leak tests, and confirm normal operation.

■ **After a long period of disuse, confirm normal operation when restarting.**

■ **Replace consumable parts that have exceeded their rated life with new ones during periodic inspections.**
Do not use consumable parts that have been stored for 5 years or more.

■ **Store consumable parts in a cool, dark place away from direct sunlight.**

■ **If lubrication of sliding surfaces deteriorates or they become dry, periodically apply lithium grease (general type) or fluorine grease (heat-resistant, low-speed, low-friction, P7 type, etc.). Before applying grease, be sure to remove foreign matter from the sliding surfaces. If the type of grease used is unknown, please contact us.**

2. Effect of Fluorine Grease

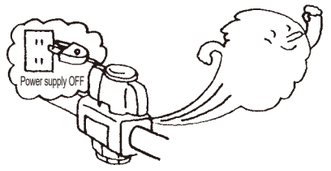
⚠ Warning

■ **If you smoke cigarettes, etc., with hands that have fluorine grease from cylinders using fluorine grease (heat-resistant, low-speed, low-friction, P7, etc.), harmful gases will be generated, which may harm the human body, so please be careful.**

3. Removal

⚠ Warning

■ **Removal of Equipment and Supply/Exhaust of Compressed Air**
When removing equipment, confirm that measures to prevent the driven object from falling or running away have been taken, then shut off the supply air and connected power, and exhaust the compressed air in the system before proceeding. When restarting, confirm that projection prevention measures have been taken, then proceed with caution.



■ **When removing the load from a double-rod cylinder, be sure to do so with the piston rod width across flats on the load side fixed. Please note that if this is done without fixing the piston rod on the load side, the fastening part (threaded part) of the piston rod may loosen.**

■ **Perform cylinder removal work after taking measures to prevent the load from falling or tipping over.**

4. Disassembly/Assembly

⚠ Warning

■ **Disassemble the cylinder after removing it from the equipment.**

■ **When performing disassembly and assembly, ensure it is done by a worker who has acquired specialized knowledge.**
After disassembly and reassembly, perform leak and operation tests before reassembling onto the equipment.

■ **When disassembling a single-acting cylinder, be very careful as parts may fly out due to the spring.**

■ **Install and remove the rod metal using appropriate pliers (C-type retaining ring installation tool).**

■ **Even when using appropriate pliers (C-type retaining ring installation tool), the retaining ring may detach from the tip of the pliers, fly off, and cause damage to personnel and surrounding equipment, so be careful.**
Also, when installing, confirm that it is securely in the retaining ring groove before supplying air.

⚠ Caution

■ **When performing maintenance such as replacing consumable parts, disassemble and reassemble on a test bench, etc., in a clean atmosphere free of dust, and perform a functional inspection to ensure the equipment operates normally.**

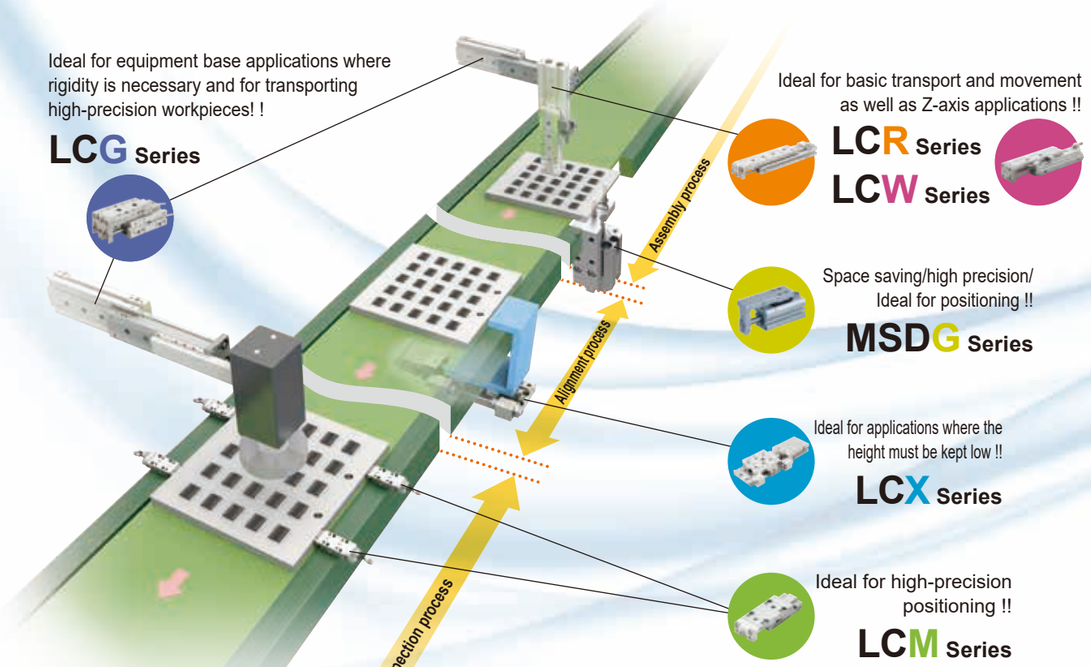
MEMO

Linear guide cylinder

Linear Slide Cylinder Product Introduction	Listed Page
Linear Slide Cylinder **LCM** Series	5
Linear Slide Cylinder **LCR** Series	51
Linear Slide Cylinder **LCG** Series	127
Linear Slide Cylinder **LCW** Series	201
Thin Linear Slide Cylinder **LCX** Series	255
Compact Cylinder with Compact Linear Guide **MSDG** Series	313

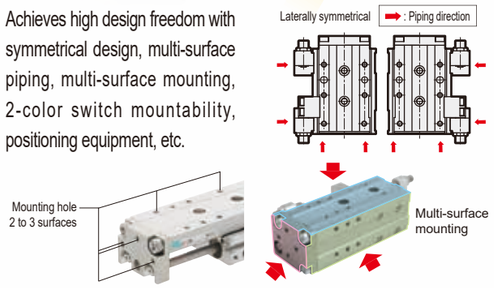
Linear Slide Cylinder

CKD's products, active in all applications including assembly and conveyance Linear Slide Series



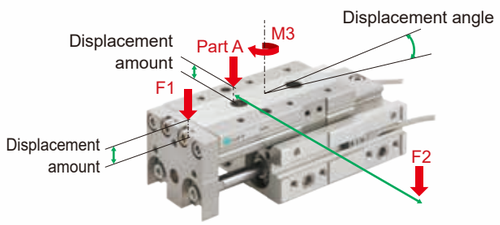
High design freedom

Achieves high design freedom with symmetrical design, multi-surface piping, multi-surface mounting, 2-color switch mountability, positioning equipment, etc.



Compactly arranged linear guide on cylinder

Achieves high-precision positioning by suppressing table displacement due to load.



Safety mechanism

●Buffer mechanism

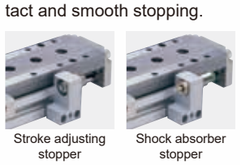
Even if the drive unit and workpiece collide when the cylinder advances, the shock absorbing mechanism activates to protect the workpiece and cylinder. Demonstrates power in pick & place applications, etc.

●Drop prevention mechanism

Ensures the safety of the workpiece and cylinder in the event of a power outage or accident.

●Stopper mechanism

New Shock absorber SKL series adopted. Achieves high tact and smooth stopping.



Environmentally Compliant

●Clean specification

Model selection possible according to cleanroom cleanliness. (Excluding some models.)

●Anti-rust treatment (LCG)

Anti-rust treatment applied to the table surface and rail surface to reduce rust generation in high-humidity environments such as near ionizers.

●P4, P40 Compatible

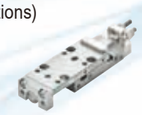
Compatible with secondary battery processes by restricting materials used.
(Excluding some parts) (Option)

Responds to various situations with a full lineup

Compact (compact specifications)

Compact (compact specifications)

LCM Series



Variation		Bore size (ømm)			Stroke (mm)				Option	
Single rod	Position locking	4.5	6	8	5	10	15	20	Stopper	Switch
Clean-room specs.	Low speed	12	16	20	25	30	40	50	Buffer	P4
Double piston system		25	32		75	100	125	150		

Double piston system (standard specifications)

All-round model for a variety of situations

Linear slide cylinder

LCR Series

Variation		Bore size (ømm)			Stroke (mm)				Option	
Single rod	Position locking	4.5	6	8	5	10	15	20	Stopper	Switch
Clean-room specs.	Low speed	12	16	20	25	30	40	50	Buffer	P4
Double piston system		25	32		75	100	125	150		

High-spec (high-precision specifications)

High-performance model with an emphasis on high precision and high rigidity

Linear slide cylinder

LCG Series

Variation		Bore size (ømm)			Stroke (mm)				Option	
Single rod	Position locking	4.5	6	8	5	10	15	20	Stopper	Switch
Clean-room specs.	Low speed	12	16	20	25	30	40	50	Buffer	P4
Double piston system		25	32		75	100	125	150		

Basic (simple specifications)

Model combines frequently used specs for simple model selection

Linear slide cylinder

LCW Series

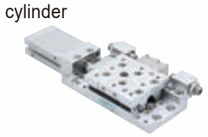
Variation		Bore size (ømm)			Stroke (mm)				Option	
Single rod	Position locking	4.5	6	8	5	10	15	20	Stopper	Switch
Clean-room specs.	Low speed	12	16	20	25	30	40	50	Buffer	P4
Double piston system		25	32		75	100	125	150		

Slim (low profile/unitized specs.)

Low profile model perfect for narrow spaces

Low profile linear slide cylinder

LCX Series



Variation		Bore size (ømm)			Stroke (mm)				Option	
Single rod	Position locking	4.5	6	8	5	10	15	20	Stopper	Switch
Clean-room specs.	Low speed	12	16	20	25	30	40	50	Buffer	P4
Double piston system		25	32		75	100	125	150		

Compact (space saving specifications)

High-precision / High-rigidity model that saves space

Compact cylinder with linear guide

MSDG Series

Variation		Bore size (ømm)			Stroke (mm)				Option	
Single rod	Position locking	4.5	6	8	5	10	15	20	Stopper	Switch
Clean-room specs.	Low speed	12	16	20	25	30	40	50	Buffer	P4
Double piston system		25	32		75	100	125	150		

With Linear Guide

LCM

Linear Slide Cylinder

ø4.5, ø6, ø8

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● Double acting, Stroke adjustment type (LCM-P) (Push)	**18**
● Double acting, Stroke adjustment type (LCM-R) (Push/Pull)	**26**
● Double acting, Side mount type (LCM-A)	**34**
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Technical Data	47
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Linear slide cylinder

LCM Series

Compact, High-Precision Actuator

Linear slide cylinder LCM series, combining high precision and rigidity in an extremely compact size. (ø4.5, ø6, ø8)

Ideal for high-precision positioning

Possesses high accuracy with running parallelism of 0.005 mm * and mounting parallelism of 0.03 mm. Ideal for positioning.

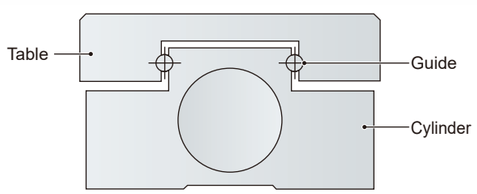
* Some are 0.006 mm. For details, see P. 47.

Running parallelism **0.005 mm**

Mounting parallelism **0.03 mm**

Pursuit of extreme miniaturization

The cylinder body, linear guide, and slide table are integrated to pursue the ultimate in miniaturization and compactness.



Compatible with narrow spaces

The size allows for installation even in narrow spaces, expanding placement flexibility.

Workpiece can be mounted on 2 surfaces

Workpieces can be directly mounted on the top and front surfaces of the table using pre-drilled mounting holes.

Highly reliable stainless steel construction

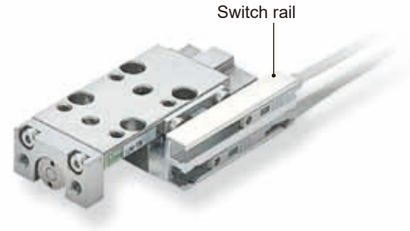
Corrosion-resistant stainless steel is used for the cylinder body and slide table.

Abundant variations

A wide variety of variations are available, such as stroke adjustment type and side mount type.

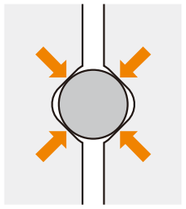
2-color switch can be mounted

A 2-color indication type has been added to the ultra-compact switch F type, making it mountable.

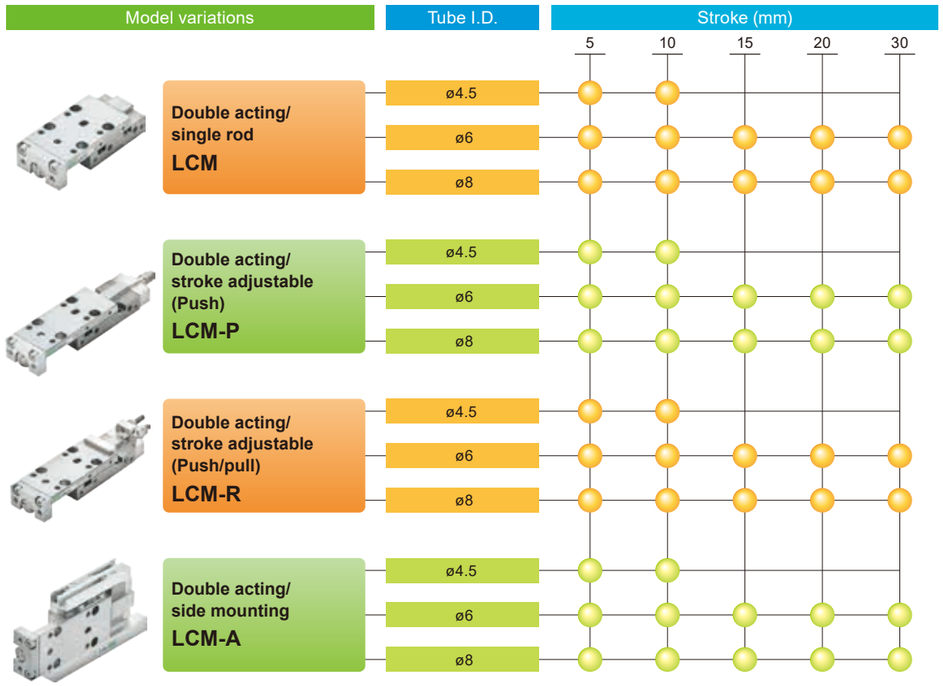


Design resistant to loads

Adopts a linear guide that contacts at 4 points. Can handle loads from all directions.

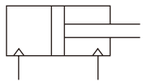
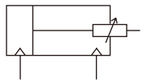
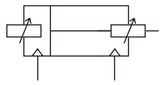
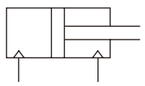


LCM Series Product Lineup



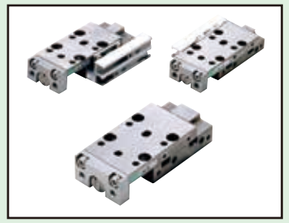
Linear Slide Cylinder
LCM Series

●: Standard, ◎: Option, ○: Custom Products : Not manufacturable

Variation	Model No. Circuit Diagram Symbol	Bore Size (mm)		Standard Stroke (mm)					Option				Switch	Page
				5	10	15	20	30	With buffer B	With magnet M	With magnet + switch rail F	Positioning pin included J□		
Double Acting/Single Rod Type	LCM 	ø4.5		●	●				◎	◎	◎	◎	◎	10
		ø6		●	●	●	●	●						
		ø8		●	●	●	●	●						
Double-acting, Stroke adjustment type (Push)	LCM - P 	ø4.5		●	●				◎	◎	◎	◎	◎	18
		ø6		●	●	●	●	●						
		ø8		●	●	●	●	●						
Double-acting, Stroke adjustment type (Push/Pull)	LCM - R 	ø4.5		●	●				◎	◎	◎	◎	◎	26
		ø6		●	●	●	●	●						
		ø8		●	●	●	●	●						
Double acting, Side mount type	LCM - A 	ø4.5		●	●				◎	◎	◎	◎	◎	34
		ø6		●	●	●	●	●						
		ø8		●	●	●	●	●						

Note) Intermediate strokes cannot be manufactured.

With Linear Guide
LCM
LCR
LCG
LCW
LCX
MSDG
Cylinder Switch
Ending



Linear Slide Cylinder Double Acting, Single Rod Type

LCM Series

● Bore size: ø4.5, ø6, ø8

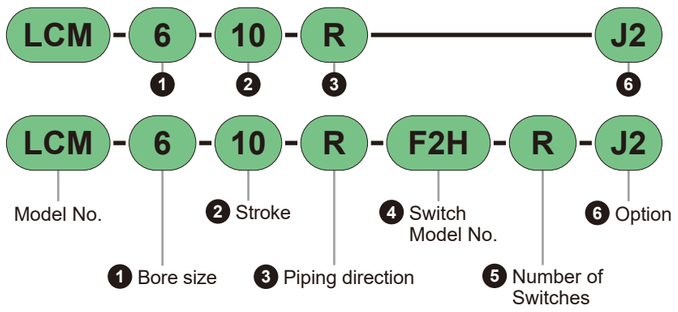
Circuit Diagram Symbol

RoHS

Model No. Notation Method

Without Switch
(Without magnet for switch)

With Switch
(Built-in magnet for switch)



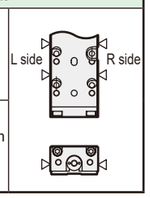
1 Bore Size (mm)

Code	Content
4.5	ø4.5
6	ø6
8	ø8

2 Stroke (mm)

Code	Bore size		
	ø4.5	ø6	ø8
5	●	●	●
10	●	●	●
15		●	●
20		●	●
30		●	●

3 Piping direction

Code	Content	
R	Right side when viewed from rod side	
L	Left side when viewed from rod side	

4 Switch Model No.

For switch details, please refer to P. 753. Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20	-	F2S□	
		3-wire (NPN)	-	30 or less	-	50 or less	-	F3S□	
		2-wire	-	10 to 30	-	5 to 20 *2	F2H□	F2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3H□	F3V□	
	1-Color (Custom order)	3-wire (PNP)	-	30 or less	-	50 or less	F3PH□	F3PV□	
	2-Color	2-wire	-	24±10%	-	5 to 20	F2YH□	F2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3YH□	F3YV□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: Switches other than the model Nos. listed above are also available. (Custom Product)
For details, see P. 753.

***Lead wire length**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)

Example) Lead wire length
1 m F2S
3 m F2S 3

5 Number of Switches

Code	Content
R	With 1 on Rod Side
H	With 1 on Head Side
D	With 2 pcs

6 Option

	Code	Content	
	B	With buffer	
*1	M	With magnet	
*1 *2	F1	Magnet + Switch rail (1 switch groove)	
*1	F2	Magnet + Switch rail (2 switch grooves)	
	J□	Positioning pin included (*Number of pins)	

*1: If a switch model No. is specified, selection is not necessary.
*2: Selectable only for ø4.5.

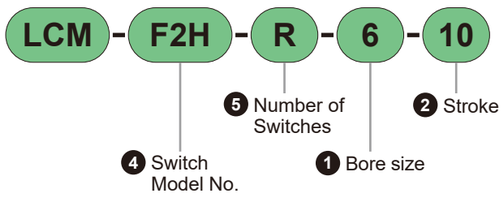
Clean Specification (Catalog No. CB-033SAA)

● Dust prevention structure usable in cleanrooms

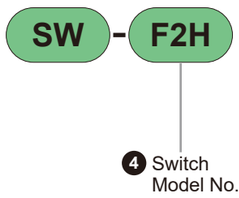
LCM - ····· - P7□

Switch Single Unit Model No. Notation Method

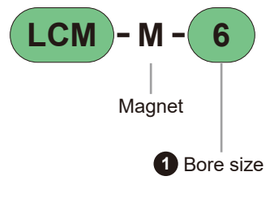
● Switch body + Switch rail + Magnet



● Switch body only

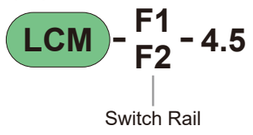


● Magnet only

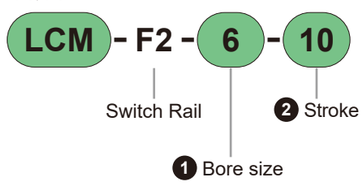


● Switch rail only

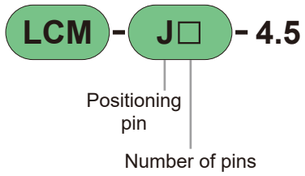
・ø4.5



・ø6, ø8



Positioning Pin Single Item Model No. Notation Method



Specifications

Item		LCM		
Bore size	mm	ø4.5	ø6	ø8
Actuation method		Double Acting Type		
Operating Fluid		Compressed Air		
Max. Working Pressure	MPa	0.7		
Min. Operating Pressure	MPa	0.2		0.15
Proof Pressure	MPa	1.05		
Ambient Temperature	°C	0 to 60		
Port Size		M3		
Stroke tolerance	mm	+1.0 0		
Operating Piston Speed	mm/s	30 to 500		
Cushion		None	With Rubber Cushion	
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)		
Allowable Absorbed Energy	J	Refer to the table on P. 48.		

With buffer specification

Item			With buffer (B)
Buffer Stroke		mm	4 (MAX)
Buffer part spring load	At SET	N	0.3
	During operation	N	0.7

Stroke

Bore size (mm)	Standard Stroke (mm)	Minimum stroke with switch (mm)
ø4.5	5, 10	5
ø6	5,10,15,20,30	
ø8	5,10,15,20,30	

Note) Strokes other than standard are not available.

Cylinder Weight

Unit: g

Stroke (mm)	5		10		15		20		30		Added Weight	
Bore Size (mm)	Magnet + Switch rail		Magnet + Switch rail		Magnet + Switch rail		Magnet + Switch rail		Magnet + Switch rail		With buffer	Weight per switch
	None	Available	None	Available	None	Available	None	Available	None	Available		
ø4.5	42	46	42	46	-	-	-	-	-	-	3	Refer to the mass described in the switch specifications on P. 753
ø6	58	63	58	63	66	72	74	80	90	97	4	
ø8	83	88	83	88	104	110	104	110	125	132	5	

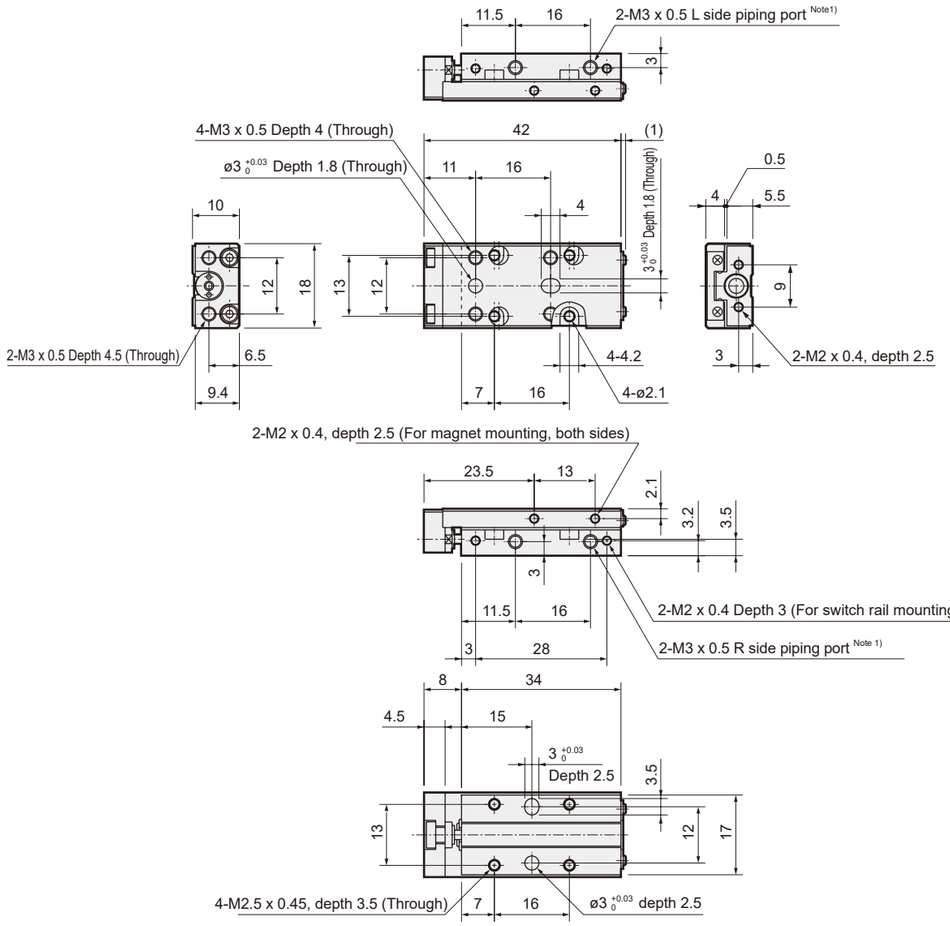
Theoretical Thrust Table

Unit: N

Bore Size (mm)	Operating Direction	Operating Pressure MPa					
		0.2	0.3	0.4	0.5	0.6	0.7
ø4.5	Push	3.2	4.8	6.4	8.0	9.5	11.1
	Pull	2.6	3.8	5.1	6.4	7.7	8.9
ø6	Push	5.7	8.5	11.3	14.1	17.0	19.8
	Pull	4.2	6.4	8.5	10.6	12.7	14.8
ø8	Push	10.1	15.1	20.1	25.1	30.2	35.2
	Pull	8.6	13.0	17.3	21.6	25.9	30.2

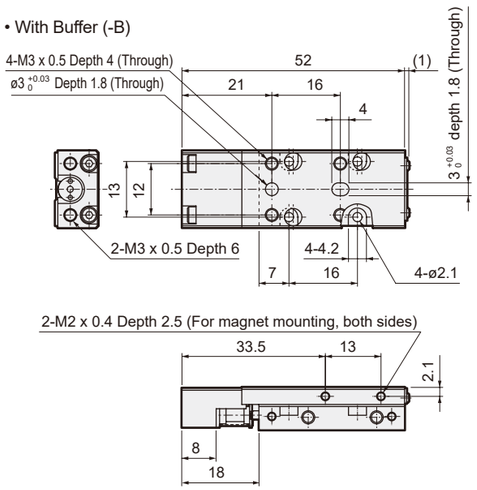
Outline dimension drawing (Bore size: ø4.5)

●LCM-4.5

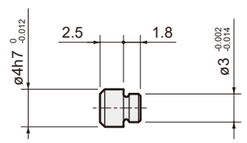


Note1) A plug is assembled on the opposite side of the piping port specified by the model No..
Note2) For switch mounting position dimensions, please refer to P. 44 and P. 45.

• With Buffer (-B)

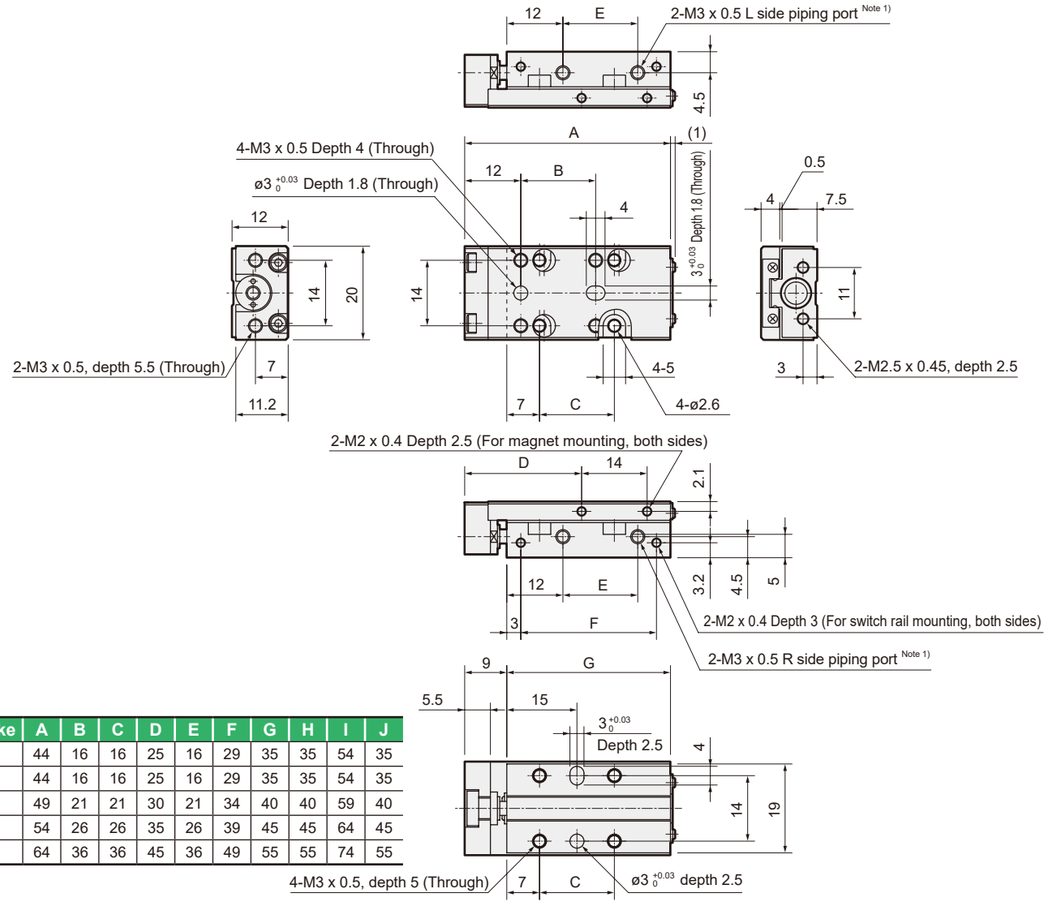


• Positioning pin (-J)



Outline dimension drawing (Bore size: ø6)

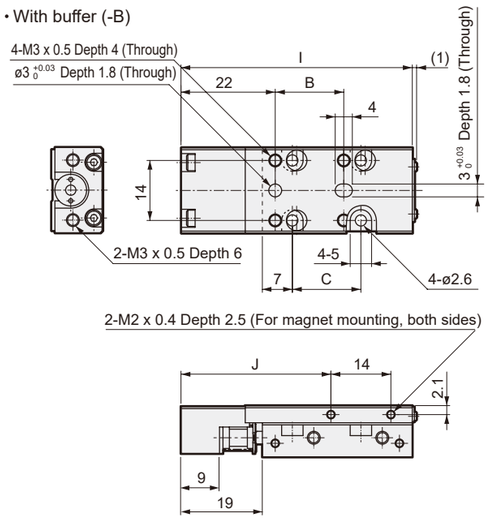
● LCM-6



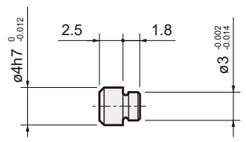
Stroke	A	B	C	D	E	F	G	H	I	J
5	44	16	16	25	16	29	35	35	54	35
10	44	16	16	25	16	29	35	35	54	35
15	49	21	21	30	21	34	40	40	59	40
20	54	26	26	35	26	39	45	45	64	45
30	64	36	36	45	36	49	55	55	74	55

Note1) A plug is assembled on the opposite side of the piping port specified by the model No..
Note2) For switch mounting position dimensions, see P. 44 and P. 45.

• With buffer (-B)

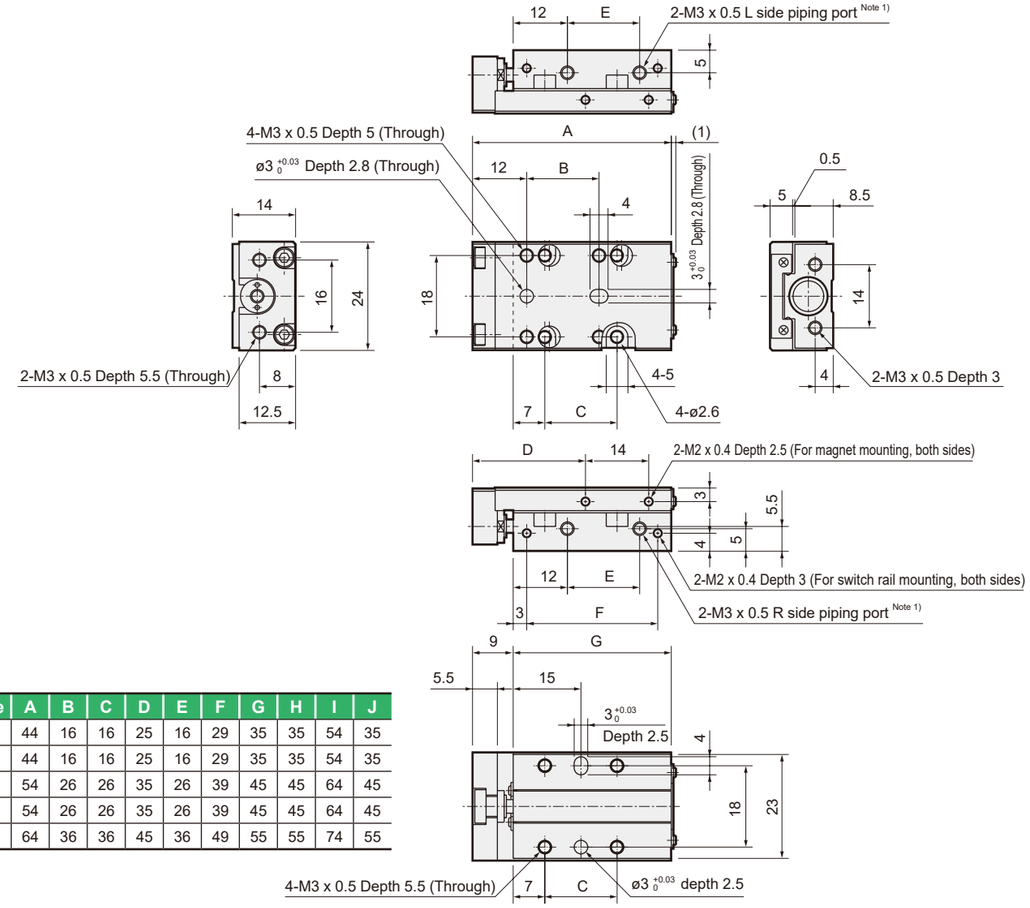


• Positioning Pin (-J)



Outline dimension drawing (Bore size: ø8)

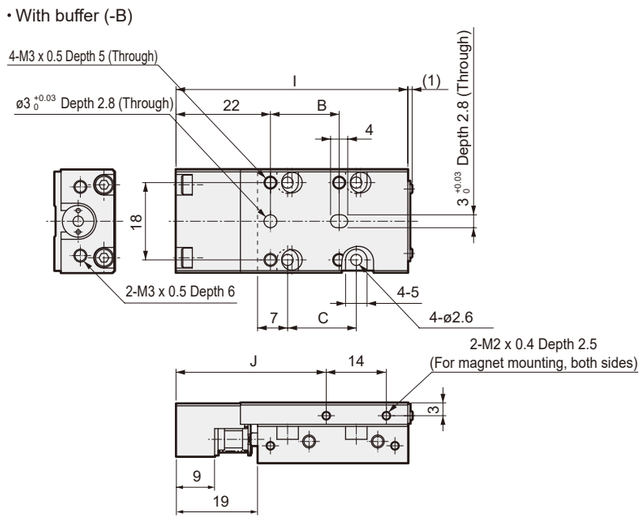
● LCM-8



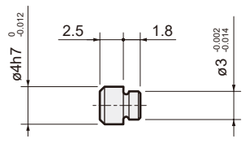
Stroke	A	B	C	D	E	F	G	H	I	J
5	44	16	16	25	16	29	35	35	54	35
10	44	16	16	25	16	29	35	35	54	35
15	54	26	26	35	26	39	45	45	64	45
20	54	26	26	35	26	39	45	45	64	45
30	64	36	36	45	36	49	55	55	74	55

Note1) A plug is assembled on the opposite side of the piping port specified by the model No..
Note2) For switch mounting position dimensions, see P. 44 and P. 45.

• With buffer (-B)

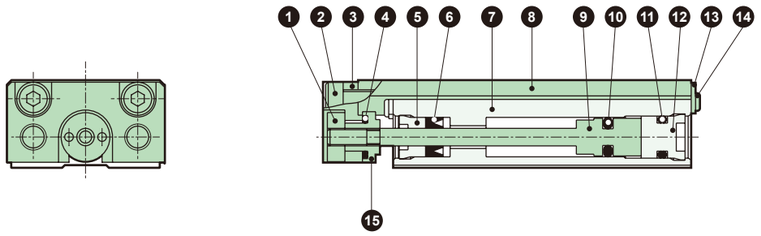


• Positioning pin (-J)

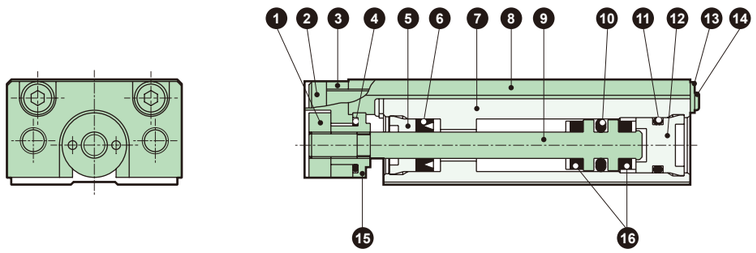


Internal Structure Diagram/Material

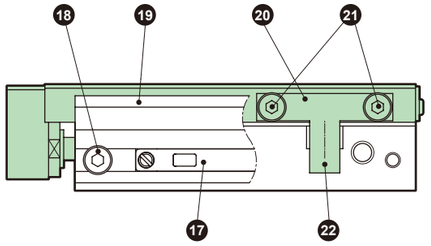
● LCM-4.5



● LCM-6.8



● LCM-4.5 to 8 With magnet and switch rail



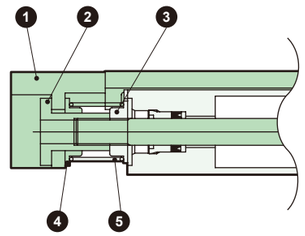
Do not disassemble

Part No.	Part Name	Material	Remarks
1	Floating bush A	Stainless Steel	
2	Hexagon Socket Head Cap Screw	Stainless Steel	
3	End plate	Aluminum Alloy	
4	O-ring	Nitrile rubber	
5	Rod Cover	Polyacetal	
6	Rod Packing	Nitrile Rubber	
7	Cylinder Body	Stainless Steel	
8	Slide table	Stainless Steel	
9	Piston	Stainless Steel	
10	Piston Packing	Nitrile Rubber	
11	O-ring	Nitrile Rubber	
12	Cover	Polyacetal	

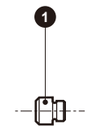
Part No.	Part Name	Material	Remarks
13	Stopper plate	Stainless Steel	
14	Machine screw	Stainless Steel	
15	Floating bush B	Stainless Steel	
16	Cushion Rubber	Urethane Rubber	
With Switch			
17	Switch		
18	Hexagon Socket Head Cap Screw	Stainless Steel	
19	Switch Rail	Aluminum Alloy	
20	Plate	Aluminum Alloy	
21	Hexagon Socket Head Cap Screw	Stainless Steel	
22	Magnet	Plastic	

Internal Structure Diagram/Material

● LCM-4.5 to 8 With buffer

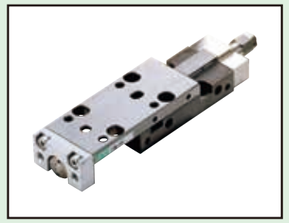


• Positioning pin



Part No.	Part Name	Material	Remarks
1	End plate	Aluminum Alloy	
2	Floating bush A	Stainless Steel	
3	Floating bush B	Stainless Steel	
4	Spring Retainer	Copper Alloy	
5	Coil Spring	Stainless Steel	

Part No.	Part Name	Material	Remarks
1	Positioning pin	Steel	



Linear Slide Cylinder Double Acting, Stroke Adjustment Type (Push)

LCM-P Series

● Bore size : ø4.5, ø6, ø8

Circuit Diagram Symbol

RoHS

Model No. Notation Method

Without Switch
(Without magnet for switch)

LCM-P - 6 - 10 - R ——— J2
1 2 3 6

With Switch
(Built-in magnet for switch)

LCM-P - 6 - 10 - R - F2H - R - J2

Model No.
❶ Bore size
❷ Stroke
❸ Piping direction
❹ Switch Model No.
❺ Number of Switches
❻ Option

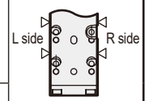
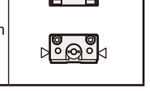
❶Bore Size (mm)

Code	Content
4.5	ø4.5
6	ø6
8	ø8

❷Stroke (mm)

Code	Bore size		
	ø4.5	ø6	ø8
5	●	●	●
10	●	●	●
15		●	●
20		●	●
30		●	●

❸Piping direction

Code	Content	
R	Right side when viewed from rod side	
L	Left side when viewed from rod side	

❹Switch Model No.

For switch details, please refer to P. 753. Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20	-	F2S□	
		3-wire (NPN)	-	30 or less	-	50 or less	-	F3S□	
		2-wire	-	10 to 30	-	5 to 20 *2	F2H□	F2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3H□	F3V□	
	1-Color (Custom order)	3-wire (PNP)	-	30 or less	-	50 or less	F3PH□	F3PV□	
	2-Color	2-wire	-	24±10%	-	5 to 20	F2YH□	F2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3YH□	F3YV□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: Switches other than the model Nos. listed above are also available. (Custom order)
For details,See P. 753.

*** Lead wire length**

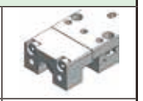
Code	Content
Blank	1 m (Standard)
3	3 m (Option)

Example) Lead wire length
1 m F2S
3 m F2S 3

❺ Number of Switches

Code	Content
R	With 1 on Rod Side
H	With 1 on Head Side
D	With 2 pcs

❻ Option

	Code	Content	
	B	With buffer	
*1	M	With magnet	
*1 *2	F1	Magnet + Switch rail (1 switch groove)	
*1	F2	Magnet + Switch rail (2 switch grooves)	
	J□	Positioning pin included (*Number of pins)	

*1: If a switch model No. is specified, selection is not necessary.
*2: Selectable only for ø4.5.

Switch Single Unit Model No. Notation Method

● Switch body + Switch rail + Magnet

LCM - F2H - R - 6 - 10

❹ Switch Model No.
❺ Number of Switches
❶ Bore size
❷ Stroke

● Switch body only

SW - F2H

❹ Switch Model No.

● Magnet only

LCM - M - 6

Magnet
❶ Bore size

● Switch rail only

・ø4.5

LCM - F1 / F2 - 4.5

Switch Rail

・ø6, ø8

LCM - F2 - 6 - 10

Switch Rail
❷ Stroke
❶ Bore size

Positioning Pin Single Item Model No. Notation Method

LCM - J□ - 4.5

Positioning pin
Number of pins

Specifications

Item		LCM-P		
Bore size	mm	ø4.5	ø6	ø8
Actuation method		Double Acting Type		
Operating Fluid		Compressed Air		
Max. Working Pressure	MPa	0.7		
Min. Operating Pressure	MPa	0.25	0.2	0.15
Proof Pressure	MPa	1.05		
Ambient Temperature	°C	0 to 60		
Port Size		M3		
Stroke tolerance	mm	+1.0 0		
Operating Piston Speed	mm/s	30 to 500		
Cushion		None		
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)		
Stroke adjustment range	mm	-5 to 0		
Repeat positioning accuracy	mm	±0.02		
Allowable Absorbed Energy	J	Refer to the table on P. 48.		

With buffer specification

Item			With buffer (B)
Buffer Stroke		mm	4 (MAX)
Buffer part spring load	At SET	N	0.3
	During operation	N	0.7

Stroke

Bore size (mm)	Standard Stroke (mm)	Minimum stroke with switch (mm)
ø4.5	5, 10	5
ø6	5,10,15,20,30	
ø8	5,10,15,20,30	

Note: Strokes other than standard are not available.

Cylinder Weight

Unit: g

Stroke (mm) / Bore Size (mm)	5		10		15		20		30		Added Weight	
	Magnet + Switch rail		Magnet + Switch rail		Magnet + Switch rail		Magnet + Switch rail		Magnet + Switch rail		With buffer	Weight per switch
	None	Available	None	Available	None	Available	None	Available	None	Available		
ø4.5	49	53	49	53	-	-	-	-	-	-	3	Refer to the mass described in the switch specifications on P. 753
ø6	68	73	68	73	77	83	86	92	104	111	4	
ø8	97	102	97	102	120	126	120	126	143	150	5	

Theoretical Thrust Table

Unit: N

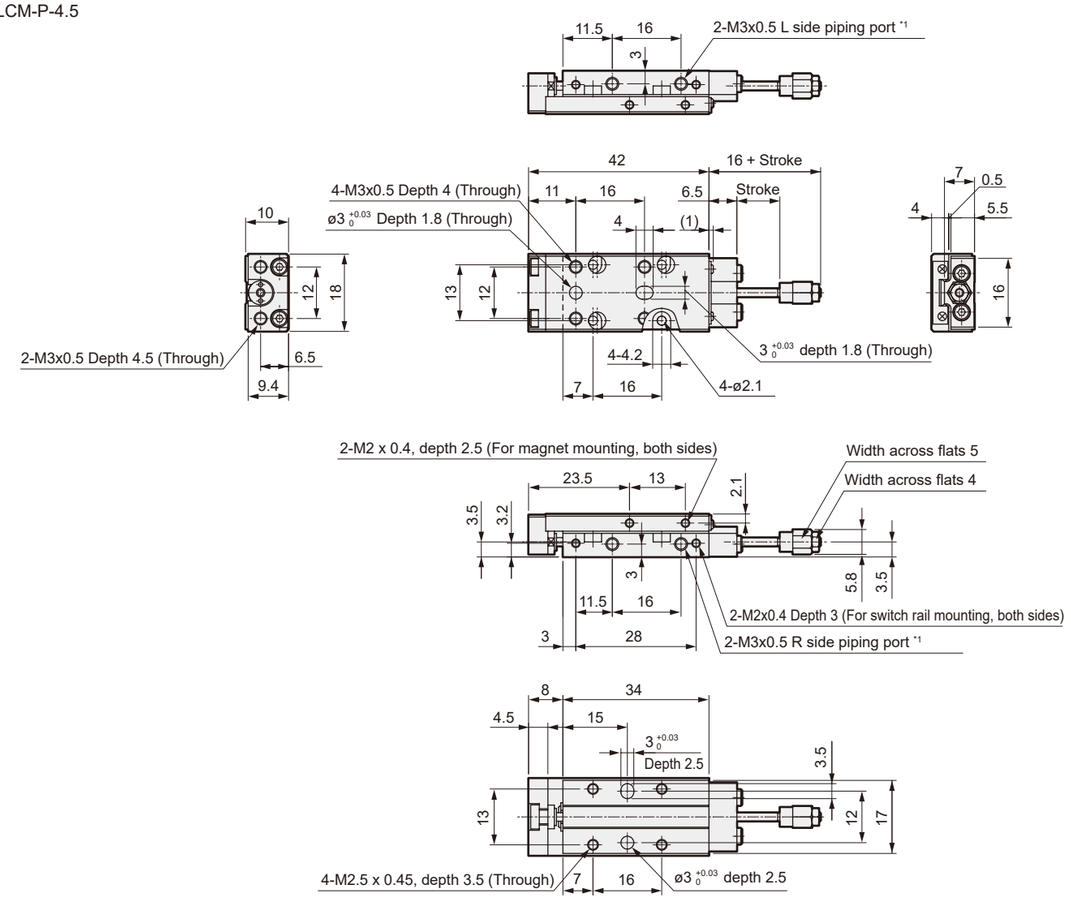
Bore Size (mm)	Operating Pressure MPa					
	0.2	0.3	0.4	0.5	0.6	0.7
ø4.5	-	3.8	5.1	6.4	7.7	8.9
ø6	4.2	6.4	8.5	10.6	12.7	14.8
ø8	8.6	13.0	17.3	21.6	25.9	30.2

MEMO

With Linear Guide
LCM
LCR
LCG
LCW
LCX
MSDG
Cylinder Switch
Ending

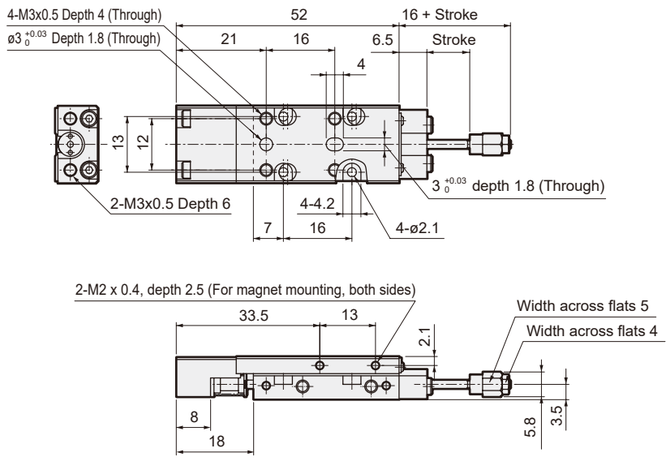
Outline dimension drawing (Bore size: ø4.5)

● LCM-P-4.5

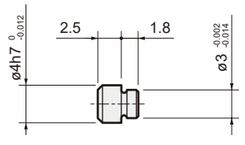


*1: A plug is assembled on the opposite side of the piping port specified by the model No..
*2: For switch mounting position dimensions, please refer to P. 44 and P. 45.

• With Buffer (-B)

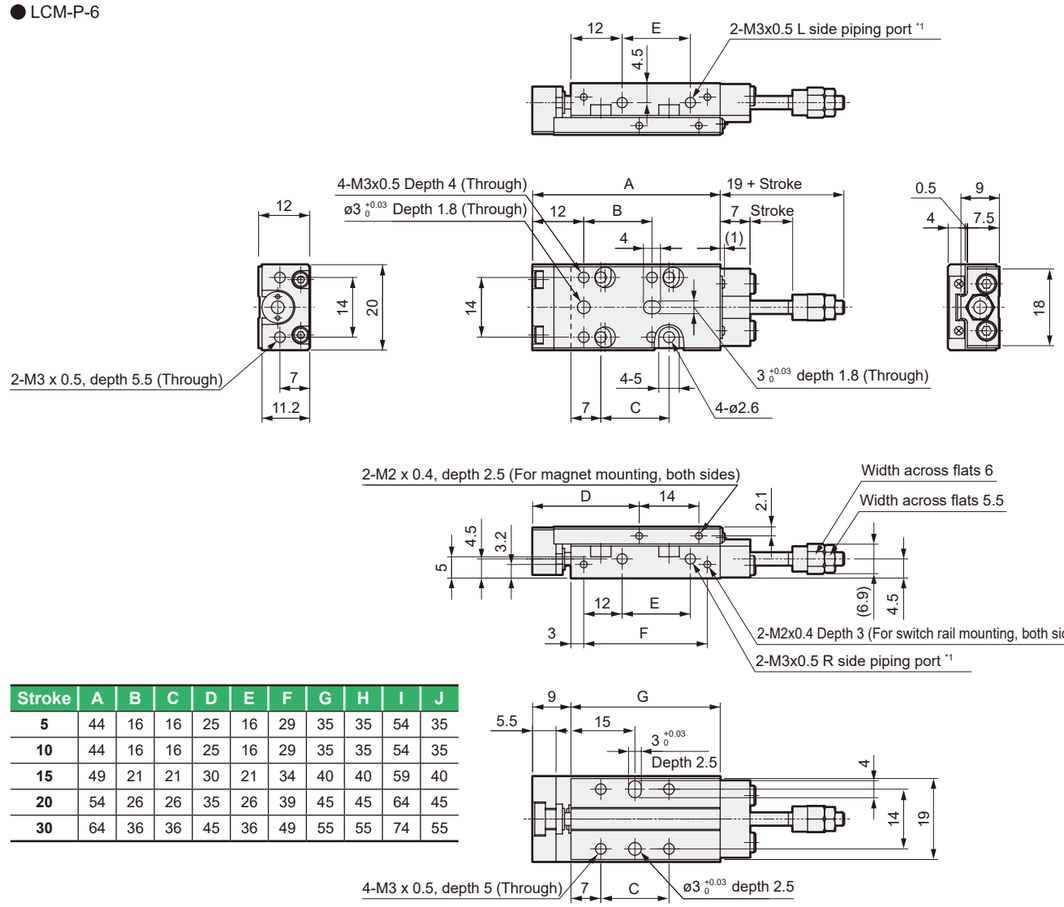


• Positioning Pin (-J)



Outline dimension drawing (Bore size: ø6)

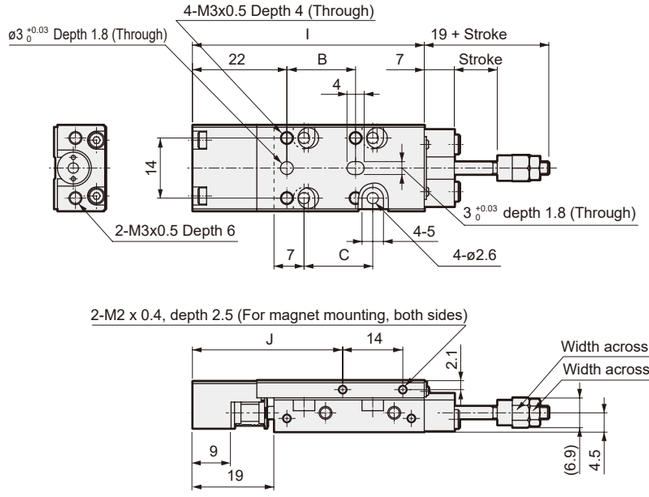
● LCM-P-6



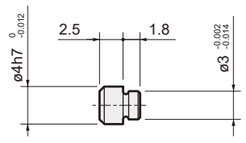
Stroke	A	B	C	D	E	F	G	H	I	J
5	44	16	16	25	16	29	35	35	54	35
10	44	16	16	25	16	29	35	35	54	35
15	49	21	21	30	21	34	40	40	59	40
20	54	26	26	35	26	39	45	45	64	45
30	64	36	36	45	36	49	55	55	74	55

*1: A plug is assembled on the opposite side of the piping port specified by the model No..
*2: For switch mounting position dimensions, please refer to P. 44 and P. 45.

• With Buffer (-B)

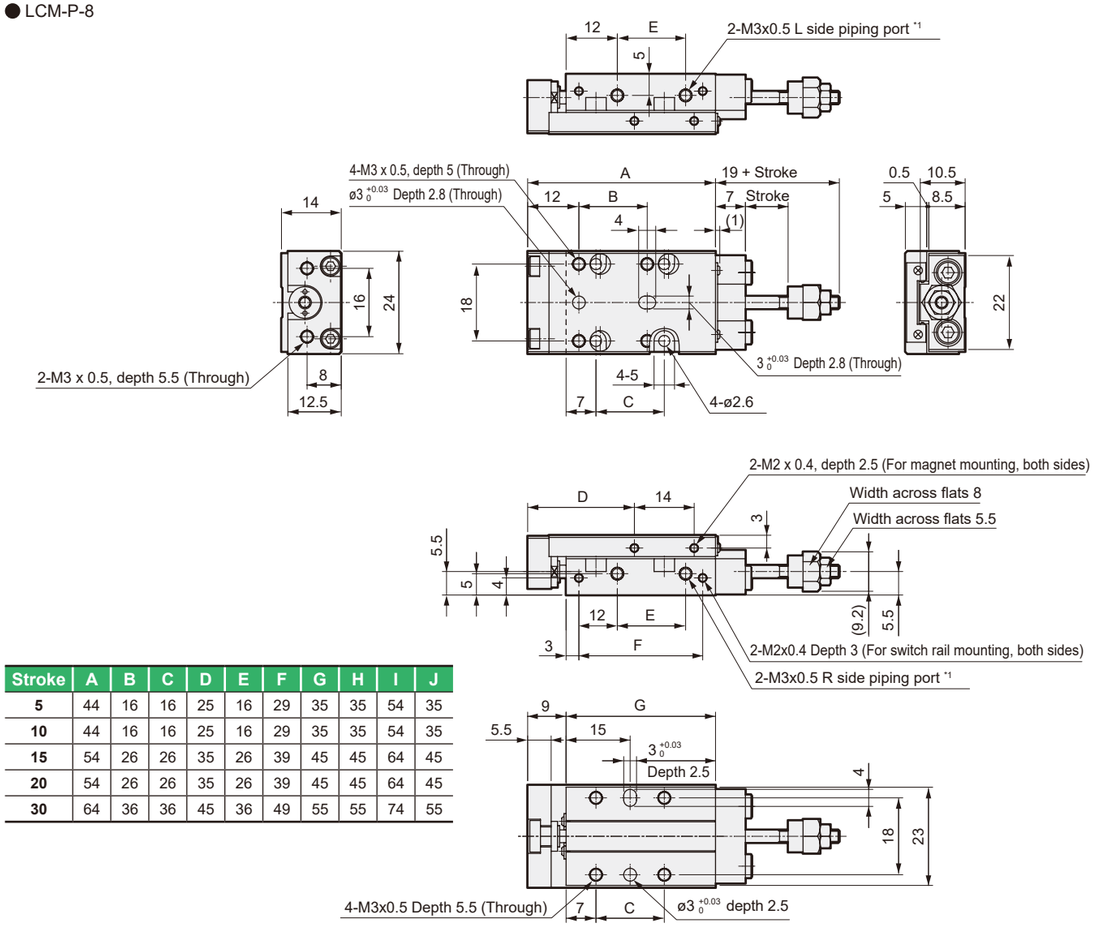


• Positioning Pin (-J)



Outline dimension drawing (Bore size: ø8)

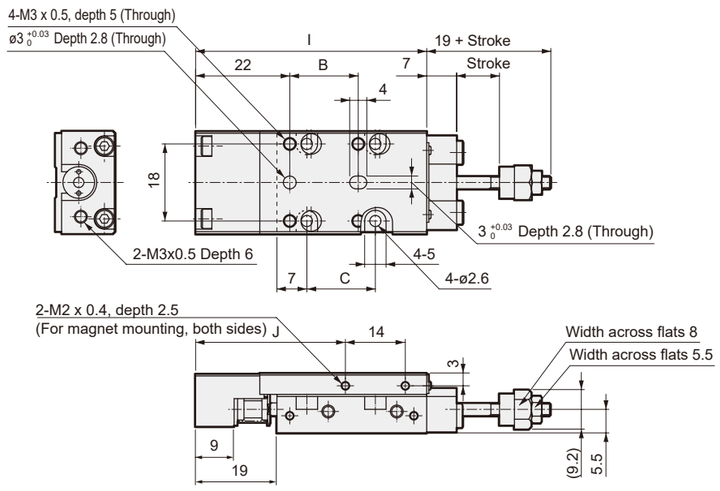
● LCM-P-8



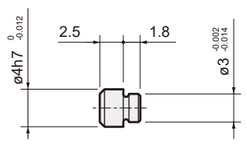
Stroke	A	B	C	D	E	F	G	H	I	J
5	44	16	16	25	16	29	35	35	54	35
10	44	16	16	25	16	29	35	35	54	35
15	54	26	26	35	26	39	45	45	64	45
20	54	26	26	35	26	39	45	45	64	45
30	64	36	36	45	36	49	55	55	74	55

*1 : A plug is assembled on the opposite side of the piping port specified by the model No..
*2 : For switch mounting position dimensions, please refer to P. 44 and P. 45.

• With Buffer (-B)

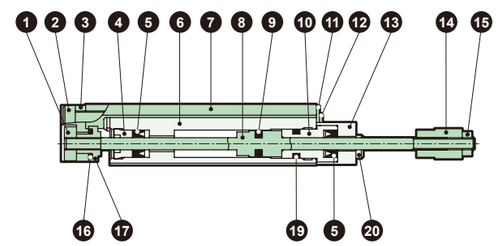


• Positioning Pin (-J)

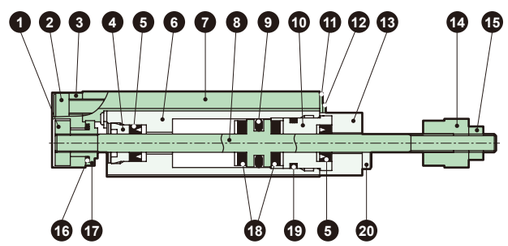


Internal Structure Diagram/Material

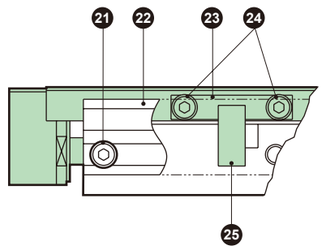
● LCM-P-4.5



● LCM-P-6,8



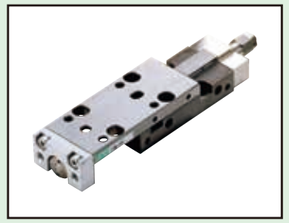
● LCM-P-4.5 to 8 With magnet and switch rail



• Positioning Pin (-J)

Do not disassemble

Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Floating bush A	Stainless Steel		15	Hexagon Nut	ø4.5 : Stainless steel ø6, ø8 : Steel	ø6, ø8 : Nickel plating
2	Hexagon Socket Head Cap Screw	Stainless Steel					
3	End plate	Aluminum Alloy		16	O-ring	Nitrile Rubber	
4	Rod Cover	Polyacetal		17	Floating bush B	Stainless Steel	
5	Rod Packing	Nitrile Rubber		18	Cushion Rubber	Urethane Rubber	
6	Cylinder Body	Stainless Steel		19	O-ring	Nitrile Rubber	
7	Slide table	Stainless Steel		20	Hexagon Socket Head Cap Screw	Stainless Steel	
8	Piston	Stainless Steel		21	Hexagon Socket Head Cap Screw	Stainless Steel	
9	Piston Packing	Nitrile Rubber		22	Switch Rail	Aluminum Alloy	
10	Cover	Aluminum Alloy		23	Plate	Aluminum Alloy	
11	Stopper plate	Stainless Steel		24	Hexagon Socket Head Cap Screw	Stainless Steel	
12	Machine screw	Stainless Steel		25	Magnet	Plastic	
13	Stopper A	Steel	Nickel Plating	26	Positioning pin	Steel	
14	Adjusting Stopper	Steel	Nickel Plating				

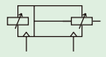


Linear Slide Cylinder Double Acting, Stroke Adjustment Type (Push/Pull)

LCM-R Series

● Bore size: ø4.5, ø6, ø8

Circuit Diagram
Symbol



RoHS

Model No. Notation Method

Without Switch
(Without magnet for switch)

LCM-R - 6 - 10 - R ——— J2
1 2 3 6

With Switch
(Built-in magnet for switch)

LCM-R - 6 - 10 - R - F2H - R - J2

Model No.
❶ Bore size
❷ Stroke
❸ Piping direction
❹ Switch Model No.
❺ Number of Switches
❻ Option

❶ Bore Size (mm)

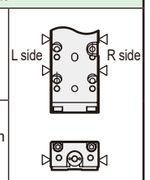
Code	Content
4.5	ø4.5
6	ø6
8	ø8

❷ Stroke (mm)

Code	Bore size		
	ø4.5	ø6	ø8
5	●	●	●
10	●	●	●
15		●	●
20		●	●
30		●	●

❸ Piping direction

Code	Content
R	Right side when viewed from rod side
L	Left side when viewed from rod side



❹ Switch Model No.

For switch details, please refer to P. 753. Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20	-	F2S□	
		3-wire (NPN)	-	30 or less	-	50 or less	-	F3S□	
		2-wire	-	10 to 30	-	5 to 20 *2	F2H□	F2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3H□	F3V□	
	1-Color (Custom order)	3-wire (PNP)	-	30 or less	-	50 or less	F3PH□	F3PV□	
	2-Color	2-wire	-	24±10%	-	5 to 20	F2YH□	F2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3YH□	F3YV□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: Switches other than the model Nos. listed above are also available. (Custom product) For details,See P. 753.

***Lead wire length**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)

Example) Lead wire length
1 m F2S
3 m F2S3

❺ Number of Switches

Code	Content
R	With 1 on Rod Side
H	With 1 on Head Side
D	With 2 pcs

❻ Option

	Code	Content	
	B	With buffer	
*1	M	With magnet	
*1 *2	F1	Magnet + Switch rail (1 switch groove)	
*1	F2	Magnet + Switch rail (2 switch grooves)	
	J□	Positioning pin included (□··· Number of pins)	

*1: If a switch model No. is specified, selection is not necessary.
*2: Selectable only for ø4.5.

Switch Single Unit Model No. Notation Method

● Switch body + Switch rail + Magnet

LCM - F2H - R - 6 - 10

❹ Switch Model No.
❺ Number of Switches
❶ Bore size
❷ Stroke

● Switch body only

SW - F2H

❹ Switch Model No.

● Magnet only

LCM - M - 6

Magnet
❶ Bore size

● Switch rail only

• ø4.5

LCM - F1 / F2 - 4.5

Switch Rail

• ø6, ø8

LCM - F2 - 6 - 10

Switch Rail
❷ Stroke
❶ Bore size

Positioning Pin Single Item Model No. Notation Method

LCM - J□ - 4.5

Positioning pin
Number of pins

Specifications

Item			LCM-R		
Bore size		mm	ø4.5	ø6	ø8
Actuation method			Double Acting Type		
Operating Fluid			Compressed Air		
Max. Working Pressure		MPa	0.7		
Min. Operating Pressure		MPa	0.25	0.2	0.15
Proof Pressure		MPa	1.05		
Ambient Temperature		°C	0 to 60		
Port Size			M3		
Stroke tolerance		mm	+1.0 0		
Operating Piston Speed		mm/s	30 to 500		
Cushion	Push		None		
	Retract		None		
Lubrication			Not required (When lubricating, use turbine oil Class 1 ISO VG32)		
Stroke adjustment range	Push	mm	-5 to 0		
	Pull	mm	-7 to 0		
Repeat positioning accuracy		mm	±0.02		
Allowable Absorbed Energy		J	Refer to the table on P. 48.		

With buffer specification

Item			With buffer (B)
Buffer Stroke		mm	4 (MAX)
Buffer part spring load	At SET	N	0.3
	During operation	N	0.7

Stroke

Bore size (mm)	Standard Stroke (mm)	Minimum stroke with switch (mm)
ø4.5	5, 10	5
ø6	5,10,15,20,30	
ø8	5,10,15,20,30	

Note) Strokes other than standard are not available.

Cylinder Weight

Unit: g

Stroke (mm) / Bore Size (mm)	5		10		15		20		30		Added Weight	
	Magnet + Switch rail		Magnet + Switch rail		Magnet + Switch rail		Magnet + Switch rail		Magnet + Switch rail		With buffer	Weight per switch
	None	Available	None	Available	None	Available	None	Available	None	Available		
ø4.5	52	56	52	56	-	-			-	-	3	Refer to the mass described in the switch specifications on P. 753
ø6	71	76	71	76	80	86	89	95	107	114	4	
ø8	100	105	100	105	123	129	123	129	146	153	5	

Theoretical Thrust Table

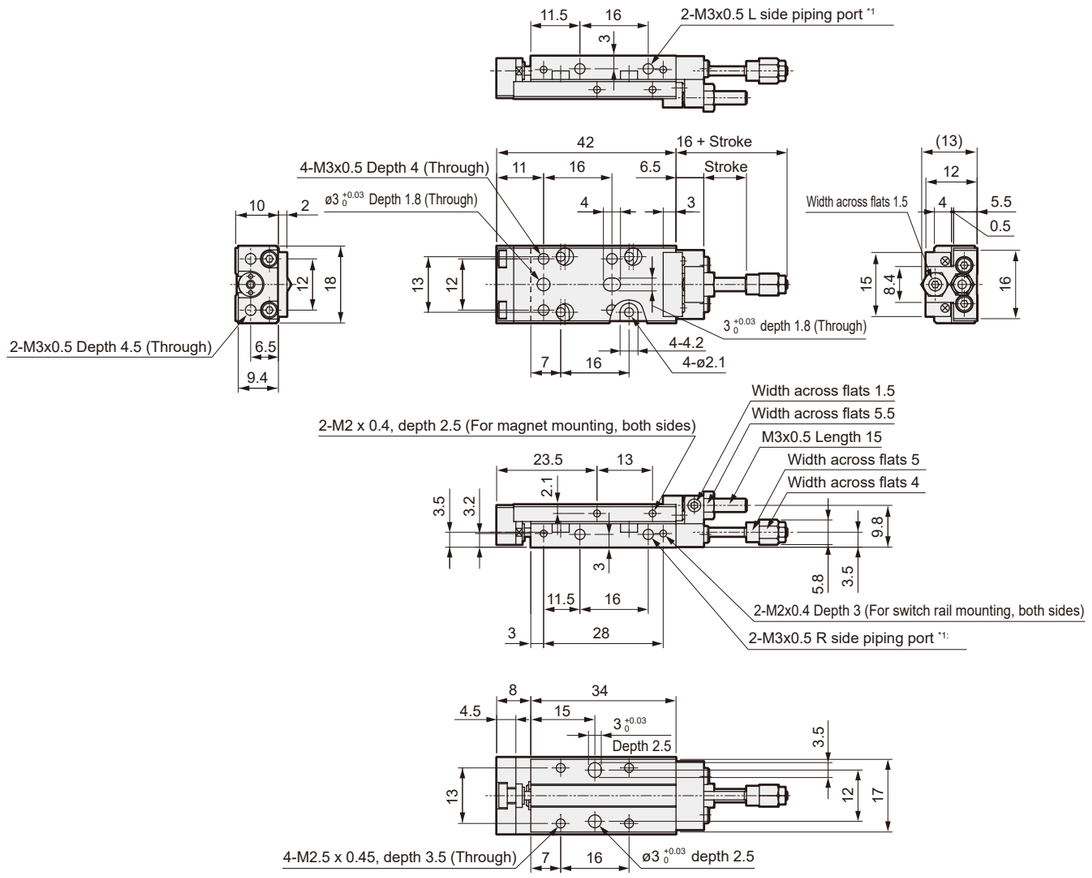
Unit: N

Bore Size (mm)	Operating Pressure MPa					
	0.2	0.3	0.4	0.5	0.6	0.7
ø4.5	-	3.8	5.1	6.4	7.7	8.9
ø6	4.2	6.4	8.5	10.6	12.7	14.8
ø8	8.6	13.0	17.3	21.6	25.9	30.2

MEMO

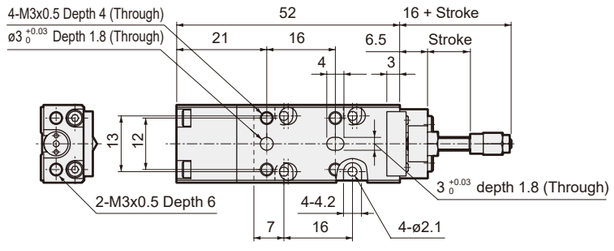
Outline dimension drawing (Bore size: ø4.5)

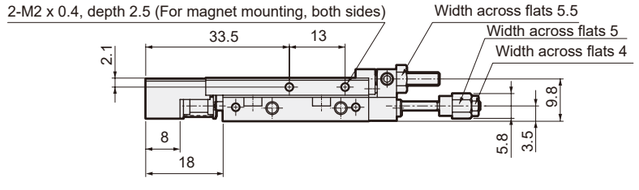
● LCM-R-4.5



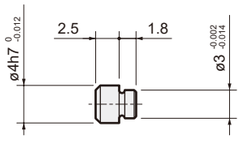
*1: A plug is assembled on the opposite side of the piping port specified by the model No..
*2: For switch mounting position dimensions, please refer to P. 44 and P. 45.

• With Buffer (-B)



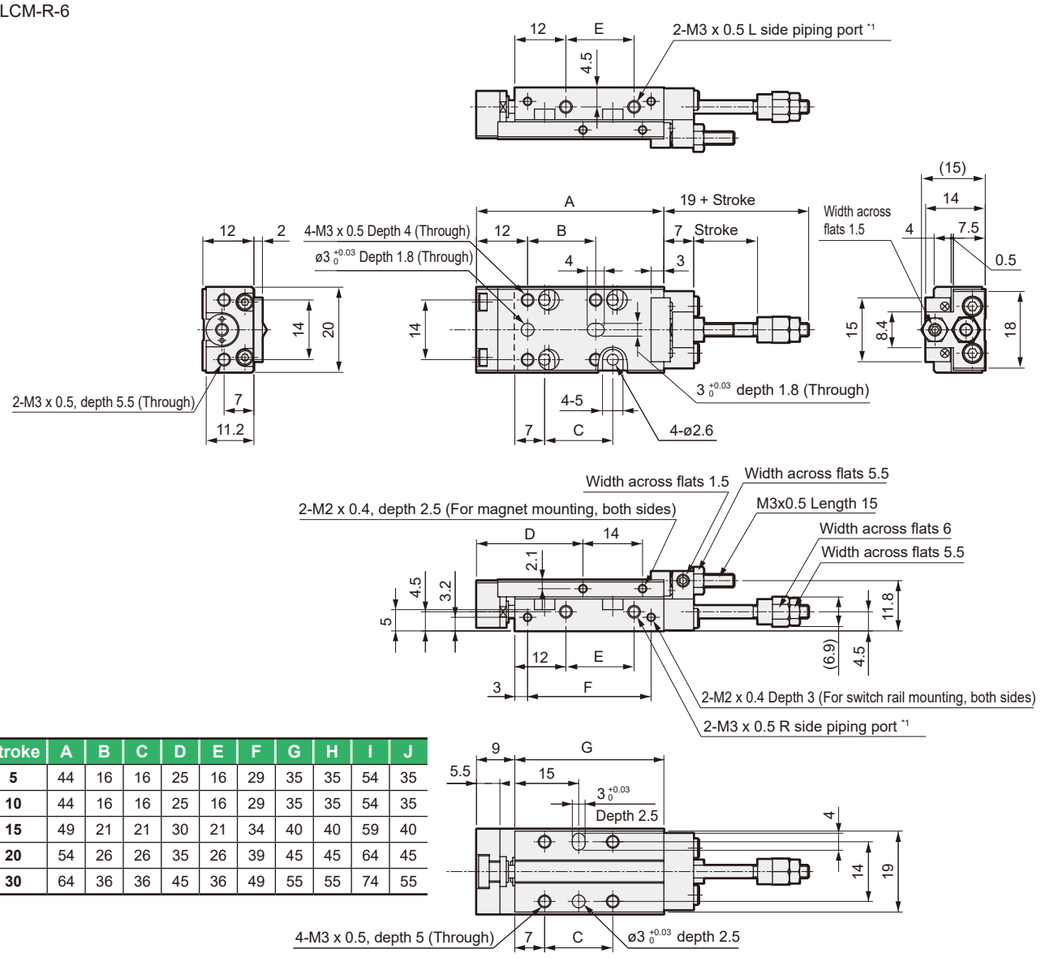


• Positioning Pin (-J)



Outline dimension drawing (Bore size: ø6)

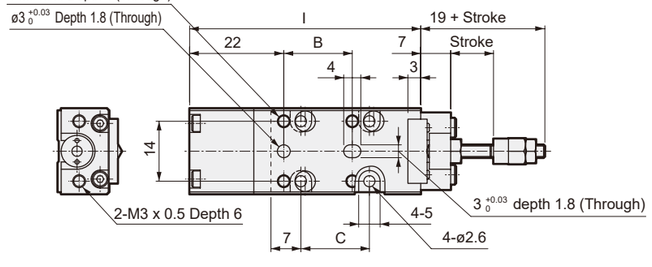
● LCM-R-6

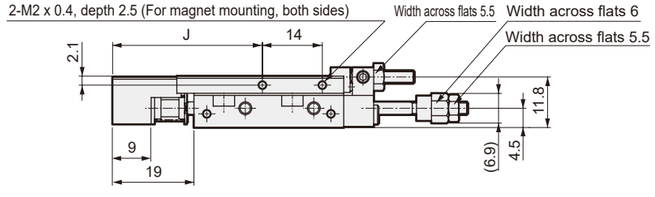


Stroke	A	B	C	D	E	F	G	H	I	J
5	44	16	16	25	16	29	35	35	54	35
10	44	16	16	25	16	29	35	35	54	35
15	49	21	21	30	21	34	40	40	59	40
20	54	26	26	35	26	39	45	45	64	45
30	64	36	36	45	36	49	55	55	74	55

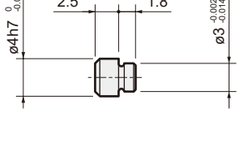
*1: A plug is assembled on the opposite side of the piping port specified by the model No..
*2: For switch mounting position dimensions, please refer to P. 44 and P. 45.

• With Buffer (-B)



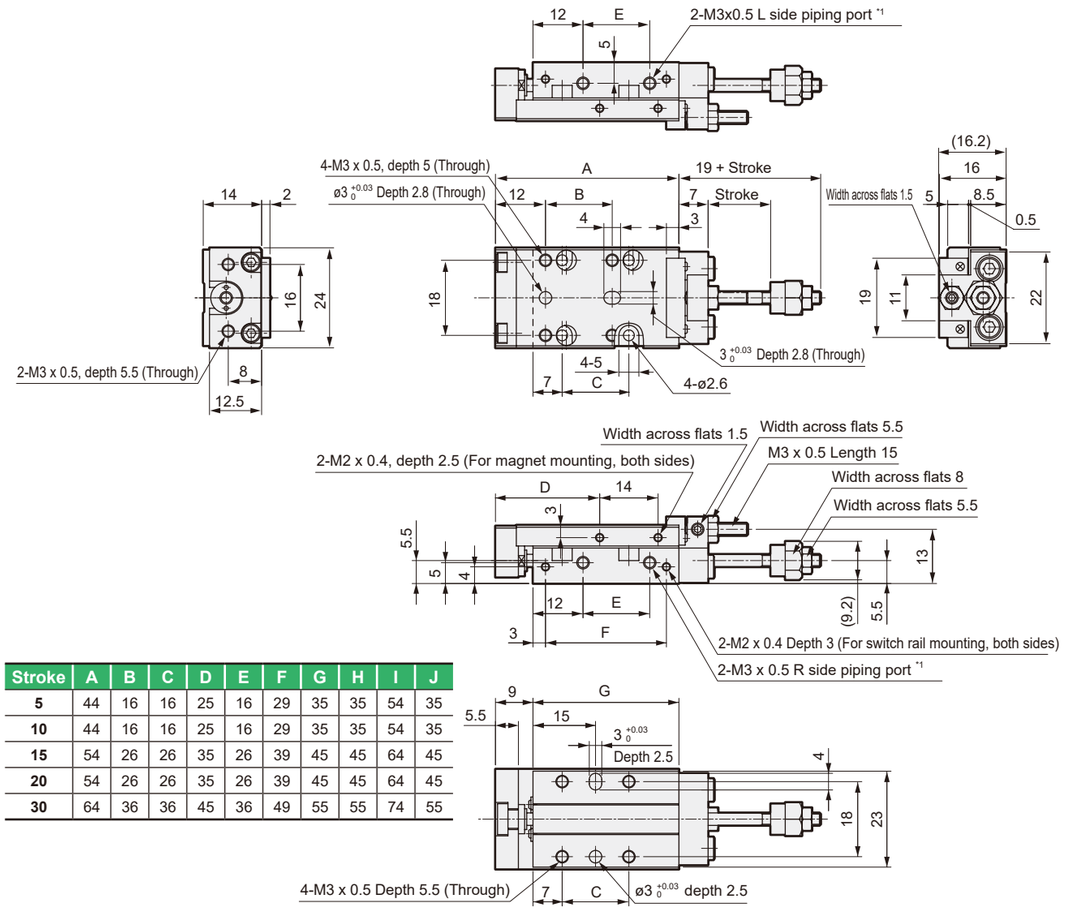


• Positioning Pin (-J)



Outline dimension drawing (Bore size: ø8)

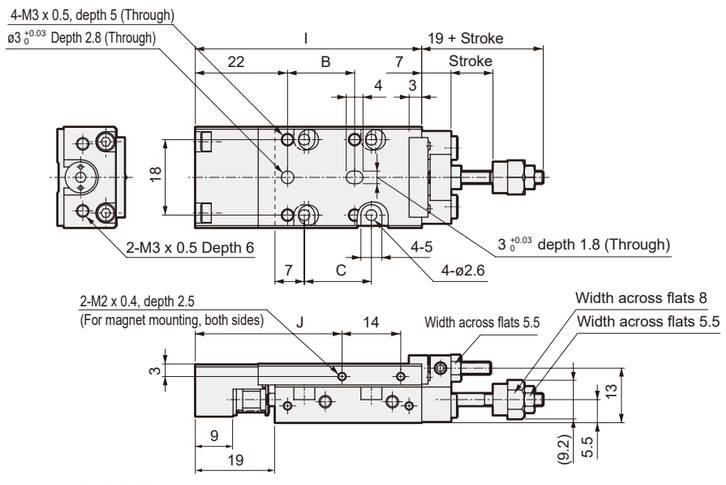
● LCM-R-8



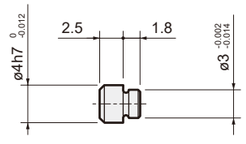
Stroke	A	B	C	D	E	F	G	H	I	J
5	44	16	16	25	16	29	35	35	54	35
10	44	16	16	25	16	29	35	35	54	35
15	54	26	26	35	26	39	45	45	64	45
20	54	26	26	35	26	39	45	45	64	45
30	64	36	36	45	36	49	55	55	74	55

*1: A plug is assembled on the opposite side of the piping port specified by the model No..
*2: For switch mounting position dimensions, please refer to P. 44 and P. 45.

• With Buffer (-B)

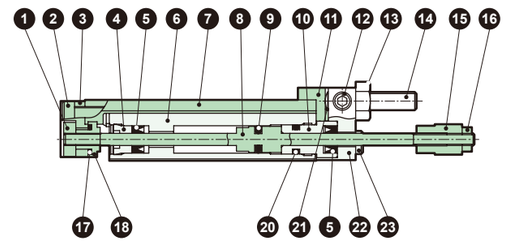


• Positioning Pin (-J)

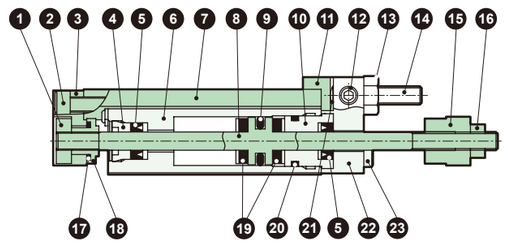


Internal Structure Diagram/Material

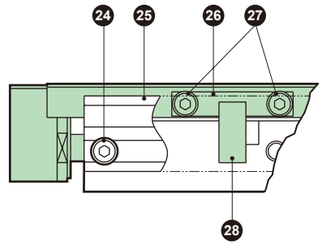
● LCM-R-4.5



● LCM-R-6,8



● LCM-R-4.5 to 8 With magnet and switch rail



• Positioning Pin (-J)

Do not disassemble

Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Floating bush A	Stainless Steel		16	Hexagon Nut	ø4.5: Stainless steel ø6, ø8: Steel	 ø6, ø8: Nickel plating
2	Hexagon Socket Head Cap Screw	Stainless Steel					
3	End plate	Aluminum Alloy		17	O-ring	Nitrile Rubber	
4	Rod Cover	Polyacetal		18	Floating bush B	Stainless Steel	
5	Rod Packing	Nitrile Rubber		19	Cushion Rubber	Urethane Rubber	
6	Cylinder Body	Stainless Steel		20	O-ring	Nitrile Rubber	
7	Slide table	Stainless Steel		21	Machine screw	Stainless Steel	
8	Piston	Stainless Steel		22	Stopper A	Steel	Nickel Plating
9	Piston Packing	Nitrile Rubber		23	Hexagon Socket Head Cap Screw	Stainless Steel	
10	Cover	Aluminum Alloy		24	Hexagon Socket Head Cap Screw	Stainless Steel	
11	Stopper B	Steel	Nickel Plating	25	Switch Rail	Aluminum Alloy	
12	Machine screw	Stainless Steel		26	Plate	Aluminum Alloy	
13	Hexagon Nut	Stainless Steel		27	Hexagon Socket Head Cap Screw	Stainless Steel	
14	Stopper bolt	Stainless Steel		28	Magnet	Plastic	
15	Adjusting Stopper	Steel	Nickel Plating	29	Positioning pin	Steel	

Linear Slide Cylinder Double Acting, Side Mount Type

LCM-A Series

● Bore size: ø4.5, ø6, ø8

Circuit Diagram Symbol

RoHS

Model No. Notation Method

Without Switch
(Without magnet for switch)

LCM-A - 6 - 10 - R ——— J2
(1) (2) (3) (6)

With Switch
(Built-in magnet for switch)

LCM-A - 6 - 10 - R - F2H - R - J2

Model No. / (2) Stroke / (4) Switch Model No. / (6) Option
(1) Bore size / (3) Table direction / (5) Number of Switches

(1) Bore Size (mm)

Code	Content
4.5	ø4.5
6	ø6
8	ø8

(2) Stroke (mm)

Code	Bore size		
	ø4.5	ø6	ø8
5	●	●	●
10	●	●	●
15		●	●
20		●	●
30		●	●

(3) Table direction

Code	Content	
R	Right side when viewed from rod side	
L	Left side when viewed from rod side	

(4) Switch Model No.

For switch details, please refer to P. 753. Switches are included to the product and shipped.

Contact	Indicator Lamp Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20	-	F2S□	
		3-wire (NPN)	-	30 or less	-	50 or less	-	F3S□	
		2-wire	-	10 to 30	-	5 to 20 *2	F2H□	F2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3H□	F3V□	
	1-Color (Custom order)	3-wire (PNP)	-	30 or less	-	50 or less	F3PH□	F3PV□	
	2-Color	2-wire	-	24±10%	-	5 to 20	F2YH□	F2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3YH□	F3YV□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: Switches other than the model Nos. listed above are also available. (Custom order) For details,See P. 753.

***Lead wire length**

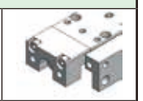
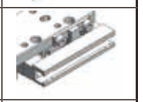
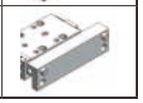
Code	Content
Blank	1 m (Standard)
3	3 m (Option)

Example) Lead wire length
1 m F2S
3 m F2S3

(5) Number of Switches

Code	Content
R	With 1 on Rod Side
H	With 1 on Head Side
D	With 2 pcs

(6) Option

	Code	Content	
	B	With buffer	
*1	M	With magnet	
*1 *2	F1	Magnet + Switch rail (1 switch groove)	
*1	F2	Magnet + Switch rail (2 switch grooves)	
	J□	Positioning pin included (□··· Number of pins)	

*1: If a switch model No. is specified, selection is not necessary.
*2: Selectable only for ø4.5.

Switch Single Unit Model No. Notation Method

● Switch body + Switch rail + Magnet

LCM - F2H - R - 6 - 10
(4) Switch Model No. / (5) Number of Switches / (1) Bore size / (2) Stroke

● Switch body only

SW - F2H
(4) Switch Model No.

● Magnet only

LCM - M - 6
Magnet / (1) Bore size

● Switch rail only

・ø4.5

LCM - F1 / F2 - 4.5
Switch Rail

・ø6, ø8

LCM - F2 - 6 - 10
Switch Rail / (1) Bore size / (2) Stroke

Positioning Pin Single Item Model No. Notation Method

LCM - J□ - 4.5
Positioning pin / Number of pins

Specifications

Item		LCM-A		
Bore size	mm	ø4.5	ø6	ø8
Actuation method		Double Acting Type		
Operating Fluid		Compressed Air		
Max. Working Pressure	MPa	0.7		
Min. Operating Pressure	MPa	0.2		0.15
Proof Pressure	MPa	1.05		
Ambient Temperature	°C	0 to 60		
Port Size		M3		
Stroke tolerance	mm	+1.0 0		
Operating Piston Speed	mm/s	30 to 500		
Cushion		None	With Rubber Cushion	
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)		
Allowable Absorbed Energy	J	Refer to the table on P. 48.		

With buffer specification

Item			With buffer (B)
Buffer Stroke		mm	4 (MAX)
Buffer part spring load	At SET	N	0.3
	During operation	N	0.7

Stroke

Bore size (mm)	Standard Stroke (mm)	Minimum stroke with switch (mm)
ø4.5	5, 10	5
ø6	5,10,15,20,30	
ø8	5,10,15,20,30	

Note) Strokes other than standard are not available.

Cylinder Weight

Unit: g

Stroke (mm) / Bore Size (mm)	5		10		15		20		30		Added Weight	
	Magnet + Switch rail		Magnet + Switch rail		Magnet + Switch rail		Magnet + Switch rail		Magnet + Switch rail		With buffer	Weight per switch
	None	Available	None	Available	None	Available	None	Available	None	Available		
ø4.5	59	63	59	63	-	-	-	-	-	-	3	Refer to the mass described in the switch specifications on P. 753
ø6	78	83	78	83	88	94	98	104	118	125	4	
ø8	106	111	106	111	132	138	132	138	158	165	5	

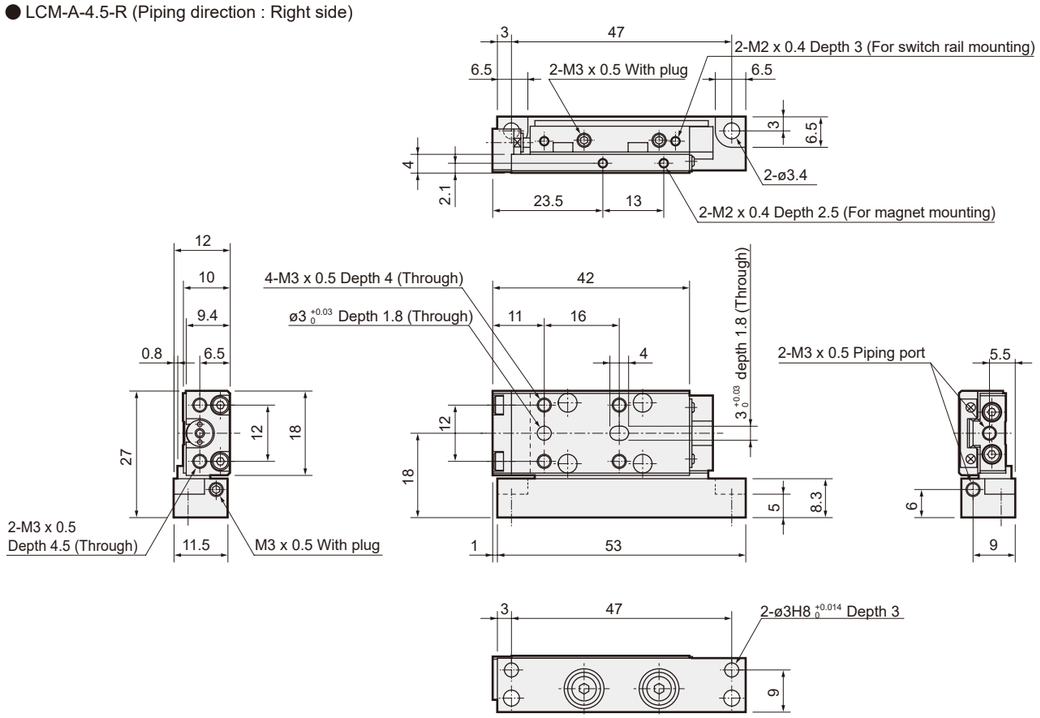
Theoretical Thrust Table

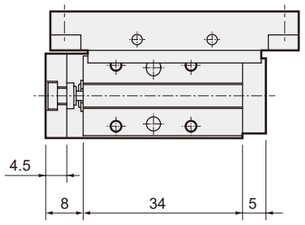
Unit: N

Bore Size (mm)	Operating Direction	Operating Pressure MPa					
		0.2	0.3	0.4	0.5	0.6	0.7
ø4.5	Push	3.2	4.8	6.4	8.0	9.5	11.1
	Pull	2.6	3.8	5.1	6.4	7.7	8.9
ø6	Push	5.7	8.5	11.3	14.1	17.0	19.8
	Pull	4.2	6.4	8.5	10.6	12.7	14.8
ø8	Push	10.1	15.1	20.1	25.1	30.2	35.2
	Pull	8.6	13.0	17.3	21.6	25.9	30.2

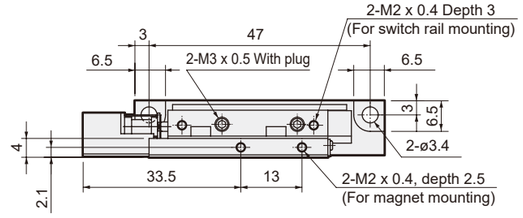
Outline dimension drawing (Bore size: ø4.5)

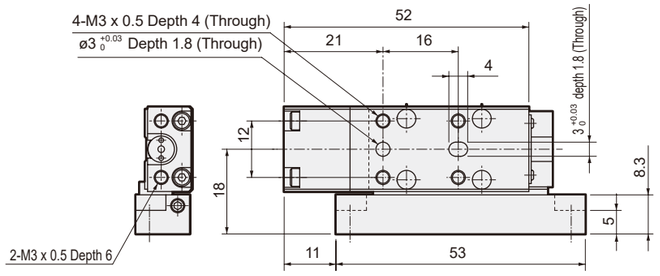
● LCM-A-4.5-R (Piping direction : Right side)





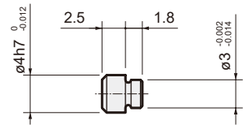
• With Buffer (-B)





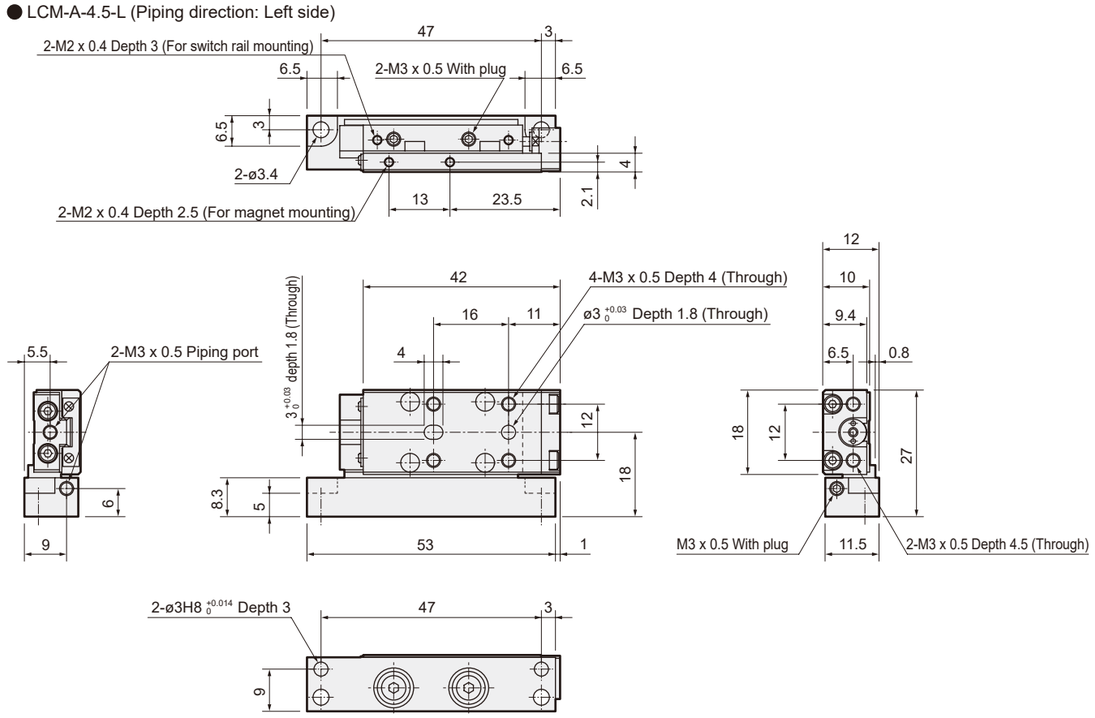
Note) For switch mounting position dimensions, see P. 44 and P. 45.

• Positioning Pin (-J)

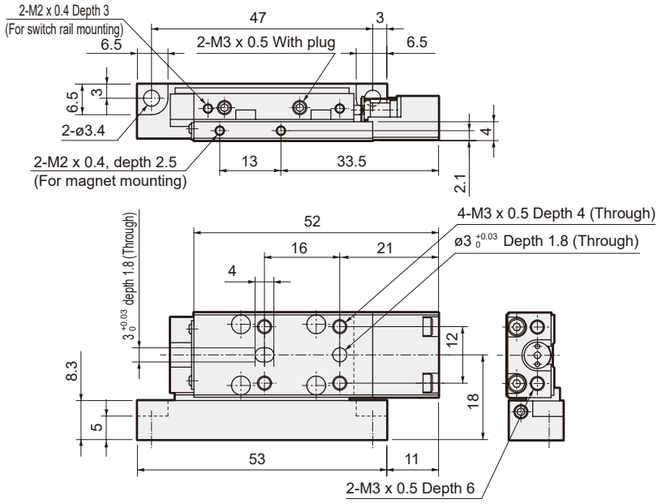


Outline dimension drawing (Bore size: ø4.5)

● LCM-A-4.5-L (Piping direction: Left side)

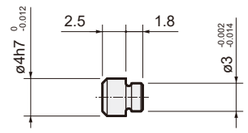


• With Buffer (-B)



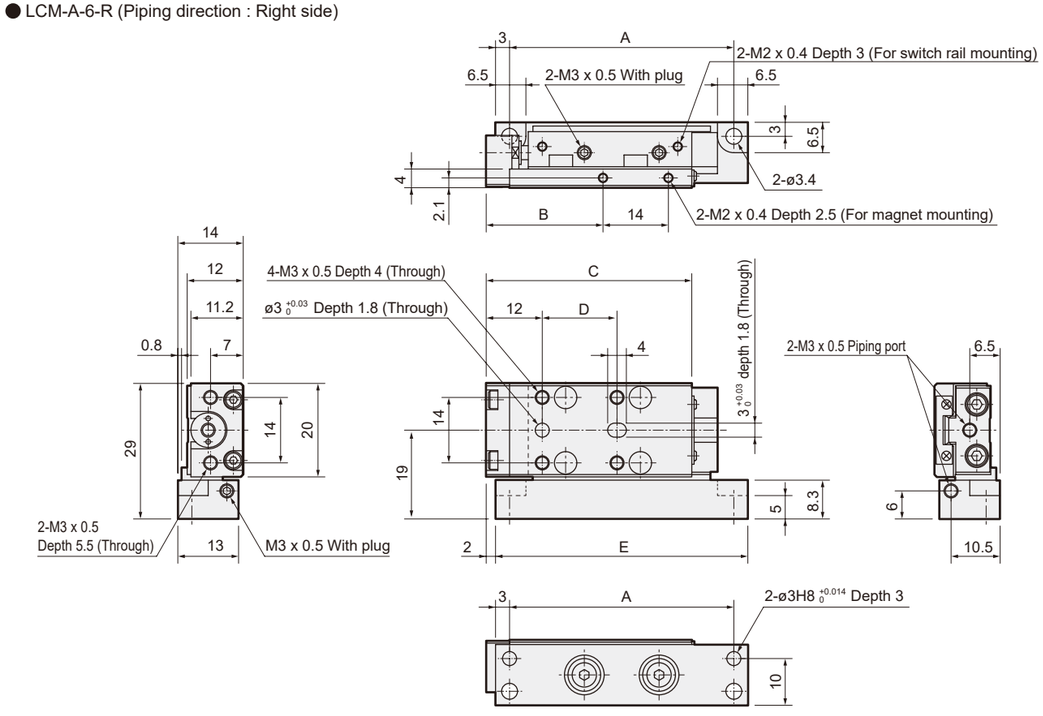
Note: For switch mounting position dimensions, see P. 44 and P. 45.

• Positioning Pin (-J)



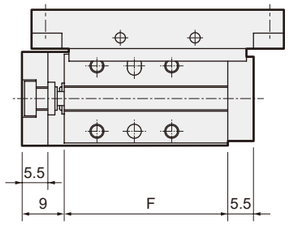
Outline dimension drawing (Bore size: ø6)

● LCM-A-6-R (Piping direction : Right side)

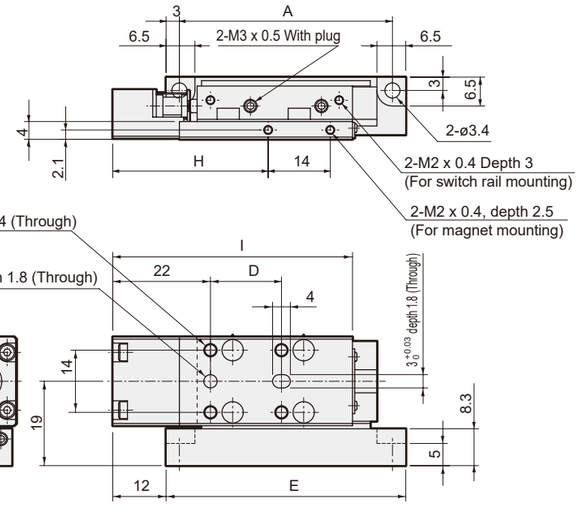


Stroke	A	B	C	D	E	F	G	H	I
5	48	25	44	16	54	35	35	35	54
10	48	25	44	16	54	35	35	35	54
15	53	30	49	21	59	40	40	40	59
20	58	35	54	26	64	45	45	45	64
30	68	45	64	36	74	55	55	55	74

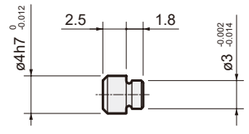
Note) For switch mounting position dimensions, see P. 44 and P. 45.



• With Buffer (-B)

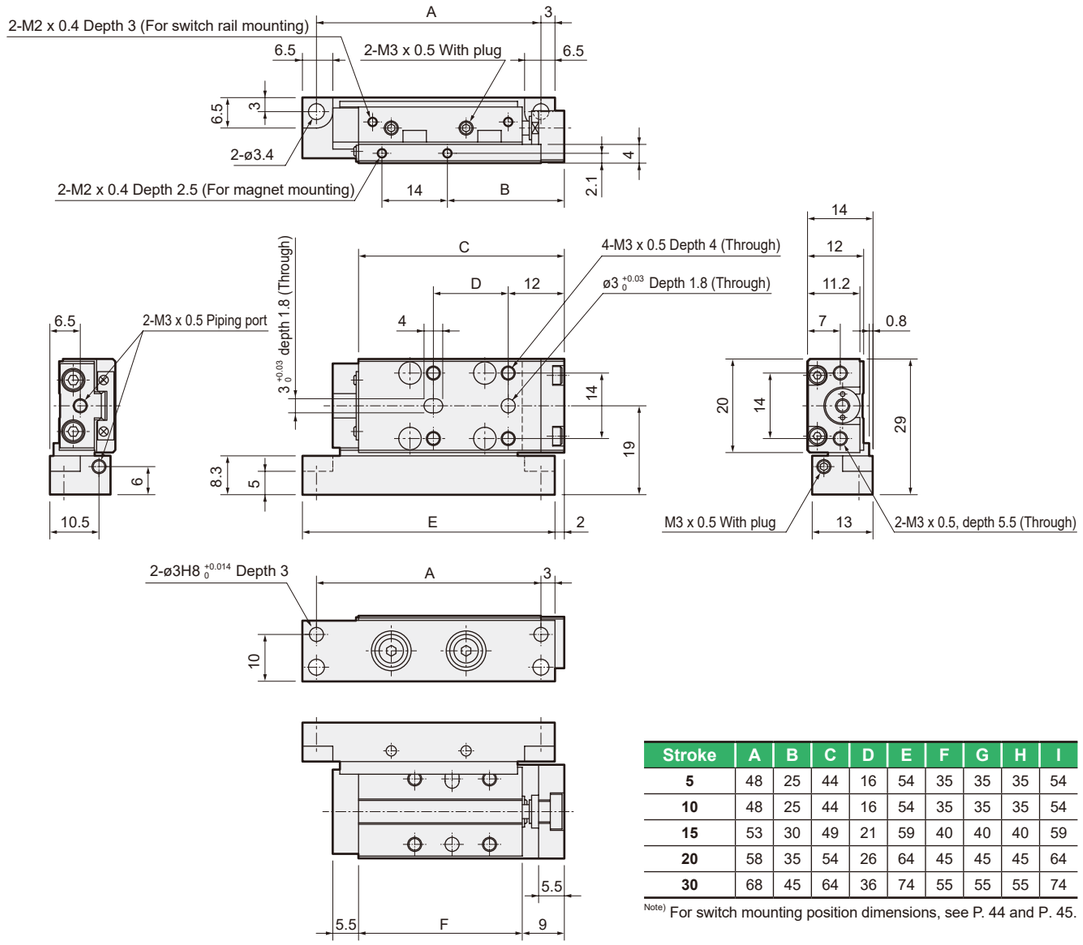


• Positioning Pin (-J)



Outline dimension drawing (Bore size: ø6)

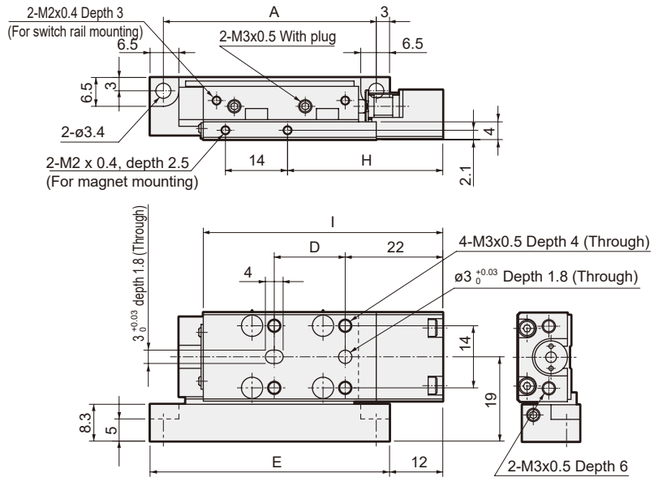
● LCM-A-6-L (Piping direction: Left side)



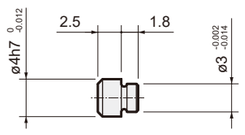
Stroke	A	B	C	D	E	F	G	H	I
5	48	25	44	16	54	35	35	35	54
10	48	25	44	16	54	35	35	35	54
15	53	30	49	21	59	40	40	40	59
20	58	35	54	26	64	45	45	45	64
30	68	45	64	36	74	55	55	55	74

Note) For switch mounting position dimensions, see P. 44 and P. 45.

• With Buffer (-B)

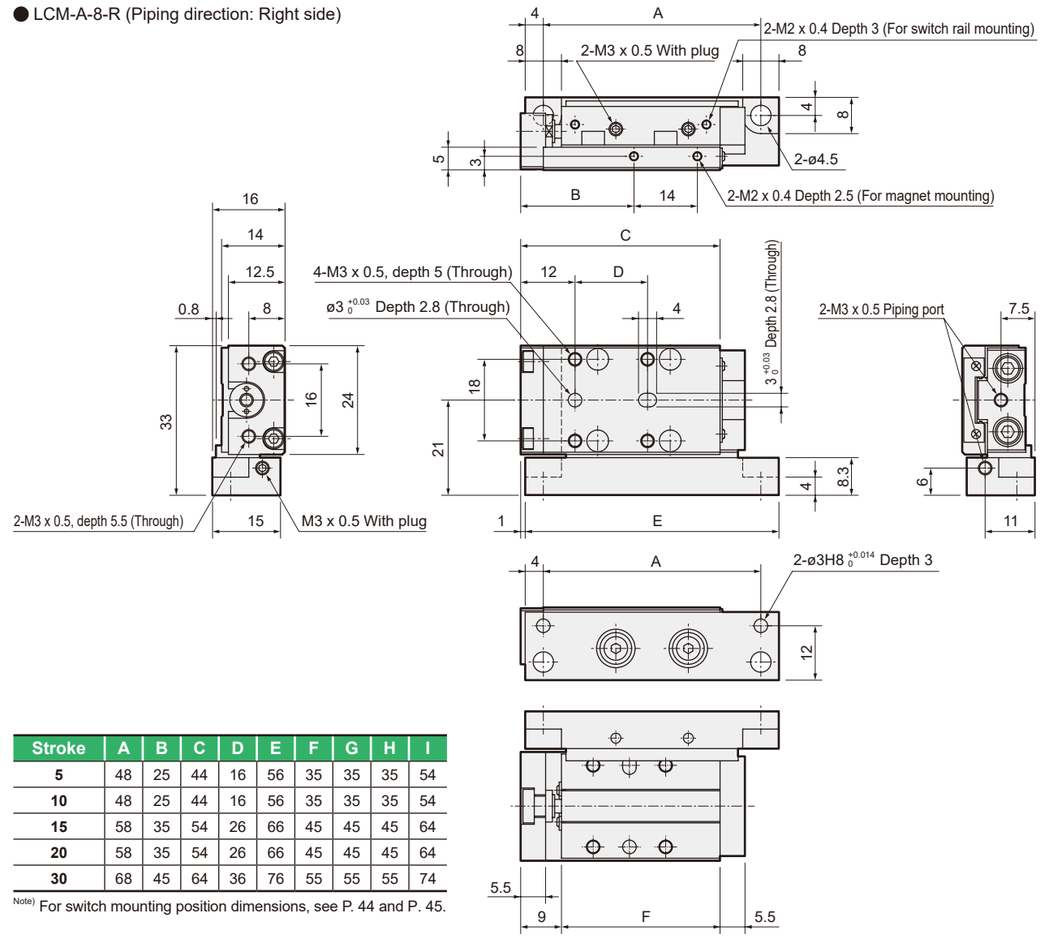


• Positioning Pin (-J)



Outline dimension drawing (Bore size: ø8)

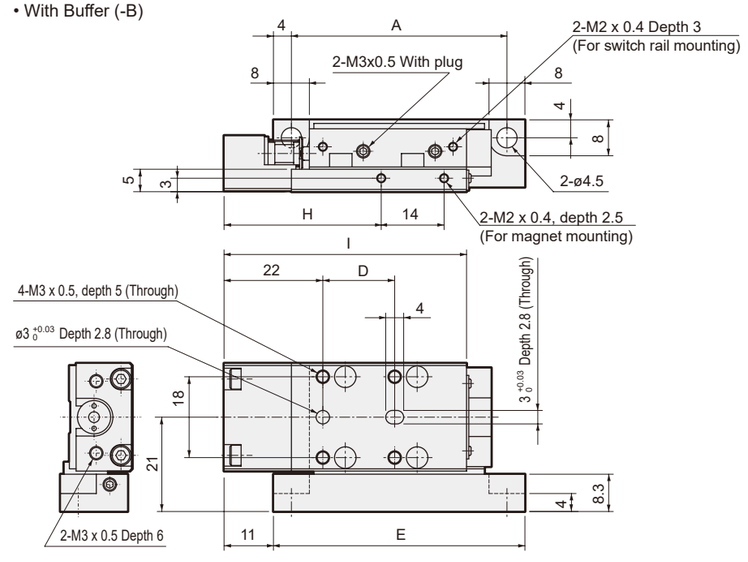
● LCM-A-8-R (Piping direction: Right side)



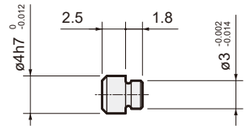
Stroke	A	B	C	D	E	F	G	H	I
5	48	25	44	16	56	35	35	35	54
10	48	25	44	16	56	35	35	35	54
15	58	35	54	26	66	45	45	45	64
20	58	35	54	26	66	45	45	45	64
30	68	45	64	36	76	55	55	55	74

Note) For switch mounting position dimensions, see P. 44 and P. 45.

• With Buffer (-B)

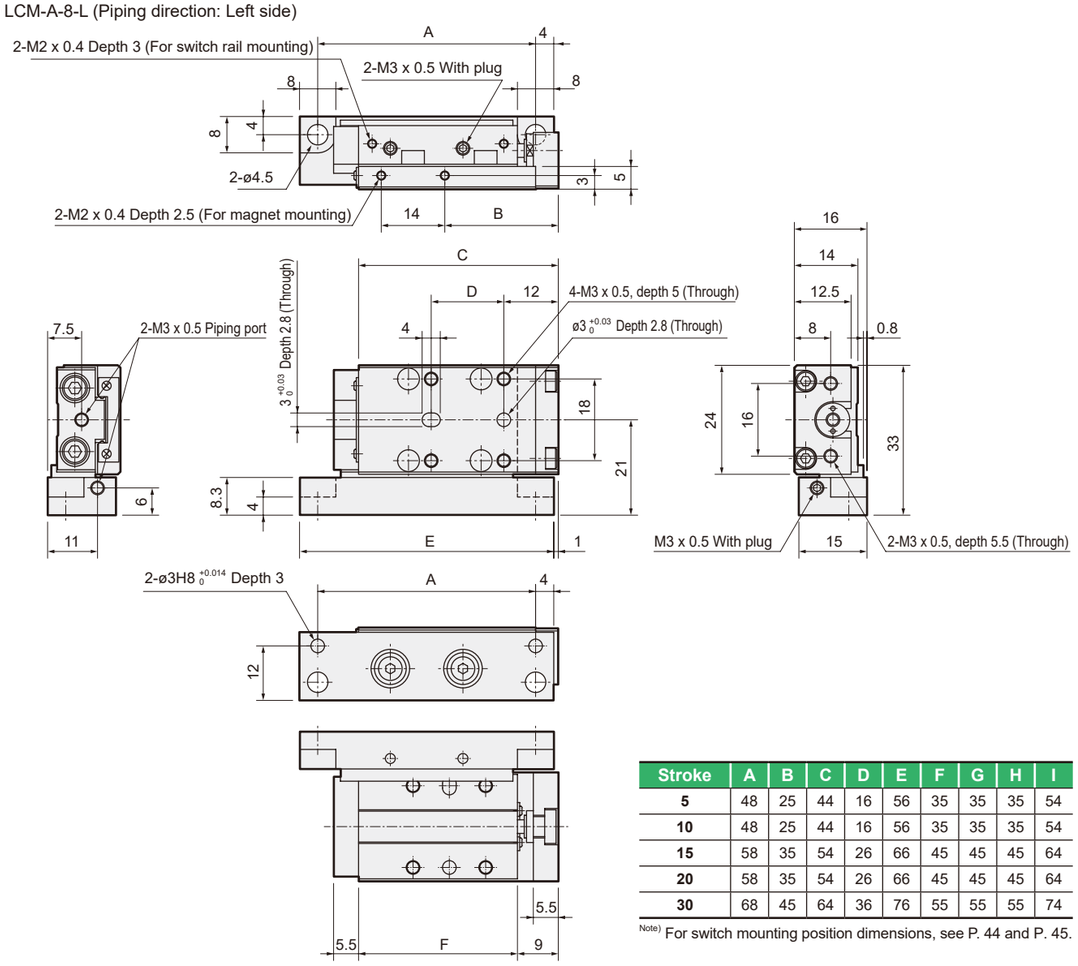


• Positioning Pin (-J)



Outline dimension drawing (Bore size: ø8)

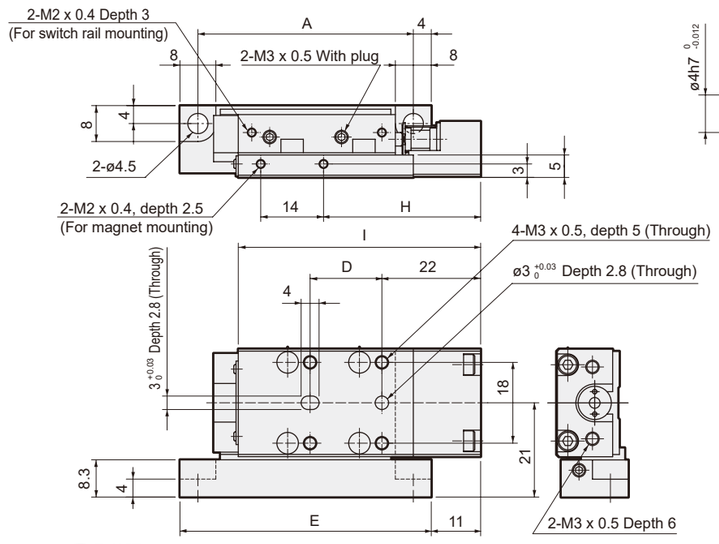
● LCM-A-8-L (Piping direction: Left side)



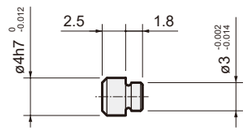
Stroke	A	B	C	D	E	F	G	H	I
5	48	25	44	16	56	35	35	35	54
10	48	25	44	16	56	35	35	35	54
15	58	35	54	26	66	45	45	45	64
20	58	35	54	26	66	45	45	45	64
30	68	45	64	36	76	55	55	55	74

Note) For switch mounting position dimensions, see P. 44 and P. 45.

• With Buffer (-B)

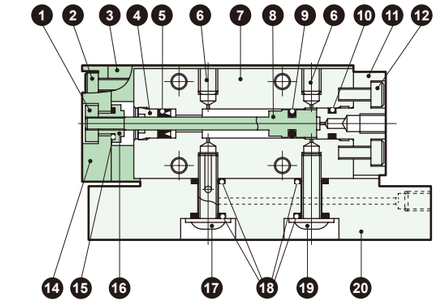


• Positioning Pin (-J)

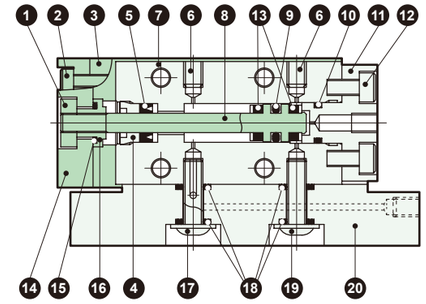


Internal Structure Diagram/Material

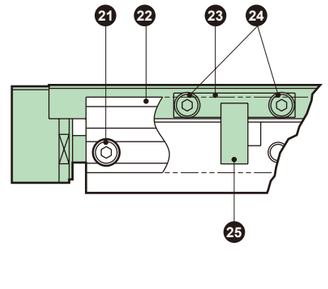
● LCM-A-4.5



● LCM-A-6,8



● LCM-A-4.5 to 8-F With magnet and switch rail



• Positioning Pin (-J)

Do not disassemble

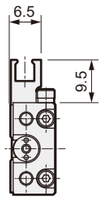
Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Floating bush A	Stainless Steel		14	End plate	Aluminum Alloy	
2	Hexagon Socket Head Cap Screw	Stainless Steel		15	O-ring	Nitrile rubber	
3	Slide table	Stainless Steel		16	Floating bush B	Stainless Steel	
4	Rod Cover	Polyacetal		17	Hexagon Socket Head Cap Screw	Stainless Steel	
5	Rod Packing	Nitrile Rubber		18	O-ring	Nitrile rubber	
6	Machine screw	Stainless Steel		19	Hexagon Socket Head Cap Screw	Stainless Steel	
7	Cylinder Body	Stainless Steel		20	Base	Aluminum Alloy	
8	Piston	Stainless Steel		21	Hexagon Socket Head Cap Screw	Stainless Steel	
9	Piston Packing	Nitrile Rubber		22	Switch Rail	Aluminum Alloy	
10	O-ring	Nitrile Rubber		23	Plate	Aluminum Alloy	
11	Head Cover	Aluminum Alloy	Alumite	24	Hexagon Socket Head Cap Screw	Stainless Steel	
12	Bolt	Stainless Steel		25	Magnet	Plastic	
13	Cushion Rubber	Urethane Rubber		26	Positioning pin	Steel	

LCM Series Outline Dimension Drawing with Switch

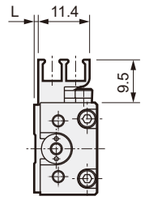
● F2H/V, F3H/V, F3PH/V, F2YH/V, F3YH/V

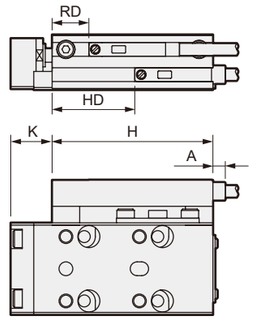
• Lead wire rear extraction

With 1 switch, For ø4.5



With 2 switches, For ø6, ø8



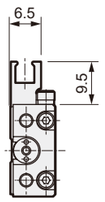


LCM,LCM-P,LCM-R,LCM-A										
Code / Bore Size (mm)	Stroke	H	K	L	F2,F3,F3P			F2Y,F3Y		
					A	RD	HD	A	RD	HD
ø4.5	5	34	8	0.1	2.7	12	17	7.2	12	17
	10	34				7	17		7	17
ø6	5	35	9	0.1		13	18		13	18
	10	35				8	18		8	18
	15	40				8	23		8	23
	20	45				8	28		8	28
	30	55				8	38		8	38
ø8	5	35	9	0.9		13	18		13	18
	10	35				8	18		8	18
	15	45				13	28		13	28
	20	45				8	28		8	28
	30	55				8	38		8	38

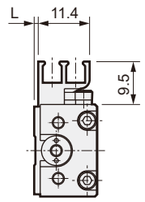
*1: The above diagram shows the case of piping direction R. In the case of piping direction H, the switch rail mounting position will be on the underside of the cylinder.
*2: For switch mountability, refer to the model No. display method for each variation.

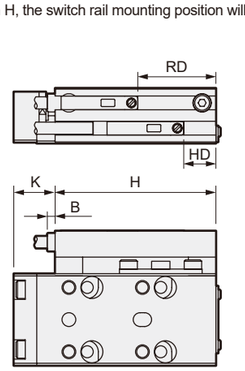
• Lead wire front extraction

With 1 switch, For ø4.5



With 2 switches, For ø6, ø8





LCM,LCM-P,LCM-R,LCM-A										
Code / Bore Size (mm)	Stroke	H	K	L	F2,F3,F3P			F2Y,F3Y		
					B	RD	HD	B	RD	HD
ø4.5	5	34	8	0.1	-	12	7	-	12	7
	10	34			1.7	17		6.2	17	
ø6	5	35	9	0.1	-	12		-	12	
	10	35			1.7	17		6.2	17	
	15	40				22			22	
	20	45				27			27	
	30	55				37			37	
ø8	5	35	9	0.9	-	12		-	12	
	10	35			1.7	17		6.2	17	
	15	45			-	22		-	22	
	20	45			1.7	27		6.2	27	
	30	55				37			37	

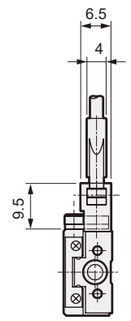
*1: The above diagram shows the case of piping direction R. In the case of piping direction H, the switch rail mounting position will be on the underside of the cylinder.
*2: For switch mountability, refer to the model No. display method for each variation.

LCM Series Outline Dimension Drawing with Switch

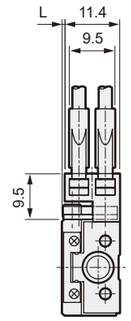
● F2S, F3S

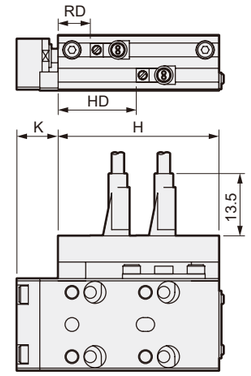
• Lead wire rear extraction

For ø4.5 (with 1 switch)



For ø4.5 (with 2 switches), ø6, ø8



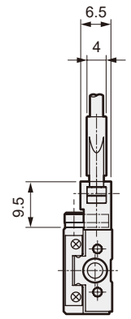


LCM,LCM-P,LCM-R,LCM-A						
Code / Bore Size (mm)	Stroke	H	K	L	F2S,F3S	
					RD	HD
ø4.5	5	34	8	0.1	11	16
	10	34			6	16
ø6	5	35	9	0.1	12	17
	10	35			7	17
	15	40			7	22
	20	45			7	27
	30	55			7	37
ø8	5	35	9	0.9	12	17
	10	35			7	17
	15	45			12	27
	20	45			7	27
	30	55			7	37

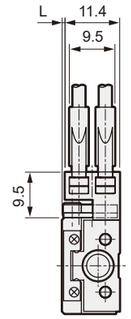
*1: The above diagram shows the case of piping direction R. In the case of piping direction H, the switch rail mounting position will be on the underside of the cylinder.
*2: For switch mountability, refer to the model No. display method for each variation.

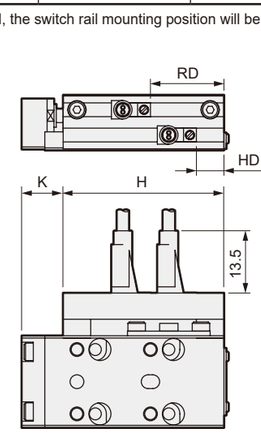
• Lead wire front extraction

For ø4.5 (with 1 switch)



For ø4.5 (with 2 switches), ø6, ø8





LCM,LCM-P,LCM-R,LCM-A						
Code / Bore Size (mm)	Stroke	H	K	L	F2S,F3S	
					RD	HD
ø4.5	5	34	8	0.1	11	6
	10	34			16	
ø6	5	35	9	0.1	11	
	10	35			16	
	15	40			21	
	20	45			26	
	30	55			36	
ø8	5	35	9	0.9	11	
	10	35			16	
	15	45			21	
	20	45			26	
	30	55			36	

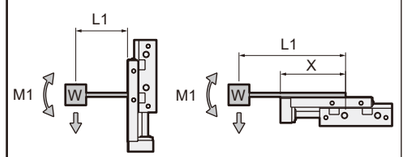
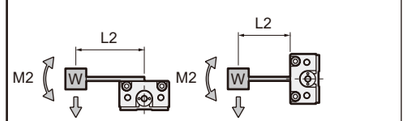
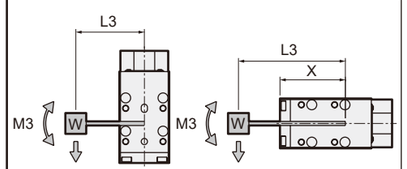
*1: The above diagram shows the case of piping direction R. In the case of piping direction H, the switch rail mounting position will be on the underside of the cylinder
*2: For switch mountability, refer to the model No. display method for each variation.

Model selection guide

STEP-1

Confirm that the load moment in each direction is below the allowable value throughout the entire stroke.

• Moment direction, Guide center position X

Direction	Diagram	Calculation formula
M1 Moment		M1=L1xW
M2 Moment		M2=L2xW
M3 Moment		M3=L3xW

• Allowable moment

N·m

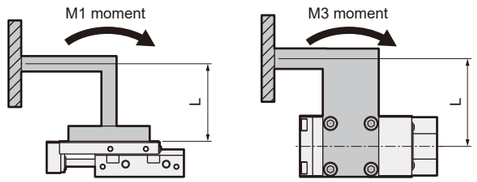
Model No.	M1	M2	M3
LCM-□-4.5	0.24	0.22	0.29
LCM-□-6	0.28	0.23	0.34
LCM-□-8	0.28	0.38	0.34

• Guide center position dimension

mm

Model No.	Stroke	X		
		Standard	With buffer	Clean Specs.
LCM-□-4.5	5	30	40	35
	10			
LCM-□-6	5	31.5	41.5	36.5
	10			
	15	36.5	46.5	41.5
	20	41.5	51.5	46.5
	30	51.5	61.5	56.5
LCM-□-8	5	31.5	41.5	36.5
	10			
	15	41.5	51.5	46.5
	20			
	30	51.5	61.5	56.5

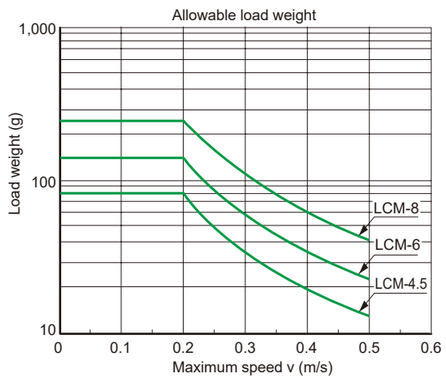
* If the workpiece is abutted at a point offset from the guide portion during the stroke, a large moment will be generated by the thrust, so be careful.



STEP-2

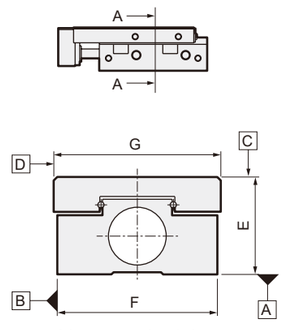
Confirm that the kinetic energy calculated from the cylinder load weight and piston speed is below the allowable absorbed energy.

Bore size	ø4.5	ø6	ø8
Allowable absorbed Energy J	$1.59x10^{-3}$	$2.83x10^{-3}$	$5.02x10^{-3}$



Technical Data

■ Slide Table Accuracy



AA cross-sectional view

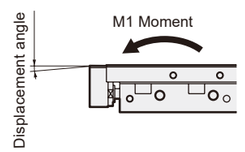
mm

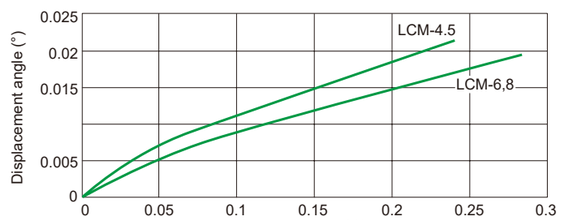
Item		LCM-□-4.5 to 8
Parallelism	C surface with respect to A surface	0.03
	D surface with respect to B surface	0.03
Running parallelism	C surface with respect to A surface	0.005 Note
	D surface with respect to B surface	0.005 Note
Dimensional tolerance of E		±0.05
Dimensional tolerance of F		±0.05
Dimensional tolerance of G		±0.05

Note) For LCM-6,8 with 30 strokes, it will be 0.006.

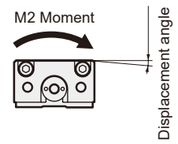
■ Displacement angle of slide table due to bending moment (reference value)

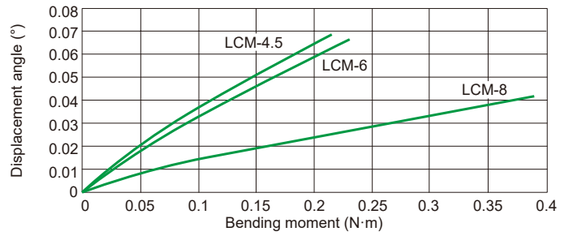
M1 Moment



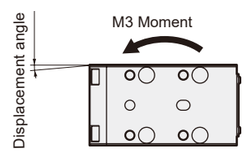


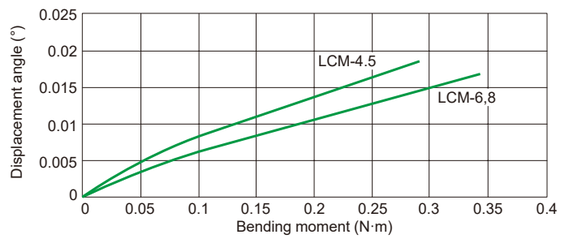
M2 Moment





M3 Moment





Pneumatic Equipment

To Use This Product Safely

Be sure to read this before use.

For general cylinder information, see Intro 41, and for cylinder switches, see P. 808.

Individual Precautions: Linear Slide Cylinder LCM Series

During Design / Selection

1. Common

Caution

■When selecting a cylinder, select according to the "LCM Selection Guide" on P. 46.

■If the cylinder is used in a place exposed to water droplets or oil droplets, a place where there is a risk of corrosion, or a place with a lot of dust, it may cause damage or malfunction, so protect the product with a cover, etc.

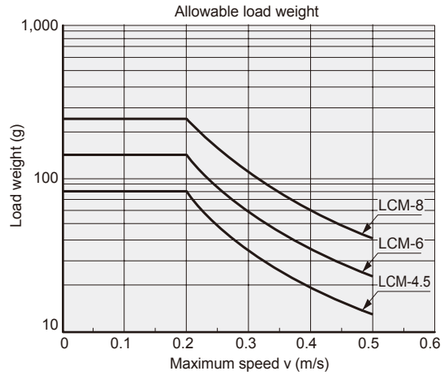
■The main body and slide table are made of stainless steel, but rust may occur depending on the environment. Apply an appropriate amount of anti-rust oil periodically.

■Be aware that the switch may malfunction in environments with surrounding magnetic fields. Also, since magnetic materials around the switch can cause malfunction, when attaching a magnetic workpiece to the slide table, ensure that it does not protrude beyond the table edge on the switch side.

■Be careful as bringing strong magnets, etc., close to this product may magnetize the product and cause the switch to malfunction.

■Use the cylinder below the allowable absorbed energy shown in the table below. If the kinetic energy exceeds this value, consider a separate shock absorber.

Bore size	ø4.5	ø6	ø8
Allowable Absorbed Energy J	1.59×10^{-3}	2.83×10^{-3}	5.02×10^{-3}



During Use

1. Common

Caution

■Apply CGL grease (manufactured by Nippon Thompson Co., Ltd.) to the track rail raceway surface every 6 months or 3 million operating cycles, whichever comes first.

■This cylinder is a non-disassembly type. Do not forcibly disassemble.

■When changing the piping port position, use adhesive for the M3 plug (hexagon socket head set screw). (Recommended adhesive: Loctite 222/221, ThreeBond 1344, or other low-strength adhesives) Also, the tightening amount of the plug should be at an intermediate position where the bolt does not protrude from the port surface and does not hit the bottom of the port hole.

■There are restrictions on usable piping fittings, so please refer to the table below.

Recommended fittings

Bore size	Recommended fitting
All bores	PG-S2-M3
	PG-S2-M3-S
	PG-L2-M3
	FTS4-M3
	FTL4-M3

Note) FTL4-M3 cannot be used for the dust collection port of ø4.5 clean specification. Refer to "For Air Fiber One-touch Fitting No.CC-784".

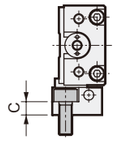
■Do not make dents, scratches, etc. that would impair the flatness of the main body mounting surface and slide table surface. Also, the flatness of the mating part to be included should be 0.02 mm or less. Poor flatness will adversely affect the accuracy of the guide part, increase rolling resistance, and shorten its lifespan.

■Use stepped pins (option) with a clearance fit for the positioning pin holes. Using press-fit dimension pins may damage the guide part due to the load during press-fitting, causing failure. Also, since the pin hole is a through hole, using pins other than stepped pins will cause the pin to interfere with the main body, leading to failure.

■The slide table and end plate are ball-supported, so when fixing a jig with bolts, be sure to hold the slide table and end plate while tightening. If tightened while holding the main body, excessive moment will be applied to the guide part, causing deterioration of the guide part accuracy.

■The bolt screw-in length and tightening torque when attaching jigs to the main body, slide table, and end plate should be the following values.

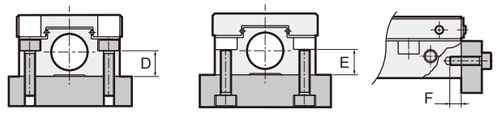
● Main body mounting (Side mounting)



Note Do not use washers, etc. The mounting bolt may hit the guide and cause damage.

Model No.	Bolt used	Max. tightening torque N·m	C mm
LCM-A-4.5	M3x0.5	1.14	5
LCM-A-6	M3x0.5	1.14	5
LCM-A-8	M4x0.7	2.7	4

● Main body mounting

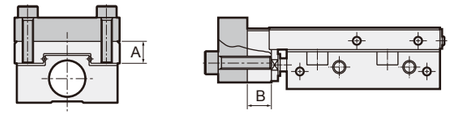


Model No.	Bolt used	Max. tightening torque N·m	D mm
LCM-□-4.5	M2x0.4	0.32	3.5
LCM-□-6	M2.5x0.45	0.65	5
LCM-□-8	M2.5x0.45	0.65	5.5

Model No.	Bolt used	Max. tightening torque N·m	E mm
LCM-□-4.5	M2.5x0.45	0.65	3.5
LCM-□-6	M3x0.5	1.14	5
LCM-□-8	M3x0.5	1.14	5.5

Model No.	Bolt used	Max. tightening torque N·m	Max. screw-in depth F mm
LCM-□-4.5	M2x0.4	0.32	2.5
LCM-□-6	M2.5x0.45	0.65	2.5
LCM-□-8	M3x0.5	1.14	3

● Jig mounting



Model No.	Bolt used	Max. tightening torque N·m	Max. screw-in depth A mm	Max. screw-in depth B mm
LCM-□-4.5	M3x0.5	0.63	4	4.5
LCM-□-6	M3x0.5	0.63	4	5.5
LCM-□-8	M3x0.5	0.63	5	5.5

Note) The length of the workpiece mounting bolt should be less than or equal to the maximum screw-in depth. If it is too long, it will hit the main body and cause damage.

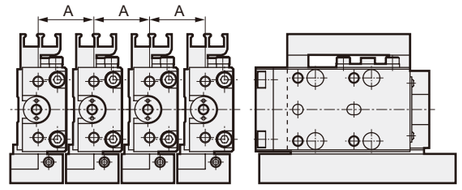
■This cylinder series allows for changes to with-switch models and switch mounting surfaces. The tightening torque for the bolts fixing the switch rail should be the following value. Note that the port on the switch mounting surface cannot be used, so install the plug before assembling the switch rail.

Model No.	Bolt used	Max. tightening torque N·m
LCM-□-4.5	M2x0.4	0.17
LCM-□-6	M2x0.4	0.17
LCM-□-8	M2x0.4	0.17

2. Side mount type

Caution

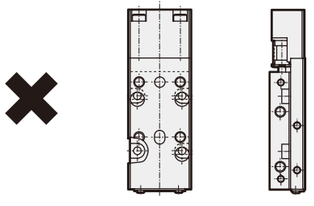
■When mounting side mount types side by side, ensure the mounting interval is greater than or equal to the values in the table below.



Model No.	A mm
LCM-A-4.5	12
LCM-A-6	14
LCM-A-8	16

3. With buffer

■Please note that models with buffers cannot be used in a vertically upward orientation.



For precautions regarding mounting, installation, adjustment, use, and maintenance, please see "Precautions for Use" in this catalog and the CKD Components Product website (https://www.ckd.co.jp/kiki/en/) → "Model No." → Instruction Manual.

With Linear Guide

LCR

Linear Slide Cylinder

ø6, ø8, ø12, ø16, ø20, ø25

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LCR Series

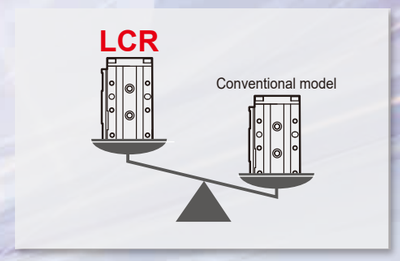
Ultimate lightness and higher rigidity

High-precision, high-rigidity linear guide mounted on double piston cylinder
Thorough weight reduction and symmetrical structure with high design freedom
Linear slide cylinder LCR series (ø6 to ø25) with abundant option variations

Thorough weight reduction has resulted in up to 10% less weight compared to conventional.

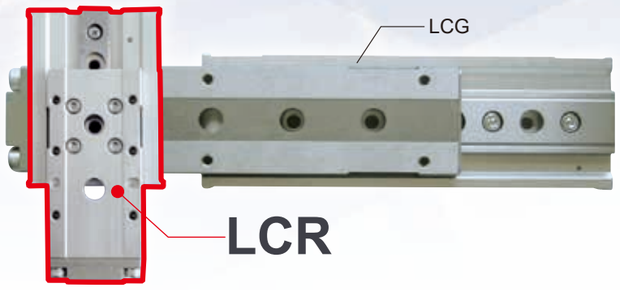
Compared to conventional

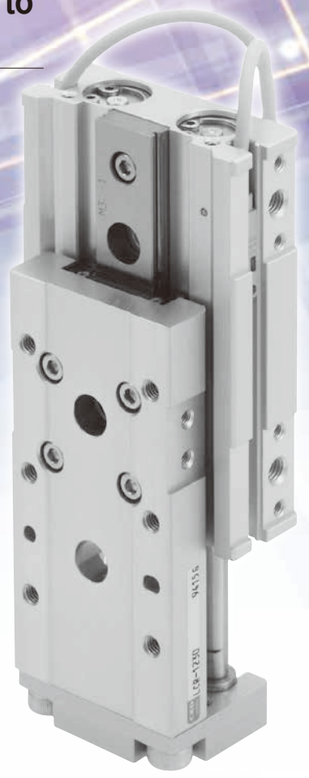
Up to **10% lighter!!**



Usage Example

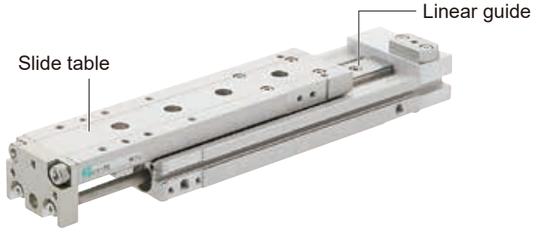
Ideal for Z-axis use.



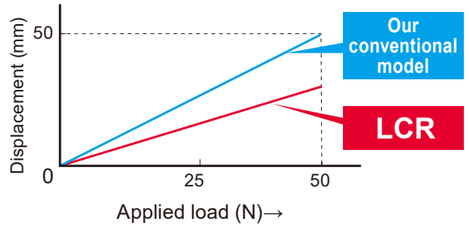


Lightening of moving parts is possible, contributing to equipment tact time improvement, miniaturization, and energy saving.

Rigidity has been improved from conventional models by increasing the rigidity of the linear guide and slide table!



Displacement at slide table end



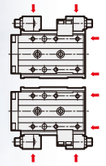
Symmetrical structure. Can be used in various situations.

High degree of design freedom

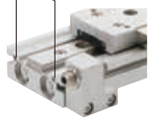
This product offers extremely high design freedom, including symmetrical stoppers, multi-surface piping, 2-surface mounting, and positioning holes.

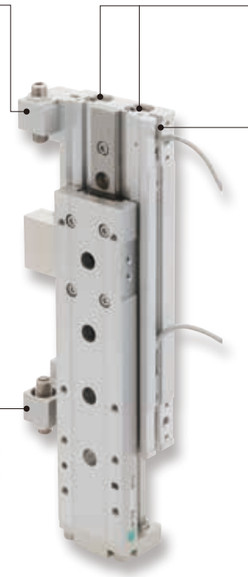
■ **Change to laterally symmetrical configuration is possible.**

Change to laterally symmetrical configuration is possible ← shows the piping direction.



■ **Standard rear piping port (except ø 6)**





Double piston structure adopted

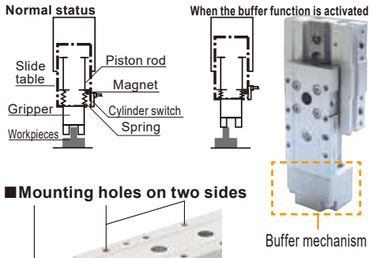
Double thrust due to double piston structure. Compact yet high output.

2-color switch selectable

Solid-state 2-color indicator switch is selectable. The switch does not protrude from the main body, resulting in a neat appearance.

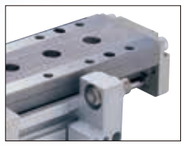
With buffer mechanism

This type protects the workpiece and cylinder by activating the shock absorbing mechanism even if the drive unit and workpiece collide when the cylinder advances. Used when a shock absorbing mechanism is required at the tip, such as in pick & place applications. Furthermore, a cylinder switch that detects buffer operation can be mounted (BL type) to detect abnormalities in lines, etc.



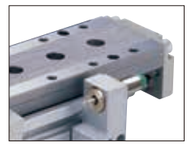
Abundant options and variations

Standard, drop prevention, and ultra-slow speed types are available. A wide range of options are available, including stroke adjustment stoppers and Shock absorber type stoppers.



■ Stroke adjustment stopper

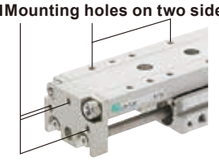
One-side adjustment range 0 to 5 mm



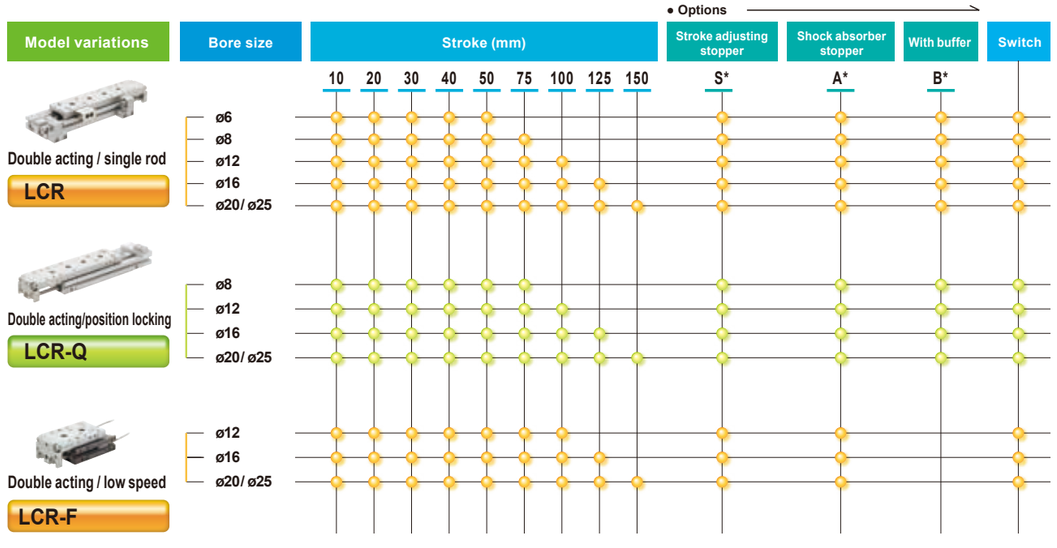
■ Shock absorber type stopper

Shock absorption at stroke end

■ **Mounting holes on two sides**



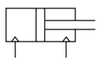
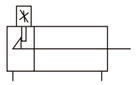
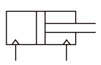
LCR Series Product Lineup



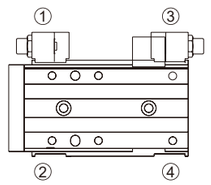
System Table

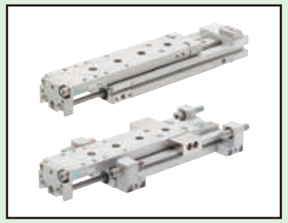
Linear Slide Cylinder LCR Series

● : Standard, ◎ : Option, ○ : (Custom order) : Not manufacturable

Variation	Model No. / Circuit Diagram Symbol	Bore size (mm)	Stroke (mm)									Option																								Switch	Page
												Stroke adjustment stopper						Shock absorber type stopper						Double-sided combination double stopper						Single-sided mixed stopper mix				With buffer			
												Stopper position ①	Stopper position ②	Stopper position ③	Stopper position ④	Stopper position ①③	Stopper position ②④	Stopper position ①	Stopper position ②	Stopper position ③	Stopper position ④	Stopper position ①③	Stopper position ②④	A1 + Metal stopper	A2 + Metal stopper	A3 + Metal stopper	A4 + Metal stopper	A5 + Metal stopper	A6 + Metal stopper	A1 + S3	A2 + S4	A3 + S1	A4 + S2	Without switch groove	With switch groove	Plug included		
			10	20	30	40	50	75	100	125	150	S1	S2	S3	S4	S5	S6	A1	A2	A3	A4	A5	A6	W1	W2	W3	W4	W5	W6	C1	C2	C3	C4	B	BL	N		
Double Acting/ Single Rod Type	LCR 	ø6	●	●	●	●	●					◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	◎	56
		ø8	●	●	●	●	●	●																														
		ø12	●	●	●	●	●	●	●																													
		ø16	●	●	●	●	●	●	●	●																												
		ø20, ø25	●	●	●	●	●	●	●	●	●																										
Double Acting/ Drop Prevention Type	LCR-Q 	ø8	●	●	●	●	●	●				◎	◎					◎	◎					○	○									○	○		◎	84
		ø12	●	●	●	●	●	●	●																													
		ø16	●	●	●	●	●	●	●	●																												
		ø20, ø25	●	●	●	●	●	●	●	●	●																										
Double Acting/ Ultra-low Speed Type	LCR-F 	ø12	●	●	●	●	●	●	●			◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○			◎	◎	104
		ø16	●	●	●	●	●	●	●	●																												
		ø20, ø25	●	●	●	●	●	●	●	●	●																										

● Stopper position

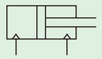




Linear Slide Cylinder Double Acting, Single Rod Type

LCR Series

● Bore size: ø6, ø8, ø12, ø16, ø20, ø25

Circuit Diagram Symbol 

RoHS

Model No. Notation Method

Without Switch (Built-in magnet for switch)

LCR - 8 - 40 ——— S506 DTBLN

Model No. ❶ ❷ ❺ ❻

With Switch (Built-in magnet for switch)

LCR - 12 - 40 - F2H - R - S506 DTBLN

Model No. ❷ Stroke ❹ Number of Switches ❻ Option

❶ Bore size ❸ Switch Model No. ❺ Stopper

❶ Bore Size (mm)

Code	Content
6	ø6
8	ø8
12	ø12
16	ø16
20	ø20
25	ø25

❷ Stroke (mm)

Stroke (mm)		Applicable Bore size					
		ø6	ø8	ø12	ø16	ø20	ø25
Standard Stroke	10	●	●	●	●	●	●
	20	●	●	●	●	●	●
	30	●	●	●	●	●	●
	40	●	●	●	●	●	●
	50	●	●	●	●	●	●
	75		●	●	●	●	●
	100			●	●	●	●
	125				●	●	●
	150					●	●

❸ Switch Model No.

For switch details, please refer to P. 753. Switches are included to the product and shipped

Contact	Indicator Lamp / Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20	-	F2S□	
		3-wire (NPN)	-	30 or less	-	50 or less	-	F3S□	*7
		2-wire	-	10 to 30	-	5 to 20 *2	F2H□	F2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3H□	F3V□	*8
		3-wire (PNP)	-	30 or less	-	50 or less	F3PH□	F3PV□	
	2-Color	2-wire	-	24±10%	-	5 to 20	F2YH□	F2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3YH□	F3YV□	
	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Water Resistance Improved	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	1-Color Flexible Lead Wire Type		-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator Lamp		110	5/12/24	20 or less	50 or less	T5H□	T5V□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder.
*4 : Switches other than the model Nos. listed above are also available. (Custom Product) For details, see P. 753.
*5 : ❶For Bore size ø16 to ø25, F type switch cannot be selected.
*6 : ❶For Bore size ø6 to ø12, T type switch cannot be selected.

*Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*7: For F type switch, 5 m cannot be selected.
*8: Only T2WLH and T2WLV can be selected.
Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❹ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

❺ Stopper

For details, see P. 58.

	Code	Content	
*2	Blank	No stopper	
	S Stroke adjustment stopper		*3, *4, *5
	S1□□	Stopper position ① (④ Changeable to)	Stopper mounting position
	S2□□	Stopper position ② (③ Changeable to)	
*11	S3□□	Stopper position ③ (② Changeable to)	
*11	S4□□	Stopper position ④ (① Changeable to)	
	S5□□	Stopper position ①, ③	
	S6□□	Stopper position ②, ④	
	A Shock absorber type stopper		*3, *4, *6, *7
	A1	Stopper position ① (④ Changeable to)	Stopper mounting position
	A2	Stopper position ② (③ Changeable to)	
*11	A3	Stopper position ③ (② Changeable to)	
*11	A4	Stopper position ④ (① Changeable to)	
	A5	Stopper position ①, ③	
	A6	Stopper position ②, ④	
	W Double-sided combination double stopper (Shock absorber type stopper, Metal stopper)		*6, *8, *9
	W1	A1 + Metal stopper	Stopper mounting position
	W2	A2 + Metal stopper	
	W3	A3 + Metal stopper	
	W4	A4 + Metal stopper	
	W5	A5 + Metal stopper	
	W6	A6 + Metal stopper	
	C Single-sided mixed stopper mix (Shock absorber type stopper, Stroke adjustment stopper)		*6
	C1□□	A1 + S3	Stopper mounting position
	C2□□	A2 + S4	
	C2□□	A3 + S1	
	C4□□	A4 + S2	

□□ part Stroke adjustment range ● Applicable to all. ▲ Applicable to some parts.*10:

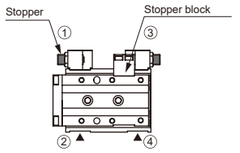
	Extension end side	Retraction end side	Stopper model No. S	A	W	C
Blank	5 mm or none	5 mm or none	●	–	–	●
02	15 mm or none	15 mm or none	●			●
03	25 mm or none	25 mm or none	●			●
04	15 mm	5 mm	▲			–
05	25 mm	5 mm	▲			–
06	5 mm	15 mm	▲			–
07	5 mm	25 mm	▲			–

❻ Option

	Code	Content	
	Stopper part port		*2, *5
	Blank	No port	
*1	D	Side and bottom ports available	
	Stopper block material		*2
	Blank	Steel	
	T	Steel (nitriding treatment)	
	With buffer		*3
	B	Without switch groove	
	BL	With switch groove	
	Plug included		
	Blank	None	
*4	N	Plug for side piping port included (ø8 to ø20)	

*1: For port positions, refer to the stopper outline drawing P. 78.
*2: Selectable only when stopper type is selected.
*3: Purchase the buffer part switch separately using the switch single item model No. indication method on P. 61.
*4: Select when using with rear piping.
*5: If the double-sided combination type (W) is selected, the stopper part port is standard, so option "D" cannot be selected.

● Stopper position



*1: For stopper positions ① to ④, refer to the diagram on the right.
*2: The standard port positions when there is no stopper are positions ① and ③ in the diagram on the right.
*3: For combinations of stroke adjustment stoppers, metal stoppers, and Shock absorber type stoppers, refer to ❺ Stopper "C□", "W□".
*4 : For ø6 to ø8 with a stroke of 30 or less and S□□□ or A□□□, if using 2 switches, select the F □H type switch.
*5 : The stroke adjustment stopper becomes metal touch at an operating pressure of 0.3 MPa or more.
*6 : For the stroke adjustment range when using a Shock absorber type, refer to the dimension table in the stopper outline drawing P. 78.
*7 : A1, A2, A5, and A6 for ø6 to ø8 with a stroke of 10 or less, and ø12 to ø25 with a stroke of 20 or less cannot be adjusted with standard stoppers, so they are custom-ordered products.
*8 : For ø6 (all strokes), ø8 (20 to 30 strokes), ø12 (30 to 50 strokes), ø16 (30 to 50 strokes), when W3 to W6 (double-sided combination stopper) is selected, and if 2 switches are included or used on the head side, please use the straight lead wire type.
*9 : When the double-sided combination type (W) is selected, the stroke adjustment range will be ø6: 9 mm, ø8: 13.5 mm, ø12: 14.5 mm, ø16: 15 mm, ø20: 13 mm, ø25: 10 mm.
*10 : Selectable only when using stroke adjustment stopper (S) and single-sided mixed type (C).
*11 : When changing the stopper position from the head side to the rod side, a separate stopper must be purchased, depending on the stroke and stroke adjustment amount. Please refer to "Precautions for Purchasing Stopper Separately" on P. 61, P. 62. Depending on the stroke, A1, A2, and adjustment amounts of 15 mm and 25 mm may not be possible.
*12 : For stopper combinations, refer to the combination availability table on P. 60.

Clean Specification

(Catalog No. CB-033SA)
● Dust prevention structure usable in cleanrooms

LCR - • • • • - P7□

Rechargeable Battery Compatible Specification

(Catalog No. CC-1226AA)
● Structure usable in rechargeable battery manufacturing processes

LCR - • • • • - P4□

*Please contact us for details.

High Durability Components HP Series

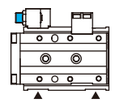
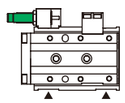
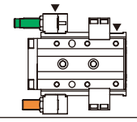
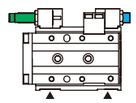
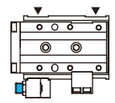
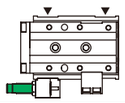
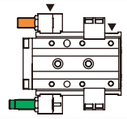
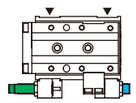
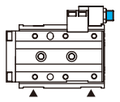
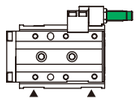
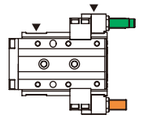
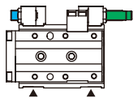
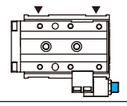
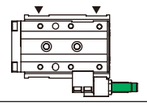
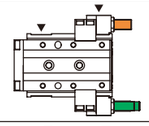
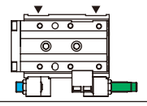
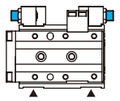
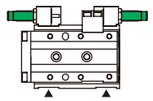
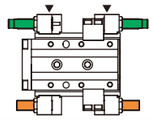
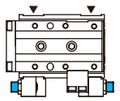
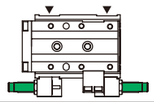
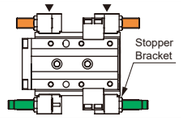
(Catalog No. CC-1421AA)
● Long-life actuator that contributes to productivity improvement with stable operation

LCR - • • • • - HP□

Stopper Model No. Selection Method

1 Stopper Combination Table

Model No. - [① Stopper type] [② Stopper position] [③] Example) LCR-8-40- [S] [5] 06

Stopper position [②]	Stopper type [①] Stroke adjustment type (single side) [S]	Shock absorber type (single side) [A]	Double-sided combination double stopper [W]	Single-sided mixed stopper mix [C]
[1]	[S1] 	[A1] 	[W1] 	[C1] 
[2]	[S2] 	[A2] 	[W2] 	[C2] 
[3]	[S3] 	[A3] 	[W3] 	[C3] 
[4]	[S4] 	[A4] 	[W4] 	[C4] 
[5]	[S5] 	[A5] 	[W5] 	
[6]	[S6] 	[A6] 	[W6]  Stopper Bracket	

▲ indicates the piping direction.
If the double-sided combination type [W] is selected, the stopper brackets on both sides will have piping, and the stopper bracket on the side opposite to the ▲ (piping direction) will have a plug.

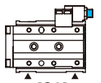
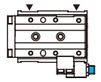
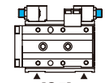
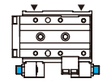
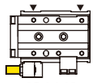
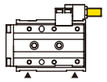
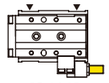
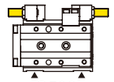
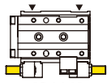
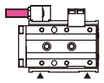
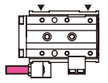
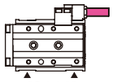
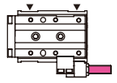
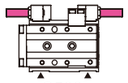
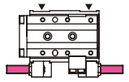
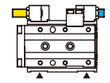
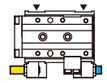
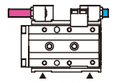
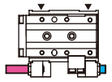
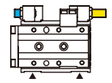
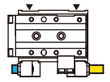
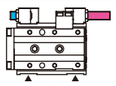
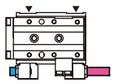
: Shock absorber type stopper
: Stroke adjustment stopper (adjustment range 5 mm)
: Metal stopper (adjustment range 15 mm)

Stopper Model No. Selection Method

2 Stopper Combination Table

Model No. - [① Stopper type] [② Stopper position] [③ Stroke adjustment range]
Example) LCR-8-40-S5 [06]
In case of stroke adjustment stopper -S

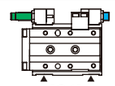
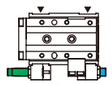
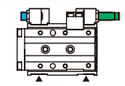
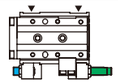
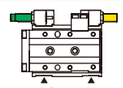
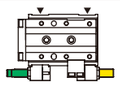
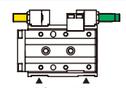
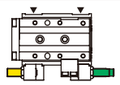
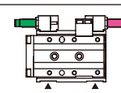
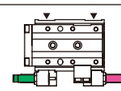
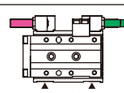
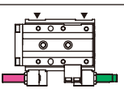
: Stroke adjustment stopper (adjustment range 5 mm)
: Stroke adjustment stopper (adjustment range 15 mm)
: Stroke adjustment stopper (adjustment range 25 mm)

Stroke adjustment range [③]	Stopper adjustment range: Extension end side	Stopper adjustment range: Retraction end side	[S1]	[S2]	[S3]	[S4]	[S5]	[S6]
Blank	5 mm or none	5 mm or none	[S1]	[S2]	[S3] 	[S4] 	[S5] 	[S6] 
[02]	15 mm or none	15 mm or none	[S102]	[S202] 	[S302] 	[S402] 	[S502] 	[S602] 
[03]	25 mm or none	25 mm or none	[S103] 	[S203] 	[S303] 	[S403] 	[S503] 	[S603] 
[04]	15 mm	5 mm					[S504] 	[S604] 
[05]	25 mm	5 mm					[S505] 	[S605] 
[06]	5 mm	15 mm					[S506] 	[S606] 
[07]	5 mm	25 mm					[S507] 	[S607] 

▲ indicates the piping direction.
Cannot be selected for Shock absorber type [A] or double-sided combination type [W].

In case of single-sided mixed stopper mix -C

: Shock absorber type stopper
: Stroke adjustment stopper (adjustment range 5 mm)
: Stroke adjustment stopper (adjustment range 15 mm)
: Stroke adjustment stopper (adjustment range 25 mm)

Stroke adjustment range [③]	Stopper adjustment range: Extension end side	Stopper adjustment range: Retraction end side	[C1]	[C2]	[C3]	[C4]
Blank	5 mm or Shock absorber	5 mm or Shock absorber	[C1] 	[C2] 	[C3] 	[C4] 
[02]	15 mm or Shock absorber	15 mm or Shock absorber	[C102] 	[C202] 	[C302] 	[C402] 
[03]	25 mm or Shock absorber	25 mm or Shock absorber	[C103] 	[C203] 	[C303] 	[C403] 

▲ indicates the piping direction.
For the stroke adjustment range of the Shock absorber type, refer to the dimension table in the stopper outline drawing P. 78.

LCR Double Acting, Single Rod Type Combination Availability Table

(Combination with stroke adjustment stopper, Shock absorber type stopper)

● : Not combinable - : Not combinable

Model No.	Stopper type		Stroke adjustment type																							
	Stopper code		S1			S2			S3			S4			S5							S6					
			-												Adjustment range											
	Bore size	Stroke	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	04	05	06	07	Blank	02	03	04	05	06	07
LCR	ø6, ø8	10	●	-	-	●	-	-	●	●	-	●	●	-	●	-	-	-	-	●	-	●	-	-	-	-	●	-
		20 or more	●	●	-	●	●	-	●	●	-	●	●	-	●	●	-	●	-	●	-	●	●	-	●	-	●	-
	ø12 to ø25	10	●	-	-	●	-	-	●	●	-	●	●	-	●	-	-	-	-	●	-	●	-	-	-	-	●	-
		20	●	●	-	●	●	-	●	●	●	●	●	●	●	●	-	●	-	●	●	●	●	-	●	-	●	●
		30 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
LCR-B, BL	ø6, ø8	10	●	-	-	●	-	-	●	●	-	●	●	-	●	-	-	-	-	●	-	●	-	-	-	-	●	-
		20 or more	●	-	-	●	-	-	●	●	-	●	●	-	●	-	-	-	-	●	-	●	-	-	-	-	●	-
	ø12 to ø25	10	●	-	-	●	-	-	●	●	-	●	●	-	●	-	-	-	-	●	-	●	-	-	-	-	●	-
		20	●	●	-	●	●	-	●	●	●	●	●	●	●	●	-	●	-	●	●	●	●	-	●	-	●	●
		30 or more	●	●	-	●	●	-	●	●	●	●	●	●	●	●	-	●	-	●	●	●	●	-	●	-	●	●

Model No.	Stopper type		Shock absorber type						Double-sided combination double stopper						Single-sided mixed stopper mix											
	Stopper code		A1	A2	A3	A4	A5	A6	W1	W2	W3	W4	W5	W6	C1			C2			C3			C4		
															Adjustment range											
	Bore size	Stroke													Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03
LCR	ø6, ø8	10	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	-	-	●	-	-
		20 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	●	●	-	●	●	-	●	●	-
	ø12 to ø25	10	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	-	-	●	-	-
		20	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	●	-	●	●	-
		30 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
LCR-B, BL	ø6, ø8	10	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	-	-	●	-	-
		20 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	●	●	-	●	-	-	●	-	-
	ø12 to ø25	10	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	-	-	●	-	-
		20	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	●	-	●	●	-
		30 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	●	●	-

Option code D: Stopper part port Please refer to the combination table above to determine if a steel stopper block (nitrided) can be selected. (● : Selectable - : Not selectable)

Switch Single Unit Model No. Notation Method

● For buffer

SW - F2H

❸ Switch model No. (P. 56 Section ③)

SW - F 2 V 3

❼ Output format ❽ Lead wire length

L-shaped lead wire type

❼ Output format

Code	Content
2	DC 2-wire solid-state
3	DC 3-wire solid-state

❽ Lead wire length

Code	Content
Blank	1 m (Standard)
3	3 m (Option)

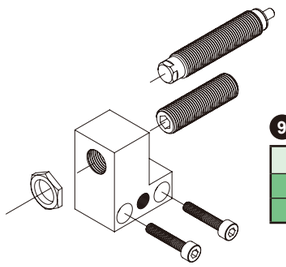
Stopper Set Model No. Notation Method

● Set of stopper part and stroke adjustment stopper or Shock absorber type stopper
● Used when changing from standard to with stroke adjustment stopper or with Shock absorber type stopper

LCR - 12 - S 2 D - S02

❶ Bore size ❿ Stopper mounting position ⓬ Stroke adjustment amount

❾ Stopper type ⓫ Stopper part port



❾ Stopper type

Code	Content
S	Stroke adjustment stopper
A	Shock absorber type stopper

❿ Stopper mounting position

Code	Content
1	Stopper position ① or For ④
2	Stopper position ② or For ③

*1: When mounting at stopper mounting positions ① and ② , the relationship of the stroke adjustment amount changes depending on the stroke, so refer to the table below.

⓫ Stopper part port

Code	Content
Blank	No port
D	Side/bottom ports available

Note) The bottom port is sealed with a plug. When using the bottom port with ø20 or ø25, purchase a plug kit (LCR-20-N, 2 pcs/set) and seal the side port before use.

⓬ Stroke adjustment amount

Code	Content
Blank	Stroke adjustment range 5 mm
S02	Stroke adjustment range 15 mm
S03	Stroke adjustment range 25 mm

*1: "S03" cannot be selected for ø6 and ø8.
*2: ❾ Cannot be selected in the case of Shock absorber type stopper "A".

Precautions when purchasing a stopper set

Only when mounting at mounting positions ① and ② (see P. 57), please note that the stroke adjustment amount will be as shown on the right depending on the stroke.

- : Not compatible

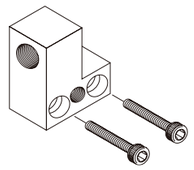
Model No. code	Option code		Stroke adjustment stopper		
			Stroke adjustment amount (mm)		
	Bore size	Stroke	-5	-15	-25
LCR Series	ø6, ø8	10	S02	-	-
		20 or more	Blank	S02	-
	ø12 to ø25	10	S03	-	-
		20	S02	S03	-
		30 or more	Blank	S02	S03

● Stopper set weight (Unit : g)

Stopper type	S1, S2			A1, A2
Stopper part port	No code, D			
Stroke adjustment amount / Bore size	Blank	S02	S03	Blank
ø6	15	18	-	18
ø8	21	25	-	27
ø12	28	31	34	33
ø16	42	47	52	49
ø20	77	85	92	86
ø25	87	94	101	95

Stopper Bracket Single Item Model No. Notation Method

● Used when changing stopper mounting position from (① or ④) to (② or ③), or when changing to a stopper with port.



LCR - 12 - STB 1 D

❶ Bore size
⓮ Stopper part port
⓭ Stopper mounting position

● Stopper bracket weight (Unit : g)

Stopper mounting position	1,2
Stopper part port / Bore size	Blank, D
ø6	8
ø8	14
ø12	20
ø16	29
ø20	53
ø25	62

⓭ Stopper mounting position

Code	Content
1	Stopper position ① or ④ for
2	Stopper position ② or ③ for

⓮ Stopper part port

Code	Content
Blank	No port
D	Side/Bottom ports available

Note) The bottom port is sealed with a plug. When using the bottom port with ø20 or 25, purchase a plug kit (LCR-20-N, 2 pcs/set) and seal the side port before use.

Stroke Adjustment Stopper Single Item Model No. Notation Method

● Hexagon socket set screw with urethane
● Used when changing stroke adjustment range or setting intermediate stroke

LCR - 12 - S02

❶ Bore size
⓯ Stroke Adjustment range

⓯ Stroke adjustment range

Code	Content
S01	One side 5 mm (Standard)
S02	One side 15 mm
S03	One side 25 mm

Note) "S03" cannot be selected for ø6 and ø8. Some model Nos. may not be compatible or the stroke adjustment range may differ from the above.

Precautions when purchasing stopper single items

Only when mounting at mounting positions ① and ② (see P. 57), please note that the combination will be as shown on the right depending on the stroke and stroke adjustment amount.

- : Not combinable

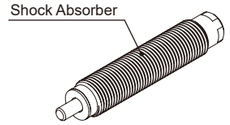
Model No. code	Option code		Stopper for Stroke Adjustment, Single Unit		
			Stroke adjustment amount (mm)		
	Bore size	Stroke	-5	-15	-25
LCR Series -S1, S2, S5, S6	ø6, ø8	10	S02	-	-
		20 or more	S01	S02	-
	ø12 to ø25	10	S03	-	-
		20	S02	S03	-
		30 or more	S01	S02	S03

● Stopper for Stroke Adjustment, Single Unit Weight (Unit : g)

Stroke adjustment range / Bore size	S01	S02	S03
ø6	6	9	-
ø8	7	10	-
ø12	7	11	14
ø16	11	16	22
ø20	22	30	37
ø25	23	30	37

Shock absorber Type Stopper Single Item Model No. Notation Method

● Shock absorber set
● Used when changing from stroke adjustment stopper to Shock absorber type stopper



LCR - 12 - A01

❶ Bore size

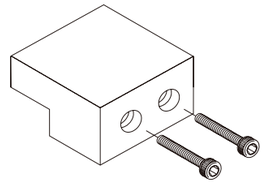
Note) **Some model Nos. may not be compatible, see P. 56. For the stroke adjustment range of the Shock absorber type stopper, see P. 78.**

Shock absorber model No. used

Model	Shock absorber model No.	Weight (g)
LCR-6	SKL-0804	9
LCR-8	SKL-0805	12
LCR-12	SKL-0805	12
LCR-16	SKL-1006	19
LCR-20	SKL-1208	31
LCR-25	SKL-1208	31

Stopper Block Single Item Model No. Indication

● Used when changing from standard to with stroke adjustment stopper or with Shock absorber type stopper



LCR - 12 - SB1 T

❶ Bore size
⓰ Stopper block
⓱ Material

⓰ Stopper block

Code	Content
SB1	ø6, ø8 : For 30 strokes or less
	ø12 to ø25 : For 50 strokes or less
SB2	ø6, ø8 : For 40 strokes or more
	ø12 to ø25 : For 75 strokes or more

⓱ Material

Code	Content
Blank	Steel
T	Steel (nitriding treatment)

● Stopper block single item weight (Unit : g)

Block type / Bore size	SB1 (T)	SB2 (T)
ø6	11	21
ø8	14	24
ø12	23	37
ø16	38	72
ø20	60	99
ø25	112	206

Side Piping Port Plug Kit Model No. Indication

LCR - 12 - N (2 pcs/1 set)

❶ Bore size

● Plug kit weight for side piping port

Bore size	Weight (g)
ø8	1
ø12	1
ø16	1
ø20	5

Specifications

Item		LCR					
Bore size mm		ø6	ø8	ø12	ø16	ø20	ø25
Actuation method		Double Acting Type					
Operating Fluid		Compressed Air					
Max. Working Pressure MPa		0.7					
Min. Operating Pressure MPa		0.15 (*1)					
Proof Pressure MPa		1.05					
Ambient Temperature °C		-10 to 60 (however, no freezing)					
Port Size	Main body side	M3	M5			Rc1/8	
	Main body rear	-	M3			M5	Rc1/8
Stroke tolerance mm		+2.0 0 (*2)					
Operating Piston Speed mm/s		50 to 500 (*3)					
Cushion		With Rubber Cushion					
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)					
Allowable Absorbed Energy J		Refer to Table 3 on P. 114.					

*1: When using ø6 Shock absorber type stopper, it will be 0.2MPa.
*2: When used without a stopper, please note that there is a slight gap between the end plate and the floating bush.
*3: When using a stroke adjustment stopper, use at 50 to 200 mm/s.
*4 : The stroke adjustment stopper becomes metal touch at an operating pressure of 0.3 MPa or more.

Stroke

Bore Size (mm)	Standard Stroke (mm)
ø6	10, 20, 30, 40, 50
ø8	10, 20, 30, 40, 50, 75
ø12	10, 20, 30, 40, 50, 75, 100
ø16	10, 20, 30, 40, 50, 75, 100, 125
ø20	10, 20, 30, 40, 50, 75, 100, 125, 150
ø25	10, 20, 30, 40, 50, 75, 100, 125, 150

Note : Strokes other than the above cannot be manufactured.

With buffer specification Specifications other than the following are the same as the common specifications below.

Item		Content					
Bore size mm		ø6	ø8	ø12	ø16	ø20	ø25
Buffer Stroke mm		4		9		10	
Buffer part	At SET N	3	5	10	13	17	21
Spring Load	During operation N	7	8	14	20	25	29

*1: If rod side stroke adjustment is performed with a buffer, the buffer stroke will be shortened by the stroke adjustment amount, and the spring load at set will also increase.
*2: Use a buffer stroke less than the stroke above. This will cause malfunction or damage.

Theoretical Thrust Table

See P. 115.

Cylinder Weight

● Basic type (Unit : g)

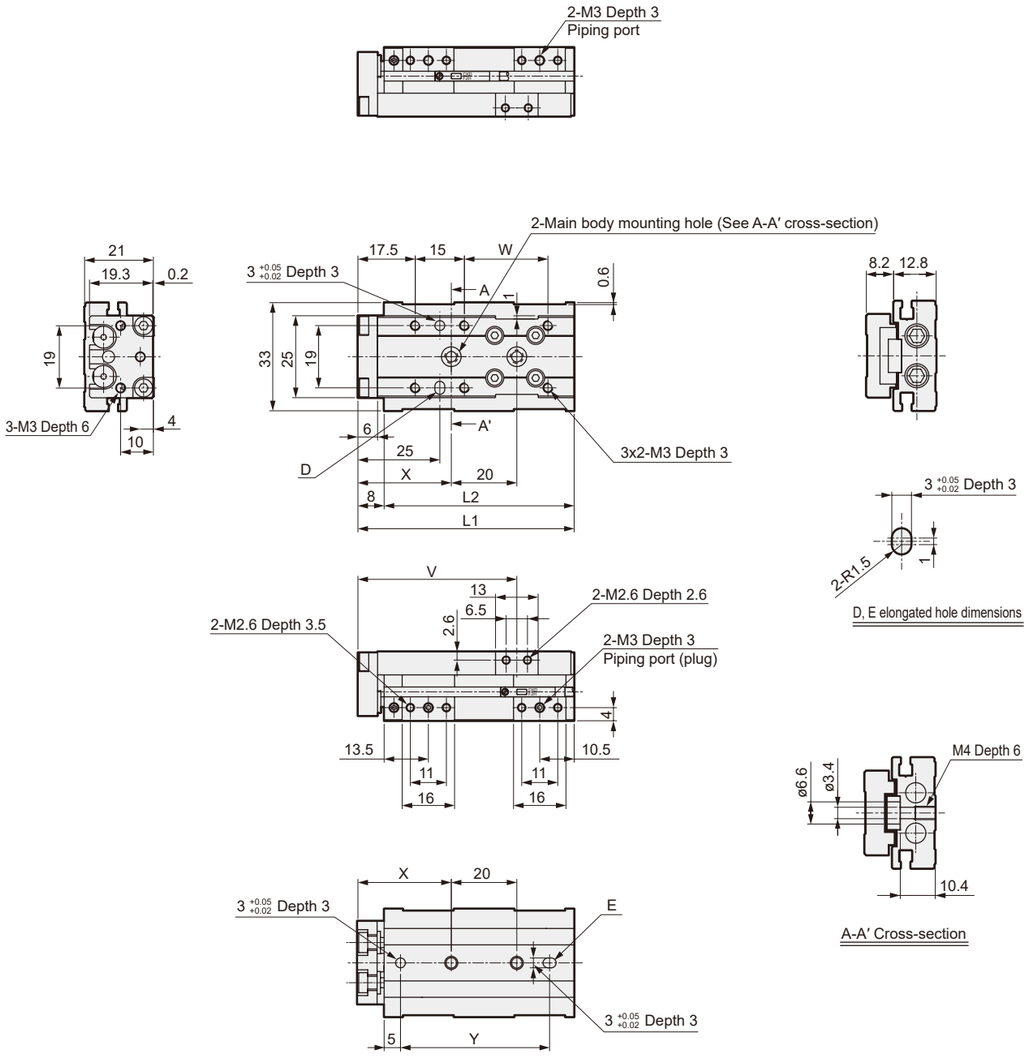
Bore size (mm)	Stroke (mm)								
	10	20	30	40	50	75	100	125	150
ø6	110	110	130	160	180	-	-	-	-
ø8	160	160	180	230	260	320	-	-	-
ø12	310	320	320	360	390	520	610	-	-
ø16	490	500	500	550	610	840	970	1,110	-
ø20	900	910	920	1,000	1,090	1,390	1,600	1,810	2,020
ø25	1,620	1,640	1,650	1,760	1,860	2,350	2,620	2,890	3,160

● Option increase (Unit : g)

Bore size (mm)	Stopper code				With buffer
	S1 to S4	S5, S6	A1 to A4	A5, A6	B, BL
ø6	30	40	40	50	40
ø8	40	60	50	70	40
ø12	70	100	80	110	70
ø16	110	150	120	160	80
ø20	170	250	180	270	150
ø25	290	380	300	400	320

Outline dimension drawing (Bore size: ø6)

● LCR-6
Stroke: 10, 20, 30
(The main body mounting holes in this figure show the case of stroke 20)



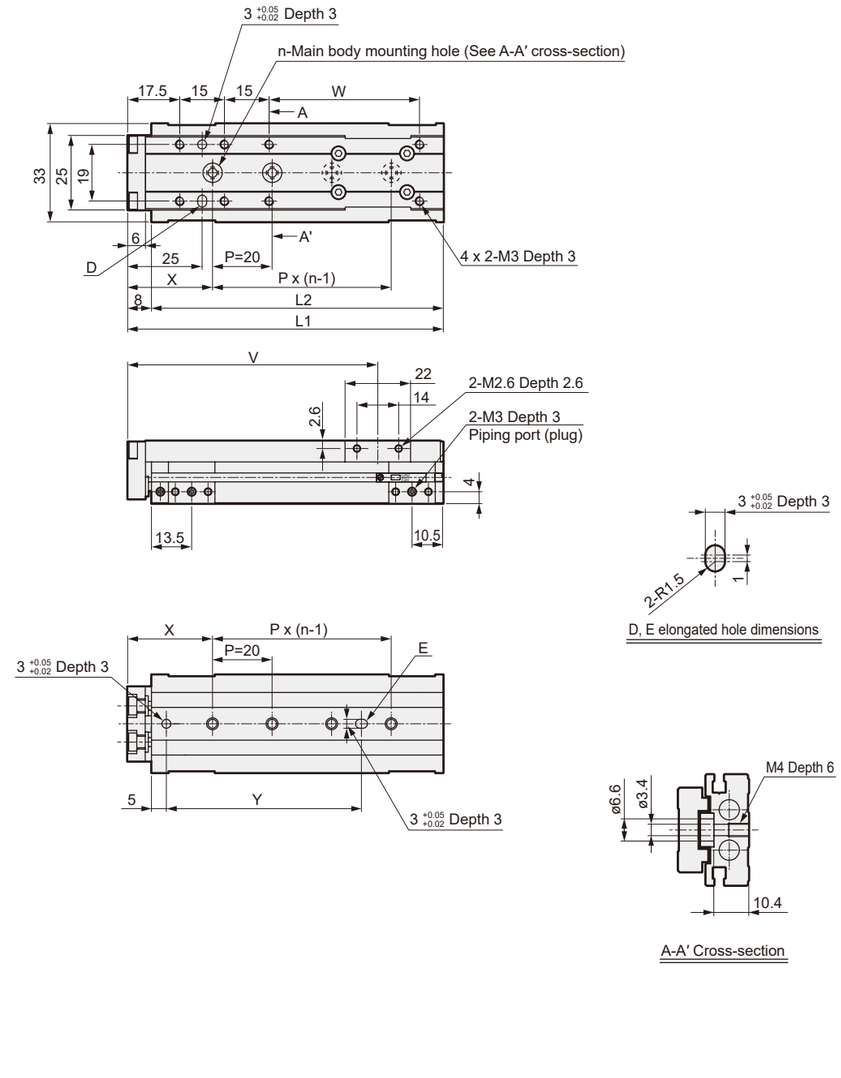
Dimension table by stroke

Code	Stroke		
	10	20	30
L1	66		76
L2	58		68
V	48.5		58.5
W	25.5		35.5
X	28.5		26
Y	45.5		43

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: ø6)

● LCR-6
Stroke: 40, 50
(The main body mounting holes in this figure show the case of stroke 50)



Dimension table by stroke

Code	Stroke	
	40	50
L1	96	106
L2	88	98
n	3	4
V	74	84
W	40.5	50.5
X	27	28.5
Y	44	65.5

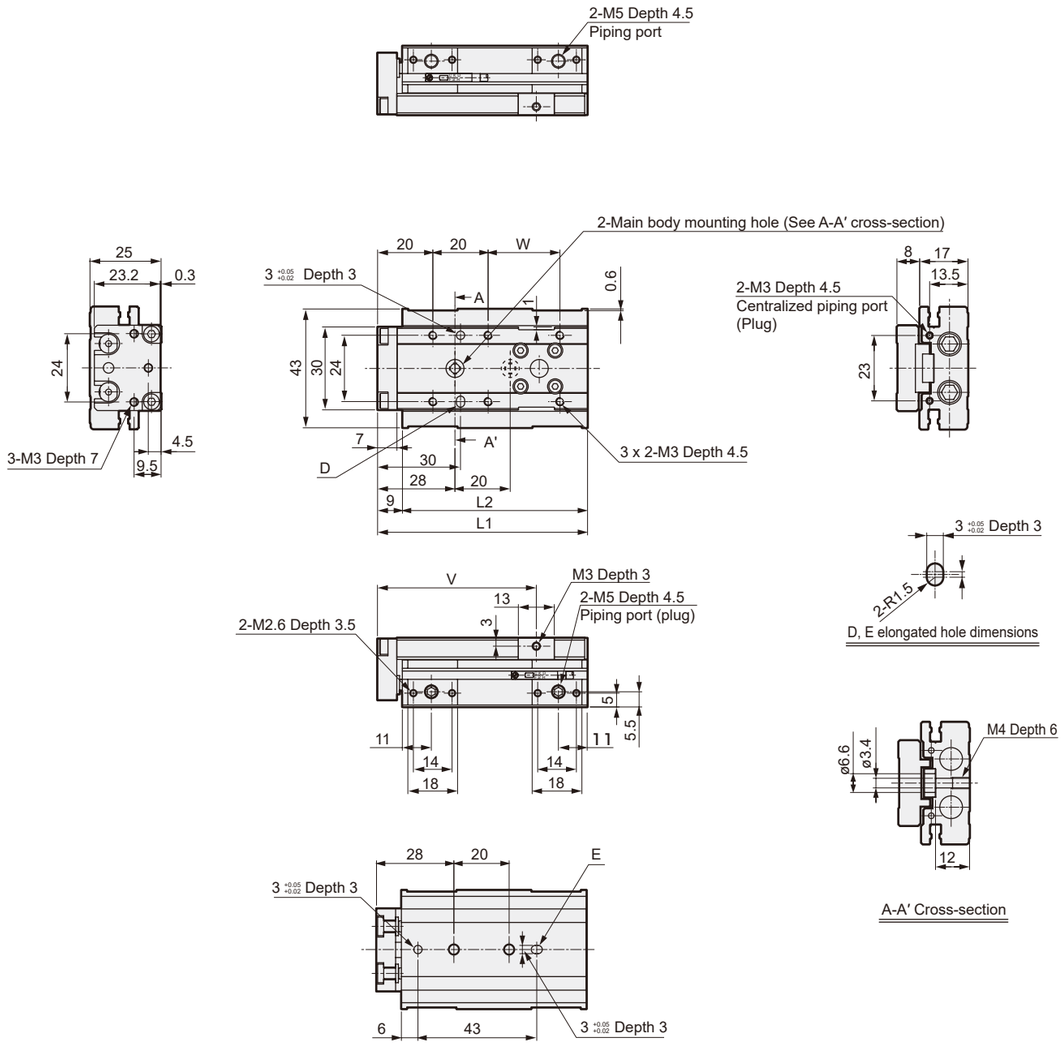
*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: ø8)

● LCR-8

Stroke: 10, 20, 30

(The main body mounting holes in this figure show the case of stroke 30)



Dimension table by stroke

Code	Stroke		
	10	20	30
L1	66		76
L2	57		67
V	47.5		57.5
W	16		26

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.

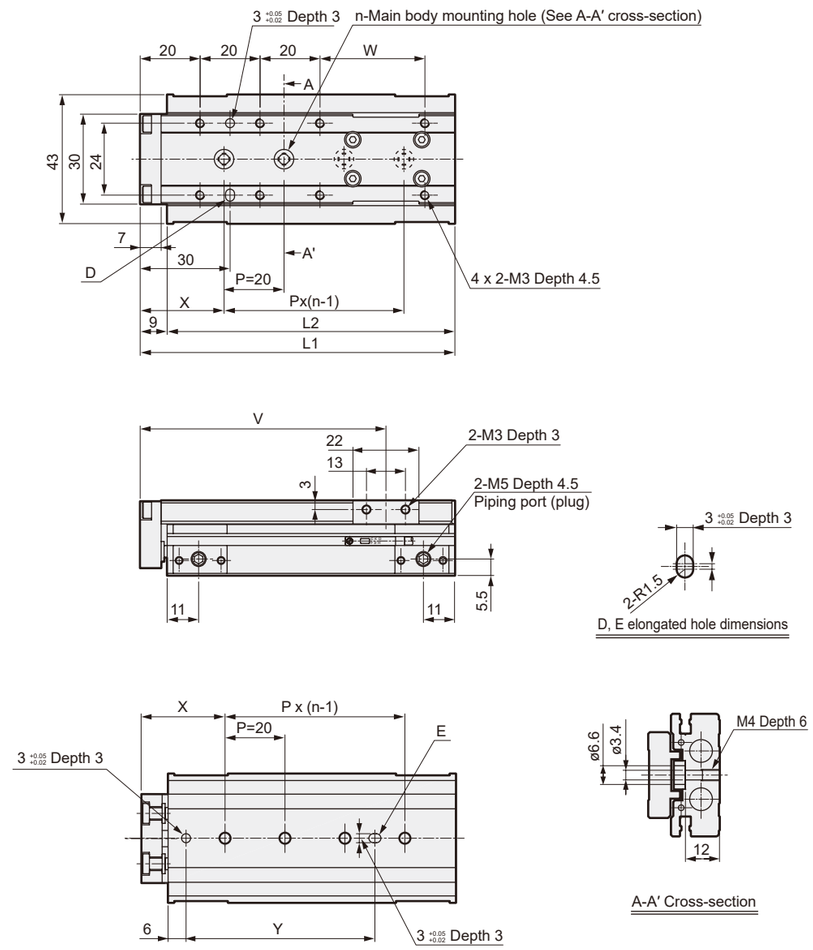
*2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: ø8)

● LCR-8

Stroke: 40, 50, 75

(The main body mounting holes in this figure show the case of stroke 50)



Dimension table by stroke

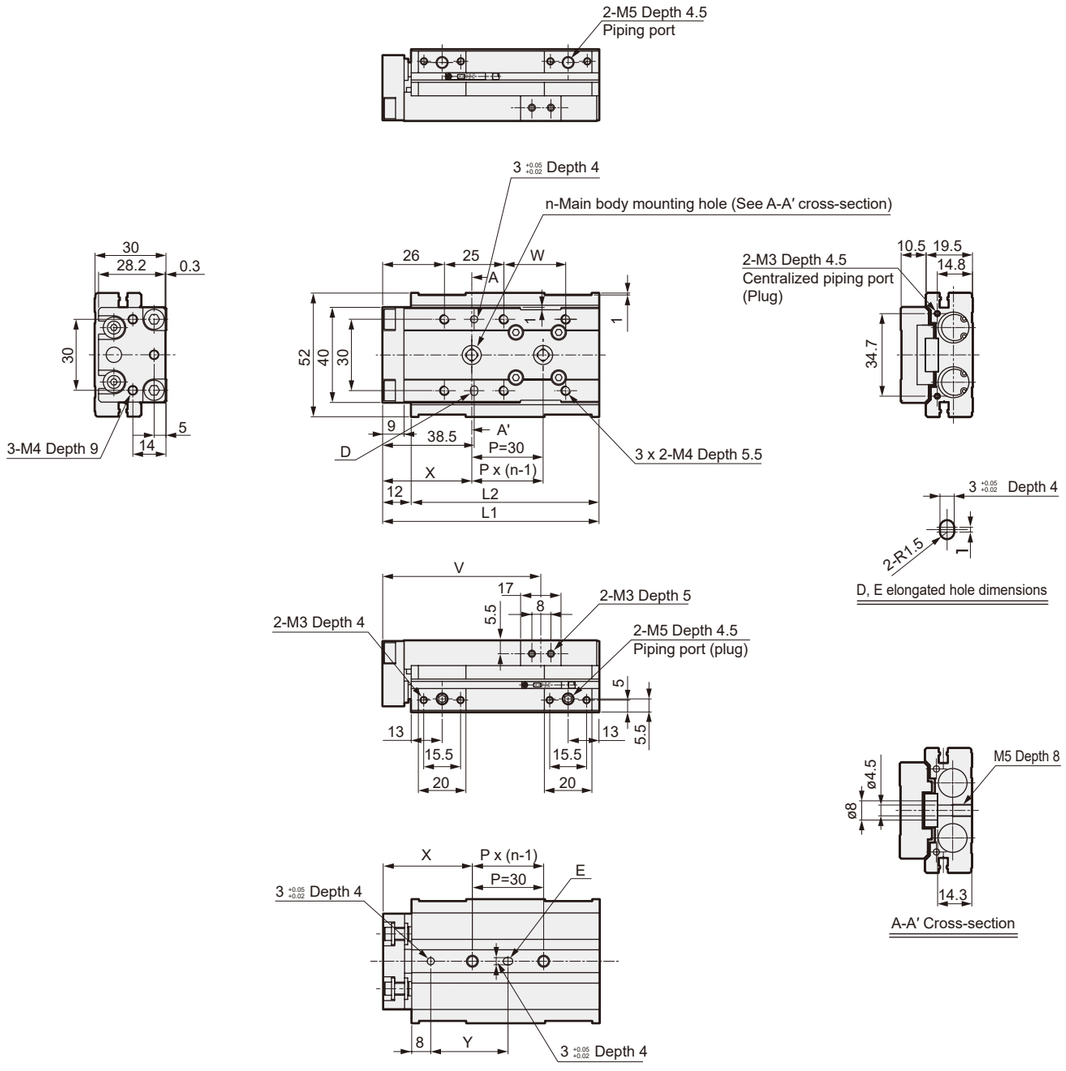
Code	Stroke		
	40	50	75
L1	95	105	130
L2	86	96	121
n	3	4	5
V	72	82	107
W	25	35	60
X	26.5	28	25
Y	41.5	63	80

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.

*2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: ø12)

● LCR-12
Stroke: 10, 20, 30, 40, 50
(The main body mounting holes in this figure show the case of stroke 30)



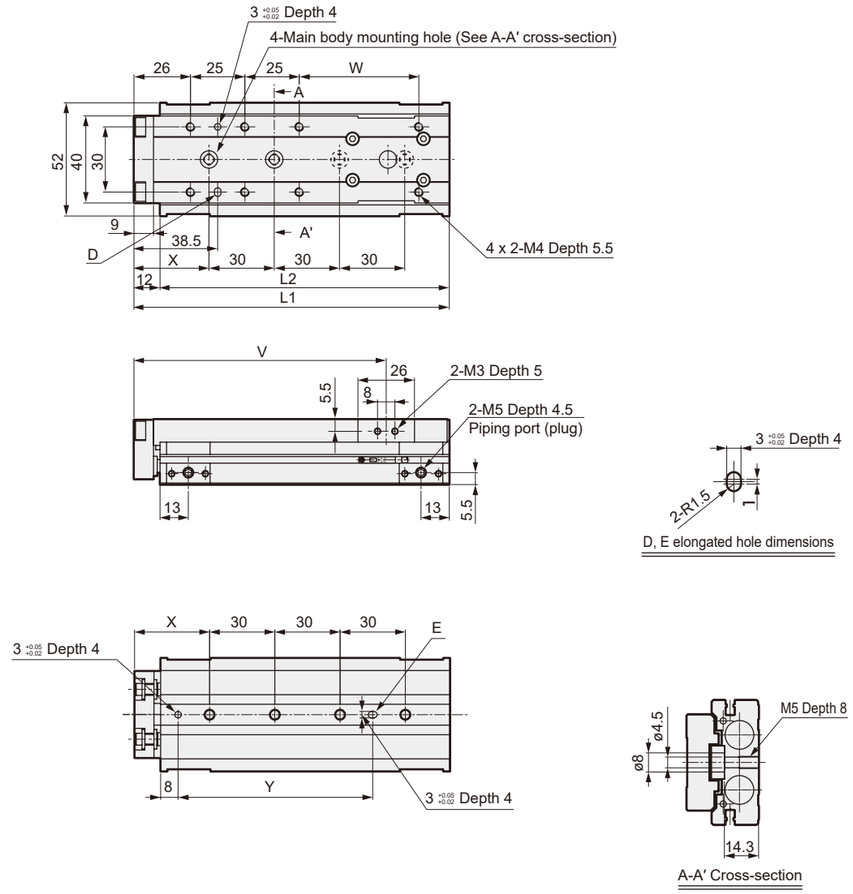
Dimension table by stroke

Code	Stroke				
	10	20	30	40	50
L1	91			101	111
L2	79			89	99
n	2			3	
V	66.5			76.5	86.5
W	26			36	46
X	37.5			36	32
Y	32.5			31	57

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: ø12)

● LCR-12
Stroke: 75, 100
(The main body mounting holes in this figure show the case of stroke 75)



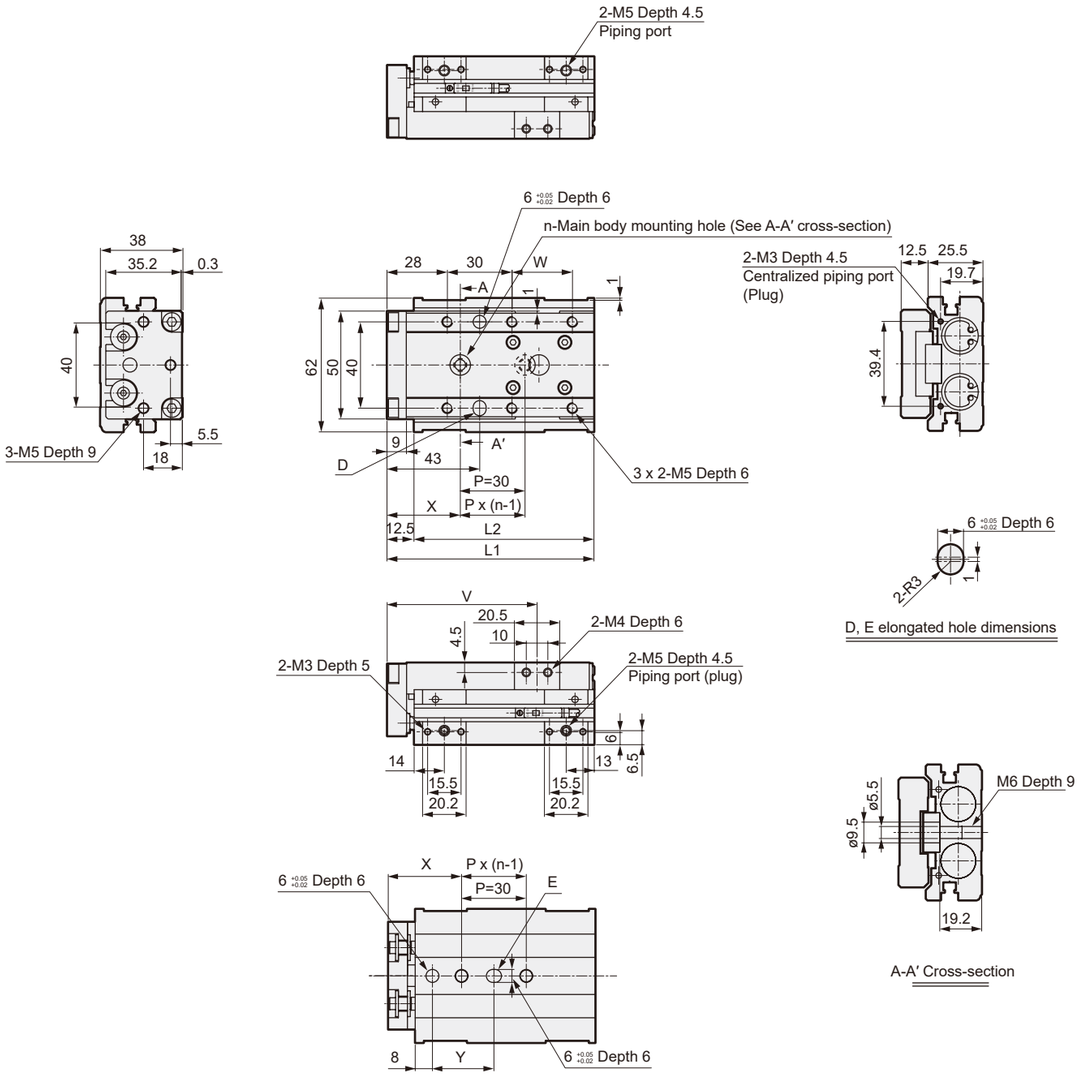
Dimension table by stroke

Code	Stroke	
	75	100
L1	145	170
L2	133	158
V	116	141
W	55	80
X	34.5	47
Y	89.5	102

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: ø16)

● LCR-16
Stroke: 10, 20, 30, 40, 50
(The main body mounting holes in this figure show the case of stroke 30)



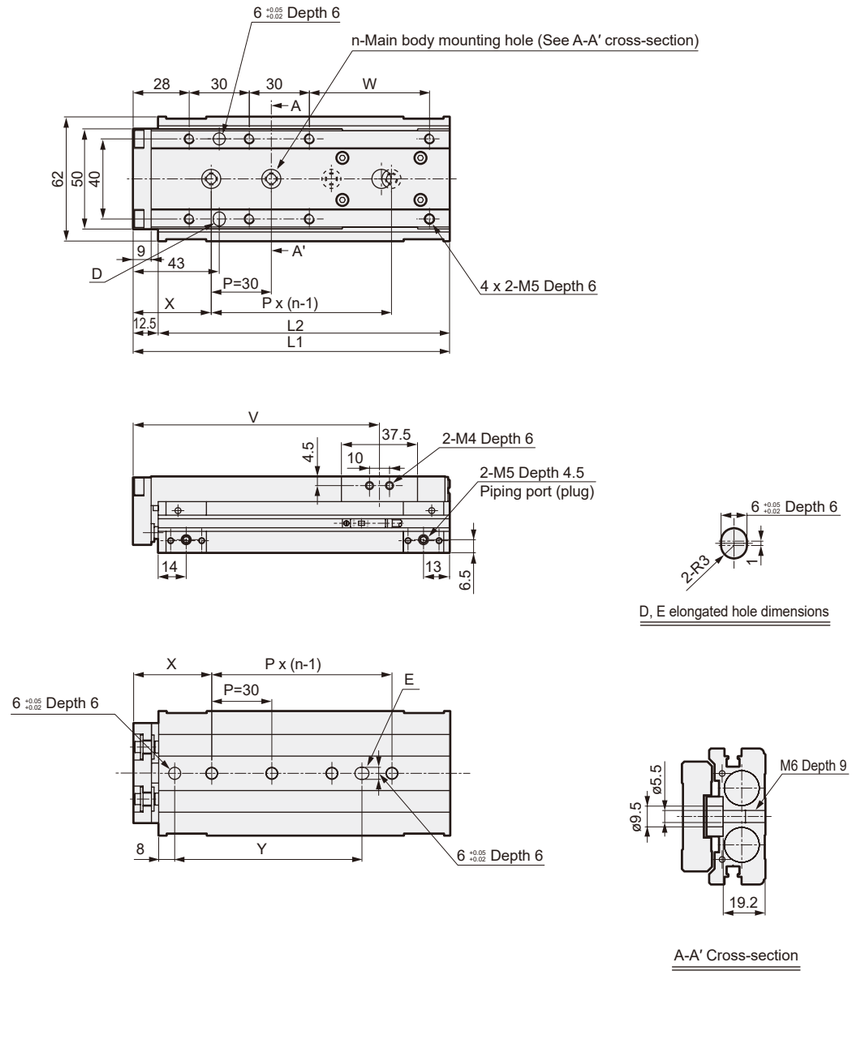
Dimension table by stroke

Code	Stroke				
	10	20	30	40	50
L1	96			106	116
L2	83.5			93.5	103.5
n	2				3
V	69.8			79.8	89.8
W	28			38	48
X	34			45.5	35.5
Y	28.5			40	60

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: ø16)

● LCR-16
Stroke: 75, 100, 125
(The main body mounting holes in this figure show the case of stroke 75)



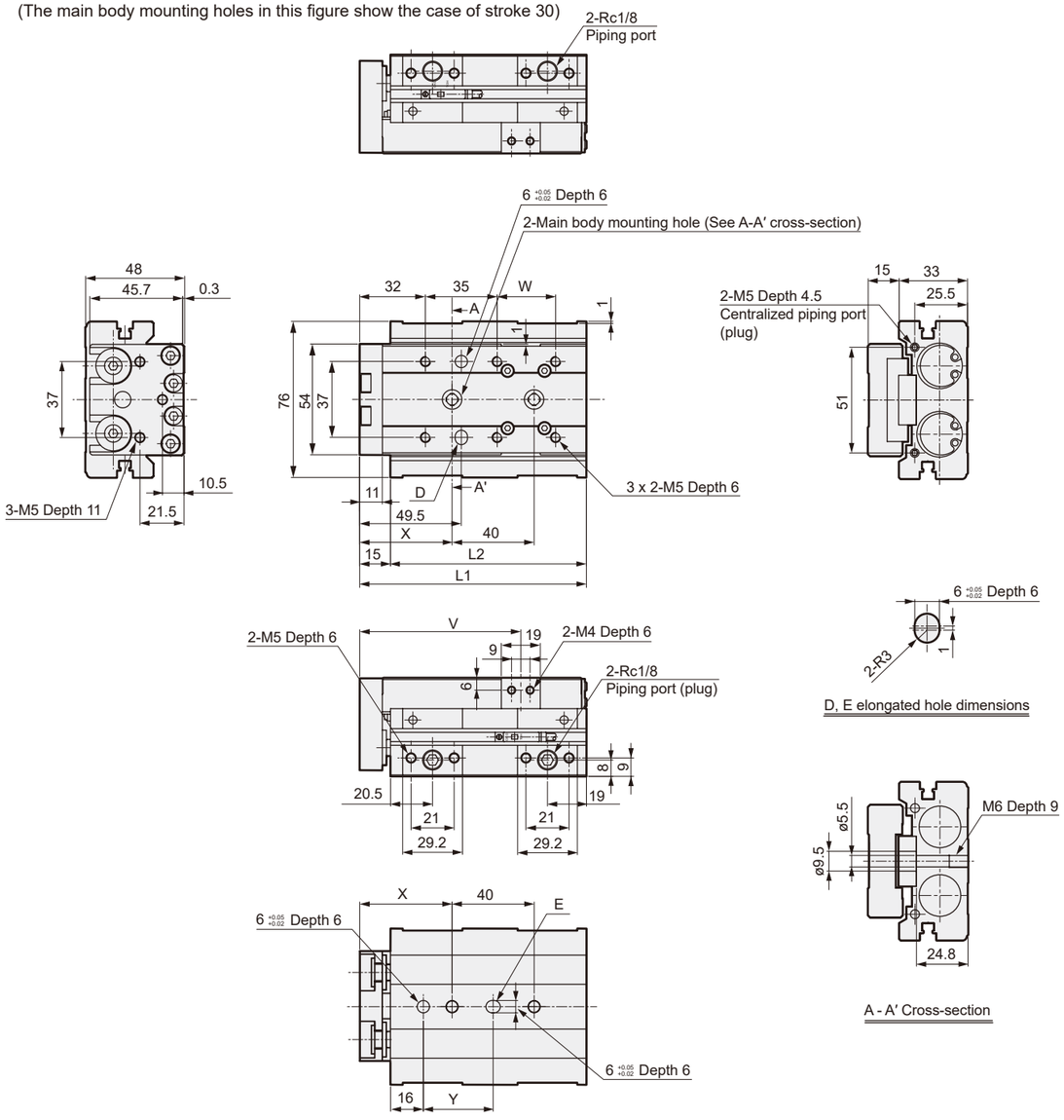
Dimension table by stroke

Code	Stroke		
	75	100	125
L1	158	183	208
L2	145.5	170.5	195.5
n	4	5	
V	123.3	148.3	173.3
W	60	85	110
X	39	37	49
Y	93.5	121.5	133.5

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: ø20)

● LCR-20
Stroke: 10, 20, 30, 40, 50
(The main body mounting holes in this figure show the case of stroke 30)



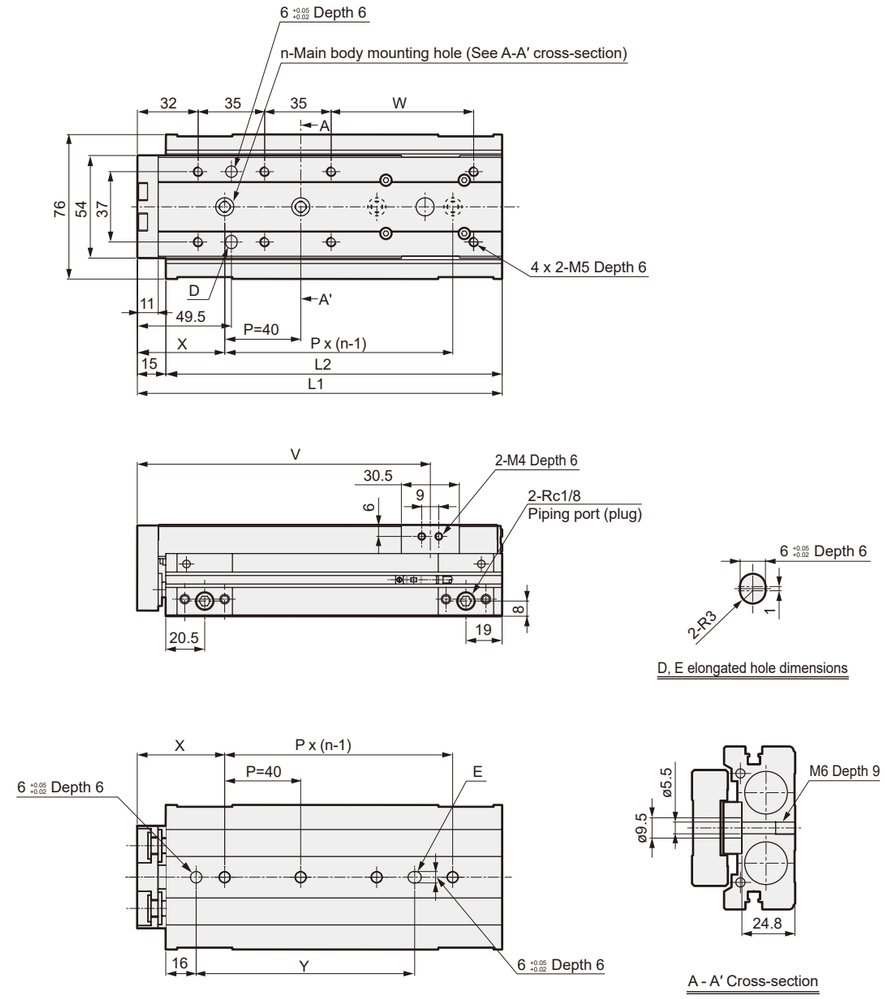
Dimension table by stroke

Code	Stroke				
	10	20	30	40	50
L1	110.5			120.5	130.5
L2	95.5			105.5	115.5
V	78.5			88.5	98.5
W	28.5			38.5	48.5
X	45			51	49
Y	34			40	38

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: ø20)

● LCR-20
Stroke: 75, 100, 125, 150
(The main body mounting holes in this figure show the case of stroke 100)



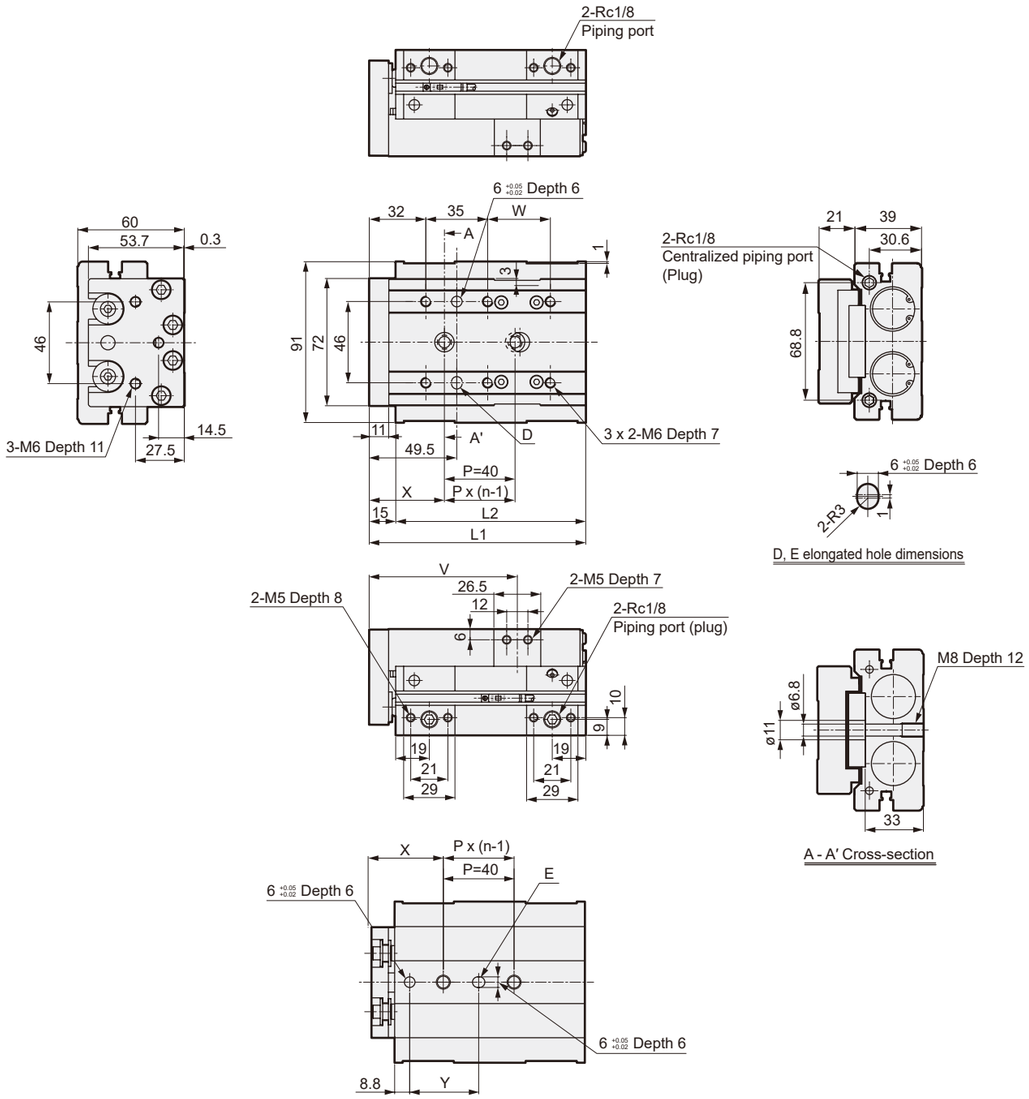
Dimension table by stroke

Code	Stroke			
	75	100	125	150
L1	167	192	217	242
L2	152	177	202	227
n	3	4		5
V	129.3	154.3	179.3	204.3
W	50	75	100	125
X	46		53	51
Y	75	115	122	160

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outline Dimension Drawing (Bore size : ø25)

● LCR-25
Stroke: 10, 20, 30, 40, 50
(The main body mounting holes in this figure show the case of stroke 30)



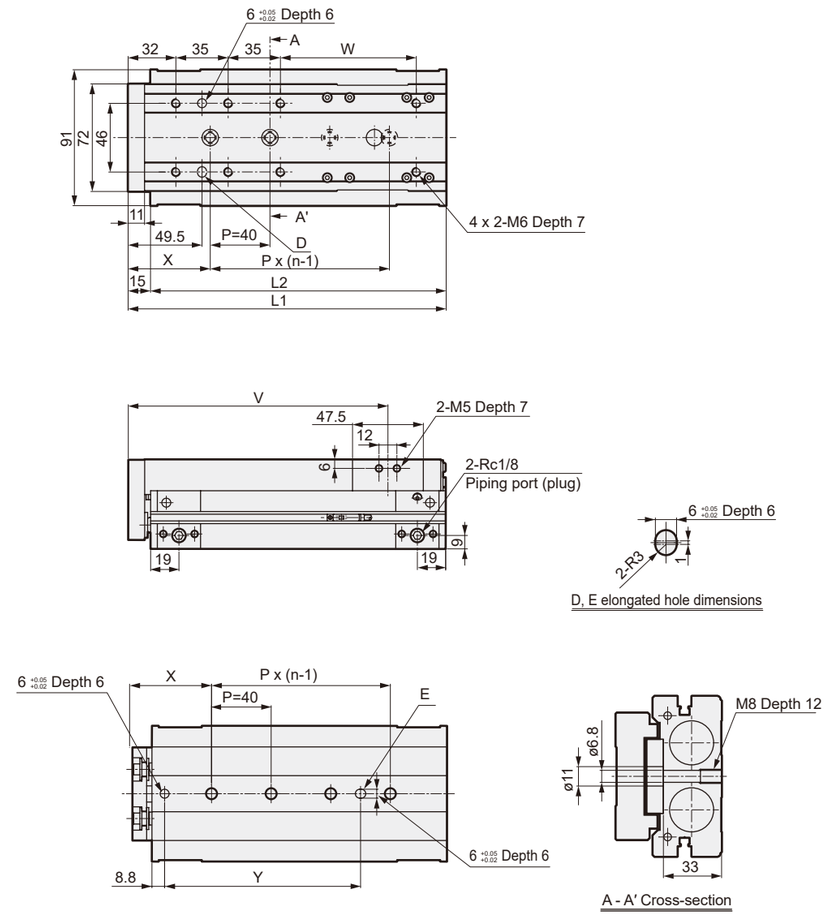
Dimension table by stroke

Code	Stroke				
	10	20	30	40	50
L1	122.5			132.5	142.5
L2	107.5			117.5	127.5
n	2			3	2
V	83.8			93.8	103.8
W	35.5			45.5	55.5
X	42.5			45.5	60.5
Y	39			42	57

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outline Dimension Drawing (Bore size : ø25)

● LCR-25
Stroke: 75, 100, 125, 150
(The main body mounting holes in this figure show the case of stroke 100)



Dimension table by stroke

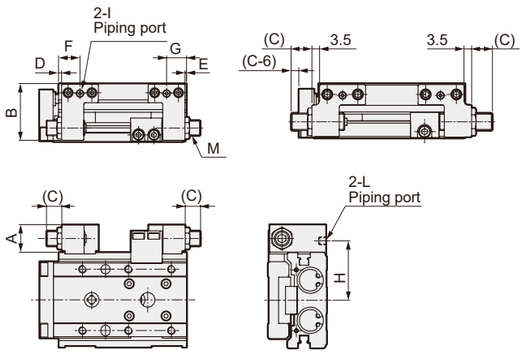
Code	Stroke			
	75	100	125	150
L1	188	213	238	263
L2	173	198	223	248
n	3	4	5	
V	138.8	163.8	188.8	213.8
W	66	91	116	141
X	60	55	45	60
Y	96.5	131.5	161.5	176.5

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outer Dimensions Diagram with Option

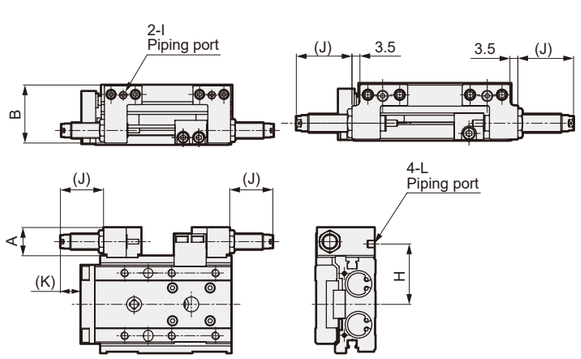
● Stroke adjustment stopper (S1 to S6)

・For ø8



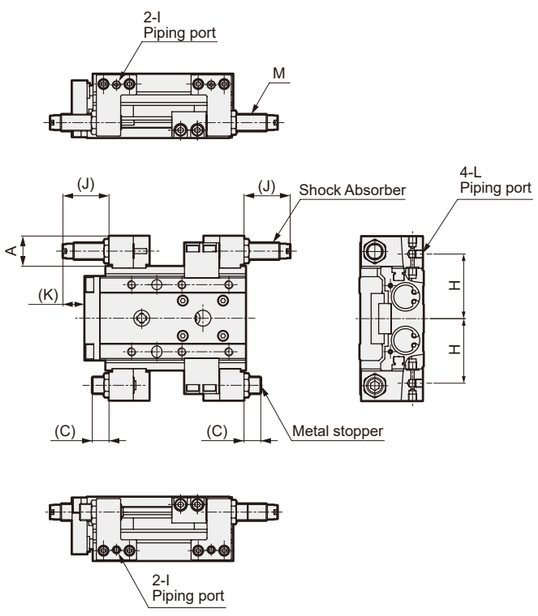
● Shock absorber type stopper (A1 to A6)

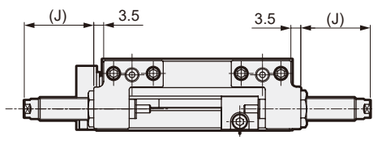
・For ø8

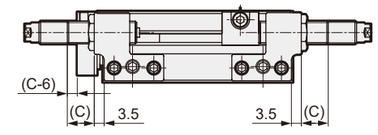


● Double-sided combination double stopper (W1 to W6)

・For ø8





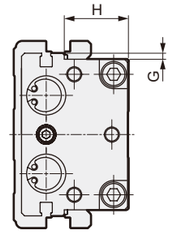


Code / Bore size (mm)	A	B	C Stroke adjustment range 5 mm	C Stroke adjustment range 15 mm	C Stroke adjustment range 25 mm	D	E	F	G	H	I	J	K	L	Shock absorber type stopper stroke adjustment range (one side)	M
ø6	14	19.9	11	21	–	4	1	13.5	10.5	24	M3 Depth 3	20.5	9	M3 Depth 3	9	M8x0.75
ø8	15.6	24.5	9.5	19.5	–	0.5	0.5	11	11	27.3	M5 Depth 4	24.5	15.5	M5 Depth 4	13.5	M8x0.75
ø12	15.5	29	12	22	32	1	1	13	13	31	M5 Depth 4	24.5	12	M5 Depth 4	14.5	M8x0.75
ø16	18	37	10	20	30	2	1	14	13	38.5	M5 Depth 4	27.5	14	M5 Depth 4	15	M10x1
ø20	20.5	45.5	14.5	24.5	34.5	4	2.5	20.5	19	47	Rc1/8	27.5	9.5	M5 Depth 4	13	M12x1
ø25	20.5	57	11.5	21.5	31.5	2.5	2.5	19	19	54.5	Rc1/8	24.5	8	M5 Depth 4	10	M12x1

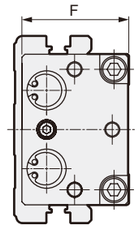
*1: F, G, H, I, and L dimensions are only for cases with stopper part port (S□D□, A□D, W□, C□D□).
*2: In the case of single-sided mixed stopper mix (C□), refer to stroke adjustment type stopper (S□) and Shock absorber type stopper (A□).
*3: S3□□ to S6□□, A3□□ to A6□□W□, W3□□ to W6□□, C□□ are not available for the drop prevention function type.
*4 : In the case of double-sided combination double stopper (W□), the C dimension is for a stroke adjustment range of 15 mm.

Outer Dimensions Diagram with Option

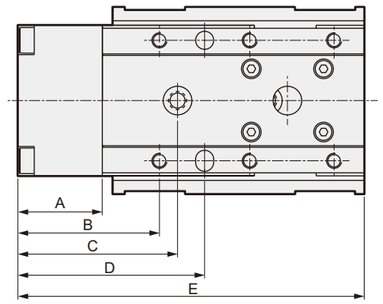
● With buffer (B, BL)



Option code BL



Option code B



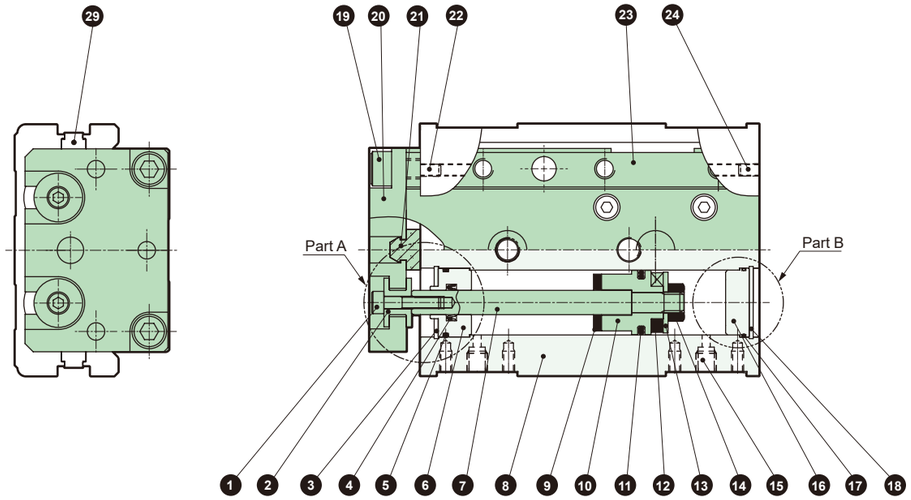
Code / Bore Size (mm)	A	B	C Stroke (mm) 10	20	30	40	50	75	100	125	150	D
ø6	22.5	34	45	45	42.5	43.5	45	-	-	-	-	41.5
ø8	21.5	34.5	42.5	42.5	42.5	41	42.5	39.5	-	-	-	44.5
ø12	27	44	55.5	55.5	55.5	54	50	52.5	65	-	-	56.5
ø16	28	47	53	53	53	64.5	54.5	58	56	68	-	62
ø20	31	52	65	65	65	71	69	66	66	73	71	69.5
ø25	34	55	65.5	65.5	65.5	68.5	83.5	83	78	68	83	72.5

Code / Bore Size (mm)	E Stroke (mm) 10	20	30	40	50	75	100	125	150	F	G	H
ø6	82.5	82.5	92.5	112.5	122.5	-	-	-	-	20	3.5	11.2
ø8	80.5	80.5	90.5	109.5	119.5	144.5	-	-	-	23.5	3.2	13.5
ø12	109	109	109	119	129	163	188	-	-	29	3.2	16
ø16	115	115	115	125	135	177	202	227	-	35.5	1	21.3
ø20	130.5	130.5	130.5	140.5	150.5	187	212	237	262	45.5	4	24.5
ø25	145.5	145.5	145.5	155.5	165.5	211	236	261	286	56	-	-

*Dimensions not indicated conform to the basic type.

Internal Structure Diagram / Material

● LCR



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Centering
1	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	16	Cover	Aluminum Alloy	Chromate
2	Floating bush	Stainless Steel		17	Cover gasket	Nitrile Rubber	
3	C-type retaining ring	Steel	ø8 to 25 only	18	C-type retaining ring	Steel	ø12 to 25 only
4	Rod Packing	Nitrile Rubber		19	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
5	Metal gasket	Nitrile Rubber		20	End plate	Aluminum Alloy	Alumite
6	Rod Metal	Aluminum Alloy	Alumite	21	Cushion rubber (H)	Urethane Rubber	
7	Piston Rod	Stainless Steel		22	Hexagon socket head set screw	Stainless Steel	
8	Cylinder Body	Aluminum Alloy	Hard Anodized	23	Table	Aluminum Alloy	Alumite
9	Cushion rubber (R)	Urethane Rubber		24	Plug	ø6 to ø20: Stainless steel ø25: Steel	
10	Piston	Aluminum Alloy	Chromate				
11	Piston Packing	Nitrile Rubber		25	Hexagon socket head set screw	Stainless Steel	
12	Magnet	Plastic		26	Rod metal A	Aluminum Alloy	
13	Plain Washer	Stainless Steel		27	Cap	Stainless Steel	
14	Hexagon Nut	Stainless Steel		28	Hexagon socket head set screw	Alloy Steel	Zinc Chromate
15	Plug	ø6 to ø16: Stainless steel ø20 to ø25: Steel		With Switch			
				29	Switch		

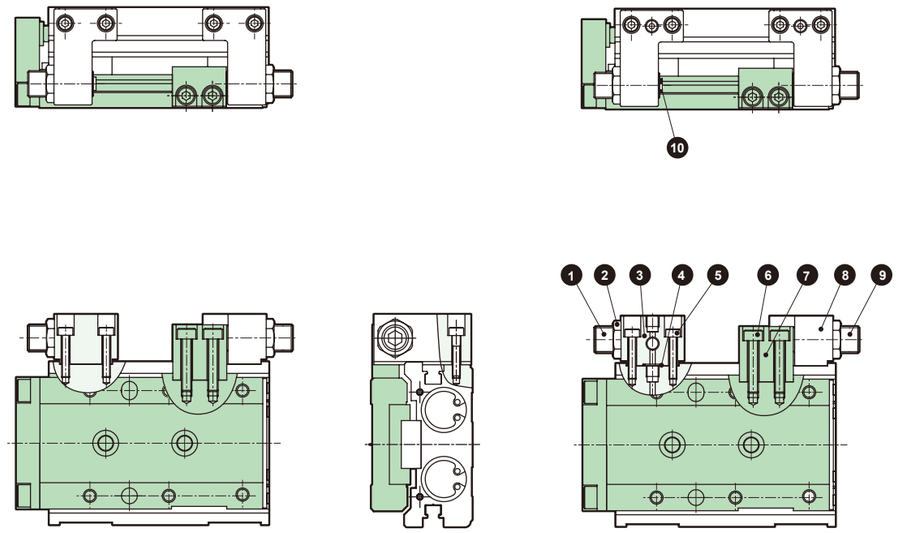
Consumable Parts List

Bore Size (mm)	Kit Number	Consumable Part No.
ø6	LCR-6K	④ ⑤ ⑨ ⑪ ⑰ ㉑
ø8	LCR-8K	
ø12	LCR-12K	
ø16	LCR-16K	
ø20	LCR-20K	
ø25	LCR-25K	

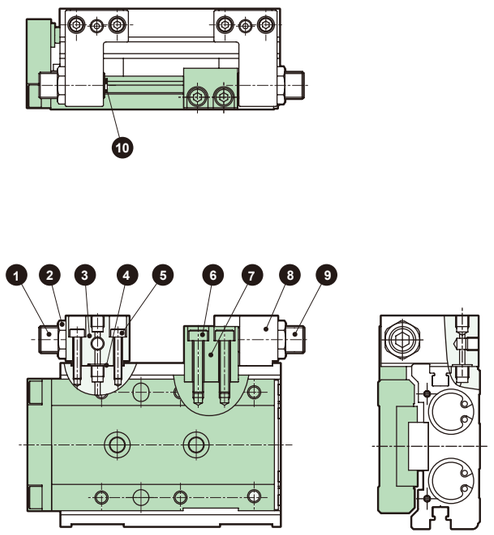
Internal structure diagram / materials (Option)

With stopper

● When stopper part has no port (Blank)



● Stopper part port side, bottom available type (D)

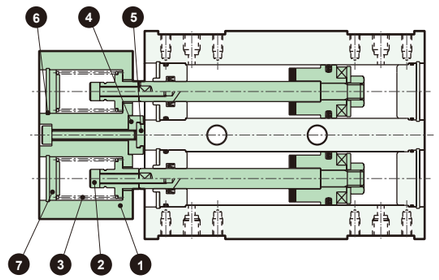


Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Stopper bolt	Alloy Steel	Nickel Plating	7	Stopper block (Stopper block code: Blank)	Steel	Nickel Plating
2	Hexagon Nut	Alloy Steel	Nickel Plating		Stopper block (Stopper block code: T)	Steel	Nitriding Treatment
3	Stopper A	Aluminum Alloy	Alumite	8	Stopper B	Aluminum Alloy	Alumite
4	Gasket	Urethane Rubber		9	Stopper bolt	Alloy Steel	Nickel Plating
5	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	10	Cushion Rubber	Urethane Rubber	
6	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate				

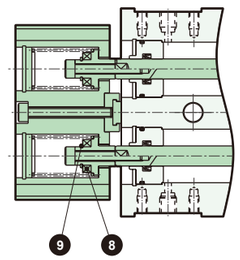
Internal structure diagram with buffer / materials (Option)

With buffer

● With buffer, without switch groove (B)



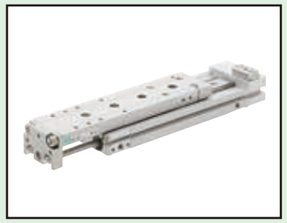
● With buffer, with switch groove (BL)



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	End plate	Aluminum Alloy	Alumite	6	C-type retaining ring	Steel	
2	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	7	Cover	Aluminum Alloy	Chromate
3	Coil Spring	Steel		8	Magnet	Plastic	
4	Stopper	ø6: Stainless steel ø8 to ø25: Aluminum alloy		9	E-ring	ø6 to 12: Stainless steel ø16 to 25: Steel	
5	Cushion Rubber	Urethane Rubber					

MEMO

With Linear Guide
LCM
LCR
LCG
LCW
LCX
MSDG
Cylinder Switch
Ending

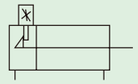


Linear Slide Cylinder Double Acting, Drop Prevention Type

LCR-Q Series

●Bore size: ø8, ø12, ø16, ø20, ø25

Circuit Diagram Symbol



RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

LCR-Q - 8 - 40 ——— S202 DTBL

Model No. ❶ ❷ ❺ ❻

With Switch
(Built-in magnet for switch)

LCR-Q - 12 - 40 - F2H - R - S202 DTBL

Model No. ❶ Bore size ❷ Stroke ❸ Switch Model No. ❹ Number of Switches ❺ Stopper ❻ Option

❶ Bore Size (mm)

Code	Content
8	ø8
12	ø12
16	ø16
20	ø20
25	ø25

❷ Stroke (mm)

Stroke (mm)		Applicable Bore size				
		ø8	ø12	ø16	ø20	ø25
Standard Stroke	10	●	●	●	●	●
	20	●	●	●	●	●
	30	●	●	●	●	●
	40	●	●	●	●	●
	50	●	●	●	●	●
	75	●	●	●	●	●
	100		●	●	●	●
	125			●	●	●
	150				●	●

❸ Switch Model No.

For switch details, please refer to P. 753. Switches are included to the product and shipped.

Contact	Indicator Lamp / Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20	-	F2S□	
		3-wire (NPN)	-	30 or less	-	50 or less	-	F3S□	
		2-wire	-	10 to 30	-	5 to 20 *2	F2H□	F2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3H□	F3V□	
		3-wire (PNP)	-	30 or less	-	50 or less	F3PH□	F3PV□	
	2-Color	2-wire	-	24±10%	-	5 to 20	F2YH□	F2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3YH□	F3YV□	
	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	1-Color Flexible Lead Wire Type	2-wire	-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator Lamp		110	5/12/24	20 or less	50 or less	T5H□	T5V□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: Switches other than the model Nos. listed above are also available. (Custom Product) For details, see P. 753.
*4 : For Bore size ø16 to ø25, F type switch cannot be selected.
*5 : For Bore size ø8, ø12, T type switch cannot be selected.

*** Lead wire length**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

*6: For F type switch, 5 m cannot be selected.

Example) Lead wire length
1 m TOH
3 m TOH3
5 m TOH5

❹ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

❺ Stopper

For details, see P. 86.

	Code	Content	
*2	Blank	No stopper	
	S Stroke adjustment stopper		*3, 4, 5
	S1□□	Stopper position ① (④ Changeable to)	Stopper mounting position
	S2□□	Stopper position ② (③ Changeable to)	
	A Shock absorber type stopper		*3, 4, 6, 7
	A1	Stopper position ① (④ Changeable to)	Stopper mounting position
	A2	Stopper position ② (③ Changeable to)	
*8	**W Double-sided combination double stopper (Shock absorber type stopper, Metal stopper)**		
	W1	A1 + Metal stopper	Stopper mounting position
	W2	A2 + Metal stopper	

□□ part Stroke adjustment range ● Applicable to all. *9

	Extension end side	Stopper model No. S	A	W
Blank	5 mm	●	–	–
02	15 mm	●		
03	25 mm	●		

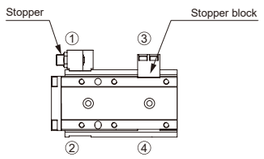
*1: For stopper positions ① to ④, refer to the diagram on the right.
*2: The standard port positions when there is no stopper are positions ① and ③ in the diagram on the right.
*3: For combinations of metal stoppers and Shock absorber type stoppers, refer to ❺ Stopper "W□".
*4 : For ø8 with a stroke of 30 or less and S□□□ or A□, if using 2 switches, select the F□H type switch.
* 5: The stroke adjustment stopper becomes metal touch at an operating pressure of 0.3 MPa or more.
*6 : For the stroke adjustment range when using a Shock absorber type, refer to the dimension table in the stopper outline drawing P. 78.
*7 : A1, A2, and A5 for ø8 with a stroke of 10 or less, and ø12 to ø25 with a stroke of 20 or less cannot be adjusted with standard stoppers, so they are custom-ordered products.
*8 : If the double-sided combination type (W) is selected, the stroke adjustment range will be ø8: 13.5 mm, ø12: 14.5 mm, ø16: 15 mm, ø20: 13 mm, ø25: 10 mm.
*9 : Selectable only when using stroke adjustment stopper (S).
*10 : Since the lock mechanism engages at the stroke end, do not install stoppers at positions ③④.
*11 : For stopper combinations, refer to the combination availability table on P. 86.

❻ Option

Code	Content	
Stopper part port		*2, 5
Blank	No port	
*1 D	Side and bottom ports available	
Stopper block material		*2
Blank	Steel	
T	Steel (nitriding treatment)	
With buffer		*3
B	Without switch groove	
BL	With switch groove	

*1: For port positions, refer to the stopper outline drawing P. 78.
*2: Selectable only when stopper type is selected.
*3: Purchase the buffer part switch separately using the switch single item model No. indication method on P. 87.
*4 : Select when using with rear piping.
*5 : If the double-sided combination type (W) is selected, the stopper part port is standard, so option "D" cannot be selected.

● Stopper position (*10)



Rechargeable Battery Compatible Specification

(Catalog No. CC-1226AA)

● Design compatible with rechargeable battery manufacturing process

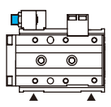
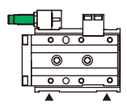
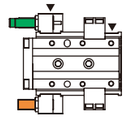
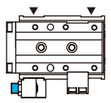
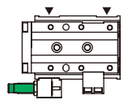
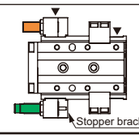
LCR-Q -•••• P4□

*Please contact us for details.

Stopper Model No. Selection Method

1 Stopper Combination Table

Model No. - [①Stopper type] [②Stopper position] [③] Example) LCR-Q-8-40- [S] [2] 06

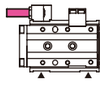
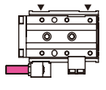
Stopper position [②]	Stopper type [①] Stroke adjustment type (single side) [S]	Shock absorber type (single side) [A]	Double-sided combination double stopper [W]
[1]	[S1] 	[A1] 	[W1] 
[2]	[S2] 	[A2] 	[W2]  Stopper bracket

▲ indicates the piping direction.
If the double-sided combination type [W] is selected, the stopper brackets on both sides will have piping, and the stopper bracket on the side opposite to the ▲ (piping direction) will have a plug.

: Shock absorber type stopper
: Stroke adjustment stopper (adjustment range 5 mm)
: Metal stopper (adjustment range 15 mm)

2 Stopper Combination Table

Model No. - [①Stopper type] [②Stopper position] [③Stroke adjustment range]
Example) LCR-Q-8-40-S1 [02]
In case of stroke adjustment stopper -S

Stroke adjustment range [③]	Stopper adjustment range: Extension end side	Stopper type, Stopper position [①②]: [S1]	[S2]
Blank	5 mm	[S1]	[S2]
[02]	15 mm	[S102]	[S202]
[03]	25 mm	 [S103]	 [S203]

: Stroke adjustment stopper (adjustment range 5 mm)
: Stroke adjustment stopper (adjustment range 15 mm)
: Stroke adjustment stopper (adjustment range 25 mm)

▲ indicates the piping direction.
Cannot be selected for Shock absorber type [A] or double-sided combination type [W].

LCR-Q Drop Prevention Type Combination Availability Table

(Combination with stroke adjustment stopper, Shock absorber type stopper)

● : Not combinable - : Not combinable

Bore size	Stroke	Stroke adjustment stopper S1 Blank	S1 02	S1 03	S2 Blank	S2 02	S2 03	Shock absorber type stopper A1	A2	Double-sided combination double stopper W1	W2
ø8	10	●	-	-	●	-	-	-	-	-	-
	20 or more	●	●	-	●	●	-	●	●	●	●
ø12 to ø25	10	●	-	-	●	-	-	-	-	-	-
	20	●	●	-	●	●	-	-	-	-	-
	30 or more	●	●	●	●	●	●	●	●	●	●

Option Code D: Stopper part with port, T: Please refer to the combination table above to determine if a steel stopper block (nitrided) can be selected. (● : Selectable - : Not selectable)

Switch Single Unit Model No. Notation Method

③ Switch Model No. (P. 84, Section ③)

●For buffer

⑦ Output format ⑧ Lead wire length
L-shaped lead wire type

⑦ Output format

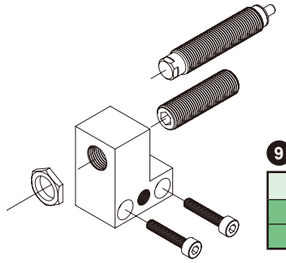
Code	Content
2	DC 2-wire solid-state
3	DC 3-wire solid-state

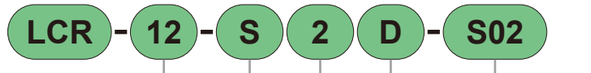
⑧ Lead wire length

Code	Content
Blank	1 m (Standard)
3	3 m (Option)

Stopper Set Model No. Notation Method

(Note: Since the lock mechanism works at the stroke end, do not install a stopper on the head side.
●Set of stopper part and stroke adjustment stopper or Shock absorber type stopper
●Used when changing from standard to with stroke adjustment stopper or with Shock absorber type stopper





① Bore size ⑩ Stopper mounting position ⑫ Stroke adjustment amount
⑨ Stopper type ⑪ Stopper part port

⑨ Stopper type

Code	Content
S	Stroke adjustment stopper
A	Shock absorber type stopper

⑩ Stopper mounting position

Code	Content
1	Stopper position ①
2	Stopper position ②

*1: The relationship of the stroke adjustment amount changes depending on the stroke, so refer to the table below.

⑪ Stopper part port

Code	Content
Blank	No port
D	Side/bottom ports available

*1: The bottom port is sealed with a plug. When using the bottom port with ø20 or 25, purchase a plug kit (LCR-20-N, 2 pcs/set) and seal the side port before use.

⑫Stroke adjustment amount

Code	Content
Blank	Stroke adjustment range 5 mm
S02	Stroke adjustment range 15 mm
S03	Stroke adjustment range 25 mm

*1: S03 cannot be selected for ø8.
*2: Cannot be selected in the case of ⑨Shock absorber type stopper "A".

Precautions when purchasing a stopper set

Please note that the stroke adjustment amount will be as shown on the right depending on the stroke. ▶

- : Not compatible

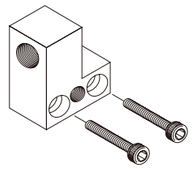
Model No. code	Option Code: Bore size	Option Code: Stroke	Stroke adjustment stopper single item: Stroke adjustment amount (mm) -5	-15	-25
LCR-Q Series	ø8	10	S02	-	-
		20 or more	Blank	S02	-
	ø12 to ø25	10	S03	-	-
		20	S02	S03	-
		30 or more	Blank	S02	S03

● Stopper set weight (Unit : g)

Stopper type	S1, S2			A1, A2
Stopper part port	Blank, D			
Stroke adjustment amount / Bore size	Blank	S02	S03	Blank
ø8	21	25	-	27
ø12	28	31	34	33
ø16	42	47	52	49
ø20	77	85	92	86
ø25	87	94	101	95

Stopper Bracket Single Item Model No. Notation Method

(Note: Since the lock mechanism works at the stroke end, do not install a stopper on the head side.
● Used when changing stopper mounting position ① ↔ ②, or when changing to a stopper with port.



LCR - 12 - STB 1 D

❶ Bore size
⓭ Stopper mounting position
⓮ Stopper part port

● Stopper bracket weight (Unit: g)

Stopper mounting position	1, 2
Stopper part port / Bore size	Blank, D
ø8	14
ø12	20
ø16	29
ø20	53
ø25	62

⓭ Stopper mounting position

Code	Content
1	Stopper position ①
2	Stopper position ②

⓮ Stopper part port

Code	Content
Blank	No port
D	Side/Bottom ports available

*The bottom port is sealed with a plug. When using the bottom port with ø20 or 25, purchase a plug kit (LCR-20-N, 2 pcs/set) and seal the side port before use.

Stroke Adjustment Stopper Single Item Model No. Notation Method

● Hexagon socket set screw with urethane
● Used when changing stroke adjustment range or setting intermediate stroke

LCR - 12 - S02

❶ Bore size
⓯ Stroke Adjustment range

⓯ Stroke adjustment range

Code	Content
S01	One side 5 mm (Standard)
S02	One side 15 mm
S03	One side 25 mm

*"SO3" cannot be selected for ø8. Some model Nos. may not be compatible or the stroke adjustment range may differ from the above.

Precautions when purchasing stopper single items

Please note that the combination will be as shown on the right depending on the stroke and stroke adjustment amount. ▶

- : Not combinable

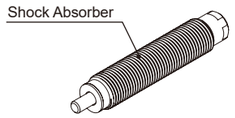
Model No. code	Option Code		Stroke adjustment stopper single item		
			Stroke adjustment amount (mm)		
	Bore size	Stroke	-5	-15	-25
LCR Series -S1, S2	ø8	10	S02	-	-
		20 or more	S01	S02	-
	ø12 to ø25	10	S03	-	-
		20	S02	S03	-
		30 or more	S01	S02	S03

● Stopper for Stroke Adjustment, Single Unit Weight (Unit : g)

Stroke adjustment range / Bore size	S01	S02	S03
ø8	7	10	-
ø12	7	11	14
ø16	11	16	22
ø20	22	30	37
ø25	23	30	37

Shock absorber Type Stopper Single Item Model No. Notation Method

● Shock absorber set
● Used when changing from stroke adjustment stopper to Shock absorber type stopper



LCR - 12 - A01

❶ Bore size

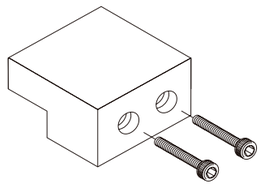
Note) **Some model Nos. may not be compatible. See P. 84. For the stroke adjustment range of the Shock absorber type stopper, see P. 78.**

Shock absorber model No. used

Model	Shock absorber model No.	Weight (g)
LCR-8	SKL-0805	12
LCR-12	SKL-0805	12
LCR-16	SKL-1006	19
LCR-20	SKL-1208	31
LCR-25	SKL-1208	31

Stopper Block Single Item Model No. Notation

● Used when changing from standard to with stroke adjustment stopper or with Shock absorber type stopper



LCR - 12 - SB1 T

❶ Bore size
⓰ Stopper block
⓱ Material

⓰ Stopper block

Code	Content
SB1	ø8 : For 30 strokes or less
	ø12 to ø25: For 50 strokes or less
SB2	ø8 : For 40 strokes or more
	ø12 to ø25: For 75 strokes or more

⓱ Material

Code	Content
Blank	Stopper block material Steel
T	Stopper block material Steel (nitriding treatment)

Specifications

Item			LCR-Q				
Bore size		mm	ø8	ø12	ø16	ø20	ø25
Actuation method			Double Acting Type				
Operating Fluid			Compressed Air				
Max. Working Pressure		MPa	0.7				
Min. Operating Pressure		MPa	0.15				
Proof Pressure		MPa	1.05				
Ambient Temperature		°C	-10 to 60 (however, no freezing)				
Port Size	Main body side		M5			Rc1/8	
	Main body rear		None				
Stroke tolerance		mm	+2.0 0 (*1)				
Operating Piston Speed		mm/s	50 to 500				
Cushion			With Rubber Cushion				
Fall prevention mechanism			Head Side				
Holding Force		N	During PULL, maximum thrust (at 0.7 MPa) x 0.7				
Lubrication			Not required (When lubricating, use turbine oil Class 1 ISO VG32)				
Allowable absorption energy		J	Refer to Table 3 on P. 114.				

*1: When used without a stopper, please note that there is a slight gap between the end plate and the floating bush.
*2: The stroke adjustment stopper becomes metal touch at an operating pressure of 0.3 MPa or more.

Stroke

Bore Size (mm)	Standard Stroke (mm)
ø8	10, 20, 30, 40, 50, 75
ø12	10, 20, 30, 40, 50, 75, 100
ø16	10, 20, 30, 40, 50, 75, 100, 125
ø20	10, 20, 30, 40, 50, 75, 100, 125, 150
ø25	10, 20, 30, 40, 50, 75, 100, 125, 150

*Strokes other than the above cannot be manufactured.

With buffer specification

Specifications other than the following are the same as the common specifications above.

Item			Content				
Bore size		mm	ø8	ø12	ø16	ø20	ø25
Buffer Stroke		mm	4	9		10	
Buffer part	At SET	N	5	10	13	17	21
spring load	During operation	N	8	14	20	25	29

*1: If rod side stroke adjustment is performed with a buffer, the buffer stroke will be shortened by the stroke adjustment amount, and the spring load at set will also increase.
*2: Use a buffer stroke less than the stroke above. This will cause malfunction or damage.

Theoretical Thrust Table

See P. 115.

Cylinder Weight

● Drop prevention type (Unit : g)

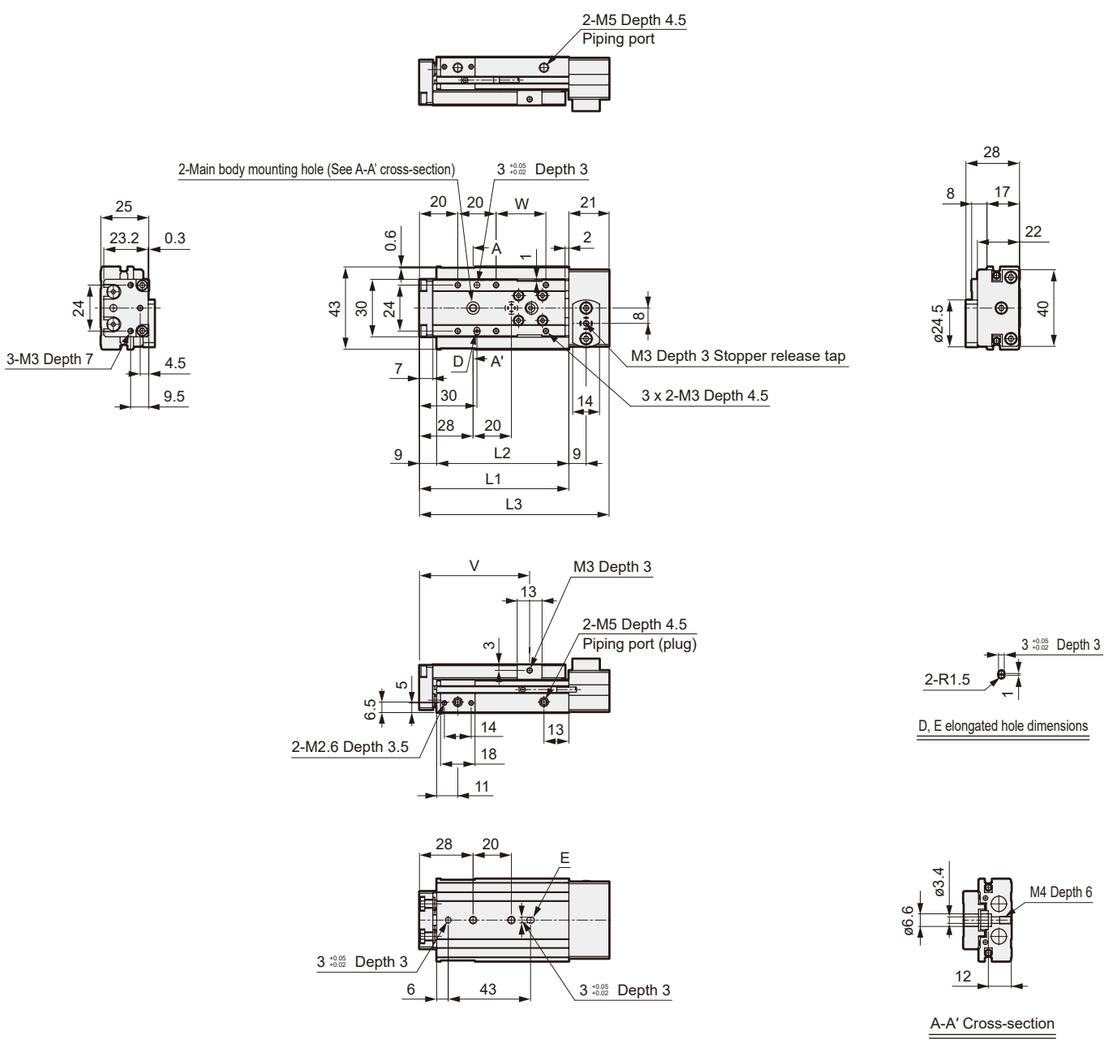
Bore size (mm)	Stroke (mm)								
	10	20	30	40	50	75	100	125	150
ø8	260	260	280	330	360	420	-	-	-
ø12	415	425	425	465	495	625	715	-	-
ø16	670	680	680	730	790	1,20	1,150	1,290	-
ø20	1,150	1,160	1,170	1,250	1,340	1,640	1,850	2,60	2,270
ø25	2,0	2,20	2,30	2,140	2,240	2,730	3,0	3,270	3,540

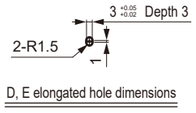
● Option increase (Unit : g)

Bore size (mm)	Stopper code		With buffer
	S1, S2	A1, A2	B, BL
ø8	40	50	40
ø12	70	80	70
ø16	110	120	80
ø20	170	180	150
ø25	290	300	320

Outline dimension drawing (Bore size: ø8)

● LCR-Q-8
Stroke: 10, 20, 30





D, E elongated hole dimensions

A-A' Cross-section

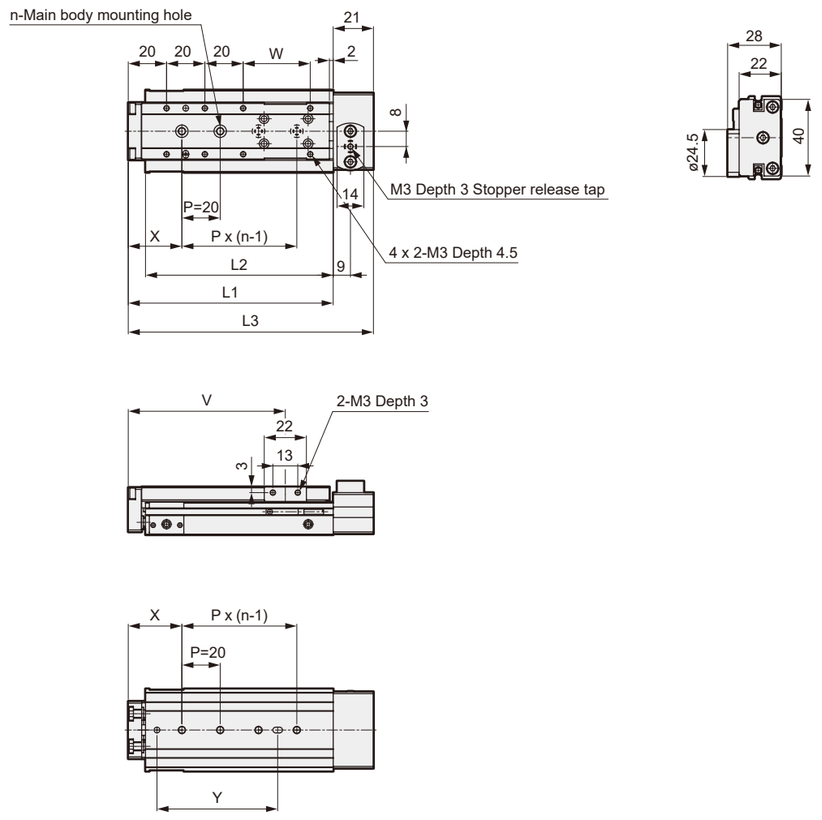
Dimension table by stroke

Code	Stroke		
	10	20	30
L1	68		78
L2	59		69
L3	89		99
V	47.5		57.5
W	16		26

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: ø8)

● LCR-Q-8
Stroke: 40, 50, 75



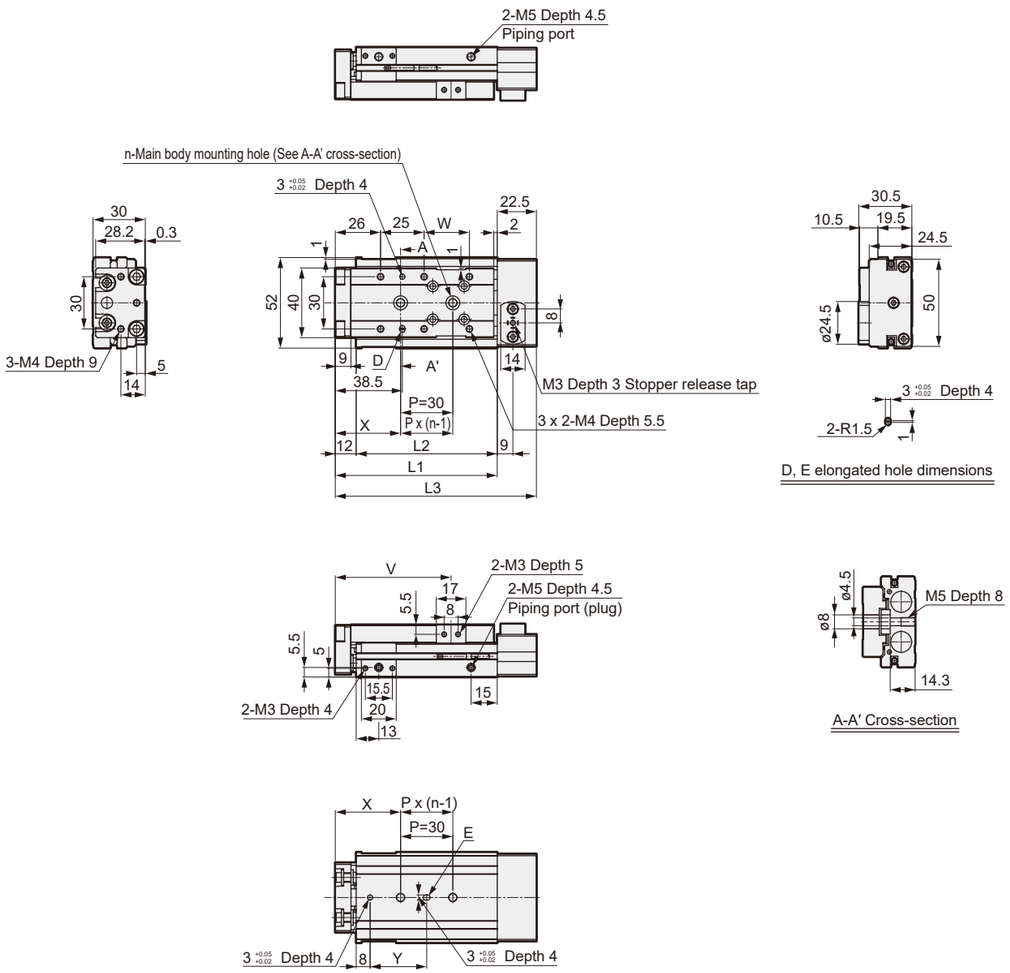
Dimension table by stroke

Code	Stroke		
	40	50	75
L1	97	107	132
L2	88	98	123
L3	118	128	153
n	3	4	5
V	72	82	107
W	25	35	60
X	26.5	28	25
Y	41.5	63	80

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: ø12)

● LCR-Q-12
Stroke: 10, 20, 30, 40, 50



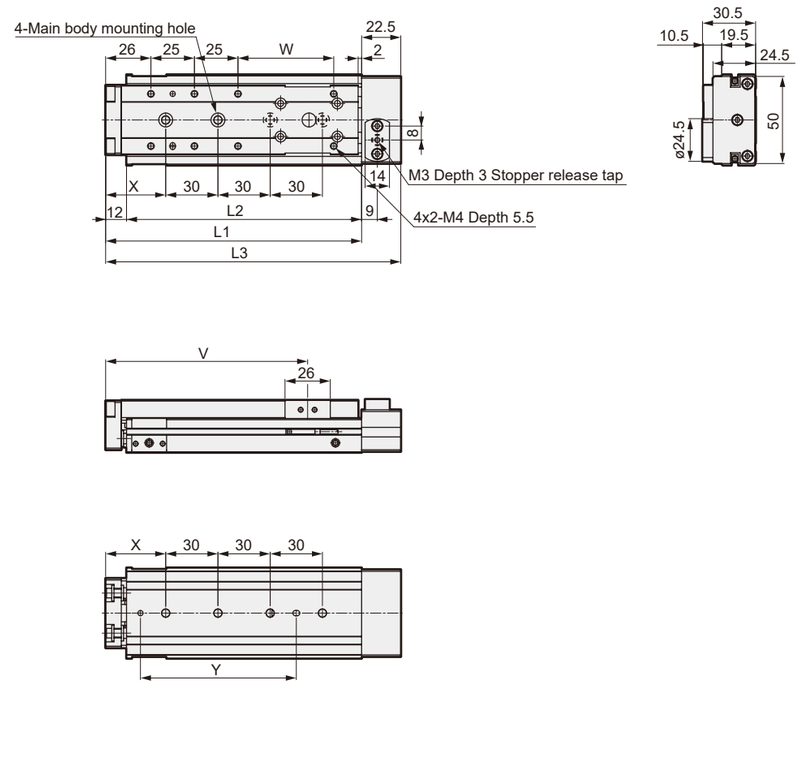
Dimension table by stroke

Code	Stroke				
	10	20	30	40	50
L1	93			103	113
L2	81			91	101
L3	115.5			125.5	135.5
n	2			3	
V	66.5			76.5	86.5
W	26			36	46
X	37.5			36	32
Y	32.5			31	57

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: ø12)

● LCR-Q-12
Stroke: 75, 100



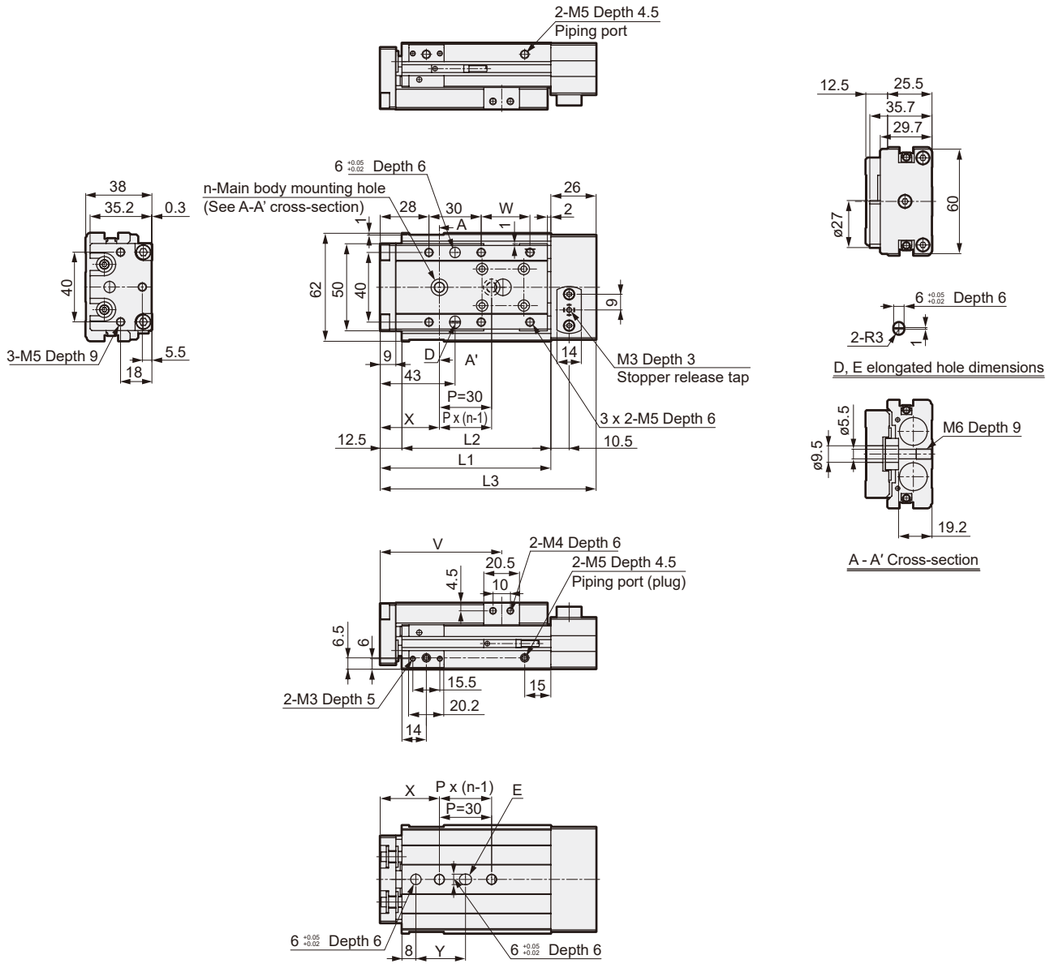
Dimension table by stroke

Code	Stroke	
	75	100
L1	147	172
L2	135	160
L3	169.5	194.5
V	116	141
W	55	80
X	34.5	47
Y	89.5	102

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: ø16)

● LCR-Q-16
Stroke: 10, 20, 30, 40, 50



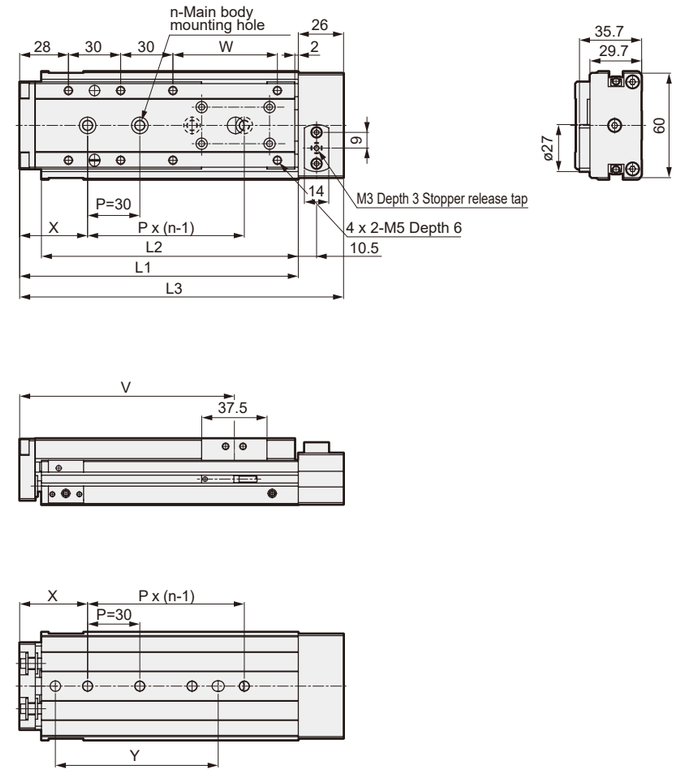
Dimension table by stroke

Code	Stroke				
	10	20	30	40	50
L1	98			108	118
L2	85.5			95.5	105.5
L3	124			134	144
n	2				3
V	69.8			79.8	89.8
W	28			38	48
X	34			45.5	35.5
Y	28.5			40	60

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: ø16)

● LCR-Q-16
Stroke: 75, 100, 125



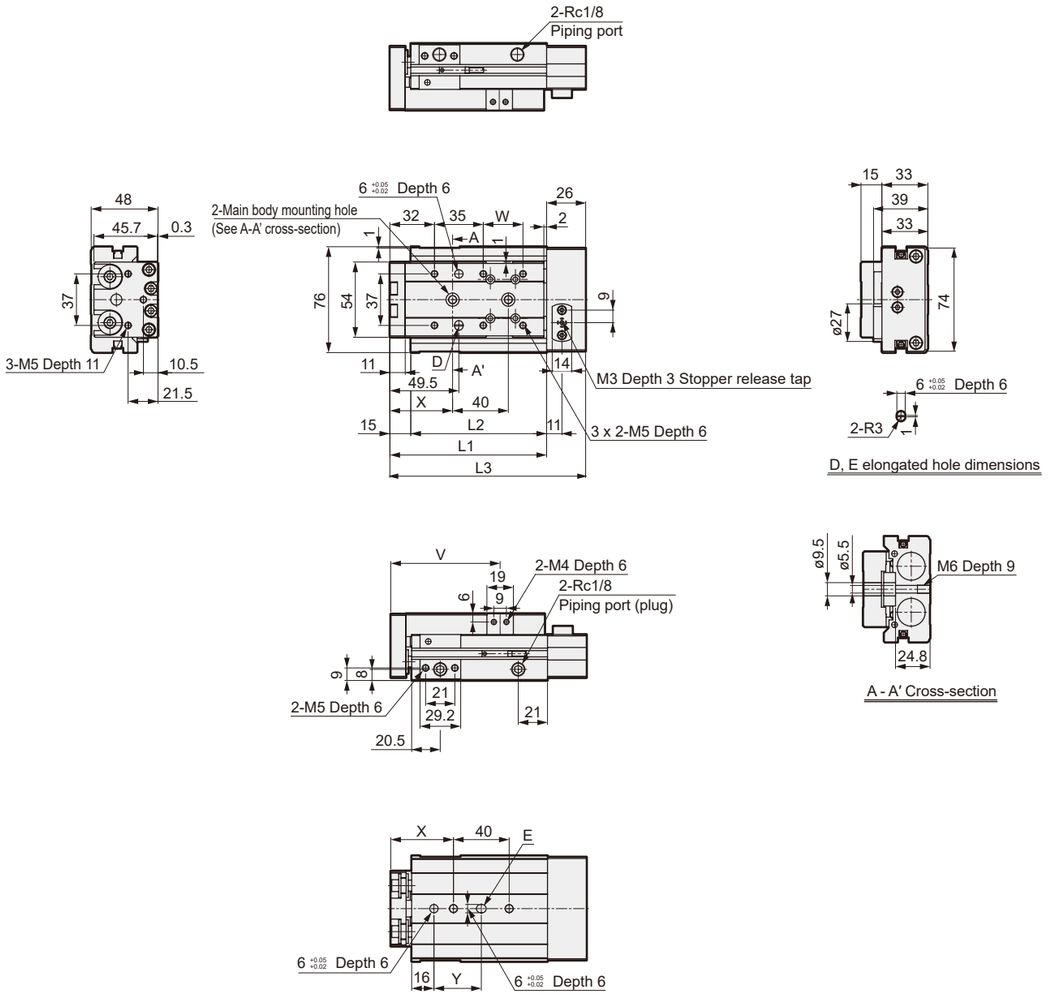
Dimension table by stroke

Code	Stroke		
	75	100	125
L1	160	185	210
L2	147.5	172.5	197.5
L3	186	211	236
n	4	5	
V	123.3	148.3	173.3
W	60	85	110
X	39	37	49
Y	93.5	121.5	133.5

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outline dimension drawing (Bore size: ø20)

● LCR-Q-20
Stroke: 10, 20, 30, 40, 50



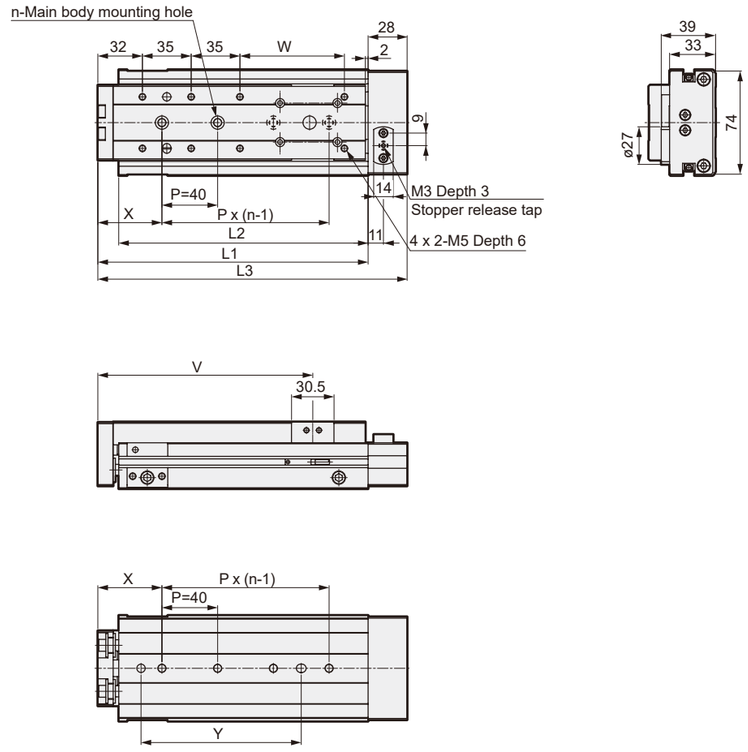
Dimension table by stroke

Code	Stroke				
	10	20	30	40	50
L1	112.5			122.5	132.5
L2	97.5			107.5	117.5
L3	140.5			150.5	160.5
V	78.5			88.5	98.5
W	28.5			38.5	48.5
X	45			51	49
Y	34			40	38

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112 and P 13.

Outline dimension drawing (Bore size: ø20)

●LCR-Q-20
Stroke: 75, 100, 125, 150



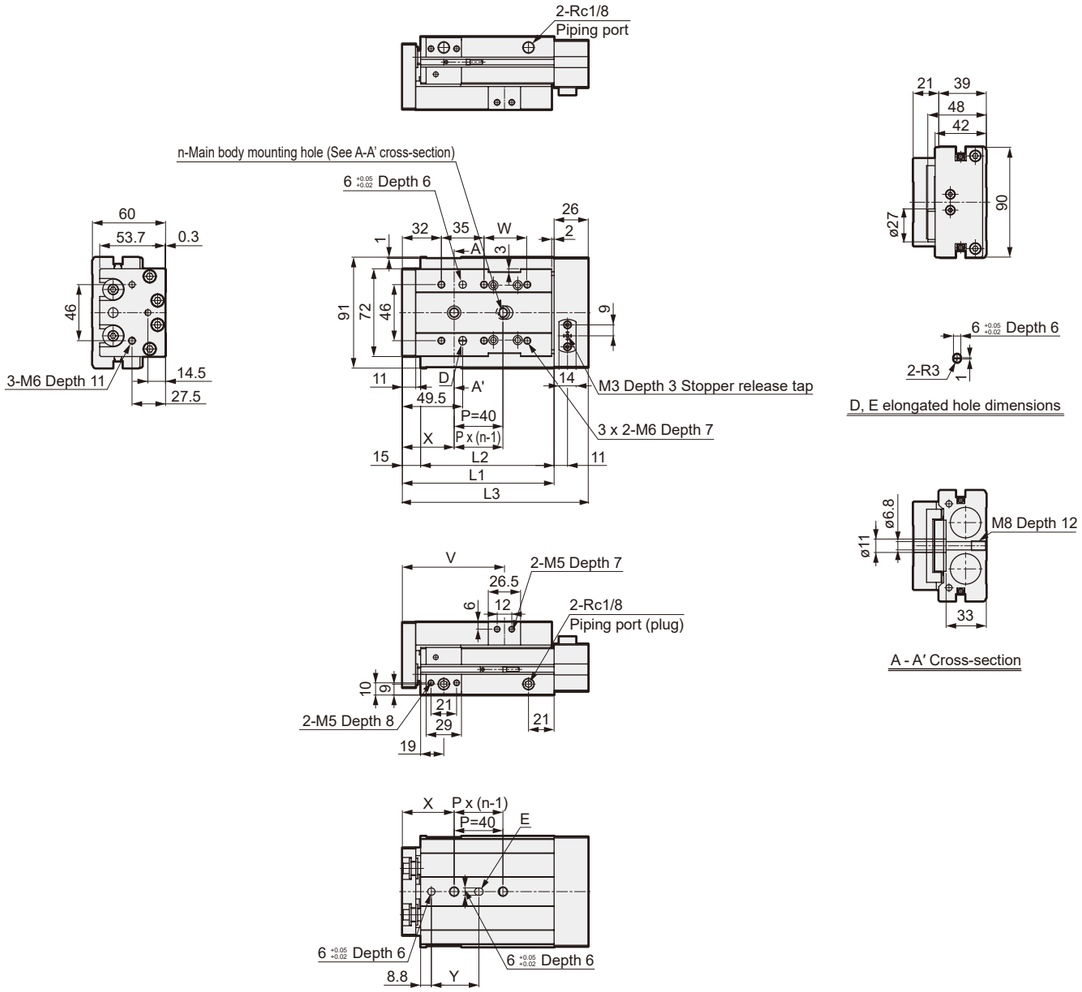
Dimension table by stroke

Code	Stroke			
	75	100	125	150
L1	169	194	219	244
L2	154	179	204	229
L3	197	222	247	272
n	3	4		5
V	129.3	154.3	179.3	204.3
W	50	75	100	125
X	46		53	51
Y	75	115	122	160

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outline Dimension Drawing (Bore size : ø25)

● LCR-Q-25
Stroke: 10, 20, 30, 40, 50



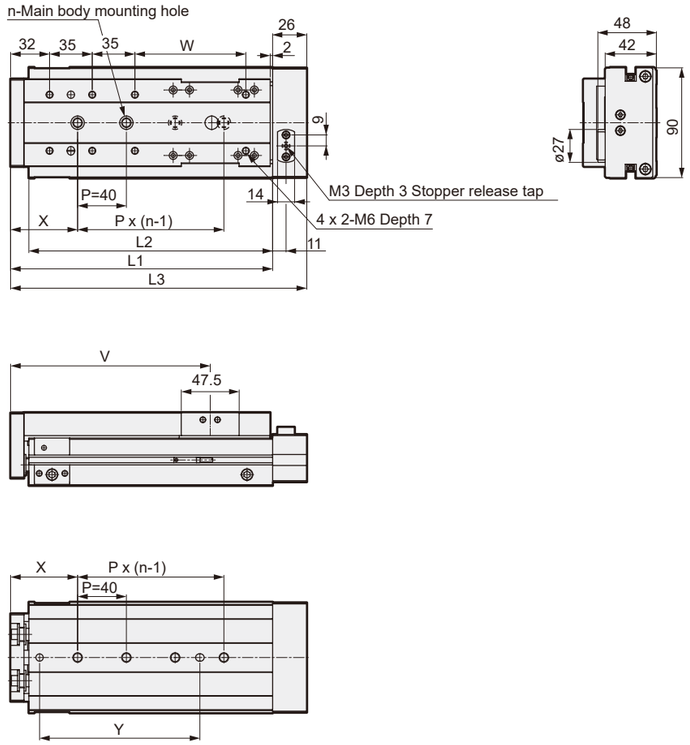
Dimension table by stroke

Code	Stroke				
	10	20	30	40	50
L1	124.5			134.5	144.5
L2	109.5			119.5	129.5
L3	152.5			162.5	172.5
n	2			3	2
V	83.8			93.8	103.8
W	35.5			45.5	55.5
X	42.5			45.5	60.5
Y	39			42	57

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outline Dimension Drawing (Bore size : ø25)

● LCR-Q-25
Stroke: 75, 100, 125, 150



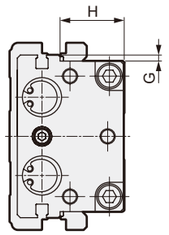
Dimension table by stroke

Code	Stroke			
	75	100	125	150
L1	190	215	240	265
L2	175	200	225	250
L3	218	243	268	293
n	3	4	5	
V	138.8	163.8	188.8	213.8
W	66	91	116	141
X	60	55	45	60
Y	96.5	131.5	161.5	176.5

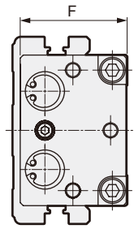
*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for pins is JIS tolerance m6 or less.
*2: For dimensions of models with switches, see P. 112, 113.

Outer Dimensions Diagram with Option

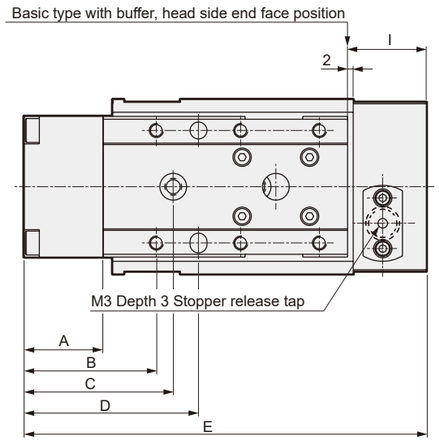
● LCR-Q-□-□-B (With buffer)



Option code: BL



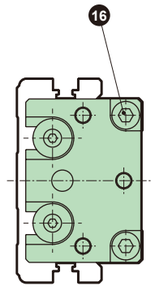
Option code: B

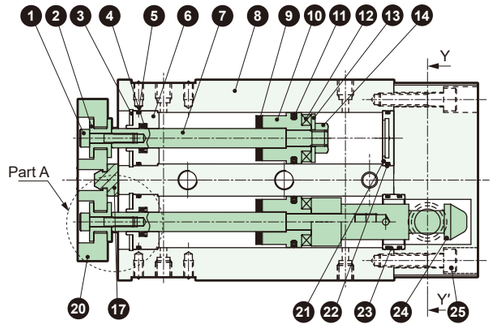


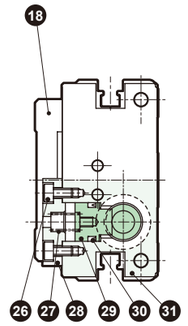
Code / Bore Size (mm)	A	B	C Stroke (mm) 10	20	30	40	50	75	100	125	150	D
ø8	21.5	34.5	42.5	42.5	42.5	41	42.5	39.5	-	-	-	44.5
ø12	27	44	55.5	55.5	55.5	54	50	52.5	65	-	-	56.5
ø16	28	47	53	53	53	64.5	54.5	58	56	68	-	62
ø20	31	52	65	65	65	71	69	66	66	73	71	69.5
ø25	34	55	65.5	65.5	65.5	68.5	83.5	83	78	68	83	72.5

Code / Bore Size (mm)	E Stroke (mm) 10	20	30	40	50	75	100	125	150	F	G	H	I
ø8	103.5	103.5	113.5	132.5	142.5	167.5	-	-	-	23.5	3.2	13.5	23
ø12	133.5	133.5	133.5	143.5	153.5	187.5	212.5	-	-	29	3.2	16	24.5
ø16	143	143	143	153	163	205	230	255	-	35.5	1	21.3	28
ø20	160.5	160.5	160.5	170.5	180.5	217	242	267	292	45.5	4	24.5	30
ø25	175.5	175.5	175.5	185.5	195.5	241	266	291	316	56	-	31	30

Internal Structure Diagram / Material

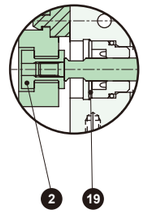






Y-Y' Cross-section

When part A is ø8

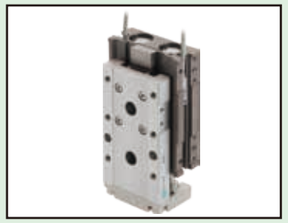


Part No.	Part Name	Material	Remarks
1	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
2	Floating bush	Stainless Steel	
3	C-type retaining ring	Steel	ø8 to 25 only
4	Rod Packing	Nitrile Rubber	
5	Metal gasket	Nitrile Rubber	
6	Rod Metal	Aluminum Alloy	Alumite
7	Piston Rod	Stainless Steel	
8	Cylinder Body	Aluminum Alloy	Hard Anodized
9	Cushion rubber (R)	Urethane Rubber	
10	Piston	Aluminum Alloy	Chromate
11	Piston Packing	Nitrile Rubber	
12	Magnet	Plastic	
13	Plain Washer	Stainless Steel	
14	Hexagon Nut	Stainless Steel	
15	Plug	ø8 to ø16: Stainless steel ø20 to ø25: Steel	
16	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate

Part No.	Part Name	Material	Remarks
17	Cushion rubber (H)	Urethane Rubber	
18	Table	Aluminum Alloy	Alumite
19	Cap	Stainless Steel	
20	End plate	Aluminum Alloy	Alumite
21	Cover	Aluminum Alloy	
22	Gasket	Nitrile Rubber	
23	Joint ring	ø8: Stainless steel ø12 to 25: Aluminum alloy	ø12 to 25: Chromate
24	Sleeve	Carbon steel	Nitriding Treatment
25	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
26	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
27	Coil Spring	Steel	
28	Stopper Cover	Aluminum Alloy	Alumite
29	Stopper Piston	Carbon steel	Nitriding Treatment
30	Stopper packing	Nitrile Rubber	
31	Head Cover	Aluminum Alloy	Alumite

Consumable Parts List

Bore size (mm)	Kit Number	Consumable Part Number: Drop prevention part consumable parts	Consumable Part Number: Basic part consumable parts
ø8	LCR-Q-8K	30	4 5 9 11 17 22
ø12	LCR-Q-12K		
ø16	LCR-Q-16K		
ø20	LCR-Q-20K		
ø25	LCR-Q-25K		

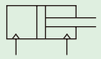


Linear Slide Cylinder Double Acting, Ultra Low Speed Type

LCR-F Series

● Bore size: ø12, ø16, ø20, ø25

Circuit Diagram Symbol

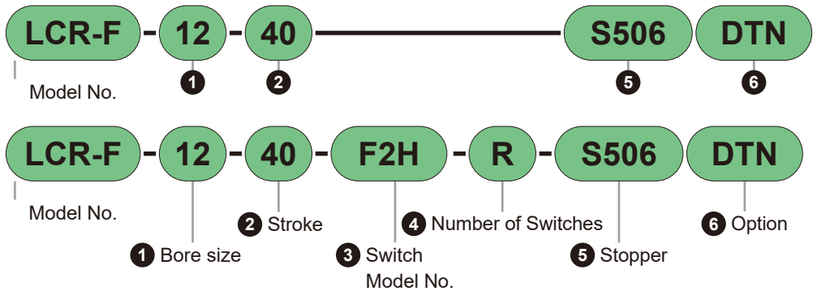


RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

With Switch
(Built-in magnet for switch)



1 Bore Size (mm)

Code	Content
12	ø12
16	ø16
20	ø20
25	ø25

2 Stroke (mm)

Stroke (mm)		Applicable Bore size ø12	ø16	ø20	ø25
Standard Stroke	10	●	●	●	●
	20	●	●	●	●
	30	●	●	●	●
	40	●	●	●	●
	50	●	●	●	●
	75	●	●	●	●
	100	●	●	●	●
	125		●	●	●
	150			●	●

3 Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20	-	F2S□	
		3-wire (NPN)	-	30 or less	-	50 or less	-	F3S□	
		2-wire	-	10 to 30	-	5 to 20 *2	F2H□	F2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3H□	F3V□	
		3-wire (PNP)	-	30 or less	-	50 or less	F3PH□	F3PV□	
	2-Color	2-wire	-	24±10%	-	5 to 20	F2YH□	F2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3YH□	F3YV□	
	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Water Resistance Improved	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	1-Color Flexible Lead Wire Type		-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder.
*4 : Switches other than the model Nos. listed above are also available. (Custom Product) For details, see P. 753.
*5 : For 1 Bore size ø16 to ø25, F type switch cannot be selected.
*6 : For 1 Bore size ø12, T-type switch cannot be selected.

*** Lead wire length, connector specification**

	Code	Content
	Blank	1 m (Standard)
	3	3 m (Option)
*7	5	5 m (Option)
*8	W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*7 : For F type switch, 5 m cannot be selected.
*8 : Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

4 Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

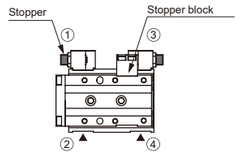
5 Stopper For details, see P. 106.

	Code	Content	
*2	Blank	No stopper	
	'S' Stroke adjustment stopper *3, *4, *6		
	S1□□	Stopper position ① (④ Changeable to)	Stopper mounting position
	S2□□	Stopper position ② (③ Changeable to)	
*10	S3□□	Stopper position ③ (② Changeable to)	
*10	S4□□	Stopper position ④ (① Changeable to)	
	S5□□	Stopper position ①, ③	
	S6□□	Stopper position ②, ④	
	'A' Shock absorber type stopper *3, *5, *6		
	A1	Stopper position ① (④ Changeable to)	Stopper mounting position
	A2	Stopper position ② (③ Changeable to)	
*10	A3	Stopper position ③ (② Changeable to)	
*10	A4	Stopper position ④ (① Changeable to)	
	A5	Stopper position ①, ③	
	A6	Stopper position ②, ④	
	'W' Double-sided combination double stopper (Shock absorber type stopper, Metal stopper) *5, *7, *8		
	W1	A1 + Metal stopper	Stopper mounting position
	W2	A2 + Metal stopper	
	W3	A3 + Metal stopper	
	W4	A4 + Metal stopper	
	W5	A5 + Metal stopper	
	W6	A6 + Metal stopper	
	'C' Single-sided mixed stopper mix (Shock absorber type stopper, Stroke adjustment stopper) *5		
	C1□□	A1 + S3	Stopper mounting position
	C2□□	A2 + S4	
	C3□□	A3 + S1	
	C4□□	A4 + S2	

□□ part Stroke adjustment range ●Applicable to all. ▲Applicable to some. *9:

	Extension end side	Retraction end side	Stopper model No. S	A	W	C
Blank	5 mm or none	5 mm or none	●	–	–	●
02	15 mm or none	15 mm or none	●			●
03	25 mm or none	25 mm or none	●			●
04	15 mm	5 mm	▲			–
05	25 mm	5 mm	▲			–
06	5 mm	15 mm	▲			–
07	5 mm	25 mm	▲			–

● Stopper position



*1: For stopper positions ① to ④, refer to the diagram on the right.
*2: The standard port positions when there is no stopper are positions ① and ③ in the diagram on the right.
*3: For combinations of stroke adjustment stoppers, metal stoppers, and Shock absorber type stoppers, refer to 5 Stopper "C□", "W□".
*4 : The stroke adjustment stopper becomes metal touch at an operating pressure of 0.3 MPa or more.
*5 : For the stroke adjustment range when using a Shock absorber type, refer to the dimension table in the stopper outline drawing P. 78.
*6 : A1, A2, A5, and A6 for ø12 to ø25 with a stroke of 20 or less cannot be adjusted with standard stoppers, so they are custom-ordered products.
*7 : For ø12 with 30 to 50 strokes, ø16 with 30 to 50 strokes, when W3 to W6 (double-sided combination stopper) is selected, and if 2 switches are included or used on the head side, please use the straight lead wire type.
*8 : If the double-sided combination type (W) is selected, the stroke adjustment range will be ø12 : 14.5 mm, ø16 : 15 mm, ø20 : 13 mm, ø25 : 10 mm.
*9 : Selectable only when using stroke adjustment stopper (S) and single-sided mixed type (C).
*10 : When changing the stopper position from the head side to the rod side, a separate stopper must be purchased, depending on the stroke and stroke adjustment amount. Please check "Precautions when purchasing stopper single items" on P. 62. Depending on the stroke, A1, A2, and adjustment amounts of 15 mm and 25 mm may not be possible.
*11 : For stopper combinations, refer to the combination availability table on P. 108.

6 Option

	Code	Content	
	Stopper part port *2, *4		
	Blank	No port	
*1	D	Side and bottom ports available	
	Stopper block material *2		
	Blank	Steel	
	T	Steel (nitriding treatment)	
	Plug included		
	Blank	None	
*4	N	Plug for side piping port included (ø12 to ø20)	

*1: For port positions, refer to the stopper outline drawing P. 78.
*2: Selectable only when stopper type is selected.
*3: If the double-sided combination type (W) is selected, the stopper part port is standard, so option "D" cannot be selected.
*4 : Select when using with rear piping.

Clean Specification (Catalog No. CB-033SAA)

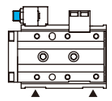
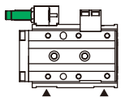
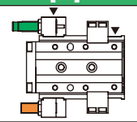
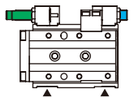
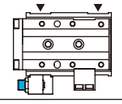
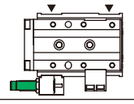
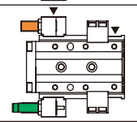
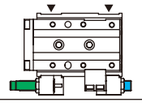
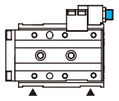
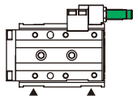
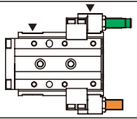
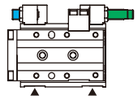
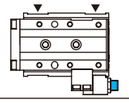
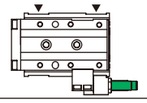
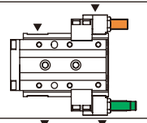
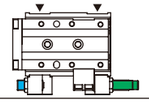
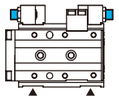
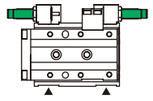
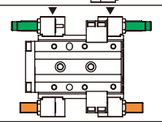
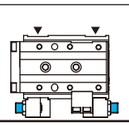
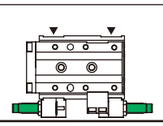
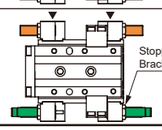
● Dust prevention structure usable in cleanrooms

LCR-F –• • • •– P7□

Stopper Model No. Selection Method

1 Stopper Combination Table

Model No. - [①Stopper type] [②Stopper position] [③] Example) LCR-F-12-40- [S] [5] 06

Stopper position [②]	Stopper type [①] Stroke adjustment type (single side) [S]	Shock absorber type (single side) [A]	Double-sided combination double stopper [W]	Single-sided mixed stopper mix [C]
[1]	[S1] 	[A1] 	[W1] 	[C1] 
[2]	[S2] 	[A2] 	[W2] 	[C2] 
[3]	[S3] 	[A3] 	[W3] 	[C3] 
[4]	[S4] 	[A4] 	[W4] 	[C4] 
[5]	[S5] 	[A5] 	[W5] 	
[6]	[S6] 	[A6] 	[W6]  Stopper Bracket	

▲ indicates the piping direction.
If the double-sided combination type [W] is selected, the stopper brackets on both sides will have piping, and the stopper bracket on the side opposite to the ▲ (piping direction) will have a plug.

: Shock absorber type stopper
: Stroke adjustment stopper (adjustment range 5 mm)
: Metal stopper (adjustment range 15 mm)

Stopper Model No. Selection Method

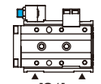
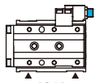
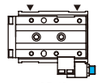
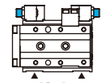
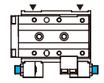
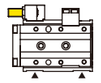
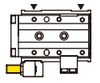
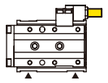
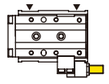
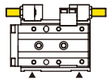
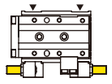
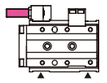
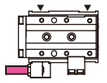
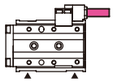
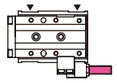
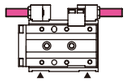
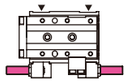
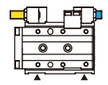
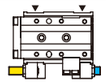
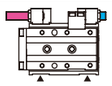
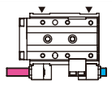
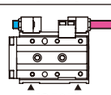
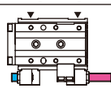
2 Stopper Combination Table

Model No. - [①Stopper type] [②Stopper position] [③Stroke adjustment range]

Example) LCR-F-12-40-S5 [06]

In case of stroke adjustment stopper -S

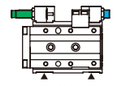
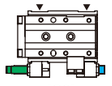
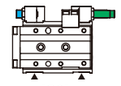
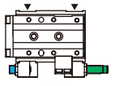
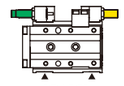
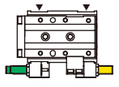
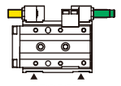
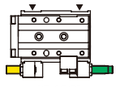
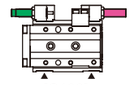
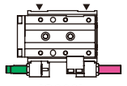
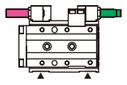
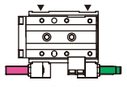
: Stroke adjustment stopper (adjustment range 5 mm)
: Stroke adjustment stopper (adjustment range 15 mm)
: Stroke adjustment stopper (adjustment range 25 mm)

Stroke adjustment range [③]	Stopper adjustment range: Extension end side	Stopper adjustment range: Retraction end side	Stopper type, Stopper position [① ②] [S1]	[S2]	[S3]	[S4]	[S5]	[S6]
Blank	5 mm or none	5 mm or none	[S1] 	[S2]	[S3] 	[S4] 	[S5] 	[S6] 
[02]	15 mm or none	15 mm or none	[S102] 	[S202] 	[S302] 	[S402] 	[S502] 	[S602] 
[03]	25 mm or none	25 mm or none	[S103] 	[S203] 	[S303] 	[S403] 	[S503] 	[S603] 
[04]	15 mm	5 mm					[S504] 	[S604] 
[05]	25 mm	5 mm					[S505] 	[S605] 
[06]	5 mm	15 mm					[S506]	[S606]
[07]	5 mm	25 mm					[S507] 	[S607] 

▲ indicates the piping direction.
Cannot be selected for Shock absorber type [A] or double-sided combination type [W].

In case of single-sided mixed stopper mix -C

: Shock absorber type stopper
: Stroke adjustment stopper (adjustment range 5 mm)
: Stroke adjustment stopper (adjustment range 15 mm)
: Stroke adjustment stopper (adjustment range 25 mm)

Stroke adjustment range [③]	Stopper adjustment range: Extension end side	Stopper adjustment range: Retraction end side	Stopper type, Stopper position [① ②] [C1]	[C2]	[C3]	[C4]
Blank	5 mm or Shock absorber	5 mm or Shock absorber	[C1] 	[C2] 	[C3] 	[C4] 
[02]	15 mm or shock suppressor	15 mm or shock suppressor	[C102] 	[C202] 	[C302] 	[C402] 
[03]	25 mm or shock suppressor	25 mm or shock suppressor	[C103] 	[C203] 	[C303] 	[C403] 

▲ indicates the piping direction.
For the stroke adjustment range of the Shock absorber type, refer to the dimension table in the stopper outline drawing P. 78.

LCR-F Ultra Low Speed Type Combination Availability Table

(Combination with stroke adjustment stopper, Shock absorber type stopper)

● : Not combinable - : Not combinable

Model No.	Stopper type		Stroke adjustment type																							
	Stopper code		S1			S2			S3			S4			S5							S6					
			Adjustment range code																							
	Bore size	Stroke	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	04	05	05	07	Blank	02	03	04	05	06	07
LCR	ø12 to ø25	10	●	-	-	●	-	-	●	●	-	●	●	-	●	-	-	-	-	●	-	●	-	-	-	-	●	-
		20	●	●	-	●	●	-	●	●	●	●	●	●	●	●	-	●	-	●	●	●	●	-	●	-	●	●
		30 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Model No.	Stopper type		Shock absorber type						Double-sided combination double stopper						Single-sided mixed stopper mix											
	Stopper code		A1	A2	A3	A4	A5	A6	W1	W2	W3	W4	W5	W6	C1			C2			C3			C4		
															Adjustment range code											
	Bore size	Stroke													Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03
LCR	ø12 to ø25	10	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	-	-	●	-	-
		20	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	●	-	●	●	-
		30 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Option Code D : Stopper part with port, T : Please refer to the combination table above to determine if a steel stopper block (nitrided) can be selected. (● : Selectable - : Not selectable)

MEMO

Specifications

Item		LCR-F			
Bore size mm		ø12	ø16	ø20	ø25
Actuation method		Double Acting Type			
Operating Fluid		Compressed Air			
Max. Working Pressure MPa		0.7			
Min. Operating Pressure MPa		0.15			
Proof Pressure MPa		1.05			
Ambient Temperature °C		5 to 60			
Port Size	Main body side	M5		Rc1/8	
	Main body rear	M3		M5	Rc1/8
Stroke tolerance mm		+2.0 0 (*1)			
Operating Piston Speed mm/s		5 to 200 (No load, 0.5 mPa)			
Cushion		With Rubber Cushion			
Lubrication		Not Available			
Allowable Absorbed Energy J		Refer to Table 3 on P. 114.			

*1: When used without a stopper, please note that there is a slight gap between the end plate and the floating bush.
*2: The stroke adjustment stopper becomes metal touch at an operating pressure of 0.3 MPa or more.

Stroke

Bore Size (mm)	Standard Stroke (mm)
ø12	10, 20, 30, 40, 50, 75, 100
ø16	10, 20, 30, 40, 50, 75, 100, 125
ø20	10, 20, 30, 40, 50, 75, 100, 125, 150
ø25	10, 20, 30, 40, 50, 75, 100, 125, 150

*Strokes other than the above cannot be manufactured.

Theoretical Thrust Table

See P. 115.

Cylinder Weight

● Ultra Low Speed Type (Unit : g)

Bore size (mm)	Stroke (mm)								
	10	20	30	40	50	75	100	125	150
ø12	310	320	320	360	390	520	610	-	-
ø16	490	500	500	550	610	840	970	1,110	-
ø20	900	910	920	1,000	1,090	1,390	1,600	1,810	2,020
ø25	1,620	1,640	1,650	1,760	1,860	2,350	2,620	2,890	3,160

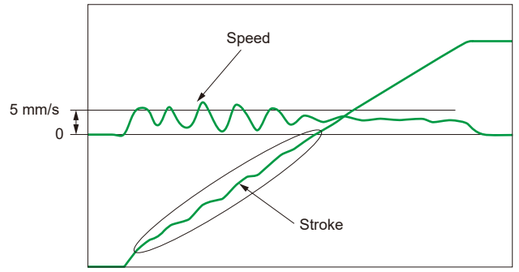
● Option increase (Unit : g)

Bore size (mm)	Stopper code			
	S1 to S4	S5, S6	A1 to A4	A5, A6
ø12	70	100	80	110
ø16	110	150	120	160
ø20	170	250	180	270
ø25	290	380	300	400

Low-speed performance

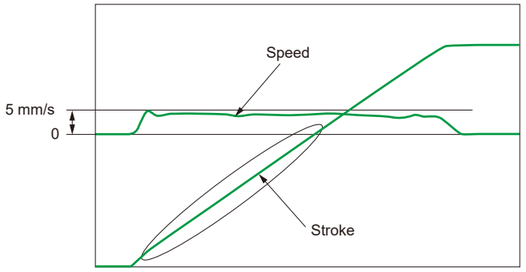
The following data is for no load and a supply pressure of 0.5 MPa. Note that these are not guaranteed values as they vary depending on measurement conditions, etc.

● LCR-12-30



Stick-slip occurs mid-stroke when speed is set to 5 mm/s

● LCR-F-12-30



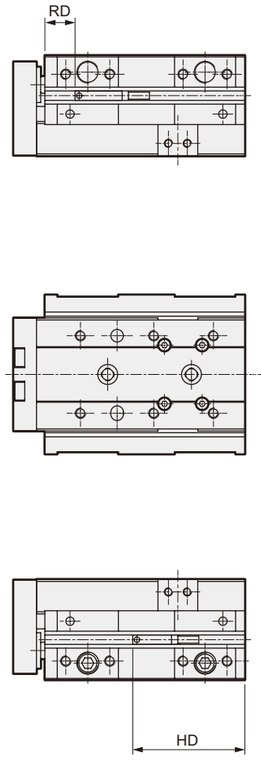
Even at a speed of 5 mm/s where stick-slip occurs in the basic type, the ultra low speed type allows for stable operation without stick-slip.

Outline Dimension Drawing

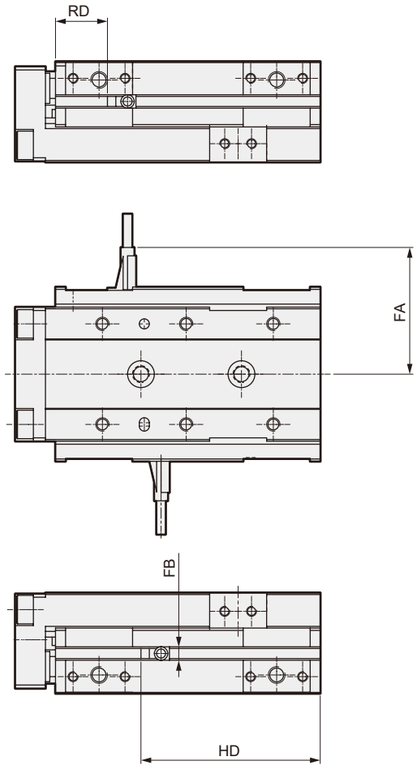
Same as double acting/single rod type. See P. 70 to 78.

LCR Series Outline Dimension Drawing with Switch

● F2H/V, F3H/V, F2YH/V, F3YH/V, F3PH/V, LCR, LCR-Q, LCR-F



● F2S, F3S
LCR, LCR-Q, LCR-F

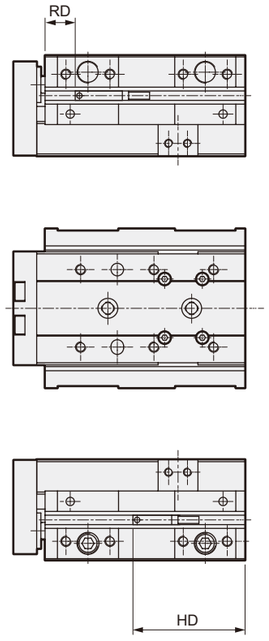


LCR, LCR-Q, LCR-F							
Code / Bore Size (mm)	Stroke	F2, F3, F2Y, F3Y, F3P		F2S, F3S			
		RD	HD	FA	FB	RD	HD
ø6	10	15	33	29.1	4	14	34
	20, 30		23				24
	40, 50		33				34
ø8	10	13	34	32.6	4	12	35
	20, 30		24				25
	40, 50, 75		33				34
ø12	10	16.5	52.5	37.8	4	15.5	53.5
	20		42.5				43.5
	30, 40, 50		32.5				33.5
	75, 100		41.5				42.5

Note) For switch mountability, refer to the model No. display method for each variation.

LCR Series Outline Dimension Drawing with Switch

● T0H/V, T5H/V, T2H/V, T3H/V, T3PH/V, T2*R3, T2WH/V, T3WH/V, T2WLH/V
LCR, LCR-Q, LCR-F

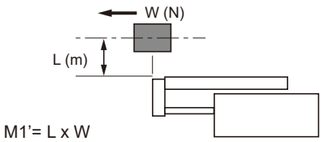


LCR, LCR-Q, LCR-F					
Code / Bore Size (mm)	Stroke	T0, T5, T2, T3, T3P, T2□R3		T2W, T3W, T2WL	
		RD	HD	RD	HD
ø16	10	17	56.5	19.5	54
	20		46.5		44
	30, 40, 50		36.5		34
	75, 100, 125		53.5		51
ø20	10	20.5	65	22	63
	20		55		53
	30, 40, 50		45		43
	75, 100, 125, 150		57.5		55.5
ø25	10	19	78.5	21	76.5
	20		68.5		66.5
	30, 40, 50		58.5		56.5
	75, 100, 125, 150		79		77

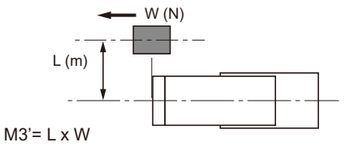
Note) For switch mountability, refer to the model No. display method for each variation.

STEP-1

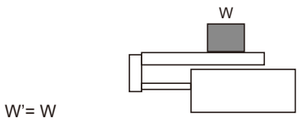
● Determine the load and impact moment in each direction that occurs at the stroke end.



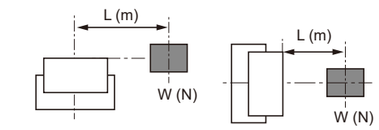
M1'= L x W



M3'= L x W



W'= W



M2'= L x W

From [Table 1], determine the approximate value of the G coefficient.

[Table 1] Va (Average speed) = $\frac{\text{Travel distance}}{\text{Travel time}}$ (m/s)

Va average speed (m/s)	Vm Stroke end speed (m/s)	G coefficient
Up to 0.07	Up to 0.1	5
Up to 0.2	Up to 0.3	14
Up to 0.27	Up to 0.4	19
Up to 0.35	Up to 0.5	24

G coefficient = ☐

M1' x G = ☐ (N·m)

M2' = ☐ (N·m)

M3' x G = ☐ (N·m)

W' = ☐ (N)

$E' = \frac{1}{2} \times (m + m_\alpha) \times V_m^2$

= ☐ (J)

$(m \approx \frac{W}{9.8})$

● Temporarily select a Bore size that satisfies the following conditional expression.

$$M'_T = \frac{M1' \times G}{M1'\,max} + \frac{M2'}{M2'\,max} + \frac{M3' \times G}{M3'\,max} + \frac{W'}{W'\,max} < 1$$

E' < E max

M'_T	: Combined Moment (Must be less than 1)
G	: G coefficient
W'max	: Max. allowable value of W' (from Table 2)
M1'max	: Max. allowable value of M1' (from Table 2)
M2'max	: Max. allowable value of M2' (from Table 2)
M3'max	: Max. allowable value of M3' (from Table 2)
E max	: Max. allowable value of Eo (from Table 2)
m_α	: Table Weight (from Table 4)

[Table 2] Allowable Static Load Values

Bore size	Stroke (mm)	Vertical load W'max (N)	Bending moment M1'max (N·m)	Lateral bending moment M2'max (N·m)	Torsional Moment M3'max (N·m)
ø6	10 to 30	140	1.7	3.5	1.7
	40 to 50	186	10.7	5.6	10.7
ø8	10 to 30	140	1.7	3.5	1.7
	40 to 75	186	10.7	5.6	10.7
ø12	10 to 50	220.8	5.7	9.8	5.7
	75 to 100		22.2		22.2
ø16	10 to 50	380.8	17.8	19.2	17.8
	75 to 125		37.3		37.3
ø20	10 to 50	548.8	31.1	37.6	31.1
	75 to 150		56.2		56.2
ø25	10 to 50	961.5	65.1	116.3	65.1
	75 to 150		127.5		127.5

Note) When installing the load on the end plate, even if a long stroke (ø6, 8...40 or more, ø12 or more...75 or more) is selected, calculate the allowable value using the short stroke (ø6, 8...30 or less, ø12 or more...50 or less) value.

[Table 3] LCR Allowable Absorbed Energy (Eo)

Bore size	Standard (J)	With stroke adjustment stopper (J)	With Shock absorber type stopper (J)
ø6	0.025	0.0032	0.14
ø8	0.058	0.0032	0.25
ø12	0.112	0.014	0.25
ø16	0.176	0.043	0.65
ø20	0.314	0.055	1.3
ø25	0.314	0.14	1.3

[Table 4] Table Weight (Unit : kg)

Bore size	Stroke (mm)									P72, P73 Increase	B, BL Increase
	10	20	30	40	50	75	100	125	150		
ø6	0.035	0.035	0.04	0.05	0.055	-	-	-	-	0.005	0.030
ø8	0.055	0.055	0.06	0.075	0.08	0.095	-	-	-	0.015	0.030
ø12	0.13	0.13	0.13	0.14	0.155	0.195	0.225	-	-	0.025	0.060
ø16	0.185	0.185	0.185	0.2	0.215	0.285	0.325	0.365	-	0.035	0.070
ø20	0.29	0.29	0.29	0.315	0.335	0.415	0.47	0.525	0.585	0.045	0.140
ø25	0.505	0.505	0.505	0.54	0.58	0.745	0.835	0.925	1.015	0.075	0.310

STEP-2

Next, load factor, effective thrust, stroke end speed and improve the accuracy of the combined moment value.

● Determine the load factor.

$\alpha = \frac{Fo}{F} \times 100$ [%]

α : Load factor

Fo : Force required to move the workpiece (N)

F : Cylinder theoretical thrust (N) [Table 5]

During horizontal operation	During vertical operation
Fo = Fw	Fo = W+Fw
FW: Wx0.2 Note)(N) W: Load (N)	

Note) Friction Coefficient

[Table 5] Theoretical Thrust Table (Unit : N)

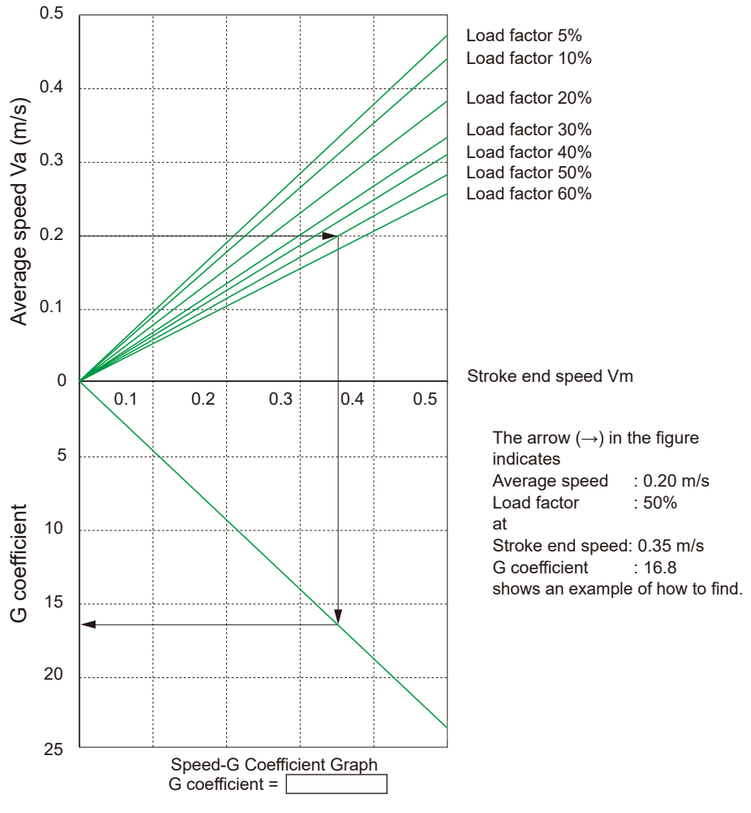
Bore size (mm)	Operating Direction	Operating pressure MPa						
		0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø6	PUSH	8	11	17	23	28	34	40
	PULL	6	8	13	17	21	25	30
ø8	PUSH	15	20	30	40	50	60	70
	PULL	11	15	23	30	38	45	53
ø12	PUSH	34	45	68	90	113	136	158
	PULL	25	34	51	68	85	102	119
ø16	PUSH	60	80	121	161	201	241	281
	PULL	52	69	104	138	173	207	242
ø20	PUSH	94	126	188	251	314	377	440
	PULL	79	106	158	211	264	317	369
ø25	PUSH	147	196	295	393	491	589	687
	PULL	124	165	247	330	412	495	577

[Table 6] Load Factor Guideline

Operating pressure MPa	Load factor (%)
0.2 to 0.3	α≤40
0.3 to 0.6	α≤50
0.6 to 0.7	α≤60

STEP-3

From the average speed (Va) and the load factor obtained in STEP-2, determine the stroke end speed (Vm) and G coefficient.



Speed-G Coefficient Graph
G coefficient = ☐

The arrow (→) in the figure indicates
Average speed : 0.20 m/s
Load factor : 50%
at
Stroke end speed: 0.35 m/s
G coefficient : 16.8
shows an example of how to find.

STEP-4

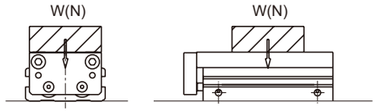
Obtained from STEP-3
From G coefficient stroke end speed (Vm)
Confirm the combined moment (MT).

M1' x G = ☐ (N·m)
M2' = ☐ (N·m)
M3' x G = ☐ (N·m)
W' = ☐ (N)

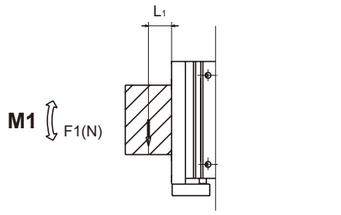
$$M'_T = \frac{M1' \times G}{M1' \max} + \frac{M2'}{M2' \max} + \frac{M3' \times G}{M3' \max} + \frac{W'}{W' \max} = \square$$

Confirm the combined moment MT during travel. (Please note that this is different from what was obtained in STEP-1.)

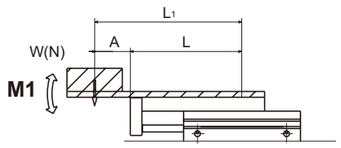
● Vertical load: W (N)



● Bending moment: M1 (N·m)

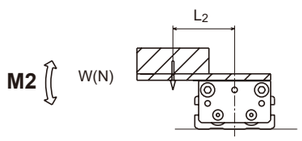


M1=F1xL1

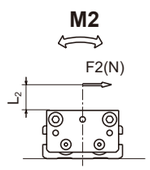


M1=WxL1
L1=A+L
L is the value in the table below

● Lateral bending moment: M2 (N·m)

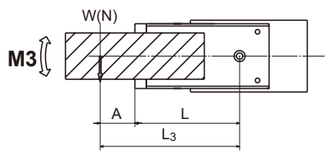


M2=WxL2

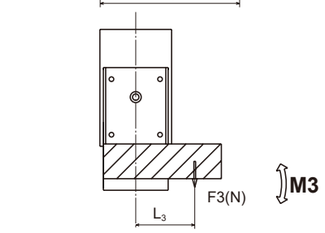


M2=F2xL2

● Torsional Moment : M3 (N·m)



M3=WxL3
L3=A+L
L is the value in the table below



M3=F3xL3

Value of L Unit : (m)

Bore size	Stroke									P72, P73 Increase	B, BL Increase
	10	20	30	40	50	75	100	125	150		
ø6	0.048	0.048	0.058	0.073	0.083	-	-	-	-	0.012	0.0165
ø8	0.048	0.048	0.058	0.072	0.082	0.107	-	-	-	0.020	0.0145
ø12	0.067	0.067	0.067	0.077	0.087	0.117	0.142	-	-	0.020	0.018
ø16	0.071	0.071	0.071	0.081	0.091	0.124	0.149	0.174	-	0.020	0.019
ø20	0.081	0.081	0.081	0.091	0.101	0.126	0.151	0.176	0.201	0.025	0.020
ø25	0.085	0.085	0.085	0.095	0.105	0.14	0.165	0.19	0.215	0.025	0.023

M1=M1 = ☐ (N·m)
M2=M2 = ☐ (N·m)
M3=M3 = ☐ (N·m)
W=W = ☐ (N)

$$M'_T = \frac{M1}{M1 \max} + \frac{M2}{M2 \max} + \frac{M3}{M3 \max} + \frac{W}{W\max} = \square$$

M'T : Combination of moments:
Wmax : Max. allowable value of W (from Table 7)
M1 max : Max. allowable value of M1 (from Table 7)
M2 max : Max. allowable value of M2 (from Table 7)
M3 max : Max. allowable value of M3 (from Table 7)
E max : Max. allowable value of Eo (from Table 2)

[Table 7] Allowable Traveling Load Values

Bore size	Stroke (mm)	Vertical load Wmax (N)	Bending moment M1 max (N·m)	Lateral bending moment M2 max (N·m)	Torsional Moment M3 max (N·m)
ø6	10 to 30	14	0.17	0.35	0.17
	40 to 50	15.5	0.89	0.47	0.89
ø8	10 to 30	14	0.17	0.35	0.17
	40 to 75	15.5	0.89	0.47	0.89
ø12	10 to 50	27.6	0.71	1.2	0.71
	75 to 100		2.2		2.2
ø16	10 to 50	47.6	1.9	2.4	1.9
	75 to 125		4.6		4.6
ø20	10 to 50	68.6	3.4	4.7	3.4
	75 to 150		7.0		7.0
ø25	10 to 50	128.2	7.6	15.5	7.6
	75 to 150		17.0		17.0

Note) When installing the load on the end plate, even if a long stroke (ø6, 8...40 or more, ø12 or more...75 or more) is selected, calculate the allowable value using the short stroke (ø6, 8...30 or less, ø12 or more...50 or less) value.

Confirm that MT, M'T≤1.
↓
Bore size determination
↓
øA

STEP-5

Confirmation of allowable absorbed energy

$$E = \frac{1}{2} \times (m+m_\alpha) \times Vm^2$$

E : Kinetic energy at workpiece end (J)
m : Load weight (kg) ($m \approx \frac{W\ (N)}{9.8}$)
mα : [Table 4] Table Weight
Vm : Stroke end speed (m/s)
E max : Max. allowable value of Eo (from Table 2)

Confirm that E ≤ E max.
↓
Bore size determination
↓
øB

STEP-6

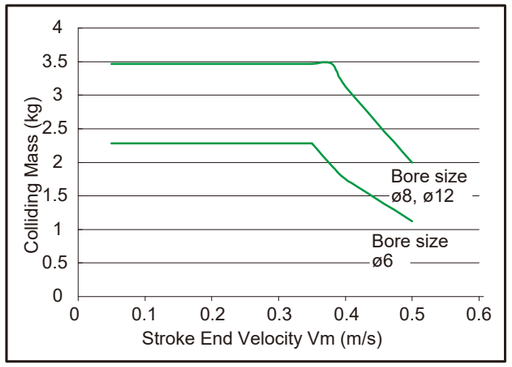
Bore size determined from STEP-4
(Load conditions)
øA

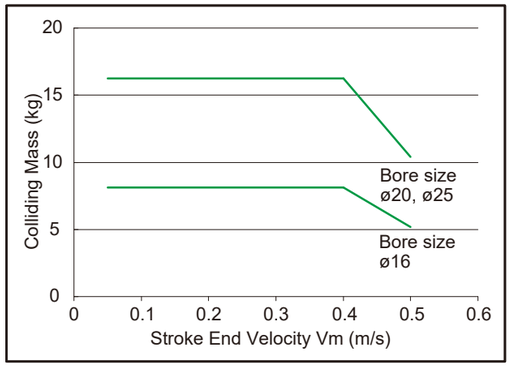
Bore size determined from STEP-5
(Allowable absorbed energy)
øB

øA≤øB → øB is selected.
or → øA Can be addressed by using in combination with an external damper or with a Shock absorber type stopper.
øA > øB → øA is selected.

Shock absorber Type Stopper Selection Confirmation Graph

1. This is a simple confirmation graph for Shock absorber type stoppers. The area inside the graph is the usable range. Select a Bore size that can accommodate a Shock absorber within the usable range.
2. The simple selection graph shows values when the air pressure used for the cylinder is 0.5 MPa.
3. The absorbed energy of the Shock absorber changes with temperature. The simple confirmation graph shows values at room temperature.
4. The colliding weight is the sum of the load weight m and the table weight ma.

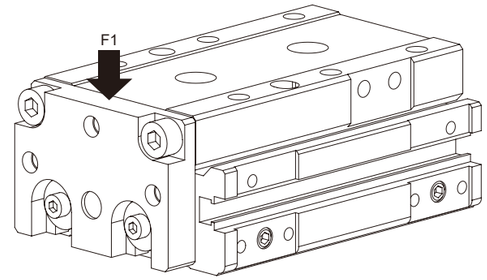


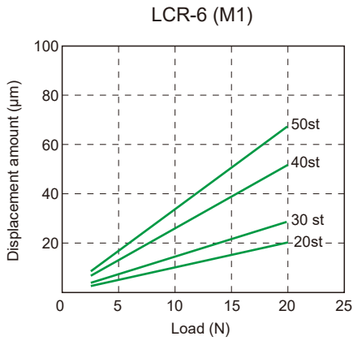


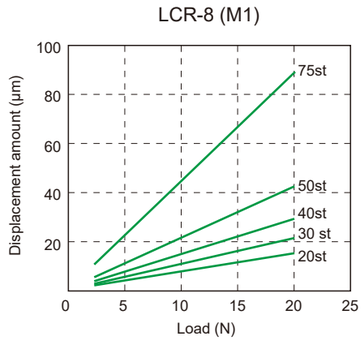
Technical Data

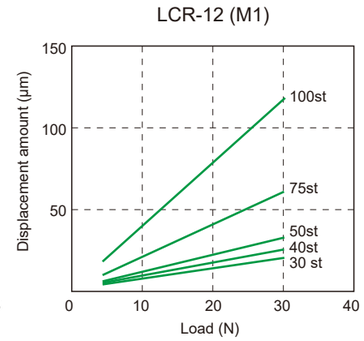
[Table Displacement due to M1 Moment] (Reference Value)

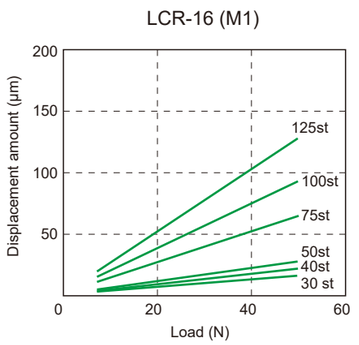
Displacement at the table tip when a load (F1) is applied to the table tip

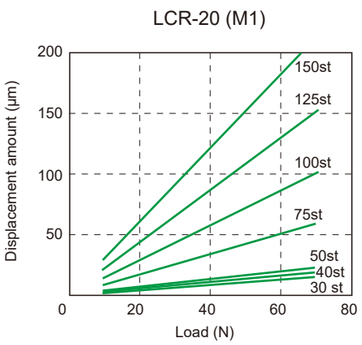


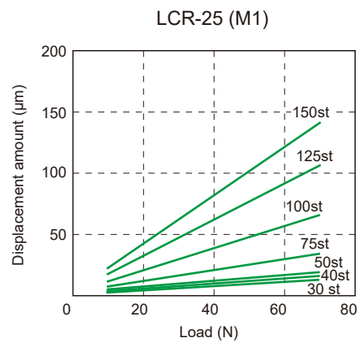






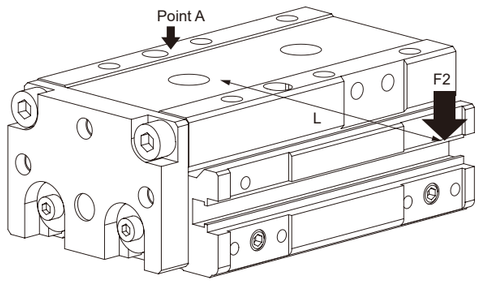






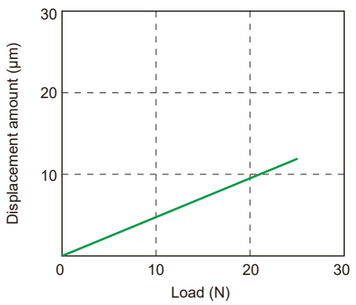
[Table Displacement due to M2 Moment] (Reference Value)

Displacement at the table end (Point A) when a load (F2) is applied at a position Lmm away from the cylinder center

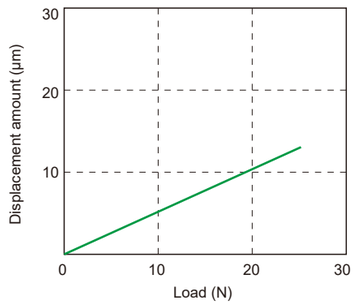


Value of L
ø 6 : L = 70, ø 8 : L = 70
ø12 : L = 90, ø16 : L =100
ø20 : L =100, ø25 : L =200

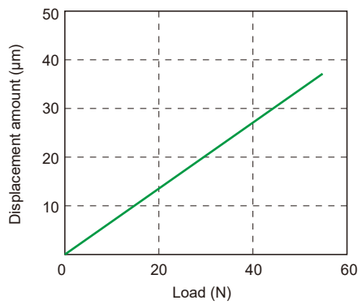
LCR-6 (M2)



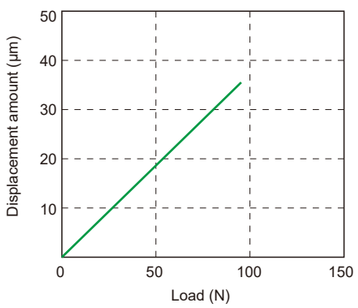
LCR-8 (M2)



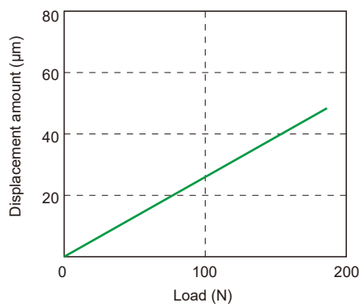
LCR-12 (M2)



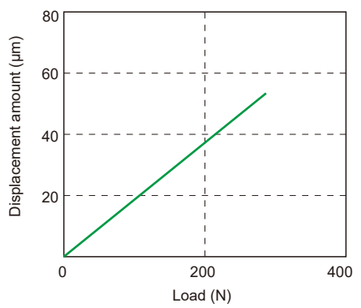
LCR-16 (M2)



LCR-20 (M2)

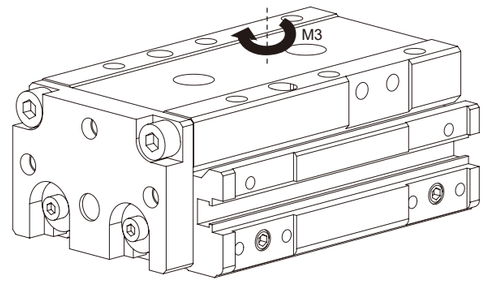


LCR-25 (M2)

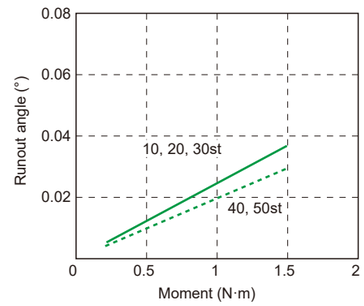


[Table Displacement Angle due to M3 Moment] (Reference Value)

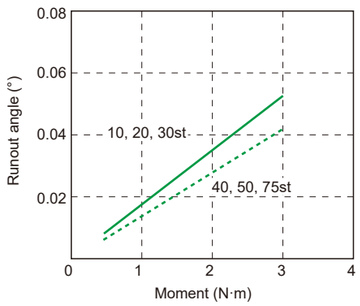
Displacement angle of the table when a rotational moment (M3) is applied to the cylinder



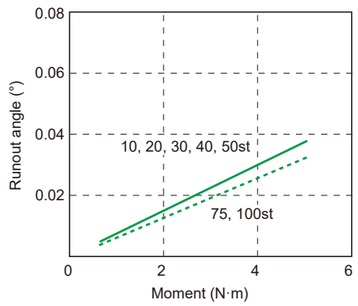
LCR-6 (M3)



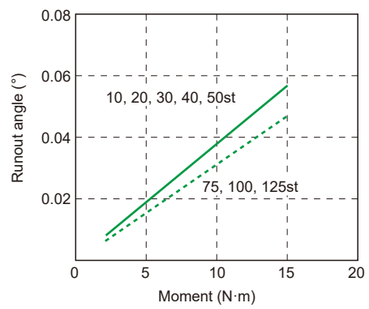
LCR-8 (M3)



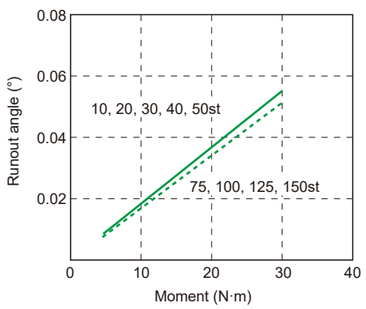
LCR-12 (M3)



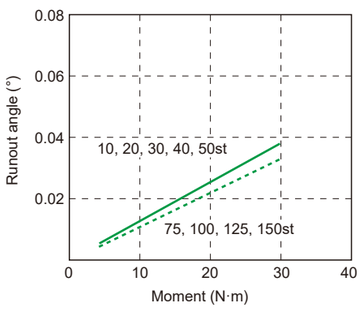
LCR-16 (M3)



LCR-20 (M3)



LCR-25 (M3)



Pneumatic Equipment

To Use This Product Safely

Be sure to read this before use.

For general cylinder information, see Intro 41, and for cylinder switches, see P. 808.

Individual Precautions: Linear Slide Cylinder LCR Series

During Design / Selection

1. Common

Caution

■Select the cylinder according to the "LCR Selection Guide" on P. 114 to 117.

■If the cylinder is used in a place exposed to water droplets or oil droplets, a place where there is a risk of corrosion, or a place with a lot of dust, it may cause damage or malfunction, so protect the product with a cover, etc.

■Precautions for products with switches

- When using a T□V type switch with a stroke adjustment stopper (S3□□, S4□□, S5□□, S6□□) or Shock absorber type stopper (A3□□, A4□□, A5□□, A6□□), the switch on the head side will interfere with the stopper, so mount the switch on the side opposite the stopper.
- For switches with a stroke of 30 or less, one switch is included to each of the two grooves on the main body, so pay attention to the lead wire extraction direction during design.

2. Drop prevention type LCR-Q

Caution

■Do not use 3-position valves.

Avoid using in combination with 3-position valves (especially closed center metal seal type). If pressure is trapped in the port on the side with the lock mechanism, the lock will not engage. Also, even if locked once, air leaking from the valve may enter the cylinder, and the lock may be released over time.

3. Low speed type LCR-F

Caution

■Use without lubrication.

Lubrication may change characteristics.

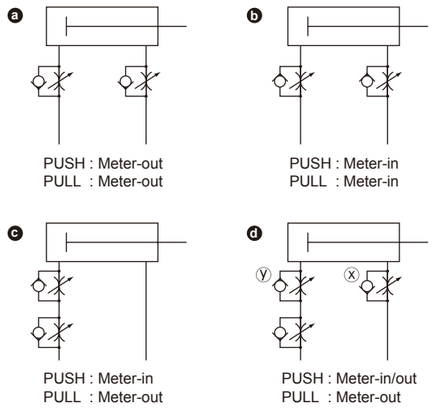
■Install the speed controller near the cylinder.

If installed far from the cylinder, the speed will become unstable. Use SC-M3/M5-F, SC3W, SCD-M3/M5, or SC3U series speed controllers.

■Generally, the higher the air pressure and the lower the load factor, the more stable the speed.

Use with a load factor of 50% or less.

■Speed control with a meter-out circuit provides stability.



When driving a single-rod cylinder at creep speed in the PUSH direction, if the load resistance is small, a flying-out phenomenon may occur at the start of operation. As a countermeasure, use circuits ⓑ, ⓒ, ⓓ.

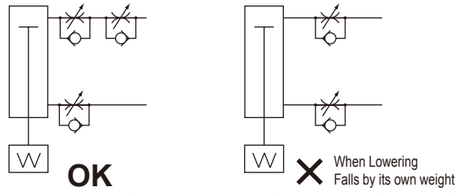
Note that circuit ⓓ is the most stable.

ⓓ Speed adjustment method for PUSH operation of circut :

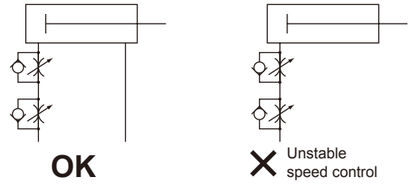
1. Setting speed with the x-axis speed controller
2. Throttle down the y-axis speed controller until lurching is eliminated.
3. Reconfirmation of speed

Note1) ⓑⓒⓓ, the operation of circuit ⓓ is the most stable.

Note2) For vertical mounting, it will fall by its own weight in a meter-in circuit, so combine it with a meter-out circuit.



Note3) For series connection of speed controllers, use the circuit shown in the figure below.



(Guideline for lurching occurrence)

Lurching occurs in the following cases:

• Thrust > Resistance

*Resistance: Thrust due to residual pressure on the exhaust side (For fine speed type, supply pressure = residual pressure) + [For horizontal use: Frictional force due to load / For vertical use: Dead weight of the load

■Do not apply lateral load to the cylinder.

Operation becomes unstable when lateral load is applied.

■Avoid use in places with vibration.

Operation becomes unstable due to the influence of vibration.

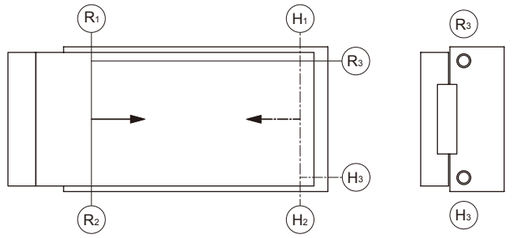
During Use

1. Common; During piping

Caution

■When changing the piping port position, use adhesive for M3 and M5 plugs (hexagon socket head set screws). (Recommended adhesive: Loctite 222/221, ThreeBond 1344, or other low-strength adhesives)

■Piping port position and operating direction



Ⓡ indicates the rod side pressure port, and Ⓗ indicates the head side pressure port. At the time of factory shipment, ports other than Ⓡ1 Ⓗ1 (depending on stopper selection and stopper position Ⓡ2 Ⓗ2) are sealed with plugs.

■Rear piping

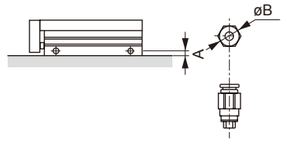
This product, excluding ø6 and drop prevention types, can be used with rear piping (Ⓗ3 ports and in the diagram above Ⓡ3). When using Ⓡ3, Ⓗ3 remove the plug sealing the port and seal the port with the plug from the table below Ⓡ1 Ⓗ1.

Item	Plug
LCR-6	Ⓡ2, Ⓗ2 No port.
LCR-8	M5x5 (Hexagon socket head set screw)
LCR-12	
LCR-16	
LCR-20	R1/8 (Hexagon socket head taper thread plug)
LCR-25	Seal the Ⓡ3, Ⓗ3 ports with the plug that was sealing the Ⓡ1, Ⓗ1 ports.

For ø8 to ø20, it is necessary to prepare two plugs from the table above separately. Plug attachment option (see P. 57) and plug single item model No. (see P. 63) are also available, so please utilize them.

■Precautions for piping fittings

Be sure to use a speed controller when piping. Also, the usable fittings are as follows.



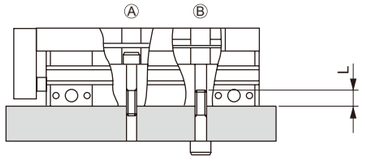
Item Bore Size (mm)	Port Size	Port position dimension A	Usable fittings	Fitting outer diameter B
ø6	M3	4	SC3W-M3-4 SC3U-M3-4 SC3W-M3-3.2 SC3U-M3-3.2 GWS3-M3-S GWS4-M3-S	ø8 or less
ø8	M5	5.5	SC3W-M5-4 SC3W-M5-6 GWS4-M5-S GWS4-M5	ø11 or less
ø12		5.5		
ø16		6.5	SC3W-M5-4 SC3W-M5-6 GWS4-M5-S GWS4-M5 GWL4-M5 GWL6-M5 GWS6-M5	ø13 or less
ø20	Rc1/8	8	SC3W-6-4,6,8 GWS4-6 GWS8-6 GWL6-6 GWS6-6 GWL4-6	ø15 or less
ø25		9		

2. Common; During installation

Caution

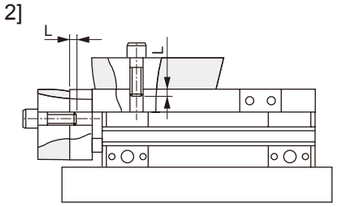
■Please do not make dents or scratches on the mounting surface of the main body (tube) and the table surface that may impair flatness. Also, the flatness of the mating side to be included to the main body and table should be 0.02 mm or less.

■Observe the following values for the bolt screw-in length and tightening torque when mounting the main body. [Figure 1]



Item	A		B		
	Bolt used	Tightening torque (N·m)	Bolt used	Tightening torque (N·m)	Max. screw-in depth L (mm)
LCR-6	M3 x 0.5	0.6 to 1.1	M4 x 0.7	1.4 to 2.4	6
LCR-8	M3 x 0.5	0.6 to 1.1	M4 x 0.7	1.4 to 2.4	6
LCR-12	M4 x 0.7	1.4 to 2.4	M5 x 0.8	2.9 to 5.1	8
LCR-16	M5 x 0.8	2.9 to 5.1	M6 x 1.0	4.8 to 8.6	9
LCR-20	M5 x 0.8	2.9 to 5.1	M6 x 1.0	4.8 to 8.6	9
LCR-25	M6 x 1.0	4.8 to 8.6	M8 x 1.25	12.0 to 21.6	12

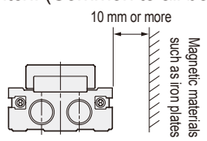
■Observe the following values for the bolt screw-in length and tightening torque when mounting a jig to the slide table and end plate.
[Figure 2]



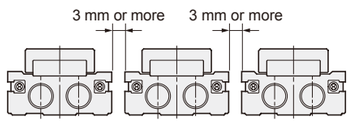
Item	Table		
	Bolt used	Tightening torque (N·m)	Screw-in length L (mm)
LCR-6	M3 x 0.5	0.6	3
LCR-8	M3 x 0.5	0.6	3 to 4.5
LCR-12	M4 x 0.7	1.4	4 to 5.5
LCR-16	M5 x 0.8	2.9	5 to 6
LCR-20	M5 x 0.8	2.9	5 to 6
LCR-25	M6 x 1.0	4.8	6 to 7

Item	End plate		
	Bolt used	Tightening torque (N·m)	Screw-in length L (mm)
LCR-6	M3 x 0.5	0.6	4.5 to 6
LCR-8	M3 x 0.5	0.6	4.5 to 7
LCR-12	M4 x 0.7	1.4	6 to 9
LCR-16	M5 x 0.8	2.9	7.5 to 9
LCR-20	M5 x 0.8	2.9	7.5 to 11
LCR-25	M6 x 1.0	4.8	9 to 11

■If there is a magnetic material such as an iron plate near the cylinder switch, it may malfunction. It can be used safely by keeping it 10 mm or more away from the cylinder surface or by changing the mounting surface of the cylinder switch. (Common to all bore sizes)



■If cylinders are adjacent, the cylinder switch may malfunction. Maintain the following distance from the cylinder surface. (Common to all bore sizes)



■Treat our Shock absorbers as consumable parts. Replace when a decrease in energy absorption capacity is observed or when operation is no longer smooth.

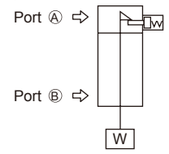
■When using locating holes, use pins with dimensions that do not result in a press fit. Using press-fit dimension pins may cause damage to the linear guide part due to press-fitting load or accuracy deterioration due to distortion.
The recommended tolerance for pins is JIS tolerance m6 or less.

■Apply ø6, 8 : CGL grease (manufactured by IKO Co., Ltd.) or ø12 to 25 : AFF grease (manufactured by THK Co., Ltd.) to the guide rail raceway surface every 6 months or 1 million operating cycles, whichever comes first.

3. Drop prevention type LCR-Q

Warning

■In the locked state, if pressure is supplied to port Ⓐ from a state where both side ports are not pressurized, the lock may not be released, or the lock may suddenly be released and the piston rod may fly out, which is very dangerous. When releasing the lock mechanism, always supply pressure to port Ⓑ and release it from a state where no load is applied to the lock mechanism.



■When using a quick exhaust valve to increase the lowering speed, the cylinder body may start moving before the lock pin operates, and normal release may not be possible. Do not use a quick exhaust valve with a drop prevention type cylinder.

Caution

■The lock mechanism works at the stroke end. If an external stopper is applied mid-stroke, the lock mechanism may not engage, and there is a risk of falling. When setting the load, be sure to confirm that the lock mechanism is working before installing.

■If the piping on the side with the lock mechanism is thin and long, or if the speed controller is far from the cylinder port, the exhaust speed may be slow and it may take time for the lock to engage, so please be careful. Also, clogging of the silencer included to the EXH. port of the solenoid valve will lead to similar results.

■If back pressure is applied to the lock mechanism side, the lock may be released, so use a single solenoid valve or a manifold with individual exhaust.

■Do not use multiple cylinders synchronized.
Do not use a method where two or more fall prevention type cylinders are synchronized to move one workpiece. The lock of one of the cylinders may become unremovable.

■Use the speed controller with meter-out control.
Lock may not be released with meter-in control.

■On the side with the lock, be sure to use the cylinder to the stroke end.
If the cylinder piston has not reached the stroke end, the lock may not engage, or it may not be possible to release the lock.

4. Low speed type LCR-F

Caution

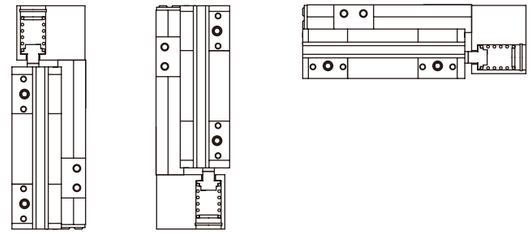
■Adjust alignment etc. so that no lateral load is applied to the cylinder.
Also, adjust and install so that there is no twisting with respect to the sliding guide.
- Operation will become unstable if there are fluctuations in load or resistance.
- Guides with a large difference between static friction and dynamic friction will result in unstable operation.

5. With buffer LCR-B

■Depending on the speed and load, the buffer may activate during operation, causing the switch to malfunction. Adjust the speed according to the load before use.

■Please note that models with buffers cannot be used in a vertically upward orientation.

X OK OK



■Use the buffer with a stroke less than the buffer stroke. This will cause malfunction or damage.

For precautions regarding mounting, installation, adjustment, use, and maintenance, please see "Precautions for Use" in this catalog and the CKD Components Product website (https://www.ckd.co.jp/kiki/en/) → "Model No." → Instruction Manual.

LCG

Linear Slide Cylinder

ø6, ø8, ø12, ø16, ø20, ø25

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● Double acting, Single rod type (LCG)	132
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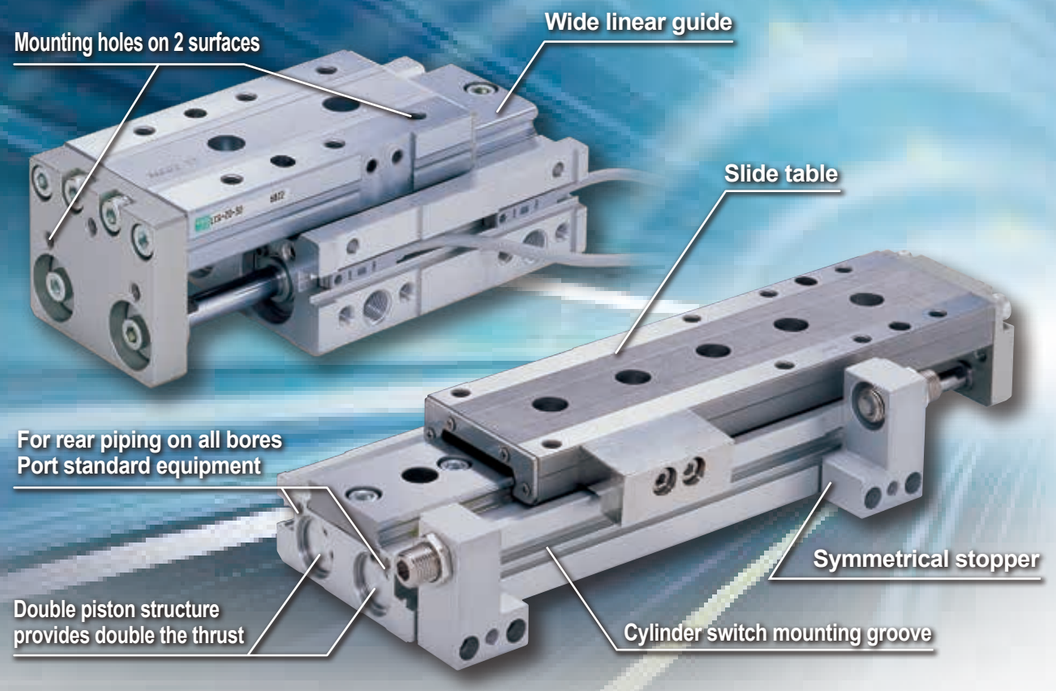
LCG Series

To higher precision and rigidity, and easier to use

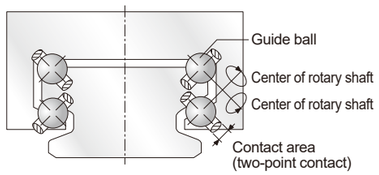
High-precision, high-rigidity wide linear guide mounted on a double piston cylinder. The linear guide table surface is directly used as the slide table. Linear slide cylinder LCG series (ø6 to ø25) with unprecedented precision and rigidity, making it easier to use.



Guide balls aligned in four rows on the linear guide (ø12 and up)

Guide balls are arranged in 4 rows, providing stable operation regardless of the load direction. In addition, since the contact width of the guide balls is smaller compared to a guide with 2 rows, the frictional resistance generated during rotation is also small, resulting in smooth operation and improved accuracy and rigidity.

■ 4-row arrangement, 2-point contact structure



Double piston structure adopted

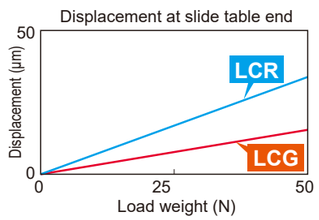
Double thrust due to double piston structure. Compact yet high output.

More precise

The table surface of the linear guide is adopted as the slide table as is. Compared to conventional products, it has become more precise.
Parallelism 0.03 mm (ø12-30 stroke)
End plate squareness 0.05 mm

More rigid

The material of the slide table has been changed from the conventional aluminum material to stainless steel or steel. Combined with a wide guide, rigidity has been further improved.



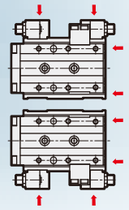
Product Features

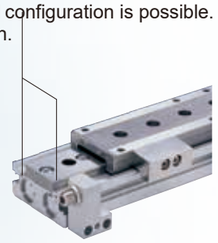
High degree of design freedom

This product offers extremely high design freedom, including symmetrical stoppers, multi-surface piping, 2-surface mounting, and positioning holes.

■ Change to laterally symmetrical configuration is possible.
■ Rear piping port Standard equipment

Change to laterally symmetrical configuration is possible.
The ← shows the piping direction.





Anti-rust treatment type (ø20, 25)

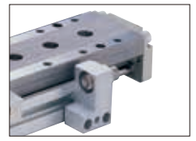
Rust prevention treatment on the table and rail surfaces reduces the occurrence of rust in high-humidity environments, such as near an ionizer.

2-color switch selectable

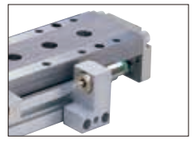
Solid-state 2-color indicator switch is now selectable. The switch does not protrude from the main body, resulting in a neat appearance.

Abundant options and variations

Standard and drop prevention types are available. A wide range of options are available, including stroke adjustment stoppers and Shock absorber type stoppers.



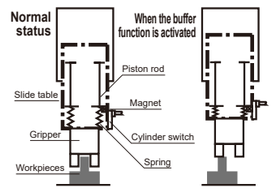
■ Stroke adjustment stopper
One-side adjustment range 0 to 5 mm



■ Shock absorber type stopper
Shock absorption at stroke end

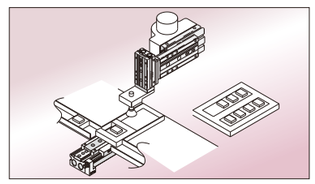
With buffer mechanism

This type protects the workpiece and cylinder by activating the shock absorbing mechanism even if the drive unit and workpiece collide when the cylinder advances. Used when a shock absorbing mechanism is required at the tip, such as in pick & place applications. Furthermore, a cylinder switch that detects buffer operation can be mounted (BL type) to detect abnormalities in lines, etc.

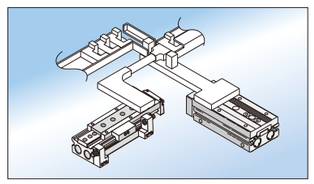


Usage Example

Storing small parts in trays or supplying from trays



Feeding small parts

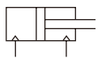
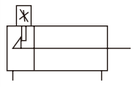


LCG Series Product Lineup

Model variations	Bore size	Stroke (mm) 10	20	30	40	50	75	100	125	150	With buffer B*	Anti-rust treatment U
Double acting / single rod LCG	ø6	●	●	●	●	●	●	●			●	
	ø8	●	●	●	●	●	●	●			●	
	ø12	●	●	●	●	●	●	●	●	●	●	
	ø16	●	●	●	●	●	●	●	●	●	●	
	ø20 / ø25	●	●	●	●	●	●	●	●	●	●	●
Double acting / position locking LCG-Q	ø8		●	●	●	●	●	●			●	
	ø12		●	●	●	●	●	●	●	●	●	
	ø16		●	●	●	●	●	●	●	●	●	
	ø20 / ø25		●	●	●	●	●	●	●	●	●	●

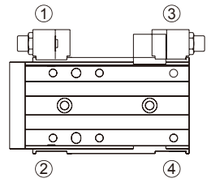
Linear Slide Cylinder
LCG Series

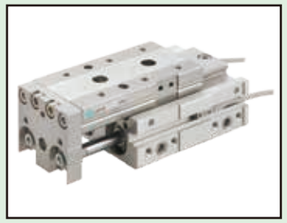
● : Standard, ◎ : Option, ○ : Custom order Not manufacturable

Variation	Model No. / Circuit Diagram Symbol	Bore size (mm)	Stroke (mm) 10	20	30	40	50	75	100	125	150	Option: Stroke adjustment stopper — Stopper position ① S1	Stopper position ② S2	Stopper position ③ S3	Stopper position ④ S4	Stopper position ① / ③ S5	Stopper position ② / ④ S6	Shock absorber type stopper — Stopper position ① A1	Stopper position ② A2	Stopper position ③ A3	Stopper position ④ A4	Stopper position ① / ③ A5	Stopper position ② / ④ A6	Double-sided combination double stopper — A1 + Metal stopper W1	A2 + Metal stopper W2	A3 + Metal stopper W3	A4 + Metal stopper W4	A5 + Metal stopper W5	A6 + Metal stopper W6	Single-sided mixed stopper mix — A1 + S3 C1	A2 + S4 C2	A3 + S1 C3	A4 + S2 C4	With buffer — Without switch groove B	With switch groove BL	Anti-rust treatment — Anti-rust treated product U	Plug included N	Switch	Page
Double Acting/ Single Rod Type	LCG 	ø6	●	●	●	●	●					◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○	◎	◎	*1	◎	◎	132
		ø8	●	●	●	●	●	●																																
		ø12	●	●	●	●	●	●	●																															
		ø16	●	●	●	●	●	●	●	●																														
		ø20, ø25	●	●	●	●	●	●	●	●	●																										◎			
Double Acting/ Drop Prevention Type	LCG-Q 	ø8	●	●	●	●	●	●				◎	◎					◎	◎					○	○									○	○	*1		◎	162
		ø12	●	●	●	●	●	●	●																															
		ø16	●	●	●	●	●	●	●	●																														
		ø20, ø25	●	●	●	●	●	●	●	●	●																										◎			

*1: Standard uses stainless steel.

●Stopper position





Linear Slide Cylinder Double Acting, Single Rod Type

LCG Series

● Bore Size: ø6, ø8, ø12, ø16, ø20, ø25

Circuit Diagram Symbol

RoHS

Model No. Notation Method (ø6 to ø16)

Without Switch
(Built-in magnet for switch)

LCG - 8 - 40 —— S5

Model No. ❶ ❷ ❺

With Switch
(Built-in magnet for switch)

LCG - 12 - 40 - F2H - R - A1 - DT

Model No. ❷ Stroke ❹ Number of Switches ❻ Option

❶ Bore size ❸ Switch Model No. ❺ Stopper

❶ Bore Size (mm)

Code	Content
6	ø6
8	ø8
12	ø12
16	ø16

❷ Stroke (mm)

Code		Applicable Bore size ø6	ø8	ø12	ø16
Standard Stroke	10	●	●	●	●
	20	●	●	●	●
	30	●	●	●	●
	40	●	●	●	●
	50	●	●	●	●
	75		●	●	●
	100			●	●
	125				●

❸ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED / Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20	-	F2S□	
		3-wire (NPN)	-	30 or less	-	50 or less	-	F3S□	
		2-wire	-	10 to 30	-	5 to 20 *2	F2H□	F2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3H□	F3V□	
		3-wire (PNP)	-	30 or less	-	50 or less	F3PH□	F3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	F2YH□	F2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3YH□	F3YV□	
	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Water Resistance Improved	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	1-Color Flexible Lead Wire Type		-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder.
*4 : ❶ For bore size ø16, F type switch cannot be selected.
*5 : ❶ For bore size ø6, 8, 12, T type switch cannot be selected.
*6 : Switches other than the switch model Nos. are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
*8 5	5 m (Option)
*7 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*7: Only T2WLH and T2WLV can be selected.
*8: For F type switch, 5 m lead wire cannot be selected.

Example) Lead wire length
1m TOH
3m TOH 3
5m TOH 5

❹ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

❺ Stopper

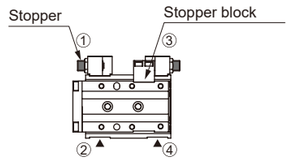
For details, see P. 136.

	Code	Content	
*2	Blank	No stopper	
	S Stroke adjustment stopper		*3, *4, *5
	S1□□	Stopper position ① (④ Changeable to)	Stopper Mounting Position
	S2□□	Stopper position ② (③ Changeable to)	
*11	S3□□	Stopper position ③ (② Changeable to)	
*11	S4□□	Stopper position ④ (① Changeable to)	
	S5□□	Stopper position ①, ③	
	S6□□	Stopper position ②, ④	
	A Shock absorber type stopper		*3, *4, *6, *7
	A1	Stopper position ① (④ Changeable to)	Stopper Mounting Position
	A2	Stopper position ② (③ Changeable to)	
*11	A3	Stopper position ③ (② Changeable to)	
*11	A4	Stopper position ④ (① Changeable to)	
	A5	Stopper position ①, ③	
	A6	Stopper position ②, ④	
	W Double-sided combination double stopper (Shock absorber type stopper, Metal stopper)		*6, *8, *9
	W1	A1 + Metal stopper	Stopper Mounting Position
	W2	A2 + Metal stopper	
	W3	A3 + Metal stopper	
	W4	A4 + Metal stopper	
	W5	A5 + Metal stopper	
	W6	A6 + Metal stopper	
	C Single-sided mixed stopper mix (Shock absorber type stopper, Stroke adjustment stopper)		*6
	C1□□	A1 + S3	Stopper Mounting Position
	C2□□	A2 + S4	
	C3□□	A3 + S1	
	C4□□	A4 + S2	

□□part Stroke adjustment range ●Applicable to all. ▲Applicable to some. *10

	Extension end side	Retraction end side	Stopper model No. S	A	W	C
Blank	5 mm or none	5 mm or none	●	–	–	●
02	15 mm or none	15 mm or none	●			●
03	25 mm or none	25 mm or none	●			●
04	15 mm	5 mm	▲			–
05	25 mm	5 mm	▲			–
06	5 mm	15 mm	▲			–
07	5 mm	25 mm	▲			–

● Stopper position



*1: For stopper positions ① to ④, refer to the diagram on the right.
*2: The standard port positions when there is no stopper are positions ① and ③ in the diagram on the right.
*3: For combinations of stroke adjustment stoppers, metal stoppers, and Shock absorber type stoppers, refer to ❺ Stopper "C□", "W□".
*4 : When using the S□□□ with ø6 to ø8-30 strokes or less and the A□□□ with 2 switches, select the F□H type switch.
*5 : The stroke adjustment stopper becomes metal touch at an operating pressure of 0.3 MPa or more.
*6 : For the stroke adjustment range when using a Shock absorber type, refer to the dimension table in the stopper outline drawing P. 156.
*7 : ø6 to ø8-10 strokes, ø12, ø16 to 20 strokes or less A1□□, A2□□, A5□□, and A6□□ cannot be adjusted with the standard stoppers and will be in a Custom Product.
*8 : For ø6 (all strokes), ø8 (20 to 40 stroke), ø12 (20 stroke or more), and ø16 (20 to 50 stroke), if W3 to 6 (stopper for use on both sides) is selected, please use the straight lead wire type when using two switches or for use on the head side.
*9 : When the type for use on both sides (W) is selected, the stroke adjustment range will be ø6: 9 mm, ø8: 13.5 mm, ø12: 14.5 mm, and ø16: 15 mm.
*10 : Selectable only when using stroke adjustment stopper (S) and single-sided mixed type (C).
*11 : When changing the stopper position from the head side to the rod side, a separate stopper must be purchased, depending on the stroke and stroke adjustment amount.P. 140 and P. 141. Depending on the stroke, A1, A2, and adjustment amounts of 15 mm and 25 mm may not be possible.
*12 : For stopper combinations, please refer to the combination possibility table on P. 138.
*13 : The rust prevention treatment type is a custom product.

❻ Option

Code	Content	
Stopper part port		*2, *5
Blank	No port	
D	Side and bottom ports available *1	
Stopper block material		*2
Blank	Steel	
T	Steel (nitriding treatment)	
With buffer		*3
B	Without switch groove	
BL	With switch groove	
Plug included		
Blank	None	
*4 N	Plug for side piping port included (Cannot be selected for ø6.)	

*1: Port position is P. 156 Refer to the stopper dimensions.
*2: Selectable only when stopper type is selected.
*3: Purchase the buffer part switch separately using the switch single item model No. indication method on P. 139.
*4 : Select N when using with rear piping. For details, see P. 196.
*5 : If the double-sided combination type (W) is selected, the stopper part port is standard, so option "D" cannot be selected.

Rechargeable Battery Compatible Specification

(Catalog No. CC-1226AA)

● Structure usable in secondary battery manufacturing processes

LCG - ····· - P4□

* Please contact us for details.

High Durability Components HP Series

(Catalog No. CC-1421AA)

● Long-life actuator that can contribute to productivity improvement with stable operation

LCG - ····· - HP□

Clean Specification

(Catalog No. CB-033SA)

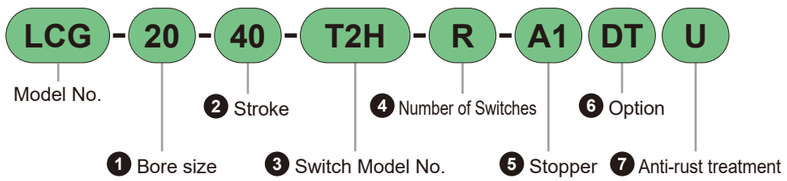
● Dust generation prevention structure usable in cleanrooms

LCG - ····· - P7□

Model No. Notation Method (ø20, ø25)

Without Switch
(Built-in magnet for switch)

With Switch
(Built-in magnet for switch)



1 Bore Size (mm)

Code	Content
20	ø20
25	ø25

2 Stroke (mm)

Code	Content
10	10
20	20
30	30
40	40
50	50
75	75
100	100
125	125
150	150

3 Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Water Resistance Improved	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	1-Color Flexible Lead Wire Type		-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder.
*4: Switches other than the switch model Nos. are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*5 : Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1m TOH
3m TOH 3
5m TOH 5

4 Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

5 Stopper

For details, see P. 136.

	Code	Content	
*2	Blank	No stopper	
	S Stroke adjustment stopper		*3, *4
	S1□□	Stopper position ① (④Changeable to)	Stopper Mounting Position
	S2□□	Stopper position ② (③Changeable to)	
*7	S3□□	Stopper position ③ (②Changeable to)	
*7	S4□□	Stopper position ④ (①Changeable to)	
	S5□□	Stopper position ①, ③	
	S6□□	Stopper position ②, ④	
	'A' Shock absorber type stopper		*3, *5
	A1	Stopper position ① (④Changeable to)	Stopper Mounting Position
	A2	Stopper position ② (③Changeable to)	
*7	A3	Stopper position ③ (②Changeable to)	
*7	A4	Stopper position ④ (①Changeable to)	
	A5	Stopper position ①, ③	
	A6	Stopper position ②, ④	
*6	**W Double-sided combination double stopper (Shock absorber type stopper, Metal stopper)**		*5
	W1	A1 + Metal stopper	Stopper Mounting Position
	W2	A2 + Metal stopper	
	W3	A3 + Metal stopper	
	W4	A4 + Metal stopper	
	W5	A5 + Metal stopper	
	W6	A6 + Metal stopper	
*6	**'C' Single-sided mixed stopper mix (Shock absorber type stopper, Stroke adjustment stopper)**		*5
	C1□□	A1 + S3	Stopper Mounting Position
	C2□□	A2 + S4	
	C3□□	A3 + S1	
	C4□□	A4 + S2	

□□ part Stroke adjustment range ●Applicable to all. ▲Applicable to some. *6

	Extension end side	Retraction end side	Stopper model No. S	A	W	C
Blank	5 mm or none	5 mm or none	●	–	–	●
02	15 mm or none	15 mm or none	●			●
03	25 mm or none	25 mm or none	●			●
04	15 mm	5 mm	▲			–
05	25 mm	5 mm	▲			–
06	5 mm	15 mm	▲			–
07	5 mm	25 mm	▲			–

*1: For stopper positions ① to ④, refer to the diagram on the right.
*2: The standard port positions when there is no stopper are positions ① and ③ in the diagram on the right.
*3: For combinations of stroke adjustment stoppers, metal stoppers, and Shock absorber type stoppers, refer to 5 Stopper "C□", "W□".
*4 : The stroke adjustment stopper becomes metal touch at an operating pressure of 0.3 MPa or more.
*5 : For the stroke adjustment range when using a Shock absorber type, refer to the dimension table in the stopper outline drawing P. 156.
*6: Selectable only when using stroke adjustment stopper (S) and single-sided mixed type (C).
*7: When changing the stopper position from the head side to the rod side, a separate stopper must be purchased, depending on the stroke and stroke adjustment amount.P. 140 and P. 141. Depending on the stroke, A1, A2, and adjustment amounts of 15 mm and 25 mm may not be possible.
*8: For stopper combinations, please refer to the combination possibility table on P. 138.

6 Option

Code	Content	
Stopper part port		*2, 5
Blank	No port	
D	Side and bottom ports available *1	
Stopper block material		*2
Blank	Steel	
T	Steel (nitriding treatment)	
With buffer		*3
B	Without switch groove	
BL	With switch groove	
Plug included		*4
Blank	None	
N	Plug for side piping port included (Cannot be selected for ø25.)	

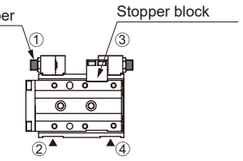
*1: Port position is P. 156
*2: Selectable only when stopper type is selected.
*3: Purchase the buffer part switch separately using the switch single item model No. indication method on P. 139.
*4: Select N when using with rear piping. For details, see P. 196.
*5: If the double-sided combination type (W) is selected, the stopper part port is standard, so option "D" cannot be selected.

7 Anti-rust treatment

	Code	Content	
	Blank	None	
*1 *2	U	Anti-rust treated product (Table/Guide part)	

*1: The table uses steel. When used in high-temperature, high-humidity environments or environments where water droplets may adhere due to condensation, etc., rust may occur, so please select "U".
*2: The table and rail will be black. Anti-rust treatment applied to the table surface and rail surface reduces rust generation in high-humidity environments such as near ionizers.
*3: If anti-rust treatment is required for the standard (stainless steel), please contact our sales department.

● Stopper position



Rechargeable Battery Compatible Specification

(Catalog No. CC-1226AA)
● Structure usable in secondary battery manufacturing processes
LCG – · · · · · – P4□

High Durability Components HP Series

(Catalog No. CC-1421AA)
● Long-life actuator that can contribute to productivity improvement with stable operation
LCG – · · · · – HP□

Clean Specification

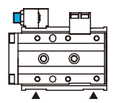
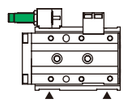
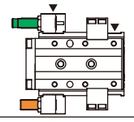
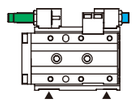
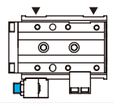
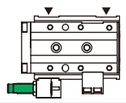
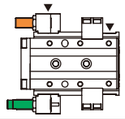
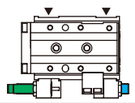
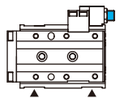
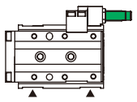
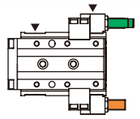
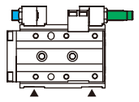
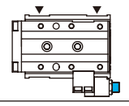
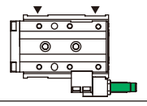
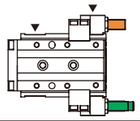
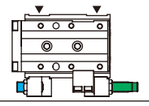
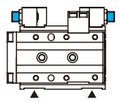
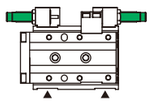
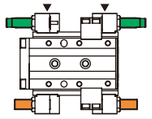
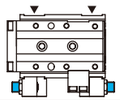
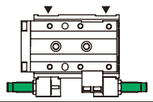
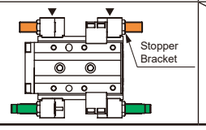
(Catalog No. CB-033SA)
● Dust generation prevention structure usable in cleanrooms
LCG – · · · · · – P7□

* Please contact us for details.

Stopper Model No. Selection Method

1 Stopper Combination Table

Model No. –[①Stopper type] [②Stopper position] [③] Example) LCG-8-40-[S] [5] 06

Stopper position [②]	Stopper [①] Stroke adjustment type (single side) [S]	Shock absorber type (single side) [A]	Double-sided combination double stopper [W]	Single-sided mixed stopper mix [C]
[1]	[S1] 	[A1] 	[W1] 	[C1] 
[2]	[S2] 	[A2] 	[W2] 	[C2] 
[3]	[S3] 	[A3] 	[W3] 	[C3] 
[4]	[S4] 	[A4] 	[W4] 	[C4] 
[5]	[S5] 	[A5] 	[W5] 	
[6]	[S6] 	[A6] 	[W6] 	

▲ indicates the piping direction.
If the double-sided combination type [W] is selected, the stopper brackets on both sides will have piping, and the stopper bracket on the side opposite to the ▲(piping direction) will have a plug.

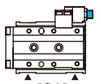
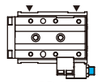
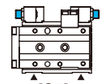
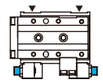
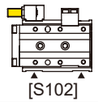
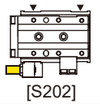
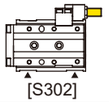
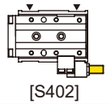
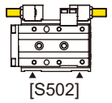
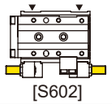
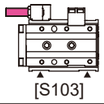
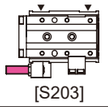
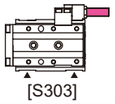
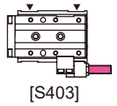
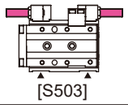
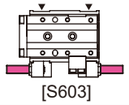
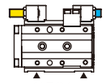
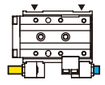
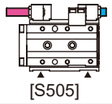
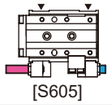
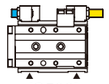
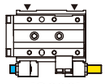
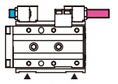
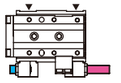
: Shock absorber type stopper
: Stroke adjustment stopper (adjustment range 5 mm)
: Metal stopper (adjustment range 15 mm)

Stopper Model No. Selection Method

2 Stopper Combination Table

Model No.-[① Stopper type] [② Stopper position] [③ Adjustable stroke range]
Example) LCG-8-40-S5 [06]
In case of stroke adjustment stopper -S

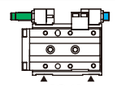
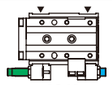
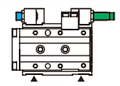
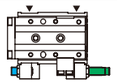
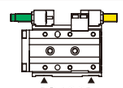
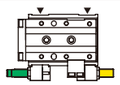
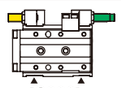
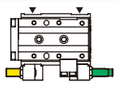
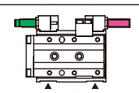
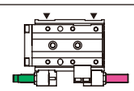
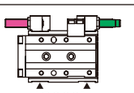
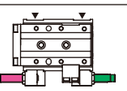
: Stroke adjustment stopper (adjustment range 5 mm)
: Stroke adjustment stopper (adjustment range 15 mm)
: Stroke adjustment stopper (adjustment range 25 mm)

Stroke adjustment range [③]	Stopper adjustment range: Extension end side	Stopper adjustment range: Retraction end side	Stopper type, Stopper position [① ②]: [S1]	[S2]	[S3]	[S4]	[S5]	[S6]
Blank	5 mm or None	5 mm or None	[S1]	[S2]	[S3] 	[S4] 	[S5] 	[S6] 
[02]	15 mm or None	15 mm or None	[S102] 	[S202] 	[S302] 	[S402] 	[S502] 	[S602] 
[03]	25 mm or None	25 mm or None	[S103] 	[S203] 	[S303] 	[S403] 	[S503] 	[S603] 
[04]	15 mm	5 mm					[S504] 	[S604] 
[05]	25 mm	5 mm					[S505] 	[S605] 
[06]	5 mm	15 mm					[S506] 	[S606] 
[07]	5 mm	25 mm					[S507] 	[S607] 

▲ indicates the piping direction.
Cannot be selected for Shock Absorber Type [A], or Both Sides Combination Type [W].

3 In case of single-sided mixed stopper mix -C

: Shock absorber type stopper
: Stroke adjustment stopper (adjustment range 5 mm)
: Stroke adjustment stopper (adjustment range 15 mm)
: Stroke adjustment stopper (adjustment range 25 mm)

Stroke adjustment range [③]	Stopper adjustment range: Extension end side	Stopper adjustment range: Retraction end side	Stopper type, Stopper position [① ②]: [C1]	[C2]	[C3]	[C4]
Blank	5 mm or Shock Absorber	5 mm or Shock Absorber	[C1] 	[C2] 	[C3] 	[C4] 
[02]	15 mm or Shock Absorber	15 mm or Shock Absorber	[C102] 	[C202] 	[C302] 	[C402] 
[03]	25 mm or Shock Absorber	25 mm or Shock Absorber	[C103] 	[C203] 	[C303] 	[C403] 

▲ indicates the piping direction.
For the stroke adjustment range of the Shock absorber type, refer to the dimension table in the stopper outline drawing P. 156.

LCG Double Acting, Single Rod Type Combination Availability Table

(Combination with stroke adjustment stopper, Shock absorber type stopper)

● : Not combinable - : Not combinable

Model No.	Stopper type		Stroke adjustment type																							
	Stopper code		S1			S2			S3			S4			S5							S6					
			Adjustment range code																							
	Bore size	Stroke	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03	04	05	06	07	Blank	02	03	04	05	06	07
LCG	ø6, ø8	10	●	-	-	●	-	-	●	●	-	●	●	-	●	-	-	-	-	●	-	●	-	-	-	-	●	-
		20 or more	●	●	-	●	●	-	●	●	-	●	●	-	●	●	-	●	-	●	-	●	●	-	●	-	●	-
	ø12 to ø25	10	●	-	-	●	-	-	●	●	-	●	●	-	●	-	-	-	-	●	-	●	-	-	-	-	●	-
		20	●	●	-	●	●	-	●	●	●	●	●	●	●	●	-	●	-	●	●	●	●	-	●	-	●	●
		30 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
LCG-B, BL	ø6, ø8	10	●	-	-	●	-	-	●	●	-	●	●	-	●	-	-	-	-	●	-	●	-	-	-	-	●	-
		20 or more	●	-	-	●	-	-	●	●	-	●	●	-	●	-	-	-	-	●	-	●	-	-	-	-	●	-
	ø12 to ø25	10	●	-	-	●	-	-	●	●	-	●	●	-	●	-	-	-	-	●	-	●	-	-	-	-	●	-
		20	●	●	-	●	●	-	●	●	●	●	●	●	●	●	-	●	-	●	●	●	●	-	●	-	●	●
		30 or more	●	●	-	●	●	-	●	●	●	●	●	●	●	●	-	●	-	●	●	●	●	-	●	-	●	●

Model No.	Stopper type		Shock absorber type						Double-sided combination double stopper						Single-sided mixed stopper mix											
	Stopper code		A1	A2	A3	A4	A5	A6	W1	W2	W3	W4	W5	W6	C1			C2			C3			C4		
															Adjustment range code											
	Bore size	Stroke													Blank	02	03	Blank	02	03	Blank	02	03	Blank	02	03
LCG	ø6, ø8	10	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	-	-	●	-	-
		20 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	●	●	-	●	●	-	●	●	-
	ø12 to ø25	10	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	-	-	●	-	-
		20	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	●	-	●	●	-
		30 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
LCG-B, BL	ø6, ø8	10	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	-	-	●	-	-
		20 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	●	●	-	●	-	-	●	-	-
	ø12 to ø25	10	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	-	-	●	-	-
		20	-	-	●	●	-	-	-	-	●	●	-	-	-	-	-	-	-	-	●	●	-	●	●	-
		30 or more	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	-	●	●	-

Option Code D : Stopper part with port, T : Please refer to the combination table above to determine if a steel stopper block (nitrided) can be selected. (● : Selectable - : Not selectable)

Switch Single Unit Model No. Notation Method

For ø8 to ø16

SW - F2H

❸ Switch model No. (P. 132 Section ③)

For ø20, ø25

SW - T2H3

❸ Switch model No. (P. 134 Section ③)

● For buffer

SW - F 2 V 3

❽ Output format ❾ Lead wire length

L-shaped lead wire type

❽ Output format

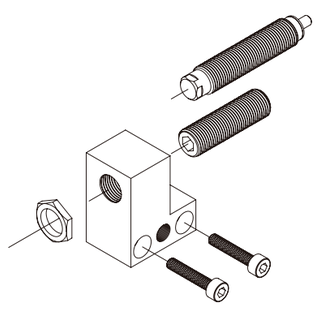
Code	Content
2	DC 2-wire solid-state
3	DC 3-wire solid-state

❾ Lead wire length

Code	Content
Blank	1 m (Standard)
3	3 m (Option)

Stopper Set Model No. Notation Method

● Set of stopper part and stroke adjustment stopper or Shock absorber type stopper
● Used when changing from standard to with stroke adjustment stopper or with Shock absorber type stopper



LCG - 12 - S 2 D - S02

❶ Bore size ⓫ Stopper mounting position ⓭ Stroke adjustment amount

❿ Stopper type ⓬ Stopper part port

❿ Stopper type

Code	Content
S	Stroke adjustment stopper
A	Shock absorber type stopper

⓫ Stopper mounting position

Code	Content
1	Stopper position ①or④ for
2	Stopper position ②or③ for

*When mounting at stopper mounting positions ① and ②, the relationship of the stroke adjustment amount changes depending on the stroke, so refer to the table below.

⓬ Stopper part port

Code	Content
Blank	No port
D	Side/bottom ports available

⓭ Stroke adjustment amount

Code	Content
Blank	Stroke adjustment range 5 mm
S02	Stroke adjustment range 15 mm
S03	Stroke adjustment range 25 mm

*1: S03 cannot be selected for ø8.
*2: Cannot be selected in the case of ❿ Shock absorber type stopper "A".

Precautions when purchasing a stopper set

Please note that only when mounting at the position(s) ①, ② (refer to P. 132 and P. 134), the stroke adjustment amount will be as follows, depending on the stroke.

- : Not compatible

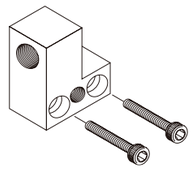
Model No. Code	Option Code		Stopper for Stroke Adjustment Single Unit		
			Stroke adjustment amount (mm)		
	Bore size	Stroke	-5	-15	-25
LCG Series -S1, S2, S5, S6	ø6, ø8	10	S02	-	-
		20 or more	Blank	S02	-
	ø12 to ø25	10	S03	-	-
		20	S02	S03	-
		30 or more	Blank	S02	S03

● Stopper set weight (Unit : g)

Stopper type	S1, S2			A1, A2
Stopper part port	Blank, D			
Stroke adjustment amount / Bore size	Blank	S02	S03	Blank
ø6	15	18	-	18
ø8	21	25	-	27
ø12	28	31	34	33
ø16	42	47	52	49
ø20	77	85	92	86
ø25	87	94	101	95

Stopper Bracket Single Item Model No. Notation Method

● Use when changing to the stopper position (①or④) ↔ (②or ③) or when changing to the stopper with port.



LCG - 12 - STB 1 D

❶ Bore size
⓯ Stopper part port
⓮ Stopper mounting position

● Stopper bracket weight (Unit : g)

Stopper mounting position	1,2
Stopper part port / Bore size	Blank, D
ø6	8
ø8	14
ø12	20
ø16	29
ø20	53
ø25	62

⓮ Stopper mounting position

Code	Content
1	Stopper position ① or ④ for
2	Stopper position ② or ③ for

⓯ Stopper part port

Code	Content
Blank	No port
D	Side/Bottom ports available

*When using the bottom port with ø20 or 25, purchase a plug kit (LCG-20-N, 2 pcs/set) and seal the side port before use.

Stroke Adjustment Stopper Single Item Model No. Notation Method

● Hexagon socket set screw with urethane rubber
● Use when changing stroke adjustment range or setting intermediate stroke

LCG - 12 - S02

❶ Bore size
⓰ Stroke Adjustment range

⓰ Stroke adjustment range

Code	Content
S01	One side 5 mm (Standard)
S02	One side 15 mm
S03	One side 25 mm

*"S03" cannot be selected for ø6 and ø8.
Some model Nos. may not be compatible or the stroke adjustment range may differ from the above.

Precautions when purchasing stopper single items

Only when mounting at mounting positions and ①, ② (see P. 132, P. 134), please note that the combination will be as shown on the right depending on the stroke and stroke adjustment amount.

- : Not combinable

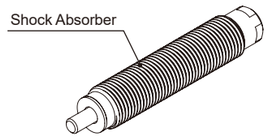
Model No. code	Option Code		Stroke adjustment stopper single item Stroke adjustment amount (mm)		
	Bore size	Stroke	-5	-15	-25
LCG Series -S1, S2, S5, S6	ø6, ø8	10	S02	-	-
		20 or more	S01	S02	-
	ø12 to ø25	10	S03	-	-
		20	S02	S03	-
		30 or more	S01	S02	S03

● Stopper for Stroke Adjustment, Single Unit Weight (Unit : g)

Stroke adjustment range / Bore size	S01	S02	S03
ø6	6	9	-
ø8	7	10	-
ø12	7	11	14
ø16	11	16	22
ø20	22	30	37
ø25	23	30	37

Shock absorber Type Stopper Single Item Model No. Notation Method

● Shock absorber set
● Used when changing from stroke adjustment stopper to Shock absorber type stopper



LCG - 12 - A01

❶ Bore size

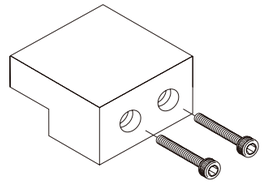
*Some model Nos. may not be compatible.**P. 132, 134.** For the stroke adjustment range of the Shock absorber type stopper, see P. 156.

Shock absorber model No. used

Model	Shock absorber model No.	Weight (g)
LCG-6	SKL-0804	9
LCG-8	SKL-0805	12
LCG-12	SKL-0805	12
LCG-16	SKL-1006	19
LCG-20	SKL-1208	31
LCG-25	SKL-1208	31

Stopper Block Single Item Model No. Notation

● Used when changing from standard to with stroke adjustment stopper or with Shock absorber type stopper



LCG - 12 - SB1 T

❶ Bore size
⓱ Stopper block
⓲ Material

● Stopper for Stroke Adjustment, Single Unit Weight (Unit : g)

Stroke adjustment range / Bore size	SB1 (T)	SB2 (T)
ø6	11	21
ø8	14	24
ø12	23	37
ø16	38	72
ø20	60	99
ø25	112	206

⓱ Stopper block

Code	Content
SB1	ø6, ø8: For 30 strokes or less
	ø12 to ø25: For 50 strokes or less
SB2	ø6, ø8: For 40 strokes or more
	ø12 to ø25: For 75 strokes or more

⓲ Material

Code	Content
Blank	Stopper block material Steel
T	Stopper block material Steel (nitriding treatment)

Side Piping Port Plug Kit Model No. Notation

LCG - 12 - N (2 pcs/1 set)

❶ Bore size

● Weight of plug kit for side piping port

Bore size	Weight (g)
ø8	1
ø12	1
ø16	1
ø20	5

Specifications

Item		LCG					
Bore size mm		ø6	ø8	ø12	ø16	ø20	ø25
Actuation method		Double Acting Type					
Operating Fluid		Compressed Air					
Max. Working Pressure MPa		0.7					
Min. Operating Pressure MPa		0.15 (*1)					
Proof Pressure MPa		1.05					
Ambient Temperature °C		-10 to 60 (however, no freezing)					
Port Size	Main body side	M3	M5			Rc1/8	
	Main body rear	M3				M5	Rc1/8
Stroke tolerance mm		+2.0 (*2) 0					
Operating Piston Speed mm/s		50 to 500 (*3)					
Cushion		With Rubber Cushion					
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)					
Allowable Absorbed Energy J		Refer to Table 3 on P. 188.					

*1: When using ø6 Shock absorber type stopper, it will be 0.2MPa.
*2: When used without a stopper, please note that there is a slight gap between the end plate and the floating bush.
*3: When using a stroke adjustment stopper, use at 50 to 200 mm/s.
*4 : The stroke adjustment stopper becomes metal touch at an operating pressure of 0.3 MPa or more.

Stroke

Bore Size (mm)	Standard Stroke (mm)
ø6	10, 20, 30, 40, 50
ø8	10, 20, 30, 40, 50, 75
ø12	10, 20, 30, 40, 50, 75, 100
ø16	10, 20, 30, 40, 50, 75, 100, 125
ø20	10, 20, 30, 40, 50, 75, 100, 125, 150
ø25	10, 20, 30, 40, 50, 75, 100, 125, 150

*Strokes other than the above cannot be manufactured.

With buffer specification

Specifications other than the following are the same as the common specifications above.

Item		Content					
Bore size mm		ø6	ø8	ø12	ø16	ø20	ø25
Buffer Stroke mm		4		9		10	
Buffer part	At SET N	3	5	10	13	17	21
Spring Load	During operation N	7	8	14	20	25	29

*1: If rod side stroke adjustment is performed with a buffer, the buffer stroke will be shortened by the stroke adjustment amount, and the spring load at set will also increase.
*2: Use a buffer stroke less than the stroke above. This will cause malfunction or damage.

Theoretical Thrust Table

See P. 189.

Cylinder Weight

● Basic Type (Unit : g)

Bore size (mm)	Stroke (mm)							
	10	20	30	40	50	75	100	125
ø6	150	150	170	230	250	-	-	-
ø8	220	220	250	330	360	450	-	-
ø12	480	480	480	530	580	770	910	-
ø16	750	740	730	810	890	1.240	1.430	1.630
ø20	1.270	1,260	1.250	1.370	1.490	1.930	2.220	2.510
ø25	2.120	2,100	2.080	2.260	2.440	3.240	3.660	4.080

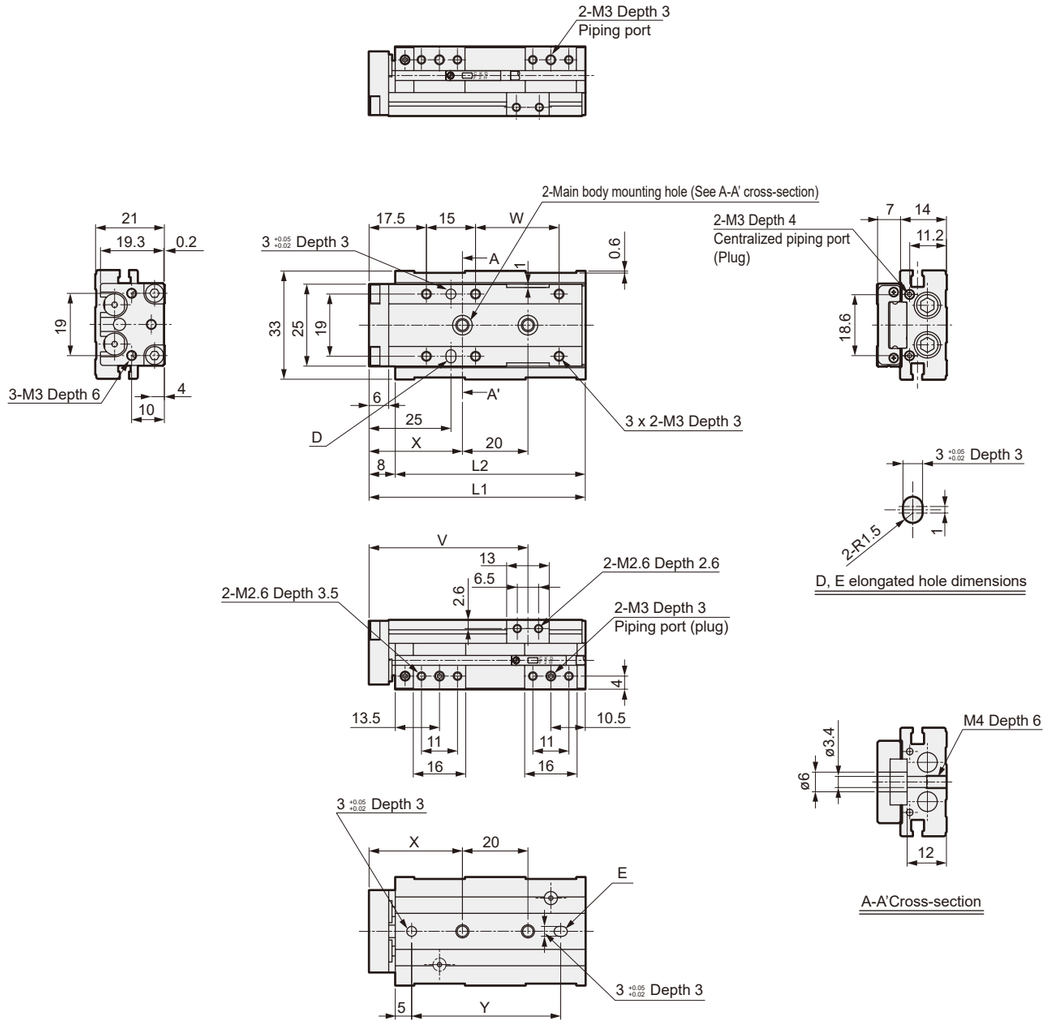
● Additional weight of options (Unit : g)

Bore size (mm)	Stopper code				With buffer
	S1 to S4	S5, S6	A1 to A4	A5, A6	B, BL
ø6	30	40	40	50	40
ø8	40	60	50	70	40
ø12	70	100	80	110	70
ø16	110	150	120	160	80
ø20	170	250	180	270	150
ø25	290	380	300	400	320

Outline dimension drawing (Bore size: ø6)

● LCG-6

Stroke: 10, 20, 30
(The main body mounting holes in this figure show the case of stroke 20)



Dimension table by stroke

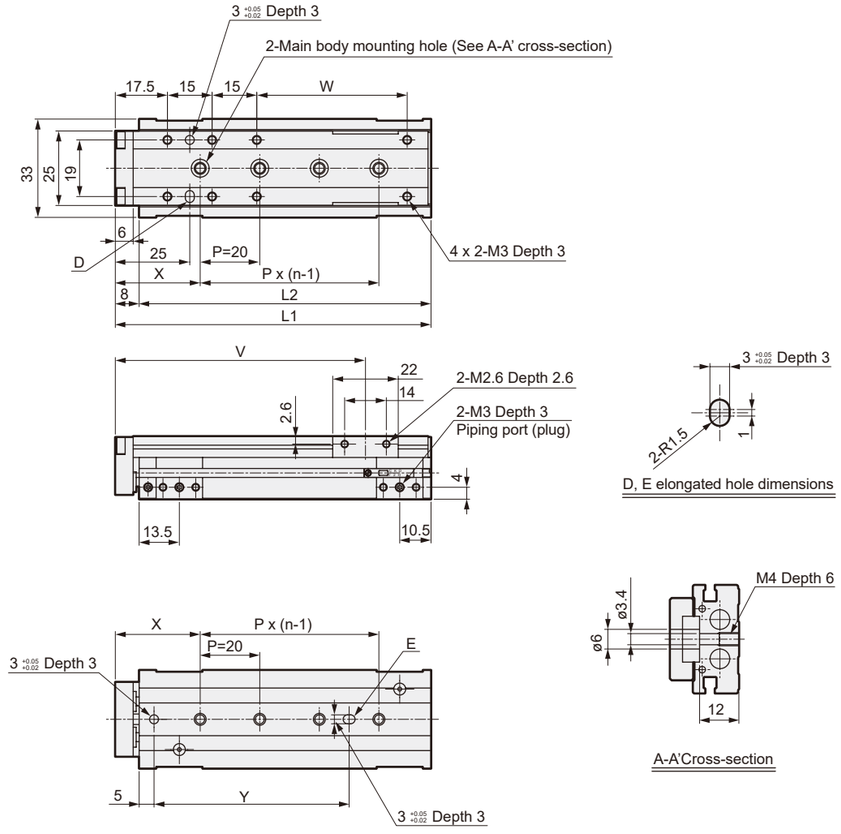
Code	Stroke		
	10	20	30
L1	66		76
L2	58		68
V	48.5		58.5
W	25.5		35.5
X	28.5		26
Y	45.5		43

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.
*2: For dimensions of models with switches, please refer to P. 186 and 187.

Outline dimension drawing (Bore size: ø6)

● LCG-6

Stroke: 40, 50
(The main body mounting holes in this figure show the case of stroke 50)



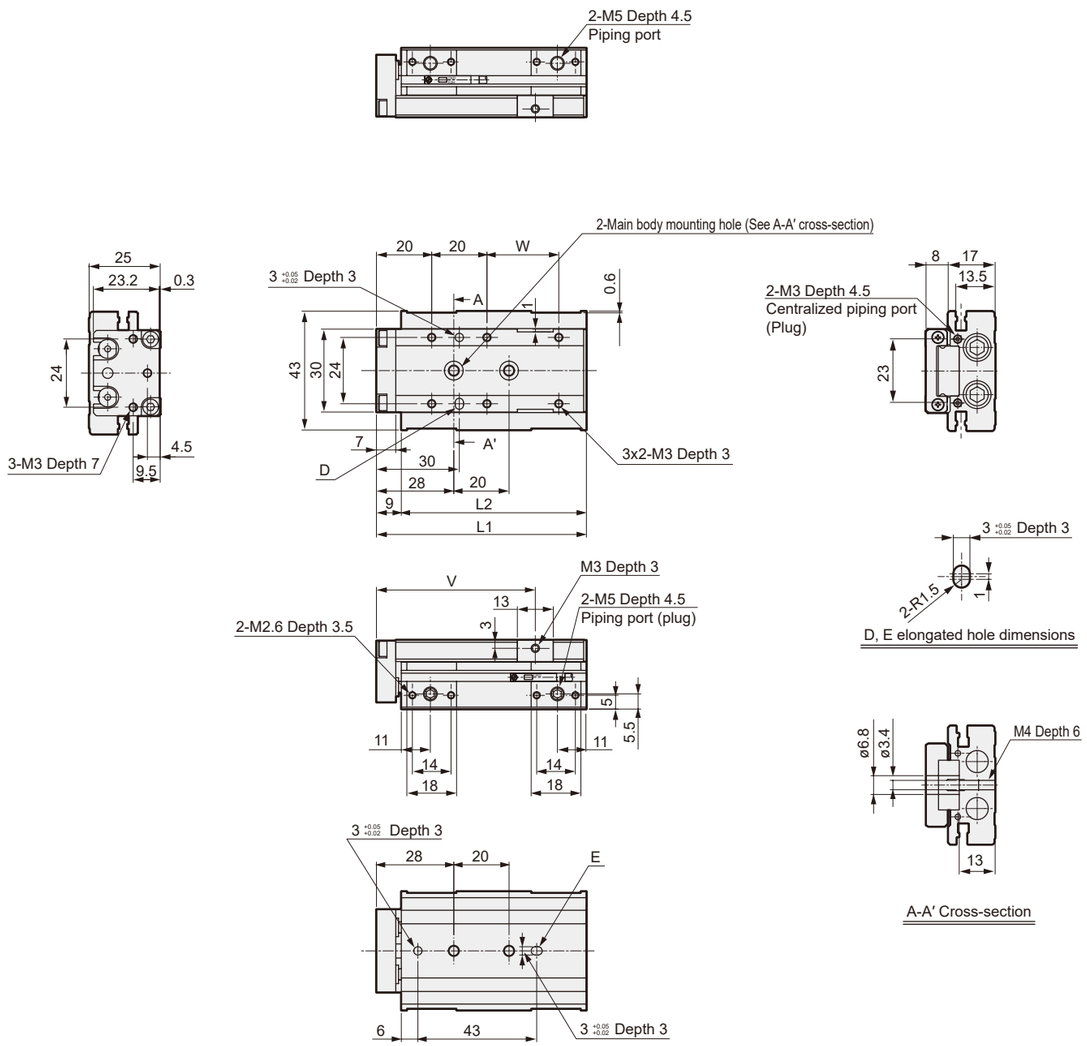
Dimension table by stroke

Code	Stroke	
	40	50
L1	96	106
L2	88	98
n	3	4
V	74	84
W	40.5	50.5
X	27	28.5
Y	44	65.5

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.
*2: For dimensions of models with switches. Please refer to P. 186, 187

Outline dimension drawing (Bore size: ø8)

● LCG-8
Stroke: 10, 20, 30
(The main body mounting holes in this figure show the case of stroke 30)



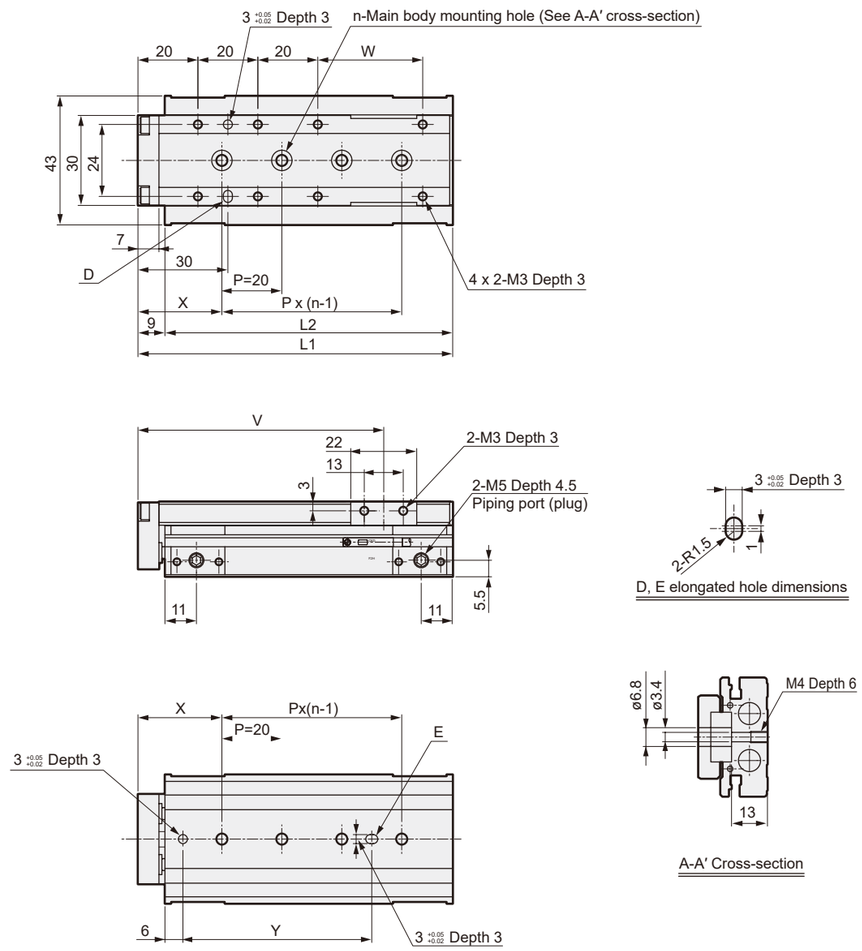
Dimension table by stroke

Code	Stroke		
	10	20	30
L1	66		76
L2	57		67
V	47.5		57.5
W	16		26

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.
***2: For dimensions of models with switches, refer to P. 186, 187**

Outline dimension drawing (Bore size: ø8)

● LCG-8
Stroke: 40, 50, 75
(The main body mounting holes in this figure show the case of stroke 50)



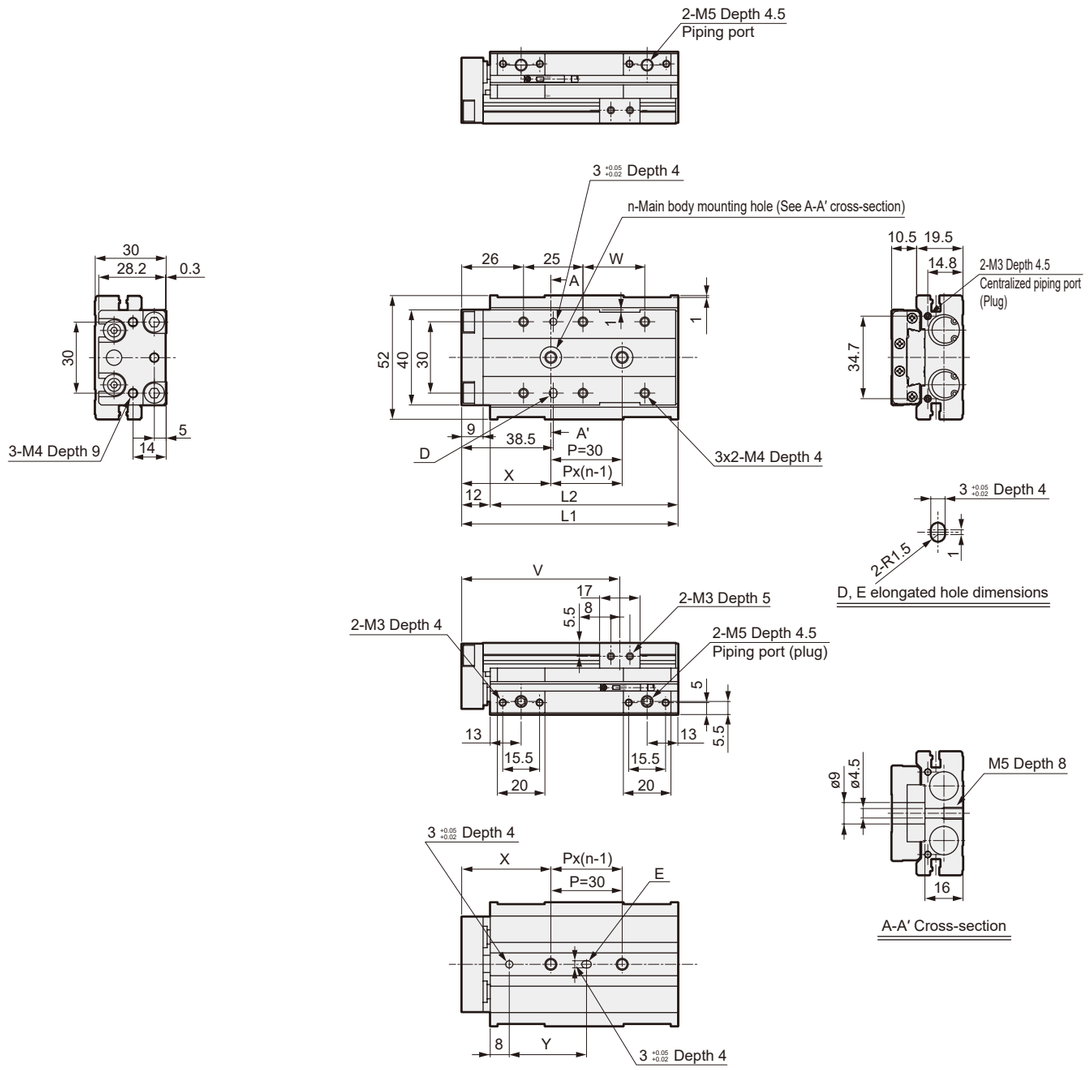
Dimension table by stroke

Code	Stroke		
	40	50	75
L1	95	105	130
L2	86	96	121
n	3	4	5
V	72	82	107
W	25	35	60
X	26.5	28	25
Y	41.5	63	80

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.
***2: For dimensions of models with switches, refer to P. 186, 187**

Outline dimension drawing (Bore size: ø12)

● LCG-12
Stroke: 10, 20, 30, 40, 50
(The main body mounting holes in this figure show the case of stroke 30)



Dimension table by stroke

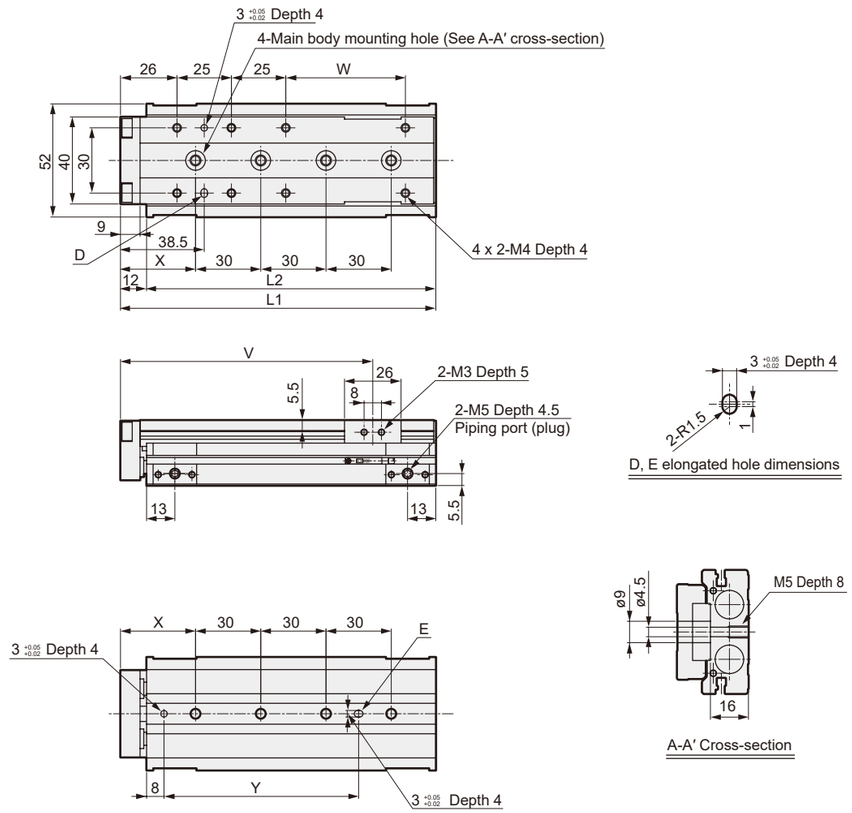
Code	Stroke				
	10	20	30	40	50
L1	91			101	111
L2	79			89	99
n	2			3	
V	66.5			76.5	86.5
W	26			36	46
X	37.5			36	32
Y	32.5			31	57

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.

***2: For dimensions of models with switches, refer to P. 186, 187**

Outline dimension drawing (Bore size: ø12)

● LCG-12
Stroke: 75, 100
(The main body mounting holes in this figure show the case of stroke 100)



Dimension table by stroke

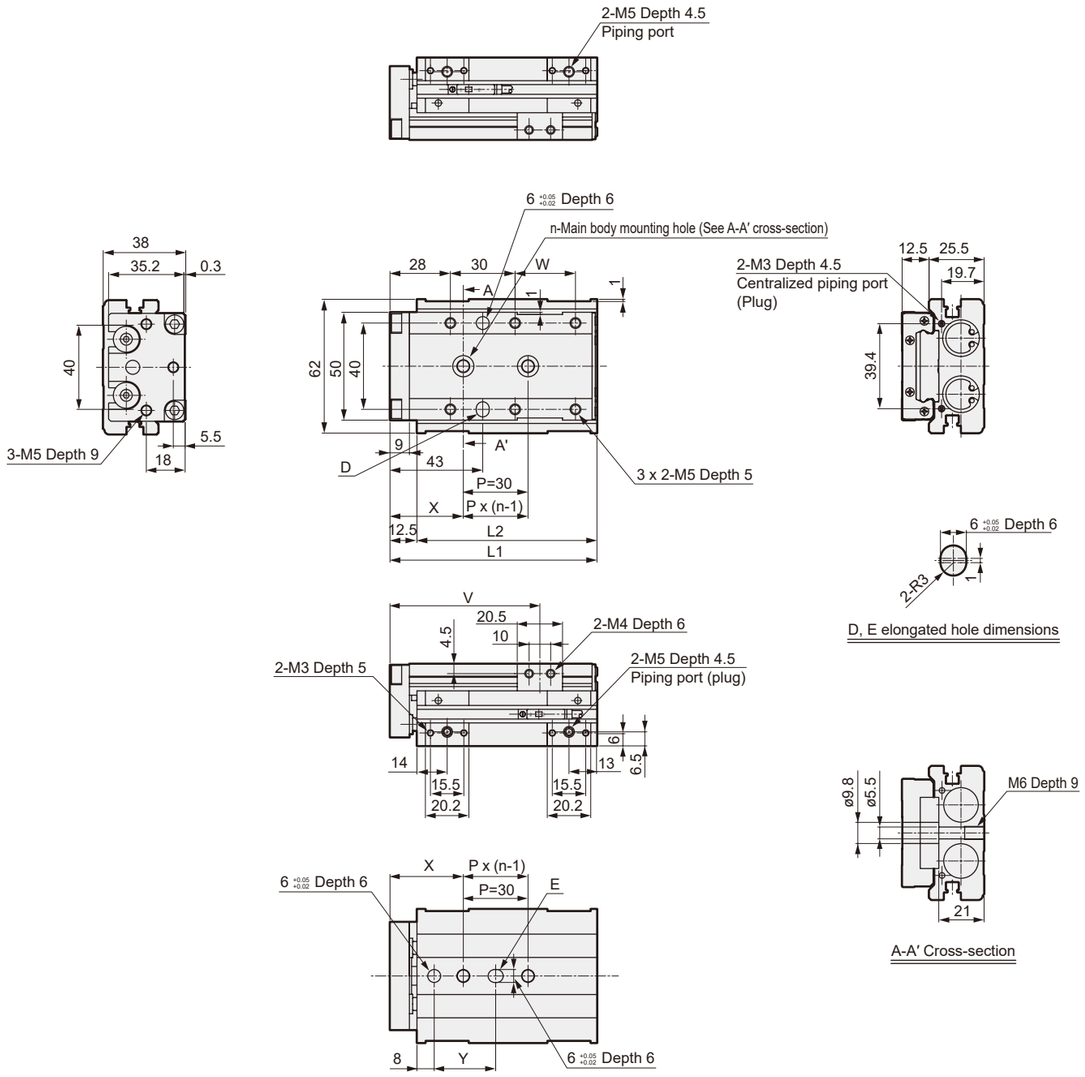
Code	Stroke	
	75	100
L1	145	170
L2	133	158
V	116	141
W	55	80
X	34.5	47
Y	89.5	102

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.

***2: For dimensions of models with switches, refer to P. 186, 187**

Outline dimension drawing (Bore size: ø16)

● LCG-16
Stroke: 10, 20, 30, 40, 50
(The main body mounting holes in this figure show the case of stroke 30)



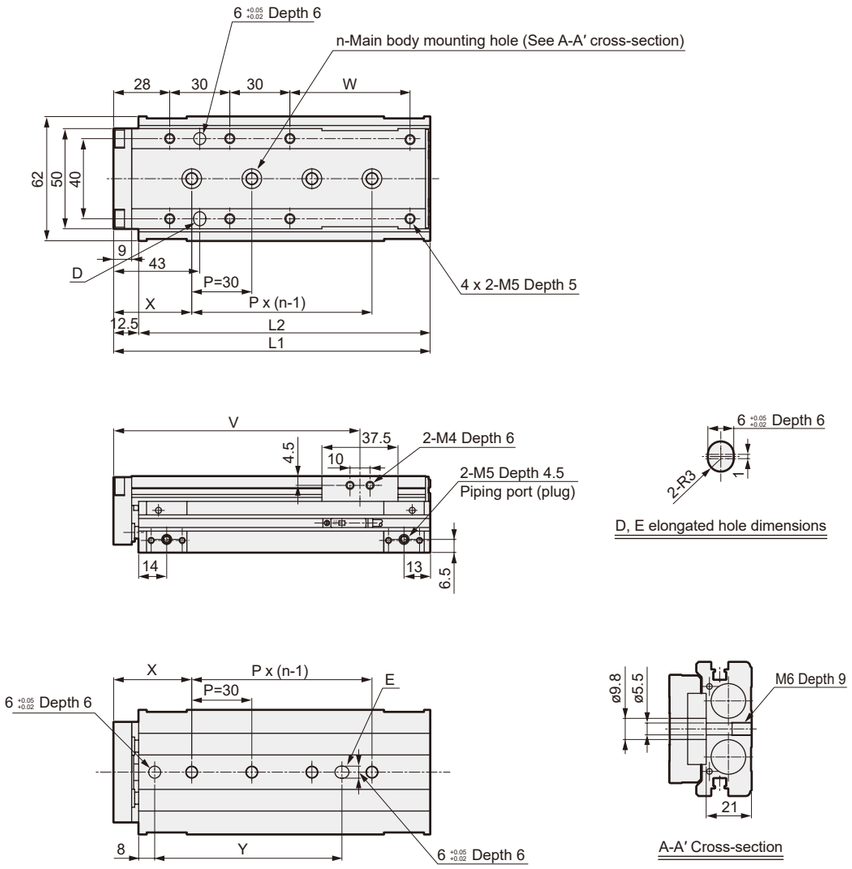
Dimension table by stroke

Code	Stroke				
	10	20	30	40	50
L1	96			106	116
L2	83.5			93.5	103.5
n	2				3
V	69.8			79.8	89.8
W	28			38	48
X	34			45.5	35.5
Y	28.5			40	60

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.
***2: For dimensions of models with switches, refer to P. 186, 187**

Outline dimension drawing (Bore size: ø16)

● LCG-16
Stroke: 75, 100, 125
(The main body mounting holes in this figure show the case of stroke 75)



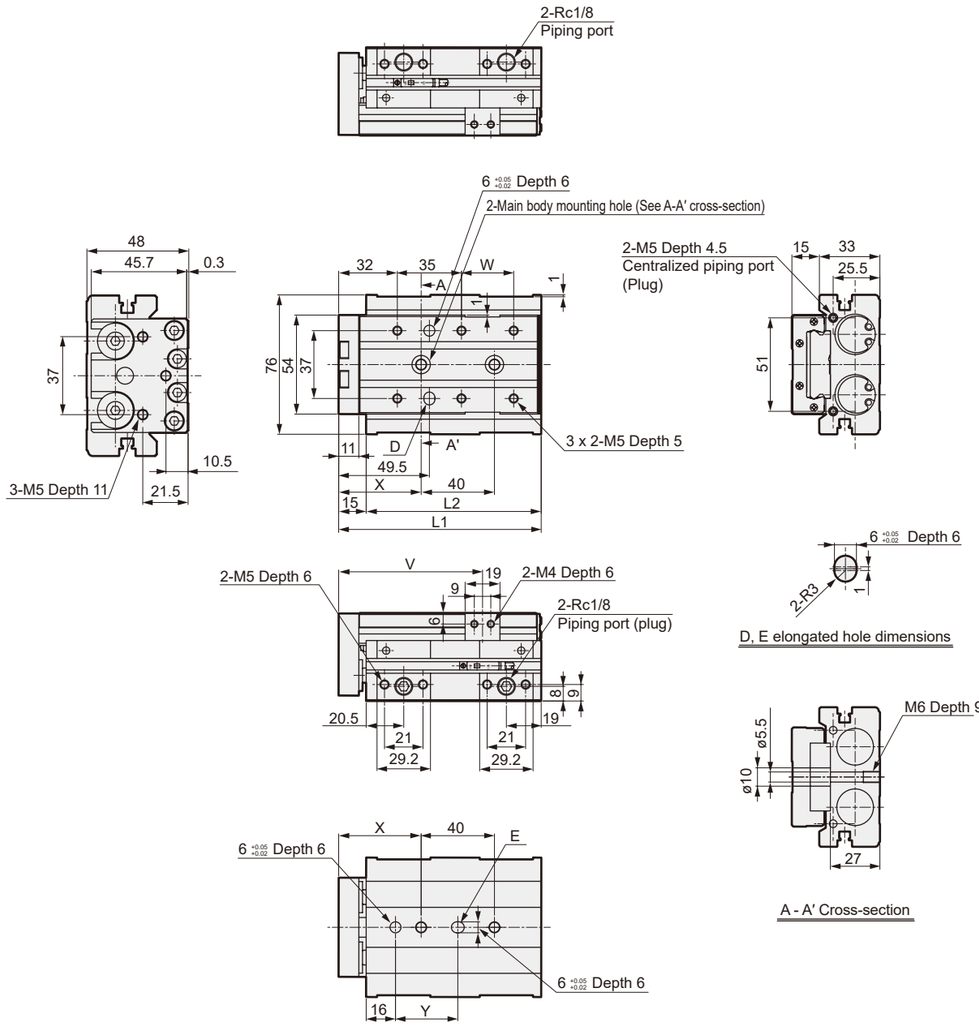
Dimension table by stroke

Code	Stroke		
	75	100	125
L1	158	183	208
L2	145.5	170.5	195.5
n	4	5	
V	123.3	148.3	173.3
W	60	85	110
X	39	37	49
Y	93.5	121.5	133.5

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.
***2: For dimensions of models with switches, refer to P. 186, 187**

Outline dimension drawing (Bore size: ø20)

● LCG-20
Stroke: 10, 20, 30, 40, 50
(The main body mounting holes in this figure show the case of stroke 30)



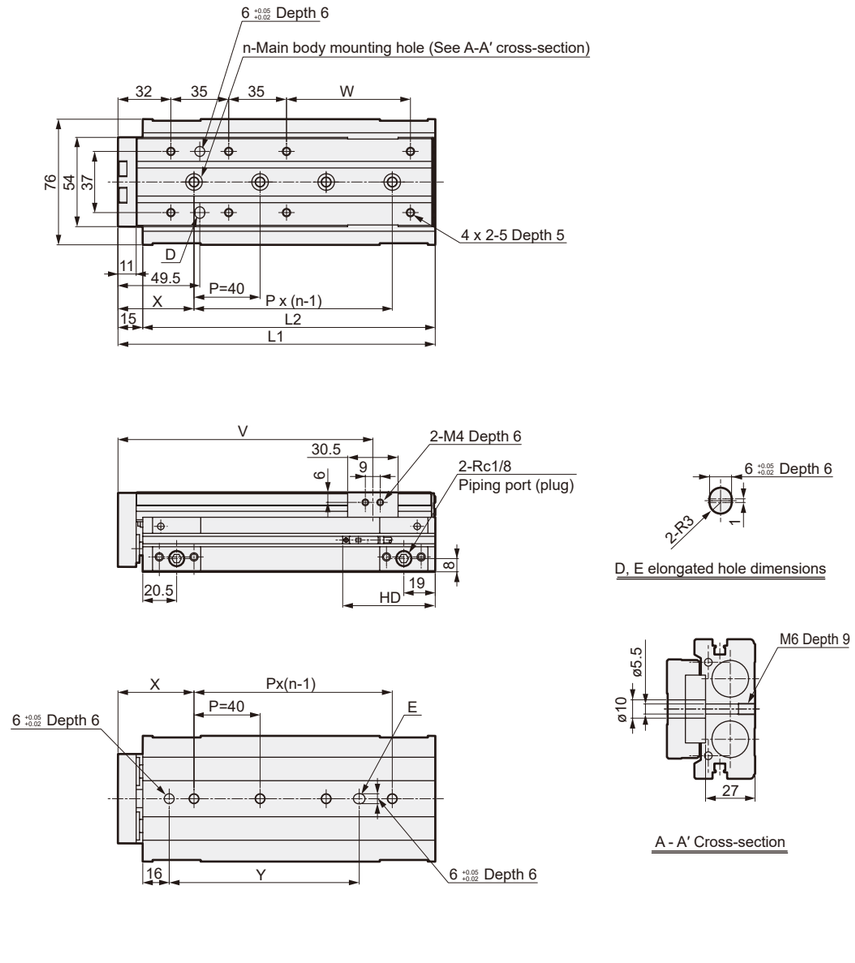
Dimension table by stroke

Code	Stroke				
	10	20	30	40	50
L1	110.5			120.5	130.5
L2	95.5			105.5	115.5
V	78.5			88.5	98.5
W	28.5			38.5	48.5
X	45			51	49
Y	34			40	38

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.
*2: The outline dimension drawing of the anti-rust treated product U is also the same.
***3: For dimensions of models with switches, refer to P. 186, 187**

Outline dimension drawing (Bore size: ø20)

● LCG-20
Stroke: 75, 100, 125, 150
(The main body mounting holes in this figure show the case of stroke 100)



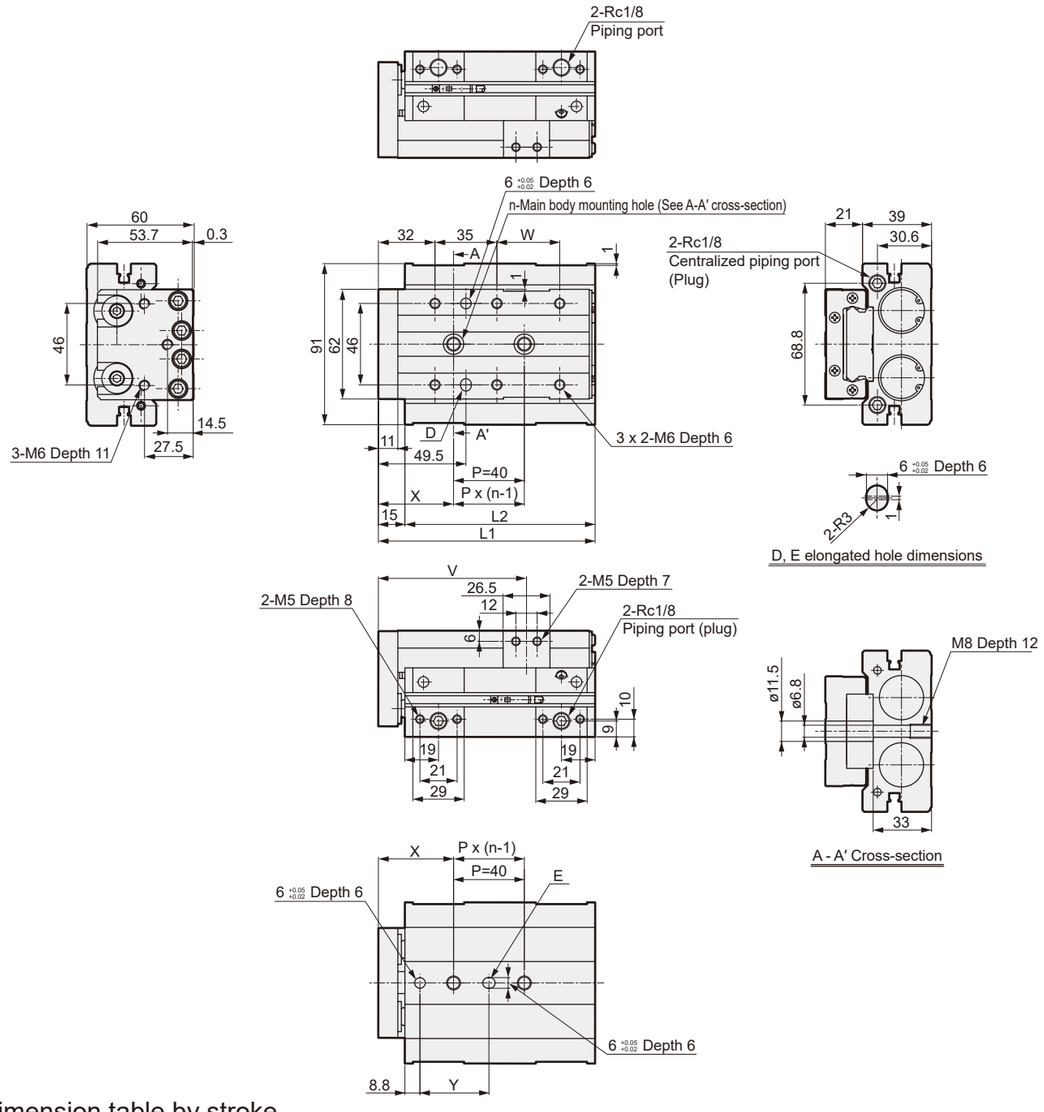
Dimension table by stroke

Code	Stroke			
	75	100	125	150
L1	167	192	217	242
L2	152	177	202	227
n	3	4		5
V	129.3	154.3	179.3	204.3
W	50	75	100	125
X	46		53	51
Y	75	115	122	160

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.
*2: The outline dimension drawing of the anti-rust treated product U is also the same.
***3: For dimensions of models with switches, refer to P. 186, 187**

Outline Dimension Drawing (Bore size : ø25)

● LCG-25
Stroke: 10, 20, 30, 40, 50
(The main body mounting holes in this figure show the case of stroke 30)



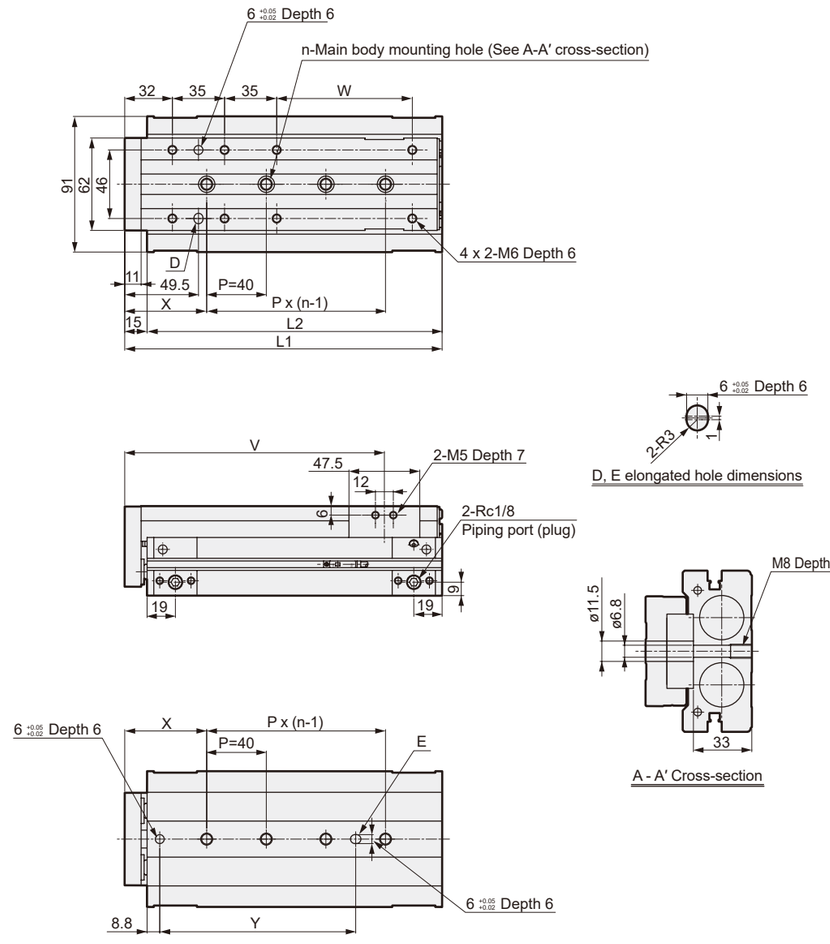
Dimension table by stroke

Code	Stroke				
	10	20	30	40	50
L1	122.5			132.5	142.5
L2	107.5			117.5	127.5
n	2			3	2
V	83.8			93.8	103.8
W	35.5			45.5	55.5
X	42.5			45.5	60.5
Y	39			42	57

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.
*2: The outline dimension drawing of the anti-rust treated product U is also the same.
***3: For dimensions of models with switches, refer to P. 186, 187**

Outline Dimension Drawing (Bore size : ø25)

● LCG-25
Stroke: 75, 100, 125, 150
(The main body mounting holes in this figure show the case of stroke 100)



Dimension table by stroke

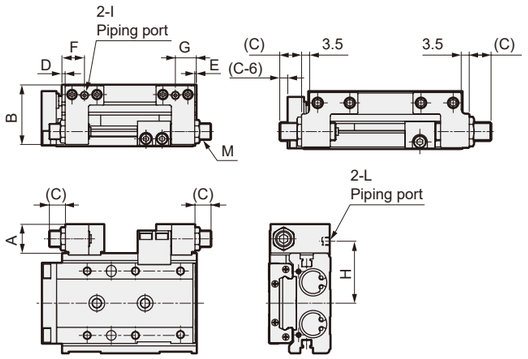
Code	Stroke			
	75	100	125	150
L1	188	213	238	263
L2	173	198	223	248
n	3	4	5	
V	138.8	163.8	188.8	213.8
W	66	91	116	141
X	60	55	45	60
Y	96.5	131.5	161.5	176.5

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.
*2: The outline dimension drawing of the anti-rust treated product U is also the same.
***3: For dimensions of models with switches, refer to P. 186, 187**

Outer Dimensions Diagram with Option

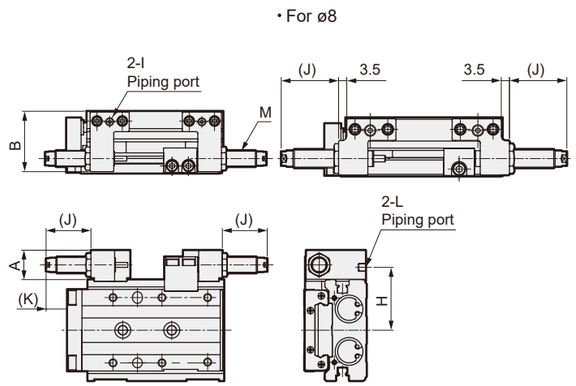
● Stroke adjustment stopper (S1 to S6)

• For ø8

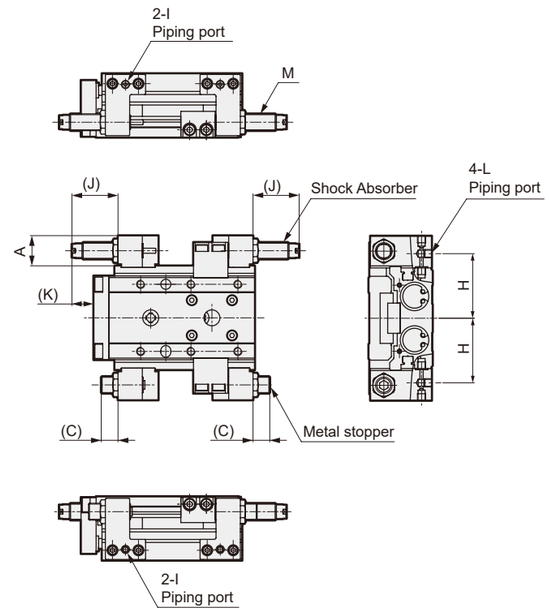


● Shock absorber type stopper (A1 to A6)

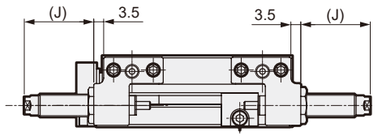
• For ø8

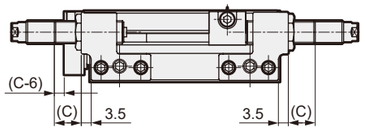


● Double-sided combination double stopper (W1 to W6)



• For ø8



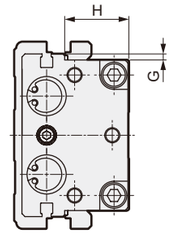


Code / Bore size (mm)	A	B	C Stroke adjustment range 5 mm	C Stroke adjustment range 15 mm	C Stroke adjustment range 25 mm	D	E	F	G	H	I	J	K	L	Shock absorber type stopper Stroke adjustment range (one side)	M
ø6	14	19.9	11	21	–	4	1	13.5	10.5	24	M3 Depth 3	20.5	9	M3 Depth 3	9	M8x0.75
ø8	15.6	24.5	9.5	19.5	–	0.5	0.5	11	11	27.3	M5 Depth 4	24.5	15.5	M5 Depth 4	13.5	M8x0.75
ø12	15.5	29	12	22	32	1	1	13	13	31	M5 Depth 4	24.5	12	M5 Depth 4	14.5	M8x0.75
ø16	18	37	10	20	30	2	1	14	13	38.5	M5 Depth 4	27.5	14	M5 Depth 4	15	M10x1
ø20	20.5	45.5	14.5	24.5	34.5	4	2.5	20.5	19	47	Rc1/8	27.5	9.5	M5 Depth 4	13	M12x1
ø25	20.5	57	11.5	21.5	31.5	2.5	2.5	19	19	54.5	Rc1/8	24.5	8	M5 Depth 4	10	M12x1

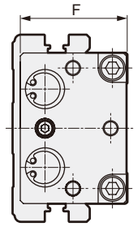
*1: F, G, H, I, and L dimensions are only for cases with stopper part port (S□D□, A□D□, W□, C□D□).
*2: In the case of single-sided mixed stopper mix (C□), refer to stroke adjustment type stopper (S□) and Shock absorber type stopper (A□).
*3: W3□□ to W6□□, C□□ are not available for the drop prevention function type.
*4 : In the case of double-sided combination double stopper (W□), the C dimension is for a stroke adjustment range of 15 mm.

Outer Dimensions Diagram with Option

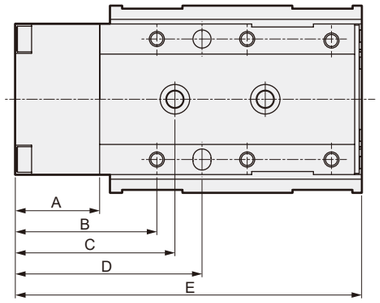
● With buffer (B, BL)



Option code BL



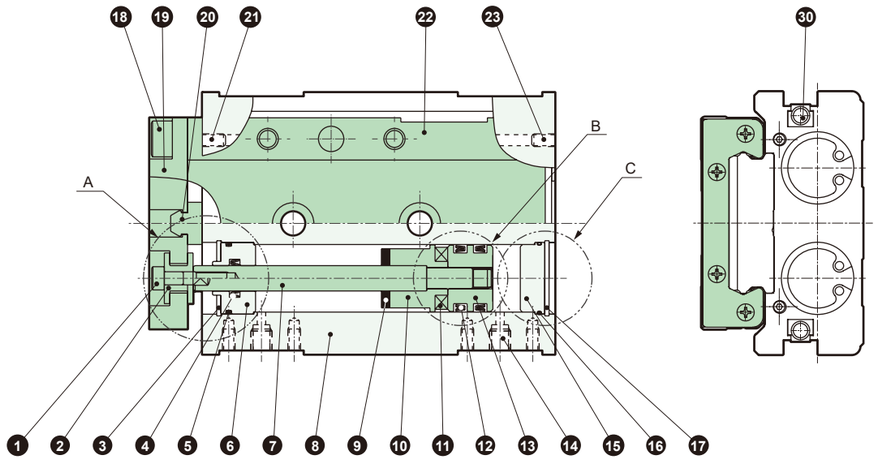
Option code: B



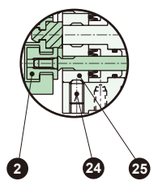
Code / Bore Size (mm)	A	B	C Stroke (mm) 10	20	30	40	50	75	100	125	150	D
ø6	22.5	34	45	45	42.5	43.5	45	-	-	-	-	41.5
ø8	21.5	34.5	42.5	42.5	42.5	41	42.5	39.5	-	-	-	44.5
ø12	27	44	55.5	55.5	55.5	54	50	52.5	65	-	-	56.5
ø16	28	47	53	53	53	64.5	54.5	58	56	68	-	62
ø20	31	52	65	65	65	71	69	66	66	73	71	69.5
ø25	34	55	65.5	65.5	65.5	68.5	83.5	83	78	68	83	72.5

Code / Bore Size (mm)	E Stroke (mm) 10	20	30	40	50	75	100	125	150	F	G	H
ø6	82.5	82.5	92.5	112.5	122.5	-	-	-	-	20	3.5	11.2
ø8	80.5	80.5	90.5	109.5	119.5	144.5	-	-	-	23.5	3.2	13.5
ø12	109	109	109	119	129	163	188	-	-	29	3.2	16
ø16	115	115	115	125	135	177	202	227	-	35.5	1	21.3
ø20	130.5	130.5	130.5	140.5	150.5	187	212	237	262	45.5	4	24.5
ø25	145.5	145.5	145.5	155.5	165.5	211	236	261	286	56	4.5	31

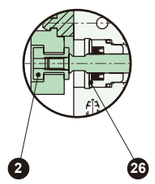
Internal Structure Diagram / Material



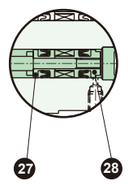
When part A is ø6



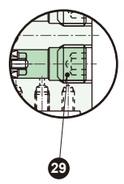
When part A is ø8



When part B is ø6, ø8, ø12



When part C is ø6, ø8



Part No.	Part Name	Material	Remarks
1	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
2	Floating bush	Stainless Steel	
3	C-type retaining ring	ø8: Steel ø12 to 25: Stainless steel	ø8 to 25 only
4	Rod Packing	Nitrile Rubber	
5	Metal gasket	Nitrile Rubber	
6	Rod Metal	Aluminum Alloy	Alumite
7	Piston Rod	Stainless Steel	
8	Cylinder Body	Aluminum Alloy	Hard Anodized
9	Cushion rubber (R)	Urethane Rubber	
10	Magnet spacer	Aluminum Alloy	Chromate
11	Magnet	Plastic	
12	Piston Packing	Nitrile Rubber	
13	Piston	Aluminum Alloy	Chromate
14	Plug	ø6 to 16: Stainless steel ø20, 25: Steel	
15	Cover	Aluminum Alloy	Chromate
16	Cover gasket	Nitrile Rubber	

Part No.	Part Name	Material	Remarks
17	C-type retaining ring	ø8: Steel ø12 to 25: Stainless steel	ø8 to 25 only
18	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
19	End plate	Aluminum Alloy	Alumite
20	Cushion rubber (H)	Urethane Rubber	
21	Plug	Stainless Steel	
22	Table	ø6 to 16: Stainless steel ø20, 25: Steel	
23	Hexagon socket head set screw	Stainless Steel	
24	Hexagon socket head set screw	Stainless Steel	ø6 only
25	Rod metal A	Aluminum Alloy	
26	Cap	Aluminum Alloy	Chromate
27	Piston A	Aluminum Alloy	Chromate
28	Piston B	Aluminum Alloy	Chromate
29	Hexagon socket head set screw	Alloy Steel	Zinc Chromate
With Switch			
30	Switch		

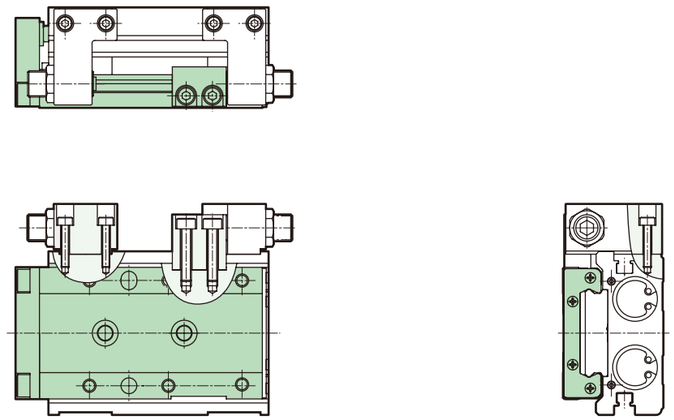
Consumable Parts List

Bore Size (mm)	Kit No.	Consumable Part No.
ø6	LCG-6K	4 5 9 12 16 20
ø8	LCG-8K	
ø12	LCG-12K	
ø16	LCG-16K	
ø20	LCG-20K	
ø25	LCG-25K	

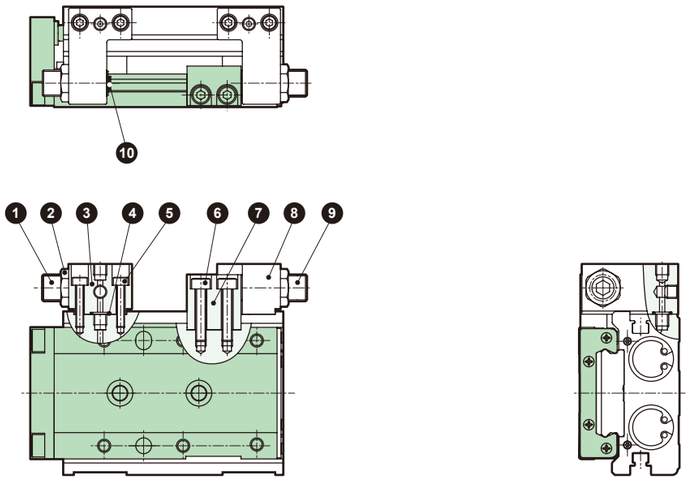
Internal structure diagram / materials (Option)

Stopper structural diagram

● When stopper part has no port (Blank)



● Stopper part port side, bottom available type (Code D)



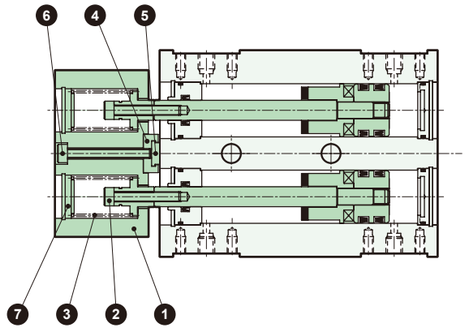
Part No.	Part Name	Material	Remarks
1	Stopper bolt	Alloy Steel	Nickel Plating
2	Hexagon Nut	Alloy Steel	Nickel Plating
3	Stopper A	Aluminum Alloy	Alumite
4	Gasket	Nitrile Rubber	
5	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
6	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate

Part No.	Part Name	Material	Remarks
7	Stopper block (Stopper block code: Blank)	Steel	Nickel Plating
	Stopper block (Stopper block code: T)	Steel	Nitriding Treatment
8	Stopper B	Aluminum Alloy	Alumite
9	Stopper bolt	Alloy Steel	Nickel Plating
10	Cushion Rubber	Urethane Rubber	

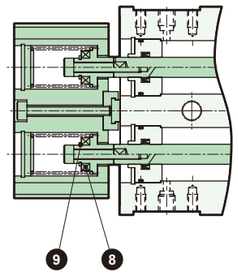
Internal structure diagram / materials (Option)

LCG-□-□-B□

● With buffer, without switch groove (B)



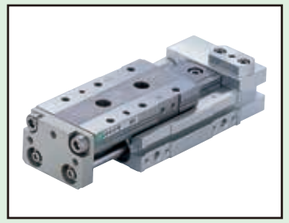
● With buffer, with switch groove (BL)



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	End plate	Aluminum Alloy	Alumite	6	C-type retaining ring	ø6, 8: Steel ø12 to 25: Stainless steel	
2	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate				
3	Coil Spring	Steel		7	Cover	Aluminum Alloy	Chromate
4	Stopper	ø6: Stainless steel ø8 to ø25: Aluminum alloy		8	Magnet	Plastic	
5	Cushion Rubber	Urethane Rubber		9	E-ring	ø6 to 12: Stainless steel ø16 to 25: Steel	

MEMO

With Linear Guide
LCM
LCR
LCG
LCW
LCX
MSDG
Cylinder Switch
Ending

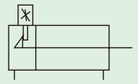


Linear Slide Cylinder Double Acting, Drop Prevention Type

LCG-Q Series

● Bore Size: ø8, ø12, ø16, ø20, ø25

Circuit Diagram Symbol



RoHS

Model No. Notation Method (ø8 to ø16)

Without Switch
(Built-in magnet for switch)

LCG-Q - 8 - 40 ——— S2

Model No. ❶ ❷ ❺

With Switch
(Built-in magnet for switch)

LCG-Q - 12 - 40 - F2H - R - A1 DT

Model No. ❷ Stroke ❹ Number of Switches ❻ Option
❶ Bore size ❸ Switch Model No. ❺ Stopper

❶ Bore size (mm)

Code	Content
8	ø8
12	ø12
16	ø16

❷ Stroke (mm)

	Stroke (mm)	Applicable Bore size ø8	ø12	ø16
Standard Stroke	10	●	●	●
	20	●	●	●
	30	●	●	●
	40	●	●	●
	50	●	●	●
	75	●	●	●
	100		●	●
	125			●

❸ Switch Model No.

For switch details, please refer to P. 753..
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	DC	Load Current (mA) AC	DC	Lead Wire *1 Straight	L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20	-	F2S□	
		3-wire (NPN)	-	30 or less	-	50 or less	-	F3S□	
		2-wire	-	10 to 30	-	5 to 20 *2	F2H□	F2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3H□	F3V□	
		3-wire (PNP)	-	30 or less	-	50 or less	F3PH□	F3PV□	
	2-Color	2-wire	-	24±10%	-	5 to 20	F2YH□	F2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3YH□	F3YV□	
	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24±10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	1-Color Flexible Lead Wire Type	2-wire	-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: ❶For bore size ø16, F type switch cannot be selected.
*4: ❶For bore size ø8, 12, T type switch cannot be selected.
*5: Switches other than the switch model Nos. are also available. (Custom Product) For details, see P. 753.

❹ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

*6

*Lead wire length

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

*6: For F type switch, 5 m lead wire cannot be selected.

Example) Lead wire length
1m TOH
3m TOH 3
5m TOH 5

❺ Stopper

For details, see P. 166.

Code	Content	
Blank	No stopper	
'S' Stroke adjustment stopper		***1, *4, *5**
S1□□	Stopper position ①	Stopper Mounting Position
S2□□	Stopper position ②	
'A' Shock absorber type stopper		***4, *7, *3, *6**
A1	Stopper position ①	Stopper Mounting Position
A2	Stopper position ②	
'W' Double-sided combination double stopper (Shock absorber type stopper, Metal stopper)		***8**
W1	A1 + Metal stopper	Stopper Mounting Position
W2	A2 + Metal stopper	

□□ part Stroke adjustment range ●Applicable to all. *9

	Extension end side	Retraction end side	Stopper model No. S	A	W
Blank	5 mm or none	5 mm or none	●	–	–
02	15 mm or none	15 mm or none	●		
03	25 mm or none	25 mm or none	●		

*1: For stopper positions ① , ② , please refer to the diagram on the right.
*2: The standard port positions when there is no stopper are positions ① and ③ in the diagram on the right.
*3: For combinations of metal stoppers and Shock absorber type stoppers, refer to ❺ Stopper "W□".
*4: For ø8 models with a stroke of 30 or less and equipped with S□□□, A□□□, please select the F□H type switch when using two switches.
*5: The stroke adjustment stopper becomes metal touch at an operating pressure of 0.3 MPa or more.
*6: For the stroke adjustment range when using a Shock absorber type, refer to the dimension table in the stopper outline drawing P. 156.
*7: For ø8 (10 stroke), ø12, and ø16 (20 stroke or less), A1 and A2 cannot be adjusted with the standard stopper and are therefore custom products.
*8: When the type for use on both sides (W) is selected, the stroke adjustment range will be ø8: 13.5 mm, ø12: 14.5 mm, and ø16: 15 mm.
*9: Can be selected only when using the stopper for stroke adjustment S□□□.
*10: Since the lock mechanism engages at the stroke end, do not install stoppers at positions ③ , ④ .
*11: For stopper combinations, please refer to the combination possibility table on P. 166.
*12: The rust prevention treatment type is a custom product.

❻ Option

Code	Content	
Stopper part port		***2, *4**
Blank	No port	
D	Side and bottom ports available *1	
Stopper block material		***2**
Blank	Steel	
T	Steel (nitriding treatment)	
With buffer		***3**
B	Without switch groove	
BL	With switch groove	

*1: Port position is P. 156. Refer to the stopper dimensions.
*2: Selectable only when stopper type is selected.
*3: Purchase the buffer part switch separately using the switch single item model No. indication method on P. 167.
*4: If the double-sided combination type (W) is selected, the stopper part port is standard, so option "D" cannot be selected.

● Stopper position

Rechargeable Battery Compatible Specification (Catalog No. CC-1226AA)

● Structure usable in Rechargeable battery manufacturing processes

LCG-Q – • • • • – P4□

* Please contact us for details.

Model No. Notation Method (ø20, ø25)

Without Switch
(Built-in magnet for switch)

LCG-Q – 20 – 40 ——— S2 — U

Model No. ❶ ❷ ❺ ❼

With Switch
(Built-in magnet for switch)

LCG-Q – 25 – 40 – T2H – R – A1 – DT – U

Model No. ❶ Bore size ❷ Stroke ❸ Switch Model No. ❹ Number of Switches ❺ Stopper ❻ Option ❼ Anti-rust treatment

❶ Bore size (mm)

Code	Content
20	ø20
25	ø25

❷ Stroke (mm)

Code	Content
10	10
20	20
30	30
40	40
50	50
75	75
100	100
125	125
150	150

❸ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□
		3-wire (PNP)	-		-		T3PH□	T3PV□
	2-Color	2-wire	-	24±10%	-	5 to 20	T2WH□	T2WV□
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□
	1-Color Flexible Lead Wire Type	2-wire	-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: Switches other than the switch model Nos. are also available. (Custom order) For details, refer to P. 753.

*** Lead wire length**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

Example) Lead wire length
1m TOH
3m TOH 3
5m TOH 5

❹ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

❺ Stopper

For details, see P. 166.

Code	Content	Mounting Position
Blank	No stopper	
S Stroke adjustment stopper *4		
S1□□	Stopper position ①	Stopper
S2□□	Stopper position ②	Stopper
'A' Shock absorber type stopper *5, *6		
A1	Stopper position ①	Stopper
A2	Stopper position ②	Stopper
W Double-sided combination double stopper (Shock absorber type stopper, Metal stopper) *5, *7		
W1	A1 + Metal stopper	Stopper
W2	A2 + Metal stopper	Stopper

*2

□□ part	Stroke adjustment range ●Applicable to all. *8				
	Extension end side	Retraction end side	Stopper model No. S	A	W
Blank	5 mm or none	5 mm or none	●	–	–
02	15 mm or none	15 mm or none	●		
03	25 mm or none	25 mm or none	●		

*1: For stopper positions ①, ②, please refer to the diagram on the right.
*2: The standard port positions when there is no stopper are positions ① and ③ in the diagram on the right.
*3: For combinations of metal stoppers and Shock absorber type stoppers, refer to ❺ Stopper "W□".
*4: The stroke adjustment stopper becomes metal touch at an operating pressure of 0.3 MPa or more.
*5: For the stroke adjustment range when using a Shock absorber type, refer to the dimension table in the stopper outline drawing P. 156.
*6: For ø20, and ø25 (20 stroke or less), A1 and A2 cannot be adjusted with the standard stopper and are therefore custom products.
*7: If the double-sided combination type (W) is selected, the stroke adjustment range will be ø20: 13 mm, ø25: 10 mm.
*8: Can be selected only when using the stopper for stroke adjustment S□□□.
*9: Since the lock mechanism engages at the stroke end, do not install stoppers at positions ③, ④.
*10: For stopper combinations P. 166 .

❼ Anti-rust treatment

Code	Content	
Blank	None	
U	Anti-rust treated product (Table/Guide part)	

*1
*2

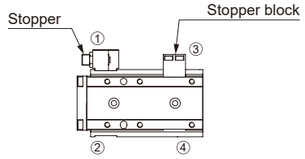
*1: The table uses steel. When used in high-temperature, high-humidity environments or environments where water droplets may adhere due to condensation, etc., rust may occur, so please select "U".
*2: The table and rail will be black. Rust prevention treatment on the table and rail surfaces reduces the occurrence of rust in high-humidity environments, such as near an ionizer.
*3: If anti-rust treatment is required for the standard (stainless steel), please contact our sales department.

❻ Option

Code	Content	
Stopper part port *2, *4		
Blank	No port	
D	Side and bottom ports available *1	
Stopper block material *2		
Blank	Steel	
T	Steel (nitriding treatment)	
With buffer *3		
B	Without switch groove	
BL	With switch groove	

*1: Port position is P. 156. Refer to the stopper dimensions.
*2: Selectable only when stopper type is selected.
*3: Purchase the buffer part switch separately using the switch single item model No. indication method on P. 167.
*4: If the double-sided combination type (W) is selected, the stopper part port is standard, so option "D" cannot be selected.

● Stopper position



Rechargeable Battery Compatible Specification (Catalog No. CC-1226AA)

● Structure usable in Rechargeable battery manufacturing processes

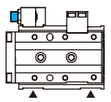
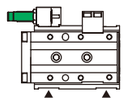
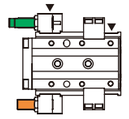
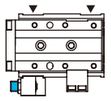
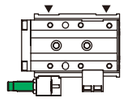
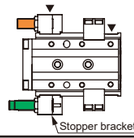
LCG-Q – • • • • – P4□

* Please contact us for details.

Stopper Model No. Selection Method

1 Stopper Combination Table

Model No. - [①Stopper type] [②Stopper position] [③] Example) LCR-Q-8-40- [S] [2] 06

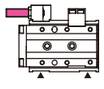
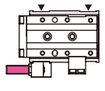
Stopper position [②]	Stopper [①] Stroke adjustment type (single side) [S]	Shock absorber type (single side) [A]	Double-sided combination double stopper [W]
[1]	[S1] 	[A1] 	[W1] 
[2]	[S2] 	[A2] 	[W2]  Stopper bracket

▲ indicates the piping direction.
If the double-sided combination type [W] is selected, the stopper brackets on both sides will have piping, and the stopper bracket on the side opposite to the ▲(piping direction) will have a plug.

■: Shock absorber type stopper
■: Stroke adjustment stopper (adjustment range 5 mm)
■: Metal stopper (adjustment range 15 mm)

2 Stopper Combination Table

Model No. - [①Stopper type] [②Stopper position] [③Stroke adjustment range]
Example) LCG-Q-8-40-S1 [02]
In case of stroke adjustment stopper -S

Stroke adjustment range [③]	Stopper adjustment range: Extension end side	Stopper type, Stopper position [① ②]: [S1]	[S2]
Blank	5 mm	[S1]	[S2]
[02]	15 mm	[S102]	[S202]
[03]	25 mm	 [S103]	 [S203]

■: Stroke adjustment stopper (adjustment range 5 mm)
■: Stroke adjustment stopper (adjustment range 15 mm)
■: Stroke adjustment stopper (adjustment range 25 mm)

▲ indicates the piping direction.
Cannot be selected for Shock absorber type [A] or double-sided combination type [W].

LCG-Q Drop Prevention Type Combination Availability Table

(Combination with stroke adjustment stopper, Shock absorber type stopper)

●: Not combinable -: Not combinable

Option Code: Bore size	Stroke	Stroke adjustment stopper: S1 Adjustment range symbol: Blank	02	03	S2: Blank	02	03	Shock absorber type stopper: A1	A2	Double-sided combination double stopper: W1	W2
ø8	10	●	-	-	●	-	-	-	-	-	-
	20 or more	●	•	-	●	●	-	●	●	●	●
ø12 to ø25	10	●	-	-	●	-	-	-	-	-	-
	20	●	●	-	●	●	-	-	-	-	-
	30 or more	●	●	●	●	●	●	●	●	●	●

Option Code D: Stopper part with port, T: Please refer to the combination table above to determine if a steel stopper block (nitrided) can be selected. (●: Selectable -: Not selectable)

Switch Single Unit Model No. Notation Method

For ø8 and ø12: SW - F2H
③ Switch model No. (P. 162 Section ③)

For ø16 to ø25: SW - T2H3
③ Switch model No. (P. 162 Section ③)

● For buffer: SW - F 2 V 3
⑧ Output format
⑨ Lead wire length
Lead wire L-shaped type

⑧ Output format

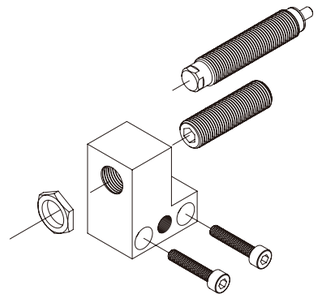
Code	Content
2	DC 2-wire solid-state
3	DC 3-wire solid-state

⑨ Lead wire length

Code	Content
Blank	1 m (Standard)
3	3 m (Option)

Stopper Set Model No. Notation Method

Note: Since the lock mechanism works at the stroke end, do not install a stopper on the head side.
● Set of stopper part and stroke adjustment stopper or Shock absorber type stopper
● Used when changing from standard to with stroke adjustment stopper or with Shock absorber type stopper



LCG - 12 - S 2 D - S02
① Bore size
⑪ Stopper mounting position
⑬ Stroke Adjustment amount
⑩ Stopper type
⑫ Stopper part port

⑩ Stopper type

Code	Content
S	Stroke adjustment stopper
A	Shock absorber type stopper

⑪ Stopper mounting position

Code	Content
1	Stopper position ①
2	Stopper position ②

*1: The relationship of the stroke adjustment amount changes depending on the stroke, so refer to the table below.

⑫ Stopper part port

Code	Content
Blank	No port
D	Side/bottom ports available

⑬ Stroke adjustment amount

Code	Content
Blank	Stroke adjustment range 5 mm
S02	Stroke adjustment range 15 mm
S03	Stroke adjustment range 25 mm

*1: S03 cannot be selected for ø8.
*2: ⑩ Cannot be selected in the case of Shock absorber type stopper "A".

Precautions when purchasing a stopper set

Please note that the stroke adjustment amount will be as follows depending on the stroke.

▼

-: Not compatible

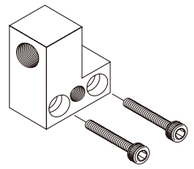
Model No. code	Option Code: Bore size	Stroke	Stroke adjustment stopper single item: Stroke adjustment amount (mm) -5	-15	-25
LCG Series -S1, S2	ø8	10	S02	-	-
		20 or more	Blank	S02	-
	ø12 to ø25	10	S03	-	-
		20	S02	S03	-
		30 or more	Blank	S02	S03

● Stopper set weight (Unit: g)

Stopper type	S1, S2			A1, A2
Stopper part port	Blank, D			
Stroke adjustment amount / Bore size	Blank	S02	S03	Blank
ø8	21	25	-	27
ø12	28	31	34	33
ø16	42	47	52	49
ø20	77	85	92	86
ø25	87	94	101	95

Stopper Bracket Single Item Model No. Notation Method

(Note: Since the lock mechanism works at the stroke end, do not install a stopper on the head side.
● Used when changing the stopper mounting position between ① and ②, or when changing to a stopper with a port.



LCG - 12 - STB 1 D

1 Bore size
14 Stopper mounting position
15 Stopper part port

● Stopper bracket weight (Unit: g)

Stopper mounting position	1,2
Stopper part port / Bore size	Blank, D
ø6	8
ø8	14
ø12	20
ø16	29
ø20	53
ø25	62

14 Stopper mounting position

Code	Content
1	Stopper position ①
2	Stopper position ②

15 Stopper part port

Code	Content
Blank	No port
D	Side/Bottom ports available

Note: When using the bottom port with ø20 or 25, purchase a plug kit (LCG-20-N, 2 pcs/set) and seal the side port before use.

Stroke Adjustment Stopper Single Item Model No. Notation Method

● Hexagon socket set screw with urethane rubber
● Use when changing stroke adjustment range or setting intermediate stroke

LCG - 12 - S02

1 Bore size
16 Stroke Adjustment range

16 Stroke adjustment range

Code	Content
S01	One side 5 mm (Standard)
S02	One side 15 mm
S03	One side 25 mm

Note: "S03" cannot be selected for ø6 and ø8.
Some model Nos. may not be compatible or the stroke adjustment range may differ from the above.

Precautions when purchasing stopper single items

Only when mounting at mounting positions and ①, ② (see P. 162, P. 164), please note that the combination will be as shown on the right depending on the stroke and stroke adjustment amount.

-: Not combinable

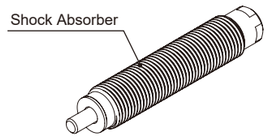
Model No. code	Option Code		Stroke adjustment stopper single item Stroke adjustment amount (mm)		
	Bore size	Stroke	-5	-15	-25
LCG Series -S1, S2, S5, S6	ø6, ø8	10	S02	-	-
		20 or more	S01	S02	-
	ø12 to ø25	10	S03	-	-
		20	S02	S03	-
		30 or more	S01	S02	S03

● Stopper for Stroke Adjustment, Single Unit Weight (Unit: g)

Stroke adjustment range / Bore size	S01	S02	S03
ø6	6	9	-
ø8	7	10	-
ø12	7	11	14
ø16	11	16	22
ø20	22	30	37
ø25	23	30	37

Shock absorber Type Stopper Single Item Model No. Notation Method

● Shock absorber set
● Used when changing from stroke adjustment stopper to Shock absorber type stopper



LCG - 12 - A01

1 Bore size

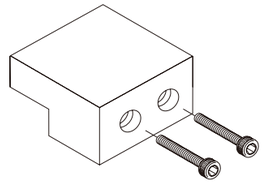
Note: Some models are not compatible, depending on the model number. Please refer to P. 162 and P. 164. For the stroke adjustment range of the shock killer type stopper, please refer to P. 156.

Shock absorber model No. used

Model	Shock absorber model No.	Weight (g)
LCG-6	SKL-0804	9
LCG-8	SKL-0805	12
LCG-12	SKL-0805	12
LCG-16	SKL-1006	19
LCG-20	SKL-1208	31
LCG-25	SKL-1208	31

Stopper Block Single Item Model No. Notation

● Used when changing from standard to with stroke adjustment stopper or with Shock absorber type stopper



LCG - 12 - SB1 T

1 Bore size
17 Stopper block
18 Material

● Stopper for Stroke Adjustment, Single Unit Weight (Unit: g)

Stroke adjustment range / Bore size	SB1 (T)	SB2 (T)
ø6	11	21
ø8	14	24
ø12	23	37
ø16	38	72
ø20	60	99
ø25	112	206

17 Stopper block

Code	Content
SB1	ø6, ø8: For 30 strokes or less
	ø12 to ø25: For 50 strokes or less
SB2	ø6, ø8: For 40 strokes or more
	ø12 to ø25: For 75 strokes or more

18 Material

Code	Content
Blank	Stopper block material Steel
T	Stopper block material Steel (nitriding treatment)

Side Piping Port Plug Kit Model No. Notation

LCG - 12 - N (2 pcs/1 set)

1 Bore size

● Weight of plug kit for side piping port

Bore size	Weight (g)
ø8	1
ø12	1
ø16	1
ø20	5

Specifications

Item			LCG-Q				
Bore size		mm	ø8	ø12	ø16	ø20	ø25
Actuation method			Double Acting Type				
Operating Fluid			Compressed Air				
Max. Working Pressure		MPa	0.7				
Min. Operating Pressure		MPa	0.15				
Proof Pressure		MPa	1.05				
Ambient Temperature		°C	-10 to 60 (however, no freezing)				
Port Size	Main body side		M5			Rc1/8	
	Main body rear		None				
Stroke tolerance		mm	+2.0 (*1) 0				
Operating Piston Speed		mm/s	50 to 500				
Cushion			With Rubber Cushion				
Fall prevention mechanism			Head Side				
Holding Force		N	At PULL, Theoretical thrust x 0.7 (at 0.7MPa)				
Lubrication			Not required (When lubricating, use turbine oil Class 1 ISO VG32)				
Allowable absorption energy		J	Refer to Table 3 on P. 188.				

*1: When used without a stopper, please note that there is a slight gap between the end plate and the floating bush.
*2: The stroke adjustment stopper becomes metal touch at an operating pressure of 0.3 MPa or more.

Stroke

Bore Size (mm)	Standard Stroke (mm)
ø8	10, 20, 30, 40, 50, 75
ø12	10, 20, 30, 40, 50, 75, 100
ø16	10, 20, 30, 40, 50, 75, 100, 125
ø20	10, 20, 30, 40, 50, 75, 100, 125, 150
ø25	10, 20, 30, 40, 50, 75, 100, 125, 150

Note: Strokes other than the above cannot be manufactured.

With buffer specification

Specifications other than the following are the same as the common specifications above.

Item			Content				
Bore size		mm	ø8	ø12	ø16	ø20	ø25
Buffer Stroke		mm	4	9		10	
Buffer part	At SET	N	5	10	13	17	21
spring load	During operation	N	8	14	20	25	29

*1: If rod side stroke adjustment is performed with a buffer, the buffer stroke will be shortened by the stroke adjustment amount, and the spring load at set will also increase.
*2: Use a buffer stroke less than the stroke above. This will cause malfunction or damage.

Theoretical Thrust Table

See P. 189.

Cylinder Weight

● Drop prevention type (Unit: g)

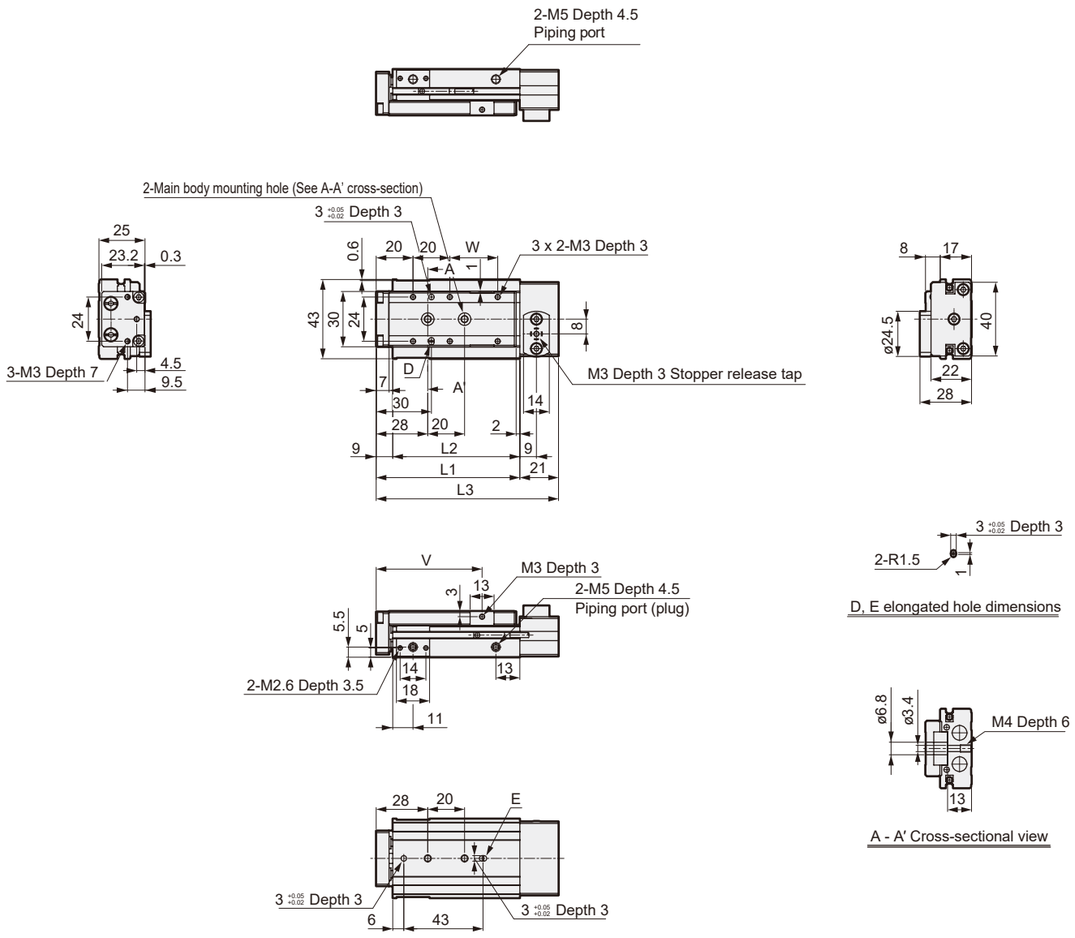
Bore size (mm)	Stroke (mm)								
	10	20	30	40	50	75	100	125	150
ø8	280	280	310	390	420	510	-	-	-
ø12	570	570	570	620	670	860	1,000	-	-
ø16	880	870	860	940	1.020	1.370	1.560	1,760	-
ø20	1.450	1.440	1.430	1.550	1.670	2.110	2.400	2.690	2.980
ø25	2.360	2.340	2.320	2.500	2.680	3.480	3,900	4.320	4,740

● Additional weight of options (Unit: g)

Bore size (mm)	Stopper code		With buffer
	S1, S2	A1, A2	B, BL
ø8	40	50	40
ø12	70	80	70
ø16	110	120	80
ø20	170	180	150
ø25	290	300	320

Outline dimension drawing (Bore size: ø8)

● LCG-Q-8
Stroke: 10, 20, 30



Dimension table by stroke

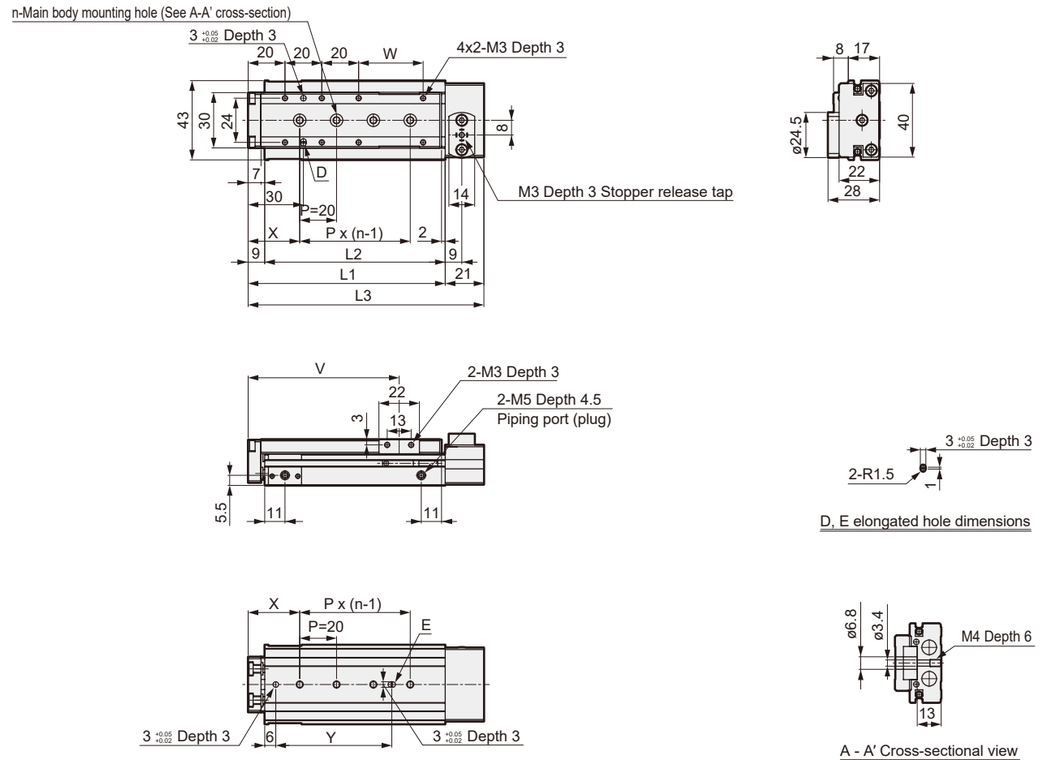
Stroke	10	20	30
L1	68		78
L2	59		69
L3	89		99
V	47.5		57.5
W	16		26

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.

***2: For dimensions of models with switches, refer to P. 186 and P 187.**

Outline dimension drawing (Bore size: ø8)

● LCR-Q-8
Stroke: 40, 50, 75



Dimension table by stroke

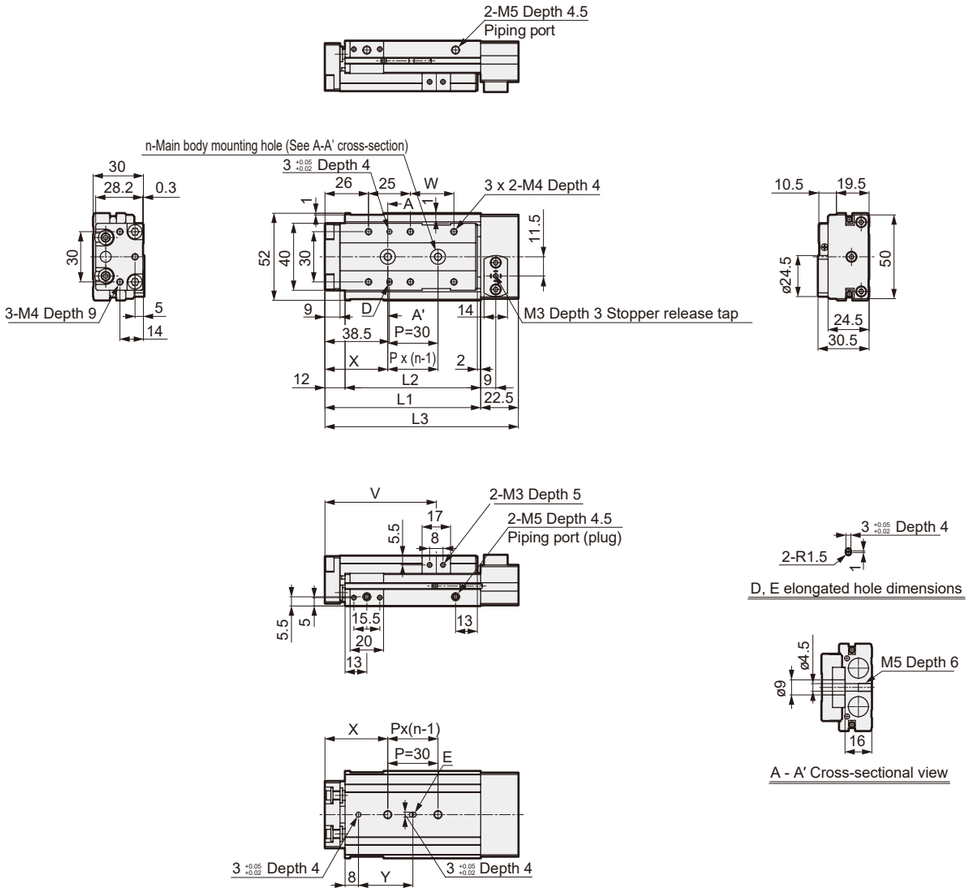
Stroke	40	50	75
L1	97	107	132
L2	88	98	123
L3	118	128	153
n	3	4	5
V	72	82	107
W	25	35	60
X	26.5	28	25
Y	41.5	63	80

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.

***2: For dimensions of models with switches, refer to P. 186, 187**

Outline dimension drawing (Bore size: ø12)

● LCG-Q-12
Stroke: 10, 20, 30, 40, 50



Dimension table by stroke

Stroke	10	20	30	40	50
L1	93			103	113
L2	81			91	101
L3	115.5			125.5	135.5
n	2			3	
V	66.5			76.5	86.5
W	26			36	46
X	37.5			36	32
Y	32.5			31	57

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.
***2: For dimensions of models with switches, refer to P. 186, 187**

Outline dimension drawing (Bore size: ø12)

● LCG-Q-12
Stroke: 75, 100

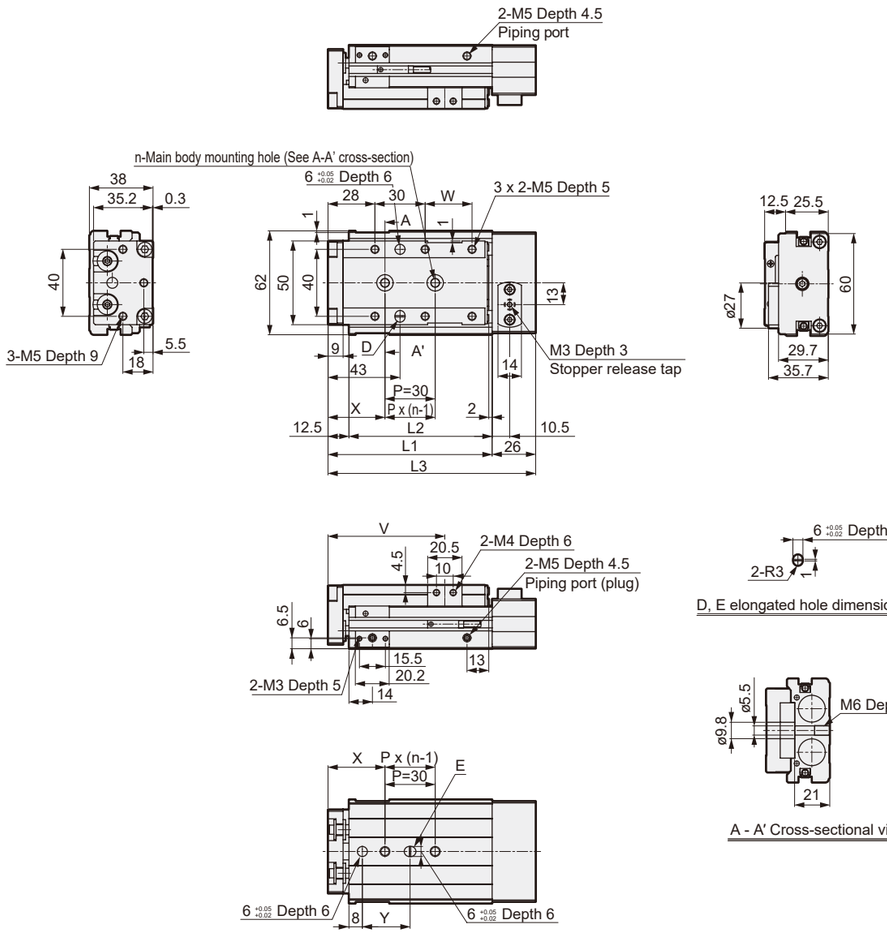
Dimension table by stroke

Stroke	75	100
L1	147	172
L2	135	160
L3	169.5	194.5
V	116	141
W	55	80
X	34.5	47
Y	89.5	102

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.
***2: For dimensions of models with switches, refer to P. 186, 187**

Outline dimension drawing (Bore size: ø16)

● LCG-Q-16
Stroke: 10, 20, 30, 40, 50



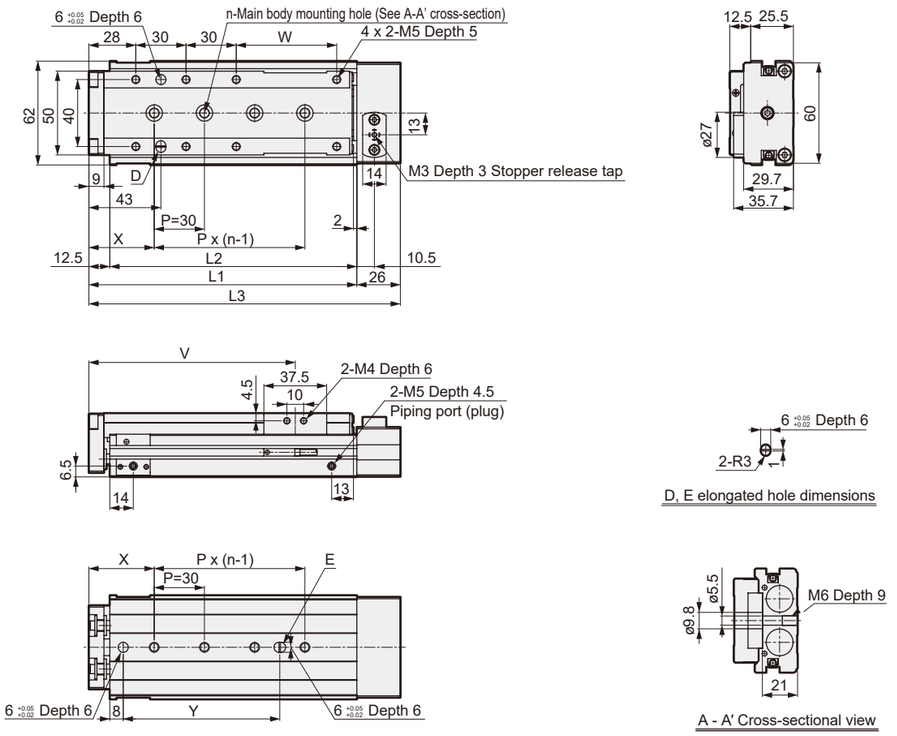
Dimension table by stroke

Stroke	10	20	30	40	50
L1	98			108	118
L2	85.5			95.5	105.5
L3	124			134	144
n	2				3
V	69.8			79.8	89.8
W	28			38	48
X	34			45.5	35.5
Y	28.5			40	60

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.
***2: For dimensions of models with switches, refer to P. 186, 187**

Outline dimension drawing (Bore size: ø16)

● LCR-Q-16
Stroke: 75, 100, 125



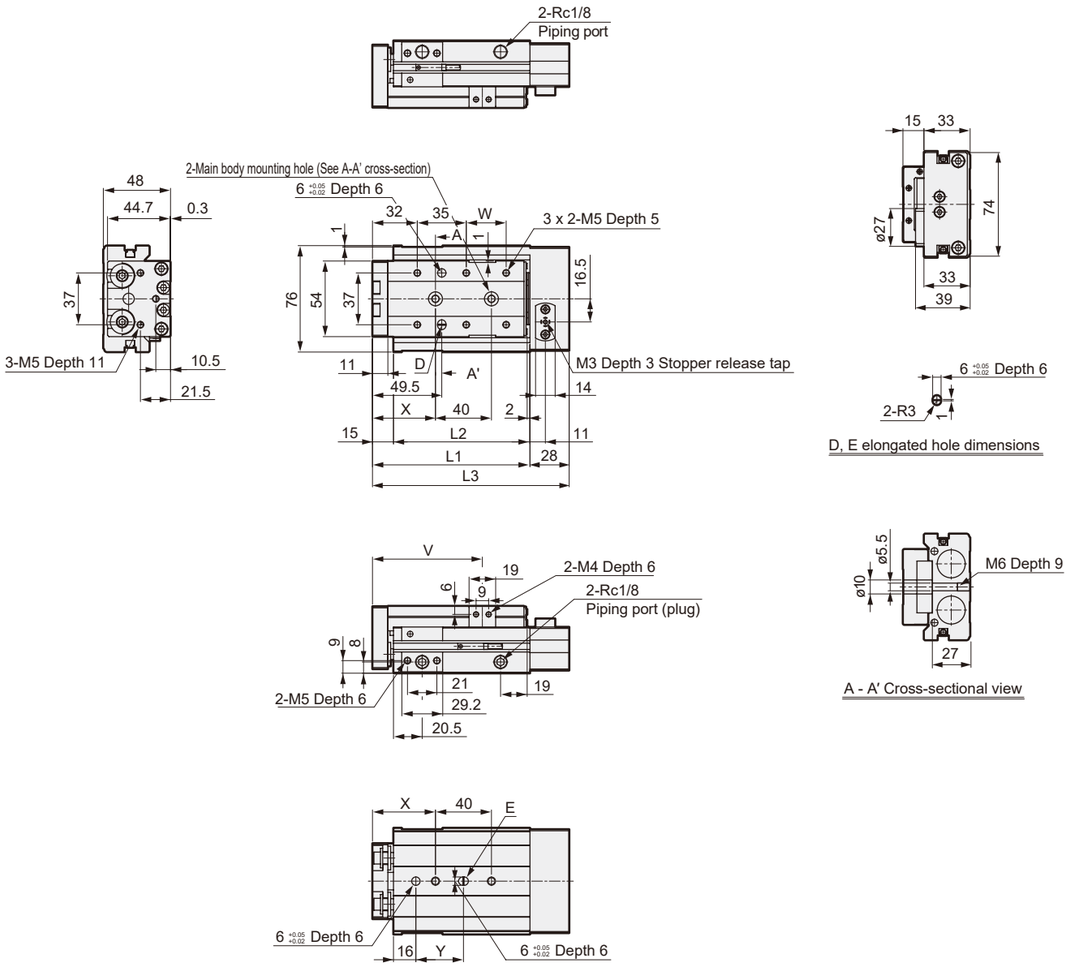
Dimension table by stroke

Stroke	75	100	125
L1	160	185	210
L2	147.5	172.5	197.5
L3	186	211	236
n	4	5	
V	123.3	148.3	173.3
W	60	85	110
X	39	37	49
Y	93.5	121.5	133.5

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.
***2: For dimensions of models with switches, refer to P. 186, 187**

Outline dimension drawing (Bore size: ø20)

● LCG-Q-20
Stroke: 10, 20, 30, 40, 50



Dimension table by stroke

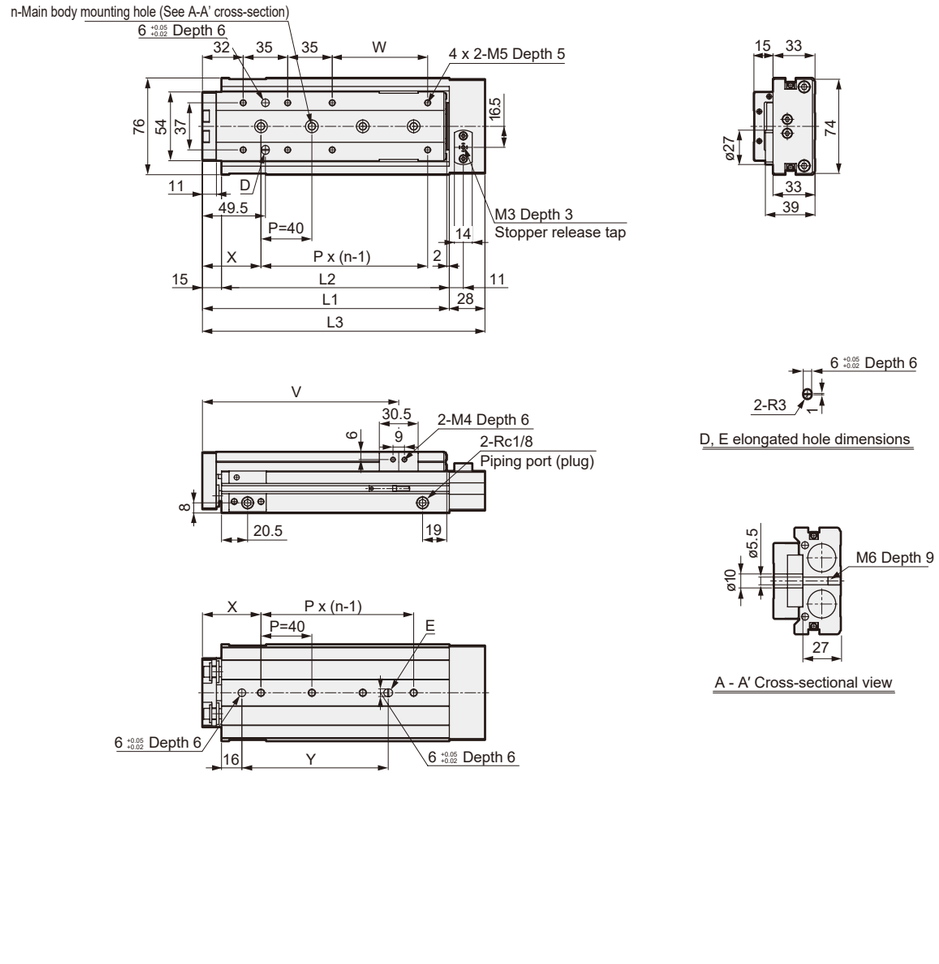
Stroke	10	20	30	40	50
L1	112.5			122.5	132.5
L2	97.5			107.5	117.5
L3	140.5			150.5	160.5
V	78.5			88.5	98.5
W	28.5			38.5	48.5
X	45			51	49
Y	34			40	38

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.

***2: For dimensions of models with switches, refer to P. 186, 187**

Outline dimension drawing (Bore size: ø20)

● LCR-Q-20
Stroke: 75, 100, 125, 150



Dimension table by stroke

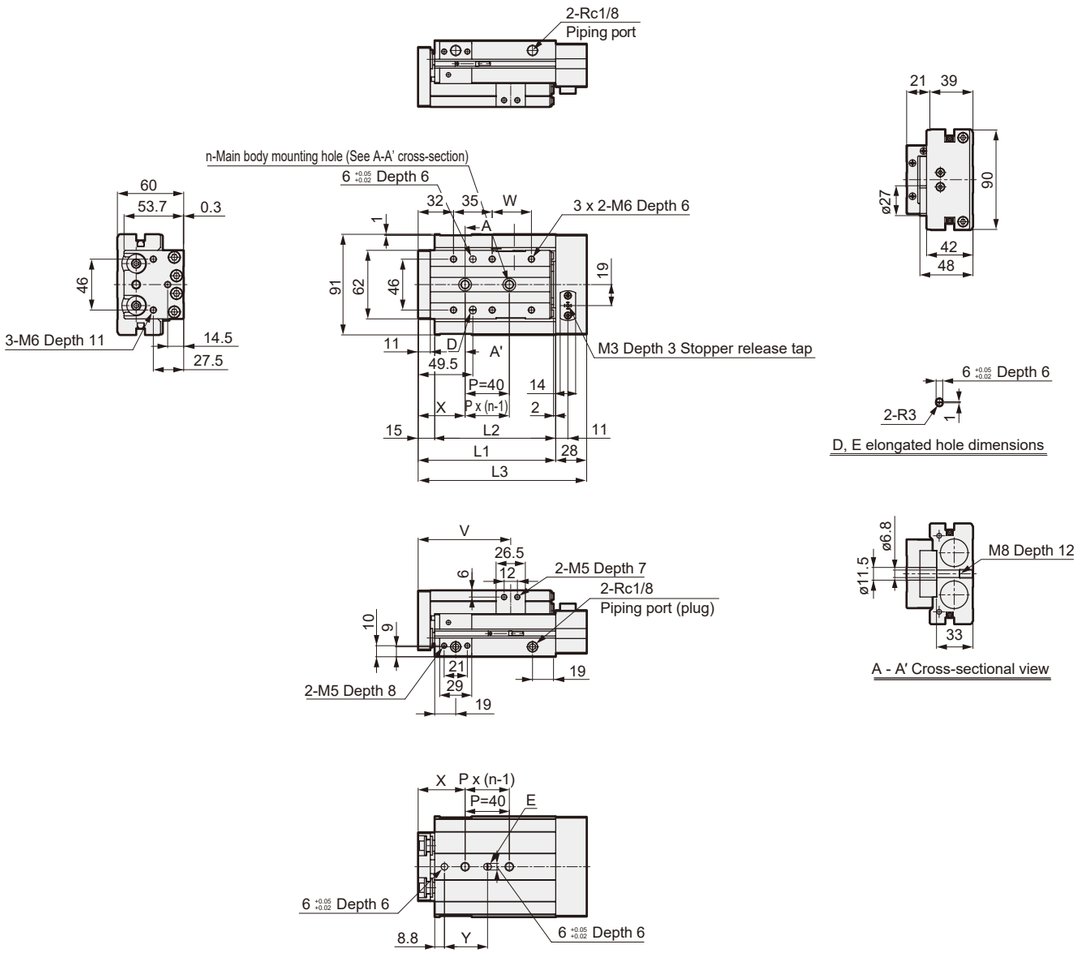
Stroke	75	100	125	150
L1	169	194	219	244
L2	154	179	204	229
L3	197	222	247	272
n	3	4		5
V	129.3	154.3	179.3	204.3
W	50	75	100	125
X	46		53	51
Y	75	115	122	160

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.

***2: For dimensions of models with switches, refer to P. 186, 187**

Outline Dimension Drawing (Bore size: ø25)

● LCG-Q-25
Stroke: 10, 20, 30, 40, 50



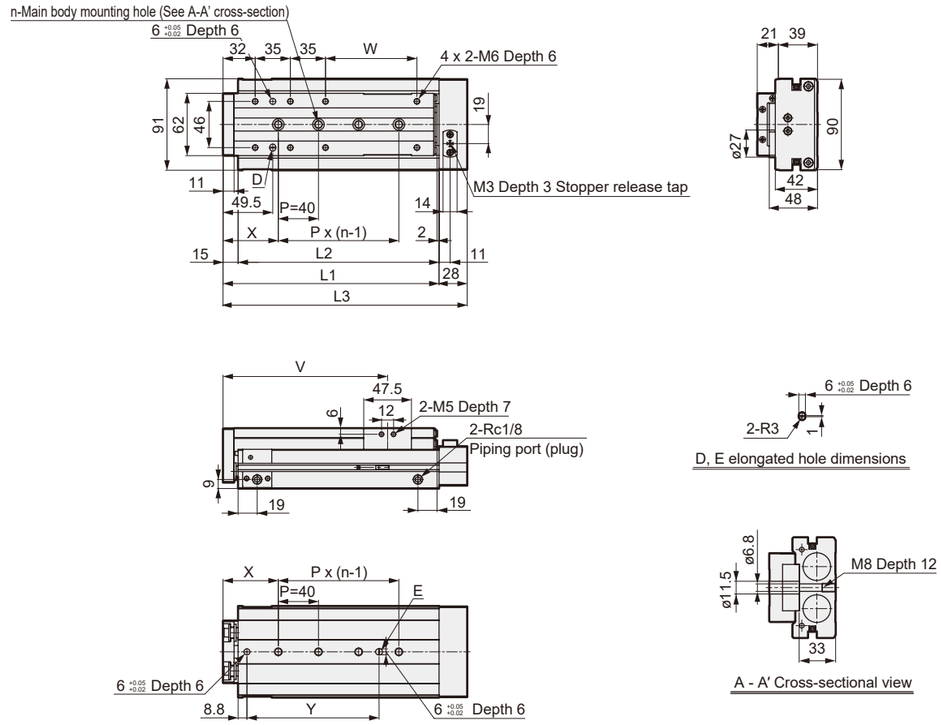
Dimension table by stroke

Stroke	10	20	30	40	50
L1	124.5			134.5	144.5
L2	109.5			119.5	129.5
L3	152.5			162.5	172.5
n	2			3	2
V	83.8			93.8	103.8
W	35.5			45.5	55.5
X	42.5			45.5	60.5
Y	39			42	57

*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.
***2: For dimensions of models with switches, refer to P. 186, 187**

Outline Dimension Drawing (Bore size: ø25)

● LCG-Q-25
Stroke: 75, 100, 125, 150



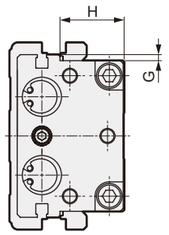
Dimension table by stroke

Stroke	75	100	125	150
L1	190	215	240	265
L2	175	200	225	250
L3	218	243	268	293
n	3	4	5	
V	138.8	163.8	188.8	213.8
W	66	91	116	141
X	60	55	45	60
Y	96.5	131.5	161.5	176.5

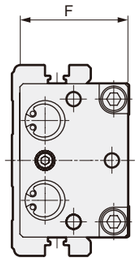
*1: When using positioning holes, use pins with dimensions that do not result in a loose fit. The recommended pin tolerance is JIS tolerance m6 or less.
***2: For dimensions of models with switches, refer to P. 186, 187**

Outer Dimensions Diagram with Option

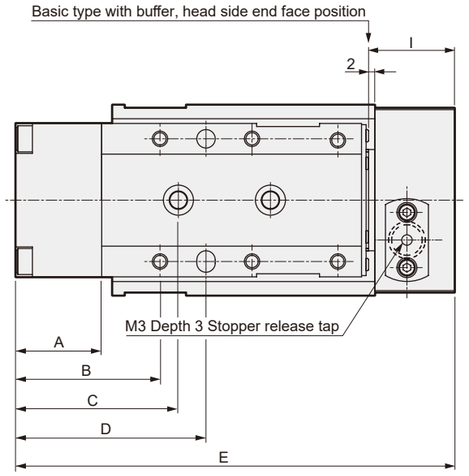
With buffer (B, BL)



Option code: BL



Option code: B



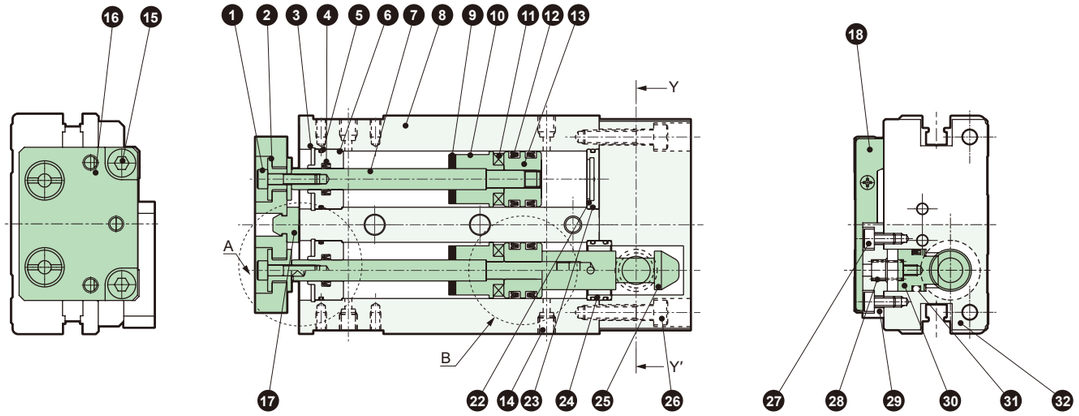
Code / Bore Size (mm)	A	B	C Stroke (mm)									D	E Stroke (mm)									F	G	H	I
			10	20	30	40	50	75	100	125	150		10	20	30	40	50	75	100	125	150				
ø8	21.5	34.5	42.5	42.5	42.5	41	42.5	39.5	-	-	-	44.5	103.5	103.5	113.5	132.5	142.5	167.5	-	-	-	23.5	3.2	13.5	23
ø12	27	44	55.5	55.5	55.5	54	50	52.5	65	-	-	56.5	133.5	133.5	133.5	143.5	153.5	187.5	213	-	-	29	3.2	16	24.5
ø16	28	47	53	53	53	64.5	54.5	58	56	68	-	62	143	143	143	153	163	205	230	255	-	35.5	1	21.3	28
ø20	31	52	65	65	65	71	69	66	66	73	71	69.5	160.5	160.5	160.5	170.5	180.5	217	242	267	292	45.5	4	24.5	30
ø25	34	55	65.5	65.5	65.5	68.5	83.5	83	78	68	83	72.5	175.5	175.5	175.5	185.5	195.5	241	266	291	316	56	4.5	31	30

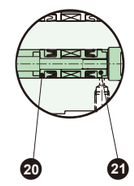
MEMO

With Linear Guide
LCM
LCR
LCG
LCW
LCX
MSDG
Cylinder Switch
Ending

Internal Structure Diagram/Material

● LCG-Q





Y-Y' Cross-section

Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	17	Cushion rubber (H)	Urethane Rubber	
2	Floating bush	Stainless Steel		18	Table	ø6 to 16: Stainless steel ø20, 25: Steel	
3	C-type retaining ring	ø8: Steel ø12 to 25: Stainless steel	ø8 to 25 only	19	Cap	Aluminum Alloy	Chromate
4	Rod Packing	Nitrile Rubber		20	Piston A	Aluminum Alloy	Chromate
5	Metal gasket	Nitrile Rubber		21	Piston B	Aluminum Alloy	Chromate
6	Rod Metal	Aluminum Alloy	Alumite	22	Cover	Aluminum Alloy	
7	Piston Rod	Stainless Steel		23	Gasket	Nitrile Rubber	
8	Cylinder Body	Aluminum Alloy	Hard Anodized	24	Joint ring	ø8: Stainless steel ø12 to 25: Aluminum alloy	ø12 to 25: Chromate
9	Cushion rubber (R)	Urethane Rubber					
10	Magnet spacer	Aluminum Alloy	Chromate	25	Sleeve	Carbon steel	Nitriding Treatment
11	Magnet	Plastic		26	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
12	Piston Packing	Nitrile Rubber		27	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
13	Piston	Aluminum Alloy	Chromate	28	Coil Spring	Steel	
14	Plug	ø6 to 16: Stainless steel ø20, 25: Steel		29	Stopper Cover	Aluminum Alloy	Alumite
				30	Stopper Piston	Carbon steel	Nitriding Treatment
15	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	31	Stopper packing	Nitrile Rubber	
16	End plate	Aluminum Alloy	Alumite	32	Head Cover	Aluminum Alloy	Alumite

Consumable Parts List

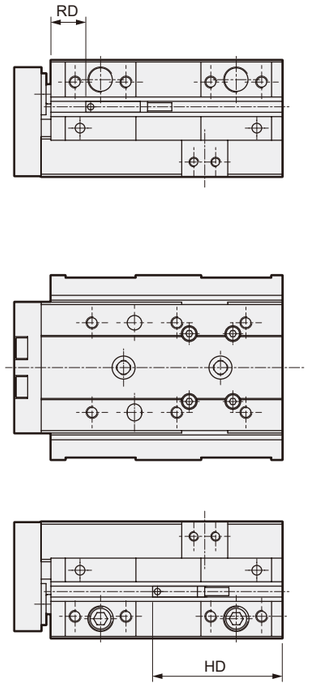
Bore size (mm)	Kit No.	Consumable Part No.	
		Drop prevention part consumable parts	Basic consumable parts
ø8	LCG-Q-8K	31	4 5 9 12 17 23
ø12	LCG-Q-12K		
ø16	LCG-Q-16K		
ø20	LCG-Q-20K		
ø25	LCG-Q-25K		

MEMO

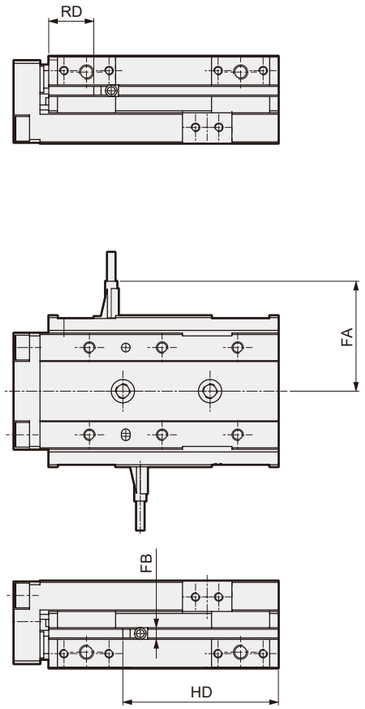
MSDG
With Linear Guide
LCM
LCR
LCG
LCW
LCX
Cylinder Switch
Ending

LCG Series Switch External Dimensions Diagram

● F2H/V, F3H/V, F2YH/V, F3YH/V, F3PH/V
LCG, LCG-Q



● F2S, F3S
LCG, LCG-Q

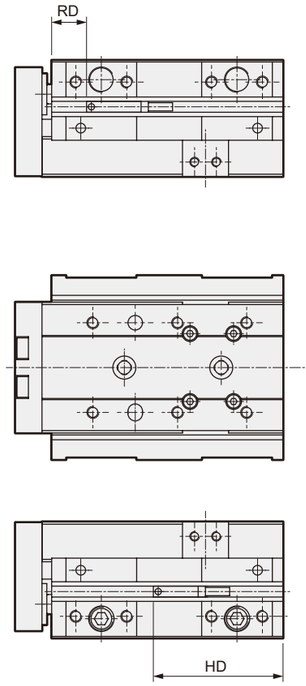


Code / Bore Size (mm)	Stroke	LCG, LCG-Q					
		F2, F3, F2Y, F3Y, F3P		F2S, F3S			
		RD	HD	RD	HD	FA	FB
ø6	10	15.5	32.5	14.5	33.5	29.6	4
	20,30		22.5		23.5		
	40, 50	25.5		24.5			
ø8	10	13	34	12	35	32.6	4
	20,30		24		25		
	40,50,75		33		34		
ø12	10	21.5	47	20.5	48	37.8	4
	20		37		38		
	30,40,50		27		28		
	75.100		36		37		

Note: For switch mountability, refer to the model No. notation method for each variation.

LCG Series Switch External Dimensions Diagram

● T0H/V, T5H/V, T2H/V, T3H/V, T3PH/V, T2□R3, T2WH/V, T3WH/V, T2WLH/V
LCG, LCG-Q

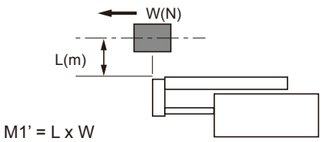


Code / Bore Size (mm)	Stroke	LCG,LCG-Q			
		T0, T5, T2, T3, T3P, T2□R3		T2W, T3W, T2WL	
		RD	HD	RD	HD
ø16	10	17	56.5	19.5	54
	20		46.5		44
	30,40,50		36.5		34
	75100125		53.5		51
ø20	10	16	69.5	18.5	67
	20		59.5		57
	30,40,50		49.5		47
	75100125150		61		58.5
ø25	10	18.5	79	21	76.5
	20		69		66.5
	30,40,50		59		56.5
	75100125150		79.5		77

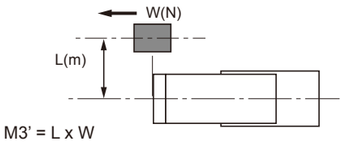
Note: For switch mountability, refer to the model No. notation method for each variation.

STEP-1

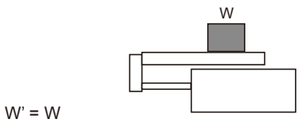
❶ Determine the load and impact moment generated in each direction at the stroke end.



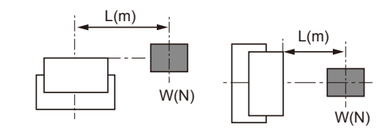
M1' = L x W



M3' = L x W



W' = W



M2'= L x W

From [Table 1], determine the approximate value of the G coefficient.

[Table 1] Va (Average speed) = $\frac{\text{Travel distance}}{\text{Travel time}}$ (m/s)

Va average speed (m/s)	Vm Stroke End speed (m/s)	G coefficient
to 0.07	to 0.1	5
to 0.2	to 0.3	14
to 0.27	to 0.4	19
to 0.35	to 0.5	24

G coefficient = ☐

M1' x G = ☐ (N·m)

M2' = ☐ (N·m)

M3' x G = ☐ (N·m)

W' = ☐ (N)

E'= $\frac{1}{2}$ x (m + mα) x Vm²

= ☐ (J)

(m ≈ $\frac{W}{9.8}$)

❷ Temporarily select a tube inner diameter that satisfies the following conditional expression.

$$M'_T = \frac{M1' \times G}{M1' \max} + \frac{M2'}{M2' \max} + \frac{M3' \times G}{M3' \max} + \frac{W'}{W' \max} < 1$$

E' < E max

M'T : Combined Moment (Must be less than 1)

G : G coefficient

W' max : Max. allowable value of W' (from Table 2)

M1' max : Max. allowable value of M1' (from Table 2)

M2' max : Max. allowable value of M2' (from Table 2)

M3' max : Max. allowable value of M3' (from Table 2)

E max : Max. allowable value of E0 (from Table 3)

mα : [Table 4] Table Weight

[Table 2] Allowable Static Load Values

Bore size	Stroke (mm)	Vertical load W'max (N)	Bending moment M1'max (N·m)	Lateral bending moment M2'max (N·m)	Torsional Moment M3'max (N·m)
ø6	10 to 30	140	1.7	4.0	1.7
	40 to 50	186	10.7	6.0	10.7
ø8	10 to 30	152	3.4	6.8	3.4
	40 to 75	230	13.8	10.3	13.8
ø12	10 to 50	220.8	5.7	15.2	5.7
	75 to 100		22.2	21.0	22.2
ø16	10 to 50	380.8	17.8	36.0	17.8
	75 to 125		37.3	40.0	37.3
ø20	10 to 50	548.8	31.1	60.3	31.1
	75 to 150		56.2	61.6	56.2
ø25	10 to 50	961.5	65.1	131.8	65.1
	75 to 150		127.5	132.0	127.5

Note: When installing the load on the end plate, even if a long stroke (ø6, 8...40 or more, ø12 or more...75 or more) is selected, calculate the allowable value using the short stroke (ø6, 8...30 or less, ø12 or more...50 or less) value.

[Table 3] LCG Allowable absorption energy (E0)

Bore size	Standard (J)	With stroke adjustment stopper (J)	With Shock absorber type stopper (J)
ø6	0.025	0.0032	0.14
ø8	0.058	0.0032	0.25
ø12	0.112	0.014	0.25
ø16	0.176	0.043	0.65
ø20	0.314	0.055	1.3
ø25	0.314	0.14	1.3

[Table 4] Table Weight (Unit: kg)

Bore size	Stroke (mm)									P72, P73 Increase	B, BL Increase
	10	20	30	40	50	75	100	125	150		
ø6	0.060	0.060	0.070	0.085	0.095	-	-	-	-	0.005	0.030
ø8	0.080	0.080	0.090	0.110	0.125	0.150	-	-	-	0.015	0.030
ø12	0.210	0.210	0.210	0.235	0.260	0.335	0.400	-	-	0.025	0.060
ø16	0.315	0.315	0.315	0.350	0.380	0.515	0.595	0.680	-	0.035	0.070
ø20	0.475	0.475	0.475	0.520	0.565	0.715	0.820	0.930	1.035	0.045	0.140
ø25	0.785	0.785	0.785	0.845	0.915	1.200	1.360	1.515	1.680	0.075	0.310

STEP-2

Next, improve the accuracy of the load factor, effective thrust, stroke end speed, and combined moment value.

● Determine the load factor.

α = $\frac{F_0}{F}$ x 100 [%]

α : Load factor

F0 : Force required to move the workpiece (N)

F : Cylinder theoretical thrust (N) [Table 5]

During horizontal operation	During vertical operation
F0 = FW	F0 = W+FW
FW: Wx0.2 *(N)	
W: Load (N)	

* Friction Coefficient

[Table 5] Theoretical Thrust Table (Unit: N)

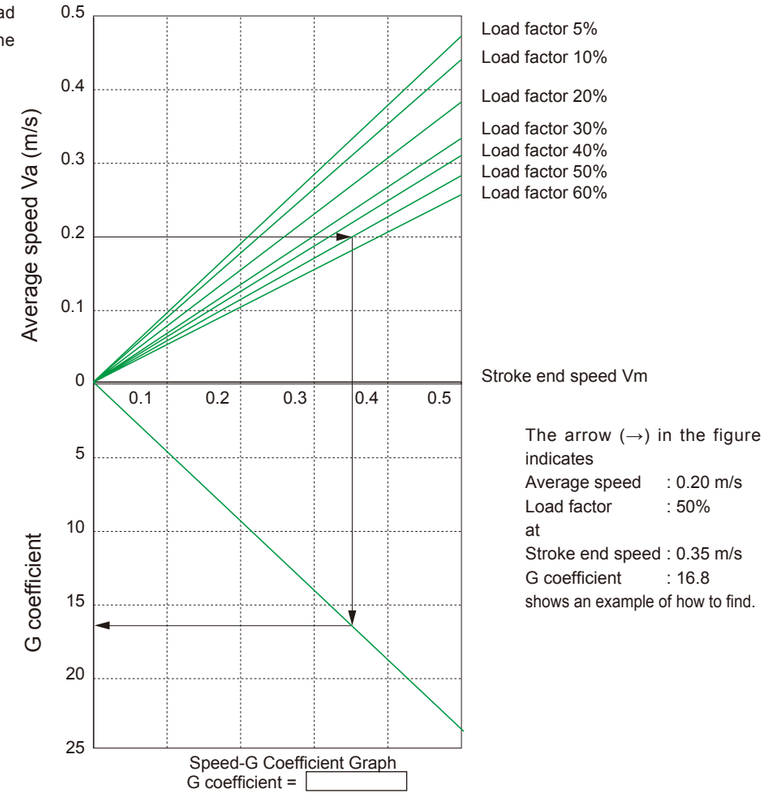
Bore size (mm)	Operating Direction	Operating pressure MPa						
		0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø6	PUSH	8	11	17	23	28	34	40
	PULL	6	8	13	17	21	25	30
ø8	PUSH	15	20	30	40	50	60	70
	PULL	11	15	23	30	38	45	53
ø12	PUSH	34	45	68	90	113	136	158
	PULL	25	34	51	68	85	102	119
ø16	PUSH	60	80	121	161	201	241	281
	PULL	52	69	104	138	173	207	242
ø20	PUSH	94	126	188	251	314	377	440
	PULL	79	106	158	211	264	317	369
ø25	PUSH	147	196	295	393	491	589	687
	PULL	124	165	247	330	412	495	577

[Table 6] Load Factor Guideline

Operating pressure MPa	Load factor (%)
0.2 to 0.3	α ≤ 40
0.3 to 0.6	α ≤ 50
0.6 to 0.7	α ≤ 60

STEP-3

From the average speed (Va) and the load factor obtained in STEP-2, determine the stroke end speed (Vm) and G coefficient.



Speed-G Coefficient Graph

G coefficient = ☐

The arrow (→) in the figure indicates
Average speed : 0.20 m/s
Load factor : 50%
at
Stroke end speed : 0.35 m/s
G coefficient : 16.8
shows an example of how to find.

STEP-4

Confirm the combined moment (MT) from the G coefficient stroke end speed (Vm) obtained from STEP-3.

M1' x G = ☐ (N·m)

M2' = ☐ (N·m)

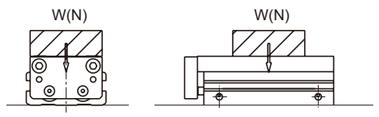
M3' x G = ☐ (N·m)

W' = ☐ (N)

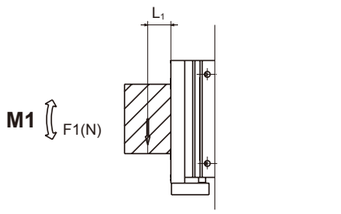
$$M'_T = \frac{M1'xG}{M1'max} + \frac{M2'}{M2'max} + \frac{M3'xG}{M3'max} + \frac{W'}{W'max} = \square$$

Confirm the combined moment MT during travel. (Please note that this is different from what was obtained in STEP-1.)

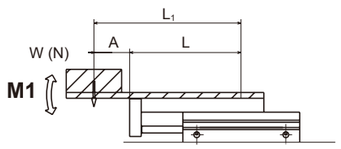
● Vertical load: W (N)



● Bending moment: M1 (N·m)

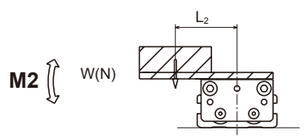


M1=F1xL1

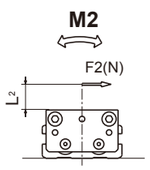


M1=WxL1
L1=A+L
L is the value in the table below

● Lateral bending moment: M2 (N·m)

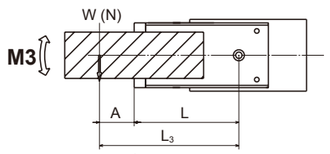


M2=WxL2

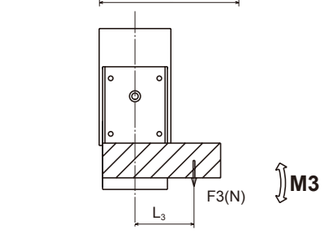


M2=F2xL2

● Torsional Moment: M3 (N·m)



M3=WxL3
L3=A+L
L is the value in the table below



M3=F3xL3

Value of L

Unit (m)

Bore size	Stroke									P72, P73 Increase	B, BL Increase
	10	20	30	40	50	75	100	125	150		
ø6	0.039	0.0415	0.049	0.0615	0.069	-	-	-	-	0.012	0.0165
ø8	0.0395	0.042	0.0495	0.0615	0.069	0.088	-	-	-	0.020	0.0145
ø12	0.053	0.0555	0.058	0.0655	0.073	0.096	0.115	-	-	0.020	0.018
ø16	0.0555	0.058	0.0605	0.068	0.0755	0.1025	0.1215	0.140	-	0.020	0.019
ø20	0.0635	0.066	0.0685	0.076	0.0835	0.108	0.127	0.1455	0.1645	0.025	0.020
ø25	0.0695	0.072	0.0745	0.082	0.0895	0.1185	0.1375	0.156	0.175	0.025	0.023

M1=M1 = ☐ (N·m)

M2=M2 = ☐ (N·m)

M3=M3 = ☐ (N·m)

W=W = ☐ (N)

$$M_T = \frac{M1}{M1\ max} + \frac{M2}{M2\ max} + \frac{M3}{M3\ max} + \frac{W}{Wmax} = \square$$

MT : Combination of moments

Wmax : Max. allowable value of W (from Table 7)

M1max : Max. allowable value of M1 (from Table 7)

M2max : Max. allowable value of M2 (from Table 7)

M3max : Max. allowable value of M3 (from Table 7)

E max : Max. allowable value of E0 (from Table 3)

[Table 7] Allowable Traveling Load Values

Bore size	Stroke (mm)	Vertical load Wmax (N)	Bending moment M1 max (N·m)	Lateral bending moment M2 max (N·m)	Torsional Moment M3 max (N·m)
ø6	10 to 30	14	0.17	0.40	0.17
	40 to 50	15.5	0.89	0.50	0.89
ø8	10 to 30	15.2	0.34	0.68	0.34
	40 to 75	19.2	1.1	0.86	1.1
ø12	10 to 50	27.6	0.71	1.9	0.71
	75 to 100		2.2	2.1	2.2
ø16	10 to 50	47.6	1.9	4.0	1.9
	75 to 125		4.6	5.0	4.6
ø20	10 to 50	68.6	3.4	6.7	3.4
	75 to 150		7.0	7.7	7.0
ø25	10 to 50	128.2	7.6	15.5	7.6
	75 to 150		17.0	17.6	17.0

Note: When installing the load on the end plate, even if a long stroke (ø6, 8...40 or more, ø12 or more...75 or more) is selected, calculate the allowable value using the short stroke (ø6, 8...30 or less, ø12 or more...50 or less) value.

Confirm that MT, M'T≤1.
↓
Bore size determination
↓
øA

STEP-5

Confirmation of allowable absorbed energy

$$E = \frac{1}{2} \times (m + m\alpha) \times Vm^2$$

E : Kinetic energy at workpiece end (J)

m : Load weight (kg) ($m \approx \frac{W\ (N)}{9.8}$)

mα : [Table 4] Table Weight

Vm : Stroke end speed (m/s)

E max : Max. allowable value of E0 (from Table 3)

Confirm that E ≤ E max.
↓
Bore size determination
↓
øB

STEP-6

Bore size determined from STEP-4 (Load conditions) → øA

Bore size determined from STEP-5 (Allowable absorbed energy) → øB

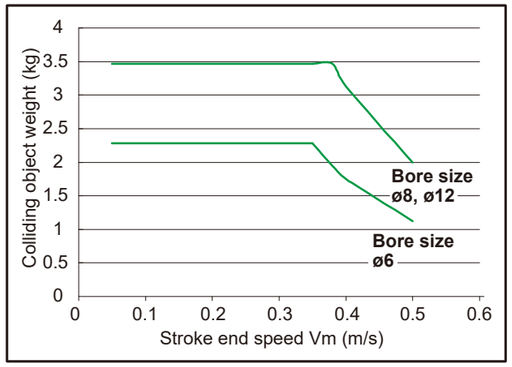
øA ≤ øB → øB is selected.

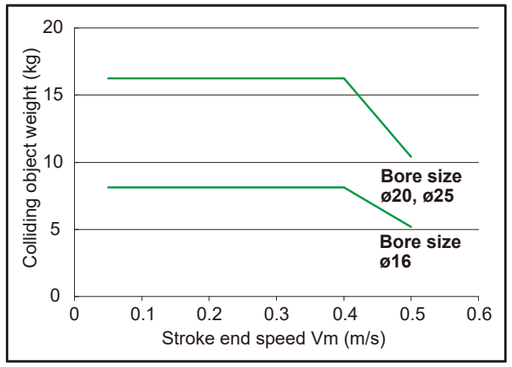
or → øA Can be addressed by using in combination with an external damper or with a Shock absorber type stopper.

øA > øB → øA is selected.

Shock absorber Type Stopper Selection Confirmation Graph

1. This is a simple confirmation graph for Shock absorber type stoppers. The area inside the graph is the usable range. Select a Bore size that can accommodate a Shock absorber within the usable range.
2. The simple selection graph shows values when the air pressure used for the cylinder is 0.5 MPa.
3. The absorbed energy of the Shock absorber changes with temperature. The simple confirmation graph shows values at room temperature.
4. The colliding weight is the sum of the load weight m and the table weight ma.

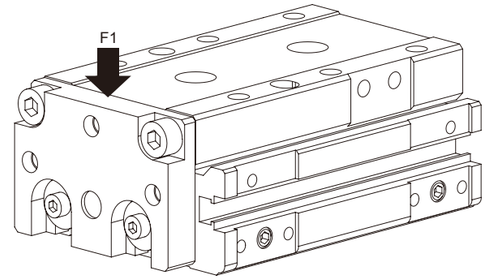




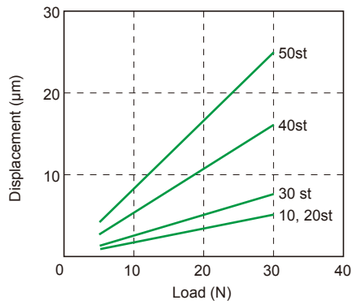
Technical Data

[Table Displacement due to M1 Moment] (Reference Value)

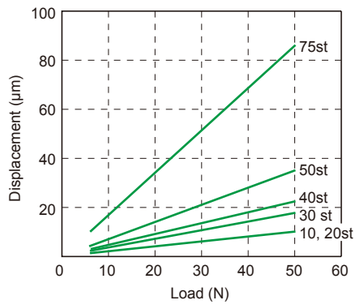
Displacement at the table tip when a load (F1) is applied to the table tip



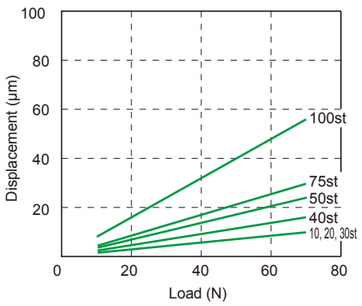
LCG-6 (M1)



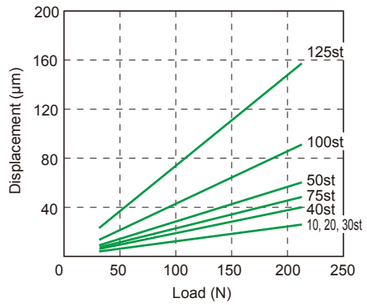
LCG-8 (M1)



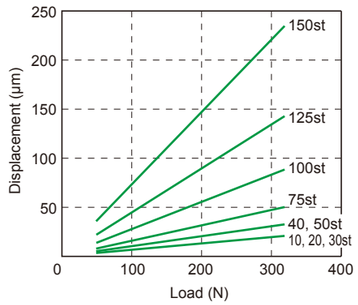
LCG-12 (M1)



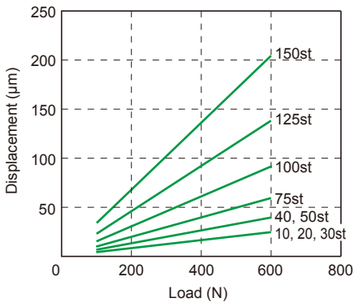
LCG-16 (M1)



LCG-20 (M1)



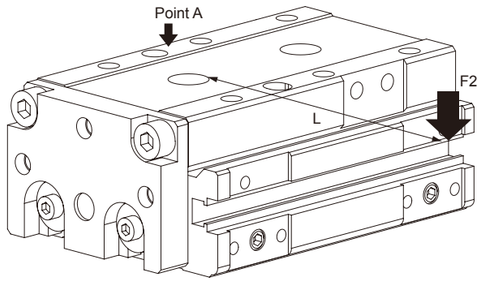
LCG-25 (M1)



Technical Data

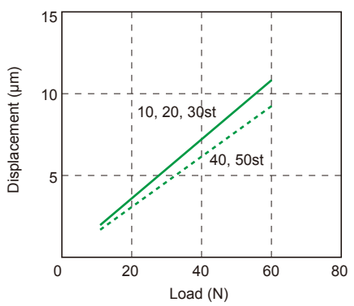
[Table Displacement due to M2 Moment] (Reference Value)

Displacement at the table end (Point A) when a load (F2) is applied at a position Lmm away from the cylinder center

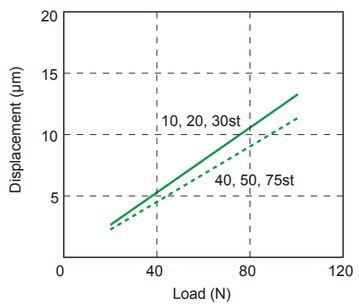


Value of L
ø6: L = 70, ø8: L = 70
ø12: L = 90, ø16: L = 100
ø20: L = 100, ø25: L = 200

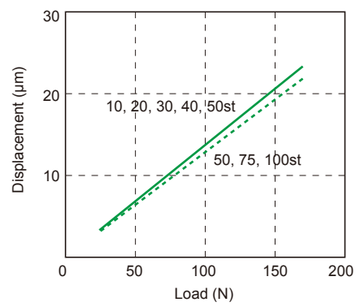
LCG-6 (M2)



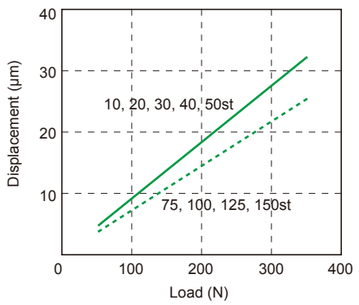
LCG-8 (M2)



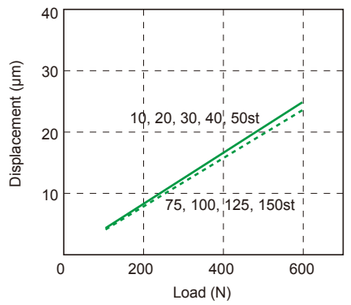
LCG-12 (M2)



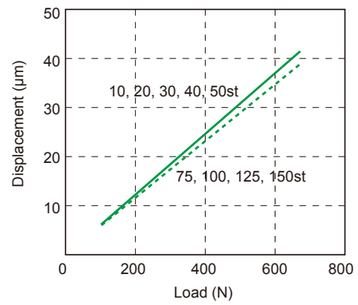
LCG-16 (M2)



LCG-20 (M2)



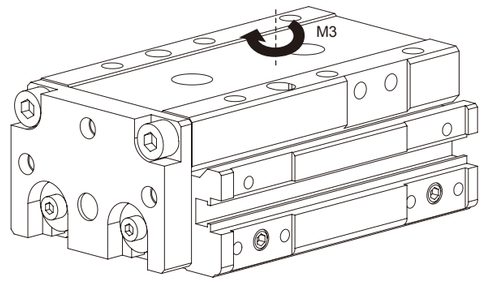
LCG-25 (M2)



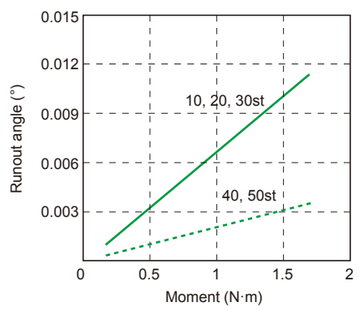
Technical Data

[Table Displacement Angle due to M3 Moment] (Reference Value)

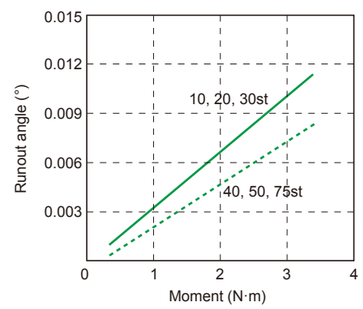
Displacement angle of the table when a rotational moment (M3) is applied to the cylinder



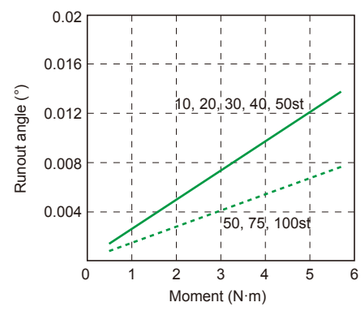
LCG-6 (M3)



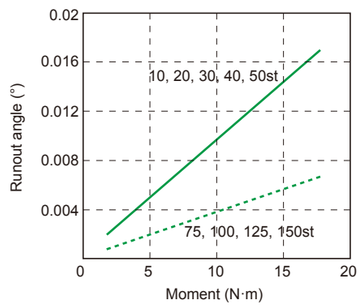
LCG-8 (M3)



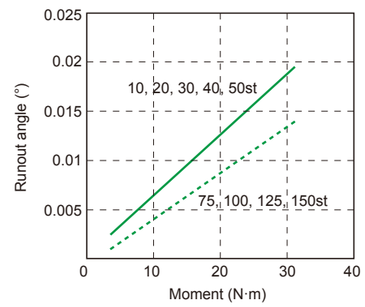
LCG-12 (M3)



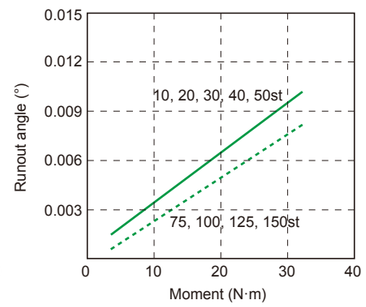
LCG-16 (M3)



LCG-20 (M3)



LCG-25 (M3)



Pneumatic Equipment

To Use This Product Safely

Be sure to read this before use.
For general cylinder information, see Intro 41, and for cylinder switches, see P. 808.

Individual Precautions: Linear Slide Cylinder LCG Series

During Design / Selection

1. Common

Caution

■For cylinder selection, follow the "LCG Selection Guide" on P. 188 to 192.

■If the cylinder is used in a place exposed to water droplets or oil droplets, a place where there is a risk of corrosion, or a place with a lot of dust, it may cause damage or malfunction, so protect the product with a cover, etc.

■Precautions for products with switches

- When using a T□V type switch with a stroke adjustment stopper (S3□□, S4□□, S5□□, S6□□) or a Shock absorber type stopper (A3□□, A4□□, A5□□, A6□□), the switch on the head side will interfere with the stopper, so install the switch on the opposite side of the stopper.
- For switches with a stroke of 30 or less, one switch is included to each of the two grooves on the main body, so pay attention to the lead wire extraction direction during design.

■Be careful as bringing strong magnets near this product may cause the table to become magnetized and the switch to malfunction.

2. Drop prevention type LCG-Q

Caution

■Do not use 3-position valves.
Avoid using in combination with 3-position valves (especially closed center metal seal type). If pressure is trapped in the port on the side with the lock mechanism, the lock will not engage. Also, even if locked once, air leaking from the valve may enter the cylinder, and the lock may be released over time.

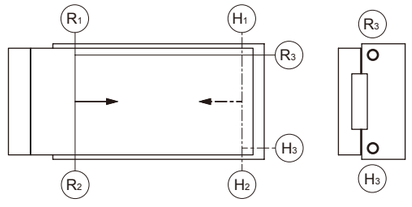
During Use

1. Common; During piping

Caution

■When changing the piping port position, use adhesive for M3 and M5 plugs (hexagon socket head set screws). (Recommended adhesive: Loctite 222/221, ThreeBond 1344, or other low-strength adhesives)

■Piping port position and operating direction



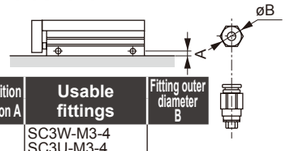
Ⓡ indicates the rod side pressurizing port, and Ⓗ indicates the head side pressurizing port. At the time of factory shipment, ports other than Ⓡ1 Ⓗ1 (Ⓡ2 Ⓗ2 depending on the stopper position when a stopper is selected) are sealed with plugs.

■Rear piping
This product, excluding the fall prevention type, can be used with rear piping (Ⓗ3 ports Ⓡ2 shown in the diagram above). When using Ⓡ3, Ⓗ3 remove the plug sealing the port Ⓡ1, Ⓗ1 and seal the port with a plug from the table on the right.

Item	Plug
LCG-6	Seal the Ⓡ1, Ⓗ1 ports with the plug that was sealing the Ⓡ1, Ⓗ1 ports.
LCG-8	M5x5 (Hexagon socket head set screw)
LCG-12	
LCG-16	
LCG-20	R1/8 (Hexagon socket head taper thread plug)
LCG-25	Seal the Ⓡ1, Ⓗ1 ports with the plug that was sealing the Ⓡ1, Ⓗ1 ports.

For ø8 to ø20, it is necessary to prepare two plugs from the table above separately.

■Precautions for piping fittings
Be sure to use a speed controller when piping. Also, the usable fittings are as follows.



Item Bore Size (mm)	Port Size	Port position dimension A	Usable fittings	Fitting outer diameter B
ø6	M3	4	SC3W-M3-4 SC3U-M3-4 SC3W-M3-3.2 SC3U-M3-3.2 GWS3-M3-S GWS4-M3-S	ø8 or less
ø8	M5	5.5	SC3W-M5-4 SC3W-M5-6 GWS4-M5-S GWS4-M5	ø11 or less
ø12		5.5		
ø16		6.5	SC3W-M5-4 SC3W-M5-6 GWS4-M5-S GWS4-M5 GWL4-M5 GWL6-M5 GWS6-M5	ø13 or less
ø20	Rc1/8	8	SC3W-6-4,6,8 GWS4-6 GWS8-6 GWL6-6 GWS6-6 GWL4-6	ø15 or less
ø25		9		

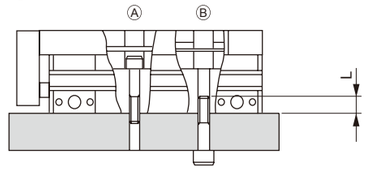
2. Common; During installation

Caution

■Please do not make dents or scratches on the mounting surface of the main body (tube) and the table surface that may impair flatness. Also, the flatness of the mating side to be included to the main body and table should be 0.02 mm or less.

■Observe the following values for the bolt screw-in length and tightening torque when mounting the main body.

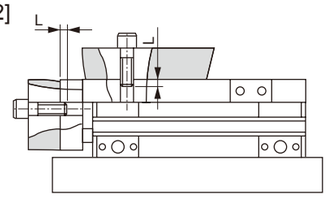
[Figure 1]



Item	A		B		
	Bolt used	Tightening torque (N·m)	Bolt used	Tightening torque (N·m)	Max. screw-in depth L (mm)
LCG-6	M3x0.5	0.6 to 1.1	M4x0.7	1.4 to 2.4	6
LCG-8	M3x0.5	0.6 to 1.1	M4x0.7	1.4 to 2.4	6
LCG-12	M4x0.7	1.4 to 2.4	M5x0.8	2.9 to 5.1	8
LCG-16	M5x0.8	2.9 to 5.1	M6x1.0	4.8 to 8.6	9
LCG-20	M5x0.8	2.9 to 5.1	M6x1.0	4.8 to 8.6	9
LCG-25	M6x1.0	4.8 to 8.6	M8x1.25	12.0 to 21.6	12

■Observe the following values for the bolt screw-in length and tightening torque when mounting a jig to the slide table and end plate.

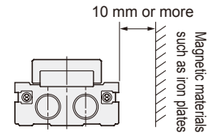
[Figure 2]



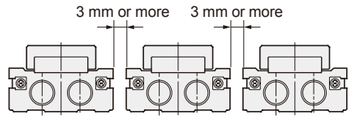
Item	Table		
	Bolt used	Tightening torque (N·m)	Max. screw-in length L (mm)
LCG-6	M3x0.5	0.6	3
LCG-8	M3x0.5	0.6	3
LCG-12	M4x0.7	1.4	4
LCG-16	M5x0.8	2.9	5
LCG-20	M5x0.8	2.9	5
LCG-25	M6x1.0	4.8	6

Item	End plate		
	Bolt used	Tightening torque (N·m)	Screw-in length L (mm)
LCG-6	M3x0.5	0.6	4.5 to 6
LCG-8	M3x0.5	0.6	4.5 to 7
LCG-12	M4x0.7	1.4	6 to 9
LCG-16	M5x0.8	2.9	7.5 to 9
LCG-20	M5x0.8	2.9	7.5 to 11
LCG-25	M6x1.0	4.8	9 to 11

■If there is a magnetic material such as an iron plate near the cylinder switch, it may malfunction. It can be used safely by keeping it 10 mm or more away from the cylinder surface or by changing the mounting surface of the cylinder switch. (Common to all bore sizes)



■If cylinders are adjacent, the cylinder switch may malfunction. Maintain the following distance from the cylinder surface. (Common to all bore sizes)



■Treat our Shock absorbers as consumable parts. Replace when a decrease in energy absorption capacity is observed or when operation is no longer smooth.

■When using locating holes, use pins with dimensions that do not result in a press fit. Using press-fit dimension pins may cause damage to the linear guide part due to press-fitting load or accuracy deterioration due to distortion.
The recommended tolerance for pins is JIS tolerance m6 or less.

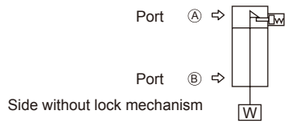
■For the guide part, apply AFF grease (manufactured by THK CO., LTD.) to the guide rail raceway surface every 6 months or 1 million operations, whichever comes first.

■Pay attention to the corrosion resistance of the table.
The table uses martensitic stainless steel (ø6 to ø16) and alloy steel (ø20, ø25). Rust may occur if used in a hot and humid environment or in an environment where water droplets adhere due to condensation, etc.

3. Drop prevention type LCG-Q

Warning

■In the locked state, if pressure is supplied to port Ⓐ from a state where both side ports are not pressurized, the lock may not be released, or the lock may suddenly be released and the piston rod may fly out, which is very dangerous. When releasing the lock mechanism, always supply pressure to port Ⓑ and release it from a state where no load is applied to the lock mechanism.



■When using a quick exhaust valve to increase the lowering speed, the cylinder body may start moving before the lock pin operates, and normal release may not be possible. Do not use a quick exhaust valve with a drop prevention type cylinder.

Caution

■The lock mechanism works at the stroke end. If an external stopper is applied mid-stroke, the lock mechanism may not engage, and there is a risk of falling. When setting the load, be sure to confirm that the lock mechanism is working before installing.

■If the piping on the side with the lock mechanism is thin and long, or if the speed controller is far from the cylinder port, the exhaust speed may be slow and it may take time for the lock to engage, so please be careful. Also, clogging of the silencer included to the EXH. port of the solenoid valve will lead to similar results.

■If back pressure is applied to the lock mechanism side, the lock may be released, so use a single solenoid valve or a manifold with individual exhaust.

■Do not use multiple cylinders synchronized.
Do not use a method where two or more fall prevention type cylinders are synchronized to move one workpiece. The lock of one of the cylinders may become unremovable.

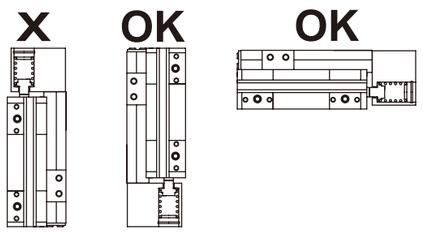
■Use the speed controller with meter-out control.
Lock may not be released with meter-in control.

■On the side with the lock, be sure to use the cylinder to the stroke end.
If the cylinder piston has not reached the stroke end, the lock may not engage, or it may not be possible to release the lock.

4. With buffer LCG-B

■Depending on the speed and load, the buffer may activate during operation, causing the switch to malfunction. Adjust the speed according to the load before use.

■Please note that models with buffers cannot be used in a vertically upward orientation.



■Use the buffer with a stroke less than the buffer stroke. This will cause malfunction or damage.

For precautions regarding mounting, installation, adjustment, use, and maintenance, please see "Precautions for Use" in this catalog and the CKD Components Product website (https://www.ckd.co.jp/kiki/en/) → "Model No." → Instruction Manual.

MEMO

With Linear Guide

LCW

Linear Slide Cylinder

ø12, ø16, ø20

CONTENTS

Product Introduction	202
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● Double acting, Single rod type (LCW)	206
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Model Selection Guide	246
⚠Precautions for Use	250

With Linear Guide
LCM
LCR
LCG
LCW
LCX
MSDG
Cylinder Switch
Ending

Introducing a basic model for the Linear Slide Cylinder

Standardly equipped with specs frequently used by customers
Model selection is easier

3 points for ease of selection

1 Bore sizes consolidated into three

ø12 ø16 ø20

2 Strokes consolidated into three

30 mm 50 mm 75 mm

Single piston adopted. (Equivalent to LCR ø8, ø12, ø16)

3 Stroke adjustment function equipped as standard

Three types of stoppers are available.

■ Rubber cushion type stopper (Standard)

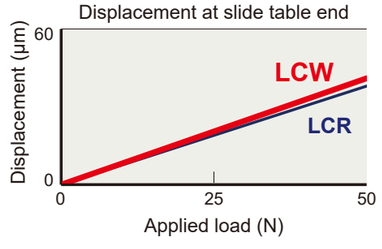
■ Metal type stopper with rubber cushion (M)

■ Shock absorber type stopper (A)

Reliability points

High rigidity

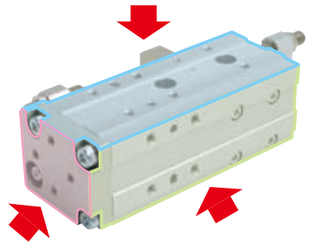
Inherits the DNA of LCR.
Achieved high rigidity and light weight.



3 points for ease of use

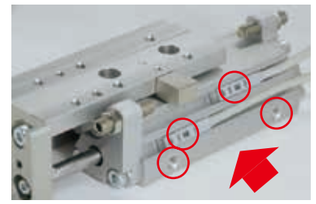
1 3-surface mounting

Industry first!! Adopts an innovative L-shaped table.
Design flexibility has been greatly improved.



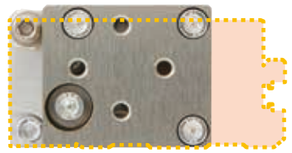
2 Piping and wiring direction on the same surface

Wiring and piping are also neat.
Improved workability and visibility.



3 Compact, Space-saving

27% reduction in width direction, 20% reduction in area ratio. Stopper position has been reviewed.



Footprint 20% Less!

(Compared to LCR)

Safety points

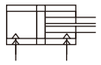
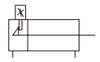
Drop prevention type lineup

Drop prevention mechanism

Head Side

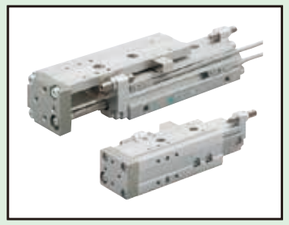
Linear Slide Cylinder
LCW Series

●: Standard, ◎: Option, : Not manufacturable

Variation	Model No. / Circuit Diagram Symbol	Bore size (mm)	Stroke (mm)			Stopper					Switch	Page
						Rubber cushion type stopper	Rubber cushion type long stopper	Metal type stopper with rubber cushion	Metal type long stopper with rubber cushion	Shock absorber type stopper		
			30	50	75	Blank	S	M	MS	A		
Double Acting / Single Rod Type	LCW 	ø12	●	●	●	●	◎	◎	◎	◎	◎	206
		ø16	●	●	●	●	◎	◎	◎	◎	◎	
		ø20	●	●	●	●	◎	◎	◎	◎	◎	
Double Acting / Drop Prevention Type	LCW-Q 	ø12	●	●	●	●	◎	◎	◎	◎	◎	224
		ø16	●	●	●	●	◎	◎	◎	◎	◎	
		ø20	●	●	●	●	◎	◎	◎	◎	◎	

MEMO

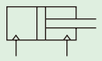
With Linear Guide
LCM
LCR
LCG
LCW
LCX
MSDG
Cylinder Switch
Ending



Linear Slide Cylinder Double Acting, Single Rod Type

LCW Series

●Bore size: ø12, ø16, ø20

Circuit Diagram Symbol 

RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

LCW - 16 - 30 - R ——— A

Model No. ❶ ❷ ❸ ❻

With Switch
(Built-in magnet for switch)

LCW - 16 - 30 - R - T2H - R - A

Model No. ❷ Stroke ❹ Switch Model No. ❻ Stopper

❶ Bore size ❸ Piping direction ❺ Number of Switches

❶ Bore size (mm)

Code	Content
12	ø12
16	ø16
20	ø20

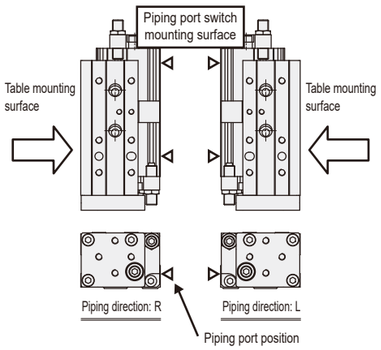
❷ Stroke (mm)

Code	Content
30	30
50	50
75	75

❸ Piping direction

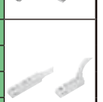
Code	Content
R	Right side when viewed from rod side
L	Left side when viewed from rod side

*1: For piping direction, refer to the diagram below.



❹ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20	-	F2S□	
		3-wire (NPN)	-	30 or less	-	50 or less	-	F3S□	
		2-wire	-	10 to 30	-	5 to 20 *2	F2H□	F2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3H□	F3V□	
		3-wire (PNP)	-	30 or less	-	50 or less	F3PH□	F3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	F2YH□	F2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3YH□	F3YV□	
	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	1-Color Flexible Lead Wire Type	2-wire	-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	

* Lead wire length

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

*6: F type switch, 5 m lead wire cannot be selected.

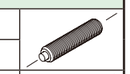
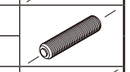
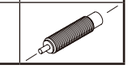
Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: ❶ For Bore size ø12, T-type switch cannot be selected.
*4: ❶ For tube inner diameters ø16 and ø20, F type switch cannot be selected.
*5: Switches other than the model Nos. listed above are also available. (Custom Product) For details, see P. 753.

❺ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

❻ Stopper

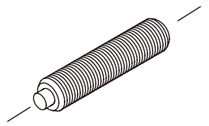
Code	Content	
Blank	Rubber cushion type stopper	
S	Rubber cushion type long stopper	
M	Metal type stopper with rubber cushion	
MS	Metal type long stopper with rubber cushion	
A	Shock absorber type stopper	

Switch Single Unit Model No. Notation Method

SW - F2H

❹ Switch Model No.
(P. 206 ④)

Rubber cushion type stopper single item model No. notation method



LCW - 12 - S01

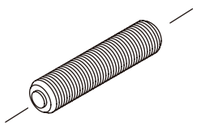
❶ Bore size ⑦ Stroke adjustment range

⑦ Stroke adjustment range

Code	Bore size	Thread Size	Stroke adjustment amount
S01 (Standard)	ø12	M6x1.0	One side 10 mm
	ø16	M6x1.0	One side 7.5 mm
	ø20	M8x1.0	One side 8 mm
S02 (Long)	ø12	M6x1.0	One side 28 mm
	ø16	M6x1.0	One side 25 mm
	ø20	M8x1.0	One side 25 mm

*1: SO2 can also be included to the head side.
The stroke adjustment amount at that time is the same as above.

Metal type stopper with rubber cushion single item model No. notation method



LCW - 12 - M01

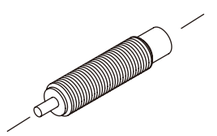
❶ Bore size ⑦ Stroke adjustment range

⑦ Stroke adjustment range

Code	Bore size	Thread Size	Stroke adjustment amount PUSH side	Stroke adjustment amount PULL side
M01 (Standard)	ø12	M6x1.0	One side 9 mm	One side 11.5 mm
	ø16	M6x1.0	One side 6 mm	One side 8.5 mm
	ø20	M8x1.0	One side 7.5 mm	One side 12 mm
M02 (Long)	ø12	M6x1.0	One side 28 mm	One side 30 mm
	ø16	M6x1.0	One side 25 mm	One side 27 mm
	ø20	M8x1.0	One side 25 mm	One side 30 mm

*1: Cannot be changed from rubber cushion type stopper.
*2: Cannot be changed from Shock absorber type stopper. (ø12, ø16 only)
*3: M**O2** can also be included to the head side.

Shock absorber Type Stopper Single Item Model No. Notation Method



LCW - 12 - A01

❶ Bore size

Bore size	Thread Size
ø12	M6x0.75
ø16	M6x0.75
ø20	M8x1.0

*1: Cannot be changed from rubber cushion type stopper.
*2: Cannot be changed from metal type stopper with rubber cushion. (ø12, ø16 only)

Specifications

Item		LCW		
Bore size	mm	ø12	ø16	ø20
Actuation method		Double Acting Type		
Operating Fluid		Compressed Air		
Max. Working Pressure	MPa	0.7		
Min. Operating Pressure	MPa	0.15 (*1)		
Proof Pressure	MPa	1.05		
Ambient Temperature	°C	-10 to 60 (However, no freezing) (*2)		
Port Size		M5		
Operating piston speed	mm/s	50 to 500 (*3)		
Cushion		Rubber Cushion		
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)		
Allowable absorption energy	J	Refer to Table 3 on P. 247.		

*1: When using a metal type stopper with rubber cushion, use a pressure of 0.4MPa or more to make metal contact at the stroke end.
*2: When using a Shock absorber type stopper, use at -5 to 60°C.
*3: When using a metal type stopper with rubber cushion, use at 50 to 200 mm/s.

Stroke

Bore Size (mm)	Standard Stroke (mm)
ø12	30 / 50 / 75
ø16	
ø20	

Note: Strokes other than the above cannot be manufactured.

Stroke adjustment range

(Unit: mm)

Bore size (mm)	Standard rubber cushion type				Metal type with rubber cushion				Shock absorber type	
	Standard Stroke		Intermediate stroke compatible (S)		Standard stroke (M)		Intermediate stroke compatible (MS)		Standard stroke (A)	
	PUSH side	PULL side	PUSH side	PULL side	PUSH side	PULL side	PUSH side	PULL side	PUSH side	PULL side
ø12	10	10	28	10	9	11.5	28	11.5	4	6.5
ø16	7.5	7.5	25	7.5	6	8.5	25	8.5	1.5	3.5
ø20	8	8	25	8	7.5	12	25	12	12.5	17

Theoretical Thrust Table

(Unit: N)

Bore Size (mm)	Operating Direction	Operating pressure MPa						
		0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø12	PUSH	17	23	34	45	57	68	79
	PULL	13	17	25	34	42	51	59
ø16	PUSH	30	40	60	80	101	121	141
	PULL	26	35	52	69	86	104	121
ø20	PUSH	47	63	94	126	157	188	220
	PULL	40	53	79	106	132	158	185

Cylinder Weight

●Basic type (Unit: g)

Bore size (mm)	Stroke (mm)		
	30	50	75
ø12	240	370	380
ø16	380	390	600
ø20	690	720	1070

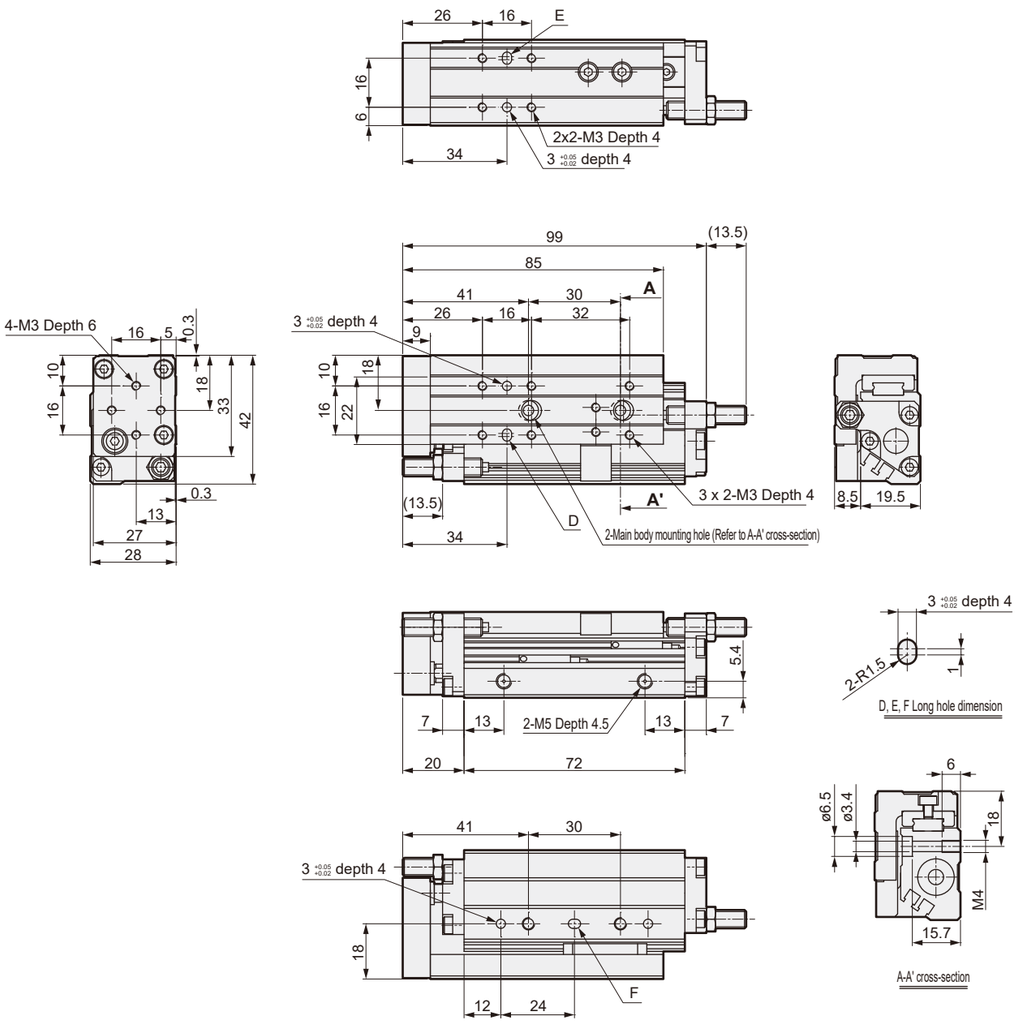
●Stopper additional amount (Unit: g)

Bore size (mm)	Stopper code		
	S	MS	A
ø12	3	3	0
ø16	3	3	0
ø20	5	5	14

For stopper code M, the weight is the same as the basic type.

Outline dimension drawing (Bore size: ø12)

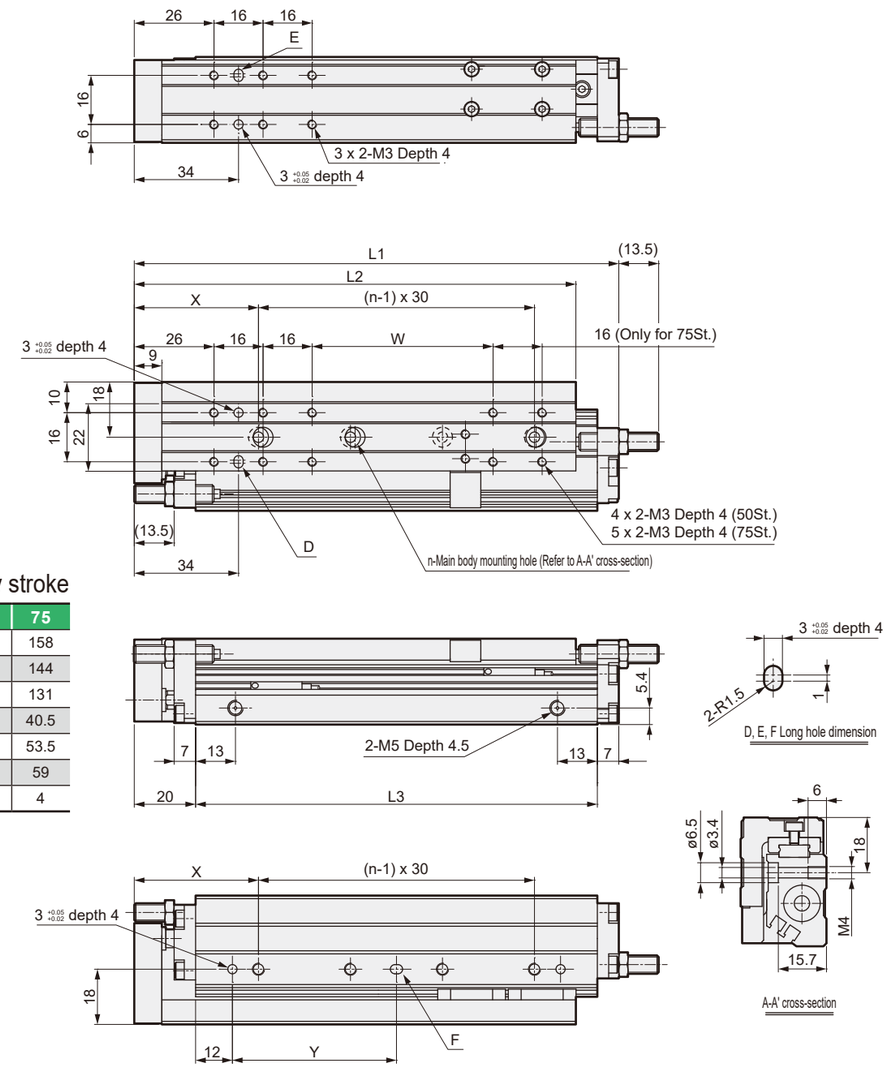
● LCW-12
Stroke: 30 Piping direction: R



*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outline dimension drawing (Bore size: ø12)

● LCW-12
Stroke: 50, 75 Piping direction: R
(The main body mounting holes in this figure show the case of stroke 75)



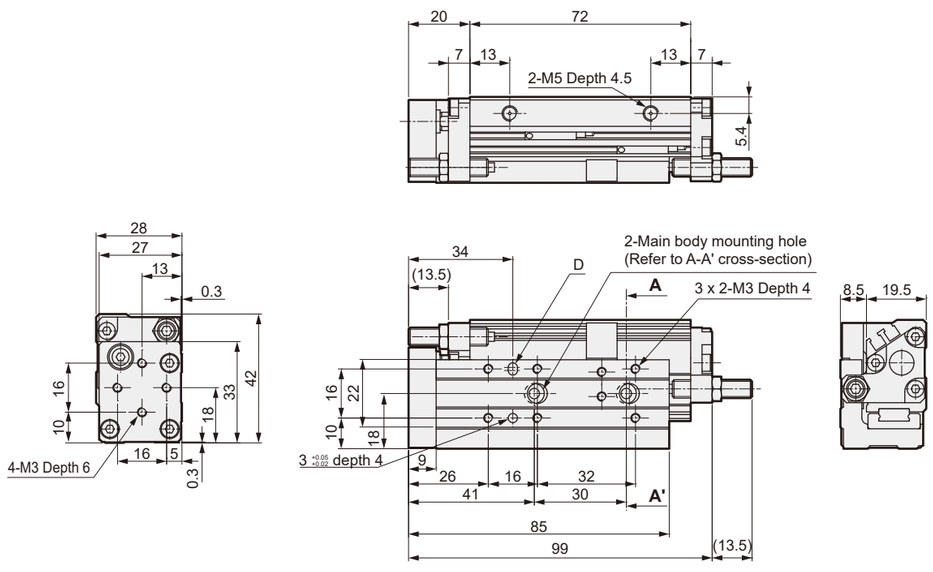
Dimension table by stroke

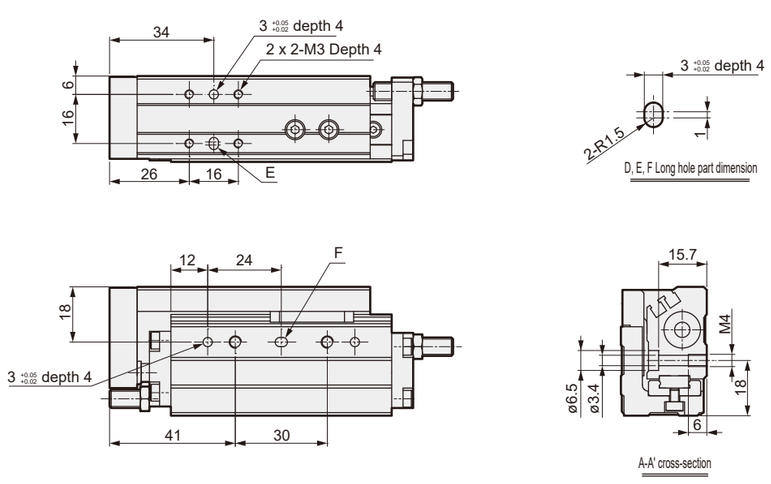
Stroke	50	75
L1	133	158
L2	119	144
L3	106	131
X	43	40.5
Y	50	53.5
W	50	59
n	3	4

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outline dimension drawing (Bore size: ø12)

● LCW-12
Stroke: 30 Piping direction: L

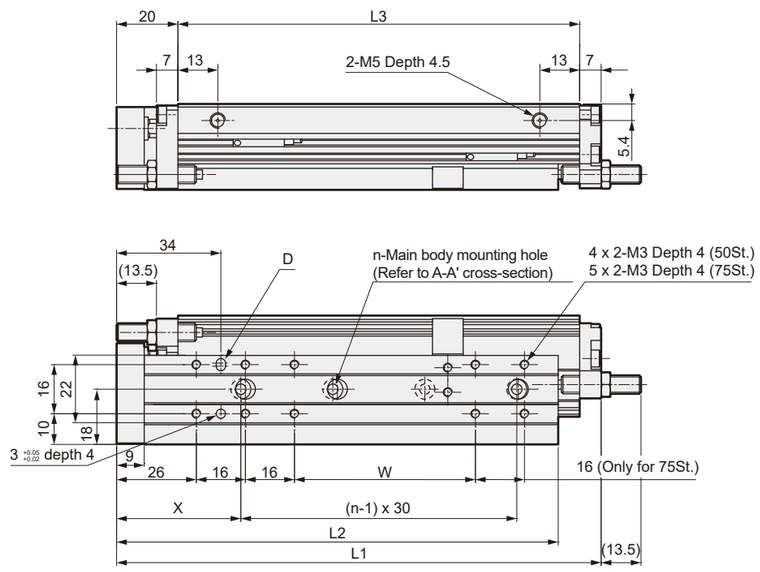




*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

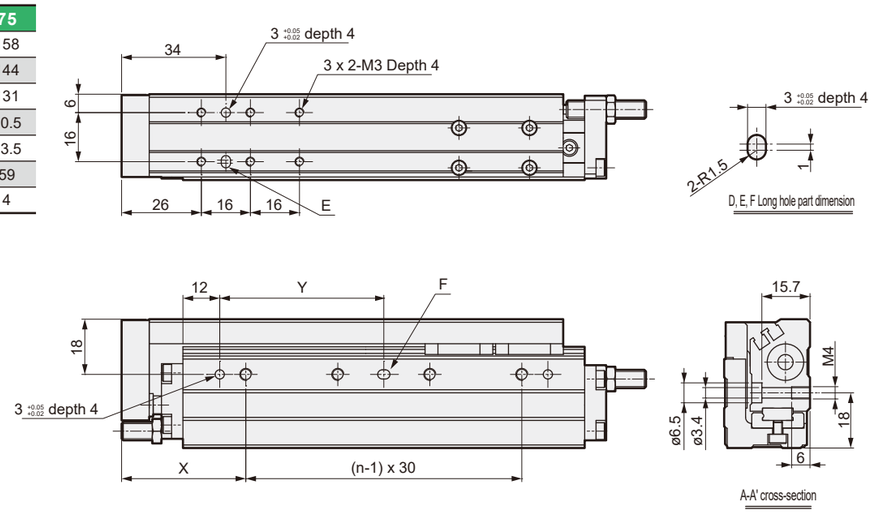
Outline dimension drawing (Bore size: ø12)

● LCW-12
Stroke: 50, 75 Piping direction: L
(The main body mounting holes in this figure show the case of stroke 75)



Dimension table by stroke

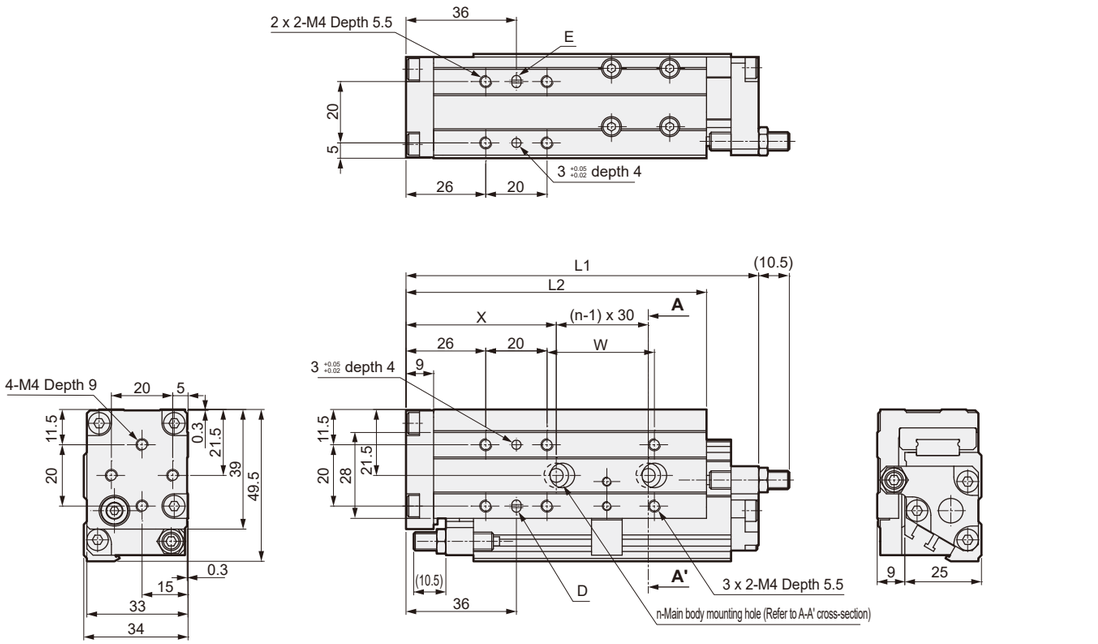
Stroke	50	75
L1	133	158
L2	119	144
L3	106	131
X	43	40.5
Y	50	53.5
W	50	59
n	3	4



*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

External dimensions diagram (Bore size: ø16)

● LCW-16
Stroke: 30, 50 Piping direction: R
(The main body mounting holes in this figure show the case of stroke 30)



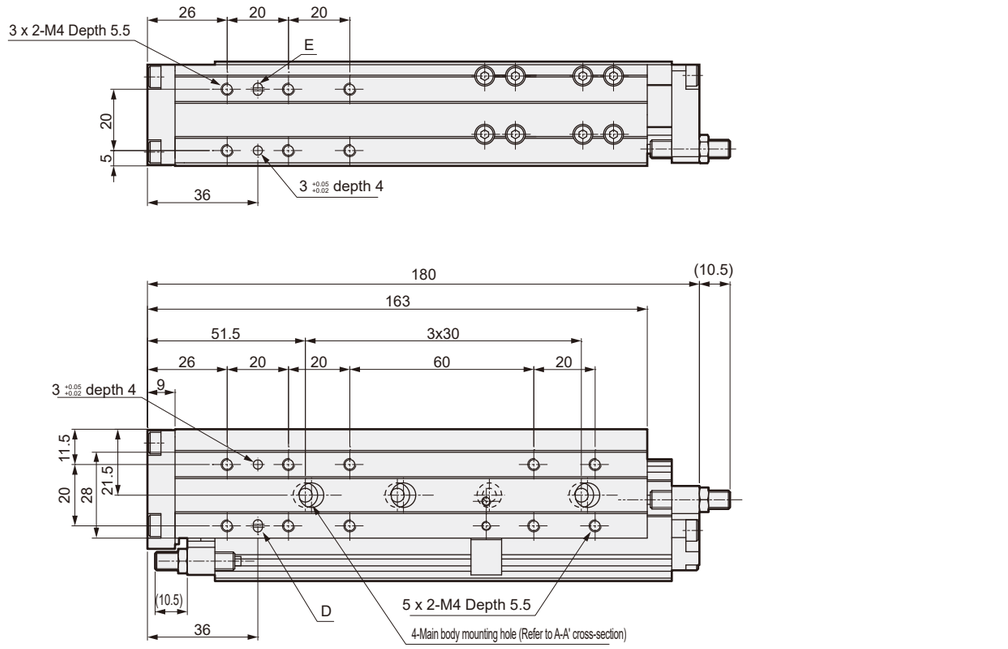
Dimension table by stroke

Stroke	30	50
L1	115	135
L2	98	118
L3	84	104
X	49	44
Y	28	50
W	35	55
n	2	3

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outline dimension drawing (Bore size: ø16)

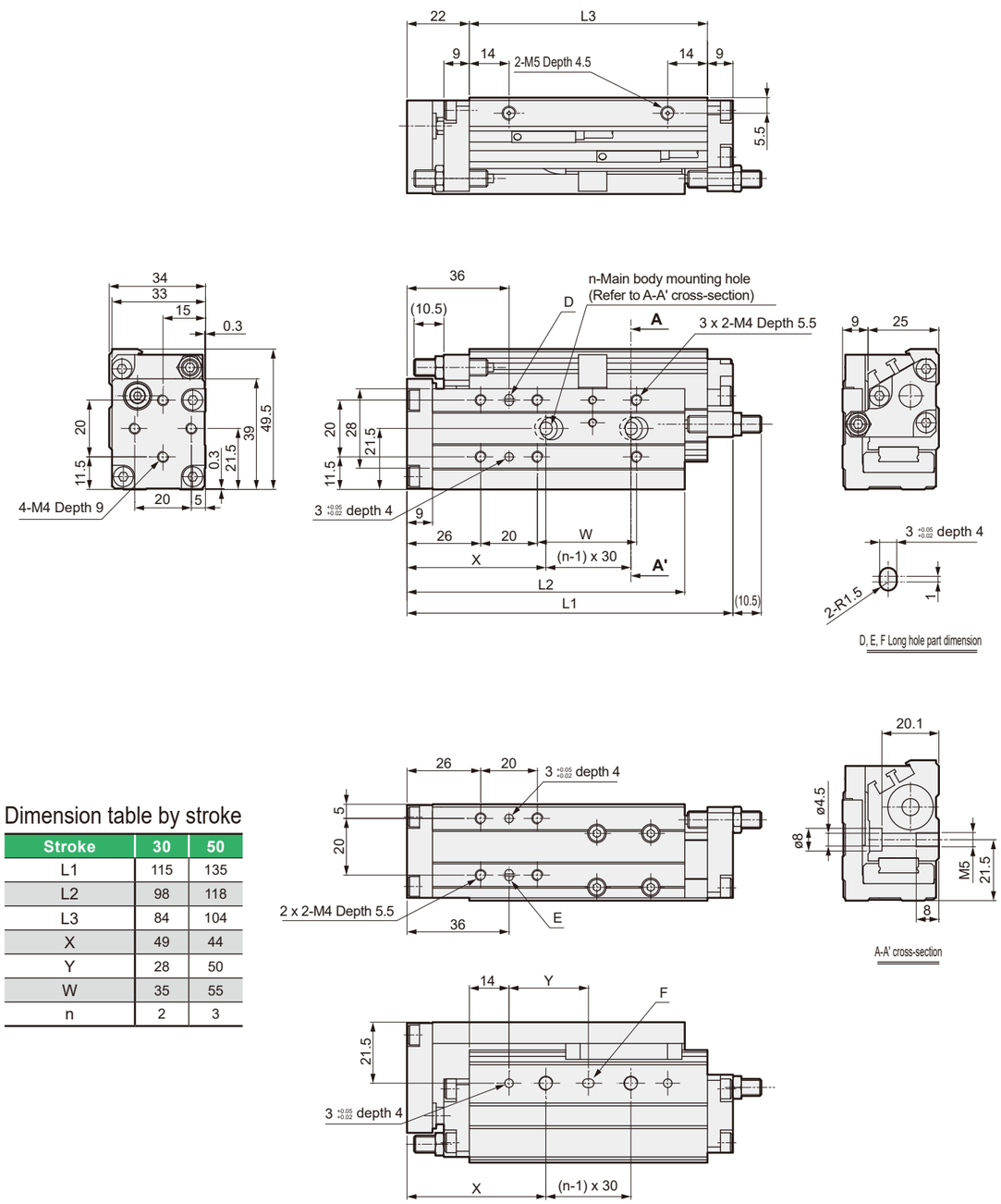
● LCW-16
Stroke: 75 Piping direction: R



*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

External dimensions diagram (Bore size: ø16)

● LCW-16
Stroke: 30, 50 Piping direction: L
(The main body mounting holes in this figure show the case of stroke 30)



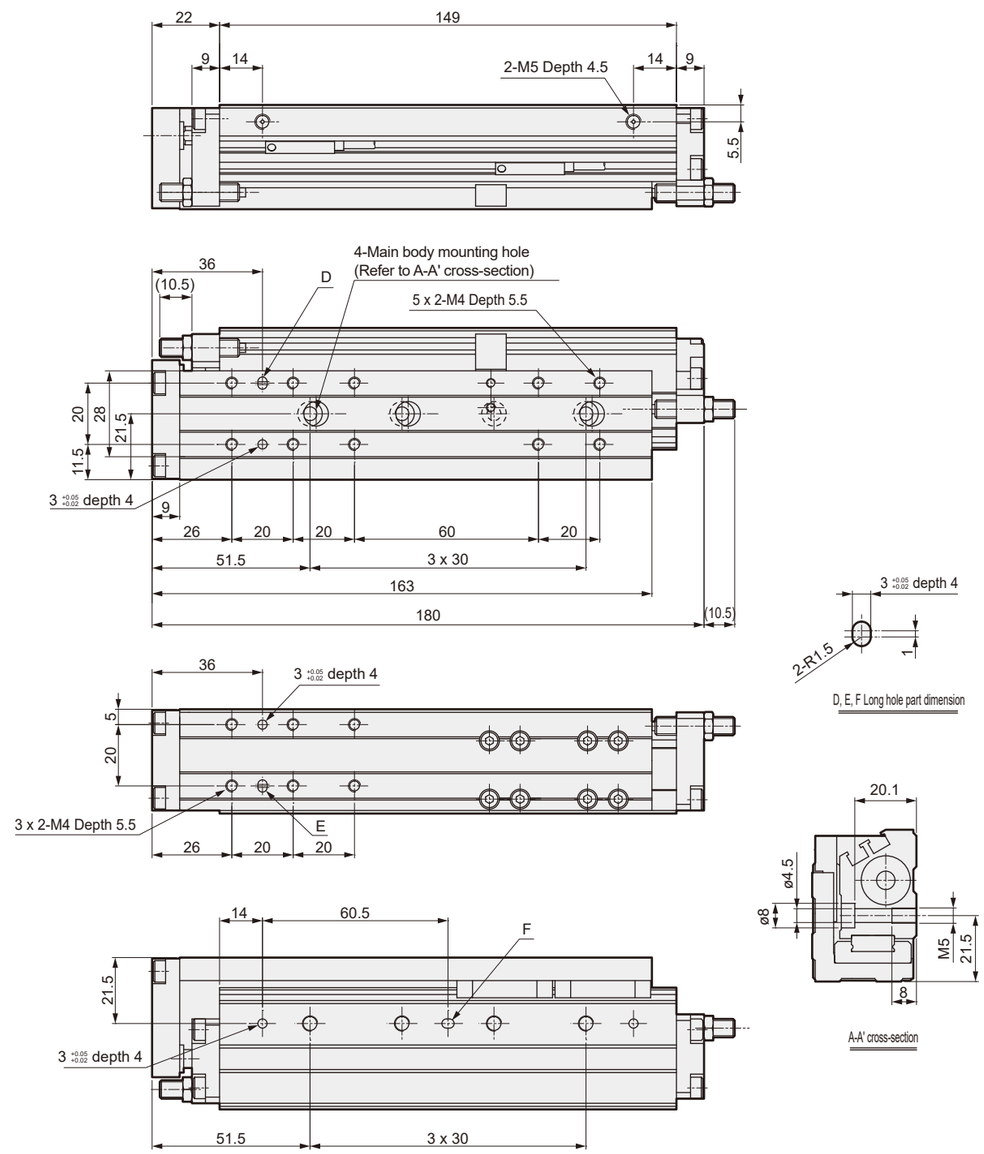
Dimension table by stroke

Stroke	30	50
L1	115	135
L2	98	118
L3	84	104
X	49	44
Y	28	50
W	35	55
n	2	3

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outline dimension drawing (Bore size: ø16)

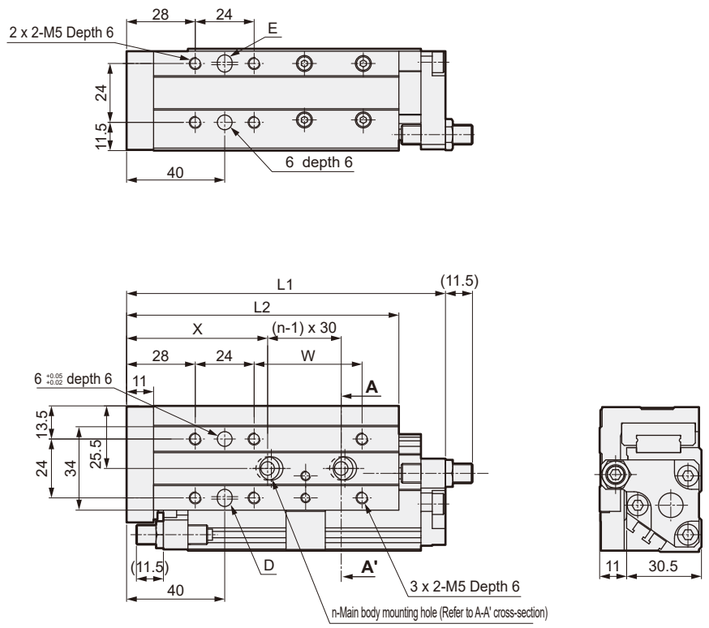
● LCW-16
Stroke: 75 Piping direction: L



*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

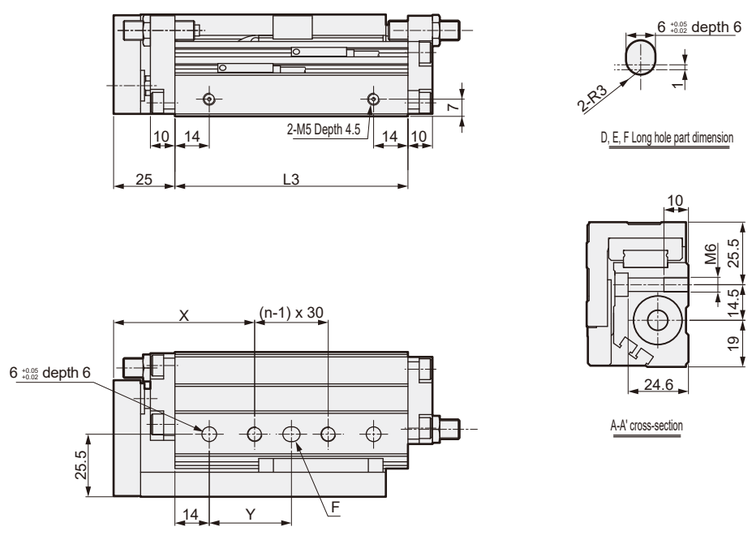
External dimensions diagram (Bore size: ø20)

● LCW-20
Stroke: 30, 50 Piping direction: R
(The main body mounting holes in this figure show the case of stroke 30)



Dimension table by stroke

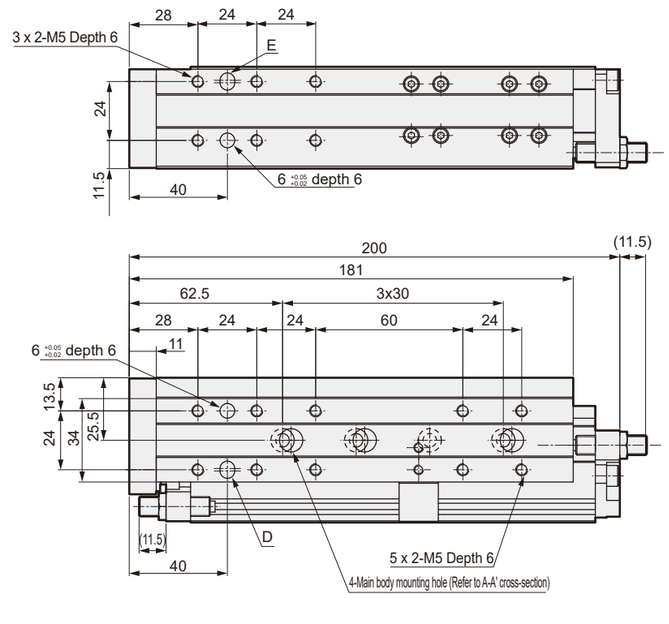
Stroke	30	50
L1	130	150
L2	111	131
L3	95	115
X	57.5	52.5
Y	33.5	60
W	44	64
n	2	3

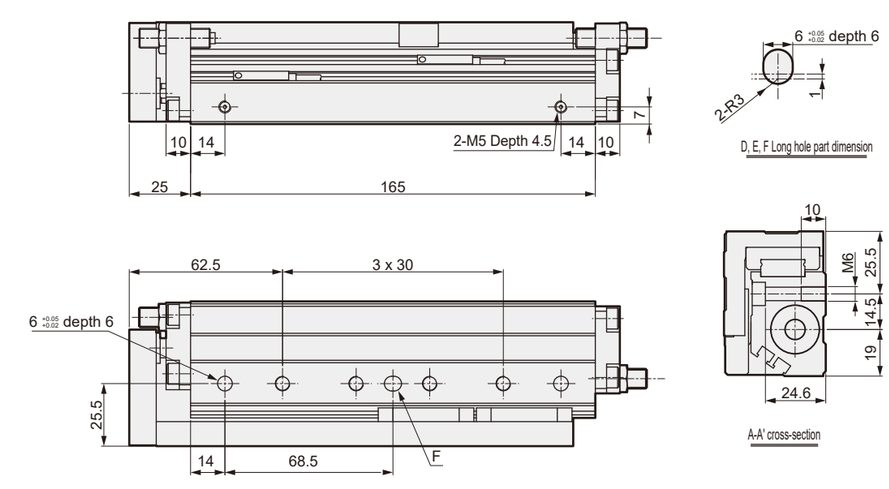


*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

External dimensions diagram (Bore size: ø20)

● LCW-20
Stroke: 75 Piping direction: R

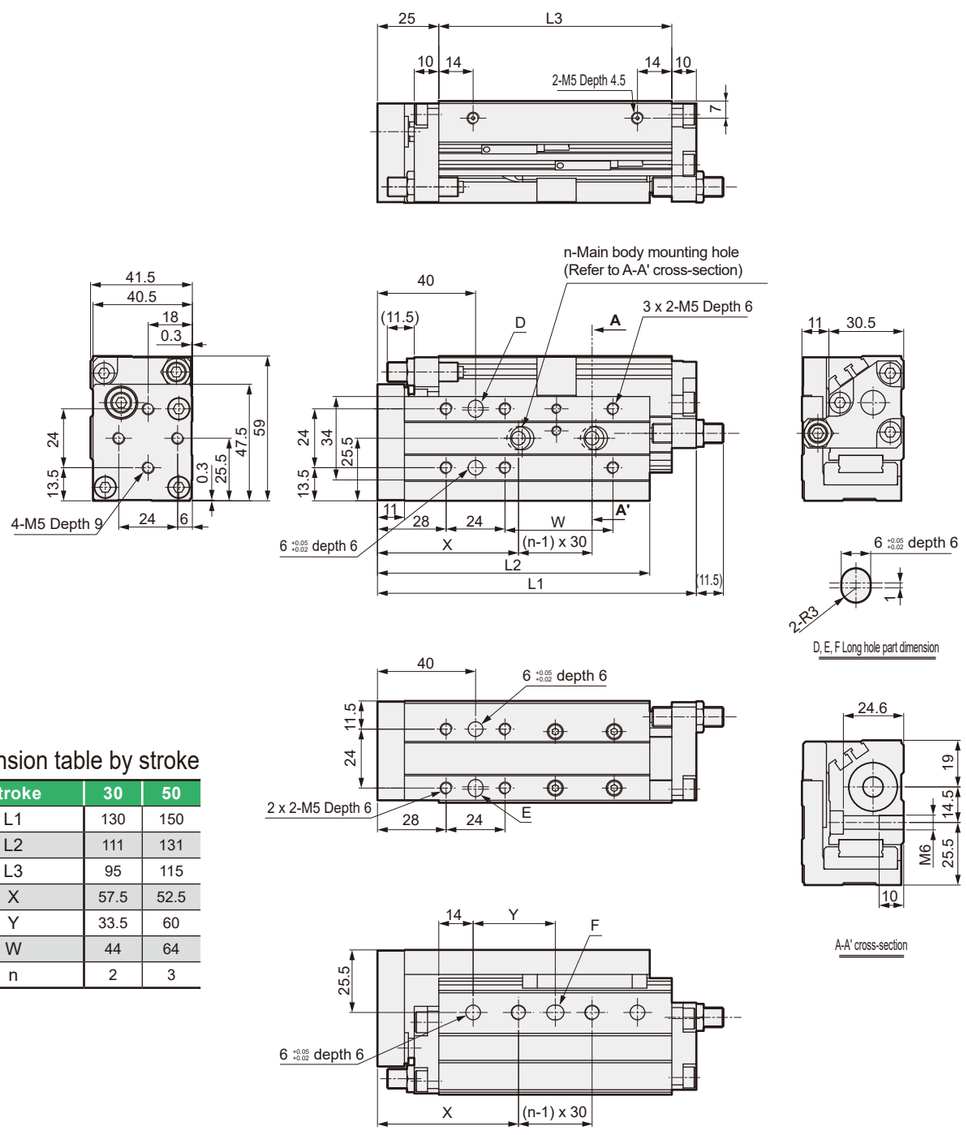




*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

External dimensions diagram (Bore size: ø20)

● LCW-20
Stroke: 30, 50 Piping direction: L
(The main body mounting holes in this figure show the case of stroke 30)



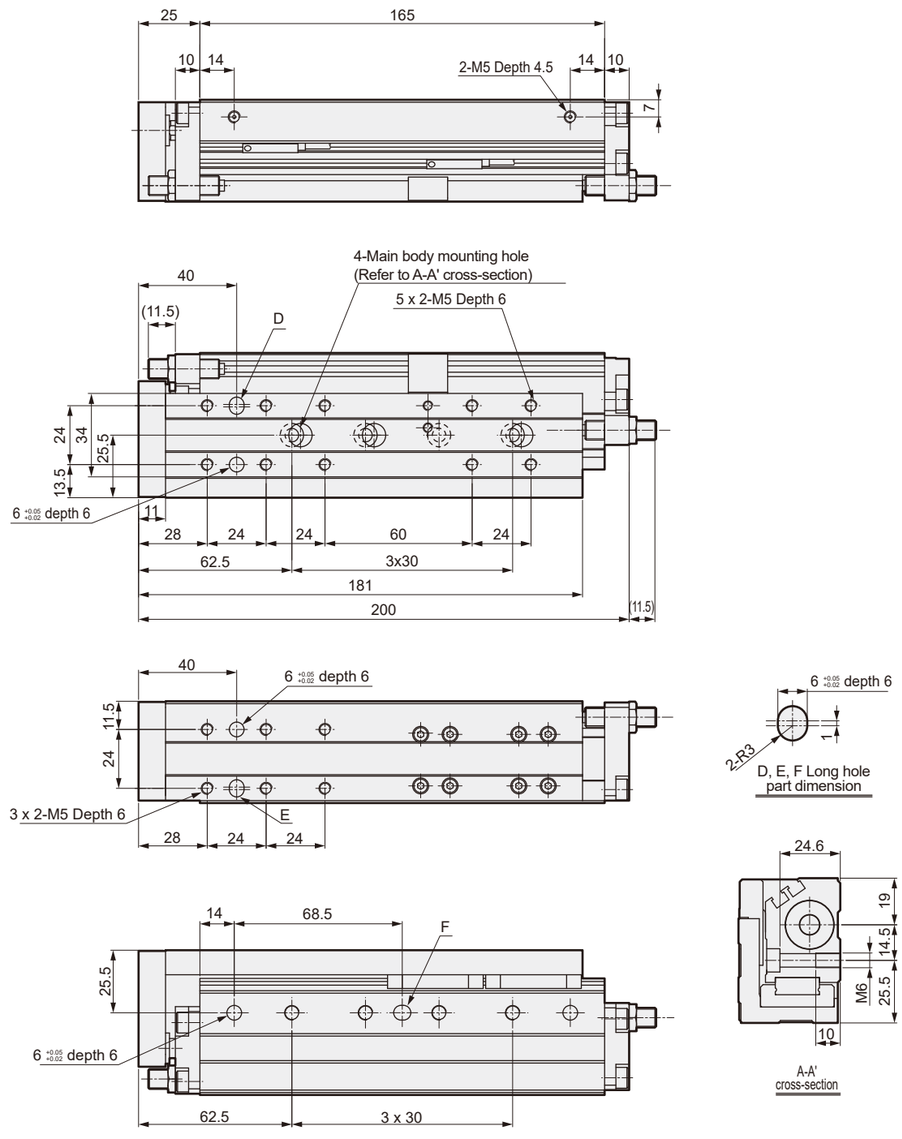
Dimension table by stroke

Stroke	30	50
L1	130	150
L2	111	131
L3	95	115
X	57.5	52.5
Y	33.5	60
W	44	64
n	2	3

*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

External dimensions diagram (Bore size: ø20)

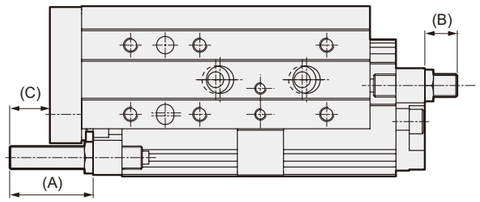
● LCW-20
Stroke: 75 Piping direction: L



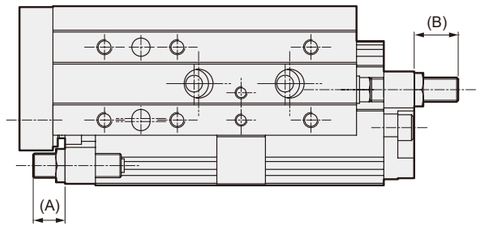
*1: When using positioning holes, use pins with dimensions that do not result in a press fit. The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outer Dimensions Diagram with Option

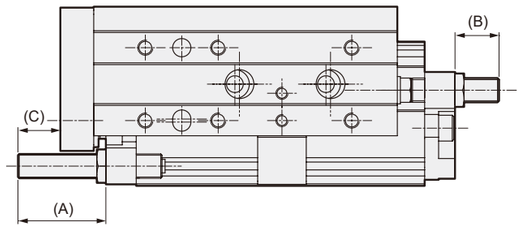
● Rubber cushion type long stopper (S)



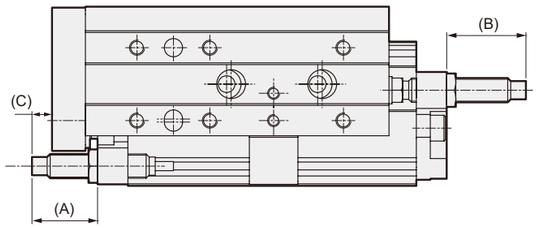
● Metal type stopper with rubber cushion (M)



● Metal type long stopper with rubber cushion (MS)



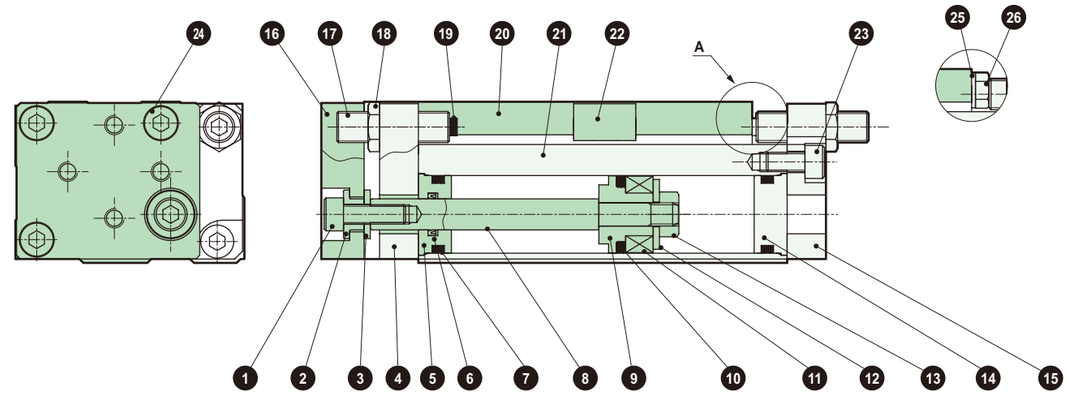
● Shock absorber type stopper (A)

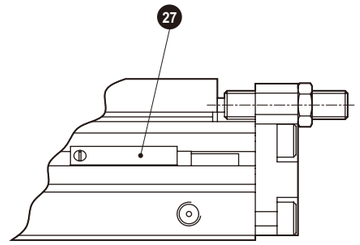


Bore size	Rubber cushion type long stopper (S)			Metal type stopper with rubber cushion (M)			Metal type long stopper with rubber cushion (MS)			Shock absorber type stopper (A)		
	A	B	C	A	B	C	A	B	C	A	B	C
ø12	31.5	13.5	18.5	12	14.5	-	31	14.5	18	11	13.5	-
ø16	28.5	10.5	15.5	9.5	11.5	-	28.5	11.5	15.5	8.5	10.5	-
ø20	28.5	11.5	13.5	10.5	15	-	28.5	15	13.5	21.5	26	6.5

Internal Structure Diagram / Material

Part A
In case of metal type stopper with rubber cushion (M, MS), Shock absorber type stopper (A)



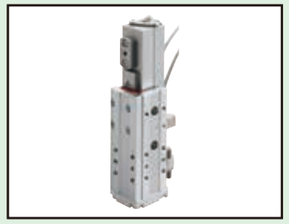


Part No.	Part Name	Material	Remarks
1	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
2	Floating bush A	Stainless Steel	
3	Floating bush B	Stainless Steel	
4	Cover retainer	Aluminum Alloy	Alumite
5	Rod Cover	Aluminum Alloy	Hard Anodized
6	Rod Packing	Nitrile Rubber	
7	O-ring	Nitrile Rubber	
8	Piston Rod	Stainless Steel	
9	Piston	Aluminum Alloy	Chromate
10	Piston Packing	Nitrile Rubber	
11	Magnet		
12	Plain Washer	Stainless Steel	
13	Hexagon Nut	Stainless Steel	
14	Head Cover	Aluminum Alloy	Chromate
15	Cover retainer	Aluminum Alloy	Alumite

Part No.	Part Name	Material	Remarks
16	End plate	Aluminum Alloy	Hard Anodized
17	Stopper bolt	Steel	Nickel Plating
18	Hexagon Nut	Steel	Nickel Plating
19	Cushion Rubber	Urethane Rubber	
20	Table	Aluminum Alloy	Alumite
21	Body	Aluminum Alloy	Hard Anodized
22	Stopper block	Steel	Nickel Plating
23	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
24	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
25	Plain Washer	Stainless Steel	
26	Hexagon bolt	Stainless Steel	
With Switch			
27	Switch		

Consumable Parts List

Bore Size (mm)	Kit No.	Consumable Part No.
ø12	LCW-12K	❻❼❿⓳
ø16	LCW-16K	
ø20	LCW-20K	

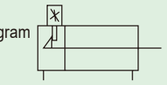


Linear Slide Cylinder Double Acting, Drop Prevention Type

LCW-Q Series

● Bore size: ø12, ø16, ø20

Circuit Diagram
Symbol



RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

LCW-Q - 16 - 30 - H R ——— S

❶ Model No. ❷ ❸ ❻

With Switch
(Built-in magnet for switch)

LCW-Q - 16 - 30 - H R - T2H - R - S

Model No. ❶ Bore size ❷ Stroke ❸ Piping direction Head side fall prevention mechanism ❹ Switch Model No. ❺ Number of Switches ❻ Stopper

❶ Bore size (mm)

Code	Content
12	ø12
16	ø16
20	ø20

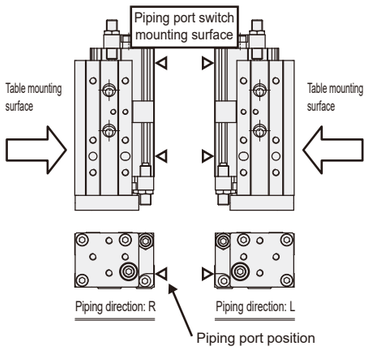
❷ Stroke (mm)

Code	Content
30	30
50	50
75	75

❸ Piping direction

Code	Content
R	Right side when viewed from rod side
L	Left side when viewed from rod side

*1: For piping direction, refer to the diagram below.



❹ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20	-	F2S□	
		3-wire (NPN)	-	30 or less	-	50 or less	-	F3S□	
		2-wire	-	10 to 30	-	5 to 20 *2	F2H□	F2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3H□	F3V□	
		3-wire (PNP)	-	30 or less	-	50 or less	F3PH□	F3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	F2YH□	F2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3YH□	F3YV□	
	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20 *2	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: ❶ For Bore size ø12, T-type switch cannot be selected.
*4: ❶ For tube inner diameters ø16 and ø20, F type switch cannot be selected.
*5: Switches other than the model Nos. listed above are also available. (Custom Product) For details, see P. 753.

* Lead wire length

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
*6 5	5 m (Option)

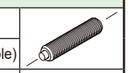
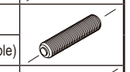
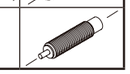
*6: F type switch, 5 m lead wire cannot be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❺ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

❻ Stopper

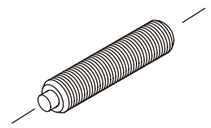
Code	Content	
Blank	Rubber cushion type stopper	
S	Rubber cushion type long stopper (Intermediate stroke compatible)	
M	Metal type stopper with rubber cushion	
MS	Metal type long stopper with rubber cushion (Intermediate stroke compatible)	
A	Shock absorber type stopper	

Switch Single Unit Model No. Notation Method

SW - F2H

❹ Switch Model No.

Rubber cushion type stopper single item model No. notation method



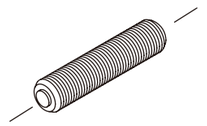
LCW - 12 - S01

❶ Bore size ❼ Stroke adjustment range

❼ Stroke adjustment range

Code	Bore size	Thread Size	Stroke adjustment amount
S01 (Standard)	ø12	M6x1.0	One side 10 mm
	ø16	M6x1.0	One side 7.5 mm
	ø20	M8x1.0	One side 8 mm
S02 (Long)	ø12	M6x1.0	One side 28 mm
	ø16	M6x1.0	One side 25 mm
	ø20	M8x1.0	One side 25 mm

Metal type stopper with rubber cushion single item model No. notation method



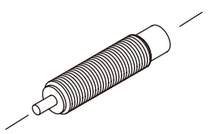
LCW - 12 - M01

❶ Bore size ❼ Stroke adjustment range

❼ Stroke adjustment range

Code	Bore size	Thread Size	Stroke adjustment amount PUSH side
M01 (Standard)	ø12	M6x1.0	One side 9 mm
	ø16	M6x1.0	One side 6 mm
	ø20	M8x1.0	One side 7.5 mm
M02 (Long)	ø12	M6x1.0	One side 28 mm
	ø16	M6x1.0	One side 25 mm
	ø20	M8x1.0	One side 25 mm

Shock absorber Type Stopper Single Item Model No. Notation Method



LCW - 12 - A01

❶ Bore size

Bore size	Thread Size
ø12	M6x0.75
ø16	M6x0.75
ø20	M8x1.0

Specifications

Item		LCW-Q		
Bore size	mm	ø12	ø16	ø20
Actuation method		Double Acting Type		
Operating Fluid		Compressed Air		
Max. Working Pressure	MPa	0.7		
Min. Operating Pressure	MPa	0.15 (*1:		
Proof Pressure	MPa	1.05		
Ambient Temperature	°C	-10 to 60 (However, no freezing) (*2:		
Port Size		M5		
Operating piston speed	mm/s	50 to 500 (*3)		
Cushion		Rubber Cushion		
Holding Force	N	15.5	27.6	47.6
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)		
Allowable absorption energy	J	Refer to Table 3 on P. 247.		

*1: When using a metal type stopper with rubber cushion, use a pressure of 0.4 MPa or more to make metal contact at the stroke end.
*2: When using a Shock absorber type stopper, use at -5 to 60°C.
*3: When using a metal type stopper with rubber cushion, use at 50 to 200 mm/s.

Stroke

Bore Size (mm)	Standard Stroke (mm)
ø12	30 / 50 / 75
ø16	
ø20	

Note: Strokes other than the above cannot be manufactured.

Stroke adjustment range

(Unit: mm)

Bore Size (mm)	Standard rubber cushion type		Metal type with rubber cushion		Shock absorber type
	Standard Stroke	Intermediate stroke compatible (S)	Standard stroke (M)	Intermediate stroke compatible (MS)	Standard stroke (A)
	PUSH side	PUSH side	PUSH side	PUSH side	PUSH side
ø12	10	28	9	28	4
ø16	7.5	25	6	25	1.5
ø20	8	25	7.5	25	12.5

Theoretical Thrust Table

(Unit: N)

Bore Size (mm)	Operating Direction	Operating pressure MPa						
		0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø12	PUSH	17	23	34	45	57	68	79
	PULL	13	17	25	34	42	51	59
ø16	PUSH	30	40	60	80	101	121	141
	PULL	26	35	52	69	86	104	121
ø20	PUSH	47	63	94	126	157	188	220
	PULL	40	53	79	106	132	158	185

Cylinder Weight

● Drop prevention type (Unit: g)

Bore Size (mm)	Stroke (mm)		
	30	50	75
ø12	300	440	450
ø16	450	460	690
ø20	770	800	1.160

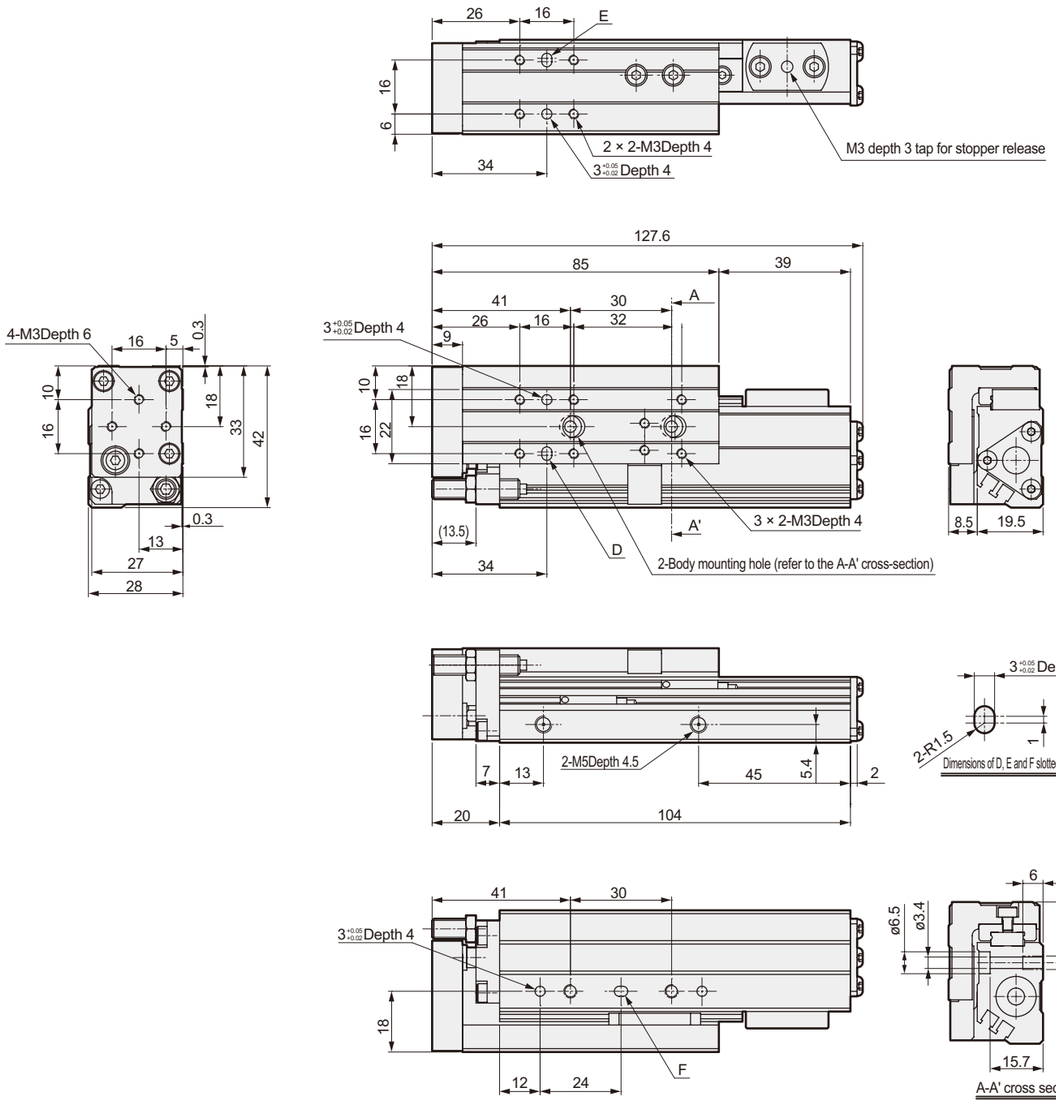
● Stopper additional amount (Unit: g)

Bore Size (mm)	Stopper code		
	S	MS	A
ø12	3	3	0
ø16	3	3	0
ø20	5	5	14

For stopper code M, the weight is the same as the fall prevention type.

Outline dimension drawing (Bore size: ø12)

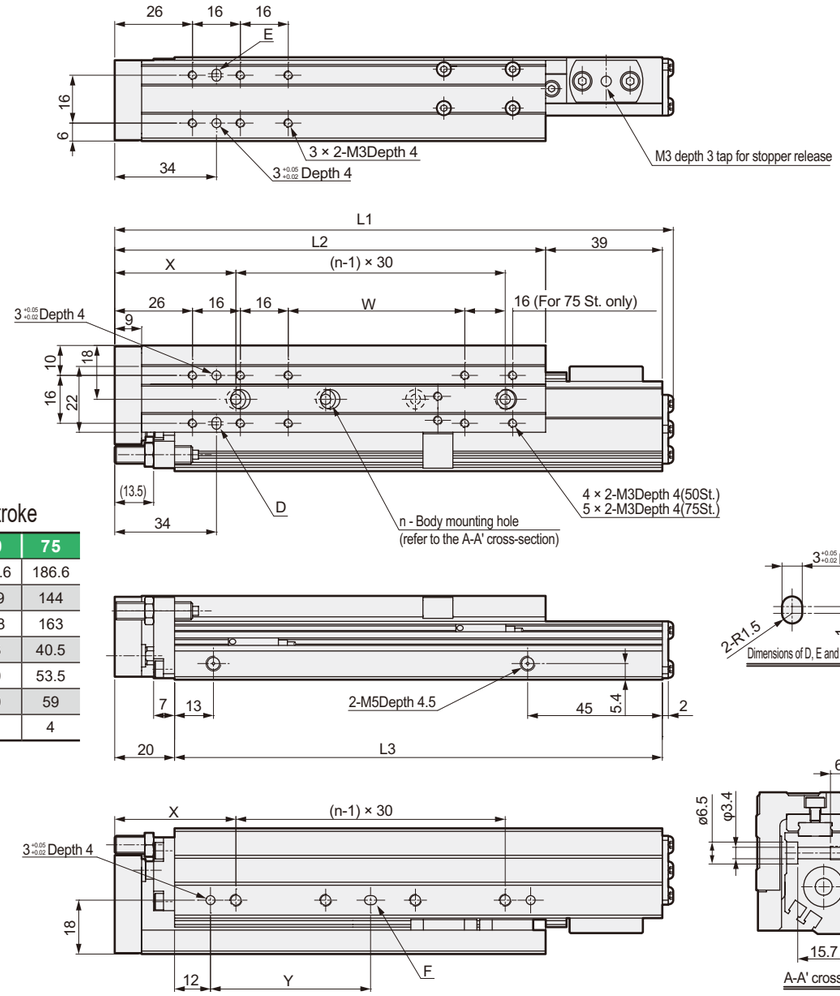
● LCW-Q-12
Stroke: 30 Piping direction: R



*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outline dimension drawing (Bore size: ø12)

● LCW-Q-12
Stroke: 50, 75 Piping direction: R
(The main body mounting holes in this figure show the case of stroke 75)



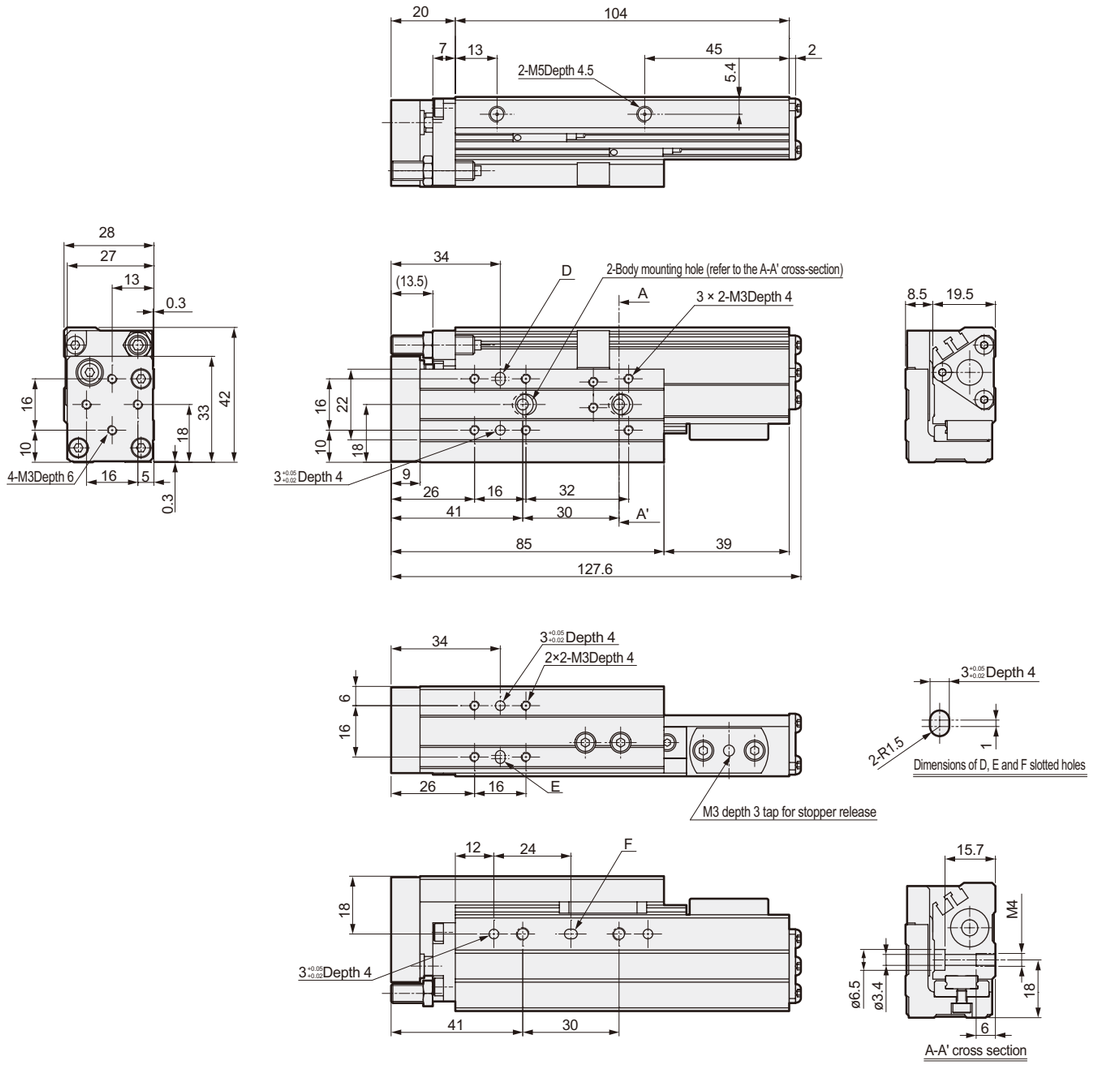
Dimension table by stroke

Stroke	50	75
L1	161.6	186.6
L2	119	144
L3	138	163
X	43	40.5
Y	50	53.5
W	50	59
n	3	4

*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outline dimension drawing (Bore size: ø12)

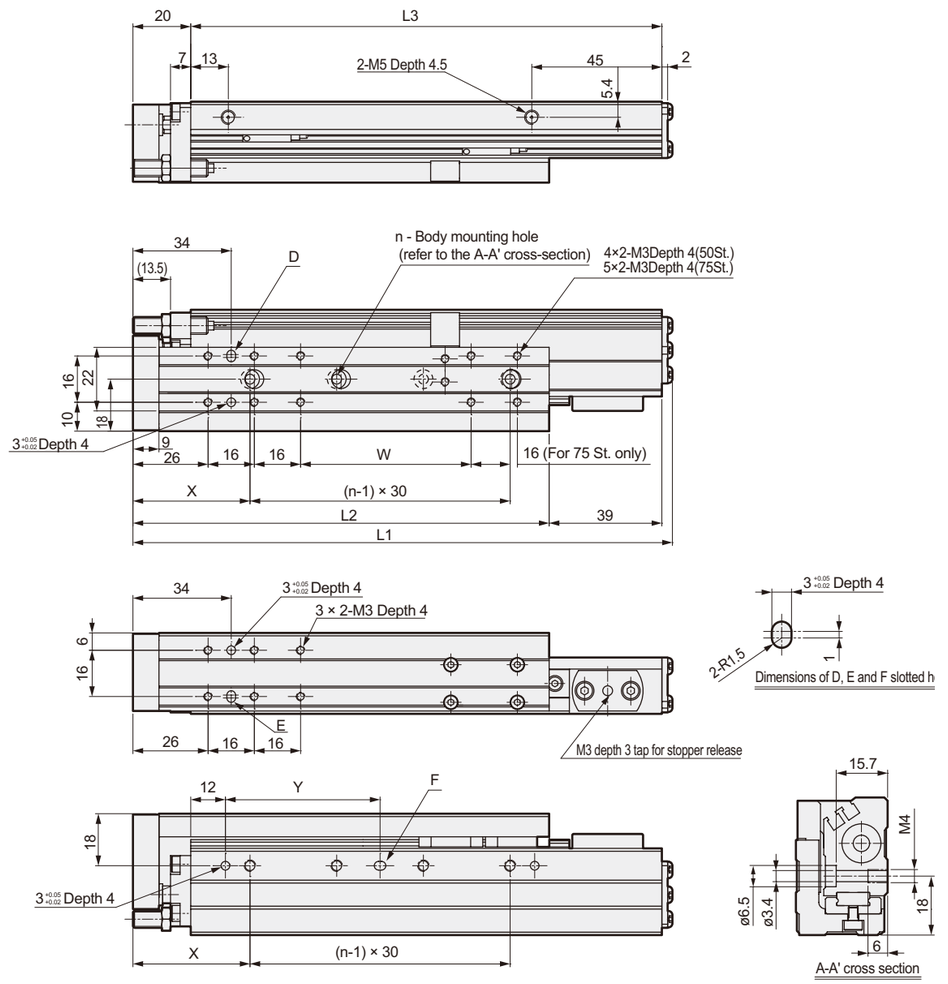
● LCW-Q-12
Stroke: 30 Piping direction: L



*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outline dimension drawing (Bore size: ø12)

● LCW-Q-12
Stroke: 50, 75 Piping direction: L
(The main body mounting holes in this figure show the case of stroke 75)



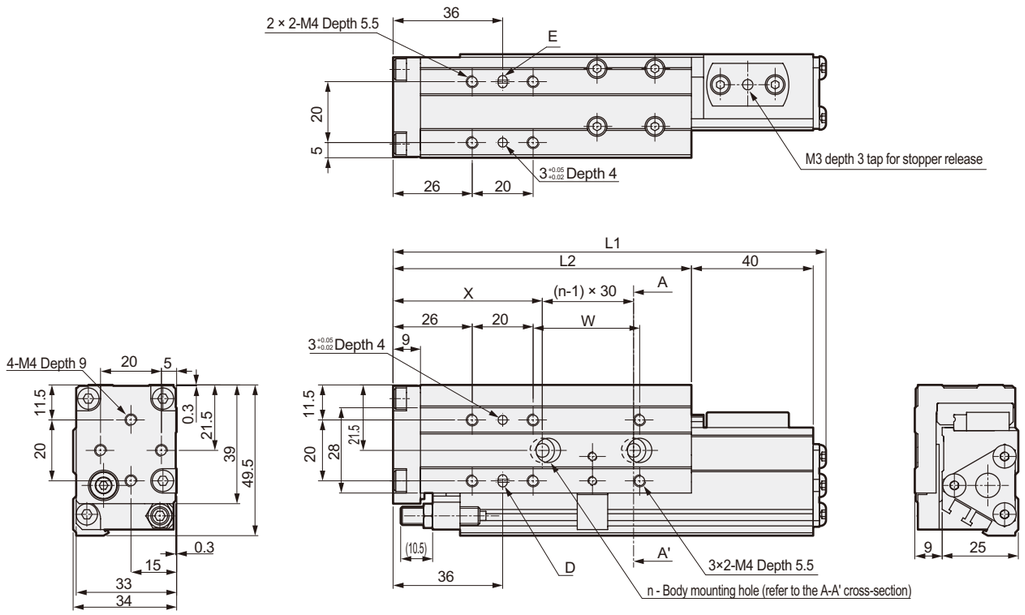
Dimension table by stroke

Stroke	50	75
L1	161.6	186.6
L2	119	144
L3	138	163
X	43	40.5
Y	50	53.5
W	50	59
n	3	4

*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

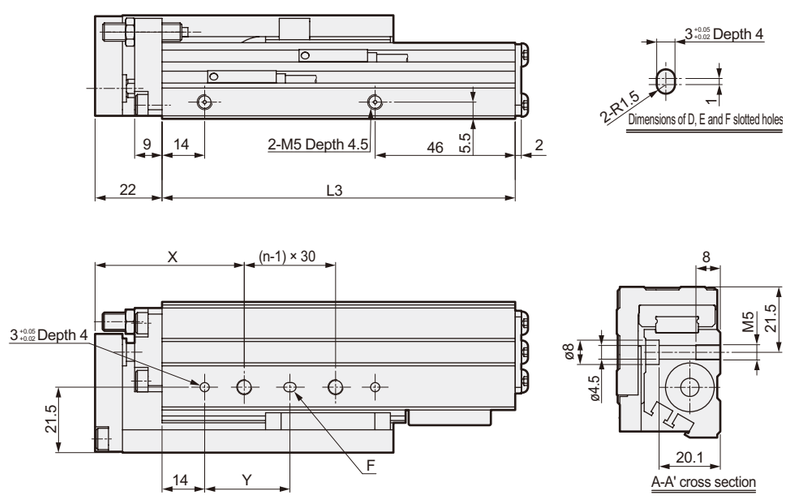
Outline dimension drawing (Bore size: ø16)

● LCW-Q-16
Stroke: 30, 50 Piping direction: R
(The main body mounting holes in this figure show the case of stroke 30)



Dimension table by stroke

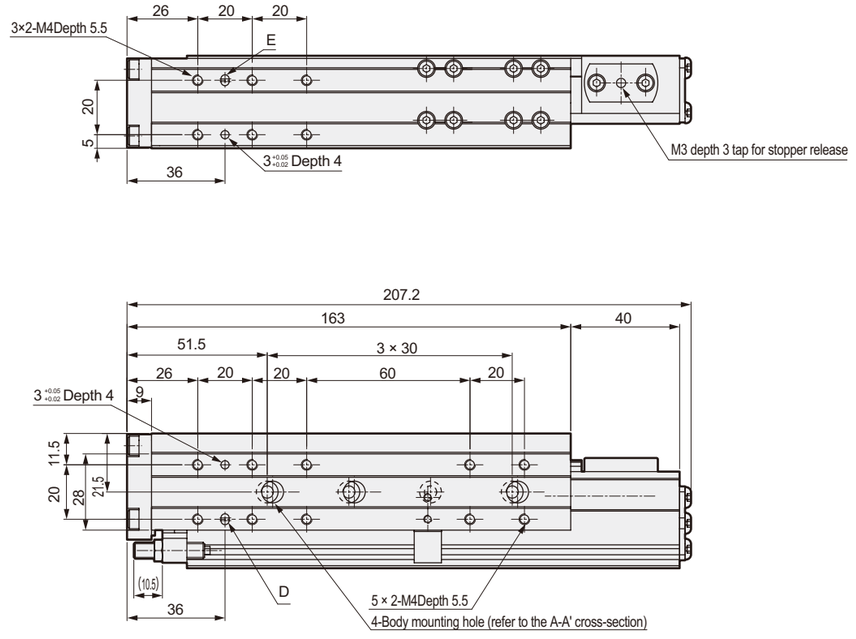
Stroke	30	50
L1	142.2	162.2
L2	98	118
L3	116	136
X	49	44
Y	28	50
W	35	55
n	2	3

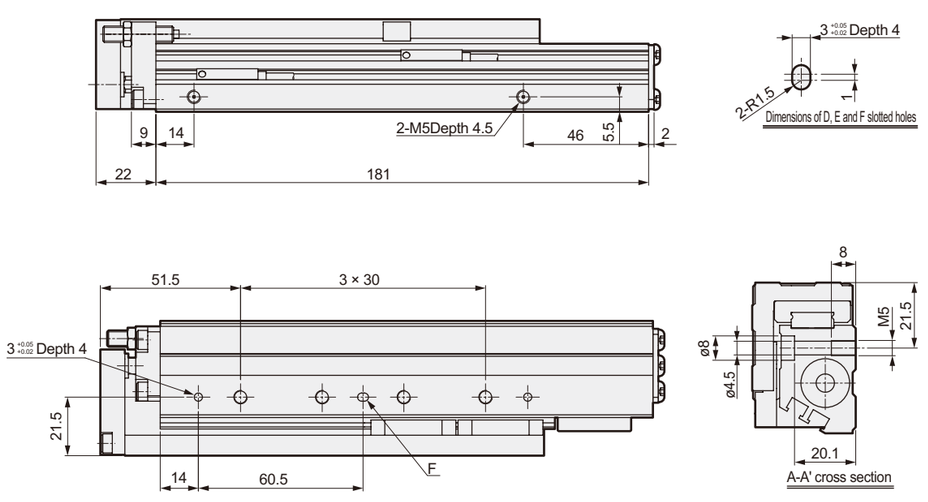


*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outline dimension drawing (Bore size: ø16)

● LCW-Q-16
Stroke: 75 Piping direction: R

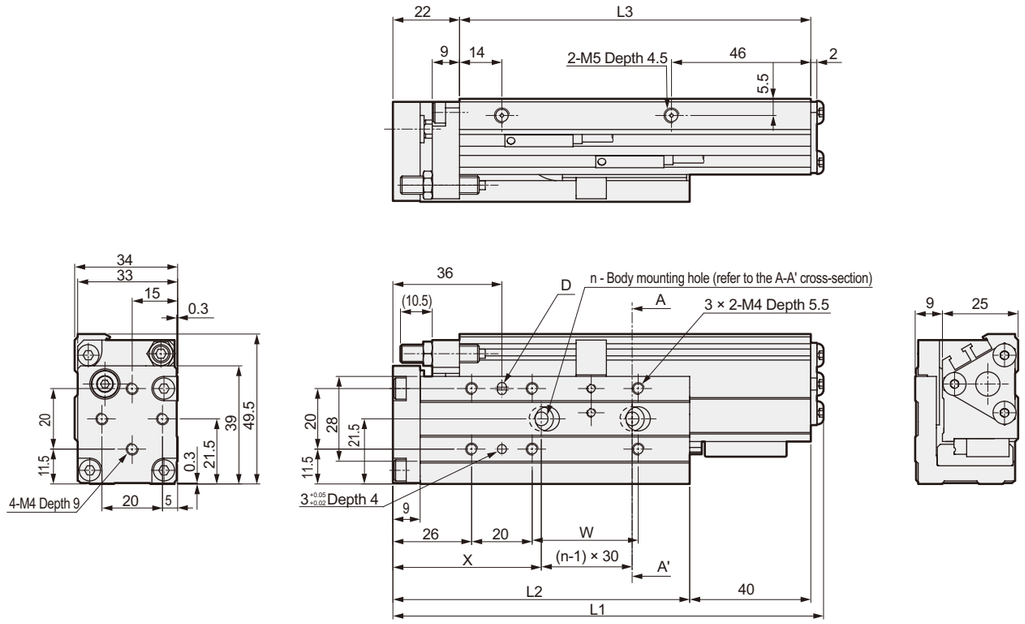




*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

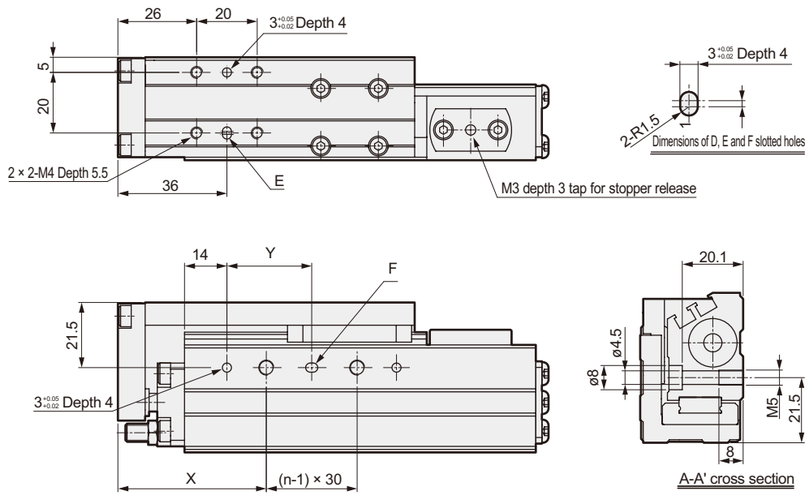
Outline dimension drawing (Bore size: ø16)

● LCW-Q-16
Stroke: 30, 50 Piping direction: L
(The main body mounting holes in this figure show the case of stroke 30)



Dimension table by stroke

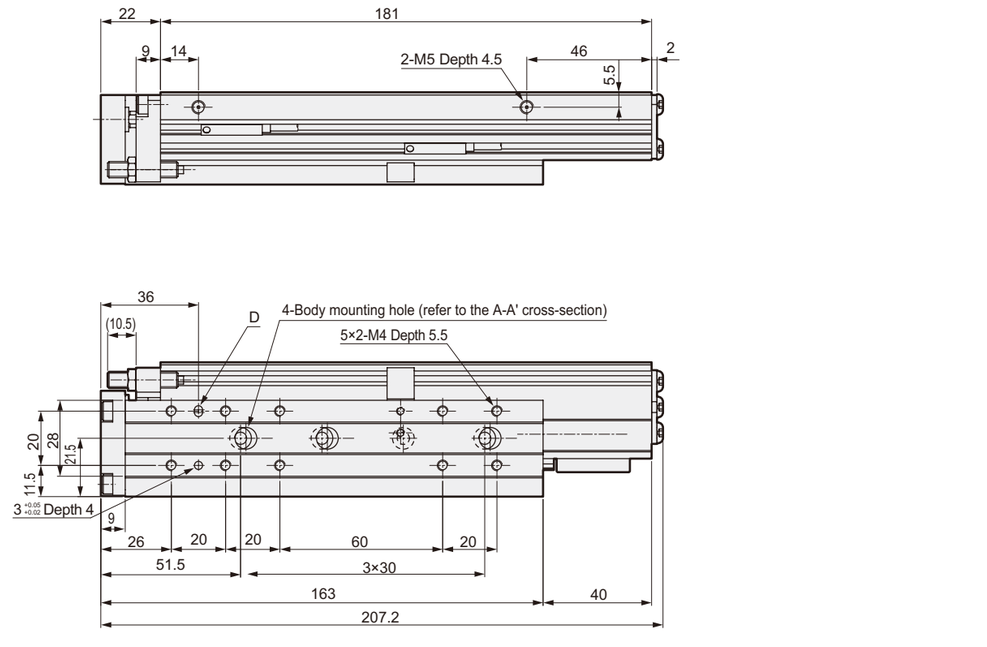
Stroke	30	50
L1	142.2	162.2
L2	98	118
L3	116	136
X	49	44
Y	28	50
W	35	55
n	2	3

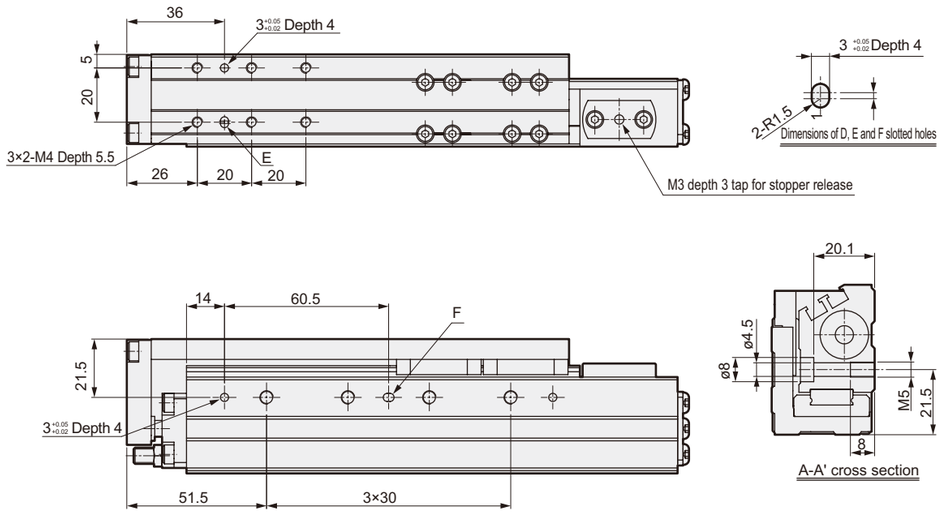


*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outline dimension drawing (Bore size: ø16)

● LCW-Q-16
Stroke: 75 Piping direction: L

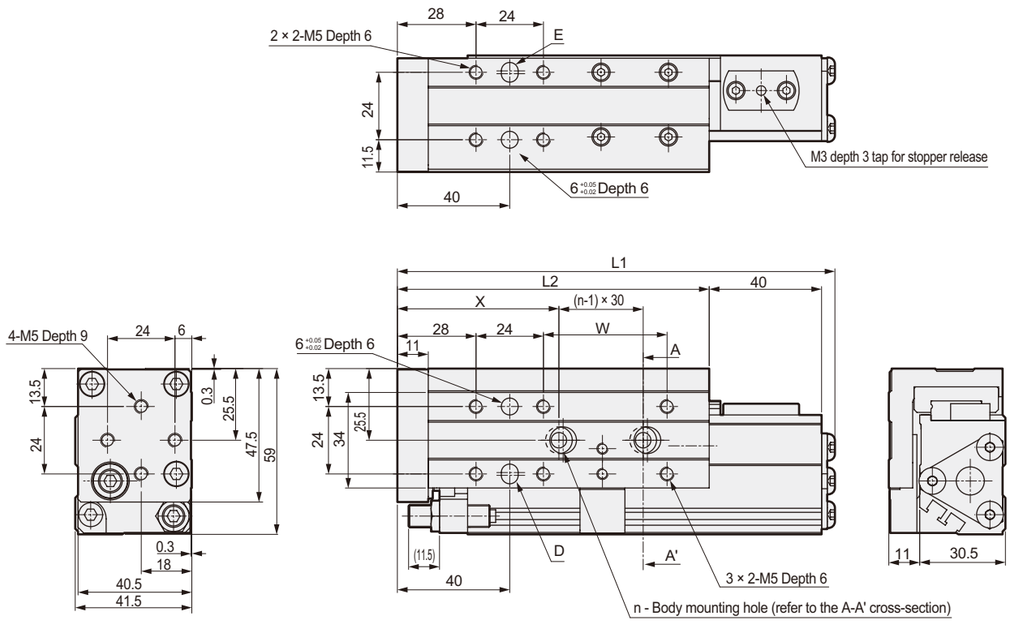




*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

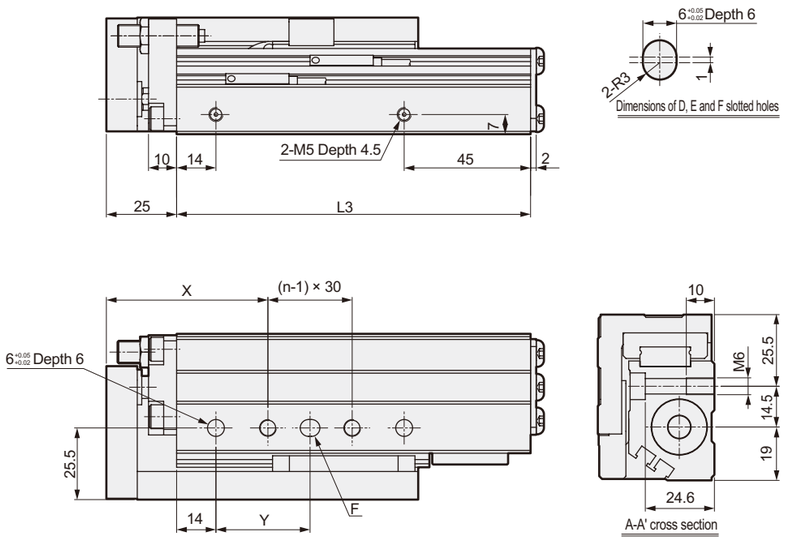
External dimensions diagram (Bore size: ø20)

● LCW-Q-20
Stroke: 30, 50 Piping direction: R
(The main body mounting holes in this figure show the case of stroke 30)



Dimension table by stroke

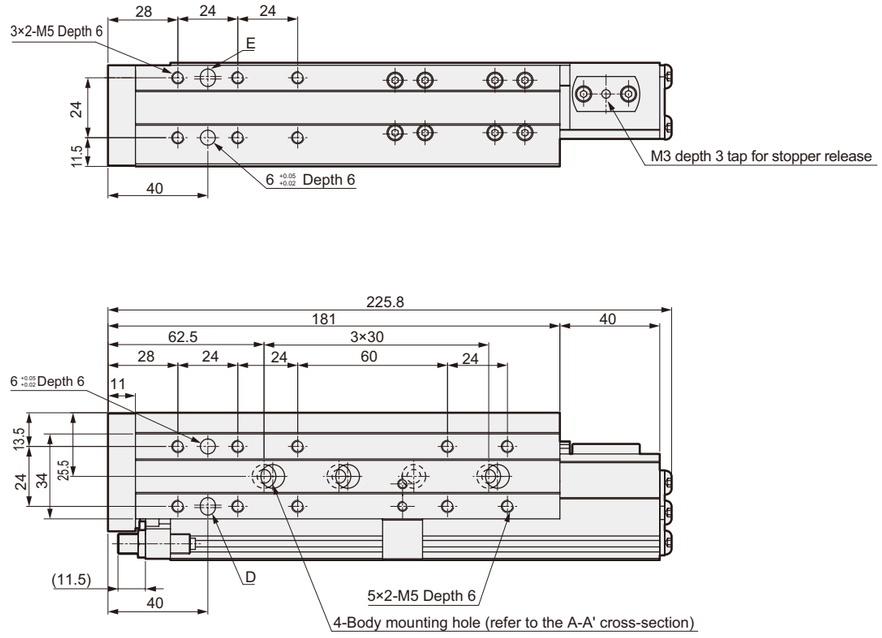
Stroke	30	50
L1	155.8	175.8
L2	111	131
L3	126	146
X	57.5	52.5
Y	33.5	60
W	44	64
n	2	3

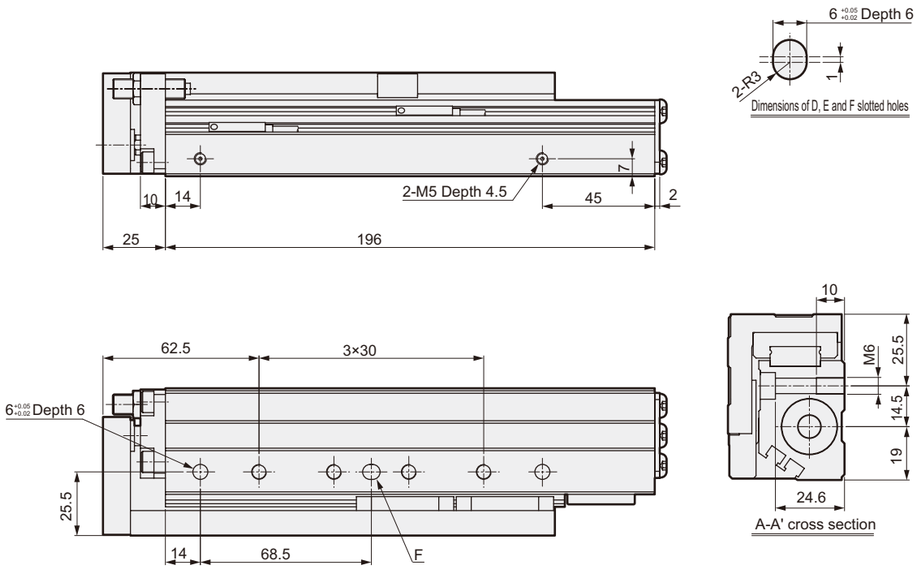


*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

External dimensions diagram (Bore size: ø20)

● LCW-Q-20
Stroke: 75 Piping direction: R

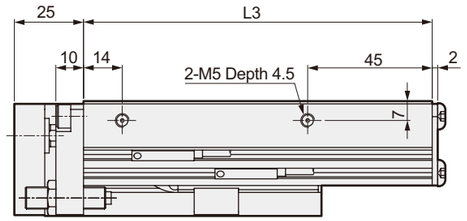


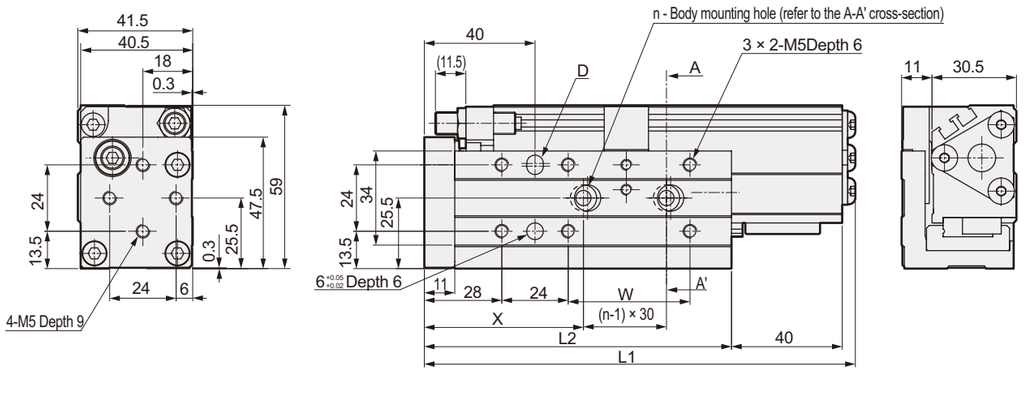


*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

External dimensions diagram (Bore size: ø20)

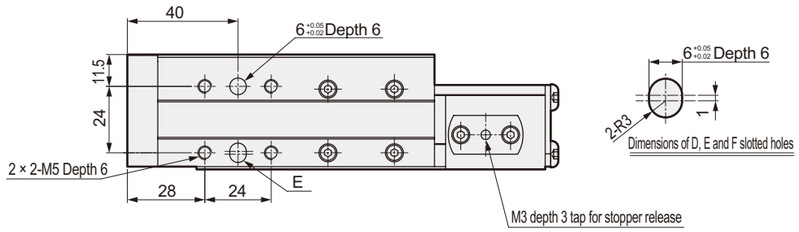
● LCW-Q-20
Stroke: 30, 50 Piping direction: L
(The main body mounting holes in this figure show the case of stroke 30)

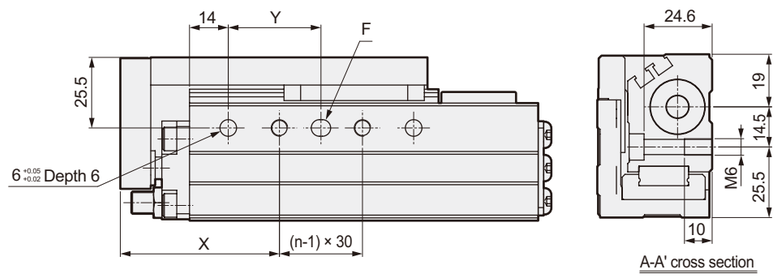




Dimension table by stroke

Stroke	30	50
L1	155.8	175.8
L2	111	131
L3	126	146
X	57.5	52.5
Y	33.5	60
W	44	64
n	2	3

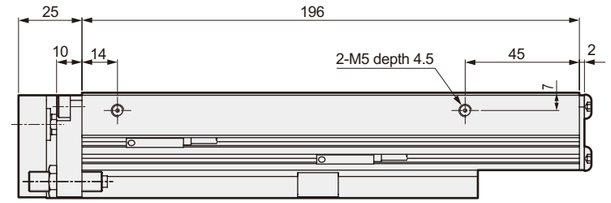


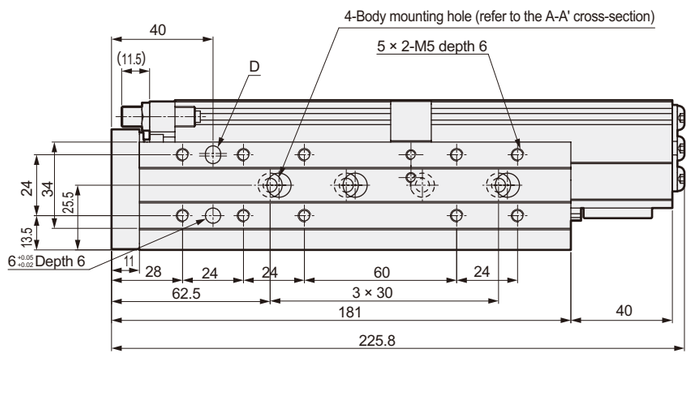


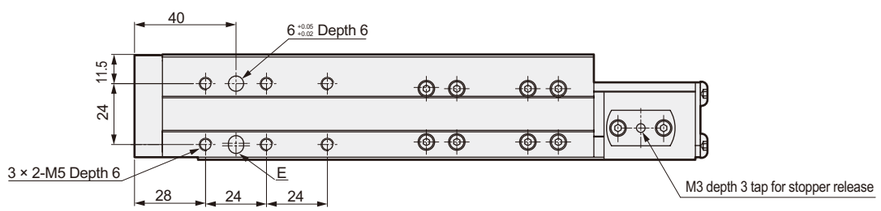
*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

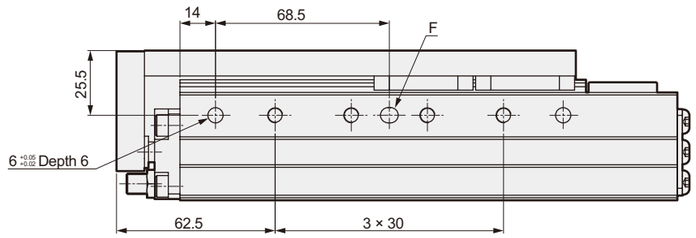
External dimensions diagram (Bore size: ø20)

● LCW-Q-20
Stroke: 75 Piping direction: L





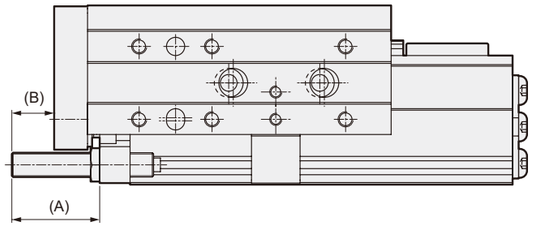




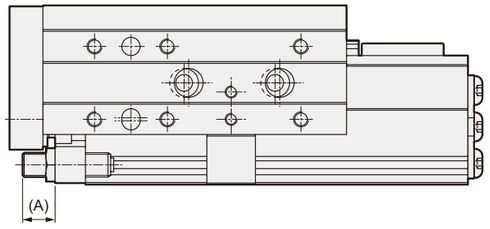
*1: When using positioning holes, use pins with dimensions that do not result in a press fit.
The recommended tolerance for the pin is JIS tolerance m6 or less.
*2: For dimensions with each switch, refer to P. 242 to 244.

Outer Dimensions Diagram with Option

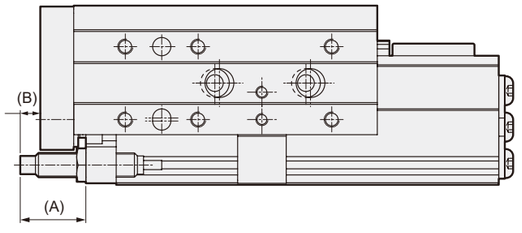
● Rubber cushion type long stopper (S)
Metal type long stopper with rubber cushion (MS)



● Metal type stopper with rubber cushion (M)

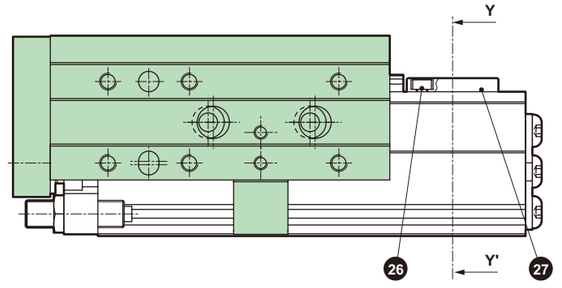


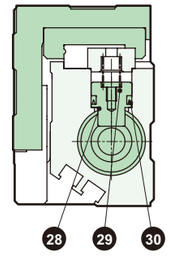
● Shock absorber type stopper (A)



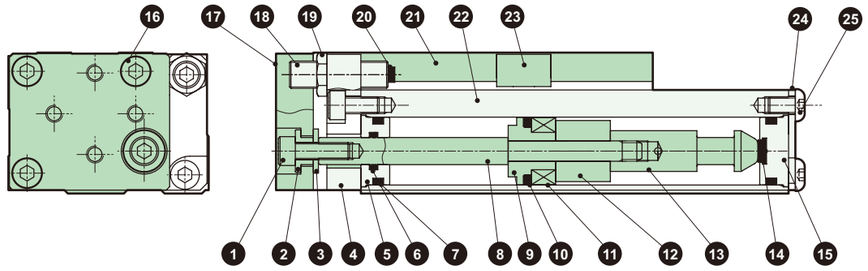
Bore size	Rubber cushion type long stopper (S)		Metal type stopper with rubber cushion (M)		Metal type long stopper with rubber cushion (MS)		Shock absorber type stopper (A)	
	A	B	A	B	A	B	A	B
ø12	31.5	18.5	12	-	31	18	11	-
ø16	28.5	15.5	9.5	-	28.5	15.5	8.5	-
ø20	28.5	13.5	10.5	-	28.5	13.5	21.5	6.5

Internal Structure Diagram / Material





Y-Y' cross-section



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate	16	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
2	Floating bush A	Stainless Steel		17	End plate	Aluminum Alloy	Hard Anodized
3	Floating bush B	Stainless Steel		18	Stopper bolt	Steel	Nickel Plating
4	Cover retainer	Aluminum Alloy	Alumite	19	Hexagon Nut	Steel	Nickel Plating
5	Rod Cover	Aluminum Alloy	Hard Anodized	20	Cushion Rubber	Urethane Rubber	
6	Rod Packing	Nitrile Rubber		21	Table	Aluminum Alloy	Alumite
7	O-ring	Nitrile Rubber		22	Body	Aluminum Alloy	Hard Anodized
8	Piston Rod	Stainless Steel		23	Stopper block	Steel	Nickel Plating
9	Piston	Aluminum Alloy	Chromate	24	Cover retainer	Stainless Steel	
10	Piston Packing	Nitrile Rubber		25	Hex Socket Button Head Bolt	Steel	Zinc Chromate
11	Magnet	-		26	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
12	Collar	Aluminum Alloy	Chromate	27	Stopper Cover	Stainless Steel	
13	Sleeve	Steel	Nitriding Treatment	28	Stopper Piston	Steel	Nitriding Treatment
14	Cushion Rubber	Urethane Rubber		29	Coil Spring	Steel	
15	Head Cover	Aluminum Alloy	Chromate	30	Stopper packing	Nitrile Rubber	

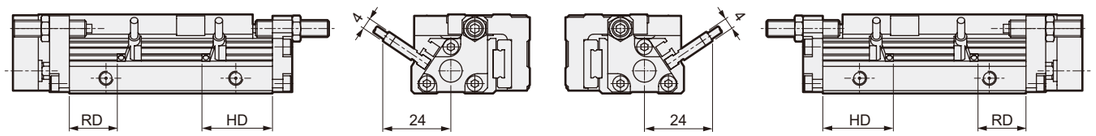
Consumable Parts List

Bore Size (mm)	Kit No.	Consumable Part No.
ø12	LCW-Q-12HK	⑥⑦⑩⑫㉔
ø16	LCW-Q-16HK	
ø20	LCW-Q-20HK	

LCW Series Switch External Dimensions Diagram

● F2S, F3S

LCW

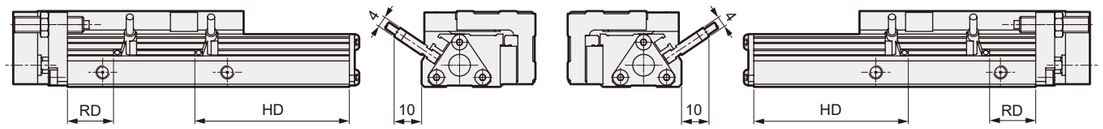


Piping direction R　　Piping direction L

Code / Bore Size (mm)	Stroke	F2S, F3S	
		RD	HD
ø12	30	17	25
	50	17	38
	75	17	38

Note: For switch mountability, refer to the model No. notation method for each variation.

LCW-Q



Piping direction R　　Piping direction L

Code / Bore Size (mm)	Stroke	F2S, F3S	
		RD	HD
ø12	30	17	57
	50	17	70
	75	17	70

Note: For switch mountability, refer to the model No. notation method for each variation.

LCW Series Switch External Dimensions Diagram

● F2H/V, F3H/V, F2YH/V, F3YH/V, F3PH/V

LCW

Piping direction R　　Piping direction L

Code / Bore Size (mm)	Stroke	F2, F3, F2Y, F3Y, F3P	
		RD	HD
ø12	30	18	24
	50	18	37
	75	18	37

Note: For switch mountability, refer to the model No. notation method for each variation.

LCW-Q

Piping direction R　　Piping direction L

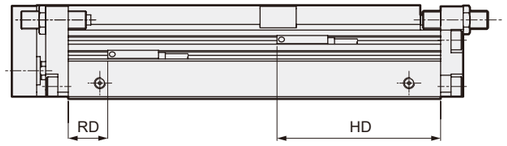
Code / Bore Size (mm)	Stroke	F2, F3, F2Y, F3Y, F3P	
		RD	HD
ø12	30	18	56
	50	18	69
	75	18	69

Note: For switch mountability, refer to the model No. notation method for each variation.

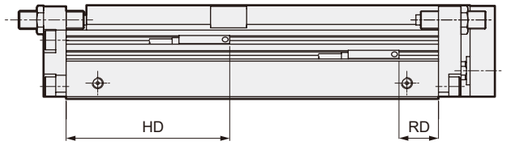
LCW Series Switch External Dimensions Diagram

● T0H/V, T5H/V, T2H/V, T3H/V, T3PH/V, T2□R3, T2WH/V, T3WH/V

LCW



Piping direction R

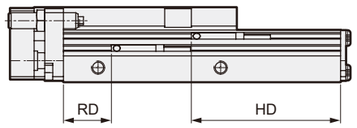


Piping direction L

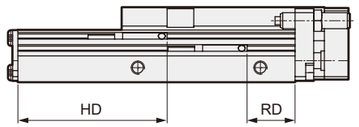
Code / Bore Size (mm)	Stroke	T0, T5, T2, T3, T3P, T2□R3		T2W, T3W	
		RD	HD	RD	HD
ø16	30	15	39	17	37
	50	15	39	17	37
	75	15	59	17	57
ø20	30	17.5	47.5	19.5	45.5
	50	17.5	47.5	19.5	45.5
	75	17.5	72.5	19.5	70.5

Note: For switch mountability, refer to the model No. notation method for each variation.

LCW-Q



Piping direction R



Piping direction L

Code / Bore Size (mm)	Stroke	T0, T5, T2, T3, T3P, T2□R3		T2W, T3W	
		RD	HD	RD	HD
ø16	30	15	71	17	69
	50	15	71	17	69
	75	15	91	17	89
ø20	30	17.5	78.5	19.5	76.5
	50	17.5	78.5	19.5	76.5
	75	17.5	103.5	19.5	101.5

Note: For switch mountability, refer to the model No. notation method for each variation.

MEMO

With Linear Guide
LCM
LCR
LCG
LCW
LCX
MSDG
Cylinder Switch
Ending

STEP-1

Confirm the load factor and determine the tube inner diameter.

$$\alpha = \frac{Fo}{F} \times 100\ [\%]$$

α : Load factor

Fo : Force required to move the workpiece (N)

F : Cylinder theoretical thrust (N) [Table 1]

During horizontal operation	During vertical operation
Fo = Fw	Fo = W + Fw
FW: Wx0.2 *(N) W: Load (N)	

* Friction Coefficient

[Table 1] Theoretical thrust table (Unit: N)

Bore size (mm)	Operating Direction	Operating pressure MPa						
		0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø12	PUSH	17	23	34	45	57	68	79
	PULL	13	17	25	34	42	51	59
ø16	PUSH	30	40	60	80	101	121	141
	PULL	26	35	52	69	86	104	121
ø20	PUSH	47	63	94	126	157	188	220
	PULL	40	53	79	106	132	158	185

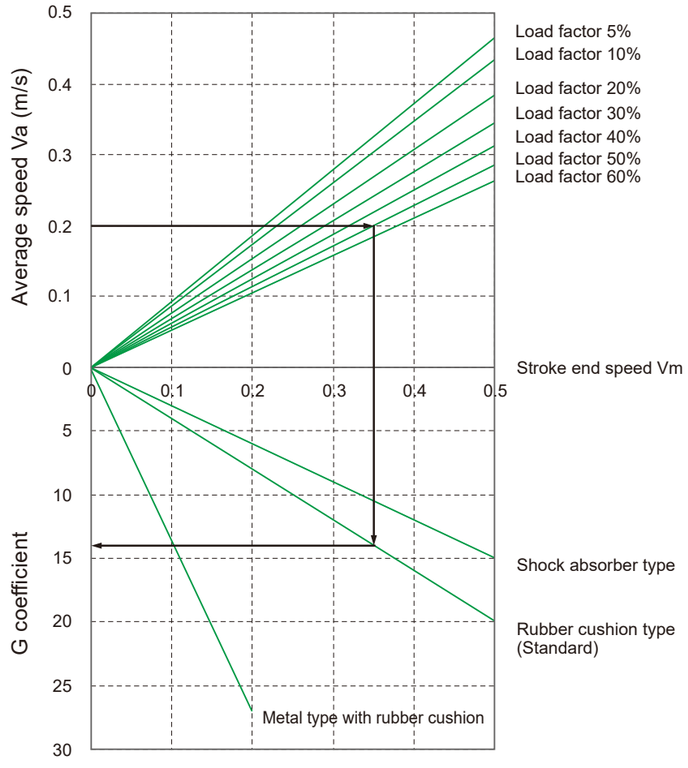
[Table 2] Load factor guide

Operating pressure MPa	Load factor (%)
0.2 to 0.3	α≤40
0.3 to 0.6	α≤50
0.6 to 0.7	α≤60

STEP-2

Determine the stroke end speed (Vm) and G coefficient.

Determine the stroke end speed (Vm) and G coefficient from the average speed (Va) and the load factor obtained in STEP-1.



The arrow (→) in the figure indicates
Average speed: 0.20 m/s
Load factor: 50%
at
Stroke end speed: 0.35 m/s
G coefficient: 14
shows an example of how to find.

STEP-3

Confirm the allowable absorption energy.

$$E = \frac{1}{2} \times (m+m_\alpha) \times Vm^2$$

E : Kinetic energy at workpiece end (J)

m : Load weight (kg) ($m \approx \frac{W\ (N)}{9.8}$)

m_α : [Table 4] Table Weight

Vm : Stroke end speed (m/s)

E max : Max. allowable value of Eo (from Table 3)

Confirm that E ≤ E max.

[Table 3] LCW Allowable absorption energy

Bore size (mm)	Rubber cushion type (Standard) (J)	Metal type with rubber cushion (J)	Shock absorber type (J)
ø12	0.027	0.0053	0.054
ø16	0.055	0.0053	0.11
ø20	0.11	0.043	0.22

[Table 4] Table Weight (Unit: kg)

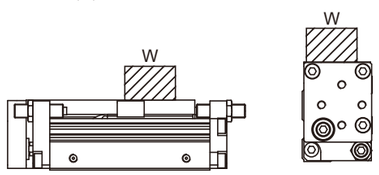
Bore size (mm)	Stroke (mm)		
	30	50	75
ø12	0.059	0.089	0.111
ø16	0.089	0.112	0.164
ø20	0.141	0.176	0.264

STEP-4

Confirm the combined moment M'T at rest.

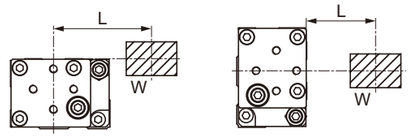
Determine the static load (moment) and impact moment generated at the stroke end, and confirm the combined moment M'T at rest.

● Vertical load: W' (N)



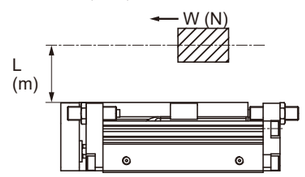
W'=W

● Lateral bending moment: M2' (N·m)



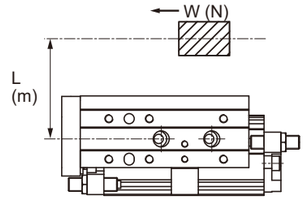
M2'=LxW

● Bending moment: M1' (N·m)



M1'=LxW

● Swinging moment: M3' (N·m)



M3'=LxW

W' = ☐ (N)

M1' x G = ☐ (N·m)

M2' = ☐ (N·m)

M3' x G = ☐ (N·m)

$$M'_T = \frac{W'}{W'max} + \frac{M1' \times G}{M1'max} + \frac{M2'}{M2'max} + \frac{M3' \times G}{M3'max} = \square$$

M'T : Combination of moments

G : G coefficient

W' max : Max. allowable value of W' (from Table 5)

M1' max : Max. allowable value of M1' (from Table 5)

M2' max : Max. allowable value of M2' (from Table 5)

M3' max : Max. allowable value of M3' (from Table 5)

[Table 5] Allowable static load value

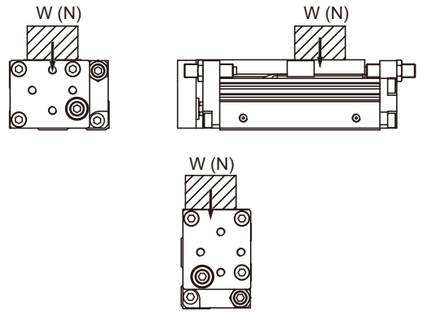
Bore size (mm)	Stroke (mm)	Vertical load W'max (N)	Bending moment M1'max (N·m)	Lateral bending moment M2'max (N·m)	Swinging moment M3'max (N·m)
ø12	30	140	0.7	3.5	0.7
	50, 75	186	10.7	5.6	10.7
ø16	30, 50	221	5.7	9.8	5.7
	75		22.2		22.2
ø20	30, 50	381	17.8	19.2	17.8
	75		37.3		37.3

Confirm that M'T ≤ 1.

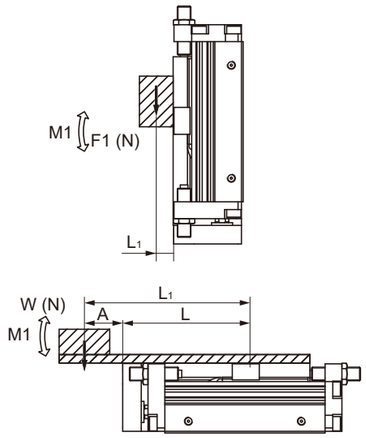
STEP-5

Confirm the combined moment MT during operation. (Note that this is different from what was obtained in STEP-4.)

● Vertical load: W (N)



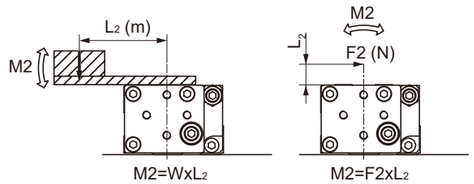
● Bending moment: M1 (N·m)



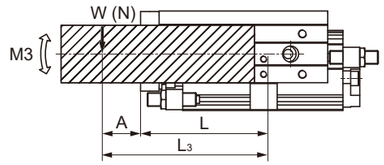
M1=F1xL1

M1 = W x L1
L1 = A + L
L is the value in the table below

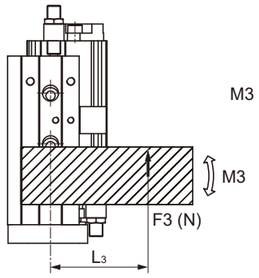
● Lateral bending moment: M2 (N·m)



● Swinging moment: M3 (N·m)



M3 = W x L3
L3 = A + L
L is the value in the table below



M3 = F3 x L

[Table 6] L value (Unit: m)

Bore size (mm)	Stroke (mm)		
	30	50	75
ø12	0.066	0.097	0.122
ø16	0.077	0.097	0.131
ø20	0.085	0.105	0.141

W=W = ☐ (N)

M1=M1 = ☐ (N·m)

M2=M2 = ☐ (N·m)

M3=M3 = ☐ (N·m)

M'T : Combination of moments

Wmax : Max. allowable value of W (from Table 7)

M1 max : Max. allowable value of M1 (from Table 7)

M2 max : Max. allowable value of M2 (from Table 7)

M3 max : Max. allowable value of M3 (from Table 7)

[Table 7] Allowable running load value

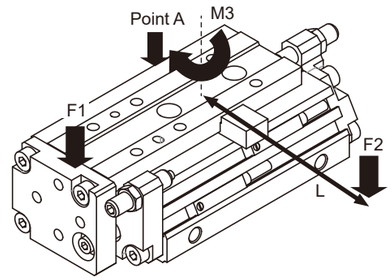
Bore size (mm)	Stroke (mm)	Vertical load Wmax (N)	Bending moment M1 max (N·m)	Lateral bending moment M2 max (N·m)	Swinging moment M3 max (N·m)
ø12	30	14	0.17	0.35	0.17
	50, 75	16	0.89	0.47	0.89
ø16	30, 50	28	0.71	1.2	0.71
	75		2.2		2.2
ø20	30, 50	48	1.9	2.4	1.9
	75		4.6		4.6

Can be used if MT ≤ 1.

Technical Data

[Table displacement due to M1, M2, M3 moments] (Reference value)

M1 moment Displacement at the table tip when a load (F1) is applied to the table tip
M2 moment M2 moment: Displacement at the table end (point A) when a load (F2) is applied at a position Lmm away from the cylinder center
M3 moment: Displacement angle of the table when a rotational moment (M3) is applied to the cylinder



Value of L
ø12: L = 70
ø16: L = 90
ø20: L = 100

Table displacement due to M1 moment

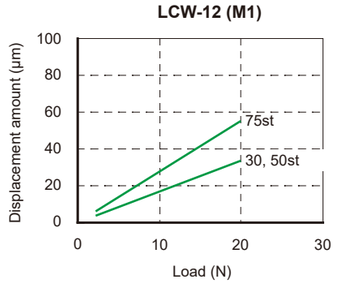


Table displacement due to M2 moment

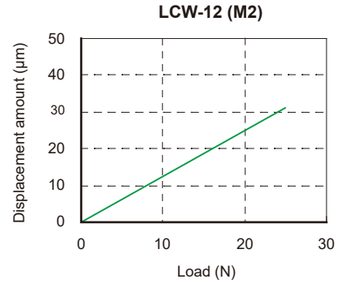
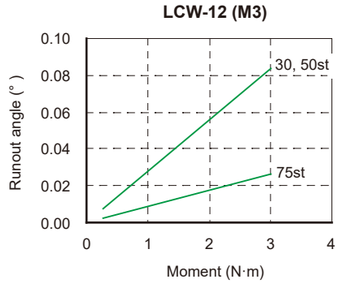
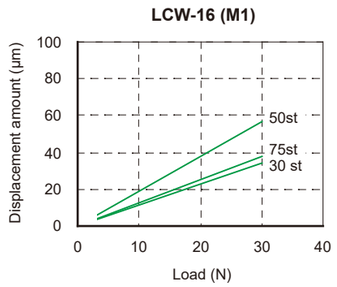
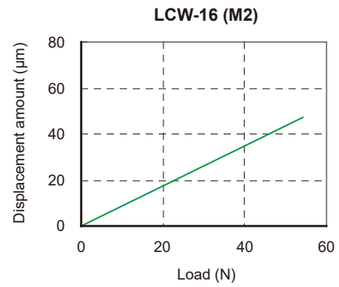
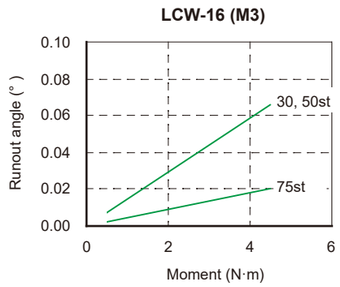


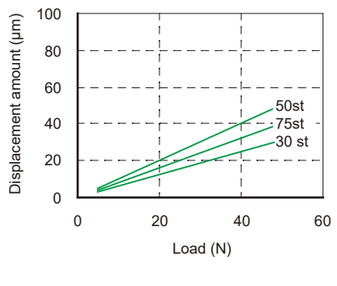
Table displacement angle due to M3 moment

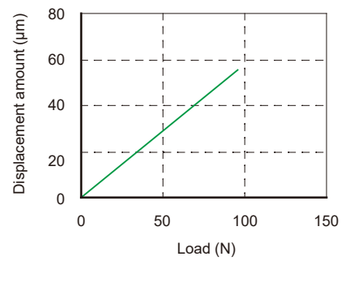


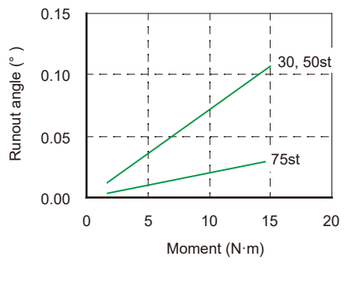












To Use This Product Safely

Be sure to read this before use.
For general cylinder information, see Intro 41, and for cylinder switches, see P. 808.

Individual Precautions : Linear Slide Cylinder LCW Series

During Design / Selection

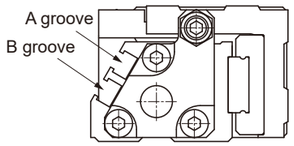
1. Common

Caution

■ For cylinder selection, follow the "LCW Selection Guide" on P. 246 to 248.

■ If the cylinder is used in a place exposed to water droplets or oil droplets, a place where there is a risk of corrosion, or a place with a lot of dust, it may cause damage or malfunction, so protect the product with a cover, etc.

■ Precautions for products with switches
- For switches with a stroke of 30, install one switch per groove on the main body.
- When using L-shaped lead wires (T□V, F□V), install the rod-side switch in groove B as shown in the diagram below.

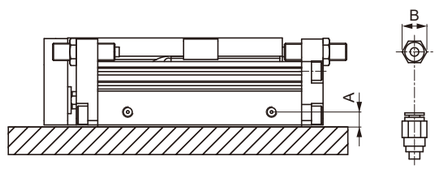


■ Avoid use in places with vibration.
Operation becomes unstable due to the influence of vibration.

2. Common : During piping

Caution

■ Precautions for piping fittings
Be sure to use a speed controller when piping. Also, the usable fittings are as follows.



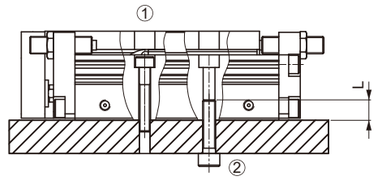
Item: Bore Size (mm)	Port Size	Port position dimension A	Usable fittings	Fitting outer diameter B
ø12	M5	5.5	SC3W-M5-4 SC3W-M5-6	ø11 or less
ø16		5.5	GWS4-M5-S GWS4-M5	ø11 or less
ø20		7	SC3W-M5-4 SC3W-M5-6 GWS4-M5-S GWS4-M5 GWL6-M5 GWS6-M5	ø13 or less

3. Common : During installation

Caution

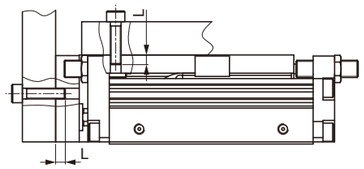
■ Please do not make dents or scratches on the mounting surface of the main body (tube) and the table surface that may impair flatness. Also, the flatness of the mating side to be included to the main body and table should be 0.02 mm or less.

■ Observe the following values for the bolt screw-in length and tightening torque when mounting the main body.



Item	1		2		
	Bolt used	Tightening torque (N·m)	Bolt used	Tightening torque (N·m)	Maximum screw-in depth L (mm)
LCW-12	M3x0.5	0.6 to 1.1	M4x0.7	1.4 to 2.4	6
LCW-16	M4x0.7	1.4 to 2.4	M5x0.8	2.9 to 5.1	8
LCW-20	M5x0.8	2.9 to 5.1	M6x1.0	4.8 to 8.6	10

■ Observe the following values for the bolt screw-in length and tightening torque when mounting a jig to the slide table and end plate.

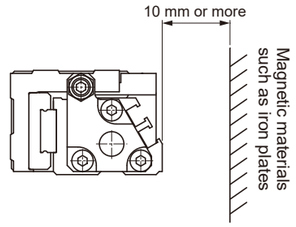


Item	Table			End plate		
	Bolt used	Tightening torque (N·m)	Screw-in length L (mm)	Bolt used	Tightening torque (N·m)	Screw-in depth L (mm)
LCW-12	M3x0.5	0.6	3 to 4	M3x0.5	0.6	4.5 to 6
LCW-16	M4x0.7	1.4	4 to 5.5	M4x0.7	1.4	6 to 9
LCW-20	M5x0.8	2.9	5 to 6	M5x0.8	2.9	7.5 to 9

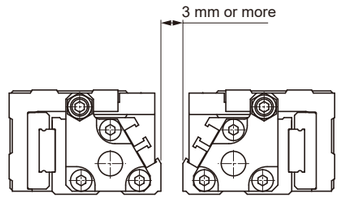
■ While the main body is operating, there is a risk of being caught by the stopper bolt, so keep hands, etc. away.

■ Treat our Shock absorbers as consumable parts. Replace when a decrease in energy absorption capacity is observed or when operation is no longer smooth.

■ If there is a magnetic material such as an iron plate near the cylinder switch, it may malfunction. You can use it safely by keeping it 10 mm or more away from the cylinder surface or by changing the mounting surface of the cylinder switch. (Common to all bore sizes)



■ If cylinders are adjacent as shown in the diagram below, the cylinder switch may malfunction. Maintain the following distance from the cylinder surface. (Common to all bore sizes)



■ When using locating holes, use pins with dimensions that do not result in a press fit. Using press-fit dimension pins may cause damage to the linear guide part due to press-fitting load or accuracy deterioration due to distortion. The recommended tolerance for the pin is JIS tolerance m6 or less.

4. Drop prevention type LCW-Q

Caution

■ Do not use 3-position valves.
Avoid using in combination with 3-position valves (especially closed center metal seal type). If pressure is trapped in the port on the side with the lock mechanism, the lock will not engage. Also, even if locked once, air leaking from the valve may enter the cylinder, and the lock may be released over time.

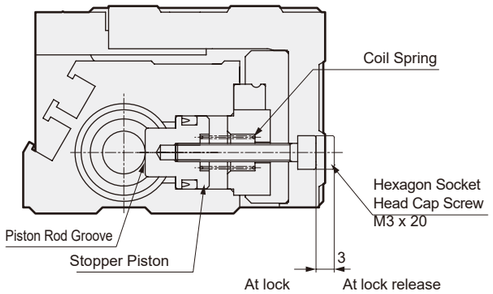
■ Release the lock when installing or adjusting the cylinder. If installation work, etc. is performed while the lock is engaged, the lock part may be damaged.

■ Do not use multiple cylinders synchronized.
Do not use a method where two or more fall prevention type cylinders are synchronized to move one workpiece. The lock of one of the cylinders may become unremovable.

■ Use the speed controller with meter-out control.
Lock may not be released with meter-in control.

■ On the side with the lock, be sure to use the cylinder to the stroke end.
If the cylinder piston has not reached the stroke end, the lock may not engage, or it may not be possible to release the lock.

■ Release method
Screw a hexagon socket head cap screw (M3x20) into the stopper piston and pull the bolt with a force of 20 N or more for 3 mm, the stopper piston will move and the lock will be released. (No-load horizontal mounting, rod port pressurization) Also, when you release your hand, the built-in spring returns the stopper piston, and if it enters the piston rod groove, the cylinder will be locked.



During Use

1. Common

Caution

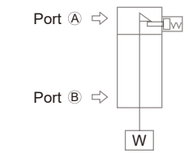
■ For the guide part, apply grease to the guide rail raceway surface every 6 months or 1 million operations, whichever comes first.
(For recommended grease, please inquire separately.)

■ When disassembling the end plate during packing replacement, be sure to hold the slide table itself while working.

2. Drop prevention type LCW-Q

Warning

■ In the locked state, if pressure is supplied to port Ⓐ from a state where both side ports are not pressurized, the lock may not be released, or the lock may suddenly be released and the piston rod may fly out, which is very dangerous. When releasing the lock mechanism, always supply pressure to port Ⓑ and release it from a state where no load is applied to the lock mechanism.



Side without lock mechanism

■ When using a quick exhaust valve to increase the lowering speed, the cylinder body may start moving before the lock pin operates, and normal release may not be possible. Do not use a quick exhaust valve with a drop prevention type cylinder.

Caution

■ The lock mechanism works at the stroke end. If an external stopper is applied mid-stroke, the lock mechanism may not engage, and there is a risk of falling. When setting the load, be sure to confirm that the lock mechanism is working before installing.

■ Supply pressure equal to or higher than the minimum operating pressure for each model to the port on the side with the lock mechanism.

■ f the piping on the side with the lock mechanism is thin and long, or if the speed controller is far from the cylinder port, the exhaust speed may be slow and it may take time for the lock to engage, so please be careful. Also, clogging of the silencer included to the EXH. port of the solenoid valve will lead to similar results.

■ If back pressure is applied to the lock mechanism side, the lock may be released, so use a single solenoid valve or a manifold with individual exhaust.

■ After manually operating the lock mechanism, return the lock mechanism to its original state. Also, do not perform manual operations other than during adjustment, as it is dangerous.

For precautions regarding mounting, installation, adjustment, use, and maintenance, please see "Precautions for Use" in this catalog and the CKD Components Product website (https://www.ckd.co.jp/kiki/en/) → "Model No." → Instruction Manual

MEMO

With Linear Guide

LCX

Low Profile Linear Slide Cylinder

ø25, ø32

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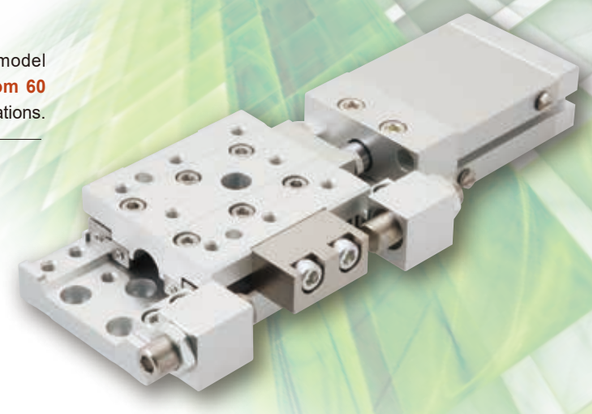
With Linear Guide

LCM
LCR
LCG
LCW
LCX
MSDG

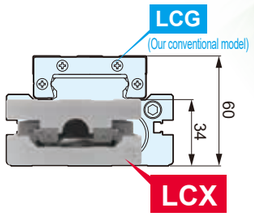
Cylinder Switch
Ending

Linear slide cylinder with a low profile, lightness and rigidity

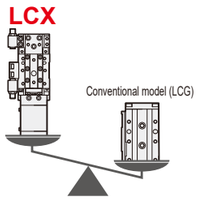


Low profile Made thin compared to the conventional model (LCG) **Height reduced almost by half from 60 mm to 34 mm!** Ideal for space-saving applications.

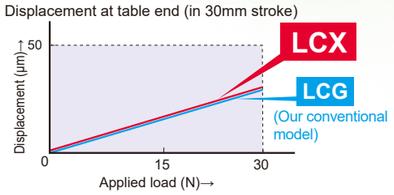
Compared with the conventional model 43% down!



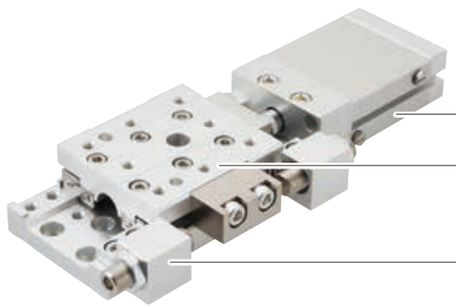
Lightweight **Product Weight halved** compared to conventional model (LCG) ! Since the movable part can be lightened, it contributes to cycle time reduction and energy saving.



Rigid Separate type linear guide adopted. Achieved **rigidity equivalent to the conventional model (LCG)** while being thin and lightweight.

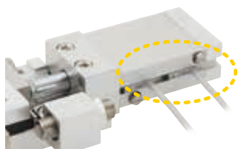


Various variations



T-type switch adopted

Solid state 2-color indicator switch selectable



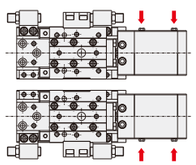
Anti-rust treatment type

Anti-rust treatment applied as standard

Symmetrical design

Piping and stopper can be mounted on both left and right sides

← indicates the piping direction.



Various stopper options available

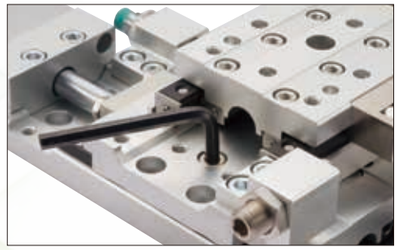
Metal type stopper | Rubber cushion stopper | Shock absorber stopper

Unitization, even simpler, more reliable, and highly accurate

Attractive option variations such as free combination, fall prevention type, long stroke type (MAX 150 mm), and with locating holes have been greatly enhanced. Further expands applications such as conveyance and positioning, contributing to the efficiency of multi-product production.

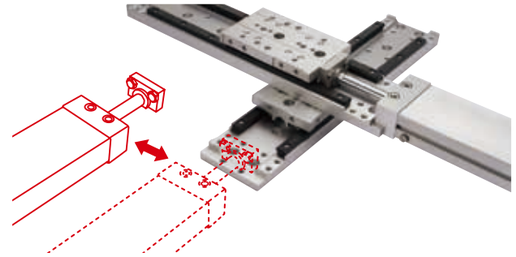
Effortless installation

Unitized with a single hexagon wrench



Significant reduction in maintenance time

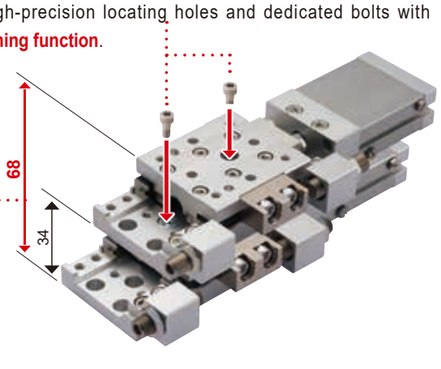
Only the cylinder part can be replaced while the main body is assembled to the equipment.



2-stage unit

High-precision positioning mechanism

Realized direct mounting that does not require position adjustment with high-precision locating holes and dedicated bolts with **positioning function**.



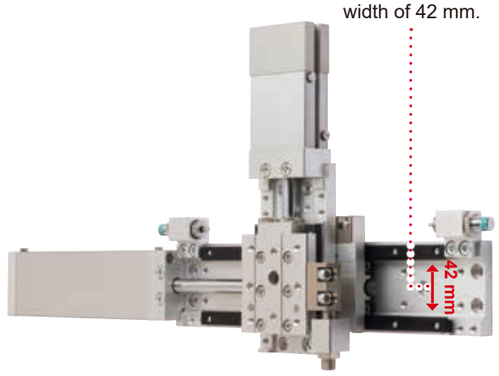
Thin design of 68mm even when stacked

Direct mounting without connecting plates achieves a low profile.

Cross unit

High-rigidity wide guide

Equivalent to a rail width of 42 mm.

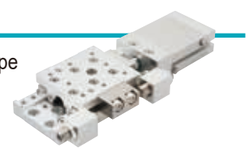


LCX Series Product System

LCX

Double Acting / Single Rod Type

ø25, ø32
Stroke: 10 to 50 mm



LCX-Q

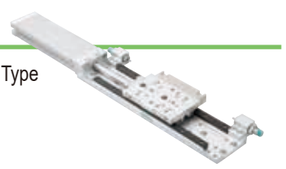
Double Acting / Drop Prevention Type

ø25, ø32
Stroke: 10 to 50 mm

LCX-□L

Double Acting / Single Rod Type
Long stroke

ø25, ø32
Stroke: 75 to 150 mm



LCX-Q-□L

Double Acting / Drop Prevention Type
Long stroke

ø25, ø32
Stroke: 75 to 150 mm

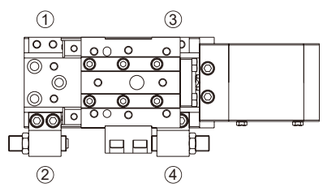
Low Profile Linear Slide Cylinder
LCX Series

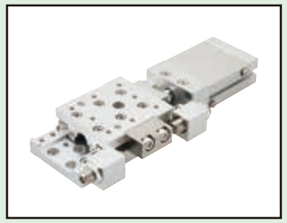
● : Standard, ◎ : Option, ○ : Custom Products : Not manufacturable

Variation	Model No. Circuit Diagram Symbol	Bore size (mm)	Stroke (mm) 10	20	30	40	50	75	100	125	150	Option: Rubber cushion type stopper ① S1	② S2	③ S3	④ S4	①/③ S5	②/④ S6	Metal type stopper ① M1	② M2	③ M3	④ M4	①/③ M5	②/④ M6	Shock absorber type stopper ① A1	② A2	③ A3	④ A4	①/③ A5	②/④ A6	With locating hole E	Center type stopper *1	Switch	Page
Double Acting, Single Rod Type	LCX	Equivalent to ø25, ø32	●	●	●	●	●					◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎	260
Double Acting, Drop Prevention Type	LCX-Q	Equivalent to ø25, ø32	●	●	●	●	●					◎	◎					◎	◎					◎	◎					◎	○	◎	270
Double Acting, Single rod type long stroke	LCX-□L	Equivalent to ø25, ø32						●	●	●	●	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	●	○	◎	278
Double Acting, Drop prevention type long stroke	LCX-Q-□L	Equivalent to ø25, ø32						●	●	●	●	◎	◎					◎	◎					◎	◎					●	○	◎	288

*1: Center type stopper is a custom product. Please contact us for details.

●Stopper position



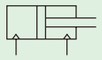


Low profile linear slide cylinder Double acting, Single rod type

LCX Series

●Bore size : equivalent to ø25, ø32

Circuit Diagram
Symbol



RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

LCX - 25 - 40 ——— S5 E

Model No. ❶ ❷ ❺ ❻

With Switch
(Built-in magnet for switch)

LCX - 25 - 40 - T2H - R - A1T E

Model No. ❷ Stroke ❹ Number of Switches ❻ Option
❶ Bore size ❸ Switch Model No. ❺ Stopper

❶ Bore Size (mm)

Code	Content
25	Equivalent to ø25
32	Equivalent to ø32

❷ Stroke (mm)

Code	Content
10	10
20	20
30	30
40	40
50	50

❸ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Water Resistance Improved	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	1-Color Flexible Lead Wire Type		-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder.
*4 : Switches other than the switch model Nos. are also available. (Custom order)For details, refer to P. 753.

*** Lead wire length, connector specification**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*5 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*5 : Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❹ Number of Switches

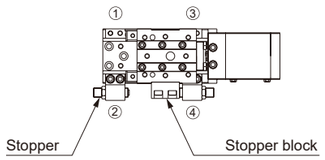
Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

❺ Stopper

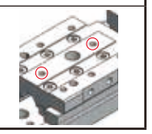
Code	Content	
Blank	No stopper	
S Rubber cushion type stopper		*2
S1	Stopper position ① (④ Changeable to)	Stopper mounting position
S2	Stopper position ② (③ Changeable to)	
S3	Stopper position ③ (② Changeable to)	
S4	Stopper position ④ (① Changeable to)	
S5	Stopper position ①, ③	
S6	Stopper position ②, ④	
M Metal type stopper		*2, *4, *6
M1	Stopper position ① (④ Changeable to)	Stopper mounting position
M2	Stopper position ② (③ Changeable to)	
M3	Stopper position ③ (② Changeable to)	
M4	Stopper position ④ (① Changeable to)	
M5	Stopper position ①, ③	
M6	Stopper position ②, ④	
A Shock absorber type stopper		*3
A1	Stopper position ① (④ Changeable to)	Stopper mounting position
A2	Stopper position ② (③ Changeable to)	
A3	Stopper position ③ (② Changeable to)	
A4	Stopper position ④ (① Changeable to)	
*7 A5	Stopper position ①, ③	
*7 A6	Stopper position ②, ④	

*1: For stopper position ① to ④, refer to the diagram below.
***2: When changing the stroke adjustment range, use the rubber cushion type stopper / metal type stopper single item on P. 263.**
***3: For the stroke adjustment range when using a Shock absorber type stopper, refer to the dimension table in the stopper external view on P. 267.**
*4 : When using a metal type stopper, stopper block material steel (nitriding treatment) (code : T) is recommended.
*5 : When using a combination of rubber cushion type stopper, metal type stopper, and Shock absorber type stopper, it will be a custom product.
*6 : In the case of a metal type stopper, use at 20 to 200 mm/s.
*7 : For stroke 10, A5□ and A6□ cannot be selected.

● Stopper position



❻ Option

Code	Content	
Stopper block material		
Blank	Steel	
*2 T	Steel (nitriding treatment)	
Locating hole		
Blank	Without locating hole	
*1 E	With locating hole	

*1: These are locating holes for assembling cross units and 2-stage units without position adjustment. Use together with locating bolts (P. 264).
*2: Selectable only when using stopper type.

Rechargeable Battery Compatible Specification (Catalog No. CC-1226AA)

● Design compatible with rechargeable battery manufacturing process

LCX - ····· - P4□

* Please contact us for details.

Clean Specification (Catalog No. CB-033SA)

● Dust prevention structure usable in cleanrooms

LCX - ····· - P7□

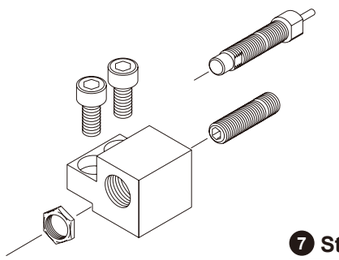
Switch Single Unit Model No. Notation Method

SW - T2H3

❸ Switch Model No.

Stopper Set Model No. Notation Method

- Set of stopper part and rubber cushion type stopper, metal type stopper or Shock absorber type stopper
- Used when changing from standard to with rubber cushion type stopper, with metal type stopper, with Shock absorber type stopper



LCX - 25 - S 2 - S02

❶ Bore size
❽ Stopper mounting position
❼ Stopper type
❾ Stroke adjustment amount

❼ Stopper type

Code	Content
S	Rubber cushion type stopper
M	Metal type stopper
A	Shock absorber type stopper

❽ Stopper mounting position

Code	Content
1	Stopper position for ① or ④
2	Stopper position for ② or ③

❾ Stroke adjustment amount

Code	Content
Blank	Stroke adjustment range 10 mm
S02	Stroke adjustment range 20 mm

Note: ❼ In the case of Shock absorber type stopper "A", it cannot be selected.

● Stopper set weight (Unit : g)

Stopper type	S1, S2, M1, M2		A1, A2
Stroke adjustment amount / Bore size	Blank	S02	-
Equivalent to ø25 Equivalent to ø32	70	80	70

Rubber cushion type stopper single item model No. notation method

- Hexagon socket set screw with urethane
- Used when changing stroke adjustment range or setting intermediate stroke

LCX - 25 - S02

❶ Bore size
❿ Stroke Adjustment range

❿ Stroke adjustment range

Code	Content
S01	One side 10 mm (Standard)
S02	One side 20 mm

● Rubber cushion type stopper weight
LCX-25, 32-S01 : 30 g
LCX-25, 32-S02 : 40 g

Metal type stopper single item model No. notation method

- Used when changing stroke adjustment range or setting intermediate stroke

LCX - 25 - M02

❶ Bore size
⓫ Stroke Adjustment range

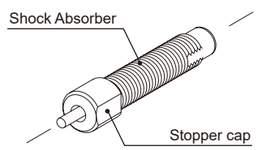
⓫ Stroke adjustment range

Code	Content
M01	One side 10 mm (Standard)
M02	One side 20 mm

● Metal type stopper weight
LCX-25, 32-M01 : 30 g
LCX-25, 32-M02 : 40 g

Shock absorber Type Stopper Single Item Model No. Notation Method

- Set of Shock absorber and stopper cap
- Used when changing from rubber cushion type, metal type stopper to Shock absorber type stopper



LCX - 25 - A01

❶ Bore size

Note: **For the stroke adjustment range of the Shock absorber type stopper, see P. 267.**

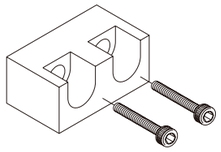
Shock absorber model No. used

Model	Shock absorber model No.
LCX-25	NCK-00-1.2
LCX-32	NCK-00-1.2

● Shock absorber type stopper weight
LCX-25, 32-A01 : 30 g

Stopper Block Single Item Model No. Notation

● Used when changing from standard to with rubber cushion type, with metal type stopper, with Shock absorber type stopper



LCX - 25 - SB1 T

❶ Bore size
⓭ Material
⓬ Stopper block

⓬ Stopper block

Code	Content
SB1	For 30, 50 strokes
SB2	For 10, 20, 40 strokes

⓭ Material

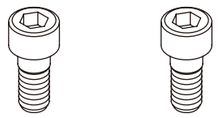
Code	Content
Blank	Steel
T	Steel (nitriding treatment)

● Stopper block weight
LCX-25,32-SB1(T) : 80 g
LCX-25,32-SB1(T) : 100 g

Locating bolt model No. notation

● Hexagon socket head cap screw with positioning mechanism
● Cross units and 2-stage units can be assembled without position adjustment.

LCX - 25 - J



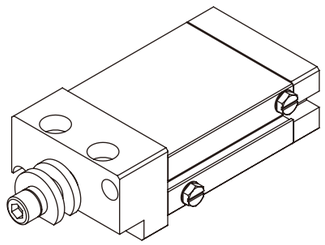
(1 set of 2 pieces)

● Locating bolt weight
* This is the weight of 1 set (2 pieces).
LCX-25-J : 10 g

Cylinder single item model No. notation

LCX - CYL - 25 - 40

❶ Bore size
❷ Stroke



Specifications

Item		LCX	
Bore size	mm	Equivalent to ø25	Equivalent to ø32
Actuation method		Double Acting Type	
Operating Fluid		Compressed Air	
Max. Working Pressure	MPa	0.7	
Min. Operating Pressure	MPa	0.15	
Proof Pressure	MPa	1.05	
Ambient Temperature	°C	-10 to 60 (However, no freezing) (*1)	
Port Size		M5	
Stroke tolerance	mm	+2.0 0 (*2)	
Operating Piston Speed	mm/s	20 to 500 (*3)	
Cushion		With Rubber Cushion	
Lubrication		Not Available	
Allowable Absorbed Energy	J	Refer to Table 3 on P. 301.	

*1: Please consult us if using in a constantly low temperature (5°C or less) or high temperature (40°C or more) environment.
*2: When used without a stopper, please note that there is a slight gap between the plate and the floating bush.
*3: When using a metal type stopper, use at 20 to 200 mm/s.

Stroke

Bore Size (mm)	Standard Stroke (mm)
Equivalent to ø25	10, 20, 30, 40, 50
Equivalent to ø32	10, 20, 30, 40, 50

Note: Strokes other than the above cannot be manufactured.

Theoretical Thrust Table

Refer to P. 300.

Cylinder Weight

● Basic type (Unit : g)

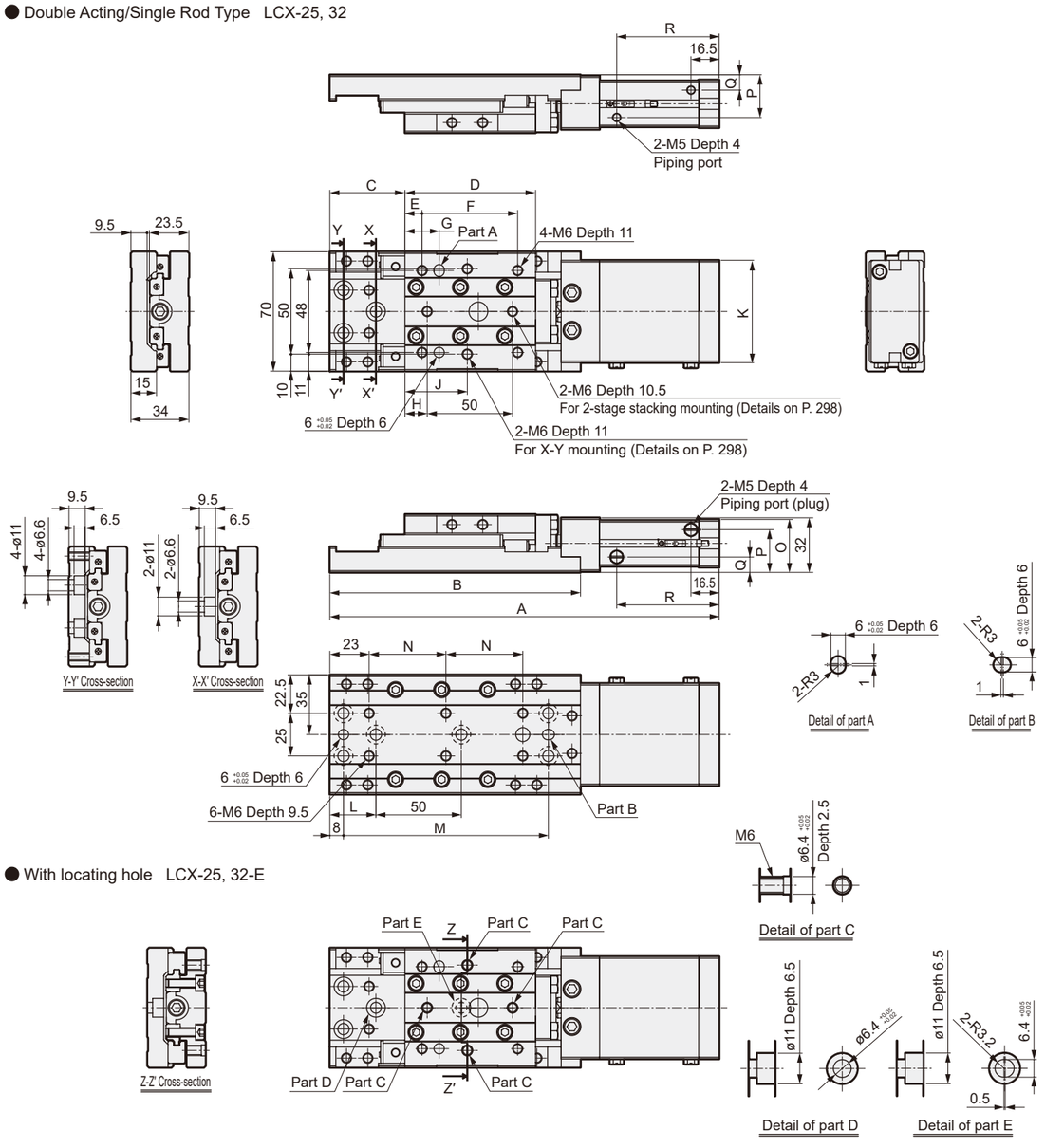
Bore size (mm)	Stroke (mm)				
	10	20	30	40	50
Equivalent to ø25	980	1.010	1,030	1.150	1,170
Equivalent to ø32	1,000	1,030	1.050	1,180	1,200

● Stopper part increase (Unit : g)

Bore size (mm)	Stopper code					
	S1 to S4	M1 to M4	A1 to A4	S5 / S6	M5 / M6	A5 / A6
Equivalent to ø25	170			240		
Equivalent to ø32						

Outline Dimension Drawing

● Double Acting/Single Rod Type LCX-25, 32



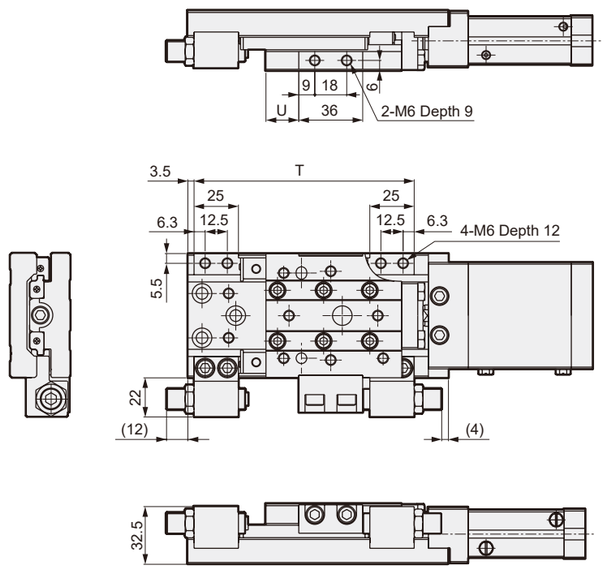
● With locating hole LCX-25, 32-E

Code		A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R
Bore size	Stroke																	
Equivalent to ø25	10	208	147	34	76.5	10	56	20	13	36.5	50	27	120	45	29.5	24.5	9.5	40
	20	218		39														50
	30	228		44														60
	40	258	167	49	86.5	15	64	30	23	46.5		41	140	55				70
	50	268		54														80
Equivalent to ø32	10	208	147	34	76.5	10	56	20	13	36.5	60	27	120	45	31	25	9	40
	20	218		39														50
	30	228		44														60
	40	258	167	49	86.5	15	64	30	23	46.5		41	140	55				70
	50	268		54														80

Note: For dimensions with each switch, refer to P. 296.

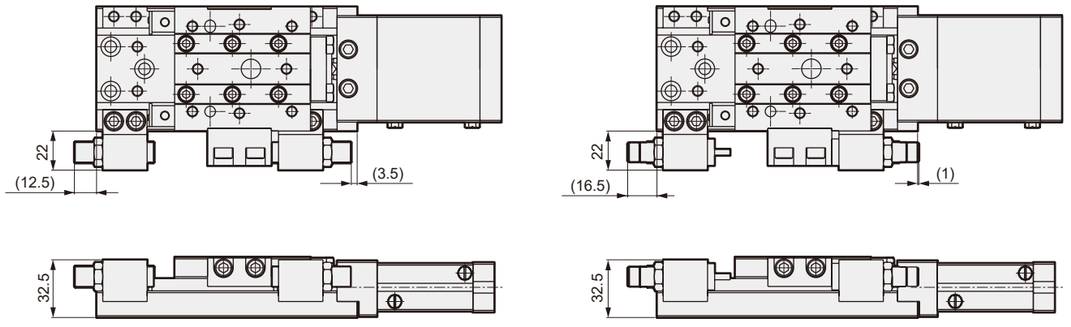
Outer Dimensions Diagram with Option

● Rubber cushion type stopper (S1 to S6)



● Metal type stopper (M1 to M6)

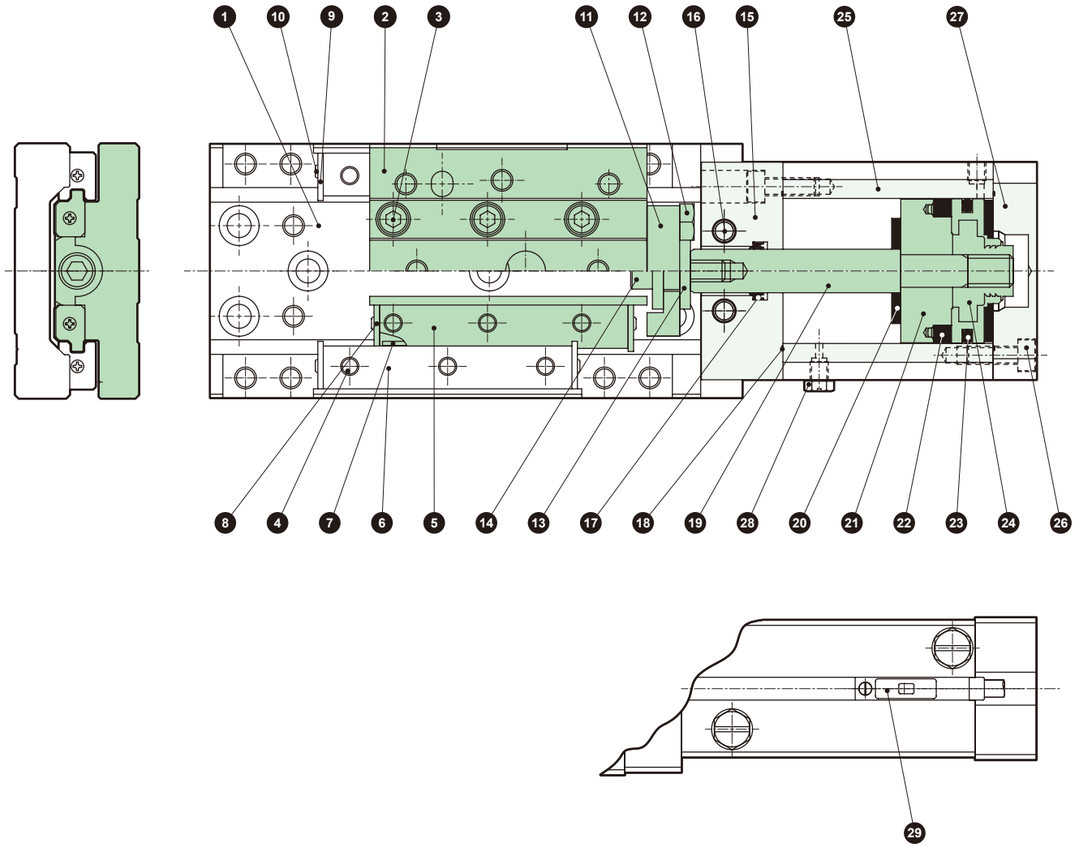
● Shock absorber type stopper (A1 to A6)



Note: If the stroke adjustment range is changed, the value of the dimension in ( ) will change by the amount of change in the stroke adjustment range.

Code		T	U	Stroke adjustment range (one side)		
Bore size	Stroke			Rubber cushion type stopper	Metal type stopper	Shock absorber type stopper
Equivalent to ø25	10	124	18.5	5	5	1
	20			10	10	7
	30					
	40	144	28.5			
	50					
Equivalent to ø32	10	124	18.5	5	5	1
	20			10	10	7
	30					
	40	144	28.5			
	50					

Internal Structure Diagram / Material



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Base	Aluminum Alloy	Alumite	16	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
2	Table	Aluminum Alloy	Alumite	17	Rod Packing	Nitrile Rubber	
3	Hexagon Socket Head Cap Screw	Stainless Steel		18	Gasket	Nitrile rubber	
4	Hexagon Socket Head Cap Screw	Stainless Steel		19	Piston Rod	Alloy Steel	Industrial Hard Chrome Plating
5	Guide rail (1)	Alloy Steel	Black chromium coating	20	Cushion Rubber	Urethane Rubber	
6	Guide rail (2)	Alloy Steel	Black chromium coating	21	Spacer	Aluminum Alloy	
7	Cage	Resin		22	Magnet	Plastic	
8	Stopper (1)	Stainless Steel		23	Piston Packing	Nitrile Rubber	
9	Stopper (2)	Stainless Steel		24	Piston	Aluminum alloy, Polyacetal	
10	Phillips pan head screw	Stainless Steel		25	Cylinder Body	Aluminum Alloy	Hard Anodized
11	Plate	Aluminum Alloy	Alumite	26	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
12	Hexagon bolt	Stainless Steel		27	Head Cover	Aluminum Alloy	Alumite
13	Floating bush	Stainless Steel		28	Plug	Copper Alloy	Nickel Plating
14	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	With Switch			
15	Rod Cover	Aluminum Alloy	Alumite	29	Switch		

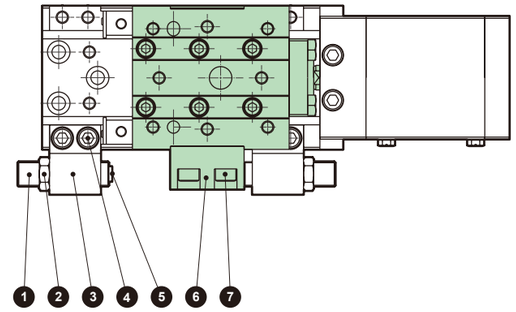
Consumable Parts List

Bore Size (mm)	Kit No.	Consumable Part No.
Equivalent to ø25	LCX-25K	17 18
Equivalent to ø32	LCX-32K	20 23

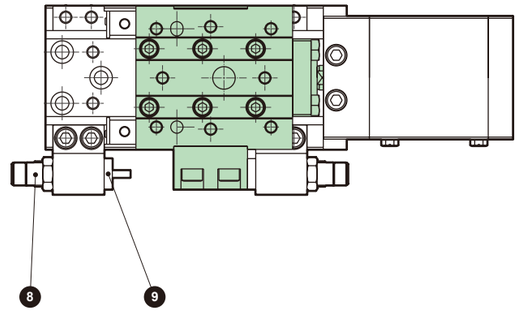
Internal structure diagram/materials (Option)

With stopper

● Rubber cushion type stopper, Metal type stopper



● Shock absorber type stopper



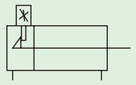
Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Stopper bolt	Alloy Steel	Nickel Plating	6	Stopper block (Stopper block code : Blank)	Steel	Nickel Plating
2	Hexagon Nut	Alloy Steel	Zinc Chromate		Stopper block (Stopper block code : T)	Steel	Nitriding Treatment
3	Stopper	Aluminum alloy	Alumite	7	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
4	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	8	Shock Absorber		
5	Cushion Rubber	Urethane Rubber	Rubber cushion type stopper only	9	Stop cap	Stainless Steel	

Low profile linear slide cylinder Double acting, Single rod, Drop prevention type

LCX-Q Series

●Bore size : Equivalent to ø25, ø32

Circuit Diagram Symbol



RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

LCX-Q – 25 – 40 ——— S5 E

Model No. ❶ ❷ ❺ ❻

With Switch
(Built-in magnet for switch)

LCX-Q – 25 – 40 – T2H – R – S1T E

Model No. ❶ Bore size ❷ Stroke ❸ Switch Model No. ❹ Number of Switches ❺ Stopper ❻ Option

❶ Bore Size (mm)

Code	Content
25	Equivalent to ø25
32	Equivalent to ø32

❷ Stroke (mm)

Code	Content
10	10
20	20
30	30
40	40
50	50

❸ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	1-Color Flexible Lead Wire Type	2-wire	-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: Switches other than the switch model Nos. are also available. (Custom order)
For details, refer to P. 753.

*** Lead wire length**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❹ Number of Switches

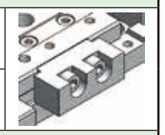
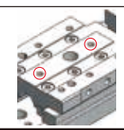
Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

❺ Stopper

Code	Content	
Blank	No stopper	
S Rubber cushion type stopper		*2
S1	Stopper position ①	Stopper mounting position
S2	Stopper position ②	
M Metal type stopper		*2, *4, *6
M1	Stopper position ①	Stopper mounting position
M2	Stopper position ②	
A Shock absorber type stopper		*3
A1	Stopper position ①	Stopper mounting position
A2	Stopper position ②	

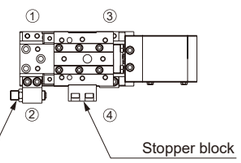
*1: For stopper position ① to ②, refer to the diagram below.
***2: When changing the stroke adjustment range, use the rubber cushion type stopper / metal type stopper single item on P. 272.**
***3: For the stroke adjustment range when using a Shock absorber type stopper, refer to the dimension table in the stopper external view on P. 267.**
*4 : When using a metal type stopper, stopper block material steel (nitriding treatment) (code : T) is recommended.
*5 : When using a combination of rubber cushion type stopper, metal type stopper, and Shock absorber type stopper, it will be a custom product.
*6 : In the case of a metal type stopper, use at 20 to 200 mm/s.
*7 : Since the lock mechanism works at the stroke end, ③④do not install it at the stopper position.

❻ Option

	Code	Content	
	Stopper block material		
	Blank	Steel	
*2	T	Steel (nitriding treatment)	
	Locating hole		
	Blank	Without locating hole	
*1	E	With locating hole	

*1: These are locating holes for assembling cross units and 2-stage units without position adjustment. Use together with locating bolts (P. 273).
*2: Selectable only when using stopper type.

● Stopper position (*7)



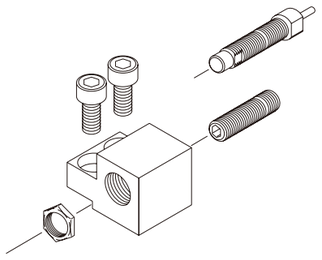
Switch Single Unit Model No. Notation Method

SW – T2H3

❸ Switch Model No.

Stopper Set Model No. Notation Method

Note: Since the lock mechanism works at the stroke end, do not install a stopper on the head side.
- Set of stopper part and rubber cushion type stopper, metal type stopper or Shock absorber type stopper
- Used when changing from standard to with rubber cushion type stopper, with metal type stopper, with Shock absorber type stopper



LCX - 25 - S - 2 - S02

1 Bore size
7 Stopper type
8 Stopper mounting position
9 Stroke adjustment amount

7 Stopper type

Code	Content
S	Rubber cushion type stopper
M	Metal type stopper
A	Shock absorber type stopper

8 Stopper mounting position

Code	Content
1	Stopper position ①
2	Stopper position ②

9 Stroke adjustment amount

Code	Content
Blank	Stroke adjustment range 10 mm
S02	Stroke adjustment range 20 mm

Note: In the case of Shock absorber type stopper "A", it cannot be selected.

- Stopper set weight (Unit : g)

Stopper type	S1, S2, M1, M2		A1, A2
Stroke adjustment amount / Bore size	Blank	S02	-
ø25 ø32	70	80	70

Rubber cushion type stopper single item model No. notation method

- Hexagon socket set screw with urethane
- Used when changing stroke adjustment range or setting intermediate stroke

LCX - 25 - S02

1 Bore size
10 Stroke Adjustment range

10 Stroke adjustment range

Code	Content
S01	One side 10 mm (Standard)
S02	One side 20 mm

- Rubber cushion type stopper weight
  LCX-25, 32-S01 : 30 g
  LCX-25, 32-S02 : 40 g

Metal type stopper single item model No. notation method

- Used when changing stroke adjustment range or setting intermediate stroke

LCX - 25 - M02

1 Bore size
11 Stroke Adjustment range

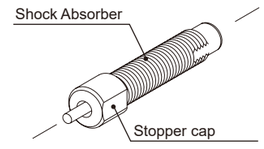
11 Stroke adjustment range

Code	Content
M01	One side 10 mm (Standard)
M02	One side 20 mm

- Metal type stopper weight
  LCX-25, 32-M01 : 30 g
  LCX-25, 32-M02 : 40 g

Shock absorber Type Stopper Single Item Model No. Notation Method

- Set of Shock absorber and stopper cap
- Used when changing from rubber cushion type, metal type stopper to Shock absorber type stopper



LCX - 25 - A01

1 Bore size

Note: For the stroke adjustment range of the Shock absorber type stopper, see P. 267.

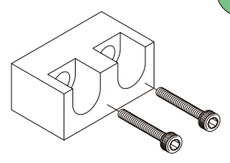
Shock absorber model No. used

Model	Shock absorber model No.
LCX-25	NCK-00-1.2
LCX-32	NCK-00-1.2

- Shock absorber type stopper weight
  LCX-25, 32-A01 : 30 g

Stopper Block Single Item Model No. Notation

- Used when changing from standard to with rubber cushion type, with metal type stopper, with Shock absorber type stopper



LCX - 25 - SB1 - T

1 Bore size
12 Stopper block
13 Material

12 Stopper block

Code	Content
SB1	For 30, 50 strokes
SB2	For 10, 20, 40 strokes

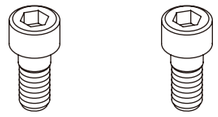
13 Material

Code	Content
Blank	Steel
T	Steel (nitriding treatment)

- Stopper block weight
  LCX-25,32-SB1(T) : 80 g
  LCX-25,32-SB1(T) : 100 g

Locating bolt model No. notation

- Hexagon socket head cap screw with positioning mechanism
- Cross units and 2-stage units can be assembled without position adjustment.

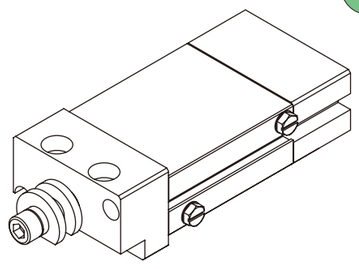


LCX - 25 - J

(1 set of 2 pieces)

- Locating bolt weight
  * This is the weight of 1 set (2 pieces).
  LCX-25-J : 10 g

Cylinder single item model No. notation



LCX-Q - CYL - 25 - 40

1 Bore size
2 Stroke

Specifications

Item		LCX-Q	
Bore size	mm	Equivalent to ø25	Equivalent to ø32
Actuation method		Double Acting Type	
Operating Fluid		Compressed Air	
Max. Working Pressure	MPa	0.7	
Min. Operating Pressure	MPa	0.15	
Proof Pressure	MPa	1.05	
Ambient Temperature	°C	-10 to 60 (However, no freezing) (*1)	
Port Size		M5	
Stroke tolerance	mm	$^{+2.0}_{0}$ (*2)	
Operating Piston Speed	mm/s	20 to 500 (*3)	
Cushion		With Rubber Cushion	
Fall prevention mechanism		Head Side	
Holding Force	N	130	230
Lubrication		Not Available	
Allowable absorption energy	J	Refer to Table 3 on P. 301.	

*1: Please consult us if using in a constantly low temperature (5°C or less) or high temperature (40°C or more) environment.
*2: When used without a stopper, please note that there is a slight gap between the plate and the floating bush.
*3: When using a metal type stopper, use at 20 to 200 mm/s.

Stroke

Bore Size (mm)	Standard Stroke (mm)
Equivalent to ø25	10, 20, 30, 40, 50
Equivalent to ø32	10, 20, 30, 40, 50

Note: Strokes other than the above cannot be manufactured.

Cylinder Weight

● Drop prevention type (Unit : g)

Bore size (mm)	Stroke type (mm)				
	10	20	30	40	50
Equivalent to ø25	1.060	1,090	1,110	1.230	1.250
Equivalent to ø32	1.130	1.160	1,180	1.310	1.330

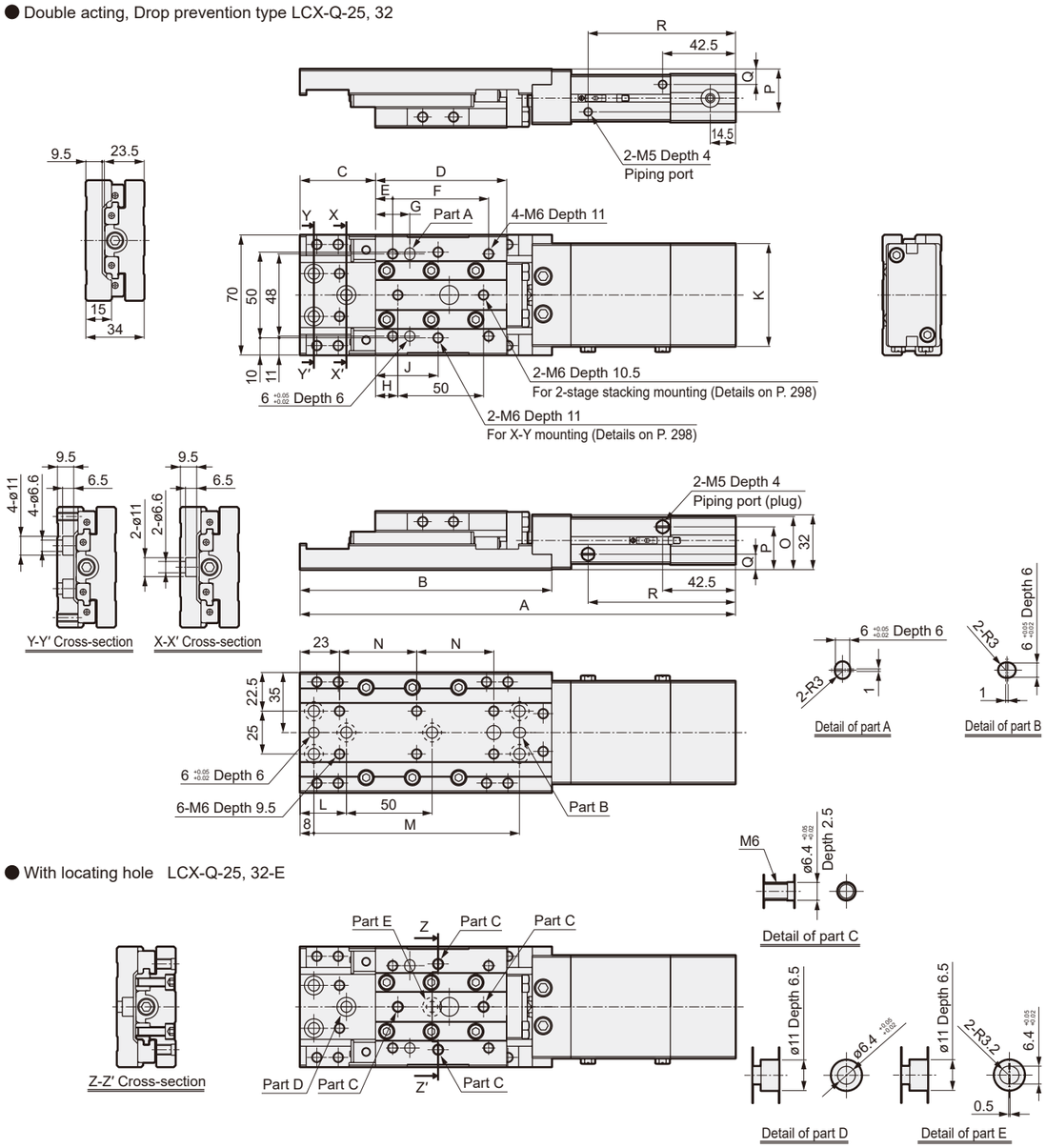
● Stopper part increase (Unit : g)

Bore size (mm)	Stopper code		
	S1 / S2	M1 / M2	A1 / A2
Equivalent to ø25	170		
Equivalent to ø32			

MEMO

Outline Dimension Drawing

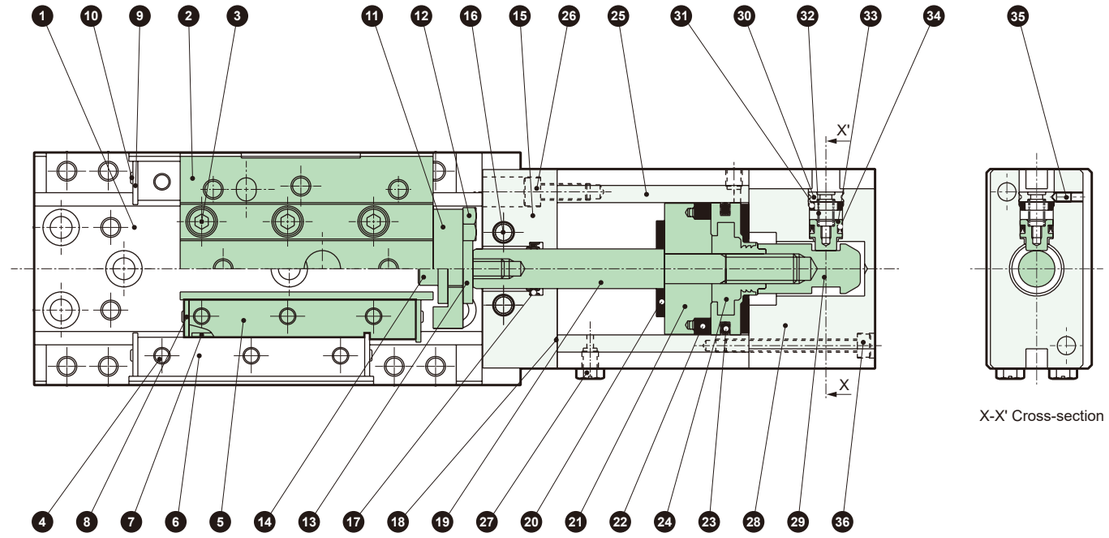
● Double acting, Drop prevention type LCX-Q-25, 32



Code		A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R
Bore size	Stroke																	
Equivalent to ø25	10	234	147	34	76.5	10	56	20	13	36.5	50	27	120	45	29.5	24.5	9.5	66
	20	244		39														76
	30	254		44														86
	40	284	167	49	86.5	15	64	30	23	46.5		41	140	55				96
	50	294		54														106
Equivalent to ø32	10	234	147	34	76.5	10	56	20	13	36.5	60	27	120	45	31	25	9	66
	20	244		39														76
	30	254		44														86
	40	284	167	49	86.5	15	64	30	23	46.5		41	140	55				96
	50	294		54														106

Note: For dimensions with each switch, refer to P. 296.

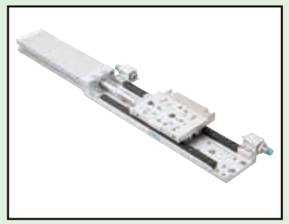
Internal Structure Diagram/Material



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Base	Aluminum Alloy	Alumite	19	Piston Rod	Alloy Steel	Industrial Hard Chrome Plating
2	Table	Aluminum Alloy	Alumite	20	Cushion Rubber	Urethane Rubber	
3	Hexagon Socket Head Cap Screw	Stainless Steel		21	Spacer	Aluminum Alloy	
4	Hexagon Socket Head Cap Screw	Stainless Steel		22	Magnet	Plastic	
5	Guide rail (1)	Alloy Steel	Black chromium coating	23	Piston Packing	Nitrile Rubber	
6	Guide rail (2)	Alloy Steel	Black chromium coating	24	Piston	Aluminum alloy, Polyacetal	
7	Cage	Resin		25	Cylinder Body	Aluminum Alloy	Hard Anodized
8	Stopper (1)	Stainless Steel		26	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
9	Stopper (2)	Stainless Steel		27	Plug	Copper Alloy	Nickel Plating
10	Phillips pan head screw	Stainless Steel		28	Head Cover	Aluminum Alloy	Alumite
11	Plate	Aluminum Alloy	Alumite	29	Sleeve	Steel	Nitriding Treatment
12	Hexagon bolt	Stainless Steel		30	Stopper Cover	Stainless Steel	
13	Floating bush	Stainless Steel		31	Cushion Rubber	Urethane Rubber	
14	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	32	Coil Spring	Steel	
15	Rod Cover	Aluminum Alloy	Alumite	33	Stopper Piston	Steel	Nitriding Treatment
16	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	34	Stopper packing	Nitrile Rubber	
17	Rod Packing	Nitrile Rubber		35	Hexagon socket head set screw	Alloy Steel	Black Oxide
18	Gasket	Nitrile Rubber		36	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate

Consumable Parts List

Bore size (mm)	Kit No.	Consumable Part No.	
		Drop prevention type consumable parts	Basic consumable parts
Equivalent to ø25	LCX-Q-25K	31 34	17 18 20 23
Equivalent to ø32	LCX-Q-32K		



Low profile linear slide cylinder Double acting, Single rod type, Long stroke

LCX-□L Series

●Bore size : Equivalent to ø25, ø32

Circuit Diagram Symbol

RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

LCX - 25 L - 100 ——— S5

Model No. ❶ ❷ ❺

With Switch
(Built-in magnet for switch)

LCX - 25 L - 100 - T2H - R - A1 T

Model No. ❷ Stroke ❹ Number of Switches ❻ Option

❶ Bore size ❸ Switch Model No. ❺ Stopper

❶ Bore Size (mm)

Code	Content
25	Equivalent to ø25
32	Equivalent to ø32

❷ Stroke (mm)

Code	Content
75	75
100	100
125	125
150	150

❸ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Water Resistance Improved	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	1-Color Flexible Lead Wire Type		-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder.
*4 : Switches other than the switch model Nos. are also available. (Custom order) For details, refer to P. 753.

*** Lead wire length, connector specification**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*5 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*5 : Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❹ Number of Switches

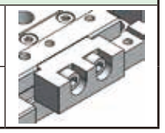
Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

❺ Stopper

Code	Content	
Blank	No stopper	
S Rubber cushion type stopper		*2
S1	Stopper position ① (④ Changeable to)	Stopper mounting position
S2	Stopper position ② (③ Changeable to)	
S3	Stopper position ③ (② Changeable to)	
S4	Stopper position ④ (① Changeable to)	
S5	Stopper position ①, ③	
S6	Stopper position ②, ④	
M Metal type stopper		*2, *4, *6
M1	Stopper position ① (④ Changeable to)	Stopper mounting position
M2	Stopper position ② (③ Changeable to)	
M3	Stopper position ③ (② Changeable to)	
M4	Stopper position ④ (① Changeable to)	
M5	Stopper position ①, ③	
M6	Stopper position ②, ④	
A Shock absorber type stopper		*3
A1	Stopper position ① (④ Changeable to)	Stopper mounting position
A2	Stopper position ② (③ Changeable to)	
A3	Stopper position ③ (② Changeable to)	
A4	Stopper position ④ (① Changeable to)	
A5	Stopper position ①, ③	
A6	Stopper position ②, ④	

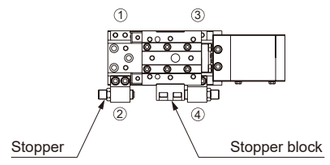
*1: For stopper position ① to ④, refer to the diagram below.
***2: When changing the stroke adjustment range, use the rubber cushion type stopper / metal type stopper single item on P. 281.**
***3: For the stroke adjustment range when using a Shock absorber type stopper, refer to the dimension table in the stopper external view on P. 285.**
*4 : When using a metal type stopper, stopper block material steel (nitriding treatment) (code : T) is recommended.
*5 : When using a combination of rubber cushion type stopper, metal type stopper, and Shock absorber type stopper, it will be a custom product.
*6 : In the case of a metal type stopper, use at 20 to 200 mm/s.
*7 : For the Long Stroke (LCX-□L), the positioning hole option (symbol : E) is standardized.

❻ Option

Code	Content	
Stopper block material		
Blank	Steel	
*1 T	Steel (nitriding treatment)	

*1: Selectable only when using stopper type.

● Stopper position



Clean Specification (Catalog No. CB-033SA)

● Dust prevention structure usable in cleanrooms

LCX-□L - - - - - P7□

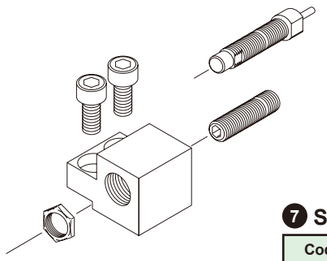
Switch Single Unit Model No. Notation Method

SW - T2H3

❸ Switch Model No.

Stopper Set Model No. Notation Method

- Set of stopper part and rubber cushion type stopper, metal type stopper or Shock absorber type stopper
- Used when changing from standard to with rubber cushion type stopper, with metal type stopper, with Shock absorber type stopper



LCX - 25 - S 2 - S02

❶ Bore size
❽ Stopper mounting position
❼ Stopper type
❾ Stroke adjustment amount

❼ Stopper type

Code	Content
S	Rubber cushion type stopper
M	Metal type stopper
A	Shock absorber type stopper

❽ Stopper mounting position

Code	Content
1	Stopper position for ① or ④
2	Stopper position for ② or ③

❾ Stroke adjustment amount

Code	Content
Blank	Stroke adjustment range 10 mm
S02	Stroke adjustment range 20 mm

*❼ In the case of Shock absorber type stopper "A", it cannot be selected.

● Stopper set weight (Unit : g)

Stopper type	S1, S2, M1, M2		A1, A2
Stroke adjustment amount / Bore size	Blank	S02	-
Equivalent to ø25 Equivalent to ø32	70	80	70

Rubber cushion type stopper single item model No. notation method

- Hexagon socket set screw with urethane
- Used when changing stroke adjustment range or setting intermediate stroke

LCX - 25 - S02

❶ Bore size
❿ Stroke Adjustment range

❿ Stroke adjustment range

Code	Content
S01	One side 10 mm (Standard)
S02	One side 20 mm

● Rubber cushion type stopper weight
LCX-25, 32-S01 : 30 g
LCX-25, 32-S02 : 40 g

Metal type stopper single item model No. notation method

- Used when changing stroke adjustment range or setting intermediate stroke

LCX - 25 - M02

❶ Bore size
⓫ Stroke Adjustment range

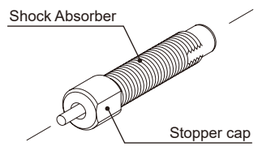
⓫ Stroke adjustment range

Code	Content
M01	One side 10 mm (Standard)
M02	One side 20 mm

● Metal type stopper weight
LCX-25, 32-M01 : 30 g
LCX-25, 32-M02 : 40 g

Shock absorber Type Stopper Single Item Model No. Notation Method

- Set of Shock absorber and stopper cap
- Used when changing from rubber cushion type, metal type stopper to Shock absorber type stopper



LCX - 25 - A01

❶ Bore size

Note: For the stroke adjustment range of the Shock absorber type stopper, see P. 285.

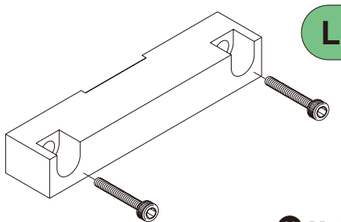
Shock absorber model No. used

Model	Shock absorber model No.
LCX-25	NCK-00-1.2
LCX-32	NCK-00-1.2

● Shock absorber type stopper weight
LCX-25, 32-A01 : 30 g

Stopper Block Single Item Model No. Notation

- Used when changing from standard to with rubber cushion type, with metal type stopper, with Shock absorber type stopper



LCX - 25 L - SB3 T

❶ Bore size
⓬ Material

⓬ Material

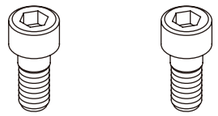
Code	Content
Blank	Steel
T	Steel (nitriding treatment)

● Stopper block weight
LCX-25L,32L-SB3(T) : 250 g

Locating bolt model No. notation

- Hexagon socket head cap screw with positioning mechanism
- Cross units and 2-stage units can be assembled without position adjustment.

LCX - 25 - J



(1 set of 2 pieces)

- Locating bolt weight

* This is the weight of 1 set (2 pieces).

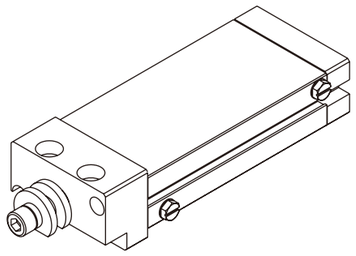
LCX-25-J : 10 g

Cylinder single item model No. notation

LCX - CYL - 25 L - 100

① Bore size

② Stroke



Specifications

Item		LCX	
Bore size	mm	Equivalent to ø25	Equivalent to ø32
Actuation method		Double Acting Type	
Operating Fluid		Compressed Air	
Max. Working Pressure	MPa	0.7	
Min. Operating Pressure	MPa	0.15	
Proof Pressure	MPa	1.05	
Ambient Temperature	°C	-10 to 60 (However, no freezing) (*1)	
Port Size		M5	
Stroke tolerance	mm	+2.0 0 (*2)	
Operating Piston Speed	mm/s	20 to 500 (*3)	
Cushion		With Rubber Cushion	
Lubrication		Not Available	
Allowable Absorbed Energy	J	Refer to Table 3 on P. 301.	

*1: Please consult us if using in a constantly low temperature (5°C or less) or high temperature (40°C or more) environment.
*2: When used without a stopper, please note that there is a slight gap between the plate and the floating bush.
*3: When using a metal type stopper, use at 20 to 200 mm/s.

Stroke

Bore Size (mm)	Standard Stroke (mm)
Equivalent to ø25	75, 100, 125, 150
Equivalent to ø32	75, 100, 125, 150

Note: Strokes other than the above cannot be manufactured.

Theoretical Thrust Table

Refer to P. 300.

Cylinder Weight

● Basic type (Unit : g)

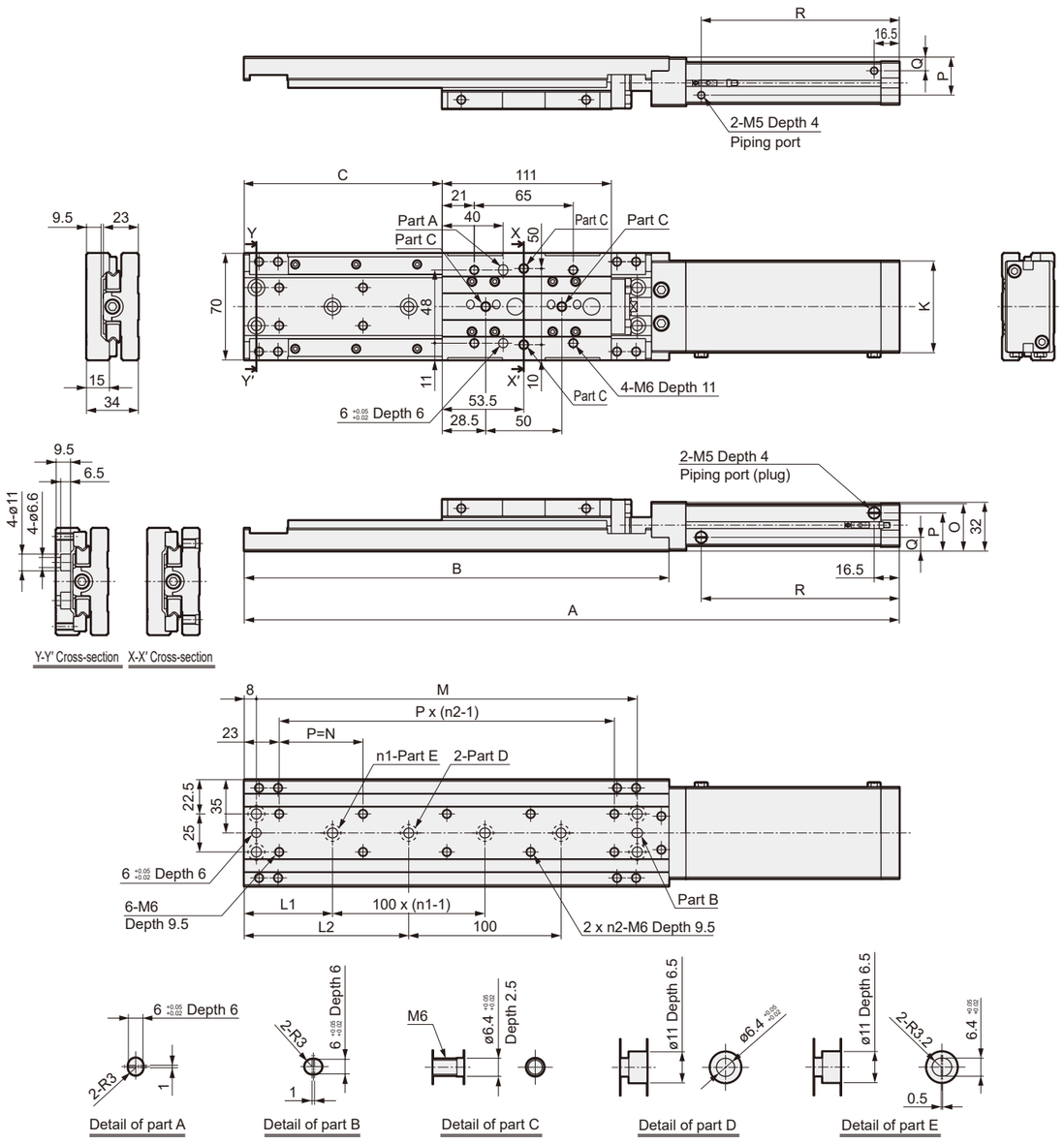
Bore size (mm)	Stroke (mm)			
	75	100	125	150
Equivalent to ø25	1.500	1,640	1.790	1.930
Equivalent to ø32	1,600	1.750	1.900	2.050

● Stopper part increase (Unit : g)

Bore size (mm)	Stopper code					
	S1 to S4	M1 to M4	A1 to A4	S5 / S6	M5 / M6	A5 / A6
Equivalent to ø25	320			400		
Equivalent to ø32						

Outline Dimension Drawing

● Double acting, Single rod type, Long stroke LCX-□L

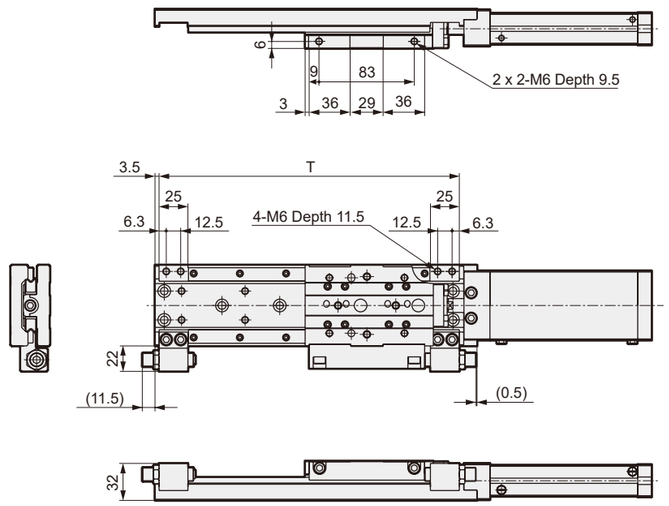


Code		A	B	C	K	L1	L2	n1	n2	M	N	O	P	Q	R
Bore size	Stroke														
Equivalent to ø25	75	380	254	105	50	45.5	95.5	2	5	225	49	29.5	24.5	9.5	105
	100	430	279	130		58	108	2	5	250	55				130
	125	480	304	155		45.5	95.5	3	6	275	49				155
	150	530	329	180		58	108	3	6	300	54				180
Equivalent to ø32	75	380	254	105	60	45.5	95.5	2	5	225	49	31	25	9	105
	100	430	279	130		58	108	2	5	250	55				130
	125	480	304	155		45.5	95.5	3	6	275	49				155
	150	530	329	180		58	108	3	6	300	54				180

Note: For dimensions with each switch, refer to P. 296.

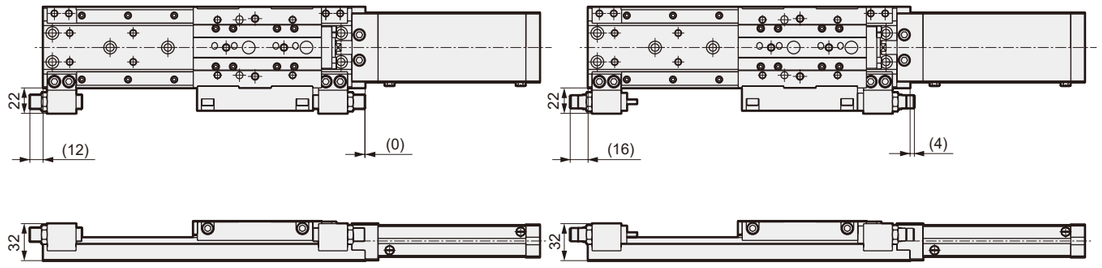
Outer Dimensions Diagram with Option

● Rubber cushion type stopper (S1 to S6)



● Metal type stopper (M1 to M6)

● Shock absorber type stopper (A1 to A6)

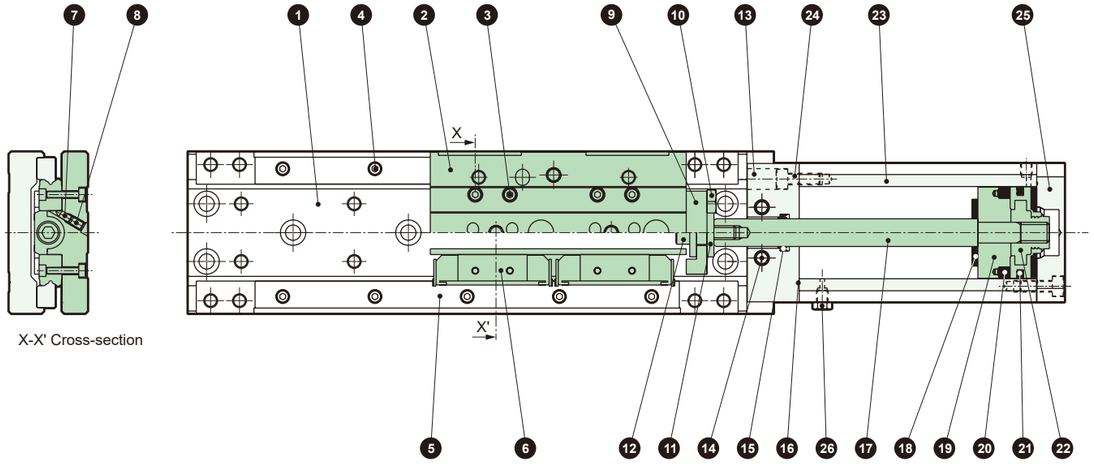


Note: If the stroke adjustment range is changed, the value of the dimension in ( ) will change by the amount of change in the stroke adjustment range.

Code		T	Stroke adjustment range (one side)		
Bore size	Stroke		Rubber cushion type stopper	Metal type stopper	Shock absorber type stopper
Equivalent to ø25	75	235	10	10	7
	100	260			
	125	285			
	150	310			
Equivalent to ø32	75	235			
	100	260			
	125	285			
	150	310			

Internal Structure Diagram / Material

● LCX



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Base	Aluminum Alloy	Alumite	14	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
2	Table	Aluminum Alloy	Alumite	15	Rod Packing	Nitrile Rubber	
3	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	16	Gasket	Nitrile rubber	
4	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	17	Piston Rod	Alloy Steel	Industrial Hard Chrome Plating
5	Guide rail	Alloy Steel	Black chromium coating	18	Cushion Rubber	Urethane Rubber	
6	Guide block	Alloy steel, Resin	Black chromium coating (Alloy steel part)	19	Spacer	Aluminum Alloy	
7	Adjustment pin	Stainless Steel		20	Magnet	Plastic	
8	Hexagon socket head set screw	Alloy Steel	Zinc Chromate	21	Piston Packing	Nitrile Rubber	
9	Plate	Aluminum Alloy	Alumite	22	Piston	Aluminum alloy, Polyacetal	
10	Hexagon bolt	Stainless Steel		23	Cylinder Body	Aluminum Alloy	Hard Anodized
11	Floating bush	Stainless Steel		24	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
12	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	25	Head Cover	Aluminum Alloy	Alumite
13	Rod Cover	Aluminum Alloy	Alumite	26	Plug	Copper Alloy	Nickel Plating

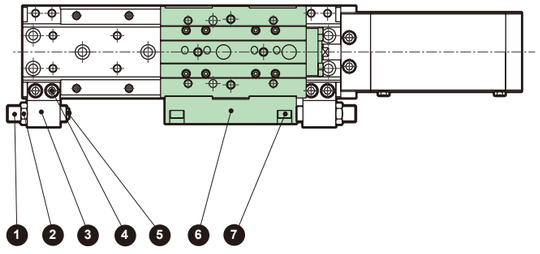
Consumable Parts List

Bore Size (mm)	Kit No.	Basic consumable parts
ø25	LCX-25K	⑮ ⑯
ø32	LCX-32K	⑱ ㉑

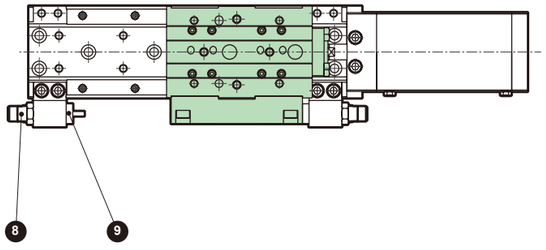
Internal structure diagram / materials (Option)

With stopper

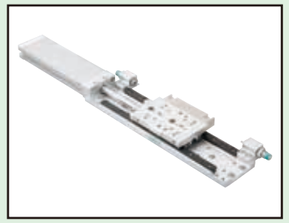
● Rubber cushion type stopper, Metal type stopper



● Shock absorber type stopper



Part No.	Part Name	Material	Remarks
1	Stopper bolt	Alloy Steel	Nickel Plating
2	Hexagon Nut	Alloy Steel	Zinc Chromate
3	Stopper	Aluminum alloy	Alumite
4	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
5	Cushion Rubber	Urethane Rubber	Rubber cushion type stopper only
6	Stopper block (Stopper block code : Blank)	Steel	Nickel Plating
	Stopper block (Stopper block code : T)	Steel	Nitriding Treatment
7	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
8	Shock Absorber		
9	Stop cap	Stainless Steel	

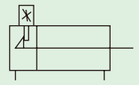


Low profile linear slide cylinder Double acting, Single rod, Drop prevention, Long stroke

LCX-Q-□L Series

●Bore size : Equivalent to ø25, ø32

Circuit Diagram Symbol



RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

LCX-Q - 25 L - 100 ——— S5

Model No. ❶ ❷ ❺

With Switch
(Built-in magnet for switch)

LCX-Q - 25 L - 100 - T2H - R - S1 T

Model No. ❷ Stroke ❹ Number of Switches ❻ Option
❶ Bore size ❸ Switch Model No. ❺ Stopper

❶ Bore Size (mm)

Code	Content
25	Equivalent to ø25
32	Equivalent to ø32

❷ Stroke (mm)

Code	Content
75	75
100	100
125	125
150	150

❸ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	1-Color Flexible Lead Wire Type	2-wire	-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: Switches other than the switch model Nos. are also available. (Custom order)
For details, refer to P. 753.

*** Lead wire length**

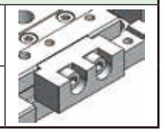
Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❹ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

❻ Option

Code	Content	
Stopper block material		
Blank	Steel	
*1 T	Steel (nitriding treatment)	

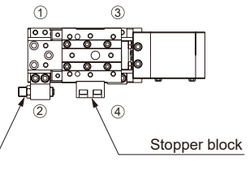
*1: Selectable only when using stopper type.

❺ Stopper

Code	Content	
Blank	No stopper	
S Rubber cushion type stopper		*2
S1	Stopper position ①	Stopper mounting position
S2	Stopper position ②	
M Metal type stopper		*2, *4, *6
M1	Stopper position ①	Stopper mounting position
M2	Stopper position ②	
A Shock absorber type stopper		*3
A1	Stopper position ①	Stopper mounting position
A2	Stopper position ②	

*1: For stopper position ① to ②, refer to the diagram below.
***2: When changing the stroke adjustment range, use the rubber cushion type stopper / metal type stopper single item on P. 290.**
***3: For the stroke adjustment range when using a Shock absorber type stopper, refer to the dimension table in the stopper external view on P. 285.**
*4 : When using a metal type stopper, stopper block material steel (nitriding treatment) (code : T) is recommended.
*5 : When using a combination of rubber cushion type stopper, metal type stopper, and Shock absorber type stopper, it will be a custom product.
*6 : In the case of a metal type stopper, use at 20 to 200 mm/s.
*7 : Since the lock mechanism works at the stroke end, ③④do not install it at the stopper position.
*8 : Long stroke has standardized the locating hole option.

● Stopper position (*7)



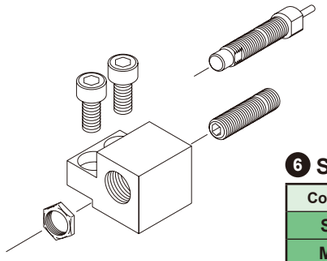
Switch Single Unit Model No. Notation Method

SW - T2H3

❸ Switch Model No.

Stopper Set Model No. Notation Method

Note: Since the lock mechanism works at the stroke end, do not install a stopper on the head side.
- Set of stopper part and rubber cushion type stopper, metal type stopper or Shock absorber type stopper
- Used when changing from standard to with rubber cushion type stopper, with metal type stopper, with Shock absorber type stopper



LCX - 25 - S - 2 - S02

1 Bore size
7 Stopper mounting position
6 Stopper type
8 Stroke adjustment amount

6 Stopper type

Code	Content
S	Rubber cushion type stopper
M	Metal type stopper
A	Shock absorber type stopper

7 Stopper mounting position

Code	Content
1	Stopper position ①
2	Stopper position ②

8 Stroke adjustment amount

Code	Content
Blank	Stroke adjustment range 10 mm
S02	Stroke adjustment range 20 mm

*6 In the case of Shock absorber type stopper "A", it cannot be selected.

● Stopper set weight (Unit : g)

Stopper type	S1, S2, M1, M2		A1, A2
Stroke adjustment amount / Bore size	Blank	S02	-
Equivalent to ø25 Equivalent to ø32	70	80	70

Rubber cushion type stopper single item model No. notation method

- Hexagon socket set screw with urethane
- Used when changing stroke adjustment range or setting intermediate stroke

LCX - 25 - S02

1 Bore size
9 Stroke Adjustment range

9 Stroke adjustment range

Code	Content
S01	One side 10 mm (Standard)
S02	One side 20 mm

● Rubber cushion type stopper weight
LCX-25, 32-S01 : 30 g
LCX-25, 32-S02 : 40 g

Metal type stopper single item model No. notation method

- Used when changing stroke adjustment range or setting intermediate stroke

LCX - 25 - M02

1 Bore size
10 Stroke Adjustment range

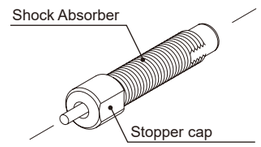
10 Stroke adjustment range

Code	Content
M01	One side 10 mm (Standard)
M02	One side 20 mm

● Metal type stopper weight
LCX-25, 32-M01 : 30 g
LCX-25, 32-M02 : 40 g

Shock absorber Type Stopper Single Item Model No. Notation Method

- Set of Shock absorber and stopper cap
- Used when changing from rubber cushion type, metal type stopper to Shock absorber type stopper



LCX - 25 - A01

1 Bore size

Note: For the stroke adjustment range of the Shock absorber type stopper, see P. 285.

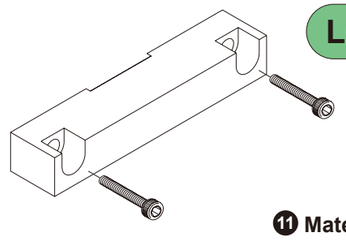
Shock absorber model No. used

Model	Shock absorber model No.
LCX-25	NCK-00-1.2
LCX-32	NCK-00-1.2

● Shock absorber type stopper weight
LCX-25, 32-A01 : 30 g

Stopper Block Single Item Model No. Notation

- Used when changing from standard to with rubber cushion type, with metal type stopper, with Shock absorber type stopper



LCX - 25 - L - SB3 - T

1 Bore size
11 Material

11 Material

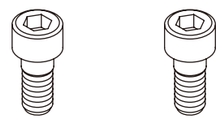
Code	Content
Blank	Stopper block material Steel
T	Stopper block material Steel (nitriding treatment)

● Stopper block weight
LCX-25L,32L-SB3(T) : 250 g

Locating bolt model No. notation

- Hexagon socket head cap screw with positioning mechanism
- Cross units and 2-stage units can be assembled without position adjustment.

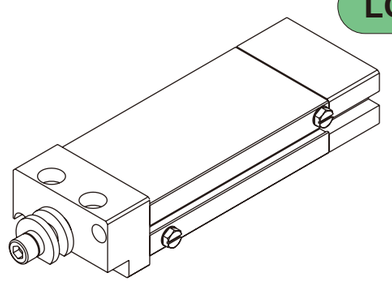
LCX - 25 - J



(1 set of 2 pieces)

● Locating bolt weight
* This is the weight of 1 set (2 pieces).
LCX-25-J : 10 g

Cylinder single item model No. notation



LCX-Q - CYL - 25 - L - 100

1 Bore size
2 Stroke

Specifications

Item		LCX-Q-□L	
Bore size	mm	Equivalent to ø25	Equivalent to ø32
Actuation method		Double Acting Type	
Operating Fluid		Compressed Air	
Max. Working Pressure	MPa	0.7	
Min. Operating Pressure	MPa	0.15	
Proof Pressure	MPa	1.05	
Ambient Temperature	°C	-10 to 60 (However, no freezing) (*1)	
Port Size		M5	
Stroke tolerance	mm	$^{+2.0}_{0}$ (*2)	
Operating Piston Speed	mm/s	20 to 500 (*3)	
Cushion		With Rubber Cushion	
Holding Force	N	130	230
Fall prevention mechanism		Head Side	
Lubrication		Not Available	
Allowable absorption energy	J	Refer to Table 3 on P. 301.	

*1: Please consult us if using in a constantly low temperature (5°C or less) or high temperature (40°C or more) environment.
*2: When used without a stopper, please note that there is a slight gap between the plate and the floating bush.
*3: When using a metal type stopper, use at 20 to 200 mm/s.

Stroke

Bore Size (mm)	Standard Stroke (mm)
Equivalent to ø25	75, 100, 125, 150
Equivalent to ø32	75, 100, 125, 150

Note: Strokes other than the above cannot be manufactured.

Theoretical Thrust Table

Refer to P. 300.

Cylinder Weight

● Drop prevention type (Unit : g)

Bore size (mm)	Stroke type (mm)			
	75	100	125	150
Equivalent to ø25	1.580	1.720	1.870	2.010
Equivalent to ø32	1.730	1.880	2,030	2.180

● Stopper part increase (Unit : g)

Bore size (mm)	Stopper code		
	S1, S2	M1 / M2	A1, A2
Equivalent to ø25	320		
Equivalent to ø32			

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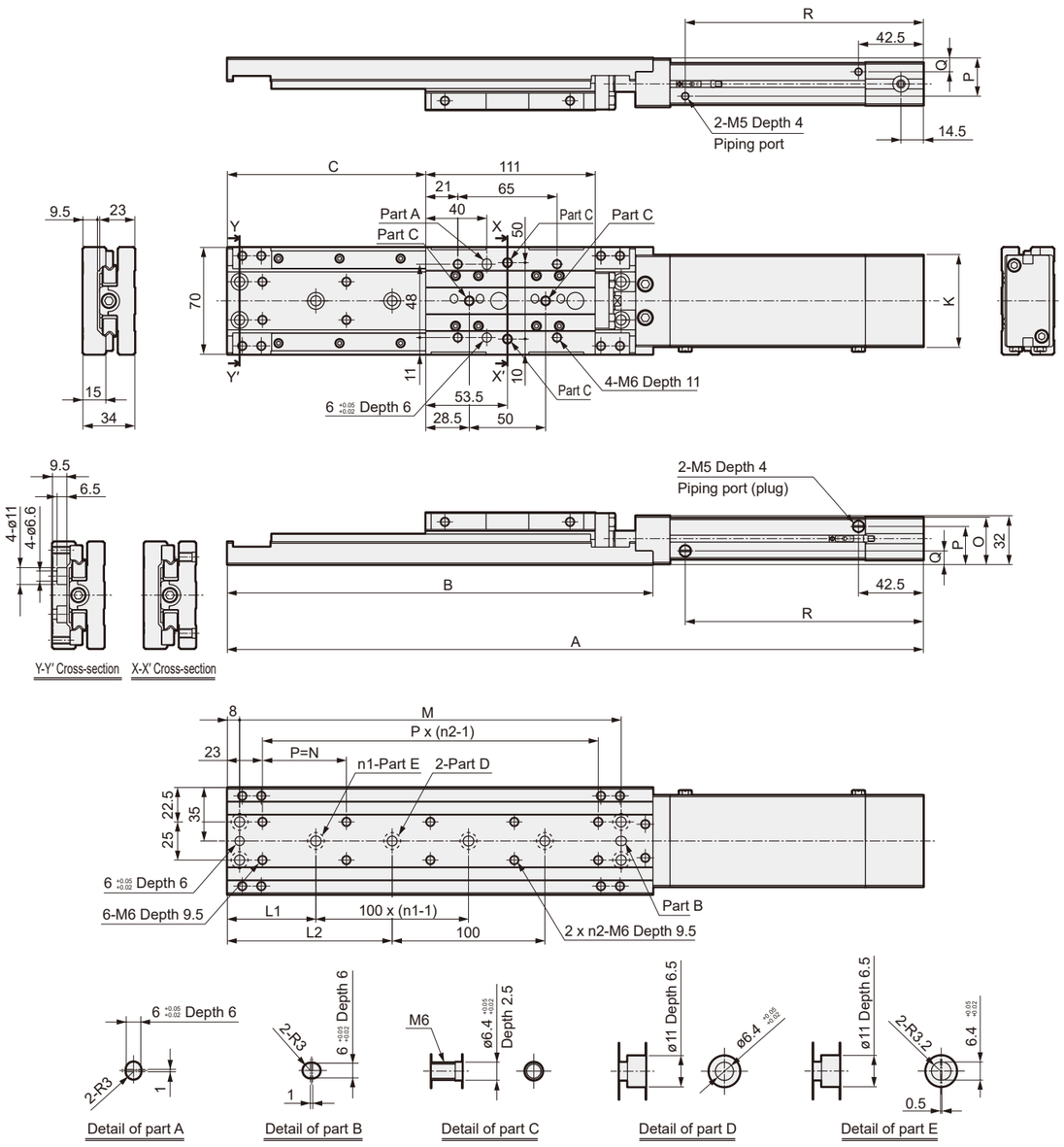
LCG
LCW
LCX
MSDG
Cylinder Switch
Ending

Outline Dimension Drawing

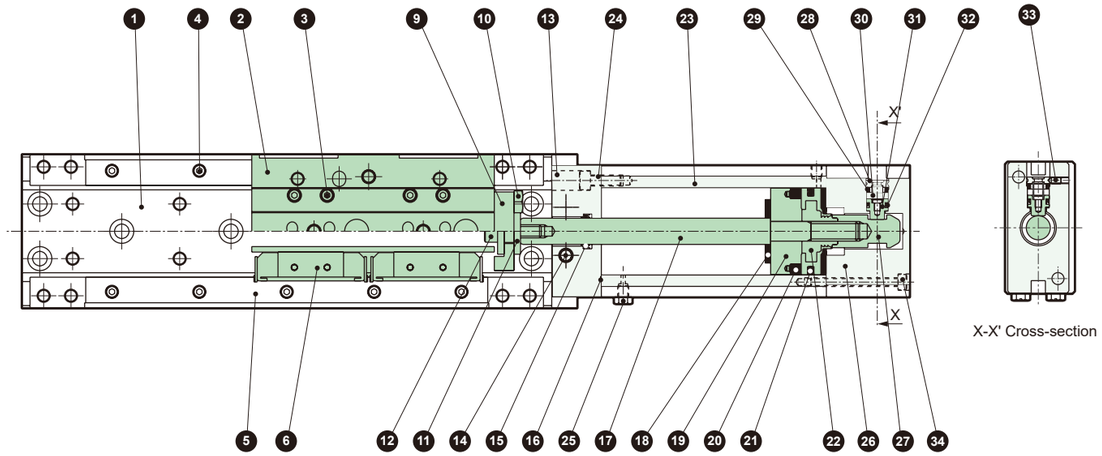
● Double acting, Drop prevention type, Long stroke LCX-Q-□L



Code		A	B	C	K	L1	L2	n1	n2	M	N	O	P	Q	R
Bore size	Stroke														
Equivalent to ø25	75	406	254	105	50	45.5	95.5	2	5	225	49	29.5	24.5	9.5	131
	100	456	279	130		58	108	2	5	250	55				156
	125	506	304	155		45.5	95.5	3	6	275	49				181
	150	556	329	180		58	108	3	6	300	54				206
Equivalent to ø32	75	406	254	105	60	45.5	95.5	2	5	225	49	31	25	9	131
	100	456	279	130		58	108	2	5	250	55				156
	125	506	304	155		45.5	95.5	3	6	275	49				181
	150	556	329	180		58	108	3	6	300	54				206

Internal Structure Diagram / Material

● LCX-Q-□L



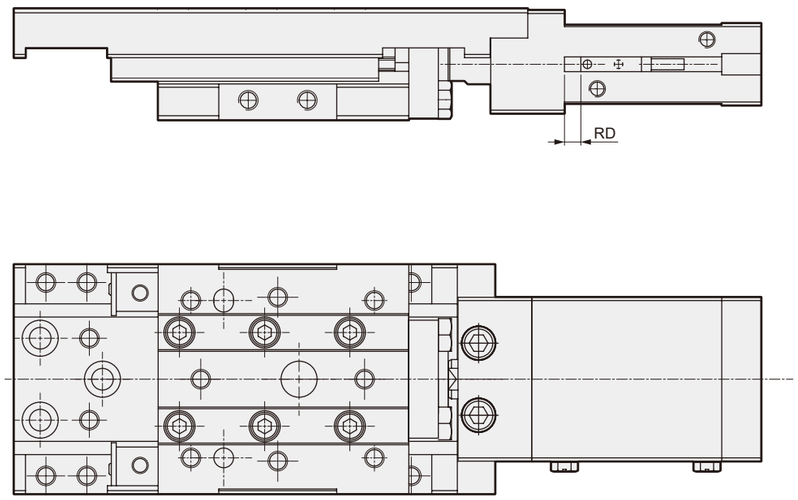
Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Base	Aluminum Alloy	Alumite	18	Cushion Rubber	Urethane Rubber	
2	Table	Aluminum Alloy	Alumite	19	Spacer	Aluminum Alloy	
3	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	20	Magnet	Plastic	
4	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	21	Piston Packing	Nitrile Rubber	
5	Guide rail	Alloy Steel	Black chromium coating	22	Piston	Aluminum alloy, Polyacetal	
6	Guide block	Alloy steel, Resin	Black chromium coating (Alloy steel part)	23	Cylinder Body	Aluminum Alloy	Hard Anodized
7	Adjustment pin	Stainless Steel		24	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
8	Hexagon socket head set screw	Alloy Steel	Zinc Chromate	25	Plug	Copper Alloy	Nickel Plating
9	Plate	Aluminum Alloy	Alumite	26	Head Cover	Aluminum Alloy	Alumite
10	Hexagon bolt	Stainless Steel		27	Sleeve	Steel	Nitriding Treatment
11	Floating bush	Stainless Steel		28	Stopper Cover	Stainless Steel	
12	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	29	Cushion Rubber	Urethane Rubber	
13	Rod Cover	Aluminum Alloy	Alumite	30	Coil Spring	Steel	
14	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate	31	Stopper Piston	Steel	Nitriding Treatment
15	Rod Packing	Nitrile Rubber		32	Stopper packing	Nitrile Rubber	
16	Gasket	Nitrile Rubber		33	Hexagon socket head set screw	Alloy Steel	Black Oxide
17	Piston Rod	Alloy Steel	Industrial Hard Chrome Plating	34	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate

Consumable Parts List

Bore size (mm)	Kit No.	Consumable Part No.	
		Drop prevention consumable parts	Basic consumable parts
Equivalent to ø25	LCX-Q-25K	❷❾	⑮⑯ ⑱㉑
Equivalent to ø32	LCX-Q-32K		

LCX Series Switch External Dimensions Diagram

● T0H/V, T5H/V, T2H/V, T3H/V, T3PH/V, T2□R3, T2WH/V, T3WH/V, T2WLH/V
LCX, LCX-Q, LCX-□L, LCX-Q-□L



LCX, LCX-Q, LCX-□L, LCX-Q-□L				
Code	T0, T5, T2, T3, T3P, T2□R3		T2W, T3W, T2WL	
Bore Size (mm)	RD	HD	RD	HD
Equivalent to ø25	5	23.5	6.5	21.5
Equivalent to ø32	5	23.5	6.5	21.5

Note: For switch mountability, refer to the model No. notation method for each variation.

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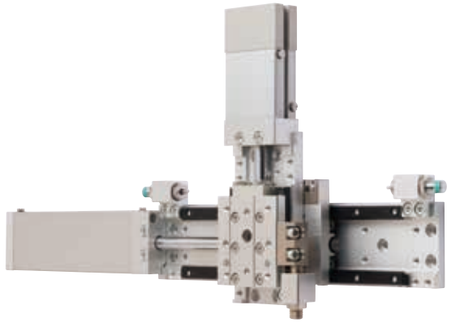
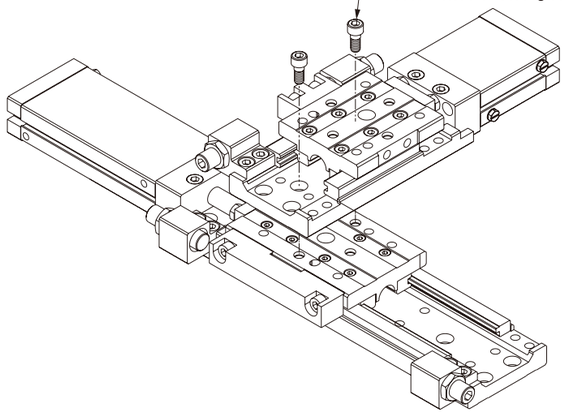
Cylinder Switch
Ending

Unit examples

● Cross unit



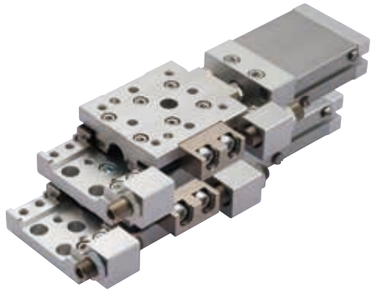
Assembly method



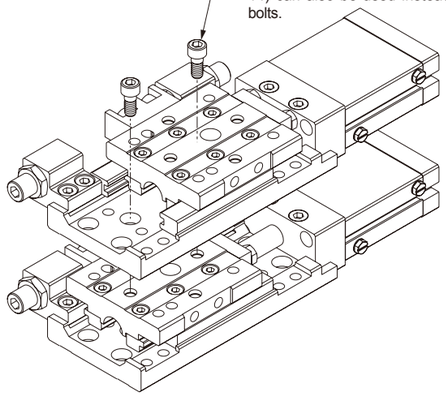
Locating bolt (Code: LCX-25-J)
Tightening Torque: 4.3 to 5.2 N·m

Note) If a positioning mechanism is not required, hexagon socket head cap screws (M6 depth 14) can also be used instead of locating bolts.

● 2-stage unit



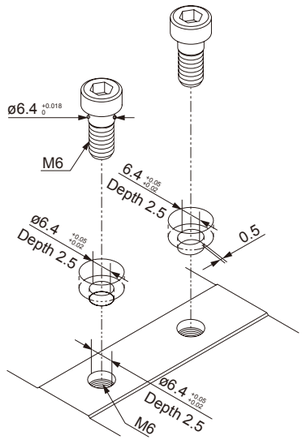
Assembly method



Locating bolt (Code: LCX-25-J)
Tightening Torque: 4.3 to 5.2 N·m

Note) If a positioning mechanism is not required, hexagon socket head cap screws (M6 depth 14) can also be used instead of locating bolts.

[Fastening with locating bolts]



Technical Data

[Table displacement due to M1, M2, M3 moments] (Reference value)

M1 moment: Displacement at the table tip when a load (F1) is applied to the table tip
M2 moment: Displacement at the table end (Point A) when load (F2) is applied to a point 100 mm away from the center of the cylinder
M3 moment: Displacement angle of the table when a rotational moment (M3) is applied to the cylinder

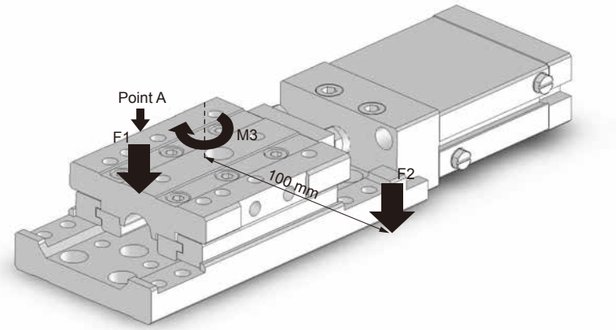


Table displacement of M1 moment

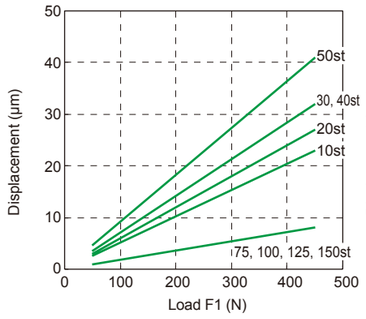


Table displacement of M2 moment

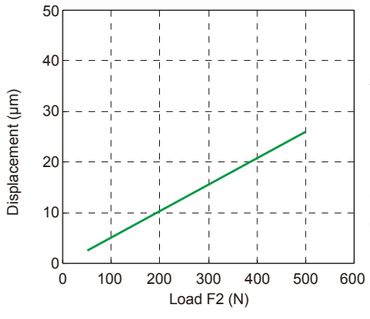
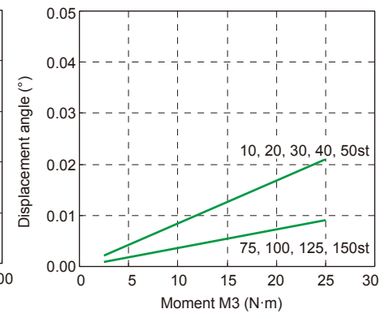


Table displacement angle of M3 moment



STEP-1

Confirm the load factor and determine the tube inner diameter.

$$\alpha = \frac{F_0}{F} \times 100\ [\%]$$

α : Load factor

F_0 : Force required to move the work-piece (N)

F : Cylinder theoretical thrust (N) [Table 1]

During horizontal operation	During vertical operation
$F_0 = F_W$	$F_0 = W + F_W$

FW: Wx0.2 Note (N)

W: Load (N)

Note) Friction Coefficient

[Table 1] Theoretical thrust table (Unit: N)

Bore size	Operating Direction	Operating pressure MPa						
		0.15	0.2	0.3	0.4	0.5	0.6	0.7
Equivalent to ø25	PUSH	74	99	148	197	246	296	345
	PULL	57	76	114	152	190	228	266
Equivalent to ø32	PUSH	116	155	233	310	388	466	543
	PULL	99	133	199	265	332	398	464

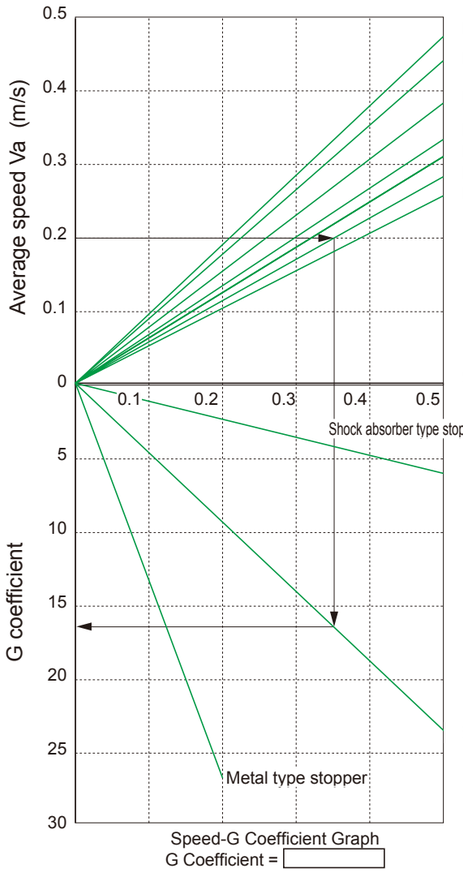
[Table 2] Load factor guide

Operating pressure MPa	Load factor (%)
0.2 to 0.3	α≤40
0.3 to 0.6	α≤50
0.6 to 0.7	α≤60

STEP-2

Determine the stroke end speed (Vm) and G coefficient.

Determine the stroke end speed (Vm) and G coefficient from the average speed (Va) and the load factor obtained in STEP-1.



Speed-G Coefficient Graph

G Coefficient = ☐

The arrow (→) in the figure indicates
Average speed : 0.20 m/s
Load factor : 50%
at:
Stroke end speed: 0.35 m/s
G coefficient: 16.8
shows an example of how to find.

STEP-3

Confirm the allowable absorption energy.

$$E = \frac{1}{2} \times (m+m_\alpha) \times Vm^2$$

E : Kinetic energy at workpiece end (J)

m : Load weight (kg) ($m \approx \frac{W\ (N)}{9.8}$)

m_α : [Table 4] Table Weight

Vm : Stroke end speed (m/s)

E max : Max. allowable value of E_0 (from Table 3)

Confirm that E ≤ E max.

[Table 3] LCX Allowable absorption energy (E_0)

Bore size	Standard type (J)	Rubber cushion type stopper (J)	Metal type stopper (J)	Shock absorber type stopper (J)
Equivalent to ø25	0.34	0.14	0.07	1.3
Equivalent to ø32				

[Table 4] Table weight (Unit: kg)

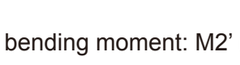
Bore size	Stroke (mm)								
	10	20	30	40	50	75	100	125	150
Equivalent to ø25	0.030				0.035				
Equivalent to ø32									

STEP-4

Confirm the combined moment M'T at rest.

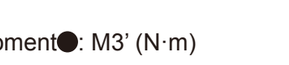
Determine the static load (moment) and impact moment generated at the stroke end, and confirm the combined moment M'T at rest.

● Vertical load: W' (N)



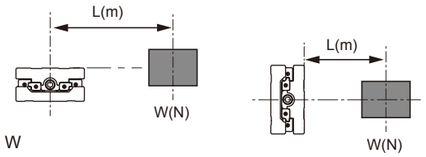
W'= W

● Bending moment: M1' (N·m)



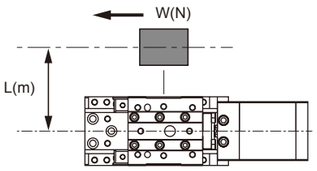
M1'= L x W

● Lateral bending moment: M2' (N·m)



M2'= L x W

Torsional Moment●: M3' (N·m)



M3'= L x W

W' = ☐ (N)

M1' x G = ☐ (N·m)

M2' = ☐ (N·m)

M3' x G = ☐ (N·m)

$$M'_T = \frac{W'}{W'\ max} + \frac{M1' \times G}{M1'\ max} + \frac{M2'}{M2'\ max} + \frac{M3' \times G}{M3'\ max} = \square$$

M'T : Combination of moments

G : G coefficient

W' max : Max. allowable value of W' (from Table 5)

M1' max : Max. allowable value of M1' (from Table 5)

M2' max : Max. allowable value of M2' (from Table 5)

M3' max : Max. allowable value of M3' (from Table 5)

[Table 5] Allowable static load value

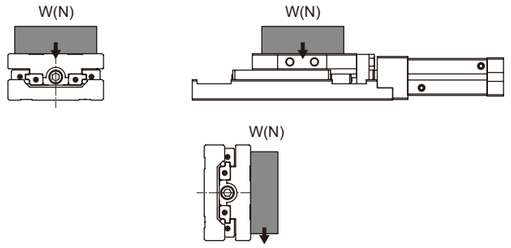
Bore size	Stroke	Vertical load W'max (N)	Bending moment M1'max (N·m)	Lateral bending moment M2'max (N·m)	Torsional Moment M3'max (N·m)
Equivalent to ø25	10, 20, 30, 40, 50	670	52	110	52
Equivalent to ø32					
Equivalent to ø25	75, 100, 125, 150	970	128	116	128
Equivalent to ø32					

Confirm that M'T ≤1.

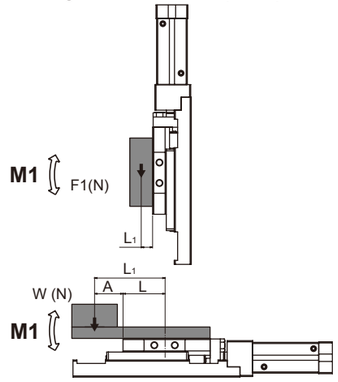
STEP-5

Confirm the combined moment MT during travel. (Note that this is different from what was obtained in STEP-4.)

● Vertical load: W (N)



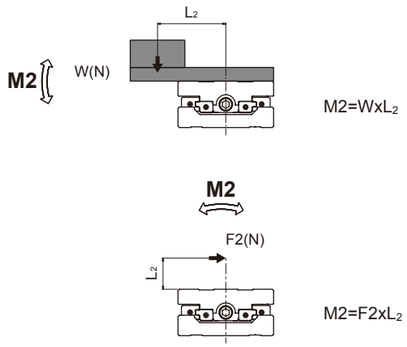
● Bending moment: M1 (N·m)



$M1=F1xL_1$

$M1=WxL_1$
$L_1=A+L$
L is the value in the table below

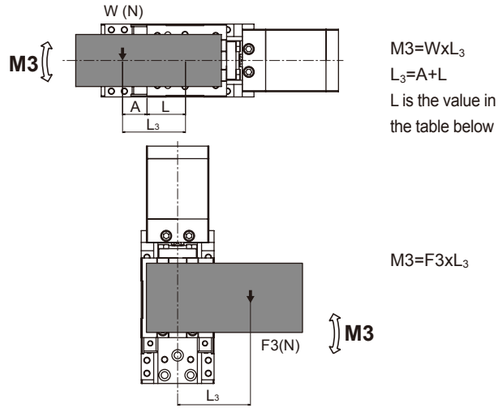
● Lateral bending moment: M2 (N·m)



$M2=WxL_2$

$M2=F2xL_2$

● Torsional Moment M3 (N·m)



$M3=WxL_3$
$L_3=A+L$
L is the value in the table below

$M3=F3xL_3$

L value (Distance from table end to bearing center) Unit (m)

Bore size	Stroke								
	10	20	30	40	50	75	100	125	150
Equivalent to ø25	0.037			0.042		0.0535			
Equivalent to ø32									

W=W = ☐ (N)

M1=M1 = ☐ (N·m)

M2=M2 = ☐ (N·m)

M3=M3 = ☐ (N·m)

M'T : Combination of moments

Wmax : Max. allowable value of W (from Table 7)

M1 max : Max. allowable value of M1 (from Table 7)

M2 max : Max. allowable value of M2 (from Table 7)

M3 max : Max. allowable value of M3 (from Table 7)

$$M_T = \frac{W}{Wmax} + \frac{M1}{M1\ max} + \frac{M2}{M2\ max} + \frac{M3}{M3\ max} = \square$$

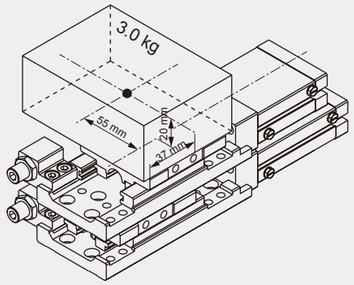
[Table 7] Allowable Traveling Load Values

Bore size	Stroke	Vertical load Wmax (N)	Bending moment M1 max (N·m)	Lateral bending moment M2 max (N·m)	Torsional Moment M3 max (N·m)
Equivalent to ø25	10, 20, 30, 40, 50	97	7	15	7
Equivalent to ø32					
Equivalent to ø25	75, 100, 125, 150	130	17	16.5	17
Equivalent to ø32					

Can be used if MT ≤1.

MEMO

Model selection guide: Selection example ①



[Operating conditions]

Model used (Upper side): LCX-25-30-M6 (Product Weight: 1,270 g)
(Lower Side): LCX-32-30-S6 (Product Weight: 1,440 g)
Pressure: 0.5 (MPa)
Workpiece Weight: 3.0 (kg)
Operating Direction: Horizontal
Average speed (Upper side): 100 (mm/s)
(Lower Side): 230 (mm/s)
Workpiece shape: Left diagram

STEP-1 Checking the load factor and determination on the bore size (For details on how to calculate, refer to P. 300.)

Calculation formula

$\alpha = \frac{F_0}{F} \times 100$ [%]

α : Load factor

F_0 : Force required to move the workpiece (N)

F : Cylinder theoretical thrust (N)

Selection example

[Upper cylinder]

$\alpha 1 = \frac{(3.0 \times 9.8) \times 0.2}{190} \times 100$

= 3.1%

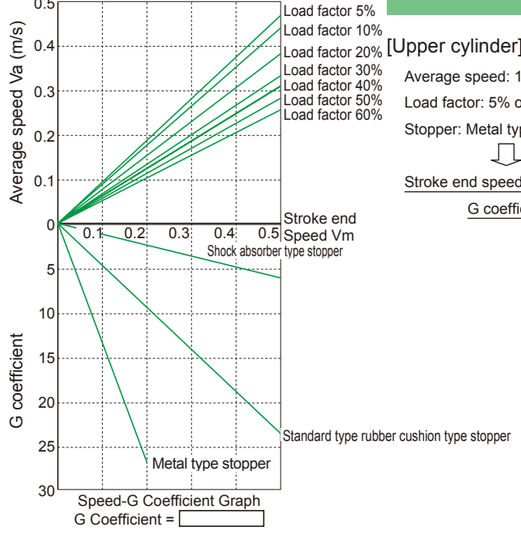
[Lower cylinder]

$\alpha 2 = \frac{\{(3.0 + 1.27 + 0.01) \times 9.8\} \times 0.2}{332}$

x 100 = 2.5%

The guideline for the load factor is, at 0.5 MPa
Usable because "α ≤ 50"

STEP-2 Confirmation of allowable running load (For detailed calculation method, please refer to P. 300)



Selection example

[Upper cylinder]

Average speed: 100 mm/s
Load factor: 5% or less (3.1%)
Stopper: Metal type stopper

⇩

Stroke end speed: 110 mm/s
G coefficient: 14

[Lower cylinder]

Average speed: 230 mm/s
Load factor: 5% or less (2.5%)
Stopper: Rubber cushion type stopper

⇩

Stroke end speed: 240 mm/s
G coefficient: 12

STEP-3 Confirmation of allowable absorption energy (For detailed calculation method, please refer to P. 301)

Calculation formula

$E = \frac{1}{2} \times (m+m_\alpha) \times Vm^2$

E : Kinetic energy at workpiece end (J)
m : Load weight (kg)
m_α : [Table 4] Table Weight
Vm : Stroke end speed (m/s)

Selection example

[Upper cylinder]

$E = \frac{1}{2} \times (3.0 + 0.03) \times 0.11^2$

= 0.02 (J)

Allowable absorption energy of metal type stopper is "0.07J", so it can be used

[Lower cylinder]

$E = \frac{1}{2} \times (3.0 + 1.27 + 0.01 + 0.035) \times 0.24^2 = 0.124$ (J)

Allowable absorption energy of rubber cushion type stopper is "0.14J", so it can be used

Model selection guide: Selection example ①

STEP-4 Confirmation of allowable static load (For detailed calculation method, please refer to P. 301)

Calculation formula

● Vertical load
W'= W

● Bending moment: M1' (N·m)
M1'= L_1 x W

● Lateral bending moment: M2' (N·m)
M2'= L_2 x W

● Torsional Moment: M3' (N·m)
M3'= L_3 x W

◎Combination of moments

$M'_T = \frac{W'}{W'max} + \frac{M1'xG}{M1'max} + \frac{M2'}{M2'max} + \frac{M3'xG}{M3'max}$

Selection example

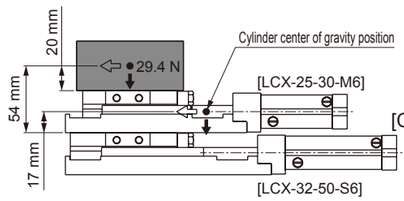
[Calculation of load and moment]

[Upper cylinder]

W'= 3.0 x 9.8 = 29.4 (N)
M1'= 0.02 x 29.4 = 0.6 (N·m)
M2'= 0.055 x 29.4 = 1.6 (N·m)
M3'= 0.055 x 29.4 = 1.6 (N·m)

[Lower cylinder]

W'= 3.0 x 9.8 + 1.27 x 9.8
= 41.8 (N)
M1'= 0.054 x 29.4
+ 0.017 x 1.27 x 9.8
= 1.8 (N·m)
(If the upper cylinder does not act as an iMPact moment, the underlined part is not added)
M2'= 0.055 x 29.4 = 1.6 (N·m)
M3'= 0.055 x 29.4 = 1.6 (N·m)



[Combination of moments when the upper cylinder operates]

Stroke end speed: 110 mm/s G coefficient: 14

[Upper cylinder]

$M'_T = \frac{29.4}{670} + \frac{0.6x14}{52} + \frac{1.6}{110} + \frac{1.6x14}{52}$
= 0.7
Combination of moments (M'T) is "1 or less", so it can be used

[Lower cylinder]

$M'_T = \frac{41.8}{670} + \frac{1.6x14}{52} + \frac{1.6}{110} + \frac{1.6x14}{52}$
= 1.0
Combination of moments (M'T) is "1 or less", so it can be used

[Combination of moments when the lower cylinder operates]

Stroke end speed: 110 mm/s G coefficient: 12

[Upper cylinder]

$M'_T = \frac{29.4}{670} + \frac{0.6x12}{52} + \frac{1.6}{110} + \frac{1.6x12}{52}$
= 0.6
Combination of moments (M'T) is "1 or less", so it can be used

[Lower cylinder]

$M'_T = \frac{41.8}{670} + \frac{1.8x12}{52} + \frac{1.6}{110} + \frac{1.6x12}{52}$
= 0.9
Combination of moments (M'T) is "1 or less", so it can be used

STEP-5 Confirmation of allowable running load (For detailed calculation method, please refer to P. 302)

Calculation formula

● Vertical load
W = W

● Bending moment: M1 (N·m)
M1 = L_1 x W

● Lateral bending moment: M2 (N·m)
M2 = L_2 x W

● Torsional Moment: M3 (N·m)
M3 = L_3 x W

◎Combination of moments

$M_T = \frac{W}{Wmax} + \frac{M1}{M1\ max} + \frac{M2}{M2\ max} + \frac{M3}{M3\ max}$

Selection example

[Upper cylinder]

W = 3.0 x 9.8 = 29.4 (N)
M1 = 0 (N·m)
M2 = 0.055 x 29.4 = 1.6 (N·m)
M3 = 0 (N·m)

$M_T = \frac{29.4}{97} + \frac{0}{7} + \frac{1.6}{15} + \frac{0}{7}$
= 0.4

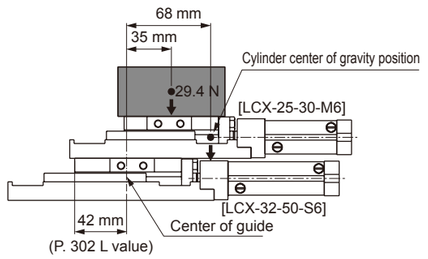
Combination of moments (M'T) is "1 or less", so it can be used

[Lower cylinder]

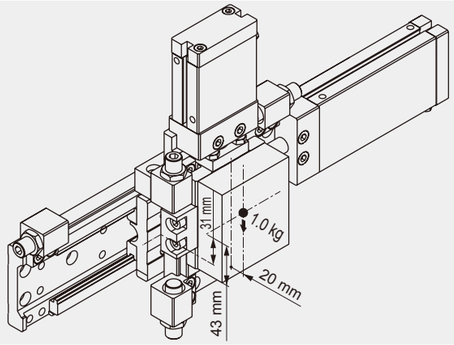
W = 3.0 x 9.8 + 1.27 x 9.8
= 41.8 (N)
M1 = 0.035 x 29.4 + 0.068 x 1.27 x 9.8
= 1.9 (N·m)
(Add the value of the upper cylinder since it works as a moment. Note that the cylinder's center of gravity is calculated as the center of its outline dimensions.)
M2 = 0.055 x 29.4 = 1.6 (N·m)
M3 = 0 (N·m)

$M_T = \frac{41.8}{97} + \frac{1.9}{7} + \frac{1.6}{15} + \frac{0}{7}$
= 0.8

Combination of moments (M'T) is "1 or less", so it can be used



Model selection guide: Selection example ②



[Operating conditions]

Model used (X-axis): LCX-32-150-A6 (Product Weight: 2,450 g)
(Z-axis): LCX-32-30-S6 (Product Weight: 1,440 g)
Pressure: 0.5 (MPa)
Workpiece Weight: 1.0 (kg)
Operating Direction: Horizontal + Vertical
Average speed (X-axis): 300 (mm/s)
(Z-axis): 50 (mm/s)
Workpiece shape: Left diagram

STEP-1 Checking the load factor and determination on the bore size (For details on how to calculate, refer to P. 300.)

Calculation formula

$\alpha = \frac{F_0}{F} \times 100$ [%]

α : Load factor
F_0 : Force required to move the workpiece (N)
F : Cylinder theoretical thrust (N)

Selection example

[X-axis cylinder]

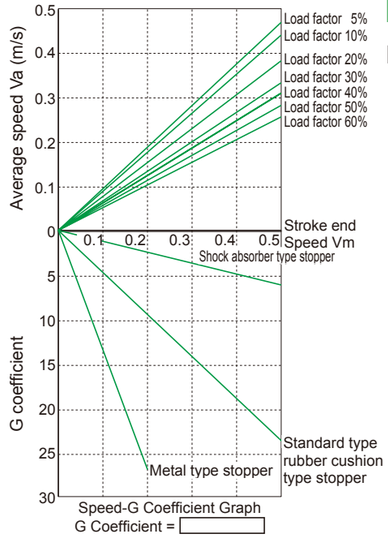
$\alpha 1 = \frac{\{(1.0 + 1.29 + 0.01) \times 9.8\} \times 0.2}{332} \times 100 = 1.4\%$

[Z-axis cylinder]

$\alpha 2 = \frac{(1.0 \times 9.8) + 0.2 \times (1.0 \times 9.8)}{332} \times 100 = 3.5\%$

The guideline for the load factor is, at 0.5 MPa
Usable because "α≤ 50"

STEP-2 Confirmation of allowable running load (For detailed calculation method, please refer to P. 300)



Selection example

[X-axis cylinder]

Average speed: 300 mm/s
Load factor: 5% or less (1.4%)
Stopper: Shock absorber type stopper
⇩
Stroke end speed: 310 mm/s
G coefficient: 4

[Z-axis cylinder]

Average speed: 50 mm/s
Load factor: 5% or less (3.5%)
Stopper: Rubber cushion type stopper
⇩
Stroke end speed: 55 mm/s
G coefficient: 3

STEP-3 Confirmation of allowable absorption energy (For detailed calculation method, please refer to P. 301)

Calculation formula

$E = \frac{1}{2} \times (m+m_\alpha) \times Vm^2$

E : Kinetic energy at workpiece end (J)
m : Load weight (kg)
m_α : [Table 4] Table Weight
Vm : Stroke end speed (m/s)

Selection example

[X-axis cylinder]

$E = \frac{1}{2} \times (1.0 + 1.29 + 0.01 + 0.035) \times 0.31^2 = 0.11$ (J)

Allowable absorption energy of Shock absorber type stopper is "1.3J", so it can be used

[Z-axis cylinder]

$E = \frac{1}{2} \times (1.0 + 0.035) \times 0.055^2 = 0.002$ (J)

Allowable absorption energy of rubber cushion type stopper is "0.14J", so it can be used

Model selection guide: Selection example ②

STEP-4 Confirmation of allowable static load (For detailed calculation method, please refer to P. 301)

Calculation formula

● Vertical load
W'= W

● Bending moment: M1' (N·m)
M1'= L_1 x W

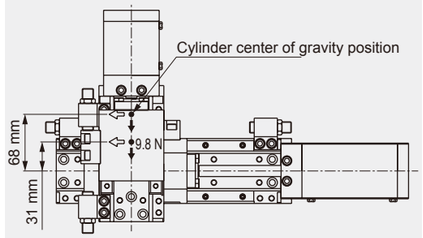
● Lateral bending moment: M2' (N·m)
M2'= L_2 x W

Torsional Moment●: M3' (N·m)
M3'= L_3 x W

◎Combination of moments

$M'_T = \frac{W'}{W' max} + \frac{M1' \times G}{M1' max} + \frac{M2'}{M2' max} + \frac{M3' \times G}{M3' max}$

Note) In cross units, iMPact moment in the M2 direction may occur. Multiply the G coefficient by the value of M2' according to the operating conditions.



Selection example

[Calculation of load and moment]

[X-axis cylinder]

W'= 1.0 x 9.8 + 1.44 x 9.8 = 23.9 (N)
M1'= 0.054 x 9.8 + 0.017 x 1.44 x 9.8
= 0.8 (N·m)
(The Z-axis cylinder also acts as a moment, so it is added)
M2'= 0.054 x 9.8 + 0.017 x 1.44 x 9.8
= 0.8 (N·m)
M3'= 0.031 x 9.8 + 0.068 x 1.44 x 9.8
= 1.3 (N·m)

[Z-axis cylinder]

W'= 0 (N)
M1'= 0.02 x 9.8 = 0.2 (N·m)
M2'= 0.02 x 9.8 = 0.2 (N·m)
M3'= 0.001 x 9.8 = 0.01 (N·m)

[Combination of moments when the X-axis cylinder operates]

Stroke end speed: 310 mm/s G coefficient: 4

[X-axis cylinder]

$M'_T = \frac{23.9}{970} + \frac{0.8 \times 4}{128} + \frac{0.8}{116} + \frac{1.3 \times 4}{128} = 0.1$

Combination of moments (M'T) is "1 or less", so it can be used

[Z-axis cylinder]

$M'_T = \frac{0}{670} + \frac{0.2}{52} + \frac{0.2 \times 4}{110} + \frac{0.01 \times 4}{52} = 0.01$

(For those where the X-axis cylinder operates and an iMPact moment in the M2 direction acts on the Z-axis cylinder, multiply by the G coefficient)

Combination of moments (M'T) is "1 or less", so it can be used

[Combination of moments when the Z-axis cylinder operates]

Stroke end speed: 55 mm/s G coefficient: 3

[X-axis cylinder]

$M'_T = \frac{23.9}{970} + \frac{0}{128} + \frac{0.5 \times 3 + 0.2}{116} + \frac{0}{128} = 0.04$

(For those where the Z-axis cylinder operates and an iMPact moment in the M2 direction acts on the X-axis cylinder, multiply by the G coefficient)

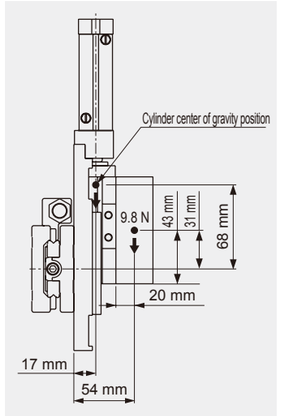
Combination of moments (M'T) is "1 or less", so it can be used

[Z-axis cylinder]

$M'_T = \frac{0}{670} + \frac{0.2 \times 3}{52} + \frac{0}{110} + \frac{0}{52} = 0.01$

Combination of moments (M'T) is "1 or less", so it can be used

STEP-5 Confirmation of allowable running load (For detailed calculation method, please refer to P. 302)



Calculation formula

● Vertical load
W = W

● Bending moment: M1 (N·m)
M1 = L_1 x W

● Lateral bending moment: M2 (N·m)
M2 = L_2 x W

● Torsional Moment: M3 (N·m)
M3 = L_3 x W

◎ Combination of moments

$M_T = \frac{W}{Wmax} + \frac{M1}{M1 max} + \frac{M2}{M2 max} + \frac{M3}{M3 max}$

Selection example

[X-axis cylinder]

W = 1.0 x 9.8 + 1.44 x 9.8
= 23.9 (N)
M1 = 0 (N·m)
M2 = 0.054 x 9.8 + 0.017 x 1.44 x 9.8
= 0.8 (N·m)
M3 = 0 (N·m)

$M_T = \frac{23.9}{130} + \frac{0}{17} + \frac{0.8}{16.5} + \frac{0}{17} = 0.2$

Combination of moments (M'T) is "1 or less", so it can be used

[Z-axis cylinder]

W = 0 (N)
M1 = 0.02 x 9.8 = 0.2 (N·m)
M2 = 0 (N·m)
M3 = 0 (N·m)

$M_T = \frac{0}{97} + \frac{0.2}{7} + \frac{0}{15} + \frac{0}{7} = 0.03$

Combination of moments (M'T) is "1 or less", so it can be used

Pneumatic Equipment

To Use This Product Safely

Be sure to read this before use.

For general information on cylinders, please see Intro 41, and for cylinder switches, please see P. 808.

Individual Precautions : Low profile linear slide cylinder LCX series

During Design / Selection

1. Common

Caution

■For cylinder selection, follow the "LCX Selection Guide" on P. 300 to P. 302.

■If the cylinder is used in a place exposed to water droplets or oil droplets, a place where there is a risk of corrosion, or a place with a lot of dust, it may cause damage or malfunction, so protect the product with a cover, etc.

■Precautions for products with switches

- For straight type lead wires with 30 strokes or less, and L-shaped type lead wires with 20 strokes or less, one switch is included to each of the two grooves on the main body, so pay attention to the lead wire extraction direction during design.

■If the ambient temperature of the cylinder is 5°C or less, use a supply pressure of 0.5 MPa or more.

■Please consult us if using in a constantly low temperature (5°C or less) or high temperature (40°C or more) environment.

■Three types of stoppers with stroke adjustment function are available.

- Rubber cushion type stopper
  Stopper with built-in urethane cushion rubber.
  To stabilize the stop position, stoppers that make metal contact at a pressure of 0.4 MPa or more are also available, so please consult us.
- Metal type stopper
  Since there is no cushion mechanism, use for light loads and low speeds. There is no change in the stop position due to deformation of the rubber cushion.
- Shock absorber type stopper
  It has high energy absorption capacity, provides smooth stopping, and the stop position is determined by metal contact.

2. Drop prevention type LCX-Q

Caution

■Do not use 3-position valves.
Avoid using in combination with 3-position valves (especially closed center metal seal type). If pressure is trapped in the port on the side with the lock mechanism, the lock will not engage. Also, even if locked once, air leaking from the valve may enter the cylinder, and the lock may be released over time.

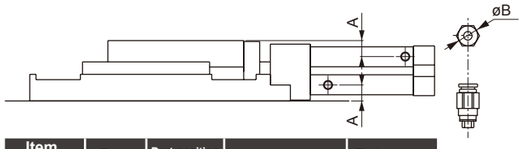
■Keep the cylinder load factor at 50% or less.
If the load factor is high, the lock may not be released, or it may lead to damage to the lock part.

During Use

1. Common; During piping

Caution

■Precautions for piping fittings
Be sure to use a speed controller when piping. Also, the usable fittings are as follows.



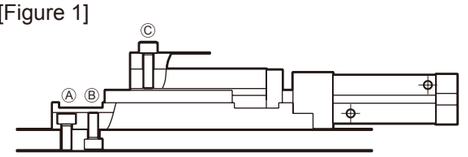
Item / Bore Size (mm)	Port Size	Port position dimension A	Usable fittings	Fitting outer diameter B
ø25	M5	9.5	SC3W-M5-4 SC3W-M5-6 GWS4-M5-S GWS4-M5 GWL4-M5 GWS6-M5-S GWS6-M5 GWL6-M5	ø17 or less
ø32		9		

2. Common; During installation

Caution

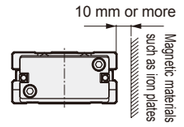
■To obtain high-precision linear motion, the mounting surfaces of the base and table of this product are precision machined. Therefore, by finishing the flatness of the mounting surface of equipment, etc. to a high precision by grinding, etc., stable high accuracy can be obtained. (Flatness : 0.01 mm or less) Also, do not make dents or scratches that may impair the flatness of the mounting surface.

■Observe the following values for the bolt screw-in length and tightening torque when mounting a jig to the table and base.
[Figure 1]

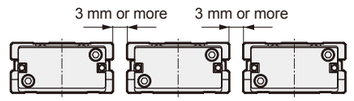


Item	Ⓐ		Ⓑ			Ⓒ		
	Bolt used	Tightening torque (N·m)	Bolt used	Tightening torque (N·m)	Max. screw-in length	Bolt used	Tightening torque (N·m)	Max. screw-in length
LCX-25	M6	4.3 to 5.2	M6 x 1.0	4.3 to 5.2	9.5 mm	M6 x 1.0	4.3 to 5.2	11 mm
LCX-32								

■If there is a magnetic material such as an iron plate near the cylinder switch, it may malfunction. You can use it safely by keeping it 10 mm or more away from the cylinder surface or by changing the mounting surface of the cylinder switch. (Common to all bore sizes)



■If cylinders are adjacent, the cylinder switch may malfunction. Maintain the following distance from the cylinder surface. (Common to all bore sizes)



■Treat our Shock absorbers as consumable parts.
Replace when a decrease in energy absorption capacity is observed or when operation is no longer smooth.

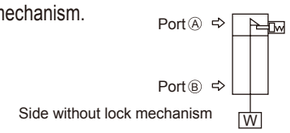
■When using locating holes, use pins with dimensions that do not result in a press fit. Using press-fit dimension pins may cause damage to the linear guide part due to press-fitting load or accuracy deterioration due to distortion. The recommended tolerance for pins is JIS tolerance m6 or less.

■For the guide part, apply AFF grease (manufactured by THK CO., LTD.) to the guide rail raceway surface every 6 months or 1 million operations, whichever comes first.

3. Drop prevention type LCX-Q

Warning

■In the locked state, if pressure is supplied to port Ⓐ from a state where both side ports are not pressurized, the lock may not be released, or the lock may suddenly be released and the piston rod may fly out, which is very dangerous. When releasing the lock mechanism, always supply pressure to port Ⓑ and release it from a state where no load is applied to the lock mechanism.



■When using a quick exhaust valve to increase the lowering speed, the cylinder body may start moving before the lock pin operates, and normal release may not be possible. Do not use a quick exhaust valve with a drop prevention type cylinder.

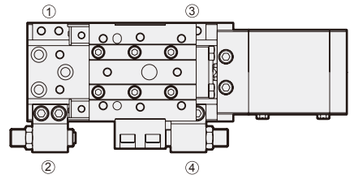
Caution

■The lock mechanism works at the stroke end. Do not install stoppers at stopper positions ③, ④. Also, if an external stopper is applied in the middle of the stroke, the lock mechanism may not work and there is a risk of falling. When setting the load, be sure to confirm that the lock mechanism is working before installing.

■Supply pressure equal to or higher than the minimum operating pressure for each model to the port on the side with the lock mechanism.

■If the piping on the side with the lock mechanism is thin and long, or if the speed controller is far from the cylinder port, the exhaust speed may be slow and it may take time for the lock to engage, so please be careful. Also, clogging of the silencer included to the EXH. port of the solenoid valve will lead to similar results.

● Stopper position



■If back pressure is applied to the lock mechanism side, the lock may be released, so use a single solenoid valve or a manifold with individual exhaust.

■After manually operating the lock mechanism, return the lock mechanism to its original state. Also, do not perform manual operations other than during adjustment, as it is dangerous.

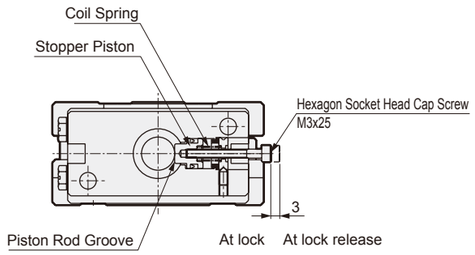
■Release the lock when installing or adjusting the cylinder. If installation work, etc. is performed while the lock is engaged, the lock part may be damaged.

■Do not use multiple cylinders synchronized.
Do not use a method where two or more fall prevention type cylinders are synchronized to move one workpiece. The lock of one of the cylinders may become unremovable.

■Use the speed controller with meter-out control.
Lock may not be released with meter-in control.

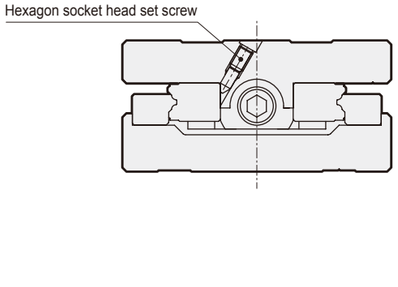
■On the side with the lock, be sure to use the cylinder to the stroke end.
If the cylinder piston has not reached the stroke end, the lock may not engage, or it may not be possible to release the lock.

■Release method
Screw a hexagon socket head cap screw (M3x25) into the stopper piston and pull the bolt with a force of 20N or more for 3 mm, the stopper piston will move and the lock will be released. (No-load horizontal mounting, rod port pressurization) Also, when you release your hand, the built-in spring returns the stopper piston, and if it enters the piston rod groove, the cylinder will be locked.



4. Long stroke LCX-□L

■The linear guide has optimal preload adjustment. Do not loosen or retighten the hexagon socket set screws, as it may degrade product performance.



For precautions regarding mounting, installation, adjustment, use, and maintenance, please see "Precautions for Use" in this catalog and the CKD Components Product website (https://www.ckd.co.jp/kiki/en/) → "Model No." → Instruction Manual

MEMO

MSDG

Compact Cylinder with Compact Linear Guide

ø6, ø8, ø12, ø16

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With Linear Guide
LCM
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Compact cylinder with linear guide

MSDG Series (ø6, ø8, ø12, ø16)

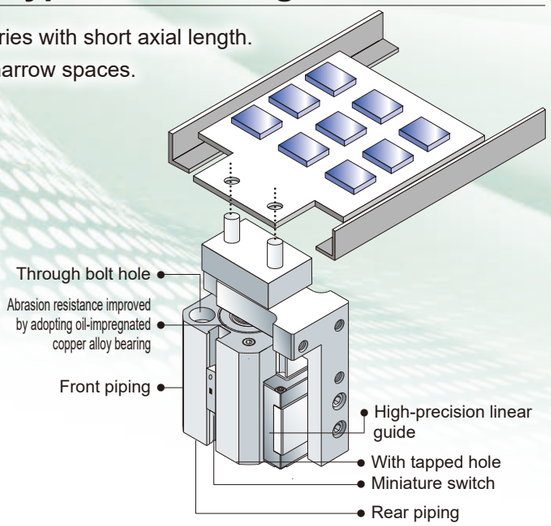
Achieves high precision and high rigidity in a space-saving design

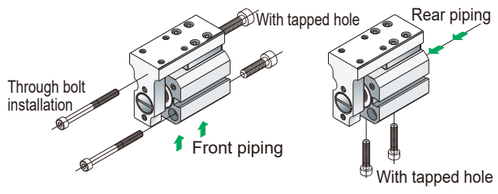
Axial direction space-saving type with linear guide

High-precision linear guide mounted on the MSD series with short axial length.
Can meet high-precision and high-rigidity needs in narrow spaces.

Direct 3-surface mounting

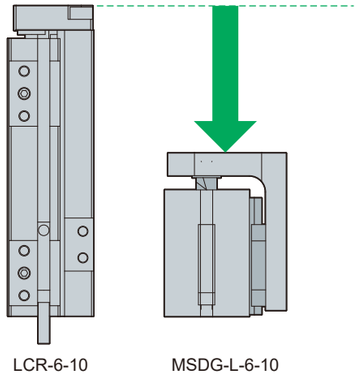
Adoption of a square body allows direct mounting from each direction. Mounting from the main body rod side and head side is possible with through bolts and tap mounting. Furthermore, adoption of rear piping has made mounting on the side of the main body possible.





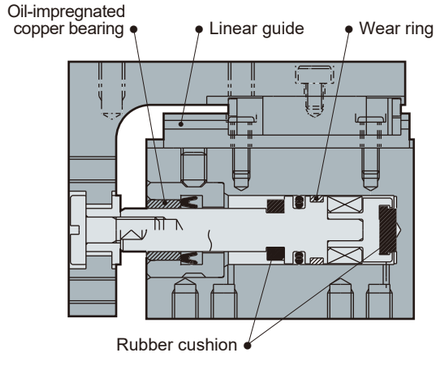
Axial direction space saving

Axial length made compact.
Mounting space can be reduced.



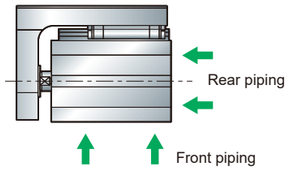
Long life design (Approx. 4 times longer than conventional products)

Oil-impregnated copper-based bearing adopted for the rod bearing part, improving wear resistance.



Piping direction selectable

Piping can be selected from two directions:
front piping or rear piping.



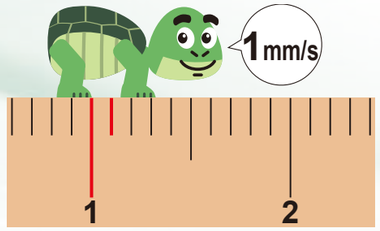
Equipped with ultra-compact F series with switch

Achieved switch inclusion in compact sizes of ø6 and ø8.

Achieves smooth ultra-low speed operation of 1 mm/s (MSDG-LF)

Ultra-low speed drive up to 1 mm/s possible

No stick-slip and stable operation even at fine speeds make it ideal for conveying and positioning delicate products.

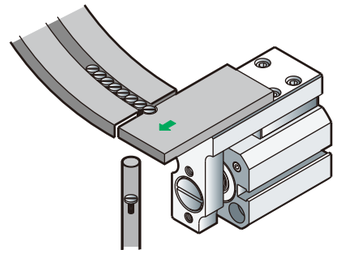


Our company's original sliding mechanism

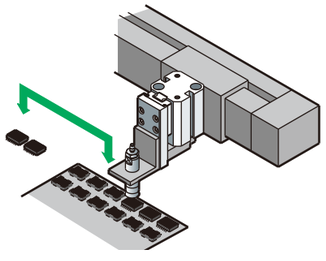
- Special treatment of the tube inner surface.
- Special treatment of the packing surface and optimization of hardness.
- Optimal grease selection.

Usage Examples

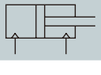
Compact parts feeding



Workpiece conveyance

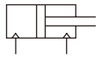
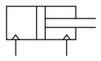


MSDG Series Product System

Variation	Model No.	Bore Size (mm)	Standard Stroke (mm)					
			5	10	15	20	25	30
Double acting, Guided type	MSDG-L	ø6, ø8, ø12, ø16	●	●	●	●	●	●
Double acting, Guided type Ultra low speed type	MSDG-LF 	ø12, ø16	●	●	●	●	●	●

Compact cylinder with small linear guide MSDG Series

●: Standard, ◎: Option, : Not manufacturable

Variation	Model No.	Bore Size (mm)	Standard Stroke (mm)							Min. Stroke (mm)	Max. Stroke (mm)	Option	Switch	Page
			5	10	15	20	25	30				Rear piping type		
												R		
Double acting, Guided type	MSDG-L 	ø6 / ø8 ø12, ø16	●	●	●	●	●	●		5	30	◎	◎	320
Double acting, Guided type Ultra Low Speed Type	MSDG-LF 	ø12, ø16	●	●	●	●	●	●		5	30	◎	◎	328

With Linear Guide
LCM
LCR
LCG
LCW
LCX
MSDG
Cylinder Switch
Ending

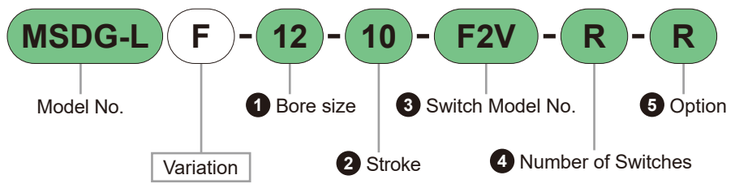
Combination Availability Table for Variations and Option Items

● Guided type MSDG Series

◎ Mark: Option
○ Mark: Custom Products
△ Mark: Manufacturable depending on conditions
× Mark: Not manufacturable

Category		Category	Variation			Option	
			Double Acting / Single Rod Type	Ultra Low Speed Type		Rear piping type	
		Code	None	F		R	
Variation	Double Acting/Single Rod Type	Blank				◎	
	Ultra Low Speed Type	F				◎	
Option	Rear piping type	R					
Accessories	Cylinder Switch	Separately Shown	◎	◎		◎	

[Model No. Notation Example]



Model No.: Compact cylinder with small guide
● Variation: Ultra Low Speed Type
❶ Bore Size : ø12 mm
❷ Stroke : 10 mm
❸ Switch model No. : Solid State F2V, Lead wire 1 m
❹ Number of Switches : With 1 pc. on rod side
❺ Options : Rear piping

MEMO

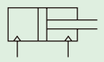
With Linear Guide
LCM
LCR
LCG
LCW
LCX
MSDG
Cylinder Switch
Ending

Compact Cylinder with Compact Linear Guide
Double acting, Linear guide equipped type with switch

MSDG-L Series

●Bore size: ø6, ø8, ø12, ø16

Circuit Diagram
Symbol



RoHS

Model No. Notation Method

With Switch
(Built-in magnet for switch)

MSDG-L - 6 - 30 - F0H - D - R

- MSDG-L: Model No.
- 6: ❶ Bore size
- 30: ❷ Stroke
- F0H: ❸ Switch Model No.
- D: ❹ Number of Switches
- R: ❺ Option

❶ Bore Size (mm)

Code	Content
6	ø6
8	ø8
12	ø12
16	ø16

❷ Stroke (mm)

Code	Content
5	5
10	10
15	15
20	20
25	25
30	30

*For details on stroke, please refer to P. 323.

❸ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20	-	F2S□	
		3-wire (NPN)	-	30 or less	-	50 or less	-	F3S□	
		2-wire	-	10 to 30	-	5 to 20 *2	F2H□	F2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3H□	F3V□	
		3-wire (PNP)	-	30 or less	-	50 or less	F3PH□	F3PV□	
	2-Color	2-wire	-	24±10%	-	5 to 20	F2YH□	F2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3YH□	F3YV□	
Reed	1-Color	2-wire	-	24 ± 10%	-	5 to 20	FOH	F0 V	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: For models with switches, use non-magnetic (stainless steel, etc.) mounting bolts for ø6 and ø8.
*4: When using a solid state switch with ø12 or ø16, use non-magnetic through bolts (made of stainless steel, etc.).
*5: Switches other than the model No.s listed above are also available. (Custom product) For details,See P. 753.
*6: Depending on the cylinder mounting and stroke relationship, it may not be possible to mount the switch. For mountability, please refer to P. 322.

*** Lead wire length**

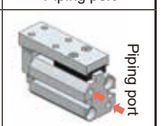
Code	Content
Blank	1 m (Standard)
3	3 m (Option)

Example) Lead wire length
1 m F2S
3 m F2S 3

❹ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

❺ Option

Code	Content	
Blank	Front piping type	Piping port
*1 R	Rear piping type	 Piping port

*1: In the case of the rear piping type, mounting on the side of the main body is possible.

Rechargeable Battery Compatible Specification (Catalog No. CC-1226AA)

● Design compatible with rechargeable battery manufacturing process

MSDG-L - - - - - P4□

*Please contact us for details.

High Durability Components HP Series (Catalog No. CC-1421AA)

● Long-life actuator that contributes to productivity improvement with stable operation

MSDG-L - - - - - HP□

Switch Single Unit Model No. Notation Method

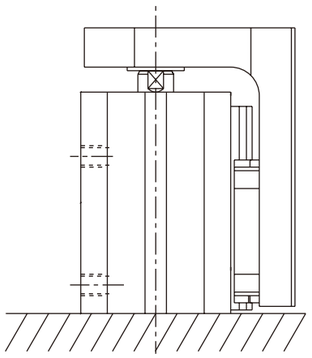
SW - F0H

- F0H: ❸ Switch Model No.

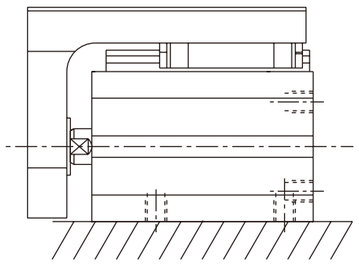
Switch usability selection table

Depending on the cylinder mounting and stroke relationship, it may not be possible to mount the switch. Select the switch after confirming the table below. In addition, for side mounting, it cannot be used in the following combinations.

- Combination of attaching F2YH/V, F3YH/V, F3PH/V to switch mounting position H with a stroke of 5 mm
- Combination of attaching F2YH, F3YH, F3PH to switch mounting position H with a stroke of 10 mm
  (For minimum stroke with switch, refer to P. 323.)



At head side mounting



At side mounting

● At head side mounting

Tube Inner Diameter (mm)	Stroke (mm)	Solid state switch										Reed switch			
		F2S/F3S		F2H/F3H		F2 V/F3 V		F2YH/F3YH/F3PH		F2YV/F3YV/F3PV		F0H		F0 V	
		Switch mounting position		Switch mounting position		Switch mounting position		Switch mounting position		Switch mounting position		Switch mounting position		Switch mounting position	
		R	H	R	H	R	H	R	H	R	H	R	H	R	H
ø6	5	○	○	×	○	○	○	×	×	○	○	×	○	○	○
	10	○	○	×	○	○	○	×	○	○	○	○	○	○	○
	15 to	○	○	○	○	○	○	○	○	○	○	○	○	○	○
ø8	5	○	○	×	○	○	○	×	×	○	○	×	○	○	○
	10	○	○	×	○	○	○	×	○	○	○	○	○	○	○
	15 to	○	○	○	○	○	○	○	○	○	○	○	○	○	○
ø12	5	○	○	×	○	○	○	×	○	○	○	×	○	○	○
	10	○	○	×	○	○	○	×	×	○	○	○	○	○	○
	15 to	○	○	○	○	○	○	○	○	○	○	○	○	○	○
ø16	5	○	○	×	○	○	○	×	○	○	○	×	○	○	○
	10	○	○	×	○	○	○	×	○	○	○	○	○	○	○
	15 to	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Note) R: With 1 rod side switch H: With 1 head side switch

Specifications

Item		MSDG-L (With switch)			
Bore Size mm		ø6	ø8	ø12	ø16
Actuation method		Double Acting Type			
Operating Fluid		Compressed Air			
Max. working pressure MPa		1.0			
Min. Operating Pressure MPa		0.2	0.15	0.1	
Proof Pressure MPa		1.6			
Ambient Temperature °C		5 to 60			
Port Size	Front piping type	M3		M5	
	Rear piping type	M3		M3	
Stroke tolerance mm		+2.0 0			
Operating Piston Speed mm/s		50 to 500			
Cushion		With Rubber Cushion			
Lubrication		Not Required (When lubricating, use Turbine Oil ISO VG32)			
Allowable absorption energy J		0.004	0.014	0.044	0.110

Stroke

Bore Size (mm)	Standard Stroke (mm)	Minimum stroke with 2 switches (mm)		Minimum stroke with 1 switch (mm)	
		Reed switch	Solid state switch	Reed switch	Solid state switch
ø6	5, 10, 15, 20, 25, 30	10	5	5	5
ø8	5, 10, 15, 20, 25, 30	10	5	5	5
ø12	5, 10, 15, 20, 25, 30	10	5	5	5
ø16	5, 10, 15, 20, 25, 30	10	5	5	5

Note) Strokes other than standard are not available.

Cylinder Weight Table

(Unit: g)

Stroke (mm) / Bore Size (mm)	5	10	15	20	25	30	Weight per Switch
ø6	43	48	52	57	61	66	Refer to the mass described in the switch specifications on P. 753
ø8	50	56	63	69	76	82	
ø12	76	88	100	112	124	136	
ø16	129	146	163	180	197	214	

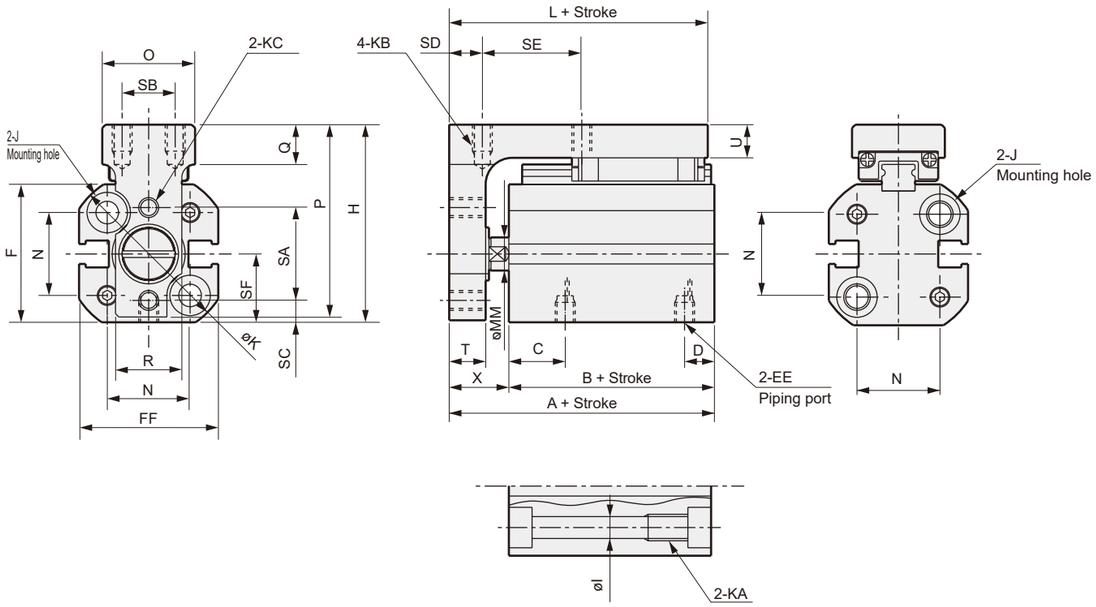
Theoretical Thrust Table

(Unit: N)

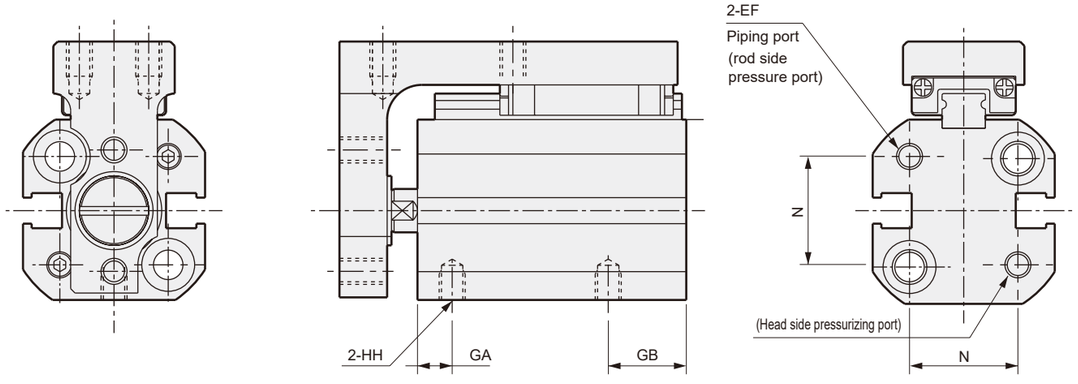
Bore Size (mm)	Operating Direction	Operating Pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø6	Push	-	-	5.65	8.48	11.3	14.1	17.0	19.8	22.6	25.4	28.3
	Pull	-	-	3.14	4.71	6.28	7.85	9.42	11.0	12.6	14.1	15.7
ø8	Push	-	7.54	10.1	15.1	20.1	25.1	30.2	35.2	40.2	45.2	50.3
	Pull	-	4.59	6.13	9.19	12.3	15.3	18.4	21.4	24.5	27.6	30.6
ø12	Push	11.3	17.0	22.6	33.9	45.2	56.5	67.9	79.2	90.5	1.02x10²	1.13 x 10²
	Pull	8.48	12.7	17.0	25.4	33.9	42.4	50.9	59.4	67.9	76.3	84.8
ø16	Push	20.1	30.2	40.2	60.3	80.4	1.01 x 10²	1.21 x 10²	1.41 x 10²	1.61 x 10²	1.81 x 10²	2.01 x 10²
	Pull	15.1	22.6	30.2	45.2	60.3	75.4	90.5	1.06 x 10²	1.21 x 10²	1.36 x 10³	1.51 x 10²

External dimensions diagram (Bore size: ø6 to ø12)

● MSDG-L-6 / 8 / 12



● MSDG-L-6 / 8 / 12-□-R (Rear piping)



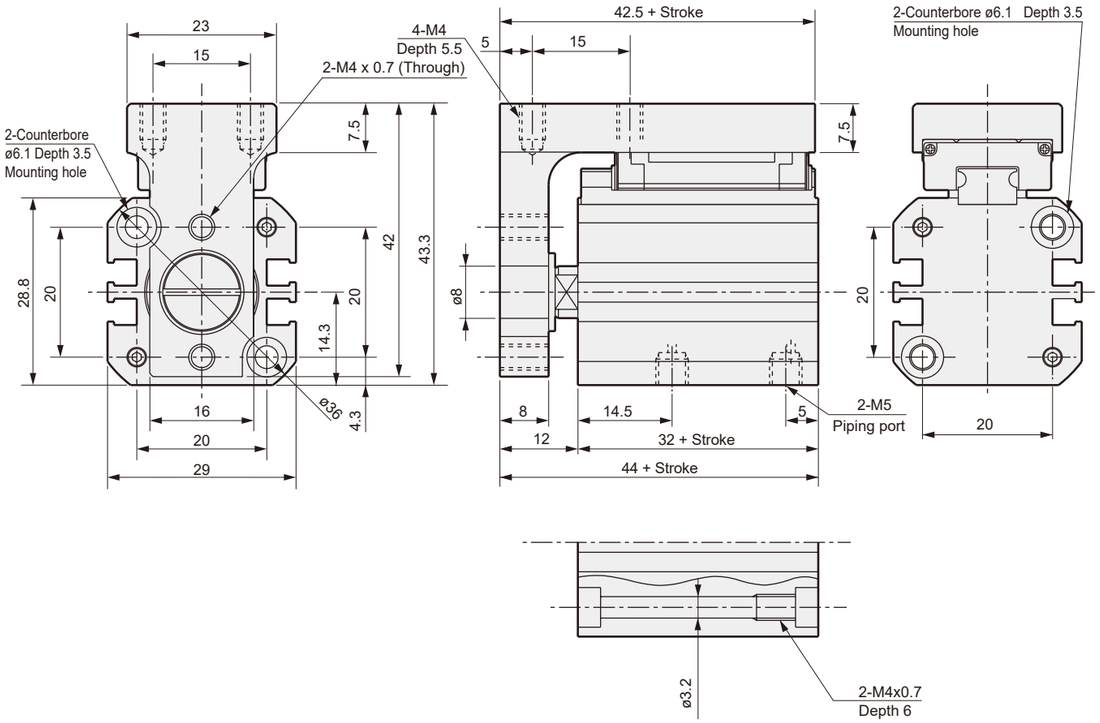
Bore Size (mm)	Common dimension																	
	A	B	C	D	EE	F	FF	H	I	J	K	KA	KB	KC	L	MM	N	O
ø6	33.5	24.5	7.5	4	M3	18.8	19	27.8	3.2	Counterbore ø6.1 Depth 3.5	22 .5	M4 Depth 6	M3 Depth 4	M3 (Through)	32	4	11	14
ø8	35	26	9	4	M3	20.8	21	29.8	3.2	Counterbore ø6.1 Depth 3.5	25	M4 Depth 6	M3 Depth 4	M3 (Through)	33.5	5	12.5	14
ø12	38	27	11.5	5	M5	24.8	25	36.3	3.2	Counterbore ø6.1 Depth 3.5	31	M4 Depth 6	M3 Depth 4.5	M3 (Through)	36.5	6	15.5	19

Bore Size (mm)	Common dimension												Rear piping dimension			
	P	Q	R	SA	SB	SC	SD	SE	SF	T	U	X	EF	GA	GB	HH
ø6	27	6	9.5	12	8	3.3	5	15	9.3	5.5	5	9	M3	3	8.5	M3 Depth 3
ø8	29	6	10	14	8	3.3	5	15	10.3	5.5	5	9	M3	4.5	8.5	M3 Depth 3
ø12	35	6.5	13	15.5	12	4.5	5	15	12.3	7	6.5	11	M3	4	10.5	M3 Depth 3

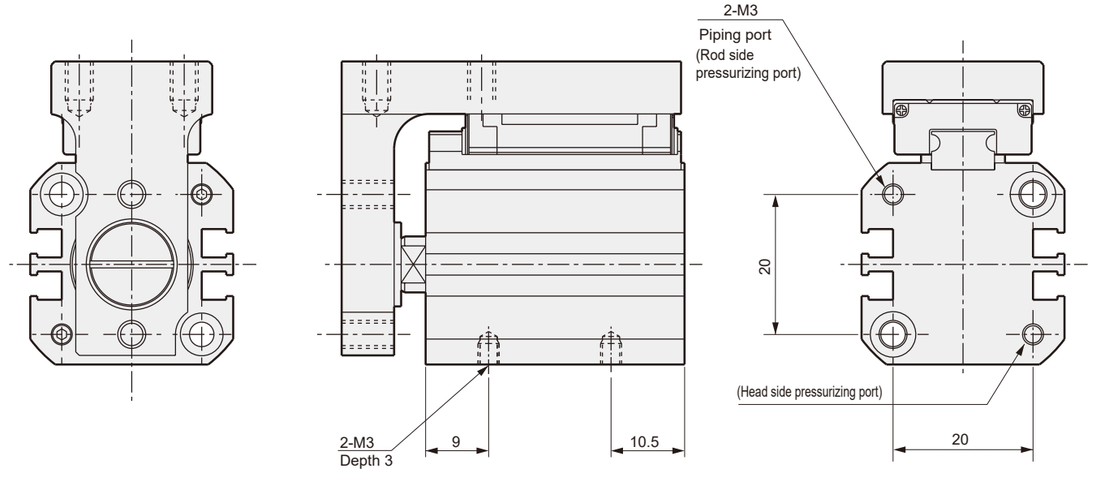
Note) **For dimensions with each switch, refer to P. 332, 333.**

Outline dimension drawing (Bore size: ø6)

● MSDG-L-16



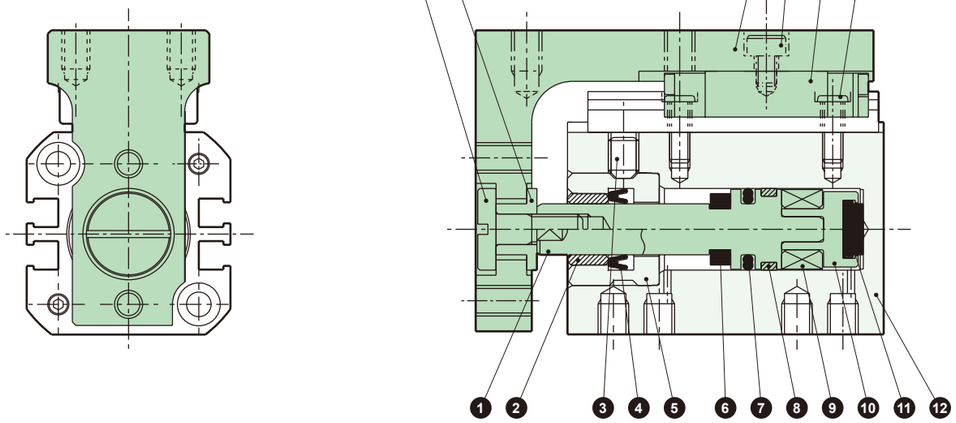
● MSDG-L-16-□-R (Rear piping)



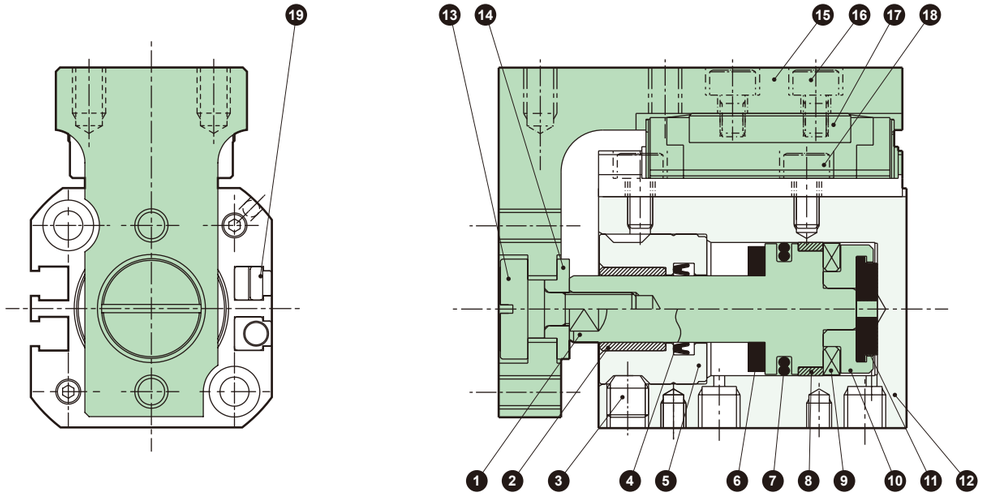
Note) **For dimensions with each switch, refer to P. 332, 333.**

Internal Structure Diagram / Material

● MSDG-L-6 / 8 / 12



● MSDG-L-16



Do not disassemble

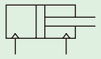
Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Piston	Stainless Steel		11	Cushion rubber H	Urethane Rubber	
2	Bushing	Oil-Impregnated Bearing Alloy		12	Cylinder Body	Aluminum Alloy	Hard Anodized
3	Hexagon socket head set screw	Stainless Steel		13	Floating bolt	Steel	Nickel Plating
4	Rod Packing	Nitrile Rubber		14	Floating bush	Stainless Steel	
5	Rod Metal	Stainless Steel		15	Table	Aluminum Alloy	Alumite
6	Cushion rubber R	Urethane Rubber		16	Hexagon Socket Head Cap Screw	Stainless Steel	
7	Piston Packing	Nitrile Rubber		17	High-precision guide	Stainless Steel	
8	Wear Ring	Polyacetal Resin		18	Bolt	Stainless Steel	
9	Magnet	Plastic		With Switch			
10	Adapter	Aluminum alloy		19	Switch		

MEMO

Compact Cylinder with Compact Linear Guide
Double acting, Linear guide equipped type with switch Ultra low speed type

MSDG-LF Series

●Bore size: ø12, ø16

Circuit Diagram Symbol 

RoHS

Model No. Notation Method

With Switch
(Built-in magnet for switch)

MSDG-LF - 12 - 10 - F2V - R - R

- MSDG-LF: Model No.
- 12: ❶ Bore size
- 10: ❷ Stroke
- F2V: ❸ Switch Model No.
- R: ❹ Number of Switches
- R: ❺ Option

❶ Bore Size (mm)

Code	Content
12	ø12
16	ø16

❷ Stroke (mm)

Code	Content
5	5
10	10
15	15
20	20
25	25
30	30

*For details on stroke, please refer to P. 330.

❹ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

❺ Option

Code	Content	
Blank	Front piping type	Piping port
*1 R	Rear piping type	Piping port

*1: In the case of the rear piping type, mounting on the side of the main body is possible.

Switch Single Unit Model No. Notation Method

SW - F0H

- F0H: ❸ Switch Model No.

❸ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20	-	F2S□	
		3-wire (NPN)	-	30 or less	-	50 or less	-	F3S□	
		2-wire	-	10 to 30	-	5 to 20 *2	F2H□	F2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3H□	F3V□	
		3-wire (PNP)	-	30 or less	-	50 or less	F3PH□	F3PV□	
	2-Color	2-wire	-	24±10%	-	5 to 20	F2YH□	F2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3YH□	F3YV□	
Reed	1-Color	2-wire	-	24 ± 10%	-	5 to 20	FOH	F0 V	

1: For "" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: When with solid state switch, use non-magnetic mounting bolts (made of stainless steel, etc.) only for through bolts.
*4: Switches other than the model No.s listed above are also available. (Custom Product) For details, see P. 753.
*5: Depending on the cylinder mounting and stroke relationship, it may not be possible to mount the switch. For mountability, please refer to P. 322.

* Lead wire length

Code	Content
Blank	1 m (Standard)
3	3 m (Option)

Example) Lead wire length
1 m F2S
3 m F2S 3

Specifications

Item		MSDG-LF	
Bore Size mm		ø12	ø16
Actuation method		Double acting, Guided type	
Operating Fluid		Compressed Air	
Max. working pressure MPa		1.0	
Min. Operating Pressure MPa		0.1	
Proof Pressure MPa		1.6	
Ambient Temperature °C		5 to 60	
Port Size	Front piping type	M5	
	Rear piping type	M3	
Stroke tolerance mm		$^{+2.0}_{0}$	
Operating Piston Speed mm/s		1 to 200	
Cushion		With Rubber Cushion	
Lubrication		Not Available	
Allowable Absorbed Energy J		0.044	0.110

Stroke

Bore Size (mm)	Standard Stroke (mm)	Minimum stroke with 2 switches (mm)		Minimum stroke with 1 switch (mm)	
		Reed switch	Solid state switch	Reed switch	Solid state switch
ø12	5, 10, 15, 20, 25, 30	10	5	5	5
ø16	5, 10, 15, 20, 25, 30	10	5	5	5

Note) Strokes other than standard are not available.

Theoretical Thrust Table

(Unit: N)

Bore Size (mm)	Operating Direction	Operating Pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø12	Push	11.3	17.0	22.6	33.9	45.2	56.5	67.9	79.2	90.5	1.02x10²	1.13 x 10²
	Pull	8.48	12.7	17.0	25.4	33.9	42.4	50.9	59.4	67.9	76.3	84.8
ø16	Push	20.1	30.2	40.2	60.3	80.4	1.01 x 10²	1.21 x 10²	1.41 x 10²	1.61 x 10²	1.81 x 10²	2.01 x 10²
	Pull	15.1	22.6	30.2	45.2	60.3	75.4	90.5	1.06 x 10²	1.21 x 10²	1.36 x 10²	1.51 x 10²

Outline Dimension Drawing

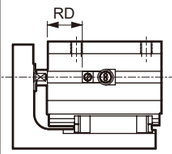
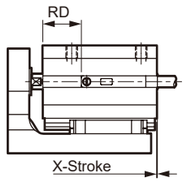
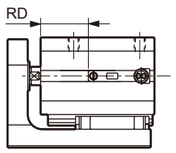
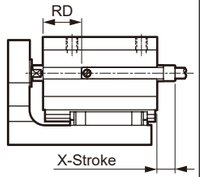
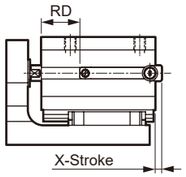
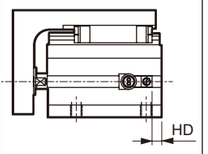
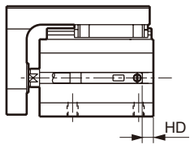
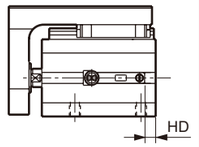
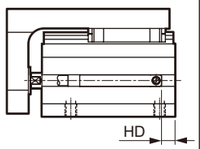
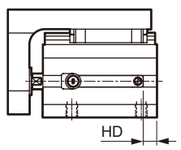
Same as double acting, guided type MSDG-L series. Please refer to P. 324, 325.

MEMO

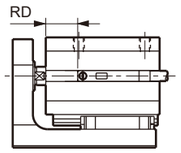
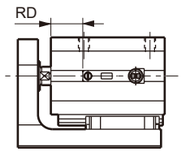
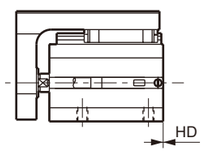
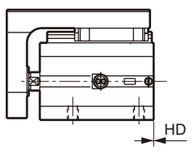
With Linear Guide
LCM
LCR
LCG
LCW
LCX
MSDG
Cylinder Switch
Ending

MSDG-L series (ø6 / ø8) Switch external dimensions diagram

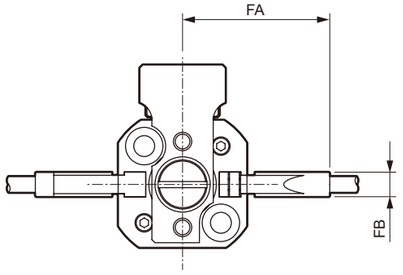
● F2S, F3S, F2H/V, F3H/V, F2YH/V, F3YH/V, F3PH/V

		F2S / F3S	F2H / F3H	F2 V / F3 V	F2YH / F3YH / F3PH	F2YV / F3YV / F3PV
ø6, ø8	RD					
	HD					

● FOH/V

		F0H	F0 V
ø6, ø8	RD		
	HD		

● Protrusion dimension when mounting cylinder switch F2S, F3S



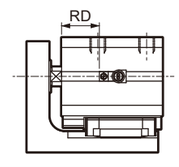
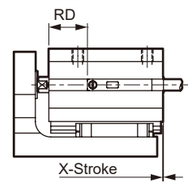
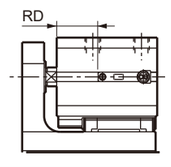
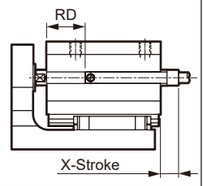
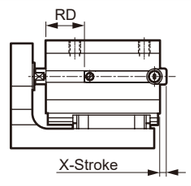
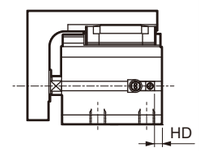
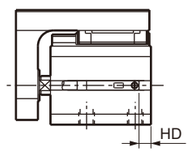
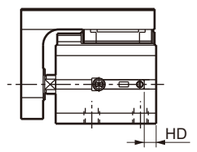
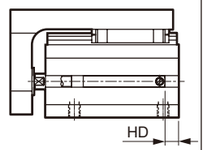
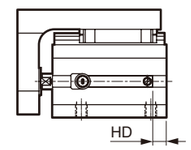
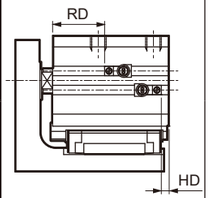
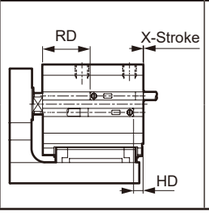
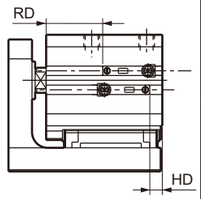
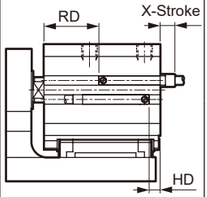
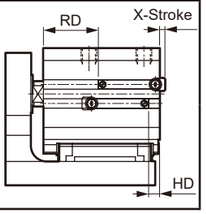
(Unit: mm)

Code	F2S/F3S				F2H/F3H			F2 V/F3 V		F2YH/F3YH/F3PH			F2YV/F3YV/F3PV			F0H		F0 V	
Tube I.D. (mm)	RD	HD	FA (*2)	FB (*2)	RD	HD	X (*1)	RD	HD	RD	HD	X (*1)	RD	HD	X (*1)	RD	HD	RD	HD
ø6	9	2.5	20.6	4	10	3.5	5.2	10	3.5	10	3.5	9.7	10	3.5	6.7	6.0	0	6.0	0
ø8	11.5	1.5	21.6	4	12.5	2.5	6.2	12.5	2.5	12.5	2.5	10.7	12.5	2.5	7.7	8.5	0	8.5	0

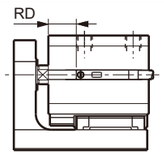
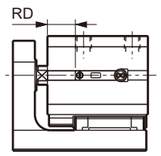
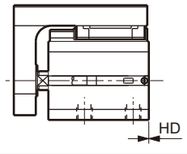
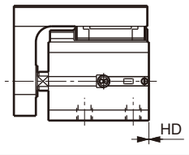
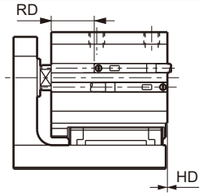
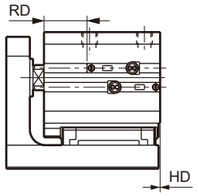
*1: X dimension is the switch protrusion dimension from the main body end face. If X-stroke is negative, there is no switch protrusion from the main body end face.
*2: For FA and FB dimensions, please refer to "Protrusion dimension when mounting cylinder switch F2S, F3S".
*3: For switch mountability, refer to the model No. notation method for each variation.

MSDG-L series (ø12 / ø16) Switch external dimensions diagram

● F2S, F3S, F2H/V, F3H/V, F2YH/V, F3YH/V, F3PH/V

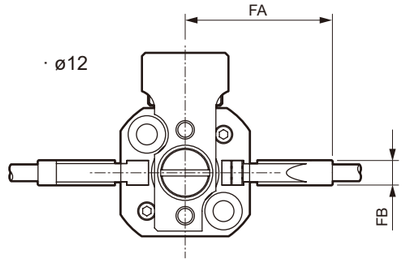
		F2S / F3S	F2H / F3H	F2 V / F3 V	F2YH / F3YH / F3PH	F2YV / F3YV / F3PV
ø12	RD					
	HD					
ø16	RD					
	HD					

●FOH/V

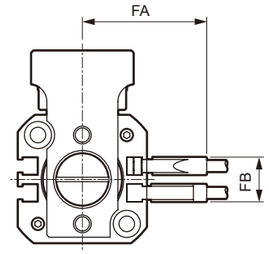
		F0H	F0 V
ø12	RD		
	HD		
ø16	RD		
	HD		

● Protrusion dimension when mounting cylinder switch F2S, F3S

· ø12



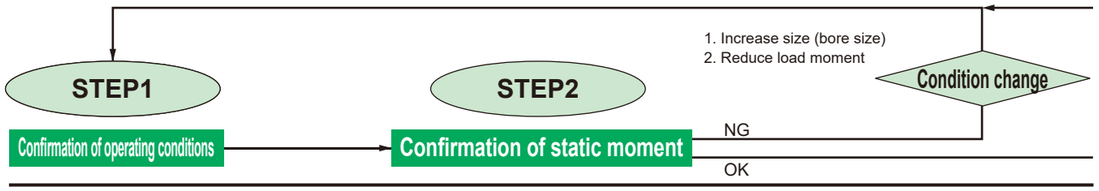
· ø16



(Unit: mm)

Code	F2S/F3S				F2H/F3H			F2 V/F3 V		F2YH/F3YH/F3PH			F2YV/F3YV/F3PV			F0H		F0 V	
Tube I.D. (mm)	RD	HD	FA (*2)	FB (*2)	RD	HD	X (*1)	RD	HD	RD	HD	X (*1)	RD	HD	X (*1)	RD	HD	RD	HD
ø12	12	2.5	23.6	4	13	3.5	5.7	13	3.5	13	3.5	10.2	13	3.5	7.2	9.0	0	9.0	0
ø16	16.5	2.5	25.6	10	17.5	3.5	5.2	17.5	3.5	17.5	3.5	9.7	17.5	3.5	6.7	14.0	0	14.0	0

*1: X dimension is the switch protrusion dimension from the main body end face. If X-stroke is negative, there is no switch protrusion from the main body end face.
*2: For FA and FB dimensions, please refer to "Protrusion dimension when mounting cylinder switch F2S, F3S".
*3: For switch mountability, refer to the model No. notation method for each variation.



STEP1
Confirmation of operating conditions

1. Bore Size	:	D (mm)	6. Load moment	:	M1, M2, M3 direction (N·m)
2. Stroke	:	St (mm)	7. Load Weight	:	m1, m2, m3 (kg)
3. Operating Pressure	:	P (MPa)	8. Overhang amount	:	L1, L2, L3 (m)
4. Travel time	:	t (s)	9. Length from the center of the guide to the table end	:	L (m)
5. Cylinder movement direction	:	Vertical direction, Horizontal direction	10. Length from the table end to the load	:	A (m)

STEP2
Confirmation of static moment

The allowable moment value differs depending on the load mounting direction (M1, M2, M3 direction). Calculate the value of the acting moment with reference to the diagram below.

● When the load mounting direction is only one direction:
Confirm that the calculated value is less than or equal to the allowable moment value (Table 1).

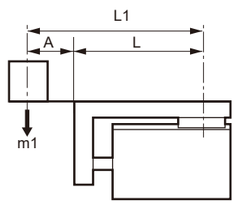
● When the load mounting direction is two or more directions (in the case of combined moment):
Divide the calculated value in each direction by the allowable moment value (Table 1), obtain the moment ratio, and confirm that the total value is 1.0 or less.

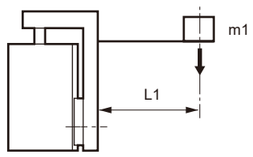
$$\frac{M1}{M1\ max} + \frac{M2}{M2\ max} + \frac{M3}{M3\ max} \leq 1.0$$

Table 1 Allowable moment during operation (Unit: N·m)

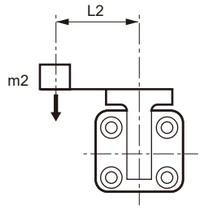
Bore Size (mm)	M1	M2	M3
ø6	0.16	0.24	0.16
ø8	0.16	0.24	0.16
ø12	0.27	0.55	0.27
ø16	0.57	1.16	0.57

● Bending moment: M1
M1 (N·m) = 10 x m1 (kg) x L1 (m)

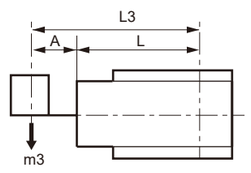


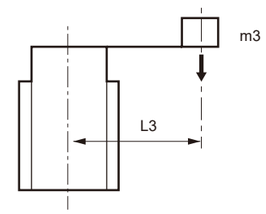


● Lateral bending moment: M2
M2 (N·m) = 10 x m2 (kg) x L2 (m)



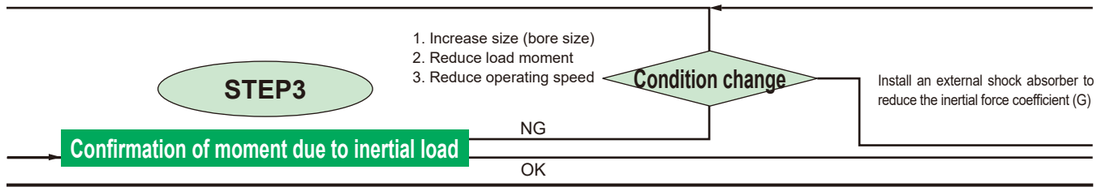
● Torsional moment: M3
M3 (N·m) = 10 x m3 (kg) x L3 (m)





Value of L (Unit: m)

Bore Size (mm)	Stroke					
	5	10	15	20	25	30
ø6	0.027	0.032	0.037	0.042	0.047	0.052
ø8	0.028	0.033	0.038	0.043	0.048	0.053
ø12	0.031	0.036	0.041	0.046	0.051	0.056
ø16	0.033	0.038	0.043	0.048	0.053	0.058



STEP3
Confirmation of moment due to inertial load

Depending on the load mounting direction (M1, M2, M3 direction), moment due to inertial load may act.
Calculate the value of the moment due to inertial load with reference to the diagram below.

Moment due to inertial load (M1'/M3') is load weight (m1, m2, m3), overhang amount (L1, L2, L3, L1', L3')
Determined by the inertial force coefficient (G).

The inertial force coefficient (G) is determined from the relationship between the inertial force coefficient and the stroke end speed (Figure 1).

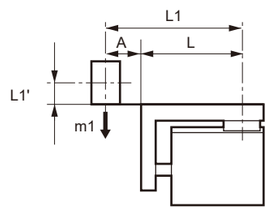
Confirm that the calculated value is less than or equal to the allowable moment value (Table 2).

Table 2 Allowable moment when inertial load is acting (Unit: N·m)

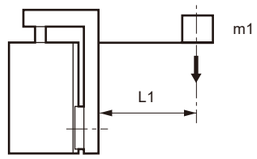
Bore Size (mm)	M1'	M2'	M3'
ø6	0.33	-	0.33
ø8	0.33	-	0.33
ø12	0.49	-	0.49
ø16	1.11	-	1.11

* Inertial load does not act in the M2 direction.

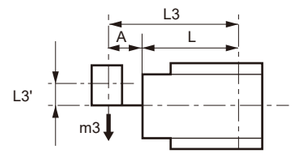
● Bending moment: M1
M1' = 10 x m1 x (L1 + G x L1')



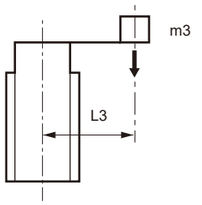
M1' = 10 x m1 x L1 x (1 + G)



● Torsional moment: M3'
M3' = 10 x m3 x (L3 + G x L3')



M3'=10 x m3 x L3 x (1 + G)



M3' = 10 x m2 x G x L2

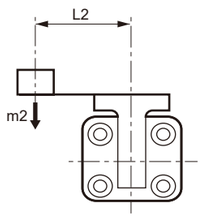
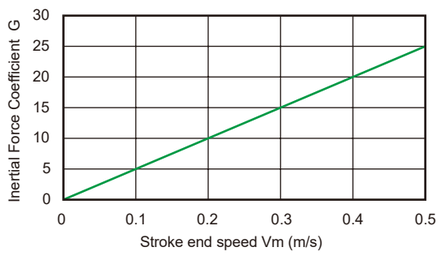
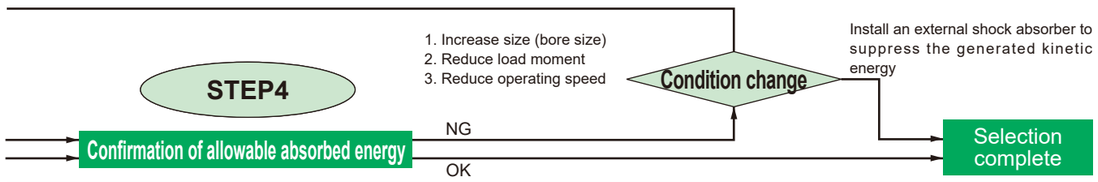


Figure 1 Relationship between inertial force coefficient and stroke end speed



Note) Stroke end speed Vm is calculated from STEP4.



STEP4
Confirmation of allowable absorbed energy

First, determine the kinetic energy of the cylinder.

$$E = \frac{1}{2} \times m \times Vm^2$$

$$Vm = \frac{1 \times 10^{-3}}{t} \times \left(1+1.5 \times \frac{\alpha}{100}\right)$$

$$\alpha = \frac{Fn}{F} \times 100$$

$$F = FO \times \frac{\mu}{100}$$

E	:	Kinetic Energy	(J)
m	:	Load weight	(kg)
Vm	:	Stroke end speed	(m/s)
St	:	Stroke	(mm)
t	:	Travel time	(s)
α	:	Load factor	(%)
Fn	:	Required thrust to move the workpiece	(N)
F	:	Actual thrust	(N)
F0	:	Theoretical thrust (Refer to Table 4)	(N)
μ	:	Thrust efficiency	(%)

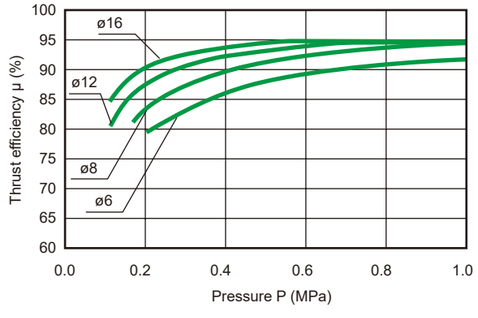
Table 3 Required thrust (Fn)

Cylinder movement direction	Horizontal direction	Vertical Direction
Thrust	Fn = 0.2 x 10 x m	Fn = 1.2 x 10 x m

Table 4 Theoretical thrust table (F0) (Unit: N)

Tube Bore	Operating Direction	Operating pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø6	Push			6	8	11	14	17	20	23	25	28
	Pull			3	5	6	8	9	11	13	14	16
ø8	Push		8	10	15	20	25	30	35	40	45	50
	Pull		5	6	9	12	15	18	21	24	28	31
ø12	Push	11	17	23	34	45	57	68	79	90	102	113
	Pull	8	13	17	25	34	42	51	59	68	76	85
ø16	Push	20	30	40	60	80	100	121	141	161	181	201
	Pull	15	23	30	45	60	75	90	106	121	136	151

Figure 2 Relationship between thrust efficiency and pressure



Confirm that the kinetic energy (E) is less than or equal to the allowable absorption energy (E0).

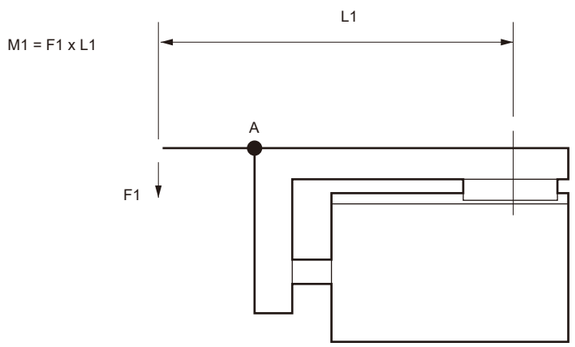
E≤E0

Table 5 Allowable absorption energy (E0)

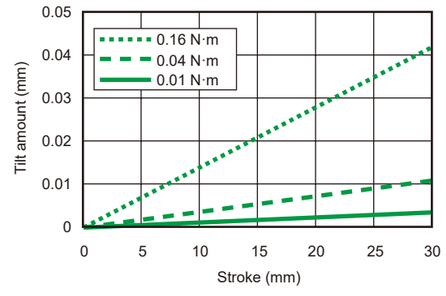
Bore Size (mm)	Allowable Absorption Energy E0 (J)
ø6	0.004
ø8	0.014
ø12	0.044
ø16	0.110

Table tilt amount (Reference value)

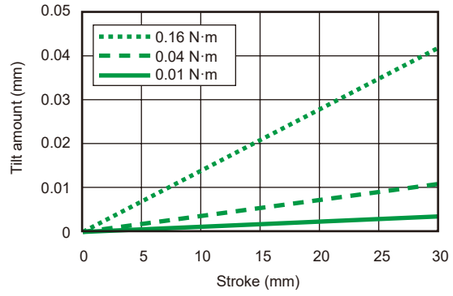
● Tilt amount at point A when M1 moment is acting



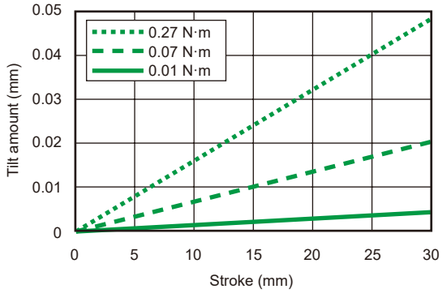
● MSDG-L-6



● MSDG-L-8



● MSDG-L-12



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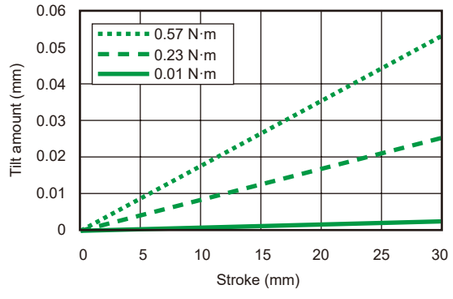
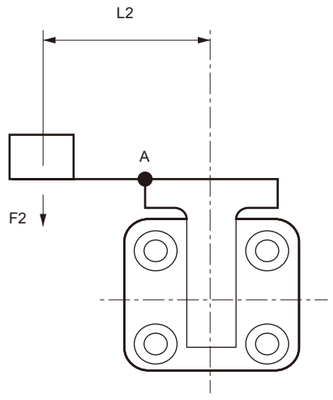


Table tilt amount (Reference value)

● Tilt amount at point A when M2 moment is acting

M2 = F2 x L2



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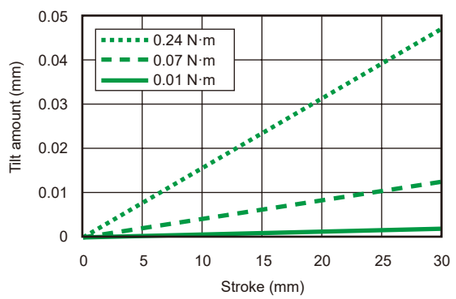

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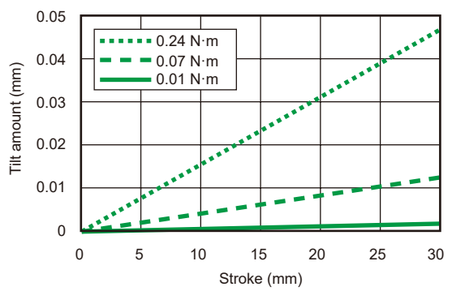
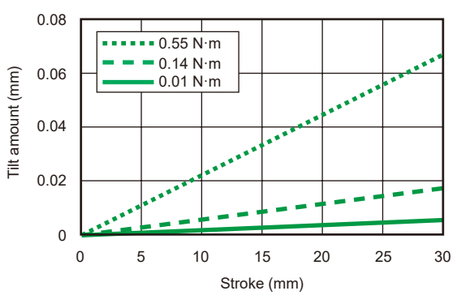


● MSDG-L-12



● MSDG-L-16

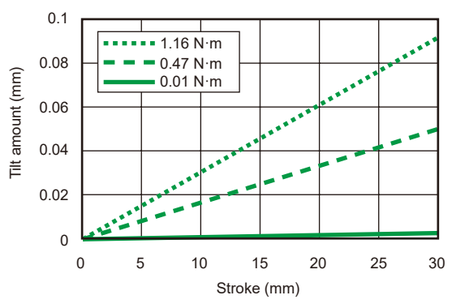
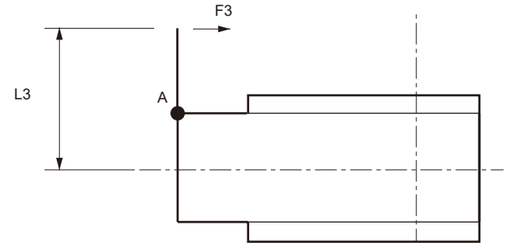


Table tilt amount (Reference value)

● Tilt amount at point A when M3 moment is acting

M3 = F3 x L3



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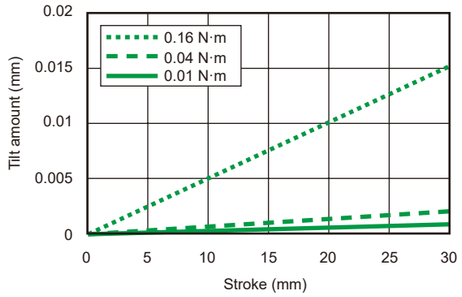

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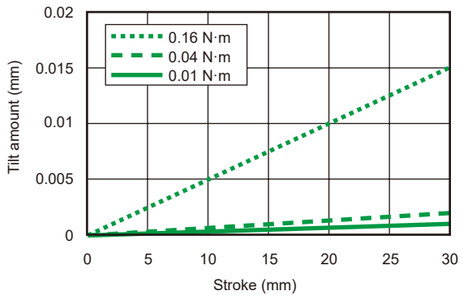

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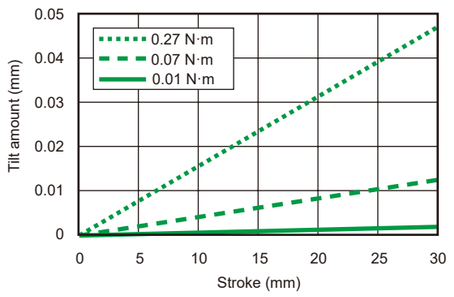
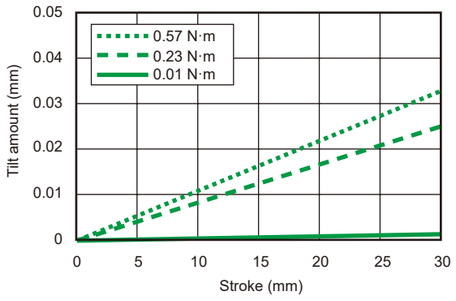


● MSDG-L-16



Pneumatic Equipment

To Use This Product Safely

Be sure to read this before use.

For general cylinder information, see Intro P. 41, and for cylinder switches, see P. 808.

Individual Precautions: Compact cylinder with small linear guide MSDG Series

During Design / Selection

1. Common

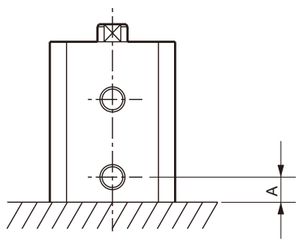
Caution

■ When selecting a cylinder, follow the "Model Selection Guide" on P. 334 to 336.

■ Please consult us if using the cylinder as a stopper.

■ When selecting a cylinder switch, refer to the "Switch Usability Selection Table" on P. 322.

■ During piping
Precautions for piping speed controllers and fittings. There are restrictions on usable piping fittings, so please refer to the table below when using.



Fitting Usability Table

Code / Bore Size (mm)	Port Size	Port position Dimension A	Usable speed controllers / fittings	Fitting outer diameter
ø6 ø8	M3	4	SC3W-M3-3 SC3W-M3-4 SC3U-M3-3 SC3U-M3-4 GWS3-M3-S GWS4-M4-S FTS4-M3	ø8 or less
ø12 ø16	M5	5	SC3W-M5-3 SC3W-M5-4 SC3W-M5-6 SC3U-M5-3 SC3U-M5-4 SC3U-M5-6 GWS4-M5-S GWS6-M5-S FTS4-M5 FTS6-M5	ø10 or less

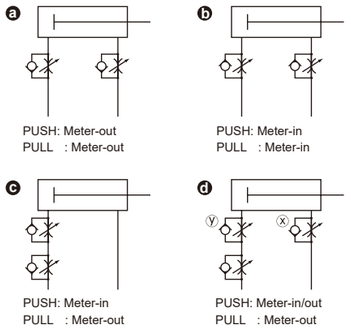
Ultra low speed type MSDG-LF

Caution

■ Use without lubrication.
Lubrication may change characteristics.

■ Generally, the higher the air pressure and the lower the load factor, the more stable the speed.
Use with a load factor of 50% or less.

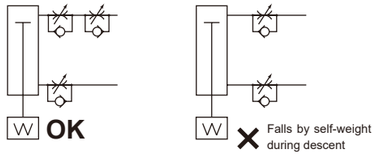
■ Speed control with a meter-out circuit provides stability.
When driving a single-rod cylinder at creep speed in the PUSH direction, if the load resistance is small, a flying-out phenomenon may occur at the start of operation. As countermeasures, use circuits ⓑ, ⓒ, ⓓ. In addition, circuit ⓓ is the most stable.



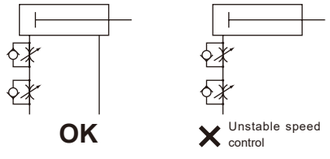
ⓓ Speed adjustment method for PUSH operation of the circuit:
1. Speed setting with x-speed controller
2. Throttle with y-speed controller until lunging stops.
3. Reconfirmation of speed

(*1) Comparing ⓑ ⓒ ⓓ, the ⓓ circuit is the most stable in operation.

(*2) For vertical mounting, it will fall by its own weight in a meter-in circuit, so combine it with a meter-out circuit.



(*3) For series connection of speed controllers, use the circuit shown in the figure below.



(Guideline for lurching occurrence)
Lurching occurs in the following cases:

• Thrust > Resistance

* Resistance: Thrust due to residual pressure on exhaust side (For creep speed type,+[intake pressure = residual pressure)
For horizontal use: Frictional force due to load
For vertical use: Dead weight of the load

■ Do not apply lateral load to the cylinder.
Operation becomes unstable when lateral load is applied.

■ Avoid use in places with vibration.
Operation becomes unstable due to the influence of vibration.

During Use

1. Common

Caution

■ Install the switch while adhering to the tightening torque.
If tightened beyond the tightening torque range, mounting screws, mounting brackets, switches, etc. may be damaged. Also, if tightened below the tightening torque range, the switch mounting position may shift.
Tightening torque: 2.0 (N·m)

■ During installation
Please do not make dents, scratches, etc. on the main body (tube) mounting surface and table surface that would impair flatness. The flatness of the mating side to be included to the table should be 0.05 mm or less.

Ultra low speed type MSDG-LF

Caution

■ Install the speed controller near the cylinder.
If installed far from the cylinder, the speed will become unstable. Use SC-M3/M5-F, SC3W, or SCD-M3/M5-F series speed controllers.

■ Adjust alignment etc. so that no lateral load is applied to the cylinder. Also, adjust and install so that there is no twisting with respect to the sliding guide.
Operation will become unstable if there are fluctuations in load or resistance. Guides with a large difference between static friction and dynamic friction will result in unstable operation.

For precautions regarding mounting, installation, adjustment, use, and maintenance, please see "Precautions for Use" in this catalog and the CKD Components Product website (https://www.ckd.co.jp/kiki/en/) → "Model No." → Instruction Manual

Guided Cylinder

Listed Page

Cylinder with Compact Guide
STM Series — 345

Guided Cylinder
STG, **STG-K** Series — 363

Guided Cylinder
STS, **STL** Series — 473

Twin Rod Cylinder
STR2 Series — 661

Unit Cylinder
UCA2 — 717

STM

Cylinder with Compact Guide

ø6, ø10

CONTENTS

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Series variation	348
● Double acting, Single rod type (STM-M/B)	350
Outer Dimensions Diagram with Switch	357
Model Selection Guide	358
⚠ Precautions for Use	360

Full of ease of use, super small

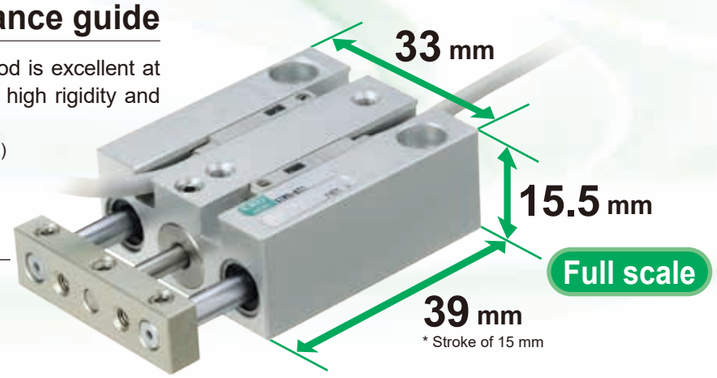
Super small size guided cylinder STM Series (ø6, ø10) with mounting flexibility, abundant variations, and consideration for ease of use and selection.

Rolling bearing type

With high-performance guide

The non-rotation accuracy of the rod is excellent at ±0.08*, and it has a structure with high rigidity and strong resistance to lateral loads.

* In the case of rolling bearing type (STM-B)



Super small size

The size of the smallest model is width 33 mm x height 15.5 mm. As a guided cylinder, it is an extremely small space-saving type.

For conveying small parts, etc.

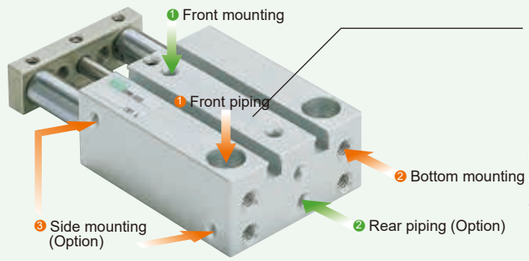
Ideal for small parts conveyance lines for precision equipment such as semiconductors, and can be used for a wide range of applications such as positioning, stoppers, clamps, press fitting, lifters, pushers, etc.

Application fields

Can be used in various manufacturing processes.

Rear piping possible / Side mounting also possible

The piping direction can be front or centralized piping from the rear. (Option) Mounting on the side of the cylinder is possible. Multiple units can be installed side by side even in narrow spaces. (Option)



2-color indicator type switch mountable

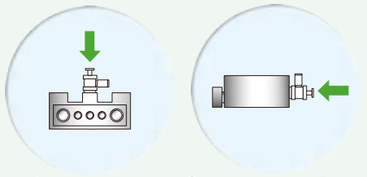
2-color indicator type solid state switch can be mounted on all models. The switch can be selected from two directions, horizontal and vertical, for the lead wire extraction direction.

* Regarding the photo, all options are shown for convenience of explanation. Actually, bottom mounting is not equipped when the side mounting option is selected. The same applies to piping options.

2 bearing types

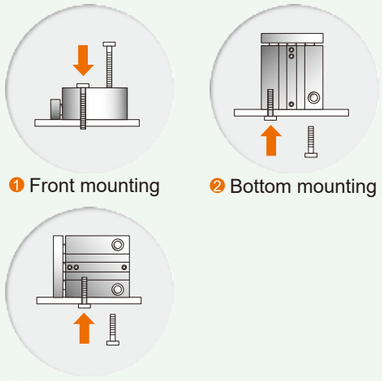
Two types, plain bearing and rolling bearing, are available according to the application.

Piping direction



1 Front piping　2 Rear piping (Option)

Mounting direction



1 Front mounting　2 Bottom mounting

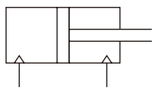
3 Side mounting (option)

STM Series product system

Model variations		Tube I.D.	Stroke (mm) 5	10	15	20	Option: Side mounting A	Rear piping R
Metal bush bearing	STM-M Series	ø6	●	●	●		●	●
		ø10	●	●	●	●	●	●
Ball bearing	STM-B Series	ø6	●	●	●		●	●
		ø10	●	●	●	●	●	●

Cylinder with Compact Guide
STM Series

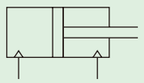
●: Standard, ◎: Option, : Not manufacturable

Variation	Model No. Circuit Diagram Symbol	Bore size (mm)	Stroke (mm) 5	10	15	20		Maximum stroke (mm)	Bearing type: Plain bearing M	Bearing type: Rolling bearing B	Option: Side Mount Type A	Option: Rear piping type R	Switch	Page
Double Acting/ Single Rod Type	STM-M/B 	ø6	●	●	●			15	●	●	●	●	◎	350
		ø10	●	●	●	●		20	●	●	●	●	◎	

Compact guided cylinder Double acting, Single rod type

STM-$^{M}_{B}$ Series

● Bore size: ø6, ø10

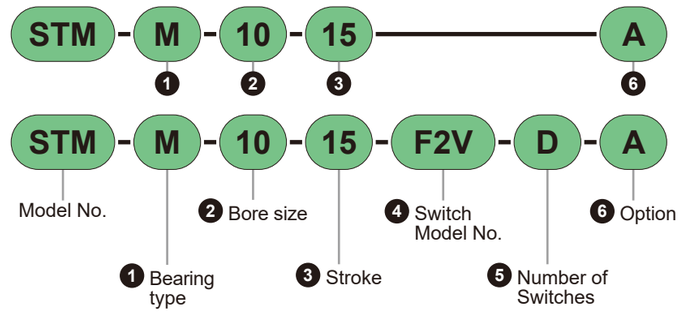
Circuit Diagram Symbol 

RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

With Switch
(Built-in magnet for switch)



1 Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

2 Bore Size (mm)

Code	Content
6	ø6
10	ø10

3 Stroke (mm)

Code	Content
5	5
10	10
15	15
20	20 (ø10 only)

4 Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20	-	F2S□	
		3-wire (NPN)	-	30 or less	-	50 or less	-	F3S□	
		2-wire	-	10 to 30	-	5 to 20 *2	F2H□	F2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3H□	F3V□	
		3-wire (PNP)	-	30 or less	-	50 or less	F3PH□	F3PV□	
	2-Color	2-wire	-	24±10%	-	5 to 20	F2YH□	F2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	F3YH□	F3YV□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: When using a solid state 2-color indicator switch with STM-B-6, do not attach it to magnetic materials such as iron plates. This will cause switch detection failure.
*4: Switches other than the model No.s listed above are also available. (Custom order) For details, refer to P. 753.

* Lead wire length

Code	Content
Blank	1 m (Standard)
3	3 m (Option)

Example) Lead wire length
1 m F2S
3 m F2S 3

5 Number of Switches

Code	Content
R	With 1 on Rod Side
H	With 1 on Head Side
D	With 2 pcs

6 Option

Code	Content	
A	Side Mount Type	
R	Rear piping type	

Clean Specification (Catalog No. CB-033SAA)

● Dust prevention structure usable in cleanrooms

STM-B-·····-P7□

STM-B-·····-P5□

High durability equipment HP series (Catalog No. CC-1421AA)

● Long-life actuator that contributes to productivity improvement with stable operation

STM-$^{M}_{B}$-·····-HP□

Switch Single Unit Model No. Notation Method

SW - F2V

4 Switch Model No.

Specifications

Item		STM-M/B	
Bore Size	mm	ø6	ø10
Actuation method		Double Acting Type	
Operating Fluid		Compressed Air	
Max. Working Pressure	MPa	0.7	
Min. Operating Pressure	MPa	0.15	
Proof Pressure	MPa	1.05	
Ambient Temperature	°C	-10 to 60 (However, no freezing)	
Port Size		M3	
Stroke tolerance	mm	+1.5 0	
Operating Piston Speed	mm/s	50 to 500	
Cushion		With Rubber Cushion	
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)	
Allowable absorption energy	J	0.008	0.054

Stroke

Bore Size	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke	Minimum Stroke with Switch
ø6	5, 10, 15	15	5	5
ø10	5, 10, 15, 20	20		

Note) Strokes other than standard strokes are custom products.

Cylinder Weight

Unit: g

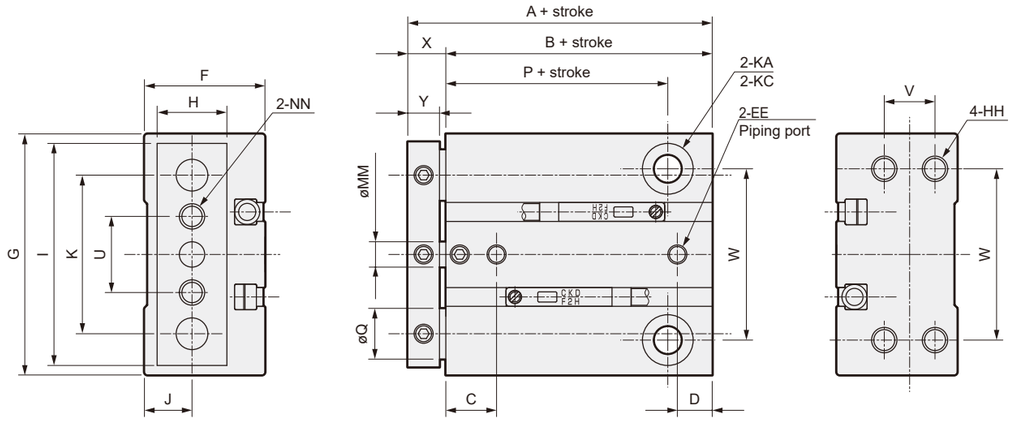
Model No.	Stroke (mm) / Bore Size (mm)	5	10	15	20	Switch weight
STM-M	ø6	45.1	52.5	59.9	-	Refer to the mass described in the switch specifications on P. 753
	ø10	73.7	84.6	95.4	106.3	
STM-B	ø6	41.9	48.1	54.3	-	
	ø10	67.1	75.5	84.0	92.5	

Theoretical Thrust Table

Unit: N

Bore Size (mm)	Operating Direction	Operating pressure (MPa)						
		0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø6	Push	4.24	5.65	8.48	11.3	14.1	17.0	19.8
	Pull	3.18	4.24	6.36	8.48	10.6	12.7	14.8
ø10	Push	11.8	15.7	23.6	31.4	39.3	47.1	55.0
	Pull	9.90	13.2	19.8	26.4	33.0	39.6	46.2

Outline Dimension Drawing



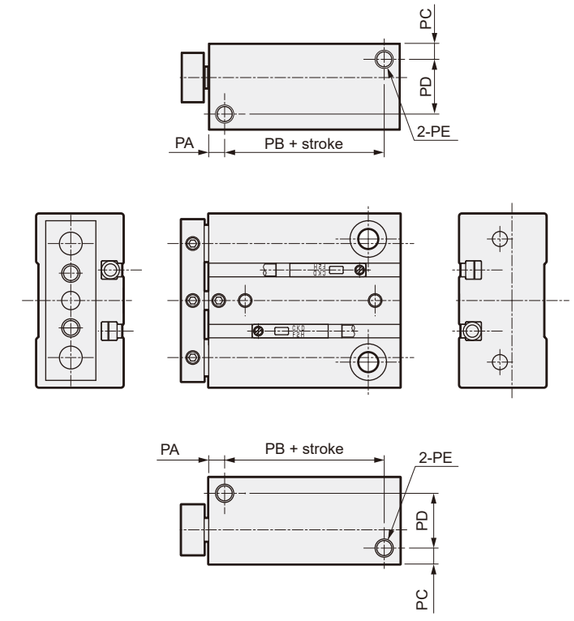
Code / Bore size (mm)	Standard Stroke (mm)	A	B	C	D	EE	F	G	H	HH	I	J	K	KA
6	5, 10, 15	30	24	7.5	5	M3	15.5	33	9	M3 Depth 5	31	6	23	3.4 Through
10	5, 10, 15, 20	34	28	8.5	7	M3	19	38	11	M4 Depth 5	35	7.5	25	4.3 Through

Code / Bore size (mm)	KC	MM	NN	P	Q		U	V	W	X	Y
					STM-M	STM-B					
6	6.1 Counterbore depth 3.3	3	M3 Through	17	6	4	12	6	25	6	5
10	8 Counterbore depth 4.4	4	M4 Through	20.5	8	5	12	8	27	6	5

Note) For dimensions with each switch, refer to P. 357.

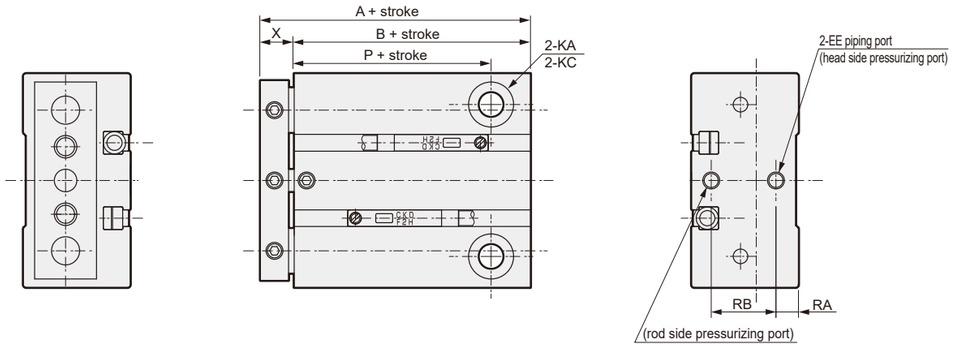
Outer Dimensions Diagram with Option

● Side mounting type (A)



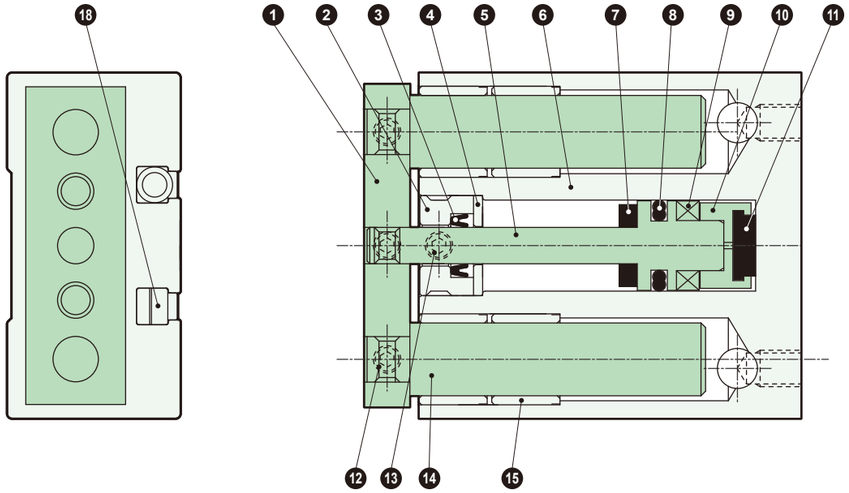
Code / Bore size (mm)	Standard Stroke (mm)	PA	PB	PC	PD	PE
6	5, 10, 15	3	18	3	10	M3 Depth 5
10	5, 10, 15, 20	4	21	4	12	M4 Depth 5

● Rear piping type (R)

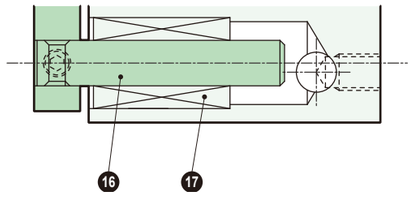


Code / Bore size (mm)	Standard Stroke (mm)	A	B	EE	KA	KC	P	RA	RB
6	5, 10, 15	32	26	M3	3.4 Through	6.1 Counterbore depth 3.3	17	4	8
10	5, 10, 15, 20	34	28	M3	4.3 Through	8 Counterbore depth 4.4	20.5	4	12

Internal Structure Diagram / Material



Plain bearing (M)

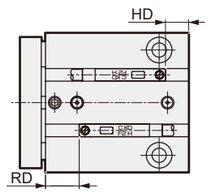
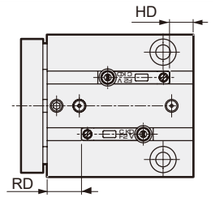
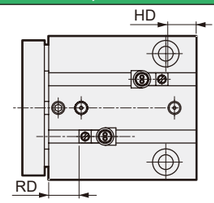
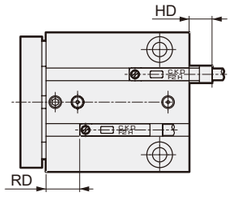
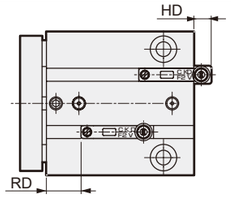
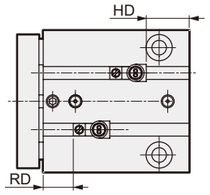


Rolling bearing (B)

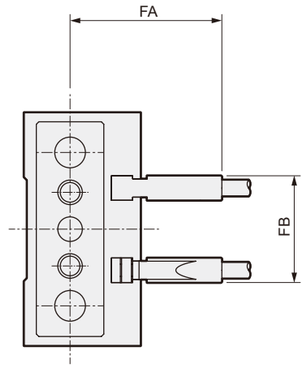
Do not disassemble

Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	End plate	Aluminum Alloy	Alumite	10	Adapter	Aluminum Alloy	Chromate
2	Rod Metal	Stainless Steel		11	Cushion rubber H	Urethane Rubber	
3	Rod Packing	Nitrile Rubber		12	Hexagon socket head set screw	Stainless Steel	
4	Spacer	Aluminum alloy	Chromate	13	Hexagon socket head set screw	Stainless Steel	
5	Piston	Stainless Steel		14	Guide rod	Stainless Steel	ø10: Industrial chromium plating
6	Cylinder Body	Aluminum Alloy	Hard Anodized	15	Bushing	Oil-Impregnated Bearing Alloy	
7	Cushion rubber R	Urethane Rubber		16	Guide rod	Alloy Steel	Industrial Hard Chrome Plating
8	Piston Packing	Nitrile Rubber		17	Ball bearing		
9	Magnet	Plastic	ø10: Painted	With Switch			
				18	Switch		

STM Series Switch External Dimensions Diagram

	F2H, F3H, F2YH, F3YH, F3PH	F2V, F3V, F2YV, F3YV, F3PV	F2S, F3S
Mounting A			
Mounting B *1			

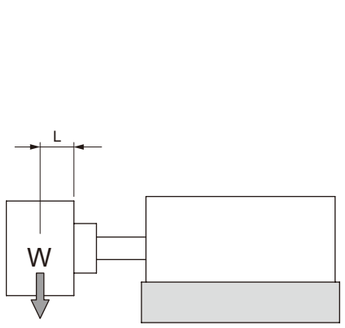
● Protrusion dimension when mounting cylinder switch F2S, F3S (*4)

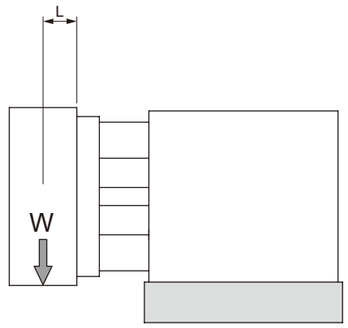


Mounting method	Bore	F2H, F3H		F2V, F3V		F2YH, F3YH, F3PH		F2YV, F3YV, F3PV		F2S, F3S			
		RD	HD (*3)	RD	HD (*3)	RD	HD (*3)	RD	HD (*3)	FA (*4)	FB (*4)	RD	HD
Mounting A	ø6	8	5.5 (7.5)	8	5.5 (7.5)	8	5.5 (7.5)	8	5.5 (7.5)	22.8	17.2	7	4.5
	ø10	10	7.5	10	7.5	10	7.5	10	7.5	24.8	17.4	9	6.5
Mounting B	ø6	8	– 4.5 (– 6.5)	8	1.5 (3.5)	8	– 9 (– 11)	8	– 6 (– 8)	22.8	17.2	7	8
	ø10	10	–3.5	10	0.5	10	8	10	–4	24.8	17.4	9	10

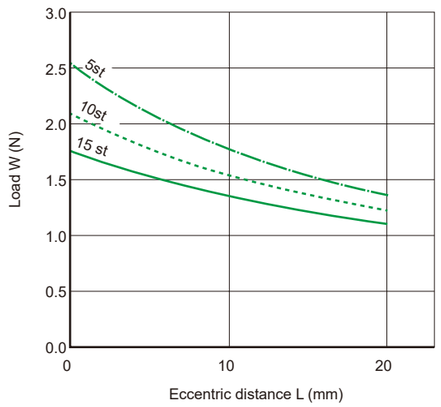
*1: If the switch is mounted as shown in mounting B, the switch may protrude from the main body. If the switch protrudes from the main body and the product is assembled to the device with head-side mounting, the switch will interfere with the device, so please be careful.
*2: A negative dimension indicates the protrusion dimension from the end face of the main body.
*3: Dimensions in ( ) are for the rear piping type.
*4: For FA and FB dimensions, please refer to "Protrusion dimension when mounting cylinder switch F2S, F3S".

Allowable Lateral Load

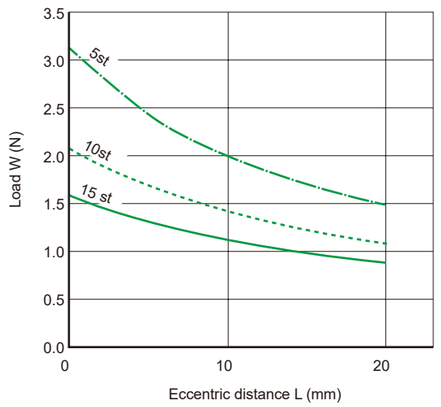




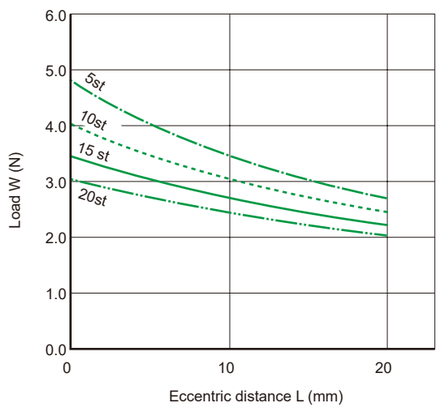
● STM-M-6



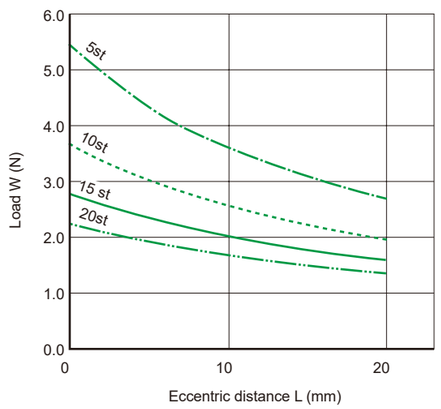
● STM-B-6



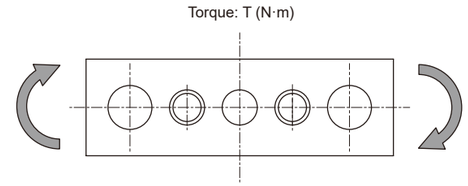
● STM-M-10



● STM-B-10



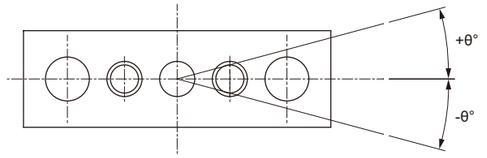
Allowable rotational torque



Unit: N·m

Bore Size (mm)	Model No.	Bearing type	Stroke (mm)			
			5	10	15	20
ø6	STM-M-6	Plain bearing	0.015	0.012	0.010	-
	STM-B-6	Rolling bearing	0.018	0.012	0.009	-
ø10	STM-M-10	Plain bearing	0.030	0.025	0.022	0.019
	STM-B-10	Rolling bearing	0.034	0.023	0.018	0.014

Non-rotation accuracy (Reference value)

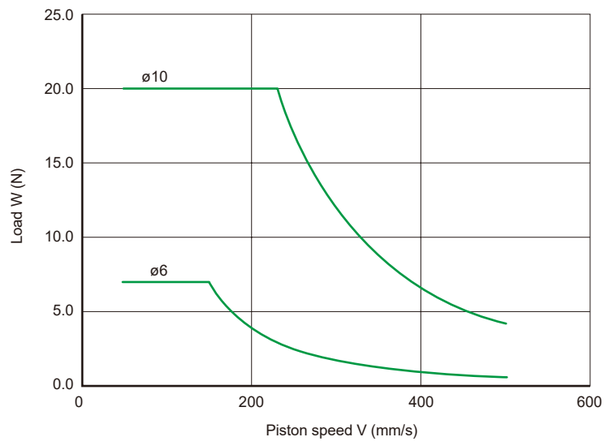


Bore Size (mm)	Non-rotation accuracy θ (degrees)	
	Plain bearing	Rolling bearing
ø6	±0.14	±0.08
ø10	±0.16	±0.08

Allowable absorption energy value

Use within the range to the lower left of the curve. If using in the upper right range, provide a separate external shock absorber.

Allowable absorption energy value



Pneumatic Equipment

To Use This Product Safely

Be sure to read this before use.

For general information on cylinders, please see Intro P. 41, and for cylinder switches, please see P. 808.

Individual Precautions: Compact guided cylinder STM series

During Design / Selection

1. Common

Caution

■ When using a solid state 2-color indicator switch with STM-B-6, do not attach it to magnetic materials such as iron plates. This will cause switch detection failure.

2. With switch

Caution

■ Install the switch while adhering to the tightening torque.
If tightened beyond the tightening torque range, mounting screws, mounting brackets, switches, etc. may be damaged. Also, if tightened below the tightening torque range, the switch mounting position may shift. Tightening torque: 0.03 to 7.0 N·m

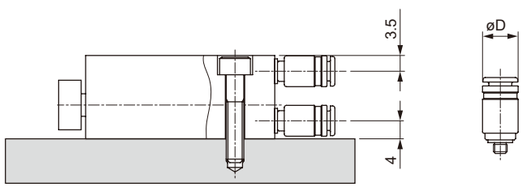
During Use

1. Common

Caution

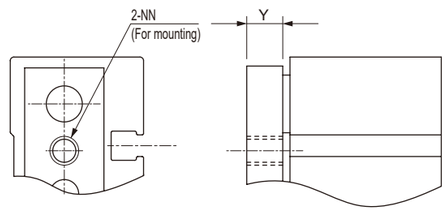
■ Be sure to use a speed controller when piping. Also, the usable fittings when mounting with through bolts for the rear piping type are as follows.

Bore Size	Port Size	Usable fittings / speed controllers	Fitting outer diameter D
ø6 ø10	M3	SC3W-M3-□ SC3U-M3-□	ø8
		FTS4-M3 FTL4-M3	
		GWS□-M3-S	
		PTN2-M3 PTNL-M3	



■ To prevent an increase in sliding resistance, do not make dents or scratches on the tube body mounting surface and end plate surface that may impair flatness. The flatness of the mating side to be included to the end plate should be 0.02 mm or less. If it is difficult to ensure the above flatness, insert shims (customer prepared), etc. between the end plate and the workpiece to adjust the gap. This may help prevent an increase in sliding resistance.

■ When attaching a jig, etc. to the end plate, ensure that the bolt screw-in length is equivalent to the Y dimension. This will cause damage to the end plate.



Bore Size (mm)	Y dimension
ø6	5
ø10	

■ A rubber cushion is incorporated as a cushion mechanism. The table below shows the kinetic energy that can be absorbed by the rubber cushion. If the energy exceeds this value, consider a separate shock absorber.

Bore Size (mm)	Allowable Absorption Energy (J)
ø6	0.008
ø10	0.054

■ When attaching a workpiece to the end plate, tighten with the tightening torque shown in the table below.

Bore Size (mm)	Thread Size	Tightening Torque (N·m)
ø6	M3	0.6
ø10	M4	1.6

■ This cylinder is a non-disassembly type. Do not forcibly disassemble.

For precautions regarding mounting, installation, adjustment, use, and maintenance, please see "Precautions for Use" in this catalog and the CKD Components Product website (https://www.ckd.co.jp/kiki/en/) → "Model No." → Instruction Manual

Guided

STG, STG-K

Guided Cylinder

ø12, ø16, ø20, ø25, 32,
ø40, ø50, ø63, 80, ø100

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● Double acting, Air cushion type (STG-$^{M}_{B}$C)	392
● Double acting, Drop prevention type (STG-$^{M}_{B}$Q)	402
● Double acting, Heavy-duty scraper type (STG-$^{M}_{B}$G)	410
● Double acting, Coil scraper type (STG-$^{M}_{B}$G1)	410
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● Double acting, Spatter adhesion prevention type (STG-$^{M}_{B}$G4)	424
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Guided cylinder

STG Series

Space-saving and lightweight with integrated guide. Supports high loads with High precision and High rigidity

No special tools required

Piston rod mounting bolts can be included and detached with a hexagon wrench. No special tools required for maintenance.

Improved load bearing performance

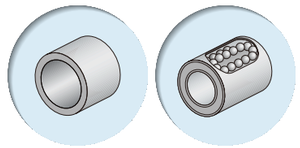
Improved metal bearing and bearing structure, resulting in improved load bearing performance compared to conventional products.

Lightweight, Resource saving

Reviewed and optimized the aluminum body shape of the cylinder body. Achieved lighter weight and resource saving compared to conventional products.

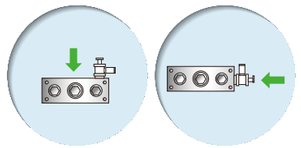
Selectable from 2 bearing types, 2 piping directions and 3 mounting directions

Piping direction



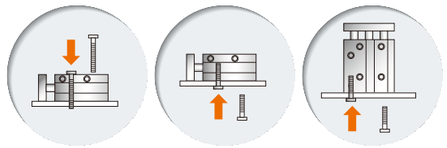
❶ Metal bush bearing ❷ Ball bearing

Mounting direction



❶ Front piping ❷ Side piping

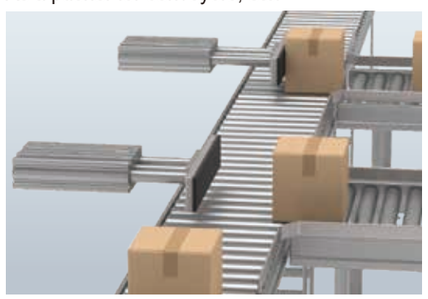
Mounting direction



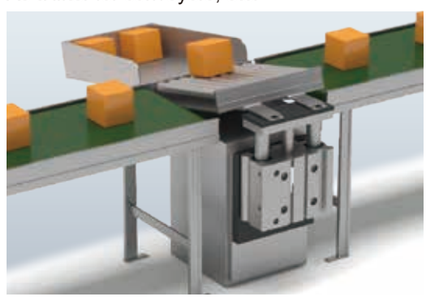
❶ Front mounting ❷ Side mounting ❸ Bottom mounting

Application Example

As a pusher for conveyors, etc.



As a lifter for conveyors, etc.



For stronger impacts!

Heavy-duty guide rod powerfully absorbs impact!

Guided cylinder
Heavy duty guide rod

STG-K Series

Adopts a larger diameter guide rod than the standard STG series, and the fastening method of the guide rod and end plate is also stronger Significantly improved load resistance and impact resistance

STG-K ø32
Guide rod diameter 25mm
STG-M ø50 or equiv.

STG-K ø50
Guide rod diameter 30mm
STG-M ø80 or equiv.

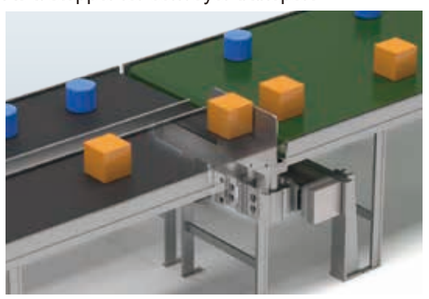
Achieves 2 ranks higher impact resistance performance while maintaining the same bore size.

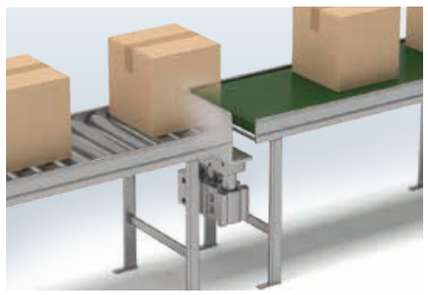
STG series product system

Model variations		Bearing		Bore size (ø)										Max. stroke
		Metal bush M	Ball B	12	16	20	25	32	40	50	63	80	100	MAX
Single rod	STG-$^{M}_{B}$	●	●	●	●	●	●	●	●	●	●	●	●	400
Rubber-air cushioned	STG-$^{M}_{B}$-□C	●	●					●	●	●	●			400
Air cushioned	STG-$^{M}_{B}$C	●	●		●	●	●	●	●	●	●			400
Position locking	STG-$^{M}_{B}$Q	●	●			●	●	●	●	●	●			400
Rubber scraper	STG-$^{M}_{B}$G	●	●			●	●	●	●	●	●			400
Coil scraper	STG-$^{M}_{B}$G1	●	●			●	●	●	●	●	●			400
Coolant proof	STG-MG2, MG3	●				●	●	●	●	●	●			400
Anti-spatter adherence	STG-$^{M}_{B}$G4	●	●						●	●	●			400
Environment-resistant scraper	STG-MG5	●					●	●	●	●	●	●	●	400
Heavy duty guide rod	STG-K	●						●		●				200

Application Example

As a stopper for conveyor transport





Guided Cylinder
STG Series

●: Standard, ◎: Option, ○: Custom Products, : Not manufacturable

Variation	Model No. Circuit Diagram Symbol	Bore Size (mm)	Standard Stroke (mm) 10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400	Min. Stroke (mm) *1	Max. Stroke (mm)	Intermediate stroke (per mm) *2	Bearing type: Plain bearing M	Bearing type: Rolling bearing B	Switch	Page
Double Acting/ Single Rod Type	STG-$^{M}_{B}$	ø12, ø16	●	●		●	●	●	●	●	●	●	●	●	●				5 (10)	250	5	●	●	◎	370
		ø20, ø25		●		●	●	●	●	●	●	●	●	●	●	●	●	●		400		●	●		
		ø32, ø40, ø50, ø63			●			●	●	●	●	●	●	●	●	●	●	●		400		●	●		
		ø80, ø100			●			●	●	●	●	●	●	●	●	●	●	●		400		●	●		
Double Acting/With Rubber Air Cushion	STG-$^{M}_{B}$-□C	ø32, ø40, ø50			●			●	●	●	●	●	●	●	●	●	●	●	5 (10)	400	5	●	●	◎	384
		ø63																	10						
Double Acting/ With Air Cushion	STG-$^{M}_{B}$-□C	ø16			●			●	●	●	●	●	●	●	●				15 *3	250	1 (Custom order)	●	●	◎	392
		ø20, ø25			●			●	●	●	●	●	●	●	●	●	●	●		400		●	●		
		ø32, ø40, ø50, ø63			●			●	●	●	●	●	●	●	●	●	●	●		400		●	●		
Double Acting, Drop Prevention Type	STG-$^{M}_{B}$Q	ø20, ø25 ø32, ø40, ø50, ø63			●			●	●	●	●	●	●	●	●	●	●	●	5 (15) *4	400	5	●	●	◎	402
Double acting, Heavy-duty scraper type Coil scraper type	STG-$^{M}_{B}$G STG-$^{M}_{B}$G1	ø20, ø25		●		●	●	●	●	●	●	●	●	●	●	●	●	●	5 (10)	400	5	●	●	◎	410
		ø32, ø40, ø50, ø63			●			●	●	●	●	●	●	●	●	●	●	●		400		●	●		
Double Acting, Coolant Proof Type	STG-MG2 STG-MG3	ø20, ø25		●		●	●	●	●	●	●	●	●	●	●	●	●	●	5 (10)	400	5	●		◎	418
		ø32, ø40, ø50, ø63			●			●	●	●	●	●	●	●	●	●	●	●		400		●			
Double Acting, Spatter Adhesion Prevention Type	STG-$^{M}_{B}$G4	ø40, ø50, ø63			●			●	●	●	●	●	●	●	●	●	●	●	5 (10)	400	5	●	●	◎	424
Double acting, Environment resistant scraper type	STG-MG5	ø20, ø25		○		○	○	○	○	○	○	○	○	○	○	○	○	○	5 (10)	400	5	○		○	430
		ø32, ø40, ø50, ø63, ø80, ø100			○			○	○	○	○	○	○	○	○	○	○	○							
Double acting, Guide rod type	STG-K	ø32, ø50			●			●	●	●	●	●	●	●					5 (10)	200	5			◎	440

*1: The value in ( ) for the minimum stroke indicates the case of a 2-color indicator type switch for AC magnetic fields.
*2: Intermediate strokes are handled by attaching a spacer to a standard stroke cylinder. Please consult us separately for dedicated body support.
*3: Cushion effect cannot be obtained below the minimum stroke with air cushion, so select the basic type.
*4: This is for L-shaped lead wires. Straight type lead wire will be 20 (30).

STG-M (Plain bearing) Series

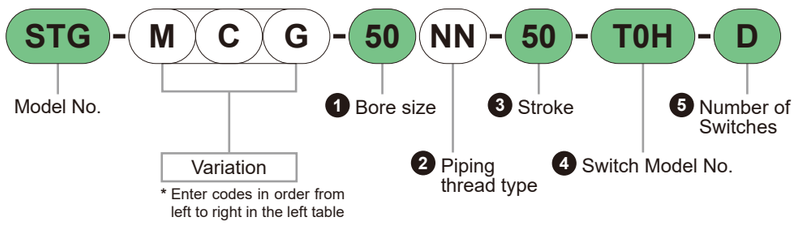
Combinability table of variations and option items (Plain bearing)

● Mark: Standard
◎ Mark: Option
○ Mark: Custom Products
△ Mark: Manufacturable depending on conditions (Consultation required)
× Mark: Not manufacturable

Category		Code	Double Acting Basic Type M	Drop prevention type Q	With Air Cushion C	Low Speed Type O	Heavy-Duty Scraper Type G	Coil Scraper Type G1	Coolant Proof Scraper Type (NBR) G2	Coolant Proof Scraper Type (FKM) G3	Sputter adhesion prevention type G4	Environment Resistant Scraper Type G5	Piping thread NPT ø20 or more NN	Piping thread G ø20 or more GN	Cushion With Rubber Air Cushion C	Option Corrosion resistant type *3 M
Variation	Double Acting Basic Type	M		●	●	○	●	●	●	●	●	○	○	○	●	△
	Drop prevention type	Q			*1	×	△	△	△	△	△	△	○	○	*1	△
	With Air Cushion	C				○	○	○	○	○	*4	○	○	○	×	△
	Low Speed Type	O					×	×	×	×	×	×	○	○	○	△
	Heavy-Duty Scraper Type	G						×	×	×	×	×	○	○	○	△
	Coil Scraper Type	G1							×	×	*2	×	○	○	○	△
	Coolant Proof Scraper Type (NBR)	G2								×	×	×	○	○	○	△
	Coolant Proof Scraper Type (FKM)	G3									×	×	○	○	×	△
	Sputter adhesion prevention type	G4										×	○	○	○	△
	Environment Resistant Scraper Type	G5											○	○	○	△
Piping thread	NPT (ø20 or more)	N												×	○	△
	G (ø20 or more)	G													○	△
Cushion	With Rubber Air Cushion	C														△
Option	Corrosion resistant type *3	M														

*1: Only the side opposite the fall prevention is supported. (Example) In the case of head side fall prevention, cushion can only be included to the rod side.
*2: G4 type has a built-in coil scraper.
*3: M: For corrosion resistant type, iron parts are mainly changed to stainless steel, but the bolt (part number 6) connecting the end plate and guide rod remains iron material for manufacturing reasons.
*4: ø25 or more can be manufactured.

[Model Number Notation Example]



Model No. : Guided Cylinder
●Variation : Plain bearing, With air cushion, Heavy-duty scraper type
❶ Bore size : ø50mm
❷ Port thread : NPT thread
❸ Stroke : 50 mm
❹ Switch model No. : Solid State TOH Switch, Lead Wire 1 m
❺ Number of Switches : With 2 pcs.

STG-B (Rolling bearing) Series

Variation / Option combinability table

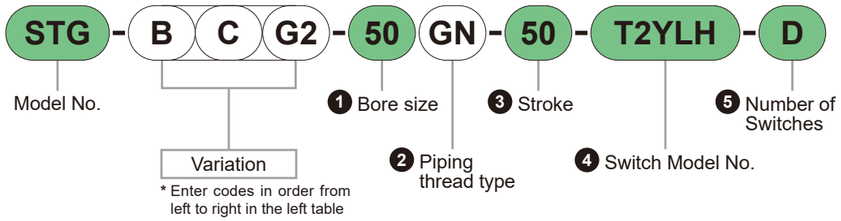
Combinability table of variations and option items (Rolling bearing)

● Mark: Standard
◎ Mark: Option
○ Mark: Custom Products
△ Mark: Manufacturable depending on conditions (Consultation required)
× Mark: Not manufacturable

Category		Code	Double Acting Basic Type B	Drop prevention type Q	With Air Cushion C	Low Speed Type O	Heavy-Duty Scraper Type G	Coil Scraper Type G1	Coolant Proof Scraper Type (NBR) G2	Coolant Proof Scraper Type (FKM) G3	Sputter adhesion prevention type G4	Piping thread NPT (ø20 or more) NN	Piping thread G (ø20 or more) GN	Cushion With Rubber Air Cushion C	Option Corrosion resistant type *2 M
Variation	Double Acting Basic Type	B		●	●	○	●	●	×	×	●	○	○	●	×
	Drop prevention type	Q			*1	×	△	△	×	×	△	○	○	*1	×
	With Air Cushion	C				○	○	○	×	×	○	○	○	x	×
	Low Speed Type	O					×	×	×	×	×	○	○	○	×
	Heavy-Duty Scraper Type	G						×	×	×	×	○	○	○	×
	Coil Scraper Type	G1							×	×	*3	○	○	○	×
	Coolant Proof Scraper Type (NBR)	G2								×	×	○	○	○	×
	Coolant Proof Scraper Type (FKM)	G3									×	○	○	×	×
	Sputter adhesion prevention type	G4										○	○	○	×
Piping thread	NPT (ø20 or more)	N											×	○	×
	G (ø20 or more)	G												○	×
Cushion	With Rubber Air Cushion	C													×
Option	Corrosion resistant type *2	M													

*1: Only the side opposite the fall prevention is supported. (Example) In the case of head side fall prevention, cushion can only be included to the rod side.
*2: For corrosion resistant type rolling bearings, bearings cannot be manufactured.
*3: G4 type has a built-in coil scraper.

[Model Number Notation Example]



Model No.
● Variation : Rolling bearing, With air cushion, Cutting oil resistant scraper type (NBR)
❶ Bore size : ø50mm
❷ Port thread : G thread
❸ Stroke : 50 mm
❹ Switch model No. : Solid State T2YLH Switch, Lead Wire 1 m
❺ Number of Switches : With 2 pcs.

Guided cylinder Double acting, Single rod type

STG-$^{M}_{B}$ Series

● Bore size: ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

Circuit Diagram Symbol

RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

STG - M - 32 - 25

Model No. ❶ ❷ ❸ ❹

With Switch
(Built-in magnet for switch)

STG - M - 32 - 25 - T2H - R

Model No. ❷ Bore size ❹ Stroke ❻ Number of Switches
❶ Bearing type ❸ Piping thread type ❺ Switch Model No.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100

❸ Piping thread type

Code	Content
Blank	M5 (ø12 to ø16)
	Rc thread (ø20 to ø100)
NN	NPT thread (ø20 or more) Custom product
GN	G thread (ø20 or more) Custom product

❹ Stroke (mm)

Stroke (mm)		Applicable Bore Size									
		ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Standard Stroke	10	●	●								
	20	●	●	●	●						
	25					●	●	●	●	●	●
	30	●	●	●	●						
	40	●	●	●	●						
	50	●	●	●	●	●	●	●	●	●	●
	75	●	●	●	●	●	●	●	●	●	●
	100	●	●	●	●	●	●	●	●	●	●
	125	●	●	●	●	●	●	●	●	●	●
	150	●	●	●	●	●	●	●	●	●	●
	175	●	●	●	●	●	●	●	●	●	●
	200	●	●	●	●	●	●	●	●	●	●
	250	●	●	●	●	●	●	●	●	●	●
	300			●	●	●	●	●	●	●	●
	350			●	●	●	●	●	●	●	●
	400			●	●	●	●	●	●	●	●
Intermediate stroke *1, *2		Every 5 mm									

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: A dedicated body with body dimensions matching the stroke is also available. Please consult us. (Custom order)

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color for AC Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	*4

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: STG-12, 16 cannot be equipped with T8H/V.
*5: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*6 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*6: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

Switch Single Unit Model No. Notation Method

SW - T0V

❺ Switch Model No.

*Please consult us separately if using environmentally compatible T-type switches.

About Custom Product Specifications

For details, see P. 466.

Code	Content
-0	Port symmetrical type

Model No. Example)
STG-$^{M}_{B}$-·····-O

For combinations of variations and options, please refer to P. 368, 369.

Clean Specification (Catalog No. CB-033SA)

● Dust prevention structure usable in cleanrooms

STG-$^{M}_{B}$-·····-P7□

Rechargeable Battery Compatible Specification (Catalog No. CC-1226AA)

● Design compatible with rechargeable battery manufacturing process

STG-$^{M}_{B}$-·····-P4□

* Please contact us for details.

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food grade grease that can be used in food manufacturing processes

STG-$^{M}_{B}$-·····-FP1

High Durability Components HP Series (Catalog No. CC-1421AA)

● Long-life actuator that contributes to productivity improvement with stable operation

STG-$^{M}_{B}$-·····-HP□

Specifications

Item	STG-M/B									
Bore Size mm	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Actuation method	Double Acting Type									
Operating Fluid	Compressed Air									
Max. Working Pressure MPa	1.0									
Min. Operating Pressure MPa	0.15				0.1					
Proof Pressure MPa	1.6									
Ambient Temperature °C	-10 to 60 (No freezing)									
Port Size	M5		Rc1/8				Rc1/4		Rc3/8	
Stroke tolerance mm	+2.0 0									
Operating Piston Speed mm/s	50 to 500							50 to 300		
Cushion	With Rubber Cushion									
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)									
Allowable Absorbed Energy J	0.056	0.088	0.157	0.157	0.401	0.627	0.980	1.560	2.510	3.92

Stroke

Bore Size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)	
				T2WL	Other switches
ø12	10, 20, 30, 40, 50, 75, 100	250	5	15	5 (10) *2
ø16	125, 150, 175, 200, 250				
ø20	20, 30, 40, 50, 75, 100, 125	400		10	
ø25	150, 175, 200, 250, 300, 350, 400				
ø32	25, 50, 75, 100 125, 150, 175 200, 250, 300 350, 400				
ø40					
ø50					
ø63					
ø80					
ø100					

*1: Intermediate strokes can be manufactured every 5 mm. However, the overall length dimension is the same as the dimension of the longer standard stroke.
A dedicated body with body dimensions matching the stroke is also available. Please consult us.
*2: This is for the case with 1 or 2 switches. The value in ( ) is the minimum stroke for a 2-color indicator type switch for AC magnetic fields.

Cylinder Weight

● STG-M

Unit: kg

Item	Stroke																Switch weight
Bore Size (mm)	10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400	
ø12	0.23	0.27	-	0.30	0.34	0.38	0.49	0.57	0.68	0.77	0.86	0.95	1.13	-	-	-	Refer to the mass described in the switch specifications on P. 753
ø16	0.32	0.37	-	0.42	0.47	0.51	0.66	0.78	0.94	1.06	1.18	1.31	1.55	-	-	-	
ø20	-	0.65	-	0.73	0.81	0.88	1.13	1.33	1.52	1.71	1.90	2.10	2.55	2.94	3.32	3.71	
ø25	-	0.92	-	1.02	1.13	1.23	1.60	1.86	2.12	2.40	2.66	2.92	3.56	4.08	4.62	5.14	
ø32	-	-	1.64	-	-	2.01	2.54	2.94	3.34	3.73	4.12	4.51	5.49	6.27	7.07	7.85	
ø40	-	-	1.89	-	-	2.30	2.75	3.15	3.57	3.98	4.39	4.80	5.81	6.64	7.47	8.29	
ø50	-	-	3.26	-	-	3.88	4.59	5.21	5.83	6.45	7.07	7.69	9.25	10.48	11.74	13.00	
ø63	-	-	4.05	-	-	4.79	5.61	6.34	7.07	7.81	8.54	9.27	11.06	12.51	13.97	15.42	
ø80	-	-	7.02	-	-	8.12	9.51	10.60	11.70	12.80	13.90	15.00	17.80	19.92	22.10	24.30	
ø100	-	-	10.24	-	-	11.58	13.29	14.63	15.96	17.30	18.64	19.98	23.27	25.94	28.62	31.29	

● STG-B

Unit: kg

Item	Stroke																Switch weight
Bore Size (mm)	10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400	
ø12	0.23	0.26	-	0.29	0.34	0.38	0.46	0.54	0.64	0.72	0.81	0.88	1.05	-	-	-	Refer to the mass described in the switch specifications on P. 753
ø16	0.33	0.38	-	0.42	0.49	0.54	0.65	0.77	0.90	1.01	1.13	1.24	1.46	-	-	-	
ø20	-	0.68	-	0.75	0.86	0.94	1.11	1.27	1.47	1.64	1.81	1.98	2.35	2.69	3.03	3.37	
ø25	-	0.95	-	1.04	1.21	1.30	1.52	1.76	2.02	2.24	2.46	2.69	3.17	3.63	4.07	4.52	
ø32	-	-	1.49	-	-	1.79	2.23	2.54	2.90	3.21	3.51	3.82	4.49	5.10	5.71	6.32	
ø40	-	-	1.74	-	-	2.09	2.56	2.91	3.32	3.67	4.02	4.37	5.12	5.82	6.52	7.22	
ø50	-	-	3.02	-	-	3.55	4.28	4.81	5.43	5.97	6.50	7.03	8.23	9.28	10.38	11.45	
ø63	-	-	3.81	-	-	4.45	5.30	5.94	6.67	7.31	7.96	8.60	9.99	11.35	12.61	13.87	
ø80	-	-	7.25	-	-	8.03	9.27	10.30	11.30	12.10	13.31	14.32	16.60	18.60	20.62	22.64	
ø100	-	-	10.15	-	-	11.69	13.57	14.81	16.05	17.29	18.52	19.76	22.85	25.32	27.80	30.27	

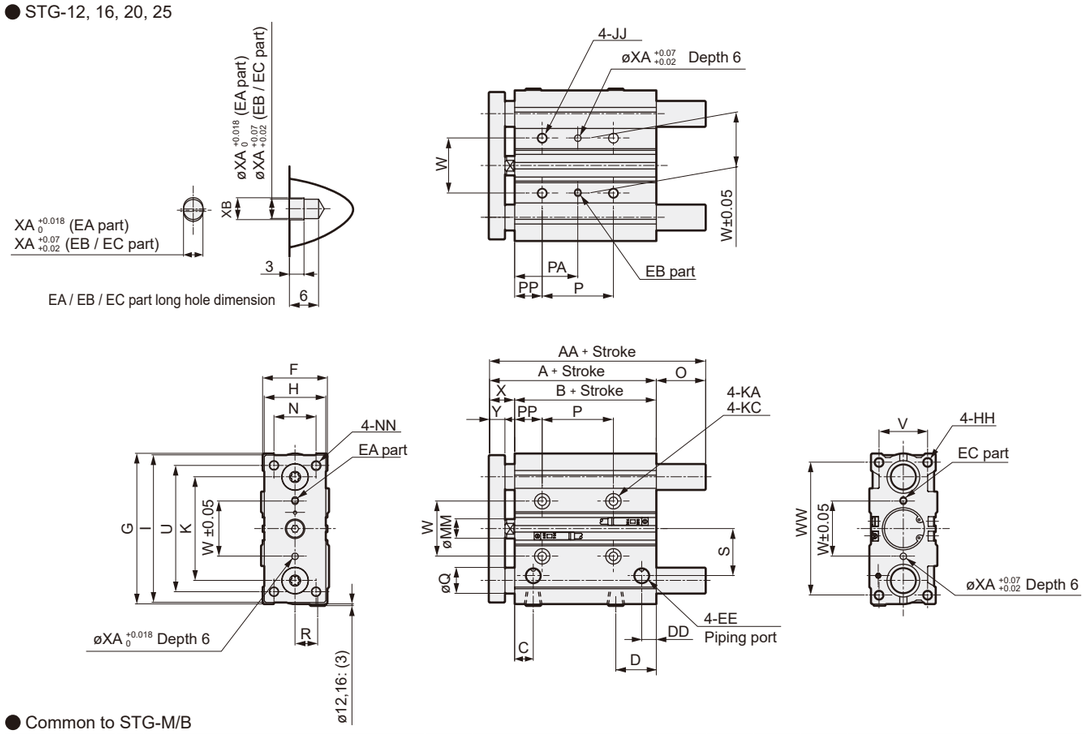
Theoretical Thrust Table

(Unit: N)

Bore Size (mm)	Operating Direction	Operating pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø12	Push	-	17.0	22.6	33.9	45.2	56.5	67.9	79.2	90.5	1.02x10²	1.13 x 10²
	Pull	-	12.7	17.0	25.4	33.9	42.4	50.9	59.4	67.9	76.3	84.8
ø16	Push	-	30.2	40.2	60.3	80.4	1.01 x 10²	1.21 x 10²	1.41 x 10²	1.61 x 10²	1.81 x 10²	2.01 x 10²
	Pull	-	22.6	30.2	45.2	60.3	75.4	90.5	1.06 x 10²	1.21 x 10²	1.36 x 10²	1.51 x 10²
ø20	Push	-	47.1	62.8	94.2	1.26 x 10²	1.57 x 10²	1.88 x 10²	2.20 x 10²	2.51 x 10²	2.83 x 10²	3.14 x 10²
	Pull	-	35.3	47.1	70.7	94.2	1.18 x 10²	1.41 x 10²	1.65 x 10²	1.88 x 10²	2.12 x 10²	2.36 x 10²
ø25	Push	-	73.6	98.2	1.47 x 10²	1.96 x 10²	2.45 x 10²	2.95 x 10²	3.44 x 10²	3.93 x 10²	4.42 x 10²	4.91 x 10²
	Pull	-	56.7	75.6	1.13 x 10²	1.51 x 10²	1.89 x 10²	2.27 x 10²	2.64 x 10²	3.02 x 10²	3.40 x 10²	3.78 x 10²
ø32	Push	80.4	1.21 x 10²	1.61 x 10²	2.41 x 10²	3.22 x 10²	4.02 x 10²	4.83 x 10²	5.63 x 10²	6.43 x 10²	7.24 x 10²	8.04 x 10²
	Pull	60.3	90.5	1.21 x 10²	1.81 x 10²	2.41 x 10²	3.02 x 10²	3.62x10²	4.22 x 10²	4.83 x 10²	5.43x10²	6.03 x 10²
ø40	Push	1.26 x 10²	1.88 x 10²	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²	1.01 x 10³	1.13 x 10³	1.26 x 10³
	Pull	1.06 x 10²	1.58 x 10²	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²	8.44 x 10²	9.50 x 10²	1.06 x 10³
ø50	Push	1.96 x 10²	2.95 x 10²	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	1.65 x 10²	2.47 x 10²	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³
ø63	Push	3.12 x 10²	4.68 x 10²	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³	2.49 x 10³	2.81 x 10³	3.12 x 10³
	Pull	2.80 x 10²	4.20 x 10²	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³	2.24 x 10³	2.52 x 10³	2.80 x 10³
ø80	Push	5.03 x 10²	7.54 x 10²	1.01 x 10³	1.51 x 10³	2.01 x 10³	2.51 x 10³	3.02 x 10³	3.52 x 10³	4.02 x 10³	4.52 x 10³	5.03 x 10³
	Pull	4.54 x 10²	6.80 x 10²	9.07 x 10²	1.36 x 10³	1.81 x 10³	2.27 x 10³	2.72 x 10³	3.17 x 10³	3.63 x 10³	4.08 x 10³	4.54 x 10³
ø100	Push	7.85 x 10²	1.18 x 10³	1.57 x 10³	2.36 x 10³	3.14 x 10³	3.93 x 10³	4.71 x 10³	5.50 x 10³	6.28 x 10³	7.07 x 10³	7.85 x 10³
	Pull	7.15 x 10²	1.07 x 10³	1.43 x 10³	2.14 x 10³	2.86 x 10³	3.57 x 10³	4.29 x 10³	5.00 x 10³	5.72 x 10³	6.43 x 10³	7.15 x 10³

External dimensions diagram (Bore size: ø12, ø16, ø20, ø25)

● STG-12, 16, 20, 25



● Common to STG-M/B

Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	DD	EE	F	G	H	HH	I	JJ
ø12	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250	42	29	12	16	7	M5	26	58	22	M4 Depth 10	56	M5 Depth 10
ø16		46	33	12	18	7.5	M5	30	64	25	M5 Depth 12	62	M5 Depth 10
ø20	20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	53	37	10.5	24.5	8.5	Rc1/8	36	83	30	M5 Depth 13	81	M6 Depth 12
ø25		53.5	37.5	11.5	25	9	Rc1/8	42	93	38	M6 Depth 15	91	M6 Depth 12

Code / Bore Size (mm)	K	KA	MM	N	NN	KC	P: 30 or less	P: Over 30 and 100 or less	P: Over 100 and 200 or less	P: Over 200 to 300 or Less	P: Over 300
ø12	41	4.3 Through	6	14	M4 Through	7.5 Counterbore depth 4.5	20	40	110	200	–
ø16	46	4.3 Through	8	16	M5 Through	8 Counterbore depth 4.5	24	44	110	200	–
ø20	54	5.2 Through	10	18	M5 Through	9.5 Counterbore depth 5.5	24	44	120	200	300
ø25	64	5.2 Through	12	26	M6 Through	9.5 Counterbore depth 5.5	24	44	120	200	300

Code / Bore Size (mm)	PA: 30 or less	PA: Over 30 and 100 or less	PA: Over 100 and 200 or less	PA: Over 200 to 300 or Less	PA: Over 300	PP	R	S	U	V	W	WW	X	Y	XA	XB
ø12	15	25	60	105	–	5	8	17	48	18	23	50	13 +0.5 0	7.5	3	3.5
ø16	17	27	60	105	–	5	10	18	54	22	24	56	13 +0.5 0	7.5	3	3.5
ø20	29	39	77	117	167	17	11	25	70	24	28	72	16 +0 -0.5	9.5	3	3.5
ø25	29	39	77	117	167	17	14	29	78	30	34	82	16 +0 -0.5	9.5	4	4.5

● STG-M

Code / Bore Size (mm)	AA: 50 or less	AA: Over 50 to 100 or Less	AA: Over 100	Q	O: 50 or less	O: Over 50 to 100 or Less	O: Over 100
ø12	42	55	85	8	0	13	43
ø16	46	63	95	10	0	17	49

Code / Bore Size (mm)	AA: 50 or less	AA: Over 50 and 200 or less	AA: Over 200	Q	O: 50 or less	O: Over 50 and 200 or less	O: Over 200
ø20	53	78	122	12	0	25	69
ø25	53.5	84	122	16	0	30.5	68.5

*1: For intermediate strokes, the overall length dimension is the same as the dimension of the longer standard stroke.

***2: For dimensions with each switch, refer to P. 446 to 448.**

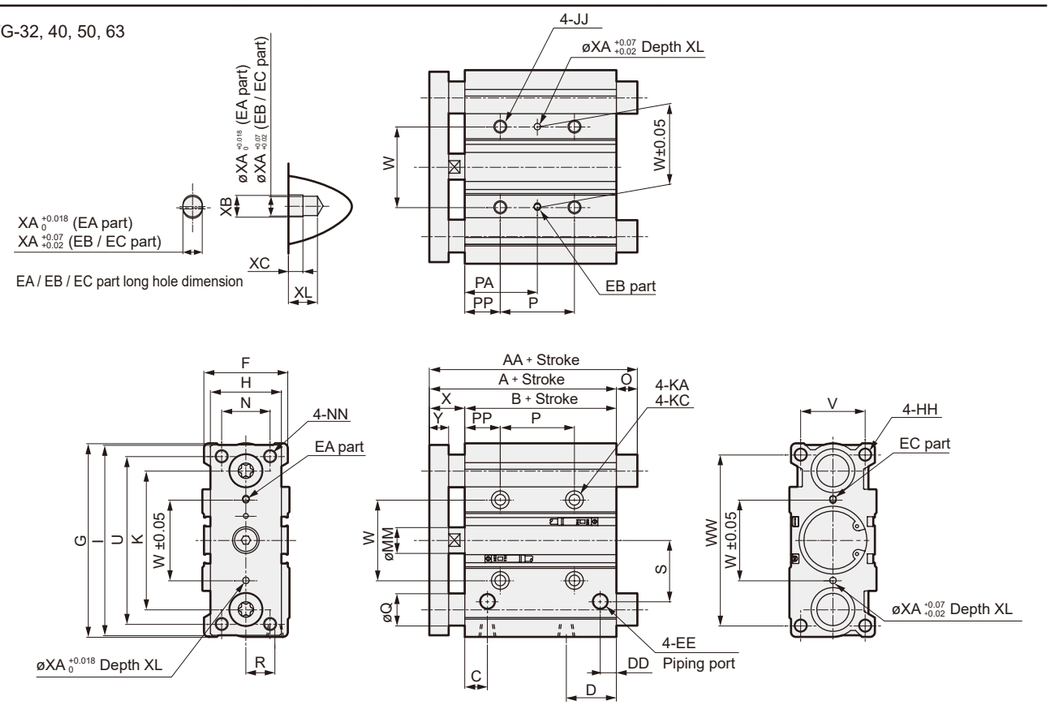
● STG-B

Code / Bore Size (mm)	AA: 30 or less	AA: Over 30 and 100 or less	AA: Over 100	Q	O: 30 or less	O: Over 30 and 100 or less	O: Over 100
ø12	43	55	85	6	1	13	43
ø16	49	65	95	8	3	19	49

Code / Bore Size (mm)	AA: 30 or less	AA: Over 30 and 100 or less	AA: Over 100 and 200 or less	AA: Over 200	Q	O: 30 or less	O: Over 30 and 100 or less	O: Over 100 and 200 or less	O: Over 200
ø20	59	78	100	122	10	6	25	47	69
ø25	65	84	103	122	13	11.5	30.5	49.5	68.5

External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

● STG-32, 40, 50, 63



● Common to STG-M/B

Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	DD	EE	F	G	H	HH	I	JJ	K	KA
ø32	25, 50, 75, 100, 125, 150, , 175, 200, 250, 300, 350, 400	59.5	37.5	12.5	30.5	9	Rc1/8	48	112	44	M8 depth 20	110	M8 Depth 16	78	6.3 Through
ø40		66	44	14	31	10	Rc1/8	54	120	44	M8 depth 20	118	M8 Depth 16	86	6.3 Through
ø50		72	44	14	35	11	Rc1/4	64	148	60	M10 Depth 22	146	M10 Depth 20	110	8.6 Through
ø63		77	49	16.5	35	15	Rc1/4	78	162	70	M10 Depth 22	158	M10 Depth 20	124	8.6 Through

Code / Bore Size (mm)	KC	MM	N	NN	P: 25 or Less	P: Over 25 and 100 or less	P: Over 100 and 200 or less	P: Over 200 to 300 or Less	P: Over 300	PA: 25 or Less	PA: Over 25 and 100 or less
ø32	11 Counterbore depth 7.5	16	30	M8 Through	24	48	124	200	300	33	45
ø40	11 Counterbore depth 7.5	16	30	M8 Through	24	48	124	200	300	34	46
ø50	14 Counterbore depth 9	20	40	M10 Through	24	48	124	200	300	36	48
ø63	14 Counterbore depth 9	20	50	M10 Through	28	52	128	200	300	38	50

Code / Bore Size (mm)	PA: Over 100 and 200 or less	PA: Over 200 to 300 or Less	PA: Over 300	PP	R	S	U	V	W	WW	X	Y	XA	XB	XC	XL
ø32	83	121	171	21	15	34	96	34	42	98	22 +0.2 0	11.5	4	4.5	3	6
ø40	84	122	172	22	18	38	104	40	50	106	22 +0.2 0	11.5	4	4.5	3	6
ø50	86	124	174	24	21.5	47	130	46	66	130	28 +0.2 0	15.5	5	6	4	8
ø63	88	124	174	24	28	55	130	58	80	142	28 +0.2 0	15.5	5	6	4	8

● STG-M

Code / Bore Size (mm)	AA: 50 or less	AA: Over 50 and 200 or less	AA: Over 200	Q	O: 50 or less	O: Over 50 and 200 or less	O: Over 200
ø32	79	100	140	20	19.5	40.5	80.5
ø40	79	100	140	20	13	34	74
ø50	91	116	161	25	19	44	89
ø63	91	116	161	25	14	39	84

*1: For intermediate strokes, the overall length dimension is the same as the dimension of the longer standard stroke.

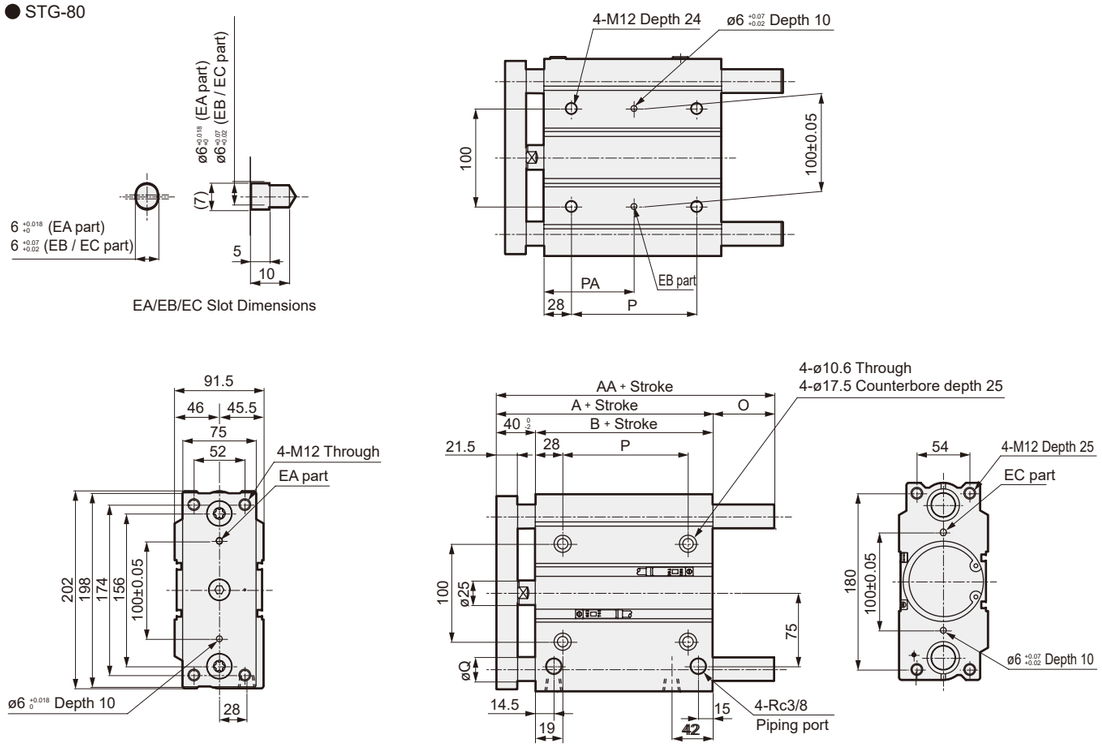
***2: For dimensions with each switch, refer to P. 446 to 448.**

● STG-B

Code / Bore Size (mm)	AA: 50 or less	AA: Over 50 to 100 or Less	AA: Over 100 and 200 or less	AA: Over 200	Q	O: 50 or less	O: Over 50 to 100 or Less	O: Over 100 and 200 or less	O: Over 200
ø32	79	98	118	140	16	19.5	38.5	58.5	80.5
ø40	79	98	118	140	16	13	32	52	74
ø50	91	114	134	161	20	19	42	62	89
ø63	91	114	134	161	20	14	37	57	84

External dimensions diagram (Bore size: ø80)

● STG-80



● Common to STG-M/B

Standard Stroke	A	B	P					PA				
			25st or less	Over 25st and 100st or less	Over 100st and 200st or less	Over 200st and 300st or less	Over 300st	25st or less	Over 25st and 100st or less	Over 100st and 200st or less	Over 200st and 300st or less	Over 300st
25, 50, 75, 100, 125, 150, 175 200, 250, 300, 350, 400	96.5	56.5	28	52	128	200	300	42	54	92	128	178

● STG-M

AA			Q	O		
50st or less	Over 50st and 200st or less	Over 200st		50st or less	Over 50st and 200st or less	Over 200st
115	142	193	30	18.5	45.5	96.5

● STG-B

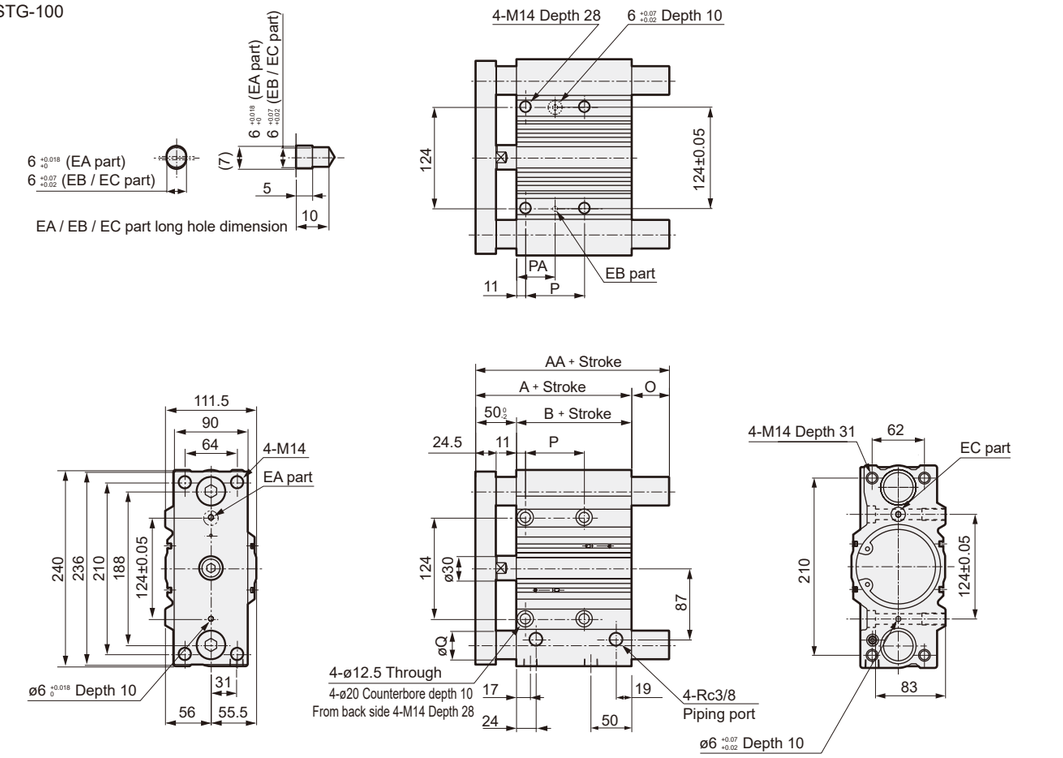
AA				Q	O			
25st or less	Over 25st and 50st or less	Over 50st and 200st or less	Over 200st		25st or less	Over 25st and 50st or less	Over 50st and 200st or less	Over 200st
109.5	130	160	193	25	13	33.5	63.5	96.5

*1: For intermediate strokes, the overall length dimension is the same as the dimension of the longer standard stroke.

***2: For dimensions with each switch, refer to P. 446 to 448.**

External dimensions diagram (Bore size: ø100)

● STG-100



● Common to STS-M/B

Standard Stroke	A	B	P					PA				
			25st or less	Over 25st and 100st or less	Over 100st and 200st or less	Over 200st and 300st or less	Over 300st	25st or less	Over 25st and 100st or less	Over 100st and 200st or less	Over 200st and 300st or less	Over 300st
25,50,75,100,125,150,175200,250,300,350,400	116	66	48	72	148	220	320	35	47	85	121	171

● STG-M

AA			Q	O		
50st or less	Over 50st and 200st or less	Over 200st		50st or less	Over 50st and 200st or less	Over 200st
137	162	203	35	21	46	87

● STG-B

AA				Q	O			
25st or less	Over 25st and 50st or less	Over 50st and 200st or less	Over 200st		25st or less	Over 25st and 50st or less	Over 50st and 200st or less	Over 200st
121	147	180	203	30	5	31	64	87

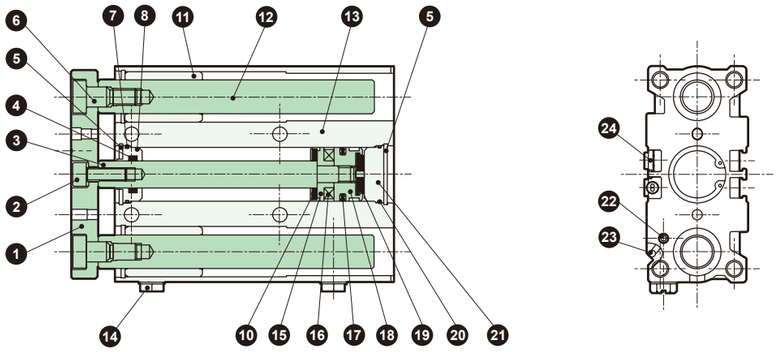
*1: For intermediate strokes, the overall length dimension is the same as the dimension of the longer standard stroke.

***2: For dimensions with each switch, refer to P. 446 to 448.**

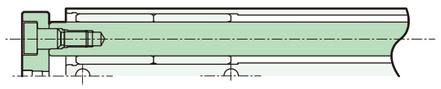
Internal structure diagram / Material (STG-M-12 to 25)

● ø12, ø16

• 50 strokes or less



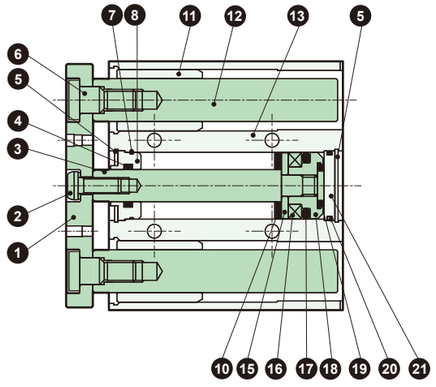
• Over 50 strokes and 100 strokes or less

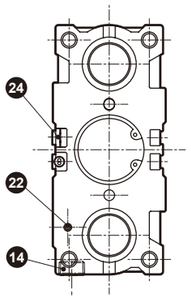


• Over 100 strokes

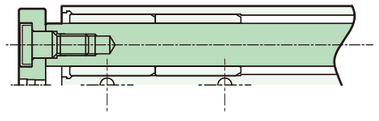
● ø20, ø25

• 50 strokes or less

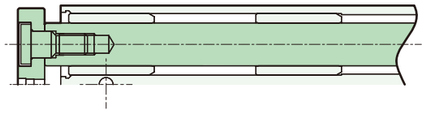




• Over 50 strokes and 200 strokes or less

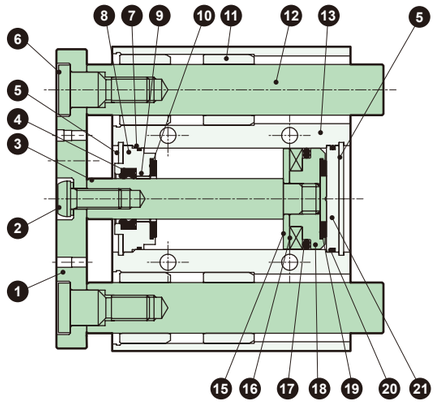


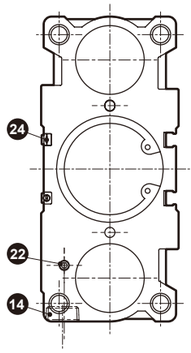
• Over 200 strokes



Internal structure diagram / Material (STG-M-32 to 63)

● ø32 to ø63





Part No.	Part Name	Material	Remarks
1	End plate	Steel	Nickel Plating
2	Hexagon socket head cap screw (ø12 to ø16) Hexagon socket button head cap screw (ø20 to ø63)	Steel	Zinc Chromate
3	Piston Rod	ø12 to ø25: Stainless steel ø32 to ø63: Steel	Industrial Hard Chrome Plating
4	Rod Packing	Nitrile Rubber	
5	C-type retaining ring	Steel	Zinc phosphate
6	Bolt	Steel	Zinc Chromate
7	Metal gasket	Nitrile Rubber	
8	Rod Metal	Aluminum Alloy	ø12 to ø32: Alumite ø40 to ø63: Chromate
9	Bushing	Bearing Alloy	ø40 to ø63 only
10	Cushion Rubber	Urethane Rubber	
11	Metal	Oil-impregnated copper alloy bearing	
12	Guide rod	ø12 to ø16: Stainless steel ø20 to ø63: Steel	Industrial Hard Chrome Plating

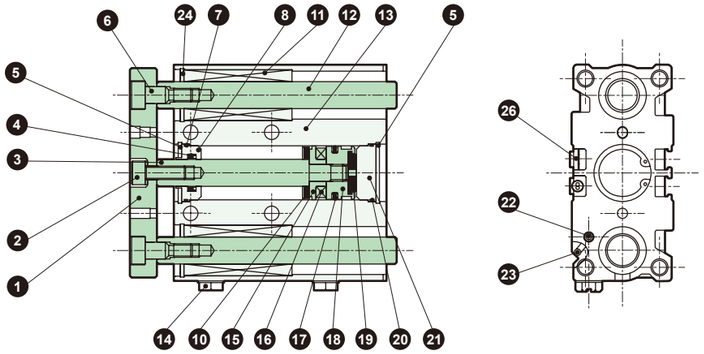
Part No.	Part Name	Material	Remarks
13	Cylinder Body	Aluminum Alloy	Hard Anodized
14	Plug	Copper alloy or steel	
15	Spacer	Aluminum Alloy	
16	Magnet		
17	Piston Packing	Nitrile Rubber	
18	Piston	Aluminum Alloy	
19	Cushion Rubber	Urethane Rubber	
20	O-ring	Nitrile Rubber	
21	Bottom plate	Aluminum Alloy	Chromate
22	Hexagon socket head set screw	Stainless Steel	
23	Steel ball	Stainless Steel	
With Switch			
24	Switch		

For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

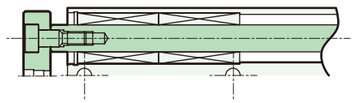
Internal structure diagram / Material (STG-B-12 to 25)

● ø12, ø16

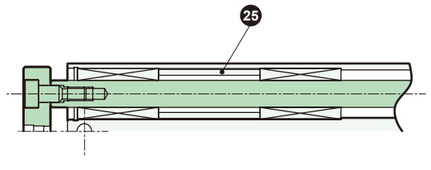
● 30 strokes or less



● Over 30 strokes and 100 strokes or less

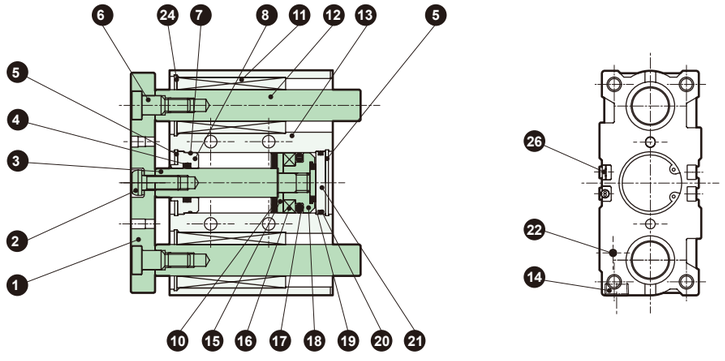


● Over 100 strokes

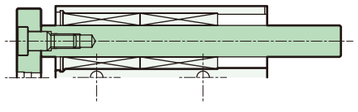


● ø20, ø25

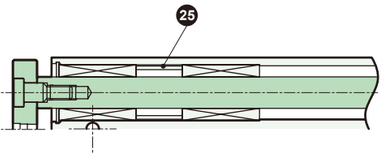
● 30 strokes or less



● Over 30 strokes and 100 strokes or less



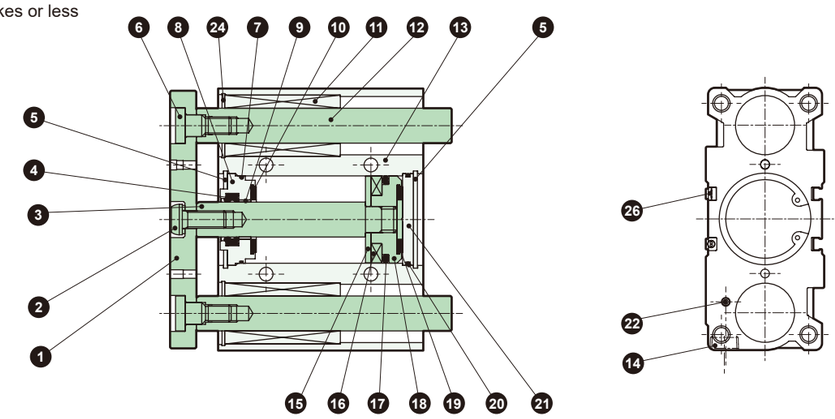
● Over 100 strokes



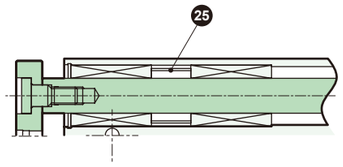
Internal structure diagram / Material (STG-B-32 to 63)

● ø32 to ø63

● 100 strokes or less



● Over 100 strokes

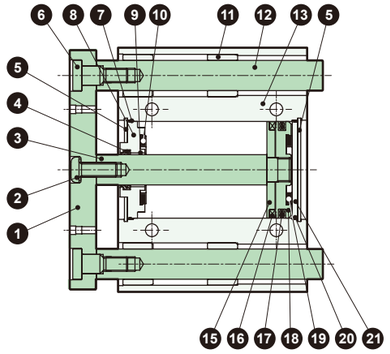


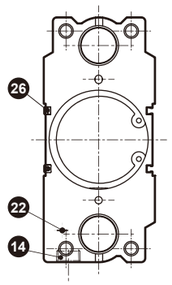
Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	End plate	Steel	Nickel Plating	13	Cylinder Body	Aluminum Alloy	Hard Anodized
2	Hexagon socket head cap screw (ø12 to ø16) Hexagon socket button head cap screw (ø20 to ø63)	Steel	Zinc Chromate	14	Plug	Copper alloy or steel	
				15	Spacer	Aluminum Alloy	
3	Piston Rod	ø12 to ø25: Stainless steel ø32 to ø63: Steel	Industrial Hard Chrome Plating	16	Magnet		
				17	Piston Packing	Nitrile Rubber	
4	Rod Packing	Nitrile Rubber		18	Piston	Aluminum Alloy	
5	C-type retaining ring	Steel	Zinc phosphate	19	Cushion Rubber	Urethane Rubber	
6	Bolt	Steel	Zinc Chromate	20	O-ring	Nitrile Rubber	
7	Metal gasket	Nitrile Rubber		21	Bottom plate	Aluminum Alloy	Chromate
8	Rod Metal	Aluminum Alloy	ø12 to ø32: Alumite ø40 to ø63: Chromate	22	Hexagon socket head set screw	Stainless Steel	
				23	Steel ball	Stainless Steel	
9	Bushing	Bearing Alloy	ø40 to ø63 only	24	C-type retaining ring	Steel	Zinc phosphate
10	Cushion Rubber	Urethane Rubber		25	Collar	Aluminum Alloy	
11	Ball bush			With Switch			
12	Guide rod	Steel	Industrial Hard Chrome Plating	26	Switch		

For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal structure diagram / Material (STG-M-80,100 / STG-B-80,100)

● STG-M-80,100

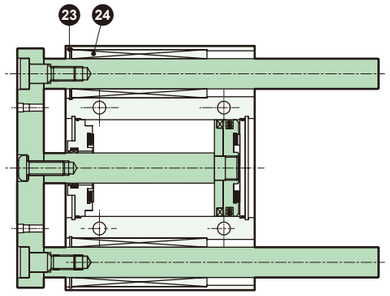




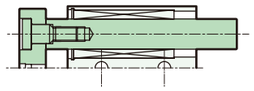
Plain bearing (M)

● STG-B-80,100

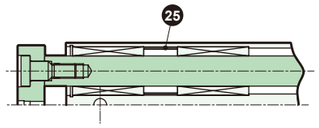
● Over 50 strokes and 200 strokes or less



● 50 strokes or less



● Over 200 strokes



Rolling bearing (B)

Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	End plate	Steel	Nickel Plating	15	Spacer	Aluminum Alloy	
2	Hex Socket Button Head Bolt	Steel	Zinc Chromate	16	Magnet		
3	Piston Rod	Steel	Industrial Hard Chrome Plating	17	Piston Packing	Nitrile Rubber	
4	Rod Packing	Nitrile Rubber		18	Piston	Aluminum Alloy	
5	C-type retaining ring	Steel	Zinc phosphate	19	Cushion Rubber	Urethane Rubber	
6	Bolt	Steel	Zinc Chromate	20	O-ring	Nitrile Rubber	
7	Metal gasket	Nitrile Rubber		21	Bottom plate	Steel	Zinc Chromate
8	Rod Metal	Aluminum Alloy	Chromate	22	Hexagon socket set screw (ø80)	Stainless Steel	
9	Bushing	Bearing Alloy			Plug (ø100)	Steel	Nickel Plating
10	Cushion Rubber	Urethane Rubber		23	C-type retaining ring	Steel	Zinc phosphate
11	Metal	Oil-impregnated copper alloy bearing		24	Ball bush		
12	Guide rod	Steel	Industrial Hard Chrome Plating	25	Collar	Aluminum Alloy	
13	Cylinder Body	Aluminum Alloy	Hard Anodized	With Switch			
14	Plug	Steel		26	Switch		

For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

MEMO

Guided
STM
STG
STS/STL
STR2
UCA2
Cylinder Switch
Ending

Guided cylinder Double acting, With rubber air cushion

STG-$\frac{M}{B}$-□C Series

●Bore size: ø32, ø40, ø50, ø63

Circuit Diagram
Symbol

RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

STG - M - 32 ( ) C - 25

Model No. ❶ ❷ ❸ ❹

With Switch
(Built-in magnet for switch)

STG - M - 32 ( ) C - 25 - T2H - R

Model No. ❷ Bore size ❸ Rubber air With Cushion ❺ Switch Model No.
❶ Bearing type ❸ Piping thread type ❹ Stroke ❻ Number of Switches

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
32	ø32
40	ø40
50	ø50
63	ø63

❸ Piping thread type

Code	Content
Blank	Rc Thread
N	NPT Thread (Custom Order Product)
G	G Thread (Custom Order Product)

❹ Stroke (mm)

Stroke (mm)		Applicable Bore Size ø32	ø40	ø50	ø63
Standard Stroke	25	●	●	●	●
	50	●	●	●	●
	75	●	●	●	●
	100	●	●	●	●
	125	●	●	●	●
	150	●	●	●	●
	175	●	●	●	●
	200	●	●	●	●
	250	●	●	●	●
	300	●	●	●	●
	350	●	●	●	●
	400	●	●	●	●
Intermediate stroke *1		Every 5 mm			

*1: The overall length dimension is the same as the dimension of the longer standard stroke.

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T5V□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-color Water resistance Improved	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color AC For Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T5V□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T5V□	T8V□	

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*5 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

Switch Single Unit Model No. Notation Method

SW - T0V

❺ Switch Model No.

About Custom Product Specifications

For details, refer to P. 466.

Code	Content
-0	Port symmetrical type

Model No. Example)
STG-$\frac{M}{B}$-□C-·····-O

For combinations of variations and options, please refer to P. 368, 369.

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food grade grease that can be used in food manufacturing processes

STG-$\frac{M}{B}$-□C-·····-FP1

Rechargeable Battery Compatible Specification (Catalog No. CC-1226AA)

● Design compatible with rechargeable battery manufacturing process

STG-$\frac{M}{B}$-□C-·····-P4□

* Please contact us for details.

Specifications

Item		STG-M/B-□C			
Bore Size	mm	ø32	ø40	ø50	ø63
Actuation method		Double Acting Type			
Operating Fluid		Compressed Air			
Max. Working Pressure	MPa	1.0			
Min. Operating Pressure	MPa	0.2			
Proof Pressure	MPa	1.6			
Ambient Temperature	°C	-10 to 60 (Provided that freezing does not occur)			
Port Size		Rc1/8		Rc1/4	
Stroke tolerance	mm	+2.0 0			
Operating Piston Speed	mm/s	50 to 500			50 to 300
Cushion		With Rubber Air Cushion			
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)			
Allowable Absorbed Energy	J	0.401	0.627	0.980	1.560

Stroke

Bore Size	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)	
				T2WL	Other switches
ø32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	400	5	10	5 (10) *2
ø40					
ø50					
ø63			10		10

*1: Intermediate strokes can be manufactured every 5 mm. However, the overall length dimension is the same as the dimension of the longer standard stroke.
*2: This is for the case with 1 or 2 switches. The value in ( ) is the minimum stroke for a 2-color indicator type switch for AC magnetic fields.

Cylinder Weight

● STG-M-□C

Unit: kg

Item / Bore Size (mm)	Stroke 25	50	75	100	125	150	175	200	250	300	350	400	Switch weight
ø32	1.64	2.01	2.54	2.94	3.34	3.73	4.12	4.51	5.49	6.27	7.07	7.85	Refer to the mass described in the switch specifications on P. 753
ø40	1.89	2.30	2.75	3.15	3.57	3.98	4.39	4.80	5.81	6.64	7.47	8.29	
ø50	3.26	3.88	4.59	5.21	5.83	6.45	7.07	7.69	9.25	10.48	11.74	13.00	
ø63	4.05	4.79	5.61	6.34	7.07	7.81	8.54	9.27	11.06	12.51	13.97	15.42	

● STG-B-□C

Unit: kg

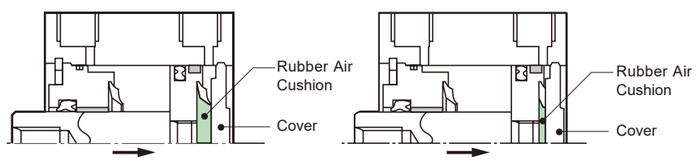
Item / Bore Size (mm)	Stroke 25	50	75	100	125	150	175	200	250	300	350	400	Switch weight
ø32	1.49	1.79	2.23	2.54	2.90	3.21	3.51	3.82	4.49	5.10	5.71	6.32	Refer to the mass described in the switch specifications on P. 753
ø40	1.74	2.09	2.56	2.91	3.32	3.67	4.02	4.37	5.12	5.82	6.52	7.22	
ø50	3.02	3.55	4.28	4.81	5.43	5.97	6.50	7.03	8.23	9.28	10.38	11.45	
ø63	3.81	4.45	5.30	5.94	6.67	7.31	7.96	8.60	9.99	11.35	12.61	13.87	

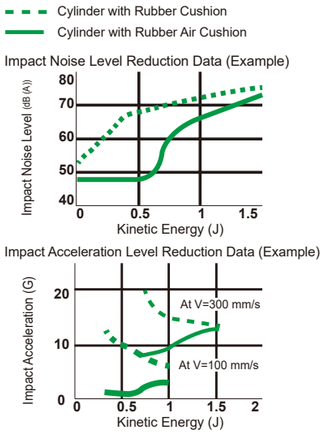
Theoretical Thrust Table

(Unit: N)

Bore Size (mm)	Operating Direction	Operating pressure MPa 0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø32	Push	1.61 x 10²	2.41 x 10²	3.22 x 10²	4.02 x 10²	4.83 x 10²	5.63 x 10²	6.43 x 10²	7.24 x 10²	8.04 x 10²
	Pull	1.21 x 10²	1.81 x 10²	2.41 x 10²	3.02 x 10²	3.62x10²	4.22 x 10²	4.83 x 10²	5.43x10²	6.03 x 10²
ø40	Push	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²	1.01 x 10³	1.13 x 10³	1.26 x 10³
	Pull	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²	8.44 x 10²	9.50 x 10²	1.06 x 10³
ø50	Push	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³
ø63	Push	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³	2.49 x 10³	2.81 x 10³	3.12 x 10³
	Pull	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³	2.24 x 10³	2.52 x 10³	2.80 x 10³

■ Rubber air cushion mechanism





Explanation at Pull

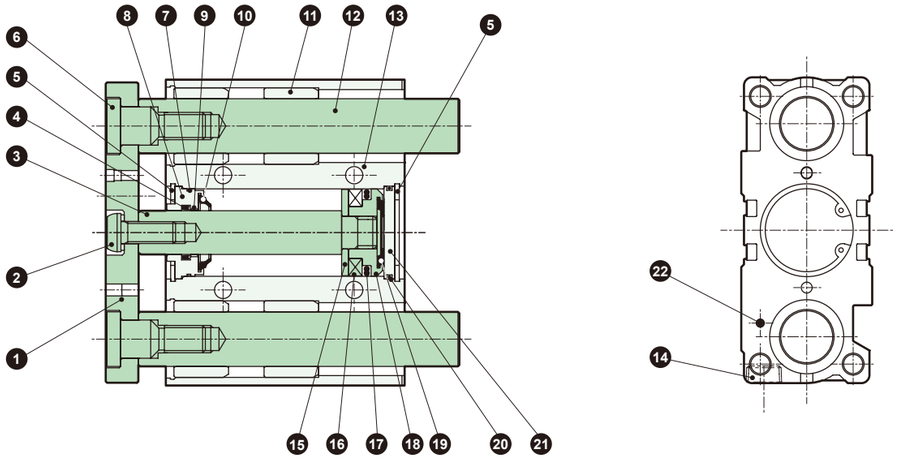
When the piston operates and the rubber air cushion comes into contact with the cover, a sealed air space is formed in ■. The air in this sealed space is compressed as the piston operates and absorbs energy. At the stroke end, energy absorption due to the compressive strain of the rubber air cushion is also added.

Outline Dimension Drawing

Same as double acting, single rod type STG series. See P. 375.

Internal structure diagram / Material (STG-M-32 to 63C / STG-B-32 to 63C)

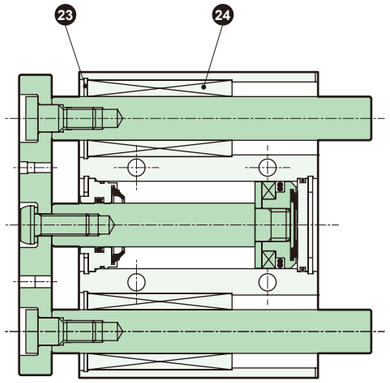
● STG-M-32 to 63C



Plain bearing (M)

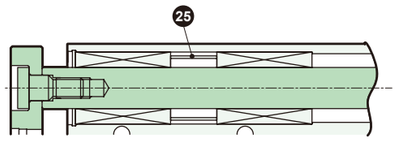
● STG-B-32 to 63C

● 100 strokes or less



Rolling bearing (B)

● Over 100 strokes



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	End plate	Steel	Nickel Plating	14	Plug	Steel	
2	Hex Socket Button Head Bolt	Alloy Steel	Zinc Chromate	15	Spacer	Aluminum Alloy	Alumite
3	Piston Rod	Steel	Industrial Hard Chrome Plating	16	Magnet	Plastic	
4	Rod Packing	Nitrile Rubber		17	Piston Packing	Nitrile Rubber	
5	C-type retaining ring	Steel	Zinc phosphate	18	Piston	Aluminum Alloy	Alumite
6	Bolt	Alloy Steel	Zinc Chromate	19	Rubber air cushion (H)	Special rubber	
7	Metal gasket	Nitrile Rubber		20	O-ring	Nitrile Rubber	
8	Rod Metal	Aluminum Alloy	Alumite	21	Bottom plate	Aluminum Alloy	Alumite
9	Bushing	Bearing Alloy	(ø40 to ø63 only)	22	Hexagon socket head set screw	Stainless Steel	
10	Rubber air cushion (R)	Special rubber		23	C-type retaining ring	Steel	Zinc phosphate
11	Metal	Oil-impregnated copper alloy bearing		24	Ball bush		
12	Guide rod	Steel	Industrial Hard Chrome Plating	25	Collar	Aluminum Alloy	
13	Cylinder Body	Aluminum Alloy	Hard Anodized				

For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

MEMO

Guided
STM
STG
STS/STL
STR2
UCA2
Cylinder Switch
Ending

Technical Data

For the guided cylinder model selection guide, please refer to P. 450 to 455.

[Performance Comparison of Impact Noise Level]

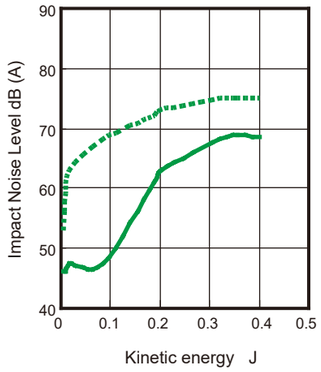
The data is a comparison example under the following conditions.
Values change depending on frame rigidity, etc., so they are not guaranteed values.

(Test conditions)

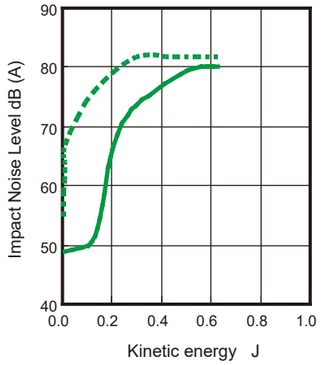
Cylinder type : STG
Cylinder Mounting Direction : Vertically upward
Cylinder supply pressure : 0.5 MPa
Sound level meter measurement position : 1 m from sample

Standard rubber cushion product: - - -
Rubber air cushion product: ———

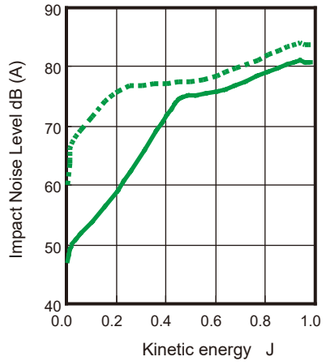
ø32



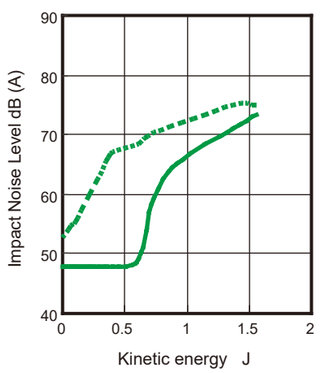
ø40



ø50



ø63

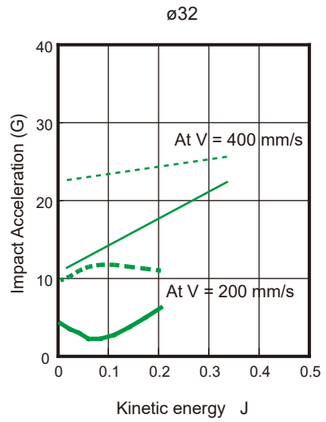


Technical Data

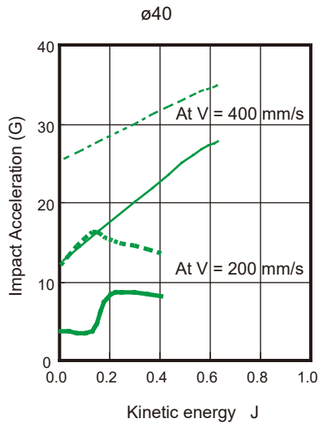
[Performance Comparison of Impact Acceleration]

Standard rubber cushion product: - - -
Rubber air cushion product: ———

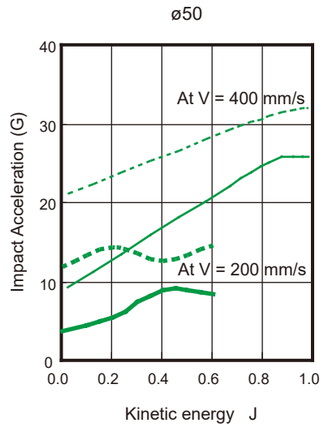
ø32



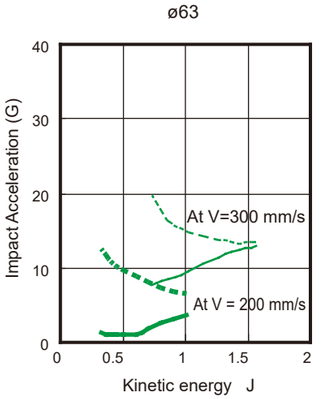
ø40



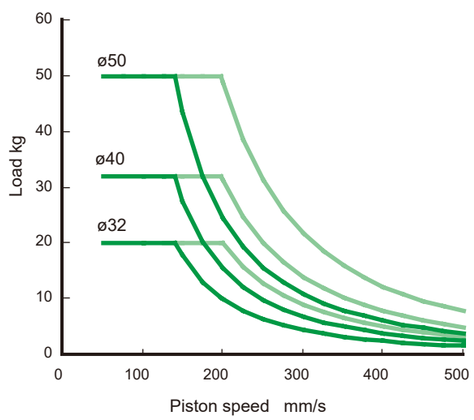
ø50

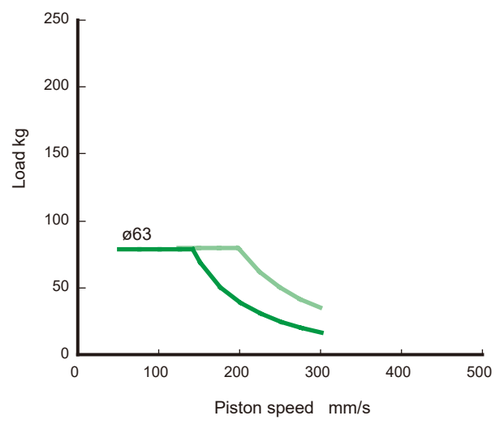


ø63



[Allowable Energy Value]





The usable range is to the lower left of the curve.
It is possible to use within the range indicated by the ——— line in the figure, but it is recommended to use within the range of the solid line to make the silencing effect more effective.

Guided cylinder Double acting, With air cushion

STG-$^{M}_{B}$C Series

● Bore size: ø16, ø20, ø25, ø32, ø40, ø50, ø63

Circuit Diagram
Symbol

RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

STG - M C - 32 ▢ - 25

Model No. ❶ ❷ ❸ ❹

With Switch
(Built-in magnet for switch)

STG - M C - 32 ▢ - 25 - T2H - R

Model No. ❶ Bearing type ❷ Bore size With Air Cushion ❸ Piping thread type ❹ Stroke ❺ Switch Model No. ❻ Number of Switches

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63

❸ Piping thread type

Code	Content
Blank	M5 (ø16)
	Rc thread (ø20 to ø63)
NN	NPT thread (ø20 or more) Custom product
GN	G thread (ø20 or more) Custom product

❹ Stroke (mm)

Stroke (mm)		Applicable Bore Size						
		ø16	ø20	ø25	ø32	ø40	ø50	ø63
Standard Stroke	25	●	●	●	●	●	●	●
	50	●	●	●	●	●	●	●
	75	●	●	●	●	●	●	●
	100	●	●	●	●	●	●	●
	125	●	●	●	●	●	●	●
	150	●	●	●	●	●	●	●
	175	●	●	●	●	●	●	●
	200	●	●	●	●	●	●	●
	250	●	●	●	●	●	●	●
	300		●	●	●	●	●	●
	350		●	●	●	●	●	●
	400		●	●	●	●	●	●
Intermediate stroke *1		Every 1 mm (Custom product)						

*1: The overall length dimension is the dimension of the longer standard stroke.

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color for AC Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	*4

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: STG-$^{M}_{B}$C-16 cannot be equipped with T8H/V.
*5: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

* Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*6 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*6: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

Switch Single Unit Model No. Notation Method

SW - T0V

❺ Switch Model No.

About Custom Product Specifications

For details, refer to P. 466.

Code	Content
-0	Port symmetrical type

Model No. Example)
STG-$^{M}_{B}$C-·····-O

For combinations of variations and options, please refer to P. 368, 369.

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food grade grease that can be used in food manufacturing processes

STG-MC-·····-FP1

Rechargeable Battery Compatible Specification (Catalog No. CC-1226AA)

● Design compatible with rechargeable battery manufacturing process

STG-$^{M}_{B}$C-·····-P4□

* Please contact us for details.

Specifications

Item		STG-MBC						
Bore Size	mm	ø16	ø20	ø25	ø32	ø40	ø50	ø63
Actuation method		Double Acting/With Air Cushion						
Operating Fluid		Compressed Air						
Max. Working Pressure	MPa	1.0						
Min. Operating Pressure	MPa	0.15			0.1			
Proof Pressure	MPa	1.6						
Ambient Temperature	°C	-10 to 60 (No freezing)						
Port Size		M5	Rc1/8				Rc1/4	
Stroke tolerance	mm	+2.0 0						
Operating Piston Speed	mm/s	50 to 500						50 to 300
Cushion		With Air Cushion						
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)						
Allowable Absorbed Energy	J	0.3	0.7	1.0	2.5	3.7	3.8	5.5

Stroke

Bore Size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø16	25, 50, 75, 100, 125, 150, 175, 200, 250	250	15	15
ø20	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	400		
ø25				
ø32				
ø40				
ø50				
ø63			*2	

*1: Intermediate strokes can be manufactured in 1 mm increments. However, the overall length dimension will be the dimension of the longer standard stroke. (Custom order)

*2: Cushion effect cannot be obtained below the minimum stroke, so select the basic type.

Cylinder Weight

● STG-M

Unit: kg

Item / Bore Size (mm)	Stroke 25	50	75	100	125	150	175	200	250	300	350	400	Switch weight
ø16	0.49	0.61	0.76	0.88	1.04	1.16	1.28	1.41	1.65	-	-	-	Refer to the mass described in the switch specifications on P. 753
ø20	0.85	1.04	1.30	1.49	1.68	1.87	2.06	2.26	2.71	3.10	3.48	3.87	
ø25	1.19	1.45	1.83	2.09	2.35	2.62	2.89	3.15	3.80	4.32	4.86	5.38	
ø32	1.90	2.26	2.80	3.18	3.58	3.96	4.35	4.73	5.71	6.48	7.26	8.03	
ø40	2.28	2.70	3.16	3.58	4.01	4.43	4.86	5.28	6.31	7.17	8.02	8.87	
ø50	3.87	4.51	5.24	5.88	6.51	7.15	7.79	8.43	10.04	11.30	12.60	13.90	
ø63	4.93	5.69	6.53	7.29	8.04	8.80	9.55	10.31	12.15	13.65	15.15	16.64	

● STG-B

Unit: kg

Item / Bore Size (mm)	Stroke 25	50	75	100	125	150	175	200	250	300	350	400	Switch weight
ø16	0.52	0.64	0.75	0.87	1.00	1.11	1.22	1.34	1.55	-	-	-	Refer to the mass described in the switch specifications on P. 753
ø20	0.90	1.10	1.27	1.43	1.63	1.80	1.97	2.14	2.50	2.84	3.18	3.52	
ø25	1.26	1.52	1.75	1.98	2.24	2.46	2.69	2.91	3.40	3.85	4.30	4.74	
ø32	1.75	2.04	2.47	2.77	3.13	3.43	3.72	4.02	4.68	5.27	5.87	6.46	
ø40	2.12	2.48	2.97	3.33	3.75	4.11	4.47	4.83	5.61	6.32	7.04	7.76	
ø50	3.62	4.17	4.92	5.47	6.10	6.65	7.20	7.75	8.98	10.07	11.20	12.30	
ø63	4.69	5.34	6.21	6.87	7.63	8.29	8.96	9.62	11.05	12.45	13.75	15.05	

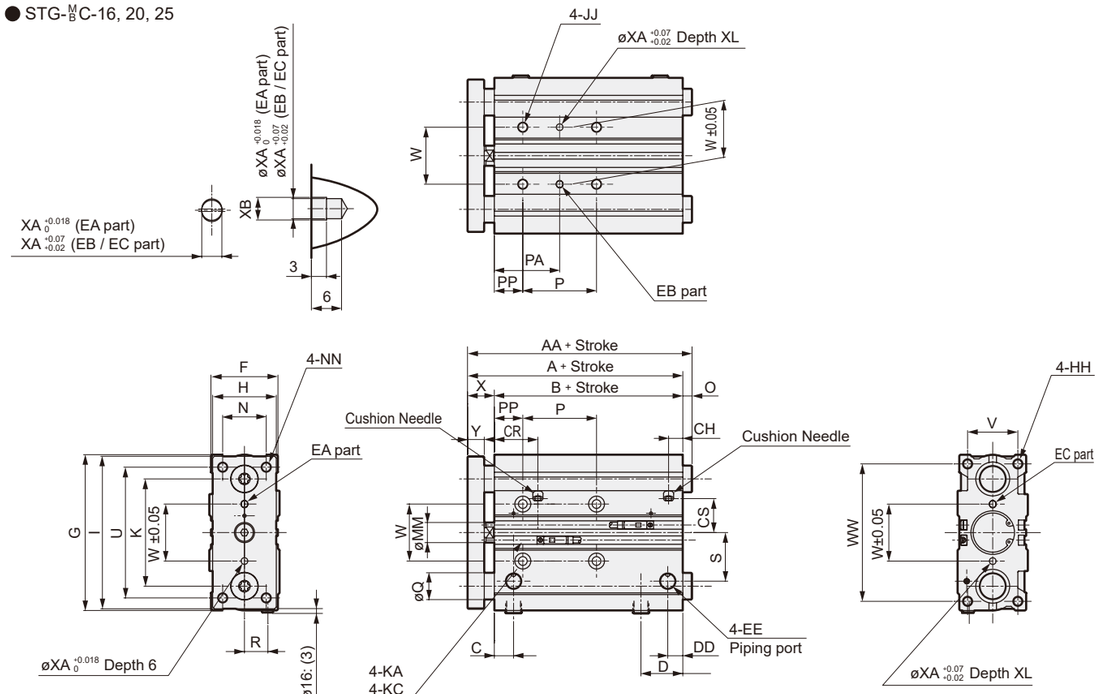
Theoretical Thrust Table

(Unit: N)

Bore Size (mm)	Operating Direction	Operating pressure MPa 0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø16	Push	-	30.2	40.2	60.3	80.4	1.01 x 10²	1.21 x 10²	1.41 x 10²	1.61 x 10²	1.81 x 10²	2.01 x 10²
	Pull	-	22.6	30.2	45.2	60.3	75.4	90.5	1.06 x 10²	1.21 x 10²	1.36 x 10²	1.51 x 10²
ø20	Push	-	47.1	62.8	94.2	1.26 x 10²	1.57 x 10²	1.88 x 10²	2.20 x 10²	2.51 x 10²	2.83 x 10²	3.14 x 10²
	Pull	-	35.3	47.1	70.7	94.2	1.18 x 10²	1.41 x 10²	1.65 x 10²	1.88 x 10²	2.12 x 10²	2.36 x 10²
ø25	Push	-	73.6	98.2	1.47 x 10²	1.96 x 10²	2.45 x 10²	2.95 x 10²	3.44 x 10²	3.93 x 10²	4.42 x 10²	4.91 x 10²
	Pull	-	56.7	75.6	1.13 x 10²	1.51 x 10²	1.89 x 10²	2.27 x 10²	2.64 x 10²	3.02 x 10²	3.40 x 10²	3.78 x 10²
ø32	Push	80.4	1.21 x 10²	1.61 x 10²	2.41 x 10²	3.22 x 10²	4.02 x 10²	4.83 x 10²	5.63 x 10²	6.43 x 10²	7.24 x 10²	8.04 x 10²
	Pull	60.3	90.5	1.21 x 10²	1.81 x 10²	2.41 x 10²	3.02 x 10²	3.62x10²	4.22 x 10²	4.83 x 10²	5.43x10²	6.03 x 10²
ø40	Push	1.26 x 10²	1.88 x 10²	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²	1.01 x 10³	1.13 x 10³	1.26 x 10³
	Pull	1.06 x 10²	1.58 x 10²	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²	8.44 x 10²	9.50 x 10²	1.06 x 10³
ø50	Push	1.96 x 10²	2.95 x 10²	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	1.65 x 10²	2.47 x 10²	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³
ø63	Push	3.12 x 10²	4.68 x 10²	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³	2.49 x 10³	2.81 x 10³	3.12 x 10³
	Pull	2.80 x 10²	4.20 x 10²	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³	2.24 x 10³	2.52 x 10³	2.80 x 10³

External dimensions diagram (Bore size: ø16, ø20, ø25)

● STG-$^{M}_{B}$C-16, 20, 25



● Common to STG-$^{M}_{B}$C

*For dimensions with each switch, refer to P. 446 to 448.

Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	DD	EE	F	G	H	HH	I	JJ	K	KA
ø16	25, 50, 75, 100, 125, 150, 175, 200, 250	71	58	12	18	7.5	M5	30	64	25	M5 Depth 12	62	M5 Depth 10	46	4.3 Through
ø20	25, 50, 75, 100, 125, 150	78	62	10.5	24.5	8.5	Rc1/8	36	83	30	M5 Depth 13	81	M6 Depth 12	54	5.2 Through
ø25	175, 200, 250, 300, 350, 400	78.5	62.5	11.5	25	9	Rc1/8	42	93	38	M6 Depth 15	91	M6 Depth 12	64	5.2 Through

Code / Bore Size (mm)	MM	N	NN	KC	P				PA			
					75st or less	Over 75st and 175st or less	Over 175st and 250st or less	Over 250st and 400st or less	75st or less	Over 75st and 175st or less	Over 175st and 250st or less	Over 250st and 400st or less
ø16	6	16	M5 Through	8 Counterbore depth 4.5	44	110	200	–	27	60	105	–
ø20	8	18	M5 Through	9.5 Counterbore depth 5.5	44	120	200	300	39	77	117	167
ø25	10	26	M6 Through	9.5 Counterbore depth 5.5	44	120	200	300	39	77	117	167

Code / Bore Size (mm)	PP	R	S	U	V	W	WW	X	Y	XA	XB	CR	CH	CS
ø16	5	10	18	54	22	24	56	13 -0 -1.5	7.5	3	3.5	23.5	9	16
ø20	17	11	25	70	24	28	72	16 -2 -0	9.5	3	3.5	25	11	19
ø25	17	14	29	78	30	34	82	16 -2 -0	9.5	4	4.5	26	8.5	20

● STG-MC

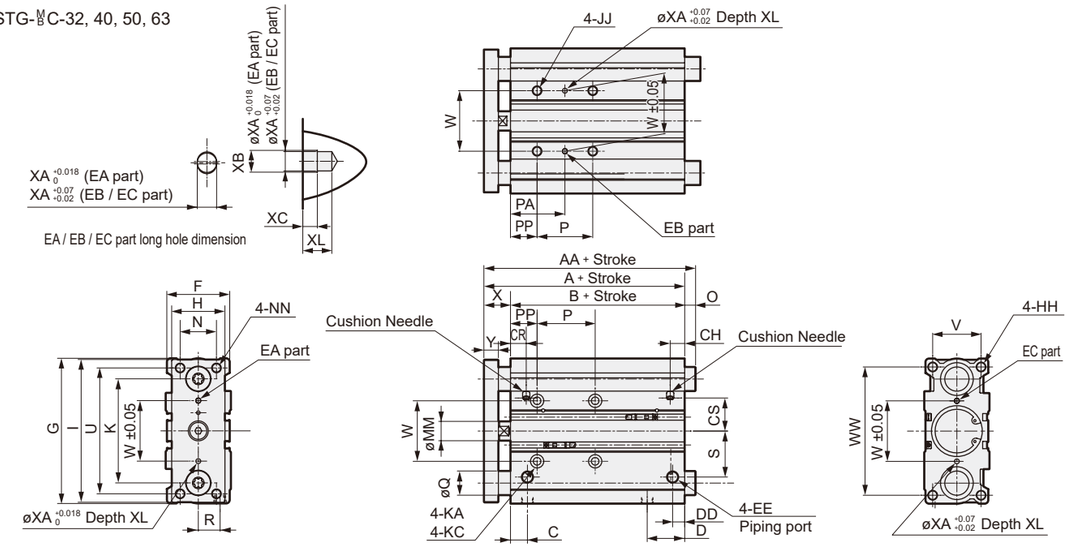
Code / Bore Size (mm)	AA					Q	O				
	25st or less	Over 25st and 50st or less	Over 50st and 100st or less	Over 100st and 200st or less	Over 200st		25st or less	Over 25st and 50st or less	Over 50st and 100st or less	Over 100st and 200st or less	Over 200st
ø16	71	88	71	95	95	10	0	17	0	24	24
ø20	78	84.5	79	79	122	12	0	6.5	1	1	44
ø25	78.5	84	84	84	122	16	0	5.5	5.5	5.5	43.5

● STG-BC

Code / Bore Size (mm)	AA					Q	O				
	25st or less	Over 25st and 75st or less	100st	Over 100st and 200st or less	Over 200st		25st or less	Over 25st and 75st or less	100st	Over 100st and 200st or less	Over 200st
ø16	80	71	71	95	95	8	9	0	0	24	24
ø20	93	79	79	100	122	10	15	1	1	22	44
ø25	99	84	103	103	122	13	20.5	5.5	24.5	24.5	43.5

External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

● STG-$^{M}_{B}$C-32, 40, 50, 63



● Common to STG-$^{M}_{B}$C

*For dimensions with each switch, refer to P. 446 to 448.

Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	DD	EE	F	G	H	HH	I	JJ	K	KA
ø32	25, 50, 75, 100, 125, 150, , 175, 200, 250, 300, 350, 400	84.5	62.5	12.5	30.5	9	Rc1/8	48	112	44	M8 depth 20	110	M8 Depth 16	78	6.3 Through
ø40		91	69	14	31	10	Rc1/8	54	120	44	M8 depth 20	118	M8 Depth 16	86	6.3 Through
ø50		97	69	14	35	11	Rc1/4	64	148	60	M10 Depth 22	146	M10 Depth 20	110	8.6 Through
ø63		102	74	16.5	35	15	Rc1/4	78	162	70	M10 Depth 22	158	M10 Depth 20	124	8.6 Through

Code / Bore Size (mm)	KC	MM	N	NN	P				PA			
					75st or less	Over 75st and 175st or less	Over 175st and 250st or less	Over 250st	75st or less	Over 75st and 175st or less	Over 175st and 250st or less	Over 250st
ø32	11 Counterbore depth 7.5	12	30	M8 Through	48	124	200	300	45	83	121	171
ø40	11 Counterbore depth 7.5	16	30	M8 Through	48	124	200	300	46	84	122	172
ø50	14 Counterbore depth 9	20	40	M10 Through	48	124	200	300	48	86	124	174
ø63	14 Counterbore depth 9	20	50	M10 Through	52	128	200	300	50	88	124	174

Code / Bore Size (mm)	PP	R	S	U	V	W	WW	X	Y	XA	XB	XC	XL	CR	CH	CS
ø32	21	15	34	96	34	42	98	22 -0 -2	11.5	4	4.5	3	6	12.5	9.2	25
ø40	22	18	38	104	40	50	106	22 -0 -2	11.5	4	4.5	3	6	13	12	27.5
ø50	24	21.5	47	130	46	66	130	28 -0 -2	15.5	5	6	4	8	15	12.5	39.5
ø63	24	28	55	130	58	80	142	28 -0 -2	15.5	5	6	4	8	32.5	31.5	45.5

● STG-MC

Code / Bore Size (mm)	AA				Q	O			
	25st	50st	Over 50st and 200st or less	Over 200st		25st	50st	Over 50st and 200st or less	Over 200st
ø32	84.5	125	100	140	20	0	40.5	15.5	55.5
ø40	91	125	100	140	20	0	34	9	49
ø50	97	116	116	161	25	0	19	19	64
ø63	102	116	116	161	25	0	14	14	59

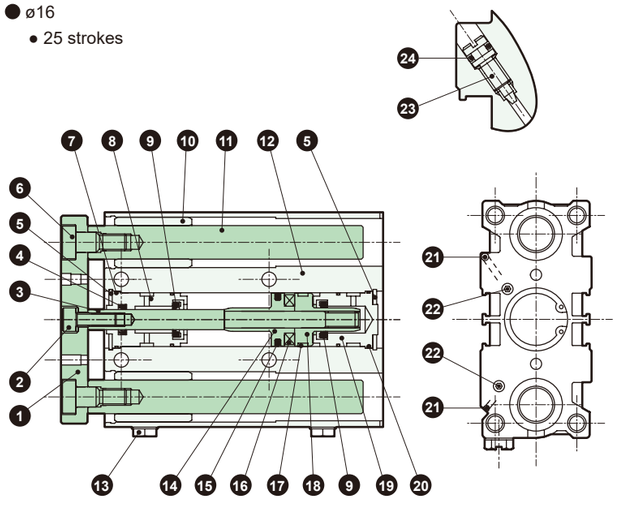
● STG-BC

Code / Bore Size (mm)	AA						Q	O					
	25st	50st	75st	100st	Over 100st and 200st or less	Over 200st		25st	50st	75st	100st	Over 100st and 200st or less	Over 200st
ø32	84.5	123	98	98	118	140	16	0	38.5	13.5	13.5	33.5	55.5
ø40	91	123	98	98	118	140	16	0	32	7	7	27	49
ø50	97	114	114	159	134	161	20	0	17	17	62	37	64
ø63	102	114	114	159	134	161	20	0	12	12	57	32	59

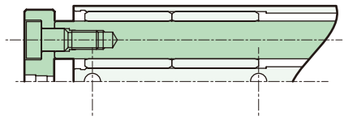
Internal structure diagram / Material (STG-MC-16 to 40)

● ø16

● 25 strokes



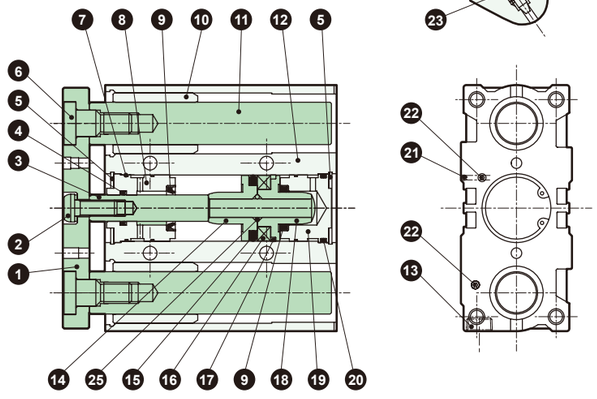
● Over 25 strokes and 100 strokes or less



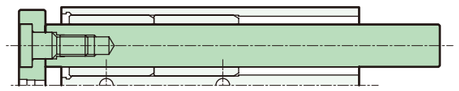
● Over 100 strokes

● ø20 to ø40

● 25 strokes (ø20, ø25)



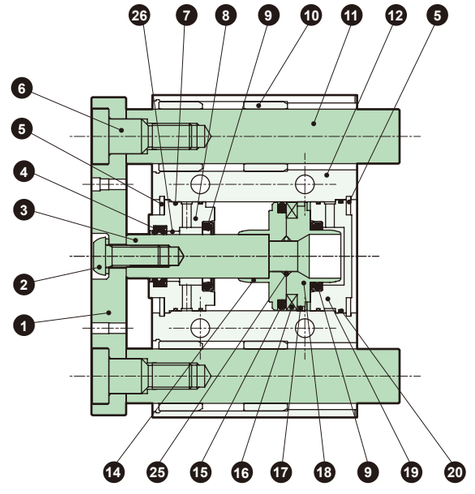
● Over 25 strokes and 200 strokes or less (ø20, ø25)

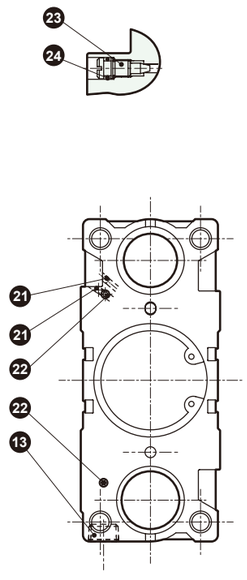


● Over 200 strokes (ø20, ø25, ø32, ø40)

Internal structure diagram / Material (STG-MC-50, 63)

● ø50, ø63





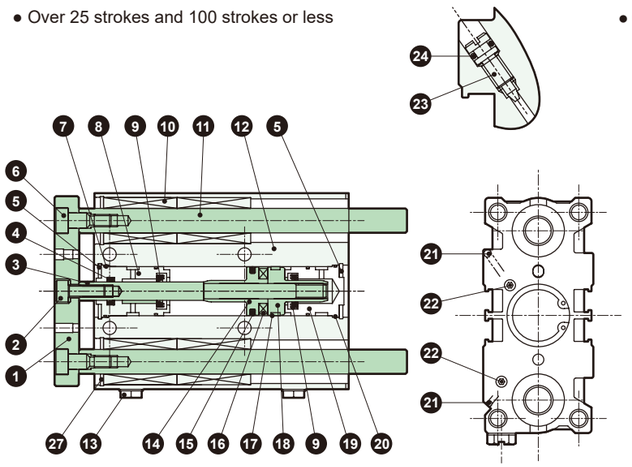
Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	End plate	Steel	Nickel Plating	12	Cylinder Body	Aluminum Alloy	Hard Anodized
2	Hexagon socket head cap screw (ø16) Hexagon socket button head cap screw (ø20 to ø63)	Steel	Zinc Chromate	13	Plug	Copper alloy or steel	
				14	Piston (R)	Aluminum Alloy	Chromate (ø16 to ø32 only)
3	Piston Rod	ø16 to ø25: Stainless steel ø32 to ø63: Steel	Industrial Hard Chrome Plating	15	Piston Packing	Nitrile Rubber	
				16	Magnet		
4	Rod Packing	Nitrile Rubber		17	Wear Ring	Polyacetal	
5	C-type retaining ring	Steel	Zinc phosphate	18	Piston (H)	Aluminum Alloy	Chromate (ø16 to ø32 only)
6	Bolt	Steel	Zinc Chromate	19	Bottom plate	Aluminum Alloy	Chromate
7	Metal gasket	Nitrile Rubber		20	O-ring	Nitrile Rubber	
8	Rod Metal	Aluminum Alloy	ø16 to ø32: Alumite ø40 to ø63: Chromate	21	Steel ball	Stainless Steel	
				22	Hexagon socket head set screw	Stainless Steel	
9	Cushion Packing	Nitrile rubber / Steel		23	Cushion Needle	Copper Alloy	
10	Metal	Oil-Impregnated Bearing Alloy		24	Needle Gasket	Nitrile Rubber	
11	Guide rod	ø16: Stainless steel ø20 to ø63: Steel	Industrial Hard Chrome Plating	25	Piston Gasket	Nitrile Rubber	
				26	Bushing	Bearing Alloy	(ø40 to ø63 only)

For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

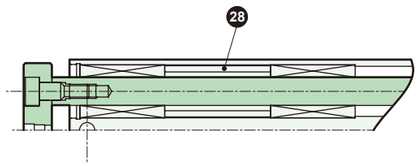
Internal structure diagram / Material (STG-BC-16 to 40)

● ø16

● Over 25 strokes and 100 strokes or less

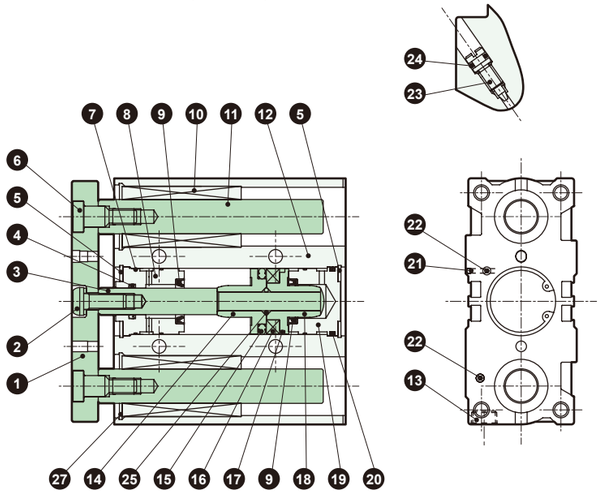


● Over 100 strokes

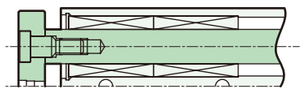


● ø20 to ø40

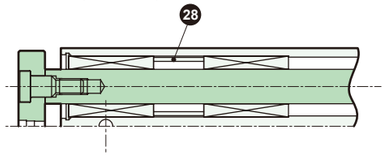
- 25 strokes (ø20, ø25)
- 100 strokes or less (ø32, ø40)



- Over 25 strokes and 100 strokes or less (ø20)
- Over 25 strokes and 75 strokes or less (ø25)



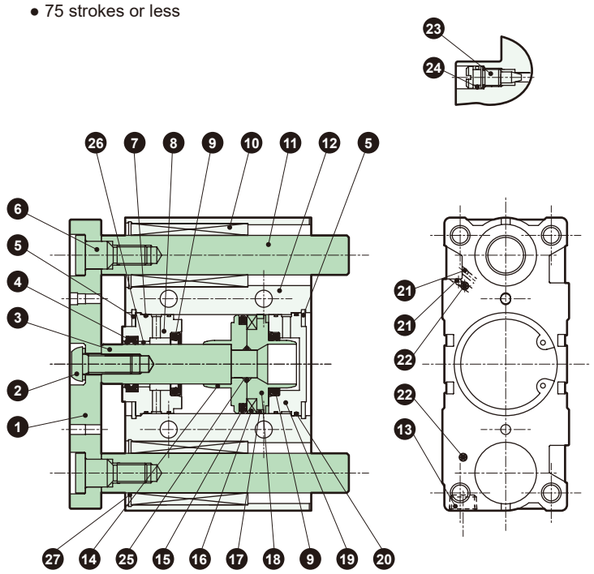
- Over 100 strokes (ø20)
- Over 75 strokes (ø25)
- Over 100 strokes (ø32, ø40)



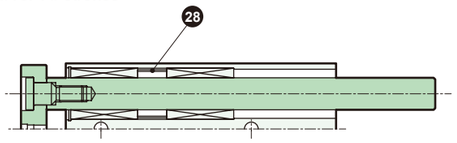
Internal structure diagram / Material (STG-BC-50, 63)

● ø50, ø63

● 75 strokes or less



● Over 75 strokes



Part No.	Part Name	Material	Remarks
1	End plate	Steel	Nickel Plating
2	Hexagon socket head cap screw (ø12 to ø16)	Steel	Zinc Chromate
	Hexagon socket button head cap screw (ø20 to ø63)	Steel	Zinc Chromate
3	Piston Rod	ø16 to ø25: Stainless steel ø32 to ø63: Steel	Industrial Hard Chrome Plating
4	Rod Packing	Nitrile Rubber	
5	C-type retaining ring	Steel	Zinc phosphate
6	Bolt	Steel	Zinc Chromate
7	Metal gasket	Nitrile Rubber	
8	Rod Metal	Aluminum Alloy	ø16 to ø32: Alumite ø40 to ø63: Chromate
9	Cushion Packing	Nitrile Rubber, Steel	
10	Ball bush		
11	Guide rod	Steel	Industrial Hard Chrome Plating
12	Cylinder Body	Aluminum Alloy	Hard Anodized
13	Plug	Copper alloy or steel	

Part No.	Part Name	Material	Remarks
14	Piston (R)	Aluminum Alloy	Chromate (ø16 to ø32 only)
15	Piston Packing	Nitrile Rubber	
16	Magnet		
17	Wear Ring	Polyacetal	
18	Piston (H)	Aluminum Alloy	Chromate (ø16 to ø32 only)
19	Bottom plate	Aluminum Alloy	Chromate
20	O-ring	Nitrile rubber	
21	Steel ball	Stainless steel	
22	Hexagon socket head set screw	Stainless Steel	
23	Cushion Needle	Copper Alloy	
24	Needle Gasket	Nitrile Rubber	
25	Piston Gasket	Nitrile Rubber	
26	Bushing	Bearing Alloy	(ø40 to ø63 only)
27	C-type retaining ring	Steel	Zinc phosphate
28	Collar	Aluminum Alloy	

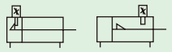
For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Guided cylinder Double acting, Drop prevention type

STG-$^{M}_{B}$Q Series

●Bore Size: ø20, ø25, ø32, ø40, ø50, ø63

Circuit Diagram
Symbol



RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

STG - M Q - 32 [ ] - 25 - H ——— M1

Model No. ❶ ❷ ❸ ❹ ❺ ❽

With Switch
(Built-in magnet for switch)

STG - M Q - 32 [ ] - 25 - H - T2H - R - M1

Model No. ❶ Bearing type ❷ Bore size ❸ Piping thread type ❹ Stroke ❺ Drop prevention mechanism ❻ Switch Model No. ❼ Number of Switches ❽ Option

Drop prevention type

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63

❸ Piping thread type

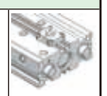
Code	Content
Blank	Rc Thread
NN	NPT Thread (Custom Order Product)
GN	G Thread (Custom Order Product)

❹ Stroke (mm)

Stroke (mm)		Applicable Bore Size					
		ø20	ø25	ø32	ø40	ø50	ø63
Standard Stroke	25	●	●	●	●	●	●
	50	●	●	●	●	●	●
	75	●	●	●	●	●	●
	100	●	●	●	●	●	●
	125	●	●	●	●	●	●
	150	●	●	●	●	●	●
	175	●	●	●	●	●	●
	200	●	●	●	●	●	●
	250	●	●	●	●	●	●
	300	●	●	●	●	●	●
	350	●	●	●	●	●	●
	400	●	●	●	●	●	●
Intermediate stroke *1		Every 5 mm					

*1: The overall length dimension is the same as the dimension of the longer standard stroke.

❺ Drop prevention mechanism

Code	Content	
H	Head side fall prevention mechanism	
R	Rod side fall prevention mechanism	

❻ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color for AC Magnetic Field	2-wire	-	24 ± 10%	-	5 to 20	T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: Please note that the minimum stroke varies depending on the switch.
*4: In the case of head side fall prevention with 25st or less, it may not be possible to insert the switch from the rod side. In this case, temporarily remove the end plate and install it. For removal and assembly methods of the end plate, please contact us.
*5: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❼ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

❽ Option

Code	Content	
M0	Non-Locking Manual Device (Release bolt attached)	
M1	Locking Manual Device	

*1: ❽ If "M0" or "M1" is not selected as an option, only the non-locking manual device will be provided. Release bolt is not included.

Switch Single Unit Model No. Notation Method

SW - T0V

❻ Switch Model No.

About Custom Product Specifications

For details, refer to P. 466.

Code	Content
-0	Port symmetrical type

Model No. Example)

STG-$^{M}_{B}$Q-·····-O

For combinations of variations and options, please refer to P. 368, 369.

Rechargeable Battery Compatible Specification (Catalog No. CC-1226AA)

● Design compatible with rechargeable battery manufacturing process

STG-$^{M}_{B}$Q-·····-P4□

* Please contact us for details.

Specifications

Item	STG-M/BQ					
Bore Size mm	ø20	ø25	ø32	ø40	ø50	ø63
Actuation method	Double Acting, Drop Prevention Type					
Operating Fluid	Compressed Air					
Max. Working Pressure MPa	1.0					
Min. Operating Pressure MPa	0.2		0.15			
Proof Pressure MPa	1.6					
Ambient Temperature °C	-10 to 60 (No freezing)					
Port Size	Rc1/8				Rc1/4	
Stroke tolerance mm	+2.0 0					
Operating Piston Speed mm/s	50 to 500					50 to 300
Cushion	With Rubber Cushion					
Fall prevention mechanism	Rod side or head side					
Holding Force	Max. Thrust x 0.7					
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)					
Allowable Absorbed Energy J	0.157	0.157	0.401	0.627	0.980	1.560

Stroke

Bore Size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø20 ø25 ø32 ø40 ø50 ø63	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	400	5	Refer to the table below

Note) Intermediate strokes can be manufactured in 5 mm increments. However, the overall length dimension will be the same as the dimension of the standard stroke above it.

Min. Stroke with Switch

	T0/T5/T2/T3/T3P	T1/T2J/T2YD/T2YDT
Straight lead wire type T□H	20	30
L-shaped lead wire type T□V	5	15

Note) This is for the case with 1 or 2 switches.

⚠ Be sure to read "Precautions for Use" (Drop prevention type) on P. 468, 469 before use.

Cylinder Weight

● STG-MQ

Unit: kg

Item / Bore Size (mm)	Stroke 25	50	75	100	125	150	175	200	250	300	350	400	Switch weight
ø20	0.71	1.15	1.35	1.54	1.73	1.92	2.12	2.35	2.77	3.15	3.54	3.92	Refer to the mass described in the switch specifications on **P. 753**
ø25	1.00	1.63	1.90	2.16	2.43	2.69	2.95	3.27	3.85	4.38	4.91	5.43	
ø32	2.06	2.60	2.99	3.39	3.78	4.18	4.57	5.06	5.94	6.73	7.52	8.30	
ø40	2.38	2.83	3.24	3.66	4.06	4.48	4.89	5.39	6.32	7.15	7.97	8.79	
ø50	4.02	4.72	5.34	5.96	6.59	7.21	7.83	8.61	10.01	11.25	12.51	13.77	
ø63	5.01	5.82	6.56	7.29	8.02	8.75	9.49	10.38	12.00	13.45	14.91	16.36	

● STG-BQ

Unit: kg

Item / Bore Size (mm)	Stroke 25	50	75	100	125	150	175	200	250	300	350	400	Switch weight
ø20	0.74	1.13	1.29	1.50	1.66	1.84	2.00	2.19	2.54	2.88	3.22	3.56	Refer to the mass described in the switch specifications on **P. 753**
ø25	1.03	1.56	1.79	2.05	2.27	2.50	2.72	2.96	3.43	3.88	4.33	4.78	
ø32	1.85	2.29	2.60	2.96	3.27	3.57	3.88	4.22	4.86	5.47	6.08	6.69	
ø40	2.18	2.65	3.00	3.40	3.75	4.10	4.45	4.84	5.56	6.26	6.96	7.66	
ø50	3.69	4.41	4.95	5.57	6.10	6.63	7.17	8.27	8.90	9.97	11.06	12.13	
ø63	4.66	5.51	6.15	6.89	7.53	8.18	8.82	9.51	10.88	12.19	13.45	14.71	

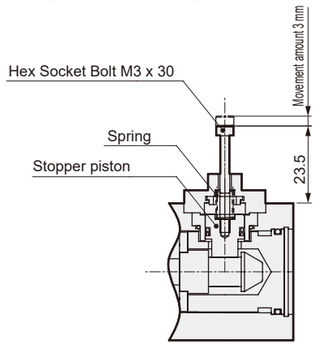
Theoretical Thrust Table

(Unit: N)

Bore Size (mm)	Operating Direction	Operating pressure MPa 0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	-	62.8	94.2	1.26 x 10²	1.57 x 10²	1.88 x 10²	2.20 x 10²	2.51 x 10²	2.83 x 10²	3.14 x 10²
	Pull	-	47.1	70.7	94.2	1.18 x 10²	1.41 x 10²	1.65 x 10²	1.88 x 10²	2.12 x 10²	2.36 x 10²
ø25	Push	-	98.2	1.47 x 10²	1.96 x 10²	2.45 x 10²	2.95 x 10²	3.44 x 10²	3.93 x 10²	4.42 x 10²	4.91 x 10²
	Pull	-	75.6	1.13 x 10²	1.51 x 10²	1.89 x 10²	2.27 x 10²	2.64 x 10²	3.02 x 10²	3.40 x 10²	3.78 x 10²
ø32	Push	1.21 x 10²	1.61 x 10²	2.41 x 10²	3.22 x 10²	4.02 x 10²	4.83 x 10²	5.63 x 10²	6.43 x 10²	7.24 x 10²	8.04 x 10²
	Pull	90.5	1.21 x 10²	1.81 x 10²	2.41 x 10²	3.02 x 10²	3.62x10²	4.22 x 10²	4.83 x 10²	5.43x10²	6.03 x 10²
ø40	Push	1.88 x 10²	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²	1.01 x 10³	1.13 x 10³	1.26 x 10³
	Pull	1.58 x 10²	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²	8.44 x 10²	9.50 x 10²	1.06 x 10³
ø50	Push	2.95 x 10²	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	2.47 x 10²	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³
ø63	Push	4.68 x 10²	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³	2.49 x 10³	2.81 x 10³	3.12 x 10³
	Pull	4.20 x 10²	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³	2.24 x 10³	2.52 x 10³	2.80 x 10³

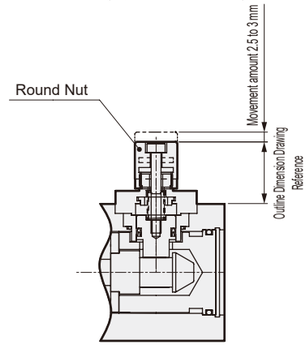
[Explanation of Manual Device]

● Non-locking manual override (Option Code: M0)



Screw the hex socket bolt (M3 x 30) into the stopper piston and pull the bolt with a force of 20N or more, the stopper piston will move and the lock will be released. (Work when no load horizontal mounting or when pressurizing the opposite side port) When the bolt is released, the built-in spring returns the stopper piston to its original position, and if it enters the lock groove, the piston will be locked.

● Locking manual override (Option Code: M1)

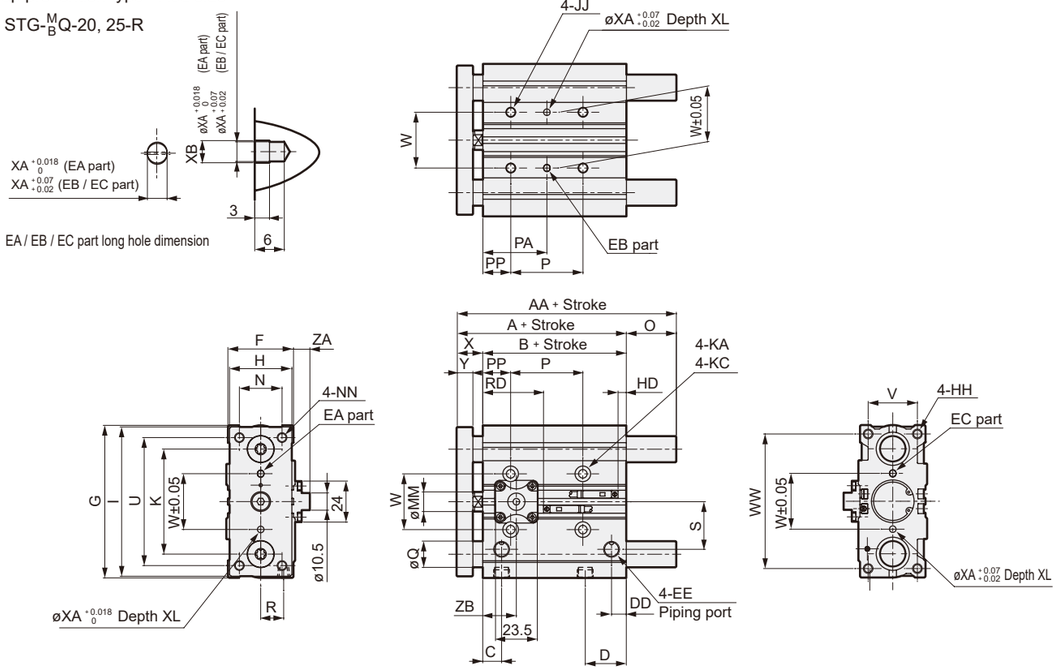


Turning the round nut to the left (counterclockwise) moves the stopper piston and releases the lock. Turning it to the right (clockwise) to the lock position returns the stopper piston, and if it enters the lock groove, the piston will be locked. When locking, if the stopper piston's engagement with the groove is shallow, it may cause damage. Be sure to securely screw the round nut all the way in.

Outline Dimension Drawing (Bore size: ø20, ø25)

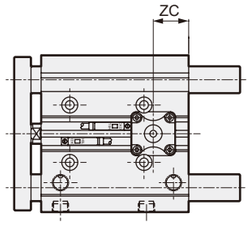
● Drop prevention type / Rod side

• STG-$^{M}_{B}$Q-20, 25-R

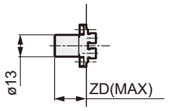


● Drop prevention type / Head side

• STG-$^{M}_{B}$Q-20, 25-H



● Locking manual type (M1)



● Common to STG-$^{M}_{B}$Q

*1: For intermediate strokes, the overall length dimension is the same as the dimension of the longer standard stroke.

***2: For dimensions with each switch, refer to P. 446 to 448.**

Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	DD	EE	F	G	H	HH	I	JJ	K	KA
ø20	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	78	62	10.5	24.5	8.5	Rc1/8	36	83	30	M5 Depth 13	81	M6 Depth 12	54	5.2 Through
ø25		78.5	62.5	11.5	25	9	Rc1/8	42	93	38	M6 Depth 15	91	M6 Depth 12	64	5.2. Through

Code / Bore Size (mm)	MM	N	NN	KC	P				PA			
					75st or less	Over 75st and 175st or less	Over 175st and 250st or less	Over 250st	75st or less	Over 75st and 175st or less	Over 175st and 250st or less	Over 250st
ø20	10	18	M5 Through	9.5 Counterbore depth 5.5	44	120	200	300	39	77	117	167
ø25	12	26	M6 Through	9.5 Counterbore depth 5.5	44	120	200	300	39	77	117	167

Code / Bore Size (mm)	PP	R	S	U	V	W	WW	X	Y	XA	XB	Drop prevention mechanism part			
												ZA	ZB	ZC	ZD
ø20	17	11	25	70	24	28	72	16 +0.2 0	9.5	3	3.5	11	20	23	23
ø25	17	14	29	78	30	34	82	16 +0.2 0	9.5	4	4.5	9	20.5	19	21

● STG-MQ

Code / Bore Size (mm)	AA			Q	O		
	25st or less	Over 25st and 175st or less	Over 175st		25st or less	Over 25st and 175st or less	Over 175st
ø20	78	84.5	122	12	0	6.5	44
ø25	78.5	84	122	16	0	5.5	43.5

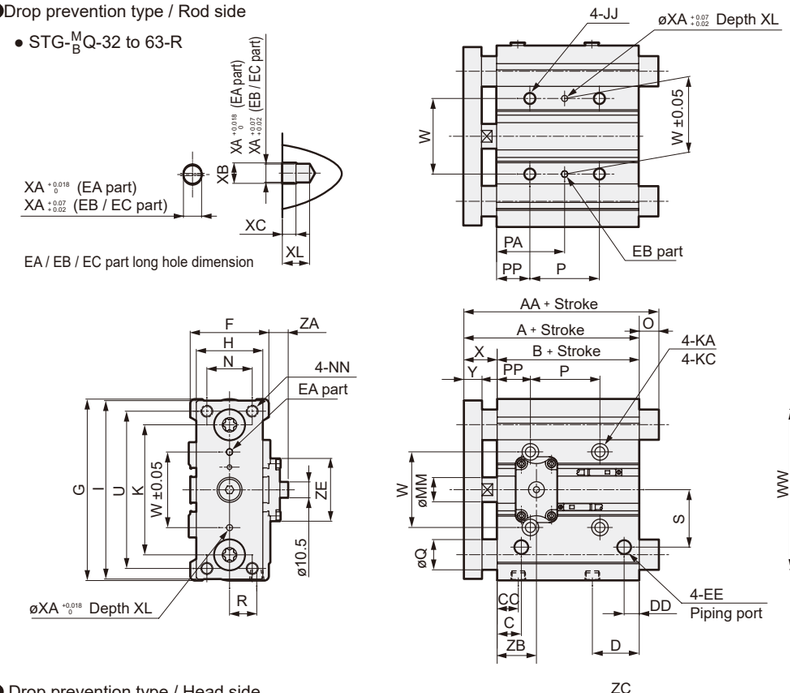
● STG-BQ

Code / Bore Size (mm)	AA			Q	O		
	75st or less	Over 75st and 175st or less	Over 175st		75st or less	Over 75st and 175st or less	Over 175st
ø20	80	100	122	10	2	22	44
ø25	84	103	122	13	5.5	24.5	43.5

Outline Dimension Drawing (Bore size: ø32 to ø63)

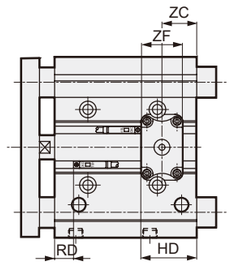
● Drop prevention type / Rod side

• STG-$^{M}_{B}$Q-32 to 63-R

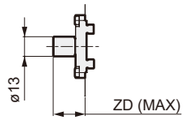


● Drop prevention type / Head side

• STG-$^{M}_{B}$Q-32 to 63-H



● Locking manual type (M1)



● Common to STG-$^{M}_{B}$Q

*1: For intermediate strokes, the overall length dimension is the same as the dimension of the longer standard stroke.

***2: For dimensions with each switch, refer to P. 446 to 448.**

Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	DD	EE	F	G	H	HH	I	JJ	K
ø32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	84.5	62.5	12.5	30.5	9	Rc1/8	48	112	44	M8 depth 20	110	M8 Depth 16	78
ø40		91	69	14	31	10	Rc1/8	54	120	44	M8 depth 20	118	M8 Depth 16	86
ø50		97	69	14	35	11	Rc1/4	64	148	60	M10 Depth 22	146	M10 Depth 20	110
ø63		102	74	16.5	35	15	Rc1/4	78	162	70	M10 Depth 22	158	M10 Depth 20	124

Code / Bore Size (mm)	KA	KC	MM	N	NN	P				PA			
						75st or less	Over 75st and 175st or less	Over 175st and 275st or less	Over 275st	75st or less	Over 75st and 175st or less	Over 175st and 275st or less	Over 275st
ø32	6.3 Through	11 Counterbore depth 7.5	16	30	M8 Through	48	124	200	300	45	83	121	171
ø40	6.3 Through	11 Counterbore depth 7.5	16	30	M8 Through	48	124	200	300	46	84	122	172
ø50	8.6 Through	14 Counterbore depth 9	20	40	M10 Through	48	124	200	300	48	86	124	174
ø63	8.6 Through	14 Counterbore depth 9	20	50	M10 Through	52	128	200	300	50	88	124	174

Code / Bore Size (mm)	PP	R	S	U	V	W	WW	X	Y	XA	XB	XC	XL	Drop prevention mechanism part					
														ZA	ZB	ZC	ZD	ZE	ZF
ø32	21	15	34	96	34	42	98	22 +0.2 0	11.5	4	4.5	3	6	10	21	20	23.5	32.5	21.5
ø40	22	18	38	104	40	50	106	22 +0.2 0	11.5	4	4.5	3	6	12	25	23	23.5	40.5	23
ø50	24	21.5	47	130	46	66	130	28 +0.2 0	15.5	5	6	4	8	12	25	23	24.5	40.5	23
ø63	24	28	55	130	58	80	142	28 +0.2 0	15.5	5	6	4	8	11.5	25	25.5	24	40.5	23

● STG-MQ

Code / Bore Size (mm)	AA			Q	O		
	25st or less	Over 25st and 175st or less	Over 175st		25st or less	Over 25st and 175st or less	Over 175st
ø32	84.5	100	140	20	0	15.5	55.5
ø40	91	100	140	20	0	9	49
ø50	97	116	161	25	0	19	64
ø63	102	116	161	25	0	14	59

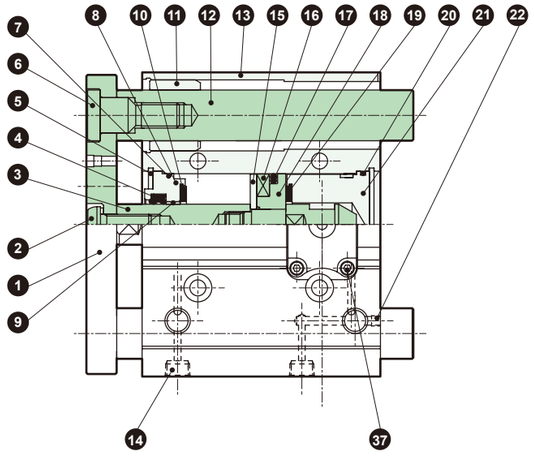
● STG-BQ

Code / Bore Size (mm)	AA				Q	O		
	25st or less	Over 25st and 75st or less	Over 75st and 175st or less	Over 175st		25st or less	Over 25st and 75st or less	Over 75st and 175st or less	Over 175st
ø32	84.5	98	118	140	16	0	13.5	33.5	55.5
ø40	91	98	118	140	16	0	7	27	49
ø50	97	114	134	161	20	0	17	37	64
ø63	102	114	134	161	20	0	12	32	59

Internal Structure Diagram/Material

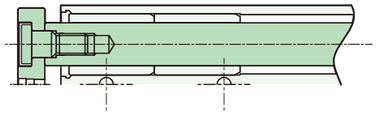
● STG-MQ-20 to 63

• Stroke 25 or less (ø20, ø25)

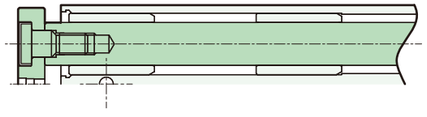


Plain bearing (M)

• Stroke over 25 and 175 or less (ø20, ø25)

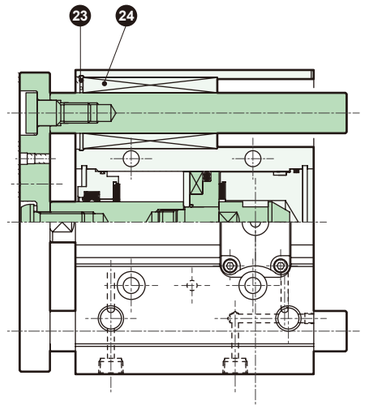


• Stroke over 175 (ø20, ø25)
• All strokes (ø32 to ø63)



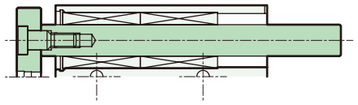
● STG-BQ-20 to 63

• 75 strokes or less (ø32 to ø63)

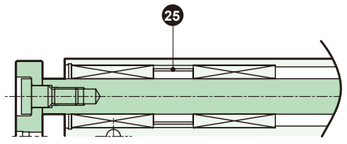


Rolling bearing (B)

• 75 strokes or less (ø20, ø25)

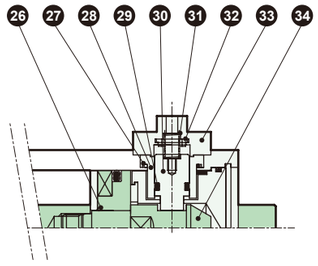


• Over 75 strokes (ø20 to ø63)

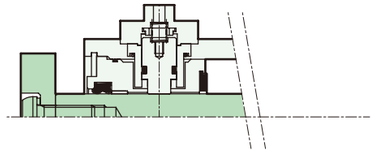


Internal Structure Diagram / Material

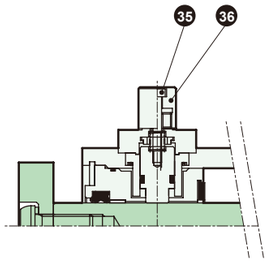
● Head side fall prevention type STG-$^{M}_{B}$Q-H



● Rod side fall prevention type STG-$^{M}_{B}$Q-R



● Locking manual device (M1)



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	End plate	Steel	Nickel Plating	19	Cushion Rubber	Urethane Rubber	
2	Hex Socket Button Head Bolt	Steel	Zinc Chromate	20	O-ring	Nitrile rubber	
3	Piston Rod	ø20 to ø25: Stainless steel ø32 to ø63: Steel	Industrial Hard Chrome Plating	21	Head Cover	Aluminum Alloy	Chromate
				22	Hexagon socket head set screw	Stainless Steel	
4	Rod Packing	Nitrile Rubber		23	C-type retaining ring	Steel	Zinc phosphate
5	C-type retaining ring	Steel	Zinc phosphate	24	Ball bush		
6	Bolt	Steel	Zinc Chromate	25	Collar	Aluminum Alloy	
7	Metal gasket	Nitrile Rubber		26	O-ring	Nitrile Rubber	
8	Rod Metal	Aluminum Alloy	ø20 to ø25: Alumite ø40 to ø63: Chromate	27	O-ring	Nitrile Rubber	
				28	Stopper housing	ø20 to ø50: Aluminum alloy ø63: Steel	ø20 to ø50: Alumite ø63: Chromate
9	Bushing	Bearing Alloy	*1				
10	Cushion Rubber	Urethane Rubber		29	Stopper packing	Nitrile Rubber	
11	Metal	Oil-Impregnated Bearing Alloy		30	Stopper piston	Steel	Nitriding Treatment
12	Guide rod	Steel	Industrial Hard Chrome Plating	31	Coil Spring	Steel	Painting
13	Cylinder Body	Aluminum Alloy	Hard Anodized	32	Cushion Rubber	Urethane Rubber	
14	Plug	Steel	Nickel Plating	33	Stopper cover	Aluminum Alloy	Chromate
15	Spacer	Aluminum alloy	Chromate	34	Sleeve	Steel	Nitriding Treatment
16	Magnet			35	Hexagon Socket Head Cap Screw	Steel	
17	Piston Packing	Nitrile Rubber		36	Round Nut	Aluminum Alloy	
18	Piston	Aluminum Alloy	Chromate	37	Hexagon Socket Head Cap Screw	Steel	

*1: For head side fall prevention type with ø32 or less, and rod side fall prevention type with ø32 or less, ❾ bush is not included.

For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Guided cylinder Double acting, Heavy-duty scraper type Guided cylinder Double acting, Coil scraper type

STG-$^{M}_{B}$G Series STG-$^{M}_{B}$G1 Series

●Bore Size: ø20, ø25, ø32, ø40, ø50, ø63

Circuit Diagram Symbol

RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

STG - M(1) G(2) - 32(3) (4) - 25(5)

Model No.

With Switch
(Built-in magnet for switch)

STG - M(1) G(2) - 32(3) (4) - 25(5) - T2H(6) - R(7)

Model No.
2 Model No.
4 Piping thread type
6 Switch Model No.
1 Bearing type
3 Bore size
5 Stroke
7 Number of Switches

1 Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

2 Model No.

Code	Content
G	Heavy-Duty Scraper Type
G1	Coil Scraper Type

3 Bore Size (mm)

Code	Content
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63

4 Piping thread type

Code	Content
Blank	Rc Thread
NN	NPT Thread (Custom Order Product)
GN	G Thread (Custom Order Product)

5 Stroke (mm)

Stroke (mm)		Applicable Bore Size					
		ø20	ø25	ø32	ø40	ø50	ø63
Standard Stroke	20	●	●				
	25			●	●	●	●
	30	●	●				
	40	●	●				
	50	●	●	●	●	●	●
	75	●	●	●	●	●	●
	100	●	●	●	●	●	●
	125	●	●	●	●	●	●
	150	●	●	●	●	●	●
	175	●	●	●	●	●	●
	200	●	●	●	●	●	●
	250	●	●	●	●	●	●
	300	●	●	●	●	●	●
	350	●	●	●	●	●	●
	400	●	●	●	●	●	●
Intermediate stroke *1		Every 5 mm					

*1: The overall length dimension is the same as the dimension of the longer standard stroke.

6 Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color for AC Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

	Code	Content
	Blank	1 m (Standard)
	3	3 m (Option)
	5	5 m (Option)
*5	W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

7 Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

Switch Single Unit Model No. Notation Method

SW - T0V

6 Switch Model No.

About Custom Product Specifications

For details, see P. 466.

Code	Content
-0	Port symmetrical type

Model No. Example)

STG-$^{M}_{B}$G-·····-O

For combinations of variations and options, please refer to P. 368, 369.

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food grade grease that can be used in food manufacturing processes

STG-$^{M}_{B}$G-·····-FP1

High Durability Components HP Series (Catalog No. CC-1421AA)

● Long-life actuator that contributes to productivity improvement with stable operation

STG-$^{M}_{B}$G-·····-HP□

Rechargeable Battery Compatible Specification (Catalog No. CC-1226AA)

● Design compatible with rechargeable battery manufacturing process

STG-$^{M}_{B}$G-·····-P4□

* Please contact us for details.

Specifications

Item		STG-$^{M}_{B}$G / STG-$^{M}_{B}$G1					
Bore Size	mm	ø20	ø25	ø32	ø40	ø50	ø63
Actuation method		Double acting, Scraper type					
Operating Fluid		Compressed Air					
Max. Working Pressure	MPa	1.0					
Min. Operating Pressure	MPa	0.2		0.15			
Proof Pressure	MPa	1.6					
Ambient Temperature	°C	-10 to 60 (No freezing)					
Port Size		Rc1/8				Rc1/4	
Stroke tolerance	mm	+2.0 0					
Operating Piston Speed	mm/s	50 to 500					50 to 300
Cushion		With Rubber Cushion					
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)					
Allowable Absorbed Energy	J	0.157	0.157	0.401	0.627	0.980	1.560

Stroke

Bore Size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)	
				T2WL	Other switches
ø20	20, 30, 40, 50, 75, 100, 125 150, 175, 200, 250, 300, 350, 400	400	5	10	5 (10) *2
ø25					
ø32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400				
ø40					
ø50					
ø63					

*1: Intermediate strokes can be manufactured every 5 mm. However, the overall length dimension will be the same as the dimension of the standard stroke above it.
*2: This is for the case with 1 or 2 switches. The value in ( ) is the minimum stroke for a 2-color indicator type switch for AC magnetic fields.

Cylinder Weight

● STG-MG / STG-MG1

Unit: kg

Item	Stroke															Switch weight
Bore Size (mm)	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400	
ø20	0.69	-	0.77	0.85	0.92	1.17	1.37	1.56	1.75	1.94	2.14	2.59	2.98	3.36	3.75	Refer to the mass described in the switch specifications on P. 753
ø25	0.98	-	1.08	1.19	1.29	1.66	1.92	2.18	2.46	2.72	2.98	3.62	4.14	4.68	5.20	
ø32	-	1.76	-	-	2.13	2.66	3.06	3.46	3.85	4.24	4.63	5.61	6.39	7.19	7.97	
ø40	-	2.03	-	-	2.44	2.89	3.29	3.71	4.12	4.53	4.94	5.95	6.78	7.61	8.43	
ø50	-	3.47	-	-	4.09	4.80	5.42	6.04	6.66	7.28	7.90	9.46	10.69	11.95	13.21	
ø63	-	4.31	-	-	5.05	5.87	6.60	7.33	8.07	8.80	9.53	11.32	12.77	14.23	15.68	

● STG-BG / STG-BG1

Unit: kg

Item	Stroke															Switch weight
Bore Size (mm)	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400	
ø20	0.72	-	0.79	0.90	0.98	1.15	1.31	1.51	1.68	1.85	2.02	2.39	2.73	3.07	3.41	Refer to the mass described in the switch specifications on P. 753
ø25	1.01	-	1.10	1.27	1.36	1.58	1.82	2.08	2.30	2.52	2.75	3.23	3.69	4.13	4.58	
ø32	-	1.61	-	-	1.91	2.35	2.66	3.02	3.33	3.63	3.94	4.61	5.22	5.83	6.44	
ø40	-	1.88	-	-	2.23	2.70	3.05	3.46	3.81	4.16	4.51	5.26	5.96	6.66	7.36	
ø50	-	3.23	-	-	3.76	4.49	5.02	5.64	6.18	6.71	7.24	8.44	9.49	10.59	11.66	
ø63	-	4.07	-	-	4.71	5.56	6.20	6.93	7.57	8.22	8.86	10.25	11.61	12.87	14.13	

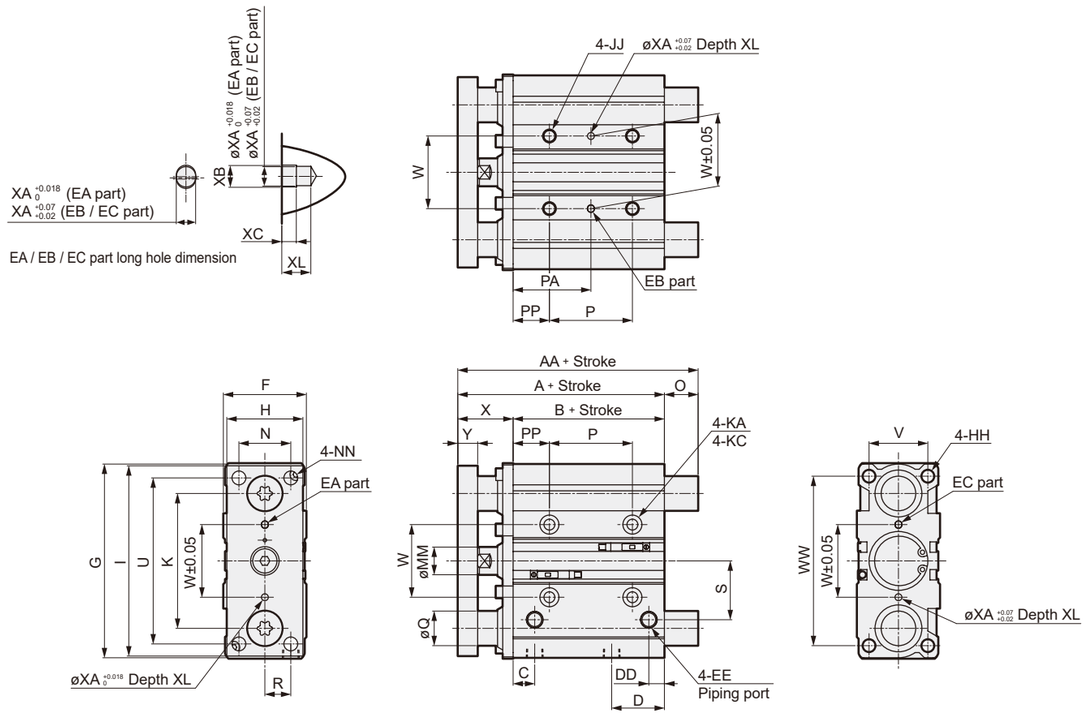
Theoretical Thrust Table

(Unit: N)

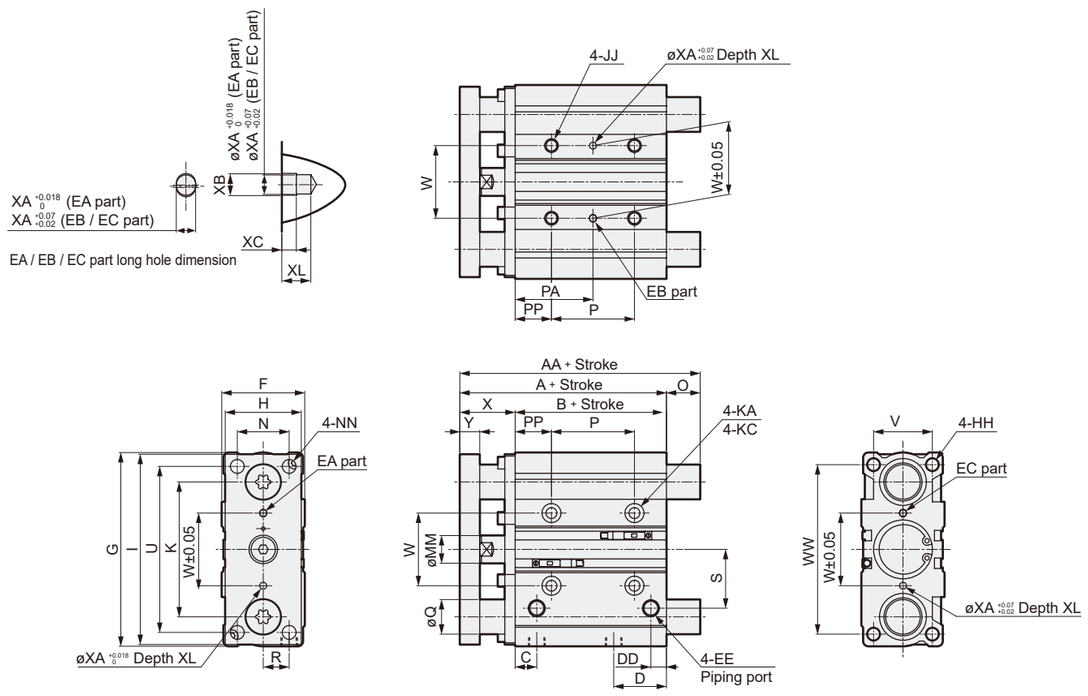
Bore Size (mm)	Operating Direction	Operating pressure MPa									
		0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	-	62.8	94.2	1.26 x 10^2	1.57 x 10^2	1.88 x 10^2	2.20 x 10^2	2.51 x 10^2	2.83 x 10^2	3.14 x 10^2
	Pull	-	47.1	70.7	94.2	1.18 x 10^2	1.41 x 10^2	1.65 x 10^2	1.88 x 10^2	2.12 x 10^2	2.36 x 10^2
ø25	Push	-	98.2	1.47 x 10^2	1.96 x 10^2	2.45 x 10^2	2.95 x 10^2	3.44 x 10^2	3.93 x 10^2	4.42 x 10^2	4.91 x 10^2
	Pull	-	75.6	1.13 x 10^2	1.51 x 10^2	1.89 x 10^2	2.27 x 10^2	2.64 x 10^2	3.02 x 10^2	3.40 x 10^2	3.78 x 10^2
ø32	Push	1.21 x 10^2	1.61 x 10^2	2.41 x 10^2	3.22 x 10^2	4.02 x 10^2	4.83 x 10^2	5.63 x 10^2	6.43 x 10^2	7.24 x 10^2	8.04 x 10^2
	Pull	90.5	1.21 x 10^2	1.81 x 10^2	2.41 x 10^2	3.02 x 10^2	3.62x10^2	4.22 x 10^2	4.83 x 10^2	5.43x10^2	6.03 x 10^2
ø40	Push	1.88 x 10^2	2.51 x 10^2	3.77 x 10^2	5.03 x 10^2	6.28 x 10^2	7.54 x 10^2	8.80 x 10^2	1.01 x 10^3	1.13 x 10^3	1.26 x 10^3
	Pull	1.58 x 10^2	2.11 x 10^2	3.17 x 10^2	4.22 x 10^2	5.28 x 10^2	6.33 x 10^2	7.39 x 10^2	8.44 x 10^2	9.50 x 10^2	1.06 x 10^3
ø50	Push	2.95 x 10^2	3.93 x 10^2	5.89 x 10^2	7.85 x 10^2	9.82 x 10^2	1.18 x 10^3	1.37 x 10^3	1.57 x 10^3	1.77 x 10^3	1.96 x 10^3
	Pull	2.47 x 10^2	3.30 x 10^2	4.95 x 10^2	6.60 x 10^2	8.25 x 10^2	9.90 x 10^2	1.15 x 10^3	1.32 x 10^3	1.48 x 10^3	1.65 x 10^3
ø63	Push	4.68 x 10^2	6.23 x 10^2	9.35 x 10^2	1.25 x 10^3	1.56 x 10^3	1.87 x 10^3	2.18 x 10^3	2.49 x 10^3	2.81 x 10^3	3.12 x 10^3
	Pull	4.20 x 10^2	5.61 x 10^2	8.41 x 10^2	1.12 x 10^3	1.40 x 10^3	1.68 x 10^3	1.96 x 10^3	2.24 x 10^3	2.52 x 10^3	2.80 x 10^3

Outline Dimension Drawing

● STG-$^{M}_{B}$G



● STG-$^{M}_{B}$G1



Outline Dimension Drawing

● Common to STG-$^{M}_{B}$G/G1

Code / Bore Size (mm)	Standard Stroke	A	B	C	D	DD	EE	F	G	H	HH	I	JJ	K	KA
ø20	20, 30, 40, 50, 75, 100, 125, 150, 175	63	37	10.5	24.5	8.5	Rc1/8	36	83	30	M5 Depth 13	81	M6 Depth 12	54	5.2 Through
ø25	200, 250, 300, 350, 400	63.5	37.5	11.5	25	9	Rc1/8	42	93	38	M6 Depth 15	91	M6 Depth 12	64	5.2 Through
ø32		69.5	37.5	12.5	30.5	9	Rc1/8	48	112	44	M8 depth 20	110	M8 Depth 16	78	6.3 Through
ø40	25, 50, 75, 100, 125, 150, 175	76	44	14	31	10	Rc1/8	54	120	44	M8 depth 20	118	M8 Depth 16	86	6.3 Through
ø50	200, 250, 300, 350, 400	82	44	14	35	11	Rc1/4	64	148	60	M10 Depth 22	146	M10 Depth 20	110	8.6 Through
ø63		87	49	16.5	35	15	Rc1/4	78	162	70	M10 Depth 22	158	M10 Depth 20	124	8.6 Through

Code / Bore Size (mm)	KC	MM	N	NN	P					PA	
					25 or Less	Over 25 100 or less	Over 100 200 or Less	Over 200 300 or Less	Over 300 0000000000	25 or Less	Over 25 100 or less
ø20	9.5 Counterbore depth 5.5	10	18	M5 Through	24	44	120	200	300	29	39
ø25	9.5 Counterbore depth 5.5	12	26	M6 Through	24	44	120	200	300	29	39
ø32	11 Counterbore depth 7.5	16	30	M8 Through	24	48	124	200	300	33	45
ø40	11 Counterbore depth 7.5	16	30	M8 Through	24	48	124	200	300	34	46
ø50	14 Counterbore depth 9	20	40	M10 Through	24	48	124	200	300	36	48
ø63	14 Counterbore depth 9	20	50	M10 Through	28	52	128	200	300	38	50

Code / Bore Size (mm)	PA			PP	R	S	U	V	W	WW	X	Y	XA	XB	XC	XL
	Over 100 200 or Less	Over 200 300 or Less	300 Over													
ø20	77	117	167	17	11	25	70	24	28	72	26$^{0}_{-2}$	9.5	3	3.5	3	6
ø25	77	117	167	17	14	29	78	30	34	82	26$^{0}_{-2}$	9.5	4	4.5	3	6
ø32	83	121	171	21	15	34	96	34	42	98	32$^{0}_{-2}$	11.5	4	4.5	3	6
ø40	84	122	172	22	18	38	104	40	50	106	32$^{0}_{-2}$	11.5	4	4.5	3	6
ø50	86	124	174	24	21.5	47	130	46	66	130	38$^{0}_{-2}$	15.5	5	6	4	8
ø63	88	124	174	24	28	55	130	58	80	142	38$^{0}_{-2}$	15.5	5	6	4	8

● STG-MG/G1

Code / Bore Size (mm)	AA			Q	O		
	50 or less	Over 50 200 or Less	200 Over		50 or less	Over 50 200 or Less	200 Over
ø20	63	88	132	12	0	25	69
ø25	63.5	94	132	16	0	30.5	68.5
ø32	89	110	150	20	19.5	40.5	80.5
ø40	89	110	150	20	13	34	74
ø50	101	126	171	25	19	44	89
ø63	101	126	171	25	14	39	84

● STG-BG/G1

Code / Bore Size (mm)	AA				Q	O			
	30st or less	Over 30st 100st or less	Over 100st 200st or less	200st Over		30st or less	Over 30st 100st or less	Over 100st 200st or less	200st Over
ø20	69	88	110	132	10	6	25	47	69
ø25	75	94	113	132	13	11.5	30.5	49.5	68.5

Code / Bore Size (mm)	AA				Q	O			
	50st or less	Over 50st 100st or less	Over 100st 200st or less	200st Over		50st or less	Over 50st 100st or less	Over 100st 200st or less	200st Over
ø32	89	108	128	150	16	19.5	38.5	58.5	80.5
ø40	89	108	128	150	16	13	32	52	74
ø50	101	124	144	171	20	19	42	62	89
ø63	101	124	144	171	20	14	37	57	84

*1: For intermediate strokes, the overall length dimension is the same as the dimension of the longer standard stroke.

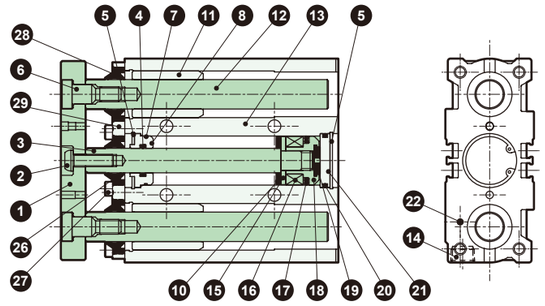
***2: For dimensions with each switch, refer to P. 446 to 448.**

Internal Structure Diagram / Material

Heavy-Duty Scraper Type

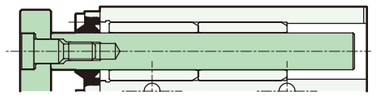
● STG-MG-20 to 63

- 50 strokes or less (ø20, 25)

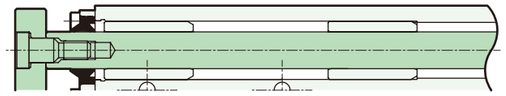


Plain bearing (M)

- Over 50 strokes and 200 strokes or less (ø20, 25)

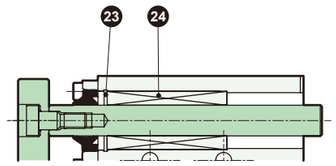


- Over 200 strokes (ø20, 25)
- All strokes (ø32 to 63)



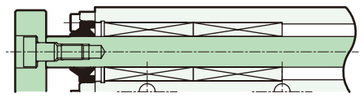
● STG-BG-20 to 63

- 30 strokes or less (ø20, 25)
- 100 strokes or less (ø32 to 63)

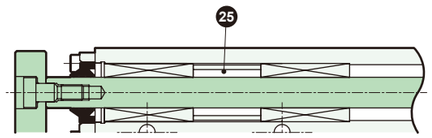


Rolling bearing (B)

- Over 30 strokes and 100 or less (ø20, 25)



- Over 100 strokes (ø20 to ø63)



Part No.	Part Name	Material	Remarks
1	End plate	Steel	Nickel Plating
2	Hex Socket Button Head Bolt	Steel	Zinc Chromate
3	Piston Rod	ø20 to ø25: Stainless steel ø32 to ø63: Steel	Industrial Hard Chrome Plating
4	Rod Packing	Nitrile Rubber	
5	C-type retaining ring	Steel	Zinc phosphate
6	Bolt	Steel	Zinc Chromate
7	Metal gasket	Nitrile Rubber	
8	Rod Metal	Aluminum Alloy	ø20 to ø32: Alumite ø40 to ø63: Chromate
9	Bushing	Bearing Alloy	ø40 to ø63 only
10	Cushion Rubber	Urethane Rubber	
11	Metal	Oil-Impregnated Bearing Alloy	
12	Guide rod	Steel	Industrial Hard Chrome Plating
13	Cylinder Body	Aluminum Alloy	Hard Anodized
14	Plug	Steel	

Part No.	Part Name	Material	Remarks
15	Spacer	Aluminum Alloy	Chromate (ø20 to ø25 only)
16	Magnet		
17	Piston Packing	Nitrile Rubber	
18	Piston	Aluminum Alloy	Chromate (ø20 to ø25 only)
19	Cushion Rubber	Urethane Rubber	
20	O-ring	Nitrile rubber	
21	Bottom plate	Aluminum Alloy	Chromate
22	Hexagon socket head set screw	Stainless Steel	
23	C-type retaining ring	Steel	Zinc phosphate
24	Ball bush		
25	Collar	Aluminum Alloy	
26	Heavy-duty Scraper	Nitrile Rubber, Steel	
27	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
28	Heavy-duty Scraper	Nitrile Rubber, Steel	
29	Adapter plate	Aluminum Alloy	Chromate

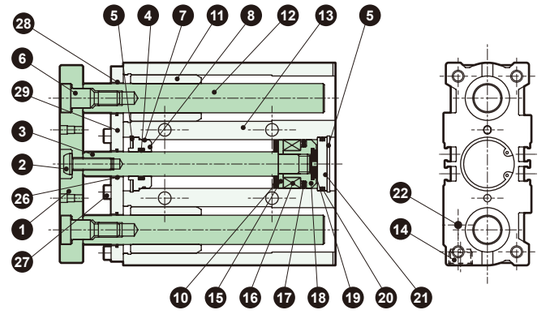
For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal Structure Diagram / Material

Coil Scraper Type

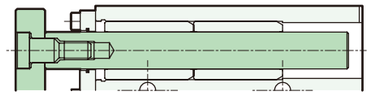
● STG-MG1-20 to 63

- 50 strokes or less (ø20, 25)

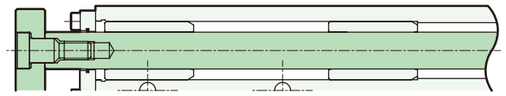


Plain bearing (M)

- Over 50 strokes and 200 strokes or less (ø20, 25)

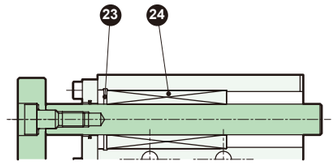


- Over 200 strokes (ø20, 25)
- All strokes (ø32 to 63)



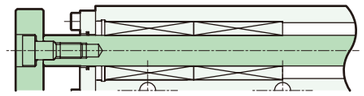
● STG-BG1-20 to 63

- 30 strokes or less (ø20, 25)
- 100 strokes or less (ø32 to ø63)

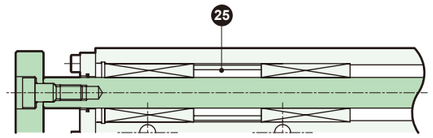


Rolling bearing (B)

- Over 30 strokes and 100 strokes or less (ø20, 25)



- Over 100 strokes (ø20 to ø63)



Part No.	Part Name	Material	Remarks
1	End plate	Steel	Nickel Plating
2	Hex Socket Button Head Bolt	Steel	Zinc Chromate
3	Piston Rod	ø20 to ø25: Stainless steel ø32 to ø63: Steel	Industrial Hard Chrome Plating
4	Rod Packing	Nitrile Rubber	
5	C-type retaining ring	Steel	Zinc phosphate
6	Bolt	Steel	Zinc Chromate
7	Metal gasket	Nitrile Rubber	
8	Rod Metal	Aluminum Alloy	ø20 to ø32: Alumite ø40 to ø63: Chromate
9	Bushing	Bearing Alloy	ø40 to ø63 only
10	Cushion Rubber	Urethane Rubber	
11	Metal	Oil-impregnated copper alloy bearing	
12	Guide rod	Steel	Industrial Hard Chrome Plating
13	Cylinder Body	Aluminum Alloy	Hard Anodized
14	Plug	Steel	

Part No.	Part Name	Material	Remarks
15	Spacer	Aluminum Alloy	Chromate (ø20 to ø25 only)
16	Magnet		
17	Piston Packing	Nitrile Rubber	
18	Piston	Aluminum Alloy	Chromate (ø20 to ø25 only)
19	Cushion Rubber	Urethane Rubber	
20	O-ring	Nitrile rubber	
21	Bottom plate	Aluminum Alloy	Chromate
22	Hexagon socket head set screw	Stainless Steel	
23	C-type retaining ring	Steel	Zinc phosphate
24	Ball bush		
25	Collar	Aluminum Alloy	
26	Coil scraper	Copper Alloy	
27	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
28	Coil scraper	Copper Alloy	
29	Adapter plate	Aluminum Alloy	Chromate

For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Guided cylinder Double acting, Cutting oil resistant type

STG-MG 2 3 Series

● Bore Size: ø20, ø25, ø32, ø40, ø50, ø63

Circuit Diagram Symbol

RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

STG - M G2 - 32 ( ) - 25
Model No. ❶ ❷ ❸ ❹

With Switch
(Built-in magnet for switch)

STG - M G2 - 32 ( ) - 25 - T2YLH - R
Model No. / Plain bearing / ❶ Protection structure level: / ❷ Bore size / ❸ Piping thread type / ❹ Stroke / ❺ Switch Model No. / ❻ Number of Switches

❶ Protection structure level

Code	Content
G2	Cutting Oil Resistant Scraper + NBR Packing
G3	Cutting Oil Resistant Scraper + FKM Packing

❷ Bore Size (mm)

Code	Content
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63

❸ Piping thread type

Code	Content
Blank	Rc Thread
NN	NPT Thread (Custom Order Product)
GN	G Thread (Custom Order Product)

❹ Stroke (mm)

Stroke (mm)		Applicable Bore Size					
		ø20	ø25	ø32	ø40	ø50	ø63
Standard Stroke	20	●	●				
	25			●	●	●	●
	30	●	●				
	40	●	●				
	50	●	●	●	●	●	●
	75	●	●	●	●	●	●
	100	●	●	●	●	●	●
	125	●	●	●	●	●	●
	150	●	●	●	●	●	●
	175	●	●	●	●	●	●
	200	●	●	●	●	●	●
	250	●	●	●	●	●	●
	300	●	●	●	●	●	●
	350	●	●	●	●	●	●
	400	●	●	●	●	●	●
Intermediate stroke *1		Every 5 mm					

*1: The overall length dimension is the same as the dimension of the longer standard stroke.

❺ Switch Model No.

For switch details, please see P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	For 2-Color Cutting Oil	2-wire	-	10 to 30	-	5 to 20	T2YLH□	T2YLV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3YLH□	T3YLV□	
	2-Color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*2

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length" table.
*2: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*3: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

* Lead wire length

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*4 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*4: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T2YLH
3 m T2YLH 3
5 m T2YLH 3

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

Switch Single Unit Model No. Notation Method

SW - T2YLH
❺ Switch Model No.

About Custom Product Specifications

For details, see P. 466.

Code	Content
-0	Port symmetrical type

Model No. Example)
STG-MG 2 3 - ····· - O

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

● Uses food grade grease that can be used in food manufacturing processes

STG-MG 2 3 - • • • • - FP1

For combinations of variations and options, please refer to P. 368, 369.

Specifications

Item		STG-MG$^{2}_{3}$					
Bore Size	mm	ø20	ø25	ø32	ø40	ø50	ø63
Actuation method		Double Acting, Coolant Proof Type					
Operating Fluid		Compressed Air					
Max. Working Pressure	MPa	1.0					
Min. Operating Pressure	MPa	0.2		0.15			
Proof Pressure	MPa	1.6					
Ambient Temperature	°C	-10 to 60 (No freezing)					
Port Size		Rc1/8				Rc1/4	
Stroke tolerance	mm	+2.0 0					
Operating Piston Speed	mm/s	50 to 500					50 to 300
Cushion		With rubber cushion (Urethane rubber)					
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)					
Allowable Absorbed Energy	J	0.157	0.157	0.401	0.627	0.980	1.560

Stroke

Bore Size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø20	20, 30, 40, 50, 75, 100, 125	400	5	10 *2
ø25	150, 175, 200, 250, 300, 350, 400			
ø32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400			
ø40				
ø50				
ø63				

*1: Intermediate strokes can be manufactured every 5 mm. However, the overall length dimension will be the same as the dimension of the standard stroke above it.
*2: This is for the case with 1 or 2 switches.

Cylinder Weight

● STG-MG2 / STG-MG3

Unit: kg

Item / Bore Size (mm)	Stroke 20	25	30	40	50	75	100	125	150	175	200	250	300	350	400	Switch weight
ø20	0.68	-	0.76	0.84	0.91	1.16	1.36	1.55	1.74	1.93	2.13	2.58	2.97	3.35	3.74	Refer to the mass described in the switch specifications on P. 753
ø25	0.96	-	1.06	1.17	1.27	1.64	1.90	2.16	2.44	2.70	2.96	3.60	4.12	4.66	5.18	
ø32	-	1.68	-	-	2.05	2.58	2.98	3.38	3.77	4.16	4.55	5.53	6.31	7.11	7.89	
ø40	-	1.93	-	-	2.34	2.79	3.19	3.61	4.02	4.43	4.84	5.85	6.68	7.51	8.33	
ø50	-	3.32	-	-	3.94	4.65	5.27	5.89	6.51	7.13	7.75	9.31	10.54	11.80	13.06	
ø63	-	4.15	-	-	4.89	5.71	6.44	7.17	7.91	8.64	9.37	11.16	12.61	14.07	15.52	

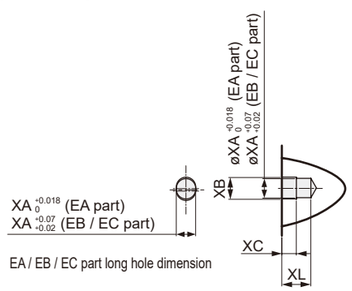
Theoretical Thrust Table

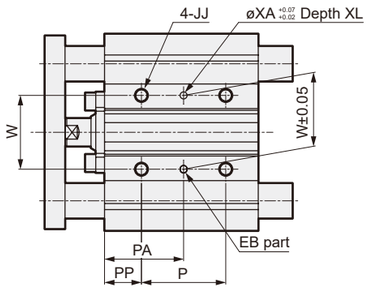
(Unit: N)

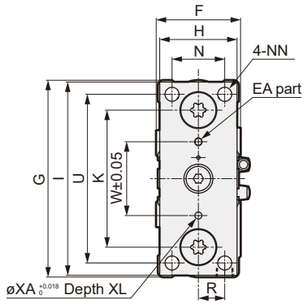
Bore Size (mm)	Operating Direction	Operating pressure MPa 0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	-	62.8	94.2	1.26 x 10^2	1.57 x 10^2	1.88 x 10^2	2.20 x 10^2	2.51 x 10^2	2.83 x 10^2	3.14 x 10^2
	Pull	-	47.1	70.7	94.2	1.18 x 10^2	1.41 x 10^2	1.65 x 10^2	1.88 x 10^2	2.12 x 10^2	2.36 x 10^2
ø25	Push	-	98.2	1.47 x 10^2	1.96 x 10^2	2.45 x 10^2	2.95 x 10^2	3.44 x 10^2	3.93 x 10^2	4.42 x 10^2	4.91 x 10^2
	Pull	-	75.6	1.13 x 10^2	1.51 x 10^2	1.89 x 10^2	2.27 x 10^2	2.64 x 10^2	3.02 x 10^2	3.40 x 10^2	3.78 x 10^2
ø32	Push	1.21 x 10^2	1.61 x 10^2	2.41 x 10^2	3.22 x 10^2	4.02 x 10^2	4.83 x 10^2	5.63 x 10^2	6.43 x 10^2	7.24 x 10^2	8.04 x 10^2
	Pull	90.5	1.21 x 10^2	1.81 x 10^2	2.41 x 10^2	3.02 x 10^2	3.62x10^2	4.22 x 10^2	4.83 x 10^2	5.43x10^2	6.03 x 10^2
ø40	Push	1.88 x 10^2	2.51 x 10^2	3.77 x 10^2	5.03 x 10^2	6.28 x 10^2	7.54 x 10^2	8.80 x 10^2	1.01 x 10^3	1.13 x 10^3	1.26 x 10^3
	Pull	1.58 x 10^2	2.11 x 10^2	3.17 x 10^2	4.22 x 10^2	5.28 x 10^2	6.33 x 10^2	7.39 x 10^2	8.44 x 10^2	9.50 x 10^2	1.06 x 10^3
ø50	Push	2.95 x 10^2	3.93 x 10^2	5.89 x 10^2	7.85 x 10^2	9.82 x 10^2	1.18 x 10^3	1.37 x 10^3	1.57 x 10^3	1.77 x 10^3	1.96 x 10^3
	Pull	2.47 x 10^2	3.30 x 10^2	4.95 x 10^2	6.60 x 10^2	8.25 x 10^2	9.90 x 10^2	1.15 x 10^3	1.32 x 10^3	1.48 x 10^3	1.65 x 10^3
ø63	Push	4.68 x 10^2	6.23 x 10^2	9.35 x 10^2	1.25 x 10^3	1.56 x 10^3	1.87 x 10^3	2.18 x 10^3	2.49 x 10^3	2.81 x 10^3	3.12 x 10^3
	Pull	4.20 x 10^2	5.61 x 10^2	8.41 x 10^2	1.12 x 10^3	1.40 x 10^3	1.68 x 10^3	1.96 x 10^3	2.24 x 10^3	2.52 x 10^3	2.80 x 10^3

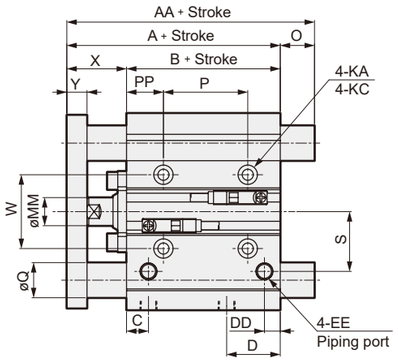
Outline Dimension Drawing

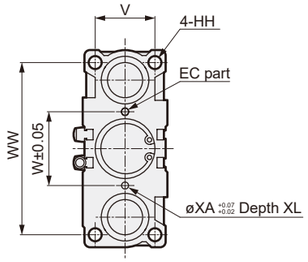
● STG-MG 2/3











Code / Bore Size (mm)	Standard Stroke	A	B	C	D	DD	EE	F	G	H	HH	I	JJ	K	KA
ø20	20, 30, 40, 50, 75, 100, 125, 150, 175	66	37	10.5	24.5	8.5	Rc1/8	36	83	30	M5 Depth 13	81	M6 Depth 12	54	5.2 Through
ø25	200, 250, 300, 350, 400	67.5	37.5	11.5	25	9	Rc1/8	42	93	38	M6 Depth 15	91	M6 Depth 12	64	5.2 Through
ø32		71.5	37.5	12.5	30.5	9	Rc1/8	48	112	44	M8 depth 20	110	M8 Depth 16	78	6.3 Through
ø40	25, 50, 75, 100, 125, 150, 175	78	44	14	31	10	Rc1/8	54	120	44	M8 depth 20	118	M8 Depth 16	86	6.3 Through
ø50	200, 250, 300, 350, 400	83	44	14	35	11	Rc1/4	64	148	60	M10 Depth 22	146	M10 Depth 20	110	8.6 Through
ø63		88	49	16.5	35	15	Rc1/4	78	162	70	M10 Depth 22	158	M10 Depth 20	124	8.6 Through

Code / Bore Size (mm)	KC	MM	N	NN	P: 25 or Less	P: Over 25 and 100 or less	P: Over 100 and 200 or less	P: Over 200 to 300 or Less	P: Over 300	PA: 25 or Less	PA: Over 25 and 100 or less
ø20	9.5 Counterbore depth 5.5	10	18	M5 Through	24	44	120	200	300	29	39
ø25	9.5 Counterbore depth 5.5	12	26	M6 Through	24	44	120	200	300	29	39
ø32	11 Counterbore depth 7.5	16	30	M8 Through	24	48	124	200	300	33	45
ø40	11 Counterbore depth 7.5	16	30	M8 Through	24	48	124	200	300	34	46
ø50	14 Counterbore depth 9	20	40	M10 Through	24	48	124	200	300	36	48
ø63	14 Counterbore depth 9	20	50	M10 Through	28	52	128	200	300	38	50

Code / Bore Size (mm)	PA: Over 100 and 200 or less	PA: Over 200 to 300 or Less	PA: Over 300	PP	R	S	U	V	W	WW	X	Y	XA	XB	XC	XL
ø20	77	117	167	17	11	25	70	24	28	72	29 +2 0	9.5	3	3.5	3	6
ø25	77	117	167	17	14	29	78	30	34	82	30 +2 0	9.5	4	4.5	3	6
ø32	83	121	171	21	15	34	96	34	42	98	34 +2 0	11.5	4	4.5	3	6
ø40	84	122	172	22	18	38	104	40	50	106	34 +2 0	11.5	4	4.5	3	6
ø50	86	124	174	24	21.5	47	130	46	66	130	39 +2 0	15.5	5	6	4	8
ø63	88	124	174	24	28	55	130	58	80	142	39 +2 0	15.5	5	6	4	8

Code / Bore Size (mm)	AA: 50st or less	AA: Over 50st and 200st or less	AA: Over 200st	Q	O: 50st or less	O: Over 50st and 200st or less	O: Over 200st
ø20	66	91	135	12	0	25	69
ø25	67.5	98	136	16	0	30.5	68.5
ø32	91	112	152	20	19.5	40.5	80.5
ø40	91	112	152	20	13	34	74
ø50	102	127	172	25	19	44	89
ø63	102	127	172	25	14	39	84

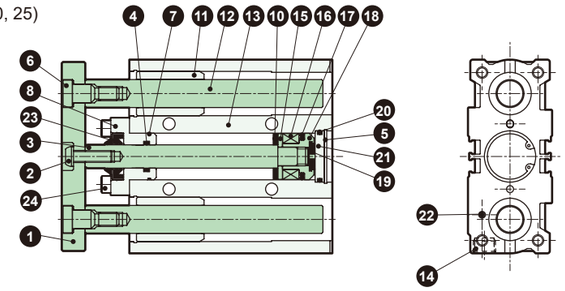
*1: For intermediate strokes, the overall length dimension is the same as the dimension of the longer standard stroke.
***2: For dimensions with each switch, refer to P. 446 to 448.**

Internal Structure Diagram/Material

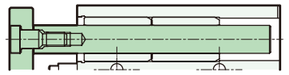
● STG-MG 2/3 -20 to 63

● ø20 to ø32

50 strokes or less (ø20, 25)

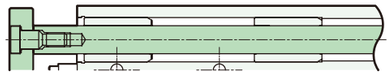


Over 50 strokes and 200 strokes or less (ø20, 25)



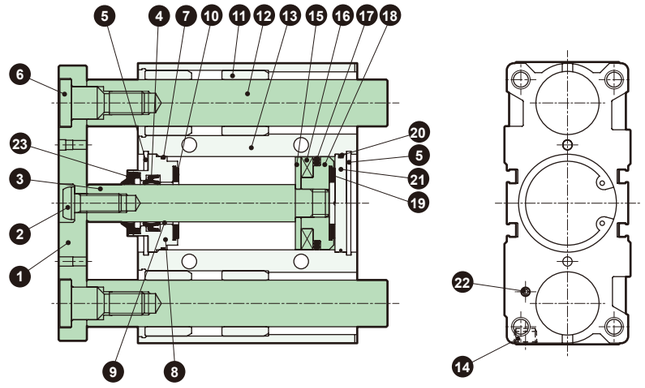
Over 200 strokes (ø20, 25)

All strokes (ø32)



● ø40 to ø63

Full stroke



Part No.	Part Name		Material	Remarks
1	End plate		Steel	Nickel Plating
2	Hex Socket Button Head Bolt		Stainless Steel	
3	Piston Rod		Stainless Steel	Industrial Hard Chrome Plating
4	Rod Packing	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
5	C-type retaining ring		Stainless Steel	
6	Bolt		Steel	Zinc Chromate
7	Metal gasket	G2	G2: Nitrile rubber	
		G3	G3: Fluoro rubber	
8	Rod cover (ø20 to ø32)		Aluminum Alloy	Alumite
	Rod metal (ø40 to ø63)		Aluminum Alloy	Alumite
9	Bushing		Bearing Alloy	ø40 to ø63 only
10	Cushion Rubber		Urethane Rubber	
11	Metal		Oil-impregnated copper alloy bearing	
12	Guide rod		Stainless Steel	Industrial Hard Chrome Plating

Part No.	Part Name		Material	Remarks
13	Cylinder Body		Aluminum Alloy	Hard Anodized
14	Plug		Stainless Steel	
15	Spacer		Aluminum alloy	Chromate
16	Magnet			
17	Piston Packing	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
18	Piston		Aluminum Alloy	Chromate
19	Cushion Rubber		Urethane Rubber	
20	O-ring	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
21	Bottom plate		Aluminum Alloy	Chromate
22	Hexagon socket head set screw		Stainless Steel	
23	Heavy-duty Scraper	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
24	Hexagon socket head cap screw (ø20 to ø32)		Stainless Steel	

For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Guided cylinder Double acting, Spatter adhesion prevention type

STG-MBG4 Series

● Bore size: ø40, ø50, ø63

Circuit Diagram
Symbol

RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

STG M G4 - 40 ( ) - 25

Model No. ❶ ❷ ❸ ❹

With Switch
(Built-in magnet for switch)

STG - M G4 - 40 ( ) - 25 - T2YD - R

Model No. Spatter adhesion prevention type ❸ Piping thread type ❺ Switch Model No. ❻ Number of Switches

❶ Bearing type ❷ Bore size ❹ Stroke

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Contents
40	ø40
50	ø50
63	ø63

❸ Piping thread type

Code	Content
Blank	Rc Thread
NN	NPT Thread (Custom Order Product)
GN	G Thread (Custom Order Product)

❹ Stroke (mm)

Stroke (mm)		Applicable Bore Size ø40	ø50	ø63
Standard Stroke	25	●	●	●
	50	●	●	●
	75	●	●	●
	100	●	●	●
	125	●	●	●
	150	●	●	●
	175	●	●	●
	200	●	●	●
	250	●	●	●
	300	●	●	●
	350	●	●	●
	400	●	●	●
Intermediate stroke *1		Every 5 mm		

*1: The overall length dimension is the same as the dimension of the longer standard stroke.

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Contact									
Solid State	2-Color for AC Magnetic Field	2-wire	-	24 ± 10%	-	5 to 20	T2YD□	–	
			-		-		T2YDT□	–	

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length" table.
*2: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

Example) Lead wire length
1 m T2YD
3 m T2YD 3
5 m T2YD 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

Switch Single Unit Model No. Notation Method

SW - T2YD

❺ Switch Model No.

About Custom Product Specifications

For details, see P. 466.

Code	Content
-0	Port symmetrical type

Model No. Example)

STG-MBG4-·····-O

For combinations of variations and options, please refer to P. 368, 369.

Specifications

Item	STG-MBG4		
Bore Size mm	ø40	ø50	ø63
Actuation method	Double Acting, Spatter Adhesion Prevention Type		
Operating Fluid	Compressed Air		
Max. Working Pressure MPa	1.0		
Min. Operating Pressure MPa	0.15		
Proof Pressure MPa	1.6		
Ambient Temperature °C	-10 to 60 (No freezing)		
Port Size	Rc1/8	Rc1/4	
Stroke tolerance mm	+2.0 0		
Operating Piston Speed mm/s	50 to 500		50 to 300
Cushion	With Rubber Cushion		
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)		
Allowable Absorbed Energy J	0.627	0.980	1.560

Stroke

Bore Size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø40	25, 50, 75, 100, 125	400	5	10 *2
ø50	150, 175, 200, 250			
ø63	300, 350, 400			

*1: Intermediate strokes can be manufactured every 5 mm. However, the overall length dimension will be the same as the dimension of the standard stroke above it.

*2: This is for the case with 1 or 2 switches.

Cylinder Weight

● STG-MG4

Unit: kg

Item / Bore Size (mm)	Stroke 25	50	75	100	125	150	175	200	250	300	350	400	Switch weight
ø40	2.03	2.44	2.89	3.29	3.71	4.12	4.53	4.94	5.95	6.78	7.61	8.43	Refer to the mass described in the switch specifications on P. 753
ø50	3.47	4.09	4.80	5.42	6.04	6.66	7.28	7.90	9.46	10.69	11.95	13.21	
ø63	4.31	5.05	5.87	6.60	7.33	8.07	8.80	9.53	11.32	12.77	14.23	15.68	

● STG-BG4

Unit: kg

Item / Bore Size (mm)	Stroke 25	50	75	100	125	150	175	200	250	300	350	400	Switch weight
ø40	1.88	2.23	2.70	3.05	3.46	3.81	4.16	4.51	5.26	5.96	6.66	7.36	Refer to the mass described in the switch specifications on P. 753
ø50	3.23	3.76	4.49	5.02	5.64	6.18	6.71	7.24	8.44	9.49	10.59	11.66	
ø63	4.07	4.71	5.56	6.20	6.93	7.57	8.22	8.86	10.25	11.61	12.87	14.13	

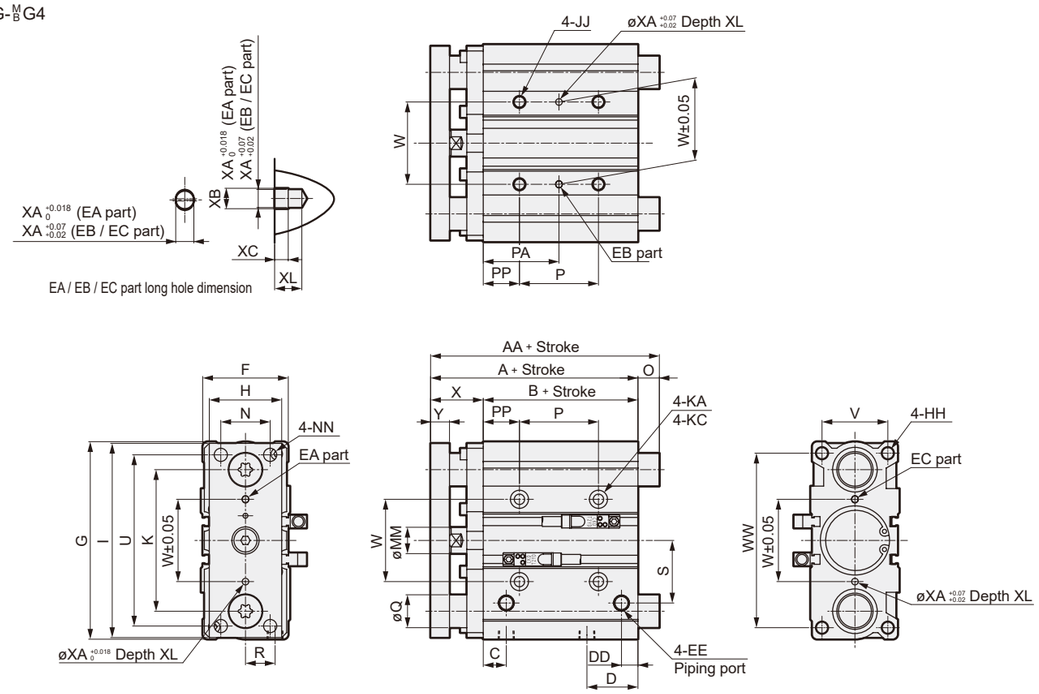
Theoretical Thrust Table

(Unit: N)

Bore Size (mm)	Operating Direction	Operating pressure MPa 0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push	1.88 x 10²	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²	1.01 x 10³	1.13 x 10³	1.26 x 10³
	Pull	1.58 x 10²	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²	8.44 x 10²	9.50 x 10²	1.06 x 10³
ø50	Push	2.95 x 10²	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	2.47 x 10²	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³
ø63	Push	4.68 x 10²	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³	2.49 x 10³	2.81 x 10³	3.12 x 10³
	Pull	4.20 x 10²	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³	2.24 x 10³	2.52 x 10³	2.80 x 10³

Outline Dimension Drawing

● STG-$^{M}_{B}$G4



● Common to STG-$^{M}_{B}$G4

Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	DD	EE	F	G	H	HH	I	JJ	K	KA
ø40	25, 50, 75, 100,	76	44	14	31	10	Rc1/8	54	120	44	M8 depth 20	118	M8 Depth 16	86	6.3 Through
ø50	125, 150, 175, 200,	82	44	14	35	11	Rc1/4	64	148	60	M10 Depth 22	146	M10 Depth 20	110	8.6 Through
ø63	250, 300, 350, 400	87	49	16.5	35	15	Rc1/4	78	162	70	M10 Depth 22	158	M10 Depth 20	124	8.6 Through

Code / Bore Size (mm)	KC	MM	N	NN	P					PA	
					25 or Less	Over 25 and 100 or less	Over 100 and 200 or less	Over 200 to 300 or Less	Over 300	25 or Less	Over 25 to 100 or less
ø40	11 Counterbore depth 7.5	16	30	M8 Through	24	48	124	200	300	34	46
ø50	14 Counterbore depth 9	20	40	M10 Through	24	48	124	200	300	36	48
ø63	14 Counterbore depth 9	20	50	M10 Through	28	52	128	200	300	38	50

Code / Bore Size (mm)	PA			PP	R	S	U	V	W	WW	X	Y	XA	XB	XC	XL
	Over 100 and 200 or less	Over 200 to 300 or Less	Over 300													
ø40	84	122	172	22	18	38	104	40	50	106	32.2°	11.5	4	4.5	3	6
ø50	86	124	174	24	21.5	47	130	46	66	130	38.2°	15.5	5	6	4	8
ø63	88	124	174	24	28	55	130	58	80	142	38.2°	15.5	5	6	4	8

● STG-MG4

Code / Bore Size (mm)	AA			Q	O		
	50 or less	Over 50 and 200 or less	Over 200		50 or less	Over 50 and 200 or less	Over 200
ø40	89	110	150	20	13	34	74
ø50	101	126	171	25	19	44	89
ø63	101	126	171	25	14	39	84

● STG-BG4

Code / Bore Size (mm)	AA				Q	O			
	30 or less	Over 30 and 100 or less	Over 100 and 200 or less	Over 200		30 or less	Over 30 and 100 or less	Over 100 and 200 or less	Over 200
ø40	89	108	128	150	16	13	32	52	74
ø50	101	124	144	171	20	19	42	62	89
ø63	101	124	144	171	20	14	37	57	84

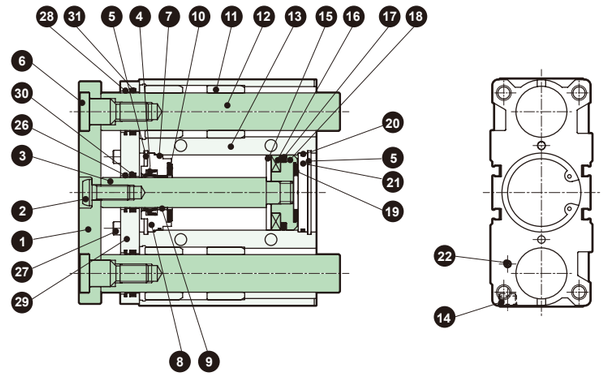
*1: For intermediate strokes, the overall length dimension is the same as the dimension of the longer standard stroke.

***2: For dimensions with each switch, refer to P. 446 to 448.**

Internal Structure Diagram/Material

● STG-MG4-40 to 63

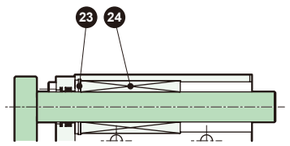
● All strokes



Plain bearing (M)

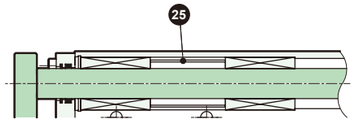
● STG-BG4-40 to 63

● 100 strokes or less



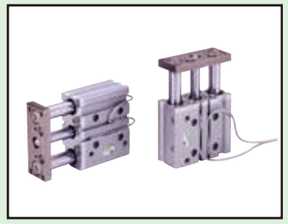
Rolling bearing (B)

● Over 100 strokes



Part No.	Part Name	Material	Remarks
1	End plate	Steel	Nickel Plating
2	Hex Socket Button Head Bolt	Steel	Zinc Chromate
3	Piston Rod	ø20 to ø25: Stainless steel ø32 to ø63: Steel	Industrial Hard Chrome Plating
4	Rod Packing	Nitrile Rubber	
5	C-type retaining ring	Steel	Zinc phosphate
6	Bolt	Steel	Zinc Chromate
7	Metal gasket	Nitrile Rubber	
8	Rod Metal	Aluminum Alloy	ø20 to ø32: Alumite ø40 to ø63: Chromate
9	Bushing	Bearing Alloy	ø40 to ø63 only
10	Cushion Rubber	Urethane Rubber	
11	Metal	Oil-impregnated copper alloy bearing	
12	Guide rod	Steel	Industrial Hard Chrome Plating
13	Cylinder Body	Aluminum Alloy	Hard Anodized
14	Plug	Steel	
15	Spacer	Aluminum Alloy	
16	Magnet		
17	Piston Packing	Nitrile Rubber	
18	Piston	Aluminum Alloy	
19	Cushion Rubber	Urethane Rubber	
20	O-ring	Nitrile Rubber	
21	Bottom plate	Aluminum Alloy	Chromate
22	Hexagon socket head set screw	Stainless Steel	
23	C-type retaining ring	Steel	Zinc phosphate
24	Ball bush		
25	Collar	Aluminum Alloy	
26	Coil scraper	Copper Alloy	
27	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
28	Heavy-duty Scraper	Copper Alloy	
29	Adapter plate	Aluminum Alloy	Chromate
30	Lube keeper	Special rubber	
31	Lube keeper	Special rubber	

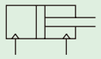
For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts



Guided cylinder Double acting, Single rod, Environment resistant scraper type

STG-MG5 Series

● Bore size: ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

Circuit Diagram Symbol 

Custom Products RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

STG - M G5 - 32 ❶ ❷ - 25 ❸

Model No.

With Switch
(Built-in magnet for switch)

STG - M G5 - 32 ❷ - 25 ❹ - T2H - R ❺

Model No. | Environment Resistant Scraper Type | ❷ Piping thread type | ❹ Switch Model No.

Plain bearing | ❶ Bore size | ❸ Stroke | ❺ Number of Switches

❶ Bore Size (mm)

Code	Content
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100

❷ Piping thread type

Code	Content
Blank	Rc Thread
NN	NPT Thread (Custom Order Product)
GN	G Thread (Custom Order Product)

❸ Stroke (mm)

Stroke (mm)		Applicable Bore Size							
		ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Standard Stroke	10								
	20	●	●						
	25			●	●	●	●	●	●
	30	●	●						
	40	●	●						
	50	●	●	●	●	●	●	●	●
	75	●	●	●	●	●	●	●	●
	100	●	●	●	●	●	●	●	●
	125	●	●	●	●	●	●	●	●
	150	●	●	●	●	●	●	●	●
	175	●	●	●	●	●	●	●	●
	200	●	●	●	●	●	●	●	●
	250	●	●	●	●	●	●	●	●
	300	●	●	●	●	●	●	●	●
	350	●	●	●	●	●	●	●	●
	400	●	●	●	●	●	●	●	●
Intermediate stroke *1		Every 5 mm							

*1: The overall length dimension is the same as the dimension of the longer standard stroke.

❹ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Water Resistance Improved	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color AC For Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❺ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

Switch Single Unit Model No. Notation Method

SW - T0V

❹ Switch Model No.

Food Manufacturing Process Compatible Specification (Catalog No. CC-1271AA)

●Uses food grade grease that can be used in food manufacturing processes

STG-MG5 - ····· - FP1

About Custom Product Specifications

For details, see P. 466.

Code	Content
-0	Port symmetrical type

Model No. Example)

STG-MG5 - ····· - O

For combinations of variations and options, please refer to P. 368, 369.

Specifications

Item		STG-MG5							
Bore Size	mm	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Actuation method		Double Acting Type							
Operating Fluid		Compressed Air							
Maximum Operating Pressure	MPa	1.0							
Min. Operating Pressure	MPa	0.25					0.2		
Proof Pressure	MPa	1.6							
Ambient Temperature	°C	-10 to 60 (However, no freezing)							
Port Size		Rc1/8				Rc1/4		Rc3/8	
Stroke tolerance	mm	+2.0 0							
Operating piston speed	mm/s	50 to 500					50 to 300		
Cushion		With Rubber Cushion							
Lubrication		Not required (When lubricating, use turbine oil class 1 ISO VG32)							
Allowable Absorption Energy	J	0.157	0.157	0.401	0.627	0.980	1.560	2.510	3.92

Stroke

Bore Size	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)	
				T2WL	Other switches
ø20	20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	400	5	10	5 (10) *2
ø25					
ø32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400				
ø40					
ø50					
ø63					
ø80					
ø100					

*1: Intermediate strokes can be manufactured every 5 mm. However, the overall length dimension is the same as the dimension of the longer standard stroke.
*2: This is for the case with 1 or 2 switches. The value in ( ) is the minimum stroke for a 2-color indicator type switch for AC magnetic fields.

Cylinder Weight Table

(Unit: kg)

Item	Stroke														Switch weight
Bore Size (mm)	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400	
ø20	0.68	-	0.75	0.83	0.91	1.16	1.35	1.55	1.73	1.93	2.12	2.58	2.96	3.34	3.73	Refer to the mass described in the switch specifications on P. 753
ø25	0.95	-	1.05	1.16	1.26	1.63	1.89	2.16	2.43	2.69	2.95	3.59	4.12	4.65	5.17	
ø32	-	1.73	-	-	2.10	2.63	3.02	3.43	3.82	4.21	4.60	5.58	6.36	7.15	7.94	
ø40	-	2.00	-	-	2.41	2.86	3.27	3.68	4.09	4.51	4.91	5.92	6.76	7.58	8.41	
ø50	-	3.44	-	-	4.06	4.77	5.39	6.01	6.63	7.25	7.87	9.44	10.66	11.92	13.18	
ø63	-	4.31	-	-	5.05	5.87	6.60	7.33	8.07	8.80	9.53	11.32	12.77	14.23	15.68	
ø80	-	7.65	-	-	8.75	10.14	11.23	12.33	13.43	14.53	15.63	18.43	20.55	22.73	24.93	
ø100	-	11.04	-	-	12.38	14.09	15.43	16.76	18.10	19.44	20.78	24.07	26.74	29.42	32.09	

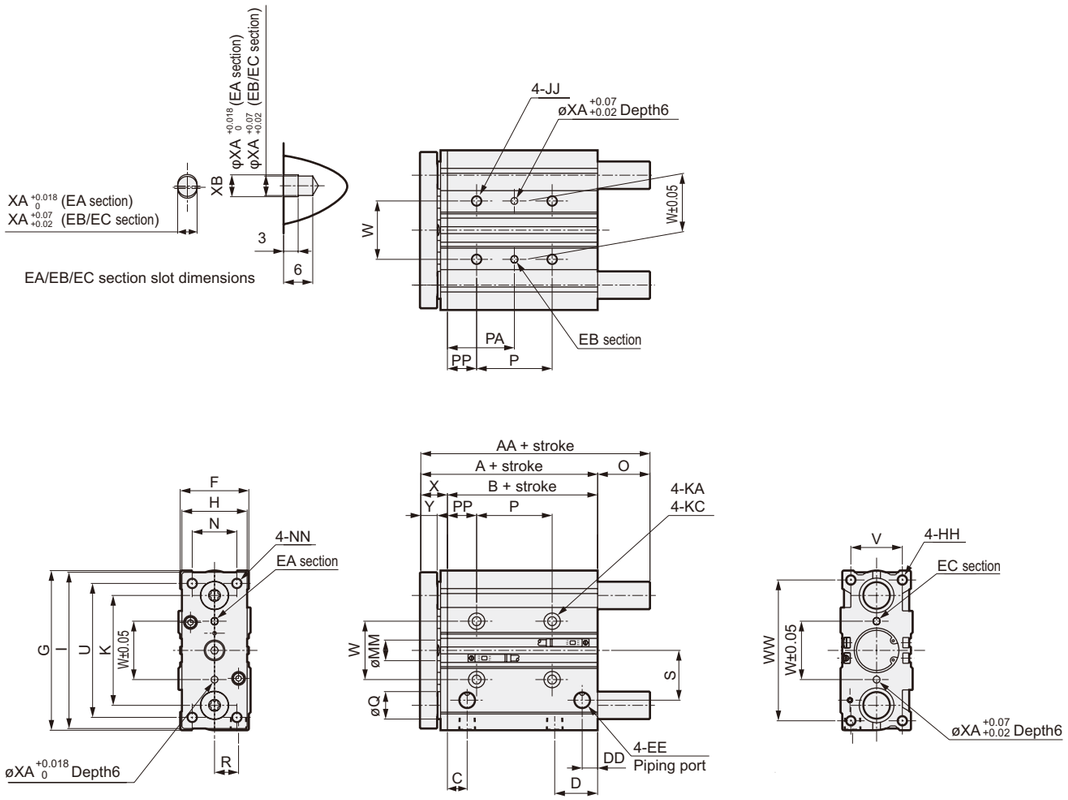
Theoretical thrust table (Double acting type)

(Unit: N)

Bore Size (mm)	Operating Direction	Operating pressure MPa									
		0.2	0.25	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	-	78.5	94.2	1.26 x 10²	1.57 x 10²	1.88 x 10²	2.20 x 10²	2.51 x 10²	2.83 x 10²	3.14 x 10²
	Pull	-	58.9	70.7	94.2	1.18 x 10²	1.41 x 10²	1.65 x 10²	1.88 x 10²	2.12 x 10²	2.36 x 10²
ø25	Push	-	1.23x10²	1.47 x 10²	1.96 x 10²	2.45 x 10²	2.95 x 10²	3.44 x 10²	3.93 x 10²	4.42 x 10²	4.91 x 10²
	Pull	-	94.4	1.13 x 10²	1.51 x 10²	1.89 x 10²	2.27 x 10²	2.64 x 10²	3.02 x 10²	3.40 x 10²	3.78 x 10²
ø32	Push	-	2.01 x 10²	2.41 x 10²	3.22 x 10²	4.02 x 10²	4.83 x 10²	5.63 x 10²	6.43 x 10²	7.24 x 10²	8.04 x 10²
	Pull	-	1.51 x 10²	1.81 x 10²	2.41 x 10²	3.02 x 10²	3.62x10²	4.22 x 10²	4.83 x 10²	5.43x10²	6.03x10²
ø40	Push	-	3.14 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²	1.01 x 10³	1.13 x 10³	1.26 x 10³
	Pull	-	2.64 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²	8.44 x 10²	9.50 x 10²	1.06 x 10³
ø50	Push	-	4.91 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	-	4.12x10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³
ø63	Push	6.23 x 10²	7.79x10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³	2.49 x 10³	2.81 x 10³	3.12 x 10³
	Pull	5.61 x 10²	7.01x10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³	2.24 x 10³	2.52 x 10³	2.80 x 10³
ø80	Push	1.01 x 10³	1.26 x 10³	1.51 x 10³	2.01 x 10³	2.51 x 10³	3.02 x 10³	3.52 x 10³	4.02 x 10³	4.52 x 10³	5.03 x 10³
	Pull	9.07 x 10²	1.13 x 10³	1.36 x 10³	1.81 x 10³	2.27 x 10³	2.72 x 10³	3.17 x 10³	3.63 x 10³	4.08 x 10³	4.54 x 10³
ø100	Push	1.57 x 10³	1.96 x 10³	2.36 x 10³	3.14 x 10³	3.93 x 10³	4.71 x 10³	5.50 x 10³	6.28 x 10³	7.07 x 10³	7.85 x 10³
	Pull	1.43 x 10³	1.79x10³	2.14 x 10³	2.86 x 10³	3.57 x 10³	4.29 x 10³	5.00 x 10³	5.72 x 10³	6.43 x 10³	7.15 x 10³

External dimensions diagram (Bore size: ø20, ø25)

● STG-MG5-20, 25



Code / Bore Size	Standard Stroke (mm)	A	B	C	D	DD	EE	F	G	H	HH	I	JJ
ø20	20, 30, 40, 50, 75, 100, 125, 150,	53	37	10.5	24.5	8.5	Rc1/8	36	83	30	M5 Depth 13	81	M6 Depth 12
ø25	175, 200, 250, 300, 350, 400	53.5	37.5	11.5	25	9	Rc1/8	42	93	38	M6 Depth 15	91	M6 Depth 12

Code / Bore Size	K	KA	MM	N	NN	KC	P				
							30 or less	Over 30 and 100 or less	Over 100 and 200 or less	Over 200 to 300 or Less	Over 300
ø20	54	5.2 Through	10	18	M5 Through	9.5 Counterbore depth 5.5	24	44	120	200	300
ø25	64	5.2 Through	12	26	M6 Through	9.5 Counterbore depth 5.5	24	44	120	200	300

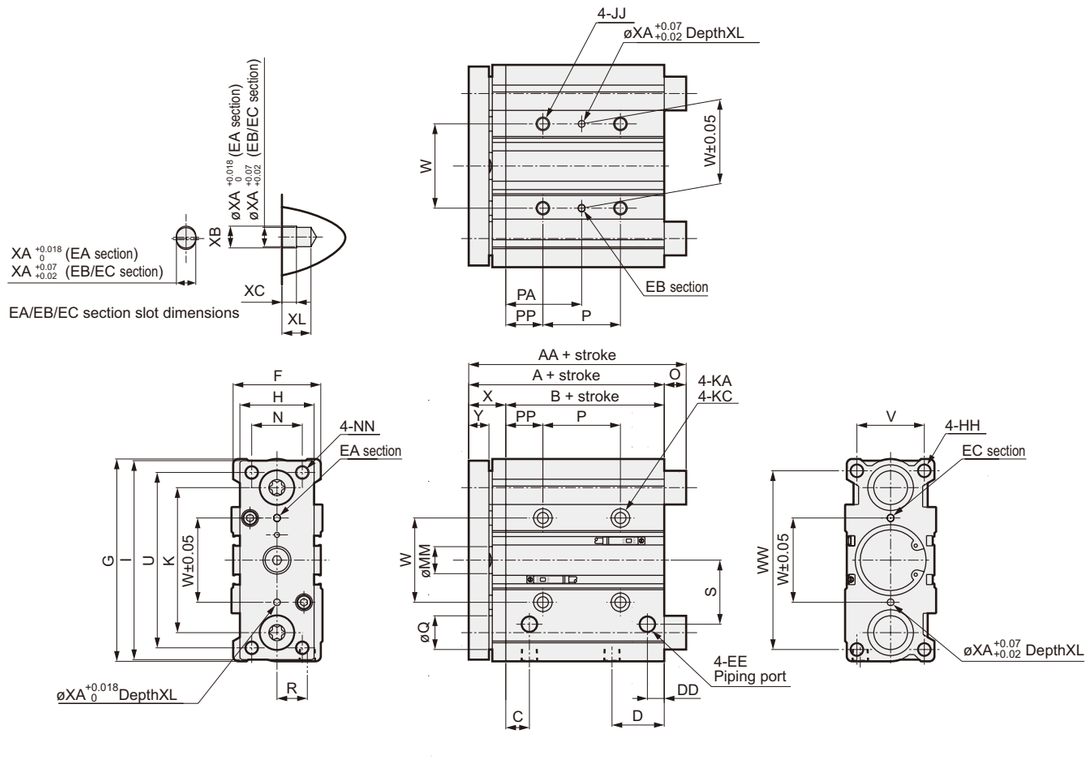
Code / Bore Size	PA					PP	R	S	U	V	W	WW	X	Y	XA	XB
	30 or less	Over 30 and 100 or less	Over 100 and 200 or less	Over 200 to 300 or Less	Over 300											
ø20	29	39	77	117	167	17	11	25	70	24	28	72	16	9.5	3	3.5
ø25	29	39	77	117	167	17	14	29	78	30	34	82	16	9.5	4	4.5

Code / Bore Size	AA			Q	O		
	50 or less	Over 50 and 200 or less	Over 200		50 or less	Over 50 and 200 or less	Over 200
ø20	53	78	122	12	0	25	69
ø25	53.5	84	122	16	0	30.5	68.5

*1: For intermediate strokes, the overall length dimension is the same as the dimension of the longer standard stroke.
*2: For dimensions with each switch, refer to P. 446 to 448.

External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

● STG-MG5-32, 40, 50, 63



Code / Bore Size	Standard Stroke (mm)	A	B	C	D	DD	EE	F	G	H	HH	I	JJ	K	KA
ø32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	59.5	37.5	12.5	30.5	9	Rc1/8	48	112	44	M8 depth 20	110	M8 Depth 16	78	6.3 Through
ø40		66	44	14	31	10	Rc1/8	54	120	44	M8 depth 20	118	M8 Depth 16	86	6.3 Through
ø50		72	44	14	35	11	Rc1/4	64	148	60	M10 Depth 22	146	M10 Depth 20	110	8.6 Through
ø63		77	49	16.5	35	15	Rc1/4	78	162	70	M10 Depth 22	158	M10 Depth 20	124	8.6 Through

Code / Bore Size	KC	MM	N	NN	P					PA	
					25 or Less	Over 25 and 100 or less	Over 100 and 200 or less	Over 200 to 300 or Less	Over 300	25 or Less	Over 25 to 100 or less
ø32	11 Counterbore depth 7.5	16	30	M8 Through	24	48	124	200	300	33	45
ø40	11 Counterbore depth 7.5	16	30	M8 Through	24	48	124	200	300	34	46
ø50	14 Counterbore depth 9	20	40	M10 Through	24	48	124	200	300	36	48
ø63	14 Counterbore depth 9	20	50	M10 Through	28	52	128	200	300	38	50

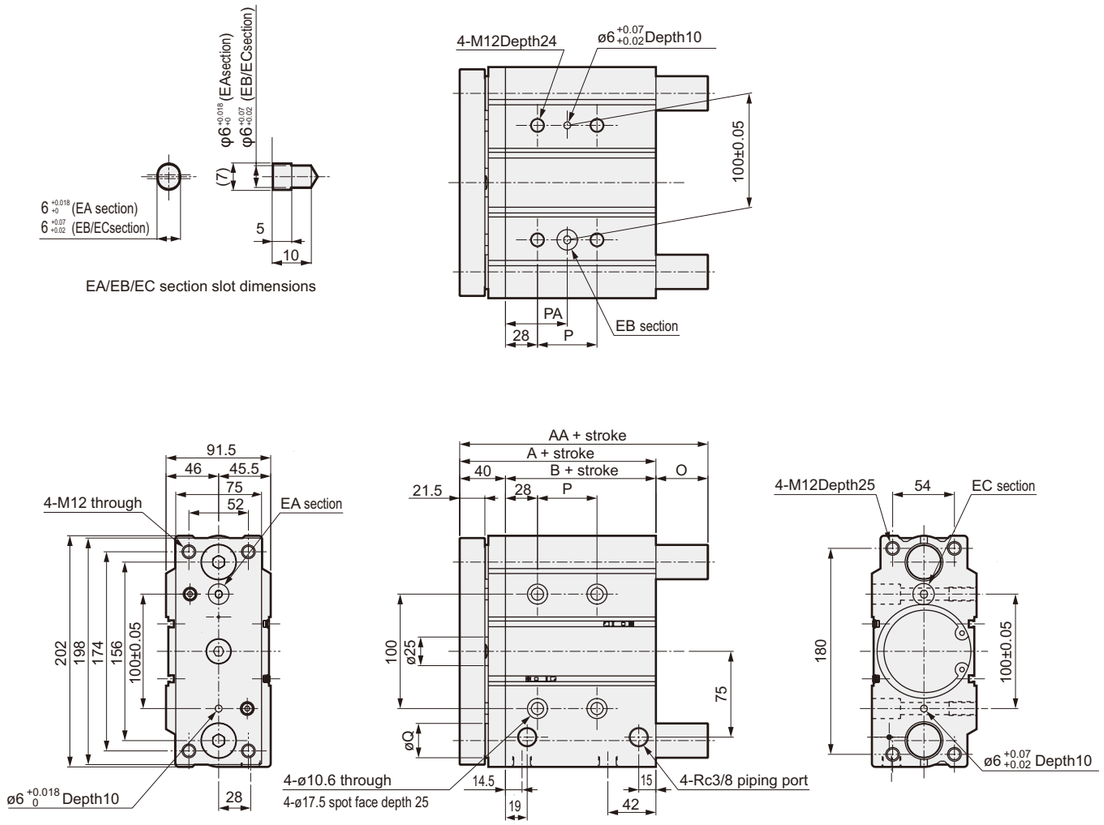
Code / Bore Size	PA			PP	R	S	U	V	W	WW	X	Y	XA	XB	XC	XL
	Over 100 and 200 or less	Over 200 to 300 or Less	Over 300													
ø32	83	121	171	21	15	34	96	34	42	98	22	11.5	4	4.5	3	6
ø40	84	122	172	22	18	38	104	40	50	106	22	11.5	4	4.5	3	6
ø50	86	124	174	24	21.5	47	130	46	66	130	28	15.5	5	6	4	8
ø63	88	124	174	24	28	55	130	58	80	142	28	15.5	5	6	4	8

Code / Bore Size	AA			Q	O		
	50 or less	Over 50 and 200 or less	Over 200		50 or less	Over 50 and 200 or less	Over 200
ø32	79	100	140	20	19.5	40.5	80.5
ø40	79	100	140	20	13	34	74
ø50	91	116	161	25	19	44	89
ø63	91	116	161	25	14	39	84

*1: For intermediate strokes, the overall length dimension is the same as the dimension of the longer standard stroke.
***2: For dimensions with each switch, refer to P. 446 to 448.**

External dimensions diagram (Bore size: ø80)

● STG-MG5-80



Standard Stroke (mm)	A	B	P					PA				
			25st or less	Over 25st and 100st or less	Over 100st and 200st or less	Over 200st and 300st or less	Over 300st	25st or less	Over 25st and 100st or less	Over 100st and 200st or less	Over 200st and 300st or less	Over 300st
25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	96.5	56.5	28	52	128	200	300	42	54	92	128	178

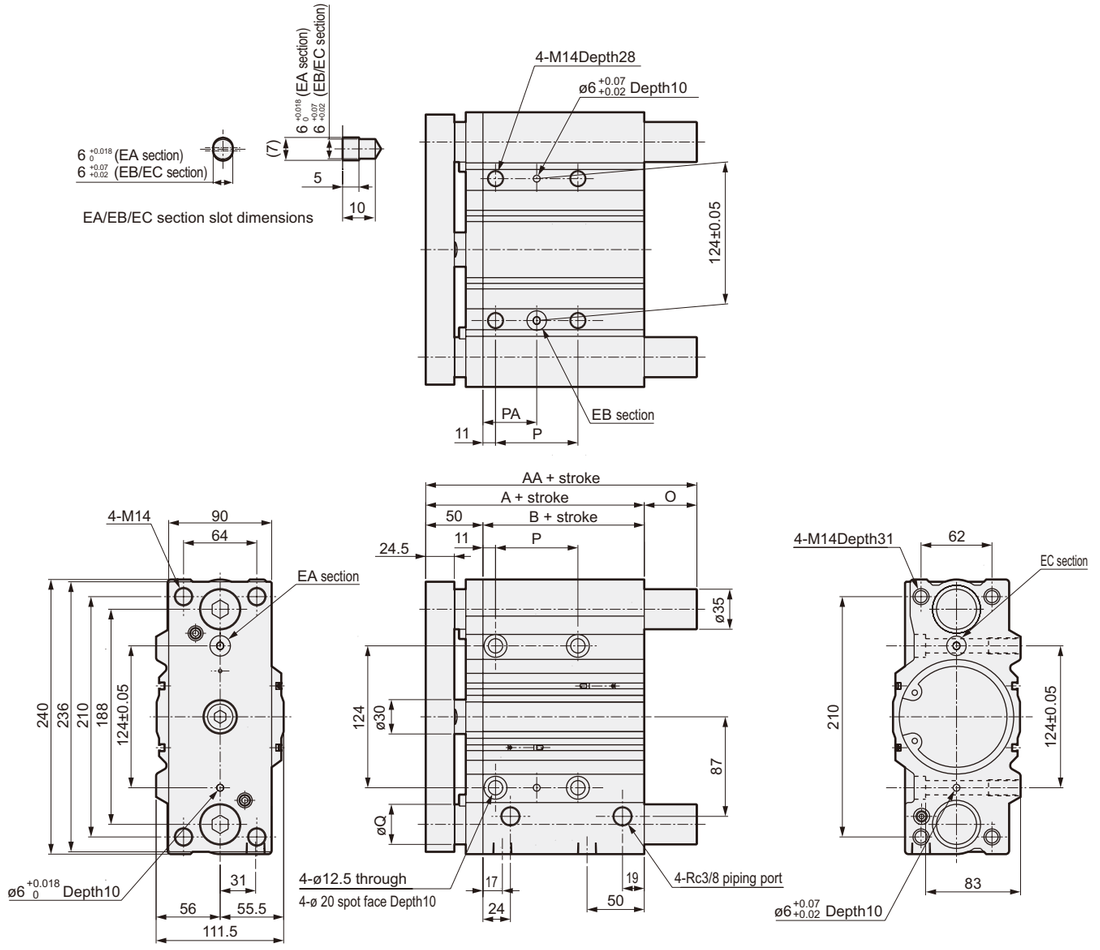
AA			Q	O		
50st or less	Over 50st and 200st or less	Over 200st		50st or less	Over 50st and 200st or less	Over 200st
115	142	193	30	18.5	45.5	96.5

*1: For intermediate strokes, the overall length dimension is the same as the dimension of the longer standard stroke.

***2: For dimensions with each switch, refer to P. 446 to 448.**

External dimensions diagram (Bore size: ø100)

● STG-MG5-100



Standard Stroke (mm)	A	B	P					PA				
			25st or less	Over 25st and 100st or less	Over 100st and 200st or less	Over 200st and 300st or less	Over 300st	25st or less	Over 25st and 100st or less	Over 100st and 200st or less	Over 200st and 300st or less	Over 300st
25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	116	66	48	72	148	220	320	35	47	85	121	171

AA			Q	O		
50st or less	Over 50st and 200st or less	Over 200st		50st or less	Over 50st and 200st or less	Over 200st
137	162	203	35	21	46	87

*1: For intermediate strokes, the overall length dimension is the same as the dimension of the longer standard stroke.

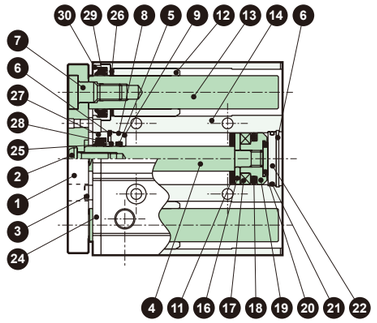
***2: For dimensions with each switch, refer to P. 446 to 448.**

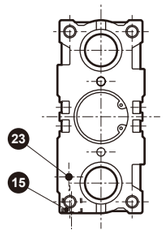
Internal structure diagram / Material (STG-MG5-20 to 63)

● STG-MG5-20 to 63

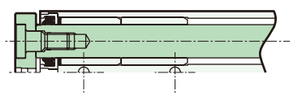
● ø20, ø25

50 strokes or less

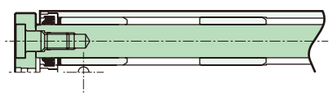




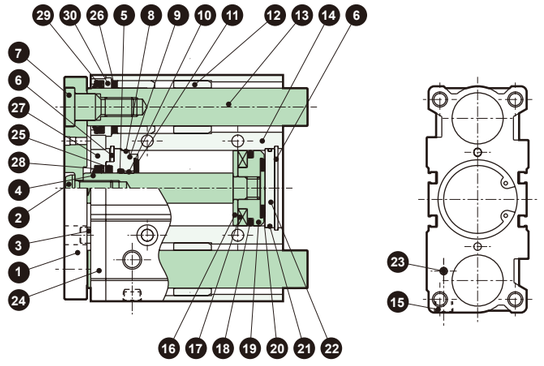
Over 50 strokes and 200 strokes or less



Over 200 strokes



● ø32 to ø63

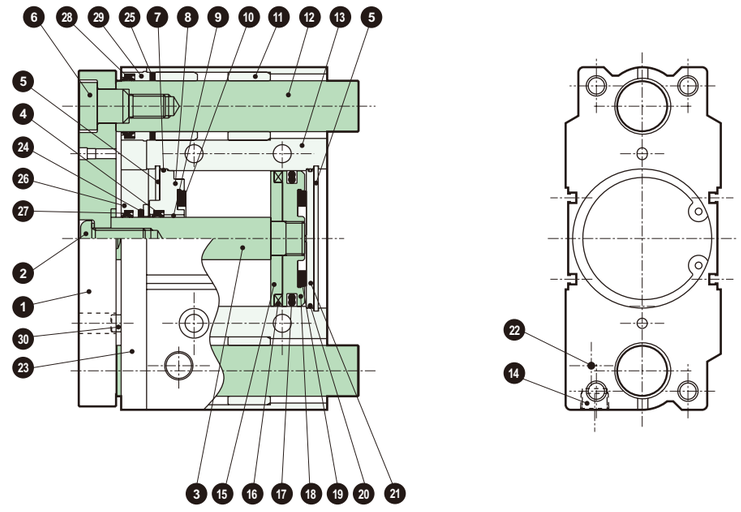


Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	End plate	Steel	Nickel Plating	15	Plug	Copper alloy or steel	
2	Hex Socket Button Head Bolt	Steel	Zinc Chromate	16	Spacer	Aluminum Alloy	
3	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate	17	Magnet		
4	Piston Rod	ø20 to ø25: Stainless steel ø32 to ø63: Steel	Industrial Hard Chrome Plating	18	Piston Packing	Nitrile Rubber	
				19	Piston	Aluminum Alloy	
5	Rod Packing	Nitrile Rubber		20	Cushion Rubber	Urethane Rubber	
6	C-type retaining ring	Steel	Zinc phosphate	21	O-ring	Nitrile Rubber	
7	Bolt	Steel	Zinc Chromate	22	Bottom plate	Aluminum Alloy	Chromate
8	Metal gasket	Nitrile Rubber		23	Hexagon socket head set screw	Stainless Steel	
9	Rod Metal	Aluminum Alloy	ø20 to ø32: Alumite ø40 to ø63: Chromate	24	Adapter plate	Aluminum Alloy	Alumite
				25	Lube keeper	Special rubber	
10	Bushing	Bearing Alloy		26	Lube keeper	Special rubber	
11	Cushion Rubber	Urethane Rubber		27	Holder R	Aluminum Alloy	Chromate
12	Metal	Oil-impregnated copper alloy bearing		28	Scraper	Nitrile Rubber	
13	Guide rod	Steel	Industrial Hard Chrome Plating	29	Scraper	Nitrile Rubber	
14	Cylinder Body	Aluminum Alloy	Hard Anodized	30	Holder G	Aluminum Alloy	Chromate

For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

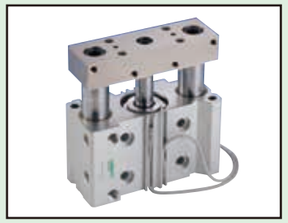
Internal structure diagram / Material (STG-MG5-80 to 100)

● ø80, ø100



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	End plate	Steel	Nickel Plating	17	Piston Packing	Nitrile Rubber	
2	Hex Socket Button Head Bolt	Steel	Zinc Chromate	18	Piston	Aluminum Alloy	
3	Piston Rod	Steel	Industrial Hard Chrome Plating	19	Cushion Rubber	Urethane Rubber	
4	Rod Packing	Nitrile Rubber		20	O-ring	Nitrile Rubber	
5	C-type retaining ring	Steel	Zinc phosphate	21	Bottom plate	ø80: Aluminum alloy ø100: Steel	ø80: Chromate ø100: Zinc chromate
6	Bolt	Steel	Zinc Chromate				
7	Metal gasket	Nitrile Rubber		22	Hexagon socket set screw (ø80)	Stainless Steel	
8	Rod Metal	Aluminum Alloy	Chromate		Plug (ø100)	Steel	Nickel Plating
9	Bushing	Bearing Alloy		23	Adapter plate	Aluminum Alloy	Alumite
10	Cushion Rubber	Urethane Rubber		24	Lube keeper	Special rubber	
11	Metal	Oil-impregnated copper alloy bearing		25	Lube keeper	Special rubber	
12	Guide rod	Steel	Industrial Hard Chrome Plating	26	Holder R	Aluminum Alloy	Chromate
13	Cylinder Body	Aluminum Alloy	Hard Anodized	27	Scraper	Nitrile Rubber	
14	Plug	Steel		28	Scraper	Nitrile Rubber	
15	Spacer	Aluminum Alloy		29	Holder G	Aluminum Alloy	Chromate
16	Magnet			30	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate

For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

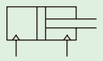


Guided cylinder Double acting, Heavy-duty guide rod type

STG-K Series

● Bore size: ø32, ø50

Circuit Diagram
Symbol



RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

STG - K - 50 ( ) ( ) - 25

Model No. ❶ ❷ ❸ ❹

With Switch
(Built-in magnet for switch)

STG - K - 50 ( ) ( ) - 25 - T2H - R

Model No. ❶ Bore size ❸ Cushion ❺ Switch Model No.
Heavy-Duty Guide Rod Type (Plain bearing) ❷ Piping thread type ❹ Stroke ❻ Number of Switches

❶ Bore Size (mm)

Code	Content
32	ø32
50	ø50

❷ Piping thread type

Code	Content
Blank	Rc Thread
NN	NPT Thread (Custom Order Product)
GN	G Thread (Custom Order Product)

❸ Cushion

Code	Content
Blank	With Rubber Cushion
C	With Rubber Air Cushion

❹ Stroke (mm)

Code	Content
25	25
50	50
75	75
100	100
125	125
150	150
175	175
200	200

*Intermediate strokes can be manufactured every 5 mm. However, the overall length dimension will be the same as the standard stroke above it.

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color for AC Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*5: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

Switch Single Unit Model No. Notation Method

SW - T0H

❺ Switch Model No.

About Custom Product Specifications

For details, see P. 466.

Code	Content
-0	Port symmetrical type

Model No. Example)

STG-K - ····· - O

For combinations of variations and options, please refer to P. 368, 369.

Specifications

Item		STG-K		
Bore Size	mm	ø32	ø50	
Actuation method		Double Acting Type		
Operating Fluid		Compressed Air		
Max. working pressure	MPa	1.0		
Min. Operating Pressure	MPa	0.1		*1
Proof Pressure	MPa	1.6		
Ambient Temperature	°C	-10 to 60 (Provided that freezing does not occur)		
Port Size		Rc1/8	Rc1/4	
Stroke Tolerance	mm	+2.0 0		
Operating Piston Speed	mm/s	50 to 400		
Cushion		With Rubber Cushion		
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)		
Allowable Absorbed Energy	J	0.401	0.980	

*1: For rubber air cushion, it will be 0.2MPa.

Stroke

Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)	
			T2WL	Other switches
25, 50, 75, 100, 125, 150, 175, 200	200	5	10	5 (10) *2

*1: Intermediate strokes can be manufactured every 5 mm.
However, the overall length dimension will be the same as the dimension of the standard stroke above it.
*2: This is for the case with 1 or 2 switches. The value in ( ) is the minimum stroke for a 2-color indicator type switch for AC magnetic fields.

Cylinder Weight

Unit: kg

Item / Bore Size (mm)	Stroke 25	50	75	100	125	150	175	200	Switch weight
ø32	2.36	2.86	3.54	4.04	4.53	5.03	5.53	6.03	Refer to the mass described in the switch specifications on P. 753
ø50	3.90	4.64	5.64	6.38	7.13	7.87	8.61	9.36	

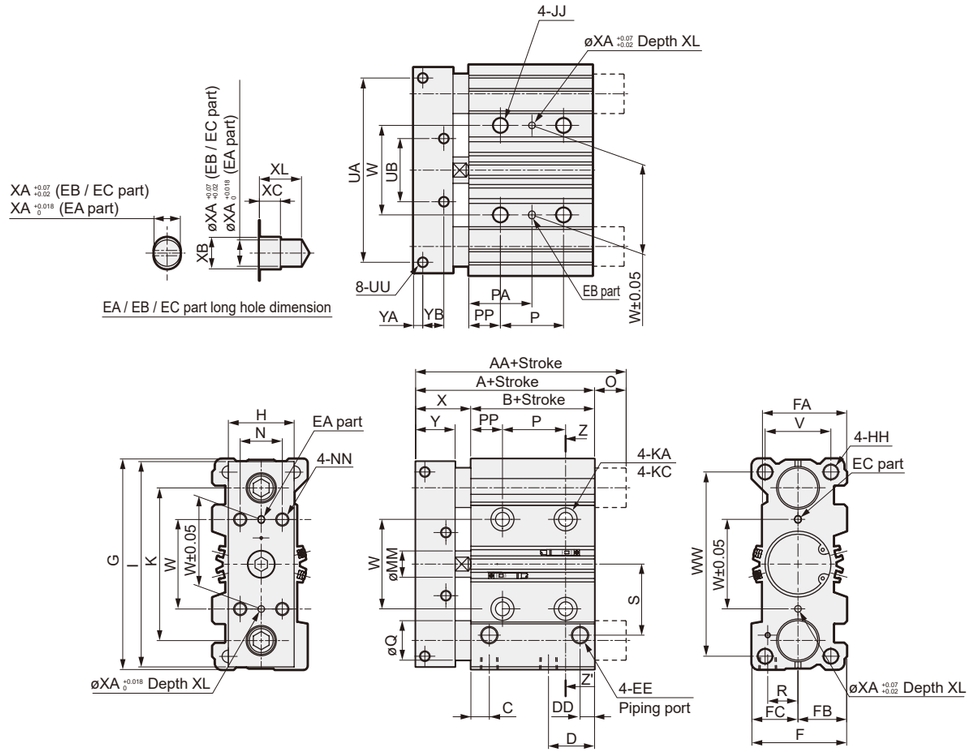
Theoretical Thrust Table

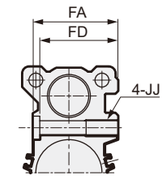
(Unit: N)

Bore Size (mm)	Operating Direction	Operating pressure MPa 0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø32	Push	80.4	1.21 x 10²	1.61 x 10²	2.41 x 10²	3.22 x 10²	4.02 x 10²	4.83 x 10²	5.63 x 10²	6.43 x 10²	7.24 x 10²	8.04 x 10²
	Pull	60.3	90.5	1.21 x 10²	1.81 x 10²	2.41 x 10²	3.02 x 10²	3.62x10²	4.22 x 10²	4.83 x 10²	5.43x10²	6.03x10²
ø50	Push	1.96 x 10²	2.95 x 10²	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	1.65 x 10²	2.47 x 10²	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³

Outline Dimension Drawing

● STG-K-ø32, ø50





Code / Bore Size (mm)	A	AA 25, 50st	AA Over 50st	B	C	D	DD	EE	F	FA	FB	FC	FD	G	H	HH
ø32	72	72	90.5	37.5	12.5	30.5	9	Rc1/8	54	47	27	27	42	130	44	M10 Depth 18
ø50	86	86	109	44	14	35	11	Rc1/4	72	64	37	35	59	160	50	M12 Depth 20

Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	O 25, 50st	O Over 50st	P 25st	P 50, 75, 100st	P Over 100st	PA 25st	PA 50, 75, 100st
ø32	126	M10 Depth 20	88	8.6 Through	14 Counterbore depth 5	16	24	M8 Depth 16	0	18.5	24	48	124	33	45
ø50	156	M12 Depth 24	116	10.6 Through	17.5 Counterbore depth 5	20	32	M10 Depth 20	0	23	24	48	124	36	48

Code / Bore Size (mm)	PA Over 100st	PP	Q	R	S	UA	UB	UU	V	W	WW	X	XA	XB	XC	XL
ø32	83	21	25	18	39.5	112	27	M6 Depth 10	37	44	113	34.5 -2 0	4	4.5	3	6
ø50	86	24	30	23	54	140	48	M8 Depth 14	50	68	140	42 -2 0	5	6	4	8

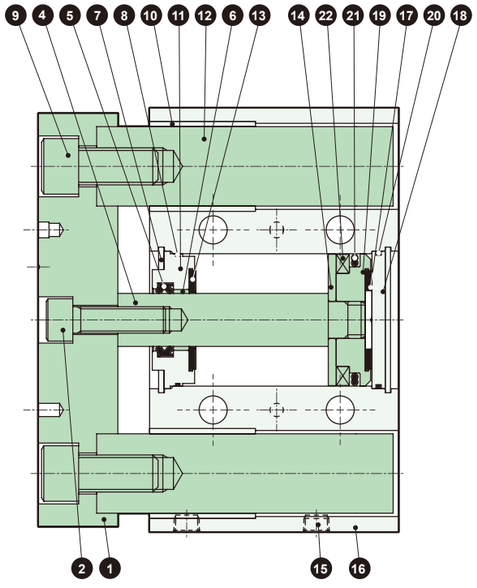
Code / Bore Size (mm)	Y	YA	YB
ø32	25	6	13
ø50	30	7	16

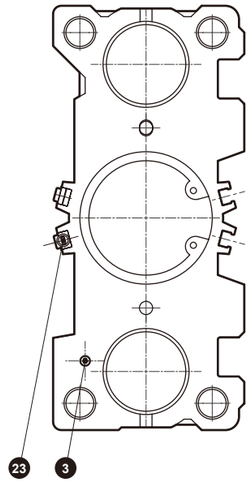
*1: For intermediate strokes, the overall length dimension is the same as the dimension of the longer standard stroke.
***2: For dimensions with each switch, refer to P. 446 to 448.**

Internal Structure Diagram/Material

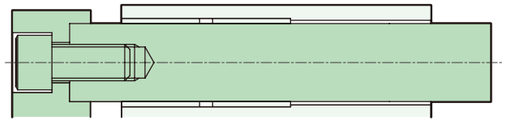
● STG-K-32, 50

● 50 strokes or less





● Over 50 strokes



Part No.	Part Name	Material	Remarks
1	End plate	Steel	Nickel Plating
2	Hexagon Socket Head Cap Screw	Steel	Black Oxide
3	Hexagon socket head set screw	Stainless Steel	
4	Piston Rod	Steel	Industrial Hard Chrome Plating
5	Rod Packing	Nitrile Rubber	
6	Bushing	Bearing Alloy	ø50 only
7	C-type retaining ring for hole	Steel	Zinc phosphate
8	O-ring	Nitrile Rubber	
9	Hexagon socket bolt	Steel	Black Oxide
10	Metal	Oil-impregnated copper alloy bearing	
11	Rod Metal	Aluminum Alloy	ø32: Hard alumite ø50: Chromate
12	Guide rod	Steel	Industrial Hard Chrome Plating

Part No.	Part Name	Material	Remarks
13	Cushion Rubber	Urethane Rubber	
14	Spacer	Aluminum Alloy	
15	Plug	Steel	
16	Cylinder Body	Aluminum Alloy	Hard Anodized
17	Cushion Rubber	Urethane Rubber	
18	Cover	Aluminum Alloy	Chromate
19	Piston	Aluminum Alloy	
20	O-ring	Nitrile Rubber	
21	Piston Packing	Nitrile Rubber	
22	Magnet		
With Switch			
23	Switch		

Consumable Parts List

Bore Size (mm)	Kit Number	Consumable Part Number
ø32	**STG-32K**	5 8 13
ø50	**STG-50K**	17 20 21

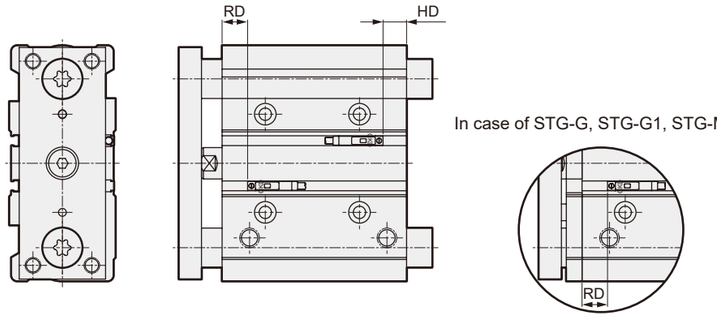
MEMO

Guided
STM
STG
STS/STL
STR2
UCA2
Cylinder Switch
Ending

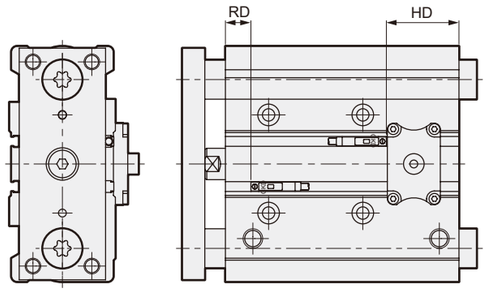
STG Series Switch External Dimensions Diagram

● T0H/V, T5H/V, T2H/V, T2□R3, T3PH/V, T2WH/V, T3WH/V, T2WLH/V

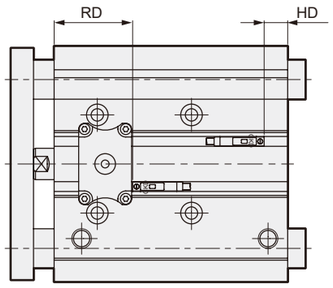
● STG,STG-□C,STG-C,STG-G,STG-G1,STG-MG5



● STG-Q-H



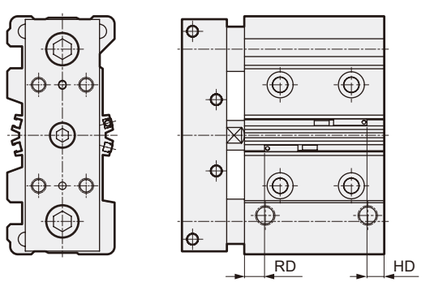
● STG-Q-R



Code / Bore Size (mm)	STG,STG-□C,STG-G,STG-G1,STG-MG5				STG-C				STG-Q-H				STG-Q-R			
	T0,T5,T2, T2□R3,T3P		T2W,T3W, T2WL		T0,T5,T2, T2□R3,T3P		T2W,T3W, T2WL		T0,T5,T2, T2□R3,T3P		T2W,T3W, T2WL		T0,T5,T2, T2□R3,T3P		T2W,T3W, T2WL	
	RD	HD	RD	HD	RD	HD	RD	HD	RD	HD	RD	HD	RD	HD	RD	HD
ø12	5	5	7	7	-	-	-	-	-	-	-	-	-	-	-	-
ø16	4	10	6	12	20.5	18	22.5	20	-	-	-	-	-	-	-	-
ø20	9.5	8.5	11.5	10.5	23.5	19.5	25.5	21.5	6.5	39	8.5	41	34.5	8.5	36.5	10.5
ø25	10	8.5	12	10.5	25.5	17.5	27.5	19.5	10	34	12	36	35	8.5	37	10.5
ø32	10	8.5	12	10.5	23.5	20	25.5	22	10	34.5	12	36.5	35	8.5	37	10.5
ø40	13	12	15	14	27.5	22.5	29.5	24.5	13	37	15	39	40	12	42	14
ø50	13.5	11.5	15.5	13.5	30	20.5	32	22.5	13.5	37	15.5	39	39	11.5	41	13.5
ø63	14	16	16	18	31	24	33	26	14	40	16	42	39	16	41	18
ø80	18	19.5	20	21.5	-	-	-	-	-	-	-	-	-	-	-	-
ø100	22	25.5	24	27.5	-	-	-	-	-	-	-	-	-	-	-	-

*For switch mountability, refer to the model No. notation method for each variation.

● STG-K

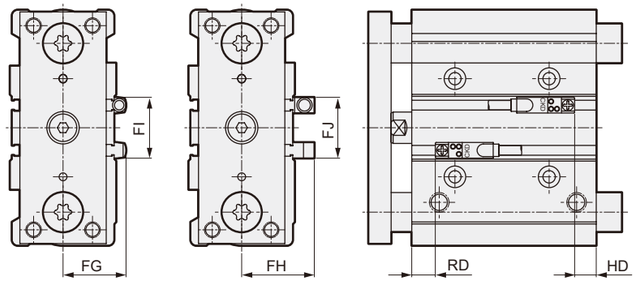


Code / Bore Size (mm)	STG-K			
	T0,T5,T2, T2*R3,T3P		T2W,T3W, T2WL	
	RD	HD	RD	HD
ø32	10	8.5	12	10.5
ø50	13.5	11.5	15.5	13.5

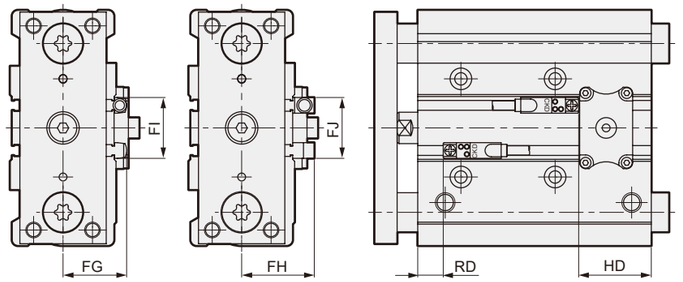
STG Series Switch External Dimensions Diagram

● T2JH/V, T2YLH, T3YLH, T8H/V, T1H/V, T2YD, T2YDT

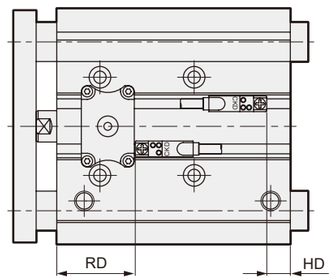
● STG,STG-*C,STG-C,STG-G,STG-G1,STG-MG2,STG-MG3,STG-G4,STG-MG5



● STG-Q-H



● STG-Q-R



Code / Bore Size (mm)	STG,STG-□C,STG-G,STG-G1,STG-MG2,STG-MG3,STG-G4,STG-MG5										STG-C									
	FG	FI	T2J,T2Y,T3Y		T8		FH	FJ	T1,T2YD,T2YDT		FG	FI	T2J,T2Y,T3Y		T8		FH	FJ	T1,T2YD,T2YDT	
			RD	HD	RD	HD			RD	HD			RD	HD	RD	HD			RD	HD
ø12	19	16	4	4	- *2	- *2	24	16	4	4	19	16	-	-	-	-	24	16	-	-
ø16	21	16	3	9	- *2	- *2	26	16	3	9	21	16	19.5	17	- *2	- *2	26	16	19.5	17
ø20	24	16	8.5	7.5	3.5	2.5	29	16	8.5	7.5	24	16	22.5	18.5	17.5	13.5	29	16	22.5	18.5
ø25	27	17	9	7.5	4	2.5	32	17	9	7.5	27	17	24.5	16.5	19.5	11.5	32	17	24.5	16.5
ø32	30	24	9	7.5	4	2.5	35	24	9	7.5	30	24	22.5	19	17.5	14	35	24	22.5	19
ø40	33	31	12	11	7	6	38	31	12	11	33	31	26.5	21.5	21.5	16.5	38	31	26.5	21.5
ø50	38	32	12.5	10.5	7.5	5.5	43	32	12.5	10.5	38	32	29	19.5	24	14.5	43	32	29	19.5
ø63	45	32	13	15	8	10	50	32	13	15	45	32	30	23	25	18	50	32	30	23
ø80	51	56	17	18.5	12	13.5	56	56	17	18.5	51	56	-	-	-	-	56	56	-	-
ø100	60	62	21	24.5	16	19.5	65	62	21	24.5	60	62	-	-	-	-	65	62	-	-

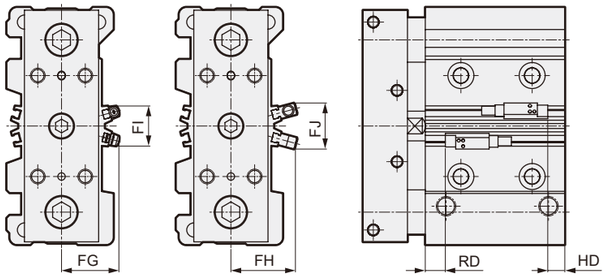
Code / Bore Size (mm)	STG-Q-H								STG-Q-R							
	FG	FI	T2J,T2Y,T3Y		FH	FJ	T1,T2YD,T2YDT		FG	FI	T2J,T2Y,T3Y		FH	FJ	T1,T2YD,T2YDT	
			RD	HD			RD	HD			RD	HD			RD	HD
ø12	19	16	-	-	24	16	-	-	19	16	-	-	24	16	-	-
ø16	21	16	-	-	26	16	-	-	21	16	-	-	26	16	-	-
ø20	24	16	5.5	39	29	16	5.5	39	24	16	34	7.5	29	16	34	7.5
ø25	27	17	9	34	32	17	9	34	27	17	34.5	7.5	32	17	34.5	7.5
ø32	30	24	9	34.5	35	24	9	34.5	30	24	34.5	8	35	24	34.5	8
ø40	33	31	12	36.5	38	31	12	36.5	33	31	39.5	11	38	31	39.5	11
ø50	38	32	12.5	37	43	32	12.5	37	38	32	39	10.5	43	32	39	10.5
ø63	45	32	13	39	50	32	13	39	45	32	39	15	50	32	39	15
ø80	51	56	-	-	56	56	-	-	51	56	-	-	56	56	-	-
ø100	60	62	-	-	65	62	-	-	60	62	-	-	65	62	-	-

*1: For switch mountability, refer to the model number notation method for each variation.
*2: STG-12,16, STG-C-16, STG-Q-20 to 63 (R/H) cannot be equipped with T8H/V.

STG-K Series Switch External Dimensions Diagram

● T2JH/V, T2YLH, T3YLH, T8H/V, T1H/V, T2YD, T2YDT

• STG-K



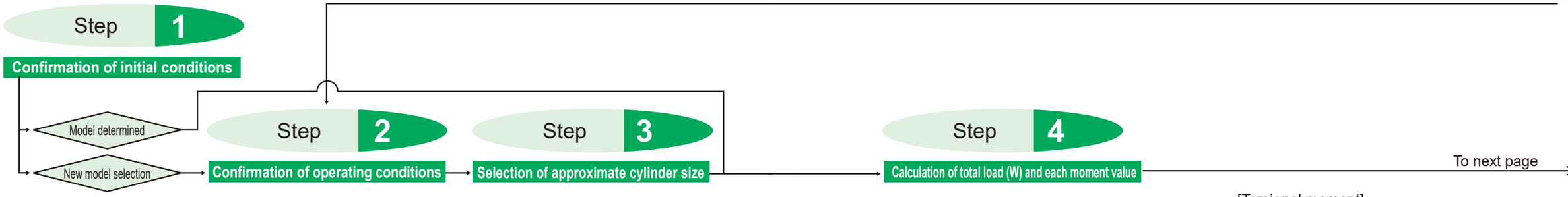
Code	STG-K							
	FG	FH	FI	FJ	T2J,T2Y,T3Y,T1,T2YD,T2YDT		T8	
Bore Size (mm)					RD	HD	RD	HD
ø32	30	36	22	26	9	7.5	4	2.5
ø50	39	45	27	31	12.5	10.5	7.5	5.5

*For switch mountability, refer to the model No. notation method for each variation.

MEMO

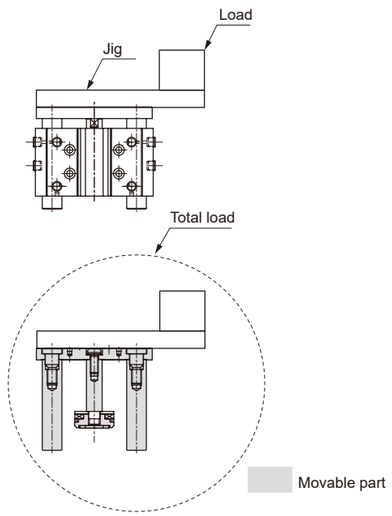
Model selection guide

Since the selection conditions are different from general air cylinders, please check the suitability using the selection guide.



Step 2 Confirmation of operating conditions

1. Operating pressure P (MPa)
2. Total load W (N)
   [Total load]
   When determining the total load, consider the weight of the movable part of the cylinder body.
   W = (Load) + (Jig load) +
   Value for the (weight of the movable part: Fa).
   The movable part own weight force calculation formula is calculated from the movable part weight table on P. 465.
   Fa=Max10
   Ma: Moving part weight (kg)
   Fa: Weight of the movable part (N)



3. Mounting direction
   [Operating method]
   Horizontal, Vertical - Ascending, Vertical - Descending
4. Stroke ST (mm)
5. Operating time t (s)
6. Stroke end speed V (m/s)
   V=ST /t x (1+1.5xα/100)
   Note) Load factor α is calculated in 5-1 ②

Step 3 Selection of approximate cylinder size

● Cylinder size (I.D.) calculation formula

$F=\pi/4 \times D_2 \times P$

$\therefore D=\sqrt{4F/\pi P}$

D: Cylinder inner diameter (mm)
P: Operating Pressure (MPa)
F: Cylinder theoretical thrust (N)

● When obtaining from the theoretical thrust value in Table 1
Approximate required thrust ≥ Load x 2
(x2 of Load x 2 is when the load factor is about 50% as a safety factor)
[Example] Operating pressure 0.5 (MPa)
Load 25 (N)
Required thrust is 25 (N)x2=50 (N)
From Table 1, if you select a bore size with a theoretical thrust of 50N or more at an operating pressure of 0.5 mPa, it will be ø12 or more.
D=ø12

[Cylinder theoretical thrust]

Table 1 Cylinder theoretical thrust table

Theoretical thrust table ø12, ø16 Unit: N

Operating direction	Pressure MPa	Bore size mm	
		ø12	ø16
At push	0.15	17	22.6
	0.2	22.6	30.2
	0.3	33.9	45.2
	0.4	45.2	60.3
	0.5	56.6	75.4
	0.6	67.8	90.5
	0.7	79.1	106
	0.8	90.4	121
	0.9	101.8	136

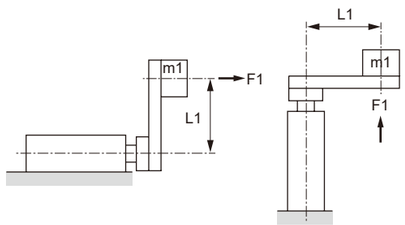
* For the theoretical thrust table, please refer to P. 373.

Step 4 Calculation of total load (W) and each moment value

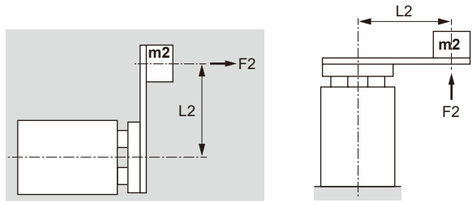
● Static load depending on the cylinder mounting state of the load
Calculate (W_0), moment (M).
W_0 = (Load) + (Jig load) (N)
$M_1 = F_1 \times L_1$ (N·m)
$M_2 = F_2 \times L_2$ (N·m)
$M_3 = F_3 \times L_3$ (N·m)
Use Figure 2 for the values of F_1, F_2, F_3

Figure 2 Calculation formula for each moment
Calculate each moment from the total load, inertial force coefficient, and eccentric distance.

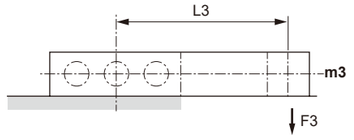
[Bending moment]
$M_1 = F_1 \times L_1 = 10 \times m_1 \times G \times L_1$



[Lateral bending moment]
$M_2 = F_2 \times L_2 = 10 \times m_2 \times G \times L_2$

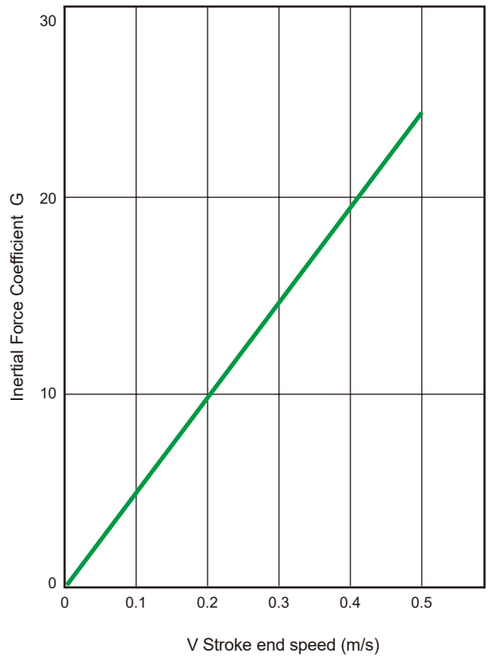


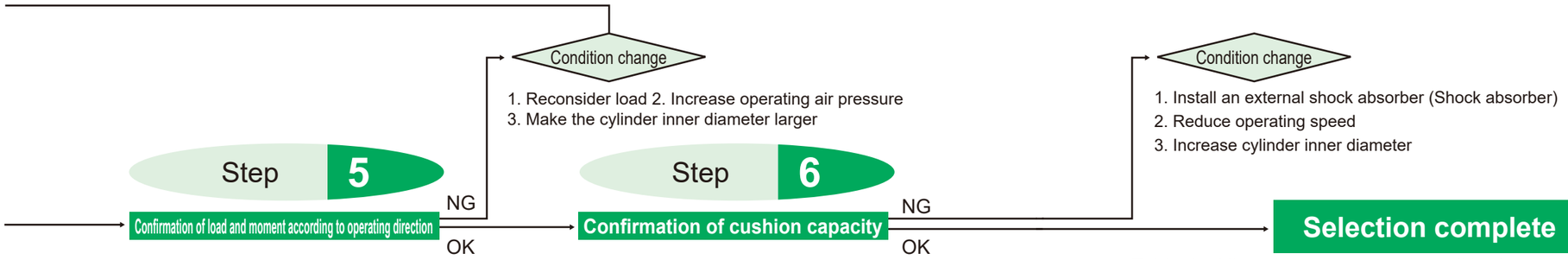
[Torsional moment]
$M_3 = F_3 \times L_3 = 10 \times m_3 \times L_3$



m_1 :
m_2 : } Load weight (kg)
m_3 :
L_1 :
L_2 : } Eccentric distance (m)
L_3 :
G: Inertial force coefficient

Figure 3 Trend of inertial force coefficient of guided cylinder





Step 5 Confirmation of load and moment according to operating direction

5-1 Confirmation of load

❶ During horizontal operation

Static load should be less than or equal to the allowable load value

Torsional moment Static load Wo — Value calculated in Step 4

Allowable lateral load Wmax — Select from Table 2 or the graph depending on the stroke

(For intermediate strokes, select the longer standard stroke)

Wo≤Wmax

Table 2 Allowable lateral load (Unit: N)

Tube Inner diameter (mm)	Model No.	Bearing type	Stroke (mm)			
			10	20	25	30
ø12	STG-M	Plain bearing	29	24	-	20
	STG-B	Rolling bearing	38	27	-	22
ø16	STG-M	Plain bearing	51	42	-	36
	STG-B	Rolling bearing	49	35	-	29
ø20	STG-M	Plain bearing	-	67	-	58
	STG-B	Rolling bearing	-	52	-	42
ø25	STG-M	Plain bearing	-	125	-	110
	STG-B	Rolling bearing	-	81	-	66
ø32	STG-M	Plain bearing	-	-	223	-
	STG-B	Rolling bearing	-	-	171	-

* For allowable lateral load, please refer to P. 460. Also, for eccentric loads, please refer to the graphs on P. 462 to P. 464.

❷ During vertical operation

Total load should be a value considering the load factor for the theoretical thrust value

● Calculation of load factor

Total load W — Value calculated in Step 2

Theoretical thrust of cylinder F — Select according to the pressure from the Theoretical Thrust Table on P. 373.

α=W/F x 100 (%)

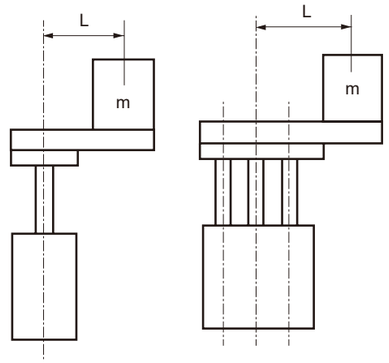
● The load factor is determined considering the stability margin and life of the cylinder operating speed, and the usage conditions. For general use, the range in Table 3 is desirable.

Table 3 Appropriate range of load factor (Reference value)

Operating pressure (MPa)	Load factor (%)
0.1 to 0.3	α≤40
0.3 to 0.6	α≤50
0.6 to 1.0	α≤60

● Confirmation during eccentric load

Allowable load weight should be less than or equal to that from the eccentric distance and load weight graphs on P. 454 and P. 455



5-2 Confirmation of moment

❶ Table of bending moment and lateral bending moment

Divide by the value of 4, obtain the moment ratio, and the total value of the moment ratio should be 1.0 or less

● Calculation of moment ratio

Bending moment in step 4: M_1, M_2 } Torsional moment calculated value

$M_1/M_{1\,max} + M_2 / M_{2\,max} \leq 1.0$

Table 4 Allowable moment value (N·m)

Bore size (mm)	Allowable bending moment M_{1max}, M_{2max} (N·m)	
	Bearing type	
	STG-M Plain bearing	STG-B Rolling bearing
ø12	11.2	7.0
ø16	19.2	11.2
ø20	35.3	19.2
ø25	51.9	35.3
ø32	171.5	51.9
ø40	171.5	51.9
ø50	294.0	171.5
ø63	294.0	171.5
ø80	509.6	294.0
ø100	793.8	509.6

❷ Torsional moment should be less than or equal to the allowable rotational torque

Torsional moment M3 — Value calculated in Step 4

Allowable rotational torque

M_{3max} — Select from Table 5 according to stroke

(For intermediate strokes, select the longer standard stroke)

$M_3 \leq M_{3\,max}$

Table 5 Allowable rotational torque (N·m)

Tube Bore size (mm)	Model No.	Bearing type	Stroke (mm)		
			10	20	25
ø12	STG-M	Plain bearing	0.30	0.25	-
	STG-B	Rolling bearing	0.39	0.28	-
ø16	STG-M	Plain bearing	0.59	0.49	-
	STG-B	Rolling bearing	0.56	0.41	-
ø20	STG-M	Plain bearing	-	0.90	-
	STG-B	Rolling bearing	-	0.70	-
ø25	STG-M	Plain bearing	-	2.00	-
	STG-B	Rolling bearing	-	1.29	-
ø32	STG-M	Plain bearing	-	-	4.35
	STG-B	Rolling bearing	-	-	3.33
ø40	STG-M	Plain bearing	-	-	4.80
	STG-B	Rolling bearing	-	-	3.68
ø50	STG-M	Plain bearing	-	-	9.56
	STG-B	Rolling bearing	-	-	4.99
ø63	STG-M	Plain bearing	-	-	10.78
	STG-B	Rolling bearing	-	-	5.63
ø80	STG-M	Plain bearing	-	-	15.01
	STG-B	Rolling bearing	-	-	5.02
ø100	STG-M	Plain bearing	-	-	24.98
	STG-B	Rolling bearing	-	-	8.04

* For allowable rotational torque, please refer to P. 460.

Step 6 CONFIRMATION OF CUSHION CAPACITY

Calculate the kinetic energy of the load actually used and check if it can be absorbed by the allowable absorption energy of the cylinder.

● Use the values in the graph below for the allowable absorption energy (E) of the cylinder.

● Kinetic energy calculation formula for load

$$E = \frac{1}{2} \times (W1 + W2) \times V^2$$

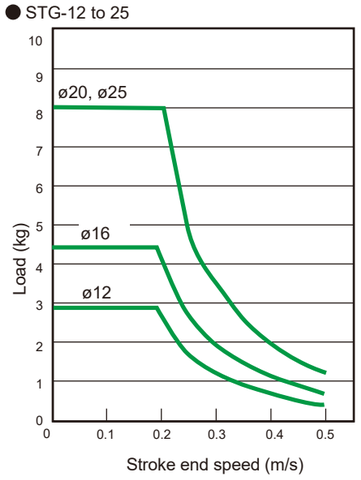
W1: Load (kg) W2: Cylinder movable part weight (kg)

V: Stroke end speed (m/s)

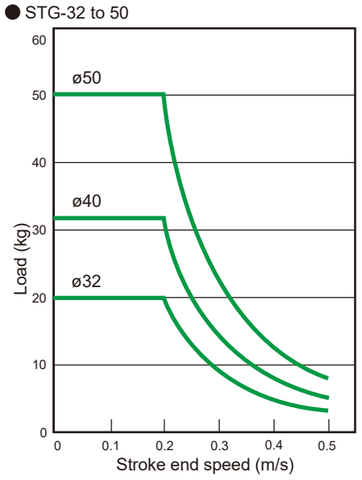
Allowable absorption energy value

Use within the range to the lower left of the curve. If using in the upper right range, provide a separate external shock absorber.

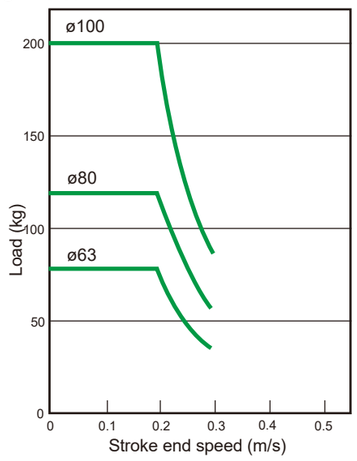
● STG-12 to 25



● STG-32 to 50



● STG-63 to 100



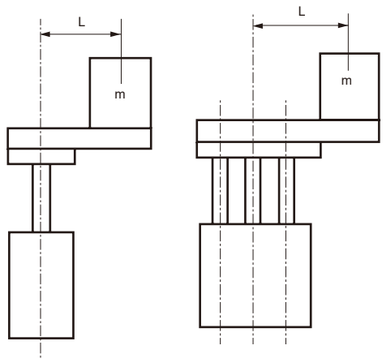
Model selection guide

In case of vertical mounting

● Select the bore size so that the ratio of the total load weight to the theoretical thrust is less than or equal to the values in the table below.

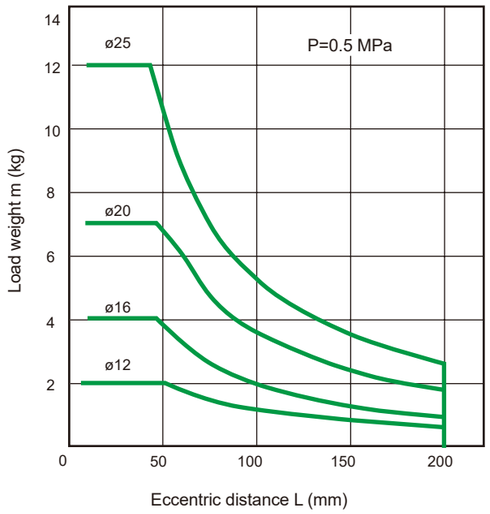
Bore Size	Load factor relative to theoretical thrust
12, 16	40% or less
20, 25	50% or less
32 to 80	60% or less
100	60% or less

Note1) For copper and PTFE free specifications, M: For plain bearings only, design with allowable value in the table below x 0.7.



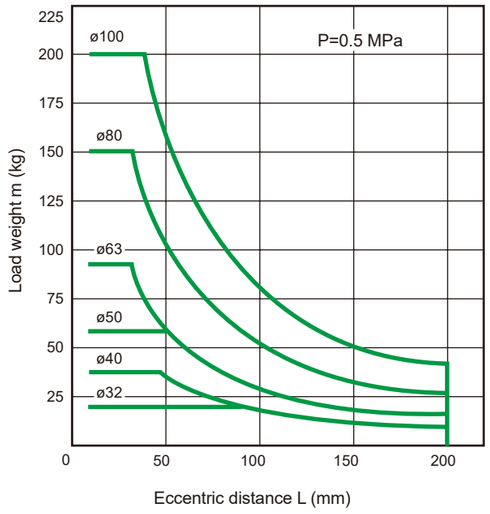
● STG-M-12 to 25

● Stroke 50 mm or less



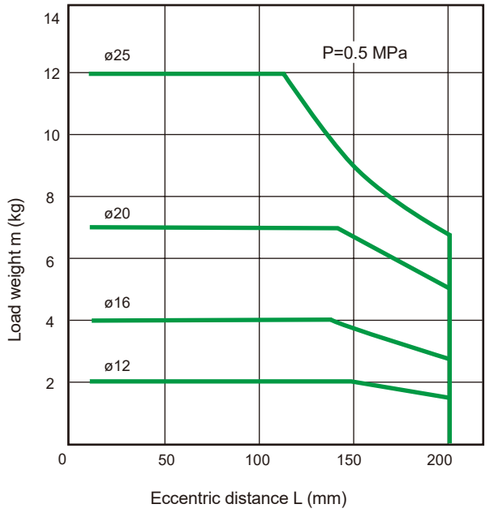
● STG-M-32 to 100

● Stroke 50 mm or less



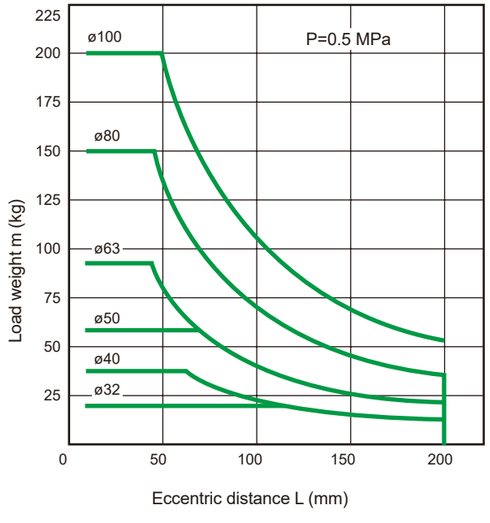
● STG-M-12 to 25

● Stroke over 50 mm



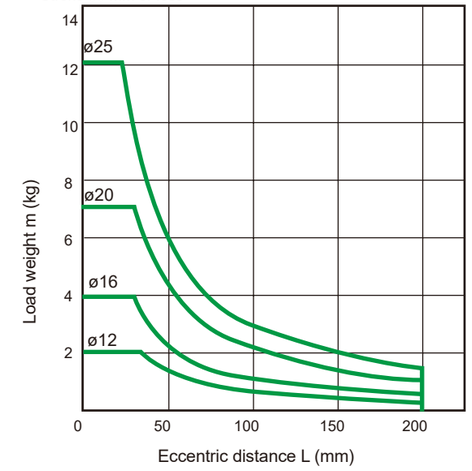
● STG-M-32 to 100

● Stroke over 50 mm



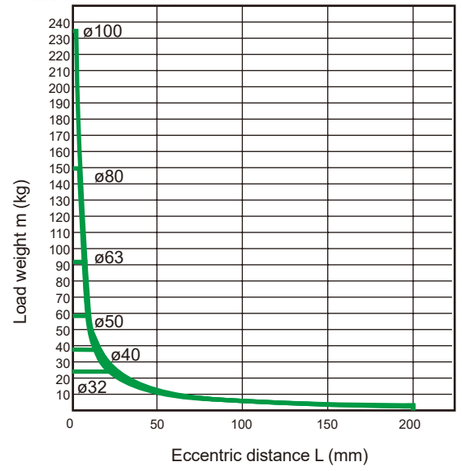
● STG-B-12 to 25

● Stroke 30 mm or less



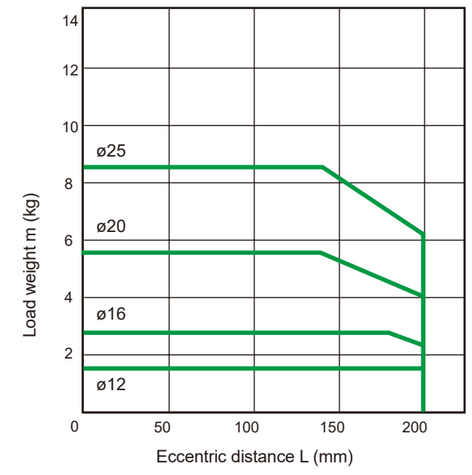
● STG-B-32 to 100

● Stroke 50 mm or less



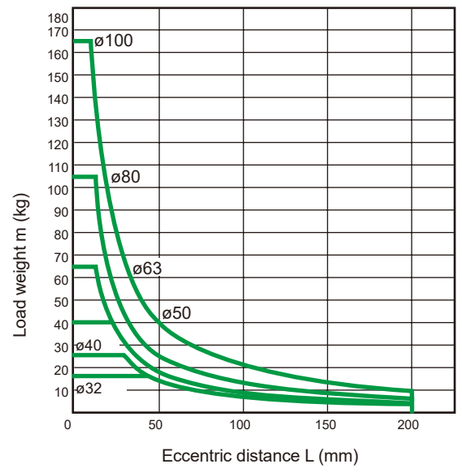
● STG-B-12 to 25

● Stroke over 30 mm and 100 mm or less



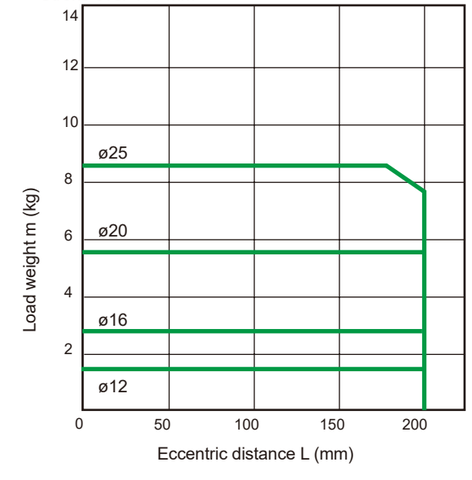
● STG-B-32 to 63 ● STG-B-80, 100

● Stroke over 50 mm and 100 mm or less ● Stroke over 50 mm and 200 mm or less



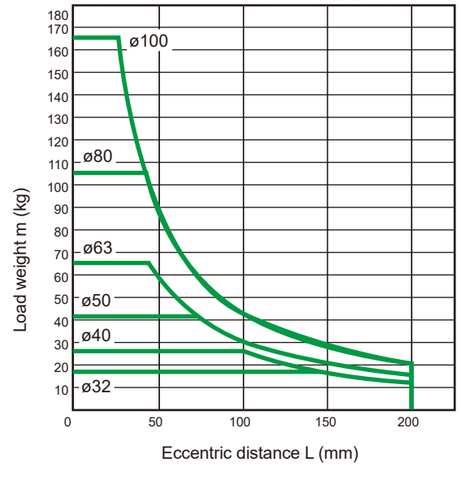
● STG-B-12 to 25

● Stroke over 100 mm



● STG-B-32 to 63 ● STG-B-80, 100

● Stroke over 100 mm ● Stroke over 200 mm

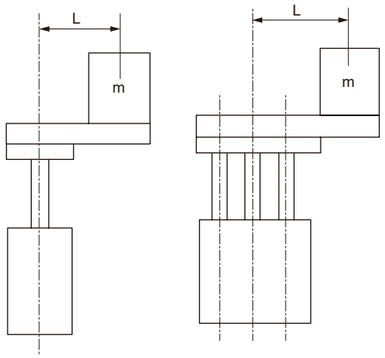


Model selection guide

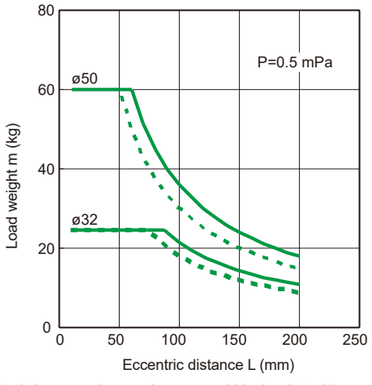
In case of vertical mounting

● Select the total load weight so that the ratio of the load to the theoretical thrust is less than or equal to the values in the table below.

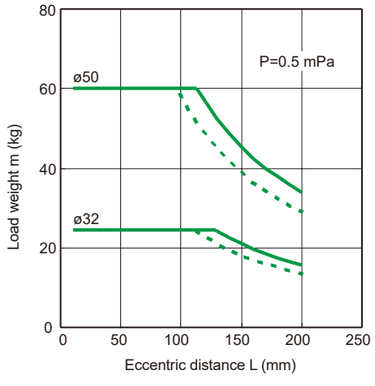
Item / Bore Size (mm)	Load factor relative to theoretical thrust
ø32	60% or less
ø50	



● Stroke 50 mm or less

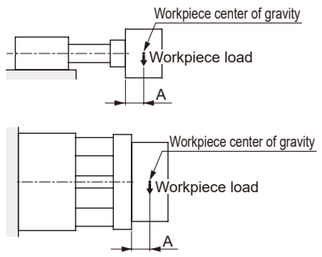


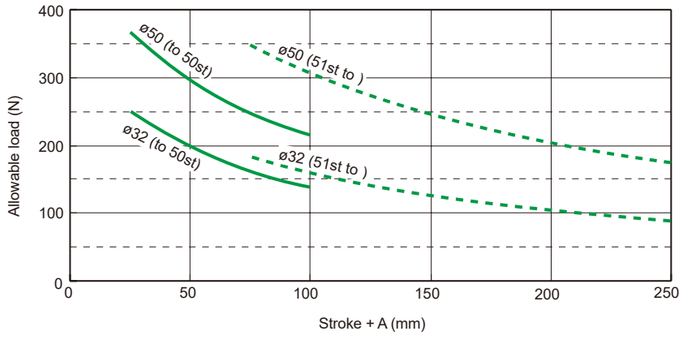
● Stroke over 50 mm



Note 1: At low speeds, use the range within the dotted line as a guide.

Allowable Lateral Load

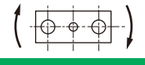




The allowable lateral load is the value when the load acts on the end face of the end plate. If the center of gravity of the workpiece included to the end plate is offset, replace the offset amount with stroke for selection.

Allowable rotational torque

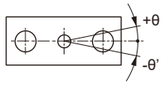
Torque: T (N·m)



Unit: N·m

Item / Bore Size (mm)	Stroke (mm) 25	50	75	100	125	150	175	200
ø32	8.0	6.3	6.6	5.7	5.1	4.5	4.1	3.7
ø50	15	12	17	15	13	12	11	10

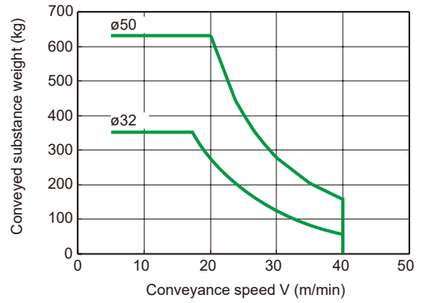
Non-rotation accuracy

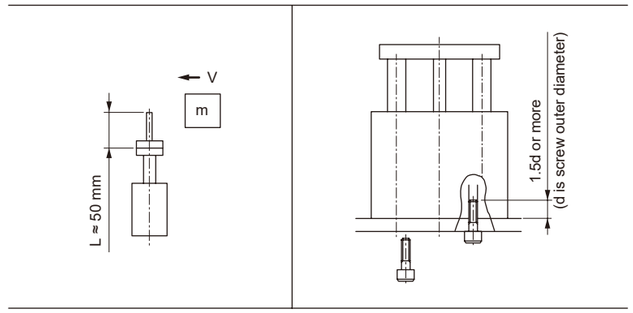


Item / Bore Size (mm)	Non-rotation Accuracy θ (degrees)
ø32	±0.05
ø50	

Model selection guide

■ Operating range when used as a stopper





Notes on Use

Note1) When using as a stopper, select 50 strokes or less.
Note2) The total length of the stopper part should be L=50 mm or less.
Note3) When fixing the cylinder body, ensure the bolt screw-in depth is 1.5d or more, and consider measures to prevent loosening (adhesive, spring washer, etc.).

■ Movable part weight table

Unit: kg

Item / Bore Size (mm)	Stroke 25	50	75	100	125	150	175	200
ø32	1.62	1.85	2.24	2.47	2.71	2.94	3.17	3.40
ø50	2.71	3.05	3.66	4.00	4.34	4.68	5.01	5.35

■ Calculation of allowable absorption energy

Calculate the kinetic energy of the load actually used and check if it can be absorbed by the allowable absorption energy of the cylinder.

● Use the values in the graph on the right for the allowable absorption energy (E) of the cylinder.

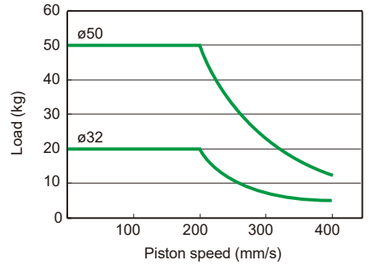
● Kinetic energy calculation formula for load

$$E = \frac{1}{2} \times (W1 + W2) \times V^2$$

W1: Load (kg) W2: Cylinder movable part weight (kg)
V: Cylinder speed (m/s)

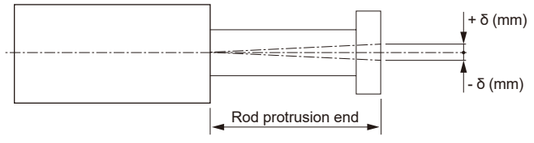
■ Allowable absorption energy value

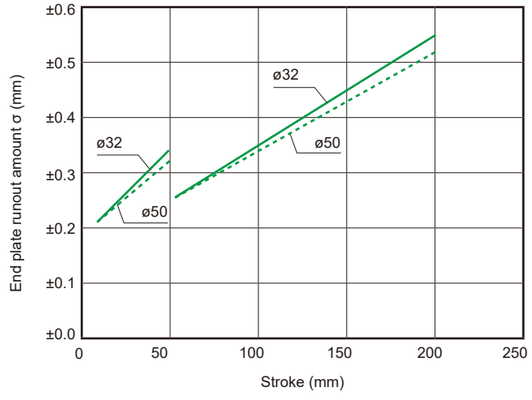
Use within the range to the lower left of the curve. If using in the upper right range, provide a separate external shock absorber.



■ Runout accuracy

The runout amount σ generated at the tip of the end plate when no load is applied is based on the values in the graph below. (Excluding guide rod deflection amount)

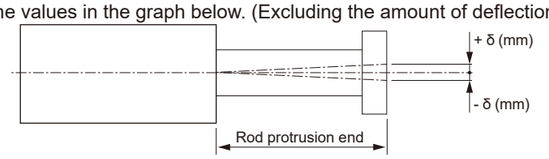




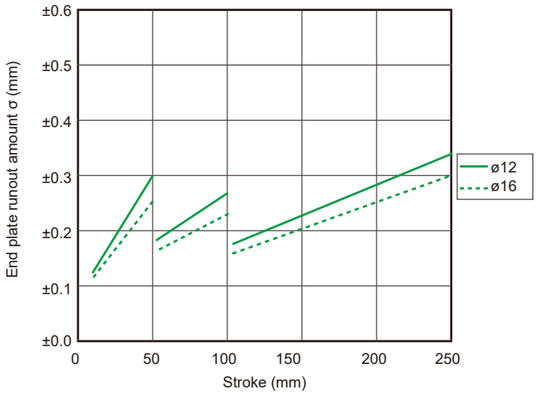
Model selection guide

Runout accuracy

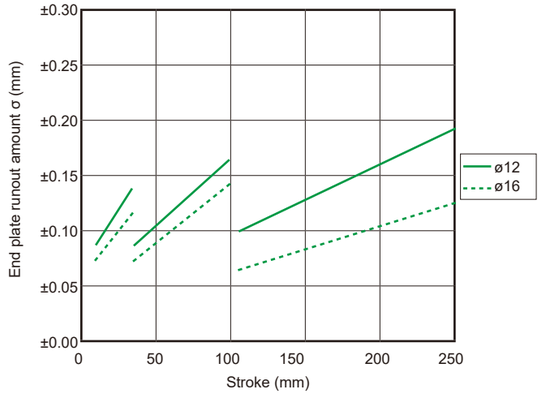
The amount of runout δ that occurs at the tip of the end plate when there is no load is estimated by the values in the graph below. (Excluding the amount of deflection of the guide rod)



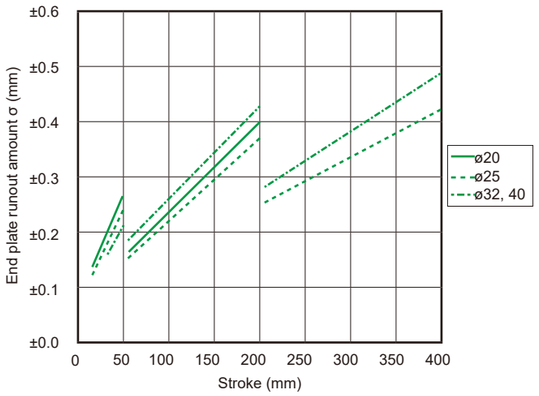
● ø12, ø16 Plain bearing
STG-M



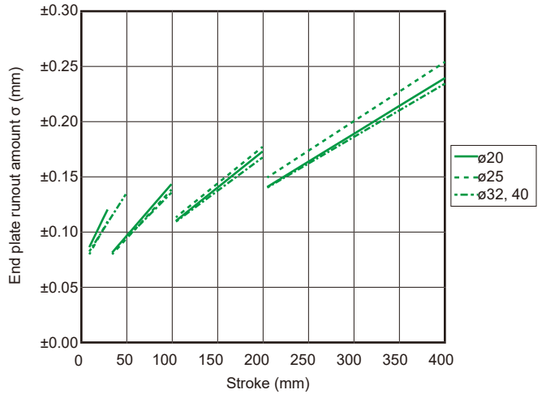
● ø12, ø16 Rolling bearing
STG-B



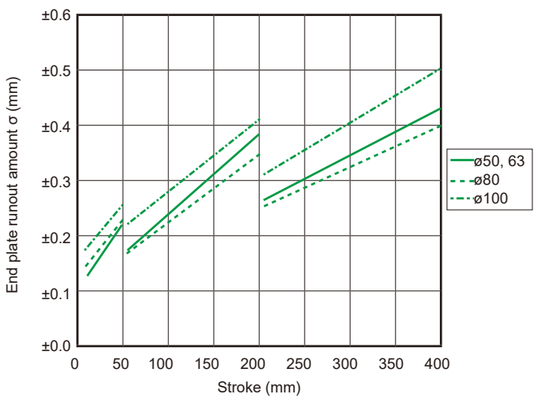
● ø20 to ø40 Plain bearing
STG-M



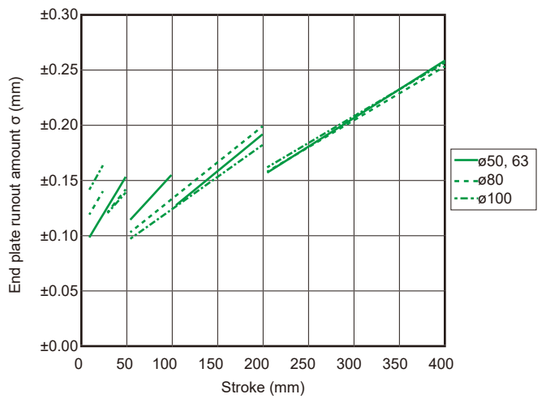
● ø20 to ø40 Rolling bearing
STG-B



● ø50 to ø100 Plain bearing
STG-M

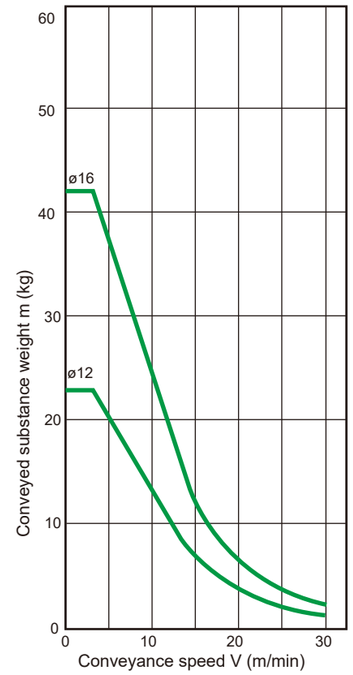


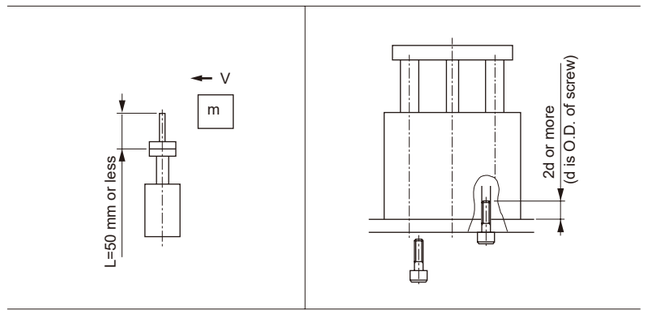
● ø50 to ø100 Rolling bearing
STG-B



Operating range when used as a stopper

Impact load
STG-M-12, 16 (Plain bearing)

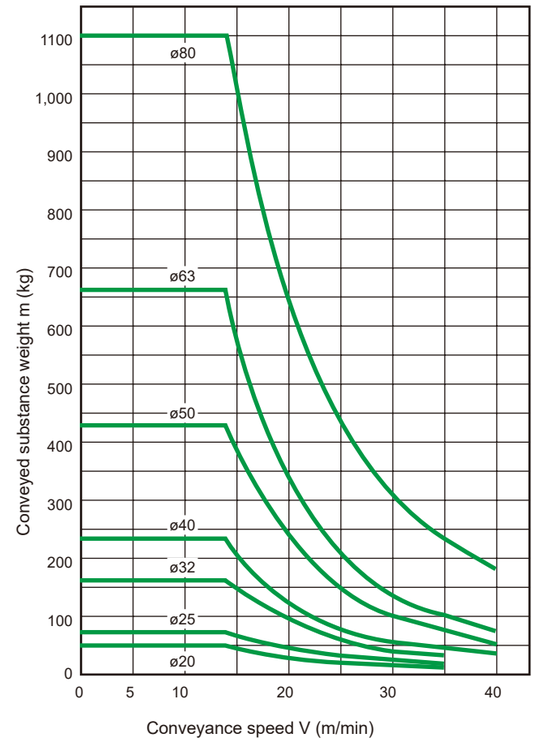




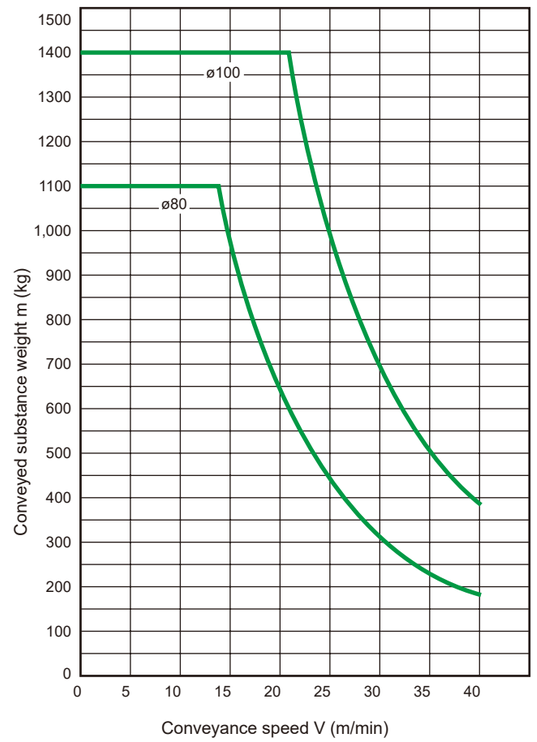
Notes on Use

Note1) When using as a stopper, select a model with 50 strokes or less (STG-M). (ø12 to ø16 is 30 strokes or less)
Note2) The total length of the stopper part should be L=50 mm or less.
Note3) When fixing the cylinder body, ensure the bolt screw-in depth is 2d or more, and consider measures to prevent loosening (adhesive, spring washer, etc.). (for ø80, make sure that the screw insertion depth is 1d. d is thread outer diameter)
Note4) STG-B (rolling bearing) cannot be used as a stopper.

Impact load
STG-M-20 to 63 (Plain bearing)



Impact load
STG-M-80 / 100 (Plain bearing)

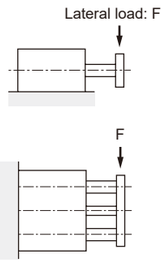


STG Series

Model selection guide

Model selection guide

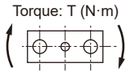
Allowable Lateral Load



Unit: N

Bore Size (mm)	Model No.	Bearing type	Stroke (mm)																
			10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
ø12	STG-M	Plain bearing	29	24	-	20	18	16	20	17	15	13	12	10	9	-	-	-
	STG-B	Rolling bearing	38	27	-	22	34	29	21	16	12	11	9	8	6	-	-	-
ø16	STG-M	Plain bearing	51	42	-	36	32	28	36	31	27	24	21	19	16	-	-	-
	STG-B	Rolling bearing	49	35	-	29	50	43	31	25	20	17	15	13	10	-	-	-
ø20	STG-M	Plain bearing	-	67	-	58	51	46	60	51	45	40	36	33	28	24	21	19
	STG-B	Rolling bearing	-	52	-	42	76	65	49	38	60	51	44	39	32	27	23	20
ø25	STG-M	Plain bearing	-	125	-	110	98	88	112	97	85	76	69	63	53	46	41	37
	STG-B	Rolling bearing	-	81	-	66	108	94	70	56	81	69	60	53	42	36	30	27
ø32	STG-M	Plain bearing	-	-	223	-	-	180	179	156	138	124	112	103	88	77	68	61
	STG-B	Rolling bearing	-	-	171	-	-	120	190	159	123	106	93	83	66	56	48	42
ø40	STG-M	Plain bearing	-	-	223	-	-	180	179	156	138	124	112	103	88	77	68	61
	STG-B	Rolling bearing	-	-	171	-	-	120	190	159	123	106	93	83	66	56	48	42
ø50	STG-M	Plain bearing	-	-	348	-	-	286	292	257	230	208	190	174	150	132	118	106
	STG-B	Rolling bearing	-	-	181	-	-	129	215	181	139	121	106	95	78	67	58	50
ø63	STG-M	Plain bearing	-	-	348	-	-	286	292	257	230	208	190	174	150	132	118	106
	STG-B	Rolling bearing	-	-	181	-	-	129	215	181	139	121	106	95	78	67	58	50
ø80	STG-M	Plain bearing	-	-	385	-	-	326	345	309	280	256	235	218	190	169	151	137
	STG-B	Rolling bearing	-	-	129	-	-	183	263	226	199	178	162	148	83	71	62	54
ø100	STG-M	Plain bearing	-	-	531	-	-	460	475	429	392	360	333	310	272	243	219	199
	STG-B	Rolling bearing	-	-	171	-	-	249	330	285	251	226	205	187	122	105	91	81

Allowable rotational torque

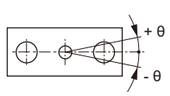


Unit: N·m

Bore Size (mm)	Model No.	Bearing type	Stroke (mm)															
			10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
ø12	STG-M	Plain bearing	0.30	0.25	-	0.21	0.18	0.16	0.21	0.18	0.15	0.13	0.12	0.11	0.09	-	-	-
	STG-B	Rolling bearing	0.39	0.28	-	0.23	0.35	0.30	0.21	0.17	0.13	0.11	0.09	0.08	0.07	-	-	-
ø16	STG-M	Plain bearing	0.59	0.49	-	0.42	0.36	0.32	0.42	0.35	0.31	0.27	0.24	0.22	0.18	-	-	-
	STG-B	Rolling bearing	0.56	0.41	-	0.33	0.58	0.50	0.36	0.28	0.23	0.19	0.17	0.15	0.12	-	-	-
ø20	STG-M	Plain bearing	-	0.90	-	0.78	0.69	0.62	0.80	0.69	0.61	0.54	0.49	0.44	0.37	0.32	0.29	0.26
	STG-B	Rolling bearing	-	0.70	-	0.57	1.02	0.88	0.66	0.52	0.80	0.69	0.60	0.53	0.43	0.36	0.31	0.27
ø25	STG-M	Plain bearing	-	2.00	-	1.75	1.56	1.41	1.80	1.55	1.37	1.22	1.10	1.00	0.85	0.74	0.66	0.59
	STG-B	Rolling bearing	-	1.29	-	1.06	1.74	1.50	1.13	0.90	1.29	1.11	0.96	0.85	0.68	0.57	0.49	0.42
ø32	STG-M	Plain bearing	-	-	4.35	-	-	3.50	3.48	3.04	2.69	2.42	2.19	2.01	1.72	1.50	1.33	1.20
	STG-B	Rolling bearing	-	-	3.33	-	-	2.34	3.70	3.10	2.40	2.07	1.82	1.61	1.29	1.09	0.94	0.82
ø40	STG-M	Plain bearing	-	-	4.80	-	-	3.86	3.84	3.35	2.97	2.66	2.42	2.21	1.89	1.65	1.47	1.32
	STG-B	Rolling bearing	-	-	3.68	-	-	2.58	4.08	3.42	2.65	2.28	2.00	1.78	1.43	1.20	1.03	0.90
ø50	STG-M	Plain bearing	-	-	9.56	-	-	7.86	8.02	7.07	6.32	5.71	5.21	4.79	4.13	3.63	3.23	2.92
	STG-B	Rolling bearing	-	-	4.99	-	-	3.56	5.90	4.99	3.83	3.32	2.93	2.61	2.16	1.83	1.58	1.39
ø63	STG-M	Plain bearing	-	-	10.78	-	-	8.86	9.04	7.97	7.12	6.44	5.88	5.41	4.66	4.09	3.65	3.29
	STG-B	Rolling bearing	-	-	5.63	-	-	4.01	6.66	5.62	4.32	3.75	3.30	2.94	2.43	2.06	1.78	1.57
ø80	STG-M	Plain bearing	-	-	15.01	-	-	12.70	13.46	12.05	10.92	9.98	9.18	8.51	7.42	6.58	5.90	5.36
	STG-B	Rolling bearing	-	-	5.02	-	-	7.13	10.25	8.81	7.77	6.96	6.30	5.76	3.23	2.76	2.40	2.12
ø100	STG-M	Plain bearing	-	-	24.98	-	-	21.60	22.32	20.17	18.40	16.92	15.66	14.57	12.79	11.40	10.28	9.37
	STG-B	Rolling bearing	-	-	8.04	-	-	11.69	15.53	13.38	11.81	10.60	9.62	8.81	5.75	4.92	4.29	3.79

Non-rotation accuracy

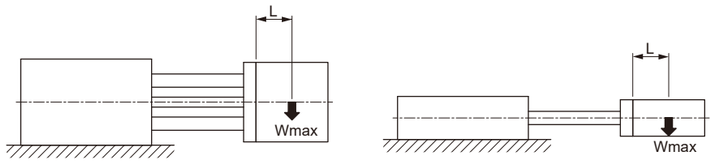
(Reference value)



Item / Bore Size (mm)	Non-rotation Accuracy θ (degrees)	
	Plain bearing	Rolling bearing
ø12	± 0.08	± 0.06
ø16		
ø20	± 0.07	± 0.05
ø25		
ø32	± 0.06	± 0.04
ø40		
ø50	± 0.05	± 0.03
ø63		
ø80		
ø100		

(PULL time initial value) Note) Excluding guide rod deflection amount

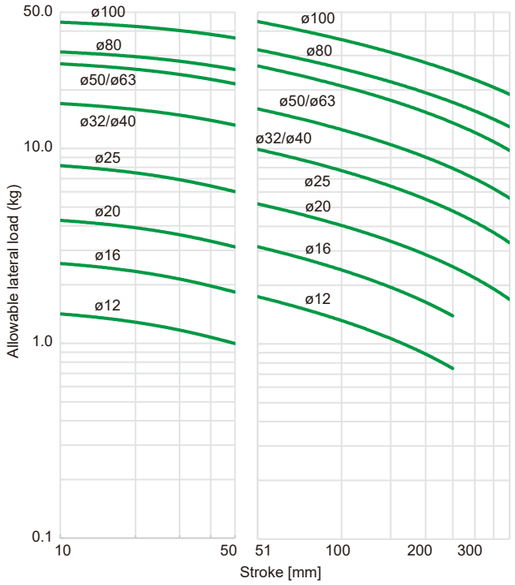
Allowable Lateral Load Plain bearing



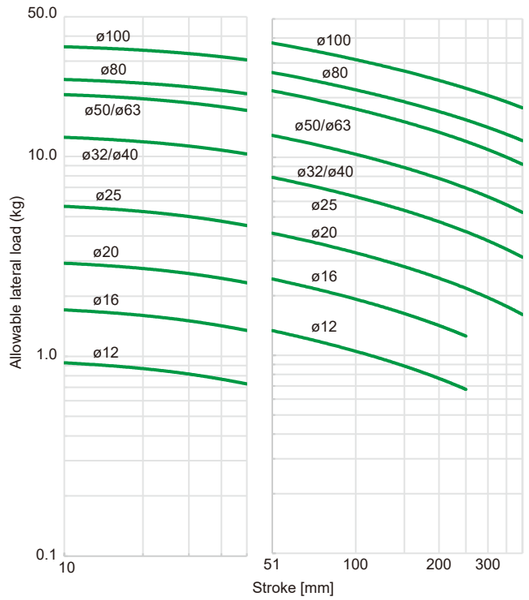
Wmax : Lateral load (kg)
L : Load's center of gravity position (mm)

STG-M-12 to 100

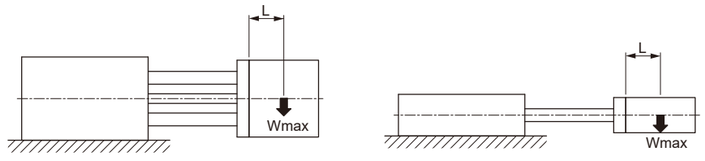
● When L=50 mm



● When L=100 mm



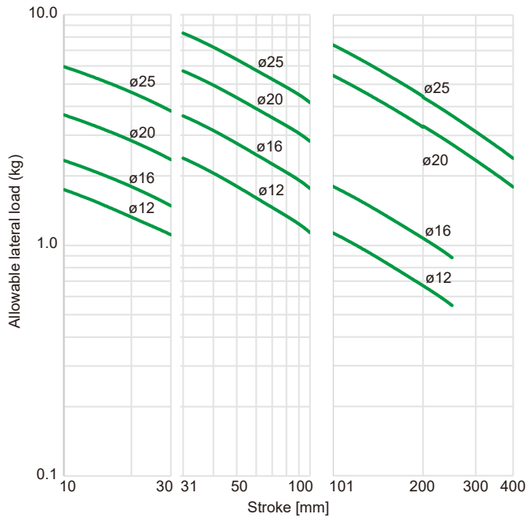
Allowable Lateral Load Rolling bearing



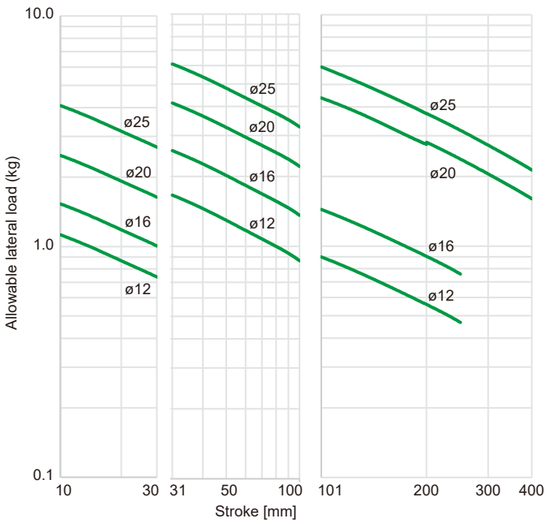
Wmax : Lateral load (kg)
L : Load's center of gravity position (mm)

STG-B-12 to 25

● When L=50 mm

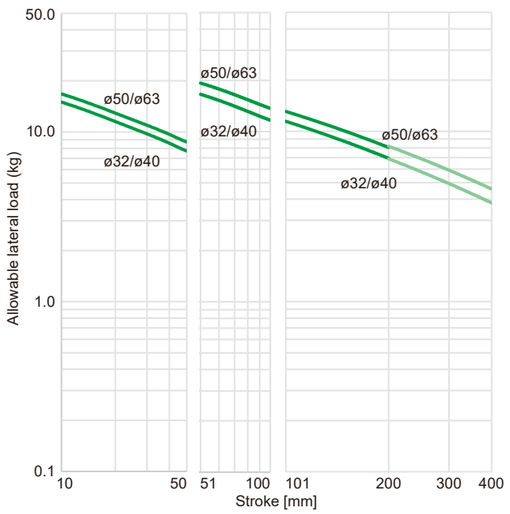


● When L=100 mm

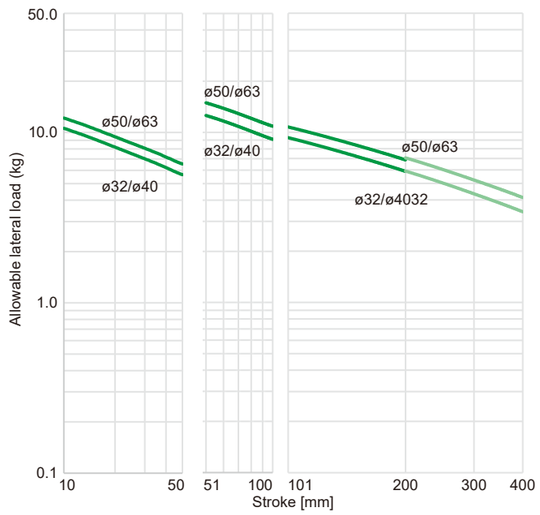


STG-B-32 to 63

● When L=50 mm

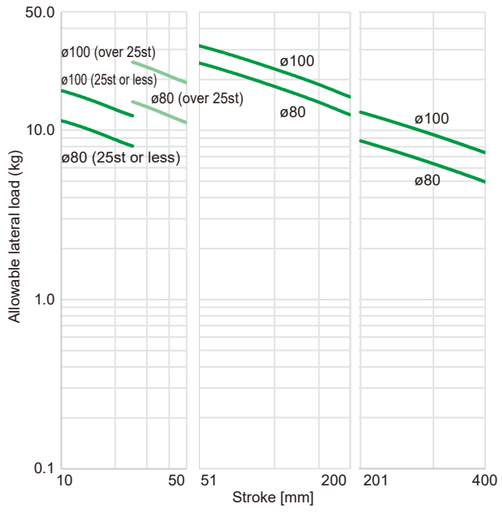


● When L=100 mm

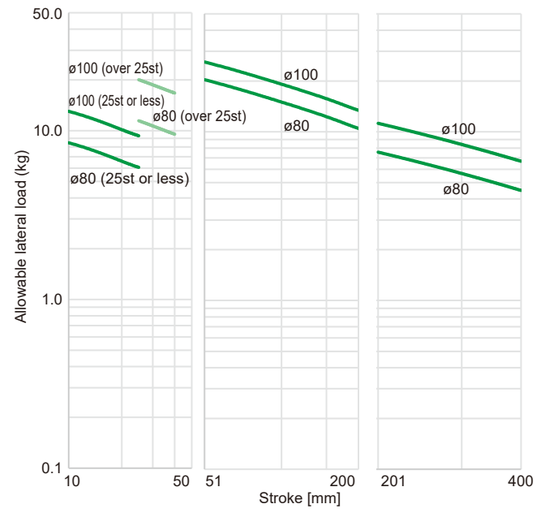


STG-B-80 / 100

● When L=50 mm



● When L=100 mm



Model selection guide

■ Movable part weight table

● STG-M Movable part weight table

Unit: kg

Bore Size (mm)	Stroke (mm)															
	10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
ø12	0.12	0.13	-	0.14	0.15	0.16	0.20	0.23	0.27	0.30	0.32	0.35	0.40	-	-	-
ø16	0.16	0.18	-	0.19	0.21	0.22	0.29	0.33	0.41	0.45	0.49	0.53	0.62	-	-	-
ø20	-	0.33	-	0.35	0.38	0.40	0.52	0.58	0.64	0.70	0.76	0.82	1.00	1.13	1.24	1.35
ø25	-	0.52	-	0.56	0.60	0.64	0.84	0.95	1.05	1.15	1.25	1.34	1.66	1.87	2.06	2.26
ø32	-	-	1.07	-	-	1.23	1.42	1.58	1.74	1.90	2.07	2.23	2.73	3.06	3.40	3.71
ø40	-	-	1.14	-	-	1.30	1.49	1.65	1.81	1.98	2.14	2.30	2.82	3.13	3.47	3.78
ø50	-	-	2.15	-	-	2.40	2.75	3.00	3.26	3.51	3.76	4.02	4.85	5.37	5.88	6.38
ø63	-	-	2.50	-	-	2.75	3.09	3.35	3.60	3.86	4.11	4.36	5.19	5.70	6.21	6.72
ø80	-	-	3.76	-	-	3.99	4.38	4.61	4.84	5.08	5.31	5.54	6.29	6.76	7.23	7.69
ø100	-	-	6.56	-	-	7.08	7.96	8.48	8.99	9.50	10.01	10.53	12.17	13.19	14.22	15.24

● STG-B Movable part weight table

Unit: kg

Bore Size (mm)	Stroke (mm)															
	10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
ø12	0.11	0.11	-	0.12	0.13	0.14	0.16	0.17	0.20	0.22	0.23	0.25	0.29	-	-	-
ø16	0.15	0.16	-	0.17	0.20	0.21	0.24	0.27	0.32	0.35	0.38	0.41	0.47	-	-	-
ø20	-	0.31	-	0.33	0.37	0.39	0.44	0.48	0.56	0.60	0.65	0.70	0.80	0.90	1.00	1.09
ø25	-	0.49	-	0.52	0.58	0.61	0.69	0.76	0.88	0.95	1.02	1.10	1.28	1.44	1.58	1.72
ø32	-	-	0.82	-	-	0.94	1.11	1.23	1.40	1.53	1.65	1.77	2.07	2.30	2.54	2.78
ø40	-	-	0.89	-	-	1.01	1.18	1.30	1.48	1.60	1.72	1.83	2.14	2.38	2.61	2.84
ø50	-	-	1.77	-	-	1.95	2.24	2.45	2.71	1.89	3.08	3.27	3.76	4.13	4.50	4.87
ø63	-	-	2.11	-	-	2.30	2.59	2.77	3.05	3.25	3.43	3.61	4.11	4.48	4.84	5.21
ø80	-	-	3.54	-	-	3.81	4.12	4.31	4.50	4.69	4.88	5.07	5.58	5.97	6.35	6.73
ø100	-	-	6.21	-	-	6.91	7.69	8.10	8.51	8.93	9.34	9.75	10.83	11.65	12.48	13.30

Port symmetrical type (-O)

Content: Position the port opposite to the standard port position.

Model No. Notation Method

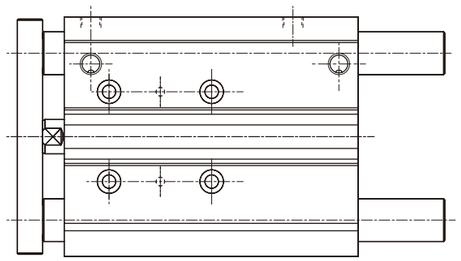
STG - M - 50 - 50 O

Model No.

Please see the STG Series model No. notation method.

Outer Dimensions Diagram

● STG



↑ For standard products, this side is the port surface.

MEMO

Guided
STM
STG
STS/ STL
STR2
UCA2
Cylinder Switch
Ending

To Use This Product Safely

Be sure to read this before use.
For general cylinder information, see Opening Section P. 41, and for cylinder switches, see P. 808.

Individual Precautions: Guided cylinder STG Series

During Design / Selection

1. Common

Caution

■When using a plain bearing type with a long stroke at low speed, stick-slip may occur depending on the load conditions. In this case, use a rolling bearing type.

2. With rubber air cushion STG-□C

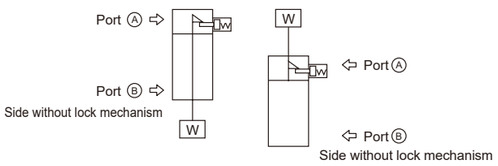
Caution

■Due to the structure, if the air supply is cut off, the stroke end position cannot be maintained. Please be careful. When detecting the stroke end with a switch, it may be outside the detection range, so set the switch position in an air-pressurized state.

3. Drop prevention type STG-$^{M}_{B}$Q

Warning

■In the locked state, if pressure is supplied to port A from a state where both side ports are not pressurized, the lock may not be released, or the lock may suddenly be released and the piston rod may fly out, which is very dangerous. When releasing the lock mechanism, always supply pressure to port B and release it from a state where no load is applied to the lock mechanism.



■When using a quick exhaust valve to increase the lowering speed, the cylinder body may start moving before the lock pin operates, and normal release may not be possible. Do not use a quick exhaust valve with a drop prevention type cylinder.

■Do not use 3-position valves.
Do not use in combination with 3-position valves (especially closed center metal seal type). If pressure is sealed in the port on the side with the lock mechanism, the lock will not engage. Also, even if locked once, air leaking from the valve may enter the cylinder, and the lock may be released over time.

Caution

■Keep the cylinder load factor at 50% or less.
If the load factor is high, the lock may not be released, or it may lead to damage to the lock part.

■If back pressure is applied to the lock mechanism side, the lock may be released, so use a single valve or a manifold with individual exhaust.

■Do not use multiple cylinders synchronized.
Do not use a method where two or more fall prevention type cylinders are synchronized to move one workpiece. The lock of one of the cylinders may become unremovable.

4. Cutting oil resistant type STG-MG$^{2}_{3}$

Caution

■Do not apply an eccentric load to the piston rod.
This may reduce the life of scrapers and bearings.

■If there is no splashing of cutting oil or water on the piston rod, use the G or G1 series. Please note that if there is no scattering of cutting oil or water with G2 and G3 series, the lubrication of the piston rod will be cut off and the service life will be reduced.

5. Spatter adhesion prevention type STG-$^{M}_{B}$G4

Caution

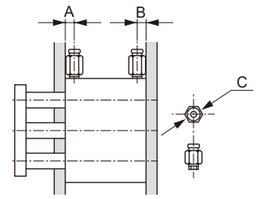
■This cylinder series has improved durability in a spatter scattering atmosphere compared to general-purpose cylinders. However, please note that durability may be inferior to general type cylinders when used in other atmospheres.

During Use

1. Common

Caution

■Be sure to use a speed controller when piping. Also, the usable fittings are as follows.



Item / Bore Size (mm)	Port Size	Port position dimension A	Port position dimension B	Usable Fittings	Fitting outer diameter øC
ø12	M5x0.8	12	7	SC3W-M5-4 SC3W-M5-6 GWS4-M5-S GWS4-M5 GWL4-M5 GWL6-M5 GWS6-M5	ø12 or less
ø16		12	7.5		
ø20	Rc1/8	10.5	8.5	SC3W-6-4 / 6 / 8 GWS4-6	ø15 or less
ø25		11.5	9	GWS6-6	
ø32		12.5	9	GWS8-6	
ø40		14	10	GWL4-6 GWL6-6	
ø50	Rc1/4	14	11	SC3W-8-6 / 8 / 10 GWS4-8 GWS6-8 GWS10-8 GWS12-8 GWL4 to 12-8	ø21 or less
ø63		16.5	15		
ø80	Rc3/8	19	15	SC3W-10-8 / 10 / 12 GWS6-10 GWS8-10 GWS10-10 GWL6 to 12-10	ø28 or less
ø100	Rc3/8	17	19	SC3W-10-8 / 10 / 12 GWS6-10 GWS8-10 GWS10-10 GWL6 to 12-10	ø28 or less

■To prevent an increase in sliding resistance, do not make dents or scratches on the tube body mounting surface and end plate surface that may impair flatness. The flatness of the mating side to be included to the end plate should be 0.03 mm or less. If it is difficult to ensure the above flatness, insert shims (customer prepared), etc. between the end plate and the workpiece to adjust the gap. This may help prevent an increase in sliding resistance.

■Allowable absorption energy value
Use within the range of allowable absorbed energy. If used exceeding the allowable absorbed energy, provide a separate external shock absorber. For the allowable absorption energy value, please refer to the specifications section or model selection guide.

■Do not rotate the piston rod except when disassembling the product for maintenance, etc. Misalignment may occur and operation may become unstable, so do not rotate the piston rod.

2. Drop prevention type STG-$^{M}_{B}$Q

Warning

■During equipment maintenance, please take separate measures for safety so that the load does not fall due to its own weight.

Caution

■Keep the cylinder load factor at 50% or less. If the load factor is high, the lock may not be released, or it may lead to damage to the lock part.

■Use the speed controller with meter-out control.
Lock may not be released with meter-in control.

■On the side with the lock, be sure to use the cylinder to the stroke end.
If the cylinder piston has not reached the stroke end, the lock may not engage, or it may not be possible to release the lock.

3. With rubber air cushion STG-$^{M}_{B}$-□C

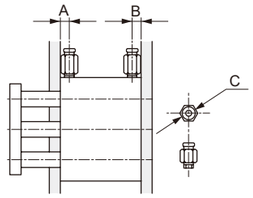
Caution

■Do not rapidly exhaust the air in the cylinder after operating at low speed outside the catalog specification range. (Example Removing piping or couplers, etc.) The rubber air cushion may come off. Please be especially careful as this is more likely to occur when the air pressure is high.

4. Heavy-duty guide rod type STG-K

⚠ Caution

■ Be sure to use a speed controller when piping. Also, the usable fittings are as follows.



Item / Bore Size (mm)	Port Size	Port position dimension A	Port position dimension B	Usable Fittings	Fitting outer diameter øC
ø32	Rc1/8	12.5	9	SC3W-6-4 / 6 / 8 GWS4-6 GWS6-6 GWS8-6 GWL4-6 GWL6-6	ø15 or less
ø50	Rc1/4	14	11	SC3W-8-6 / 8 / 10 GWS4-8 GWS6-8 GWS10-8 GWS12-8 GWL4 to 12-8	ø21 or less

■ To prevent an increase in sliding resistance, do not make dents or scratches on the tube body mounting surface and end plate surface that may impair flatness. The flatness of the mating side to be included to the end plate should be 0.03 mm or less. If it is difficult to ensure the above flatness, insert shims (customer prepared), etc. between the end plate and the workpiece to adjust the gap. This may help prevent an increase in sliding resistance.

■ Allowable absorption energy value
Use within the range of allowable absorbed energy. If used exceeding the allowable absorbed energy, provide a separate external shock absorber. For the allowable absorption energy value, please refer to the specifications section or model selection guide.

■ Do not rotate the piston rod except when disassembling the product for maintenance, etc. Misalignment may occur and operation may become unstable, so do not rotate the piston rod.

MEMO

For precautions regarding mounting, installation, adjustment, use, and maintenance, please see "Precautions for Use" in this catalog and the CKD Components Product website (https://www.ckd.co.jp/kiki/en/) → "Model No." → Instruction Manual.

STS / STL

Guided Cylinder

ø8, ø12, ø16, ø20, ø25, ø32,
ø40, ø50, ø63, ø80, ø100

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STS/STL Series

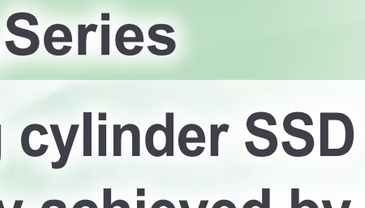
Rectangular, space saving cylinder SSD
High precision/high rigidity achieved by integrating guides on both sides

STL Series

STS Series

Application Example

Suitable for use as a lifter, pusher, etc.



Supports long strokes up to 400 mm

The long stroke STL is compatible with maximum stroke of 200mm at ø8 to ø16 and maximum stroke of 400mm at ø20 to ø80.

Dedicated STS for short stroke

The STS has no protrusion from the body of the guide rod when the end plate is pulled. When mounting using the bottom of the cylinder, it is no longer necessary to drill a hole to release the guide rod.

Boosts integrated equipment accuracy

Two guide rods with metal bush bearing (M) or ball bearing (B). High non-rotating accuracy and deflection, contributing to increased accuracy of the equipment into which it is integrated.

Sleek design

Inner groove on body. Cylinder switch, cable tie, terminal block, etc., can be fixed. The neat square design helps save space.

Suitable for use with high load

Highly rigid and resistant to lateral load, etc., with two guide rods mounted.

End plate material can be selected

Aluminum (standard) or steel (option) end plate can be selected.

Variation

Model variations	Bore size (mm) ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Single rod STS/L-M/B Standard Type	●	●	●	●	●	●	●	●	●	●	●
Stroke adjustable STS/L-M/BP Adjustable push stroke	●	●	●	●	●	●	●	●	●	●	
Heat resistance STS/L-M/BT Compatible with ambient temperature up to 120°C (ø 20 and ø 25 B are not available)		●	●	●	●	●	●	●	●	●	
Packing material fluoro rubber STS/L-M/BT2 Rod packing, piston packing, etc., changed to fluoro rubber		●	●	●	●	●	●	●	●	●	
Rubber-air cushioned STS/L-M/B-□C The rubber-air cushion with special structure absorbs impact						●	●	●	●	●	
With air cushion STS/L-M/BC High impact absorption performance with air cushion					●	●	●	●	●	●	
Position locking STS/L-M/BQ Lock mechanism at the stroke end prevents falling		●	●	●	●	●	●	●	●	●	
Fine speed STS/L-M/BF Fine speed operation from 1 mm/sec is possible	●	●	●	●	●	●	●	●	●	●	
Low speed STS/L-M/BO Low speed operation of 10 mm/sec is possible		●	●	●	●	●	●	●	●	●	
Rubber scraper STS/L-M/BG Coil scraper STS/L-M/BG1 Scraper on piston and guide rods prevents the entry of foreign matter (G: earth, sand, dust, G1: spot welding)		●	●	●	●	●	●	●	●	●	
Coolant proof STS/L-M/BG2/G3 Equipped with coolant proof scraper G2 (nitrile rubber) G3 (fluoro rubber)		●	●	●	●	●	●	●	●	●	
Anti-spatter adherence STS/L-M/BG4 Coil scraper + anti-spatter adherence agent used to suppress spatter adherence						●	●	●	●	●	
Valve equipped STS/L-M/BV Valve equipped type that contributes to reduced piping work-hours		●	●	●	●	●	●	●	●	●	

●: Standard ◎: Option ○: Custom Products ▒: Not manufacturable

Variation	Model No. Circuit Diagram Symbol	Bore Size (mm)	Standard stroke (mm) STS 10	20	25	30	40	50	75	100	Standard stroke (mm) STL 50	75	100	Stroke (mm) STL 125	150	175	200	225	250	275	300	325	350	375	400	Min. Stroke (mm)	Intermediate stroke (mm) (per mm)	Maximum Stroke (mm)	Bearing type: Plain bearing M	Rolling bearing B	Option: End plate material Steel F	Corrosion proof end plate material Aluminum M	Corrosion proof end plate material SUS M1	Switch	Page
Double Acting / Single Rod Type	ST$^{S}_{L}$-$^{M}_{B}$	ø8 / ø12 / ø16	●	●	▒	●	●	●	▒	▒	●	●	●	●	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒	5	5	200	●	●	◎	◎	◎	◎	482
		ø20, ø25, ø32, ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	◎	◎	◎		
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	◎	◎	◎		
		ø100	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒			200	●	●	◎	◎	◎		
Double-acting / Stroke adjustment type (Push)	ST$^{S}_{L}$-$^{M}_{B}$P	ø8 / ø12 / ø16	●	●	▒	●	●	●	▒	▒	●	●	●	●	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒	10	–	200	●	●	◎	▒	▒	◎	504
		ø20, ø25, ø32, ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	◎	▒	▒		
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	◎	▒	▒		
Double Acting / Heat Resistant Type	ST$^{S}_{L}$-$^{M}_{B}$T	ø12, ø16	●	●	▒	●	●	●	▒	▒	●	●	●	●	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒	5	5	200	●	●	◎	○ *1	○ *1	▒	520
		ø20, ø25, ø32, ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	*3	◎	○ *1	○ *1		
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	◎	○ *1	○ *1		
Double acting / packing material fluoro rubber	ST$^{S}_{L}$-$^{M}_{B}$T2	ø12, ø16	●	●	▒	●	●	●	▒	▒	●	●	●	●	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒	5	5	200	●	●	◎	○	○	◎	528
		ø20, ø25, ø32, ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	◎	○	○		
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	◎	○	○		
Double Acting / With Rubber Air Cushion	ST$^{S}_{L}$-$^{M}_{B}$-□C	ø32, ø40, ø50	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	5	5	400	●	●	◎	○	○	◎	536
		ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	10		400	●	●	◎	○	○		
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	10		400	●	●	◎	○	○		
Double Acting / With Air Cushion	ST$^{S}_{L}$-$^{M}_{B}$C	ø25/ø32/ø40/ø50/ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	15 *2	–	400	●	●	◎	○	○	◎	544
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	▒	▒			375	●	●	◎	○	○		
Double Acting / Drop Prevention Type	ST$^{S}_{L}$-$^{M}_{B}$Q	ø20, ø25, ø32	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	5	5	400	●	●	◎	○	○	◎	556
		ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	▒	▒			375	●	●	◎	○	○		
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	▒	▒			350	●	●	◎	○	○		
Double Acting / Ultra-slow Speed Type	ST$^{S}_{L}$-$^{M}_{B}$F	ø8 / ø12 / ø16	●	●	▒	●	●	●	▒	▒	●	●	●	●	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒	5	5	200	●	●	◎	○	○	◎	574
		ø20/ø25/ø32/ø50/ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒			200	●	●	◎	○	○		
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒			200	●	●	◎	○	○		
Double Acting / Low Speed Type	ST$^{S}_{L}$-$^{M}_{B}$O	ø8 / ø12 / ø16	●	●	▒	●	●	●	▒	▒	●	●	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	5	5	150	●	●	◎	○	○	◎	578
		ø20, ø25, ø32, ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	▒	▒	▒	▒	▒	▒			300	●	●	◎	○	○		
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	▒	▒	▒	▒	▒	▒			300	●	●	◎	○	○		
Double Acting, Heavy Duty Scraper Type / Coil Scraper Type	ST$^{S}_{L}$-$^{M}_{B}$G / ST$^{S}_{L}$-$^{M}_{B}$G1	ø20, ø25, ø32, ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	5	5	400	●	●	◎	○	○	◎	582
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	◎	○	○		
Double Acting / Coolant Proof Type	ST$^{S}_{L}$-$^{M}_{B}$G2 / ST$^{S}_{L}$-$^{M}_{B}$G3	ø20, ø25, ø32, ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	5	5	400	●	●	▒	▒	○	◎	602
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	▒	▒	○		
Double Acting / Spatter Adhesion Prevention Type	ST$^{S}_{L}$-$^{M}_{B}$G4	ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	5	5	400	●	●	◎	○	○	◎	618
		ø80	▒	▒	●	▒	▒	●	●	●	▒	●	●	●	●	●	●	●	●	●	●	●	●	●	●			400	●	●	◎	○	○		
Double acting / valve equipped	ST$^{S}_{L}$-$^{M}_{B}$V	ø20, ø25, ø32, ø40, ø50, ø63	▒	▒	●	▒	▒	●	▒	▒	●	●	●	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	5	5	100	●	●	◎	▒	▒	◎	628

*1: Ball bearing (B) only.
*2: For min. stroke and below, select the basic type since there is no cushion effect.
*3: Ball bearing (B) is not available for ø20 / ø25.

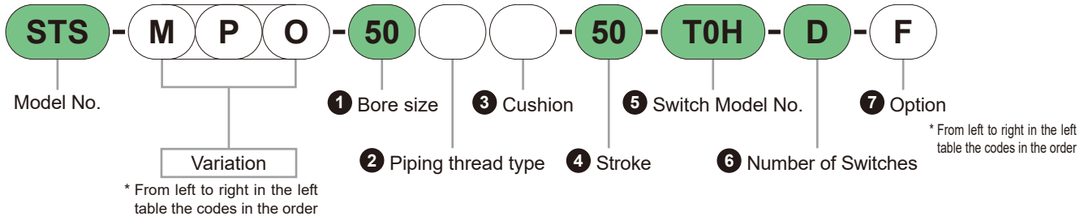
Combinability table of variations and option items (Plain bearing)

● Mark: Standard
◎ Mark: Option
○ Mark: Custom Products
△ Mark: Manufacturable depending on conditions (Please consult)
× Mark: Not manufacturable

Category		Category	Variation																		Piping Screw		Cushion	Option		
			Double acting basic (metal bush)	Stroke Adjustable Type (Push)	Drop prevention type	With solenoid valve	With Air Cushion	Heat resistant type (120°C)	Packing Material: Fluoro Rubber	Low Speed Type	Heavy-Duty Scraper Type	Coil Scraper Type	Coolant Proof Scraper Type (NBR)	Coolant Proof Scraper Type (FKM)	Sputter adhesion prevention type	Low speed type	2-color display/off-delay/T1/T8 With switch *7	NPT ø32 or more	G ø32 or more	With Rubber Air Cushion	Corrosion proof (aluminum end plate)	Corrosion proof (SUS end plate)	Plate material specification Steel
		Code	M	P	Q	V	C	T	T2	O	G	G1	G2	G3	G4	F	L1	N	G	C	M	M1	F
Variation	Double acting basic (metal bush)	M		●	●	●	●	●	●	●	●	●	●	●	●	●	◎	○	○	●	◎	◎	◎
	Stroke Adjustable Type (Push)	P			*2	○	○	×	○	○	*6	*6	×	×	*6	△	◎	○	○	○	△	△	◎
	Drop prevention type	Q				×	×	×	×	×	△	△	△	△	△	×	◎	○	○	×	○	○	◎
	With solenoid valve	V					×	×	×	○	×	×	×	×	×	×	◎	○	○	○	△	△	◎
	With Air Cushion	C						*1	*1	○	○	○	○	○	○	×	◎	○	○	×	○	○	◎
	Heat resistance (120°)	T							×	×	×	○	×	×	×	×	×	○	○	×	×	×	◎
	Packing Material: Fluoro Rubber	T2								×	×	○	×	*3	×	×	◎	○	○	×	○	○	◎
	Low Speed Type	O									×	×	×	×	×	×	◎	○	○	○	○	○	◎
	Heavy-Duty Scraper Type	G										×	×	×	×	×	◎	○	○	○	○	○	◎
	Coil Scraper Type	G1											×	×	*4	×	◎	○	○	○	○	○	◎
	Coolant Proof Scraper Type (NBR)	G2												×	×	×	*5	○	○	○	*3	○	×
	Coolant Proof Scraper Type (FKM)	G3													×	×	*5	○	○	×	*3	○	×
	Sputter adhesion prevention type	G4														×	◎	○	○	○	○	○	◎
	Low speed type	F															◎	○	○	○	○	○	◎
	2-color display/off-delay with T1/T8 switch *7	L1																○	○	◎	◎	◎	◎
Piping thread	NPT ø32 or higher	N																	×	○	○	○	○
	G ø32 or more	G																		○	○	○	○
Cushion	With Rubber Air Cushion	C																			○	○	○
Option	Corrosion proof (aluminum end plate)	M																				×	×
	Corrosion proof (SUS end plate)	M1																					×
	Plate material specification Steel	F																					
Accessories	Cylinder Switch	Separately Shown	◎	◎	◎	◎	◎	×	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

*1: Only ø50 to 100 is available.
*2: Available forhead side position locking only.
*3: For the combination ofG3 and T2, select G3 for fluoro rubber cylinder interior packing. (T2 code is not required.)
Similarly, G2 and G3 include the specifications of M (corrosion proof). (The "M" code is not necessary.)
*4: G4 includes coil scraper.
*5: L1 specifications. (L1 code is not required.)
*6: Shock absorber is provided as standard.
*7: Excluding T2W and T3W.

[Model Number Notation Example]



Note) For the 2-color display, T1H/V, T8H/V and off-delay of ø40 and over,
insert "L1" with "-" between the variation model No. and bore size. (Excluding T2W, T3W)
(Example) STS-MPO-**L1**-50-50-T2JH-D-F

ø80,ø100 cannot be mounted when the T1H/V, T8H/V, off-delay, AC magnetic field proof switch is retrofitted on a previously purchased standard product.
In this case, order the model No. with "L1" inserted between Items ❶ and ❷.
(Example) STS-B-**L1**-80-50-F

Model No. : Guided cylinder, short stroke
● Variation : Metal bush bearing, stroke adjustable, low speed
❶ Bore size : ø50 mm
❷ Port thread : Rc Thread
❸ Cushion : With Rubber Cushion
❹ Stroke : 50 mm
❺ Switch model No. : Solid State TOH Switch, Lead Wire 1 m
❻ Switch quantity : With 2 pcs.
❼ 7 Option : End plate material: Steel

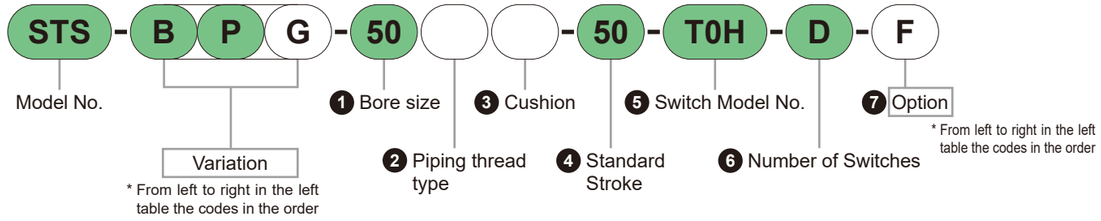
Combinability table of variations and option items (Rolling bearing)

● Mark: Standard
◎ Mark: Option
○ Mark: Custom Products
△ Mark: Manufacturable depending on conditions (Please consult)
× Mark: Not manufacturable

Category		Category	Variation																		Piping thread		Cushion	Option		
			Double acting basic (bearing bush type)	Stroke Adjustable Type (Push)	Drop prevention type	With solenoid valve	With Air Cushion	Heat resistance (120°C) *2	Packing Material: Fluoro Rubber	Low Speed Type	Heavy-Duty Scraper Type	Coil Scraper Type	Coolant Proof Scraper Type (NBR)	Coolant Proof Scraper Type (FKM)	Sputter adhesion prevention type	Low speed type	2-color display/off-delay/T1/T8 With switch *7	NPT ø32 or more	G ø32 or more	With Rubber Air Cushion	Corrosion proof (aluminum end plate)	Corrosion proof (SUS end plate)	Plate material specification Steel
		Code	B	P	Q	V	C	T	T2	O	G	G1	G2	G3	G4	F	L1	N	G	C	M	M1	F
Variation	Double acting basic (bearing bush type)	B	⧹	●	●	●	●	●	●	●	●	●	●	●	●	●	◎	○	○	●	◎	◎	◎
	Stroke Adjustable Type (Push)	P		⧹	*2	○	○	×	○	○	*6	*6	×	×	*6	△	◎	○	○	○	△	△	◎
	With Fall Prevention	Q			⧹	×	×	×	×	×	△	△	△	△	△	×	◎	○	○	×	○	○	◎
	With solenoid valve	V				⧹	×	×	×	○	×	×	×	×	×	×	◎	○	○	○	△	△	◎
	With Air Cushion	C					⧹	*1	*1	○	○	○	○	○	○	×	◎	○	○	×	○	○	◎
	Heat resistance (120°) *2	T						⧹	×	×	×	○	×	×	×	×	×	○	○	×	○	○	◎
	Packing Material: Fluoro Rubber	T2							⧹	×	×	○	×	*3	×	×	◎	○	○	×	○	○	◎
	Low Speed Type	O								⧹	×	×	×	×	×	×	◎	○	○	○	○	○	◎
	Heavy-Duty Scraper Type	G									⧹	×	×	×	×	×	◎	○	○	○	○	○	◎
	Coil Scraper Type	G1										⧹	×	×	*4	×	◎	○	○	○	○	○	◎
	Coolant Proof Scraper Type (NBR)	G2											⧹	×	×	*5	○	○	○	*3	○	×
	Coolant Proof Scraper Type (FKM)	G3												⧹	×	*5	○	○	×	*3	○	×
	Sputter adhesion prevention type	G4													⧹	×	◎	○	○	○	○	○	◎
	Low speed type	F														⧹	◎	○	○	○	○	○	◎
	2-color display/off-delay with T1/T8 switch *7	L1															⧹	○	○	◎	◎	◎	◎
Piping thread	NPT ø32 or higher	N																⧹	×	○	○	○	○
	G ø32 or more	G																	⧹	○	○	○	○
Cushion	With Rubber Air Cushion	C																		⧹	○	○	○
Option	Corrosion proof (aluminum end plate)	M																			⧹	×	×
	Corrosion proof (SUS end plate)	M1																				⧹	×
	Plate material specification Steel	F																					⧹
Accessories	Cylinder Switch	Separately Shown	◎	◎	◎	◎	◎	×	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

*1: Onlyø50 to 100 is available.
*2: Available for head side position locking only.
*3: For the combination ofG3 and T2, select G3 for fluoro rubber cylinder interior packing. (T2 code is not required.)
Similarly, G2 and G3 include the specifications of M (corrosion proof). (The "M" code is not necessary.)
*4: G4 includes coil scraper.
*5: L1 specifications. (L1 code is not required.)
*6: Shock absorber is provided as standard.
*7: Excluding T2W and T3W.

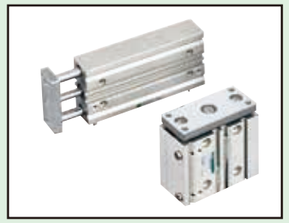
[Model Number Notation Example]



Note) For ø40 and over 2-color display, T1H/V, T8H/V and off-delay, insert "L1" with "-" between the variation model No. and bore size. (Excluding T2W, T3W)
(Example) STS-B-**L1**-63-50-T1H-D-F

ø80,ø100 cannot be mounted when the T1H/V, T8H/V, off-delay, AC magnetic field proof switch is retrofitted on a previously purchased standard product. In this case, order the model No. with "L1" inserted between Items ❶ and ❷.
(Example) STS-B-**L1**-80-50-F

Model No. : Guided cylinder/short stroke
● Variation : Ball bearing, stroke adjustable, rubber scraper
❶ Bore size : ø50 mm
❷ Port thread : Rc Thread
❸ Cushion : With Rubber Cushion
❹ Stroke : 50 mm
❺ Switch model No. : Solid State TOH Switch, Lead Wire 1 m
❻ Switch quantity : With 2 pcs.
❼ Option : End plate material: Steel



Guided cylinder Double acting, Single rod type

STS / STL-$^{M}_{B}$ Series

● Bore size: ø8/ø12/ø16/ø20/ø25/ø32
ø40, ø50, ø63, ø80, ø100

Circuit Diagram Symbol

RoHS

Model No. Notation Method

●Short stroke

Without switch Note1)
(Built-in magnet for switch)

STS - M — 8 □ - 10 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STS - M — 8 □ - 10 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color display, T1H/V, T8H/V, With off-delay switch
(Built-in magnet for switch) (ø40 or more)

STS - M - L1 - 40 □ - 10 - T1H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

Long stroke

Without switch Note1)
(Built-in magnet for switch)

STL - M — 8 □ - 50 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STL - M — 8 □ - 50 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color display, T1H/V, T8H/V, With off-delay switch
(Built-in magnet for switch) (ø40 or more)

STL - M - L1 - 40 □ - 50 - T1H - R - F
Model No. ❶ Bearing type ❷ Bore size ❸ Piping thread type ❹ Stroke ❺ Switch Model No. ❻ Number of Switches ❼ Option

Note1) For ø80,ø100, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
8	ø8
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100 (customized product)

❸ Piping thread type

Code	Content
Blank	M5 (ø8 to ø25)
	Rc thread (ø32 to ø100)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❹ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size										
			ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
STS	Standard Stroke	10	●	●	●								
		20	●	●	●								
		25				●	●	●	●	●	●	●	●
		30	●	●	●								
		40	●	●	●								
		50	●	●	●	●	●	●	●	●	●	●	●
		75										●	●
		100										●	●
	Intermediate Stroke	*1 *2	Every 5 mm										

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

Series	Stroke (mm)		Applicable Bore Size										
			ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
STL	Standard Stroke	50	●	●	●	●	●	●	●	●	●		
		75	●	●	●	●	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●	●	●	●	●
		225				●	●	●	●	●	●	●	
		250				●	●	●	●	●	●	●	
		275				●	●	●	●	●	●	●	
		300				●	●	●	●	●	●	●	
		325				●	●	●	●	●	●	●	
		350				●	●	●	●	●	●	●	
		375				●	●	●	●	●	●	●	
		400				●	●	●	●	●	●	●	
	Intermediate Stroke	*1 *2	Every 5 mm										

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Water Resistance Improved	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color AC For Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	*4

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: ø8 to ø16 cannot be equipped with T8H/V.
*5: For the 2-color display, T1H/V, T8H/V and off-delay for ø40 and over, insert "L1" with "-" between and . (However, T2WH/V and T3WH/V are excluded.)
(Example) STS-M-L1-63-50-T1H3-D-F
For ø80,ø100, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased standard product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.
(Example) STS-M-L1-80-50-F
*6: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

	Code	Content
	Blank	1 m (Standard)
	3	3 m (Option)
	5	5 m (Option)
*7	W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*7: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

❼ Option

	Code	Content
	F	End plate material: Steel
*1	M	Corrosion resistant type (Piston rod, guide rod material: SUS)
*1	M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS)

*1: Refer to P. 502 for material details.

For combinations of variations and options, please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

Rechargeable Battery Compatible Specification
(Catalog No. CC-1226AA)
● Design compatible with rechargeable battery manufacturing process
STS/L-$^{M}_{B}$ - ····· - P4□
* Please contact us for details.

High Durability Components HP Series
(Catalog No. CC-1421AA)
● Long-life actuator that contributes to productivity improvement with stable operation
STS/L-$^{M}_{B}$ - ····· - HP□

About Custom Product Specifications

For details, see P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)
STS/L - $^{M}_{B}$ - ····· - O

Switch Single Unit Model No. Notation Method

SW - T0V
❺ Switch Model No.

Specifications

Item		STS-M/B STL-M/B									
Bore Size	mm	ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Actuation method		Double Acting Type										
Operating Fluid		Compressed Air										
Max. Working Pressure MPa		1.0										
Min. Operating Pressure MPa		0.15					0.1					
Proof Pressure	MPa	1.6										
Ambient Temperature °C		-10 to 60 (No freezing)										
Port Size		M5					Rc1/8		Rc1/4		Rc3/8	
Stroke tolerance	mm	+2.0 0										
Operating Piston Speed mm/s		50 to 500								50 to 300		
Cushion		With Rubber Cushion										
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)										
Allowable Absorbed Energy J		0.029	0.056	0.088	0.157	0.157	0.401	0.627	0.980	1.560	2.510	3.92

Stroke

● Short stroke STS

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)	
				T2WL	Other switches
ø8	10, 20, 30 40, 50	50	5	25	5 *1
ø12				15	
ø16				25	
ø20	25, 50			5 *1	
ø25					
ø32					
ø40					
ø50					
ø63					
ø80	25, 50, 75, 100	100			
ø100					

*1: This is for the case with 1 or 2 switches.

● Long stroke STL

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø8	50, 75, 100 125, 150 175, 200	200	50	50 *2
ø12				
ø16				
ø20	50, 75, 100 125, 150, 175 200, 225, 250 275, 300, 325 350, 375, 400	400	30	30 *2
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375, 400		55	55 *2
ø100	75, 100, 125, 150, 175, 200	200		

*1: Intermediate strokes can be manufactured in 5 mm increments.
However, the overall length dimension will be the same as the standard stroke above it.
*2: This is for the case with 1 or 2 switches.

Theoretical Thrust Table

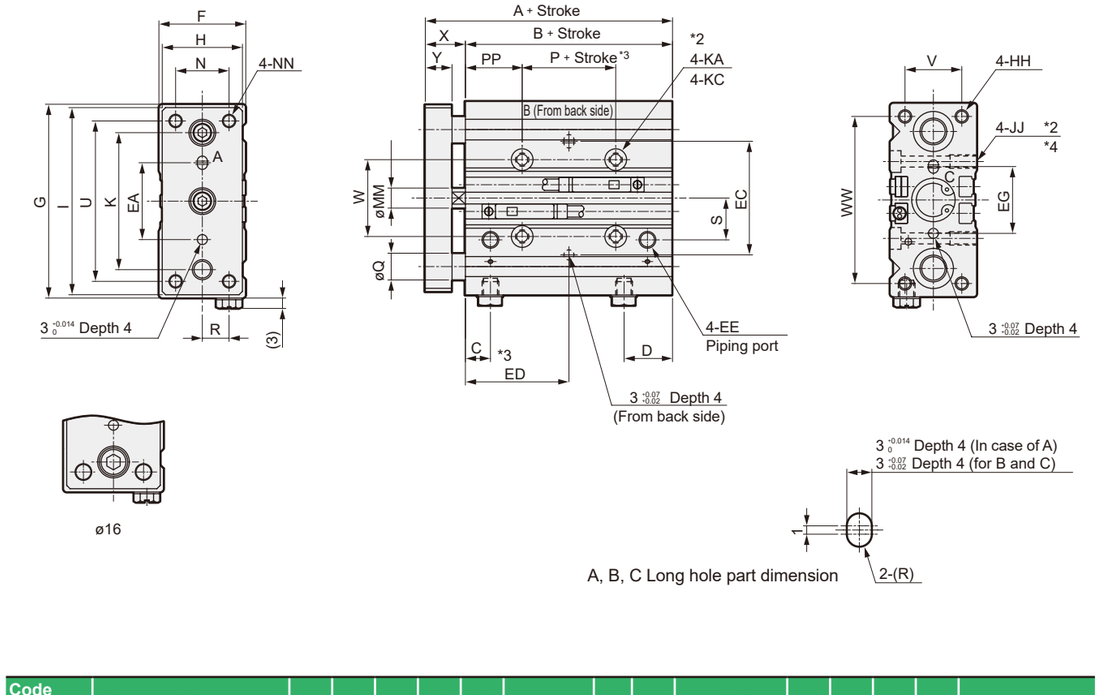
(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø8	Push	–	7.54	10.1	15.1	20.1	25.1	30.2	35.2	40.2	45.2	50.3
	Pull	–	5.65	7.54	11.3	15.1	18.8	22.6	26.4	30.2	33.9	37.7
ø12	Push	–	17.0	22.6	33.9	45.2	56.5	67.9	79.2	90.5	$1.02x10^2$	$1.13x10^2$
	Pull	–	12.7	17.0	25.4	33.9	42.4	50.9	59.4	67.9	76.3	84.8
ø16	Push	–	30.2	40.2	60.3	80.4	1.01×10^2	1.21×10^2	1.41×10^2	1.61×10^2	1.81×10^2	2.01×10^2
	Pull	–	22.6	30.2	45.2	60.3	75.4	90.5	1.06×10^2	1.21×10^2	1.36×10^2	1.51×10^2
ø20	Push	–	47.1	62.8	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	2.51×10^2	2.83×10^2	3.14×10^2
	Pull	–	35.3	47.1	70.7	94.2	1.18×10^2	1.41×10^2	1.65×10^2	1.88×10^2	2.12×10^2	2.36×10^2
ø25	Push	–	73.6	98.2	1.47×10^2	1.96×10^2	$2.45X10^2$	2.95×10^2	3.44×10^2	3.93×10^2	4.42×10^2	4.91×10^2
	Pull	–	56.7	75.6	$1.13x10^2$	1.51×10^2	$1.89X10^2$	2.27×10^2	2.64×10^2	3.02×10^2	3.40×10^2	3.78×10^2
ø32	Push	80.4	1.21×10^2	1.61×10^2	2.41×10^2	$3.22X10^2$	4.02×10^2	4.83×10^2	5.63×10^2	6.43×10^2	7.24×10^2	8.04×10^2
	Pull	60.3	90.5	1.21×10^2	1.81×10^2	2.41×10^2	3.02×10^2	3.62×10^2	4.22×10^2	4.83×10^2	5.43×10^2	6.03×10^2
ø40	Push	1.26×10^2	1.88×10^2	2.51×10^2	3.77×10^2	5.03×10^2	6.28×10^2	7.54×10^2	8.80×10^2	1.01×10^3	1.13×10^3	1.26×10^3
	Pull	1.06×10^2	1.58×10^2	2.11×10^2	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
ø50	Push	1.96×10^2	2.95×10^2	3.93×10^2	5.89×10^2	7.85×10^2	9.82×10^2	1.18×10^3	1.37×10^3	1.57×10^3	1.77×10^3	1.96×10^3
	Pull	1.65×10^2	2.47×10^2	3.30×10^2	4.95×10^2	6.60×10^2	8.25×10^2	9.90×10^2	1.15×10^3	1.32×10^3	1.48×10^3	1.65×10^3
ø63	Push	3.12×10^2	4.68×10^2	6.23×10^2	9.35×10^2	1.25×10^3	1.56×10^3	1.87×10^3	2.18×10^3	2.49×10^3	2.81×10^3	3.12×10^3
	Pull	2.80×10^2	4.20×10^2	5.61×10^2	8.41×10^2	1.12×10^3	1.40×10^3	1.68×10^3	1.96×10^3	2.24×10^3	2.52×10^3	2.80×10^3
ø80	Push	5.03×10^2	7.54×10^2	1.01×10^3	1.51×10^3	2.01×10^3	2.51×10^3	3.02×10^3	3.52×10^3	4.02×10^3	4.52×10^3	5.03×10^3
	Pull	4.54×10^2	6.80×10^2	9.07×10^2	1.36×10^3	1.81×10^3	2.27×10^3	2.72×10^3	3.17×10^3	3.63×10^3	4.08×10^3	4.54×10^3
ø100	Push	7.85×10^2	1.18×10^3	1.57×10^3	2.36×10^3	3.14×10^3	3.93×10^3	4.71×10^3	5.50×10^3	6.28×10^3	7.07×10^3	7.85×10^3
	Pull	7.15×10^2	1.07×10^3	1.43×10^3	2.14×10^3	2.86×10^3	3.57×10^3	4.29×10^3	5.00×10^3	5.72×10^3	6.43×10^3	7.15×10^3

For cylinder weight, please refer to P. 642 to 645.

External dimensions diagram (Bore size: ø8, ø12, ø16)

● Standard single rod STS-M/B
● Corrosion proof STS-M/B-M / M1



Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	DD	EE	EA	EC	ED *3	EG	F	G	H	HH
ø8	10, 20, 30 40, 50	40	28	11	14.5	6.5	M5	20	25	15 + Stroke/2	20	24	53	22	M4 depth 8
ø12		44	32	7.5	14.5	7.5	M5	23	34	16 + Stroke/2	20	26	58	24	M4 depth 8
ø16		45	32	7.5	17	7.5	M5	24	36	16 + Stroke/2	24	30	64	28	M5 Depth 10

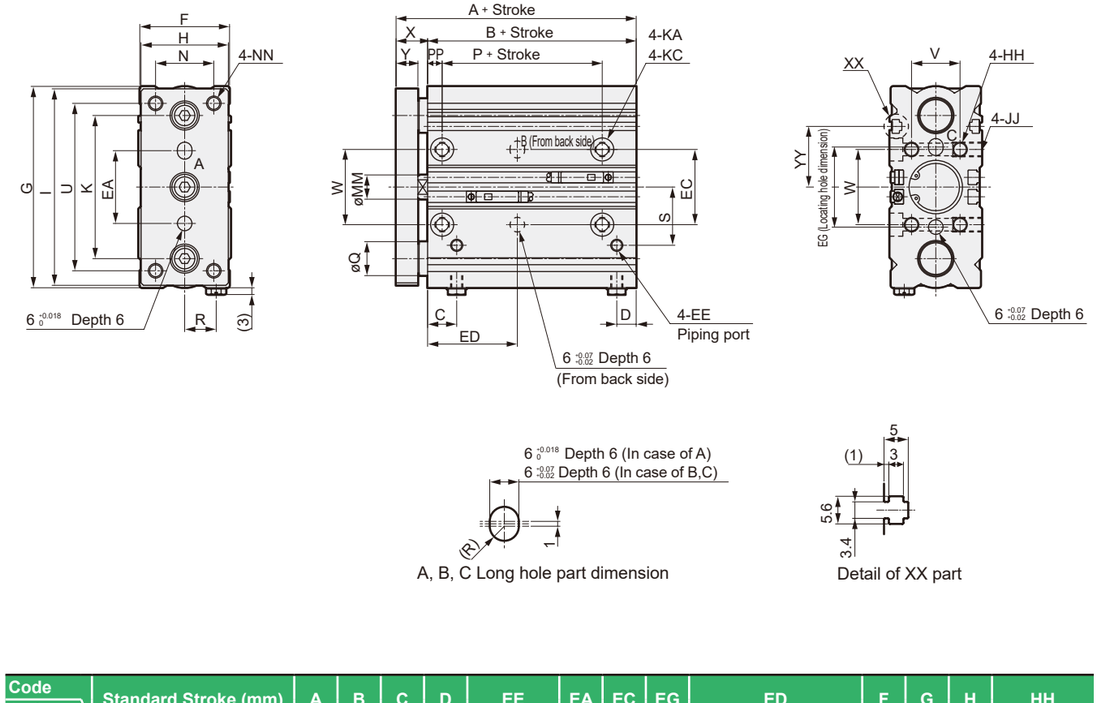
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø8	51	M4 Depth 10	40	3.3 Through	6.5 Counterbore depth 3.3	4	15	M4 Through	-10	20	6	5	7.5
ø12	56	M4 Depth 10	41	3.3 Through	6.5 Counterbore depth 3.3	6	16	M4 Through	-2	17	8	6	8
ø16	62	M5 Depth 10	46	4.3 Through	8 Counterbore depth 4.4	8	18	M5 Through	-2	17	10	8	10

Code / Bore Size (mm)	S	U	V	W	WW	X	Y
ø8	13.5	43	16	25	45	12 0 -1.5	8
ø12	12.5	48	17	23	50	12 0 -1.5	8
ø16	13	52	22	25	54	13 0 -1.5	9

*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.
*2: STS-M/B-8-10 (10mm stroke) is 2-KA, 2-KC, 2-JJ (two mounting holes).
*3: ED is 5 for 3: STS-M/B-8-10 (10mm stroke).
*4: STS-M/B-16-10 (10mm stroke) has four JJ dimension M5 screws, as shown in the figure, but the mounting will be two.
***5: For dimensions with each switch, refer to P. 636, 637.**

Outline dimension drawing (bore size: ø20, ø25)

● Standard single rod STS-M/B
● Corrosion proof STS-M/B-M / M1



Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	EE	EA	EC	EG	ED	F	G	H	HH
ø20	25, 50	53	40	12	8	M5	30	31	33	14 + Stroke/2	38	83	36	M6 Depth 12
ø25		54	41	12	9	M5	32	35	37	14.5 + Stroke/2	42	86	38	M6 Depth 12

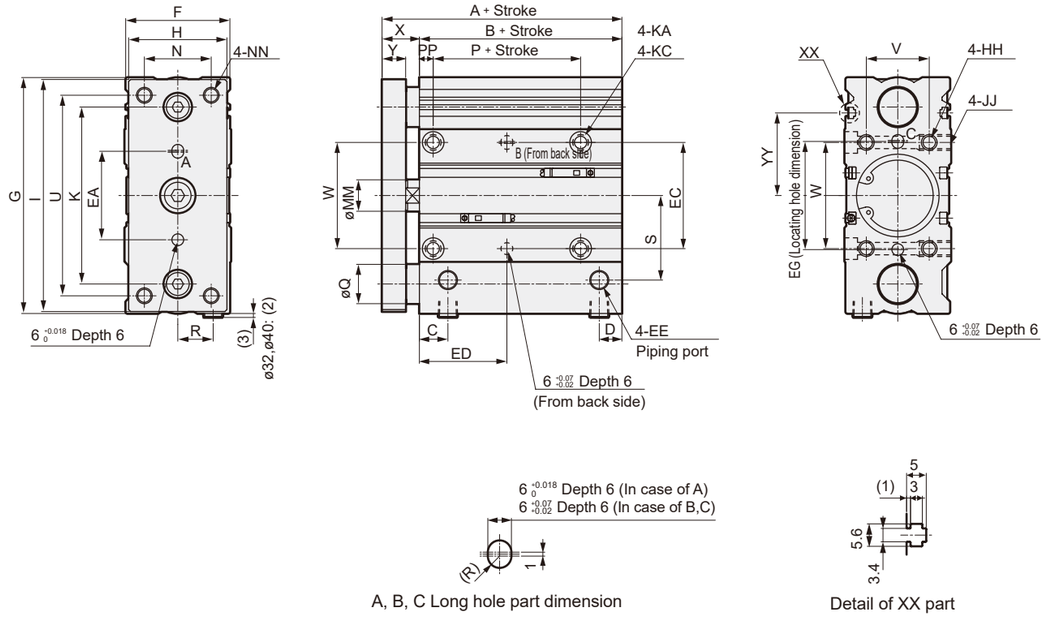
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø20	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	20	6	14	12	13
ø25	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	20	6	14	12	14

Code / Bore Size (mm)	S	U	V	W	X	Y	YY
ø20	24	69	20	31	13 0 -2	9	25
ø25	26	72	24	35	13	9	27

*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.
***2: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

● Standard single rod STS-M/B
● Corrosion proof STS-M/B-M / M1



A, B, C Long hole part dimension

Detail of XX part

Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	EE	EA	EC	EG	ED	F	G	H	HH
ø32	25, 50	68	49	14	10.5	Rc1/8	42	45	46	17.5 + Stroke/2	47	111	45	M8 Depth 16
ø40		72	53	14.5	12	Rc1/8	45	54	55	19.5 + Stroke/2	54	120	50	M8 Depth 16
ø50		77	55	16	12.5	Rc1/4	55	66	69	19.5 + Stroke/2	66	147	64	M10 Depth 20
ø63		83	61	17.5	17.5	Rc1/4	62	79	82	22.5 + Stroke/2	79	162	75	M10 Depth 20

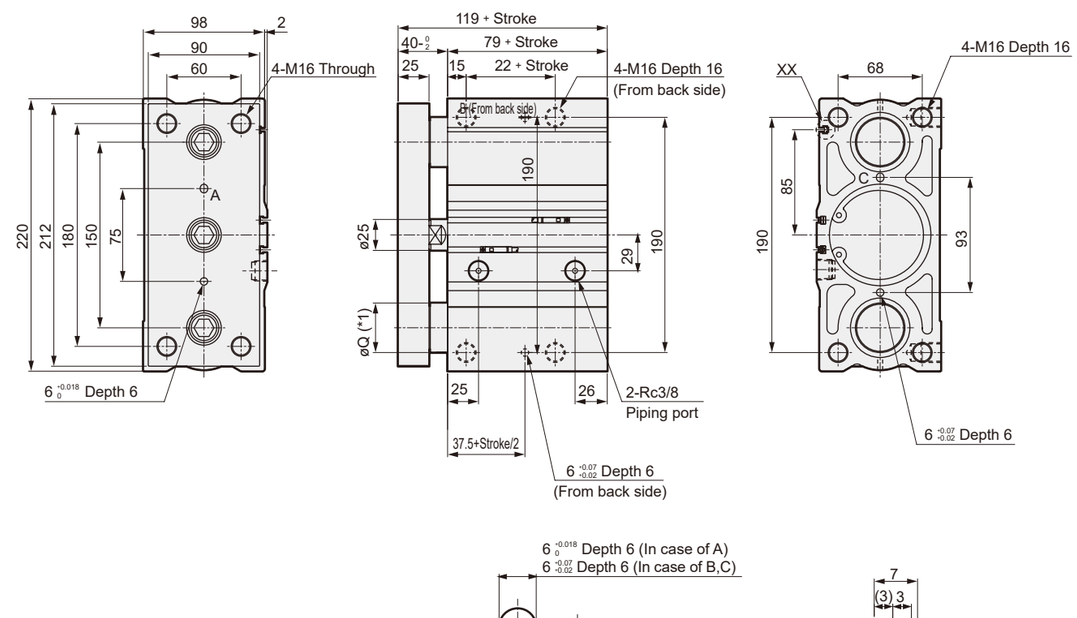
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø32	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	22	7	20	16	16
ø40	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	25	7	20	16	18
ø50	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	26	8	25	20	22
ø63	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	26	8	25	20	26

Code / Bore Size (mm)	S	U	V	W	X	Y	YY
ø32	39	93	25	45	19 0 -2	12	39
ø40	43	102	32	54	19 0 -2	12	42
ø50	49	125	38	66	22 0 -2	16	45
ø63	56	140	50	79	22 0 -2	16	52

*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.
***2: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø80)

● Standard single rod STS-M/B
● Corrosion proof STS-M/B-M / M1



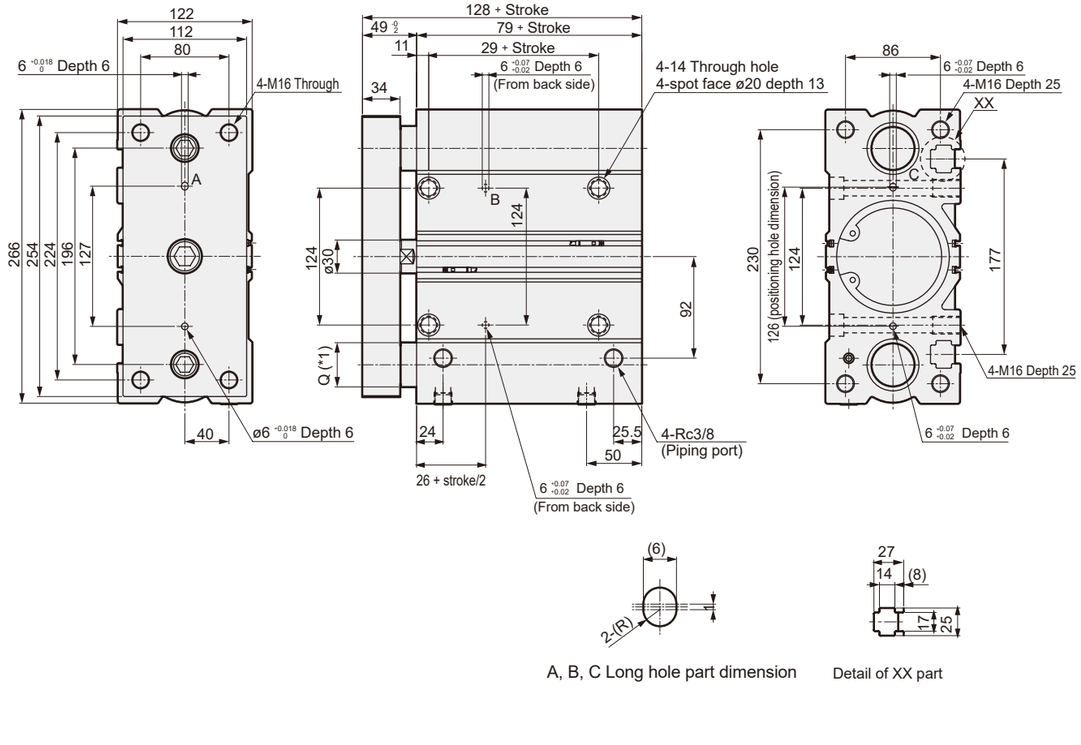
A, B, C Long hole part dimension

Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
*2: When using a custom stroke, the dimensions are the same as the longer standard stroke. The standard strokes of ø80 are 25, 50, 75 and 100 mm.
***3: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø100)

- Standard single rod STS-$^{M}_{B}$
- Corrosion proof STS-$^{M}_{B}$-M / M1

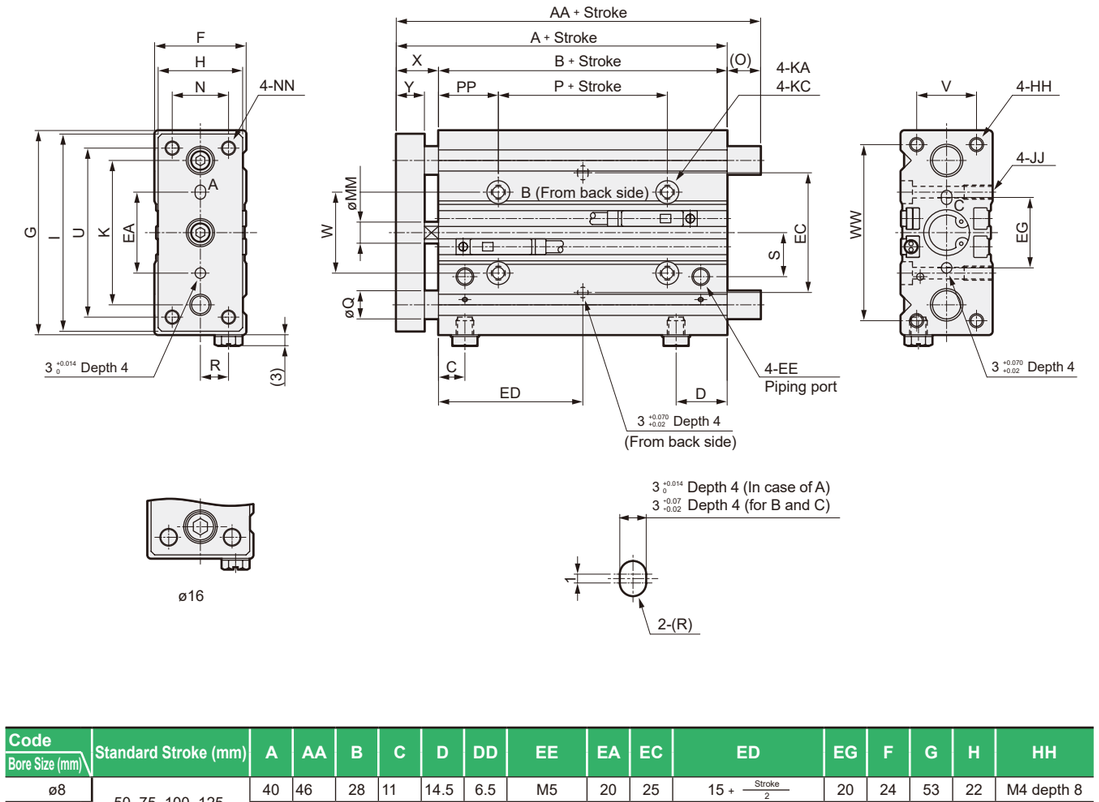


A, B, C Long hole part dimension Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
***2: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø8, ø12, ø16)

- Standard single rod STL-$^{M}_{B}$
- Corrosion proof STL-$^{M}_{B}$-M / M1



Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	DD	EE	EA	EC	ED	EG	F	G	H	HH
ø8	50, 75, 100, 125, 150, 175, 200	40	46	28	11	14.5	6.5	M5	20	25	15 + Stroke/2	20	24	53	22	M4 depth 8
ø12		44	53.5	32	7.5	14.5	7.5	M5	23	34	16 + Stroke/2	20	26	58	24	M4 depth 8
ø16		45	64	32	7.5	17	7.5	M5	24	36	16 + Stroke/2	24	30	64	28	M5 Depth 10

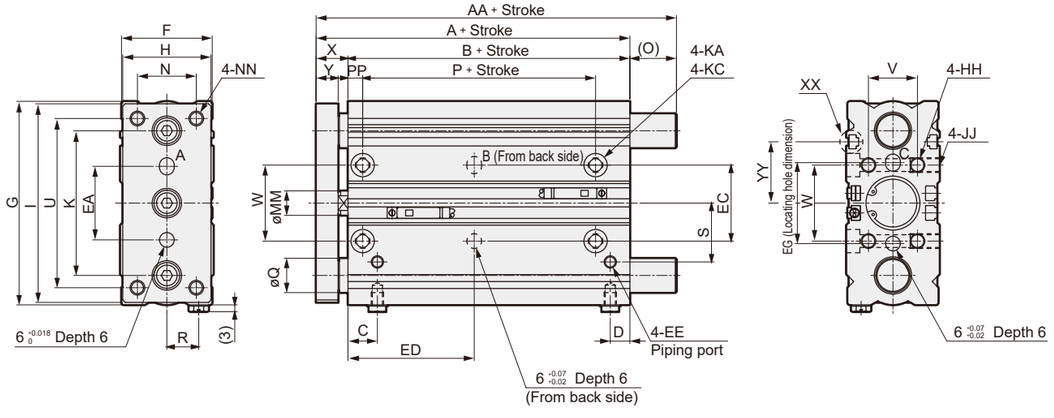
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	O	P	PP	Q STL-M	Q STL-B	R
ø8	51	M4 Depth 10	40	3.3 Through	6.5 Counterbore depth 3.3	4	15	M4 Through	6	-10	20	6	5	7.5
ø12	56	M4 Depth 10	41	3.3 Through	6.5 Counterbore depth 3.3	6	16	M4 Through	9.5	-2	17	8	6	8
ø16	62	M5 Depth 10	46	4.3 Through	8 Counterbore depth 4.4	8	18	M5 Through	19	-2	17	10	8	10

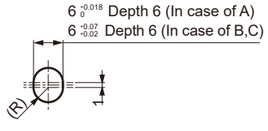
Code / Bore Size (mm)	S	U	V	W	WW	X	Y
ø8	13.5	43	16	25	45	12 0 -1.5	8
ø12	12.5	48	17	23	50	12 0 -1.5	8
ø16	13	52	22	25	54	13 0 -1.5	9

*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.
***2: For dimensions with each switch, refer to P. 636, 637.**

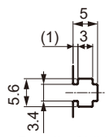
Outline dimension drawing (bore size: ø20, ø25)

- Standard single rod STL-M/B
- Corrosion proof STL-M/B-M / M1





A, B, C Long hole part dimension



Detail of XX part

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	EG	ED	F	G	H
ø20	50, 75, 100, 125, 150, 175, 200, 225,	53	72	40	12	8	M5	30	31	33	14.0 + Stroke/2	38	83	36
ø25	250, 275, 300, 325, 350, 375, 400	54	72	41	12	9	M5	32	35	37	14.5 + Stroke/2	42	86	38

Code / Bore Size (mm)	HH	I	JJ	K	KA	KC	MM	N	NN	O	P	PP	Q STL-M	Q STL-B	R
ø20	M6 Depth 12	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	19	20	6	14	12	13
ø25	M6 Depth 12	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	18	20	6	14	12	14

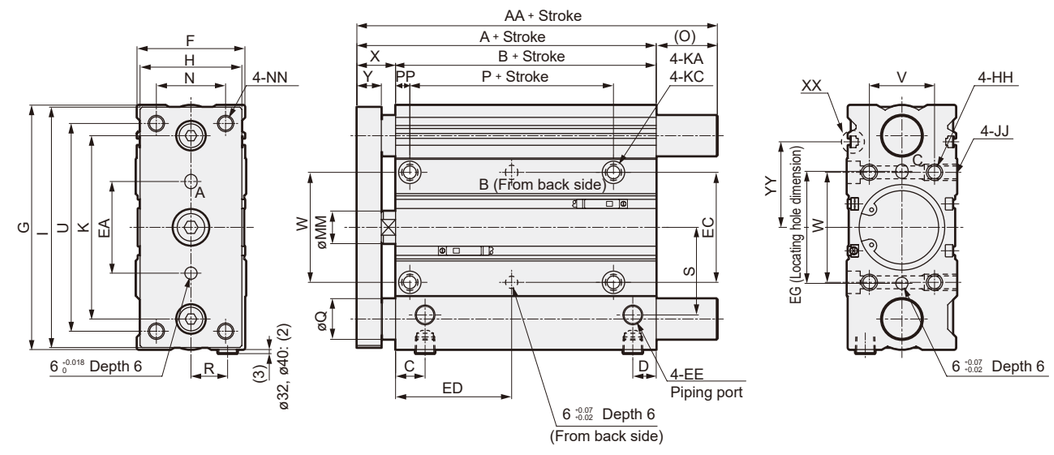
Code / Bore Size (mm)	S	U	V	W	X	Y	YY
ø20	24	69	20	31	13 0 -2	9	25
ø25	26	72	24	35	13 0 -2	9	27

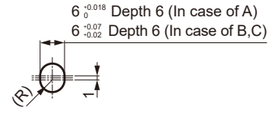
*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

***2: For dimensions with each switch, refer to P. 636, 637.**

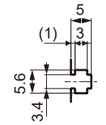
External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

- Standard single rod STL-M/B
- Corrosion proof STL-M/B-M / M1





A, B, C Long hole part dimension



Detail of XX part

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	EG	ED	F	G	H	HH
ø32	50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400	68	102	49	14	10.5	Rc1/8	42	45	46	17.5 + Stroke/2	47	111	45	M8 Depth 16
ø40		72	102	53	14.5	12	Rc1/8	45	54	55	19.5 + Stroke/2	54	120	50	M8 Depth 16
ø50		77	125	55	16	12.5	Rc1/4	55	66	69	19.5 + Stroke/2	66	147	64	M10 Depth 20
ø63		83	125	61	17.5	17.5	Rc1/4	62	79	82	22.5 + Stroke/2	79	162	75	M10 Depth 20

Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	O	P	PP	Q STL-M	Q STL-B	R	S	U	V	W
ø32	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	34	22	7	20	16	16	39	93	25	45
ø40	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	30	25	7	20	16	18	43	102	32	54
ø50	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	48	26	8	25	20	22	49	125	38	66
ø63	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	42	26	8	25	20	26	56	140	50	79

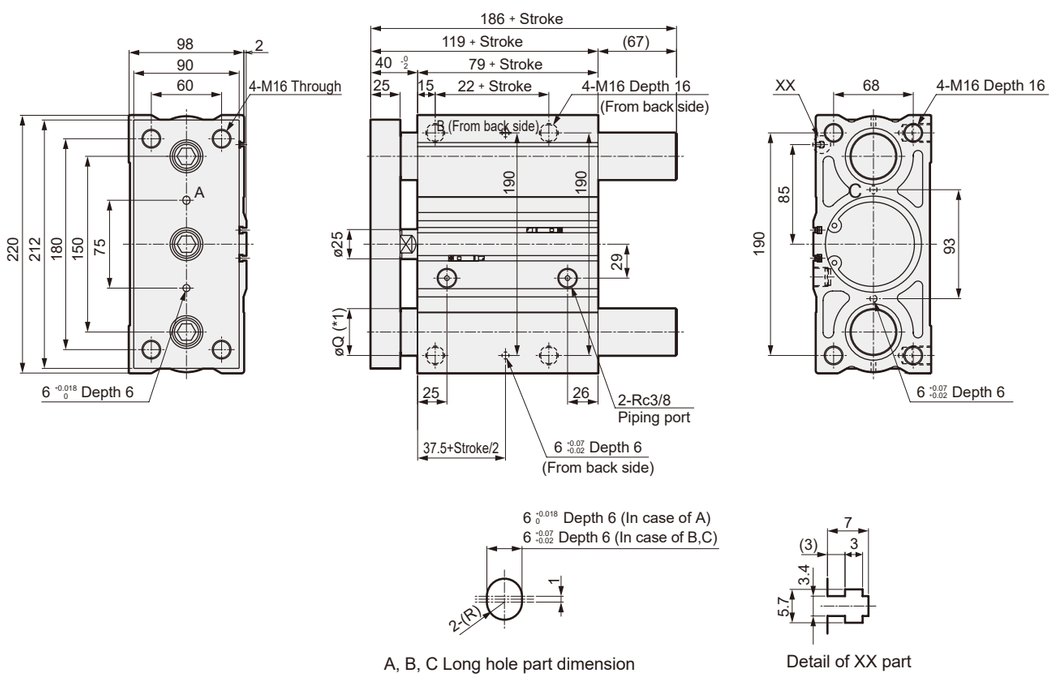
Code / Bore Size (mm)	X	Y	YY
ø32	19 0 -2	12	39
ø40	19 0 -2	12	42
ø50	22 0 -2	16	45
ø63	22 0 -2	16	52

*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

***2: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø80)

● Standard single rod STL-M/B
● Corrosion proof STL-M/B-M / M1



A, B, C Long hole part dimension

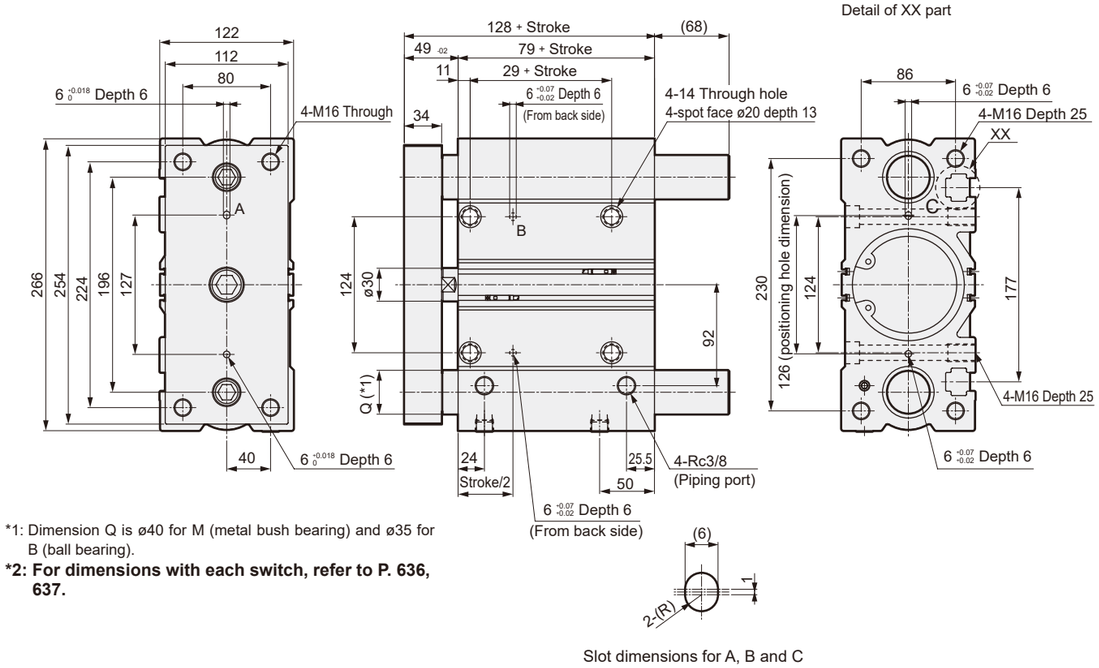
Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
*2: When using a custom stroke, the dimensions are the same as the longer standard stroke.
The standard stroke of ø80 can be selected from 75 to 400 mm in 25 mm increments.
***3: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø100)

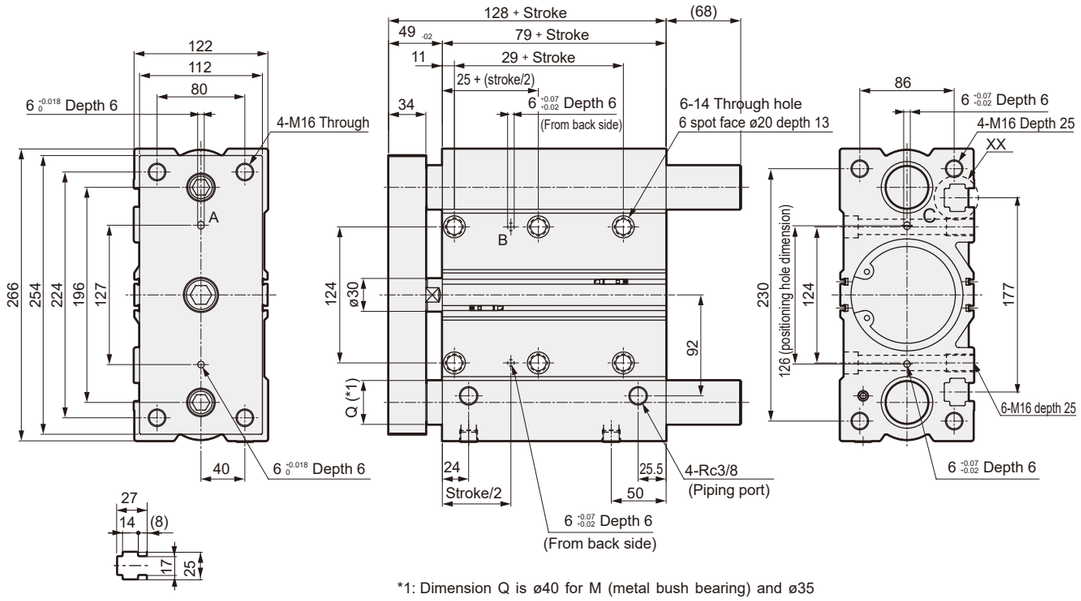
● Standard single rod STL-M/B
● Corrosion proof STL-M/B-M / M1

[100 strokes or less]



Slot dimensions for A, B and C

[125 strokes or more]



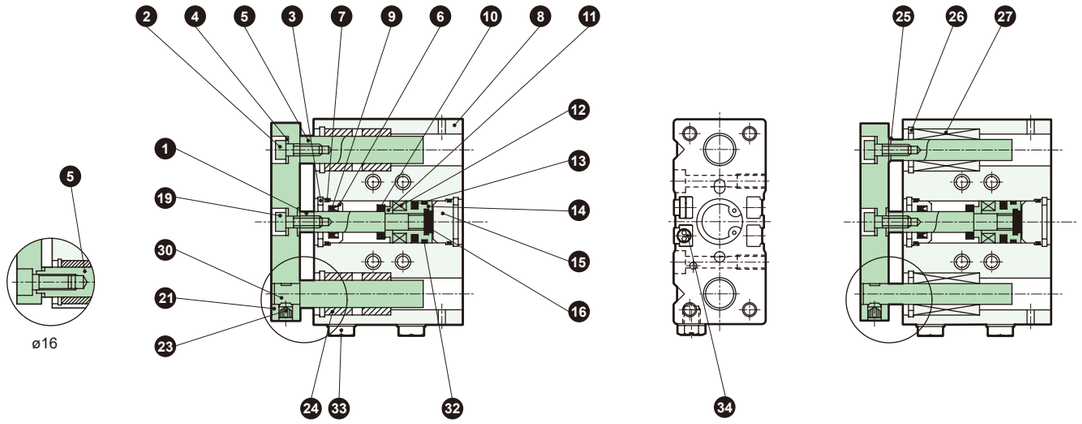
*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
***2: For dimensions with each switch, refer to P. 636, 637.**

Internal structure diagram / Material (Bore size: ø8 to ø63)

● Double acting / standard single rod

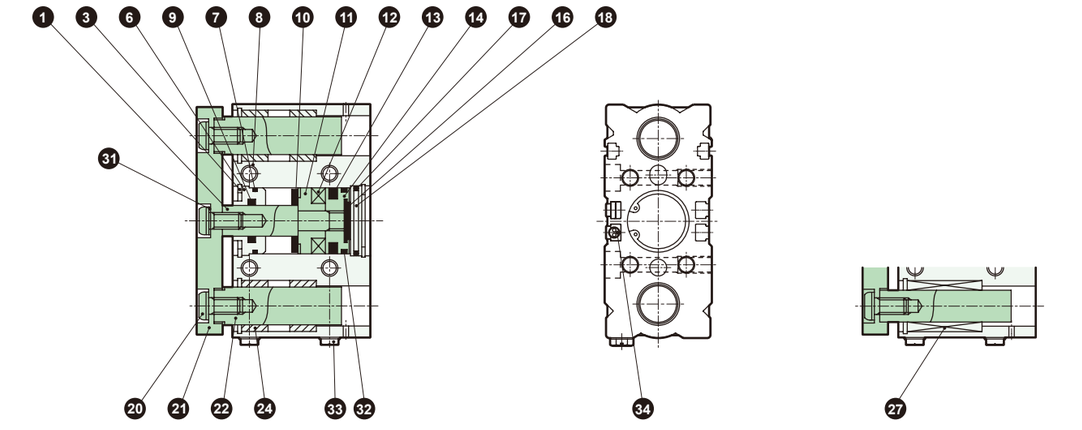
STS-M/B

ø8, ø12, ø16



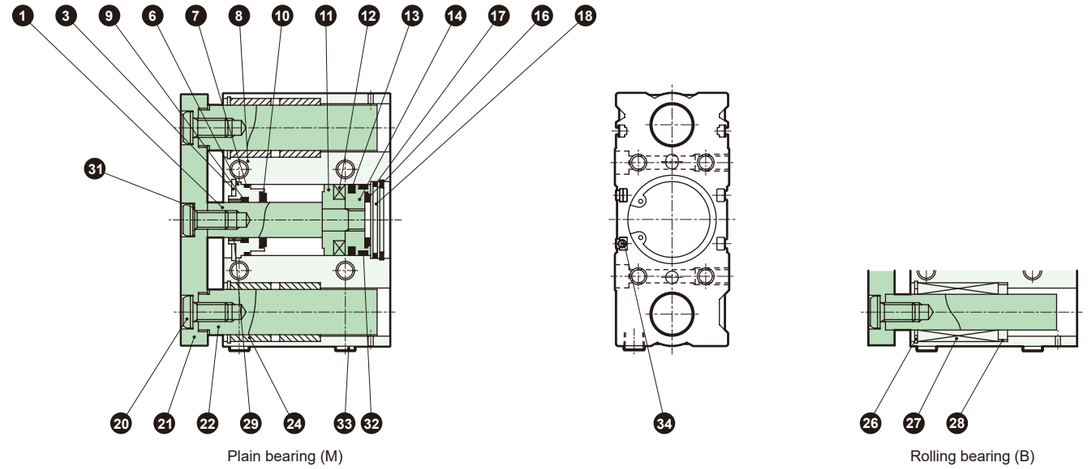
Plain bearing (M) | Rolling bearing (B)

ø20, ø25



Plain bearing (M) | Rolling bearing (B)

ø32, ø40, ø50, ø63



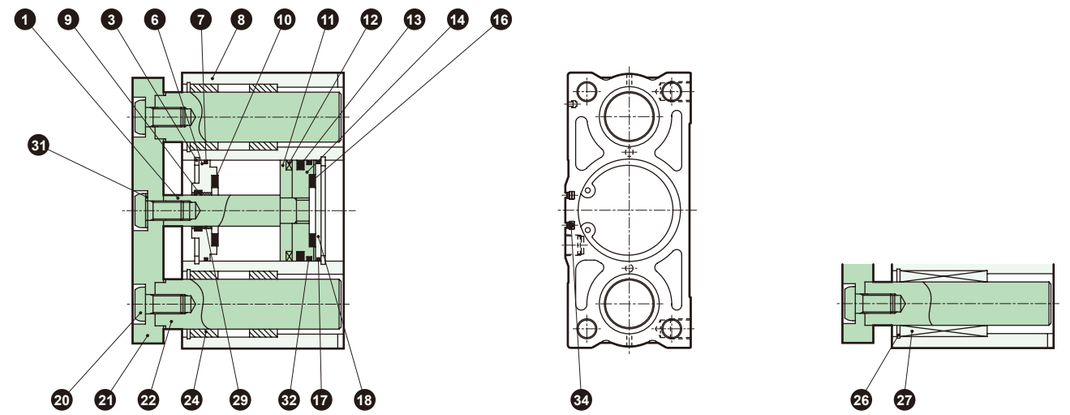
Plain bearing (M) | Rolling bearing (B)

Internal structure diagram / Material (Bore size: ø80)

● Double acting/standard single rod

STS-M/B

ø80



Plain bearing (M) | Rolling bearing (B)

Part No.	Part Name		Material	Remarks
1	Piston Rod		ø8 to ø25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate
3	C-type retaining ring		Steel	Zinc phosphate
4	Plain Washer		Steel	Black Oxide
5	Guide rod (1) (ø8 to ø16)	M	Stainless Steel	ø12,16: Industrial chromium plating
		B	Alloy Steel	Industrial Hard Chrome Plating
6	Rod Metal		Aluminum Alloy	ø12 to ø25: Alumite ø32 to ø50: Chromate
7	Metal gasket		Nitrile Rubber	
8	Cylinder Body		Aluminum Alloy	Hard Anodized
9	Rod Packing		Nitrile Rubber	
10	Cushion rubber (R)		Urethane Rubber	
11	Spacer		ø8 to ø12, ø63, ø80: Aluminum alloy ø20 to ø50: Polyamide	ø8 to ø12, ø63, ø80: Chromate
12	Magnet			
13	Piston Packing		Nitrile Rubber	
14	Piston		Aluminum Alloy	ø8, ø20 to ø80: Chromate
15	Cover		Aluminum Alloy	
16	Cushion rubber (H)		Urethane Rubber	
17	O-ring		Nitrile Rubber	
18	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate

Part No.	Part Name		Material	Remarks
19	Hexagon nut (ø8)		Steel	Zinc Chromate
	Hexagon socket head cap screw (ø12, ø16)		Steel	Zinc Chromate
20	Hex Socket Button Head Bolt		Steel	Zinc Chromate
21	End plate		Aluminum Alloy	Alumite
22	Guide rod (ø20 to ø80)	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
23	Hexagon socket head set screw		Steel	Blackening (ø8, ø12 only)
24	Metal		Oil-Impregnated Bearing Alloy	
25	Plain Washer		Steel	Black Oxide
26	C-type retaining ring		Steel	Zinc phosphate
27	Ball bush			
28	Collar		Aluminum Alloy	
29	Bushing		Bearing Alloy	
30	Guide rod (2) (ø8, ø12)	M	Stainless Steel	ø12: Industrial chromium plating
		B	Alloy Steel	Industrial Hard Chrome Plating
31	Belleville washer		Steel	
32	Wear Ring		Polyacetal	ø12 to ø80 only
33	Plug		ø32 to ø63: Steel	ø12 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
With Switch				
34	Switch			

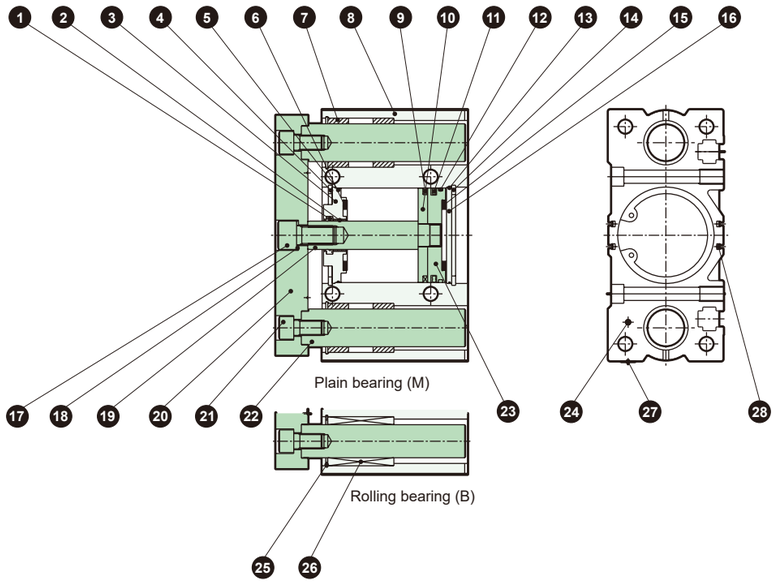
For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal structure / material (bore size: ø100)

● Double acting / standard single rod

STS-$^{M}_{B}$

ø100



Model No.	Part Name	Material	Remarks	Model No.	Part Name	Material	Remarks
1	Rod Packing	Nitrile Rubber		16	Bottom plate	Steel	Zinc Chromate
2	Bushing	Bearing Alloy		17	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
3	Rod Metal	Aluminum Alloy	Chromate	18	Belleville washer	Steel	Zinc Chromate
4	C-type retaining ring	Steel	Zinc phosphate	19	Piston Rod	Steel	Industrial Hard Chrome Plating
5	Metal gasket	Nitrile Rubber		20	End plate	Aluminum Alloy	Alumite
6	Cushion Rubber (R)	Urethane Rubber		21	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
7	Metal	Oil-Impregnated Bearing Alloy		22	Guide rod	Steel	Industrial Hard Chrome Plating
8	Tube body	Aluminum Alloy	Hard Anodized	23	Piston	Aluminum Alloy	Chromate
9	Magnet			24	Hexagon socket head set screw	Steel	Black Oxide
10	Spacer	Aluminum Alloy	Chromate	25	C-type retaining ring	Steel	Zinc phosphate
11	Piston Packing	Nitrile Rubber		26	Ball bearing		
12	Wear Ring	Polyacetal		27	Plug	Steel	Nickel Plating
13	O-ring	Nitrile Rubber		With Switch			
14	C-type retaining ring	Steel	Zinc phosphate	28	Switch		
15	Cushion rubber (H)	Urethane Rubber					

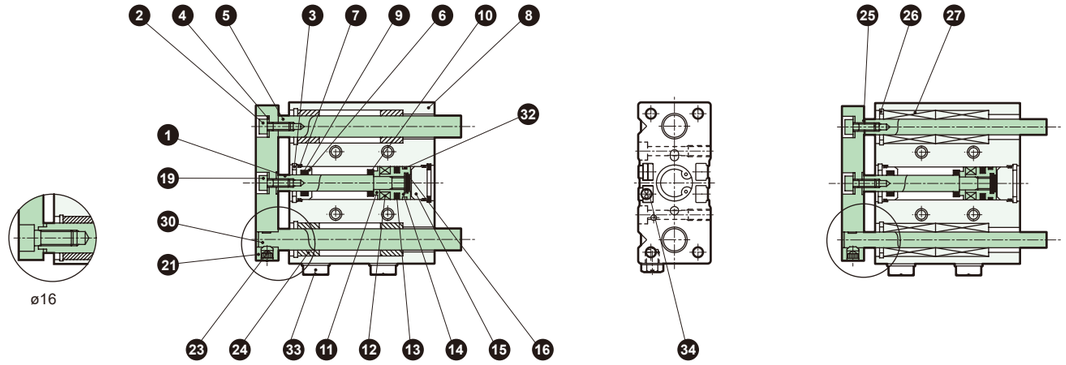
For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal structure diagram / Material (Bore size: ø8 to ø63)

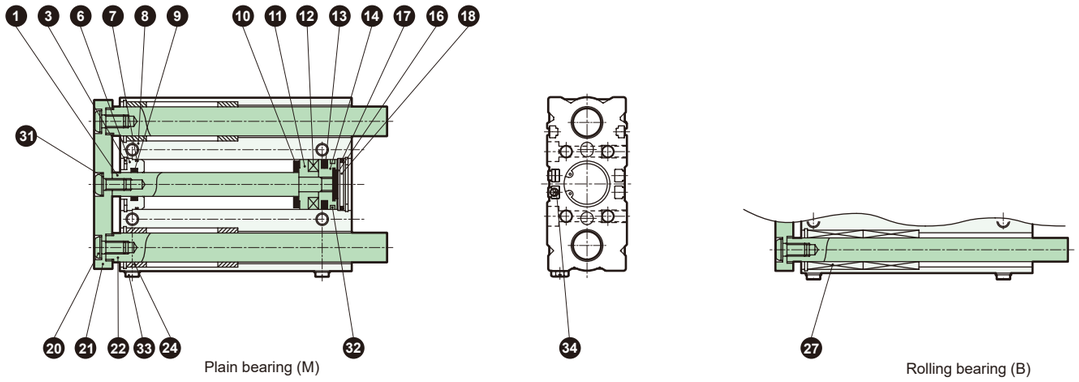
● Double acting/standard single rod

STS-$^{M}_{B}$

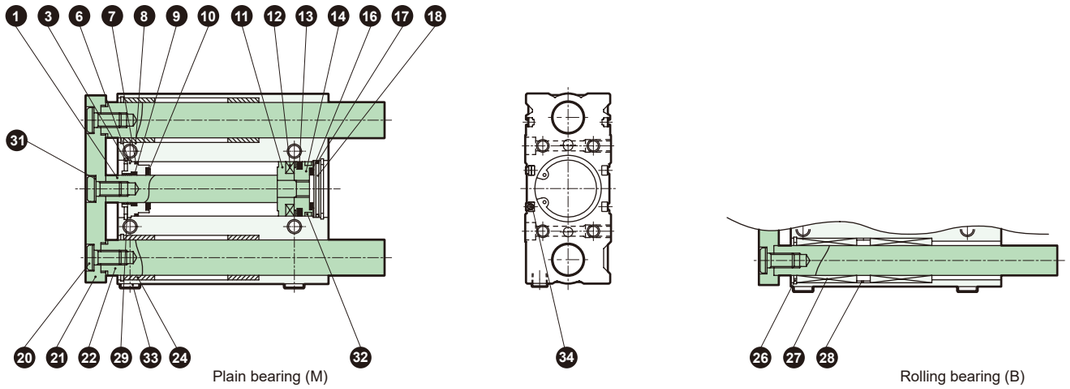
ø8 / ø12 / ø16



ø20, ø25

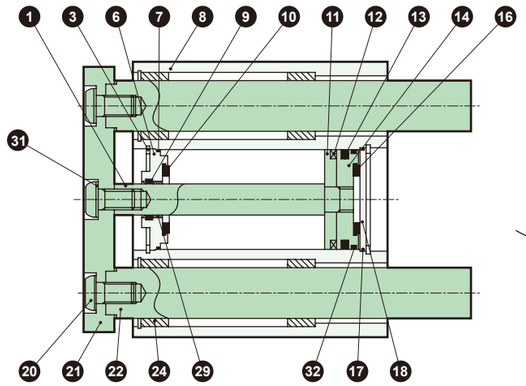


ø32, ø40, ø50, ø63

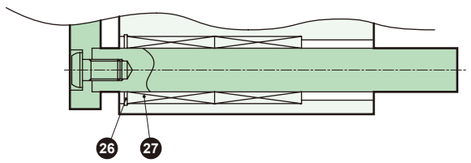


Internal structure diagram / Material (Bore size: ø80)

● Standard single rod ø80
STL-$^{M}_{B}$



Plain bearing (M)



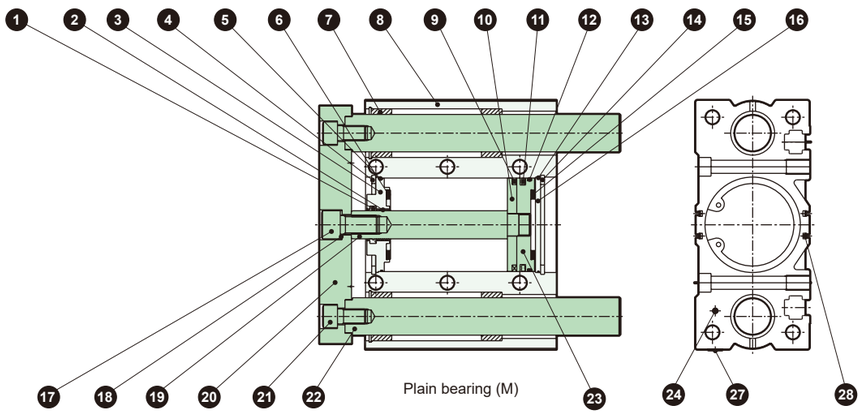
Rolling bearing (B)

Part No.	Part Name		Material	Remarks
1	Piston Rod		ø8 to ø25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate
3	C-type retaining ring		Steel	Zinc phosphate
4	Plain Washer		Steel	Black Oxide
5	Guide rod (1) (ø8 to ø16)	M	Stainless Steel	ø12,16: Industrial chromium plating
		B	Alloy Steel	Industrial Hard Chrome Plating
6	Rod Metal		Aluminum Alloy	ø12 to ø25: Alumite ø32 to ø50: Chromate
7	Metal gasket		Nitrile Rubber	
8	Cylinder Body		Aluminum Alloy	Hard Anodized
9	Rod Packing		Nitrile Rubber	
10	Cushion rubber (R)		Urethane Rubber	
11	Spacer		ø8 to ø12, ø63, ø80: Aluminum alloy ø20 to ø50: Polyamide	ø8 to ø12, ø63, ø80: Chromate
12	Magnet			
13	Piston Packing		Nitrile Rubber	
14	Piston		Aluminum Alloy	ø8, ø20 to ø80: Chromate
15	Cover		Aluminum Alloy	
16	Cushion rubber (H)		Urethane Rubber	
17	O-ring		Nitrile Rubber	
18	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
19	Hexagon nut (ø8)		Steel	Zinc Chromate
	Hexagon socket head cap screw (ø12, ø16)		Steel	Zinc Chromate
20	Hex Socket Button Head Bolt		Steel	Zinc Chromate
21	End plate		Aluminum Alloy	Alumite
22	Guide rod (ø20 to ø80)	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
23	Hexagon socket head set screw		Steel	Blackening (ø8, ø12 only)
24	Metal		Oil-Impregnated Bearing Alloy	
25	Plain Washer		Steel	Black Oxide
26	C-type retaining ring		Steel	Zinc phosphate
27	Ball bush			
28	Collar		Aluminum Alloy	
29	Bushing		Bearing Alloy	
30	Guide rod (2) (ø8, ø12)	M	Stainless Steel	ø12: Industrial chromium plating
		B	Alloy Steel	Industrial Hard Chrome Plating
31	Belleville washer		Steel	
32	Wear Ring		Polyacetal	ø12 to ø80 only
33	Plug		ø32 to ø63: Steel	ø12 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
With Switch				
34	Switch			

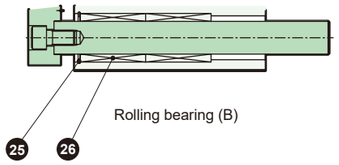
For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal structure/material (bore size: ø100)

● Double acting/standard single rod ø100
STS-$^{M}_{B}$



Plain bearing (M)



Rolling bearing (B)

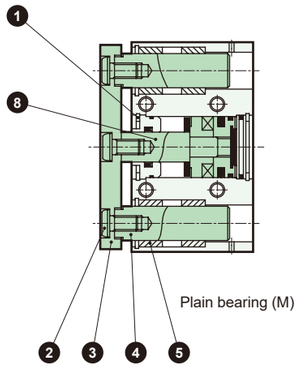
Model No.	Part Name	Material	Remarks
1	Rod Packing	Nitrile Rubber	
2	Bushing	Bearing Alloy	
3	Rod Metal	Aluminum Alloy	Chromate
4	C-type retaining ring	Steel	Zinc phosphate
5	Metal gasket	Nitrile Rubber	
6	Cushion Rubber (R)	Urethane Rubber	
7	Metal	Oil-Impregnated Bearing Alloy	
8	Tube body	Aluminum Alloy	Hard Anodized
9	Magnet		
10	Spacer	Aluminum Alloy	Chromate
11	Piston Packing	Nitrile Rubber	
12	Wear Ring	Polyacetal	
13	O-ring	Nitrile Rubber	
14	C-type retaining ring	Steel	Zinc phosphate
15	Cushion rubber (H)	Urethane Rubber	
16	Bottom plate	Steel	Zinc Chromate
17	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
18	Belleville washer	Steel	
19	Piston Rod	Steel	Industrial Hard Chrome Plating
20	End plate	Aluminum Alloy	Alumite
21	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
22	Guide rod	Steel	Industrial Hard Chrome Plating
23	Piston	Aluminum Alloy	Chromate
24	Hexagon socket head set screw	Steel	Black Oxide
25	C-type retaining ring	Steel	Zinc phosphate
26	Ball bearing		
27	Plug	Steel	Nickel Plating
With Switch			
28	Switch		

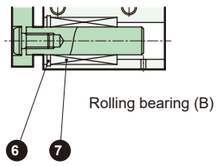
For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal structure / material (corrosion proof Bore size size: ø8 to ø100)

● Corrosion resistant type

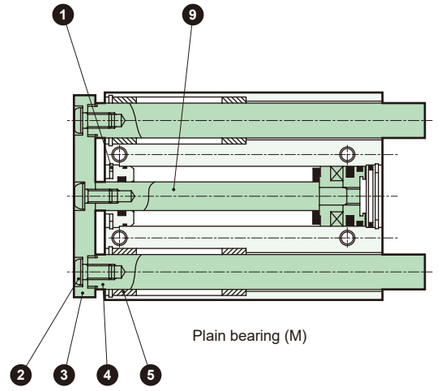
STS-$^{M}_{B}$-M / M1

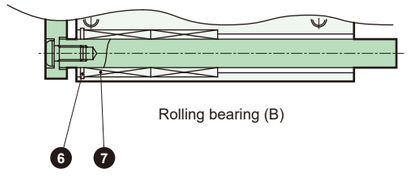




● Corrosion resistant type

STL-$^{M}_{B}$-M / M1





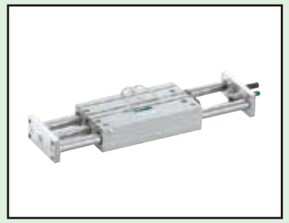
(Parts oher than those listed below are the same as those of double acting/standard single rod. Please refer to P. 497 to 501.)

Model No.	Part Name	Material	Remarks	Model No.	Part Name	Material	Remarks
1	C-type retaining ring	Stainless Steel		5	Metal	Bearing Alloy Steel	
2	Hexagon socket button head bolt (ø8 to ø80) Hexagon socket head cap screw (ø100)	Stainless Steel		6	Adaptor (ø8 to ø16)	Aluminum Alloy	
					C-snap ring (ø32 to ø100)	Stainless Steel	
3	End plate	M: Aluminum Alloy	Alumite	7	Ball bush	Made of stainless steel	
		M1: Stainless steel		8	Piston Rod	Stainless Steel	Industrial Hard Chrome Plating
4	Guide rod	Stainless Steel	Industrial chrome plating (M type only)	9	Piston Rod	Stainless Steel	Industrial Hard Chrome Plating

For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

MEMO

Guided
STM
STG
STS/STL
STR2
UCA2
Cylinder Switch
Ending



Guided cylinder Double acting, Stroke adjustment type

STS / STL-$^{M}_{B}$P Series

● Bore size: ø8, ø12, ø16, ø20, ø25, ø32, 40, ø50, ø63, ø80

Circuit Diagram Symbol

RoHS

Model No. Notation Method

● Short stroke

Without switch Note1)
(Built-in magnet for switch)

STS - M P — 8 ( ) - 10 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STS - M P — 8 ( ) - 10 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STS - M P - L1 - 40 ( ) - 10 - T1H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

●Long stroke

Without switch Note1)
(Built-in magnet for switch)

STL - M P — 8 ( ) - 50 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STL - M P — 8 ( ) - 50 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STL - M P - L1 - 40 ( ) - 50 - T1H - R - F
Model No. ❶ Bearing type ❷ Bore size ❸ Piping thread type ❹ Stroke ❺ Switch Model No. ❻ Number of Switches ❼ Option

Note1) For ø80, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
8	ø8
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

❸ Piping thread type

Code	Content
Blank	M5 (ø8 to ø25)
	Rc thread (ø32 to ø80)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❹ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size									
			ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	10	●	●	●							
		20	●	●	●							
		25				●	●	●	●	●	●	●
		30	●	●	●							
		40	●	●	●							
		50	●	●	●	●	●	●	●	●	●	●
		75										●
		100										●

Series	Stroke (mm)		Applicable Bore Size									
			ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●	●	●	●
		225				●	●	●	●	●	●	●
		250				●	●	●	●	●	●	●
		275				●	●	●	●	●	●	●
		300				●	●	●	●	●	●	●
		325				●	●	●	●	●	●	●
		350				●	●	●	●	●	●	●
		375				●	●	●	●	●	●	●
		400				●	●	●	●	●	●	●

Note) Intermediate strokes are not supported. Adjust the stroke with the stroke adjustment mechanism.

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color for AC Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	*4

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: ø8 to ø16 cannot be equipped with T8H/V.
*5: For the 2-color display, T1H/V, T8H/V and off-delay for ø40 and over, insert "L1" with "-" between ❶ and ❷. (However, T2WH/V and T3WH/V are excluded.)
Example) STS-MP-L1-63-50-T1H3-D-F
For ø80, T1H/V, T8H/V, off-delay type, and AC magnetic field type switches cannot be retrofitted after purchasing the standard product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.
Example) STS-MP-L1-80-50-F
*6: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

* Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*7 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*7: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

❼ Option

Code	Content
F	End plate material: Steel

For combinations of variations and options,
Please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

About Custom Product Specifications

For details, see P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)

STS/L-$^{M}_{B}$P-·····-O

Switch Single Unit Model No. Notation Method

SW - T0V
❺ Switch Model No.

Specifications

Item		STS-MP/BP STL-MP/BP									
Bore Size	mm	ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
Actuation method		Double-acting, Stroke adjustment type									
Operating Fluid		Compressed Air									
Max. Working Pressure	MPa	1.0									
Min. Operating Pressure	MPa	0.2					0.15				
Proof Pressure	MPa	1.6									
Ambient Temperature	°C	-10 to 60 (No freezing)									
Port Size		M5					Rc1/8		Rc1/4		Rc3/8
Stroke tolerance	mm	+2.0 0									
Operating Piston Speed	mm/s	50 to 500								50 to 300	
Cushion		With rubber cushion, With shock absorber at push									
Stroke adjustment range	mm	25									
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)									
Allowable Absorbed Energy	J	0.029	0.056	0.088	0.157	0.157	0.401	0.627	0.980	1.560	2.510

Stroke

●Short stroke STS

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)	
				T2WL	Other switches
ø8	10, 20, 30, 40, 50	50	10	25	10
ø12				15	
ø16				25 *1	25 *1
ø20	25, 50		25		
ø25					
ø32					
ø40					
ø50					
ø63					
ø80	25, 50, 75, 100	100			

*1: For types with one or two switches.

● Long stroke STL

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø8	50, 75, 100, 125, 150 175, 200	200	50	50 *1
ø12				
ø16				
ø20	50, 75, 100, 125, 150 175, 200, 225, 250 275, 300, 325, 350 375, 400	400		
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375, 400		75	75 *2

*1: For types with one or two switches.

Theoretical Thrust Table

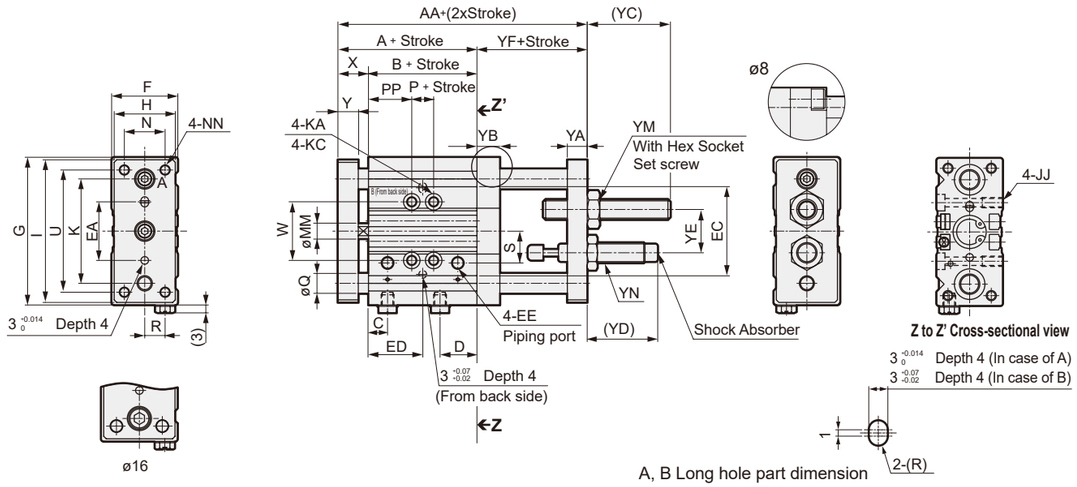
(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa									
		0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø8	Push	–	10.1	15.1	20.1	25.1	30.2	35.2	40.2	45.2	50.3
	Pull	–	7.54	11.3	15.1	18.8	22.6	26.4	30.2	33.9	37.7
ø12	Push	–	22.6	33.9	45.2	56.5	67.9	79.2	90.5	$1.02x10^2$	$1.13x10^2$
	Pull	–	17.0	25.4	33.9	42.4	50.9	59.4	67.9	76.3	84.8
ø16	Push	–	40.2	60.3	80.4	1.01×10^2	1.21×10^2	1.41×10^2	1.61×10^2	1.81×10^2	2.01×10^2
	Pull	–	30.2	45.2	60.3	75.4	90.5	1.06×10^2	1.21×10^2	1.36×10^2	1.51×10^2
ø20	Push	–	62.8	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	2.51×10^2	2.83×10^2	3.14×10^2
	Pull	–	47.1	70.7	94.2	1.18×10^2	1.41×10^2	1.65×10^2	1.88×10^2	2.12×10^2	2.36×10^2
ø25	Push	–	98.2	1.47×10^2	1.96×10^2	2.45×10^2	2.95×10^2	3.44×10^2	3.93×10^2	4.42×10^2	4.91×10^2
	Pull	–	75.6	$1.13x10^2$	1.51×10^2	1.89×10^2	2.27×10^2	2.64×10^2	3.02×10^2	3.40×10^2	3.78×10^2
ø32	Push	1.21×10^2	1.61×10^2	2.41×10^2	3.22×10^2	4.02×10^2	4.83×10^2	5.63×10^2	6.43×10^2	7.24×10^2	8.04×10^2
	Pull	90.5	1.21×10^2	1.81×10^2	2.41×10^2	3.02×10^2	3.62×10^2	4.22×10^2	4.83×10^2	5.43×10^2	6.03×10^2
ø40	Push	1.88×10^2	2.51×10^2	3.77×10^2	5.03×10^2	6.28×10^2	7.54×10^2	8.80×10^2	1.01×10^3	1.13×10^3	1.26×10^3
	Pull	1.58×10^2	2.11×10^2	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
ø50	Push	2.95×10^2	3.93×10^2	5.89×10^2	7.85×10^2	9.82×10^2	1.18×10^3	1.37×10^3	1.57×10^3	1.77×10^3	1.96×10^3
	Pull	2.47×10^2	3.30×10^2	4.95×10^2	6.60×10^2	8.25×10^2	9.90×10^2	1.15×10^3	1.32×10^3	1.48×10^3	1.65×10^3
ø63	Push	4.68×10^2	6.23×10^2	9.35×10^2	1.25×10^3	1.56×10^3	1.87×10^3	2.18×10^3	2.49×10^3	2.81×10^3	3.12×10^3
	Pull	4.20×10^2	5.61×10^2	8.41×10^2	1.12×10^3	1.40×10^3	1.68×10^3	1.96×10^3	2.24×10^3	2.52×10^3	2.80×10^3
ø80	Push	7.54×10^2	1.01×10^3	1.51×10^3	2.01×10^3	2.51×10^3	3.02×10^3	3.52×10^3	4.02×10^3	4.52×10^3	5.03×10^3
	Pull	6.80×10^2	9.07×10^2	1.36×10^3	1.81×10^3	2.27×10^3	2.72×10^3	3.17×10^3	3.63×10^3	4.08×10^3	4.54×10^3

For cylinder weight, please refer to P. 642 to 645.

External dimensions diagram (Bore size: ø8 / ø12 / ø16)

● Stroke adjustment type



Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	ED	F	G	H
ø8	10, 20, 30 40, 50	40	67.5	28	11	14.5	M5	20	25	$15+\frac{\text{Stroke}}{2}$	24	53	22
ø12		44	71.5	32	7.5	14.5	M5	23	34	$16+\frac{\text{Stroke}}{2}$	26	58	24
ø16		45	73.5	32	7.5	17	M5	24	36	$16+\frac{\text{Stroke}}{2}$	30	64	28

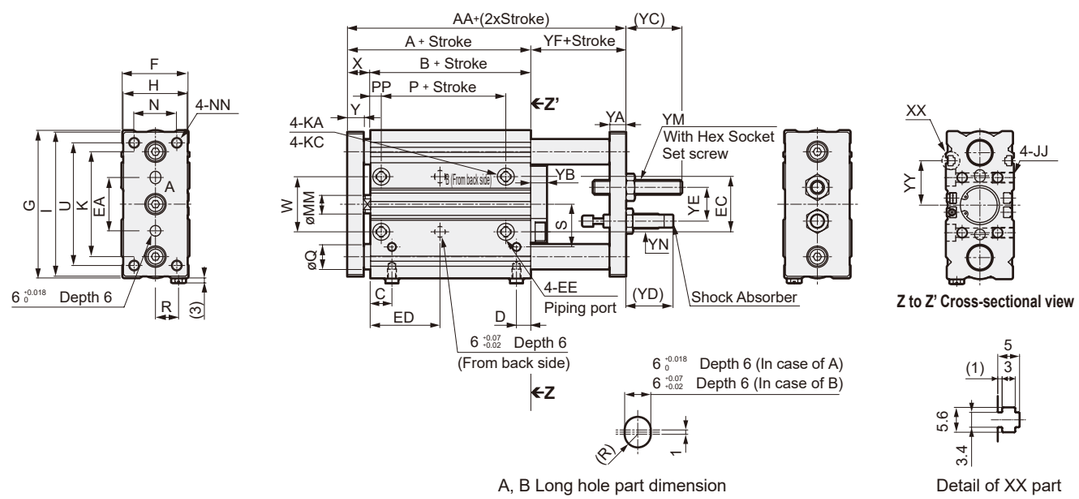
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø8	51	M4 Depth 10	40	3.3 Through	6.5 Counterbore depth 3.3	4	15	M4 Through	-10	20	6	5	7.5
ø12	56	M4 Depth 10	41	3.3 Through	6.5 Counterbore depth 3.3	6	16	M4 Through	-2	17	8	6	8
ø16	62	M5 Depth 10	46	4.3 Through	8 Counterbore depth 4.4	8	18	M5 Through	-2	17	10	8	10

Code / Bore Size (mm)	S	U	W	X	Y	YA	YB	YC *6	YD *6	YE	YF	YM	YN	Shock absorber model number
ø8	13.5	43	25	$12^{0}_{-1.5}$	8	8	9	32.5	27.5	17	27.5	M8x50	M8x0.75	NCK-00-0.3-C
ø12	12.5	48	23	$12^{0}_{-1.5}$	8	8	9	32.5	27.5	17	27.5	M8x50	M8x0.75	NCK-00-0.3-C
ø16	13	52	25	$13^{0}_{-1.5}$	9	9	9	31.5	26.5	17	28.5	M8x50	M8x0.75	NCK-00-0.3-C

*1: For STS-$^{M}_{B}$-8-10 (10 mm stroke), it will be 2-KA, 2-KC, 2-JJ (2 mounting holes).
*2: For STS-$^{M}_{B}$-8-10 (10 mm stroke), ED dimension will be 5.
*3: For STS-$^{M}_{B}$-16-10 (10 mm stroke), JJ dimension M5 screws are in 4 places as shown in the diagram, but mounting is in 2 places.
***4: For dimensions with each switch, refer to P. 636, 637.**
*5: Intermediate strokes are not supported.
*6: YC, YD dimensions indicate dimensions at the time of shipment.

Outline dimension drawing (bore size: ø20, ø25)

● Stroke adjustment type



Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	ED	F	G	H
ø20	25, 50	53	81.5	40	12	8	M5	30	31	$14+\frac{\text{Stroke}}{2}$	38	83	36
ø25		54	84	41	12	9	M5	32	35	$14.5+\frac{\text{Stroke}}{2}$	42	86	38

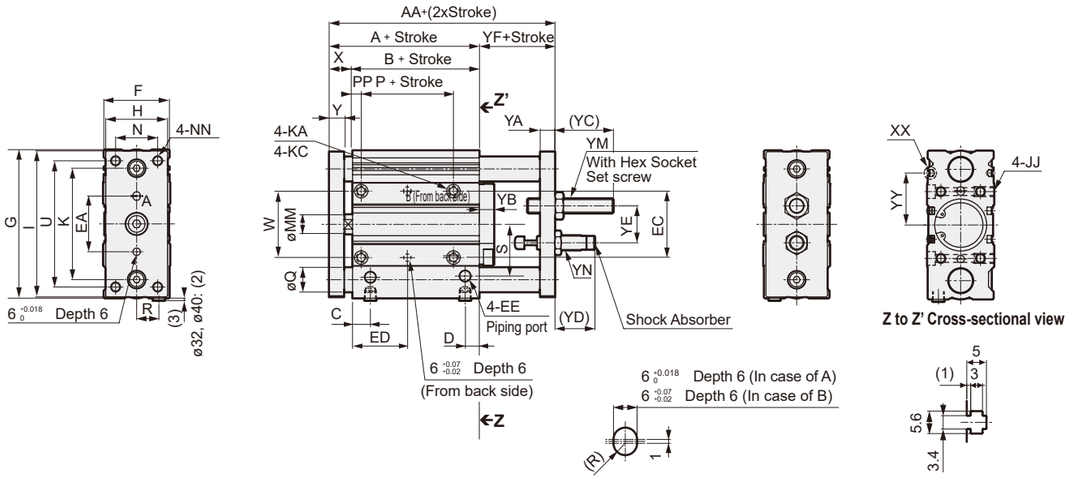
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø20	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	20	6	14	12	13
ø25	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	20	6	14	12	14

Code / Bore Size (mm)	S	U	W	X	Y	YA	YB	YC *3	YD *3	YE	YF	YM	YN	YY	Shock absorber model number
ø20	24	69	31	13^{0}_{-2}	9	9	9	31.5	26.5	19	28.5	M8x50	M8x0.75	25	NCK-00-0.3-C
ø25	26	72	35	13^{0}_{-2}	9	9	9	30	29	19	30	M8x50	M18xx1	27	NCK-00-0.7-C

***1: For dimensions with each switch, refer to P. 636, 637.**
*2: Intermediate strokes are not supported.
*3: YC, YD dimensions indicate dimensions at the time of shipment.

External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

● Stroke adjustment type



A, B Long hole part dimension

Z to Z' Cross-sectional view

Detail of XX part

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	ED	F	G	H
ø32	25, 50	68	104.5	49	14	10.5	Rc1/8	42	45	17.5 + Stroke/2	47	111	45
ø40		72	108.5	53	14.5	12	Rc1/8	45	54	19.5+ Stroke/2	54	120	50
ø50		77	124	55	16	12.5	Rc1/4	55	66	19.5+ Stroke/2	66	147	64
ø63		83	130	61	17.5	17.5	Rc1/4	62	79	22.5+ Stroke/2	79	162	75

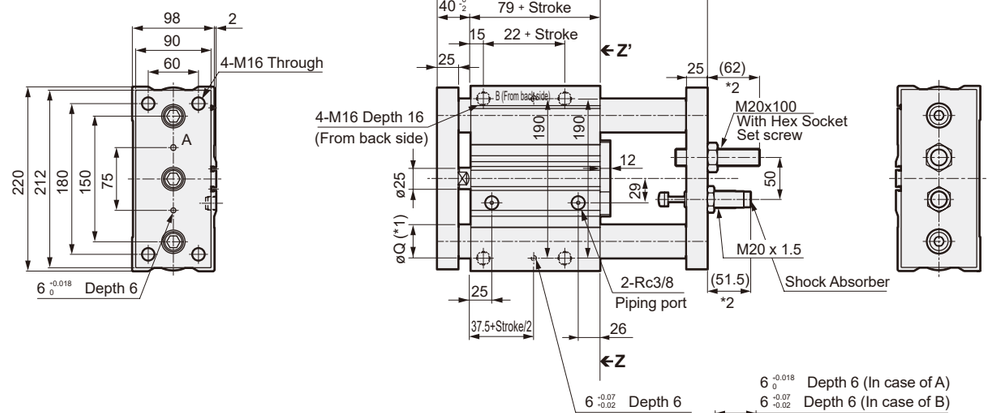
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø32	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	22	7	20	16	16
ø40	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	25	7	20	16	18
ø50	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	26	8	25	20	22
ø63	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	26	8	25	20	26

Code / Bore Size (mm)	S	U	W	X	Y	YA	YB	YC *3	YD *3	YE	YF	YM	YN	YY	Shock absorber model number
ø32	39	93	45	19 +0.2 0	12	12	12	47.5	32.5	30	36.5	M12x70	M12x1	39	NCK-00-1.2-C
ø40	43	102	54	19 +0.2 0	12	12	12	47.5	32.5	30	36.5	M12x70	M12x1	42	NCK-00-1.2-C
ø50	49	125	66	22 +0.2 0	16	16	16	51	52	40	47	M16x80	M14x1.5	45	NCK-00-2.6-C
ø63	56	140	79	22 +0.2 0	16	16	16	51	52	40	47	M16x80	M14x1.5	52	NCK-00-2.6-C

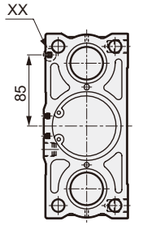
***1: For dimensions with each switch, refer to P. 636, 637.**
*2: Intermediate strokes are not supported.
*3: YC, YD dimensions indicate dimensions at the time of shipment.

External dimensions diagram (Bore size: ø80)

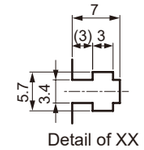
● Stroke adjustment type



A, B Long hole part dimension



Z to Z' Cross-sectional view

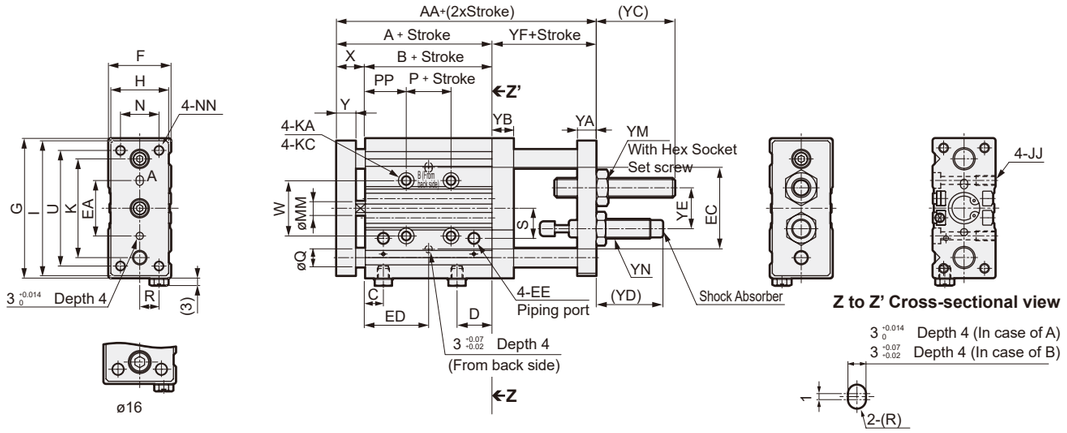


Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
*2: Dimensions at the time of shipment are shown.
*3: Intermediate strokes are not supported.
***4: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø8, ø12, ø16)

● Stroke adjustment type



Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	ED	F	G	H
ø8	50, 75, 100, 125, 150, 175, 200	40	67.5	28	11	14.5	M5	20	25	$15+\frac{Stroke}{2}$	24	53	22
ø12		44	71.5	32	7.5	14.5	M5	23	34	$16+\frac{Stroke}{2}$	26	58	24
ø16		45	73.5	32	7.5	17	M5	24	36	$16+\frac{Stroke}{2}$	30	64	28

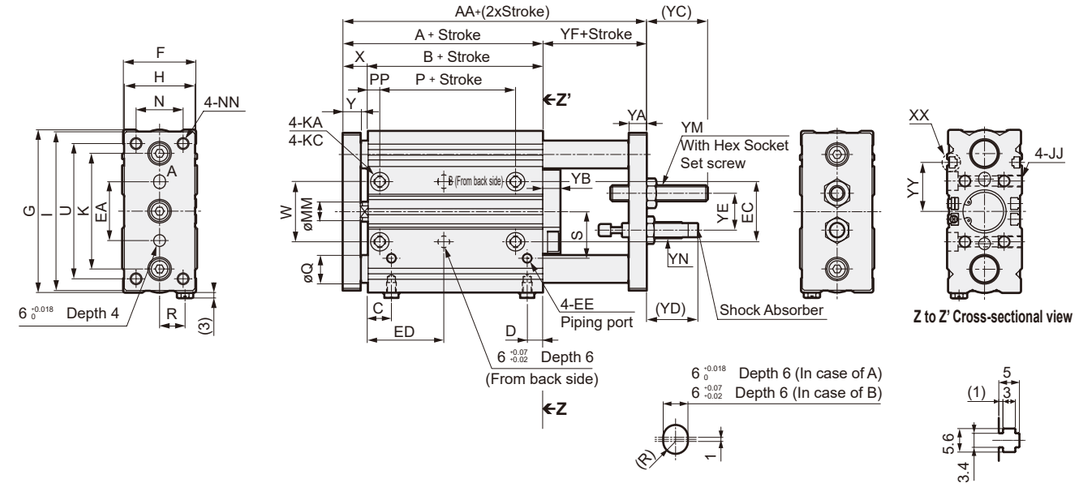
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STL-M	Q STL-B	R
ø8	51	M4 Depth 10	40	3.3 Through	6.5 Counterbore depth 3.3	4	15	M4 Through	−10	20	6	5	7.5
ø12	56	M4 Depth 10	41	3.3 Through	6.5 Counterbore depth 3.3	6	16	M4 Through	−2	17	8	6	8
ø16	62	M5 Depth 10	46	4.3 Through	8 Counterbore depth 4.4	8	18	M5 Through	−2	17	10	8	10

Code / Bore Size (mm)	S	U	W	X	Y	YA	YB	YC *3	YD *3	YE	YF	YM	YN	Shock absorber model number
ø8	13.5	43	25	$12^{0}_{-1.5}$	8	8	9	32.5	27.5	17	27.5	M8x50	M8x0.75	NCK-00-0.3-C
ø12	12.5	48	23	$12^{0}_{-1.5}$	8	8	9	32.5	27.5	17	27.5	M8x50	M8x0.75	NCK-00-0.3-C
ø16	13	52	25	$13^{0}_{-1.5}$	9	9	9	31.5	26.5	17	28.5	M8x50	M8x0.75	NCK-00-0.3-C

***1: For dimensions with each switch, refer to P. 636, 637.**
*2: Intermediate strokes are not supported.
*3: YC, YD dimensions indicate dimensions at the time of shipment.

Outline dimension drawing (bore size: ø20, ø25)

● Stroke adjustment type



A, B Long hole part dimension

Detail of XX part

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	ED	F	G	H
ø20	50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400	53	81.5	40	12	8	M5	30	31	$14.0+\frac{Stroke}{2}$	38	83	36
ø25		54	84	41	12	9	M5	32	35	$14.5+\frac{Stroke}{2}$	42	86	38

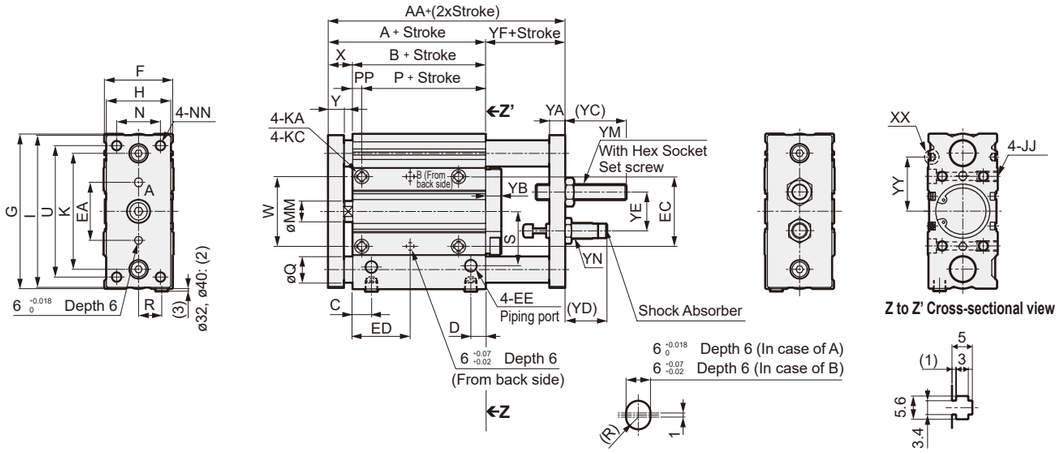
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STL-M	Q STL-B	R
ø20	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	20	6	14	12	13
ø25	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	20	6	14	12	14

Code / Bore Size (mm)	S	U	W	X	Y	YA	YB	YC *3	YD *3	YE	YF	YM	YN	YY	Shock absorber model number
ø20	24	69	31	13^{0}_{-2}	9	9	9	31.5	26.5	19	28.5	M8x50	M8x0.75	25	NCK-00-0.3-C
ø25	26	72	35	13^{0}_{-2}	9	9	9	30	29	19	30	M8x50	M18xx1	27	NCK-00-0.7-C

***1: For dimensions with each switch, refer to P. 636, 637.**
*2: Intermediate strokes are not supported.
*3: YC, YD dimensions indicate dimensions at the time of shipment.

External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

● Stroke adjustment type



A, B Long hole part dimension

Detail of XX part

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	ED	F	G	H
ø32	50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400	68	104.5	49	14	10.5	Rc1/8	42	45	17.5 + Stroke/2	47	111	45
ø40		72	108.5	53	14.5	12	Rc1/8	45	54	19.5 + Stroke/2	54	120	50
ø50		77	124	55	16	12.5	Rc1/4	55	66	19.5 + Stroke/2	66	147	64
ø63		83	130	61	17.5	17.5	Rc1/4	62	79	22.5 + Stroke/2	79	162	75

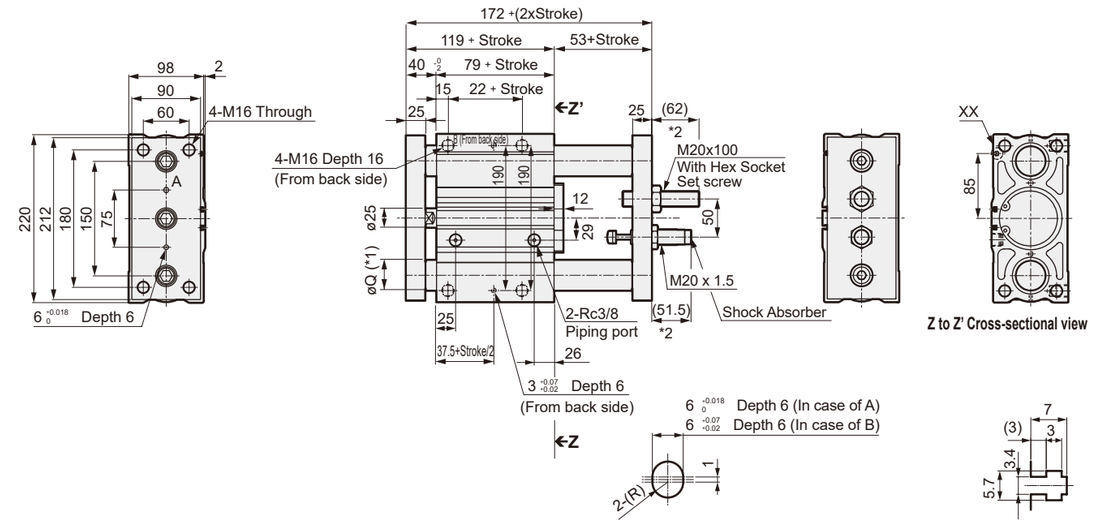
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STL-M	Q STL-B	R	S	U	W
ø32	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	22	7	20	16	16	39	93	45
ø40	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	25	7	20	16	18	43	102	54
ø50	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	26	8	25	20	22	49	125	66
ø63	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	26	8	25	20	26	56	140	79

Code / Bore Size (mm)	X	Y	YA	YB	YC *3	YD *3	YE	YF	YM	YN	YY	Shock absorber model number
ø32	19 0 -2	12	12	12	47.5	32.5	30	36.5	M12x70	M12x1	39	NCK-00-1.2-C
ø40	19 0 -2	12	12	12	47.5	32.5	30	36.5	M12x70	M12x1	42	NCK-00-1.2-C
ø50	22 0 -2	16	16	16	51	52	40	47	M16x80	M14x1.5	45	NCK-00-2.6-C
ø63	22 0 -2	16	16	16	51	52	40	47	M16x80	M14x1.5	52	NCK-00-2.6-C

***1: For dimensions with each switch, refer to P. 636, 637.**
*2: Intermediate strokes are not supported.
*3: YC, YD dimensions indicate dimensions at the time of shipment.

External dimensions diagram (Bore size: ø80)

● Stroke adjustment type



A, B Long hole part dimension

Detail of XX part

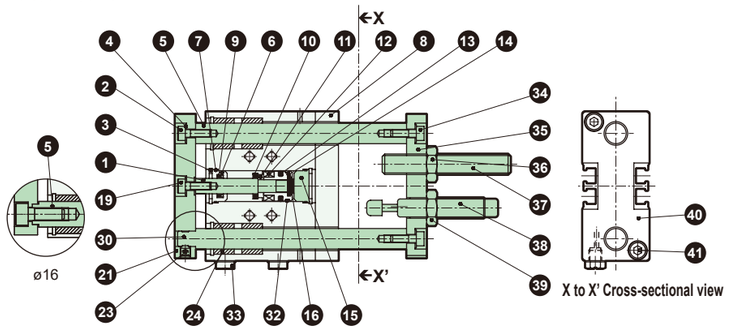
*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
*2: Dimensions at the time of shipment are shown.
*3: Intermediate strokes are not supported.
***4: For dimensions with each switch, refer to P. 636, 637.**

Internal structure diagram / Material (Bore size: ø8 to ø63)

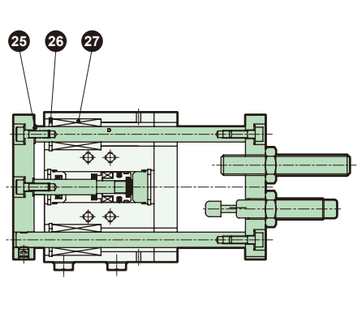
● Stroke adjustment type

STS-$^{M}_{B}$P

ø8, ø12, ø16

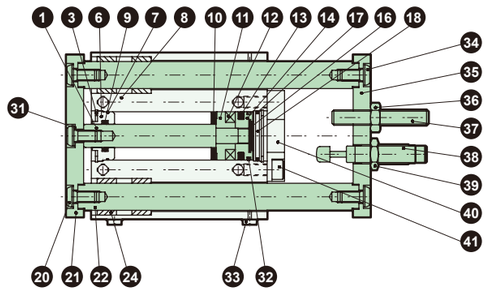


Plain bearing (M)

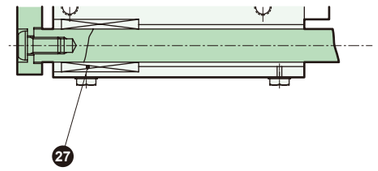


Rolling bearing (B)

ø20, ø25

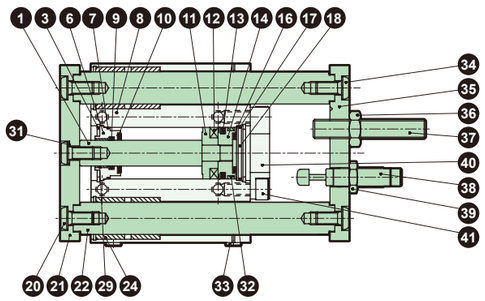


Plain bearing (M)

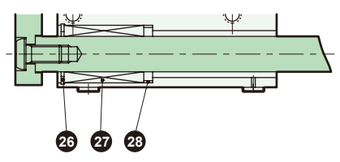


Rolling bearing (B)

ø32, ø40, ø50, ø63



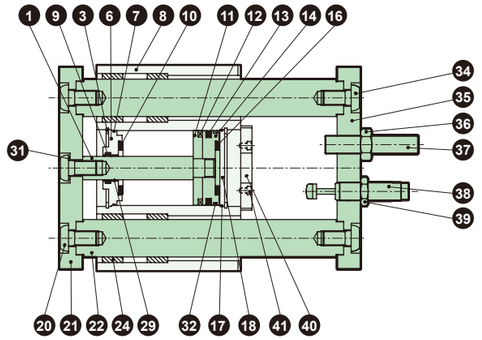
Plain bearing (M)



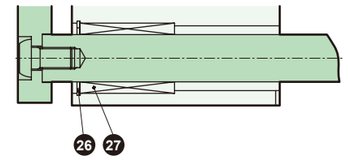
Rolling bearing (B)

Internal structure diagram / Material (Bore size: ø80)

● Stroke adjustment type



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name		Material	Remarks	Part No.	Part Name		Material	Remarks
1	Piston Rod		ø8 to ø25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating	20	Hex Socket Button Head Bolt		Steel	Zinc Chromate
					21	End plate		Aluminum Alloy	Alumite
2	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate	22	Guide rod (ø20 to ø80)	M	Steel	Industrial Hard Chrome Plating
3	C-type retaining ring		Steel	Zinc phosphate			B	Alloy Steel	Industrial Hard Chrome Plating
4	Plain Washer		Steel	Black Oxide	23	Hexagon socket head set screw		Steel	Blackening (ø8, ø12 only)
5	Guide rod (1)	M	Stainless Steel	ø12,16: Industrial chromium plating	24	Metal		Oil-Impregnated Bearing Alloy	
	(ø8 to ø16)	B	Alloy Steel	Industrial Hard Chrome Plating	25	Plain Washer		Steel	Black Oxide
6	Rod Metal		Aluminum Alloy	ø12 to ø25: Alumite ø32 to ø50: Chromate	26	C-type retaining ring		Steel	Zinc phosphate
					27	Ball bush			
7	Metal gasket		Nitrile Rubber		28	Collar		Aluminum Alloy	
8	Cylinder Body		Aluminum Alloy	Hard Anodized	29	Bushing		Bearing Alloy	
9	Rod Packing		Nitrile Rubber		30	Guide rod (2)	M	Stainless Steel	ø12: Industrial chromium plating
10	Cushion rubber (R)		Urethane Rubber			(ø8, ø12)	B	Alloy Steel	Industrial Hard Chrome Plating
11	Spacer		ø8 to ø12, ø63, ø80: Aluminum alloy ø20 to ø50: Polyamide	ø8 to ø12, ø63, ø80: Chromate	31	Belleville washer		Steel	
					32	Wear Ring		Polyacetal	ø12 to ø80 only
12	Magnet				33	Plug			ø12 to ø25: FPL (CKD)
13	Piston Packing		Nitrile Rubber					ø32 to ø80: Steel	ø32 to ø63: Zinc chromate
14	Piston		Aluminum Alloy	ø8, ø20 to ø80: Chromate	34	Hex Socket Button Head Bolt		Steel	Zinc Chromate
15	Cover		Aluminum Alloy		35	End plate (H)		Aluminum Alloy	Alumite
16	Cushion rubber (H)		Urethane Rubber		36	Hexagon Nut		Steel	Black Oxide
17	O-ring		Nitrile Rubber		37	Hexagon socket head set screw		Steel	Black Oxide
18	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate	38	Shock Absorber			
					39	Hexagon Nut		Steel	Zinc Chromate
19	Hexagon nut (ø8)		Steel	Zinc Chromate	40	Stopper plate		Steel	Zinc Chromate
	Hexagon socket head cap screw (ø12, ø16)		Steel	Zinc Chromate	41	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate

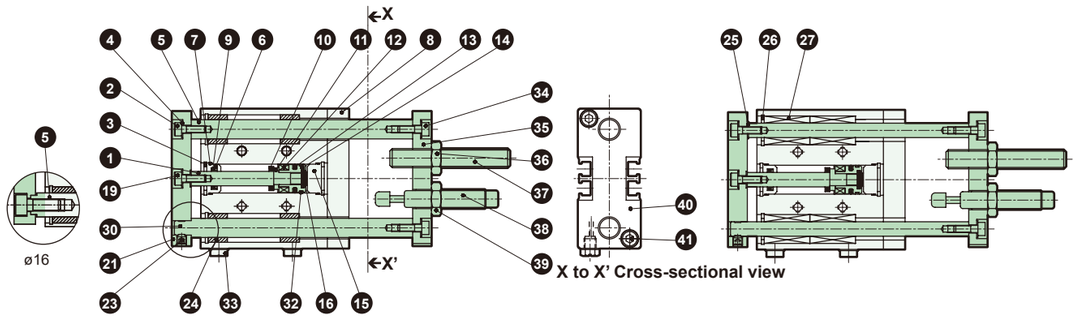
For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal structure diagram / Material (Bore size: ø8 to ø63)

● Stroke adjustment type

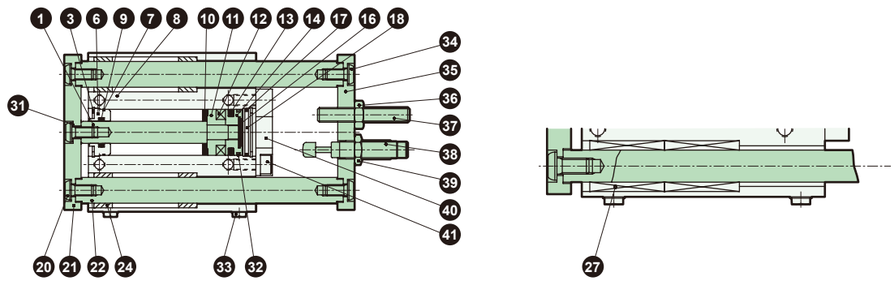
STL-$^{M}_{B}$P

ø8, ø12, ø16



Plain bearing (M) Rolling bearing (B)

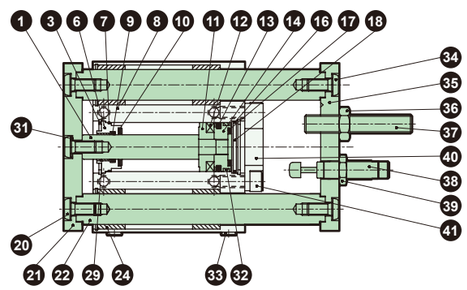
ø20, ø25



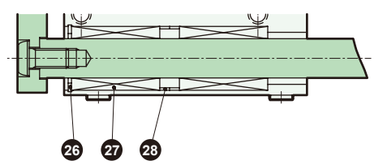
Plain bearing (M)

Rolling bearing (B)

ø32, ø40, ø50, ø63



Plain bearing (M)

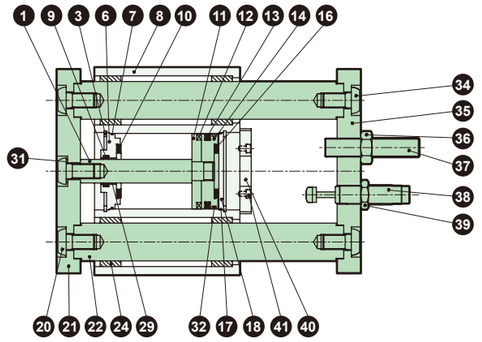


Rolling bearing (B)

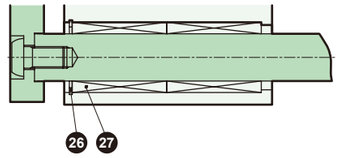
Internal structure diagram / Material (Bore size: ø80)

● Stroke adjustment type

STL-$^{M}_{B}$P



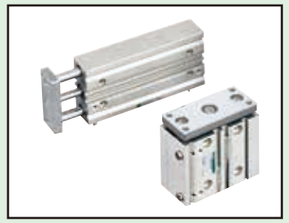
Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name		Material	Remarks	Part No.	Part Name		Material	Remarks
1	Piston Rod		ø8 to ø25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating	20	Hex Socket Button Head Bolt		Steel	Zinc Chromate
					21	End plate		Aluminum Alloy	Alumite
2	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate	22	Guide rod (ø20 to ø80)	M	Steel	Industrial Hard Chrome Plating
3	C-type retaining ring		Steel	Zinc phosphate			B	Alloy Steel	Industrial Hard Chrome Plating
4	Plain Washer		Steel	Black Oxide	23	Hexagon socket head set screw		Steel	Blackening (ø8, ø12 only)
5	Guide rod (1)	M	Stainless Steel	ø12,16: Industrial chromium plating	24	Metal		Oil-Impregnated Bearing Alloy	
	(ø8 to ø16)	B	Alloy Steel	Industrial Hard Chrome Plating	25	Plain Washer		Steel	Black Oxide
6	Rod Metal		Aluminum Alloy	ø12 to ø25: Alumite ø32 to ø50: Chromate	26	C-type retaining ring		Steel	Zinc phosphate
					27	Ball bush			
7	Metal gasket		Nitrile Rubber		28	Collar		Aluminum Alloy	
8	Cylinder Body		Aluminum Alloy	Hard Anodized	29	Bushing		Bearing Alloy	
9	Rod Packing		Nitrile Rubber		30	Guide rod (2)	M	Stainless Steel	ø12: Industrial chromium plating
10	Cushion rubber (R)		Urethane Rubber			(ø8, ø12)	B	Alloy Steel	Industrial Hard Chrome Plating
11	Spacer		ø8 to ø12, ø63, ø80: Aluminum alloy ø20 to ø50: Polyamide	ø8 to ø12, ø63, ø80: Chromate	31	Belleville washer		Steel	
					32	Wear Ring		Polyacetal	ø12 to ø80 only
12	Magnet				33	Plug		ø32 to ø80: Steel	ø12 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
13	Piston Packing		Nitrile Rubber						
14	Piston		Aluminum Alloy	ø8, ø20 to ø80: Chromate	34	Hex Socket Button Head Bolt		Steel	Zinc Chromate
15	Cover		Aluminum Alloy		35	End plate (H)		Aluminum Alloy	Alumite
16	Cushion rubber (H)		Urethane Rubber		36	Hexagon Nut		Steel	Black Oxide
17	O-ring		Nitrile Rubber		37	Hexagon socket head set screw		Steel	Black Oxide
18	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate	38	Shock Absorber			
					39	Hexagon Nut		Steel	Zinc Chromate
19	Hexagon nut (ø8)		Steel	Zinc Chromate	40	Stopper plate		Steel	Zinc Chromate
	Hexagon socket head cap screw (ø12, ø16)		Steel	Zinc Chromate	41	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate

For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts



Guided cylinder Double acting, Heat resistant type

STS / STL-$^{M}_{B}$T Series

● Bore size: ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80

Circuit Diagram Symbol

RoHS

Model No. Notation Method

Short stroke
(Switch cannot be mounted)

STS - M T - 12 [ ] - 10 - F

Model No. ❶ ❷ ❸ ❹ ❺

Long stroke
(Switch cannot be mounted)

STL - M T - 12 [ ] - 50 - F

Model No. ❷ Bore size ❹ Stroke

❶ Bearing type ❸ Piping thread type ❺ Option

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing (ø20 and ø25 cannot be manufactured.)

❷ Bore Size (mm)

Code	Content
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

❸ Piping thread type

Code	Content
Blank	M5 (ø12 to ø25)
	Rc thread (ø32 to ø80)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❹ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	10	●	●							
		20	●	●							
		25			●	●	●	●	●	●	●
		30	●	●							
		40	●	●							
		50	●	●	●	●	●	●	●	●	●
		75									●
		100									●
	Intermediate Stroke *1 *2		Every 5 mm								

Series	Stroke (mm)		Applicable Bore Size ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●	●	●
		225			●	●	●	●	●	●	●
		250			●	●	●	●	●	●	●
		275			●	●	●	●	●	●	●
		300			●	●	●	●	●	●	●
		325			●	●	●	●	●	●	●
		350			●	●	●	●	●	●	●
		375			●	●	●	●	●	●	●
		400			●	●	●	●	●	●	●
	Intermediate Stroke *1 *2		Every 5 mm								

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

❺ Option

	Code	Content
	F	End plate material: Steel
*1	M	Corrosion resistant type (Piston rod, guide rod material: SUS) (Custom order)
*1	M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) (Custom order)

*1: Ball bearing (B) only.
For details on materials, please refer to P. 502.

For combinations of variations and options, please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

About Custom Product Specifications

For details, see P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)

STS/L-$^{M}_{B}$T - ····· O

Specifications

Item	STS-MT/BT STL-MT/BT								
Bore Size mm	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
Actuation method	Double Acting/Heat Resistant Type								
Operating Fluid	Compressed Air								
Max. Working Pressure MPa	1.0								
Min. Operating Pressure MPa	0.2				0.15				
Proof Pressure MPa	1.6								
Ambient Temperature °C	5 to 120								
Port Size	M5				Rc1/8		Rc1/4		Rc3/8
Stroke tolerance mm	+2.0 0								
Operating Piston Speed mm/s	50 to 500							50 to 300	
Cushion	None								
Lubrication	Not required (Periodically grease up with heat resistant grease.)								
Allowable Absorbed Energy J	0.004	0.01	0.016	0.021	0.025	0.092	0.1	0.12	0.27

Stroke

● Short stroke STS

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)
ø12	10, 20, 30, 40, 50	50	5
ø16			
ø20	25, 50		
ø25			
ø32			
ø40			
ø50			
ø63			
ø80	25, 50, 75, 100	100	

● Long stroke STL

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)
ø12	50, 75, 100, 125, 150 175, 200	200	50
ø16			
ø20	50, 75, 100, 125, 150 175, 200, 225, 250 275, 300, 325, 350 375, 400	400	30
ø25			
ø32			
ø40			
ø50			
ø63			
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375, 400		55

Note) Intermediate strokes can be manufactured every 5 mm. However, the overall length dimension will be the same as the standard stroke above it.

Theoretical Thrust Table

(Unit: N)

Bore size (mm)	Operating Direction	Operating pressure MPa									
		0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø12	Push	-	22.6	33.9	45.2	56.5	67.9	79.2	90.5	$1.02x10^2$	$1.13x10^2$
	Pull	-	17.0	25.4	33.9	42.4	50.9	59.4	67.9	76.3	84.8
ø16	Push	-	40.2	60.3	80.4	1.01×10^2	1.21×10^2	1.41×10^2	1.61×10^2	1.81×10^2	2.01×10^2
	Pull	-	30.2	45.2	60.3	75.4	90.5	1.06×10^2	1.21×10^2	1.36×10^2	1.51×10^2
ø20	Push	-	62.8	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	2.51×10^2	2.83×10^2	3.14×10^2
	Pull	-	47.1	70.7	94.2	1.18×10^2	1.41×10^2	1.65×10^2	1.88×10^2	2.12×10^2	2.36×10^2
ø25	Push	-	98.2	1.47×10^2	1.96×10^2	2.45×10^2	2.95×10^2	3.44×10^2	3.93×10^2	4.42×10^2	4.91×10^2
	Pull	-	75.6	$1.13x10^2$	1.51×10^2	1.89×10^2	2.27×10^2	2.64×10^2	3.02×10^2	3.40×10^2	3.78×10^2
ø32	Push	1.21×10^2	1.61×10^2	2.41×10^2	3.22×10^2	4.02×10^2	4.83×10^2	5.63×10^2	6.43×10^2	7.24×10^2	8.04×10^2
	Pull	90.5	1.21×10^2	1.81×10^2	2.41×10^2	3.02×10^2	3.62×10^2	4.22×10^2	4.83×10^2	5.43×10^2	6.03×10^2
ø40	Push	1.88×10^2	2.51×10^2	3.77×10^2	5.03×10^2	6.28×10^2	7.54×10^2	8.80×10^2	1.01×10^3	1.13×10^3	1.26×10^3
	Pull	1.58×10^2	2.11×10^2	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
ø50	Push	2.95×10^2	3.93×10^2	5.89×10^2	7.85×10^2	9.82×10^2	1.18×10^3	1.37×10^3	1.57×10^3	1.77×10^3	1.96×10^3
	Pull	2.47×10^2	3.30×10^2	4.95×10^2	6.60×10^2	8.25×10^2	9.90×10^2	1.15×10^3	1.32×10^3	1.48×10^3	1.65×10^3
ø63	Push	4.68×10^2	6.23×10^2	9.35×10^2	1.25×10^3	1.56×10^3	1.87×10^3	2.18×10^3	2.49×10^3	2.81×10^3	3.12×10^3
	Pull	4.20×10^2	5.61×10^2	8.41×10^2	1.12×10^3	1.40×10^3	1.68×10^3	1.96×10^3	2.24×10^3	2.52×10^3	2.80×10^3
ø80	Push	7.54×10^2	1.01×10^3	1.51×10^3	2.01×10^3	2.51×10^3	3.02×10^3	3.52×10^3	4.02×10^3	4.52×10^3	5.03×10^3
	Pull	6.80×10^2	9.07×10^2	1.36×10^3	1.81×10^3	2.27×10^3	2.72×10^3	3.17×10^3	3.63×10^3	4.08×10^3	4.54×10^3

For cylinder weight, please refer to P. 642 to 645.

Outline Dimension Drawing

Same as double acting, single rod type STS/STL series. Please refer to the P. below.
However, it does not come with a switch.

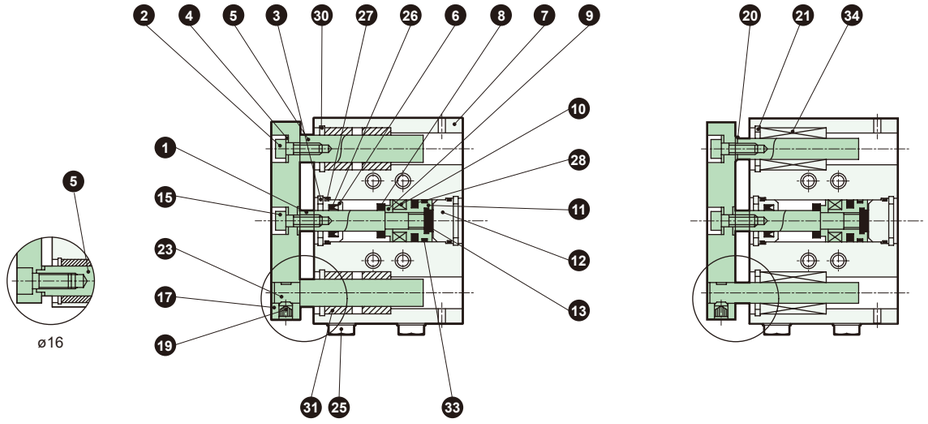
STS Series: Page 486 (ø8 to ø16), page 487 (ø20, ø25), page 488 (ø32 to ø63), page 489 (ø80)
STL Series: Page 491 (ø8 to ø16), page 492 (ø20,ø25), page 493 (ø32 to ø63), page 494 (ø80)

Internal structure diagram / Material (Bore size: ø12 to ø63)

● Heat resistant type

STS-$^{M}_{B}$T

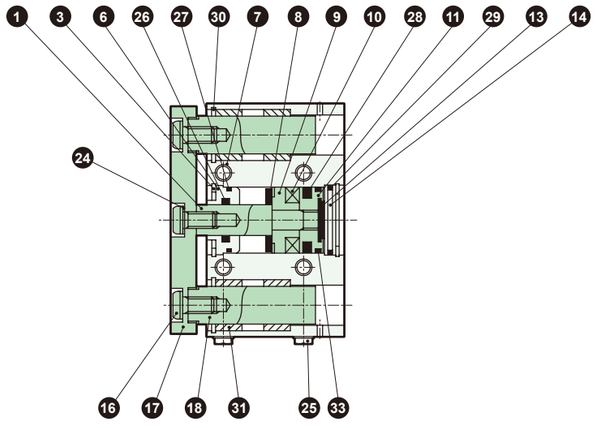
ø12, ø16



Plain bearing (M)

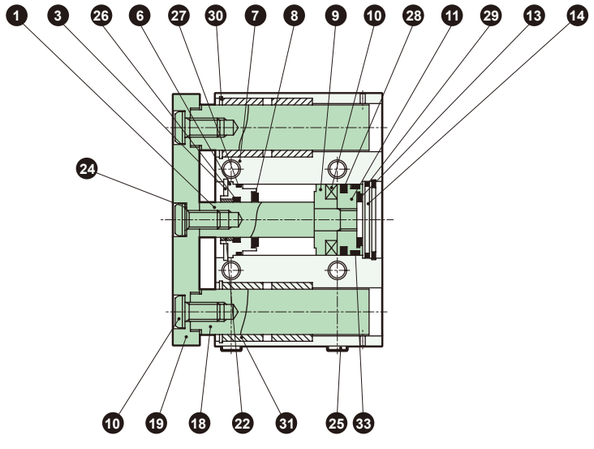
Rolling bearing (B)

ø20, ø25

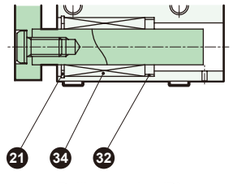


Plain bearing (M)

ø32, ø40, ø50, ø63



Plain bearing (M)

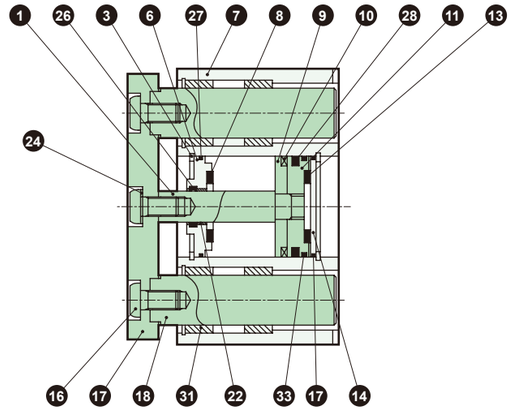


Rolling bearing (B)

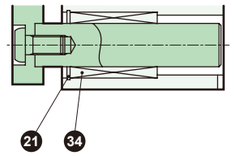
Internal structure diagram / Material (Bore size: ø80)

● Heat resistant type

STS-$^{M}_{B}$T



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name		Material	Remarks
1	Piston Rod		ø12 to 25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate
3	C-type retaining ring		Steel	Zinc phosphate
4	Plain Washer		Steel	Black Oxide
5	Guide rod (1) (ø12, ø16)	M	Stainless Steel	ø12,16: Industrial chromium plating
		B	Alloy Steel	Industrial Hard Chrome Plating
6	Rod Metal		Aluminum Alloy	ø12 to ø25: Alumite ø32 to ø50: Chromate
7	Cylinder Body		Aluminum Alloy	Hard Anodized
8	Cushion rubber (R)		Urethane Rubber	
9	Spacer		ø12, ø63, ø80: Aluminum alloy ø20 to ø50: Polyamide	ø12, ø63, ø80: Chromate
10	Magnet			
11	Piston		Aluminum Alloy	ø20 to ø80: Chromate
12	Cover		Aluminum Alloy	
13	Cushion rubber (H)		Urethane Rubber	
14	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
15	Hexagon socket head cap screw (ø12, ø16)		Steel	Zinc Chromate
16	Hex Socket Button Head Bolt		Steel	Zinc Chromate
17	End plate		Aluminum Alloy	Alumite

Part No.	Part Name		Material	Remarks
18	Guide rod (ø20 to ø80)	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
19	Hexagon socket head set screw		Steel	Blackening (ø12 only)
20	Plain Washer		Steel	Black Oxide
21	C-type retaining ring		Steel	Zinc phosphate
22	Bushing		Bearing Alloy	
23	Guide rod (2) (ø12)	M	Stainless Steel	ø12: Industrial chromium plating
		B	Alloy Steel	Industrial Hard Chrome Plating
24	Belleville washer		Steel	
25	Plug		ø12 to ø25: - ø32 to ø63: Steel	ø12 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
26	Rod Packing		Fluoro Rubber	
27	Metal gasket		Fluoro Rubber	
28	Piston Packing		Fluoro Rubber	
29	O-ring		Fluoro Rubber	
30	Round R-type retaining ring		Steel	Black Oxide
31	Metal		Bearing Alloy	
32	Collar		Aluminum Alloy	
33	Wear Ring		ø12, ø16: Polytetrafluoroethylene resin ø20 to ø80: Special resin	
34	Ball bush			

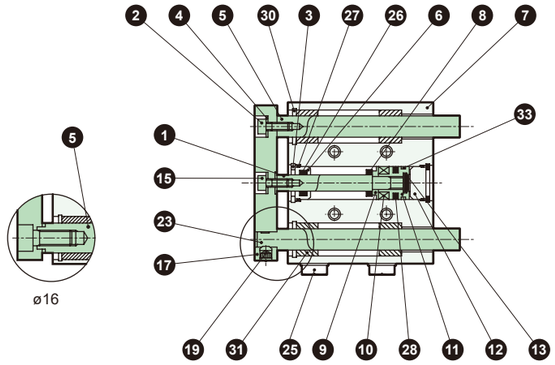
For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal structure diagram / Material (Bore size: ø12 to ø63)

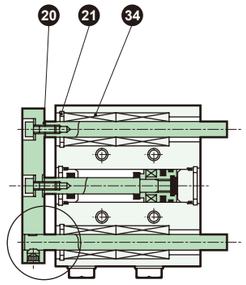
● Heat resistant type

STL-$^{M}_{B}$T

ø12, ø16

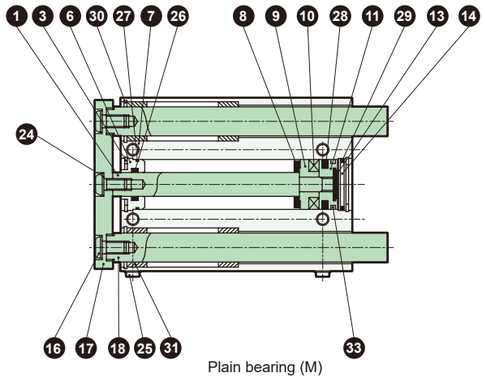


Plain bearing (M)



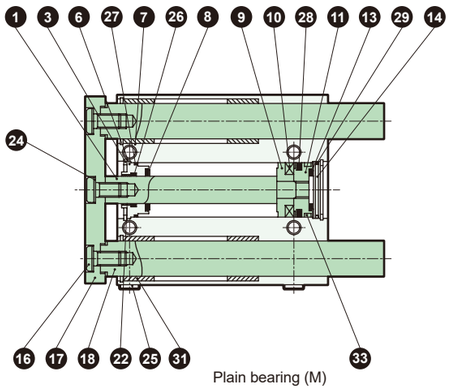
Rolling bearing (B)

ø20, ø25

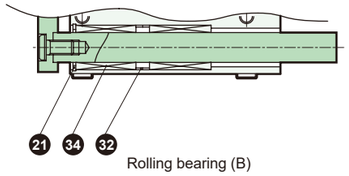


Plain bearing (M)

ø32, ø40, ø50, ø63



Plain bearing (M)

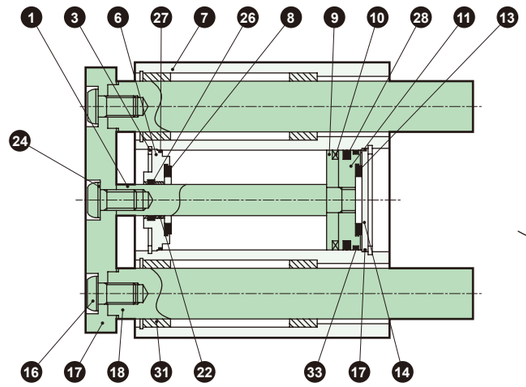


Rolling bearing (B)

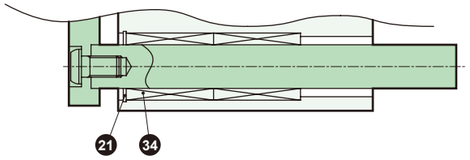
Internal structure diagram / Material (Bore size: ø80)

● Heat resistant type

STL-$^{M}_{B}$T



Plain bearing (M)

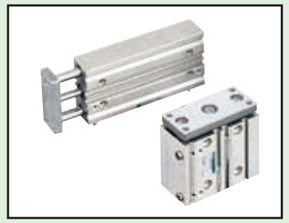


Rolling bearing (B)

Part No.	Part Name		Material	Remarks
1	Piston Rod		ø12 to 25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate
3	C-type retaining ring		Steel	Zinc phosphate
4	Plain Washer		Steel	Black Oxide
5	Guide rod (1) (ø12, ø16)	M	Stainless Steel	ø12,16: Industrial chromium plating
		B	Alloy Steel	Industrial Hard Chrome Plating
6	Rod Metal		Aluminum Alloy	ø12 to 25: Alumite ø32 to 50: Chromate
7	Cylinder Body		Aluminum Alloy	Hard Anodized
8	Cushion rubber (R)		Urethane Rubber	
9	Spacer		ø12, ø63, ø80: Aluminum alloy ø20 to ø50: Polyamide	ø12, ø63, ø80: Chromate
10	Magnet			
11	Piston		Aluminum Alloy	ø20 to ø80: Chromate
12	Cover		Aluminum Alloy	
13	Cushion rubber (H)		Urethane Rubber	
14	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
15	Hexagon socket head cap screw (ø12, ø16)		Steel	Zinc Chromate
16	Hex Socket Button Head Bolt		Steel	Zinc Chromate
17	End plate		Aluminum Alloy	Alumite

Part No.	Part Name		Material	Remarks
18	Guide rod (ø20 to ø80)	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
19	Hexagon socket head set screw		Steel	Blackening (ø12 only)
20	Plain Washer		Steel	Black Oxide
21	C-type retaining ring		Steel	Zinc phosphate
22	Bushing		Bearing Alloy	
23	Guide rod (2) (ø12)	M	Stainless Steel	ø12: Industrial chromium plating
		B	Alloy Steel	Industrial Hard Chrome Plating
24	Belleville washer		Steel	
25	Plug		ø12 to ø25: - ø32 to ø63: Steel	ø12 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
26	Rod Packing		Fluoro Rubber	
27	Metal gasket		Fluoro Rubber	
28	Piston Packing		Fluoro Rubber	
29	O-ring		Fluoro Rubber	
30	Round R-type retaining ring		Steel	Black Oxide
31	Metal		Bearing Alloy	
32	Collar		Aluminum Alloy	
33	Wear Ring		ø12, ø16: Polytetrafluoroethylene resin ø20 to ø80: Special resin	
34	Ball bush			

For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts



Guided cylinder Double acting/packing seal material fluoro rubber

STS / STL-$^{M}_{B}$T2 Series

● Bore size: ø12, ø16, ø20, ø25, ø32, ø40, ø50 / ø63 / ø80

Circuit Diagram Symbol

RoHS

Model No. Notation Method

● Short stroke

Without switch Note1)
(Built-in magnet for switch)

STS - M - T2 - ❶ 12 ❷ ❸ - 10 ❹ - F ❼
Model No. ❶

With switch Note1)
(Built-in magnet for switch)

STS - M - T2 - ❶ 12 ❷ ❸ - 10 ❹ - T2H ❺ - R ❻ - F ❼
Model No. ❶

2-color display, T1H/V, T8H/V,\with off-delay switch
(Built-in magnet for switch) (ø40 or more)

STS - M - T2 - L1 - ❶ 40 ❷ ❸ - 10 ❹ - T1H ❺ - R ❻ - F ❼
Model No. ❶

● Long stroke

Without switch Note1)
(Built-in magnet for switch)

STL - M - T2 - ❶ 12 ❷ ❸ - 50 ❹ - F ❼
Model No. ❶

With switch Note1)
(Built-in magnet for switch)

STL - M - T2 - ❶ 12 ❷ ❸ - 50 ❹ - T2H ❺ - R ❻ - F ❼
Model No. ❶

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STL - M - T2 - L1 - ❶ 40 ❷ ❸ - 50 ❹ - T1H ❺ - R ❻ - F ❼
Model No. ❶ Bearing type ❷ Tube Bore size ❸ Piping thread Type ❹ Stroke ❺ Switch Model No. ❻ Number of Switches ❼ Option

Note1) Forø80, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❶.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

❸ Piping thread type

Code	Content
Blank	M5 (ø12 to ø25)
	Rc thread (ø32 to ø80)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❹ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	10	●	●							
		20	●	●							
		25			●	●	●	●	●	●	●
		30	●	●							
		40	●	●							
		50	●	●	●	●	●	●	●	●	●
		75									●
		100									●
	Intermediate Stroke *1 *2		Every 5 mm								

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

Series	Stroke (mm)		Applicable Bore Size ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●	●	●
		225			●	●	●	●	●	●	●
		250			●	●	●	●	●	●	●
		275			●	●	●	●	●	●	●
		300			●	●	●	●	●	●	●
		325			●	●	●	●	●	●	●
		350			●	●	●	●	●	●	●
		375			●	●	●	●	●	●	●
		400			●	●	●	●	●	●	●
	Intermediate Stroke *1 *2		Every 5 mm								

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	DC	Load Current (mA) AC	DC	Lead wire *1 Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color AC For Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	*4

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: T8H/V switch cannot be installed on ø12 / ø16.
*5: For the 2-color display, T1H/V, T8H/V and off-delay for ø40 and over, insert "L1" with "-" between ❶ and ❷. (However, T2WH/V and T3WH/V are excluded) Example) STS-MT2-L1-63-50-T1H3-D-F
For ø80, T1H/V, T8H/V, off-delay type, and AC magnetic field type switches cannot be retrofitted after purchasing the standard product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.
Example) STS-MT2-L1-80-50-F
*6: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

* Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*7 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*7: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

❼ Option

Code	Content
F	End plate material: Steel
*1 M	Corrosion resistant type (Piston rod, guide rod material: SUS) (Custom order)
*1 M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) (Custom order)

*1: Refer to P. 502 for material details.

For combinations of variations and options,
please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

About Custom Product Specifications

For details, refer to P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)

STS/L-$^{M}_{B}$T2 - ····· - O

Switch Single Unit Model No. Notation Method

SW - T0V
❺ Switch Model No.

Specifications

Item	STS-MT2, BT2 STL-MT2, BT2								
Bore Size mm	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
Actuation method	Double acting / packing material fluoro rubber								
Operating Fluid	Compressed Air								
Max. Working Pressure MPa	1.0								
Min. Operating Pressure MPa	0.15				0.1				
Proof Pressure MPa	1.6								
Ambient Temperature °C	-10 to 60 (No freezing)								
Port Size	M5				Rc1/8		Rc1/4		Rc3/8
Stroke tolerance mm	+2.0 0								
Operating Piston Speed mm/s	50 to 500							50 to 300	
Cushion	With Rubber Cushion								
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)								
Allowable Absorbed Energy J	0.056	0.088	0.157	0.157	0.401	0.627	0.980	1.560	2.510

Stroke

● Short stroke STS

Bore size	Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)	
				T2WL	Other switches
ø12	10,20,30,40,50	50	5	15	5 *1
ø16				25	
ø20	25, 50			5 *1	
ø25					
ø32					
ø40					
ø50					
ø63					
ø80	25, 50, 75, 100	100			

*1: This is for the case with 1 or 2 switches.

● Long stroke STL

Bore size	Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø12	50, 75, 100, 125, 150 175, 200	200	50	50 *2
ø16				
ø20	50, 75, 100, 125, 150 175, 200, 225, 250 275, 300, 325, 350 375, 400	400	30	30 *2
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300, 325, 350, 375, 400		55	55 *2

*1: Intermediate strokes can be manufactured in 5 mm increments. However, the overall length dimension will be the same as the standard stroke above it.
*2: This is for the case with 1 or 2 switches.

Theoretical Thrust Table

(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	-	47.1	62.8	94.2	1.26 x 10²	1.57 x 10²	1.88 x 10²	2.20 x 10²	2.51 x 10²	2.83 x 10²	3.14 x 10²
	Pull	-	35.3	47.1	70.7	94.2	1.18 x 10²	1.41 x 10²	1.65 x 10²	1.88 x 10²	2.12 x 10²	2.36 x 10²
ø25	Push	-	73.6	98.2	1.47 x 10²	1.96 x 10²	2.45 x 10²	2.95 x 10²	3.44 x 10²	3.93 x 10²	4.42 x 10²	4.91 x 10²
	Pull	-	56.7	75.6	1.13x10²	1.51 x 10²	1.89 x 10²	2.27 x 10²	2.64 x 10²	3.02 x 10²	3.40 x 10²	3.78 x 10²
ø32	Push	80.4	1.21 x 10²	1.61 x 10²	2.41 x 10²	3.22 x 10²	4.02 x 10²	4.83 x 10²	5.63 x 10²	6.43 x 10²	7.24 x 10²	8.04 x 10²
	Pull	60.3	90.5	1.21 x 10²	1.81 x 10²	2.41 x 10²	3.02 x 10²	3.62 x 10²	4.22 x 10²	4.83 x 10²	5.43 x 10²	6.03 x 10²
ø40	Push	1.26 x 10²	1.88 x 10²	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²	1.01 x 10³	1.13 x 10³	1.26 x 10³
	Pull	1.06 x 10²	1.58 x 10²	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²	8.44 x 10²	9.50 x 10²	1.06 x 10³
ø50	Push	1.96 x 10²	2.95 x 10²	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	1.65 x 10²	2.47 x 10²	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³
ø63	Push	3.12 x 10²	4.68 x 10²	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³	2.49 x 10³	2.81 x 10³	3.12 x 10³
	Pull	2.80 x 10²	4.20 x 10²	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³	2.24 x 10³	2.52 x 10³	2.80 x 10³
ø80	Push	5.03 x 10²	7.54 x 10²	1.01 x 10³	1.51 x 10³	2.01 x 10³	2.51 x 10³	3.02 x 10³	3.52 x 10³	4.02 x 10³	4.52 x 10³	5.03 x 10³
	Pull	4.54 x 10²	6.80 x 10²	9.07 x 10²	1.36 x 10³	1.81 x 10³	2.27 x 10³	2.72 x 10³	3.17 x 10³	3.63 x 10³	4.08 x 10³	4.54 x 10³

For cylinder weight, please refer to P. 642 to 645.

Outline Dimension Drawing

Same as double acting, single rod type STS/STL series. Please refer to the P. below.

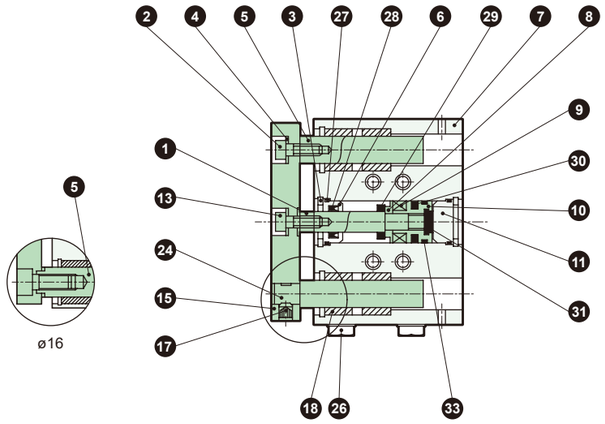
STS Series: P. 486 (ø8 to ø16), P. 487 (ø2, ø25), P. 488 (ø32 to ø63), P. 489 (ø80)
STL Series P. 491 (ø8 to ø16), P. 492 (ø20, ø25), P. 493 (ø32 to ø63), P. 494 (ø80)

Internal structure diagram / Material (Bore size: ø12 to ø63)

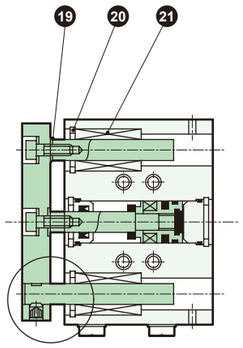
● Packing Material: Fluoro Rubber

STS-$^{M}_{B}$T2

ø12, ø16

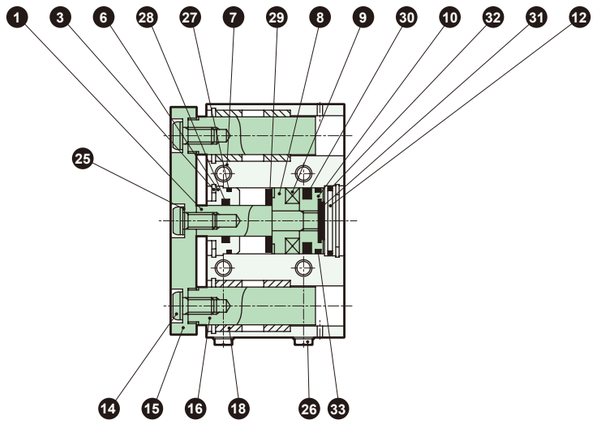


Plain bearing (M)

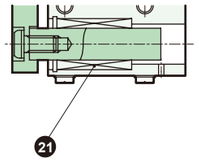


Rolling bearing (B)

ø20, ø25

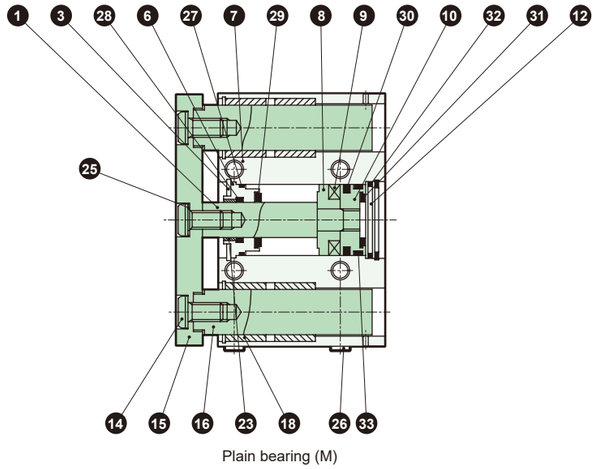


Plain bearing (M)

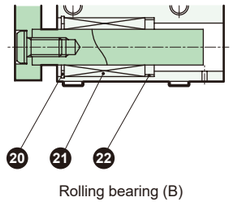


Rolling bearing (B)

ø32, ø40, ø50, ø63



Plain bearing (M)

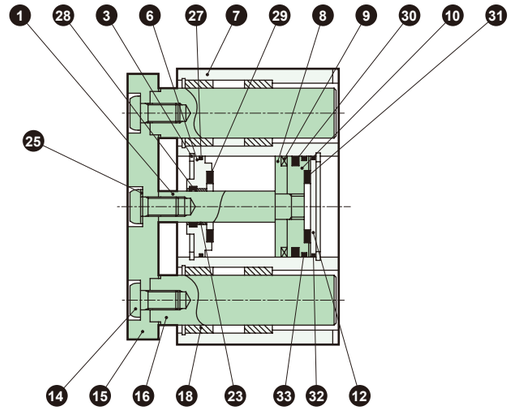


Rolling bearing (B)

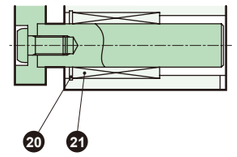
Internal structure diagram / Material (Bore size: ø80)

●Packing Material: Fluoro Rubber

STS-$^{M}_{B}$T2



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name		Material	Remarks
1	Piston Rod		ø12 to 25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate
3	C-type retaining ring		Steel	Zinc phosphate
4	Plain Washer		Steel	Black Oxide
5	Guide rod (1) (ø12, ø16)	M B	Stainless Steel Alloy Steel	ø12,16: Industrial chromium plating Industrial Hard Chrome Plating
6	Rod Metal		Aluminum Alloy	ø12 to 25: Alumite ø32 to 50: Chromate
7	Cylinder Body		Aluminum Alloy	Hard Anodized
8	Spacer		ø12, ø63, ø80: Aluminum alloy ø20 to ø50: Polyamide	ø12, ø63, ø80: Chromate
9	Magnet			
10	Piston		Aluminum Alloy	ø20 to ø80: Chromate
11	Cover		Aluminum Alloy	
12	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
13	Hexagon socket head cap screw (ø12, ø16)		Steel	Zinc Chromate
14	Hex Socket Button Head Bolt		Steel	Zinc Chromate
15	End plate		Aluminum Alloy	Alumite
16	Guide rod (ø20 to ø80)	M B	Steel Alloy Steel	Industrial Hard Chrome Plating Industrial Hard Chrome Plating

Part No.	Part Name		Material	Remarks
17	Hexagon socket head set screw		Steel	Blackening (ø12 only)
18	Metal		Oil-Impregnated Bearing Alloy	
19	Plain Washer		Steel	Black Oxide
20	C-type retaining ring		Steel	Zinc phosphate
21	Ball bush			
22	Collar		Aluminum Alloy	
23	Bushing		Bearing Alloy	
24	Guide rod (2) (ø12)	M B	Stainless Steel Alloy Steel	ø12: Industrial chromium plating Industrial Hard Chrome Plating
25	Belleville washer		Steel	
26	Plug		ø12 to ø25: - ø32 to ø63: Steel	ø12 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
27	Metal gasket		Fluoro Rubber	
28	Rod Packing		Fluoro Rubber	
29	Cushion rubber (R)		Urethane Rubber	
30	Piston Packing		Fluoro Rubber	
31	Cushion rubber (H)		Urethane Rubber	
32	O-ring		Fluoro Rubber	
33	Wear Ring		Polyacetal	

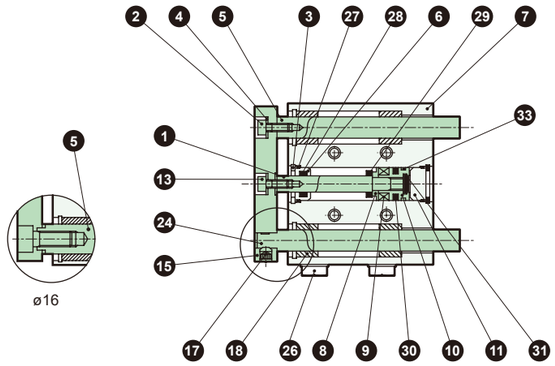
For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal structure diagram / Material (Bore size: ø12 to ø63)

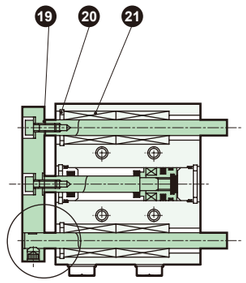
● Packing Material: Fluoro Rubber

STSL-$^{M}_{B}$T2

ø12, ø16

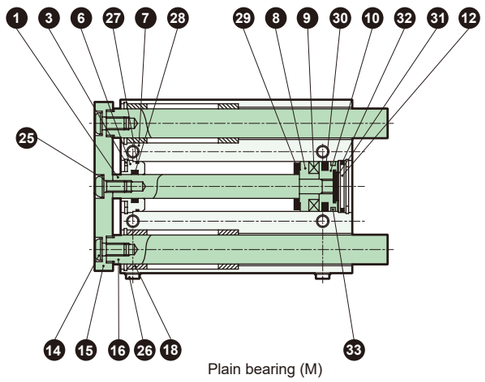


Plain bearing (M)

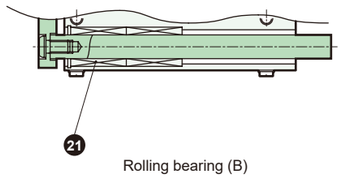


Rolling bearing (B)

ø20, ø25

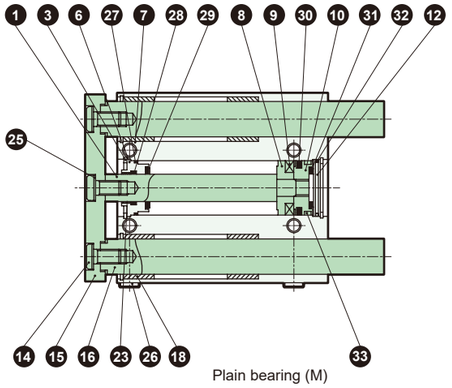


Plain bearing (M)

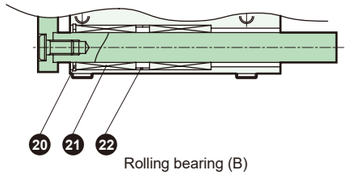


Rolling bearing (B)

ø32, ø40, ø50, ø63



Plain bearing (M)

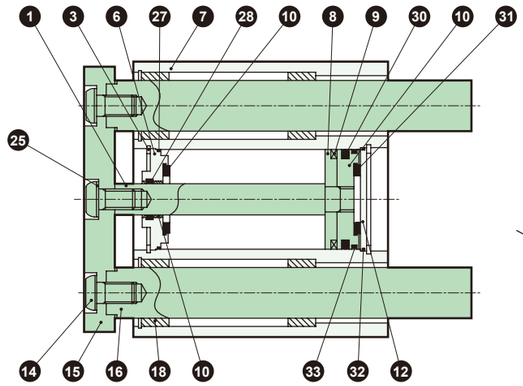


Rolling bearing (B)

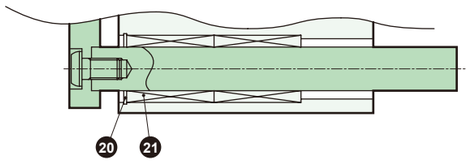
Internal structure diagram / Material (Bore size: ø80)

● Packing Material: Fluoro Rubber

STL-$^{M}_{B}$T2



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name		Material	Remarks
1	Piston Rod		ø12 to 25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	Hexagon Socket Head Cap Screw		Steel	Zinc Chromate
3	C-type retaining ring		Steel	Zinc phosphate
4	Plain Washer		Steel	Black Oxide
5	Guide rod (1) (ø12, ø16)	M B	Stainless Steel Alloy Steel	ø12,16: Industrial chromium plating Industrial Hard Chrome Plating
6	Rod Metal		Aluminum Alloy	ø12 to 25: Alumite ø32 to 50: Chromate
7	Cylinder Body		Aluminum Alloy	Hard Anodized
8	Spacer		ø12, ø63, ø80: Aluminum alloy ø20 to ø50: Polyamide	ø12, ø63, ø80: Chromate
9	Magnet			
10	Piston		Aluminum Alloy	ø20 to ø80: Chromate
11	Cover		Aluminum Alloy	
12	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
13	Hexagon socket head cap screw (ø12, ø16)		Steel	Zinc Chromate
14	Hex Socket Button Head Bolt		Steel	Zinc Chromate
15	End plate		Aluminum Alloy	Alumite
16	Guide rod (ø20 to ø80)	M B	Steel Alloy Steel	Industrial Hard Chrome Plating Industrial Hard Chrome Plating

Part No.	Part Name		Material	Remarks
17	Hexagon socket head set screw		Steel	Blackening (ø12 only)
18	Metal		Oil-Impregnated Bearing Alloy	
19	Plain Washer		Steel	Black Oxide
20	C-type retaining ring		Steel	Zinc phosphate
21	Ball bush			
22	Collar		Aluminum Alloy	
23	Bushing		Bearing Alloy	
24	Guide rod (2) (ø12)	M B	Stainless Steel Alloy Steel	ø12: Industrial chromium plating Industrial Hard Chrome Plating
25	Belleville washer		Steel	
26	Plug		ø12 to ø25: - ø32 to ø63: Steel	ø12 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
27	Metal gasket		Fluoro Rubber	
28	Rod Packing		Fluoro Rubber	
29	Cushion rubber (R)		Urethane Rubber	
30	Piston Packing		Fluoro Rubber	
31	Cushion rubber (H)		Urethane Rubber	
32	O-ring		Fluoro Rubber	
33	Wear Ring		Polyacetal	

For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Guided cylinder Rubber-air cushioned

STS / STL-$\frac{M}{B}$-□C Series

● Bore size: ø32, ø40, ø50, ø63, ø80

Circuit Diagram Symbol

RoHS

Model No. Notation Method

● Short stroke

Without switch Note1)
(Built-in magnet for switch)

STS - M — 32 □ C - 50 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STS - M — 32 □ C - 50 - T0H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STS - M - L1 - 40 □ C - 50 - T1H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

● Long stroke

Without switch Note1)
(Built-in magnet for switch)

STL - M — 32 □ C - 100 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STL - M — 32 □ C - 100 - T0H - D - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STL - M - L1 - 40 □ C - 100 - T1H - D - F
Model No. ❶ Bearing type ❷ Bore size ❸ Piping thread type □ With Rubber Air Cushion ❹ Stroke ❺ Switch Model No. ❻ Number of Switches ❼ Option

Note1) For ø80, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

❸ Piping thread type

Code	Content
Blank	Rc Thread
N	NPT Thread (Custom Order Product)
G	G Thread (Custom Order Product)

❹ Stroke (mm)

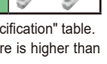
Series	Stroke (mm)		Applicable Bore Size ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	25	●	●	●	●	●
		50	●	●	●	●	●
		75					●
		100					●
	Intermediate Stroke *1, *2		Every 5 mm				

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

Series	Stroke (mm)		Applicable Bore Size ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	
		75	●	●	●	●	●
		100	●	●	●	●	●
		125	●	●	●	●	●
		150	●	●	●	●	●
		175	●	●	●	●	●
		200	●	●	●	●	●
		225	●	●	●	●	●
		250	●	●	●	●	●
		275	●	●	●	●	●
		300	●	●	●	●	●
		325	●	●	●	●	●
		350	●	●	●	●	●
		375	●	●	●	●	●
		400	●	●	●	●	●
	Intermediate Stroke *1, *2		Every 5 mm				

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED / Special Function	Wiring (Output)	Load Voltage (V) AC	DC	Load Current (mA) AC	DC	Lead wire *1 Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color for AC Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	*4

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: For the 2-color display, T1H/V, T8H/V and off-delay for ø40 and over, insert "L1" with "-" between ❶ and ❷. (However, T2WH/V and T3WH/V are excluded)
Example) STS-M-L1-63C-50-T1H3-D-F
For ø80, T1H/V, T8H/V, off-delay type, and AC magnetic field type switches cannot be retrofitted after purchasing the standard product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.
(Example) STS-M-L1-80C-50-F
*5: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*6 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*6: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

❼ Option

Code	Content
F	End plate material: Steel
*1 M	Corrosion resistant type (Piston rod, guide rod material: SUS) (Custom order)
*1 M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) (Custom order)

*1: Refer to P. 502 for material details.

For combinations of variations and options,
please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

About Custom Product Specifications

For details, see P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)
STS/L-$\frac{M}{B}$-□C - ····· - O

Switch Single Unit Model No. Notation Method

SW - T0H
❺ Switch Model No.

Specifications

Item		STS/L-M/B-□C				
Bore Size	mm	ø32	ø40	ø50	ø63	ø80
Actuation method		Double Acting Type				
Operating Fluid		Compressed Air				
Max. Working Pressure	MPa	1.0				
Min. Operating Pressure	MPa	0.2				
Proof Pressure	MPa	1.6				
Ambient Temperature	°C	-10 to 60 (Provided that freezing does not occur)				
Port Size		Rc1/8		Rc1/4		Rc3/8
Stroke tolerance	mm	+2.0 0				
Operating Piston Speed	mm/s	50 to 500			50 to 300	
Cushion		With Rubber Air Cushion				
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)				
Allowable Absorbed Energy	J	0.401	0.627	0.980	1.560	2.510

Stroke

● Short stroke STS

Bore Size (mm)	Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø32	25, 50	50	5	5 *1
ø40				
ø50				
ø63			10	10 *1
ø80	25, 50, 75, 100	100		

*1: This is for the case with 1 or 2 switches.

● Long stroke STL

Bore Size (mm)	Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø32	50, 75, 100, 125, 150 175, 200, 225, 250 275, 300, 325, 350 375, 400	400	30	30 *2
ø40				
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375, 400		55	55 *2

*1: Intermediate strokes can be manufactured in 5 mm increments. However, the overall length dimension will be the same as the standard stroke above it.
*2: This is for the case with 1 or 2 switches.

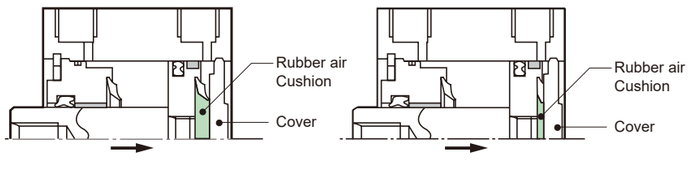
Theoretical Thrust Table

(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa								
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø32	Push	1.61 x 10²	2.41 x 10²	3.22 x 10²	4.02 x 10²	4.83 x 10²	5.63 x 10²	6.43 x 10²	7.24 x 10²	8.04 x 10²
	Pull	1.21 x 10²	1.81 x 10²	2.41 x 10²	3.02 x 10²	3.62 x 10²	4.22 x 10²	4.83 x 10²	5.43 x 10²	6.03 x 10²
ø40	Push	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²	1.01 x 10³	1.13 x 10³	1.26 x 10³
	Pull	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²	8.44 x 10²	9.50 x 10²	1.06 x 10³
ø50	Push	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³
ø63	Push	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³	2.49 x 10³	2.81 x 10³	3.12 x 10³
	Pull	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³	2.24 x 10³	2.52 x 10³	2.80 x 10³
ø80	Push	1.01 x 10³	1.51 x 10³	2.01 x 10³	2.51 x 10³	3.02 x 10³	3.52 x 10³	4.02 x 10³	4.52 x 10³	5.03 x 10³
	Pull	9.07 x 10²	1.36 x 10³	1.81 x 10³	2.27 x 10³	2.72 x 10³	3.17 x 10³	3.63 x 10³	4.08 x 10³	4.54 x 10³

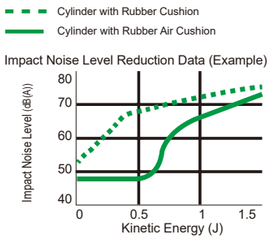
For cylinder weight, please refer to P. 642 to 645.

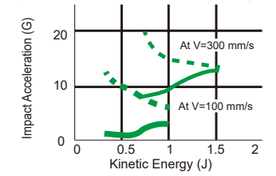
Rubber air cushion mechanism



Explanation at Pull

When the piston operates and the rubber air cushion comes into contact with the cover, a sealed air space is formed in ■. The air in this sealed space is compressed as the piston operates and absorbs energy.
At the stroke end, energy absorption due to the compressive strain of the rubber air cushion is also added.





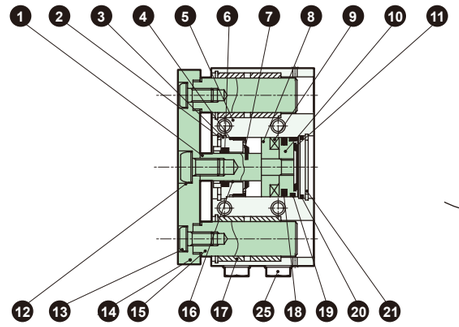
Outline Dimension Drawing

Same as double acting, single rod type STS/STL series. Please refer to the P. below.

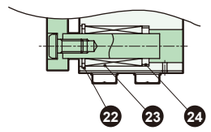
STS Series: P. 486 (ø8 to ø16), P. 487 (ø20, ø25), P.488 (ø32 to ø63), P.489 (ø80)
STL Series P. 491 (ø8 to ø16), P. 492 (ø20, ø25), P. 493 (ø32 to ø63), P. 494 (ø80)

Internal Structure Diagram / Material

● STS-$^{M}_{B}$-32C to 80C (short stroke)

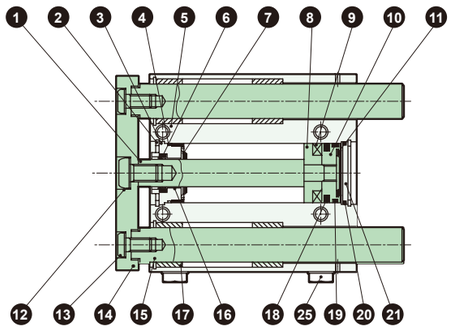


Bearing (M)

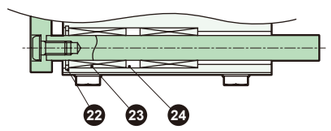


Ball bearing (B)

● STL-$^{M}_{B}$-32C to 80C (long stroke)



Bearing (M)



Ball bearing (B)

Part No.	Part Name	Material	Remarks
1	Piston Rod	Steel	Industrial Hard Chrome Plating
2	C-type retaining ring	Steel	Zinc phosphate
3	Rod Metal	Special aluminum alloy	Alumite
4	Metal gasket	Nitrile Rubber	
5	Cylinder Body	Aluminum Alloy	Hard Anodized
6	Rod Packing	Nitrile Rubber	
7	Rubber air cushion (R)	Urethane Rubber	
8	Spacer	Aluminum Alloy	
9	Magnet	Plastic	
10	Piston	Aluminum Alloy	
11	Rubber air cushion (H)	Special rubber	
12	Belleville washer	Steel	
13	Hex Socket Button Head Bolt	Steel	Zinc Chromate
14	End plate	Aluminum Alloy	Alumite

Part No.	Part Name	Material	Remarks
15	Guide rod	Steel	Industrial Hard Chrome Plating
16	Bushing	Bearing Alloy	
17	Metal	Oil-Impregnated Bearing Alloy	
18	Piston Packing	Nitrile Rubber	
19	Wear Ring	Polyacetal	
20	O-ring	Nitrile Rubber	
21	Bottom plate	ø32 to ø63: Aluminum alloy ø80: Steel	 ø80: Zinc chromate
22	C-type retaining ring	Steel	Zinc phosphate
23	Ball bush		
24	Collar	Aluminum Alloy	(Not provided for ø80)
25	Plug	ø8 to ø25: - ø32 to ø63: Steel	ø8 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate

For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

MEMO

Guided
STM
STG
STS/ STL
STR2
UCA2
Cylinder Switch
Ending

Technical Data

Refer to P. 638 for guided cylinder selection guide.

[Performance Comparison of Impact Noise Level]

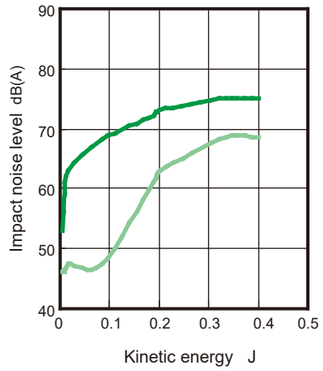
The data is a comparison example under the following conditions.
Values change depending on frame rigidity, etc., so they are not guaranteed values.

(Test conditions)

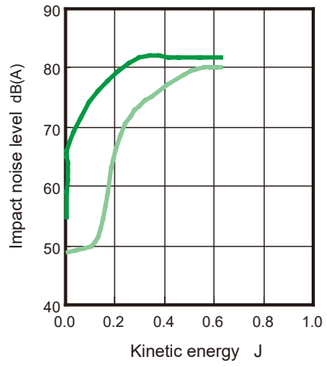
Cylinder type	: STS/L
Cylinder Mounting Direction	: Vertically upward
Cylinder supply pressure	: 0.5 MPa
Sound level meter measurement position	: 1 m from sample

Standard rubber cushion product:
Rubber air cushion product:

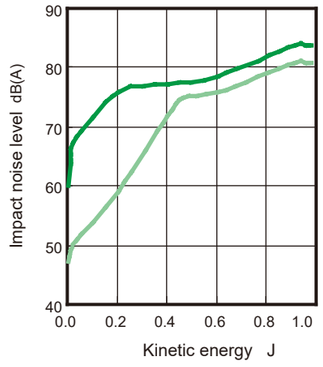
ø32



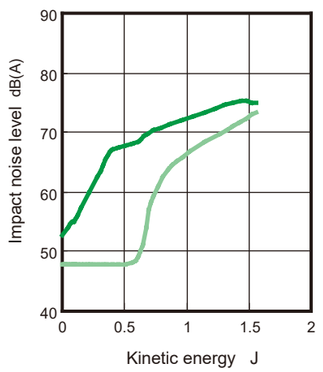
ø40



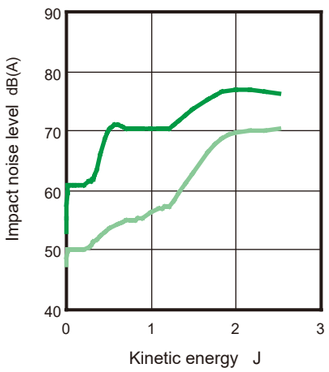
ø50



ø63



ø80

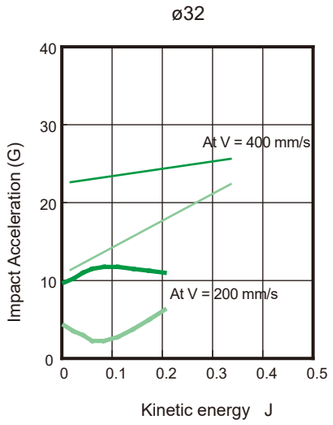


Technical Data

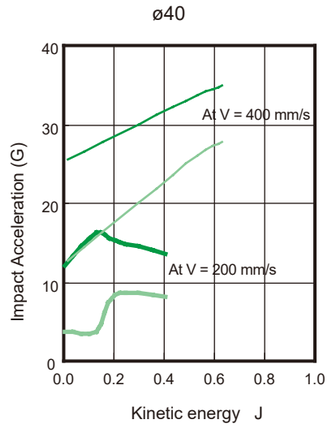
[Performance Comparison of Impact Acceleration]

Standard rubber cushion product:
Rubber air cushion product:

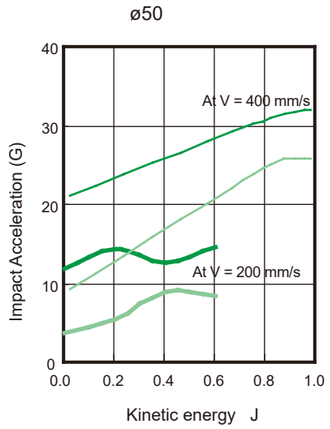
ø32



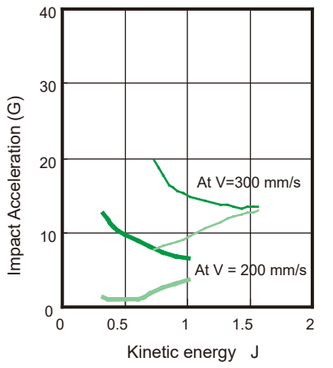
ø40



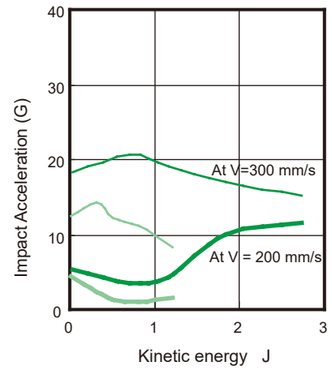
ø50



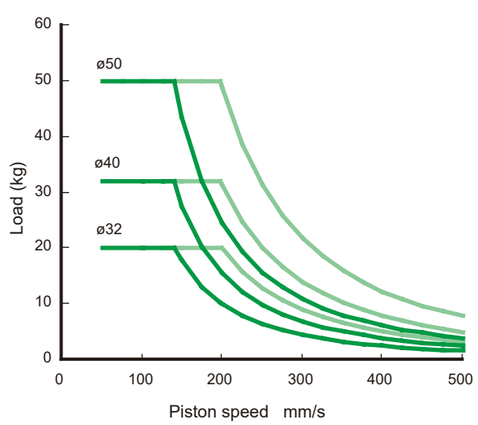
ø63

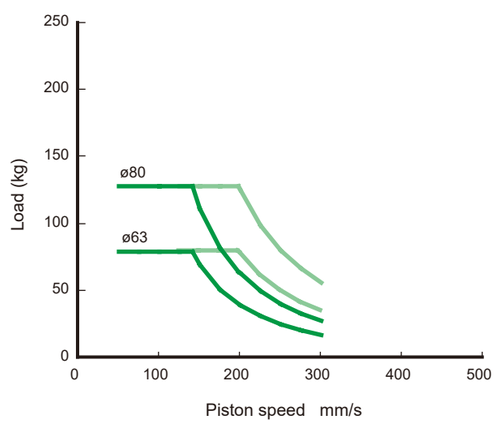


ø80



[Allowable Energy Value]





The usable range is to the lower left of the curve.
It is possible to use within the range indicated by the line in the figure, but it is recommended to use within the range of the solid line to make the silencing effect more effective.

Guided cylinder Double acting, With air cushion

STS / STL-$^{M}_{B}$C Series

● Bore size: ø25, ø32, ø40, ø50, ø63, ø80

Circuit Diagram Symbol

RoHS

Model No. Notation Method

● Short stroke

Without switch Note1)
(Built-in magnet for switch)

STS - M C — 25 [ ] - 25 — F

Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STS - M C — 25 [ ] - 25 - T2H - R - F

Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STS - M C - L1 - 40 [ ] - 25 - T1H - R - F

Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

● Long stroke

Without switch Note1)
(Built-in magnet for switch)

STL - M C — 25 [ ] - 50 — F

Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STL - M C — 25 [ ] - 50 - T2H - R - F

Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STL - M C - L1 - 40 [ ] - 50 - T1H - R - F

Model No. ❶ Bearing type ❷ Bore size ❸ Piping thread type ❹ Stroke ❺ Switch Model No. ❻ Number of Switches ❼ Option

Note1) For ø80, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

❸ Piping thread type

Code	Content
Blank	M5 (ø25)
	Rc thread (ø32 to ø80)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❹ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size ø25	ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	25	●	●	●	●	●	●
		50	●	●	●	●	●	●
		75						●
		100						●
	Intermediate Stroke *1		Every 1 mm (Custom product)					

*1: The overall length dimension is the same as the dimension of the longer standard stroke.

Series	Stroke (mm)		Applicable Bore Size ø25	ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	●	
		75	●	●	●	●	●	●
		100	●	●	●	●	●	●
		125	●	●	●	●	●	●
		150	●	●	●	●	●	●
		175	●	●	●	●	●	●
		200	●	●	●	●	●	●
		225	●	●	●	●	●	●
		250	●	●	●	●	●	●
		275	●	●	●	●	●	●
		300	●	●	●	●	●	●
		325	●	●	●	●	●	●
		350	●	●	●	●	●	●
		375	●	●	●	●	●	●
		400	●	●	●	●	●	
	Intermediate Stroke *1		Every 1 mm (Custom product)					

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED / Special Function	Wiring (Output)	Load Voltage (V) AC	DC	Load Current (mA) AC	DC	Lead wire *1 Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color for AC Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	*4

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: For the 2-color display, T1H/V, T8H/V and off-delay for ø40 and over, insert "L1" with "-" between ❶ and ❷. (However, T2WH/V and T3WH/V are excluded) Example) STS-MC-L1-63-50-T1H3-D-F
For ø80, T1H/V, T8H/V, off-delay type, and AC magnetic field type switches cannot be retrofitted after purchasing the standard product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.
Example) STS-MC-L1-80-50-F
*5: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

* Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*6 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*6: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

❼ Option

Code	Content
F	End plate material: Steel
*1 M	Corrosion proof (piston rod, guide rod material: SUS) (Custom order)
*1 M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) (Custom order)

*1: Refer to P. 502 for material details.

For combinations of variations and options,
please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

About Custom Product Specifications

For details, see P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)
STS/L-$^{M}_{B}$C - ····· O

Switch Single Unit Model No. Notation Method

SW - T0V

❺ Switch Model No.

Specifications

Item	STS-MC/BC, STL-MC/BC					
Bore Size mm	ø25	ø32	ø40	ø50	ø63	ø80
Actuation method	Double Acting/With Air Cushion					
Operating Fluid	Compressed Air					
Max. Working Pressure MPa	1.0					
Min. Operating Pressure MPa	0.15	0.1				
Proof Pressure MPa	1.6					
Ambient Temperature °C	-10 to 60 (No freezing)					
Port Size	M5	Rc1/8		Rc 1/4		Rc 3/8
Stroke tolerance mm	$^{+2.0}_{0}$					
Operating Piston Speed mm/s	50 to 500				50 to 300	
Cushion	With Air Cushion					
Effective Cushion Length mm	8.1	8.6		13.4		15.4
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)					
Allowable Absorbed Energy J	1.18	2.27	3.05	3.81	15.64	20.18

Stroke

● Short stroke STS

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Minimum Stroke (mm) *1	Min. stroke with switch (mm) *1
ø25	25, 50	50	15	15 *2
ø32				
ø40				
ø50				
ø63				
ø80	25, 50, 75, 100	100		

*1: For min. stroke and below, select the basic type since there is no cushion effect.
*2: This is for the case with 1 or 2 switches.

● Long stroke STL

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø25	50, 75, 100, 125, 150 175, 200, 225, 250 275, 300, 325, 350 375, 400	400	30	30 *2
ø32				
ø40				
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375	375	55	55 *2

*1: Intermediate strokes can be manufactured in 1 mm increments. (Custom order)
*2: This is for the case with 1 or 2 switches.

Theoretical Thrust Table

(Unit: N)

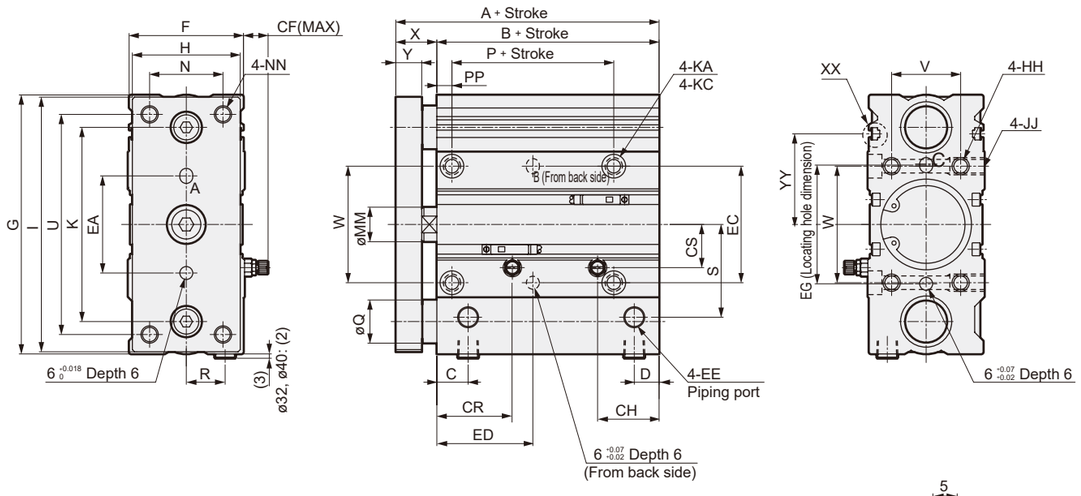
Bore size (mm)	Operating Direction	Operating Pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø25	Push	-	73.6	98.2	1.47 x 10^2	1.96 x 10^2	2.45 x 10^2	2.95 x 10^2	3.44 x 10^2	3.93 x 10^2	4.42 x 10^2	4.91 x 10^2
	Pull	-	56.7	75.6	1.13x10^2	1.51 x 10^2	1.89 x 10^2	2.27 x 10^2	2.64 x 10^2	3.02 x 10^2	3.40 x 10^2	3.78 x 10^2
ø32	Push	80.4	1.21 x 10^2	1.61 x 10^2	2.41 x 10^2	3.22 x 10^2	4.02 x 10^2	4.83 x 10^2	5.63 x 10^2	6.43 x 10^2	7.24 x 10^2	8.04 x 10^2
	Pull	60.3	90.5	1.21 x 10^2	1.81 x 10^2	2.41 x 10^2	3.02 x 10^2	3.62 x 10^2	4.22 x 10^2	4.83 x 10^2	5.43 x 10^2	6.03 x 10^2
ø40	Push	1.26 x 10^2	1.88 x 10^2	2.51 x 10^2	3.77 x 10^2	5.03 x 10^2	6.28 x 10^2	7.54 x 10^2	8.80 x 10^2	1.01 x 10^3	1.13 x 10^3	1.26 x 10^3
	Pull	1.06 x 10^2	1.58 x 10^2	2.11 x 10^2	3.17 x 10^2	4.22 x 10^2	5.28 x 10^2	6.33 x 10^2	7.39 x 10^2	8.44 x 10^2	9.50 x 10^2	1.06 x 10^3
ø50	Push	1.96 x 10^2	2.95 x 10^2	3.93 x 10^2	5.89 x 10^2	7.85 x 10^2	9.82 x 10^2	1.18 x 10^3	1.37 x 10^3	1.57 x 10^3	1.77 x 10^3	1.96 x 10^3
	Pull	1.65 x 10^2	2.47 x 10^2	3.30 x 10^2	4.95 x 10^2	6.60 x 10^2	8.25 x 10^2	9.90 x 10^2	1.15 x 10^3	1.32 x 10^3	1.48 x 10^3	1.65 x 10^3
ø63	Push	3.12 x 10^2	4.68 x 10^2	6.23 x 10^2	9.35 x 10^2	1.25 x 10^3	1.56 x 10^3	1.87 x 10^3	2.18 x 10^3	2.49 x 10^3	2.81 x 10^3	3.12 x 10^3
	Pull	2.80 x 10^2	4.20 x 10^2	5.61 x 10^2	8.41 x 10^2	1.12 x 10^3	1.40 x 10^3	1.68 x 10^3	1.96 x 10^3	2.24 x 10^3	2.52 x 10^3	2.80 x 10^3
ø80	Push	5.03 x 10^2	7.54 x 10^2	1.01 x 10^3	1.51 x 10^3	2.01 x 10^3	2.51 x 10^3	3.02 x 10^3	3.52 x 10^3	4.02 x 10^3	4.52 x 10^3	5.03 x 10^3
	Pull	4.54 x 10^2	6.80 x 10^2	9.07 x 10^2	1.36 x 10^3	1.81 x 10^3	2.27 x 10^3	2.72 x 10^3	3.17 x 10^3	3.63 x 10^3	4.08 x 10^3	4.54 x 10^3

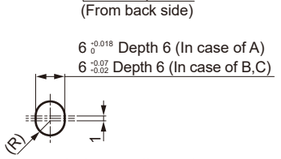
For cylinder weight, please refer to P. 642 to 645.

Dimensions (bore size: ø25, ø32, ø40, ø50, ø63)

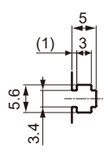
● With Air Cushion

STS-$^{M}_{B}$C





A, B, C Long hole part dimension



Detail of XX part

● STS-M/BC (ø25 to ø63)

Code / Bore Size (mm)	A	B	C	D	EE	EA	EC	EG	ED	F	G	H	HH	I	JJ	K	KA
ø25	79	66	12	9	M5x0.8	32	35	37	27 + Stroke/2	42	86	38	M6 Depth 12	84	M6 Depth 12	63	5.2 Through
ø32	93	74	14	10.5	Rc1/8	42	45	46	30 + Stroke/2	47	111	45	M8 Depth 16	109	M8 Depth 16	81	6.3 Through
ø40	97	78	14.5	11.5	Rc1/8	45	54	55	32 + Stroke/2	54	120	50	M8 Depth 16	118	M8 Depth 16	90	6.3 Through
ø50	102	80	16	12.5	Rc1/4	55	66	69	32 + Stroke/2	66	147	64	M10 Depth 20	145	M10 Depth 20	110	8.6 Through
ø63	108	86	12.5	17.5	Rc1/4	62	79	82	35 + Stroke/2	79	162	75	M10 Depth 20	160	M10 Depth 20	124	8.6 Through

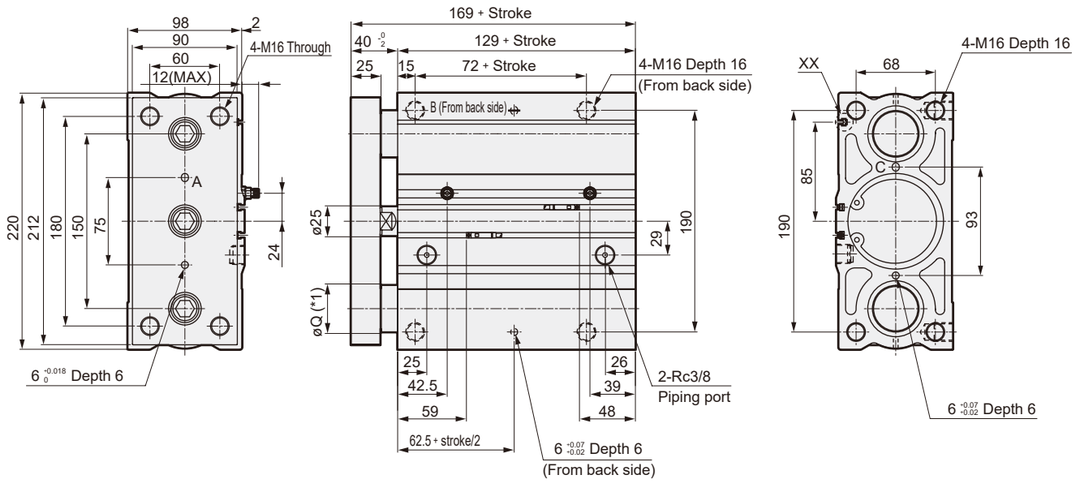
Code / Bore Size (mm)	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R	S	U	V	W	X	Y	YY	CF	CH	CR	CS
ø25	9.5 Counterbore Depth 5.4	12	26	M6 Through	45	6	14	12	14	26	72	24	35	13 0 -2	9	27	15	24.5	27	25
ø32	11 Counterbore Depth 6.5	16	29	M8 Through	47	7	20	16	16	39	93	25	45	19 0 -2	12	39	14	28	33	34
ø40	11 Counterbore Depth 6.5	16	34	M8 Through	50	7	20	16	18	43	102	32	54	19 0 -2	12	42	14	29	35	20
ø50	14 Counterbore Depth 8.6	20	44	M10 Through	51	8	25	20	22	49	125	38	66	22 0 -2	16	45	17	29	36	23
ø63	14 Counterbore Depth 8.6	20	55	M10 Through	51	8	25	20	26	56	140	50	79	22 0 -2	16	52	17	29	41.5	25

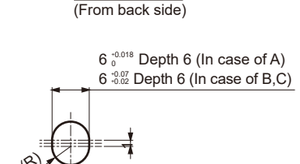
*1: Intermediate strokes can be manufactured in 1 mm increments. (Custom order)
*2: Port plug of ø25 is hexagonal.
***3: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø80)

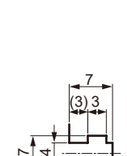
● With Air Cushion

STS-$^{M}_{B}$C





A, B, C Long hole part dimension



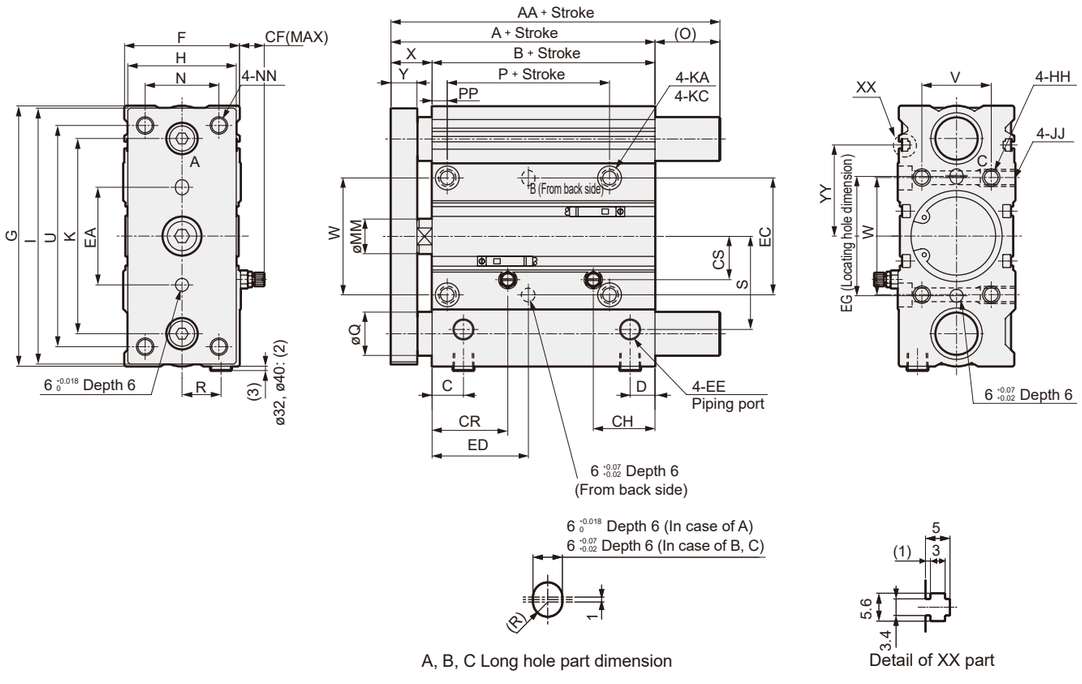
Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
*2: When using a custom stroke, the dimensions are the same as the longer standard stroke. The standard strokes of ø80 are 25, 50, 75 and 100 mm.
***3: For dimensions with each switch, refer to P. 636, 637.**

Dimensions (bore size: ø25, ø32, ø40, ø50, ø63)

● Air Cushion Type

STL-$^{M}_{B}$C



A, B, C Long hole part dimension

Detail of XX part

● STL-M/BC (ø25 to ø63)

Code / Bore Size (mm)	A	AA	B	C	D	EE	EA	EC	EG	ED	F	G	H	HH	I	JJ	K	KA
ø25	79	79	66	12	9	M5x0.8	32	35	37	27 + Stroke/2	42	86	38	M6 Depth 12	84	M6 Depth 12	63	5.2 Through
ø32	93	102	74	14	10.5	Rc1/8	42	45	46	30 + Stroke/2	47	111	45	M8 Depth 16	109	M8 Depth 16	81	6.3 Through
ø40	97	102	78	14.5	11.5	Rc1/8	45	54	55	32 + Stroke/2	54	120	50	M8 Depth 16	118	M8 Depth 16	90	6.3 Through
ø50	102	125	80	16	12.5	Rc1/4	55	66	69	32 + Stroke/2	66	147	64	M10 Depth 20	145	M10 Depth 20	110	8.6 Through
ø63	108	125	86	12.5	17.5	Rc1/4	62	79	82	35 + Stroke/2	79	162	75	M10 Depth 20	160	M10 Depth 20	124	8.6 Through

Code / Bore Size (mm)	KC	MM	N	NN	O	P	PP	Q STL-M	Q STL-B	R	S	U	V	W	X	Y	YY	CF	CH	CR	CS
ø25	9.5 Counterbore Depth 5.4	12	26	M6 Through	0	45	6	14	12	14	26	72	24	35	13 0 -2	9	27	15	24.5	27	25
ø32	11 Counterbore Depth 6.5	16	29	M8 Through	9	47	7	20	16	16	39	93	25	45	19 0 -2	12	39	14	28	33	34
ø40	11 Counterbore Depth 6.5	16	34	M8 Through	5	50	7	20	16	18	43	102	32	54	19 0 -2	12	42	14	29	35	20
ø50	14 Counterbore Depth 8.6	20	44	M10 Through	23	51	8	25	20	22	49	125	38	66	22 0 -2	16	45	17	29	36	23
ø63	14 Counterbore Depth 8.6	20	55	M10 Through	17	51	8	25	20	26	56	140	50	79	22 0 -2	16	52	17	29	41.5	25

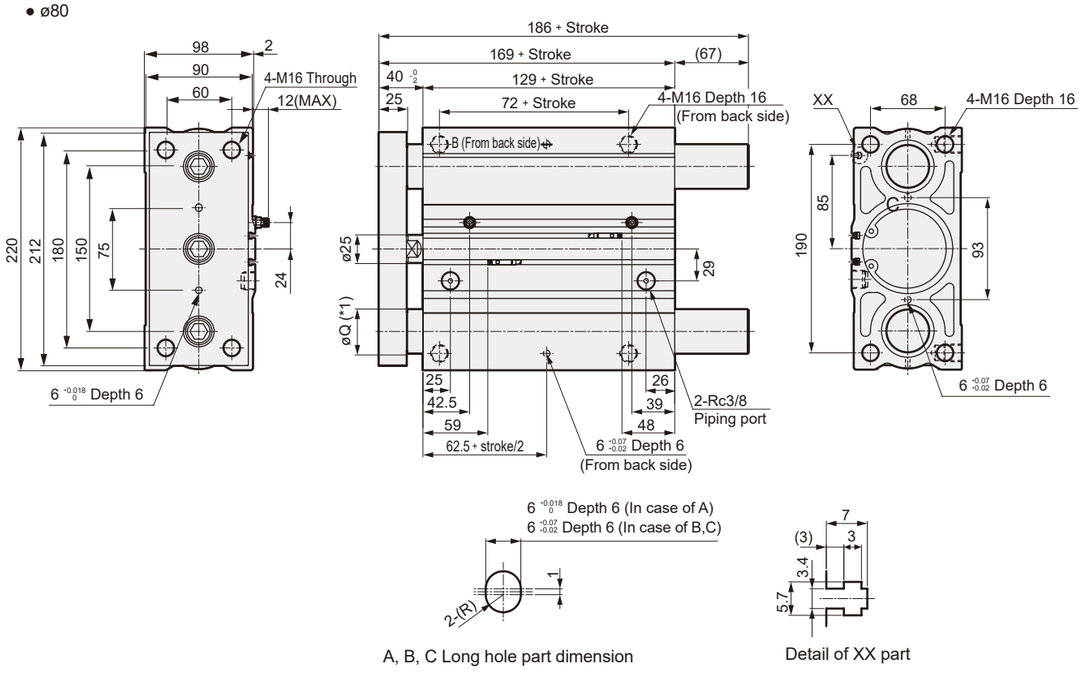
*1: Intermediate strokes can be manufactured in 1 mm increments. (Custom order)
*2: Port plug of ø25 is hexagonal.
***3: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø80)

● Air Cushion Type

STL-$^{M}_{B}$C

● ø80



A, B, C Long hole part dimension

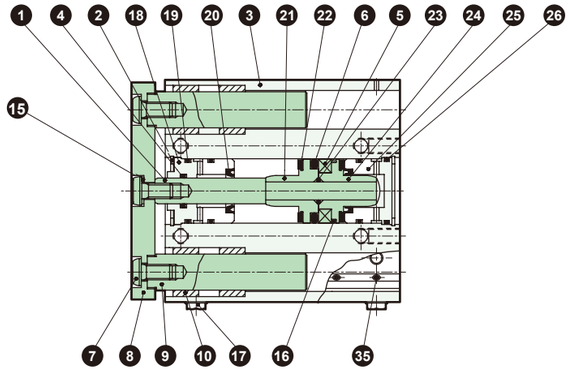
Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
*2: When using a custom stroke, the dimensions are the same as the longer standard stroke. The standard strokes of ø80 are 25, 50, 75 and 100 mm.
***3: For dimensions with each switch, refer to P. 636, 637.**

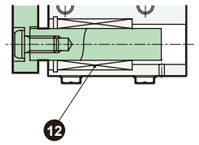
Internal structure / material (bore size: ø25 to ø63)

● With Air Cushion

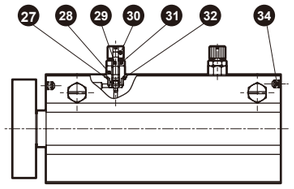
STS-$^{M}_{B}$C

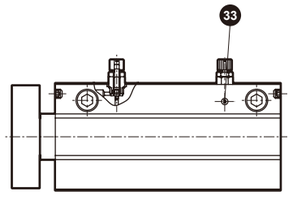


Plain bearing (M)

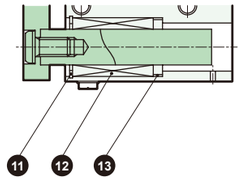


Rolling bearing (B)





(Only for ø32 to ø63)



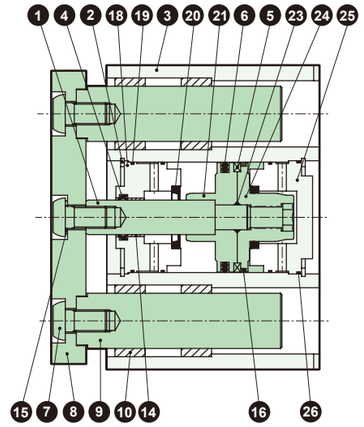
Rolling bearing (B)

(Only for ø32 to ø63)

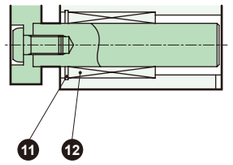
Internal structure diagram / Material (Bore size: ø80)

● With Air Cushion

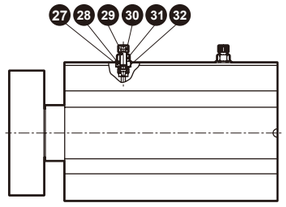
STS-$^{M}_{B}$C



Plain bearing (M)



Rolling bearing (B)



Part No.	Part Name		Material	Remarks
1	Piston Rod		ø25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	C-type retaining ring		Steel	Zinc phosphate
3	Cylinder Body		Aluminum Alloy	Hard Anodized
4	Rod Packing		Nitrile Rubber	
5	Magnet			
6	Piston Packing		Nitrile Rubber	
7	Hex Socket Button Head Bolt		Steel	Zinc Chromate
8	End plate		Aluminum Alloy	Alumite
9	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
10	Metal		Oil-Impregnated Bearing Alloy	
11	C-type retaining ring		Steel	Zinc phosphate
12	Ball bush			
13	Collar		Aluminum Alloy	
14	Bushing		Bearing Alloy	
15	Belleville washer		Steel	
16	Wear Ring		Polyacetal	
17	Plug		ø25 ø32 to ø63: Steel	ø25: FPL (CKD) ø32 to ø63: Zinc chromate

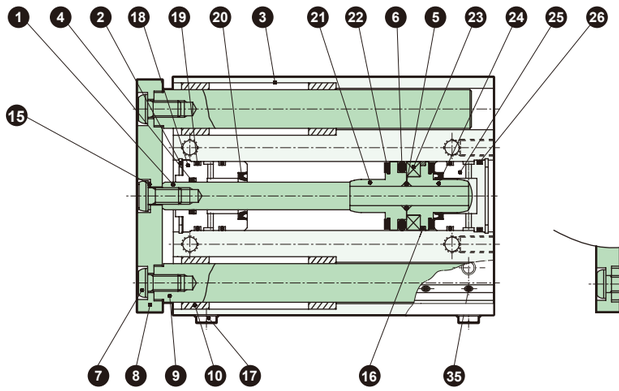
Part No.	Part Name	Material	Remarks
18	Rod Metal	Aluminum Alloy	Alumite
19	Metal gasket	Nitrile Rubber	
20	Cushion Packing	Nitrile Rubber, Steel	
21	Piston R	Aluminum Alloy	
22	Cushion Rubber	Urethane Rubber	
23	O-ring	Nitrile Rubber	
24	Piston H	Aluminum Alloy	
25	Bottom plate	Aluminum Alloy	Chromate
26	O-ring	Nitrile Rubber	
27	O-ring	Nitrile Rubber	
28	Needle Holder	Aluminum Alloy	
29	Needle	Stainless Steel	
30	Knob	Aluminum Alloy	
31	Lock Nut	Steel	Nickel Plating
32	O-ring	Nitrile Rubber	
33	Steel ball	Steel	
34	Hexagon socket head set screw	Stainless Steel	
35	Hexagon socket head set screw	Alloy Steel	Black Oxide

For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

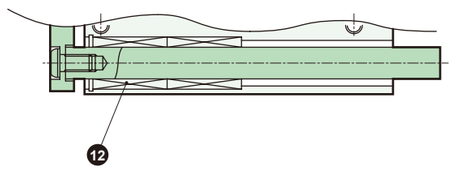
Internal structure / material (bore size: ø25 to ø63)

● With Air Cushion

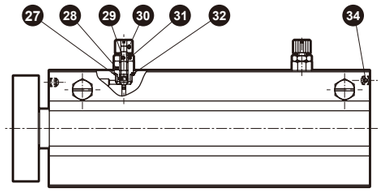
STL-$^{M}_{B}$C

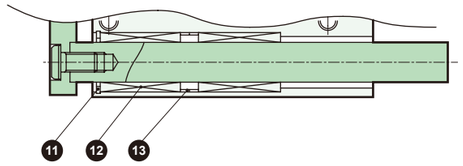


Plain bearing (M)

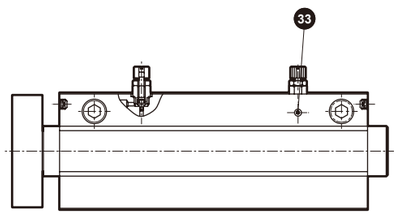


Rolling bearing (B)





Rolling bearing (B)
(For ø32 to ø63)

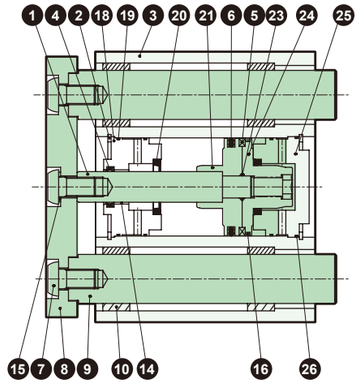


(Only for ø32 to ø63)

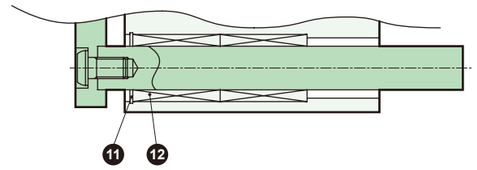
Internal structure diagram / Material (Bore size: ø80)

● With Air Cushion

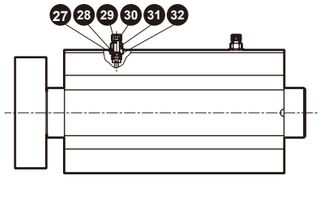
STL-$^{M}_{B}$C



Plain bearing (M)



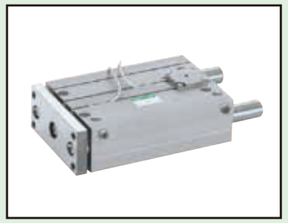
Rolling bearing (B)



Part No.	Part Name		Material	Remarks
1	Piston Rod		ø25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	C-type retaining ring		Steel	Zinc phosphate
3	Cylinder Body		Aluminum Alloy	Hard Anodized
4	Rod Packing		Nitrile Rubber	
5	Magnet			
6	Piston Packing		Nitrile Rubber	
7	Hex Socket Button Head Bolt		Steel	Zinc Chromate
8	End plate		Aluminum Alloy	Alumite
9	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
10	Metal		Oil-Impregnated Bearing Alloy	
11	C-type retaining ring		Steel	Zinc phosphate
12	Ball bush			
13	Collar		Aluminum Alloy	
14	Bushing		Bearing Alloy	
15	Belleville washer		Steel	
16	Wear Ring		Polyacetal	
17	Plug		ø25 ø32 to ø63: Steel	ø25: FPL (CKD) ø32 to ø63: Zinc chromate

Part No.	Part Name	Material	Remarks
18	Rod Metal	Aluminum Alloy	Alumite
19	Metal gasket	Nitrile Rubber	
20	Cushion Packing	Nitrile Rubber, Steel	
21	Piston R	Aluminum Alloy	
22	Cushion Rubber	Urethane Rubber	
23	O-ring	Nitrile Rubber	
24	Piston H	Aluminum Alloy	
25	Bottom plate	Aluminum Alloy	Chromate
26	O-ring	Nitrile Rubber	
27	O-ring	Nitrile Rubber	
28	Needle Holder	Aluminum Alloy	
29	Needle	Stainless Steel	
30	Knob	Aluminum Alloy	
31	Lock Nut	Steel	Nickel Plating
32	O-ring	Nitrile Rubber	
33	Steel ball	Steel	
34	Hexagon socket head set screw	Stainless Steel	
35	Hexagon socket head set screw	Alloy Steel	Black Oxide

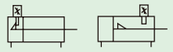
For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts



Guided cylinder Double acting, Drop prevention type

STS / STL-$^{M}_{B}$Q Series

Bore size: ø20, ø25, ø32, ø40, ø50, ø63, ø80

Circuit Diagram Symbol 

RoHS

Model No. Notation Method

● Short stroke

Without switch Note1) (Built-in magnet for switch)

STS - M Q — 20 ( ) - 25 - H — F

Model No. ❶ ❷ ❸ ❹ ❺ ❽

With switch Note1) (Built-in magnet for switch)

STS - M Q — 20 ( ) - 25 - H - T2H - R - F

Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

2-color indicator, T1H/V, T8H/V, With off-delay type switch (Built-in magnet for switch) (ø40 or more)

STS - M Q-L1 - 40 ( ) - 25 - H - T1H - R - F

Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

● Long stroke

Without switch Note1) (Built-in magnet for switch)

STL - M Q — 20 ( ) - 50 - H — F

Model No. ❶ ❷ ❸ ❹ ❺ ❽

With switch Note1) (Built-in magnet for switch)

STL - M Q — 20 ( ) - 50 - H - T2H - R - F

Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

2-color indicator, T1H/V, T8H/V, With off-delay type switch (Built-in magnet for switch) (ø40 or more)

STL - M Q-L1 - 40 ( ) - 50 - H - T1H - R - F

Model No. ❶ Bearing type ❷ Tube Bore size ❸ Piping thread Type ❹ Stroke ❺ Fall prevention mechanism ❻ Switch Model No. ❼ Number of Switches ❽ Option

Note1) For ø80, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased product. In this case, please arrange with a model number with "L1" .inserted between ❶ and ❷.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

❸ Piping thread type

Code	Content
Blank	M5 (ø20, ø25) Rc thread (ø32 to ø80)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❹ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size ø20	ø25	ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	25	●	●	●	●	●	●	●
		50	●	●	●	●	●	●	●
		75							●
		100							●
	Intermediate Stroke	*1 *2	Every 5 mm						

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

Series	Stroke (mm)		ø20	ø25	ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●
		225	●	●	●	●	●	●	●
		250	●	●	●	●	●	●	●
		275	●	●	●	●	●	●	●
		300	●	●	●	●	●	●	●
		325	●	●	●	●	●	●	●
		350	●	●	●	●	●	●	●
		375	●	●	●	●	●	●	
		400	●	●	●				
	Intermediate Stroke	*1 *2	Every 5 mm						

❺ Drop prevention mechanism

Code	Content	
H	Head side fall prevention mechanism	
R	Rod side fall prevention mechanism	

❻ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	DC	Load Current (mA) AC	DC	Lead wire *1 Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color for AC Magnetic Field	2-wire	-	24 ± 10%	-	5 to 20	T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: For the 2-color display, T1H/V and off-delay for φ40 and over, insert "L1" with - between ❶ and ❷. (However, T2WH/V and T3WH/V are excluded)
(Example) STS-MQ-L1-63-50-T1H3-D-F
For ø80, the T1H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased standard product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷. Example) STS-MQ-L1-80-50-F
*4: In some cases, a switch cannot be inserted from the rod side of the head side position locking type of 25st or less. In this case, temporarily remove the end plate and install it. For removal and assembly methods of the end plate, please contact us.
*5: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❼ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

❽ Option

	Code	Content
	F	End plate material: Steel
*1	M	Corrosion resistant type (Piston rod, guide rod material: SUS) Custom Products
*1	M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) Custom Products

*1: Refer to P. 502 for material details.

For combinations of variations and options, please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

Switch Single Unit Model No. Notation Method

SW - T0V

❺ Switch Model No.

Specifications

Item	STS-MQ/BQ, STL-MQ/BQ						
Bore Size mm	ø20	ø25	ø32	ø40	ø50	ø63	ø80
Actuation method	Double Acting, Drop Prevention Type						
Operating Fluid	Compressed Air						
Max. Working Pressure MPa	1.0						
Min. Operating Pressure MPa	0.2		0.15				
Proof Pressure MPa	1.6						
Ambient Temperature °C	-10 to 60 (No freezing)						
Port Size	M5		Rc1/8		Rc1/4		Rc3/8
Stroke tolerance mm	$^{+2.0}_{0}$						
Operating Piston Speed mm/s	50 to 500					50 to 300	
Cushion	With Rubber Cushion						
Fall prevention mechanism	Rod side or head side						
Holding Force N	Max. Thrust x 0.7						
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)						
Allowable Absorbed Energy J	0.157	0.157	0.401	0.627	0.980	1.560	2.510

Stroke

● Short stroke STS

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø20	25, 50	50	5	5 *1
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	25, 50, 75, 100	100		

*1: This is for the case with 1 or 2 switches.

● Long stroke STL

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø20	50, 75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375, 400	400	30	30 *2
ø25				
ø32				
ø40	50, 75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375	375		
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350	350	55	55 *2

*1: Intermediate strokes can be manufactured in 5 mm increments.
However, the overall length dimension will be the same as the standard stroke above it.
*2: This is for the case with 1 or 2 switches.

⚠Be sure to read the "Safety precautions" on Drop prevention type P. 656, 659 before use.

Theoretical Thrust Table

(Unit: N)

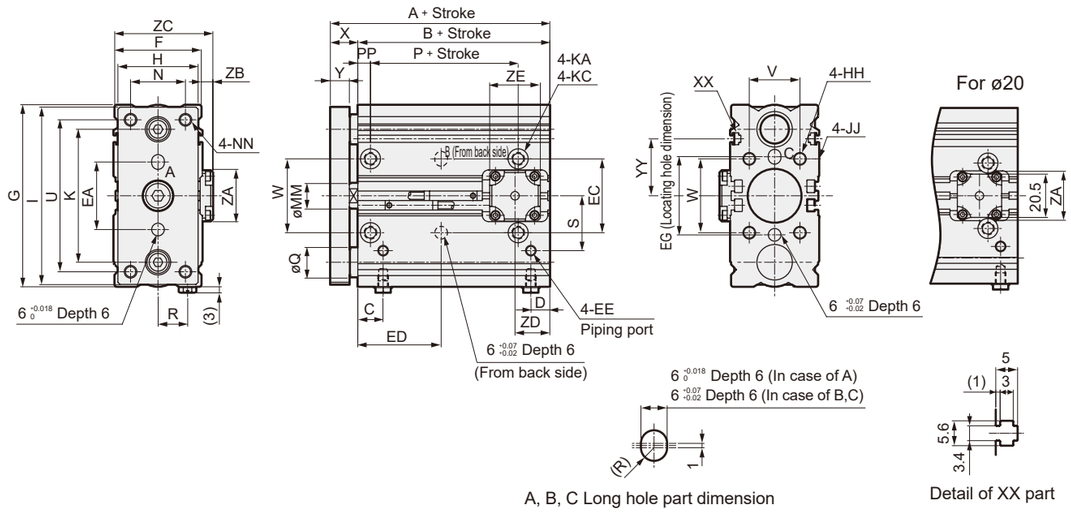
Bore size (mm)	Operating Direction	Operating Pressure MPa									
		0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	-	62.8	94.2	1.26 x 10²	1.57 x 10²	1.88 x 10²	2.20 x 10²	2.51 x 10²	2.83 x 10²	3.14 x 10²
	Pull	-	47.1	70.7	94.2	1.18 x 10²	1.41 x 10²	1.65 x 10²	1.88 x 10²	2.12 x 10²	2.36 x 10²
ø25	Push	-	98.2	1.47 x 10²	1.96 x 10²	2.45 x 10²	2.95 x 10²	3.44 x 10²	3.93 x 10²	4.42 x 10²	4.91 x 10²
	Pull	-	75.6	1.13 x 10²	1.51 x 10²	1.89 x 10²	2.27 x 10²	2.64 x 10²	3.02 x 10²	3.40 x 10²	3.78 x 10²
ø32	Push	1.21 x 10²	1.61 x 10²	2.41 x 10²	3.22 x 10²	4.02 x 10²	4.83 x 10²	5.63 x 10²	6.43 x 10²	7.24 x 10²	8.04 x 10²
	Pull	90.5	1.21 x 10²	1.81 x 10²	2.41 x 10²	3.02 x 10²	3.62 x 10²	4.22 x 10²	4.83 x 10²	5.43 x 10²	6.03 x 10²
ø40	Push	1.88 x 10²	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²	1.01 x 10³	1.13 x 10³	1.26 x 10³
	Pull	1.58 x 10²	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²	8.44 x 10²	9.50 x 10²	1.06 x 10³
ø50	Push	2.95 x 10²	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	2.47 x 10²	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³
ø63	Push	4.68 x 10²	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³	2.49 x 10³	2.81 x 10³	3.12 x 10³
	Pull	4.20 x 10²	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³	2.24 x 10³	2.52 x 10³	2.80 x 10³
ø80	Push	7.54 x 10²	1.01 x 10³	1.51 x 10³	2.01 x 10³	2.51 x 10³	3.02 x 10³	3.52 x 10³	4.02 x 10³	4.52 x 10³	5.03 x 10³
	Pull	6.80 x 10²	9.07 x 10²	1.36 x 10³	1.81 x 10³	2.27 x 10³	2.72 x 10³	3.17 x 10³	3.63 x 10³	4.08 x 10³	4.54 x 10³

For cylinder weight, please refer to P. 642 to 645.

Outline dimension drawing (bore size: ø20, ø25)

● Drop prevention type / Head side

STS-$^{M}_{B}$Q-H

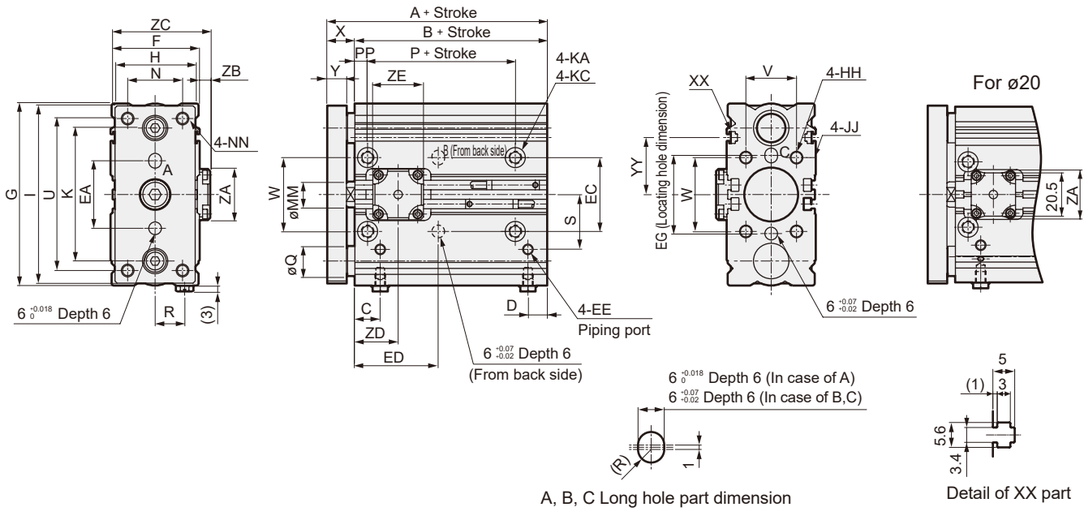


A, B, C Long hole part dimension

Detail of XX part

●Drop prevention type / Rod side

STS-$^{M}_{B}$Q-R



A, B, C Long hole part dimension

Detail of XX part

Code / Bore Size (mm)	A	B	EA	EC	EG	ED	P	PP	W	ZA	ZB	ZC	ZE	STS-$^{M}_{B}$Q-H ZD	STS-$^{M}_{B}$Q-R ZD
ø20	78	65	30	31	33	26.5 + $\frac{Stroke}{2}$	45	6	31	23.2	6	44	21	18	20
ø25	79	66	32	35	37	27 + $\frac{Stroke}{2}$	45	6	35	24	5	47	24	16.5	20.5

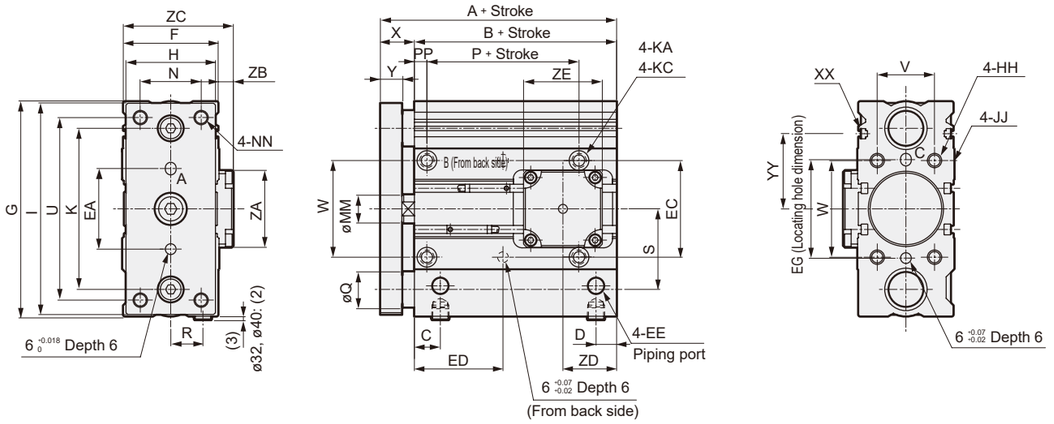
*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

***2: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

● Position locking/head side (Dimensions not listed below are the same as those of the double acting/single rod)

STS-$^{M}_{B}$Q-H

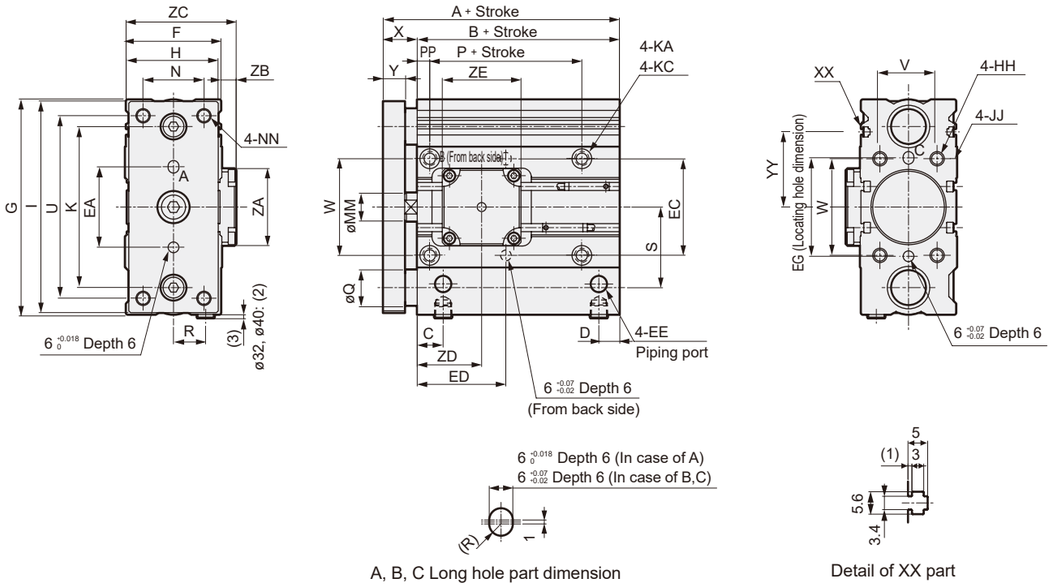


A, B, C Long hole part dimension

Detail of XX part

● Position locking/rod side (Dimensions not listed below are the same as those of the double acting/single rod)

STS-$^{M}_{B}$Q-R



A, B, C Long hole part dimension

Detail of XX part

Code / Bore Size (mm)	A	B	EA	EC	EG	ED	P	PP	W	ZA	ZB	ZC	ZE	STS-$^{M}_{B}$Q-H ZD	STS-$^{M}_{B}$Q-R ZD
ø32	93	74	42	45	46	30 + $\frac{Stroke}{2}$	47	7	45	32	6.5	53.5	24	21	25
ø40	122	103	45	54	55	44.5 + $\frac{Stroke}{2}$	75	7	54	43	8	62	44	30	36
ø50	127	105	55	66	69	44.5 + $\frac{Stroke}{2}$	76	8	66	43	7.5	73.5	44	33	40
ø63	133	111	62	79	82	47.5 + $\frac{Stroke}{2}$	76	8	79	47	7.5	86.5	47	35	40

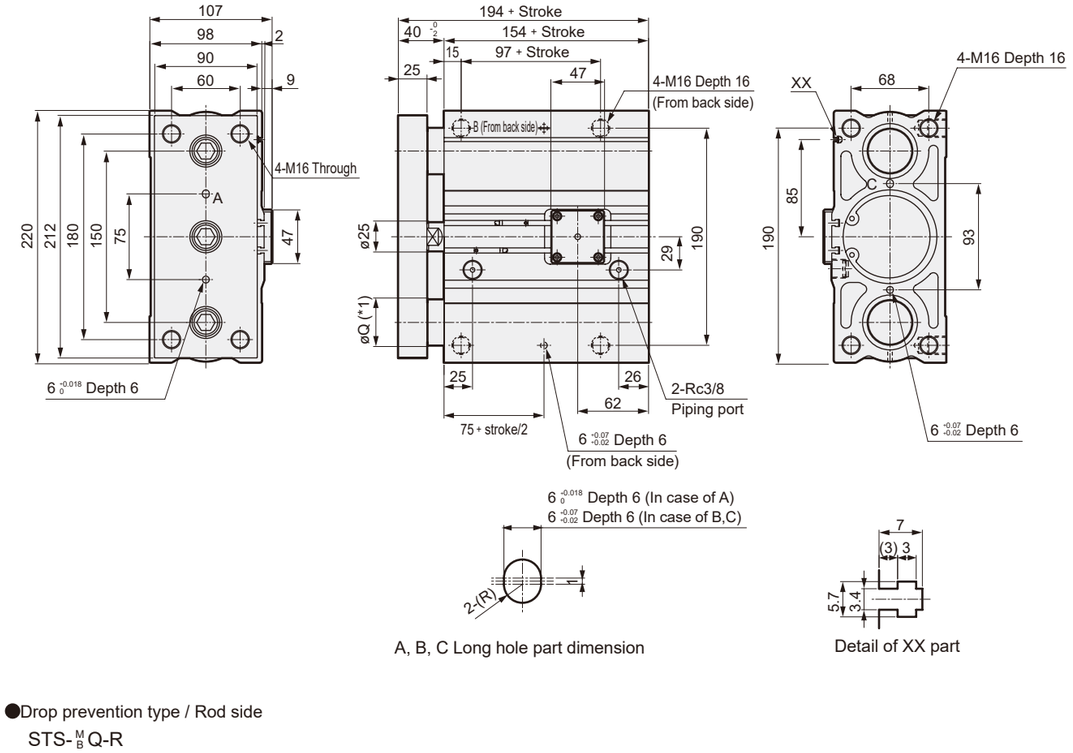
*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

***2: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø80)

●Drop prevention type / Head side

STS-$^{M}_{B}$Q-H

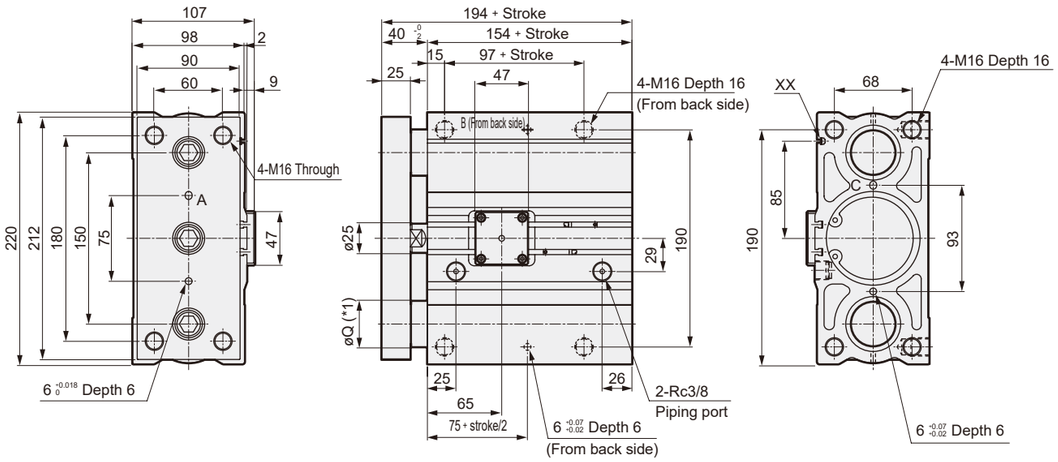


A, B, C Long hole part dimension

Detail of XX part

●Drop prevention type / Rod side

STS-$^{M}_{B}$Q-R



A, B, C Long hole part dimension

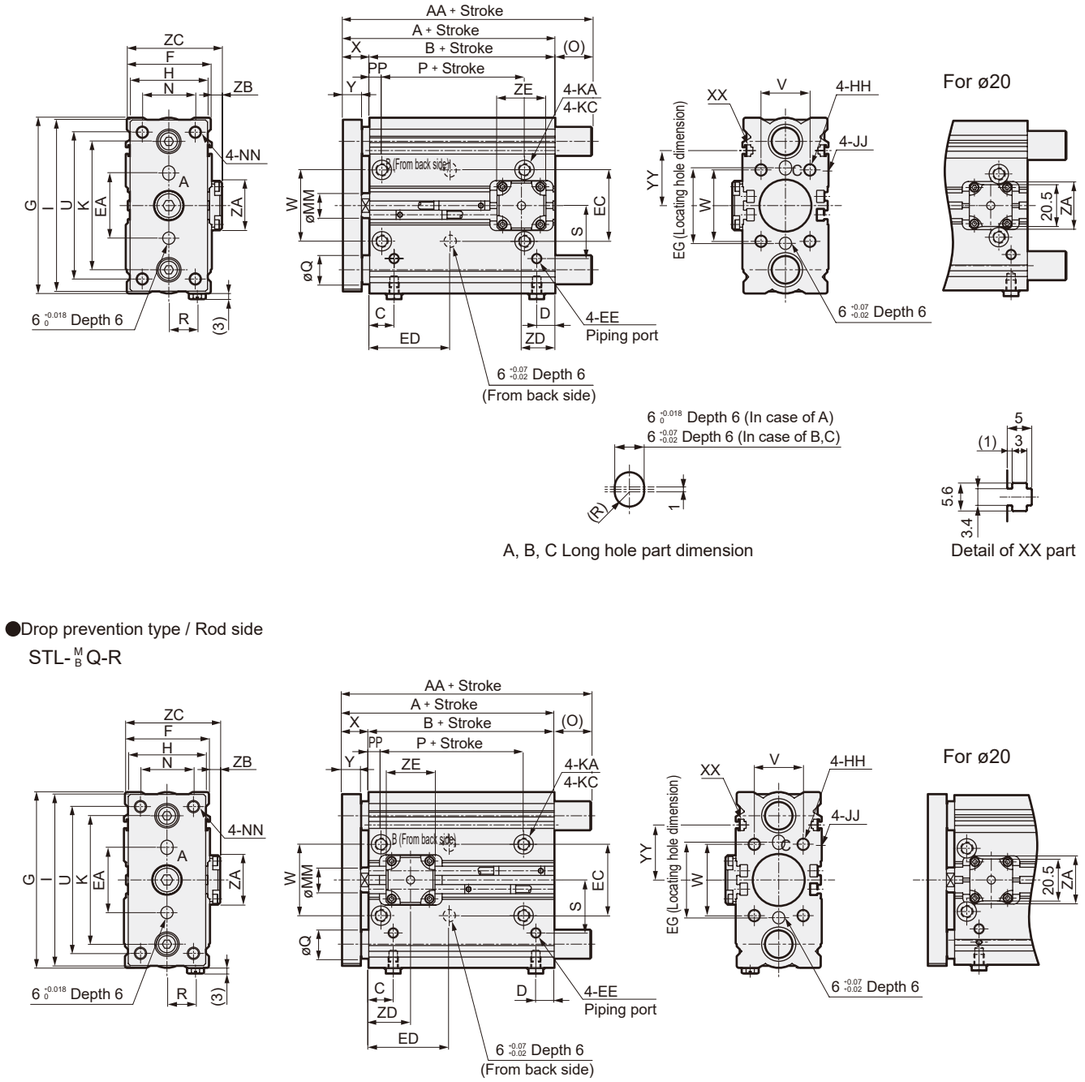
Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
*2: When using a custom stroke, the dimensions are the same as the longer standard stroke.
***3: For dimensions with each switch, refer to P. 636, 637.**

Outline dimension drawing (bore size: ø20, ø25)

●Drop prevention type / Head side

STL-$^{M}_{B}$Q-H



A, B, C Long hole part dimension

Detail of XX part

●Drop prevention type / Rod side

STL-$^{M}_{B}$Q-R

A, B, C Long hole part dimension

Detail of XX part

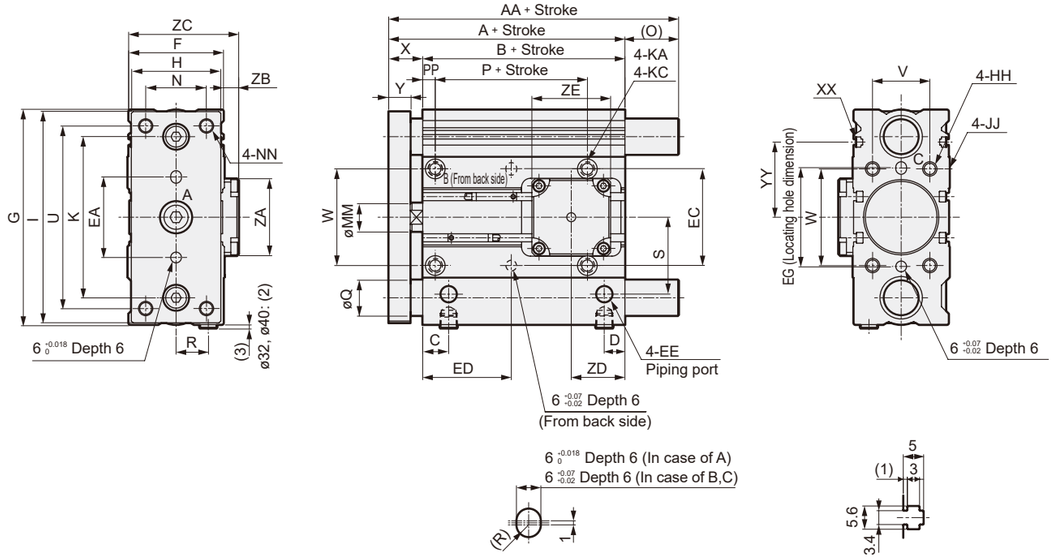
Code / Bore Size (mm)	A	AA	EA	EC	EG	ED	B	P	PP	W	ZA	ZB	ZC	ZE	STL-$^{M}_{B}$Q-H ZD	STL-$^{M}_{B}$Q-R ZD
ø20	78	97	30	31	33	26.5 + $\frac{\text{Stroke}}{2}$	65	45	6	31	23.2	6	44	21	18	20
ø25	79	97	32	35	37	27 + $\frac{\text{Stroke}}{2}$	66	45	6	35	24	5	47	24	16.5	20.5

*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.
***2: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

●Drop prevention type / Head side

STL-$^{M}_{B}$Q-H

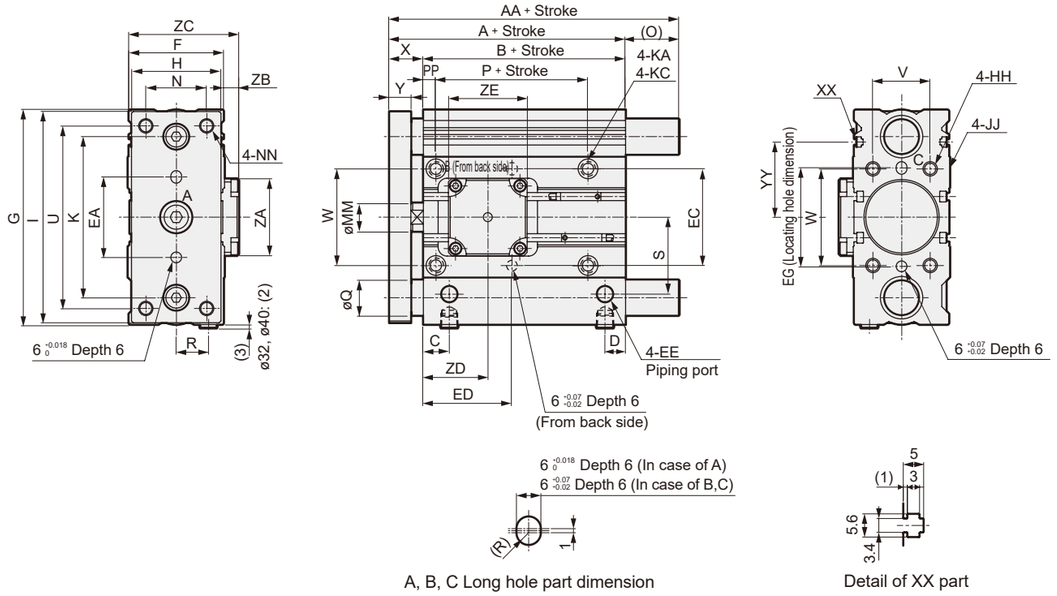


A, B, C Long hole part dimension

Detail of XX part

● Position locking/rod side

STL-$^{M}_{B}$Q-R



A, B, C Long hole part dimension

Detail of XX part

Code / Bore Size (mm)	A	AA	EA	EC	EG	ED	B	P	PP	W	ZA	ZB	ZC	ZE	STL-$^{M}_{B}$Q-H ZD	STL-$^{M}_{B}$Q-R ZD
ø32	93	127	42	45	46	30 + Stroke/2	74	47	7	45	32	6.5	53.5	24	21	25
ø40	122	152	45	54	55	44.5 + Stroke/2	103	75	7	54	43	8	62	44	30	36
ø50	127	175	55	66	69	44.5 + Stroke/2	105	76	8	66	43	7.5	73.5	44	33	40
ø63	133	175	62	79	82	47.5 + Stroke/2	111	76	8	79	47	7.5	86.5	47	35	40

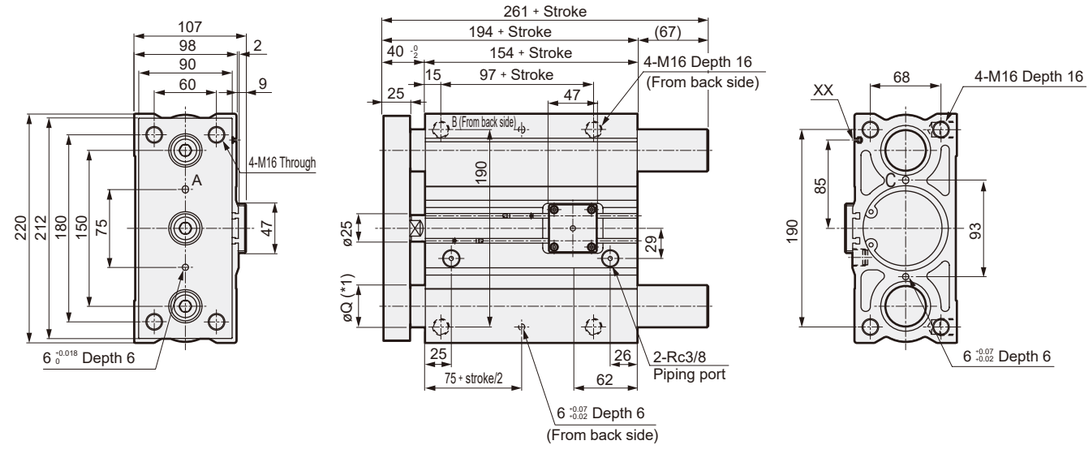
*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

***2: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø80)

●Drop prevention type / Head side

STL-$^{M}_{B}$Q-H

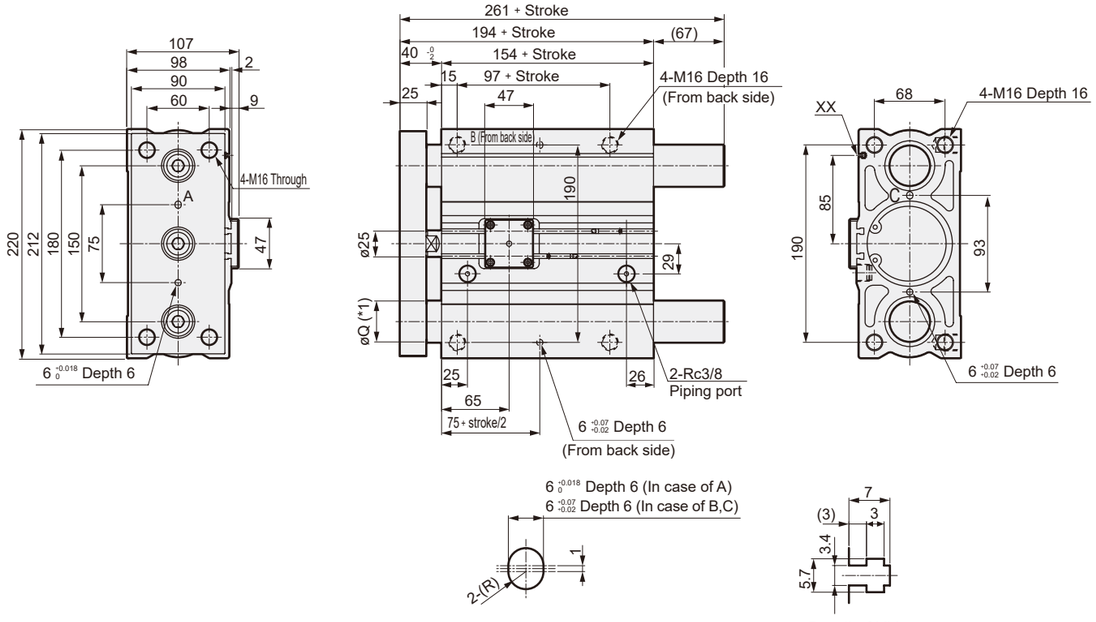


A, B, C Long hole part dimension

Detail of XX part

●Drop prevention type / Rod side

STL-$^{M}_{B}$Q-R



A, B, C Long hole part dimension

Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).

*2: When using a custom stroke, the dimensions are the same as the longer standard stroke.

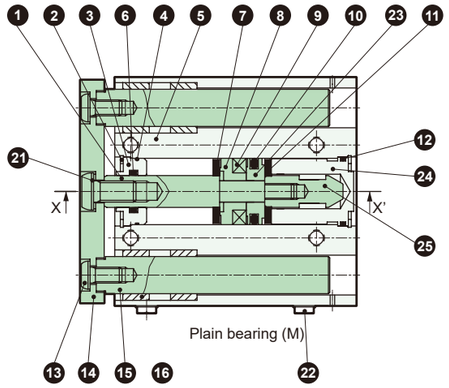
***3: For dimensions with each switch, refer to P. 636, 637.**

Internal structure diagram / Material (Bore size: ø20 to ø63)

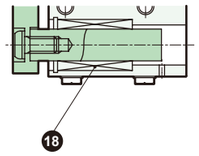
●Drop prevention type / Head side

STS-$^{M}_{B}$Q-H

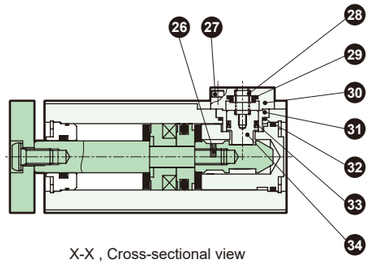
ø20, ø25



Plain bearing (M)

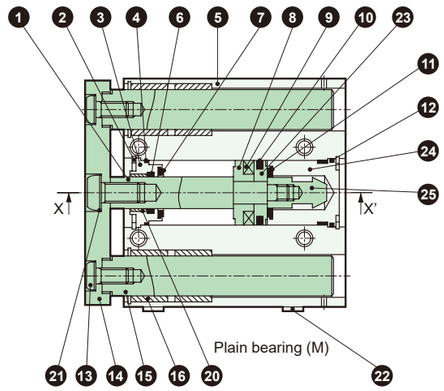


Rolling bearing (B)

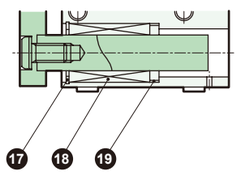


X-X , Cross-sectional view

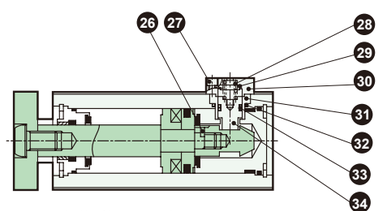
ø32, ø40, ø50, ø63



Plain bearing (M)



Rolling bearing (B)

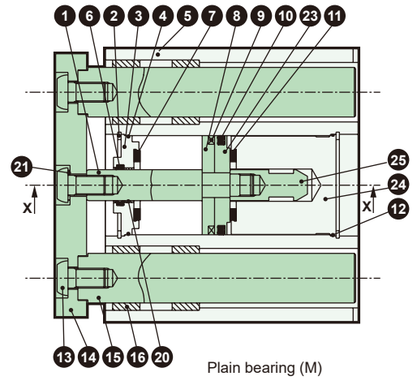


X-X , Cross-sectional view

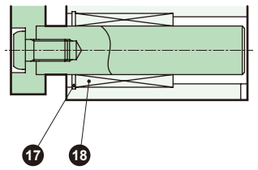
Internal structure diagram / Material (Bore size: ø80)

●Drop prevention type / Head side

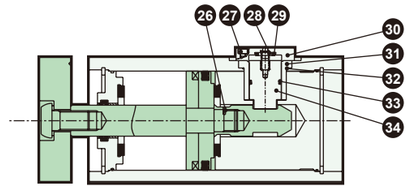
STS-$^{M}_{B}$Q-H



Plain bearing (M)



Rolling bearing (B)



X-X , Cross-sectional view

Part No.	Part Name		Material	Remarks
1	Piston Rod		ø20,25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	C-type retaining ring		Steel	Zinc phosphate
3	Rod Metal		Aluminum Alloy	ø20, ø25, ø63, ø80: Alumite ø32 to ø50: Chromate
4	Metal gasket		Nitrile Rubber	
5	Cylinder Body		Aluminum Alloy	Hard Anodized
6	Rod Packing		Nitrile Rubber	
7	Cushion rubber (R)		Urethane Rubber	
8	Spacer		ø20 to ø50: Polyamide ø63, ø80: Aluminum alloy	ø63, ø80: Chromate
9	Magnet			
10	Piston Packing		Nitrile Rubber	
11	Cushion rubber (H)		Urethane Rubber	
12	O-ring		Nitrile Rubber	
13	Hex Socket Button Head Bolt		Steel	Zinc Chromate
14	End plate		Aluminum Alloy	Alumite
15	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
16	Metal		Oil-Impregnated Bearing Alloy	

Part No.	Part Name	Material	Remarks
17	C-type retaining ring	Steel	Zinc phosphate
18	Ball bush		
19	Collar	Aluminum Alloy	
20	Bushing	Bearing Alloy	
21	Belleville washer	Steel	
22	Plug	ø8 to ø25: - ø32 to ø63: Steel	ø8 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
23	Piston	Aluminum Alloy	Chromate
24	Head Cover	Aluminum Alloy	
25	Sleeve	Steel	Nitriding Treatment
26	Spring Pin	Steel	Black Oxide
27	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
28	Coil Spring	Steel	Electrodeposition Coating
29	Cushion Rubber	Urethane Rubber	
30	Stopper Cover	Aluminum Alloy	Alumite
31	Stopper housing	Aluminum Alloy	Alumite
32	O-ring	Nitrile Rubber	
33	Stopper packing	Nitrile Rubber	
34	Stopper Piston	Steel	Nitriding Treatment

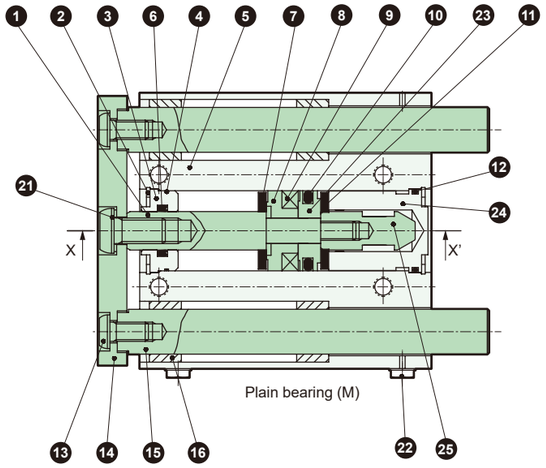
For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

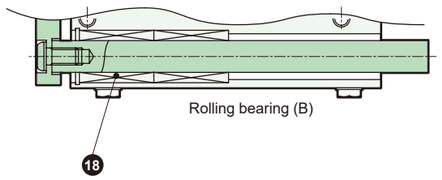
Internal structure diagram / Material (Bore size: ø20 to ø63)

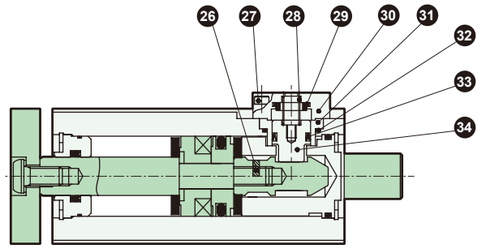
●Drop prevention type / Head side

STL-$^{M}_{B}$Q-H

ø20, ø25

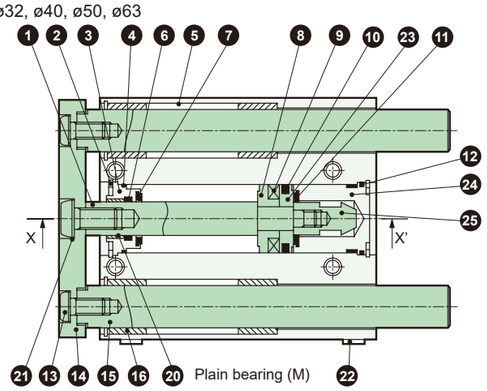


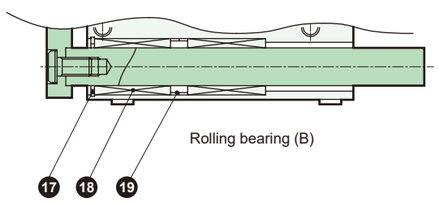


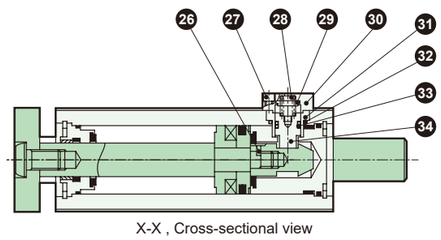


X-X , Cross-sectional view

ø32, ø40, ø50, ø63





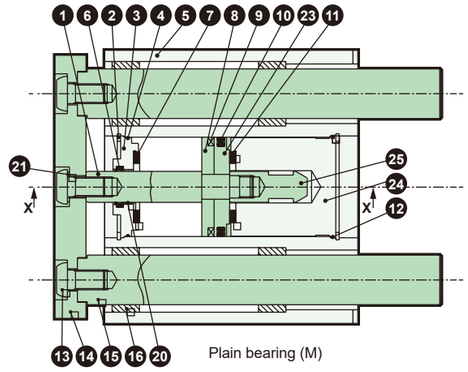


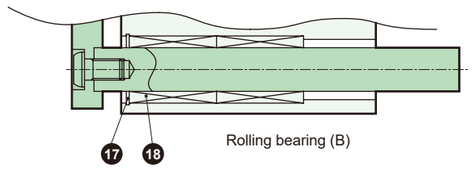
X-X , Cross-sectional view

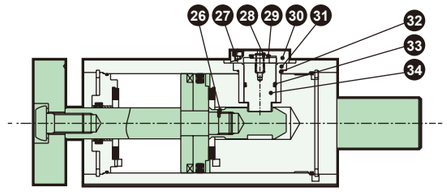
Internal structure diagram / Material (Bore size: ø80)

●Drop prevention type / Head side

STL-$^{M}_{B}$Q-H







X-X , Cross-sectional view

Part No.	Part Name		Material	Remarks
1	Piston Rod		ø20,25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	C-type retaining ring		Steel	Zinc phosphate
3	Rod Metal		Aluminum Alloy	ø20, ø25, ø63, ø80: Alumite ø32 to ø50: Chromate
4	Metal gasket		Nitrile Rubber	
5	Cylinder Body		Aluminum Alloy	Hard Anodized
6	Rod Packing		Nitrile Rubber	
7	Cushion rubber (R)		Urethane Rubber	
8	Spacer		ø20 to ø50: Polyamide ø63, ø80: Aluminum alloy	ø63, ø80: Chromate
9	Magnet			
10	Piston Packing		Nitrile Rubber	
11	Cushion rubber (H)		Urethane Rubber	
12	O-ring		Nitrile Rubber	
13	Hex Socket Button Head Bolt		Steel	Zinc Chromate
14	End plate		Aluminum Alloy	Alumite
15	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
16	Metal		Oil-Impregnated Bearing Alloy	

Part No.	Part Name	Material	Remarks
17	C-type retaining ring	Steel	Zinc phosphate
18	Ball bush		
19	Collar	Aluminum Alloy	
20	Bushing	Bearing Alloy	
21	Belleville washer	Steel	
22	Plug	ø32 to ø63: Steel	ø8 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
23	Piston	Aluminum Alloy	Chromate
24	Head Cover	Aluminum Alloy	
25	Sleeve	Steel	Nitriding Treatment
26	Spring Pin	Steel	Black Oxide
27	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
28	Coil Spring	Steel	Electrodeposition Coating
29	Cushion Rubber	Urethane Rubber	
30	Stopper Cover	Aluminum Alloy	Alumite
31	Stopper housing	Aluminum Alloy	Alumite
32	O-ring	Nitrile Rubber	
33	Stopper packing	Nitrile Rubber	
34	Stopper Piston	Steel	Nitriding Treatment

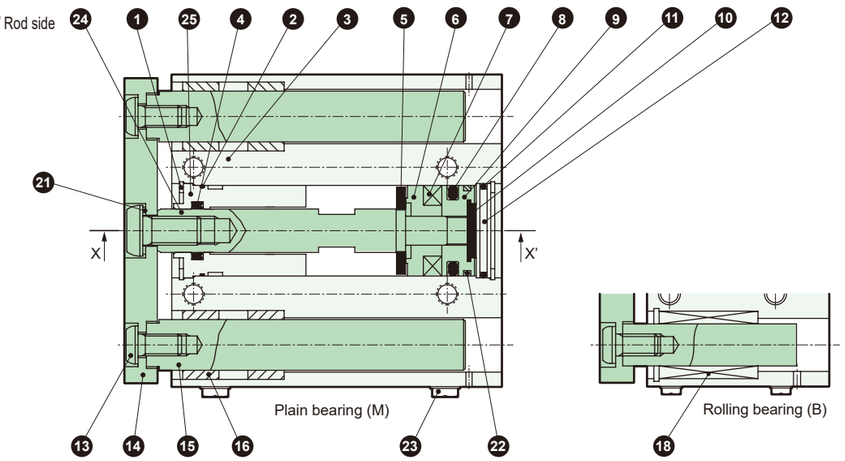
For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

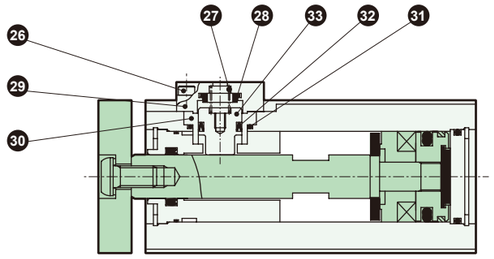
Internal structure diagram / Material (Bore size: ø20 to ø63)

● Drop prevention type / Rod side

STS-$^{M}_{B}$Q-R

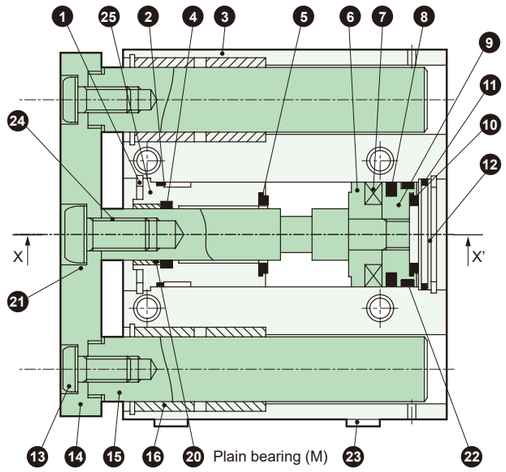
ø20, ø25

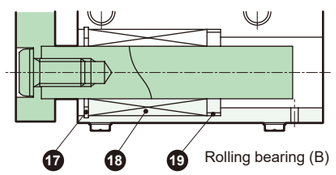


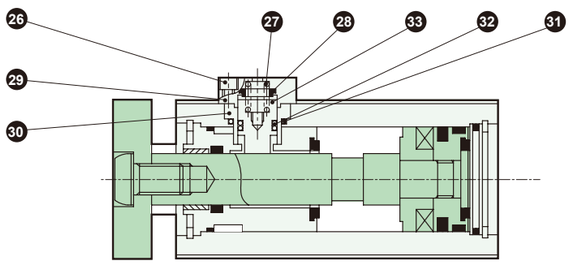


X-X , Cross-sectional view

ø32, ø40, ø50, ø63





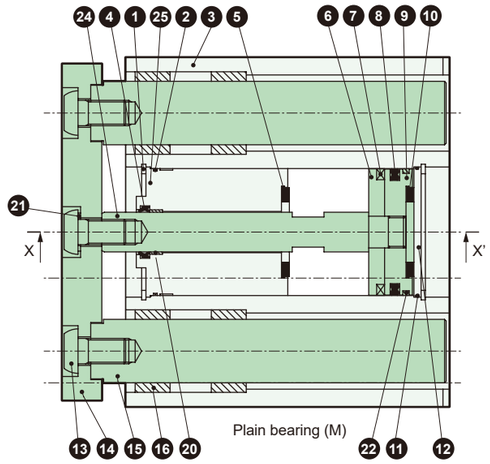


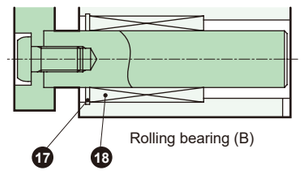
X-X , Cross-sectional view

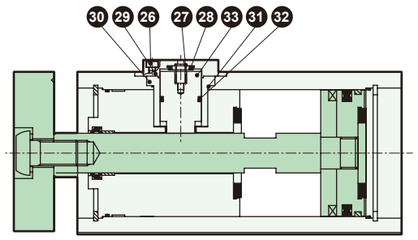
Internal structure diagram / Material (Bore size: ø80)

●Drop prevention type / Rod side

STS-$^{M}_{B}$Q-R







X-X , Cross-sectional view

Part No.	Part Name		Material	Remarks
1	C-type retaining ring		Steel	Zinc phosphate
2	Metal gasket		Nitrile Rubber	
3	Cylinder Body		Aluminum Alloy	Hard Anodized
4	Rod Packing		Nitrile Rubber	
5	Cushion rubber (R)		Urethane Rubber	
6	Spacer		ø20 to ø50: Polyamide ø63, ø80: Aluminum alloy	ø63, ø80: Chromate
7	Magnet			
8	Piston Packing		Nitrile Rubber	
9	Piston		Aluminum Alloy	Chromate
10	Cushion rubber (H)		Urethane Rubber	
11	O-ring		Nitrile Rubber	
12	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
13	Hex Socket Button Head Bolt		Steel	Zinc Chromate
14	End plate		Aluminum Alloy	Alumite
15	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
16	Metal		Oil-Impregnated Bearing Alloy	
17	C-type retaining ring		Steel	Zinc phosphate

Part No.	Part Name	Material	Remarks
18	Ball bush		
19	Collar	Aluminum Alloy	
20	Bushing	Bearing Alloy	
21	Belleville washer	Steel	
22	Wear Ring	Polyacetal	
23	Plug	ø8 to ø25: - ø32 to ø63: Steel	ø8 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
24	Piston Rod	ø20,25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
25	Rod Metal	Aluminum Alloy	ø20, ø25, ø63, ø80: Alumite ø32 to ø50: Chromate
26	Hexagon Socket Head Cap Screw	Alloy Steel	Zinc Chromate
27	Coil Spring	Steel	Electrodeposition Coating
28	Cushion Rubber	Urethane Rubber	
29	Stopper Cover	Aluminum Alloy	Alumite
30	Stopper housing	Aluminum Alloy	Alumite
31	O-ring	Nitrile Rubber	
32	Stopper packing	Nitrile Rubber	
33	Stopper Piston	Steel	Nitriding Treatment

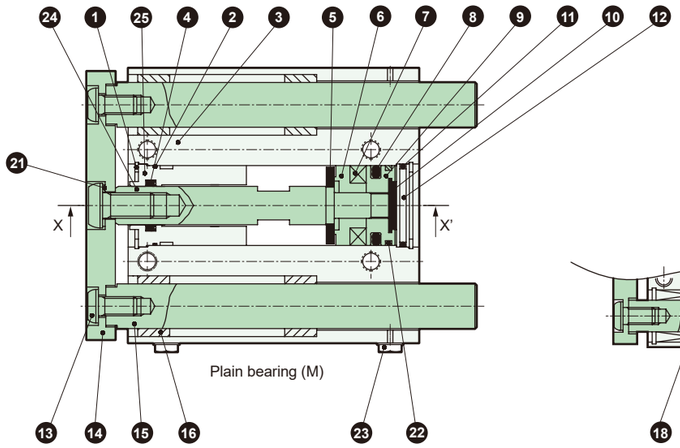
For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal structure diagram / Material (Bore size: ø20 to ø63)

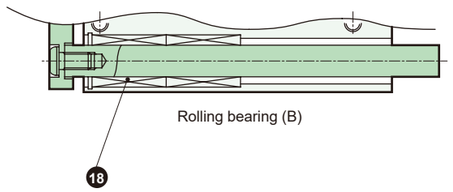
●Drop prevention type

STL-$^{M}_{B}$Q-R

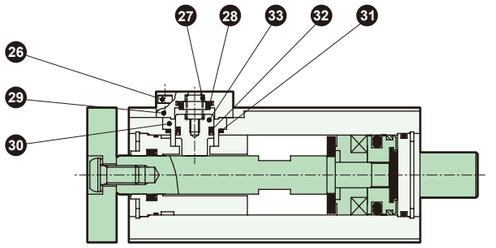
ø20, ø25



Plain bearing (M)

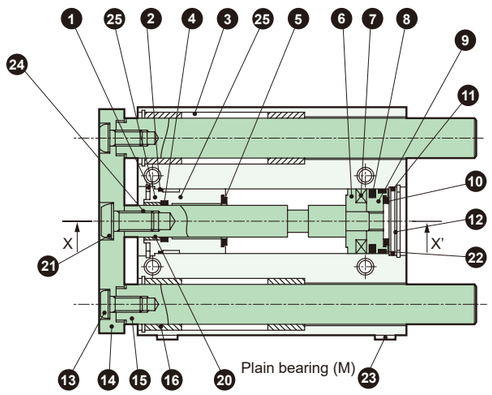


Rolling bearing (B)

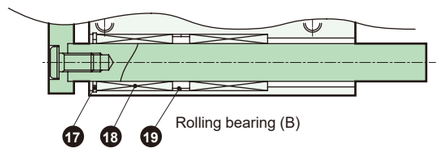


X-X , Cross-sectional view

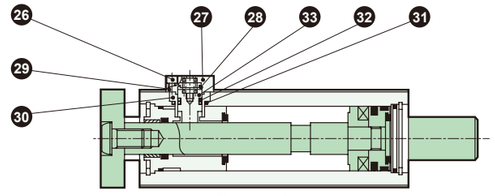
ø32, ø40, ø50, ø63



Plain bearing (M)



Rolling bearing (B)

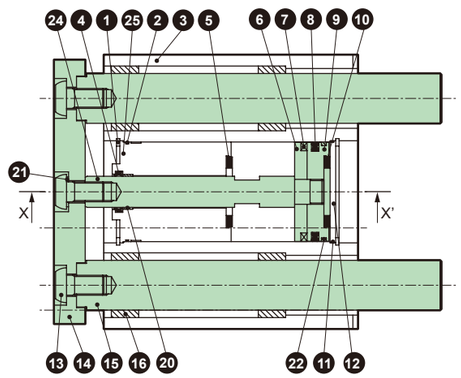


X-X , Cross-sectional view

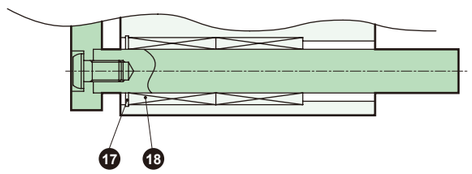
Internal structure diagram / Material (Bore size: ø80)

● Drop prevention type

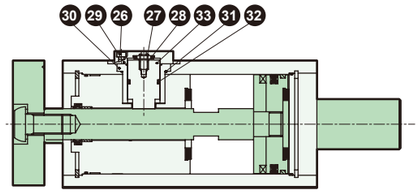
STL-$^{M}_{B}$Q-R



Plain bearing (M)



Rolling bearing (B)



X-X , Cross-sectional view

Part No.	Part Name		Material	Remarks
1	C-type retaining ring		Steel	Zinc phosphate
2	Metal gasket		Nitrile Rubber	
3	Cylinder Body		Aluminum Alloy	Hard Anodized
4	Rod Packing		Nitrile Rubber	
5	Cushion rubber (R)		Urethane Rubber	
6	Spacer		ø20 to ø50: Polyamide ø63, ø80: Aluminum alloy	ø63, ø80: Chromate
7	Magnet			
8	Piston Packing		Nitrile Rubber	
9	Piston		Aluminum Alloy	Chromate
10	Cushion rubber (H)		Urethane Rubber	
11	O-ring		Nitrile Rubber	
12	Bottom plate		ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
13	Hex Socket Button Head Bolt		Steel	Zinc Chromate
14	End plate		Aluminum Alloy	Alumite
15	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
16	Metal		Oil-Impregnated Bearing Alloy	
17	C-type retaining ring		Steel	Zinc phosphate
18	Ball bush			
19	Collar		Aluminum Alloy	
20	Bushing		Bearing Alloy	
21	Belleville washer		Steel	
22	Wear Ring		Polyacetal	
23	Plug		ø8 to ø25: - ø32 to ø63: Steel	ø8 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
24	Piston Rod		ø20,25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
25	Rod Metal		Aluminum Alloy	ø20, ø25, ø63, ø80: Alumite ø32 to ø50: Chromate
26	Hexagon Socket Head Cap Screw		Alloy Steel	Zinc Chromate
27	Coil Spring		Steel	Electrodeposition Coating
28	Cushion Rubber		Urethane Rubber	
29	Stopper Cover		Aluminum Alloy	Alumite
30	Stopper housing		Aluminum Alloy	Alumite
31	O-ring		Nitrile Rubber	
32	Stopper packing		Nitrile Rubber	
33	Stopper Piston		Steel	Nitriding Treatment

For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Guided cylinder / Ultra Low speed type

STS / STL-$^{M}_{B}$F Series

● Bore size ø8, ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80

Circuit Diagram Symbol

RoHS

Model No. Notation Method

● Short stroke

Without switch Note1)
(Built-in magnet for switch)

STS - M F — 8 ( ) - 10 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STS - M F — 8 ( ) - 10 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STS - M F - L1 - 40 ( ) - 10 - T1H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

● Long stroke

Without switch Note1)
(Built-in magnet for switch)

STL - M F — 8 ( ) - 50 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STL - M F — 8 ( ) - 50 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STL - M F - L1 - 40 ( ) - 50 - T1H - R - F
Model No. ❶ Bearing type ❷ Bore size ❸ Piping thread type ❹ Stroke ❺ Switch Model No. ❻ Number of Switches ❼ Option

Note1) For ø80, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased product. In this case, please arrange with a model number with "L1" .inserted between ❶ and ❷.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
8	ø8
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

❸ Piping thread type

Code	Content
Blank	M5 (ø8 to ø25)
	Rc thread (ø32 to ø80)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❹ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size									
			ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	10	●	●	●							
		20	●	●	●							
		25				●	●	●	●	●	●	●
		30	●	●	●							
		40	●	●	●							
		50	●	●	●	●	●	●	●	●	●	●
		75										●
		100										●
	Intermediate Stroke	*1 *2	Every 5 mm									

Series	Stroke (mm)		Applicable Bore Size									
			ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●	●	●	●
	Intermediate Stroke	*1 *2	Every 5 mm									

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-color Water resistance Improved	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color for AC Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	*4

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: ø8 to ø16 cannot be equipped with T8H/V.
*5: For the 2-color display, T1H/V, T8H/V and off-delay for ø40 and over, insert "L1" with "-" between ❶ and ❷. (However, T2WH/V and T3WH/V are excluded
Example) STS-MF-L1-63-50-T1H3-D-F
For ø80, T1H/V, T8H/V, off-delay type, and AC magnetic field type switches cannot be retrofitted after purchasing the standard product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷. Example) TS-MF-L1-80-50-F
*6: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*7 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*7: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

❼ Option

Code	Content
F	End plate material: Steel
*1 M	Corrosion resistant type (Piston rod, guide rod material: SUS) (customized product)
*1 M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) (Custom order)

*1: Refer to P. 502 for material details.

For combinations of variations and options, please refer to P. 478 (Plain bearing M) and 480 (Rolling bearing B).

About Custom Product Specifications

For details, refer to P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)

STS/L-$^{M}_{B}$F-·····-O

Switch Single Unit Model No. Notation Method

SW - T0V
❺ Switch Model No.

Specifications

Item		STS-MF, STS-BF (Short stroke) / STL-MF, STL-BF (Long stroke)									
Bore Size	mm	ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
Actuation method		Double Acting Type									
Operating Fluid		Compressed Air									
Max. Working Pressure	MPa	1.0									
Min. Operating Pressure	MPa	0.15					0.1				
Proof Pressure	MPa	1.6									
Ambient Temperature	°C	5 to 60									
Port Size		M5					Rc 1/8		Rc 1/4		Rc 3/8
Stroke tolerance	mm	$^{+2.0}_{0}$									
Operating Piston Speed	mm/s	1 to 200									
Cushion		Rubber Cushion									
Lubrication		Not Available									
Allowable Absorbed Energy	J	0.029	0.056	0.088	0.157	0.157	0.401	0.627	0.980	0.1560	2.510

Note) **For the theoretical thrust table, please refer to P. 485.**

Stroke

● Short stroke STS

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)	
				T2WL	Other switches
ø8	10, 20, 30 40, 50	50	5	25	5 *1
ø12				15	
ø16				25	
ø20	25, 50			5 *1	
ø25					
ø32					
ø40					
ø50					
ø63					
ø80	25, 50, 75, 100	100			

*1: This is for the case with 1 or 2 switches.

● Long stroke STL

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø8	50, 75, 100 125, 150 175, 200	200	50	50 *2
ø12				
ø16				
ø20	50, 75, 100 125, 150, 175 200	200	30	30 *2
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	75, 100, 125, 150, 175, 200		55	55 *2

*1: Intermediate strokes can be manufactured in 5 mm increments. However, the overall length dimension will be the same as the standard stroke above it.
*2: This is for the case with 1 or 2 switches.

For cylinder weight, please refer to P. 642 to 645.

Technical Data

For technical data on measurement dimensions, please refer to the measurement method (Pneumatic cylinder ②(Catalog No. RJ-003AA) SSD-F / SSD-KF).

Outline Dimension Drawing

Same as double acting, single rod type STS/STL series.
STS Series: P. 486 (ø8 to ø16), P. 487 (ø20, ø25), P. 488 (ø32 to ø63), P. 489 (ø80)
STL Series P. 491 (ø8 to ø16), P. 492 (ø20, ø25), P. 493 (ø32 to ø63), P. 494 (ø80)

MEMO

Guided cylinder Double acting, Low speed type

STS / STL-$^{M}_{B}$O Series

● Bore size: ø8, ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80

Circuit Diagram Symbol

RoHS

Model No. Notation Method

●Short stroke

Without switch Note1)
(Built-in magnet for switch)

STS - M O — 8 ( ) - 10 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STS - M O — 8 ( ) - 10 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STS - M O - L1 - 40 ( ) - 10 - T1H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

●Long stroke

Without switch Note1)
(Built-in magnet for switch)

STL - M O — 8 ( ) - 50 — F
Model No. ❶ ❷ ❸ ❹ ❼

With switch Note1)
(Built-in magnet for switch)

STL - M O — 8 ( ) - 50 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STL - M O - L1 - 40 ( ) - 50 - T1H - R - F
Model No. ❶ Bearing type ❷ Bore size ❸ Piping thread type ❹ Stroke ❺ Switch Model No. ❻ Number of Switches ❼ Option

Note1) For ø80, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased product. In this case, please arrange with a model number with "L1" .inserted between ❶ and ❷.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
8	ø8
12	ø12
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

❸ Piping thread type

Code	Content
Blank	M5 (ø8 to ø25)
	Rc thread (ø32 to ø80)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❹ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	10	●	●	●							
		20	●	●	●							
		25				●	●	●	●	●	●	●
		30	●	●	●							
		40	●	●	●							
		50	●	●	●	●	●	●	●	●	●	●
		75										●
		100										●
	Intermediate Stroke	*1 *2	Every 5 mm									

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

Series	Stroke (mm)		Applicable Bore Size ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●	●	●	●
		175				●	●	●	●	●	●	●
		200				●	●	●	●	●	●	●
		225				●	●	●	●	●	●	●
		250				●	●	●	●	●	●	●
		275				●	●	●	●	●	●	●
		300				●	●	●	●	●	●	●
	Intermediate Stroke	*1 *2	Every 5 mm									

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	DC	Load Current (mA) AC	DC	Lead wire *1 Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color for AC Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	*4

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: ø8 to ø16 cannot be equipped with T8H/V.
*5: For the 2-color display, T1H/V, T8H/V and off-delay for ø40 and over, insert "L1" with "-" between ❶ and ❷.
(However, T2WH/V and T3WH/V are excluded) Example) STS-MO-L1-63-50-T1H3-D-F
For ø80, T1H/V, T8H/V, off-delay type, and AC magnetic field type switches cannot be retrofitted after purchasing the standard product.
In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.
Example) STS-MO-L1-80-50-F
*6: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

* Lead wire length, connector specification

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*7 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*7: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

❼ Option

Code	Content
F	End plate material: Steel
*1 M	Corrosion resistant type (Piston rod, guide rod material: SUS) (customized product)
*1 M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) (Custom order)

*1: Refer to P. 502 for material details.

For combinations of variations and options, please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

About Custom Product Specifications

For details, refer to P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)
STS/L-$^{M}_{B}$O-·····- O

Switch Single Unit Model No. Notation Method

SW - T0V
❺ Switch Model No.

Specifications

Item	STS-MO/BO, STL-MO/BO									
Bore Size mm	ø8	ø12	ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80
Actuation method	Double Acting/Low Speed Type									
Operating Fluid	Compressed Air									
Max. working pressure MPa	1.0									
Min. Operating Pressure MPa	0.15					0.1				
Proof Pressure MPa	1.6									
Ambient Temperature °C	-10 to 60 (No freezing)									
Port Size	M5					Rc 1/8		Rc 1/4		Rc 3/8
Stroke tolerance mm	$^{+2.0}_{0}$									
Operating Piston Speed mm/s	10 to 200									
Cushion	With Rubber Cushion									
Lubrication	Not Available									
Allowable Absorbed Energy J	0.029	0.056	0.088	0.157	0.157	0.401	0.627	0.980	0.1560	2.510

Stroke

● Short stroke STS

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)	
				T2WL	Other switches
ø8	10, 20, 30, 40, 50	50	5	25	5 *1
ø12				15	
ø16				25	
ø20	25, 50			5 *1	
ø25					
ø32					
ø40					
ø50					
ø63					
ø80	25, 50, 75, 100	100			

*1: For types with one or two switches.

● Long stroke STL

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø8	50, 75, 100, 125, 150	150	50	50
ø12				
ø16				
ø20	50, 75, 100, 125, 150 175, 200, 225, 250 275, 300	300	30	30 *2
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300		55	55 *2

*1: The custom stroke is available in 5 mm increments. However, the overall length dimension will be the same as the standard stroke above it.
*2: For types with one or two switches.

Theoretical Thrust Table

(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø8	Push	-	7.54	10.1	15.1	20.1	25.1	30.2	35.2	40.2	45.2	50.3
	Pull	-	5.65	7.54	11.3	15.1	18.8	22.6	26.4	30.2	33.9	37.7
ø12	Push	-	17.0	22.6	33.9	45.2	56.5	67.9	79.2	90.5	$1.02x10^2$	$1.13 x 10^2$
	Pull	-	12.7	17.0	25.4	33.9	42.4	50.9	59.4	67.9	76.3	84.8
ø16	Push	-	30.2	40.2	60.3	80.4	$1.01 x 10^2$	$1.21 x 10^2$	$1.41 x 10^2$	$1.61 x 10^2$	$1.81 x 10^2$	$2.01 x 10^2$
	Pull	-	22.6	30.2	45.2	60.3	75.4	90.5	$1.06 x 10^2$	$1.21 x 10^2$	$1.36 x 10^2$	$1.51 x 10^2$
ø20	Push	-	47.1	62.8	94.2	$1.26 x 10^2$	$1.57 x 10^2$	$1.88 x 10^2$	$2.20 x 10^2$	$2.51 x 10^2$	$2.83 x 10^2$	$3.14 x 10^2$
	Pull	-	35.3	47.1	70.7	94.2	$1.18 x 10^2$	$1.41 x 10^2$	$1.65 x 10^2$	$1.88 x 10^2$	$2.12 x 10^2$	$2.36 x 10^2$
ø25	Push	-	73.6	98.2	$1.47 x 10^2$	$1.96 x 10^2$	$2.45 x 10^2$	$2.95 x 10^2$	$3.44 x 10^2$	$3.93 x 10^2$	$4.42 x 10^2$	$4.91 x 10^2$
	Pull	-	56.7	75.6	$1.13 x 10^2$	$1.51 x 10^2$	$1.89 x 10^2$	$2.27 x 10^2$	$2.64 x 10^2$	$3.02 x 10^2$	$3.40 x 10^2$	$3.78 x 10^2$
ø32	Push	80.4	$1.21 x 10^2$	$1.61 x 10^2$	$2.41 x 10^2$	$3.22 x 10^2$	$4.02 x 10^2$	$4.83 x 10^2$	$5.63 x 10^2$	$6.43 x 10^2$	$7.24 x 10^2$	$8.04 x 10^2$
	Pull	60.3	90.5	$1.21 x 10^2$	$1.81 x 10^2$	$2.41 x 10^2$	$3.02 x 10^2$	$3.62 x 10^2$	$4.22 x 10^2$	$4.83 x 10^2$	$5.43 x 10^2$	$6.03 x 10^2$
ø40	Push	$1.26 x 10^2$	$1.88 x 10^2$	$2.51 x 10^2$	$3.77 x 10^2$	$5.03 x 10^2$	$6.28 x 10^2$	$7.54 x 10^2$	$8.80 x 10^2$	$1.01 x 10^3$	$1.13 x 10^3$	$1.26 x 10^3$
	Pull	$1.06 x 10^2$	$1.58 x 10^2$	$2.11 x 10^2$	$3.17 x 10^2$	$4.22 x 10^2$	$5.28 x 10^2$	$6.33 x 10^2$	$7.39 x 10^2$	$8.44 x 10^2$	$9.50 x 10^2$	$1.06 x 10^3$
ø50	Push	$1.96 x 10^2$	$2.95 x 10^2$	$3.93 x 10^2$	$5.89 x 10^2$	$7.85 x 10^2$	$9.82 x 10^2$	$1.18 x 10^3$	$1.37 x 10^3$	$1.57 x 10^3$	$1.77 x 10^3$	$1.96 x 10^3$
	Pull	$1.65 x 10^2$	$2.47 x 10^2$	$3.30 x 10^2$	$4.95 x 10^2$	$6.60 x 10^2$	$8.25 x 10^2$	$9.90 x 10^2$	$1.15 x 10^3$	$1.32 x 10^3$	$1.48 x 10^3$	$1.65 x 10^3$
ø63	Push	$3.12 x 10^2$	$4.68 x 10^2$	$6.23 x 10^2$	$9.35 x 10^2$	$1.25 x 10^3$	$1.56 x 10^3$	$1.87 x 10^3$	$2.18 x 10^3$	$2.49 x 10^3$	$2.81 x 10^3$	$3.12 x 10^3$
	Pull	$2.80 x 10^2$	$4.20 x 10^2$	$5.61 x 10^2$	$8.41 x 10^2$	$1.12 x 10^3$	$1.40 x 10^3$	$1.68 x 10^3$	$1.96 x 10^3$	$2.24 x 10^3$	$2.52 x 10^3$	$2.80 x 10^3$
ø80	Push	$5.03 x 10^2$	$7.54 x 10^2$	$1.01 x 10^3$	$1.51 x 10^3$	$2.01 x 10^3$	$2.51 x 10^3$	$3.02 x 10^3$	$3.52 x 10^3$	$4.02 x 10^3$	$4.52 x 10^3$	$5.03 x 10^3$
	Pull	$4.54 x 10^2$	$6.80 x 10^2$	$9.07 x 10^2$	$1.36 x 10^3$	$1.81 x 10^3$	$2.27 x 10^3$	$2.72 x 10^3$	$3.17 x 10^3$	$3.63 x 10^3$	$4.08 x 10^3$	$4.54 x 10^3$

For cylinder weight, please refer to P. 642 to 645.

Outline Dimension Drawing

Same as double acting, single rod type STS / STL series. Please refer to the page below.

STS Series: P. 486 (ø8 to ø16), P. 487 (ø20, ø25), P. 488 (ø32 to ø63), P. 489 (ø80)
STL Series P. 491 (ø8 to ø16), P. 492 (ø20, ø25), P. 493 (ø32 to ø63), P. 494 (ø80)

Internal Structure Diagram / Material

Same as double acting / single rod type. Please refer to P. 496 to 501.

Guided cylinder Double acting, Heavy-duty scraper type

STS / STL-$^{M}_{B}$G Series

Double-acting, Coil scraper type

STS / STL-$^{M}_{B}$G1 Series

● Bore size: ø20, ø25, ø32, ø40, ø50, ø63, ø80

Circuit Diagram Symbol

RoHS

Model No. Notation Method

● Short stroke

Without switch Note1)
(Built-in magnet for switch)

STS - M G — 20 ( ) - 25 — F
Model No. ❶ ❷ ❸ ❹ ❺ ❽

With switch Note1)
(Built-in magnet for switch)

STS - M G — 20 ( ) - 25 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STS - M G - L1 - 40 ( ) - 10 - T1H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

● Long stroke

Without switch Note1)
(Built-in magnet for switch)

STL - M G — 20 ( ) - 50 — F
Model No. ❶ ❷ ❸ ❹ ❺ ❽

With switch Note1)
(Built-in magnet for switch)

STL - M G — 20 ( ) - 50 - T2H - R - F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STL - M G - L1 - 40 ( ) - 50 - T1H - R - F
Model No. ❶ Bearing type ❷ Model No. ❸ Bore size ❹ Piping thread type ❺ Stroke ❻ Switch Model No. ❼ Number of Switches ❽ Option

Note1) For ø80, the T1H/V, T8H/V, off-delay, AC magnetic field proof switches cannot be retrofitted on a previously purchased product. In this case, please arrange with a model number with "L1" inserted between ❶ and ❷.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Model No.

Code	Content
G	Heavy-Duty Scraper Type
G1	Coil Scraper Type

❸ Bore Size (mm)

Code	Content
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

❹ Piping thread type

Code	Content
Blank	M5 (ø20, ø25)
	Rc thread (ø32 to ø80)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❺ Stroke (mm)

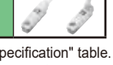
Series	Stroke (mm)		Applicable Bore Size ø20	ø25	ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	25	●	●	●	●	●	●	●
		50	●	●	●	●	●	●	●
		75							●
		100							●
	Intermediate Stroke *1 *2		Every 5 mm						

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

Series	Stroke (mm)		Applicable Bore Size ø20	ø25	ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●
		225	●	●	●	●	●	●	●
		250	●	●	●	●	●	●	●
		275	●	●	●	●	●	●	●
		300	●	●	●	●	●	●	●
		325	●	●	●	●	●	●	●
		350	●	●	●	●	●	●	●
		375	●	●	●	●	●	●	●
		400	●	●	●	●	●	●	●
	Intermediate Stroke *1 *2		Every 5 mm						

❻ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED / Special Function	Wiring (Output)	Load Voltage (V) AC	DC	Load Current (mA) AC	DC	Lead wire *1 Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-Color Improved Water Resistance	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	2-Color for AC Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: For the 2-color display, T1H/V, T8H/V and off-delay for ø40 and over, insert "L1" with "-" between ❶ and ❷. (However, T2WH/V and T3WH/V are excluded) Example) STS-MG-L1-63-50-T1H3-D-F
For ø80, T1H/V, T8H/V, off-delay type, and AC magnetic field type switches cannot be retrofitted after purchasing the standard product. In this case, select a model number with "L1" inserted between ❶ and ❷. Example) STS-MG-L1-80-50-F
*5: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)
*6 W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*6: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❼ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

❽ Option

Code	Content
F	End plate material: Steel
*1 M	Corrosion resistant type (Piston rod, guide rod material: SUS) (customized product)
*1 M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) (Custom order)

*1: Refer to P. 502 for material details.

For combinations of variations and options,
please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

About Custom Product Specifications

For details, see P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)
STS/L-$^{M}_{B}$G·G1- ····· - O

Switch Single Unit Model No. Notation Method

SW - T0V
❻ Switch Model No.

Specifications

Item	STS-MG/BG, STS-MG1/BG1, STL-MG/BG, STL-MG1/BG1						
Bore Size mm	ø20	ø25	ø32	ø40	ø50	ø63	ø80
Actuation method	Double acting, Scraper type						
Operating Fluid	Compressed Air						
Max. working pressure MPa	1.0						
Min. Operating Pressure MPa	0.2		0.15				
Proof Pressure MPa	1.6						
Ambient Temperature °C	-10 to 60 (No freezing)						
Port Size	M5		Rc1/8		Rc1/4		Rc3/8
Stroke tolerance mm	$^{+2.0}_{0}$						
Operating Piston Speed mm/s	50 to 500					50 to 300	
Cushion	With Rubber Cushion						
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)						
Allowable Absorbed Energy J	0.157	0.157	0.401	0.627	0.980	1.560	2.510

Stroke

● Short stroke STS

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø20	25, 50	50	5	5 *1
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	25, 50, 75, 100	100		

*1: For types with one or two switches.

● Long stroke STL

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø20	50, 75, 100, 125, 150 175, 200, 225, 250 275, 300, 325, 350 375, 400	400	30	30 *2
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375, 400		55	55 *2

*1: The custom stroke is available in 5 mm increments. However, the overall length dimension will be the same as the standard stroke above it.
*2: For types with one or two switches.

Theoretical Thrust Table

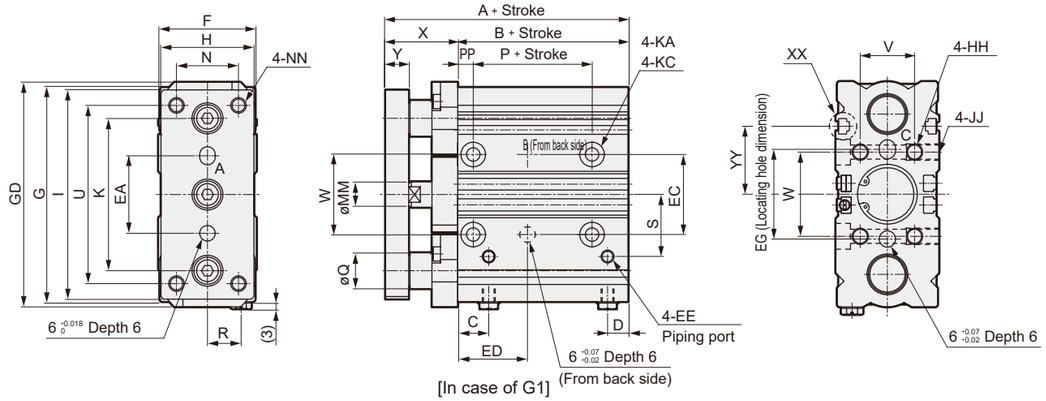
(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa									
		0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	-	62.8	94.2	1.26 x 10²	1.57 x 10²	1.88 x 10²	2.20 x 10²	2.51 x 10²	2.83 x 10²	3.14 x 10²
	Pull	-	47.1	70.7	94.2	1.18 x 10²	1.41 x 10²	1.65 x 10²	1.88 x 10²	2.12 x 10²	2.36 x 10²
ø25	Push	-	98.2	1.47 x 10²	1.96 x 10²	2.45 x 10²	2.95 x 10²	3.44 x 10²	3.93 x 10²	4.42 x 10²	4.91 x 10²
	Pull	-	75.6	1.13 x 10²	1.51 x 10²	1.89 x 10²	2.27 x 10²	2.64 x 10²	3.02 x 10²	3.40 x 10²	3.78 x 10²
ø32	Push	1.21 x 10²	1.61 x 10²	2.41 x 10²	3.22 x 10²	4.02 x 10²	4.83 x 10²	5.63 x 10²	6.43 x 10²	7.24 x 10²	8.04 x 10²
	Pull	90.5	1.21 x 10²	1.81 x 10²	2.41 x 10²	3.02 x 10²	3.62 x 10²	4.22 x 10²	4.83 x 10²	5.43 x 10²	6.03 x 10²
ø40	Push	1.88 x 10²	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²	1.01 x 10³	1.13 x 10³	1.26 x 10³
	Pull	1.58 x 10²	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²	8.44 x 10²	9.50 x 10²	1.06 x 10³
ø50	Push	2.95 x 10²	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	2.47 x 10²	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³
ø63	Push	4.68 x 10²	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³	2.49 x 10³	2.81 x 10³	3.12 x 10³
	Pull	4.20 x 10²	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³	2.24 x 10³	2.52 x 10³	2.80 x 10³
ø80	Push	7.54 x 10²	1.01 x 10³	1.51 x 10³	2.01 x 10³	2.51 x 10³	3.02 x 10³	3.52 x 10³	4.02 x 10³	4.52 x 10³	5.03 x 10³
	Pull	6.80 x 10²	9.07 x 10²	1.36 x 10³	1.81 x 10³	2.27 x 10³	2.72 x 10³	3.17 x 10³	3.63 x 10³	4.08 x 10³	4.54 x 10³

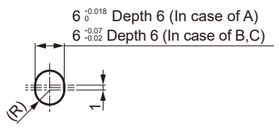
For cylinder weight, please refer to P. 642 to 645.

Outline dimension drawing (bore size: ø20, ø25)

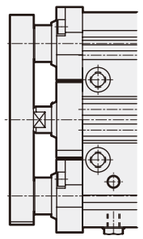
- Coil scraper type STS-$^{M}_{B}$G1
- Heavy-duty scraper type STS-$^{M}_{B}$G

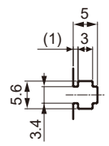


[In case of G1]



A, B, C Long hole part dimension





Detail of XX part

[In case of G]

Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	EE	EA	EC	EG	ED	F	G	GD	H	HH
ø20	25, 50	68	40	12	8	M5	30	31	33	14 + Stroke/2	38	83	87	36	M6 Depth 12
ø25		69	41	12	9	M5	32	35	37	14.5 + Stroke/2	42	86	91	38	M6 Depth 12

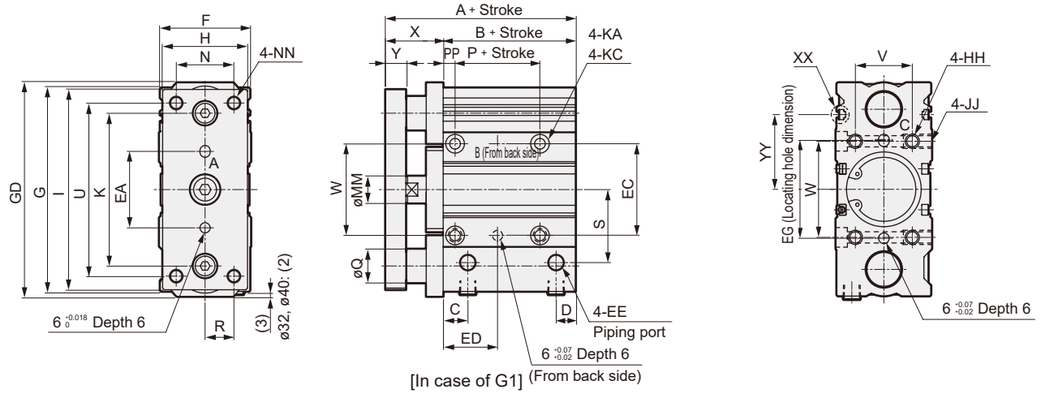
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø20	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	20	6	14	12	13
ø25	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	20	6	14	12	14

Code / Bore Size (mm)	S	U	V	W	X	Y	YY
ø20	24	69	20	31	28 $^{0}_{-2}$	9	25
ø25	26	72	24	35	28 $^{0}_{-2}$	9	27

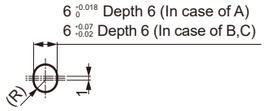
Note) **For dimensions with each switch, refer to P. 636 and 637.**

External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

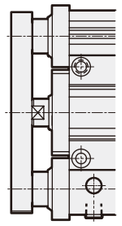
- Coil scraper type STS-$^{M}_{B}$G1
- Heavy-duty scraper type STS-$^{M}_{B}$G

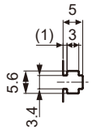


[In case of G1]



A, B, C Long hole part dimension





Detail of XX part

[In case of G]

Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	EE	EA	EC	EG	ED	F	G	GD	H	HH
ø32	25, 50	83	49	14	10.5	Rc1/8	42	45	46	17.5 + Stroke/2	47	111	117	45	M8 Depth 16
ø40		87	53	14.5	12	Rc1/8	45	54	55	19.5 + Stroke/2	54	120	126	50	M8 Depth 16
ø50		92	55	16	12.5	Rc1/4	55	66	69	19.5 + Stroke/2	66	147	152	64	M10 Depth 20
ø63		98	61	17.5	17.5	Rc1/4	62	79	82	22.5 + Stroke/2	79	162	166	75	M10 Depth 20

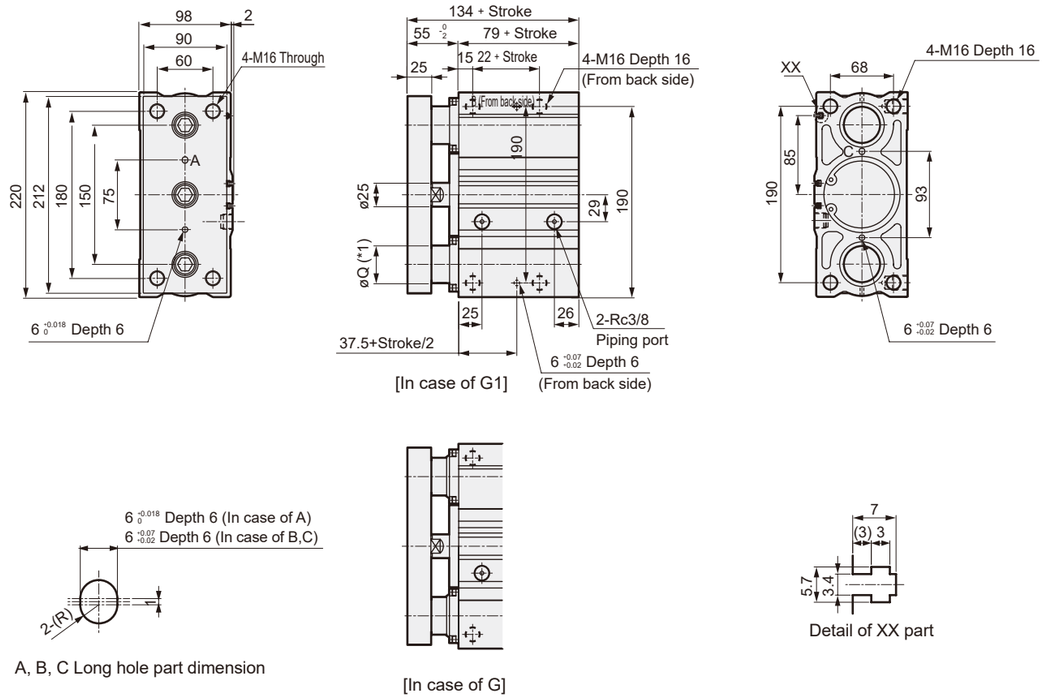
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø32	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	22	7	20	16	16
ø40	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	25	7	20	16	18
ø50	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	26	8	25	20	22
ø63	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	26	8	25	20	26

Code / Bore Size (mm)	S	U	V	W	X	Y	YY
ø32	39	93	25	45	34 $^{0}_{-2}$	12	39
ø40	43	102	32	54	34 $^{0}_{-2}$	12	42
ø50	49	125	38	66	37 $^{0}_{-2}$	16	45
ø63	56	140	50	79	37 $^{0}_{-2}$	16	52

Note) **For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø80)

- Coil scraper type STS-$^{M}_{B}$G1
- Heavy-duty scraper type STS-$^{M}_{B}$G



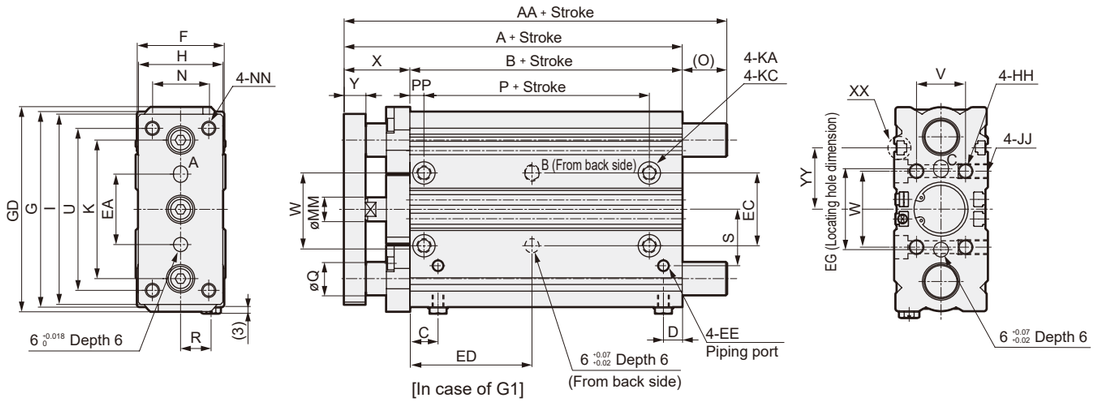
*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).

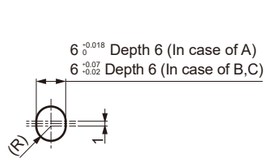
***2: For dimensions with each switch, refer to P. 636, 637.**

MEMO

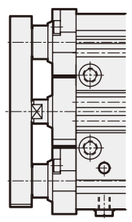
Outline dimension drawing (bore size: ø20, ø25)

- Coil scraper STL-$^{M}_{B}$G1
- Heavy-duty scraper type STL-$^{M}_{B}$G

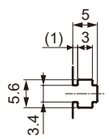




A, B, C Long hole part dimension



[In case of G]



Detail of XX part

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	EG	ED	F	G	GD	H
ø20	50, 75, 100, 125, 150, 175, 200, 225,	68	87	40	12	8	M5	30	31	33	14.0 + Stroke/2	38	83	87	36
ø25	250, 275, 300, 325, 350, 375, 400	69	87	41	12	9	M5	32	35	37	14.5 + Stroke/2	42	86	91	38

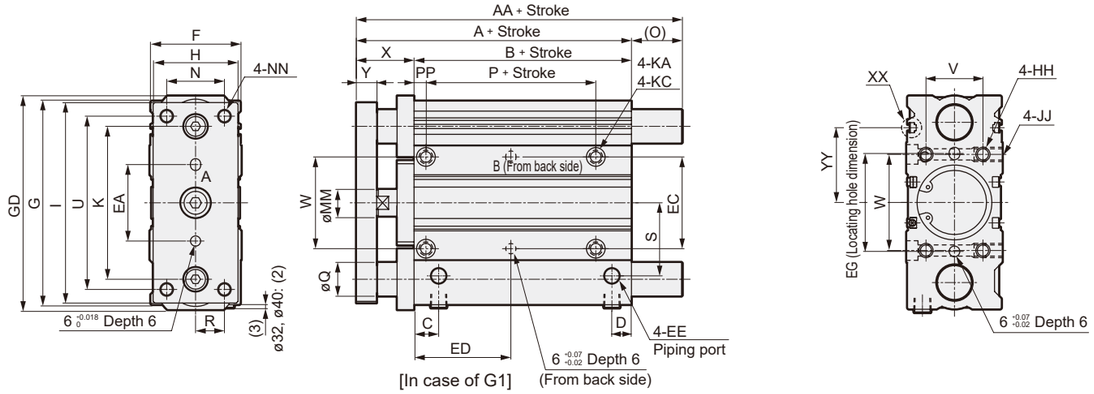
Code / Bore Size (mm)	HH	I	JJ	K	KA	KC	MM	N	NN	O	P	PP	Q STL-M	Q STL-B	R
ø20	M6 Depth 12	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	19	20	6	14	12	13
ø25	M6 Depth 12	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	18	20	6	14	12	14

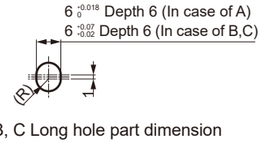
Code / Bore Size (mm)	S	U	V	W	X	Y	YY
ø20	24	69	20	31	28 0 -2	9	25
ø25	26	72	24	35	28 0 -2	9	27

Note) **For dimensions with each switch, refer to P. 636, 637.**

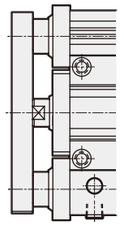
External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

- Coil scraper STL-$^{M}_{B}$G1
- Heavy-duty scraper type STL-$^{M}_{B}$G

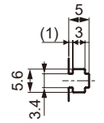




A, B, C Long hole part dimension



[In case of G]



Detail of XX part

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	EG	ED	F	G	GD	H	HH
ø32	50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400	83	117	49	14	10.5	Rc1/8	42	45	46	17.5 + Stroke/2	47	111	117	45	M8 Depth 16
ø40		87	117	53	14.5	12	Rc1/8	45	54	55	19.5 + Stroke/2	54	120	126	50	M8 Depth 16
ø50		92	140	55	16	12.5	Rc1/4	55	66	69	19.5 + Stroke/2	66	147	152	64	M10 Depth 20
ø63		98	140	61	17.5	17.5	Rc1/4	62	79	82	22.5 + Stroke/2	79	162	166	75	M10 Depth 20

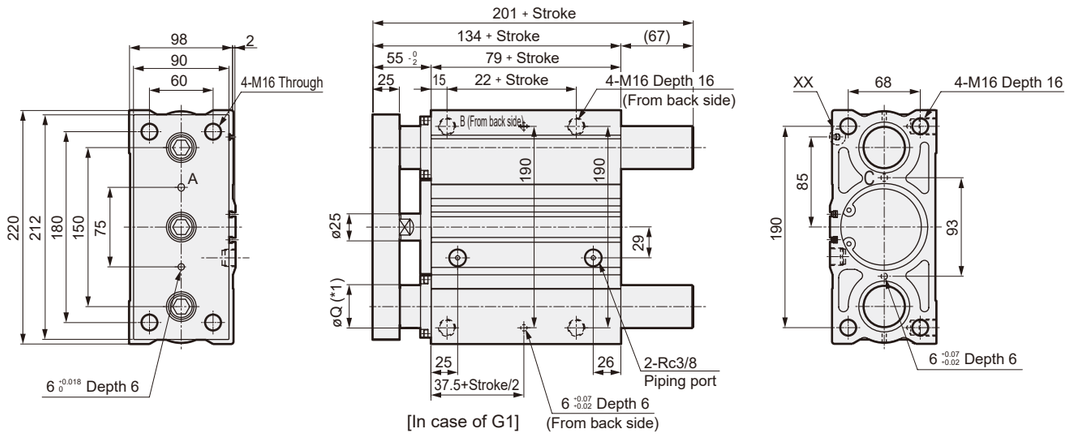
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	O	P	PP	Q STL-M	Q STL-B	R	S	U	V	W
ø32	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	34	22	7	20	16	16	39	93	25	45
ø40	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	30	25	7	20	16	18	43	102	32	54
ø50	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	48	26	8	25	20	22	49	125	38	66
ø63	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	42	26	8	25	20	26	56	140	50	79

Code / Bore Size (mm)	X	Y	YY
ø32	34 0 -2	12	39
ø40	34 0 -2	12	42
ø50	37 0 -2	16	45
ø63	37 0 -2	16	52

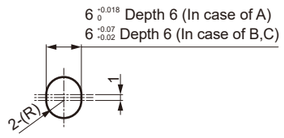
Note: For dimensions with each switch, refer to P. 636, 637.

External dimensions diagram (Bore size: ø80)

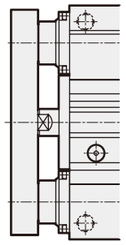
- Coil scraper STL-$^{M}_{B}$G1
- Heavy-duty scraper type STL-$^{M}_{B}$G



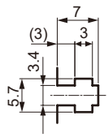
[In case of G1]



A, B, C Long hole part dimension



[In case of G]



Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).

***2: For dimensions with each switch, refer to P. 636, 637.**

MEMO

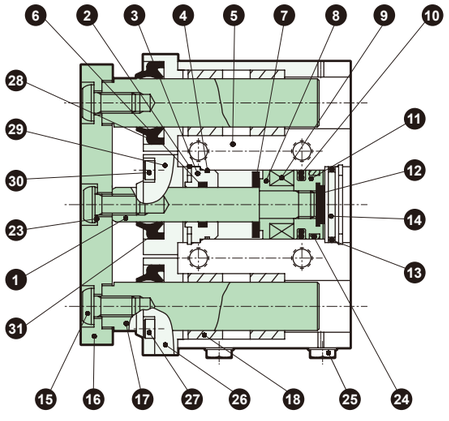
Guided
STM
STG
STS/ STL
STR2
UCA2
Cylinder Switch
Ending

Internal structure diagram / Material (Bore size: ø20 to ø63)

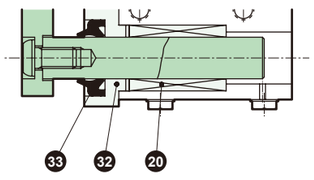
● Heavy-duty scraper type

STS-$^{M}_{B}$G

ø20, ø25

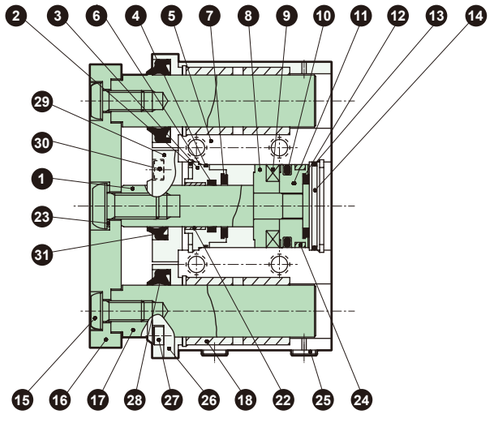


Plain bearing (M)

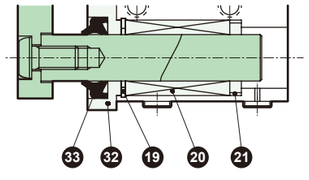


Rolling bearing (B)

ø32, ø40, ø50, ø63



Plain bearing (M)

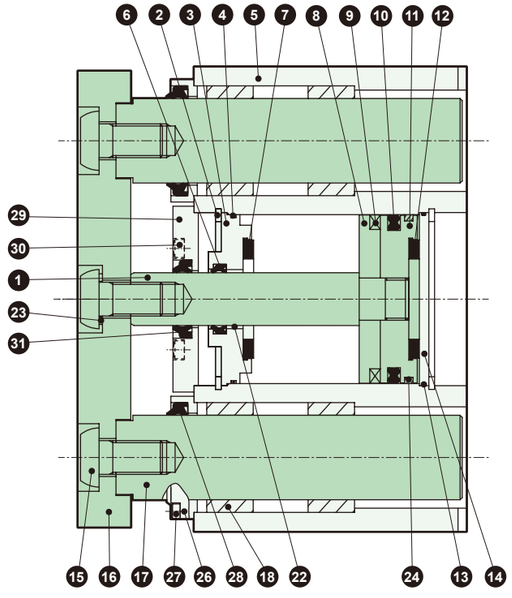


Rolling bearing (B)

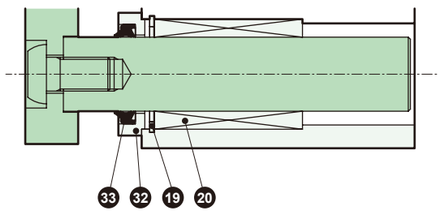
Internal structure diagram / Material (Bore size: ø80)

● Heavy-duty scraper type

STS-$^{M}_{B}$G



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name	Material	Remarks
1	Piston Rod	ø20,25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	C-type retaining ring	Steel	Zinc phosphate
3	Rod Metal	Aluminum Alloy	ø20, ø25, ø63, ø80: Alumite ø32 to ø50: Chromate
4	Metal gasket	Nitrile Rubber	
5	Cylinder Body	Aluminum Alloy	Hard Anodized
6	Rod Packing	Nitrile Rubber	
7	Cushion rubber (R)	Urethane Rubber	
8	Spacer	ø20 to ø50: Polyamide ø63, ø80: Aluminum alloy	ø63, ø80: Chromate
9	Magnet		
10	Piston Packing	Nitrile Rubber	
11	Piston	Aluminum Alloy	Chromate
12	Cushion rubber (H)	Urethane Rubber	
13	O-ring	Nitrile Rubber	
14	Bottom plate	ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
15	Hex Socket Button Head Bolt	Steel	Zinc Chromate
16	End plate	Aluminum Alloy	Alumite

Part No.	Part Name		Material	Remarks
17	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
18	Metal		Oil-Impregnated Bearing Alloy	
19	C-type retaining ring		Steel	Zinc phosphate
20	Ball bush			
21	Collar		Aluminum Alloy	
22	Bushing		Bearing Alloy	
23	Belleville washer		Steel	
24	Wear Ring		Polyacetal	
25	Plug		ø32 to ø63: Steel	ø8 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
26	Adapter B		Aluminum Alloy	Alumite
27	Hexagon Socket Head Cap Screw		Alloy Steel	Zinc Chromate
28	Heavy-duty Scraper		Nitrile rubber, Steel	
29	Adapter A		Aluminum Alloy	Alumite
30	Hexagon Socket Head Cap Screw		Alloy Steel	Zinc Chromate
31	Heavy-duty Scraper		Nitrile rubber, Steel	
32	Adapter C		Aluminum Alloy	Alumite
33	Heavy-duty Scraper		Nitrile rubber, Steel	

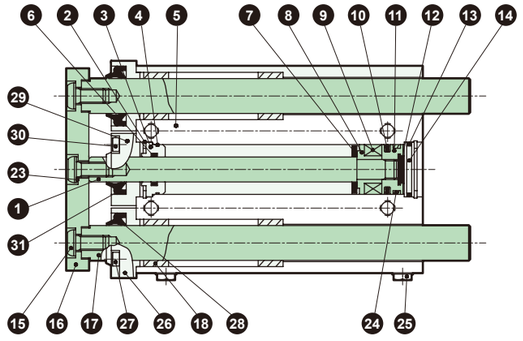
For maintenance parts, refer to the CKD component product site (https://www.ckd.co.jp/kiki/en/) → "Model No." → See "Maintenance Parts"

Internal structure diagram / Material (Bore size: ø20 to ø63)

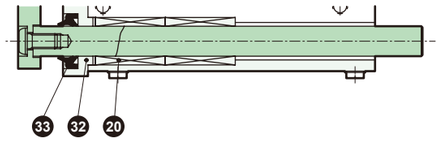
● Heavy-duty scraper type

STL-$^{M}_{B}$G

ø20, ø25

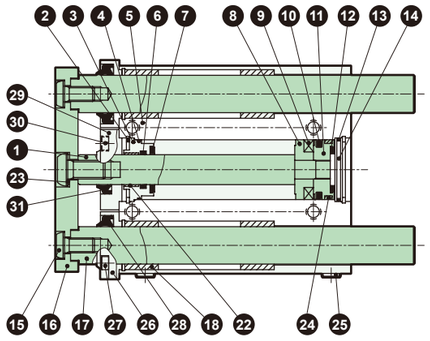


Plain bearing (M)

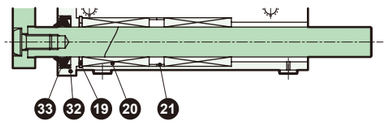


Rolling bearing (B)

ø32, ø40, ø50, ø63



Plain bearing (M)

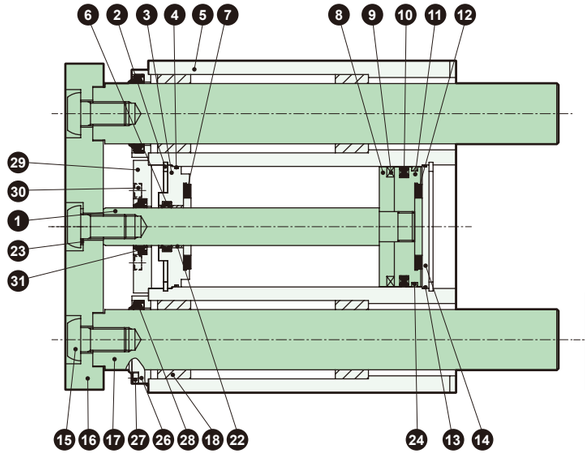


Rolling bearing (B)

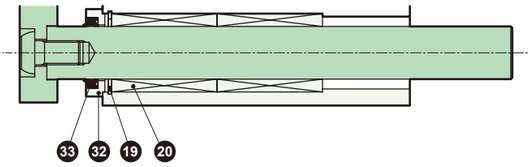
Internal structure diagram / Material (Bore size: ø80)

● Heavy-duty scraper type

STL-$^{M}_{B}$G



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name	Material	Remarks
1	Piston Rod	ø20,25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	C-type retaining ring	Steel	Zinc phosphate
3	Rod Metal	Aluminum Alloy	ø20, ø25, ø63, ø80: Alumite ø32 to ø50: Chromate
4	Metal gasket	Nitrile Rubber	
5	Cylinder Body	Aluminum Alloy	Hard Anodized
6	Rod Packing	Nitrile Rubber	
7	Cushion rubber (R)	Urethane Rubber	
8	Spacer	ø20 to ø50: Polyamide ø63, ø80: Aluminum alloy	ø63, ø80: Chromate
9	Magnet		
10	Piston Packing	Nitrile Rubber	
11	Piston	Aluminum Alloy	Chromate
12	Cushion rubber (H)	Urethane Rubber	
13	O-ring	Nitrile Rubber	
14	Bottom plate	ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
15	Hex Socket Button Head Bolt	Steel	Zinc Chromate
16	End plate	Aluminum Alloy	Alumite

Part No.	Part Name		Material	Remarks
17	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
18	Metal		Oil-Impregnated Bearing Alloy	
19	C-type retaining ring		Steel	Zinc phosphate
20	Ball bush			
21	Collar		Aluminum Alloy	
22	Bushing		Bearing Alloy	
23	Belleville washer		Steel	
24	Wear Ring		Polyacetal	
25	Plug		ø32 to ø63: Steel	ø8 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
26	Adapter B		Aluminum Alloy	Alumite
27	Hexagon Socket Head Cap Screw		Alloy Steel	Zinc Chromate
28	Heavy-duty Scraper		Nitrile rubber, Steel	
29	Adapter A		Aluminum Alloy	Alumite
30	Hexagon Socket Head Cap Screw		Alloy Steel	Zinc Chromate
31	Heavy-duty Scraper		Nitrile rubber, Steel	
32	Adapter C		Aluminum Alloy	Alumite
33	Heavy-duty Scraper		Nitrile rubber, Steel	

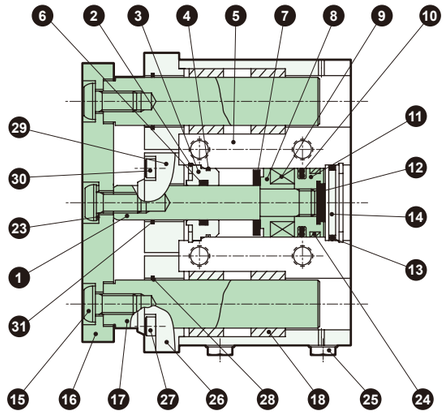
For maintenance parts, refer to the CKD component product site (https://www.ckd.co.jp/kiki/en/) → "Model No." → See "Maintenance Parts"

Internal structure diagram / Material (Bore size: ø20 to ø63)

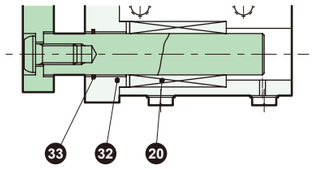
● Coil scraper type

STS-$^{M}_{B}$G1

ø20, ø25

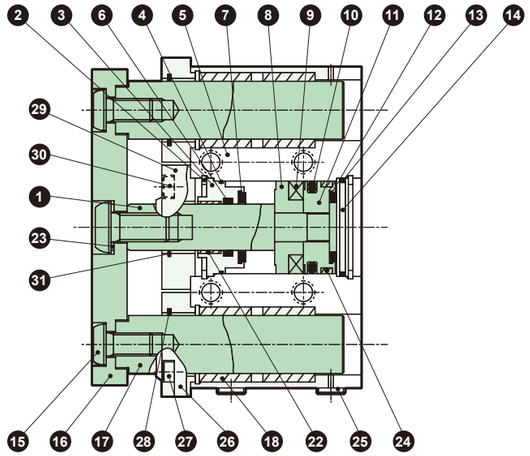


Plain bearing (M)

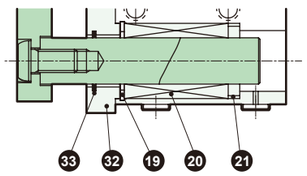


Rolling bearing (B)

ø32, ø40, ø50, ø63



Plain bearing (M)

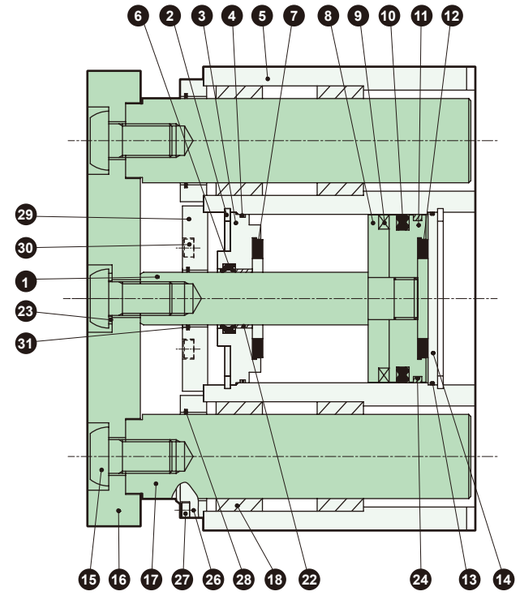


Rolling bearing (B)

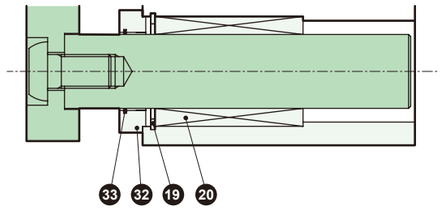
Internal structure diagram / Material (Bore size: ø80)

● Coil scraper type

STS-$^{M}_{B}$G1



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name	Material	Remarks
1	Piston Rod	ø20,25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	C-type retaining ring	Steel	Zinc phosphate
3	Rod Metal	Aluminum Alloy	ø20, ø25, ø63, ø80: Alumite ø32 to ø50: Chromate
4	Metal gasket	Nitrile Rubber	
5	Cylinder Body	Aluminum Alloy	Hard Anodized
6	Rod Packing	Nitrile Rubber	
7	Cushion rubber (R)	Urethane Rubber	
8	Spacer	ø20 to ø50: Polyamide ø63, ø80: Aluminum alloy	ø63, ø80: Chromate
9	Magnet		
10	Piston Packing	Nitrile Rubber	
11	Piston	Aluminum Alloy	Chromate
12	Cushion rubber (H)	Urethane Rubber	
13	O-ring	Nitrile Rubber	
14	Bottom plate	ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
15	Hex Socket Button Head Bolt	Steel	Zinc Chromate
16	End plate	Aluminum Alloy	Alumite

Part No.	Part Name		Material	Remarks
17	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
18	Metal		Oil-Impregnated Bearing Alloy	
19	C-type retaining ring		Steel	Zinc phosphate
20	Ball bush			
21	Collar		Aluminum Alloy	
22	Bushing		Bearing Alloy	
23	Belleville washer		Steel	
24	Wear Ring		Polyacetal	
25	Plug		ø20 to ø25: - ø32 to ø63: Steel	ø20 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
26	Adapter B		Aluminum Alloy	Alumite
27	Hexagon Socket Head Cap Screw		Alloy Steel	Zinc Chromate
28	Coil scraper		Phosphor bronze	
29	Adapter A		Aluminum Alloy	Alumite
30	Hexagon Socket Head Cap Screw		Alloy Steel	Zinc Chromate
31	Coil scraper		Phosphor bronze	
32	Adapter C		Aluminum Alloy	Alumite
33	Coil scraper		Phosphor bronze	

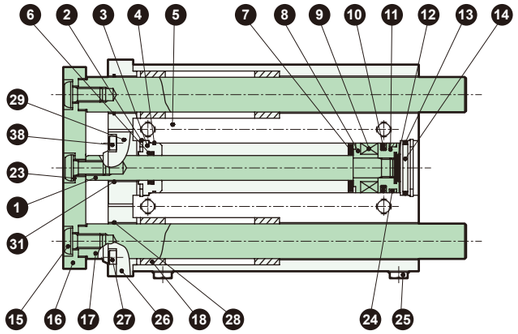
For maintenance parts, refer to the CKD component product site (https://www.ckd.co.jp/kiki/en/) → "Model No." → See "Maintenance Parts"

Internal structure diagram / Material (Bore size: ø20 to ø63)

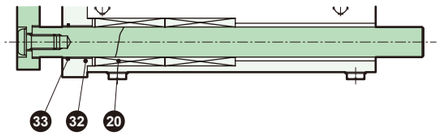
● Coil scraper type

STL-$^{M}_{B}$G-1

ø20, ø25

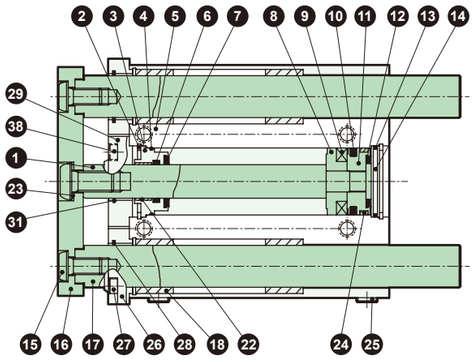


Plain bearing (M)

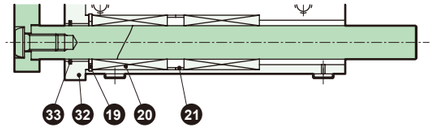


Rolling bearing (B)

ø32, ø40, ø50, ø63



Plain bearing (M)

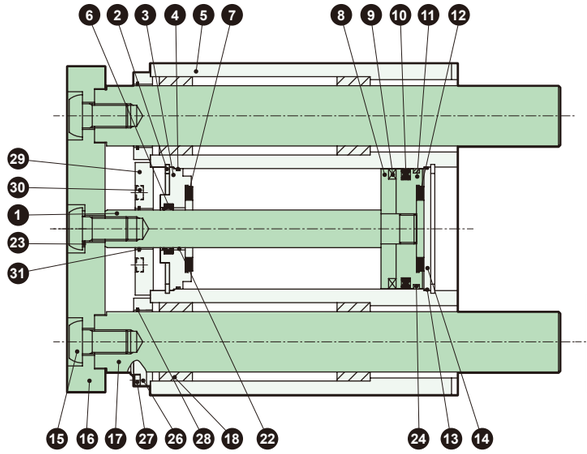


Rolling bearing (B)

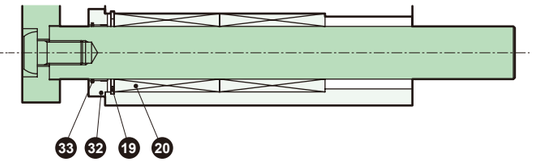
Internal structure diagram / Material (Bore size: ø80)

● Coil scraper type

STL-$^{M}_{B}$G-1



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name	Material	Remarks
1	Piston Rod	ø20,25: Stainless steel ø32 to ø80: Steel	Industrial Hard Chrome Plating
2	C-type retaining ring	Steel	Zinc phosphate
3	Rod Metal	Aluminum Alloy	ø20, ø25, ø63, ø80: Alumite ø32 to ø50: Chromate
4	Metal gasket	Nitrile Rubber	
5	Cylinder Body	Aluminum Alloy	Hard Anodized
6	Rod Packing	Nitrile Rubber	
7	Cushion rubber (R)	Urethane Rubber	
8	Spacer	ø20 to ø50: Polyamide ø63, ø80: Aluminum alloy	ø63, ø80: Chromate
9	Magnet		
10	Piston Packing	Nitrile Rubber	
11	Piston	Aluminum Alloy	Chromate
12	Cushion rubber (H)	Urethane Rubber	
13	O-ring	Nitrile Rubber	
14	Bottom plate	ø20 to ø63: Aluminum alloy ø80: Steel	ø20 to ø63: Chromate ø80: Zinc chromate
15	Hex Socket Button Head Bolt	Steel	Zinc Chromate
16	End plate	Aluminum Alloy	Alumite

Part No.	Part Name		Material	Remarks
17	Guide rod	M	Steel	Industrial Hard Chrome Plating
		B	Alloy Steel	Industrial Hard Chrome Plating
18	Metal		Oil-Impregnated Bearing Alloy	
19	C-type retaining ring		Steel	Zinc phosphate
20	Ball bush			
21	Collar		Aluminum Alloy	
22	Bushing		Bearing Alloy	
23	Belleville washer		Steel	
24	Wear Ring		Polyacetal	
25	Plug		ø8 to ø25: - ø32 to ø63: Steel	ø20 to ø25: FPL (CKD) ø32 to ø63: Zinc chromate
26	Adapter B		Aluminum Alloy	Alumite
27	Hexagon Socket Head Cap Screw		Alloy Steel	Zinc Chromate
28	Coil scraper		Phosphor bronze	
29	Adapter A		Aluminum Alloy	Alumite
30	Hexagon Socket Head Cap Screw		Alloy Steel	Zinc Chromate
31	Coil scraper		Phosphor bronze	
32	Adapter C		Aluminum Alloy	Alumite
33	Coil scraper		Phosphor bronze	

For maintenance parts, refer to the CKD component product site (https://www.ckd.co.jp/kiki/en/) → "Model No." → See "Maintenance Parts"

Guided cylinder Double acting, Cutting oil resistant type

STS / STL-$^{M}_{B}$G$^{2}_{3}$ Series

● Bore size: ø20, ø25, ø32, ø40, ø50, ø63, ø80

Circuit Diagram Symbol

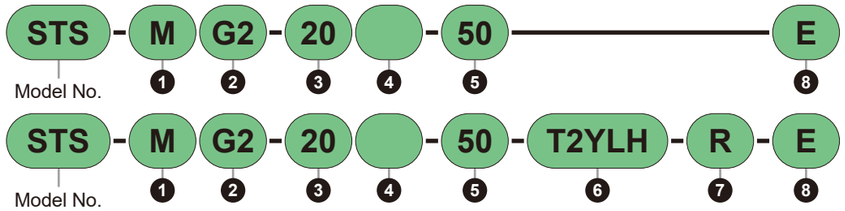
RoHS

Model No. Notation Method

● Short stroke

Without Switch
(Built-in magnet for switch)

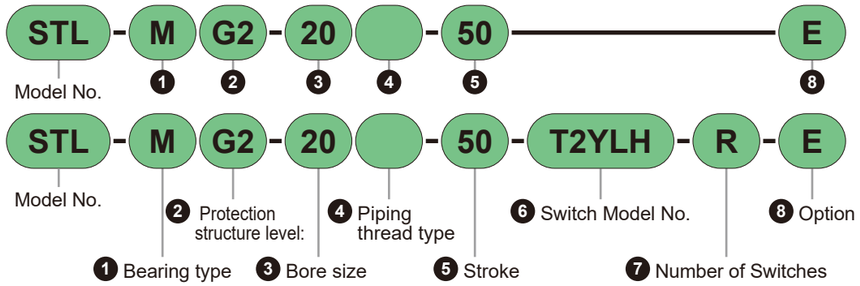
With Switch
(Built-in magnet for switch)



● Long stroke

Without Switch
(Built-in magnet for switch)

With Switch
(Built-in magnet for switch)



1 Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

2 Protection structure level

Code	Content
G2	Cutting Oil Resistant Scraper + NBR Packing
G3	Cutting Oil Resistant Scraper + FKM Packing

3 Bore Size (mm)

Code	Content
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80

4 Piping thread type

Code	Content
Blank	M5 (ø20, ø25)
	Rc thread (ø32 to ø80)
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

5 Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size ø20	ø25	ø32	ø40	ø50	ø63	ø80
STS	Standard Stroke	25	●	●	●	●	●	●	●
		50	●	●	●	●	●	●	●
		75							●
		100							●
	Intermediate Stroke	*1 *2	Every 5 mm						

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

Series	Stroke (mm)		Applicable Bore Size ø20	ø25	ø32	ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	●	●	●	
		75	●	●	●	●	●	●	●
		100	●	●	●	●	●	●	●
		125	●	●	●	●	●	●	●
		150	●	●	●	●	●	●	●
		175	●	●	●	●	●	●	●
		200	●	●	●	●	●	●	●
		225	●	●	●	●	●	●	●
		250	●	●	●	●	●	●	●
		275	●	●	●	●	●	●	●
		300	●	●	●	●	●	●	●
		325	●	●	●	●	●	●	●
		350	●	●	●	●	●	●	●
		375	●	●	●	●	●	●	●
		400	●	●	●	●	●	●	●
	Intermediate Stroke	*1 *2	Every 5 mm						

6 Switch Model No.

For switch details, please see P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	DC	Load Current (mA) AC	DC	Lead wire *1 Straight	L-shape	
Solid State	2-Color Water Resistance Improved	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*2
	2-Color For Cutting Oil	2-wire	-	10 to 30	-	5 to 20	T2YLH□	T2YLV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3YLH□	T3YLV□	

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*3: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

	Code	Content
	Blank	1 m (Standard)
	3	3 m (Option)
	5	5 m (Option)
*4	W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*4: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m T2YLH
3 m F2S 3
5 m F2S 5

7 Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

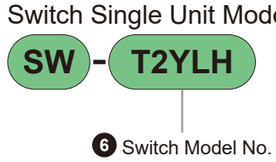
8 Option

Code	Content
M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) (Custom order)

*1: Refer to P. 502 for material details.

For combinations of variations and options, please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

Switch Single Unit Model No. Notation Method



Specifications

Item		STS/STL-$^{M}_{B}$G$^{2}_{3}$						
Bore Size	mm	ø20	ø25	ø32	ø40	ø50	ø63	ø80
Actuation method		Double Acting, Coolant Proof Type						
Operating Fluid		Compressed Air						
Max. Working Pressure	MPa	1.0						
Min. Operating Pressure	MPa	0.2		0.15				
Proof Pressure	MPa	1.6						
Ambient Temperature	°C	-10 to 60 (no freezing)						
Port Size		M5		Rc1/8		Rc1/4		Rc3/8
Stroke tolerance	mm	$^{+2.0}_{0}$						
Operating Piston Speed	mm/s	50 to 500					50 to 300	
Cushion		With rubber cushion (Urethane rubber)						
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)						
Allowable Absorbed Energy	J	0.157	0.157	0.401	0.627	0.980	1.560	2.510

Stroke

● Scraper Type

· Short stroke STS

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø20	25, 50	50	5	5 *1
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	25, 50, 75, 100	100		

*1: This is for the case with 1 or 2 switches.

· Long stroke STL

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø20	50, 75, 100, 125, 150 175, 200, 225, 250 275, 300, 325, 350 375, 400	400	30	30 *3
ø25				
ø32				
ø40				
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375, 400		55	55 *3

*1: Intermediate strokes can be manufactured every 5 mm. However, the total length is the same as that of the next longer standard stroke.
*2: Stroke over standard to maximum is available in increments of 25.
*3: This is for the case with 1 or 2 switches.

Caution: The rod side with scraper is coolant proof but the head side without scraper is not. Therefore, protect it with a cover.

Theoretical Thrust Table

(Unit: N)

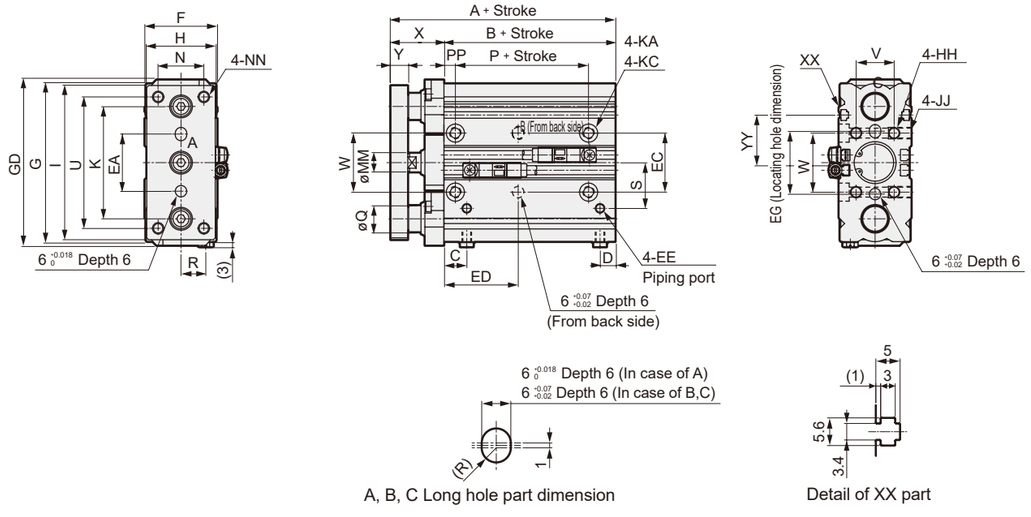
Bore size (mm)	Operating Direction	Operating Pressure MPa									
		0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	-	62.8	94.2	1.26 x 10²	1.57 x 10²	1.88 x 10²	2.20 x 10²	2.51 x 10²	2.83 x 10²	3.14 x 10²
	Pull	-	47.1	70.7	94.2	1.18 x 10²	1.41 x 10²	1.65 x 10²	1.88 x 10²	2.12 x 10²	2.36 x 10²
ø25	Push	-	98.2	1.47 x 10²	1.96 x 10²	2.45 x 10²	2.95 x 10²	3.44 x 10²	3.93 x 10²	4.42 x 10²	4.91 x 10²
	Pull	-	75.6	1.13 x 10²	1.51 x 10²	1.89 x 10²	2.27 x 10²	2.64 x 10²	3.02 x 10²	3.40 x 10²	3.78 x 10²
ø32	Push	1.21 x 10²	1.61 x 10²	2.41 x 10²	3.22 x 10²	4.02 x 10²	4.83 x 10²	5.63 x 10²	6.43 x 10²	7.24 x 10²	8.04 x 10²
	Pull	90.5	1.21 x 10²	1.81 x 10²	2.41 x 10²	3.02 x 10²	3.62 x 10²	4.22 x 10²	4.83 x 10²	5.43 x 10²	6.03 x 10²
ø40	Push	1.88 x 10²	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²	1.01 x 10³	1.13 x 10³	1.26 x 10³
	Pull	1.58 x 10²	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²	8.44 x 10²	9.50 x 10²	1.06 x 10³
ø50	Push	2.95 x 10²	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	2.47 x 10²	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³
ø63	Push	4.68 x 10²	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³	2.49 x 10³	2.81 x 10³	3.12 x 10³
	Pull	4.20 x 10²	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³	2.24 x 10³	2.52 x 10³	2.80 x 10³
ø80	Push	7.54 x 10²	1.01 x 10³	1.51 x 10³	2.01 x 10³	2.51 x 10³	3.02 x 10³	3.52 x 10³	4.02 x 10³	4.52 x 10³	5.03 x 10³
	Pull	6.80 x 10²	9.07 x 10²	1.36 x 10³	1.81 x 10³	2.27 x 10³	2.72 x 10³	3.17 x 10³	3.63 x 10³	4.08 x 10³	4.54 x 10³

For cylinder weight, please refer to P. 642 to 645.

Outline dimension drawing (bore size: ø20, ø25)

● Cutting Oil Resistant Type

STS-$^{M}_{B}$G2 / G3



Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	EE	EA	EC	EG	ED	F	G	GD	H	HH
ø20	25, 50	68	40	12	8	M5	30	31	33	14+ Stroke/2	38	83	87	36	M6 Depth 12
ø25		69	41	12	9	M5	32	35	37	14.5+ Stroke/2	42	86	91	38	M6 Depth 12

Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø20	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	20	6	14	12	13
ø25	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	20	6	14	12	14

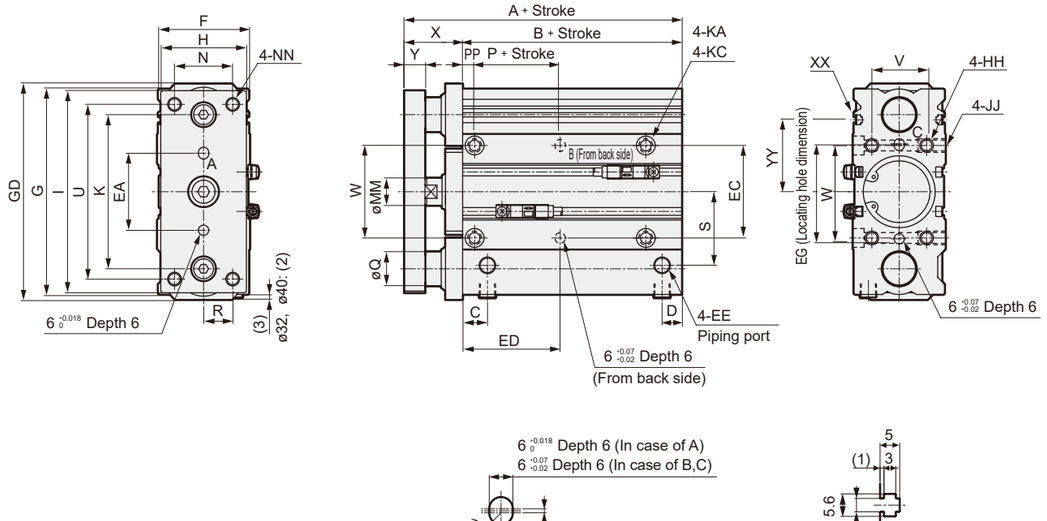
Code / Bore Size (mm)	S	U	V	W	X	Y	YY
ø20	24	69	20	31	28 0 -2	9	25
ø25	26	72	24	35	28 0 -2	9	27

Note) **For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

● Cutting Oil Resistant Type

STS-$^{M}_{B}$G2 / G3



Code / Bore Size (mm)	Standard Stroke (mm)	A	B	C	D	EE	EA	EC	EG	ED	F	G	GD	H	HH
ø32	25, 50	83	49	14	10.5	Rc1/8	42	45	46	17.5+ Stroke/2	47	111	117	45	M8 Depth 16
ø40		87	53	14.5	12	Rc1/8	45	54	55	19.5+ Stroke/2	54	120	126	50	M8 Depth 16
ø50		92	55	16	12.5	Rc1/4	55	66	69	19.5+ Stroke/2	66	147	152	64	M10 Depth 20
ø63		98	61	17.5	17.5	Rc1/4	62	79	82	22.5+ Stroke/2	79	162	166	75	M10 Depth 20

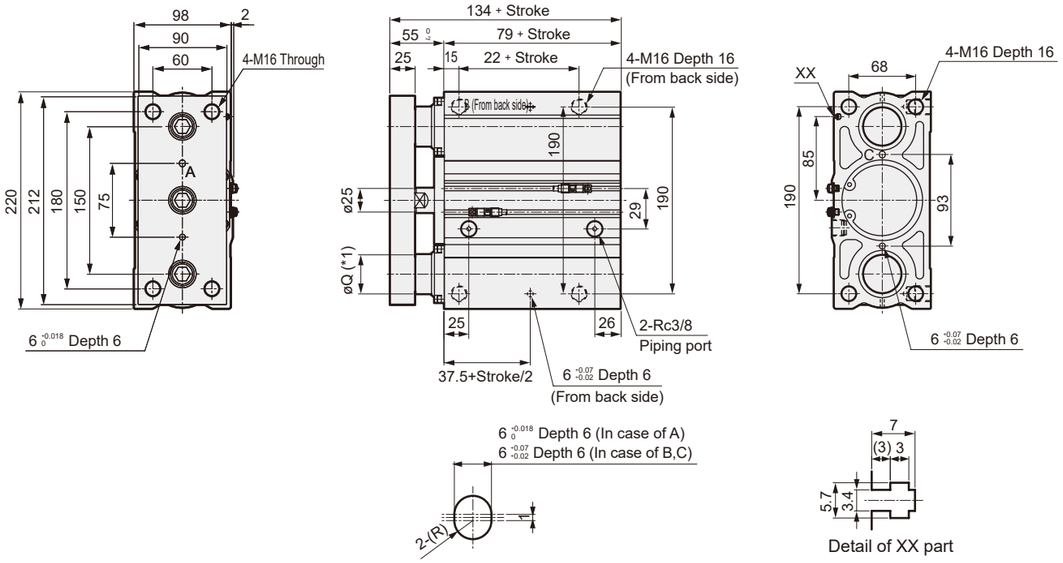
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	P	PP	Q STS-M	Q STS-B	R
ø32	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	22	7	20	16	16
ø40	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	25	7	20	16	18
ø50	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	26	8	25	20	22
ø63	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	26	8	25	20	26

Code / Bore Size (mm)	S	U	V	W	X	Y	YY
ø32	39	93	25	45	34 0 -2	12	39
ø40	43	102	32	54	34 0 -2	12	42
ø50	49	125	38	66	37 0 -2	16	45
ø63	56	140	50	79	37 0 -2	16	52

Note) **For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø80)

● Cutting Oil Resistant Type
STS-$^{M}_{B}$G2 / G3



A, B, C Long hole part dimension

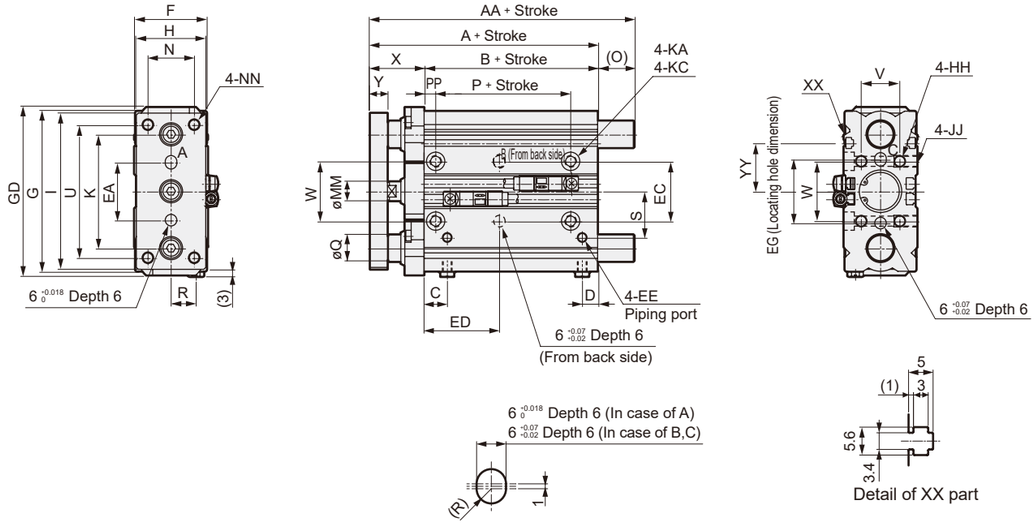
*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
***2: For dimensions with each switch, refer to P. 636, 637.**

MEMO

Outline dimension drawing (bore size: ø20, ø25)

● Cutting Oil Resistant Type

STL-$^{M}_{B}$G2 / G3



A, B, C Long hole part dimension

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	EG	ED	F	G	GD	H
ø20	50, 75, 100, 125, 150, 175, 200, 225,	68	87	40	12	8	M5	30	31	33	14.0 + Stroke/2	38	83	87	36
ø25	250, 275, 300, 325, 350, 375, 400	69	87	41	12	9	M5	32	35	37	14.5+ Stroke/2	42	86	91	38

Code / Bore Size (mm)	HH	I	JJ	K	KA	KC	MM	N	NN	O	P	PP	Q STL-M	Q STL-B	R
ø20	M6 Depth 12	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	19	20	6	14	12	13
ø25	M6 Depth 12	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	18	20	6	14	12	14

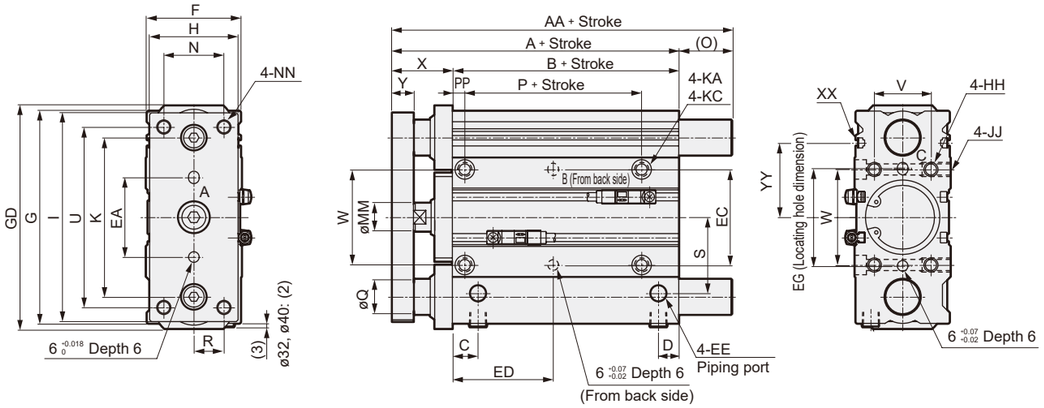
Code / Bore Size (mm)	S	U	V	W	X	Y	YY
ø20	24	69	20	31	28 $^{0}_{-2}$	9	25
ø25	26	72	24	35	28 $^{0}_{-2}$	9	27

Note) **For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø32, ø40, ø50, ø63)

Cutting Oil Resistant Type

STL-$^{M}_{B}$G2 / G3



A, B, C Long hole part dimension

Code / Bore Size (mm)	Standard Stroke (mm)	A	AA	B	C	D	EE	EA	EC	EG	ED	F	G	GD	H	HH
ø32	50, 75, 100, 125, 150,	83	117	49	14	10.5	Rc1/8	42	45	46	17.5+ Stroke/2	47	111	117	45	M8 Depth 16
ø40	175, 200, 225, 250, 275,	87	117	53	14.5	12	Rc1/8	45	54	55	19.5+ Stroke/2	54	120	126	50	M8 Depth 16
ø50	300, 325, 350, 375, 400	92	140	55	16	12.5	Rc1/4	55	66	69	19.5+ Stroke/2	66	147	152	64	M10 Depth 20
ø63		98	140	61	17.5	17.5	Rc1/4	62	79	82	22.5+ Stroke/2	79	162	166	75	M10 Depth 20

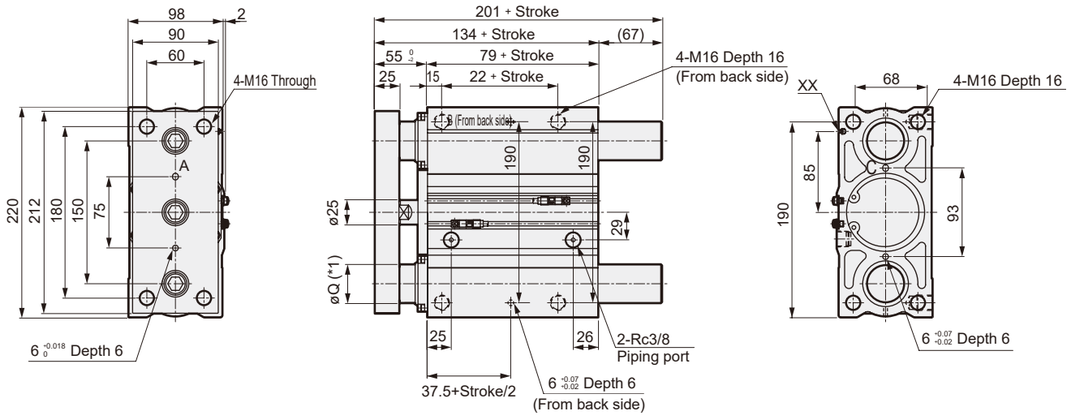
Code / Bore Size (mm)	I	JJ	K	KA	KC	MM	N	NN	O	P	PP	Q STL-M	Q STL-B	R	S	U	V	W
ø32	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	34	22	7	20	16	16	39	93	25	45
ø40	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	30	25	7	20	16	18	43	102	32	54
ø50	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	48	26	8	25	20	22	49	125	38	66
ø63	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	42	26	8	25	20	26	56	140	50	79

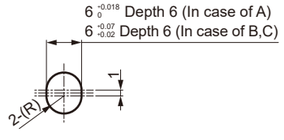
Code / Bore Size (mm)	X	Y	YY
ø32	34 $^{0}_{-2}$	12	39
ø40	34 $^{0}_{-2}$	12	42
ø50	37 $^{0}_{-2}$	16	45
ø63	37 $^{0}_{-2}$	16	52

Note) **For dimensions with each switch, refer to P. 636, 637.**

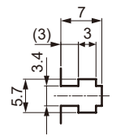
External dimensions diagram (Bore size: ø80)

● Cutting Oil Resistant Type
STL-$^{M}_{B}$G2 / G3





A, B, C Long hole part dimension



Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).
***2: For dimensions with each switch, refer to P. 636, 637.**

MEMO

Guided
STM
STG
STS/ STL
STR2
UCA2
Cylinder Switch
Ending

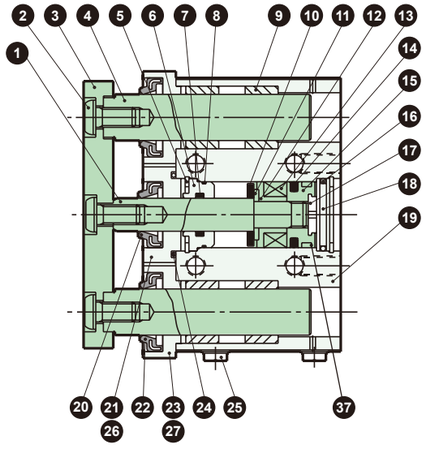
Internal structure diagram / Material (Bore size: ø20 to ø63)

● Protection structure level: Packing NBR / FKM

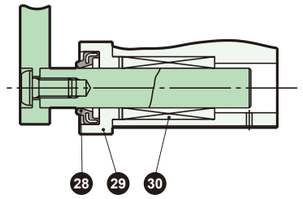
STS-$^{M}_{B}$G2

STS-$^{M}_{B}$G3

● ø20, ø25

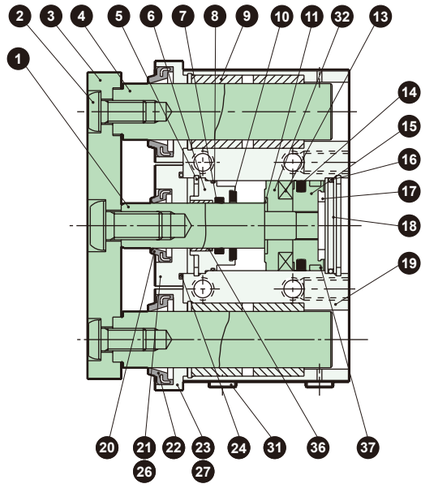


Plain bearing (M)

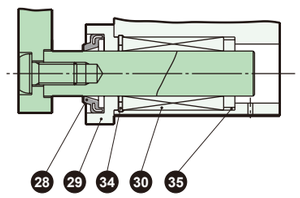


Rolling bearing (B)

● ø32, ø40, ø50, ø63



Plain bearing (M)



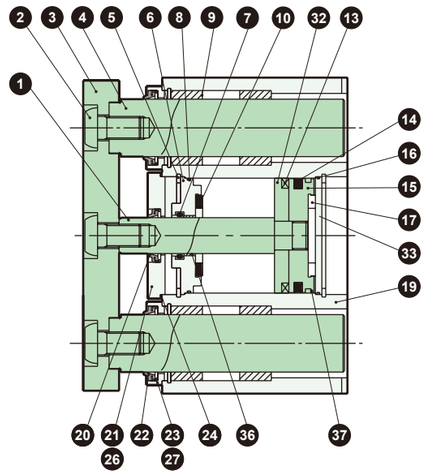
Rolling bearing (B)

Internal structure diagram / Material (Bore size: ø80)

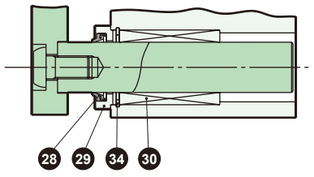
● Protection structure level: Packing NBR / FKM

STS-$^{M}_{B}$G2

STS-$^{M}_{B}$G3



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name		Material	Remarks
1	Piston Rod		Stainless Steel	Industrial Hard Chrome Plating
2	Hex Socket Button Head Bolt		Stainless Steel	
3	End plate		Aluminum Alloy	Alumite
4	Guide rod		Stainless Steel	Industrial Hard Chrome Plating
5	C-type retaining ring for hole		Stainless Steel	
6	Rod Metal		Aluminum Alloy	Alumite
7	Rod Packing	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
8	Metal gasket	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
9	Metal		Oil-Impregnated Bearing Alloy	
10	Cushion rubber (R)		Urethane Rubber	
11	Spacer washer		Stainless Steel	ø20 to ø50 only
12	Spacer		Polyamide	ø20 to ø50 only
13	Magnet			
14	Piston Packing	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
15	Piston		Aluminum Alloy	Chromate
16	O-ring	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
17	Cushion rubber (H)		Urethane Rubber	
18	Bottom plate		Aluminum Alloy	ø20 to ø63 only
19	Tube body		Aluminum Alloy	Hard Anodized

Part No.	Part Name		Material	Remarks
20	Scraper	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
21	Adaptor A		Aluminum Alloy	Alumite
22	Scraper	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
23	Adapter B		Aluminum Alloy	Alumite
24	O-ring	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
25	Plug		-	FPL(CKD)
26	Hexagon Socket Head Cap Screw		Stainless Steel	
27	Hexagon Socket Head Cap Screw		Stainless Steel	
28	Scraper	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
29	Adapter C		Aluminum Alloy	Alumite
30	Bearing		Stainless Steel	
31	Hexagon socket flush plug		Stainless Steel	ø32 to ø63 only
32	Spacer		Aluminum Alloy	ø63.ø80 only
33	Bottom plate		Steel	Zinc chromate (ø80 only)
34	C-type retaining ring for hole		Stainless Steel	ø32 to ø80 only
35	Collar		Aluminum Alloy	ø32 to ø63 only
36	Bushing		Bearing Alloy	ø32 to ø80 only
37	Wear Ring		Polyacetal	

For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

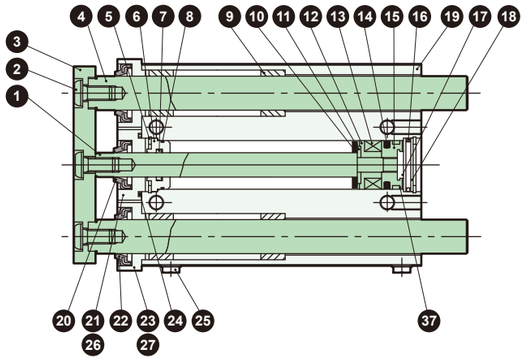
Internal structure diagram / Material (Bore size: ø20 to ø63)

● Protection structure level: Packing NBR / FKM

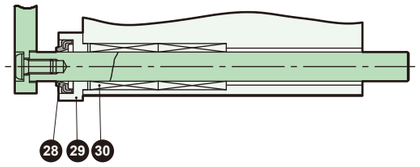
STL-$^{M}_{B}$G2

STL-$^{M}_{B}$G3

● ø20, ø25

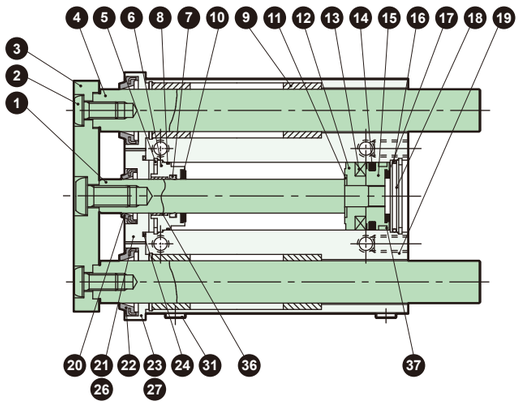


Plain bearing (M)

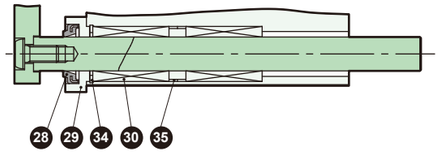


Rolling bearing (B)

● ø32, ø40, ø50, ø63



Plain bearing (M)



Rolling bearing (B)

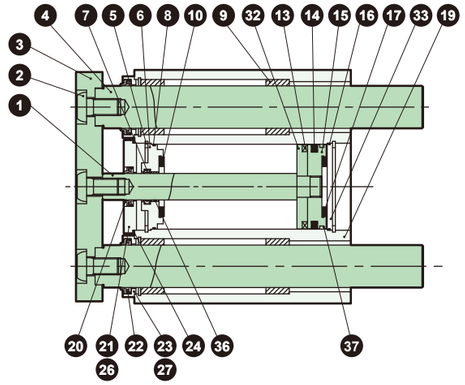
Internal structure diagram / Material (Bore size: ø80)

● Protection structure level: Packing NBR / FKM

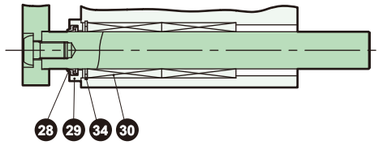
STL-$^{M}_{B}$G2

STL-$^{M}_{B}$G3

● ø80



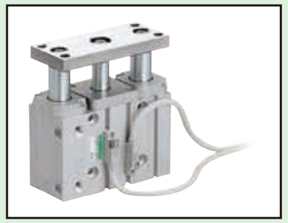
Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name		Material	Remarks
1	Piston Rod		Stainless Steel	Industrial Hard Chrome Plating
2	Hex Socket Button Head Bolt		Stainless Steel	
3	End plate		Aluminum Alloy	Alumite
4	Guide rod		Stainless Steel	Industrial Hard Chrome Plating
5	C-type retaining ring for hole		Stainless Steel	
6	Rod Metal		Special aluminum	Alumite
7	Rod Packing	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
8	Metal gasket	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
9	Metal		Oil-Impregnated Bearing Alloy	
10	Cushion rubber (R)		Urethane Rubber	
11	Spacer washer		Stainless Steel	ø20 to ø50 only
12	Spacer		Polyamide	ø20 to ø50 only
13	Magnet			
14	Piston Packing	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
15	Piston		Aluminum Alloy	Chromate
16	O-ring	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
17	Cushion rubber (H)		Urethane Rubber	
18	Bottom plate		Aluminum Alloy	ø20 to ø63 only
19	Tube body		Aluminum Alloy	Hard Anodized
20	Scraper	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
21	Adapter A		Aluminum Alloy	Alumite
22	Scraper	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
23	Adapter B		Aluminum Alloy	Alumite
24	O-ring	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
25	Plug		-	FPL(CKD)
26	Hexagon Socket Head Cap Screw		Stainless Steel	
27	Hexagon Socket Head Cap Screw		Stainless Steel	
28	Scraper	G2	Nitrile Rubber	
		G3	Fluoro Rubber	
29	Adapter C		Aluminum Alloy	Alumite
30	Bearing		Stainless Steel	
31	Hexagon socket flush plug		Stainless Steel	ø32 to ø63 only
32	Spacer		Aluminum Alloy	ø63.ø80 only
33	Bottom plate		Steel	Zinc chromate (ø80 only)
34	C-type retaining ring for hole		Stainless Steel	ø32 to ø80 only
35	Collar		Aluminum Alloy	ø32 to ø63 only
36	Bushing		Bearing Alloy	ø32 to ø80 only
37	Wear Ring		Polyacetal	

For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts



Guided cylinder Anti-spatter adherence

STS / STL-G4 Series

● Bore size: ø40, ø50, ø63, ø80

Circuit Diagram Symbol ● Double acting type

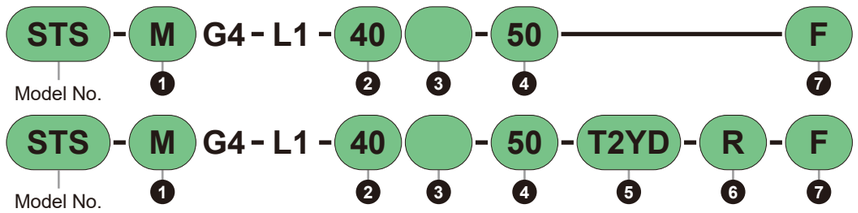
RoHS

Model No. Notation Method

●Short stroke

Without Switch
(Built-in magnet for switch)

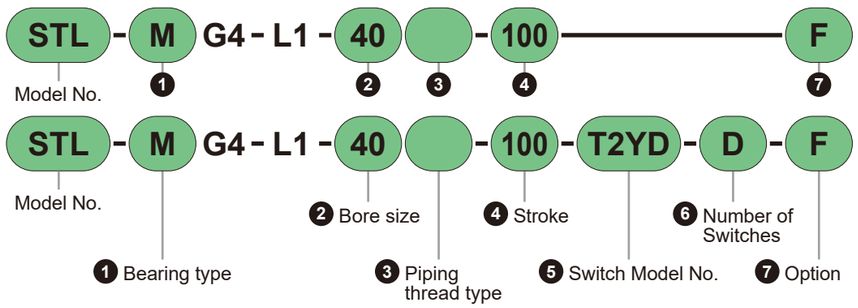
With Switch
(Built-in magnet for switch)



●Long stroke

Without Switch
(Built-in magnet for switch)

With Switch
(Built-in magnet for switch)



❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead Wire *1 Straight	Lead Wire *1 L-shape
Solid State	2-Color for AC Magnetic Field	2-wire	-	24 ± 10%	-	5 to 20	T2YD□	–
			-		-		T2YDT□	–

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length" table.
*2: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

Example) Lead wire length
1 m T2YD
3 m T2YD 3
5 m T2YD 5

❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

❼ Option

	Code	Content
	F	End plate material: Steel
*1	M	Corrosion resistant type (Piston rod, guide rod material: SUS) (customized product)
*1	M1	Corrosion resistant type (Piston rod, guide rod, end plate material: SUS) (Custom order)

*1: Refer to P. 502 for material details.

For combinations of variations and options, please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

About Custom Product Specifications

For details, see P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)

STS/L-G4- ····· - O

Switch Single Unit Model No. Notation Method

SW - T2YD

❺ Switch Model No.

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
40	ø40
50	ø50
63	ø63
80	ø80

❸ Piping thread type

Code	Content
Blank	Rc Thread
NN	NPT Thread (Custom Order Product)
GN	G Thread (Custom Order Product)

❹ Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size ø40	ø50	ø63	ø80
STS	Standard Stroke	25	●	●	●	●
		50	●	●	●	●
		75				●
		100				●
	Intermediate Stroke *1 *2		Every 5 mm			

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

Series	Stroke (mm)		Applicable Bore Size ø40	ø50	ø63	ø80
STL	Standard Stroke	50	●	●	●	
		75	●	●	●	●
		100	●	●	●	●
		125	●	●	●	●
		150	●	●	●	●
		175	●	●	●	●
		200	●	●	●	●
		225	●	●	●	●
		250	●	●	●	●
		275	●	●	●	●
		300	●	●	●	●
		325	●	●	●	●
		350	●	●	●	●
		375	●	●	●	●
		400	●	●	●	●
	Intermediate Stroke *1 *2		Every 5 mm			

Specifications

Item	STS/STL-G4			
Bore Size mm	ø40	ø50	ø63	ø80
Actuation method	Double Acting Type			
Operating Fluid	Compressed Air			
Max. Working Pressure MPa	1.0			
Min. Operating Pressure MPa	0.15			
Proof Pressure MPa	1.6			
Ambient Temperature °C	-10 to 60 (Provided that freezing does not occur)			
Port Size	Rc1/8	Rc1/4		Rc3/8
Stroke tolerance mm	+2.0 0			
Operating Piston Speed mm/s	50 to 500		50 to 300	
Cushion	With Rubber Cushion			
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)			
Allowable Absorbed Energy J	0.627	0.980	1.560	2.510

Stroke

● Short stroke STS

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø40	25, 50	50	5	5 *1
ø50				
ø63				
ø80	25, 50, 75, 100	100		

*1: This is for the case with 1 or 2 switches.

● Long stroke STL

Bore Size (mm)	Standard Stroke (mm)	Maximum Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø40	50, 75, 100, 125, 150 175, 200, 225, 250, 275, 300, 325, 350, 375, 400	400	30	30 *2
ø50				
ø63				
ø80	75, 100, 125, 150, 175 200, 225, 250, 275, 300 325, 350, 375, 400		55	55 *2

*1: Intermediate strokes can be manufactured every 5 mm.
However, the total length is the same as that of the next longer standard stroke.
*2: This is for the case with 1 or 2 switches.

Theoretical Thrust Table

(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa									
		0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push	1.88 x 10²	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²	1.01 x 10³	1.13 x 10³	1.26 x 10³
	Pull	1.58 x 10²	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²	8.44 x 10²	9.50 x 10²	1.06 x 10³
ø50	Push	2.95 x 10²	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³	1.57 x 10³	1.77 x 10³	1.96 x 10³
	Pull	2.47 x 10²	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³	1.32 x 10³	1.48 x 10³	1.65 x 10³
ø63	Push	4.68 x 10²	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³	2.49 x 10³	2.81 x 10³	3.12 x 10³
	Pull	4.20 x 10²	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³	2.24 x 10³	2.52 x 10³	2.80 x 10³
ø80	Push	7.54 x 10²	1.01 x 10³	1.51 x 10³	2.01 x 10³	2.51 x 10³	3.02 x 10³	3.52 x 10³	4.02 x 10³	4.52 x 10³	5.03 x 10³
	Pull	6.80 x 10²	9.07 x 10²	1.36 x 10³	1.81 x 10³	2.27 x 10³	2.72 x 10³	3.17 x 10³	3.63 x 10³	4.08 x 10³	4.54 x 10³

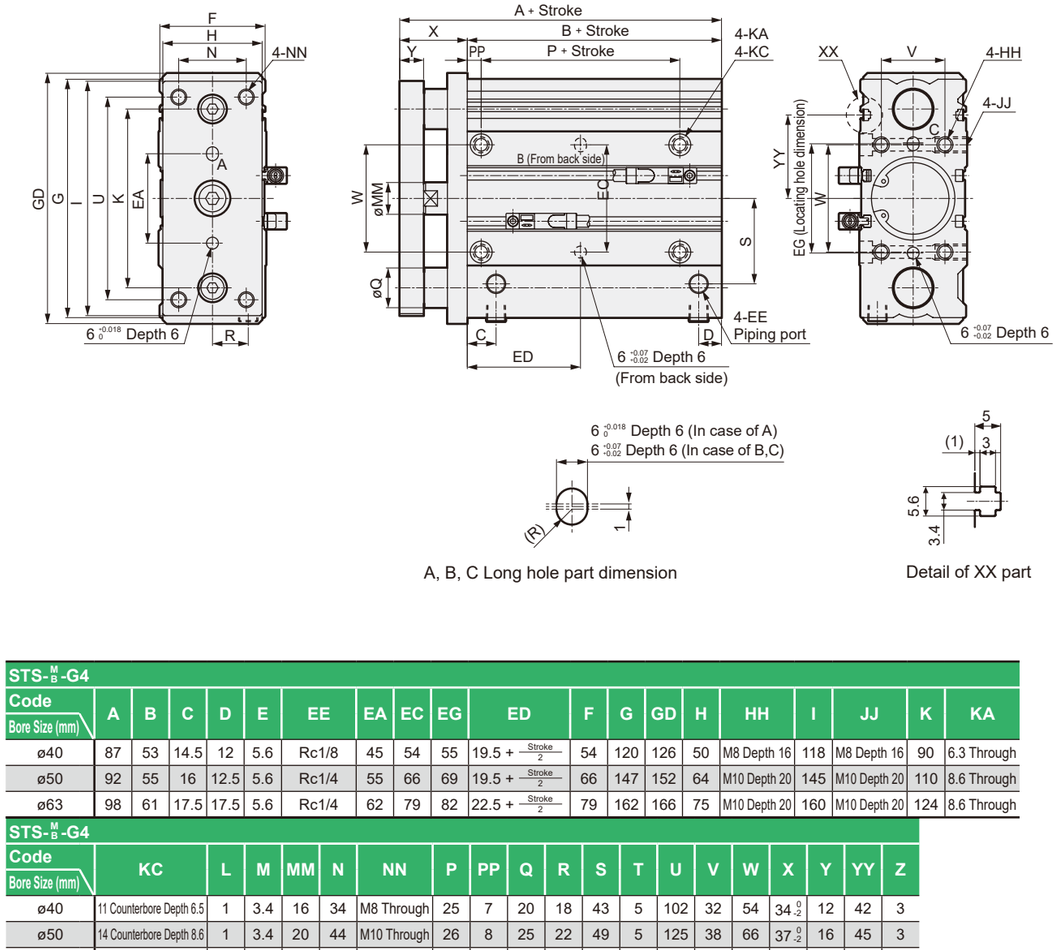
* For cylinder weight, please refer to P. 642 to 645.

MEMO

External Dimensions Diagram (Bore size: ø40, ø50, ø63)

● Double acting / standard single rod

STS-$^{M}_{B}$G4



STS-$^{M}_{B}$-G4 Code / Bore Size (mm)	A	B	C	D	E	EE	EA	EC	EG	ED	F	G	GD	H	HH	I	JJ	K	KA
ø40	87	53	14.5	12	5.6	Rc1/8	45	54	55	19.5 + Stroke/2	54	120	126	50	M8 Depth 16	118	M8 Depth 16	90	6.3 Through
ø50	92	55	16	12.5	5.6	Rc1/4	55	66	69	19.5 + Stroke/2	66	147	152	64	M10 Depth 20	145	M10 Depth 20	110	8.6 Through
ø63	98	61	17.5	17.5	5.6	Rc1/4	62	79	82	22.5 + Stroke/2	79	162	166	75	M10 Depth 20	160	M10 Depth 20	124	8.6 Through

STS-$^{M}_{B}$-G4 Code / Bore Size (mm)	KC	L	M	MM	N	NN	P	PP	Q	R	S	T	U	V	W	X	Y	YY	Z
ø40	11 Counterbore Depth 6.5	1	3.4	16	34	M8 Through	25	7	20	18	43	5	102	32	54	34 -0.2 0	12	42	3
ø50	14 Counterbore Depth 8.6	1	3.4	20	44	M10 Through	26	8	25	22	49	5	125	38	66	37 -0.2 0	16	45	3
ø63	14 Counterbore Depth 8.6	1	3.4	20	55	M10 Through	26	8	25	26	56	5	140	50	79	37 -0.2 0	16	52	3

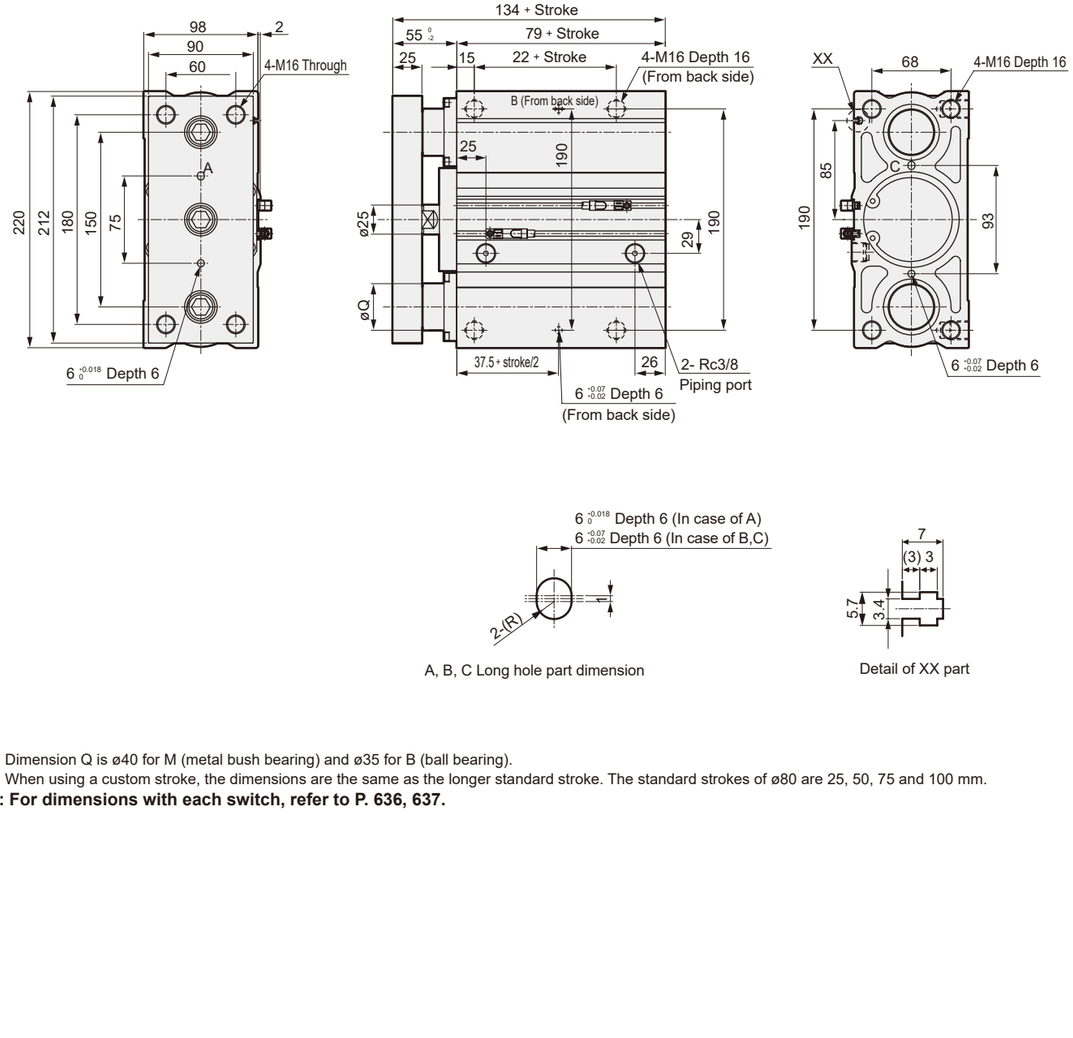
*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

***2: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø80)

● Double acting/standard single rod

STS-$^{M}_{B}$G4



*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).

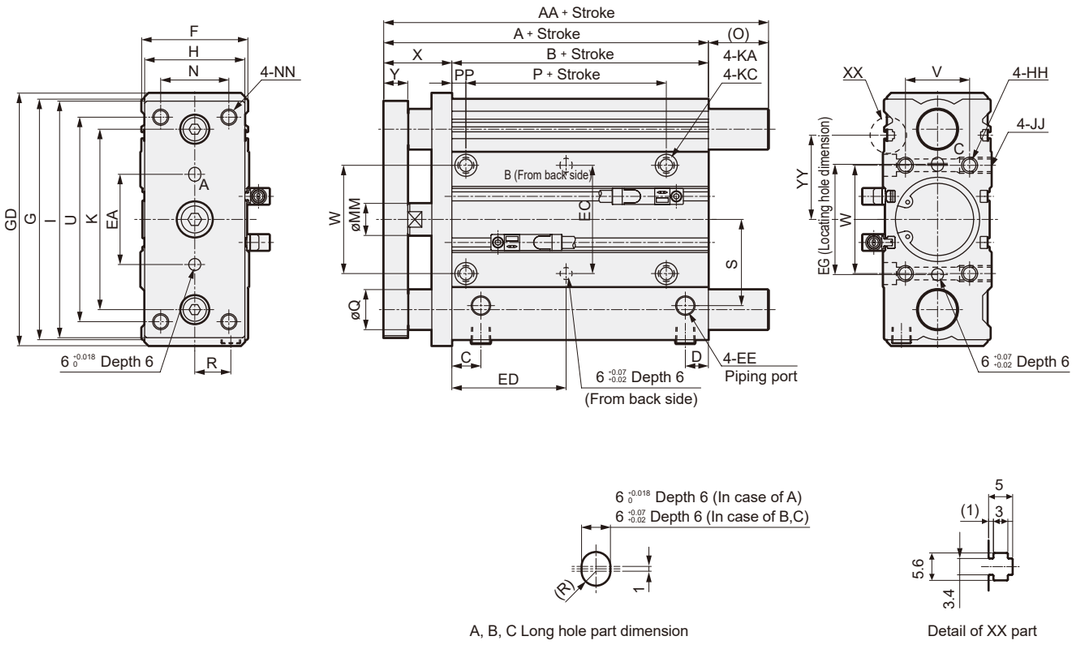
*2: When using a custom stroke, the dimensions are the same as the longer standard stroke. The standard strokes of ø80 are 25, 50, 75 and 100 mm.

***3: For dimensions with each switch, refer to P. 636, 637.**

External Dimensions Diagram (Bore size: ø40, ø50, ø63)

● Double acting / standard single rod

STL-$^{M}_{B}$G4



A, B, C Long hole part dimension

Detail of XX part

STL-$^{M}_{B}$-G4 Code / Bore Size (mm)	A	AA	B	C	D	E	EE	EA	EC	EG	ED	F	G	GD	H	HH	I	JJ	K	KA
ø40	87	117	53	14.5	12	5.6	Rc1/8	45	54	55	19.5 + Stroke/2	54	120	126	50	M8 Depth 16	118	M8 Depth 16	90	6.3 Through
ø50	92	140	55	16	12.5	5.6	Rc1/4	55	66	69	19.5 + Stroke/2	66	147	152	64	M10 Depth 20	145	M10 Depth 20	110	8.6 Through
ø63	98	140	61	17.5	17.5	5.6	Rc1/4	62	79	82	22.5 + Stroke/2	79	162	166	75	M10 Depth 20	160	M10 Depth 20	124	8.6 Through

STL-$^{M}_{B}$-G4 Code / Bore Size (mm)	KC	L	M	MM	N	NN	O	P	PP	Q	R	S	T	U	V	W	X	Y	YY	Z
ø40	11 Counterbore Depth 6.5	1	3.4	16	34	M8 Through	30	25	7	20	18	43	5	102	32	54	34 0 -2	12	42	3
ø50	14 Counterbore Depth 8.6	1	3.4	20	44	M10 Through	48	26	8	25	22	49	5	125	38	66	37 0 -2	16	45	3
ø63	14 Counterbore Depth 8.6	1	3.4	20	55	M10 Through	42	26	8	25	26	56	5	140	50	79	37 0 -2	16	52	3

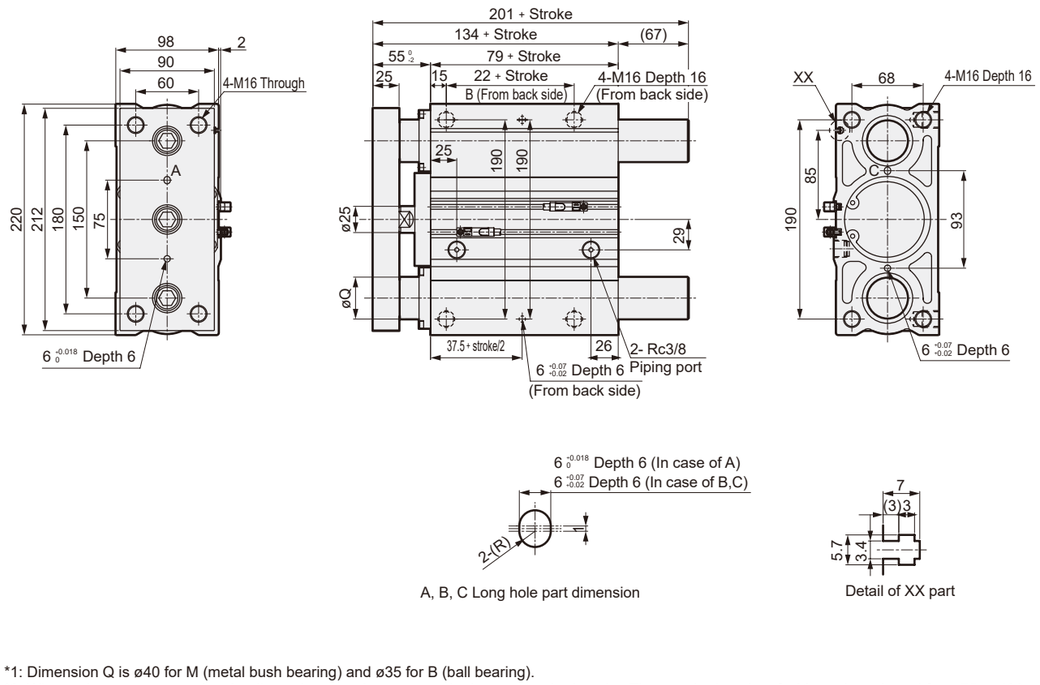
*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

***2: For dimensions with each switch, refer to P. 636, 637.**

External dimensions diagram (Bore size: ø80)

● Double acting/standard single rod

STL-$^{M}_{B}$G4



A, B, C Long hole part dimension

Detail of XX part

*1: Dimension Q is ø40 for M (metal bush bearing) and ø35 for B (ball bearing).

*2: When using a custom stroke, the dimensions are the same as the longer standard stroke. The standard stroke of ø80 can be selected from 75 to 400 mm in 25 mm increments.

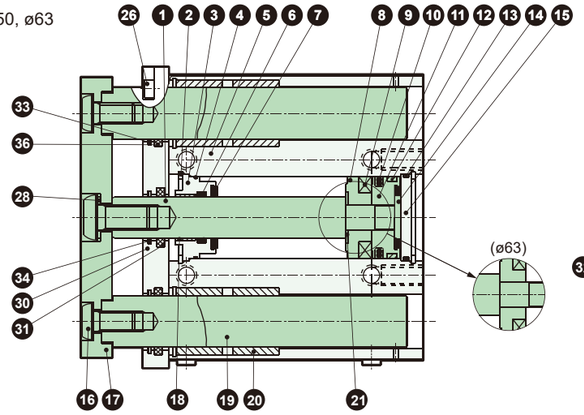
***3: For dimensions with each switch, refer to P. 636, 637.**

Internal Structure Diagram / Material

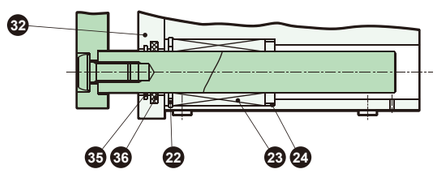
● Double acting / standard single rod

STS-$^{M}_{B}$G4

●ø40, ø50, ø63

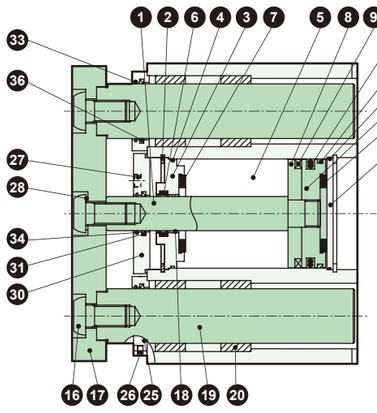


Plain bearing (M)

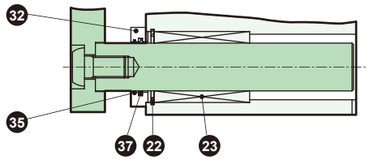


Rolling bearing (B)

● ø80



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name	Material	Remarks
1	Piston Rod	Steel	Industrial Hard Chrome Plating
2	C-type retaining ring	Steel	Zinc phosphate
3	Rod Metal	Special aluminum alloy	Alumite
4	Metal gasket	Nitrile Rubber	
5	Cylinder Body	Aluminum Alloy	Hard Anodized
6	Rod Packing	Nitrile Rubber	
7	Cushion rubber (R)	Urethane Rubber	
8	Spacer	ø40 / ø50: Polyamide	ø63 / ø80: Chromate
		ø63 / ø80: Aluminum alloy	
9	Magnet		
10	Piston Packing	Nitrile Rubber	
11	Piston	Aluminum Alloy	Chromate
12	Wear Ring	Polyacetal	
13	O-ring	Nitrile Rubber	
14	Cushion rubber (H)	Urethane Rubber	
15	Bottom plate	ø40 to ø63: Aluminum alloy	ø40 to ø63: Chromate
		ø80: Steel	ø80: Zinc chromate
16	Hex Socket Button Head Bolt	Steel	Zinc Chromate
17	End plate	Aluminum Alloy	Alumite
18	Bushing	Bearing Alloy	

Part No.	Part Name	Material	Remarks
19	Guide rod	Steel	Industrial Hard Chrome Plating
20	Metal	Oil-Impregnated Bearing Alloy	
21	Spacer washer	Stainless Steel	
22	C-type retaining ring	Steel	Zinc phosphate
23	Ball bush		
24	Collar	Aluminum Alloy	
25	Adapter B	Aluminum Alloy	Alumite
26	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
27	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
28	Belleville washer	Steel	
29	Plug	Steel	Zinc chromate (ø40 to ø63 only)
30	Adapter A	Aluminum Alloy	Alumite
31	Lube keeper	Special rubber	
32	Adapter C	Aluminum Alloy	Alumite
33	Coil scraper	Phosphor bronze	
34	Coil scraper	Phosphor bronze	
35	Coil scraper	Phosphor bronze	
36	Lube keeper	Special rubber	
37	Lube keeper	Special rubber	

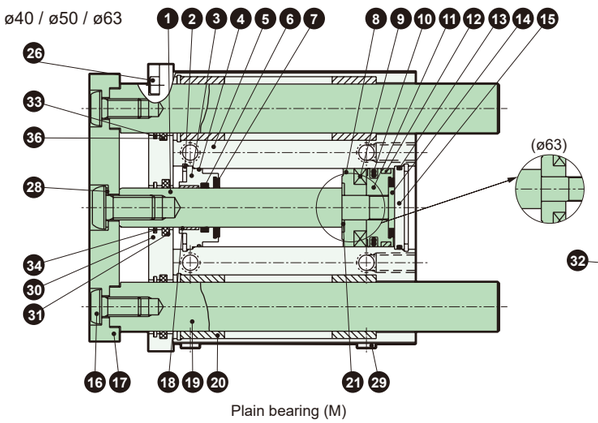
For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

Internal Structure Diagram / Material

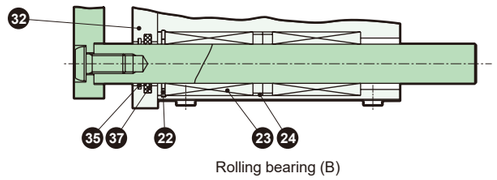
● Double acting/standard single rod

STL-$^{M}_{B}$G4

● ø40 / ø50 / ø63

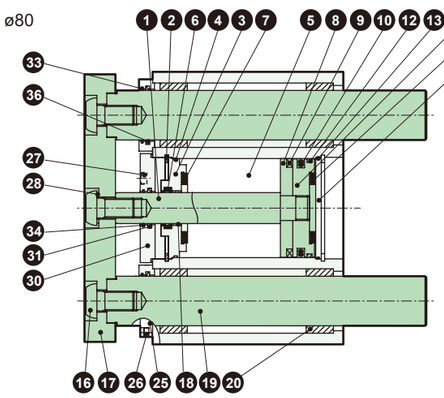


Plain bearing (M)

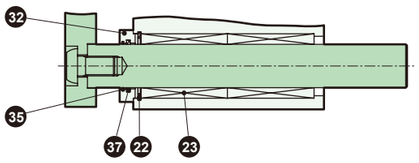


Rolling bearing (B)

● ø80



Plain bearing (M)

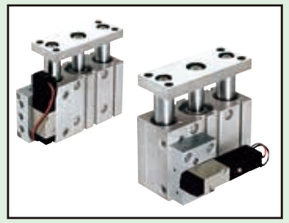


Rolling bearing (B)

Part No.	Part Name	Material	Remarks
1	Piston Rod	Steel	Industrial Hard Chrome Plating
2	C-type retaining ring	Steel	Zinc phosphate
3	Rod Metal	Special aluminum alloy	Alumite
4	Metal gasket	Nitrile Rubber	
5	Cylinder Body	Aluminum Alloy	Hard Anodized
6	Rod Packing	Nitrile Rubber	
7	Cushion rubber (R)	Urethane Rubber	
8	Spacer	ø40 / ø50: Polyamide	ø63 / ø80: Chromate
		ø63 / ø80: Aluminum alloy	
9	Magnet		
10	Piston Packing	Nitrile Rubber	
11	Piston	Aluminum Alloy	Chromate
12	Wear Ring	Acetal Resin	
13	O-ring	Nitrile Rubber	
14	Cushion rubber (H)	Urethane Rubber	
15	Bottom plate	ø40 to ø63: Aluminum alloy	ø40 to ø63: Chromate
		ø80: Steel	ø80: Zinc chromate
16	Hex Socket Button Head Bolt	Steel	Zinc Chromate
17	End plate	Aluminum Alloy	Alumite
18	Bushing	Bearing Alloy	

Part No.	Part Name	Material	Remarks
19	Guide rod	Steel	Industrial Hard Chrome Plating
20	Metal	Oil-Impregnated Bearing Alloy	
21	Spacer washer	Stainless Steel	
22	C-type retaining ring	Steel	Zinc phosphate
23	Ball bush		
24	Collar	Aluminum Alloy	
25	Adapter B	Aluminum Alloy	Alumite
26	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
27	Hexagon Socket Head Cap Screw	Steel	Zinc Chromate
28	Belleville washer	Steel	
29	Plug	Steel	Zinc chromate (ø40 to ø63 only)
30	Adapter A	Aluminum Alloy	Alumite
31	Lube keeper	Special rubber	
32	Adapter C	Aluminum Alloy	Alumite
33	Coil scraper	Phosphor bronze	
34	Coil scraper	Phosphor bronze	
35	Coil scraper	Phosphor bronze	
36	Lube keeper	Special rubber	
37	Lube keeper	Special rubber	

For maintenance parts, please visit the CKD Equipment Product Site
(https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

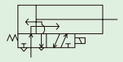


Guided cylinder/valve equipped

STS / STL-$^{M}_{B}$V Series

●Bore size: ø20, ø25, ø32, ø40, ø50, ø63

Circuit Diagram Symbol



RoHS

Model No. Notation Method

● Short stroke

Without Switch
(Built-in magnet for switch)

STS - M V1 S — 20 ( ) - 25 B 1 — F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ⓫

With Switch
(Built-in magnet for switch)

STS - M V1 S — 20 ( ) - 25 B 1 T0H R F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STS - M V1 S - L1 - 40 ( ) - 25 B 1 T1H R F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫

● Long stroke

Without Switch
(Built-in magnet for switch)

STL - M V1 S — 50 ( ) - 50 B 1 — F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ⓫

With Switch
(Built-in magnet for switch)

STL - M V1 S — 50 ( ) - 50 B 1 T0H R F
Model No. ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫

2-color indicator, T1H/V, T8H/V, With off-delay type switch
(Built-in magnet for switch) (ø40 or more)

STL - M V1 S - L1 - 50 ( ) - 50 B 1 T1H R F
Model No. ❷ Operating Direction; ❹ Bore size; ❻ Stroke; ❽ Rated voltage; ❿ Number of Switches
❶ Bearing type; ❸ Valve mounting direction; ❺ Piping thread type; ❼ Electrical connections; ❾ Switch Model No.; ⓫ Option

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Operating Direction

Code	Content
V1	Pushed out when energized
V2	Energized retraction type

❸ Valve mounting direction

Code	Content
Blank	With valve on front
S	With valve on side

*1: When selecting types with valve on side with a stroke of 25 mm or less, the valve mounting dimensions (VC) may exceed the overall length of the cylinder (A + stroke). Check the measurements using the external dimensions chart.
*2: T1H/V, T8H/V, off-delay, AC magnetic field proof switch cannot be mounted on the valve on front type.

❹Bore Size (mm)

Code	Content
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63

❺ Piping thread type

Code	Content
Blank	Rc Thread
NN	NPT thread (ø32 or more) Custom product
GN	G thread (ø32 or more) Custom product

❻Stroke (mm)

Series	Stroke (mm)		Applicable Bore Size ø20	ø25	ø32	ø40	ø50	ø63
STS	Standard Stroke	25	●	●	●	●	●	●
		50	●	●	●	●	●	●
	Intermediate Stroke *1 *2		Every 5 mm					

Series	Stroke (mm)		Applicable Bore Size ø20	ø25	ø32	ø40	ø50	ø63
STL	Standard Stroke	50	●	●	●	●	●	●
		75	●	●	●	●	●	●
		100	●	●	●	●	●	●
	Intermediate Stroke *1 *2		Every 5 mm					

*1: The overall length dimension is the same as the dimension of the longer standard stroke.
*2: Special total length for custom stroke can be provided when a custom stroke is used. (Custom order)

❼ Electrical connections

Code	Content
Blank	Grommet lead wire (300 mm)
B	Compact terminal box, without lead wire
C	C-connector, lead wire (300 mm)
D	D-connector, lead wire (300 mm)

❽ Rated voltage

Code	Content
1	100 VAC
2	200 VAC
3	24 VDC

❾ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	DC	Load Current (mA) AC	DC	Lead wire *1 Straight	L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	2-color Water resistance Improved	2-wire	-	24 ± 10%	-	5 to 20	T2WLH□	T2WLV□	*3
	Two-color mixture For Magnetic Field		-	24 ± 10%	-		T2YD□	–	
			-		-		T2YDT□	–	
	1-Color Off-Delay Type		-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	-		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	
	1-Color		110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	

*1: For "□" in the switch model number, enter the code selected from the "*Lead wire length, connector specification" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: This does not guarantee the water resistance of the cylinder. When using in a water-resistant environment, use of an improved water resistance cylinder is recommended.
*4: For the 2-color display, T1H/V, T8H/V and off-delay for ø40 and over, insert "L1" with "-" between ❶ and ❷. (However, T2WH/V and T3WH/V are excluded) Example) STS-MV1S-L1-50-50-B-1-T1H3-D-F
*5: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 753.

*** Lead wire length, connector specification**

	Code	Content
	Blank	1 m (Standard)
	3	3 m (Option)
	5	5 m (Option)
*6	W	M8 Connector, 1PIN (+), 4PIN (−) Lead Wire 0.3 m

*6: Only T2WLH and T2WLV can be selected.

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

❿ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

⓫ Option

Code	Content
F	End plate material: Steel

For combinations of variations and options, please refer to P. 478 (Plain bearing M) and P. 480 (Rolling bearing B).

About Custom Product Specifications

For details, see P. 654.

Code	Content
-0	Port symmetrical type

Model No. Example)
STS/L-$^{M}_{B}$V- ····· - O

Switch Single Unit Model No. Notation Method

SW - T0H
❾ Switch Model No.

Specifications

Item		STS-MV, STS-BV (short stroke)/STL-MV/STL-BV (long stroke)					
Bore Size	mm	ø20	ø25	ø32	ø40	ø50	ø63
Actuation method		Double Acting Type					
Operating Fluid		Compressed Air					
Max. Working Pressure	MPa	0.7					
Min. Operating Pressure	MPa	0.15					
Proof Pressure	MPa	1.0					
Ambient Temperature	°C	-5 to 50 (no freezing)					
Port Size		Rc1/8			Rc1/4		
Stroke tolerance	mm	+2.0 0					
Operating Piston Speed	mm/s	50 to 500					50 to 300
Cushion		With Rubber Cushion					
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)					
Incorporated valve		4KB1 Series			4KB2 Series		
Allowable Absorbed Energy	J	0.157	0.157	0.401	0.627	0.980	1.560

Note) Refer to "Directional control valve " (No. RJ-012AA) for details on valves.

Stroke

Bore Size (mm)	Standard Stroke (mm)		Maximum Stroke (mm)	Min. Stroke (mm)
ø20, ø25, ø32	STS	25 / 50	100	5
ø40, ø50, ø63	STL	50, 75, 100		

Note) Custom stroke Custom strokes other than the standard stroke are available in 5 mm increments. However, the overall length dimension will be the same as the dimension of the standard stroke above it. (Example) For STS-MV1-25-35, A spacer is mounted inside the STS-MV1-25-50 body to obtain a total length the same as that of the 50-stroke type.

Series Variations

Bore Size (mm)	Applicable Valve Series	Position Number of solenoids	Valve effective cross-sectional area (mm²) (Cv)
ø20	4KB1 Series	2-position single	4 (0.22)
ø25			
ø32			
ø40	4KB2 Series	2-position single	14 (0.76)
ø50			
ø63			

Valve specifications

Item	STS-MV1, STS-BV1, STS-MV2, STS-BV2 STL-MV1, STL-BV1, STL-MV2, STL-BV2 Short stroke			STS-MV1, STS-BV1, STS-MV2, STS-BV2 STL-MV1, STL-BV1, STL-MV2, STL-BV2 Long stroke		
Applicable Valve Series	4KB1 Series			4KB2 Series		
Position Number of solenoids	2-position single			2-position single		
Valve effective cross-sectional area (mm²) (Cv)	4 (0.22)			14 (0.76)		
Rated Voltage (V)	100 VAC (50/60Hz)	200 VAC (50/60Hz)	24 DC	100 VAC (50/60Hz)	200 VAC (50/60Hz)	24 DC
Starting Current (A)	0.056/0.044	0.034/0.026	0.075	0.056/0.044	0.028/0.022	0.075
Holding Current (A)	0.028/0.022	0.017/0.013		0.028/0.022	0.014/0.011	
Power Consumption (W)	1.8/1.4	2.1/1.6	1.8	1.8/1.4		1.8
Voltage Fluctuation Range	±10%			±10%		
Heat Resistance Class	Class B molded coil			Class B molded coil		

Note) **Refer to "Directional control valve " (No. RJ-012AA) for details on valves.**

Theoretical Thrust Table

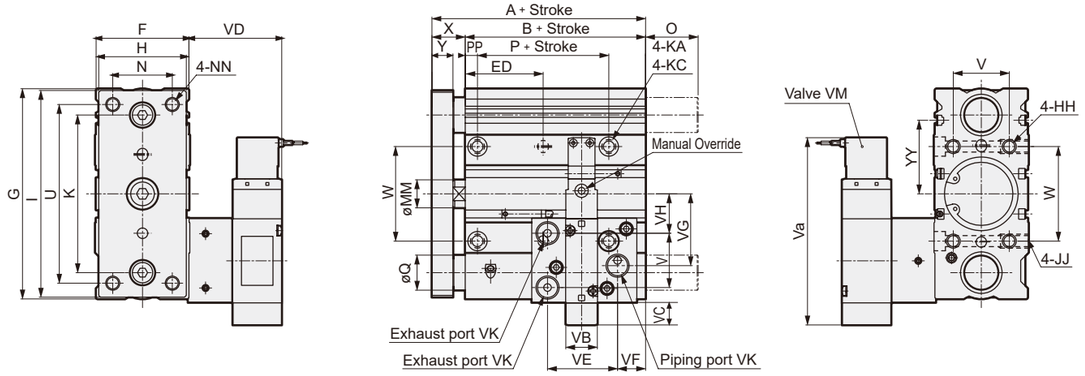
(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa						
		0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø20	Push	47.1	62.8	94.2	1.26 x 10²	1.57 x 10²	1.88 x 10²	2.20 x 10²
	Pull	35.3	47.1	70.7	94.2	1.18 x 10²	1.41 x 10²	1.65 x 10²
ø25	Push	73.6	98.2	1.47 x 10²	1.96 x 10²	2.45 x 10²	2.95 x 10²	3.44 x 10²
	Pull	56.7	75.6	1.13 x 10²	1.51 x 10²	1.89 x 10²	2.27 x 10²	2.64 x 10²
ø32	Push	1.21 x 10²	1.61 x 10²	2.41 x 10²	3.22 x 10²	4.02 x 10²	4.83 x 10²	5.63 x 10²
	Pull	90.5	1.21 x 10²	1.81 x 10²	2.41 x 10²	3.02 x 10²	3.62 x 10²	4.22 x 10²
ø40	Push	1.88 x 10²	2.51 x 10²	3.77 x 10²	5.03 x 10²	6.28 x 10²	7.54 x 10²	8.80 x 10²
	Pull	1.58 x 10²	2.11 x 10²	3.17 x 10²	4.22 x 10²	5.28 x 10²	6.33 x 10²	7.39 x 10²
ø50	Push	2.95 x 10²	3.93 x 10²	5.89 x 10²	7.85 x 10²	9.82 x 10²	1.18 x 10³	1.37 x 10³
	Pull	2.47 x 10²	3.30 x 10²	4.95 x 10²	6.60 x 10²	8.25 x 10²	9.90 x 10²	1.15 x 10³
ø63	Push	4.68 x 10²	6.23 x 10²	9.35 x 10²	1.25 x 10³	1.56 x 10³	1.87 x 10³	2.18 x 10³
	Pull	4.20 x 10²	5.61 x 10²	8.41 x 10²	1.12 x 10³	1.40 x 10³	1.68 x 10³	1.96 x 10³

For cylinder weight, please refer to P. 642 to 645.

Outline Dimension Drawing

● With valve on front



Code / Bore Size (mm)	A	B	ED	F	G	H	HH	I	JJ	K	KA	KC	MM	N	NN	O STS	O STL	P
ø20	53	40	14+ Stroke/2	38	83	36	M6 Depth 12	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	0	18	20
ø25	54	41	14.5+ Stroke/2	42	86	38	M6 Depth 12	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	0	17	20
ø32	68	49	17.5+ Stroke/2	47	111	45	M8 Depth 16	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	0	34	22
ø40	72	53	19.5+ Stroke/2	54	120	50	M8 Depth 16	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	0	30	25
ø50	77	55	19.5+ Stroke/2	66	147	64	M10 Depth 20	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	0	48	26
ø63	83	61	22.5+ Stroke/2	79	162	75	M10 Depth 20	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	0	42	26

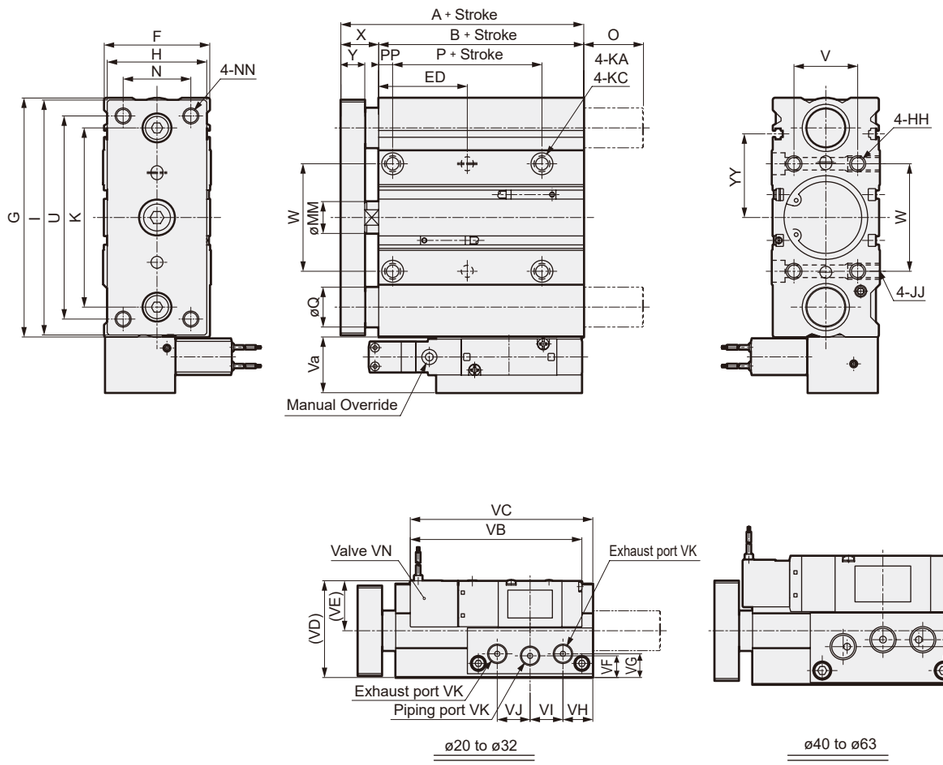
Code / Bore Size (mm)	PP	Q M type	Q B-type	U	V	W	X	Y	YY	Va	VB	VC	VD	VE	VF	VG	VH	VI	VK	VM
ø20	6	14	12	69	20	31	13 $^{0}_{-2}$	9	25	86	15	8.5	42.5	35.5	9.5	29.5	13	22	Rc1/8	4KB1 Series
ø25	6	14	12	72	24	35	13 $^{0}_{-2}$	9	27	86	15	8	42.5	35.5	10.5	30.5	14	22	Rc1/8	4KB1 Series
ø32	7	20	16	93	25	45	19 $^{0}_{-2}$	12	39	86	15	4	42.5	37.5	15.5	39	20.5	26	Rc1/8	4KB1 Series
ø40	7	20	16	102	32	54	19 $^{0}_{-2}$	12	42	107	18	15	52.5	40	16	41	22.5	31	Rc1/4	4KB2 Series
ø50	8	25	20	125	38	66	22 $^{0}_{-2}$	16	45	107	18	9	52.5	41	17	49	43	21	Rc1/4	4KB2 Series
ø63	8	25	20	140	50	79	22 $^{0}_{-2}$	16	52	107	18	8	52.5	41	23	55.5	49.5	21	Rc1/4	4KB2 Series

*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

***2: For dimensions with each switch, refer to P. 636, 637.**

Outline Dimension Drawing

● With valve on side



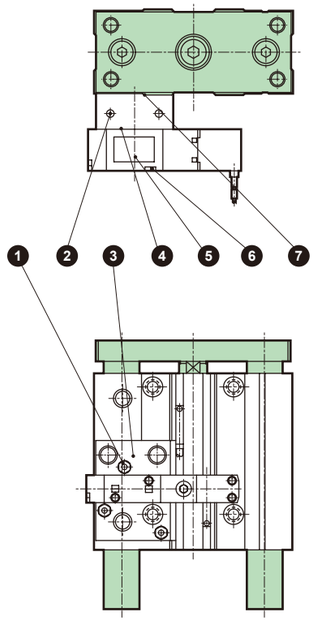
Code / Bore Size (mm)	A	B	ED	F	G	H	HH	I	JJ	K	KA	KC	MM	N	NN	O STS	O STL	P
ø20	53	40	14+ Stroke/2	38	83	36	M6 Depth 12	81	M6 Depth 12	59	5.2 Through	9.5 Counterbore Depth 5.4	10	24	M6 Through	0	18	20
ø25	54	41	14.5+ Stroke/2	42	86	38	M6 Depth 12	84	M6 Depth 12	63	5.2 Through	9.5 Counterbore Depth 5.4	12	26	M6 Through	0	17	20
ø32	68	49	17.5+ Stroke/2	47	111	45	M8 Depth 16	109	M8 Depth 16	81	6.3 Through	11 Counterbore Depth 6.5	16	29	M8 Through	0	34	22
ø40	72	53	19.5+ Stroke/2	54	120	50	M8 Depth 16	118	M8 Depth 16	90	6.3 Through	11 Counterbore Depth 6.5	16	34	M8 Through	0	30	25
ø50	77	55	19.5+ Stroke/2	66	147	64	M10 Depth 20	145	M10 Depth 20	110	8.6 Through	14 Counterbore Depth 8.6	20	44	M10 Through	0	48	26
ø63	83	61	22.5+ Stroke/2	79	162	75	M10 Depth 20	160	M10 Depth 20	124	8.6 Through	14 Counterbore Depth 8.6	20	55	M10 Through	0	42	26

Code / Bore Size (mm)	PP	Q M type	Q B-type	U	V	W	X	Y	YY	Va	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VN
ø20	6	14	12	69	20	31	13 $^{0}_{-2}$	9	25	23	86	92	47.5	28.5	10	11	15	16.5	16.5	Rc1/8	4KB1 Series
ø25	6	14	12	72	24	35	13 $^{0}_{-2}$	9	27	23	86	92	49.5	28.5	12	13	15	16.5	16.5	Rc1/8	4KB1 Series
ø32	7	20	16	93	25	45	19 $^{0}_{-2}$	12	39	23	86	92	48.5	25	11	12	15	16.5	16.5	Rc1/8	4KB1 Series
ø40	7	20	16	102	32	54	19 $^{0}_{-2}$	12	42	28	107	108	64.5	37.5	19	22.5	17.5	20	20	Rc1/4	4KB2 Series
ø50	8	25	20	125	38	66	22 $^{0}_{-2}$	16	45	28	107	108	66.5	33.5	21	24.5	17.5	20	20	Rc1/4	4KB2 Series
ø63	8	25	20	140	50	79	22 $^{0}_{-2}$	16	52	28	107	108	68	28.5	22.5	26	17	20	20	Rc1/4	4KB2 Series

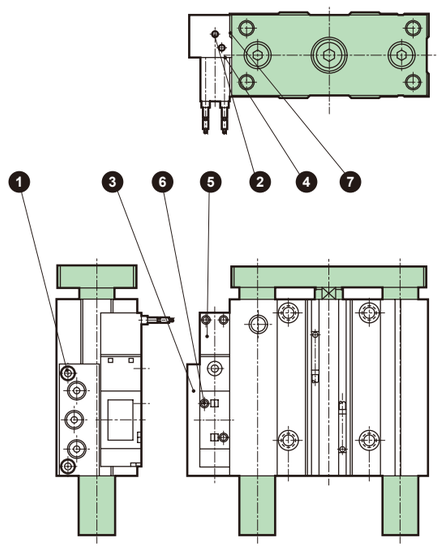
*1: When using a custom stroke, the dimensions are the same as the longer standard stroke.

***2: For dimensions with each switch, refer to P. 636, 637.**

Internal Structure Diagram / Material



With valve on front



With valve on side

Part No.	Part Name	Material	Remarks
1	Hexagon Socket Head Cap Screw	Stainless Steel	
2	Hexagon socket head set screw	Steel	Black Oxide
3	Sub-base	Aluminum Alloy	Alumite
4	Gasket	Nitrile Rubber	
5	Selex valve		
6	Mounting Screw	Steel	Zinc Chromate
7	O-ring	Nitrile Rubber	

For maintenance parts, please visit the CKD Equipment Product Site (https://www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts

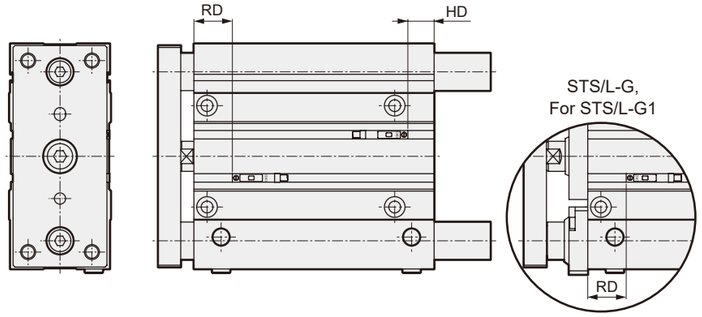
MEMO

Guided
STM
STG
STS/ STL
STR2
UCA2
Cylinder Switch
Ending

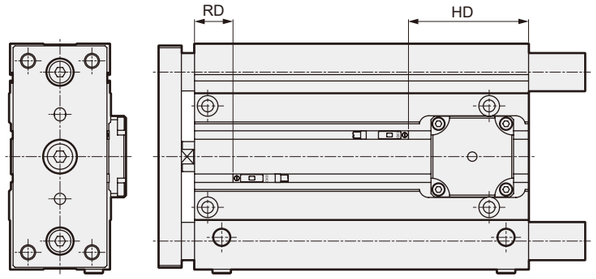
Dimensions with STS/STL series switch

● T0H/V,T5H/V,T2H/V,T2□R3,T3H/V,T3PH/V,T2WH/V,T3WH/V,T2WLH/V

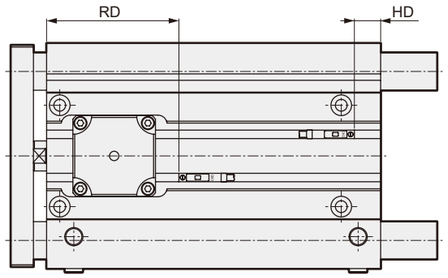
● STS/L, STS/L-P, STS/L-T2, STS/L-□C, STS/L-C, STS/L-F, STS/L-O, STS/L-G, STS/L-G1, STS/L-V



● STS/L-Q-H



● STS/L-Q-R



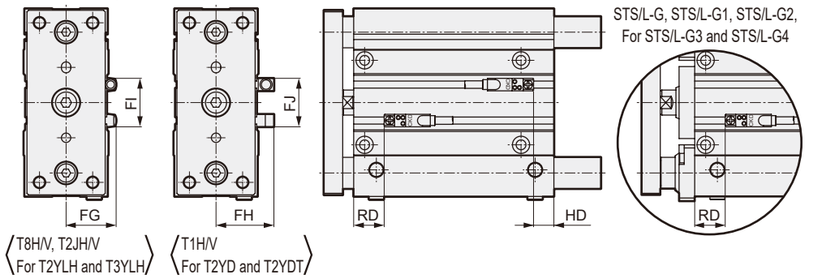
Code	STS/L, -P, -T2, -□C, -F, -O, -G, -G1, -V				STS/L-C				STS/L-Q-H				STS/L-Q-R			
	T0, T5, T2, T2□R3, T3, T3P		T2W, T3W, T2WL		T0, T5, T2, T2□R3, T3, T3P		T2W, T3W, T2WL		T0, T5, T2, T2□R3, T3, T3P		T2W, T3W, T2WL		T0, T5, T2, T2□R3, T3, T3P		T2W, T3W, T2WL	
Bore Size (mm)	RD	HD	RD	HD	RD	HD	RD	HD	RD	HD	RD	HD	RD	HD	RD	HD
ø8	6.5	2.5	8.5	4.5	-	-	-	-	-	-	-	-	-	-	-	-
ø12	5	8.5	7	10.5	-	-	-	-	-	-	-	-	-	-	-	-
ø16	4	9.5	6	11.5	-	-	-	-	-	-	-	-	-	-	-	-
ø20	10.5	10.5	12.5	12.5	-	-	-	-	10.5	35.5	12.5	37.5	35.5	10.5	37.5	12.5
ø25	12.5	9	14.5	11	27.5	19	29.5	21	12.5	34	14.5	36	37.5	9	39.5	11
ø32	17	13	19	15	34	21	36	23	17	38	19	40	42	13	44	15
ø40	20.5	14	22.5	16	38	22	40	24	20.5	64	22.5	66	70.5	14	72.5	16
ø50	21.5	14.5	23.5	16.5	38	22.5	40	24.5	21.5	64.5	23.5	66.5	71.5	14.5	73.5	16.5
ø63	19.5	22.5	21.5	24.5	43.5	25.5	45.5	27.5	19.5	72.5	21.5	74.5	69.5	22.5	71.5	24.5
ø80	26	33.5	28	35.5	60	49.5	62	51.5	26	108.5	28	110.5	101	33.5	103	35.5
ø100	25	35	27	37	-	-	-	-	-	-	-	-	-	-	-	-

Note) For switch mountability, refer to the model No. notation method for each variation.

Dimensions with STS / STL series switch

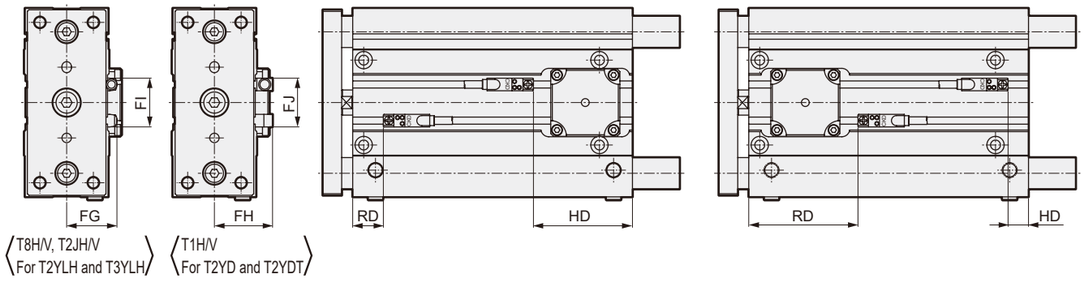
● T2JH/V, T2YLH, T3YLH, T8H/V, T1H/V, T2YD, T2YDT

● STS/L, STS/L-P, STS/L-T2, STS/L-□C, STS/L-C, STS/L-Q-H, STS/L-Q-R, STS/L-F, STS/L-O, STS/L-G, STS/L-G1, STS/L-G2, STS/L-G3, STS/L-G4, STS/L-V



● STS/L-Q-H

● STS/L-Q-R



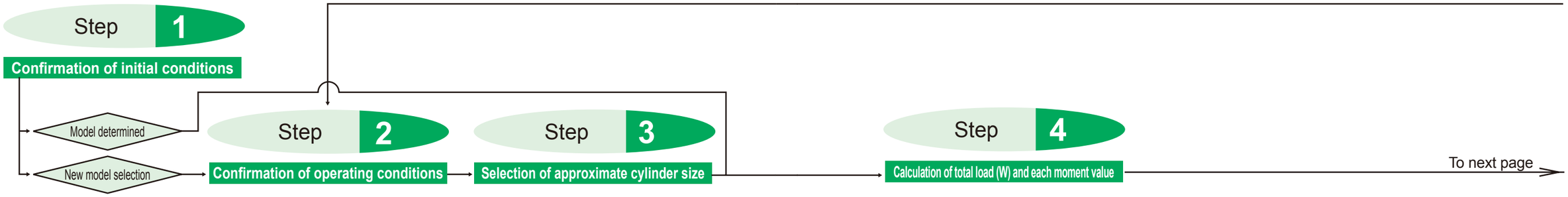
Code	STS/L, -P, -T2, -□C, -F, -O, -G, -G1, -G2, -G3, -G4, -V										STS/L-C									
	FG	FI	T2J, T2Y, T3Y		T8		FH	FJ	T1, T2YD, T2YDT		FG	FI	T2J, T2Y, T3Y		T8		FH	FJ	T1, T2YD, T2YDT	
Bore Size (mm)			RD	HD	RD	HD			RD	HD			RD	HD	RD	HD			RD	HD
ø8	17.6	16	5.5	1.5	- *2	- *2	22.6	16	5.5	1.5	-	-	-	-	-	-	-	-	-	-
ø12	18.8	16	4	7.5	- *2	- *2	23.8	16	4	7.5	-	-	-	-	-	-	-	-	-	-
ø16	20.8	16	3	8.5	- *2	- *2	25.8	16	3	8.5	-	-	-	-	-	-	-	-	-	-
ø20	24.3	16	9.5	9.5	4.5	4.5	29.3	16	9.5	9.5	-	-	-	-	-	-	-	-	-	-
ø25	26.3	17	11.5	8	6.5	3	31.3	17	11.5	8	26.3	17	26.5	18	21.5	13	31.3	17	26.5	18
ø32	28.8	24	16	12	11	7	33.8	24	16	12	28.8	24	33	19	28	14	33.8	24	33	19
ø40	32.3	31	19.5	13	14.5	8	37.3	31	19.5	13	32.3	31	37	21	32	16	37.3	31	37	21
ø50	38.3	32	20.5	13.5	15.5	8.5	43.3	32	20.5	13.5	38.3	32	37	21.5	32	16.5	43.3	32	37	21.5
ø63	44.8	32	18.5	21.5	13.5	16.5	49.8	32	18.5	21.5	44.8	32	42.5	24.5	37.5	19.5	49.8	32	42.5	24.5
ø80	55.3	32	25	32.5	20	27.5	60.3	32	25	32.5	55.3	32	59	48.5	54	43.5	60.3	32	59	48.5
ø100	65	32	24	34	19	29	70.9	32	24	34	-	-	-	-	-	-	-	-	-	-

Code	STS/L-Q-H								STS/L-Q-R							
	FG	FI	T2J, T2Y, T3Y		FH	FJ	T1, T2YD, T2YDT		FG	FI	T2J, T2Y, T3Y		FH	FJ	T1, T2YD, T2YDT	
Bore Size (mm)			RD	HD			RD	HD			RD	HD			RD	HD
ø8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ø12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ø16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ø20	24.3	16	9.5	34.5	29.3	16	9.5	34.5	24.3	16	34.5	9.5	29.3	16	34.5	9.5
ø25	26.3	17	11.5	33	31.3	17	11.5	33	26.3	17	36.5	8	31.3	17	36.5	8
ø32	28.8	24	16	37	33.8	24	16	37	28.8	24	41	12	33.8	24	41	12
ø40	32.3	31	19.5	63	37.3	31	19.5	63	32.3	31	69.5	13	37.3	31	69.5	13
ø50	38.3	32	20.5	63.5	43.3	32	20.5	63.5	38.3	32	70.5	13.5	43.3	32	70.5	13.5
ø63	44.8	32	18.5	71.5	49.8	32	18.5	71.5	44.8	32	68.5	21.5	49.8	32	68.5	21.5
ø80	55.3	32	25	107.5	60.3	32	25	107.5	55.3	32	100	32.5	60.3	32	100	32.5
ø100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*1: For switch mountability, refer to the model number notation method for each variation.
*2: STS/L-8 to 16, STS/L-P-8 to 16, STG-T2-12, 16, STS/L-Q-20 to 80 (R/H), STS/L-F-8 to 16, and STS/L-O-8 to 16 cannot be installed on T8H/V.

Model selection guide

Since the selection conditions are different from general air cylinders, please check the suitability using the selection guide.



Step 2 Confirmation of operating conditions

1. Operating pressure P (MPa)
2. Total load W (N)
   [Total load]
   When determining the total applied load, take into account the weight of the guide rod part of the cylinder body.
   W = (Load) + (Jig load) +
   (Self-weight of guide rod part: Fa).
   Table 1 shows the formula for the self-weight of the guide rod part.

Table 1 Weight of movable part calculation formula

Tube Bore size	Fa: Weight of the movable part (N)	
	STS	STL
ø8	(0.36) + 0.004 x ST	(0.43) + 0.004 x ST
ø12	(0.54) + 0.008 x ST	(0.69) + 0.008 x ST
ø16	(0.81) + 0.012 x ST	(1.10) + 0.012 x ST
ø20	(1.30) + 0.030 x ST	(2.00) + 0.030 x ST
ø25	(1.50) + 0.033 x ST	(2.20) + 0.033 x ST
ø32	(3.90) + 0.065 x ST	(5.80) + 0.065 x ST
ø40	(4.10) + 0.065 x ST	(6.10) + 0.065 x ST
ø50	(7.40) + 0.101 x ST	(11.2) + 0.101 x ST
ø63	(8.30) + 0.101 x ST	(12.1) + 0.101 x ST
ø80	(26.2) + 0.234 x ST	(40.6) + 0.234 x ST
ø100	(52.3) + 0.248 x ST	(65.8) + 0.248 x ST

ST: Stroke (mm)

3. Mounting direction
   [Operating method]
   Horizontal, Vertical - Ascending, Vertical - Descending
4. Stroke ST (mm)
5. Operating time t (s)
6. Operating speed V (mm/s)
   Calculation formula for average operating speed Va of cylinder
   Va=ST/t (mm/s)

Step 3 Selection of approximate cylinder size

● Cylinder size (I.D.) calculation formula

$F = \pi/4 \times D^2 \times P$

$\therefore D = \sqrt{4F/\pi P}$

D: Cylinder inner diameter (mm)
P: Operating Pressure (MPa)
F: Cylinder theoretical thrust (N)

● When obtaining from the theoretical thrust value in Table 2
Approximate required thrust ≥ Load x 2
(x2 of Load x 2 is when the load factor is about 50% as a safety factor)

[Example] Operating pressure 0.5 (MPa)
Load 25 (N)
Required thrust is 25 (N)x2=50 (N)
From Table 2, if you select a bore size with a theoretical thrust of 50N or more at an operating pressure of 0.5 mPa, it will be ø12 or more.
D=ø12

[Cylinder theoretical thrust]

Table 2 Cylinder theoretical thrust table

Theoretical thrust table ø8,ø12 Unit: N

Operating direction	Pressure MPa	Bore size mm	
		ø8	ø12
At push	0.15	7.5	17
	0.2	10	22.6
	0.3	15.1	33.9
	0.4	20	45.2
	0.5	25.1	56.6
	0.6	30.1	67.8
	0.7	35.2	79.1
	0.8	40.2	90.4
	0.9	45.2	101.8

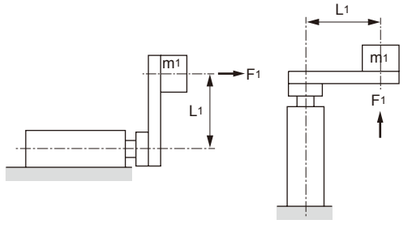
* For the theoretical thrust table, please refer to P. 485.

Step 4 Calculation of total load (W) and each moment value

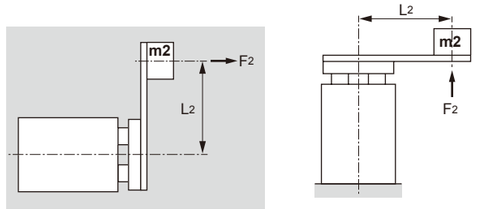
● Static load depending on the cylinder mounting state of the load
Calculate (W_0), moment (M)
W_0 = (Load) + (Jig load) (N)
$M_1 = F_1 \times L_1$ (N·m)
$M_2 = F_2 \times L_2$ (N·m)
$M_3 = F_3 \times L_3$ (N·m)
Use Figure 2 for the values of F_1, F_2, F_3

Figure 2 Calculation formula for each moment
Calculate each moment from the total load, inertial force coefficient, and eccentric distance.

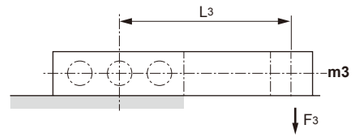
[Bending moment]
$M_1 = F_1 \times L_1 = 10 \times m_1 \times G \times L_1$



[Lateral bending moment]
$M_2 = F_2 \times L_2 = 10 \times m_2 \times G \times L_2$



[Torsional moment]
$M_3 = F_3 \times L_3 = 10 \times m_3 \times L_3$

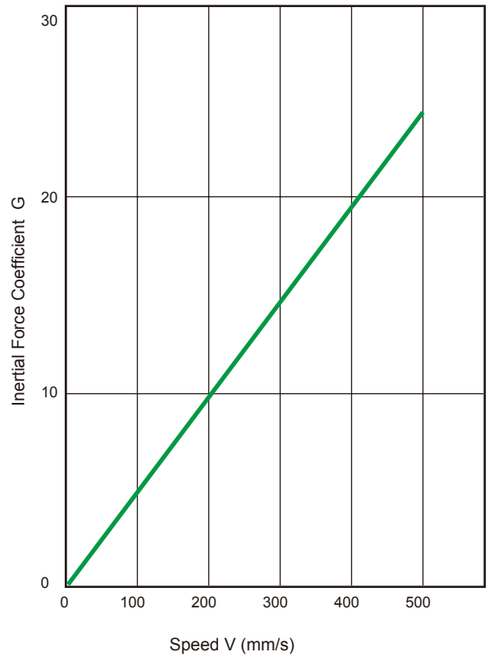


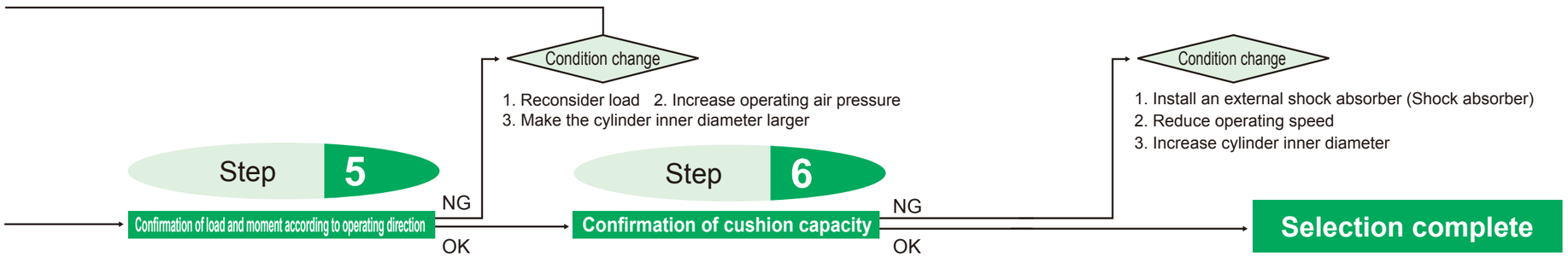
m_1:
m_2:
m_3: } Load weight (kg)

L_1:
L_2: } Eccentric distance (m)
L_3:

G: Inertial force coefficient

Figure 3 Trend of inertial force coefficient of guided cylinder





Step 5 Confirmation of load and moment according to operating direction

5-1 Confirming total applied load

❶ During horizontal operation

Static load should be less than or equal to the allowable load value

Static applied load Wo — Value calculated in Step 4

Allowable lateral load Wmax — Select from Table 3 or the graph based on the stroke.

(For intermediate strokes, select the longer standard stroke.)

Wo≤Wmax

Table 3 Allowable lateral load — Unit: N

Bore Size (mm)	Model	Bearing type	STS		
			10	20	25
ø8	STS/L-M-8	Plain bearing	14	11	-
	STS/L-B-8	Rolling bearing	16	11	-
ø12	STS/L-M-12	Plain bearing	23	19	-
	STS/L-B-12	Rolling bearing	30	21	-
ø16	STS/L-M-16	Plain bearing	40	34	-
	STS/L-B-16	Rolling bearing	44	32	-
ø20	STS/L-M-20	Plain bearing	-	-	48
	STS/L-B-20	Rolling bearing	-	-	45
ø25	STS/L-M-25	Plain bearing	-	-	48
	STS/L-B-25	Rolling bearing	-	-	45
ø32	STS/L-M-32	Plain bearing	-	-	141
	STS/L-B-32	Rolling bearing	-	-	49

* For allowable lateral load, please refer to P. 648.
Also refer to the graphs on pages 650 to 653 for eccentric load.

❷ During vertical operation

Ensure that the total load is the theoretical thrust value, taking into account the load factor.

● Calculation of load factor

Total load W : Value calculated in Step 2

Theoretical thrust of cylinder F : Select according to the pressure from the Theoretical Thrust Table on P. 485.

$\alpha = W/F \times 100$ (%)

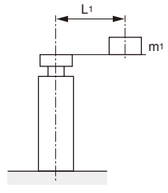
● The load factor is determined considering the stability margin and life of the cylinder operating speed, and the usage conditions. For general use, the range in Table 4 is desirable.

Table 4 Appropriate range of load factor (Reference value)

Operating pressure (MPa)	Load factor (%)
0.1 to 0.3	α ≤ 40
0.3 to 0.6	α ≤ 50
0.6 to 1.0	α ≤ 60

● During eccentric load, lateral load acts.

The acting lateral load should be less than or equal to the allowable lateral load in Table 3



$$\frac{m_1 \times L_1 \times 10}{L} \leq Wmax$$

St: Stroke (m)

Bore size	L	Bore size	L
ø8	0.015 + st	ø32	0.022 + st
ø12	0.015 + st	ø40	0.022 + st
ø16	0.016 + st	ø50	0.025 + st
ø20	0.016 + st	ø63	0.025 + st
ø25	0.016 + st	ø80	0.046 + st
		ø100	0.055 + st

5-2 Confirmation of moment

❶ Table of bending moment and lateral bending moment

Divide by the value of 5, obtain the moment ratio, and the total value of the moment ratio should be 1.0 or less

● Calculation of moment ratio

Bending moment M_1, Radial moment M_2 } Value obtained in Step 4

$M_1 / M_{1\,max} + M_2 / M_{2\,max} \leq 1.0$

Table 5 Allowable moment value (N·m)

Bore size (mm)	Allowable bending moment M_{1max}, M_{2max} (N·m)
ø8	4.1
ø12	6.1
ø16	19.3
ø20	32.6
ø25	48.5
ø32	107.4
ø40	107.4
ø50	201.7
ø63	201.7
ø80	726.0
ø100	726.0

❷ Torsional moment should be less than or equal to the allowable rotational torque

Torsional moment M3 Value calculated in Step 4

Allowable rotational torque

M3max Select from Table 6 according to stroke

(For intermediate strokes, select the longer standard stroke)

$M_3 \leq M_{3\,max}$

Table 6 Allowable rotational torque (N·m)

Bore Size (mm)	Model	Bearing type	STS		
			10	20	25
ø8	STS/L-M-8	Plain bearing	0.14	0.11	-
	STS/L-B-8	Rolling bearing	0.16	0.11	-
ø12	STS/L-M-12	Plain bearing	0.24	0.19	-
	STS/L-B-12	Rolling bearing	0.31	0.22	-
ø16	STS/L-M-16	Plain bearing	0.46	0.39	-
	STS/L-B-16	Rolling bearing	0.51	0.37	-
ø20	STS/L-M-20	Plain bearing	-	-	0.71
	STS/L-B-20	Rolling bearing	-	-	1.19
ø25	STS/L-M-25	Plain bearing	-	-	0.76
	STS/L-B-25	Rolling bearing	-	-	1.28
ø32	STS/L-M-32	Plain bearing	-	-	2.86
	STS/L-B-32	Rolling bearing	-	-	0.99
ø40	STS/L-M-40	Plain bearing	-	-	3.17
	STS/L-B-40	Rolling bearing	-	-	1.10
ø50	STS/L-M-50	Plain bearing	-	-	5.86
	STS/L-B-50	Rolling bearing	-	-	2.01
ø63	STS/L-M-63	Plain bearing	-	-	6.60
	STS/L-B-63	Rolling bearing	-	-	2.26
ø80	STS/L-M-80	Plain bearing	-	-	13.95
	STS/L-B-80	Rolling bearing	-	-	8.48
ø100	STS/L-M-100	Plain bearing	-	-	18.23
	STS/L-B-100	Rolling bearing	-	-	11.07

* For allowable rotational torque, please refer to P. 648.

Step 6 CONFIRMATION OF CUSHION CAPACITY

Check if the kinetic energy of the load actually used can be absorbed by the cushion capacity of the cylinder itself.

● The allowable absorbed energy of cylinder (E_1) depends on the cylinder model. Use the values in Table 7 for STS and STL.

● Calculation formula for piston kinetic energy (E_2)

$$E_2 = 1/2 \times W \times V^2 \times \frac{1}{10} \quad (J)$$

W: Total applied load (N) Value obtained in Step 2

V: Speed of the piston entering the cushion (m/s)

$V = ST/t \times (1+1.5x\alpha/100)$

St : Stroke (m)

t : Operating Time (s)

α : Load factor (%)

Allowable absorption energy of cylinder

● The value of kinetic energy absorption capacity by the cylinder cushion mechanism varies depending on the cylinder inner diameter. Compare guided cylinders with the values in Table 7.

Table 7 STS/STL allowable absorbed energy (E1)

Bore Size (mm)	Allowable Absorption Energy (J)			
	Rubber Cushion	Rubber Air Cushion	Air Cushion	Without cushion
ø8	0.029	-	-	-
ø12	0.056	-	-	0.004
ø16	0.088	-	-	0.010
ø20	0.157	-	-	0.016
ø25	0.157	-	1.18	0.021
ø32	0.401	0.401	2.27	0.025
ø40	0.627	0.627	3.05	0.092
ø50	0.980	0.980	3.81	0.100
ø63	1.560	1.560	15.64	0.120
ø80	2.510	2.510	20.18	0.270
ø100	3.920	-	-	0.560

$E_1 > E_2$

(Allowable absorption energy) > (Piston kinetic energy)

Selection complete

$E_1 < E_2$

(Allowable absorption energy) < (Piston kinetic energy)

● Short stroke

Unit: g

Model series	Bore Size (mm)	Bearing	Weight at 0 mm stroke: Cylinder Body	End plate: Standard type	End plate: Steel	Weight per Switch (Grommet)	Additional weight per St = 25 mm (ø8 to ø16: Additional weight per St = 10 mm)
● Standard single rod STS-$^{M}_{B}$ ● Low Speed Type STS-$^{M}_{B}$O ● Corrosion resistant type STS-$^{M}_{B}$-M/M1 ● Heat resistant type STS-$^{M}_{B}$T ● Packing fluoro rubber STS-$^{M}_{B}$T2 ● Rubber Air Cushion Type STS-$^{M}_{B}$-□C ● Ultra Low Speed Type STS-$^{M}_{B}$F	ø8	M	102	22	62	Refer to the mass described in the switch specifications on P. 753	29
		B	89				
	ø12	M	151	27	76		37
		B	154				
	ø16	M	225	37	104		47
		B	229				
	ø20	M	483	72	200		150
		B	363				
	ø25	M	534	78	219		169
		B	415				
	ø32	M	924	162	451		231
		B	804				
	ø40	M	1333	195	543		283
		B	1214				
	ø50	M	2026	415	1158		428
		B	1915				
	ø63	M	2803	530	1478		557
		B	2569				
	ø80	M	6435	1335	3720		1265
		B	5876				1150
	ø100	M	10850	2685	7491		1933
		B	9934				1817
● Stroke adjustment type STS-$^{M}_{B}$P	ø8	M	260	22	62	Refer to the mass described in the switch specifications on P. 753	33
		B	243				
	ø12	M	340	27	76		45
		B	333				
	ø16	M	462	37	104		59
		B	454				
	ø20	M	742	72	200		210
		B	602				
	ø25	M	836	78	219		229
		B	697				
	ø32	M	1499	162	451		335
		B	1331				
	ø40	M	2006	195	543		407
		B	1841				
	ø50	M	3323	415	1158		620
		B	3106				
	ø63	M	4458	530	1478		749
		B	4118				
	ø80	M	9505	1335	3720		1755
		B	8776				1526
● Drop prevention type STS-$^{M}_{B}$Q-H (with head side position locking)	ø20	M	680	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	560				
	ø25	M	767	78	219		169
		B	648				
	ø32	M	1235	162	451		231
		B	1115				
	ø40	M	2183	195	543		283
		B	2064				
	ø50	M	3305	415	1158		428
		B	3194				
	ø63	M	4554	530	1478		557
		B	4320				
	ø80	M	11583	1335	3720		1265
		B	10679				1150
● Drop prevention type STS-$^{M}_{B}$Q-R (with rod side position locking)	ø20	M	666	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	546				
	ø25	M	749	78	219		169
		B	630				
	ø32	M	1221	162	451		231
		B	1101				
	ø40	M	2126	195	543		283
		B	2007				
	ø50	M	3214	415	1158		428
		B	3103				
	ø63	M	4434	530	1478		557
		B	4200				
	ø80	M	11340	1335	3720		1265
		B	10436				1150

● Short stroke

Unit: g

Model series	Bore Size (mm)	Bearing	Weight at 0 mm stroke: Cylinder Body	End plate: Standard type	End plate: Steel	Weight per Switch (Grommet)	Additional weight per St = 25 mm
● Coil Scraper Type STS-$^{M}_{B}$G1 ● Rubber scraper STS-$^{M}_{B}$G ● Cutting Oil Resistant Type STS-$^{M}_{B}$G2, G3 ● Sputter adhesion prevention type STS-$^{M}_{B}$G4	ø20	M	572	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	452				
	ø25	M	630	78	219		169
		B	511				
	ø32	M	1083	162	451		231
		B	963				
	ø40	M	1667	195	543		283
		B	1548				
	ø50	M	2299	415	1158		428
		B	2188				
	ø63	M	3125	530	1478		557
		B	2891				
	ø80	M	6861	1335	3720		1265
		B	6302				1150
● Valve Mounted Type STS-$^{M}_{B}$V$^{1}_{2}$ (With valve on front)	ø20	M	668	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	548				
	ø25	M	719	78	219		169
		B	600				
	ø32	M	1136	162	451		231
		B	1016				
	ø40	M	1648	195	543		283
		B	1529				
	ø50	M	2428	415	1158		428
		B	2317				
	ø63	M	3205	530	1478		557
		B	2971				
● Valve Mounted Type STS-$^{M}_{B}$V$^{1}_{2}$S (With valve on side)	ø20	M	663	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	543				
	ø25	M	714	78	219		169
		B	595				
	ø32	M	1104	162	451		231
		B	684				
	ø40	M	1651	195	543		283
		B	1532				
	ø50	M	2344	45	1158		428
		B	2233				
	ø63	M	3121	530	1478		557
		B	2887				

Note) **Refer to P. 753 for the switch weight of 3 m and 5 m switch lead wire lengths.**

● Long stroke

Unit: g

Model series	Bore Size (mm)	Bearing	Weight at 0 mm stroke: Cylinder Body	End plate: Standard type	End plate: Steel	Weight per Switch (Grommet)	Additional weight per St = 25 mm
● Standard single rod STL-$^{M}_{B}$ ● Low Speed Type STL-$^{M}_{B}$O ● Corrosion resistant type STL-$^{M}_{B}$-M/M1 ● Heat resistant type STL-$^{M}_{B}$T ● Packing fluoro rubber STL-$^{M}_{B}$T2 ● Rubber Air Cushion Type STL-$^{M}_{B}$-□C ● Ultra Low Speed Type STL-$^{M}_{B}$F	ø8	M	103	22	62	Refer to the mass described in the switch specifications on P. 753	73
		B	99				
	ø12	M	159	27	76		91
		B	173				
	ø16	M	232	37	104		119
		B	265				
	ø20	M	890	72	200		150
		B	751				
	ø25	M	979	78	219		169
		B	840				
	ø32	M	1705	162	451		231
		B	1520				
	ø40	M	2218	195	543		283
		B	2033				
	ø50	M	3587	415	1158		428
		B	3228				
	ø63	M	4501	530	1478		557
		B	4142				
	ø80	M	10337	1335	3720		1265
		B	9341				1150
	ø100	M	16649	2685	7491		1933
		B	15385				1817
● Stroke adjustment type STL-$^{M}_{B}$P	ø8	M	261	22	62	Refer to the mass described in the switch specifications on P. 753	84
		B	253				
	ø12	M	348	27	76		111
		B	352				
	ø16	M	469	37	104		150
		B	490				
	ø20	M	1149	72	200		210
		B	990				
	ø25	M	1281	78	219		229
		B	1122				
	ø32	M	2280	162	451		335
		B	2049				
	ø40	M	2891	195	543		407
		B	2658				
	ø50	M	4884	415	1158		620
		B	4419				
	ø63	M	6156	530	1478		749
		B	5691				
	ø80	M	12035	1335	3720		1755
		B	11191				1526
● Drop prevention type STL-$^{M}_{B}$Q-H (with head side position locking)	ø20	M	1087	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	948				
	ø25	M	1212	78	219		169
		B	1073				
	ø32	M	2016	162	451		231
		B	1831				
	ø40	M	3068	195	543		283
		B	2883				
	ø50	M	4866	415	1158		428
		B	4507				
	ø63	M	6252	530	1478		557
		B	5893				
	ø80	M	15485	1335	3720		1265
		B	14144				1150
● Drop prevention type STL-$^{M}_{B}$Q-R (with rod side position locking)	ø20	M	1073	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	934				
	ø25	M	1194	78	219		169
		B	1056				
	ø32	M	2002	162	451		231
		B	1867				
	ø40	M	3011	195	543		283
		B	2826				
	ø50	M	4775	415	1158		428
		B	4416				
	ø63	M	6132	530	1478		557
		B	5773				
	ø80	M	15242	1335	3720		1265
		B	13401				1150

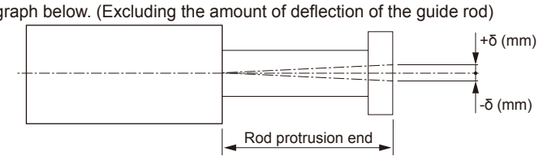
● Long stroke

Unit: g

Model series	Bore Size (mm)	Bearing	Weight at 0 mm stroke: Cylinder Body	End plate: Standard type	End plate: Steel	Weight per Switch (Grommet)	Additional weight per St = 25 mm
● Coil Scraper Type STL-$^{M}_{B}$G1 ● Rubber scraper STL-$^{M}_{B}$G ● Cutting Oil Resistant Type STL-$^{M}_{B}$G2, G3 ● Sputter adhesion prevention type STL-$^{M}_{B}$G4	ø20	M	979	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	840				
	ø25	M	1075	78	219		169
		B	936				
	ø32	M	1864	162	451		231
		B	1679				
	ø40	M	2552	195	543		283
		B	2367				
	ø50	M	3860	415	1158		428
		B	3501				
	ø63	M	4823	530	1478		557
		B	4464				
	ø80	M	10763	1335	3720		1265
		B	9767				1150
● Valve Mounted Type STL-$^{M}_{B}$V$^{1}_{2}$ (With valve on front)	ø20	M	1075	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	936				
	ø25	M	1164	78	219		169
		B	1025				
	ø32	M	1917	162	451		231
		B	1732				
	ø40	M	2533	195	543		283
		B	2348				
	ø50	M	3989	415	1158		428
		B	3630				
	ø63	M	4903	530	1478		557
		B	4544				
● Valve Mounted Type STL-$^{M}_{B}$V$^{1}_{2}$S (With valve on side)	ø20	M	1070	72	200	Refer to the mass described in the switch specifications on P. 753	150
		B	931				
	ø25	M	1159	78	219		169
		B	1020				
	ø32	M	1885	162	451		231
		B	1700				
	ø40	M	2536	195	543		283
		B	2351				
	ø50	M	3905	415	1158		428
		B	3546				
	ø63	M	4819	530	1478		557
		B	4460				

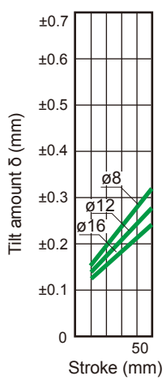
Runout accuracy

The amount of tilt that occurs at the tip of the end plate when there is no load is estimated by the values in the graph below. (Excluding the amount of deflection of the guide rod)

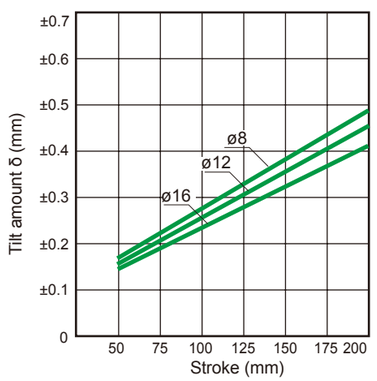


ø8 to ø16 metal bush bearing

STS-M

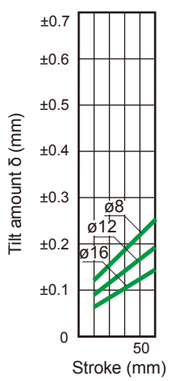


STL-M

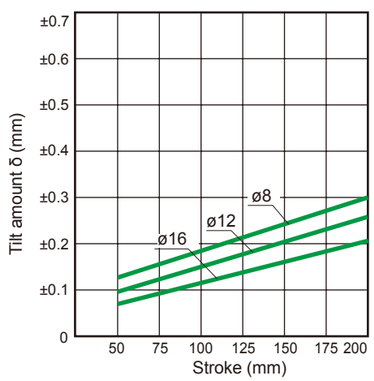


ø8 to ø16 ball bearing

STS-B

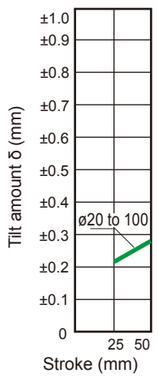


STL-B

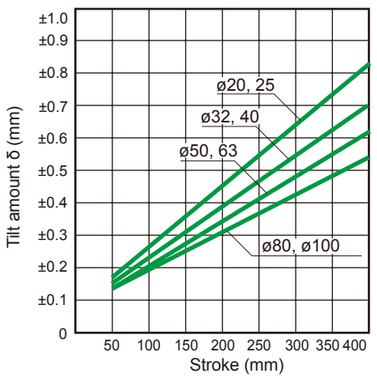


ø20 to ø100 Metal bush bearing

STS-M

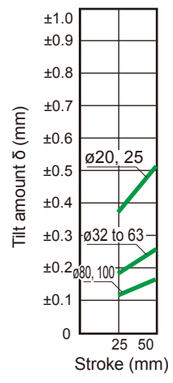


STL-M

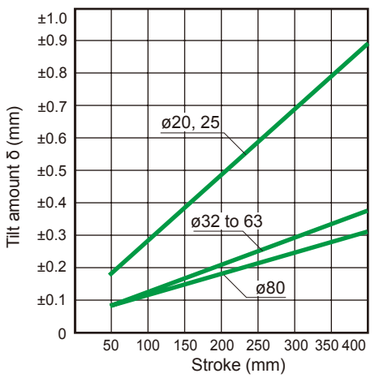


ø20 to ø80 ball bearing

STS-B

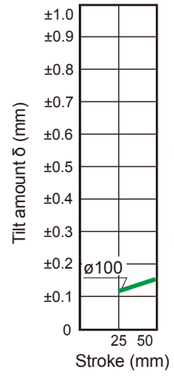


STL-B

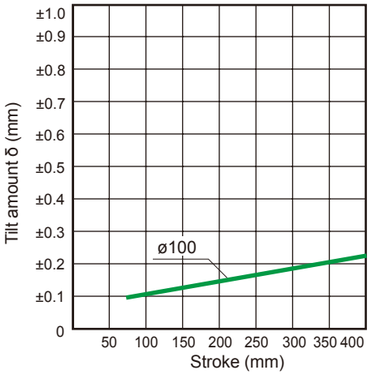


ø100 ball bearing

STS-B



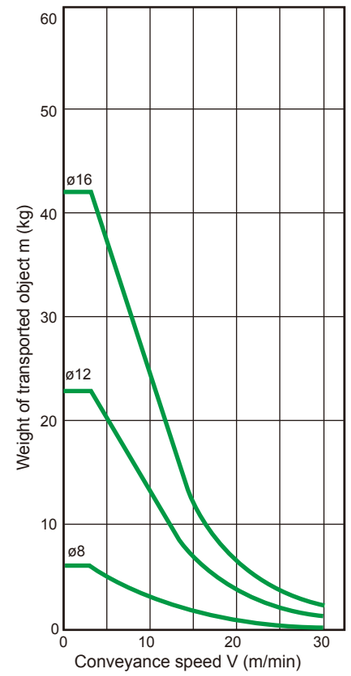
STL-B

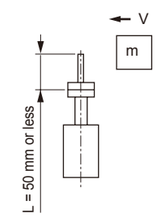


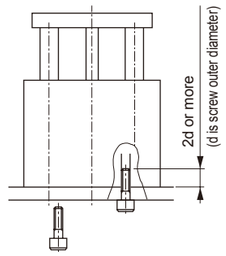
Operating range when used as a stopper

Impact load

STS-M-8 to 16 (metal bush bearing)







Notes on Use

Note1) When using the cylinder as a stopper, select a model with 50 mm stroke or less (STS-M). (30 mm stroke or less for ø8 to ø16)

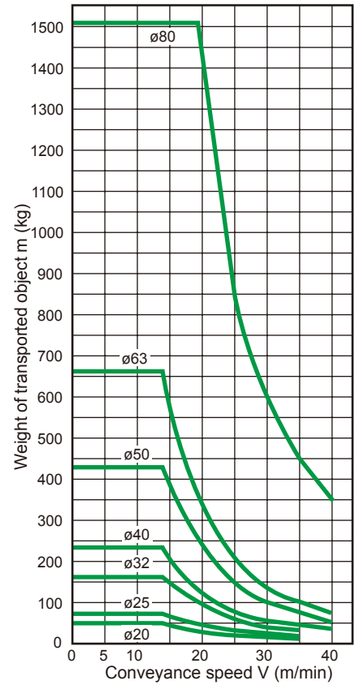
Note2) Make sure that the total length of the stopper section ℓ = 50mm or less.

Note3) When fixing the cylinder body, ensure the bolt screw-in depth is 2d or more, and consider measures to prevent loosening (adhesive, spring washer, etc.). (for ø80 and ø100, make sure that the screw insertion depth is 1d. d is thread outer diameter)

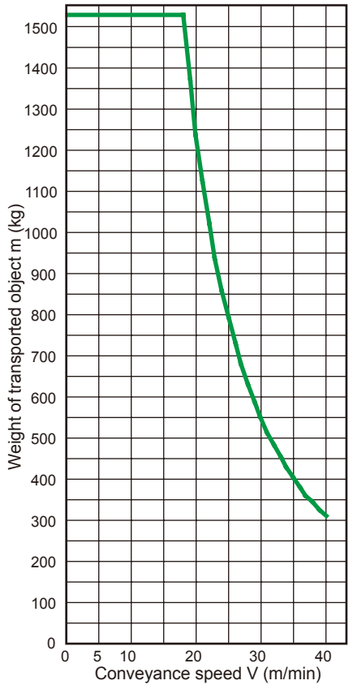
Note4) STS-B (ball bearing) cannot be used as a stopper.

Impact load

STS-M-20 to 80 (metal bush bearing)

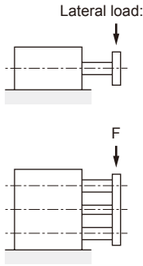


STS-M-100 (metal bush bearing)



STS / STL Series
Technical data ❹ Allowable lateral load/allowable torque/non-rotating accuracy

Allowable Lateral Load

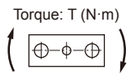


Unit: N

Bore Size (mm)	Model No.	Bearing type	Stroke (mm) STS 10	20	25	30	40	50	75	100	STL 50	75	100	125	150	175	200	225	250	275	300	325	350	375	400
ø8	ST$^{S}_{L}$-M-8	Plain bearing	14	11	-	9	8	7	-	-	12	9	7	6	5	5	4	-	-	-	-	-	-	-	-
	ST$^{S}_{L}$-B-8	Rolling bearing	16	11	-	8	7	6	-	-	16	11	9	7	5	4	4	-	-	-	-	-	-	-	-
ø12	ST$^{S}_{L}$-M-12	Plain bearing	23	19	-	16	14	12	-	-	20	16	13	11	10	9	8	-	-	-	-	-	-	-	-
	ST$^{S}_{L}$-B-12	Rolling bearing	30	21	-	16	13	11	-	-	23	16	13	10	8	7	6	-	-	-	-	-	-	-	-
ø16	ST$^{S}_{L}$-M-16	Plain bearing	40	34	-	29	25	22	-	-	35	29	24	21	19	17	15	-	-	-	-	-	-	-	-
	ST$^{S}_{L}$-B-16	Rolling bearing	44	32	-	25	21	18	-	-	34	25	19	16	13	11	10	-	-	-	-	-	-	-	-
ø20	ST$^{S}_{L}$-M-20	Plain bearing	-	-	48	-	-	35	-	-	54	45	38	33	30	27	24	22	20	19	17	16	15	14	14
	ST$^{S}_{L}$-B-20	Rolling bearing	-	-	45	-	-	29	-	-	68	50	39	32	27	23	20	18	16	14	13	12	11	10	9
ø25	ST$^{S}_{L}$-M-25	Plain bearing	-	-	48	-	-	35	-	-	54	45	38	33	30	27	24	22	20	19	17	16	15	14	14
	ST$^{S}_{L}$-B-25	Rolling bearing	-	-	45	-	-	29	-	-	68	50	39	32	27	23	20	18	16	14	13	12	11	10	9
ø32	ST$^{S}_{L}$-M-32	Plain bearing	-	-	141	-	-	109	-	-	161	138	121	108	97	88	81	75	69	65	61	57	54	51	48
	ST$^{S}_{L}$-B-32	Rolling bearing	-	-	49	-	-	33	-	-	100	76	62	51	44	38	34	30	27	25	22	21	19	18	16
ø40	ST$^{S}_{L}$-M-40	Plain bearing	-	-	141	-	-	109	-	-	161	138	121	108	97	88	81	75	69	65	61	57	54	51	48
	ST$^{S}_{L}$-B-40	Rolling bearing	-	-	49	-	-	33	-	-	100	76	62	51	44	38	34	30	27	25	22	21	19	18	16
ø50	ST$^{S}_{L}$-M-50	Plain bearing	-	-	213	-	-	170	-	-	243	213	189	170	155	142	131	121	113	106	100	94	89	85	81
	ST$^{S}_{L}$-B-50	Rolling bearing	-	-	73	-	-	50	-	-	161	126	103	87	75	66	58	52	47	43	40	36	34	31	29
ø63	ST$^{S}_{L}$-M-63	Plain bearing	-	-	213	-	-	170	-	-	243	213	189	170	155	142	131	121	113	106	100	94	89	85	81
	ST$^{S}_{L}$-B-63	Rolling bearing	-	-	73	-	-	50	-	-	161	126	103	87	75	66	58	52	47	43	40	36	34	31	29
ø80	ST$^{S}_{L}$-M-80	Plain bearing	-	-	372	-	-	316	275	243	-	402	367	338	312	291	272	255	241	228	216	205	196	187	179
	ST$^{S}_{L}$-B-80	Rolling bearing	-	-	226	-	-	165	133	112	-	235	197	170	149	133	120	109	99	91	85	79	73	69	64
ø100	ST$^{S}_{L}$-M-100	Plain bearing	-	-	372	-	-	316	275	243	-	402	367	338	312	291	272	-	-	-	-	-	-	-	-
	ST$^{S}_{L}$-B-100	Rolling bearing	-	-	226	-	-	165	133	112	-	235	197	170	149	133	120	-	-	-	-	-	-	-	-

*1: When operating the unit under a load, calculate the allowable lateral load using the two equations below.
[Anti-corrosion] Catalog allowable lateral load value x 0.6
[Optional variations other than the above] Catalog allowable lateral load value x 0.9
2: When designing, be sure to consider the safety factor according to the operating conditions.

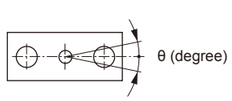
Allowable rotational torque



Unit: N·m

Bore Size (mm)	Model No.	Bearing type	Stroke (mm) STS 10	20	25	30	40	50	75	100	STL 50	75	100	125	150	175	200	225	250	275	300	325	350	375	400
ø8	ST$^{S}_{L}$-M-8	Plain bearing	0.14	0.11	-	0.09	0.08	0.07	-	-	0.12	0.09	0.07	0.06	0.05	0.05	0.04	-	-	-	-	-	-	-	-
	ST$^{S}_{L}$-B-8	Rolling bearing	0.16	0.11	-	0.08	0.07	0.06	-	-	0.16	0.11	0.08	0.07	0.05	0.04	0.04	-	-	-	-	-	-	-	-
ø12	ST$^{S}_{L}$-M-12	Plain bearing	0.24	0.19	-	0.16	0.14	0.12	-	-	0.21	0.16	0.13	0.11	0.10	0.09	0.08	-	-	-	-	-	-	-	-
	ST$^{S}_{L}$-B-12	Rolling bearing	0.31	0.22	-	0.16	0.13	0.11	-	-	0.24	0.16	0.13	0.10	0.08	0.07	0.06	-	-	-	-	-	-	-	-
ø16	ST$^{S}_{L}$-M-16	Plain bearing	0.46	0.39	-	0.33	0.29	0.25	-	-	0.40	0.33	0.28	0.24	0.22	0.20	0.17	-	-	-	-	-	-	-	-
	ST$^{S}_{L}$-B-16	Rolling bearing	0.51	0.37	-	0.29	0.24	0.21	-	-	0.39	0.29	0.22	0.18	0.15	0.13	0.12	-	-	-	-	-	-	-	-
ø20	ST$^{S}_{L}$-M-20	Plain bearing	-	-	0.71	-	-	0.52	-	-	0.80	0.66	0.56	0.49	0.44	0.40	0.35	0.32	0.30	0.28	0.25	0.24	0.22	0.21	0.21
	ST$^{S}_{L}$-B-20	Rolling bearing	-	-	1.19	-	-	0.80	-	-	1.00	0.74	0.58	0.47	0.40	0.34	0.30	0.27	0.24	0.21	0.19	0.18	0.16	0.15	0.13
ø25	ST$^{S}_{L}$-M-25	Plain bearing	-	-	0.76	-	-	0.55	-	-	0.85	0.71	0.60	0.52	0.47	0.43	0.38	0.35	0.32	0.30	0.27	0.25	0.24	0.22	0.22
	ST$^{S}_{L}$-B-25	Rolling bearing	-	-	1.28	-	-	0.85	-	-	1.07	0.79	0.61	0.50	0.43	0.36	0.32	0.28	0.25	0.22	0.20	0.19	0.17	0.16	0.14
ø32	ST$^{S}_{L}$-M-32	Plain bearing	-	-	2.86	-	-	2.21	-	-	3.26	2.79	2.45	2.19	1.96	1.78	1.64	1.52	1.40	1.32	1.24	1.15	1.09	1.03	0.97
	ST$^{S}_{L}$-B-32	Rolling bearing	-	-	0.99	-	-	0.67	-	-	2.03	1.54	1.26	1.03	0.89	0.77	0.69	0.61	0.55	0.51	0.45	0.43	0.38	0.36	0.32
ø40	ST$^{S}_{L}$-M-40	Plain bearing	-	-	3.17	-	-	2.45	-	-	3.62	3.11	2.72	2.43	2.18	1.98	1.82	1.69	1.55	1.46	1.37	1.28	1.22	1.15	1.08
	ST$^{S}_{L}$-B-40	Rolling bearing	-	-	1.10	-	-	0.74	-	-	2.25	1.71	1.40	1.15	0.99	0.86	0.77	0.68	0.61	0.56	0.50	0.47	0.43	0.41	0.36
ø50	ST$^{S}_{L}$-M-50	Plain bearing	-	-	5.86	-	-	4.68	-	-	6.68	5.86	5.20	4.68	4.26	3.91	3.60	3.33	3.11	2.92	2.75	2.59	2.45	2.34	2.23
	ST$^{S}_{L}$-B-50	Rolling bearing	-	-	2.01	-	-	1.38	-	-	4.43	3.47	2.83	2.39	2.06	1.82	1.60	1.43	1.29	1.18	1.10	0.99	0.94	0.85	0.80
ø63	ST$^{S}_{L}$-M-63	Plain bearing	-	-	6.60	-	-	5.27	-	-	7.53	6.60	5.86	5.27	4.81	4.40	4.06	3.75	3.50	3.29	3.10	2.91	2.76	2.64	2.51
	ST$^{S}_{L}$-B-63	Rolling bearing	-	-	2.26	-	-	1.55	-	-	4.99	3.91	3.19	2.70	2.33	2.05	1.80	1.61	1.46	1.33	1.24	1.12	1.05	0.96	0.90
ø80	ST$^{S}_{L}$-M-80	Plain bearing	-	-	13.95	-	-	11.85	10.31	9.11	-	15.08	13.76	12.68	11.70	10.91	10.20	9.56	9.04	8.55	8.10	7.69	7.35	7.01	6.71
	ST$^{S}_{L}$-B-80	Rolling bearing	-	-	8.48	-	-	6.19	4.99	4.20	-	8.81	7.39	6.38	5.59	4.99	4.50	4.09	3.71	3.41	3.19	2.96	2.74	2.59	2.40
ø100	ST$^{S}_{L}$-M-100	Plain bearing	-	-	18.23	-	-	15.48	13.48	11.91	-	19.70	17.98	16.56	15.29	14.26	13.33	-	-	-	-	-	-	-	-
	ST$^{S}_{L}$-B-100	Rolling bearing	-	-	11.07	-	-	8.09	6.52	5.49	-	11.52	9.65	8.33	7.30	6.52	5.88	-	-	-	-	-	-	-	-

Non-rotation accuracy

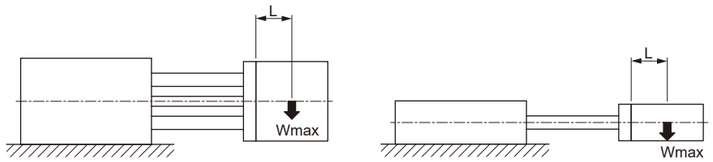


Item / Bore Size (mm)	Non-rotation Accuracy θ (degrees) Plain bearing	Rolling bearing
ø8	±0.09	±0.06
ø12	±0.10	
ø16		
ø20		±0.08
ø25		
ø32	±0.08	±0.04
ø40	±0.07	
ø50		±0.03
ø63	±0.06	
ø80	±0.05	±0.03
ø100		

(PULL time initial value) Note) Excluding guide rod deflection amount

Short stroke

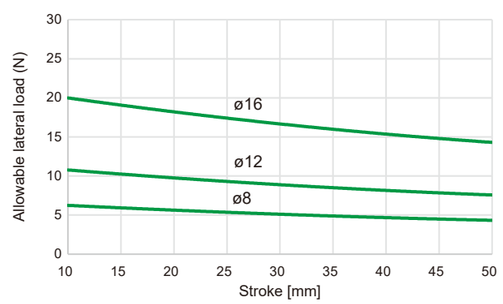
Allowable Lateral Load Plain bearing



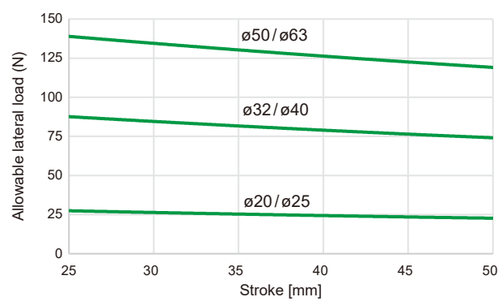
Wmax : Lateral load (N)
L : Load's center of gravity position (mm)

● When L=50 mm

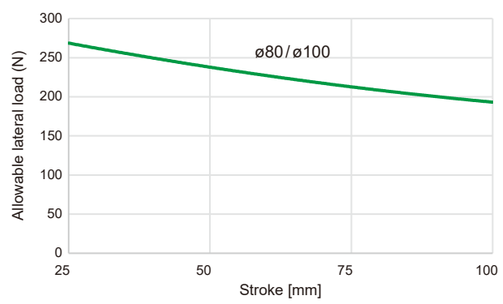
STS-M-8 to 16



STS-M-20 to 63

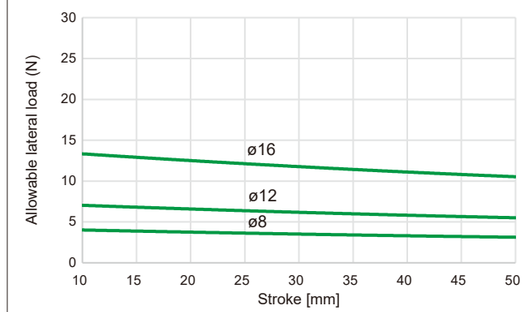


STS-M-80 / 100

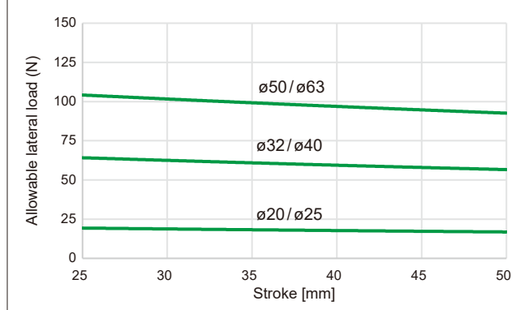


● When L=100 mm

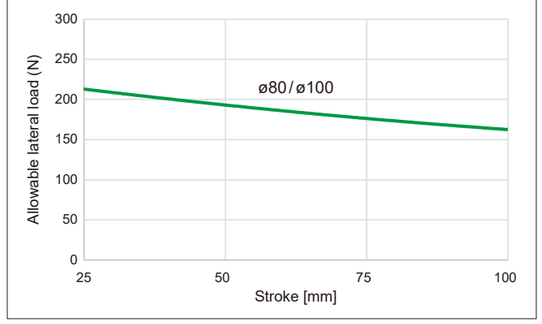
STS-M-8 to 16



STS-M-20 to 63



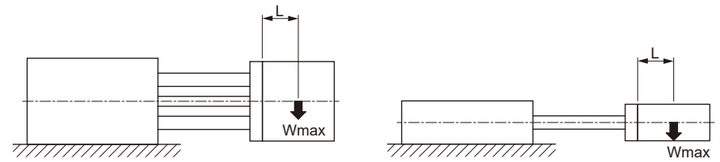
STS-M-80 / 100



Note1) When operating the unit under a load, calculate the allowable lateral load using the two equations below.
[Anti-corrosion] Catalog allowable lateral load value x 0.6
[Optional variations other than the above] Catalog allowable lateral load value x 0.9
Note2) When designing, be sure to consider the safety factor according to the operating conditions.

Short stroke

Allowable Lateral Load Rolling bearing

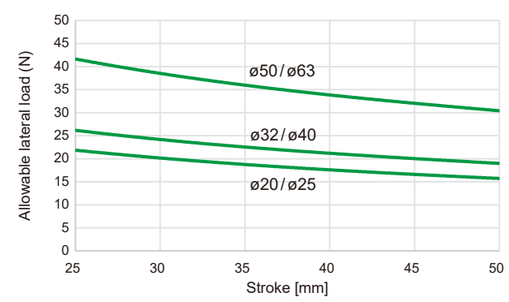


Wmax : Lateral load (N)
L : Load's center of gravity position (mm)

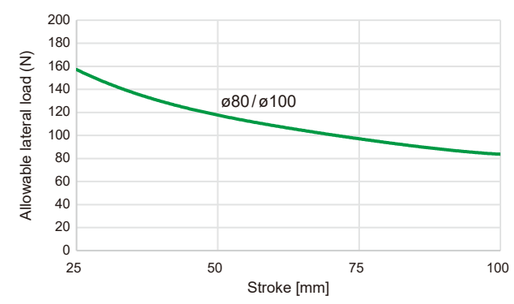
● When L=50 mm

STS-B-8 to 16

STS-B-20 to 63

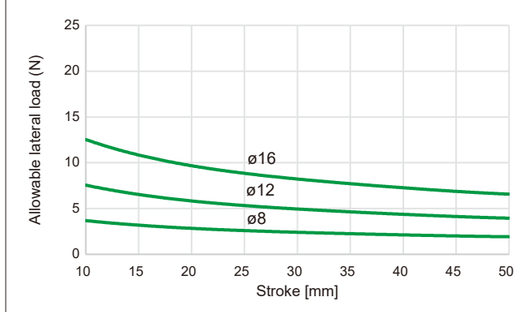


STS-B-80 / 100

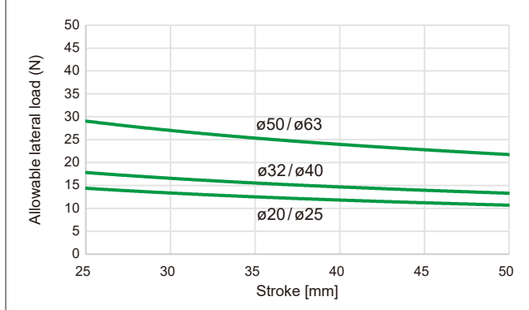


● When L=100 mm

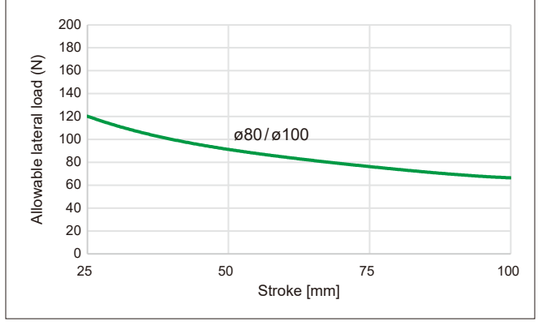
STS-B-8 to 16



STS-B-20 to 63



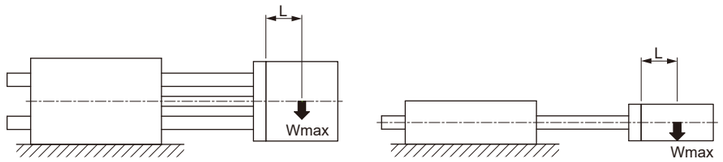
STS-B-80 / 100



Note1) When operating the unit under a load, calculate the allowable lateral load using the two equations below.
[Anti-corrosion] Catalog allowable lateral load value x 0.6
[Optional variations other than the above] Catalog allowable lateral load value x 0.9
Note2) When designing, be sure to consider the safety factor according to the operating conditions.

Long stroke

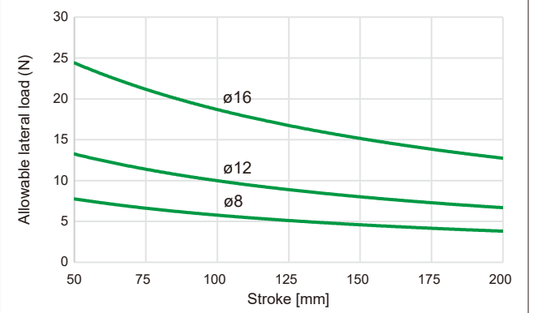
Allowable Lateral Load Plain bearing



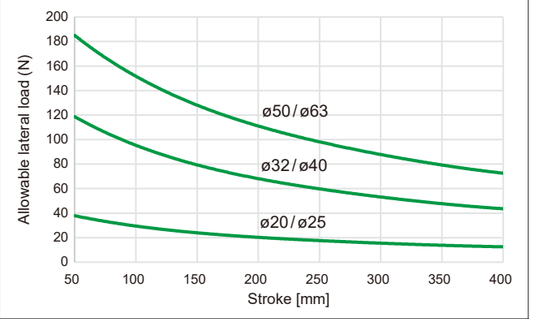
Wmax : Lateral load (N)
L : Load's center of gravity position (mm)

● When L=50 mm

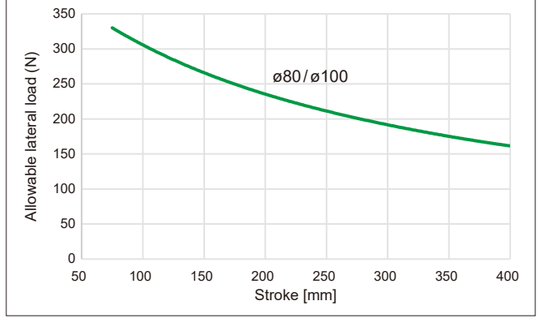
STL-M-8 to 16



STL-M-20 to 63

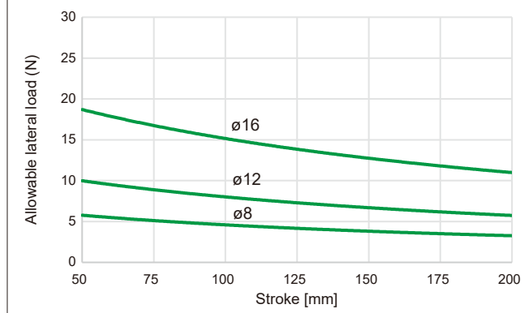


STL-M-80 / 100

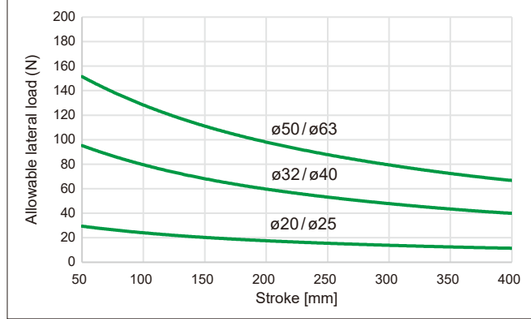


● When L=100 mm

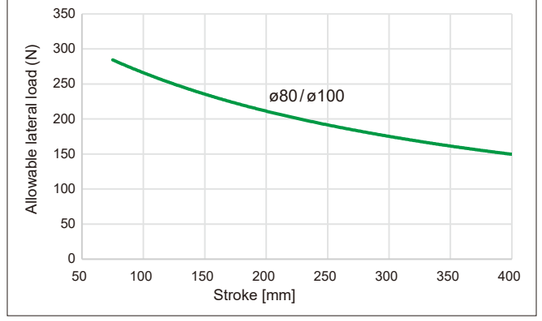
STL-M-8 to 16



STL-M-20 to 63



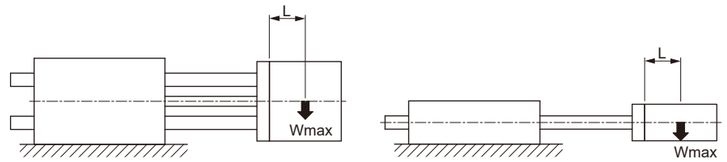
STL-M-80 / 100



Note1) When operating the unit under a load, calculate the allowable lateral load using the two equations below.
[Anti-corrosion] Catalog allowable lateral load value x 0.6
[Optional variations other than the above] Catalog allowable lateral load value x 0.9
Note2) When designing, be sure to consider the safety factor according to the operating conditions.

Long stroke

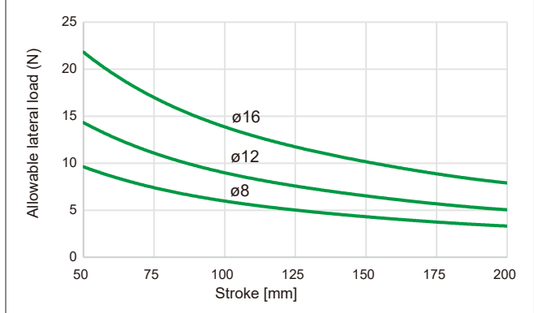
Allowable Lateral Load Rolling bearing



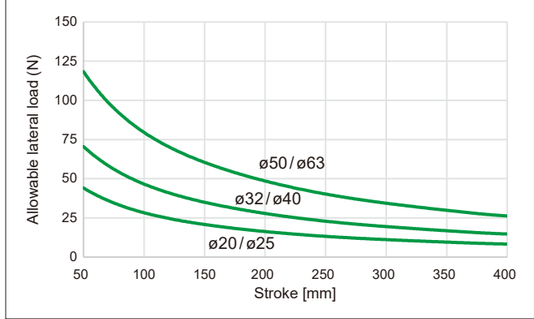
Wmax : Lateral load (N)
L : Load's center of gravity position (mm)

● When L=50 mm

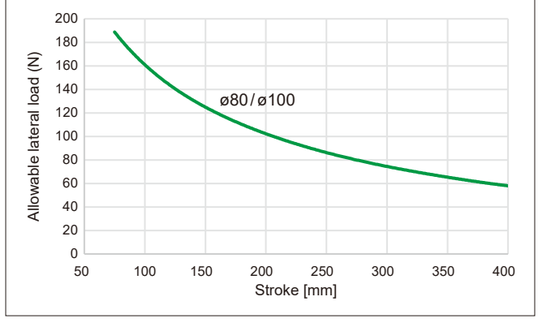
STL-B-8 to 16



STL-B-20 to 63

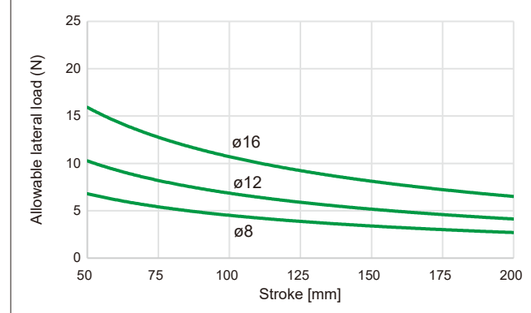


STL-B-80 / 100

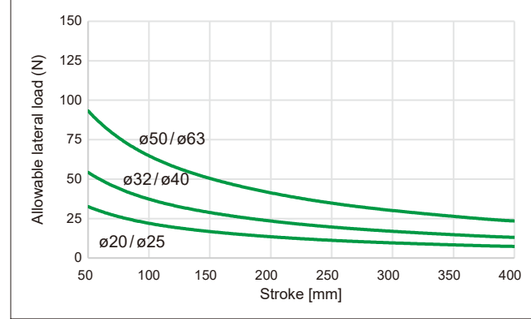


● When L=100 mm

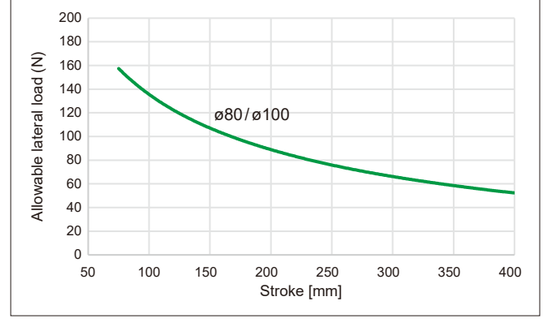
STL-B-8 to 16



STL-B-20 to 63



STL-B-80 / 100



Note1) When operating the unit under a load, calculate the allowable lateral load using the two equations below.
[Anti-corrosion] Catalog allowable lateral load value x 0.6
[Optional variations other than the above] Catalog allowable lateral load value x 0.9
Note2) When designing, be sure to consider the safety factor according to the operating conditions.

Port symmetrical type (-O)

Content: Position the port opposite to the standard port position.

Model No. Notation Method

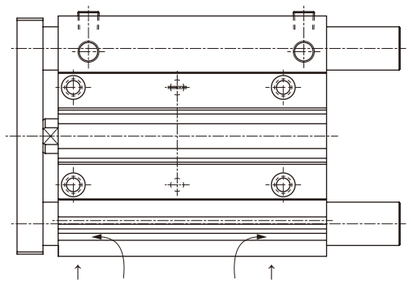
STS/L - M - 50 - 50 - P6 O

* Indicated without a hyphen immediately after the option code.

Model No.

Refer to How to order for STS/L Series.

Outer Dimensions Diagram



The standard product has a port on this side.

MEMO

Guided
STM
STG
STS/ STL
STR2
UCA2
Cylinder Switch
Ending

To Use This Product Safely

Be sure to read this before use. For general cylinder information, see Opening Section P. 41, and for cylinder switches, see P. 808.

Individual Precautions: Guided cylinder STS/STL Series

During Design / Selection

1. Common

⚠ Caution

■ When using a plain bearing type with a long stroke at low speed, stick-slip may occur depending on the load conditions. In this case, use a rolling bearing type.

2. With rubber air cushion STS/STL-$^{M}_{B}$-□C

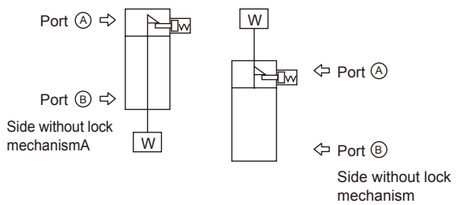
⚠ Caution

■ Due to the structure, if the air supply is cut off, the stroke end position cannot be maintained. Please be careful. When detecting the stroke end with a switch, it may be outside the detection range, so set the switch position in an air-pressurized state.

3. Drop prevention type STS/STL-$^{M}_{B}$Q

⚠ Warning

■ In the locked state, if pressure is supplied to port Ⓐ from a state where both side ports are not pressurized, the lock may not be released, or the lock may suddenly be released and the piston rod may fly out, which is very dangerous. When releasing the lock mechanism, always supply pressure to port Ⓑ and release it from a state where no load is applied to the lock mechanism.



■ When using a quick exhaust valve to increase the lowering speed, the cylinder body may start moving before the lock pin operates, and normal release may not be possible. Do not use a quick exhaust valve with a drop prevention type cylinder.

■ Do not use 3-position valves.
Do not use in combination with 3-position valves (especially closed-center metal seal type). If pressure is sealed in the port on the side with the lock mechanism, the lock will not engage. Also, even if locked once, air leaking from the valve may enter the cylinder, and the lock may be released over time.

⚠ Caution

■ Keep the cylinder load factor at 50% or less.
If the load factor is high, the lock may not be released, or it may lead to damage to the lock part.

■ If back pressure is applied to the lock mechanism side, the lock may be released, so use a single valve or a manifold with individual exhaust.

■ Do not use multiple cylinders synchronized.
Do not use a method where two or more fall prevention type cylinders are synchronized to move one workpiece. The lock of one of the cylinders may become unremovable.

4. Low speed type (STS/STL-$^{M}_{B}$F)

⚠ Caution

■ Use without lubrication.
Lubrication may change characteristics.

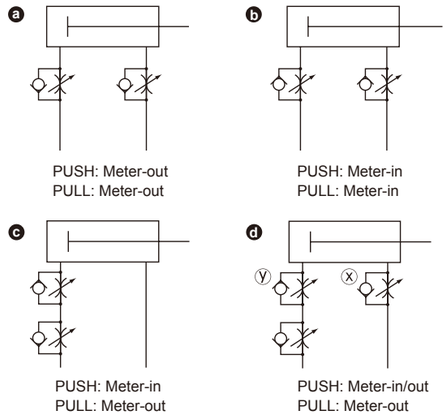
■ Install the speed controller near the cylinder.
If installed far from the cylinder, the speed will become unstable. SC-M3/M5-F, SC3W, SCD-M3/M5-F Series speed controllers are recommended.

■ Generally, the higher the air pressure and the lower the load factor, the more stable the speed.
Use with a load factor of 50% or less.

■ Do not apply lateral load to the cylinder. Also, install the sliding guide without twisting.
Operation will become unstable if there are fluctuations in load or resistance. Guides with a large difference between static friction and dynamic friction will result in unstable operation.

■ Avoid use in places with vibration.
Operation becomes unstable due to the influence of vibration.

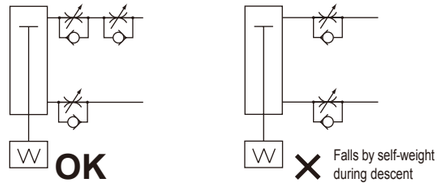
■ Speed control with a meter-out circuit provides stability.
When driving a single-rod cylinder at creep speed in the PUSH direction, if the load resistance is small, a flying-out phenomenon may occur at the start of operation. As countermeasures, use circuits ⓑ, ⓒ, or ⓓ. Circuit ⓓ is the most stable.



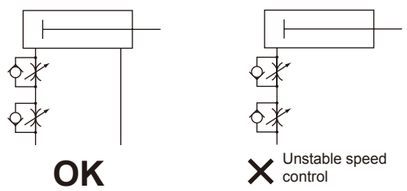
ⓓ Speed adjustment method for PUSH operation of the circuit:
1. Setting the speed with the x-axis speed controller
2. Restrict the speed with the y-axis speed controller until there is no popping out.
3. Reconfirmation of speed

Note1) Comparing ⓑⓒⓓ, the ⓓ circuit is the most stable in operation.

Note2) For vertical mounting, it will fall by its own weight in a meter-in circuit, so combine it with a meter-out circuit.



Note3) For series connection of speed controllers, use the circuit shown in the figure below.



(Guideline for lurching occurrence)
Lurching occurs in the following cases:
• Thrust > Resistance
* Resistance: Thrust due to residual pressure on exhaust side (For creep speed type, intake pressure = residual pressure) + [For horizontal use: Frictional force due to load / For vertical use: Dead weight of the load]

5. Coolant proof STS/STL-$^{M}_{B}$G$^{2}_{3}$

⚠ Caution

■ Do not apply an eccentric load to the piston rod. This may reduce the life of scrapers and bearings.

■ If there is no splashing of cutting oil or water on the piston rod, use the G or G1 series.
Please case that if there is no scattering of cutting oil or water with G2 and G3 series, the lubrication of the piston rod will be cut off and the service life will be reduced.

■ Install a speed controller on the cylinder.
Install a speed controller on the cylinder. Use within the operating piston speed range of each cylinder.

6. Spatter adhesion prevention type STS/STL-$^{M}_{B}$G4

⚠ Caution

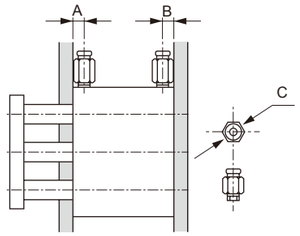
■ This cylinder series has improved durability in a spatter scattering atmosphere compared to general-purpose cylinders. However, please *that durability may be inferior to general type cylinders when used in other atmospheres.

During Use

1. Common

Caution

■ Be sure to use a speed controller when piping. Also, the usable fittings are as follows.



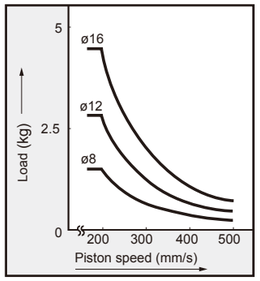
ø80 does not allow side piping such as shown in the figure above.

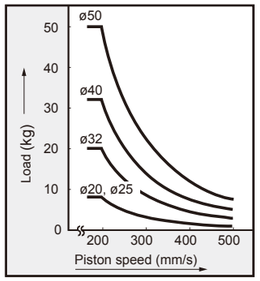
Item / Bore Size (mm)	Port Size	Port position dimension A	Port position dimension B	Usable Fittings	Fitting outer diameter øC
ø8	M5x0.8	11	6.5	SC3W-M5-4 SC3W-M5-6	ø12 or less
ø12		7.5	7.5	GWS4-M5-S GWS4-M5 GWL4-M5	
ø16		7.5	7.5	GWL6-M5 GWS6-M5	
ø20		12	8	SC3W-M5-4, SC3W-M5-6 GWS4-M5-S, GWS4-M5 GWL4-M5	ø15 or less
ø25		12	9	GWL6-M5	
ø32	Rc1/8	14	9	SC3W-6-4 / 6 / 8 GWS4-6, GWS6-6, GWS8-6	ø15 or less
ø40		14.5	10	GWS8-6, GWL4-6	
ø50	Rc1/4	16	11	SC3W-8-6 / 8 / 10 GWS4-8 GWS6-8 GWS10-8 GWS12-8 GWL4 to 12-8	ø21 or less
ø63		17.5	16		
ø80	Rc3/8	25	26	SC3W-10-8/10/12 GWS6-10 GWS8-10 GWS10-10 GWL6 to 12-10	ø21 or less
ø100	Rc3/8	24	25.5 (50)	SC3W-10-8/10/12 GWS6-10 GWS8-10 GWS10-10 GWL6 to 12-10	ø21 or less

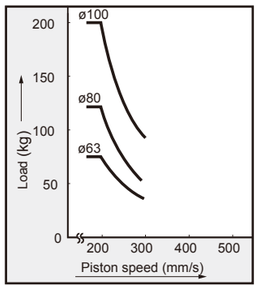
■ To prevent an increase in sliding resistance, do not make dents or scratches on the tube body mounting surface and end plate surface that may impair flatness. The flatness of the mating side included to the end plate should be 0.05 mm or less.
If it is difficult to ensure the above flatness, insert shims (customer prepared), etc. between the end plate and the workpiece to adjust the gap. This may help prevent an increase in sliding resistance.

■ Be sure not to rotate the piston rod, as it may destabilize operation (due to misalignment).

■ Allowable Energy Value
Use within the range to the lower left of the curve. If using in the upper right range, provide a separate external shock absorber.







■ Do not rotate the piston rod except when disassembling the product for maintenance, etc. Misalignment may occur and operation may become unstable, so do not rotate the piston rod.

■ Treat our Shock absorbers as consumable parts. Replace when a decrease in energy absorption capacity is observed or when operation is no longer smooth.

2. With rubber air cushion STS/STL-$^{M}_{B}$-□C

Caution

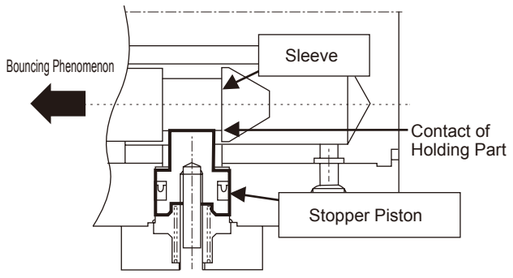
■ Do not rapidly exhaust the air in the cylinder after operating at low speed outside the catalog specification range. (Example Removing piping or couplers, etc.) The rubber air cushion may come off. Please be especially careful as this is more likely to occur when the air pressure is high.

3. Drop prevention type STS/STL-$^{M}_{B}$Q

Warning

■ During equipment maintenance, please take separate measures for safety so that the load does not fall due to its own weight.

■ When stopping with external shock absorbing equipment (shock absorbers, etc.), adjust so that there is no bounce. If it bounces, the sleeve and stopper piston will make impact contact, leading to damage to the lock mechanism. Also, please perform periodic inspections once or twice a year to check for damage to the holding part due to this phenomenon.



Caution

■ Since the lock mechanism works at the stroke end, if an external stopper is applied mid-stroke, the lock mechanism will not work, and there is a risk of falling. When setting the load, be sure to confirm that the lock mechanism is working before installing.

■ Supply pressure equal to or higher than the minimum operating pressure to the port on the side with the lock mechanism.

■ If the piping on the side with the lock mechanism is thin and long, or if the speed controller is far from the cylinder port, the exhaust speed may be slow and it may take time for the lock to engage, so please be careful. Also, clogging of the silencer included to the EXH. port of the valve will lead to similar results.

■ Use the speed controller with meter-out control.
Lock may not be released with meter-in control.

4. Low speed type (STS/STL-$^{M}_{B}$F)

Caution

■ Make adjustments such as alignment so that no lateral load is applied to the cylinder. Also, adjust and install so that there is no twisting with respect to the sliding guide.
Operation will become unstable if there are fluctuations in load or resistance. Guides with a large difference between static friction and dynamic friction will result in unstable operation.

For precautions regarding mounting, installation, adjustment, use, and maintenance, please see "Precautions for Use" in this catalog and the CKD Components Product website (https://www.ckd.co.jp/kiki/en/) → "Model No." → Instruction Manual

Guided

STR2

Twin Rod Cylinder

ø6, ø10, ø16, ø20, ø25, ø32

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● Double acting, Drop preventi on type (STR2-$^{M}_{B}$Q)	**676**
● Double acting, Low speed type (STR2-$^{M}_{B}$O)	**684**
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● Double acting, Double rod type (STR2-$^{M}_{B}$D)	**694**
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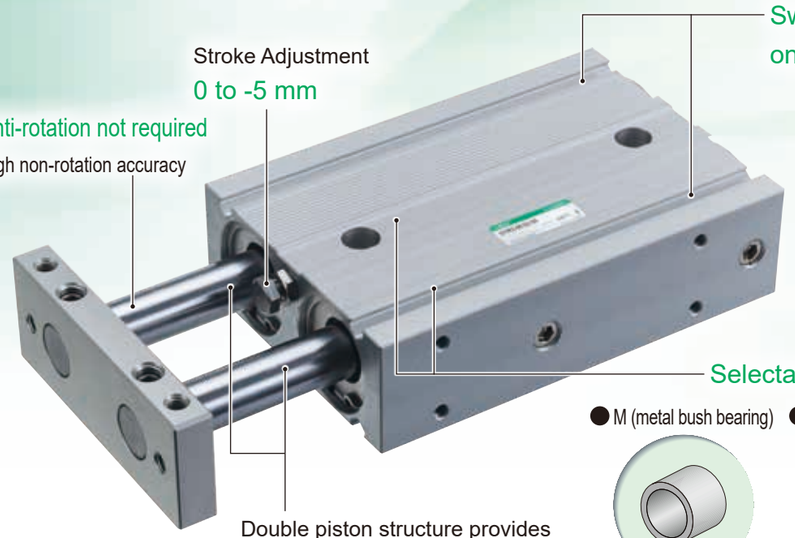
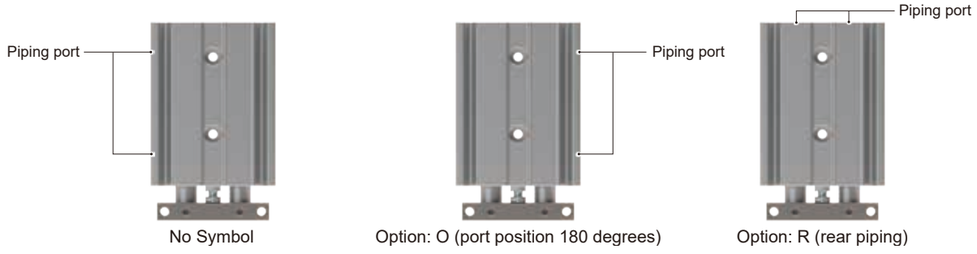
Twin rod / Double piston structure
Achieves high non-rotation accuracy and double the thrust



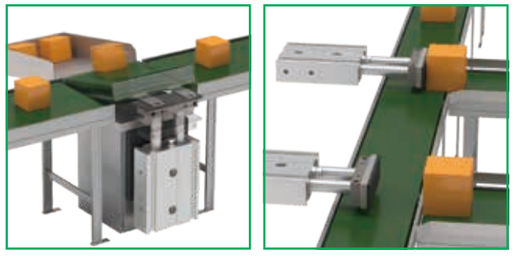
Selectable piping port position

Select piping position according to equipment

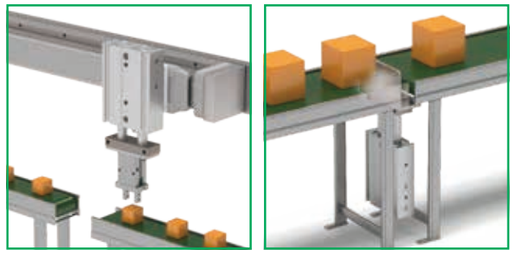


Application Example

Simple lifter / Pusher

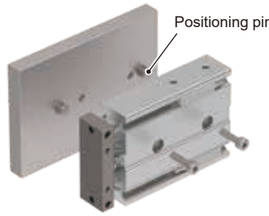


Pick & Place / Stopper

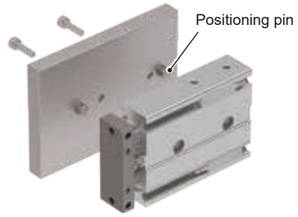


Main body mounting surface has 3 surfaces

Top surface mounting



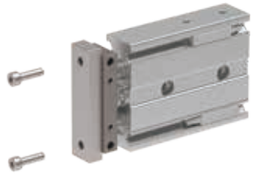
Bottom surface mounting



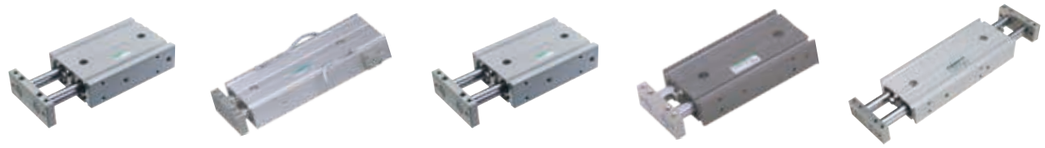
Side surface mounting

* Locating pin holes are not provided for side mounting.
* Option: When O is selected, side mounting is not possible.

Workpiece mounting surface has 3 surfaces



Single Rod	Fall Prevention	Low Speed	Ultra Low Speed	Double Rod
STR2-$^{M}_{B}$	STR2-$^{M}_{B}$Q	STR2-$^{M}_{B}$O	STR2-$^{M}_{B}$F	STR2-$^{M}_{B}$D



STR2 Series product system

Model variations	Bearing		Bore size (mm)					
	Metal bush bearing M	Ball bearing B	ø6	ø10	ø16	ø20	ø25	ø32
Double acting / Standard STR2-$^{M}_{B}$	●	●	●	●	●	●	●	●
Double acting / Position locking STR2-$^{M}_{B}$Q	●	●	●	●	●	●	●	●
Double acting / Low speed STR2-$^{M}_{B}$O	●	●	●	●	●	●	●	●
Double acting / Ultra low speed STR2-$^{M}_{B}$F	●	●	●	●	●	●	●	●
Double acting / Double rod STR2-$^{M}_{B}$D	●	●	●	●	●	●	●	●

Twin Rod Cylinder
STR2 Series

●: Standard, ◎: Option, ○: Custom Products ▩: Not manufacturable

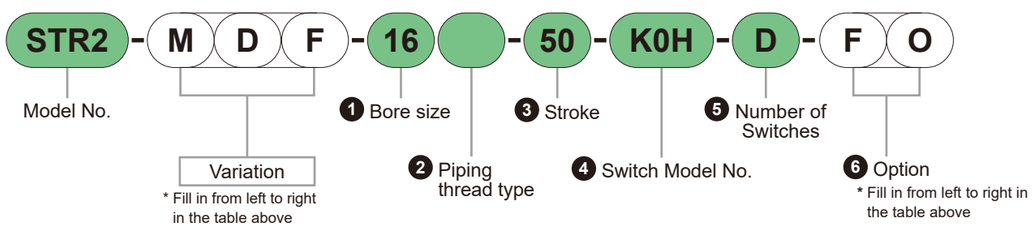
Variation	Model No. Circuit Diagram Symbol	Bore size (mm)	Standard Stroke (mm) 10	20	30	40	50	60	70	Stroke (mm) 80	90	100	Min. Stroke (mm)	Max. Stroke (mm)	Intermediate stroke (mm) increments	Producible Stroke (mm)	Bearing type: Plain bearing M	Rolling bearing B	Option: End plate material Steel F	Piping port position 180° change O	Rear piping type R	Switch	Page
Double acting / Standard type	STR2-$^{M}_{B}$	ø6, ø10	●	●	●	●	●	▩	▩	▩	▩	▩	5	50	1	100	●	●	◎	◎	◎	◎	668
		ø16, ø20, ø25, ø32	●	●	●	●	●	●	●	●	●	●		100		200	●	●	◎	◎	◎		
Double Acting / Drop Prevention Type	STR2-$^{M}_{B}$Q	ø16, ø20, ø25, ø32	●	●	●	●	●	●	●	●	●	●	5	100	–	–	●	●	◎	◎	▩	◎	676
Double Acting / Low Speed Type	STR2-$^{M}_{B}$O	ø6, ø10	●	●	●	●	●	▩	▩	▩	▩	▩	5	50	1	100	●	●	◎	◎	○	◎	684
		ø16, ø20, ø25, ø32	●	●	●	●	●	●	●	●	●	●		100		200	●	●	◎	◎	○		
Double Acting / Ultra Low Speed Type	STR2-$^{M}_{B}$F	ø10	●	●	●	●	●	▩	▩	▩	▩	▩	5	50	1	100	●	●	◎	○	◎	◎	690
		ø16, ø20, ø25, ø32	●	●	●	●	●	●	●	●	●	●		100		200	●	●	◎	○	◎		
Double Acting / Double Rod Type	STR2-$^{M}_{B}$D	ø6, ø10	●	●	●	●	●	▩	▩	▩	▩	▩	5	50	–	–	●	●	◎	◎	▩	◎	694
		ø16, ø20, ø25, ø32	●	●	●	●	●	●	●	●	●	●		100			●	●	◎	◎	▩		

Combinability table of variations and option items (Plain bearing)

● Symbol: Standard
◎ Symbol: Option
○ Symbol: Custom Products
△ Symbol: Manufacturable depending on conditions (Please consult)
x Symbol: Not manufacturable

Category		Category	Variation					Piping thread		Option			
			Double acting basic type (Plain bearing)	Double rod type	Drop prevention type	Low speed type	Ultra low speed type	NPT	G	Plate material specification Steel	Piping port position 180° change	Rear piping type	
		Code	M	D	Q	O	F	NN	GN	F	O	R	
Variation	Double acting basic type (Plain bearing)	M	＼	◎	◎	◎	◎	○	○	◎	◎	◎	
	Double rod type	D		＼	○	○	○	○	○	◎	◎	x	
	Drop prevention type	Q			＼	x	x	○	○	◎	◎	x	
	Low speed type	O				＼	x	○	○	◎	◎	○	
	Ultra low speed type	F					＼	○	○	◎	○	◎	
Piping thread	NPT	NN						＼	x	○	○	○	
	G	GN							＼	○	○	○	
Option	End plate material Steel	F								＼	○	○	
	Piping port position 180° change	O									＼	x	
	Rear piping type	R										＼	
Accessories	Cylinder Switch	Separately Shown	◎	◎	◎	◎	◎	○	○	◎	◎	◎	

[Model No. Notation Example]



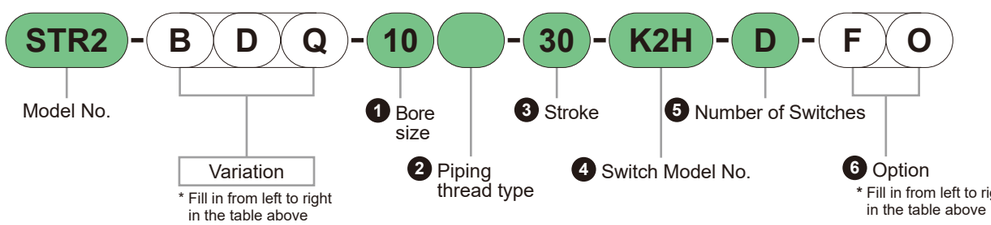
Model No. : Twin Rod Cylinder
● Variation : Plain Bearing, Double Rod Type, Ultra Low Speed Type
❶ Bore size : ø16mm
❷ Port thread : Rc Thread
❸ Stroke : 50 mm
❹ Switch model No. : Solid State TOH Switch, Lead Wire 1 m
❺ Number of Switches : With 2 pcs.
❻ Option : End plate material (Steel), Piping port position 180° change

Combinability table of variations and option items (Rolling bearing)

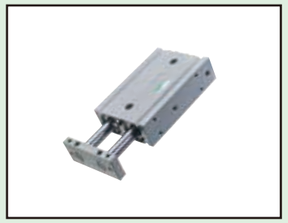
● Symbol: Standard
◎ Symbol: Option
○ Symbol: Custom Products
△ Symbol: Manufacturable depending on conditions (Please consult)
x Symbol: Not manufacturable

Category		Category	Variation					Piping thread		Option			
			Double acting basic type (Rolling bearing)	Double rod type	Drop prevention type	Low Speed Type	Ultra low speed type	NPT	G	Plate material specification Steel	Piping port 180° change	Rear piping type	
		Code	B	D	Q	O	F	NN	GN	F	O	R	
Variation	Double acting basic type (Rolling bearing)	B	＼	◎	◎	◎	◎	○	○	◎	◎	◎	
	Double rod type	D		＼	○	○	○	○	○	◎	◎	x	
	Drop prevention type	Q			＼	x	x	○	○	◎	◎	x	
	Low speed type	O				＼	x	○	○	◎	◎	○	
	Ultra low speed type	F					＼	○	○	◎	○	◎	
Piping thread	NPT	NN						＼	x	○	○	○	
	G	GN							＼	○	○	○	
Option	End plate material Steel	F								＼	○	○	
	Piping port position 180° change	O									＼	x	
	Rear piping type	R										＼	
Accessories	Cylinder Switch	Separately Shown	◎	◎	◎	◎	◎	○	○	◎	◎	◎	

[Model No. Notation Example]



Model No. : Twin Rod Cylinder
●Variation : Rolling bearing, Double rod type, Drop prevention type
❶ Bore size : ø10 mm
❷ Port thread : Rc Thread
❸ Stroke : 30 mm
❹ Switch model No. : Solid State, K2H Switch, Lead Wire 1 m
❺ Number of Switches : With 2 pcs.
❻ Options : End plate material (Steel), Piping port position 180° change



Twin Rod Cylinder Double acting / Standard type

STR2-$^{M}_{B}$ Series

●Bore size: ø6, ø10, ø16, ø20, ø25, ø32

Circuit Diagram Symbol

RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

STR2 - M - 16 - 30 - F

Model No. ❶ ❷ ❸ ❹ ❼

With Switch
(Built-in magnet for switch)

STR2 - M - 16 - 30 - K0H - R - F

Model No. ❷ Bore size ❹ Stroke ❻ Number of Switches

❶ Bearing type ❸ Piping thread type ❺ Switch Model No. ❼ Option

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
6	ø6
10	ø10
16	ø16
20	ø20
25	ø25
32	ø32

❸ Piping thread type

Code	Content	
Blank	M5	(ø6 to ø25)
	Rc thread	(ø32)
NN	NPT thread (Custom Product)	(ø32)
*1 GN	G thread (Custom Product)	(ø32)

*1: For G thread, opposite side (❼ Option "O") is not available. There is no port itself, not a plug seal.
(❼ If option "O" is selected, there is no standard port.)

❹ Stroke (mm)

Bore size	Stroke	Intermediate Stroke
ø6, ø10	5 to 50	Every 1 mm *2
*1 ø16 to ø32	5 to 100	

*1: ❼ The maximum stroke of option rear piping type "R" is
- ø16 : 70 mm
- ø20 / 25 : 60 mm
- ø32 : 50 mm

*2: The overall length dimension is the same as the dimension of the longer standard stroke.
*3: For standard stroke, please refer to P. 670.

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	K2H□	K2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	K3H□	K3V□	
		3-wire (PNP)	-		-		K3PH□	K3PV□	
	2-Color	2-wire	-	10 to 30	-	5 to 20	K2YH□	K2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	K3YH□	K3YV□	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	K0H□	K0V□	*3
	No Indicator LED			5/12/24	20 or less	50 or less	K5H□	K5V□	

1: For "□" in the switch model No., enter the code selected from the " Lead wire length" table.
*2: Maximum load current value above: 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: Reed switches cannot be used with STR2-B-6 / 10.
*4: Switches other than the model Nos. listed above are also available. (Custom order) For details, refer to P. 753.

* Lead wire length

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

Example) Lead wire length 1 m KOH
3 m KOH 3
5 m KOH 5

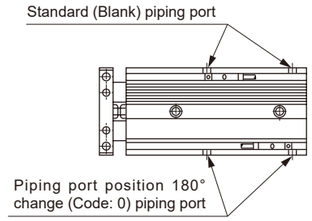
❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

❼ Option

Code	Content	
F	End plate material: Steel	
* O	Piping port position 180° change	
R	Rear piping type	

*The piping port position in the case of "O" is as shown in the diagram below.



For combinations of variations and options, please refer to P. 666 (Plain bearing) and P.667 (Rolling bearing).

Clean Specification

(Catalog No. CB-033SA)

● Dust prevention structure usable in cleanrooms

STR2-B - · · · · - P7□

STR2-B - · · · · - P5□

Rechargeable Battery Compatible Specification

(Catalog No. CC-1226AA)

● Design compatible with rechargeable battery manufacturing process

STR2-$^{M}_{B}$ - · · · · - P4□

* Please contact us for details.

High Durability Components HP Series

(Catalog No. CC-1421AA)

● Long-life actuator that contributes to productivity improvement with stable operation

STR2-$^{M}_{B}$ - · · · · - HP□

Switch Single Unit Model No. Notation Method

SW - K0H

❺ Switch Model No.

Specifications

Item		STR2-M (Plain bearing) STR2-B (Rolling bearing)					
Bore size	mm	ø6	ø10	ø16	ø20	ø25	ø32
Actuation method		Double Acting Type					
Operating Fluid		Compressed Air					
Max. Working Pressure	MPa	0.7					
Min. Operating Pressure	MPa	0.2	0.15	0.1			
Proof Pressure	MPa	1.05					
Ambient Temperature	°C	-10 to 60 (However, no freezing)					
Port Size		M5					Rc1/8
Stroke tolerance	mm	+2.0 0					
Stroke adjustment range	mm	-5 to 0					
Operating Piston Speed	mm/s	50 to 500					
Non-rotation accuracy (Reference value)	STR2-M	±0.4°	±0.3°			±0.2°	
	STR2-B	±0.2°	±0.1°			±0.3°	
Cushion		Rubber Cushion					
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)					
Allowable Absorption Energy J	PUSH	0.008	0.061	0.181	0.303	0.68	1.3
	PULL	0.059	0.083	0.083	0.127	0.237	0.311

Stroke

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Producible stroke (mm)	Min. stroke with switch (mm)
ø6	10, 20, 30, 40, 50	50	5	100	10
ø10					
ø16	10, 20, 30, 40, 50 60, 70, 80, 90, 100	100 *1		200	
ø20					
ø25					
ø32					

*1: In case of rear piping type
- ø16 : 70 mm
- ø20, ø25 : 60 mm
- ø32 : 50 mm

*2: Intermediate strokes can be manufactured every 1 mm. However, the overall length dimension is the same as the dimension of the longer standard stroke.

Theoretical Thrust Table

(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa							
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø6	Push	-	-	11.3	17.0	22.6	28.3	33.9	39.6
	Pull	-	-	6.28	9.42	12.6	15.7	18.8	22.0
ø10	Push	-	23.6	31.4	47.1	62.8	78.5	94.2	1.10 x 10²
	Pull	-	15.1	20.1	30.2	40.2	50.3	60.3	70.4
ø16	Push	40.2	60.3	80.4	1.21 x 10²	1.61 x 10²	2.01 x 10²	2.41 x 10²	2.81x10²
	Pull	24.5	36.8	49.0	73.5	98.0	1.23x10²	1.47 x 10²	1.72x10²
ø20	Push	62.8	94.2	1.26 x 10²	1.88 x 10²	2.51 x 10²	3.14 x 10²	3.77 x 10²	4.40x10²
	Pull	40.2	60.3	80.4	1.21 x 10²	1.61 x 10²	2.01 x 10²	2.41 x 10²	2.81x10²
ø25	Push	98.2	1.47 x 10²	1.96 x 10²	2.95 x 10²	3.93 x 10²	4.91 x 10²	5.89 x 10²	6.87x10²
	Pull	67.4	1.01 x 10²	1.35x10²	2.02x10²	2.70x10²	3.37x10²	4.04x10²	4.72x10²
ø32	Push	1.61 x 10²	2.41 x 10²	3.22 x 10²	4.83 x 10²	6.43 x 10²	8.04 x 10²	9.65x10²	1.13 x 10³
	Pull	1.21 x 10²	1.81 x 10²	2.41 x 10²	3.62x10²	4.83 x 10²	6.03x10²	7.24 x 10²	8.44 x 10²

Cylinder Weight

Unit: g

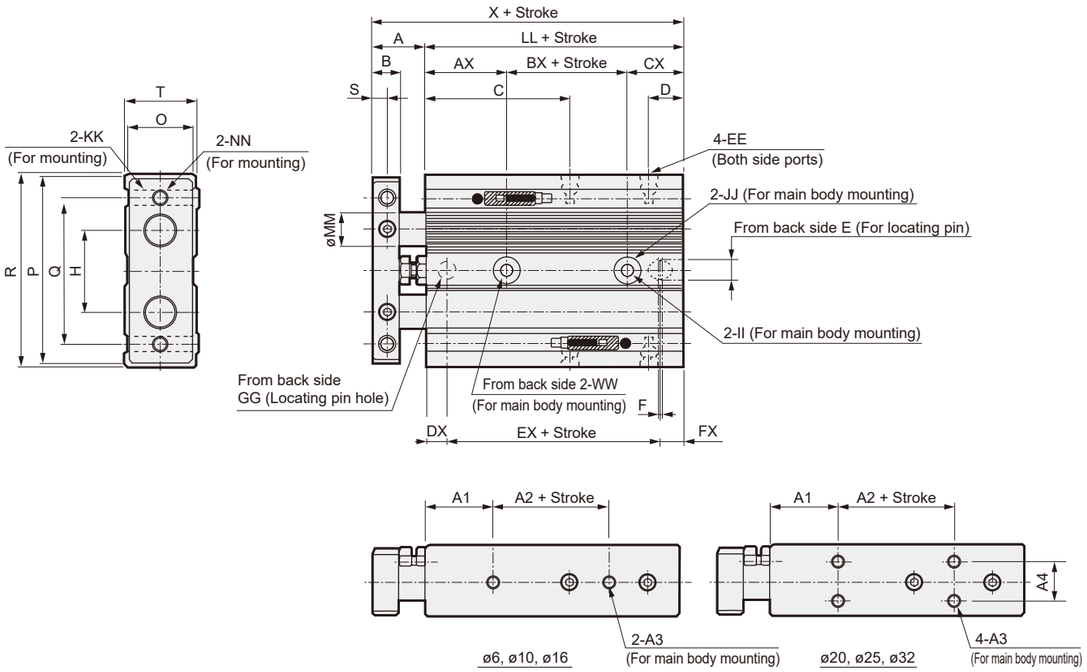
Bore size	Product Weight at Stroke 0 mm		S= Per 10 mm Added Weight
	STR2-M	STR2-B	
ø6	60	64	10
ø10	140	155	14
ø16	240	300	20
ø20	340	405	40
ø25	580	610	52
ø32	1300	1150	83

(Example) Product Weight
STR2-M-6-10-K2H-D

- Product Weight at stroke=0 mm···· 60 g
- Added weight at stroke 10 mm····· 10 g x 1=10 g
- Weight of cylinder switch (2 pieces)·····18 g x 2=36 g
- Product Weight·····60 g + 10 g + 36 g = 106 g

External dimensions diagram (Bore size: ø6 to ø32)

● Standard type, end plate material: Steel (F) , Piping port position 180° change (O)



Code	Basic type, O, F Basic dimensions													
Bore size (mm)	A	B	C	D	E	EE	F	GG	H	II	JJ	KK	LL *1	MM
ø6	12	6	24.5	7.5	4 +0.07 +0.02 depth 4	M5	1	4 +0.07 +0.02 depth 4	14	3.4	6.5 Counterbore depth 3.3	M3 Through	44	4
ø10	14	6	35	7	4 +0.07 +0.02 depth 4	M5	1	4 +0.07 +0.02 depth 4	20	4.3	8 Counterbore depth 4.4	M4 Through	55	6
ø16	16	8	43	9.5	6 +0.07 +0.02 depth 6	M5	1	6 +0.07 +0.02 depth 6	25	4.3	8 Counterbore depth 4.4	M5 Through	66	10
ø20	20	10	46	9.5	6 +0.07 +0.02 depth 6	M5	1	6 +0.07 +0.02 depth 6	28	5.2	9.5 Counterbore Depth 5.4	M5 Through	75	12
ø25	22	12	44	10.5	6 +0.07 +0.02 depth 6	M5	1	6 +0.07 +0.02 depth 6	34	6.3	11 Counterbore Depth 6.5	M6 Through	75	14
ø32	22	12	56	11	6 +0.07 +0.02 depth 6	Rc 1/8	1	6 +0.07 +0.02 depth 6	44	6.3	11 Counterbore Depth 6.5	M6 Through	91	16

Code																		
Bore size (mm)	NN	O	P	Q	R	S	T	WW	X *1	AX	BX *1	CX	DX	EX *1	FX	A1	A2 *1	A3	A4
ø6	M3 Through	11	34	29	36	3	13	M4 Depth 5	56	20	10	14	7	30	7	15	10	M3 Depth 4	-
ø10	M4 Through	13	42	36	44	3	15	M5 Depth 6	69	24	14	17	8	38	9	15	20	M3 Depth 3.5	-
ø16	M5 Through	19	52	45	58	4	21	M5 Depth 6	82	24	26	16	8	50	8	20	25	M4 Depth 4	-
ø20	M5 Through	24	60	50	62	5	27	M6 Depth 8	95	24	33	18	9	57	9	20	30	M4 Depth 4	13
ø25	M6 Through	30	70	60	72	6	33	M8 Depth 8	97	24	33	18	9	57	9	20	30	M5 Depth 6	18
ø32	M6 Through	36	94	75	96	6	38	M8 Depth 8	113	24	47	20	9	73	9	20	40	M5 Depth 8	24

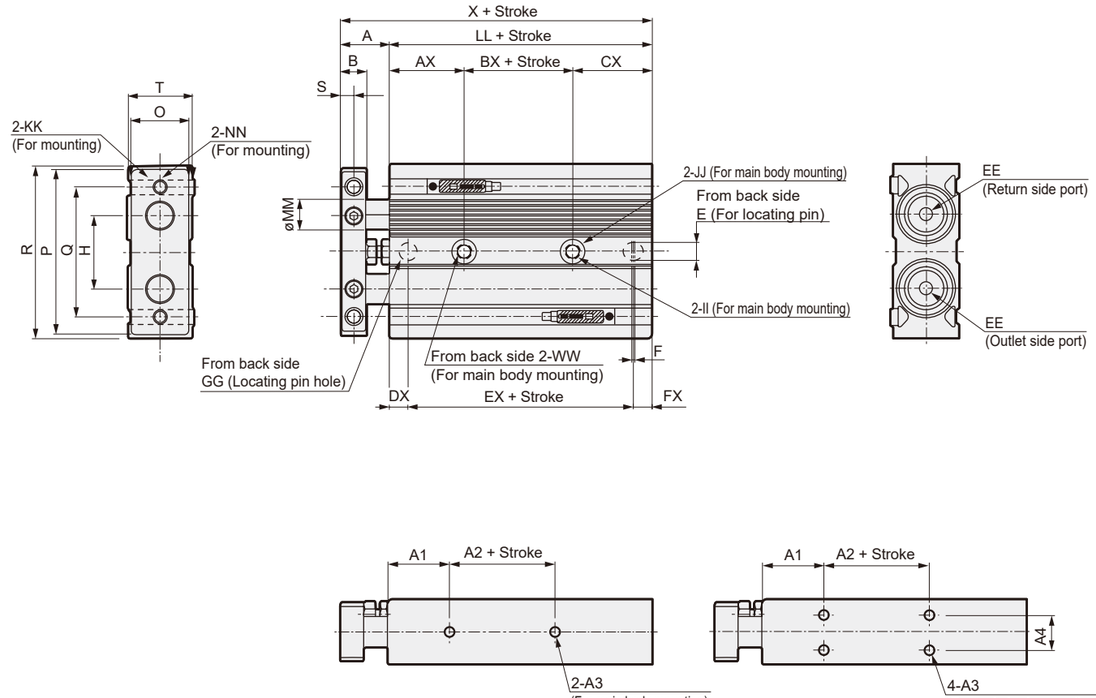
*1: For intermediate strokes, the overall length dimension is the same as the dimension of the longer standard stroke.

*2: If the surface with the counterbore (JJ) is used as the mounting surface for this cylinder, the cylinder may tilt due to the step. In such cases, use the port position change or port position 180° change option (O) so that the surface with the counterbore is not the mounting surface.

***3: For dimensions with each switch, refer to P. 700, 701.**

External dimensions diagram (Bore size: ø6 to ø32)

● Rear piping (R)



Code	R Basic dimensions													
Bore size (mm)	A	B	E	EE	F	GG	H	II	JJ	KK	LL *1	MM	NN	O
ø6	12	6	4 +0.07 +0.02 depth 4	M5	1	4 +0.07 +0.02 depth 4	14	3.4	6.5 Counterbore depth 3.3	M3 Through	54	4	M3 Through	11
ø10	14	6	4 +0.07 +0.02 depth 4	M5	1	4 +0.07 +0.02 depth 4	20	4.3	8 Counterbore depth 4.4	M4 Through	65	6	M4 Through	13
ø16	16	8	6 +0.07 +0.02 depth 6	M5	1	6 +0.07 +0.02 depth 6	25	4.3	8 Counterbore depth 4.4	M5 Through	76	10	M5 Through	19
ø20	20	10	6 +0.07 +0.02 depth 6	M5	1	6 +0.07 +0.02 depth 6	28	5.2	9.5 Counterbore Depth 5.4	M5 Through	85	12	M5 Through	24
ø25	22	12	6 +0.07 +0.02 depth 6	M5	1	6 +0.07 +0.02 depth 6	34	6.3	11 Counterbore Depth 6.5	M6 Through	85	14	M6 Through	30
ø32	22	12	6 +0.07 +0.02 depth 6	Rc 1/8	1	6 +0.07 +0.02 depth 6	44	6.3	11 Counterbore Depth 6.5	M6 Through	101	16	M6 Through	36

Code																	
Bore size (mm)	P	Q	R	S	T	WW	X *1	AX	BX *1	CX	DX	EX *1	FX	A1	A2 *1	A3	A4
ø6	34	29	36	3	13	M4 Depth 5	66	20	10	24	7	40	7	15	10	M3 Depth 4	-
ø10	42	36	44	3	15	M5 Depth 6	79	24	14	27	8	48	9	15	20	M3 Depth 3.5	-
ø16	52	45	58	4	21	M5 Depth 6	92	24	26	26	8	60	8	20	25	M4 Depth 4	-
ø20	60	50	62	5	27	M6 Depth 8	105	24	33	28	9	67	9	20	30	M4 Depth 4	13
ø25	70	60	72	6	33	M8 Depth 8	107	24	33	28	9	67	9	20	30	M5 Depth 6	18
ø32	94	75	96	6	38	M8 Depth 8	123	24	47	30	9	83	9	20	40	M5 Depth 8	24

*1: For intermediate strokes, the overall length dimension is the same as the dimension of the longer standard stroke.

*2: If the surface with the counterbore (JJ) is used as the mounting surface for this cylinder, the cylinder may tilt due to the step. In such cases, use the port position change or port position 180° change option (O) so that the surface with the counterbore is not the mounting surface.

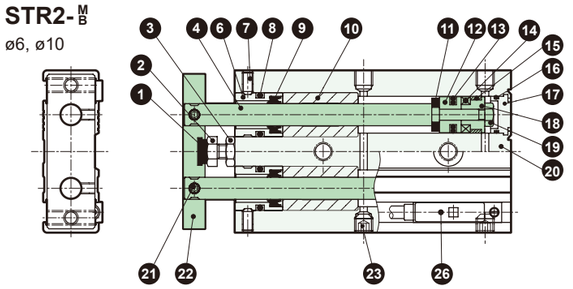
***3: For dimensions with each switch, refer to P. 700, 701.**

Internal Structure Diagram / Material

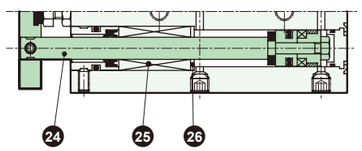
●Standard type

STR2-$^{M}_{B}$

ø6, ø10

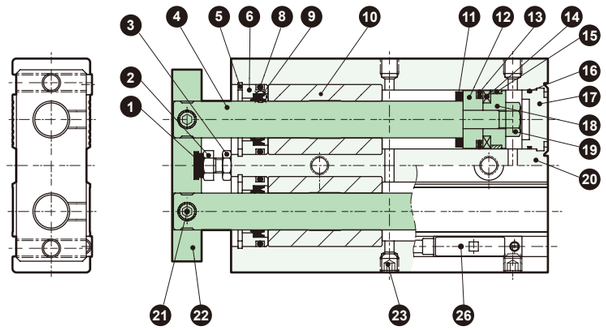


Plain bearing (M)

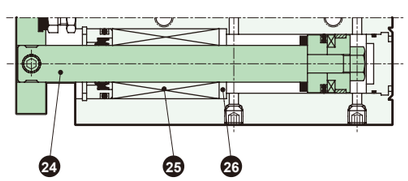


Rolling bearing (B)

ø16 to ø32



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Cushion rubber (H)	Urethane Rubber		14	Magnet	Plastic	
2	Hexagon bolt	Stainless Steel		15	Wear Ring	Polyacetal	
3	Hexagon Nut	Stainless Steel		16	O-ring	Nitrile Rubber	
4	Piston rod (1)	ø6 to ø20: Stainless steel ø25, ø32: Steel	ø16 to ø32: Industrial chrome plating	17	Cap	Aluminum Alloy	Chromate
				18	Magnet spacer	Aluminum Alloy	Chromate
5	C-ring for hole	Stainless Steel	ø16 to ø32 only	19	Hexagon Nut	Steel	Zinc Chromate
6	Housing	ø6, ø10: Stainless steel ø16 to ø32: Aluminum alloy	ø 16 to ø 32: Chromate	20	Cylinder Body	Aluminum Alloy	Hard Anodized
				21	Hexagon socket set screw	Stainless Steel	
7	Hexagon socket set screw	Stainless Steel	ø6, ø10 only	22	End plate *1	Aluminum Alloy	Alumite
8	O-ring	Nitrile Rubber		23	Hexagon socket set screw	Stainless Steel	
9	Rod Packing	Nitrile Rubber		24	Piston rod (2)	Steel	Industrial Hard Chrome Plating
10	Bushing	Aluminum Alloy		25	Bearing		
11	Cushion rubber (R)	Urethane Rubber		26	Spacer	Aluminum alloy	Chromate
12	Piston	Aluminum Alloy	Chromate	With Switch			
13	Piston Packing	Nitrile Rubber		27	Switch		

*1: Option (F): In the case of end plate material steel, the material is steel and the treatment is zinc chromate.

Consumable Parts List

STR2-M, STR2-B

Bore size (mm)	Kit Number	Consumable Part No.
ø6	**STR2-6K**	❶ ❽ ❾ ⓫ ⓭ ⓯
ø10	**STR2-10K**	
ø16	**STR2-16K**	
ø20	**STR2-20K**	
ø25	**STR2-25K**	
ø32	**STR2-32K**	

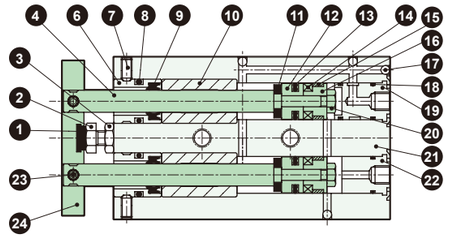
*Please specify the kit number when ordering.

Internal Structure Diagram/Material

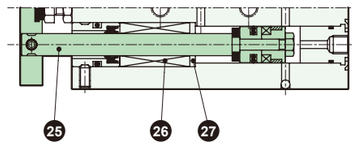
●Rear piping (R)

STR2-$^{M}_{B}$-R

ø6, ø10

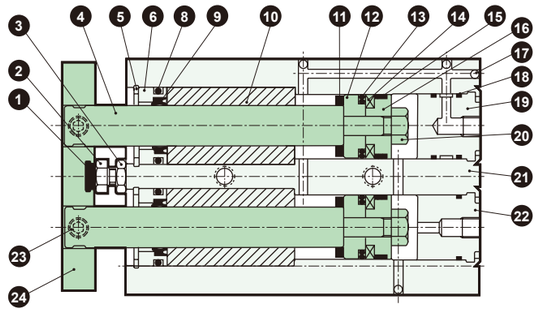


Plain bearing (M)

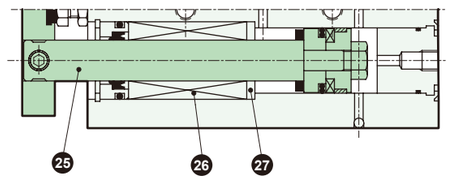


Rolling bearing (B)

ø16 to ø32



Plain bearing (M)



Rolling bearing (B)

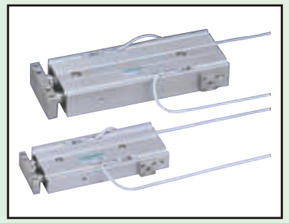
Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Cushion rubber (H)	Urethane Rubber		14	Magnet	Plastic	
2	Hexagon bolt	Stainless Steel		15	Wear Ring	Polyacetal Resin	
3	Hexagon Nut	Stainless Steel		16	Magnet spacer	Aluminum Alloy	Chromate
4	Piston rod (1)	ø6 to ø20: Stainless steel ø25, ø32: Steel	ø16 to ø32: Industrial chrome plating	17	Steel ball	Steel	
				18	O-ring	Nitrile Rubber	
5	C-ring for hole	Stainless Steel	ø16 to ø32 only	19	Cap (A)	Aluminum Alloy	Chromate
6	Housing	ø6, ø10: Stainless steel ø16 to ø32: Aluminum alloy	ø 16 to ø 32: Chromate	20	Hexagon Nut	Steel	Zinc Chromate
				21	Cylinder Body	Aluminum Alloy	Hard Anodized
7	Hexagon socket set screw	Stainless Steel	ø6, ø10 only	22	Cap (B)	Aluminum Alloy	Chromate
8	O-ring	Nitrile Rubber		23	Hexagon socket head set screw	Stainless Steel	
9	Rod Packing	Nitrile Rubber		24	End plate	Aluminum Alloy	Alumite
10	Bushing	Aluminum Alloy		25	Piston rod (2)	Steel	Industrial Hard Chrome Plating
11	Cushion rubber (R)	Urethane Rubber		26	Bearing		
12	Piston	Aluminum Alloy	Chromate	27	Spacer	Aluminum alloy	Chromate
13	Piston Packing	Nitrile Rubber					

Consumable Parts List

STR2-M-R (Rear piping), STR2-B-R (Rear piping)

Bore size (mm)	Kit Number	Consumable Part No.
ø6	**STR2-6K**	❶ ❽ ❾ ⓫ ⓭ ⓯
ø10	**STR2-10K**	
ø16	**STR2-16K**	
ø20	**STR2-20K**	
ø25	**STR2-25K**	
ø32	**STR2-32K**	

*Please specify the kit number when ordering.

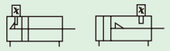


Twin Rod Cylinder Double acting / Drop prevention type

STR2-$^{M}_{B}$Q Series

●Bore size: ø16, ø20, ø25, ø32

Circuit Diagram Symbol



RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

STR2 M Q - 16 - 30 H ——— O

Model No. ❶ ❷ ❸ ❹ ❺ ❽

With Switch
(Built-in magnet for switch)

STR2 - M Q - 16 - 30 - H - K0H - R - O

Model No. ❷ Bore size ❹ Stroke ❻ Switch Model No. ❽ Option

❶ Bearing type ❸ Piping thread type ❺ Drop prevention mechanism ❼ Number of Switches

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore Size (mm)

Code	Content
16	ø16
20	ø20
25	ø25
32	ø32

❸ Piping thread type

Code	Content	
Blank	M5	(ø16 to ø25)
	Rc thread	(ø32)
NN	NPT thread (Custom Product)	(ø32)
* GN	G thread (Custom Product)	(ø32)

*In the case of G thread, there is no port on the opposite side (❽ option "O"). There is no port itself, not a plug seal.
(❽ If option "O" is selected, there is no standard port.)

❹ Stroke (mm)

Bore size	Stroke
ø16 to ø32	10 to 100

*For standard stroke, please refer to P. 678.

❺ Drop prevention mechanism

Code	Content	
H	With head side fall prevention	
R	With rod side fall prevention	

❻ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	K2H□	K2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	K3H□	K3V□	
		3-wire (PNP)	-		-		K3PH□	K3PV□	
	2-Color	2-wire	-	10 to 30	-	5 to 20	K2YH□	K2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	K3YH□	K3YV□	
Reed	1-Color	2-wire	110	12 / 24	7 to 20	5 to 50	K0H□	K0V□	
	No Indicator LED			5 / 12 / 24	20 or less	50 or less	K5H□	K5V□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: Maximum load current value above: 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: Switches other than the model Nos. listed above are also available. (Custom order) For details, refer to P. 753.

*** Lead wire length**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

Example) Lead wire length 1 m KOH
3 m KOH 3
5 m KOH 5

❼ Number of Switches

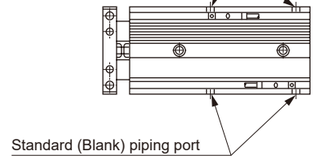
Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

❽ Option

Code	Content
F	End plate material: Steel
* O	Piping port position 180° change

*The piping port position in the case of "O" is as shown in the diagram below.

Piping port position 180° change (Code: 0) piping port



Standard (Blank) piping port

For combinations of variations and options,
please refer to P. 666 (Plain bearing) and 667 (Rolling bearing).

Rechargeable Battery Compatible Specification

(Catalog No. CC-1226AA)

● Structure usable in rechargeable battery manufacturing processes

STR2-$^{M}_{B}$Q - · · · · - P4□

* Please contact us for details.

Switch Single Unit Model No. Notation Method

SW - K0H

❻ Switch Model No.

Specifications

Item		STR2-MQ (Plain bearing) STR2-BQ (Rolling bearing)			
Bore size mm		ø16	ø20	ø25	ø32
Actuation method		Double Acting, Drop Prevention Type			
Operating Fluid		Compressed Air			
Max. Working Pressure MPa		0.7			
Min. Operating Pressure MPa		0.15			
Proof Pressure MPa		1.05			
Ambient Temperature °C		-10 to 60 (However, no freezing)			
Port Size		M5			Rc1/8
Stroke tolerance mm		$^{+2.0}_{0}$			
Stroke adjustment range mm		Not adjustable (With head side fall prevention) / -5 to 0 (With rod side fall prevention)			
Operating Piston Speed mm/s		50 to 500			
Non-rotation accuracy (Reference value)	STR2-M	±0.3°		±0.2°	
	STR2-B	±0.1°		±0.3°	
Cushion		Rubber Cushion			
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)			
Fall prevention mechanism		Rod side or head side			
Holding Force N		Max. Thrust x 0.7			
Allowable Absorption Energy J	PUSH	0.181	0.303	0.68	1.3
	PULL	0.083	0.127	0.237	0.311

Stroke

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø16	10, 20, 30, 40, 50 60, 70, 80, 90, 100	100	5	10
ø20				
ø25				
ø32				

*Intermediate strokes are custom products.

Theoretical Thrust Table

(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa						
		0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø16	Push	60.3	80.4	1.21 x 10²	1.61 x 10²	2.01 x 10²	2.41 x 10²	2.81x10²
	Pull	36.8	49.0	73.5	98.0	1.23x10²	1.47 x 10²	1.72x10²
ø20	Push	94.2	1.26 x 10²	1.88 x 10²	2.51 x 10²	3.14 x 10²	3.77 x 10²	4.40x10²
	Pull	60.3	80.4	1.21 x 10²	1.61 x 10²	2.01 x 10²	2.41 x 10²	2.81x10²
ø25	Push	1.47 x 10²	1.96 x 10²	2.95 x 10²	3.93 x 10²	4.91 x 10²	5.89 x 10²	6.87x10²
	Pull	1.01 x 10²	1.35x10²	2.02x10²	2.70x10²	3.37x10²	4.04x10²	4.72x10²
ø32	Push	2.41 x 10²	3.22 x 10²	4.83 x 10²	6.43 x 10²	8.04 x 10²	9.65x10²	1.13 x 10³
	Pull	1.81 x 10²	2.41 x 10²	3.62x10²	4.83 x 10²	6.03x10²	7.24 x 10²	8.44 x 10²

Cylinder Weight

Unit: g

Bore size	Product Weight at Stroke 0 mm		Added Weight per S = 10 mm
	STR2-M	STR2-B	
ø16	390	405	31
ø20	605	605	43
ø25	910	890	59
ø32	1430	1480	84

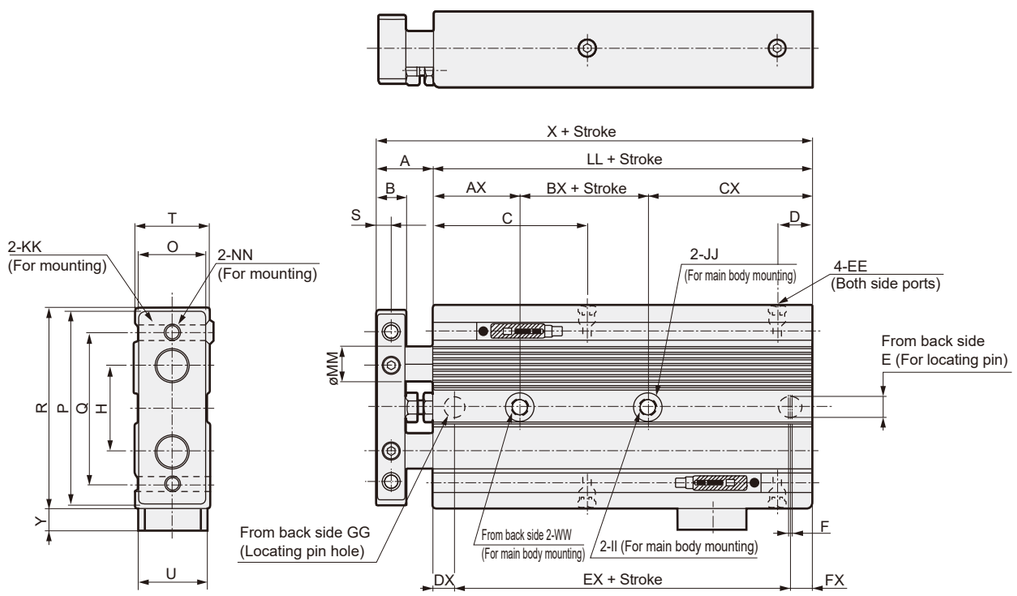
(Example) Product Weight
STR2-MQ-16-10-H-K2H-D

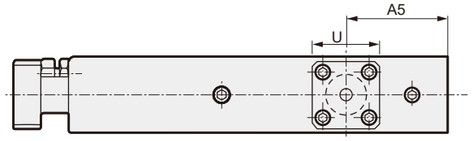
- Product Weight at stroke=0 mm ····· 390 g
- Added weight at stroke 10 mm ····· 31 g x 1=31 g
- Weight of cylinder switch (2 pieces)··· 18 g x 2=36 g
- Product Weight ·····390 g + 31 g + 36 g = 457 g

Be sure to read "Precautions for Use" Drop prevention type STR2-Q P. 712, 715 before use.

External dimensions diagram (Bore size: ø16 to ø32)

● Drop prevention type (Q) With head side fall prevention (H), Piping port position 180° change (O)





Code	Q-H Basic dimensions															
Bore size (mm)	A	B	C	D	E	EE	F	GG	H	II	JJ	KK	LL	MM	NN	O
ø16	16	8	43	9.5	6 +0.07 +0.02 Depth 6	M5	1	6 +0.07 +0.02 Depth 6	25	4.3	8 Counterbore depth 4.4	M5 Through	96	10	M5 Through	19
ø20	20	10	46	9.5	6 +0.07 +0.02 Depth 6	M5	1	6 +0.07 +0.02 Depth 6	28	5.2	9.5 Counterbore Depth 5.4	M5 Through	105	12	M5 Through	24
ø25	22	12	44	10.5	6 +0.07 +0.02 Depth 6	M5	1	6 +0.07 +0.02 Depth 6	34	6.3	11 Counterbore Depth 6.5	M6 Through	105	14	M6 Through	30
ø32	22	12	56	11	6 +0.07 +0.02 Depth 6	Rc 1/8	1	6 +0.07 +0.02 Depth 6	44	6.3	11 Counterbore Depth 6.5	M6 Through	121	16	M6 Through	36

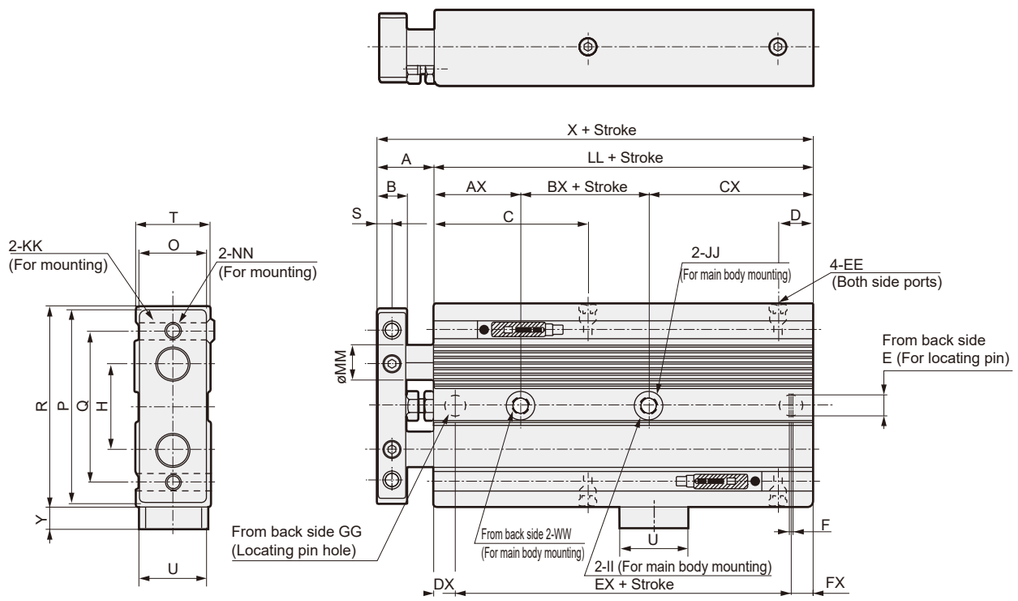
Code																
Bore size (mm)	P	Q	R	S	T	U	WW	X	Y	AX	BX	CX	DX	EX	FX	A5
ø16	52	45	58	4	21	19	M5 Depth 6	112	6	24	26	46	8	80	8	28
ø20	60	50	62	5	27	23	M6 Depth 8	125	7.5	24	33	48	9	87	9	25
ø25	70	60	72	6	33	23	M8 Depth 8	127	7.5	24	33	48	9	87	9	28
ø32	94	75	96	6	38	23	M8 Depth 8	143	7.5	24	47	50	9	103	9	27.5

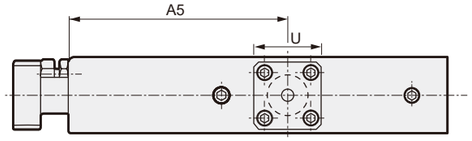
*1: If the surface with the counterbore (JJ) is used as the mounting surface for this cylinder, the cylinder may tilt due to the step. In such cases, use the port position change or port position 180° change option (O) so that the surface with the counterbore is not the mounting surface.

***2: For dimensions with each switch, refer to P. 700, 701.**

External dimensions diagram (Bore size: ø16 to ø32)

● Drop prevention type (Q) With rod side fall prevention (R), Piping port position 180° change (O)





Code	Q-R Basic dimensions															
Bore size (mm)	A	B	C	D	E	EE	F	GG	H	II	JJ	KK	LL	MM	NN	O
ø16	16	8	43	9.5	6 +0.07 +0.02 Depth 6	M5	1	6 +0.07 +0.02 Depth 6	25	4.3	8 Counterbore depth 4.4	M5 Through	96	10	M5 Through	19
ø20	20	10	46	9.5	6 +0.07 +0.02 Depth 6	M5	1	6 +0.07 +0.02 Depth 6	28	5.2	9.5 Counterbore Depth 5.4	M5 Through	105	12	M5 Through	24
ø25	22	12	44	10.5	6 +0.07 +0.02 Depth 6	M5	1	6 +0.07 +0.02 Depth 6	34	6.3	11 Counterbore Depth 6.5	M6 Through	105	14	M6 Through	30
ø32	22	12	56	11	6 +0.07 +0.02 Depth 6	Rc 1/8	1	6 +0.07 +0.02 Depth 6	44	6.3	11 Counterbore Depth 6.5	M6 Through	121	16	M6 Through	36

Code																
Bore size (mm)	P	Q	R	S	T	U	WW	X	Y	AX	BX	CX	DX	EX	FX	A5
ø16	52	45	58	4	21	19	M5 Depth 6	112	6	24	26	46	8	80	8	61.5
ø20	60	50	62	5	27	23	M6 Depth 8	125	7.5	24	33	48	9	87	9	61.5
ø25	70	60	72	6	33	23	M8 Depth 8	127	7.5	24	33	48	9	87	9	61.5
ø32	94	75	96	6	38	23	M8 Depth 8	143	7.5	24	47	50	9	103	9	72.5

*1: If the surface with the counterbore (JJ) is used as the mounting surface for this cylinder, the cylinder may tilt due to the step. In such cases, use the port position change or port position 180° change option (O) so that the surface with the counterbore is not the mounting surface.

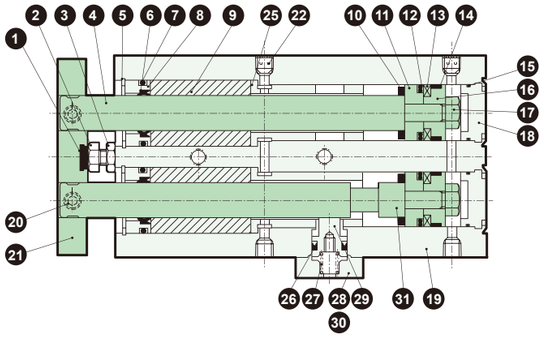
***2: For dimensions with each switch, refer to P. 700, 701.**

Internal Structure Diagram / Material

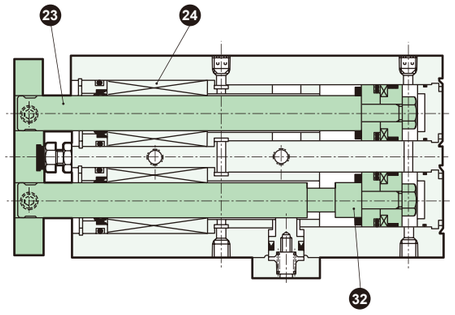
● Drop prevention type

(With rod side fall prevention)

STR2-$^{M}_{B}$Q-R



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Cushion rubber (H)	Urethane Rubber		17	Hexagon Nut	Steel	Zinc Chromate
2	Hexagon bolt	Stainless Steel		18	Cap	Aluminum Alloy	Chromate
3	Hexagon Nut	Stainless Steel		19	Cylinder Body	Aluminum Alloy	Hard Anodized
4	Piston rod (1)	ø16, ø20: Stainless steel ø25, ø32: Steel	Industrial Hard Chrome Plating	20	Hexagon socket head set screw	Stainless Steel	
				21	End plate	Aluminum Alloy	Alumite
5	C-ring for hole	Stainless Steel		22	Hexagon socket head set screw	Stainless Steel	
6	Rod Packing	Nitrile Rubber		23	Piston rod (1)	Steel	Industrial Hard Chrome Plating
7	O-ring	Nitrile Rubber		24	Bearing		
8	Housing	Aluminum Alloy	Chromate	25	Adapter	Aluminum Alloy	Chromate
9	Bushing	Aluminum Alloy		26	Stopper packing	Nitrile Rubber	
10	Cushion rubber (R)	Urethane Rubber		27	Coil Spring	Piano Wire	Electrodeposition Coating
11	Piston	Aluminum Alloy	Chromate	28	Stopper Cover	Aluminum Alloy	Alumite
12	Piston Packing	Nitrile Rubber		29	Stopper Piston	Stainless Steel	
13	Magnet	Plastic		30	Hexagon Socket Head Cap Screw	Stainless Steel	
14	Wear Ring	Polyacetal		31	Piston rod (2)	ø16, ø20: Stainless steel ø25, ø32: Steel	Industrial Hard Chrome Plating
15	O-ring	Nitrile rubber					
16	Spacer	Aluminum alloy	Chromate	32	Piston rod (2)	Steel	Industrial Hard Chrome Plating

Consumable Parts List

STR2-$^{M}_{B}$Q-R

Bore size (mm)	Kit Number	Consumable Part No.
ø16	**STR2-Q-16K**	
ø20	**STR2-Q-20K**	❶ ❻ ❼ ㉖
ø25	**STR2-Q-25K**	⑩ ⑫ ⑭
ø32	**STR2-Q-32K**	

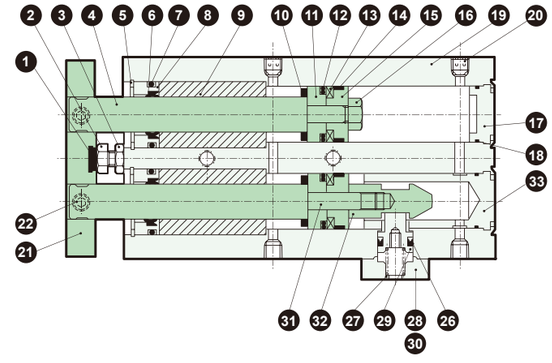
*Please specify the kit number when ordering.

Internal Structure Diagram / Material

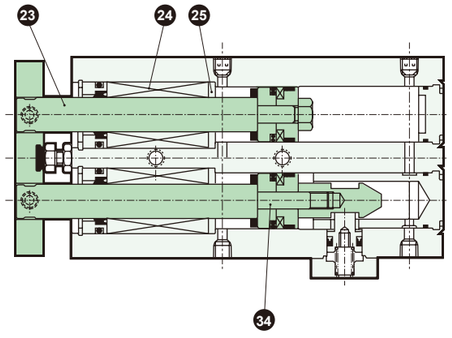
● Drop prevention type

With head side fall prevention

STR2-$^{M}_{B}$Q-H



Plain bearing (M)



Rolling bearing (B)

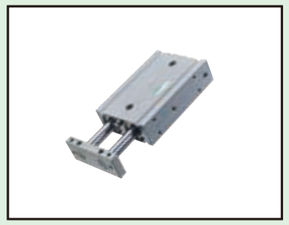
Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Cushion rubber (H)	Urethane Rubber		18	O-ring	Nitrile Rubber	
2	Hexagon bolt	Stainless Steel		19	Cylinder Body	Aluminum Alloy	Hard Anodized
3	Hexagon Nut	Stainless Steel		20	Hexagon socket head set screw	Stainless Steel	
4	Piston rod (1)	ø16, ø20: Stainless steel ø25, ø32: Steel	Industrial Hard Chrome Plating	21	End plate	Aluminum Alloy	Alumite
				22	Hexagon socket head set screw	Stainless Steel	
5	C-ring for hole	Stainless Steel		23	Piston rod (1)	Steel	Industrial Hard Chrome Plating
6	Rod Packing	Nitrile Rubber		24	Bearing		
7	O-ring	Nitrile Rubber		25	Spacer	Aluminum alloy	Chromate
8	Housing	Aluminum Alloy	Chromate	26	Stopper packing	Nitrile Rubber	
9	Bushing	Aluminum Alloy		27	Coil Spring	Piano Wire	Electrodeposition Coating
10	Cushion rubber (R)	Urethane Rubber		28	Stopper Cover	Aluminum Alloy	Alumite
11	Piston	Aluminum Alloy	Chromate	29	Stopper Piston	Stainless Steel	
12	Piston Packing	Nitrile Rubber		30	Hexagon Socket Head Cap Screw	Stainless Steel	
13	Magnet	Plastic		31	Piston rod (2)	ø16, ø20: Stainless steel ø25, ø32: Steel	Industrial Hard Chrome Plating
14	Wear Ring	Polyacetal					
15	Spacer	Aluminum alloy	Chromate	32	Sleeve	Stainless Steel	
16	Hexagon Nut	Steel	Zinc Chromate	33	Head Cover	Aluminum Alloy	Chromate
17	Cap	Aluminum Alloy	Chromate	34	Piston rod (2)	Steel	Industrial Hard Chrome Plating

Consumable Parts List

STR2-$^{M}_{B}$Q-H

Bore size (mm)	Kit Number	Consumable Part No.
ø16	**STR2-Q-16K**	
ø20	**STR2-Q-20K**	❶ ❻ ❼ ㉖
ø25	**STR2-Q-25K**	⑩ ⑫ ⑭
ø32	**STR2-Q-32K**	

*Please specify the kit number when ordering.



Twin Rod Cylinder Double acting / Low speed type

STR2-$^{M}_{B}$O Series

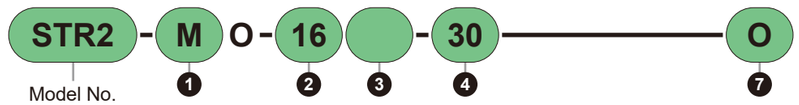
● Bore size: ø6, ø10, ø16, ø20, ø25, ø32

Circuit Diagram
Symbol

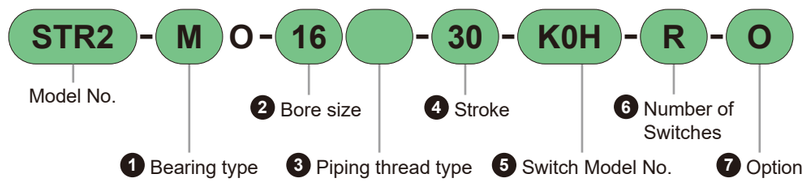
RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)



With Switch
(Built-in magnet for switch)



1 Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

2 Bore size (mm)

Code	Content
6	ø6
10	ø10
16	ø16
20	ø20
25	ø25
32	ø32

3 Piping thread type

Code	Content
Blank	M5 (ø6 to ø25)
	Rc thread (ø32)
NN	NPT thread (Custom Product) (ø32)
* GN	G thread (Custom Product) (ø32)

*In the case of G thread, there is no port on the opposite side (option "O"). There is no port itself, not a plug seal. (If option "O" is selected, there is no standard port.)

4 Stroke (mm)

Bore size	Stroke	Intermediate Stroke
ø6, ø10	5 to 50	Every 1 mm
ø16 to ø32	5 to 100	

*1: The overall length dimension is the same as the longer standard stroke.
*2: For standard stroke, please refer to P. 686.

5 Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	K2H□	K2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	K3H□	K3V□	
		3-wire (PNP)	-		-		K3PH□	K3PV□	
	2-Color	2-wire	-	10 to 30	-	5 to 20	K2YH□	K2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	K3YH□	K3YV□	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	K0H□	K0V□	*3
	No Indicator LED			5/12/24	20 or less	50 or less	K5H□	K5V□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: Maximum load current value above: 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: Reed switches cannot be used with STR2-B-6 / 10.
*4: Switches other than the model Nos. listed above are also available. (Custom order) For details, refer to P. 753.

*** Lead wire length**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

Example) Lead wire length 1 m KOH
3 m KOH 3
5 m KOH 5

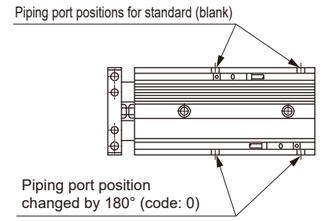
6 Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

7 Option

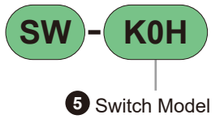
Code	Content
F	End plate material: Steel
* O	Piping port position 180° change

*The piping port position in the case of "O" is as shown in the diagram below.



For combinations of variations and options, please refer to P. 666 (Plain bearing) and 667 (Rolling bearing).

Switch Single Unit Model No. Notation Method



Specifications

Item		STR2-MO (Plain bearing) STR2-BO (Rolling bearing)					
Bore size mm		ø6	ø10	ø16	ø20	ø25	ø32
Actuation method		Double Acting/Low Speed Type					
Operating Fluid		Compressed Air					
Max. Working Pressure MPa		0.7					
Min. Operating Pressure MPa		0.2	0.15	0.1			
Proof Pressure MPa		1.05					
Ambient Temperature °C		-10 to 60 (However, no freezing)					
Port Size		M5					Rc1/8
Stroke tolerance mm		+2.0 0					
Stroke adjustment range mm		-5 to 0					
Operating Piston Speed mm/s		10 to 200					
Non-rotation accuracy (Reference value)	STR2-M	±0.4°	±0.3°			±0.2°	
	STR2-B	±0.2°	±0.1°			±0.3°	
Cushion		Rubber Cushion					
Lubrication		Not Available					
Allowable Absorption Energy J	PUSH	0.008	0.061	0.181	0.303	0.68	1.3
	PULL	0.059	0.083	0.083	0.127	0.237	0.311

Stroke

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Producible stroke (mm)	Min. stroke with switch (mm)
ø6	10, 20, 30, 40, 50	50	5	100	10
ø10					
ø16	10, 20, 30, 40, 50 60, 70, 80, 90, 100	100		200	
ø20					
ø25					
ø32					

*The custom stroke is available in 1 mm increments.
However, the overall length dimension is the same as the dimension of the longer standard stroke.

Theoretical Thrust Table

(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa							
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø6	Push	-	-	11.3	17.0	22.6	28.3	33.9	39.6
	Pull	-	-	6.28	9.42	12.6	15.7	18.8	22.0
ø10	Push	-	23.6	31.4	47.1	62.8	78.5	94.2	1.10 x 10^2
	Pull	-	15.1	20.1	30.2	40.2	50.3	60.3	70.4
ø16	Push	40.2	60.3	80.4	1.21 x 10^2	1.61 x 10^2	2.01 x 10^2	2.41 x 10^2	2.81x10^2
	Pull	24.5	36.8	49.0	73.5	98.0	1.23x10^2	1.47 x 10^2	1.72x10^2
ø20	Push	62.8	94.2	1.26 x 10^2	1.88 x 10^2	2.51 x 10^2	3.14 x 10^2	3.77 x 10^2	4.40x10^2
	Pull	40.2	60.3	80.4	1.21 x 10^2	1.61 x 10^2	2.01 x 10^2	2.41 x 10^2	2.81x10^2
ø25	Push	98.2	1.47 x 10^2	1.96 x 10^2	2.95 x 10^2	3.93 x 10^2	4.91 x 10^2	5.89 x 10^2	6.87x10^2
	Pull	67.4	1.01 x 10^2	1.35x10^2	2.02x10^2	2.70x10^2	3.37x10^2	4.04x10^2	4.72x10^2
ø32	Push	1.61 x 10^2	2.41 x 10^2	3.22 x 10^2	4.83 x 10^2	6.43 x 10^2	8.04 x 10^2	9.65x10^2	1.13 x 10^3
	Pull	1.21 x 10^2	1.81 x 10^2	2.41 x 10^2	3.62x10^2	4.83 x 10^2	6.03x10^2	7.24 x 10^2	8.44 x 10^2

Cylinder Weight

Unit: g

Bore size	Product Weight at Stroke 0 mm		Added Weight per S = 10 mm
	STR2-M	STR2-B	
ø6	60	64	10
ø10	140	155	14
ø16	240	300	20
ø20	340	405	40
ø25	580	610	52
ø32	1300	1150	83

(Example) Product Weight
STR2-M-6-10-K2H-D

- Product Weight at stroke=0 mm ····· 60 g
- Added weight at stroke 10 mm ····· 10 g x 1=10 g
- Weight of cylinder switch (2 pieces) ·· 18 g x 2=36 g
- Product Weight ····· 60 g + 10 g + 36 g = 106 g

Outline Dimension Drawing

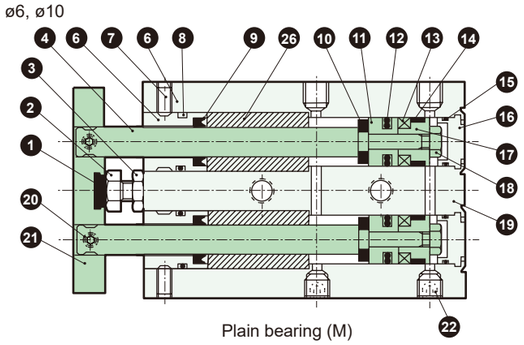
Double Acting, Standard Type Same as the STR2-$^{M}_{B}$ Series. See P. 672.

Internal Structure Diagram/Material

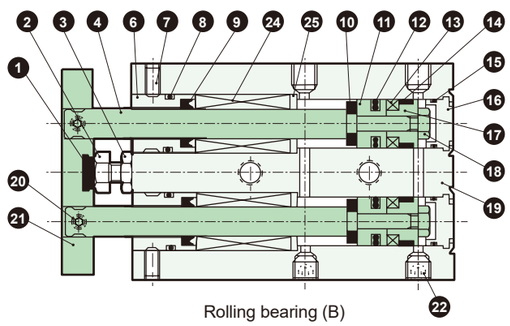
● Low Speed Type

STR2-$^{M}_{B}$O

ø6, ø10

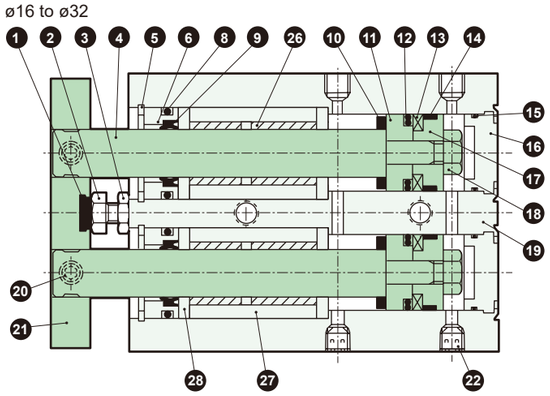


Plain bearing (M)

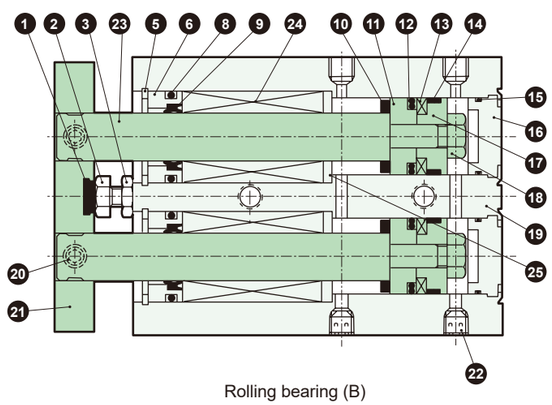


Rolling bearing (B)

ø16 to ø32



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Cushion rubber (H)	Urethane Rubber		14	Wear Ring	Polyacetal	
2	Hexagon bolt	Stainless Steel		15	O-ring	Nitrile rubber	
3	Hexagon Nut	Stainless Steel		16	Cap	Aluminum Alloy	Chromate
4	Piston rod (1)	ø6 to ø20: Stainless steel ø25, ø32: Steel	ø16 to ø32: Industrial chrome plating	17	Magnet spacer	Aluminum Alloy	Chromate
				18	Hexagon Nut	Steel	Zinc Chromate
5	C-ring for hole	Stainless Steel	ø16 to ø32 only	19	Cylinder Body	Aluminum Alloy	Hard Anodized
6	Housing	ø6, ø10: Stainless steel ø16 to ø32: Aluminum alloy	ø 16 to ø 32: Chromate	20	Hexagon socket set screw	Stainless Steel	
				21	End plate *1	Aluminum Alloy	Alumite
7	Hexagon socket set screw	Stainless Steel	ø6, ø10 only	22	Hexagon socket set screw	Stainless Steel	
8	O-ring	Nitrile Rubber		23	Piston rod (2)	Steel	Industrial Hard Chrome Plating
9	Rod Packing	Nitrile Rubber		24	Bearing		
10	Cushion rubber (R)	Urethane Rubber		25	Spacer	Aluminum alloy	Chromate
11	Piston	Aluminum Alloy	Chromate	26	Bushing	Oil-Impregnated Bearing Alloy	
12	Piston Packing	Nitrile Rubber		27	Aluminum housing	Aluminum Alloy	Chromate
13	Magnet	Plastic		28	Spacer	Aluminum alloy	Chromate

*1: Option (F): In the case of end plate material steel, the material is steel and the treatment is zinc chromate.

Consumable Parts List

STR2-$^{M}_{B}$O (Low speed type) * All consumable parts other than piston packing are the same as standard.

Bore size (mm)	Kit Number	Consumable Part No.
ø6	**STR2-O-6K**	❶ ❽ ❾ ❿ ⓬ ⓮
ø10	**STR2-O-10K**	
ø16	**STR2-O-16K**	
ø20	**STR2-O-20K**	
ø25	**STR2-O-25K**	
ø32	**STR2-O-32K**	

*Please specify the kit number when ordering.

MEMO

Twin Rod Cylinder Double acting / Ultra low speed type

STR2-$^{M}_{B}$F Series

● Bore size: ø10, ø16, ø20, ø25, ø32

Circuit Diagram
Symbol

RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

STR2 - M F - 16 [ ] - 30 ——— F

Model No. ❶ ❷ ❸ ❹ ❼

With Switch
(Built-in magnet for switch)

STR2 - M F - 16 [ ] - 30 - K0H - R - F

Model No.
❷ Bore size
❹ Stroke
❻ Number of Switches
❶ Bearing type
❸ Piping thread type
❺ Switch Model No.
❼ Option

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore size (mm)

Code	Content
10	ø10
16	ø16
20	ø20
25	ø25
32	ø32

Piping thread type

	Code	Content
	Blank	M5 (ø10 to ø25)
		Rc thread (ø32)
	NN	NPT thread (Custom Product) (ø32)
*	GN	G thread (Custom Product) (ø32)

*In the case of G thread, there is no port on the opposite side (option "O"). There is no port itself, not a plug seal.
(❼ If option "O" is selected, there is no standard port.)

❹ Stroke (mm)

	Bore size	Stroke	Intermediate Stroke
	ø10	5 to 50	Every 1 mm
*1	ø16 to ø32	5 to 100	

*1: ❼ The maximum stroke of option rear piping type "R" is
- ø16 : 70 mm
- ø20, ø25 : 60 mm
- ø32 : 50 mm.

*2: The overall length dimension is the same as the longer standard stroke.
*3: For standard stroke, please refer to P. 692.

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	K2H□	K2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	K3H□	K3V□	
		3-wire (PNP)	-		-		K3PH□	K3PV□	
	2-Color	2-wire	-	10 to 30	-	5 to 20	K2YH□	K2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	K3YH□	K3YV□	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	K0H□	K0V□	*3
	No Indicator LED			5/12/24	20 or less	50 or less	K5H□	K5V□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: Maximum load current value above: 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: Reed switches cannot be used with STR2-BF-10.
*4: Switches other than the model Nos. listed above are also available. (Custom order) For details, refer to P. 753.

***Lead wire length**

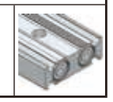
Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

Example) Lead wire length 1 m KOH
3 m KOH 3
5 m KOH 5

❻ Number of Switches

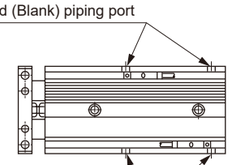
Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

❼ Option

	Code	Content	
	F	End plate material: Steel	
*	O	Piping port position 180° change	
	R	Rear piping type	

*The piping port position in the case of "O" is as shown in the diagram below.

Standard (Blank) piping port



Piping port position 180° change (Code: 0) piping port

For combinations of variations and options, please refer to P. 666 (Plain bearing) and 667 (Rolling bearing).

Clean Specification

(Catalog No. CB-033SA)

● Dust prevention structure usable in cleanrooms

STR2-BF - • • • • - P7□

Switch Single Unit Model No. Notation Method

● Switch body only

SW - K0H

❺ Switch Model No.

Specifications

Item		STR2-MF (Plain bearing), STR2-BF (Rolling bearing)				
Bore size mm		ø10	ø16	ø20	ø25	ø32
Actuation method		Double Acting Type				
Operating Fluid		Compressed Air				
Max. Working Pressure MPa		0.70				
Min. Operating Pressure MPa		0.15	0.1			
Ambient Temperature °C		5 to 60				
Port Size		M5				Rc1/8
Stroke tolerance mm		-5 to 0				
Operating Piston Speed mm/s		1 to 200				
Non-rotation accuracy (Reference value)	STR2-MF	±0.3°			±0.2°	
	STR2-BF	±0.1°			±0.3°	
Cushion		Rubber Cushion				
Lubrication		Lubrication Not Possible				
Allowable Absorbed Energy J		0.061	0.181	0.303	0.68	1.3

*For ø6, low speed type (STR2-0) is recommended.

Stroke

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Minimum Stroke with Switch (mm)
ø10	10, 20, 30, 40, 50	50	5	10
ø16	10, 20, 30, 40, 50 60, 70, 80, 90, 100	100		
ø20				
ø25				
ø32				

*About Intermediate Stroke: Manufacturable every 1 mm. However, the overall length dimension is the same as the dimension of the longer standard stroke.

Theoretical Thrust Table

(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa							
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø10	Push	-	23.6	31.4	47.1	62.8	78.5	94.2	1.10 x 10^2
	Pull	-	15.1	20.1	30.2	40.2	50.3	60.3	70.4
ø16	Push	40.2	60.3	80.4	1.21 x 10^2	1.61 x 10^2	2.01 x 10^2	2.41 x 10^2	2.81x10^2
	Pull	24.5	36.8	49.0	73.5	98.0	1.23x10^2	1.47 x 10^2	1.72x10^2
ø20	Push	62.8	94.2	1.26 x 10^2	1.88 x 10^2	2.51 x 10^2	3.14 x 10^2	3.77 x 10^2	4.40x10^2
	Pull	40.2	60.3	80.4	1.21 x 10^2	1.61 x 10^2	2.01 x 10^2	2.41 x 10^2	2.81x10^2
ø25	Push	98.2	1.47 x 10^2	1.96 x 10^2	2.95 x 10^2	3.93 x 10^2	4.91 x 10^2	5.89 x 10^2	6.87x10^2
	Pull	67.4	1.01 x 10^2	1.35x10^2	2.02x10^2	2.70x10^2	3.37x10^2	4.04x10^2	4.72x10^2
ø32	Push	1.61 x 10^2	2.41 x 10^2	3.22 x 10^2	4.83 x 10^2	6.43 x 10^2	8.04 x 10^2	9.65x10^2	1.13 x 10^3
	Pull	1.21 x 10^2	1.81 x 10^2	2.41 x 10^2	3.62x10^2	4.83 x 10^2	6.03x10^2	7.24 x 10^2	8.44 x 10^2

Outline Dimension Drawing

Same as double acting type STR2 series. See P. 672.

Technical Data

For technical data on measurement methods, please refer to the measurement method (Pneumatic cylinder ②) (Catalog No. RJ-003AA) SSD-F, SSD-KF).

MEMO

Guided
STM
STG
STS/STL
STR2
UCA2
Cylinder Switch
Ending

Twin Rod Cylinder Double acting / Double rod type

STR2-MBD Series

● Bore size: ø6, ø10, ø16, ø20, ø25, ø32

Circuit Diagram
Symbol

RoHS

Model No. Notation Method

Without Switch
(Built-in magnet for switch)

STR2 - M D - 16 [ ] - 30 ——— O

Model No. ❶ ❷ ❸ ❹ ❼

With Switch
(Built-in magnet for switch)

STR2 - M D - 16 [ ] - 30 - K0H - R - O

Model No. ❷ Bore size ❹ Stroke ❺ Switch Model No. ❻ Number of Switches ❶ Bearing type ❸ Piping thread type ❼ Option

❶ Bearing type

Code	Content
M	Plain bearing
B	Rolling bearing

❷ Bore size (mm)

Code	Content
6	ø6
10	ø10
16	ø16
20	ø20
25	ø25
32	ø32

Piping thread type

Code	Content
Blank	M5 (ø6 to ø25)
	Rc thread (ø32)
NN	NPT thread (Custom Product) (ø32)
* GN	G thread (Custom Product) (ø32)

*In the case of G thread, there is no port on the opposite side (option "O"). There is no port itself, not a plug seal. (❼ If option "O" is selected, there is no standard port.)

❹ Stroke (mm)

Bore size	Stroke
ø6, ø10	10 to 50
ø16 to ø32	10 to 100

*For standard stroke, please refer to P. 696.

❺ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	K2H□	K2V□	
		3-wire (NPN)	-	30 or less	-	50 or less	K3H□	K3V□	
		3-wire (PNP)	-		-		K3PH□	K3PV□	
	2-Color	2-wire	-	10 to 30	-	5 to 20	K2YH□	K2YV□	
		3-wire (NPN)	-	30 or less	-	50 or less	K3YH□	K3YV□	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	K0H□	K0V□	*3
	No Indicator LED			5/12/24	20 or less	50 or less	K5H□	K5V□	

*1: For "□" in the switch model No., enter the code selected from the "*Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C.
If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: Reed switches cannot be used with STR2-B-6 / 10.
*4: Switches other than the model Nos. listed above are also available. (Custom order) For details, refer to P. 753.

* Lead wire length

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

Example) Lead wire length 1 m KOH
3 m KOH 3
5 m KOH 5

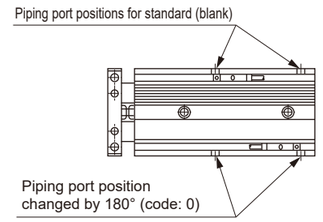
❻ Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs

❼ Option

Code	Content
F	End plate material: Steel
* O	Piping port position 180° change

*The piping port position in the case of "O" is as shown in the diagram below.



For combinations of variations and options,
please refer to P. 666 (Plain bearing) and 667 (Rolling bearing).

Switch Single Unit Model No. Notation Method

SW - K0H

❺ Switch Model No.

Specifications

Item		STR2-MD (Plain bearing) STR2-BD (Rolling bearing)					
Bore size mm		ø6	ø10	ø16	ø20	ø25	ø32
Actuation method		Double Acting/Double Rod Type					
Operating Fluid		Compressed Air					
Max. Working Pressure MPa		0.7					
Min. Operating Pressure MPa		0.25	0.2	0.15			
Proof Pressure MPa		1.05					
Ambient Temperature °C		-10 to 60 (However, no freezing)					
Port Size		M5					Rc1/8
Stroke tolerance mm		+2.0 0					
Stroke adjustment range mm		-5 to 0					
Operating Piston Speed mm/s		50 to 500					
Non-rotation accuracy (Reference value)	STR2-M	±0.4°	±0.3°			±0.2°	
	STR2-B	±0.2°	±0.1°			±0.3°	
Cushion		Rubber Cushion					
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)					
Allowable absorption energy J*1	PULL	0.059	0.083	0.083	0.127	0.237	0.311

*1: The allowable absorption energy for double rod type is only on the PULL side.

Stroke

Bore size	Standard Stroke (mm)	Max. Stroke (mm)	Min. Stroke (mm)	Min. stroke with switch (mm)
ø6	10, 20, 30, 40, 50	50	5	10
ø10				
ø16	10, 20, 30, 40, 50 60, 70, 80, 90, 100	100		
ø20				
ø25				
ø32				

Note) Intermediate strokes are custom products.

Theoretical Thrust Table

(Unit: N)

Bore size (mm)	Operating Pressure MPa						
	0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø6	-	-	9.42	12.6	15.7	18.8	22.0
ø10	-	20.1	30.2	40.2	50.3	60.3	70.4
ø16	36.8	49.0	73.5	98.0	1.23x10²	1.47 x 10²	1.72 x 10²
ø20	60.3	80.4	1.21 x 10²	1.61 x 10²	2.01 x 10²	2.41 x 10²	2.81 x 10²
ø25	1.01 x 10²	1.35 x 10²	2.02 x 10²	2.70 x 10²	3.37 x 10²	4.04 x 10²	4.72 x 10²
ø32	1.81 x 10²	2.41 x 10²	3.62 x 10²	4.83 x 10²	6.03 x 10²	7.24 x 10²	8.44 x 10²

Cylinder Weight

Unit: g

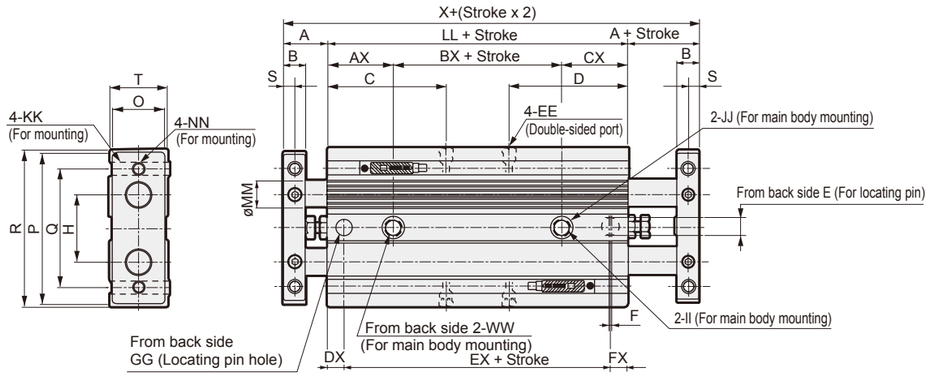
Bore size	Product Weight at Stroke 0 mm		Added Weight per S = 10 mm
	STR2-M	STR2-B	
ø6	100	95	13
ø10	185	200	20
ø16	450	475	44
ø20	735	730	60
ø25	1160	1120	82
ø32	1960	2060	115

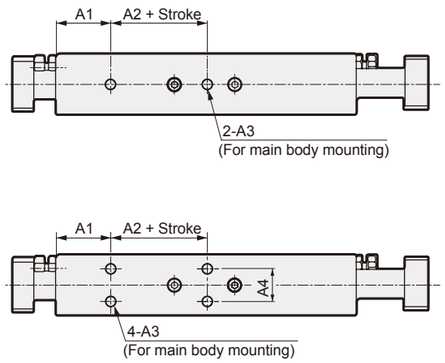
(Example) Product Weight
STR2-MD-6-10-K2H-D

- Product Weight at stroke=0 mm ····· 100 g
- Added weight at stroke 10 mm ····· 13 x 1=12 g
- Weight of cylinder switch (2 pieces) ·· 18 g x 2=36 g
- Product Weight ····· 100 g + 12 g + 36 g = 149 g

External dimensions diagram (Bore size: ø6 to ø32)

● Double rod type (D), Piping port position 180° change (O)





ø6, ø10, ø16

ø20, ø25, ø32

Code	Basic dimensions																
Bore size (mm)	A	B	C	D	E	EE	F	GG	H	II	JJ	KK	LL	MM	NN	O	P
ø6	12	6	24.5	24.5	4 +0.07 +0.02 Depth 4	M5	1	4 +0.07 +0.02 Depth 4	14	3.4	6.5 Counterbore depth 3.3	M3 Through	61	4	M3 Through	11	34
ø10	14	6	35	35	4 +0.07 +0.02 Depth 4	M5	1	4 +0.07 +0.02 Depth 4	20	4.3	8 Counterbore depth 4.4	M4 Through	82.5	6	M4 Through	13	42
ø16	16	8	43	43	6 +0.07 +0.02 Depth 6	M5	1	6 +0.07 +0.02 Depth 6	25	4.3	8 Counterbore depth 4.4	M5 Through	99	10	M5 Through	19	52
ø20	20	10	46	46	6 +0.07 +0.02 Depth 6	M5	1	6 +0.07 +0.02 Depth 6	28	5.2	9.5 Counterbore Depth 5.4	M5 Through	108	12	M5 Through	24	60
ø25	22	12	44	44	6 +0.07 +0.02 Depth 6	M5	1	6 +0.07 +0.02 Depth 6	34	6.3	11 Counterbore Depth 6.5	M6 Through	108	14	M6 Through	30	70
ø32	22	12	56	56	6 +0.07 +0.02 Depth 6	Rc 1/8	1	6 +0.07 +0.02 Depth 6	44	6.3	11 Counterbore Depth 6.5	M6 Through	133	16	M6 Through	36	94

Code																
Bore size (mm)	Q	R	S	T	WW	X	AX	BX	CX	DX	EX	FX	A1	A2	A3	A4
ø6	29	36	3	13	M4 Depth 5	85	20	21	20	7	47	7	15	10	M3 Depth 4	-
ø10	36	44	3	15	M5 Depth 6	110.5	24	34.5	24	8	65.5	9	15	20	M3 Depth 3.5	-
ø16	45	58	4	21	M5 Depth 6	131	24	51	24	8	83	8	20	25	M4 Depth 4	-
ø20	50	62	5	27	M6 Depth 8	148	24	60	24	9	90	9	20	30	M4 Depth 4	13
ø25	60	72	6	33	M8 Depth 8	152	24	60	24	9	90	9	20	30	M5 Depth 6	18
ø32	75	96	6	38	M8 Depth 8	177	24	85	24	9	115	9	20	40	M5 Depth 8	24

*1: If the surface with the counterbore (JJ) is used as the mounting surface for this cylinder, the cylinder may tilt due to the step. In such cases, use the port position change or port position 180° change option (O) so that the surface with the counterbore is not the mounting surface.

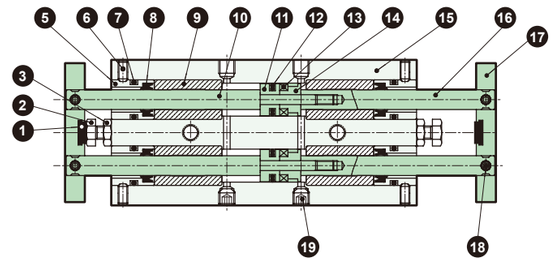
***2: For dimensions with each switch, refer to P. 700, 701.**

Internal Structure Diagram/Material

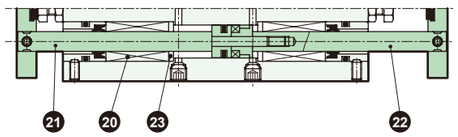
● Double rod type

STR2-$_{MB}$D

ø6, ø10

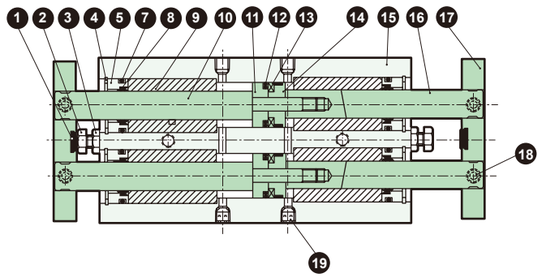


Plain bearing (M)

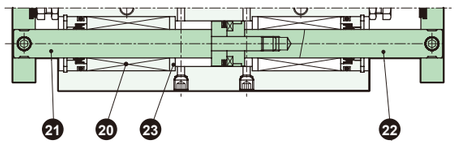


Rolling bearing (B)

ø16, ø32



Plain bearing (M)



Rolling bearing (B)

Part No.	Part Name	Material	Remarks
1	Cushion rubber (H)	Urethane Rubber	
2	Hexagon bolt	Stainless Steel	
3	Hexagon Nut	Stainless Steel	
4	C-ring for hole	Stainless Steel	
5	Housing	ø6, ø10: Stainless steel ø16 to ø32: Aluminum alloy	ø16 to ø32: Chromate
6	Hexagon socket set screw	Stainless Steel	ø6, ø10 only
7	O-ring	Nitrile rubber	
8	Rod Packing	Nitrile Rubber	
9	Bushing	Aluminum Alloy	
10	Piston rod (A)	ø6 to ø20: Stainless steel ø25, ø32: Steel	ø16 to ø32: Industrial Hard Chrome Plating
11	Piston	Aluminum Alloy	Chromate
12	Piston Packing	Nitrile Rubber	

Part No.	Part Name	Material	Remarks
13	Magnet	Plastic	
14	Spacer	Aluminum alloy	Chromate
15	Cylinder Body	Aluminum Alloy	Hard Anodized
16	Piston rod (B)	ø6 to ø20: Stainless steel ø25, ø32: Steel	ø16 to ø32: Industrial Hard Chrome Plating
17	End plate	Aluminum Alloy	Alumite
18	Hexagon socket head set screw	Stainless Steel	
19	Hexagon socket head set screw	Stainless Steel	
20	Bearing		
21	Piston rod (A)	Steel	Industrial Hard Chrome Plating
22	Piston rod (B)	Steel	Industrial Hard Chrome Plating
23	Spacer	Aluminum alloy	Chromate

Consumable Parts List

STR2-$^{M}_{B}$D

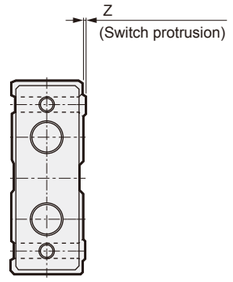
Bore size (mm)	Kit Number	Consumable Part No.
ø6	STR2-D-6K	1 7 8 12
ø10	STR2-D-10K	
ø16	STR2-D-16K	
ø20	STR2-D-20K	
ø25	STR2-D-25K	
ø32	STR2-D-32K	

*Please specify the kit number when ordering.

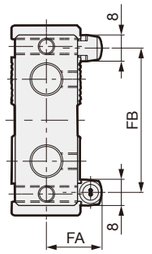
STR2 Series Switch External Dimensions Diagram

● K0H/V, K5H/V, K2H/V, K3H/V, K2YH/V, K3YH/V

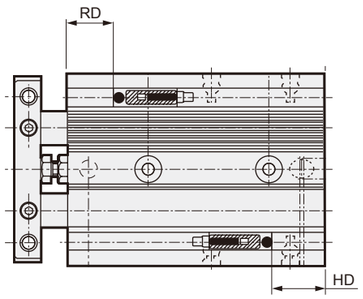
• STR2-(M/B) Standard, -R (Rear piping), O, Q-R, Q-H



[In case of K0H/V, K5H/V, K2H/V, K3H/V]



[In case of K2YH/V, K3YH/V]



	STR2-(M/B) Standard, STR2-(M/B) O							STR2-(M/B)-R (Rear piping)						
Code	K0, K5, K2, K3			K2Y, K3Y				K0, K5, K2, K3			K2Y, K3Y			
Bore size (mm)	Z	RD	HD	FA	FB	RD	HD	Z	RD	HD	FA	FB	RD	HD
ø6	1.0	21 *1	3.5 *1	13.5	24	20	2.5	1.0	21 *1	13.5 *1	13.5	24	20	12.5
ø10	1.0	33 *1	2.5 *1	14.5	34	32	1	1.0	33 *1	12.5 *1	14.5	34	32	11
ø16	0.5	39.5	7	17	44	38.5	5.5	0.5	39.5	17	17	44	38.5	15.5
ø20	0.5	45	10.5	20	49	44	9.5	0.5	45	20.5	20	49	44	19.5
ø25	0.5	43.5	11.5	23	58	42.5	10.5	0.5	43.5	21.5	23	58	42.5	20.5
ø32	0.5	55.5	15.5	25.5	71	54.5	14.5	0.5	55.5	25.5	25.5	71	54.5	24.5

	STR2-(M/B)-Q-H							STR2-(M/B)-Q-R						
Code	K0, K5, K2, K3			K2Y, K3Y				K0, K5, K2, K3			K2Y, K3Y			
Bore size (mm)	Z	RD	HD	FA	FB	RD	HD	Z	RD	HD	FA	FB	RD	HD
ø16	0.5	39.5	37	17	44	38.5	35.5	0.5	69.5	7	17	44	68.5	5.5
ø20	0.5	45	40.5	20	49	44	39.5	0.5	75	10.5	20	49	74	9.5
ø25	0.5	43.5	41.5	23	58	42.5	40.5	0.5	73.5	11.5	23	58	72.5	10.5
ø32	0.5	55.5	45.5	25.5	71	54.5	44.5	0.5	85.5	15.5	25.5	71	84.5	14.5

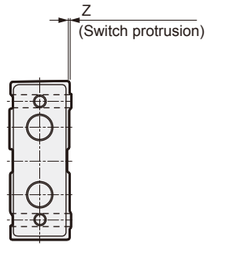
*1: For ø6 and ø10, reed switches K0 and K5 cannot be selected.

*2: For switch mountability, refer to the Model No.display method for each variation.

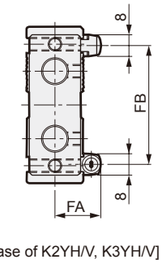
STR2 Series Switch External Dimensions Diagram

●K0H/V, K5H/V, K2H/V, K3H/V, K2YH/V, K3YH/V

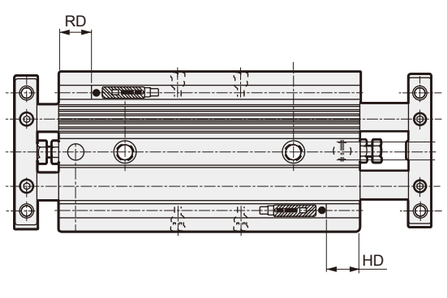
• STR2-(M/B) D



[In case of K0H/V, K5H/V, K2H/V, K3H/V]



[In case of K2YH/V, K3YH/V]



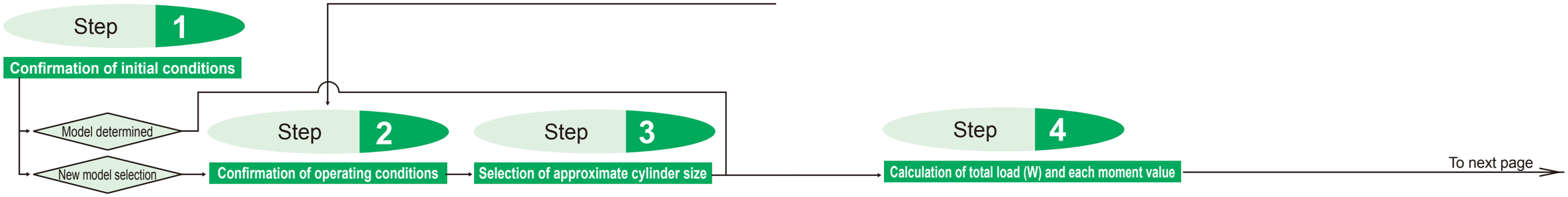
	STR2-(M/B) D						
Code	K0, K5, K2, K3			K2Y, K3Y			
Bore size (mm)	Z	RD	HD	FA	FB	RD	HD
ø6	1.0	20.5 *1	21 *1	13.5	24	20	19.5
ø10	1.0	30.5 *1	32.5 *1	14.5	34	31	29
ø16	0.5	39	40.5	17	44	39	38
ø20	0.5	43	45	20	49	44	42
ø25	0.5	43.5	44.5	23	58	43.5	42.5
ø32	0.5	55.5	57.5	25.5	71	56.5	54.5

*1: For ø6 and ø10, reed switches K0 and K5 cannot be selected.

*2: For switch mountability, refer to the Model No.display method for each variation.

Model selection guide

Since the selection conditions are different from general air cylinders, please check the suitability using the selection guide.



Guided
STM
STG
STS/STL
STR2
UCA2
Cylinder Switch
Ending

Step 2 Confirmation of operating conditions

1. Operating pressure P (MPa)
2. Total load W (N)
   [Total load]
   W = (Load) + (Jig load) + (Value for weight of the movable part: Fa). The weight of the movable part calculation formula is as shown in Table 1.

Table 1 Weight of movable part calculation formula

Tube	Fa: Weight of the movable part (N)
	STR2
ø6	0.16+0.002ST
ø10	0.38+0.004ST
ø16	1.08+0.013ST
ø20	1.66+0.013ST
ø25	2.82+0.025ST
ø32	4.33+0.025ST

3. Mounting direction
   [Operating method]
   Horizontal, Vertical - Ascending, Vertical - Descending
4. Stroke ST (mm)
5. Operating time t (s)
6. Operating speed V (mm/s)
   Calculation formula for average operating speed Va of cylinder
   Va=ST /t (mm/s)

Step 3 Selection of approximate cylinder size

● Cylinder size (I.D.) calculation formula

$$F=\pi/4 \times D^2 \times P$$

$$\therefore D=\sqrt{4F/\pi P}$$

D: Cylinder inner diameter (mm)
P: Operating Pressure (MPa)
F: Cylinder theoretical thrust (N)

● When obtaining from the theoretical thrust table
Approximate required thrust ≥ Load x 2
(x2 of Load x 2 is when the load factor is about 50% as a safety factor)

[Example] Operating pressure 0.5 (MPa)
Load 25 (N)
Required thrust is 25 (N) x 2=50 (N)
From Table 2, if you select a tube inner diameter with a theoretical thrust of 50N or more at an operating pressure of 0.5 mPa, it will be ø10 or more.
D=ø10

[Cylinder theoretical thrust]

Table 2 Cylinder theoretical thrust table

Theoretical Thrust Table Unit: N

Bore size (mm)	Operating Direction	Operating Pressure MPa 0.1	0.15	0.2
ø6	Push	-	-	11.3
	Pull	-	-	6.28
ø10	Push	-	-	31.4
	Pull	-	-	20.1
ø16	Push	40.2	60.3	80.4
	Pull	24.5	36.8	49.0
ø20	Push	62.8	94.2	1.26 x 10²
	Pull	40.2	60.3	80.4
ø25	Push	98.2	1.47 x 10²	1.96 x 10²
	Pull	67.4	1.01 x 10²	1.35 x 10²
ø32	Push	1.61 x 10²	2.41 x 10²	3.22 x 10²
	Pull	1.21 x 10²	1.81 x 10²	2.41 x 10²

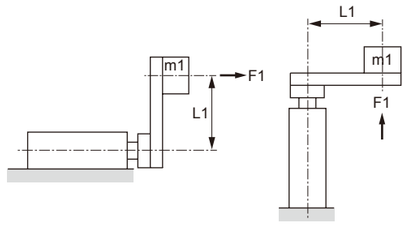
* For the theoretical thrust table, please refer to P. 670.

Step 4 Calculation of total load (W) and each moment value

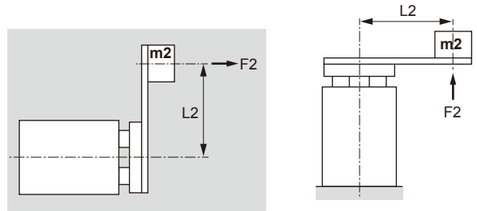
● Static load depending on the cylinder mounting state of the load
Calculate (W_0), moment (M).
W_0 = (Load) + (Jig load) (N)
$M_1 = F_1 \times L_1$ (N·m)
$M_2 = F_2 \times L_2$ (N·m)
$M_3 = F_3 \times L_3$ (N·m)
Use Figure 2 for the values of F_1, F_2, F_3

Figure 2 Calculation formula for each moment
Calculate each moment from the load, inertial force coefficient, and eccentric distance.

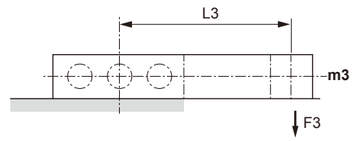
[Bending moment]
$M_1 = F_1 \times L_1 = 10 \times m_1 \times G \times L_1$



[Lateral bending moment]
$M_2 = F_2 \times L_2 = 10 \times m_2 \times G \times L_2$

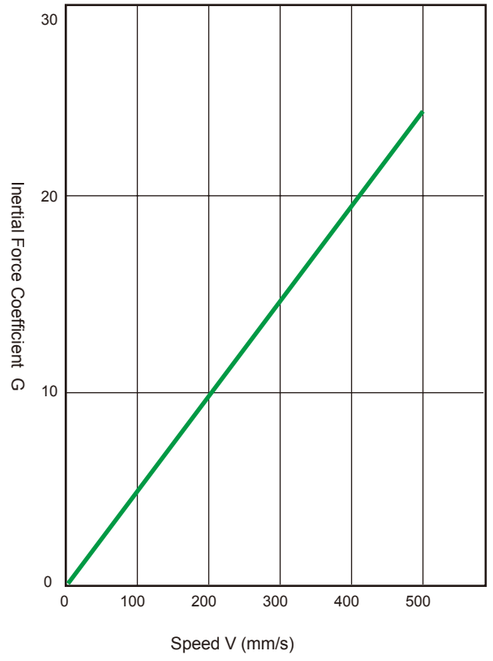


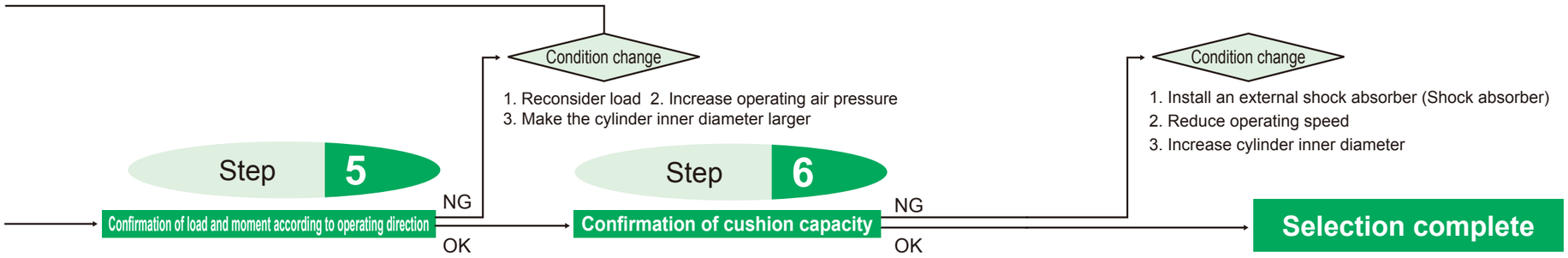
[Torsional moment]
$M_3 = F_3 \times L_3 = 10 \times m_3 \times L_3$



m_1: m_2: m_3: Load weight (kg)
L_1: L_2: L_3: Eccentric distance (m)
G: Inertial force coefficient

Figure 3 Trend of inertial force coefficient of guided cylinder





Step 5 Confirmation of load and moment according to operating direction

5-1 Confirmation of load

❶ During horizontal operation

Static load should be less than or equal to the allowable load value

Torsional moment Static load Wo — Value calculated in Step 4

Allowable lateral load Wmax — Select from Table 3 or the graph depending on the stroke

(For intermediate strokes, select the longer standard stroke)

Wo≤Wmax

Table 3 Allowable lateral load

● Plain bearing Unit: N

Model	Stroke (mm)			
	10	20	30	40
STR2-M-6	2.4	1.9	1.5	1.3
STR2-M-10	5.8	4.8	4.1	3.5
STR2-M-16	15.9	13.3	11.5	10.1
STR2-M-20	20.3	17.3	15.1	13.4
STR2-M-25	22.1	18.9	16.5	14.7
STR2-M-32	34.9	30.2	26.7	23.9

● Rolling bearing Unit: N

Model	Stroke (mm)			
	10	20	30	40
STR2-B-6	2.6	1.9	1.5	1.2
STR2-B-10	6.0	4.4	3.6	3.0
STR2-B-16	11.4	8.5	7.0	5.9
STR2-B-20	12.7	9.6	7.9	6.8
STR2-B-25	14.7	11.1	9.2	7.9
STR2-B-32	24.3	18.5	15.4	13.3

* For allowable lateral load, please refer to P. 706.
Also, for eccentric loads, please refer to the graphs on P. 707 and P. 708.

❷ During vertical operation

Total load should be a value considering the load factor for the theoretical thrust value

● Calculation of load factor

Total load W — Value calculated in Step 2

Theoretical thrust of cylinder F — Theoretical thrust table P. 670

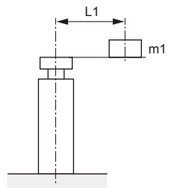
α=W/F x 100 (%)

● The load factor is determined considering the stability margin and life of the cylinder operating speed, and the usage conditions. For general use, the range in Table 4 is desirable.

Table 4 Appropriate range of load factor (Reference value)

Operating pressure (MPa)	Load factor (%)
0.1 to 0.3	α≤40
0.3 to 0.6	α≤50
0.6 to 1.0	α≤60

● During eccentric load, lateral load acts.
The acting lateral load should be less than or equal to the allowable lateral load in Table 3



$$\frac{m_1 \times L_1 \times 10}{L} \leq W_{max}$$

ST: Stroke (m)

Bore size	L	Bore size	L
ø6	0.022+ST	ø20	0.032+ST
ø10	0.027+ST	ø25	0.034+ST
ø16	0.026+ST	ø32	0.036+ST

5-2 Confirmation of moment

❶ Divide the bending moment and lateral bending moment by the value in Table 5, obtain the moment ratio, and the total value of the moment ratio should be 1.0 or less

● Calculation of moment ratio

Bending moment M_1 } In Step 4

Radial moment M_2 } Calculated value

$M_1 / M_{1\,max} + M_2 / M_{2\,max} \leq 1.0$

Table 5 Allowable moment value (N·m)

Bore size	Allowable bending moment M_{1max} / M_{2max}
ø6	3.6
ø10	3.6
ø16	9.2
ø20	9.2
ø25	74
ø32	74

❷ Torsional moment should be less than or equal to the allowable rotational torque

Torsional moment M3 Value calculated in Step 4

Allowable rotational torque

M3max Select from Table 6 according to stroke

(For intermediate strokes, select the longer standard stroke)

$M_3 \leq M_{3\,max}$

Table 6 Allowable rotational torque

● Plain bearing (N·m)

Model	Stroke (mm)			
	10	20	30	40
STR2-M-6	0.008	0.006	0.005	0.004
STR2-M-10	0.029	0.024	0.020	0.017
STR2-M-16	0.099	0.083	0.071	0.063
STR2-M-20	0.142	0.121	0.105	0.093
STR2-M-25	0.187	0.160	0.140	0.125
STR2-M-32	0.383	0.332	0.293	0.262

● Rolling bearing (N·m)

Model	Stroke (mm)			
	10	20	30	40
STR2-B-6	0.009	0.006	0.005	0.004
STR2-B-10	0.030	0.022	0.018	0.015
STR2-B-16	0.071	0.053	0.043	0.036
STR2-B-20	0.088	0.067	0.055	0.047
STR2-B-25	0.125	0.094	0.078	0.067
STR2-B-32	0.267	0.203	0.169	0.146

* For allowable rotational torque, please refer to P. 709.

Step 6 CONFIRMATION OF CUSHION CAPACITY

Check if the kinetic energy of the load actually used can be absorbed by the cushion capacity of the cylinder itself.

● Use the values in Table 7 for the allowable absorption energy (E_1) of the cylinder.

● Calculation formula for piston kinetic energy (E_2)

$$E_2 = 1/2 \times W \times V^2 \times \frac{1}{10}\ (J)$$

W: Total applied load (N) — In Step 2Calculated value

V: Piston impact speed into cushion (m/s)

V=ST/t x (1 + 1.5 x α/100)

ST : Stroke (m)

t : Operating Time (s)

α : Load factor (%)

Allowable absorption energy of cylinder

● The value of kinetic energy absorption capacity by the cylinder cushion mechanism varies depending on the cylinder inner diameter. Compare guided cylinders with the values in Table 7.

Table 7 STR2 Allowable absorption energy (E_1)

Bore size	Allowable absorption energy (J)	
	Rubber Cushion	
	Push	Pull
ø6	0.008	0.059
ø10	0.061	0.083
ø16	0.181	0.083
ø20	0.303	0.127
ø25	0.68	0.237
ø32	1.3	0.311

$E_1 > E_2$

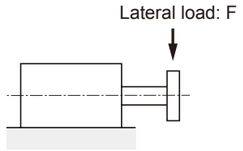
(Allowable absorption energy) > (Piston kinetic energy)

lection comple

$E_1 < E_2$

(Allowable absorption energy) < (Piston kinetic energy)

Allowable Lateral Load



● Plain bearing (N)

Model	Stroke (mm)									
	10	20	30	40	50	60	70	80	90	100
STR2-M-6	2.4	1.9	1.5	1.3	1.1	-	-	-	-	-
STR2-M-10	5.8	4.8	4.1	3.5	3.1	-	-	-	-	-
STR2-M-16	15.9	13.3	11.5	10.1	8.9	8.1	7.3	6.7	6.2	5.8
STR2-M-20	20.3	17.3	15.1	13.4	12.1	10.9	10.0	9.2	8.5	7.9
STR2-M-25	22.1	18.9	16.5	14.7	13.1	11.9	10.9	10.1	9.3	8.7
STR2-M-32	34.9	30.2	26.7	23.9	21.6	19.7	18.1	16.8	15.7	14.7

● Rolling bearing (N)

Model	Stroke (mm)									
	10	20	30	40	50	60	70	80	90	100
STR2-B-6	2.6	1.9	1.5	1.2	1.0	-	-	-	-	-
STR2-B-10	6.0	4.4	3.6	3.0	2.6	-	-	-	-	-
STR2-B-16	11.4	8.5	7.0	5.9	5.1	4.5	4.0	3.7	3.3	3.0
STR2-B-20	12.7	9.6	7.9	6.8	5.9	5.3	4.7	4.3	3.9	3.6
STR2-B-25	14.7	11.1	9.2	7.9	6.9	6.1	5.5	5.0	4.6	4.2
STR2-B-32	24.3	18.5	15.4	13.3	11.7	10.5	9.5	8.7	8.0	7.4

STR2-D Allowable lateral load

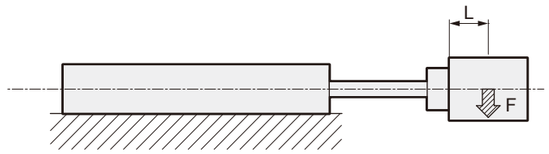
● Plain bearing (Double rod type) (N)

Model	Stroke (mm)									
	10	20	30	40	50	60	70	80	90	100
STR2-MD-6	3.3	3.2	3.1	3.0	2.9	-	-	-	-	-
STR2-MD-10	8.0	7.6	7.3	7.1	7.0	-	-	-	-	-
STR2-MD-16	21.7	20.5	19.7	19.1	18.7	18.3	18.0	17.8	17.6	17.5
STR2-MD-20	26.7	25.3	24.3	23.7	23.1	22.7	22.4	22.1	21.9	21.7
STR2-MD-25	29.3	27.8	26.7	26.0	25.4	24.9	24.6	24.3	24.0	23.8
STR2-MD-32	45.2	42.9	41.3	40.1	39.1	38.3	37.7	37.2	36.7	36.3

● Rolling bearing (Double rod type) (N)

Model	Stroke (mm)									
	10	20	30	40	50	60	70	80	90	100
STR2-BD-6	3.7	3.0	2.7	2.5	2.3	-	-	-	-	-
STR2-BD-10	8.6	6.9	6.2	5.7	5.3	-	-	-	-	-
STR2-BD-16	16.6	13.3	11.7	10.7	10.0	9.4	9.0	8.6	8.3	8.0
STR2-BD-20	17.8	14.3	12.6	11.5	10.8	10.2	9.8	9.3	9.0	8.7
STR2-BD-25	20.8	16.7	14.7	13.5	12.6	11.9	11.4	10.9	10.5	10.2
STR2-BD-32	34.5	27.6	24.2	22.1	20.6	19.5	18.5	17.8	17.1	16.6

Allowable Lateral Load

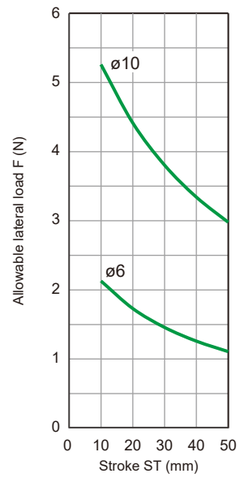


F: Lateral load (kg)
L: Load's center of gravity position (mm)

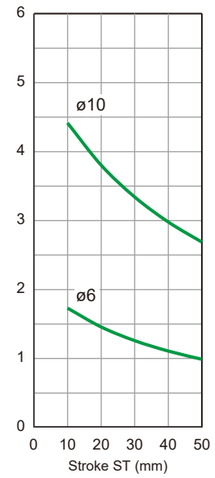
Basic type Plain bearing

STR2-M-6/10

● When L=5

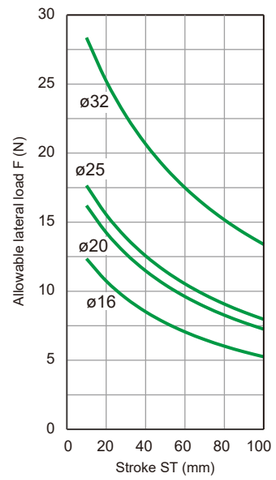


● When L=15

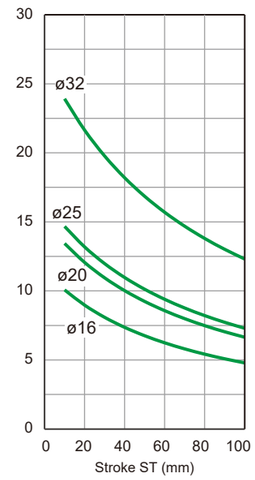


STR2-M-16/20/25/32

● When L=15



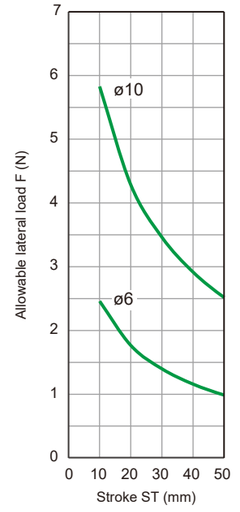
● When L=30



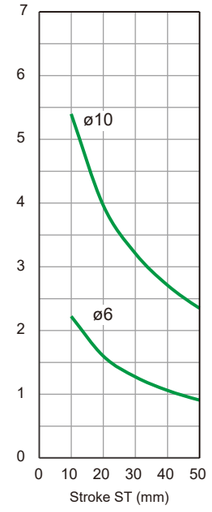
Basic type Rolling bearing

STR2-B-6/10

● When L=5

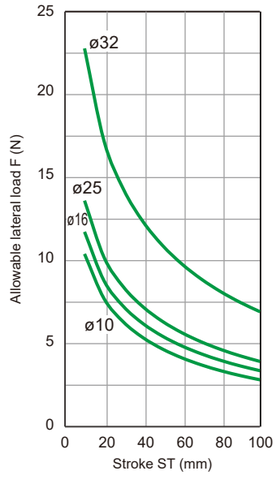


● When L=15

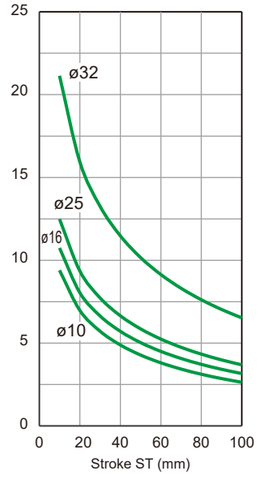


STR2-B-16/20/25/32

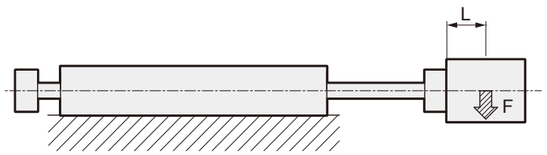
● When L=15



● When L=30



Allowable Lateral Load

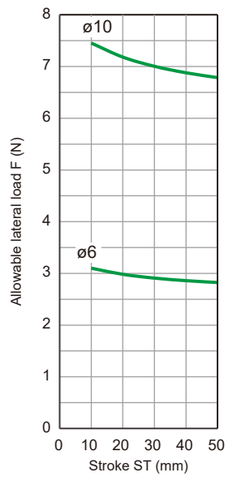


F: Lateral load (kg)
L: Load's center of gravity position (mm)

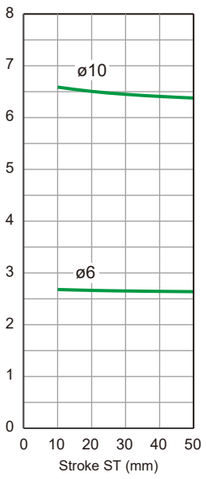
Double rod type Plain bearing

STR2-MD-6/10

● When L=5

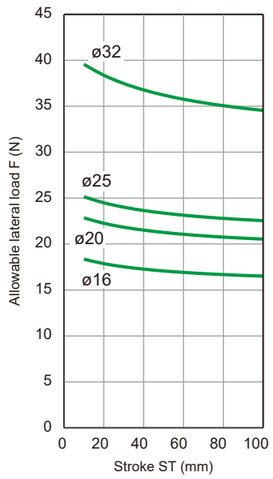


● When L=15

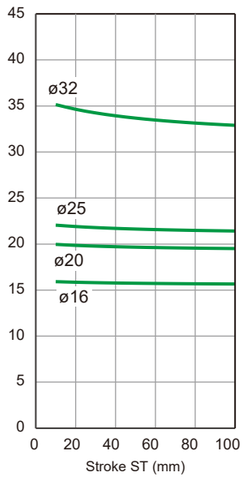


STR2-MD-16/20/25/32

● When L=15



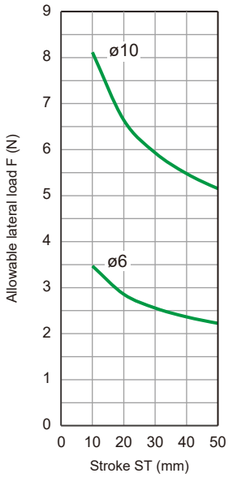
● When L=30



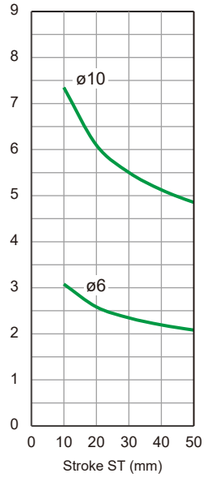
Double rod type Rolling bearing

STR2-BD-6/10

● When L=5

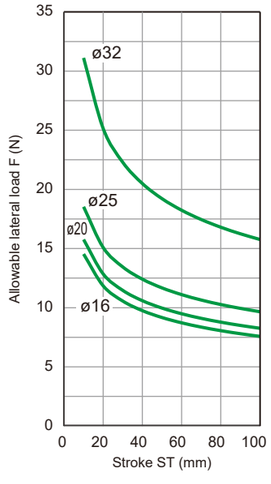


● When L=15

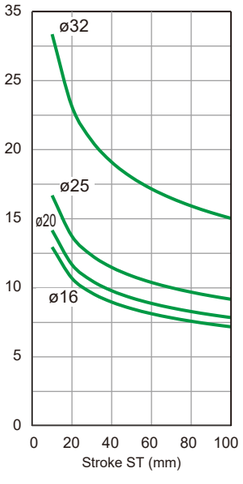


STR2-BD-16/20/25/32

● When L=15

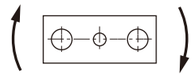


● When L=30



Allowable rotational torque

Torque: T (N·m)



● Plain bearing (N·m)

Model	Stroke (mm)									
	10	20	30	40	50	60	70	80	90	100
STR2-M-6	0.008	0.006	0.005	0.004	0.003	-	-	-	-	-
STR2-M-10	0.029	0.024	0.020	0.017	0.015	-	-	-	-	-
STR2-M-16	0.099	0.083	0.071	0.063	0.055	0.050	0.045	0.041	0.038	0.036
STR2-M-20	0.142	0.121	0.105	0.093	0.084	0.076	0.070	0.064	0.059	0.055
STR2-M-25	0.187	0.160	0.140	0.125	0.111	0.101	0.092	0.085	0.079	0.074
STR2-M-32	0.383	0.332	0.293	0.262	0.237	0.216	0.199	0.184	0.172	0.161

● Rolling bearing (N·m)

Model	Stroke (mm)									
	10	20	30	40	50	60	70	80	90	100
STR2-B-6	0.009	0.006	0.005	0.004	0.003	-	-	-	-	-
STR2-B-10	0.030	0.022	0.018	0.015	0.013	-	-	-	-	-
STR2-B-16	0.071	0.053	0.043	0.036	0.031	0.028	0.025	0.023	0.020	0.018
STR2-B-20	0.088	0.067	0.055	0.047	0.041	0.037	0.032	0.030	0.027	0.025
STR2-B-25	0.125	0.094	0.078	0.067	0.058	0.051	0.046	0.042	0.039	0.035
STR2-B-32	0.267	0.203	0.169	0.146	0.128	0.115	0.104	0.095	0.088	0.081

STR2-D Allowable rotational torque

● Plain bearing (Double rod type) (N·m)

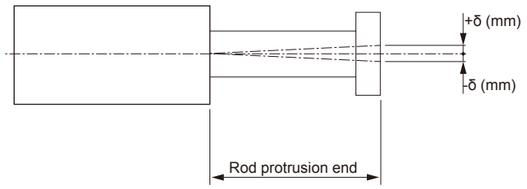
Model	Stroke (mm)									
	10	20	30	40	50	60	70	80	90	100
STR2-MD-6	0.011	0.011	0.010	0.010	0.010	-	-	-	-	-
STR2-MD-10	0.040	0.038	0.036	0.035	0.035	-	-	-	-	-
STR2-MD-16	0.135	0.128	0.123	0.119	0.116	0.114	0.112	0.111	0.110	0.109
STR2-MD-20	0.186	0.177	0.170	0.165	0.161	0.158	0.156	0.154	0.153	0.151
STR2-MD-25	0.249	0.236	0.227	0.221	0.215	0.211	0.209	0.206	0.204	0.202
STR2-MD-32	0.497	0.471	0.454	0.441	0.430	0.421	0.414	0.409	0.403	0.399

● Rolling bearing (Double rod type) (N·m)

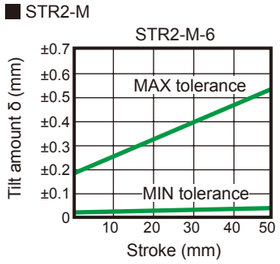
Model	Stroke (mm)									
	10	20	30	40	50	60	70	80	90	100
STR2-BD-6	0.013	0.010	0.009	0.008	0.008	-	-	-	-	-
STR2-BD-10	0.043	0.034	0.031	0.028	0.026	-	-	-	-	-
STR2-BD-16	0.103	0.083	0.073	0.066	0.062	0.055	0.056	0.053	0.051	0.050
STR2-BD-20	0.124	0.100	0.088	0.080	0.075	0.071	0.068	0.065	0.063	0.060
STR2-BD-25	0.176	0.142	0.125	0.114	0.107	0.101	0.096	0.092	0.089	0.086
STR2-BD-32	0.379	0.303	0.266	0.243	0.226	0.214	0.203	0.195	0.188	0.182

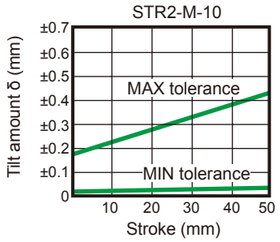
Runout accuracy
(Reference value)

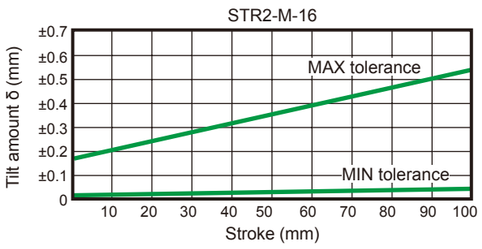
The tilt amount generated at the tip of the end plate when no load is applied is based on the values in the graph below.
(Excluding piston rod deflection amount)

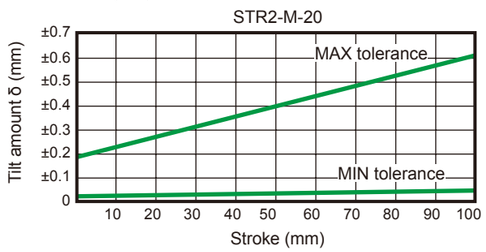


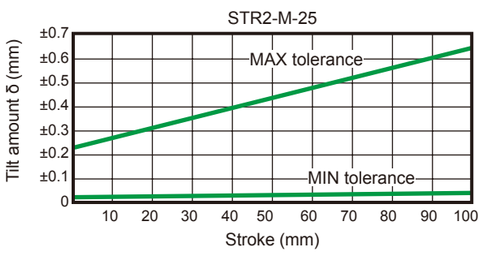
■ STR2-M

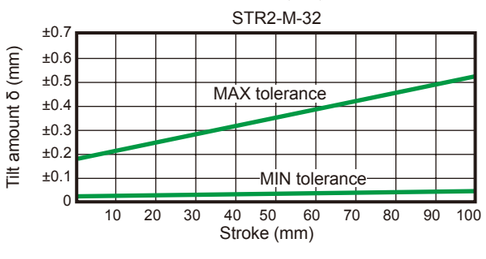




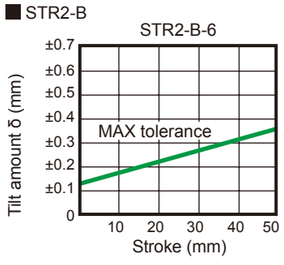


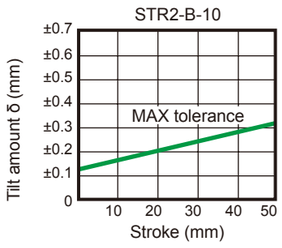


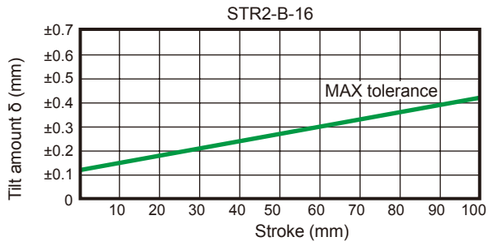


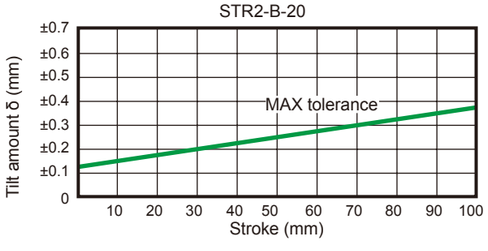


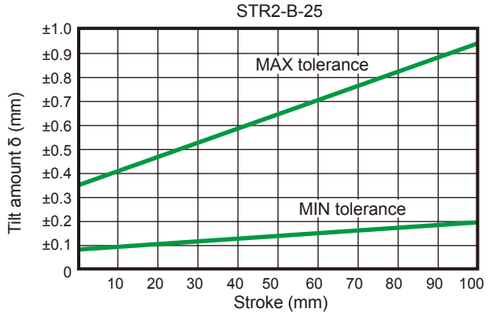
■ STR2-B

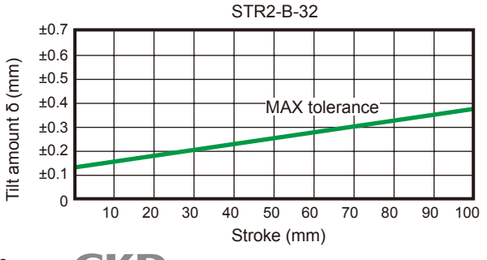




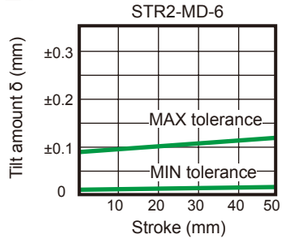


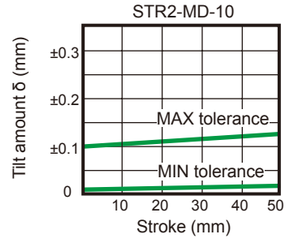


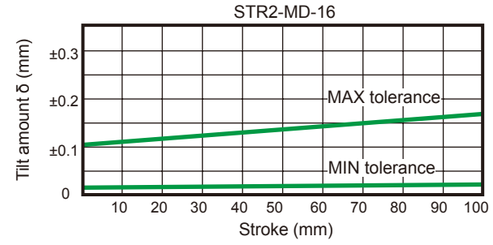


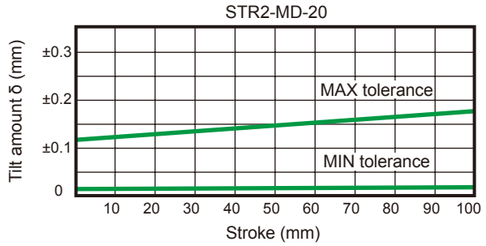


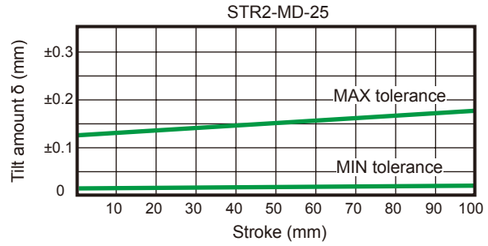
■ STR2-MD

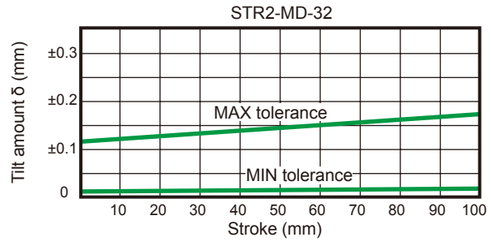




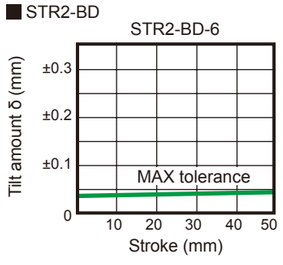


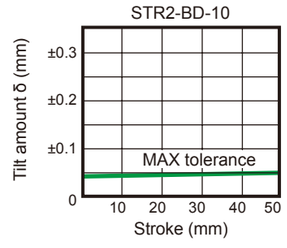


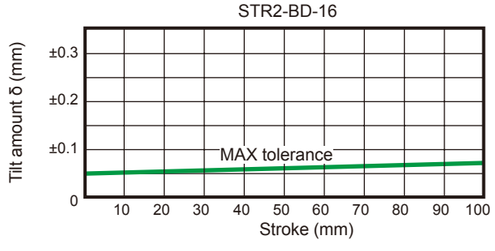


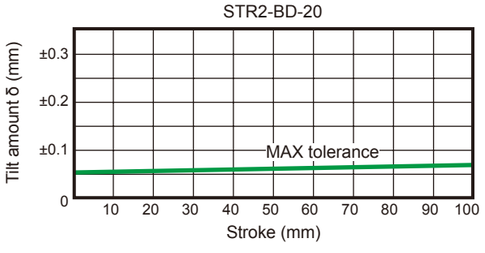


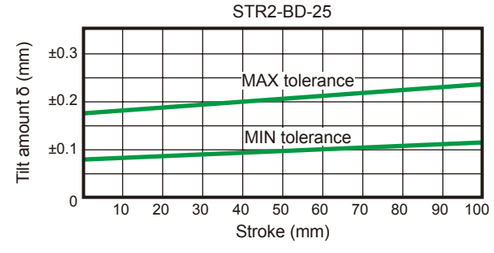
■ STR2-BD

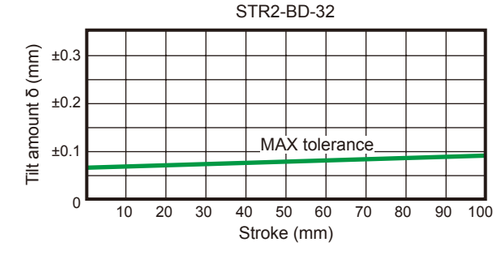












STR2 Series
Technical data ❸ Runout accuracy
Guided
STM
STG
STS/ STL
STR2
UCA2
Cylinder Switch
Ending

To Use This Product Safely

Be sure to read this before use.

For general cylinder information, see Opening Section P. 41, and for cylinder switches, see P. 808.

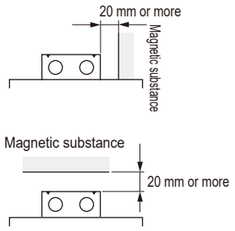
Individual Precautions: Twin Rod Cylinder STR2 series

During Design / Selection

1. Common; With switch

Caution

■ If there is a magnetic material such as an iron plate near the cylinder switch, it will cause the cylinder switch to malfunction. Keep a distance of 20 mm or more from the cylinder surface. (Common to all bore sizes)

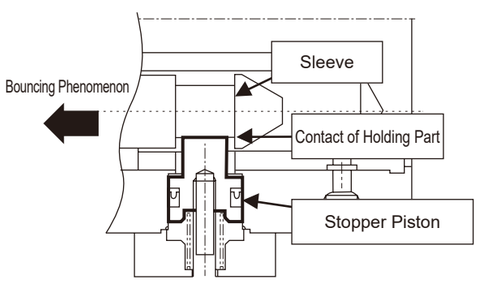


2. Drop prevention type STR2-Q

Warning

■ In the locked state, if pressure is supplied to the port on the side with the lock mechanism from a state where both side ports are not pressurized, the lock may not be released, or the lock may suddenly be released and the piston rod may fly out, which is very dangerous.
When releasing the lock mechanism, be sure to supply pressure to the opposite side port and release it from a state where no load is applied to the lock mechanism.

■ When using a quick exhaust valve to increase the lowering speed, the cylinder may start moving before the lock mechanism operates, and normal release may not be possible.
Do not use quick exhaust valves with fall prevention cylinders. When stopping with external shock absorbing equipment (shock absorbers, etc.), adjust so that there is no bounce. If it bounces, the sleeve and stopper piston will make impact contact, leading to damage to the lock mechanism. Also, please perform periodic inspections once or twice a year to check for damage to the holding part due to this phenomenon.



■ Do not use 3-position valves.
Do not use in combination with 3-position (especially closed center metal seal type) valves. If pressure is sealed in the piston chamber with the lock mechanism, the lock will not engage. Also, even if locked once, air leaked from the valve may enter the cylinder, and the lock may be released over time.

■ During equipment maintenance, please take separate measures for safety so that the load does not fall due to its own weight.

Caution

■ Keep the cylinder load factor at 50% or less.
If the load factor is high, the lock may not be released, or it may lead to damage to the lock part.

■ If back pressure is applied to the lock mechanism, the lock may be released, so use a single solenoid valve or a manifold with individual exhaust.

■ Do not use multiple cylinders synchronized.
● Do not use a method where two or more fall prevention type cylinders are synchronized to move one workpiece. The lock of one of the cylinders may become unremovable.

3. Low speed type STR2-F

Caution

■ Use without lubrication.
Lubrication may change characteristics.

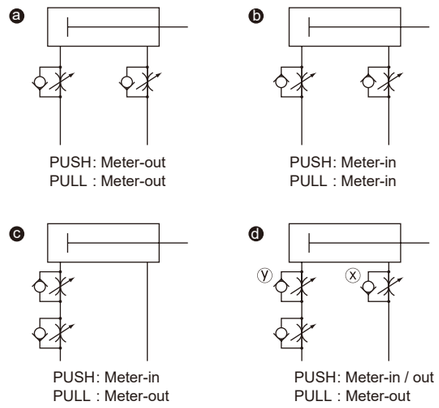
■ Install the speed controller near the cylinder.
If installed far from the cylinder, the speed will become unstable.
Use SC-M3/M5, SC3W, SCD-M3/M5, SC3WU series speed controllers.

■ Generally, the higher the air pressure and the lower the load factor, the more stable the speed.
Use with a load factor of 50% or less.

■ Do not apply lateral load to the cylinder.
Also, install the sliding guide without twisting.
Operation will become unstable if there are fluctuations in load or resistance.
Guides with a large difference between static friction and dynamic friction will result in unstable operation.

■ Avoid use in places with vibration.
Operation becomes unstable due to the influence of vibration.

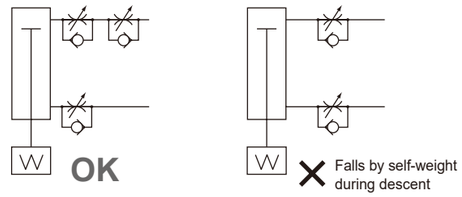
■ Speed control with a meter-out circuit provides stability.
When driving a single-rod cylinder at creep speed in the PUSH direction, if the load resistance is small, a flying-out phenomenon may occur at the start of operation. As countermeasures, use circuits ⓑ, ⓒ or ⓓ.
In addition, the ⓓ circuit is the most stable.



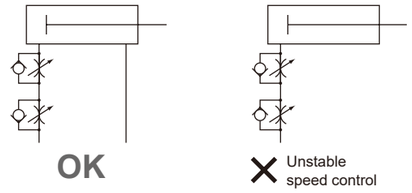
ⓓ Speed adjustment method for PUSH operation of the circuit:
1. Speed setting with x speed controller
2. Throttle with y speed controller until projection stops.
3. Reconfirmation of speed

Note1) Comparing ⓑ ⓒ ⓓ, the ⓓ circuit is the most stable in operation.

Note2) For vertical mounting, it will fall by its own weight in a meter-in circuit, so combine it with a meter-out circuit.



Note3) For series connection of speed controllers, use the circuit shown in the figure below.



(Guideline for lurching occurrence)
Lurching occurs in the following cases:
• Thrust > Resistance
* Resistance: Thrust due to residual pressure on exhaust side (For creep speed type, + intake pressure = residual pressure) [For horizontal use: Frictional force due to load / For vertical use: Dead weight of the load

■ Make adjustments such as alignment so that no lateral load is applied to the cylinder.
Also, adjust and install so that there is no twisting with respect to the sliding guide.
● Operation will become unstable if there are fluctuations in load or resistance.
● Guides with a large difference between static friction and dynamic friction will result in unstable operation.

During Use

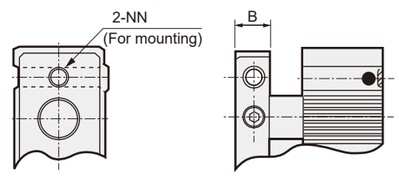
1. Common

Caution

■ The Twin Rod Cylinder has two piping ports for each operating direction. Change the plug position according to the usage conditions. After changing, please confirm that there is no air leakage from the plug part.

■ To prevent an increase in sliding resistance, do not make dents or scratches on the tube body mounting surface and end plate surface that may impair flatness. The flatness of the mating side included to the end plate should be 0.05 mm or less.
If it is difficult to ensure the above flatness, insert shims (customer prepared), etc. between the end plate and the workpiece to adjust the gap. This may help prevent an increase in sliding resistance.

■ When using the screw hole NN on the end plate, ensure that the bolt length is equivalent to dimension B. This will cause damage to the end plate.



Bore size (mm)	B dimension
ø6	6
ø10	6
ø16	8
ø20	10
ø25	12
ø32	12

■ When mounting the main body with through bolts, tighten with the tightening torque shown in the table below.

Bore size (mm)	Tightening torque
ø6	0.6 to 1.0 N·m
ø10	1.4 to 2.4 N·m
ø16	
ø20	2.9 to 5.1 N·m
ø25	4.8 to 8.6 N·m
ø32	

■ A rubber cushion is incorporated as a cushion mechanism. The table below shows the kinetic energy that can be absorbed by the rubber cushion. If the energy exceeds this value, consider a separate shock absorber.

Tube I.D. (mm)	Allowable Absorption Energy J	
	PUSH	PULL
ø6	0.008	0.059
ø10	0.061	0.083
ø16	0.181	0.083
ø20	0.303	0.127
ø25	0.68	0.237
ø32	1.3	0.311

■ If the surface with the counterbore (JJ) is used as the mounting surface, the cylinder may tilt due to the step. In such cases, use the port position change or port position 180° change option (o) so that the surface with the counterbore is not the mounting surface.

■ Operating units with excessive inertia will cause damage to the cylinder body and malfunction, so be sure to use within the allowable absorption energy range.

■ Avoid use with the stroke adjustment bolt removed.

■ When using cylinders adjacent to each other, it will cause malfunction of the cylinder switch, so keep the following distance from the cylinder surface.

Adjacent conditions			Switch type	ø6	ø10	ø16	ø20	ø25	ø32
Cylinder 2 pieces in parallel	Horizontal placement	A	K2, K3	43	45	56	66	75	111
			K0, K5	40 *1	47 *1	62	81	85	111
		B	K2, K3	7	1	2	4	3	15
			K0, K5	4 *1	3 *1	8	19	12	15
	Vertical placement Mount switch on the adjacent cylinder side	A	K2, K3	28	27	36	47	47	58
			K0, K5	27 *1	26 *1	36	53	53	58
		B	K2, K3	15	12	15	20	14	20
			K0, K5	14 *1	11 *1	15	26	20	20
	Vertical placement Mount switch on the opposite side of the adjacent cylinder	A	K2, K3	19	16	22	28	34	39
			K0, K5	14 *1	16 *1	22	33	34	39
		B	K2, K3	6	1	1	1	1	1
			K0, K5	1 *1	1 *1	1	6	1	1
Cylinder 3 or more pieces in parallel	Horizontal placement	A	K2, K3	44	45	57	67	77	111
			K0, K5	41 *1	47 *1	64	83	86	111
		B	K2, K3	8	1	3	5	5	15
			K0, K5	5 *1	3 *1	10	21	14	15
	Vertical placement	A	K2, K3	33	30	40	51	49	58
			K0, K5	30 *1	28 *1	42	60	97	58
		B	K2, K3	20	15	19	24	16	20
			K0, K5	17 *1	13 *1	21	33	25	20

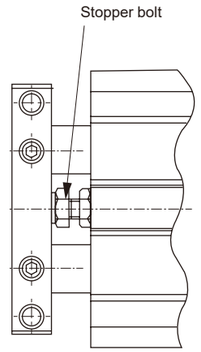
*1: Dimensions of STR2-M. Reed switches cannot be used with STR2-B-6, 10.

2. Drop prevention type STR2-Q

⚠ Caution

■ Since the lock mechanism works at the stroke end, if an external stopper is applied mid-stroke, the lock mechanism will not work, and there is a risk of falling. When setting the load, be sure to confirm that the lock mechanism is working before installing.

■ In the case of head side fall prevention, do not adjust or change the stopper bolt to adjust the retraction side stroke, as this will prevent the lock mechanism from working.



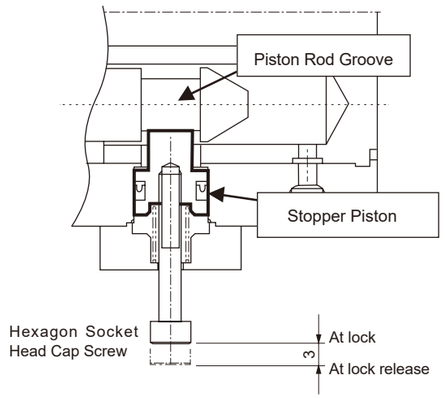
■ If the piping on the side with the lock mechanism is thin and long, or if the speed controller is far from the cylinder port, the exhaust speed may be slow and it may take time for the lock to engage, so please be careful. Also, clogging of the silencer included to the EXH. port of the solenoid valve will lead to similar results.

■ After manually operating the lock mechanism, return the lock mechanism to its original state. Also, do not perform manual operations other than during adjustment, as it is dangerous.

■ Release the lock when installing or adjusting the cylinder. Performing installation work, etc. while the lock is engaged may damage the lock part.

■ Use the speed controller with meter-out control.
- Lock may not be released with meter-in control.

■ Release method
- Screw a hexagon socket head cap screw (M3x20) into the stopper piston and pull the bolt with a force of 20N or more for 3 mm to move the stopper piston and release the lock. Also, when released, the built-in spring returns the stopper piston to its original position, and if it enters the piston rod groove, the cylinder will be locked.



For precautions regarding mounting, installation, adjustment, use, and maintenance, please see "Precautions for Use" in this catalog and the CKD Components Product website (https://www.ckd.co.jp/kiki/en/) → "Model No." → Instruction Manual

UCA2

Unit Cylinder

ø10, ø16, ø25, ø32

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● **Double acting, Single rod, Plain bearing type (UCA2)**	**724**
● **Double acting, Single rod, Rolling bearing type (UCA2-B)**	**734**
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UCA2 Series

Twin double rod structure for high precision and high thrust

Twin double rod structure with guide function provides high positional accuracy. Cylinder with built-in Shock absorber, suitable for simple robots. (ø10 to ø32)

No plate protrusion
Easy to make into a robot unit.

Built-in Shock absorber
Smooth stopping is possible due to the soft stop function.

Stroke adjustable
Stroke adjustment between standard strokes is possible as an option.

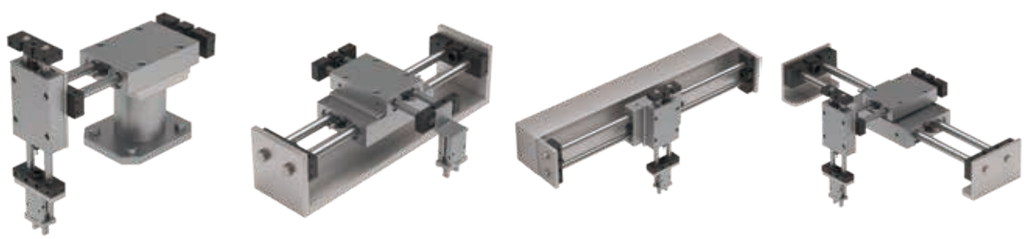
Compact / High thrust
Compact type with a slim design, yet can exert double the thrust due to parallel double pistons.

2 types of bearings
Selectable from 2 types: plain bearing and rolling bearing.

High-precision rotation stop
Parallel double pistons connected by end plates on both sides. Rotation stop is perfect and drives with high precision.

Application Example

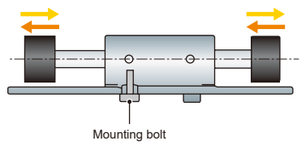
Various application examples of unit cylinders created by modular design



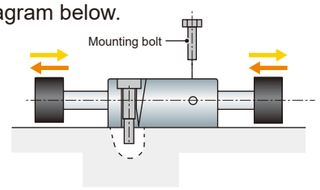
Selectable from two usage methods

Body fixing (Model name: UCA2-(B) -X)

There are two mounting methods as shown in the diagram below.



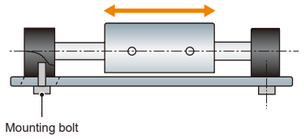
Fixing from the bottom



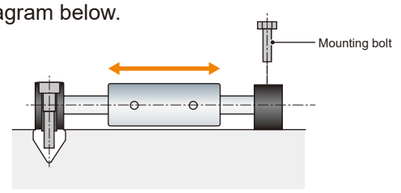
Fixing from the top

End plate fixing (Model name: UCA2-(B) -Y)

There are two mounting methods as shown in the diagram below.



Fixing from the bottom

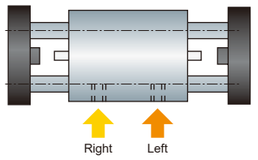


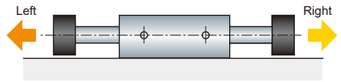
Fixing from the top

Selectable piping direction

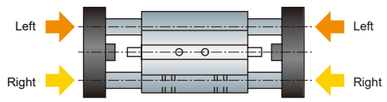
There are ports on both the body and end plate, and piping can be done to the fixed part with either fixing method.

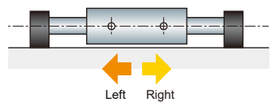
Body fixing (Model name: UCA2-(B) -X)





End plate fixing (Model name: UCA2-(B) -Y)





UCA2 Series product system

Model variations		Bore size (mm)	Standard stroke (mm)								Fixing method	
			25	50	75	100	125	150	175	200	Body fixing X	Plate fixing Y
Metal bush bearing with switch	UCA2 UCA2-L	ø10	●	●	●	●					●	●
		ø16, ø25, ø32	●	●	●	●	●	●	●	●	●	●
Ball bearing with switch	UCA2-B UCA2-BL	ø10	●	●	●	●					●	●
		ø16, ø25, ø32	●	●	●	●	●	●	●	●	●	●

Unit Cylinder
UCA2 Series

●: Standard, ◎: Option ▒: Not manufacturable

Variation	Model No. Circuit Diagram Symbol	Bore size (mm)	Standard Stroke (mm) 25	50	75	100	125	150	175	200	Min. Stroke	Max. Stroke	Fixing method: Body fixing X	Fixing method: Plate fixing Y	Stopper: Both sides adjustment stopper Standard Blank	Stopper: One side adjustment stopper Plate A side P1A	Stopper: One side adjustment stopper Plate B side P1B	Stopper: Both sides adjustment stopper P2	Switch	Page
Sleeve Bearing Type With Switch	UCA2 UCA2-L (With switch)	ø10	●	●	●	●	▒	▒	▒	▒	25	100	●	●	●	◎	◎	◎	◎	724
		ø16 / ø25 / ø32	●	●	●	●	●	●	●	●		200	●	●	●	◎	◎	◎		
Rolling bearing type with switch	UCA2-B UCA2-BL (With switch)	ø10	●	●	●	●	▒	▒	▒	▒	25	100	●	●	●	◎	◎	◎	◎	734
		ø16 / ø25 / ø32	●	●	●	●	●	●	●	●		200	●	●	●	◎	◎	◎		

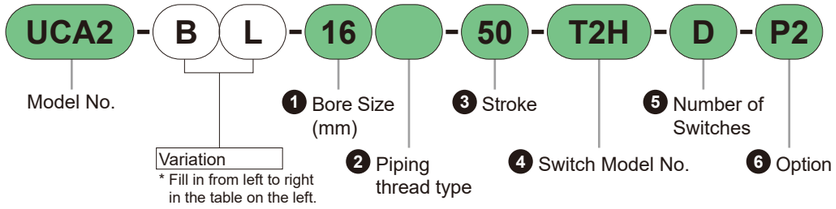
Combination Availability Table for Variations and Option Items

● Symbol: Standard
◎ Symbol: Option
○ Symbol: Custom Products
△ Symbol: Manufacturable depending on conditions (Please consult)
x Symbol: Not manufacturable

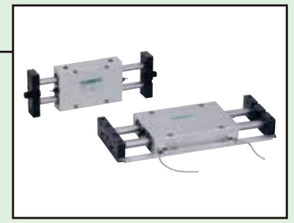
Category		Category	Variation				Piping thread			Option *1				
			Sleeve Bearing Type	Rolling Bearing Type	With Cylinder Switch		NPT	G		Both sides adjustment stopper (Standard)	Both sides adjustment stopper	One side adjustment stopper (Plate A side)	One side adjustment stopper (Plate B side)	
		Code	None	B	L		NN	GN		None	P2	P1A	P1B	
Variation	Sleeve Bearing Type	Blank	＼	x	◎		○	○		●	◎	◎	◎	
	Rolling Bearing Type	B		＼	◎		○	○		●	◎	◎	◎	
	With Cylinder Switch	L			＼		○	○		●	◎	◎	◎	
Piping thread	NPT	NN					＼	x		○	○	○	○	
	G	GN						＼		○	○	○	○	
Option *1	Both sides adjustment stopper (Standard)	Blank								＼	x	x	x	
	Both sides adjustment stopper	P2									＼	x	x	
	One side adjustment stopper (Plate A side)	P1A										＼	x	
	One side adjustment stopper (Plate B side)	P1B											＼	
														＼
Accessories	Cylinder Switch	Separately Shown	◎	◎	◎		○	○		◎	◎	◎	◎	

*1: For the stroke adjustable stopper stroke, refer to Table A on P.751.

[Model No. Notation Example]



Model No.: Unit Cylinder
● Variation: Rolling bearing type with switch
1 Bore size : ø16 mm
2 Port Thread Type : Rc Thread
3 Stroke : 50 mm
4 Switch Model No. : Solid State T2H Switch, Lead Wire 1 m
5 Number of Switches : With 2 pcs
6 Option : Both sides adjusting stoppers, adjustable range 12.5 mm per side

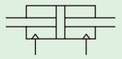


Unit cylinder Metal bush bearing with switch

UCA2 Series

● Bore size: ø10, ø16, ø25, ø32

Circuit Diagram
Symbol



RoHS

Model No. Notation Method

Without Switch
(Without magnet for switch)

UCA2 - X - 10 - [ ] - 25 ——— P1A

❶ Model No. ❷ ❸ ❹ ❺ ❽

With Switch
(Built-in magnet for switch)

UCA2-L - X - 10 - [ ] - 25 - T2H - RA - P1A

❶ Model No. ❸ Bore size ❺ Stroke ❼ Number of Switches ❽ Option
❷ Fixing method ❹ Piping thread type ❻ Switch Model No.

❶ Model No.

Code	Content
UCA2	Sleeve Bearing Type
UCA2-L	Metal bush bearing with switch

❷ Fixing method

Code	Content	
X	Body fixing	Body / Plate
Y	Plate fixing	Body / Plate

❸ Bore Size (mm)

Code	Content
10	ø10
16	ø16
25	ø25
32	ø32

❹ Piping thread type

Code	Content
Blank	M5 (ø10, ø16)
	Rc thread (ø25, ø32)
NN	NPT thread (ø25, ø32 only) (Custom product)
GN	G thread (ø25, ø32 only) (Custom product)

❺ Stroke (mm)

Bore size	Stroke
ø10	25 to 100
ø16	25 to 200
ø25	25 to 200
ø32	25 to 200

Note) For minimum stroke, please refer to P. 726.

❻ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20*2	T2H□	T2V*	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	1-Color Flexible Lead Wire Type	2-wire	-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	

*1: For "□" in the switch model No., enter the code selected from the " * Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: Magnet is not built into the type without switch. For the with switch specification without switch, magnets and magnet rails are included, but switch rails are not included.
*4: Switches other than the switch model Nos. are also available. (Custom Product) For details, see P. 753.

*** Lead wire length**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

Example) Lead wire length
1m TOH
3m TOH 3
5m TOH 5

❼ Number of Switches

Code	Content	
*2 RA	With 1 pc	Plate A side
*2 RB		Plate B side
D	With 2 pcs	
*1 T	With 3 pcs	

*1: The minimum stroke with 3 switches is 75 (mm).
*2: The distinction between A side and B side is described in the external dimensions diagram.

❽ Option

Code	Content		
Blank	Both sides adjustment stopper (Standard)		
*1 P1A	One side adjustment Stopper	Plate A side	
*1 P1B		Plate B side	
P2	Both sides adjustment stopper		

*1: The distinction between A side and B side is described in the external dimensions diagram.
*2: For the stroke adjustment amount, Table A P. 751.

Rechargeable Battery Compatible Specification (Catalog No. CC-1226AA)

● Structure usable in rechargeable battery manufacturing processes

UCA2 - ····· - P4□

* Please contact us for details.

Switch Single Unit Model No. Notation Method

● Switch body + mounting bracket set (including switch rail) ... ①

UCA2 - T0H - X - 10 - 25 - RA

❻ Switch Model No. ❷ Fixing method ❸ Bore size ❺ Stroke ❼ Number of Switches

● Mounting bracket set (including switch rail) ... ②

UCA2 - T - X - 10 - 25

❷ Fixing method ❸ Bore size ❺ Stroke

● Mounting bracket set (including switch rail) ... ③

UCA2 - T - X - 10 - 25 - SW - RAIL

❷ Fixing method ❺ Stroke ❸ Bore size

● Switch body only ... ④

SW - T0H

❻ Switch Model No.

Shock absorber kit Model No.display method

● For ø10
UCA2-10-NCK

● For ø16 to ø32 (common)
UCA2-16-NCK

Specifications

Item		UCA2 UCA2-L (with switch)			
Bore size	mm	ø10	ø16	ø25	ø32
Actuation method		Double Acting Type			
Operating Fluid		Compressed Air			
Max. Working Pressure	MPa	1.0			
Min. Operating Pressure	MPa	0.15		0.1	
Proof Pressure	MPa	1.5			
Ambient Temperature	°C	-10 to 60 (no freezing)			
Port Size		M5		Rc1/8	
Stroke tolerance	mm	+1.0 0			
Operating Piston Speed	mm/s	30 to 300			
Non-Rotating Accuracy	*	±0.1°	±0.05°		±0.02°
Max. Repetition Frequency	times/min	30			
Cushion		Built-in Shock absorber			
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)			
Allowable Absorbed Energy	J	0.25	0.65	2.4	4.5

* Value when stroke = 0 (excluding deflection of the piston rod)

Stroke

Bore Size (mm)	Standard Stroke (mm)	Min. stroke with switch (mm)
ø10	25, 50, 75, 100	10 (With 1 switch *2) 20 (With 2 switches *2)
ø16	25, 50, 75, 100 125, 150, 175, 200	
ø25		
ø35		

*1: Strokes other than standard strokes are not supported.
*2: This is the minimum stroke when the stroke is adjusted with a stopper.

Theoretical Thrust Table

(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø10	Push	-	15.1	20.1	30.2	40.2	50.3	60.3	70.4	80.4	90.5	1.01×10^2
	Pull	-	15.1	20.1	30.2	40.2	50.3	60.3	70.4	80.4	90.5	1.01×10^2
ø16	Push	-	36.8	49.0	73.5	98.0	1.23×10^2	1.47×10^2	1.72×10^2	1.96×10^2	2.21×10^2	2.45×10^2
	Pull	-	36.8	49.0	73.5	98.0	1.23×10^2	1.47×10^2	1.72×10^2	1.96×10^2	2.21×10^2	2.45×10^2
ø25	Push	67.4	1.01×10^2	1.35×10^2	2.02×10^2	2.70×10^2	3.37×10^2	4.04×10^2	4.72×10^2	5.39×10^2	6.06×10^2	6.74×10^2
	Pull	67.4	1.01×10^2	1.35×10^2	2.02×10^2	2.70×10^2	3.37×10^2	4.04×10^2	4.72×10^2	5.39×10^2	6.06×10^2	6.74×10^2
ø32	Push	1.21×10^2	1.81×10^2	2.41×10^2	3.62×10^2	4.83×10^2	6.03×10^2	7.24×10^2	8.44×10^2	9.65×10^2	1.09×10^3	1.21×10^3
	Pull	1.21×10^2	1.81×10^2	2.41×10^2	3.62×10^2	4.83×10^2	6.03×10^2	7.24×10^2	8.44×10^2	9.65×10^2	1.09×10^3	1.21×10^3

Cylinder Weight (X: Body Fixed type) - Numbers in ( ) include switch mounting rail

[Unit: kg]

Model No.	Stroke (mm)								Switch Weight Per piece
	25	50	75	100	125	150	175	200	
UCA2-X-10	0.30 (0.35)	0.37 (0.42)	0.43 (0.49)	0.49 (0.55)	-	-	-	-	Refer to the mass described in the switch specifications on P. 753
UCA2-X-16	0.53 (0.56)	0.66 (0.71)	0.78 (0.84)	0.91 (0.98)	1.04 (1.12)	1.17 (1.25)	1.30 (1.39)	1.42 (1.52)	
UCA2-X-25	1.00 (1.04)	1.20 (1.26)	1.41 (1.47)	1.61 (1.68)	1.81 (1.89)	2.02 (2.11)	2.22 (2.32)	2.43 (2.53)	
UCA2-X-32	1.65 (1.69)	1.95 (2.01)	2.25 (2.31)	2.55 (2.62)	2.85 (2.93)	3.15 (3.24)	3.45 (3.55)	3.75 (3.85)	

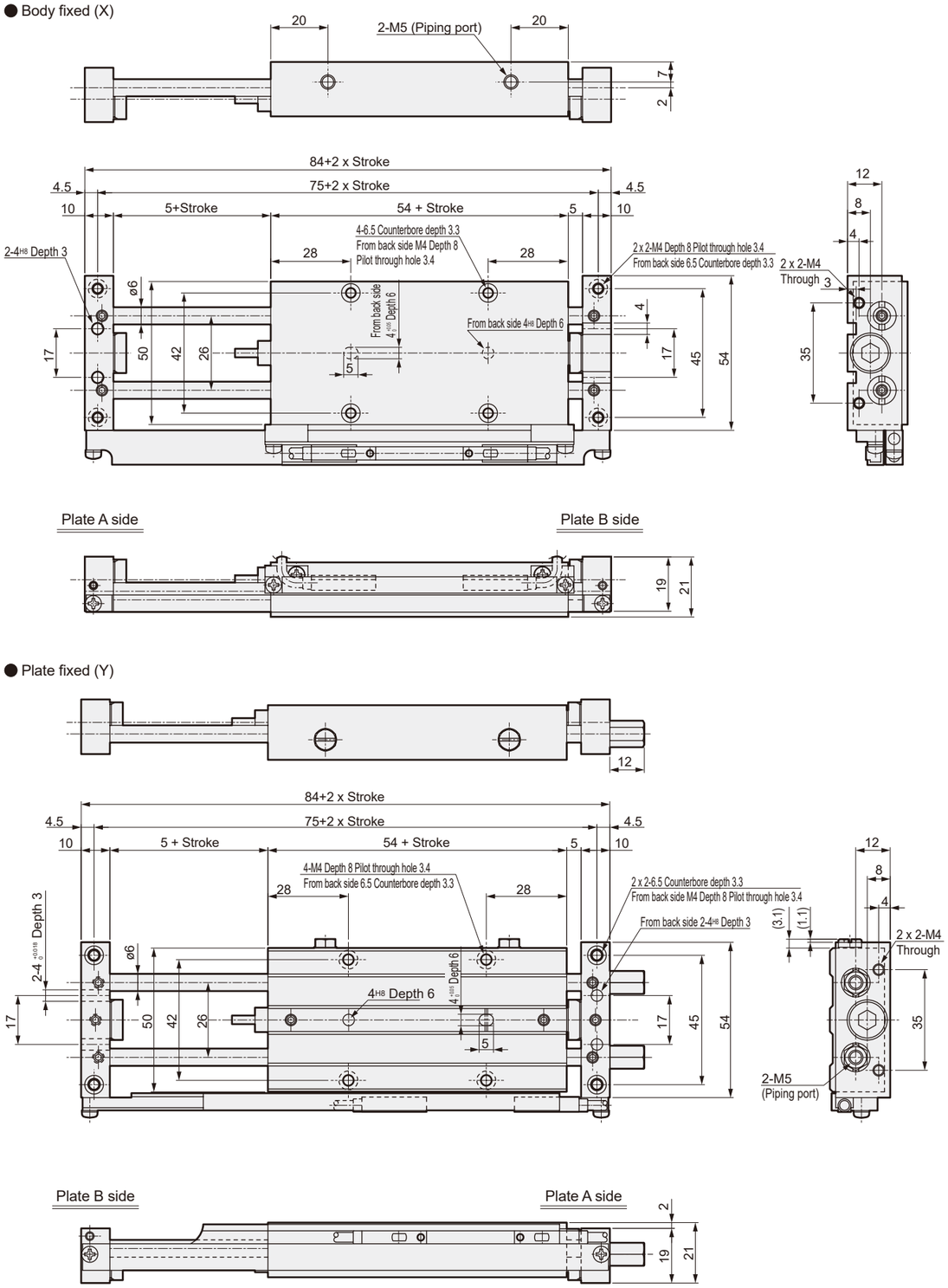
Cylinder weight (Y: Plate Fixed type) - Numbers in ( ) include switch mounting rail

[Unit: kg]

Model No.	Stroke (mm)								Switch Weight Per piece
	25	50	75	100	125	150	175	200	
UCA2-Y-10	0.30 (0.33)	0.37 (0.40)	0.43 (0.46)	0.49 (0.52)	-	-	-	-	Refer to the mass described in the switch specifications on P. 753
UCA2-Y-16	0.53 (0.56)	0.66 (0.69)	0.78 (0.82)	0.91 (0.95)	1.04 (1.08)	1.17 (1.21)	1.30 (1.34)	1.42 (1.47)	
UCA2-Y-25	1.00 (1.03)	1.20 (1.23)	1.41 (1.44)	1.61 (1.65)	1.81 (1.85)	2.02 (2.06)	2.20 (2.27)	2.43 (2.47)	
UCA2-Y-32	1.65 (1.68)	1.95 (1.98)	2.25 (2.29)	2.55 (2.59)	2.85 (2.89)	3.15 (3.19)	3.45 (3.50)	3.75 (3.80)	

External dimensions diagram (Bore size: ø10)

● Body fixed (X)

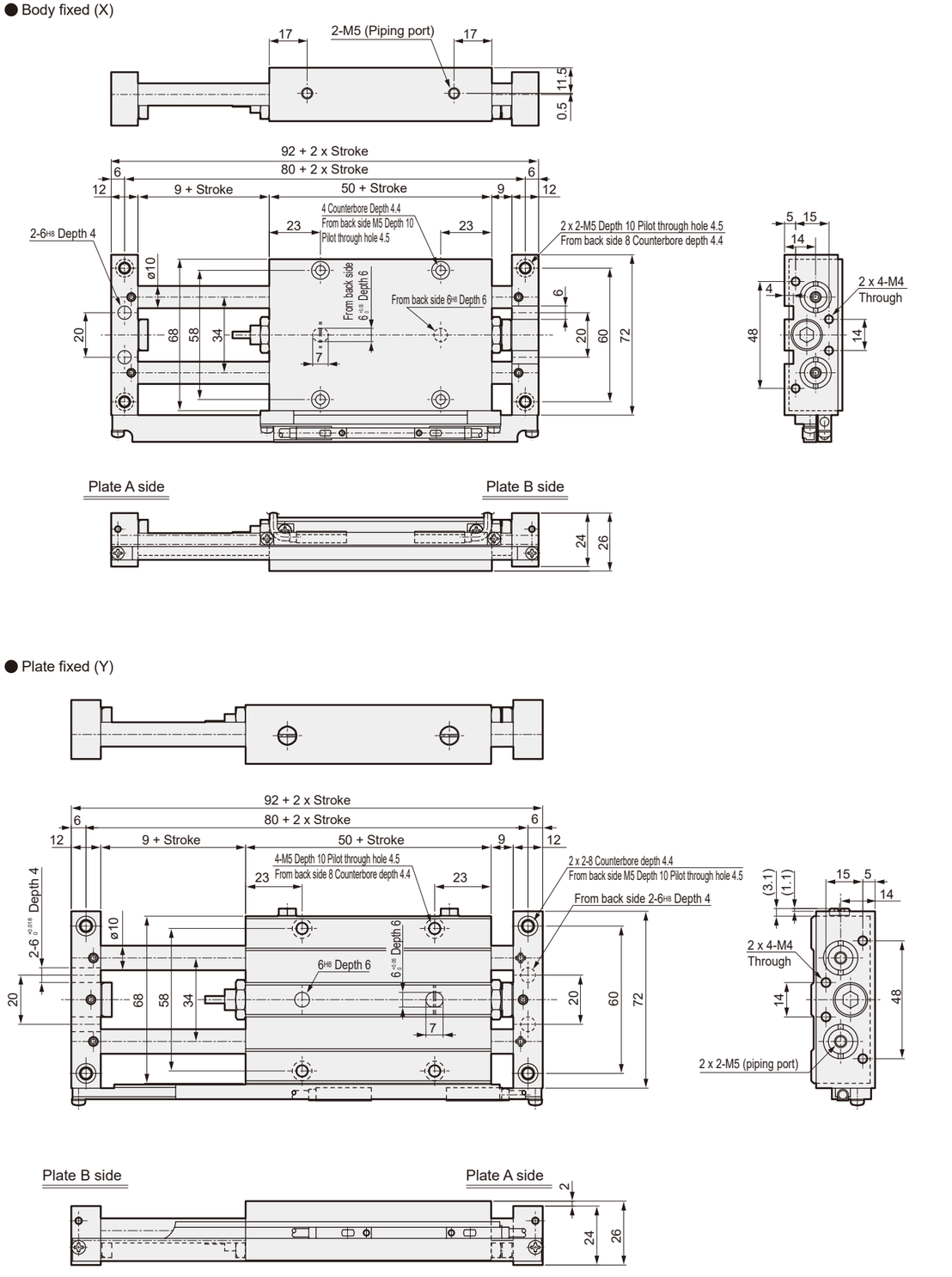


● Plate fixed (Y)

*1: Using the cylinder with its stroke extended by adjusting the stopper will cause malfunctions.
For details, see P. 751.
*2: For dimensions of models with switches, see P. 744.

Outline dimension drawing (Bore size: ø16)

● Body fixed (X)

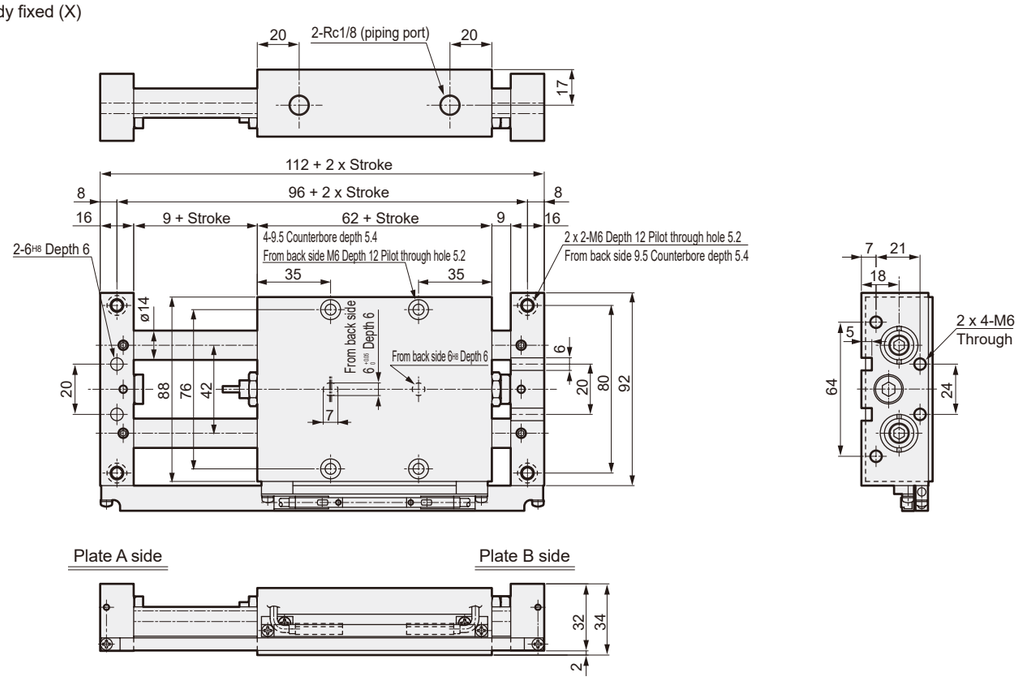


● Plate fixed (Y)

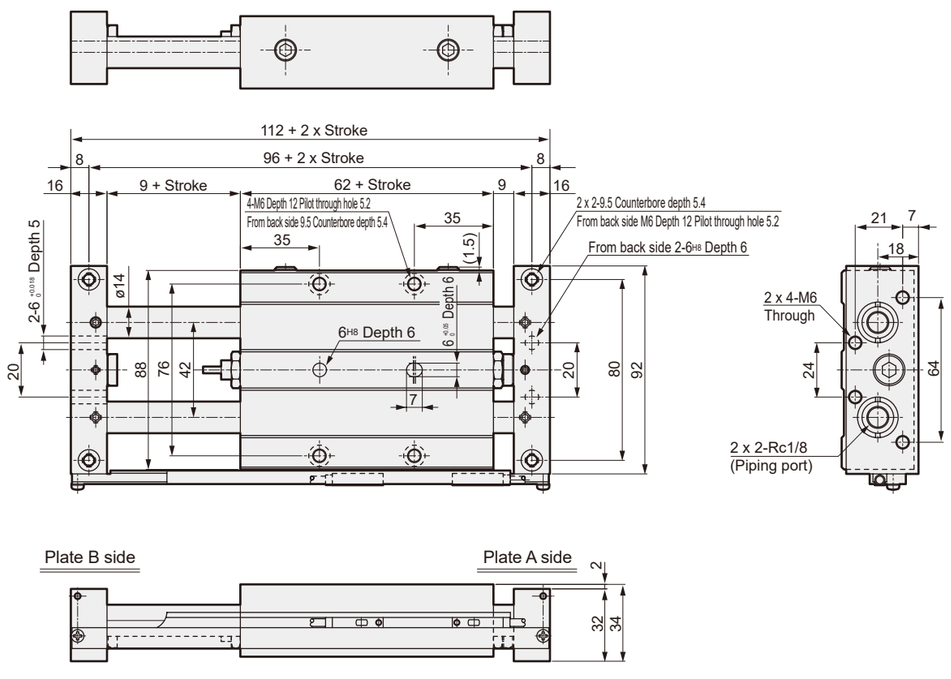
*1: Using the cylinder with its stroke extended by adjusting the stopper will cause malfunctions.
For details, see P. 751.
*2: For dimensions of models with switches, see P. 744.

Outline Dimension Drawing (Bore size: ø25)

● Body fixed (X)



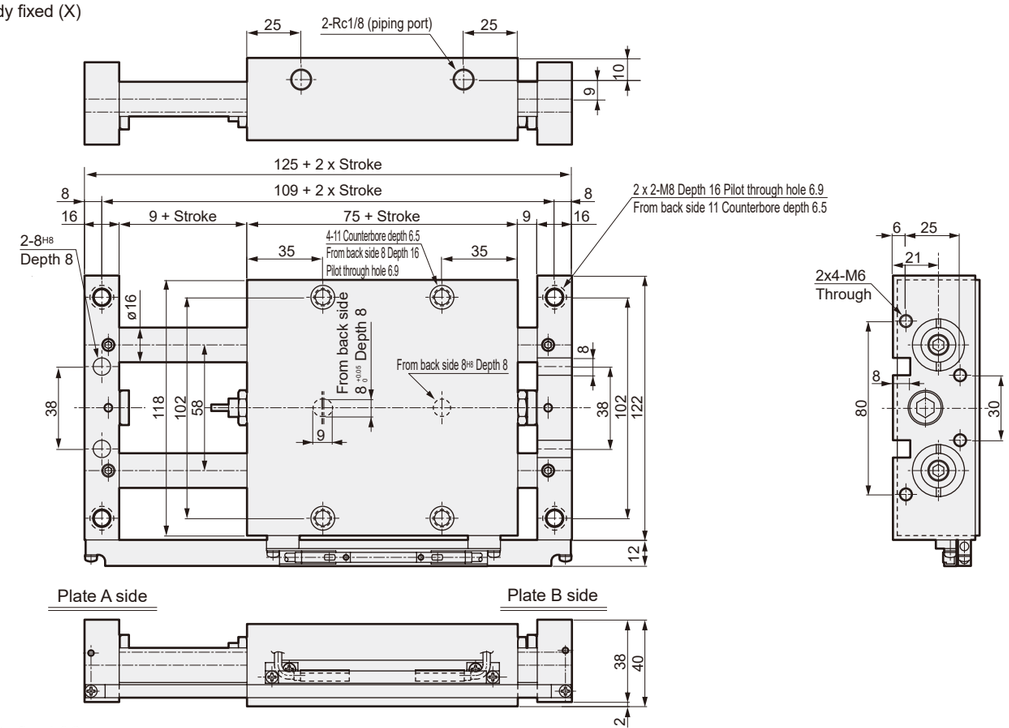
● Plate fixed (Y)



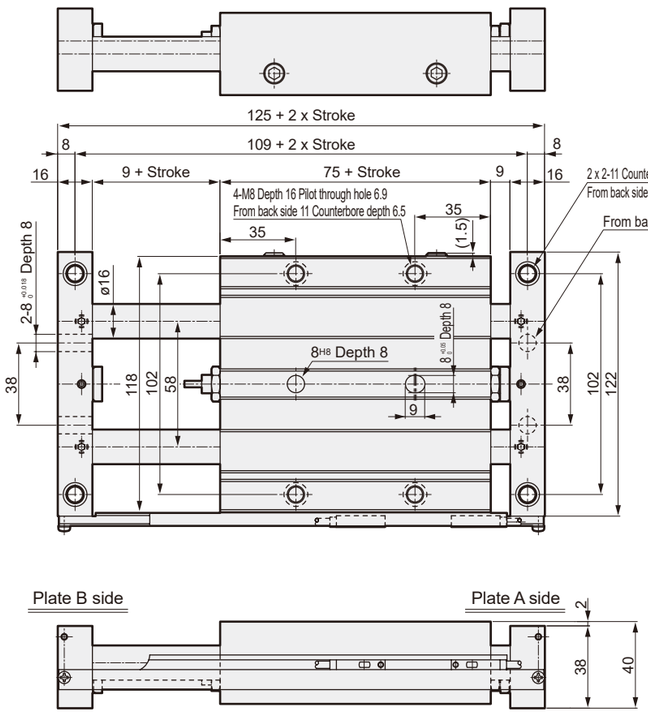
*1: Using the cylinder with its stroke extended by adjusting the stopper will cause malfunctions.
For details, see P. 751.
*2: For dimensions of models with switches, see P. 744.

External dimensions diagram (Bore size: ø32)

● Body fixed (X)



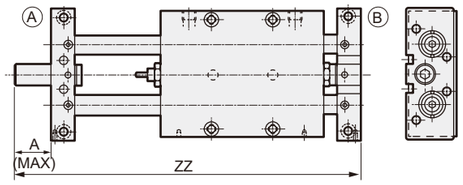
● Plate fixed (Y)



*1: Using the cylinder with its stroke extended by adjusting the stopper will cause malfunctions.
For details, see P. 751.
*2: For dimensions of models with switches, see P. 744.

Outer Dimensions Diagram with Option: Adjusting Stopper

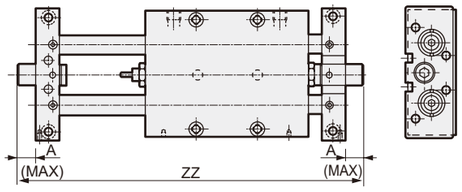
● UCA2-X (10/16/25/32) - ☐ ☐ -P1☐ (single adjusting stopper)



Model No.	A (MAX)	ZZ							
		25st	50st	75st	100st	125st	150st	175st	200st
UCA2-10	25	159	209	259	309	-	-	-	-
UCA2-16		167	217	267	317	367	417	467	517
UCA2-25		187	237	287	337	387	437	487	537
UCA2-32		200	250	300	350	400	450	500	550

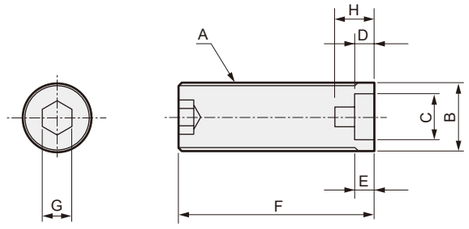
Note) P1A: Plate A side
P1B: Plate B side

● UCA2-X (10/16/25/32) - ☐ ☐ -P2 ☐ (double adjusting stoppers)



Model No.	A (MAX)	ZZ							
		25st	50st	75st	100st	125st	150st	175st	200st
UCA2-10	12.5	159	209	259	309	-	-	-	-
UCA2-16		167	217	267	317	367	417	467	517
UCA2-25		187	237	287	337	387	437	487	537
UCA2-32		200	250	300	350	400	450	500	550

Stopper dimension



Code / Bore Size (mm)	A	B	C	D	E	F			G	H
						Standard	P1	P2		
ø10	M14x1	ø14	ø10	4	4	14.5	39.5	27	6	8
ø16	M14x1	ø14	ø10	8	4	17	42	29.5	6	-
ø25	M14x1	ø14	ø10	6.5	4	21	46	33.5	6	-
ø32	M16x1	ø16	ø10	5.5	4	21	46	33.5	8	-

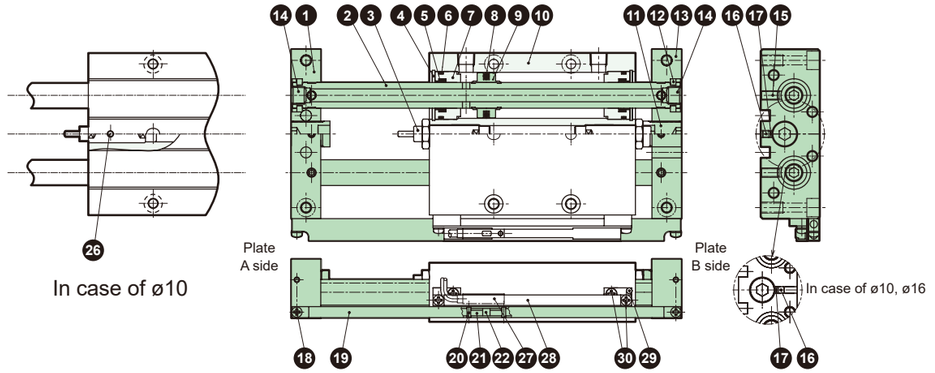
Note) Adjusting the stopper to use a longer stroke will cause problems.
For details, see P. 751.

Adjustment stopper single item model No.

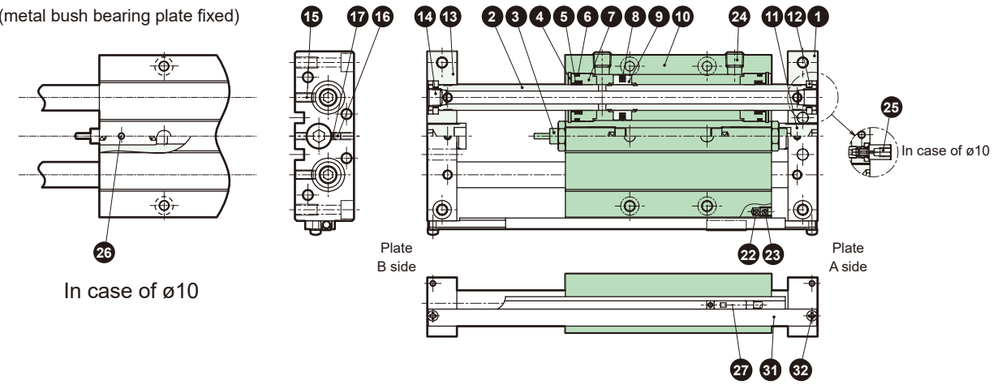
Parts / Part name	Both sides adjustment stopper (Standard)		One side adjustment stopper		Both sides adjustment stopper	
Bore size (mm)	Model No.	Weight g	Model No.	Weight g	Model No.	Weight g
ø10	UCA2-P-10	12	UCA2-P1-10	38	UCA2-P2-10	25
ø16	UCA2-P-16	12	UCA2-P1-16	38	UCA2-P2-16	25
ø25	UCA2-P-25	17	UCA2-P1-25	44	UCA2-P2-25	30
ø32	UCA2-P-32	22	UCA2-P1-32	58	UCA2-P2-32	40

Internal Structure Diagram / Material

● UCA2-X (metal bush bearing body fixed)



● UCA2-Y (metal bush bearing plate fixed)

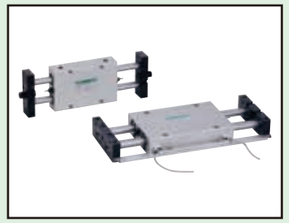


Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	End plate (A)	Aluminum Alloy	Alumite	18	Pan head screw with cross recess and captive washer	Steel	Zinc Chromate
2	Piston Rod	Steel	Industrial Hard Chrome Plating	19	Magnet rail	Aluminum Alloy	
3	Shock Absorber			20	Spring Pin	Steel	
4	C-type retaining ring for hole	Steel	Zinc phosphate	21	Fixed bush	Urethane Rubber	
5	Rod Packing	Nitrile Rubber		22	Magnet	Special alloy	
6	Rod metal gasket	Nitrile Rubber		23	Hexagon socket head set screw	Stainless Steel	
7	Rod Metal	Aluminum Alloy	Alumite	24	Plug (ø10, ø16)		FPL-M5 (CKD)
8	Piston Packing	Nitrile Rubber			Plug: (ø25, ø32)	Steel	Black Oxide
9	Piston	Aluminum Alloy		25	Bushing	Steel	Zinc Chromate
10	Cylinder Body	Aluminum Alloy	Hard Anodized	26	Hexagon socket head set screw	Alloy Steel	
11	Stopper	Steel	Chromate	With switch			
12	Split ring	Steel	Black Oxide	27	Switch		
13	End plate (B)	Aluminum Alloy	Alumite	28	Switch Rail X	Aluminum Alloy	
14	Plug	Steel	Black Oxide	29	Spacer	Aluminum Alloy	
15	Hexagon socket head set screw	Alloy Steel	Black Oxide	30	Pan head screw with cross recess and captive washer	Steel	Zinc Chromate
16	Hexagon socket head set screw	Alloy Steel	ø25,32 only	31	Switch Rail Y	Aluminum Alloy	
17	Set shoe	Aluminum Alloy	ø25,32 only	32	Pan head screw with cross recess and captive washer	Steel	Zinc Chromate

Consumable Parts List

Bore Size (mm)	Kit Number	Consumable Part No.
ø10	UCA2-10K	5 6 8 15
ø16	UCA2-16K	
ø25	UCA2-25K	
ø32	UCA2-32K	

Note) Consumable parts for plain bearing type and rolling bearing type are the same.



Unit cylinder　Rolling bearing type with switch

UCA2-B Series

●Bore size: ø10, ø16, ø25, ø32

Circuit Diagram
Symbol

RoHS

Model No. Notation Method

Without Switch
(Without magnet for switch)

UCA2-B – X – 10 – ( ) – 25 ——— P1A

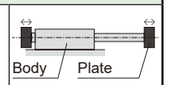
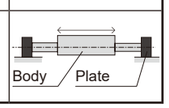
Model No. ① ② ③ ④ ⑦

With Switch
(Built-in magnet for switch)

UCA2-BL – X – 10 – ( ) – 25 – T2H – RA – P1A

Model No. ② Bore size ④ Stroke ⑥ Number of Switches ① Fixing method ③ Piping thread type ⑤ Switch Model No. ⑦ Option

① Fixing method

Code	Content	
X	Body fixing	
Y	Plate fixing	

② Bore Size (mm)

Code	Content
10	ø10
16	ø16
25	ø25
32	ø32

③ Piping thread type

Code	Content
Blank	M5 (ø10, ø16)
	Rc thread (ø25, ø32)
NN	NPT thread (ø25, ø32 only) (Custom product)
GN	G thread (ø25, ø32 only) (Custom product)

④ Stroke (mm)

Bore size	Stroke
ø10	25 to 100
ø16	25 to 200
ø25	25 to 200
ø32	25 to 200

*For minimum stroke, please refer to P. 736.

⑤ Switch Model No.

For switch details, please refer to P. 753.
Switches are included to the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-Color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	1-Color Flexible Lead Wire Type	2-wire	-	10 to 30	-	5 to 20 *2	T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		110	5/12/24	20 or less	50 or less	T5H□	T5V□	

1: For "□" in the switch model No., enter the code selected from the " Lead wire length" table.
*2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
*3: Magnet is not built into the type without switch. For the with switch specification without switch, magnets and magnet rails are included, but switch rails are not included.
*4: Switches other than the switch model Nos. are also available. (Custom order)
For details, refer to P. 753.

*** Lead wire length**

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

Example) Lead wire length
1 m TOH
3 m TOH 3
5 m TOH 5

⑥ Number of Switches

	Code	Content	
*2	RA	With 1 pc	Plate A side
*2	RB		Plate B side
	D	With 2 pcs	
*1	T	With 3 pcs	

*1: The minimum stroke with 3 switches is 75 (mm) .
*2: The distinction between A side and B side is described in the external dimensions diagram.

⑦ Option

	Code	Content		
	Blank	Both sides adjustment stopper (Standard)		
*1	P1A	One side adjustment Stopper	Plate A side	
*1	P1B		Plate B side	
	P2	Both sides adjustment stopper		

*1: The distinction between A side and B side is described in the external dimensions diagram.
*2: For the stroke adjustment amount, please refer to Table A P. 751.

Rechargeable Battery Compatible Specification (Catalog No. CC-1226AA)

● Structure usable in rechargeable battery manufacturing processes

UCA2-B – ····· – P4□

* Please contact us for details.

Switch Single Unit Model No. Notation Method

● Switch body + Mounting bracket set (Including switch rail) ... ①

UCA2-B – T0H – X – 10 – 25 – RA

⑤ Switch Model No. ② Bore size ① Fixing method ④ Stroke ⑥ Number of Switches

● Mounting bracket set (Including switch rail) ... ②

UCA2-B – T – X – 10 – 25

② Bore size ① Fixing method ④ Stroke

● Mounting bracket set (Including switch rail) ... ③

UCA2-B – T – X – 10 – 25 – SW – RAIL

① Fixing method ④ Stroke ② Bore size

● Switch body only ... ④

SW – T0H

⑤ Switch Model No.

Shock absorber kit Model No.display method

● For ø10
UCA2-10-NCK

● For ø16 to ø32 (Common)
UCA2-16-NCK

Specifications

Item		UCA2-B UCA2-BL (With switch)			
Bore size	mm	ø10	ø16	ø25	ø32
Actuation method		Double Acting Type			
Operating Fluid		Compressed Air			
Max. Working Pressure	MPa	1.0			
Min. Operating Pressure	MPa	0.15		0.1	
Proof Pressure	MPa	1.5			
Ambient Temperature	°C	-10 to 60 (Provided that freezing does not occur)			
Port Size		M5		Rc1/8	
Stroke tolerance	mm	+1.0 0			
Operating Piston Speed	mm/s	30 to 300			
Non-rotation accuracy	*1	±0.04°	±0.03°	±0.015°	±0.015°
Max. Repetition Frequency	times/min	30			
Cushion		Built-in Shock absorber			
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)			
Allowable Absorbed Energy	J	0.25	0.65	2.4	4.5

*1: Value at stroke 0 (Excluding piston rod deflection).

Stroke

Bore size (mm)	Standard Stroke (mm)	Min. stroke with switch (mm)
ø10	25, 50, 75, 100	10 (With 1 switch *2) 20 (With 2 switches *2)
ø16	25, 50, 75, 100 125, 150, 175, 200	
ø25		
ø35		

*1: Strokes other than standard strokes are not supported.
*2: This is the minimum stroke when the stroke is adjusted with a stopper.

Theoretical Thrust Table

(Unit: N)

Bore size (mm)	Operating Direction	Operating Pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø10	Push	-	15.1	20.1	30.2	40.2	50.3	60.3	70.4	80.4	90.5	1.01×10^2
	Pull	-	15.1	20.1	30.2	40.2	50.3	60.3	70.4	80.4	90.5	1.01×10^2
ø16	Push	-	36.8	49.0	73.5	98.0	1.23×10^2	1.47×10^2	1.72×10^2	1.96×10^2	2.21×10^2	2.45×10^2
	Pull	-	36.8	49.0	73.5	98.0	1.23×10^2	1.47×10^2	1.72×10^2	1.96×10^2	2.21×10^2	2.45×10^2
ø25	Push	67.4	1.01×10^2	1.35×10^2	2.02×10^2	2.70×10^2	3.37×10^2	4.04×10^2	4.72×10^2	5.39×10^2	6.06×10^2	6.74×10^2
	Pull	67.4	1.01×10^2	1.35×10^2	2.02×10^2	2.70×10^2	3.37×10^2	4.04×10^2	4.72×10^2	5.39×10^2	6.06×10^2	6.74×10^2
ø32	Push	1.21×10^2	1.81×10^2	2.41×10^2	3.62×10^2	4.83×10^2	6.03×10^2	7.24×10^2	8.44×10^2	9.65×10^2	1.09×10^3	1.21×10^3
	Pull	1.21×10^2	1.81×10^2	2.41×10^2	3.62×10^2	4.83×10^2	6.03×10^2	7.24×10^2	8.44×10^2	9.65×10^2	1.09×10^3	1.21×10^3

Cylinder Weight (X: Body Fixed type) -

Numbers in ( ) include switch mounting rail

[Unit: kg]

Model No.	Stroke (mm)								Weight per switch
	25	50	75	100	125	150	175	200	
UCA2-B-X-10	0.36 (0.41)	0.42 (0.47)	0.48 (0.54)	0.54 (0.61)	-	-	-	-	Refer to the mass described in the switch specifications on P. 753
UCA2-B-X-16	0.80 (0.85)	0.92 (0.98)	1.05 (1.11)	1.18 (1.25)	1.31 (1.38)	1.44 (1.51)	1.56 (1.65)	1.69 (1.78)	
UCA2-B-X-25	1.32 (1.37)	1.53 (1.58)	1.73 (1.79)	1.94 (2.01)	2.14 (2.22)	2.35 (2.43)	2.55 (2.75)	2.76 (2.85)	
UCA2-B-X-32	2.21 (2.26)	2.51 (2.57)	2.81 (2.87)	3.11 (3.18)	3.41 (3.49)	3.71 (3.79)	4.01 (4.10)	4.31 (4.40)	

Cylinder weight (Y: Plate Fixed type) -

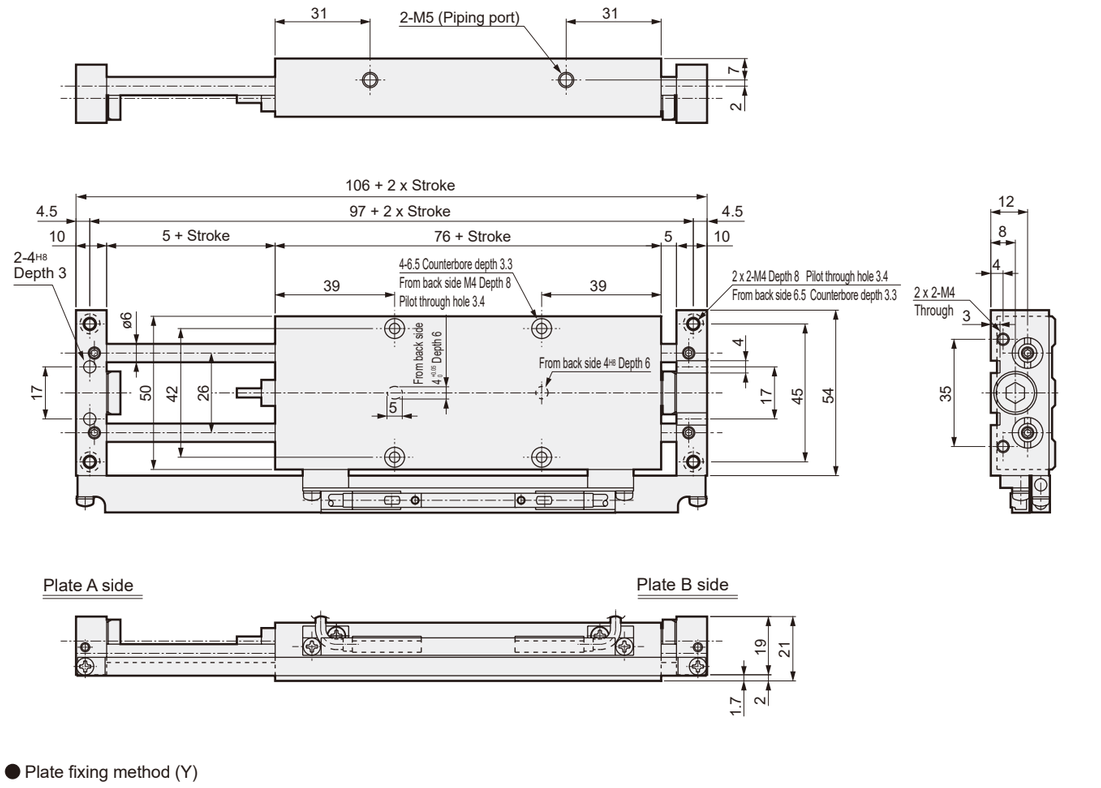
Numbers in ( ) include switch mounting rail

[Unit: kg]

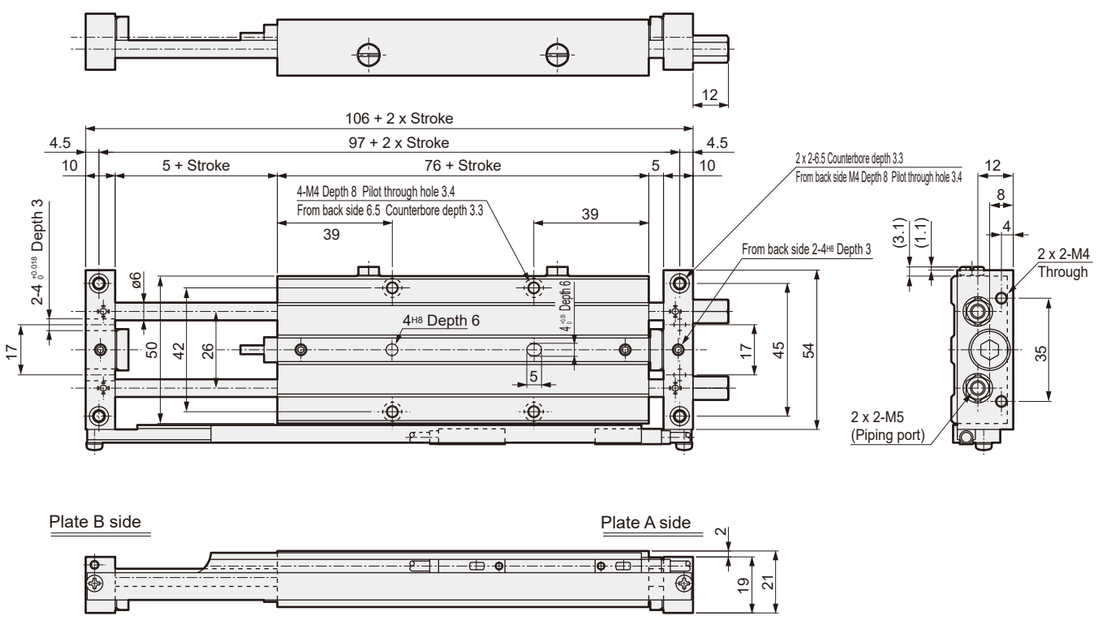
Model No.	Stroke (mm)								Weight per switch
	25	50	75	100	125	150	175	200	
UCA2-B-Y-10	0.36 (0.39)	0.42 (0.46)	0.48 (0.54)	0.54 (0.60)	-	-	-	-	Refer to the mass described in the switch specifications on P. 753
UCA2-B-Y-16	0.80 (0.83)	0.92 (0.96)	1.05 (1.09)	1.18 (1.22)	1.31 (1.35)	1.44 (1.48)	1.56 (1.61)	1.69 (1.74)	
UCA2-B-Y-25	1.32 (1.36)	1.53 (1.56)	1.73 (1.77)	1.94 (1.98)	2.14 (2.18)	2.35 (2.39)	2.55 (2.60)	2.76 (2.80)	
UCA2-B-Y-32	2.21 (2.24)	2.51 (2.54)	2.81 (2.85)	3.11 (3.15)	3.41 (3.45)	3.71 (3.75)	4.01 (4.06)	4.31 (4.36)	

External dimensions diagram (Bore size: ø10)

● Body Fixed system (X)



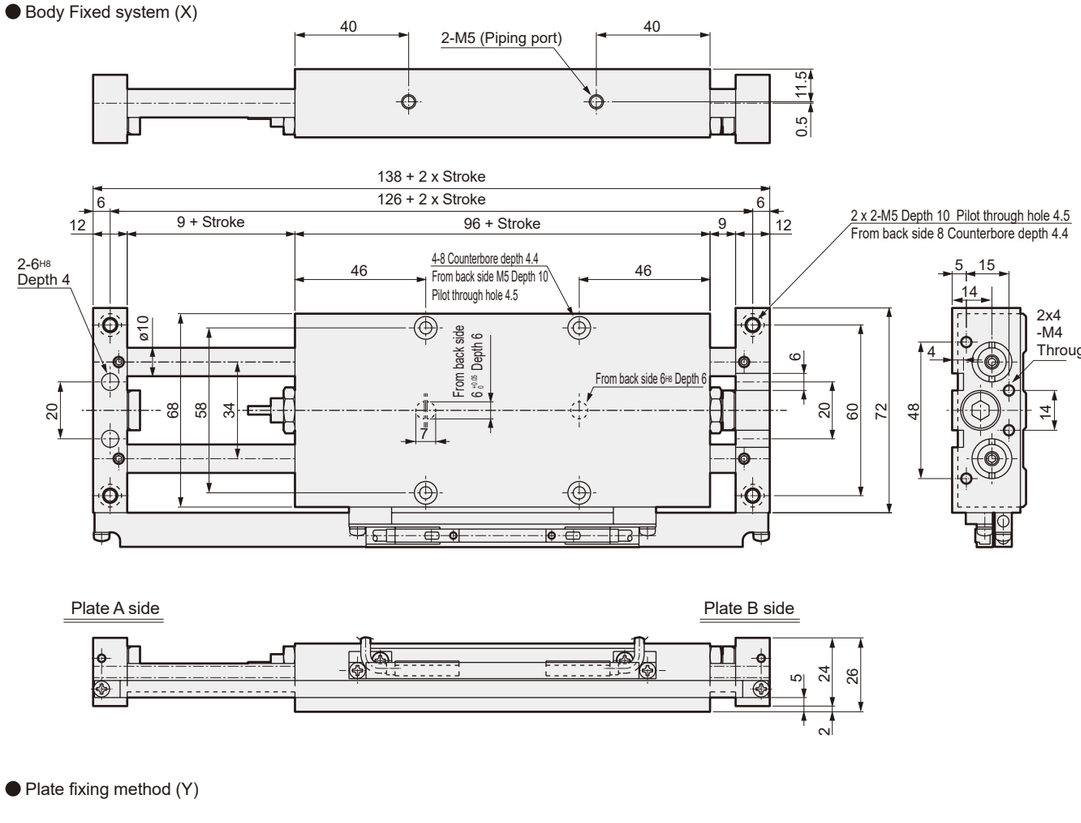
● Plate fixing method (Y)



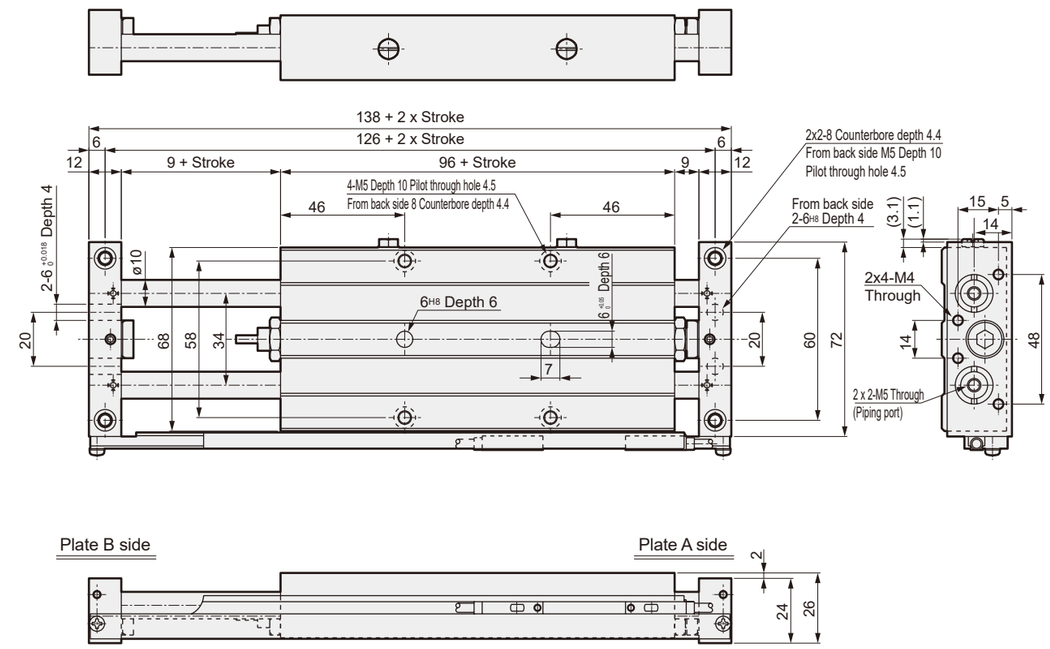
*1: Using the cylinder with its stroke extended by adjusting the stopper will cause malfunctions. For details, see P. 751.
*2: For dimensions of models with switches, see P. 744.

Outline dimension drawing (Bore size: ø16)

● Body Fixed system (X)



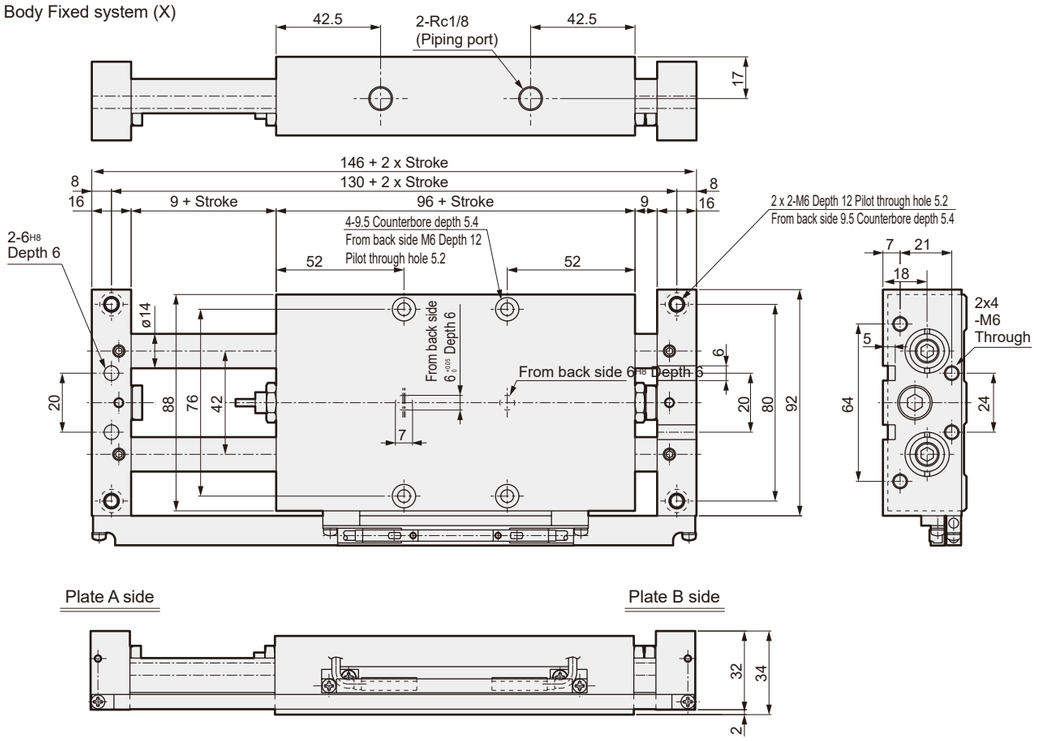
● Plate fixing method (Y)



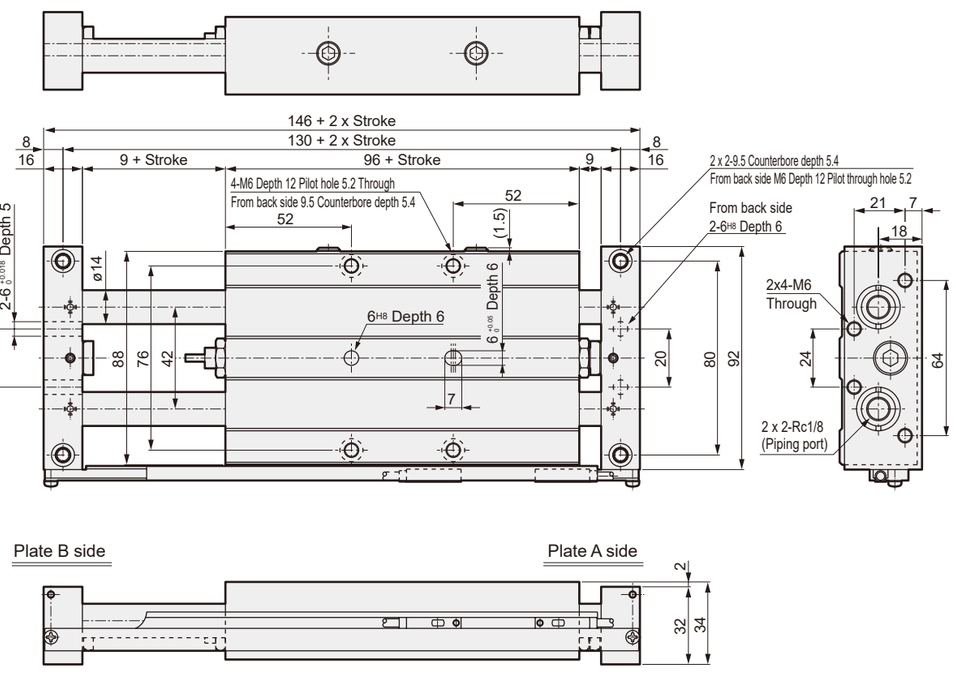
*1: Using the cylinder with its stroke extended by adjusting the stopper will cause malfunctions. For details, see P. 751.
*2: For dimensions of models with switches, see P. 744.

Outline Dimension Drawing (Bore size: ø25)

● Body Fixed system (X)



● Plate fixing method (Y)

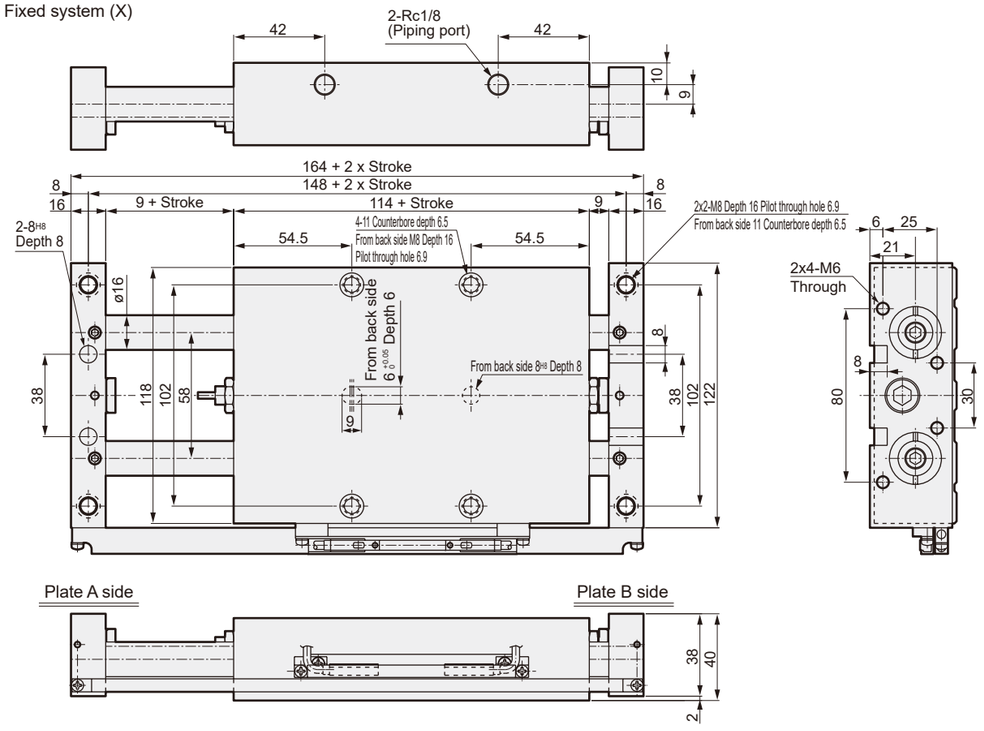


*1: Using the cylinder with its stroke extended by adjusting the stopper will cause malfunctions. For details, see P. 751.

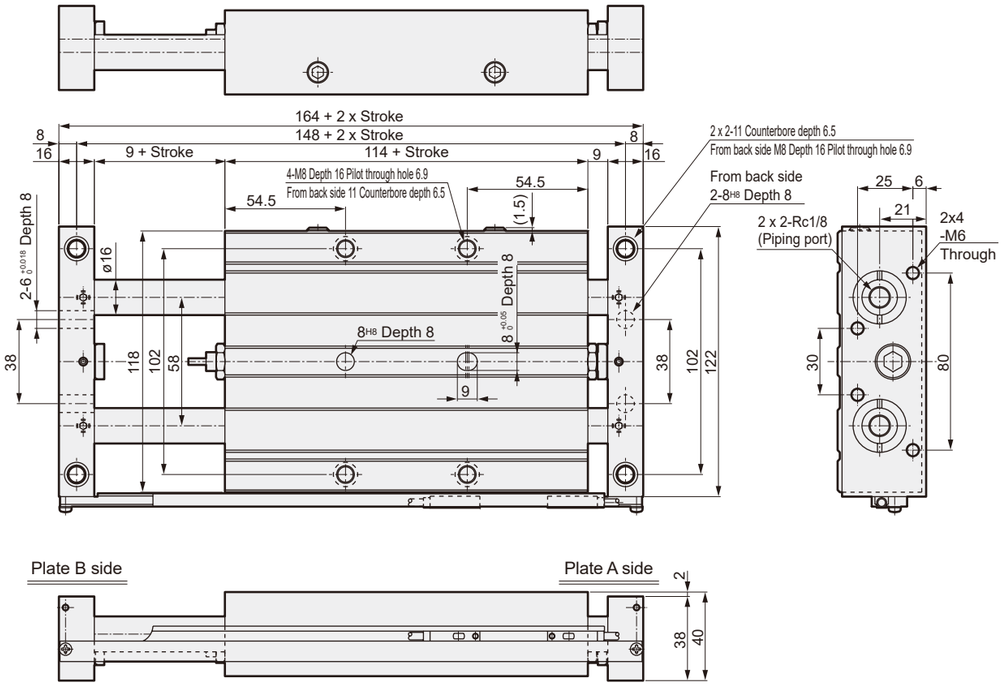
*2: For dimensions of models with switches, see P. 744.

External dimensions diagram (Bore size: ø32)

● Body Fixed system (X)



● Plate fixed method (Y)

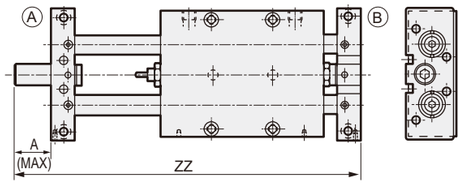


*1: Using the cylinder with its stroke extended by adjusting the stopper will cause malfunctions. For details, see P. 751.

*2: For dimensions of models with switches, see P. 744.

Outer Dimensions Diagram with Option: Adjusting Stopper

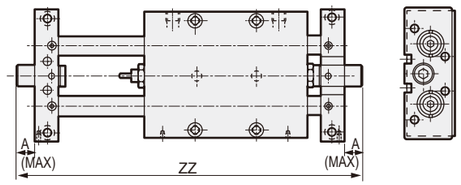
● UCA2-B-X/Y 10/16/25/32 -□□-P1□ (One side adjustment stopper)



Model No.	A (MAX)	ZZ							
		25st	50st	75st	100st	125st	150st	175st	200st
UCA2-B-10	25	181	231	281	331	-	-	-	-
UCA2-B-16		213	263	313	363	413	463	513	563
UCA2-B-25		221	271	321	371	421	471	521	571
UCA2-B-32		239	289	339	389	439	489	539	589

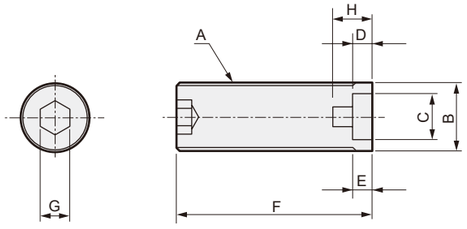
Note) P1A: Plate A side
P1B: Plate B side

● UCA2-B-X/Y 10/16/25/32 -□□-P2□ (Both sides adjustment stopper)



Model No.	A (MAX)	ZZ							
		25st	50st	75st	100st	125st	150st	175st	200st
UCA2-B-10	12.5	181	231	281	331	-	-	-	-
UCA2-B-16		213	263	313	363	413	463	513	563
UCA2-B-25		221	271	321	371	421	471	521	571
UCA2-B-32		239	289	339	389	439	489	539	589

Stopper dimension



Code / Bore size (mm)	A	B	C	D	E	F			G	H
						Standard	P1	P2		
ø10	M14x1	ø14	ø10	4	4	14.5	39.5	27	6	8
ø16	M14x1	ø14	ø9.4	8	4	17	42	29.5	6	-
ø25	M14x1	ø14	ø9.4	6.5	4	21	46	33.5	6	-
ø32	M16x1	ø16	ø9.4	5.5	4	21	46	33.5	8	-

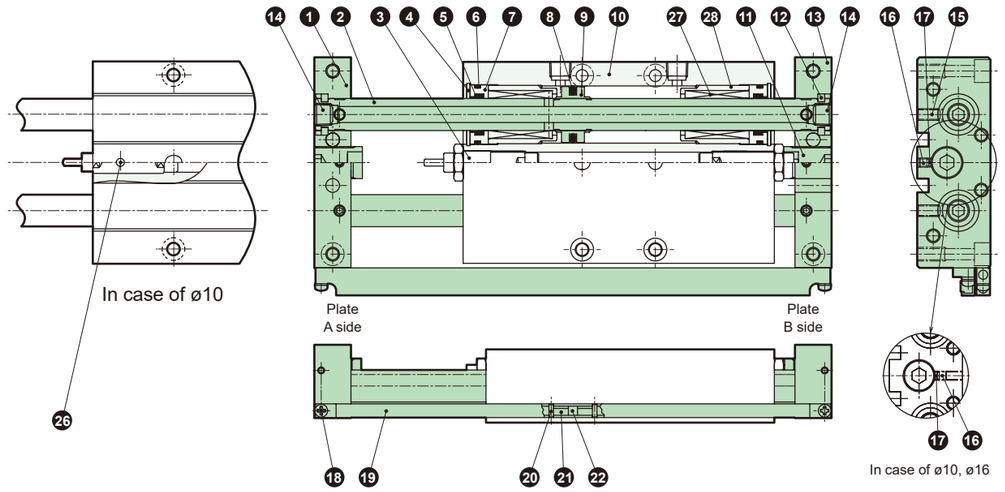
***Adjusting the stopper to use a longer stroke will cause problems. For details, see P. 751.**

Adjustment stopper single item model No.

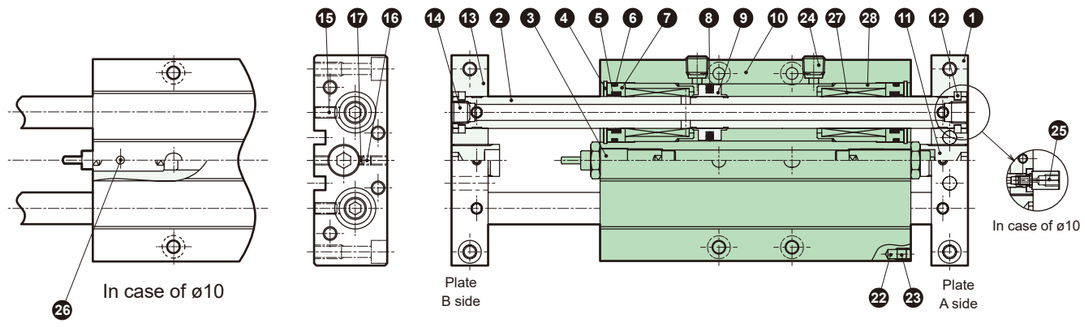
Parts / Part name	Both sides adjustment stopper (Standard)		One side adjustment stopper		Both sides adjustment stopper	
Bore size (mm)	Model No.	Weight g	Model No.	Weight g	Model No.	Weight g
ø10	UCA2-P-10	12	UCA2-P1-10	38	UCA2-P2-10	25
ø16	UCA2-P-16	12	UCA2-P1-16	38	UCA2-P2-16	25
ø25	UCA2-P-25	17	UCA2-P1-25	44	UCA2-P2-25	30
ø32	UCA2-P-32	22	UCA2-P1-32	58	UCA2-P2-32	40

Internal Structure Diagram/Material

● UCA2-B-X (Rolling bearing, Body fixing)



● UCA2-B-Y (Rolling bearing, Plate fixing)



Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	End plate (A)	Aluminum Alloy	Alumite	16	Hexagon socket head set screw	Alloy Steel	ø25,32 only
2	Piston Rod	Steel	Industrial Hard Chrome Plating	17	Set shoe	Aluminum Alloy	ø25,32 only
3	Shock Absorber			18	Pan head screw with cross recess and captive washer	Steel	Zinc Chromate
4	C-type retaining ring for hole	Steel	Zinc phosphate	19	Magnet rail	Aluminum Alloy	
5	Rod Packing	Nitrile Rubber		20	Spring Pin	Steel	
6	Rod metal gasket	Nitrile Rubber		21	Fixed bush	Urethane Rubber	
7	Rod Metal	Aluminum Alloy	Alumite	22	Magnet	Special alloy	
8	Piston Packing	Nitrile Rubber		23	Hexagon socket head set screw	Stainless Steel	
9	Piston	Aluminum Alloy		24	Plug: (ø10, ø16)		FPL-M5 (CKD)
10	Cylinder Body	Aluminum Alloy	Hard Anodized		Plug: (ø25, ø32)	Steel	Black Oxide
11	Stopper	Steel	Chromate	25	Bushing	Steel	Zinc Chromate
12	Split ring	Steel	Black Oxide	26	Hexagon socket head set screw	Alloy Steel	
13	End plate (B)	Aluminum Alloy	Alumite	27	Ball bearing		
14	Plug	Steel	Black Oxide	28	Housing	Aluminum Alloy	ø25,32 only
15	Hexagon socket head set screw	Alloy Steel	Black Oxide				

Consumable Parts List

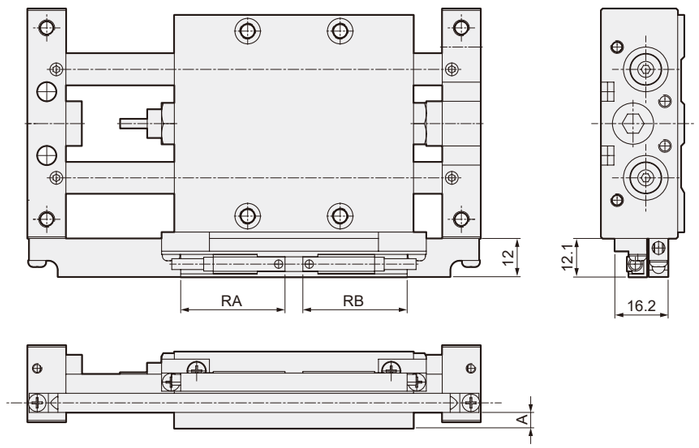
Bore size (mm)	Kit Number	Consumable Part No.
ø10	UCA2-10K	5 6 8 15
ø16	UCA2-16K	
ø25	UCA2-25K	
ø32	UCA2-32K	

Note) Consumable parts for plain bearing type and rolling bearing type are the same.

UCA2 Series Switch External Dimensions Diagram

● T0H/V, T5H/V, T2H/V, T3H/V, T3PH/V, T2□R3, T2WH/V, T3WH/V

UCA2-(B)-X

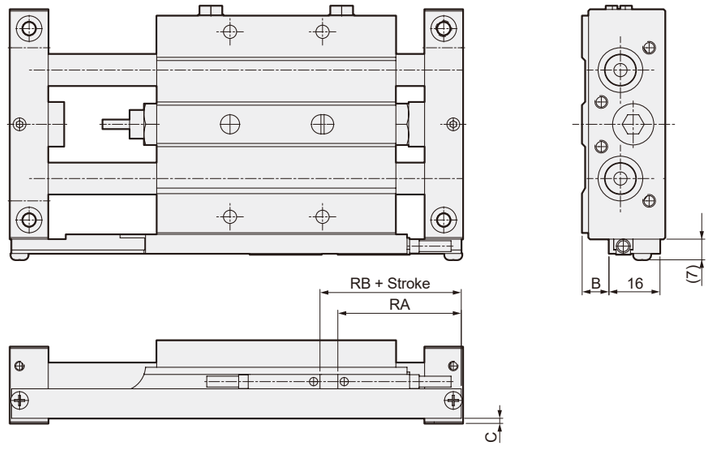


UCA2-X								
Code	A	T0, T5		T2, T3, T3P, T2□R3		T2W, T3W	
Bore size (mm)		RA	RB	RA	RB	RA	RB
ø10	1.7	32.7	32.7	32	32	30.5	30.5
ø16	5						
ø25	2.2						
ø32	4						

Note) For switch mountability, refer to the Model No.display method for each variation.

● T0H/V, T5H/V, T2H/V, T3H/V, T3PH/V, T2□R3, T2WH/V, T3WH/V

UCA2-(B)-Y



UCA2-Y								
Code	B	C	T0, T5		T2, T3, T3P, T2□R3		T2W, T3W	
Bore size (mm)			RA	RB	RA	RB	RA	RB
ø10	0.6	4.4	32.7	13.3	32	14	30.5	15.5
ø16	8.4	1.6	38.7	19.3	38	20	36.5	21.5
ø25	12.4	5.6	42.7	23.3	42	24	40.5	25.5
ø32	15.4	8.6	42.7	23.3	42	24	40.5	25.5

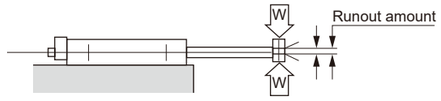
Note) For switch mountability, refer to the Model No.display method for each variation.

1 Piston rod deflection amount due to concentrated load (Reference value)

Keep the center of gravity of the load and the center of the unit cylinder as close as possible.

[Unit: mm]

Bore size (mm)	Stroke (mm) / Load (N)	75	100	125	150	175	200
ø10	15	0.05	0.10	-	-	-	-
ø16	40	0.02	0.05	0.09	0.16	0.25	0.38
ø25	70	0.01	0.03	0.06	0.10	0.16	0.24
ø32	100	0.005	0.02	0.04	0.07	0.11	0.15



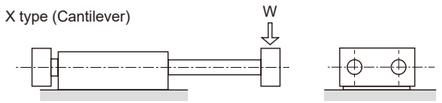
[Unit: mm]

Bore size (mm)	Stroke (mm) / Load (N)	25	50	75	100	125	150	175	200
ø10	7	0.04	0.10	0.18	0.27	-	-	-	-
ø16	20	0.03	0.07	0.12	0.20	0.28	0.37	0.48	0.60
ø25	35	0.02	0.04	0.08	0.13	0.17	0.24	0.32	0.41
ø32	50	0.01	0.03	0.06	0.10	0.14	0.21	0.29	0.38

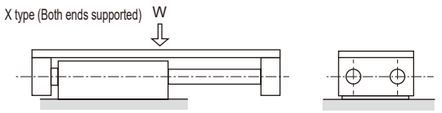
2 Allowable load judgment

1. Vertical load

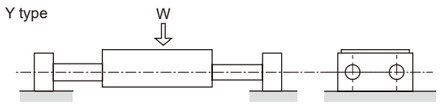
X type (Cantilever)



X type (Both ends supported)



Y type



[Unit: N]

Bore size (mm) \ Type (Fixing method)	X type: Cantilever	X type: Both ends supported	Y type
ø10	6.9	14.7	
ø16	19.6	39.2	
ø25	34.3	68.6	
ø32	49	98	

W = Load N

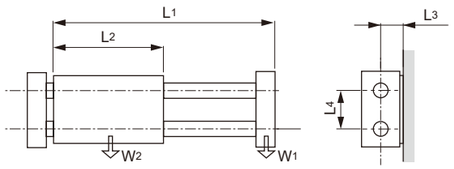
2. With overhang load applied

Select the tube inner diameter according to the load calculation below.
However, the overhang load (W) should be less than or equal to the vertical load value in item (1), and the overhang amount (L) should be 100 mm or less.

2-1. Conditions and items required in calculation of the allowable load

W = Load (N)
L = Overhang amount (mm)
V = Operating speed (mm/s)
S = Stroke (mm)
F = Maximum load applied per bearing (N)

W_1 = End plate weight (kg)
W_2 = Cylinder body weight (kg)
L_1 = Length from end plate to main body (mm)
L_2 = Cylinder body length (mm)
L_3 = Length from rod center to cylinder body (mm)
L_4 = Rod pitch (mm)



Bore size (mm) \ Type \ Code		L_1	L_2	L_3	L_4	W_1	W_2
ø10	Metal	69 + 2·S	54 + S	9	26	0.099 + 7x10^{-4}·S	0.174 + 2 x10^{-3}·S
	Bearing	91 + 2·S	76 + S	9	26	0.109 + 7x10^{-4}·S	0.214 + 2 x10^{-3}·S
ø16	Metal	71 + 2·S	50 + S	12	34	0.199 + 21x10^{-4}·S	0.334 + 3.2x10^{-3}·S
	Bearing	117 + 2·S	96 + S	12	34	0.239 + 21x10^{-4}·S	0.338 + 3.2x10^{-3}·S
ø25	Metal	87 + 2·S	62 + S	16	42	0.456 + 36x10^{-4}·S	0.6 + 4.7x10^{-3}·S
	Bearing	121 + 2·S	96 + S	16	42	0.509 + 36x10^{-4}·S	0.615 + 4.7x10^{-3}·S
ø32	Metal	100 + 2·S	75 + S	19	58	0.636 + 47x10^{-4}·S	0.92 + 7 x10^{-3}·S
	Bearing	139 + 2·S	114 + S	19	58	0.714 + 47x10^{-4}·S	1.313 + 7 x10^{-3}·S

2-2. Allowable load calculation

Calculate the value of F according to the "Mounting posture pattern diagram example", and ensure that the value of Fk obtained by the following formula is less than or equal to the allowable value in Table 3.

$F_K = F \times K$
F_K: Operating speed load (N)
K: Speed coefficient

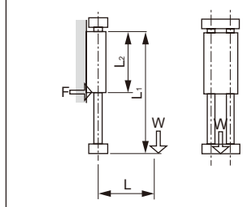
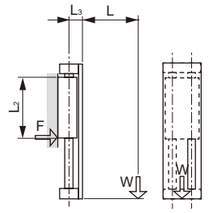
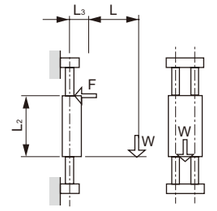
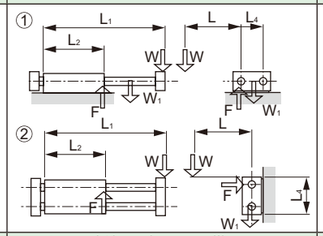
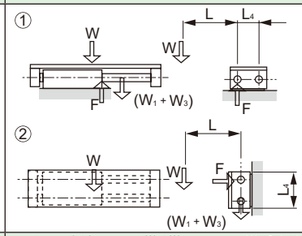
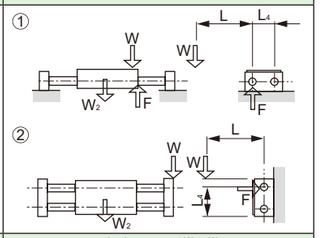
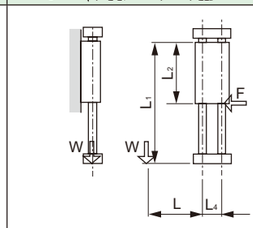
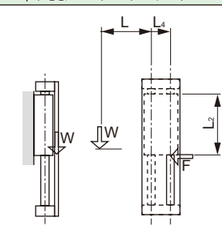
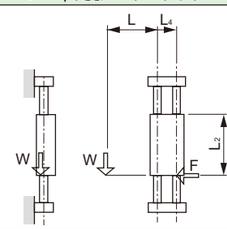
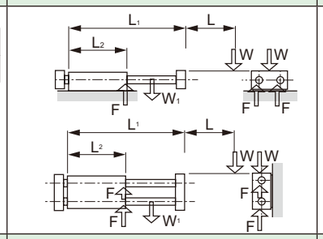
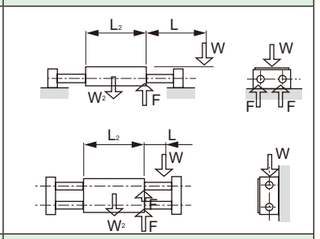
Table 3 Allowable value of operating speed load (F_K)

Bore size (mm)	Allowable value of Fk (N)
ø10	21.6
ø16	75.5
ø25	103.0
ø32	157.0

Speed coefficient

Operating speed (mm/s)	K
30 ≤ V < 100	1.0
100 ≤ V < 200	1.1
200 ≤ V < 300	1.2

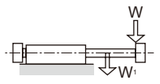
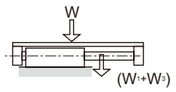
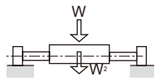
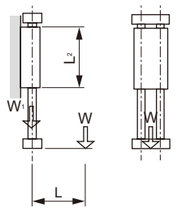
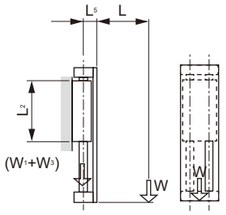
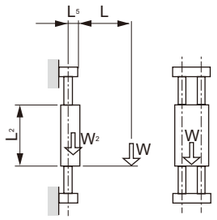
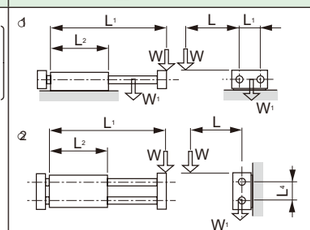
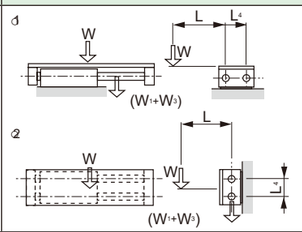
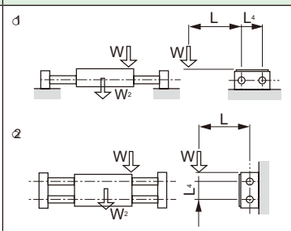
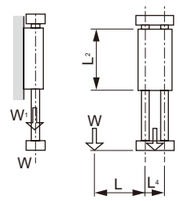
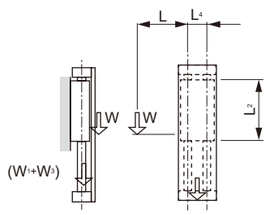
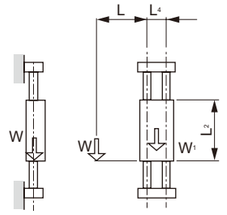
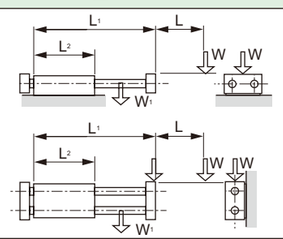
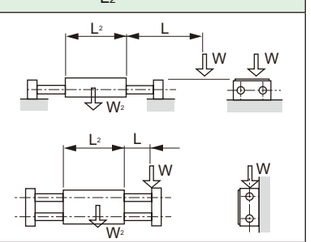
2-3. Mounting orientation examples

	X Type (Cantilever)	X Type (Both ends supported)	Y Type
Overhang load is applied in the vertical direction Vertical mounting			
Maximum load per bearing (N)	$F=\frac{L}{2L_2}\cdot W$	$F=\frac{L+L_3}{2\cdot L_2}\cdot W$	$F=\frac{L+L_3}{2\cdot L_2}\cdot W$
Overhang load is applied in the vertical direction of the stroke ① Horizontal mounting ② Horizontal side mounting			
Maximum load per bearing (N)	① $F=\left(\frac{L+L_4}{2\cdot L_4}+\frac{L_1}{2L_2}\right)W+\frac{W_1}{4}$ ② $F=\sqrt{\left(\frac{L}{2\cdot L_4}\cdot W\right)^2+\left(\frac{L_1}{2L_2}\cdot W+\frac{W_1}{4}\right)^2}$	① $F=\frac{L+L_4}{2\cdot L_4}\cdot W+\frac{W_1+W_3}{4}$ ② $F=\sqrt{\left(\frac{L}{2\cdot L_4}\cdot W\right)^2+\left(\frac{W_1+W_3}{4}\right)^2}$ W_3: Sub-plate Weight (kg)	① $F=\frac{L+L_4}{2\cdot L_4}\cdot W+\frac{W_1+W_2}{4}$ ② $F=\sqrt{\left(\frac{L}{2\cdot L_4}\cdot W\right)^2+\left(\frac{W_2}{4}\right)^2}$
Overhang load is applied in the lateral direction Vertical mounting			
Maximum load per bearing (N)	$F=\frac{L+L_4}{L_2}\cdot W$	$F=\frac{L+L_4}{L_2}\cdot W$	$F=\frac{L+L_4}{L_2}\cdot W$
Overhang load is applied in the stroke direction Horizontal mounting Horizontal side mounting			
Maximum load per bearing (N)	$F=\frac{L+L_1}{2\cdot L_2}\cdot W+\frac{W_1}{4}$		$F=\frac{L+L_2}{2\cdot L_2}\cdot W+\frac{W_2}{4}$

3 Calculation of load factor

1. Refer to Table 4 and calculate the necessary thrust according to the weight, direction and mounting orientation of the load.

Table 4

	Body Fixed (Cantilever)	Body Fixed (Both ends supported)	Plate fixing
Load is applied to the cylinder center Horizontal mounting			
Required thrust	$f = \mu(W + W_1)$	$f = \mu(W + W_1 + W_3)$	$f = \mu(W + W_2)$
Overhang load is applied in the vertical direction Vertical mounting			
Required thrust	$f = \frac{2\mu \cdot L}{L_2} \cdot W + W + W_1$	$f = \frac{2\mu \cdot (L+L_5)}{L_2} \cdot W + W + W_1 + W_3$	$f = \frac{2\mu \cdot (L+L_5)}{L_2} \cdot W + W + W_2$
Overhang load is applied in the vertical direction of the stroke ① Horizontal mounting ② Horizontal side mounting			
Required thrust	① $f = \mu\{(\frac{2L+L_4}{L_4} + \frac{2L+L_2}{L_2}) \cdot W + W + W_1\}$ ② $f = \mu \cdot \sqrt{(\frac{2L}{L_4} \cdot W)^2 + (\frac{2L_1 - L_2}{L_2} \cdot W + W + W_1)^2}$	① $f = \mu \cdot (\frac{2L+L_4}{L_4} \cdot W + W + W_1 + W_3)$ ② $f = \mu \cdot \sqrt{(\frac{2L}{L_4} \cdot W)^2 + (W + W_1 + W_3)^2}$	① $f = \mu(\frac{2L+L_4}{L_4} \cdot W + W + W_2)$ ② $f = \mu \cdot \sqrt{(\frac{2L}{L_4} \cdot W)^2 + (W + W_2)^2}$
Laterally Overhang Load is applied Vertical mounting			
Required thrust	$f = \frac{\mu(2 \cdot L + L_4)}{L_2} \cdot W + W + W_1$	$f = \frac{\mu(2 \cdot L + L_4)}{L_2} \cdot W + W + W_1 + W_3$	$f = \frac{\mu(2 \cdot L + L_4)}{L_2} \cdot W + W + W_2$
In stroke direction Overhang Load is applied Horizontal mounting Horizontal side mounting			
Required thrust	$f = \mu[\frac{2(L + L_1) - L_2}{L_2} \cdot W + W + W_1]$		$f = \mu(\frac{2 \cdot L + L_2}{L_2} \cdot W + W + W_2)$

f: Required thrust N
μ: Friction coefficient Plain bearing type 0.3
Rolling bearing type 0.1

Note) W_2: Sub-plate weight (kg)

For the remaining items and dimensions, refer to "Allowable load judgment".

2. Calculate the load factor from the necessary thrust obtained in 1, the theoretical thrust table and the thrust efficiency graph. (Ensure the load factor is 50% or less.)

$\omega = \frac{f}{B} \times 100 \leq 50$

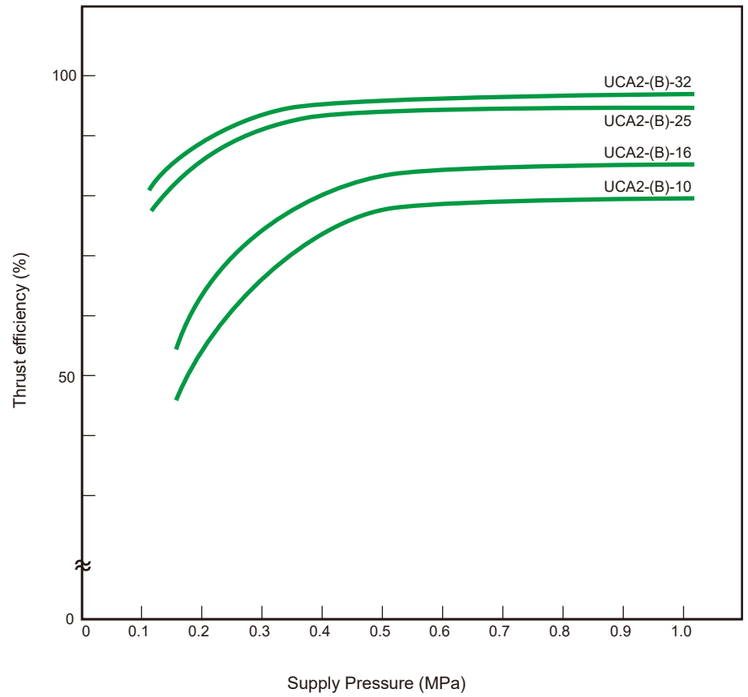
$B = \frac{a}{100} \cdot A$

ω : Load factor (%)
f : Required thrust (N)
A : Theoretical thrust (N)
a : Thrust efficiency (%)
B : Effective thrust (N)

Theoretical thrust [Unit: N]

Model No.	Operating Pressure MPa								
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
UCA2-10	10	20	29	39	49	59	69	78	88
UCA2-16	25	48	73	96	121	145	169	193	217
UCA2-25	66	132	198	265	330	396	463	528	594
UCA2-32	119	236	355	474	591	710	828	846	1065
UCA2-B-10	10	20	29	39	49	59	69	78	88
UCA2-B-16	25	48	73	96	121	145	169	193	217
UCA2-B-25	66	132	198	265	330	396	463	528	594
UCA2-B-32	119	236	355	474	591	710	828	946	1065

Thrust efficiency



UCA2, UCA2-B

Technical data ❹ Calculation of kinetic energy

4 Calculation of kinetic energy

Calculate the kinetic energy from the load weight (W) and speed (V), and ensure it is less than or equal to the allowable value in Table 7.
If the allowable energy value is exceeded, be sure to increase the cylinder size so that it is within the allowable energy, or consider an external shock absorber.
In addition, the speed value referred to here is not the average speed but the speed at the time of cushion entry, so calculate the cushion entry speed from equation (1).

$$E = \frac{1}{2} mV^2 + f S_1$$

$$Va = \frac{S_2}{t}$$

$$V = Va \times (1 + 1.5 \frac{\omega}{100}) \quad \text{——(1)}$$

E : Kinetic Energy (J)
m : Weight (kg)
V : Cushion impact speed (m/s)
f : Thrust (N)
S_1 : Shock Absorbers stroke (m)
Va : Average speed (m/s)
S_2 : Cylinder stroke (m)
t : Travel time (s)
ω : Load factor (%)

Table 7 Allowable absorption energy

Bore size (mm)	Allowable absorption energy (J)
ø10	0.25
ø16	0.65
ø25	2.4
ø32	4.5

Shock Absorber Stroke

Bore size (mm)	Stroke (mm)
ø10	4.5
ø16	5.0
ø25	6.5
ø32	7.0

Pneumatic Equipment

To Use This Product Safely

Be sure to read this before use.
For general cylinder information, see Opening Section P. 41, and for cylinder switches, see P. 808.

Individual Precautions: Unit cylinder UCA2 Series

During Use

1. During installation

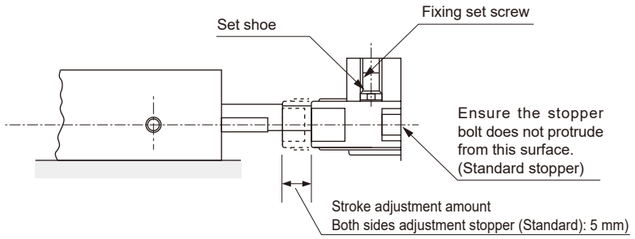
Caution

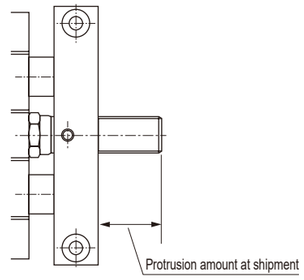
■ About stopper adjustment method

- When adjusting the stroke, loosen the fixing set screw and then turn the stopper bolt to adjust. Also, after adjustment, tighten the fixing set screw.
  Recommended tightening torque for fixing set screw: 1.4 N·m
- The adjustment amount of the stopper depends on Table A.
- Using a longer stroke will cause malfunction, so please refrain from doing so. Ensure the standard stopper does not protrude beyond the outside of the end plate. For single-side adjustment stopper P1 and both-sides adjustment stopper P2, do not adjust them to extend beyond the projection amount at the time of shipment (Table A).

Table A

Item		Stroke adjustment amount	Protrusion amount at shipment
Both sides adjustment stopper (Standard) Blank	Plate A side	-5 mm	0 mm
	Plate B side		
One side adjustment stopper P1A	Plate A side	-30 mm	25 mm
	Plate B side	-5 mm	0 mm
One side adjustment stopper P1B	Plate A side	-5 mm	0 mm
	Plate B side	-30 mm	25 mm
Both sides adjustment stopper P2	Plate A side	-17.5 mm	12.5 mm
	Plate B side		





■ Treat our Shock absorbers as consumable parts.
Replace when a decrease in energy absorption capacity is observed or when operation is no longer smooth.

For precautions regarding mounting, installation, adjustment, use, and maintenance, please see "Precautions for Use" in this catalog and the CKD Components Product website (https://www.ckd.co.jp/kiki/en/) → "Model No." → Instruction Manual

About switch single item model No.

The single item Model No. of the switch is as follows.

SW – Switch Model No.

For the lead wire outlet direction, straight type (H) and L-shaped type (V) are available.

Cylinder Switch

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Cylinder with Switch System Table 756

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Cylinder Switch

Solid state switch

	M Series				R Series					T Series											K Series					F Series						
														Improved Water Resistance	For Cutting Oil			For Cutting Oil	For AC Magnetic Field												
Sub-item	M2	M2WV	M3	M3WV	R1	R2	R2Y	R3	R3Y	T1	T2	T2J	T2W	T2WL	T2YL	T3	T3P	T3W	T3YL	T2YD	K2	K2Y	K3	K3P	K3Y	F2	F2Y	F2S	F3	F3Y	F3P	F3S
Grommet	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Terminal box					●	●	●	●	●																							
Connector											○		○	○	○	○	○	○		○		○					○					
2-wire	●	●			●	●	●			●	●	●	●	●	●					●	●	●				●	●	●				
3-wire			●	●				●	●							●	●	●	●				●	●	●				●	●	●	●
LED	Red	Red/Green	Red	Red/Green	Red	Red	Red/Green	Red	Red/Green	Red	Red	Red	Red/Green	Red/Green	Red/Green	Red	Yellow	Red/Green	Red/Green	Red/Green	Red	Red/Green	Red	Yellow	Red/Green	Yellow	Red/Green	Red	Yellow	Red/Green	Yellow	Red
Neon lamp (Lights up when OFF)																															
No indicator etc.																															
2-color indicator type		●		●			●		●				●	●	●					●		●			●				●			
5 VDC			●					●	●														●	●							
10 VDC to 30 VDC (28 V)	●	●		●		●	●				●	●			●	●	●	●	●						●		●	●	●		●	
24 VDC													●	●						●						●						
30 VDC or less			●	●				●	●						●	●	●	●					●	●	●				●	●	●	●
100 VAC/110 V					●					●																						
200 VAC/220 V					●					●																						
Programmable Controller	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
IC circuit			●	●				●	●														●	●	●				●	●	●	●
Relay			●	●	●			●	●							●	●	●	●				●	●	●				●	●	●	●
Large capacity relay																																

Reed switch

	M Series		R Series				T Series				K Series		F Series	H Series		E Series		V Series
										For magnetized environment				For strong magnetic field		Heat resistant		For small magnetic field
Main item	Sub-item	M0	M5	R0	R4	R5	R6	T0	T5	T8	TOY	K0	K5	F0	H0	H0Y	E0	ET0	V0
Wiring method	Grommet	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●
	Terminal box			●	●	●	●										●		
	Connector							○			○				○	○			○
Number of wires	2-wire	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	3-wire																		
With indicator lamp	LED	Red		Red			Red	Red		Red	Red/Green	Red		Yellow	Green	Red/Green	Red	Yellow	Red
	Neon lamp (Lights up when OFF)				●														
	No indicator etc.		●			●			●				●						
	2-color indicator type										●					●			
Operating voltage *1	5 VDC		●			●			●				●						
	10 VDC to 30 VDC (28 V)																		
	24 VDC	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●
	30 VDC or less																		
	100 VAC/110 V	●	●	●	●	●		●	●	●		●	●		●		●	●	●
	200 VAC/220 V			●	●	●				●							●		
Applications	Programmable controller	●	●	●		●	●	●	●	●	●	●	●	●	●		●	●	●
	IC circuit		●			●			●				●						
	Relay	●	●	●		●		●	●	●		●	●		●		●	●	●
	Large capacity relay				●														

●: Standard Product ○: Custom specification product (Selectable connector types vary depending on the model, so check the catalog for details.)

About switch single item model No.

Model No.notation Notation Example: SW-T2H5

SW - T2 H 5

① Switch model No. ③ Lead wire length

② Lead wire extraction direction

① Switch model No.

M2	M2WV	M3	M3WV	R1	R2	R2Y	R3	R3Y	T1	T2	T2J	T2W	T2WL	T2YL	T3	T3P	T3W	T3YL	T2YD	K2	K2Y
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Note) Please refer to the table above.

② Lead wire extraction direction

Code	H	V	V, S
Outlet direction	Straight	L-shape	L-shape
Appearance			F*S, T2WLV only

③ Lead wire length

Blank (1 m), **3** (3 m), 5 (5 m)

* The selectable length varies depending on the model, so please check the catalog specifications for details.

Cylinder switch (Cylinder system with switch)

Solid state switch

Reed switch

Cylinder Model		Bore size	Mounting method: Band	Mounting method: Tie Rod	Mounting method: Rail	Presence / absence of magnet in main body: Standard equipment	Presence / absence of magnet in main body: Option	M Series: M0	M Series: M5	R Series: R0	R Series: R4	R Series: R5	R Series: R6	T Series: T0	T Series: T5	T Series: T8	T Series: T0Y (For magnetized environment)	K Series: K0	K Series: K5	F Series: F0	H Series: H0 (For strong magnetic field)	H Series: H0Y (For strong magnetic field)	E Series: E0 (Heat resistant)	E Series: ET0 (Heat resistant)	M Series: M2	M Series: M2WV	M Series: M3	M Series: M3WV	R Series: R1	R Series: R2	R Series: R2Y	R Series: R3	R Series: R3Y	T Series: T1	T Series: T2	T Series: T2J	T Series: T2W	T Series: T2WL (Improved Water Resistance)	T Series: T2YL (For Cutting Oil)	T Series: T3	T Series: T3P	T Series: T3W	T Series: T3YL (For Cutting Oil)	T Series: T2YD (For AC Magnetic Field)	K Series: K2	K Series: K2Y	K Series: K3	K Series: K3P	K Series: K3Y	F Series: F2	F Series: F2Y	F Series: F2S	F Series: F3	F Series: F3Y	F Series: F3P	F Series: F3S
General Type	SCP□3	ø6 to ø16	●				●							●	●																		●		●	●	●		●	●	●																
	CMK2	ø20 to ø40	●			●								●	●	●	▲														●	●	●	●	●	▲	●	●	●	▲																
	CMA2	ø20 to ø40	●			●								●	●	●															●	●	●	●	●		●	●	●	▲																
	SCM	ø20 to ø100	●		●	●								●	●	●	▲														●	●	●	●	●	▲	●	●	●	▲	●															
	SCG	ø40 to ø100		●		●								●	●	●	▲														●	●	●	●	●	▲	●	●	●	▲	●															
	SCA2	ø40 to ø100		●		●								●	●	●	▲				▲	▲	▲								●	●	●	●	●	▲	●	●	●	▲	●															
	SCA2-V	ø40 to ø100		●		●								●	●																●	●	●	●	●		●	●	●		●															
	SCS2	ø125 to ø250		●			●							●	●	●	▲														●	●	●	●	●	▲	●	●	●	▲	●															
Space-saving Type	SSD2	ø12 to ø200			●		●							●	●	●	▲						▲								●	●	●	●	●	▲	●	●	●	▲	●															
	SSG	ø12 to ø100			●		●							●	●	●	▲														●	●	●	●	●	▲	●	●	●	▲	●															
	SSD	ø12 to ø160			●		●							●	●	●	▲														●	●	●	●	●	▲	●	●	●	▲	●															
	MDC2	ø4 to ø10			●		●													●											●	●	●	●	●	▲	●	●	●	▲	●															
	SMG	ø6 to ø32			●		●											●	●												●	●	●	●	●	▲	●	●	●	▲	●															
	MSD	ø6 to ø16			●		●													●											●	●	●	●	●	▲	●	●	●	▲	●															
	FC□	ø25 to ø63			●		●	●	●																						●	●	●	●	●	▲	●	●	●	▲	●															
With Linear Guide	LCM	ø4.5 to ø8			●		●																								●	●	●	●	●	▲	●	●	●	▲	●															
	LCR	ø6 to ø25			●	●								●	●																●	●	●	●	●	▲	●	●	●	▲	●															
	LCG	ø6 to ø25			●	●								●	●																●	●	●	●	●	▲	●	●	●	▲	●															
	LCW	ø12 to ø20			●	●								●	●																●	●	●	●	●	▲	●	●	●	▲	●															
	LCX	ø25 to ø32			●	●								●	●																●	●	●	●	●	▲	●	●	●	▲	●															
	MSDG-L	ø6 to ø16			●	●														●											●	●	●	●	●	▲	●	●	●	▲	●															
Guided	STM	ø6 to ø10			●	●																									●	●	●	●	●	▲	●	●	●	▲	●															
	STG	ø12 to ø100			●	●								●	●	●	▲														●	●	●	●	●	▲	●	●	●	▲	●															
	STS/L	ø8 to ø100			●	●								●	●	●	▲														●	●	●	●	●	▲	●	●	●	▲	●															
	STR2	ø6 to ø32			●	●												●	●												●	●	●	●	●	▲	●	●	●	▲	●															
	UCA2	ø10 to ø32			●		●							●	●																●	●	●	●	●	▲	●	●	●	▲	●															
Rodless Type	SRL3	ø10 to ø100			●	●		●	●																						●	●	●	●	●	▲	●	●	●	▲	●															
	SRG3	ø12 to ø25			●		●	●	●																						●	●	●	●	●	▲	●	●	●	▲	●															
	SRM3	ø25 to ø63			●		●							●	●	●															●	●	●	●	●	▲	●	●	●	▲	●															
	SRT3	ø32 to ø63			●	●		●	●																						●	●	●	●	●	▲	●	●	●	▲	●															
	MRL2	ø6 to ø20			●		●																								●	●	●	●	●	▲	●	●	●	▲	●															
	MRG2	ø10 to ø25			●	●								●	●																●	●	●	●	●	▲	●	●	●	▲	●															

●: Standard Product ▲: Mountable depending on conditions
Varies depending on conditions such as variation and tube inner diameter. Please check the product specifications for details.

Cylinder switch (Cylinder system with switch)

Solid state switch

Cylinder Model		Bore size	Mounting method: Band	Mounting method: Tie Rod	Mounting method: Rail	Presence / absence of magnet in main body: Standard equipment	Presence / absence of magnet in main body: Option	M Series: M2	M2WV	M3	M3WV	R Series: R1	R2	R2Y	R3	R3Y	T Series: T1	T2	T2J	T2W	T2WL	T2YL	T3	T3P	T3W	T3YL	T2YD	K Series: K2	K2Y	K3	K3P	K3Y	F Series: F2	F2Y	F2S	F3	F3Y	F3P	F3S
With Brake	ULK	ø20 to ø40	●			●											●	●	●	●	●		●	●	●														
	JSK2	ø20 to ø40	●			●											●	●	●	●	●		●	●	●														
	JSM2	ø20 to ø40	●			●											●	●	●	●	●		●	●	●														
	JSG	ø40 to ø100		●		●											●		●	●	●		●	●	●		●												
	JSC3	ø40 to ø100		●		●											●		●	●	●		●	●	●		●												
	JSC4	ø125 to ø100		●			●										●	●	●	●	●		●	●	●		●												
With lock	USSD	ø20 to ø100			●		●										●	●	●	●	●		●	●	●		●												
	UFCD-KL	ø25 to ø63			●	●		●	●	●	●																												
	USC	ø40 to ø100		●		●											●	●	●	●	●		●	●	●		●												
With Valve	CKV2	ø20 to ø40	●			●											●	●	●	●	●		●	●	●														
	CAV2, COV2	ø50 to ø100		●		●											●	●	●	●	●		●	●	●		●												
Clamp Cylinder	CAC4	ø40 to ø80	●	●		●											●	●	●	●	●		●	●	●		●												
	UCAC2	ø50, ø63	●	●		●											●	●	●	●			●	●	●		●												
	CAC-N	ø32, ø40	●	●		●											●	●	●	●	●		●	●	●		●												
	UCAC-N	ø32, ø40, ø63	●	●		●											●	●	●	●			●	●	●		●												
	RCS2	ø12 to ø63			●	●											●	●	●	●	●		●	●	●		●					●	●	●	●	●	●	●	
	RCC2	ø16 to ø63			●	●												●	●	●	●		●	●	●		●					●	●	●	●	●	●	●	
Special cylinder	MVC	ø6, ø10			●	●																										●	●	●	●	●	●	●	
	STK	ø20 to ø50			●	●											●	●	●	●	●		●	●	●		●												
	MCP	Actual thrust For 2t, 5t		●	●	●											●	●	●	●			●	●	●														
	GLC	ø40 to ø100		●		●						●	●		●																								
High Speed Type	HCM	ø20 to ø63			●	●											●	●	●	●	●		●	●	●		●												
	HCA	ø20 to ø100	●			●						●	●	●	●	●																								
Swinging/Rotating Type	RRC	Size 8, 32, 63			●	●											●	●	●	●	●		●	●	●		●												
	GRC	Size 5 to 80			●	●											●	●	●	●	●		●	●	●		●												
	RV3□	Size 50 to 800					●	●		●							●				●																		
Gripper / Chuck			Catalog name [No]					Refer to Pneumatic Cylinder ⑤ [RJ-006AA].																																		

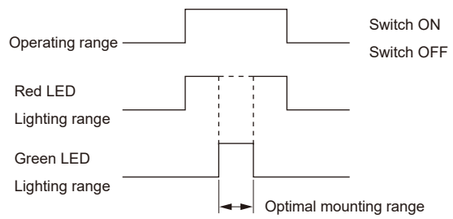
Reed switch

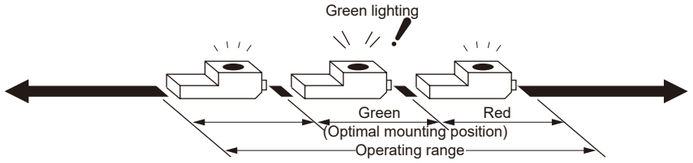
Cylinder Model		Bore size	Mounting method: Band	Mounting method: Tie Rod	Mounting method: Rail	Presence / absence of magnet in main body: Standard equipment	Presence / absence of magnet in main body: Option	M Series: M0	M5	R Series: R0	R4	R5	R6	T Series: T0	T5	T8	T0Y	K Series: K0	K5	F Series: F0	H Series: H0	H0Y	E Series: E0	ET0
With Brake	ULK	ø20 to ø40	●			●								●	●	●								
	JSK2	ø20 to ø40	●			●								●	●	●								
	JSM2	ø20 to ø40	●			●								●	●	●								
	JSG	ø40 to ø100		●		●								●	●	●	▲							
	JSC3	ø40 to ø100		●		●								●	●	●	▲				▲	▲		
	JSC4	ø125 to ø100		●			●							●	●	●	▲							
With lock	USSD	ø20 to ø100			●		●							●	●	●	▲							
	UFCD-KL	ø25 to ø63			●	●																		
	USC	ø40 to ø100		●		●								●	●	●					▲	▲		
With Valve	CKV2	ø20 to ø40	●			●								●	●	●								
	CAV2, COV2	ø50 to ø100		●		●								●	●	●								
Clamp Cylinder	CAC4	ø40 to ø80	●	●		●								●	●	●	▲				▲			
	UCAC2	ø50, ø63	●	●		●								●	●	●	▲				▲	▲		
	CAC-N	ø32, ø40	●	●		●								●	●	●	▲							
	UCAC-N	ø32, ø40, ø63	●	●		●								●	●	●	▲							
	RCS2	ø12 to ø63			●	●								●	●	●	▲							
	RCC2	ø16 to ø63			●	●								●	●		▲							
Special cylinder	MVC	ø6, ø10			●	●														●				
	STK	ø20 to ø50			●	●								●	●	●	▲							
	MCP	Actual thrust For 2t, 5t		●	●	●								●	●	●								
	GLC	ø40 to ø100		●		●				●	●	●	●								▲			
High Speed Type	HCM	ø20 to ø63			●	●								●	●	●	●							
	HCA	ø20 to ø100	●			●				●	●	●	●											
Swinging/Rotating Type	RRC	Size 8, 32, 63			●	●								●	●	●								
	GRC	Size 5 to 80			●	●																		
	RV3□	Size 50 to 800					●	●	●															
Gripper / Chuck			Catalog name [No]					Refer to Pneumatic Cylinder ⑤ [RJ-006AA].																

●: Standard Product ▲: Mountable depending on conditions
Varies depending on conditions such as variation and tube inner diameter. Please check the product specifications for details.

2-Color Indicator Solid State Cylinder Switch

● Lamp Display





Overview

Conventionally, position detection switches for pneumatic cylinders required troublesome mounting and adjustment work due to their operating range and hysteresis. The 2-color indicator type solid state cylinder switch lights up green at the optimal mounting position and red in the normal operating range, instantly displaying the optimal mounting position. Therefore, it not only eliminates the time and hassle involved in switch adjustment, but also reduces setting errors to zero, allowing for the construction of highly reliable equipment.

Main features

● Easy to mount and adjust

Since the green display position is the optimal mounting position, mounting and adjusting the switch is extremely easy.

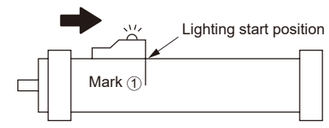
● Highly reliable

This is an extremely reliable switch due to the adoption of a unique hybrid IC equipped with a magnetoresistive element.

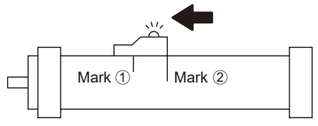
● Cylinder / Switch Setting Comparison

[Conventional] → [2-color indicator type switch]

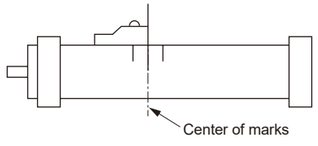
① Move the switch from one direction and mark the lighting start position.



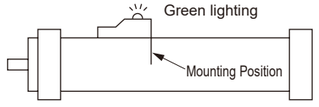
② Similarly move from the opposite direction and mark the lighting start position.



③ Align the end face of the switch with the center of the two marks and fix it.



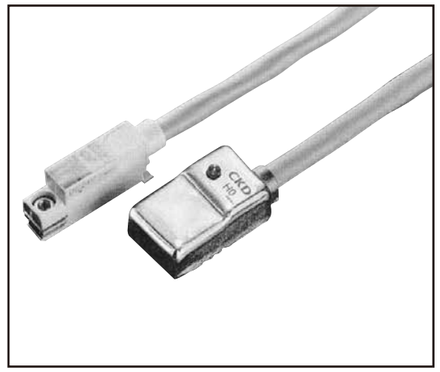
① Move the switch in one direction only and fix it at the position where it lights up green.



2-color indicator type switch is
① Quick mounting
② Easy mounting
③ No setting errors

Cylinder Switch

Strong magnetic field resistant cylinder switch



Overview

This is a cylinder switch that can be used in environments where strong magnetic fields are generated, such as around spot welding machines and magnetizing equipment in automobile factories.

Main features

● Easy to mount/position (V0, T2YD)

Adopts rail mounting method. Can be mounted with a single screw, and position adjustment is also easy.

● Uses heat-resistant material

The main body is made of metal (H0, H0Y) and self-extinguishing resin UL94-V0 (V0, T2YD), and flame-retardant lead wires are used (optional for T2YD). Prevents combustion and melting of the main body and lead wires due to spatter.

● No polarity (H0, T2YD, H0Y)

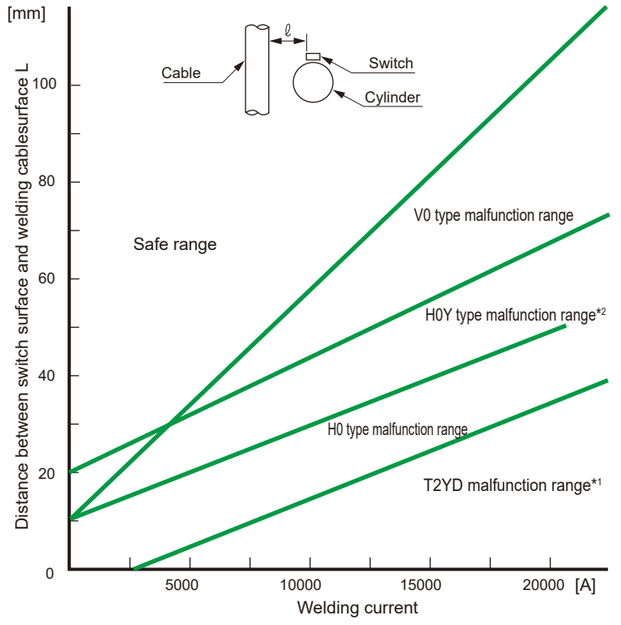
Non-polarity achieved with built-in diode bridge. Eliminates the hassle of checking positive and negative polarity, preventing connection errors.

● Easy to adjust with 2-color indicator (T2YD, H0Y)

Since the green display is the optimal mounting position, mounting and adjusting the switch is extremely easy.

Caution

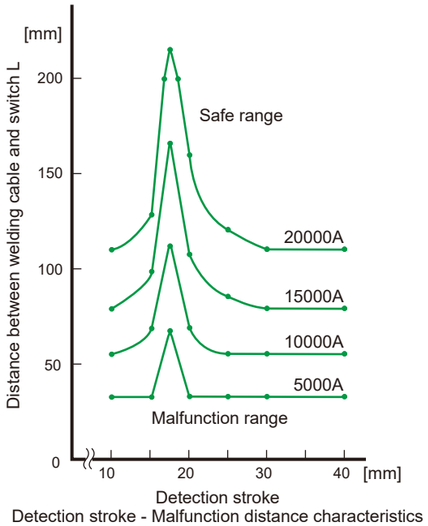
① Spot welding current - Malfunction distance characteristics
(For V0 switch with detection stroke of 30 mm or more)



The above external magnetic field resistance performance is the performance when the switch is mounted within the range of "maximum sensitivity position ±1 mm" for H0, "maximum sensitivity position ±1.5 mm" for V0, and "optimal mounting range" for H0Y, so be sure to mount the switch within this range. Do not pass welding current while the cylinder piston is moving.
If there are two or more welding cables and they are energized simultaneously, the magnetic flux will increase due to the synergistic effect of the cables, so please consult us. Also, it cannot be used if the switch enters the loop of the cable.

*1: Indicates malfunctions caused by demagnetization of the cylinder's piston magnet due to the welding magnetic field.
*2: Malfunction of H0Y refers to output malfunction.
*3: T2YD is a switch exclusively for AC magnetic fields.

② SSD detection stroke - Malfunction distance characteristics (V0 Switch)



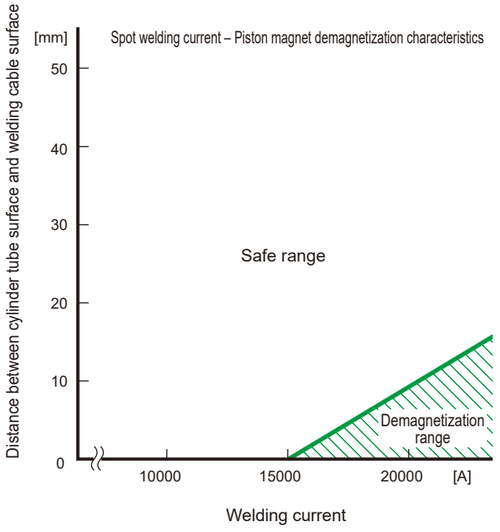
Detection stroke - Malfunction distance characteristics

If used with a detection stroke of less than 30 mm, please maintain the distance shown in the figure above between the welding cable and the switch.

Cylinder Switch

③ H type cylinder switch

Magnet performance near spot welding



Demagnetization occurs when an AC magnetic field is applied to the magnet. The magnet of the H-type switch equipped cylinder has countermeasures and will not demagnetize up to 15,000A, but if it exceeds 15,000A, please maintain the distance shown in the figure above between the cylinder tube surface and the welding cable surface.

MEMO

Cylinder Switch

M Series	Applicable Cylinder	FC□, RV3□, SRL3, SRG3, SRT3, UFCD

M□V

M□H

Specifications

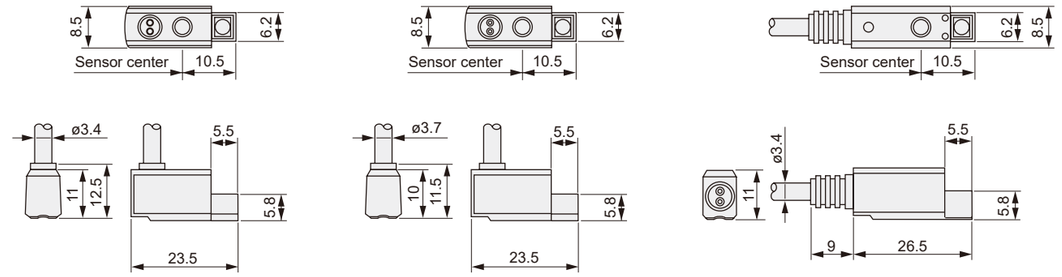
Item	Solid state 2-wire type		Solid state 3-wire type		
	M2V, M2H	M2WV (2-color indicator type)	M3H/V (NPN output type)	M3PH/V (PNP output type)	M3WV (2-color indicator type)
Applications	For programmable controller only		For programmable controller, relay, IC circuit, small solenoid valve		
Output method	–		NPN output	PNP output	NPN output
Power supply voltage	–		4.5 to 28 VDC		10 to 28 VDC
Load voltage	10 to 30 VDC		30 VDC or less		
Load current	5 to 30 mA		100 mA or less		
Current consumption	–		10 mA or less at 24 VDC	10 mA or less at 24 VDC	15 mA or less at 24 VDC
Internal voltage drop	4 V or less		0.5 V or less		
Indicator LED	Red LED (Lights up when ON)	Red/Green LED (Lights up when ON)	Red LED (Lights up when ON)	Yellow LED (Lights up when ON)	Red/Green LED (Lights up when ON)
Leakage current	1 mA or less		10 μA or less	0.05 mA or less	10 μA or less
Lead wire length	1 m (Oil-resistant vinyl cabtyre cord 2-core 0.2 mm²)		1 m (Oil-resistant vinyl cabtyre cord 3-core 0.15 mm²)		
Shock resistance	980 m/s²				
Insulation resistance	100 MΩ or more with 500 VDC megger				
Dielectric strength	No abnormality when 1000 VAC is applied for 1 minute				
Ambient Temperature	-10 to +60°C				
Protection structure	IEC standard IP67, JIS C0920 (Immersible type)				
Weight	1 m: 22 g 3 m: 57 g 5 m: 93 g		1 m: 22 g 3 m: 57 g 5 m: 93 g		

Item	Reed 2-wire type			
	M0V, M0H		M5V, M5H	
Applications	For programmable controller, relay		For programmable controller, relay, IC circuit (no indicator light), series connection	
Power supply voltage	–			
Load voltage	12/24 VDC	110 VAC	5/12/24 VDC	110 VAC
Load current	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less
Current consumption	–			
Internal voltage drop	3 V or less (In case of DC, when load current is 30 mA)		0.1 V or less (*4)	
Indicator LED	Red LED (Lights up when ON)		No Indicator LED	
Leakage current	0 mA			
Lead wire length	1 m (Oil-resistant vinyl cabtyre cord 2-core 0.2 mm²)			
Shock resistance	294 m/s²			
Insulation resistance	100 MΩ or more with 500 VDC megger			
Dielectric strength	No abnormality when 1000 VAC is applied for 1 minute			
Ambient Temperature	-10 to +60°C			
Protection structure	IEC standard IP67, JIS C0920 (Immersible type)			
Contact protection circuit *5	None			
Weight	1 m: 22 g 3 m: 57 g 5 m: 93 g			

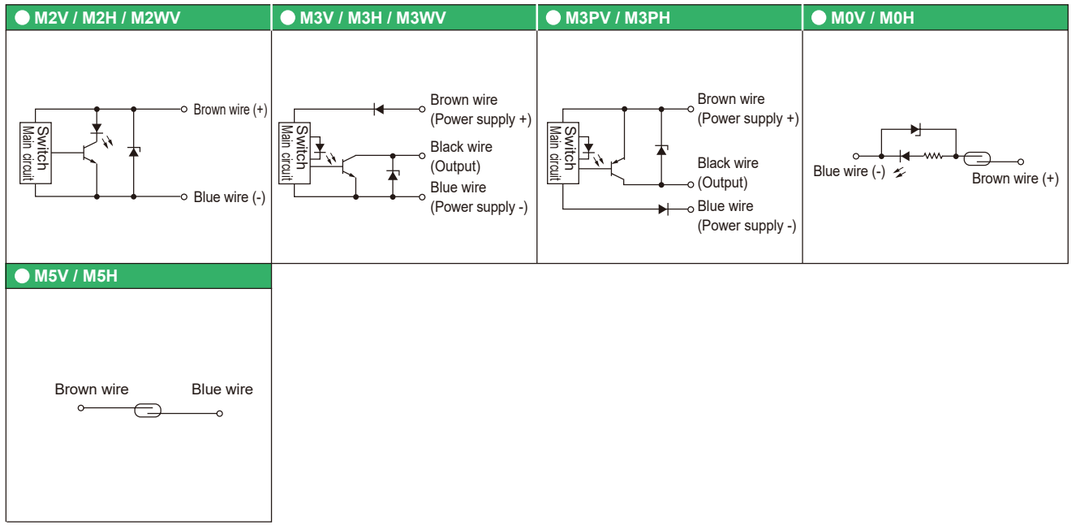
*1: M□H can be used for SRL3, SRG3, SRT3.
*2: For switch model Nos. that can be mounted on the cylinder, please refer to the P. for each cylinder model.
*3: Please consult us separately for cylinder switches with connectors.
*4: Internal resistance 0.5 Ω or less
***5: For contact protection measures, see P. 783.**

Outline Dimension Drawing

● M□V Series (L-shaped lead wire type) ● M□W series (2-color indicator type, L-shaped lead wire type) ● M□H Series (Straight lead wire type)



Switch internal circuit diagram



R Series	Applicable Cylinder	GLC, HCA, MFC, SHC

(Excluding R1, R4)

R□, R□Y

R□B

Specifications

Item	Solid state 2-wire type			Solid state 3-wire type	
	R1, R1K	R2, R2K	R2Y, R2YK (2-color indicator type)	R3, R3K	R3Y, R3YK (2-color indicator type)
Applications	Programmable controller, Relay, Small solenoid valve	For programmable controller only		For programmable controller, relay, IC circuit, solenoid valve	
Output method	–			NPN output	
Power supply voltage	–	–		4.5 to 28 VDC	
Load voltage	85 to 265 VAC	10 to 30 VDC		30 VDC or less	30 VDC or less
Load current	5 to 100 mA	5 to 30 mA		200 mA or less	100 mA or less
Current consumption	–	–		At 24 VDC (When ON)	
				10 mA or less	16 mA or less
Internal voltage drop	10% or less of load voltage	4 V or less		0.5 V or less at 150 mA	0.5 V or less
Indicator LED	Red LED (Lights up when ON)		Red/Green LED (Lights up when ON)	Red LED (Lights up when ON)	Red/Green LED (Lights up when ON)
Leakage current	1 mA or less at 100 VAC, 2 mA or less at 200 VAC	1 mA or less		10 μA or less	
Lead wire length	1 m (Oil-resistant vinyl cabtyre cord 2-core 0.3 mm²)			1 m (Oil-resistant vinyl cabtyre cord 3-core 0.2 mm²)	
Shock resistance	980 m/s²				
Insulation resistance	20 MΩ or more with 500 VDC megger				
Dielectric strength	1500 VAC, 1 minute No abnormality upon application	No abnormality when 1000 VAC is applied for 1 minute			
Ambient Temperature	-10 to +60°C				
Protection structure	Grommet type is IEC standard IP67, JIS C0920 (Immersible type)				
Option	With terminal box R*B (Not waterproof)				
Weight	1 m: 42 g 3 m: 100 g 5 m: 158 g		1 m: 56 g 3 m: 114 g 5 m: 172 g	1 m: 42 g 3 m: 100 g 5 m: 158 g	1 m: 56 g 3 m: 114 g 5 m: 172 g

Item	Reed 2-wire type								
	R0			R4		R5			R6
Applications	For relay, programmable controller			For high capacity relay, solenoid valve		For programmable controller, relay, IC circuit (no indicator light), series connection			For programmable controller only (With DC self-holding function)
Power supply voltage	–			–		–			–
Load voltage	12/24 VDC	110 VAC	220 VAC	110 VAC	220 VAC	5/12/24 VDC	110 VAC	220 VAC	24 VDC ±10%
Load current	5 to 50 mA	7 to 20 mA	7 to 10 mA	20 to 200 mA	10 to 200 mA	50 mA or less	20 mA or less	10 mA or less	5 to 50 mA
Current consumption	–			–		–			–
Internal voltage drop	3.0 V or less			2 V or less		0.5 V or less (*1)			5 V or less
Indicator LED	Red LED (Lights up when ON)			Neon lamp OFF (Lights up when OFF)		None			Red LED (Lights up when ON)
Leakage current	0 mA			1 mA or less		0 mA			0.1 mA or less
Lead wire length	1 m (Oil-resistant vinyl cabtyre cord 2-core 0.3 mm²)								
Shock resistance	294 m/s²								
Insulation resistance	20 MΩ or more with 500 VDC megger								
Dielectric strength	No abnormality when 1500 VAC is applied for 1 minute								
Ambient Temperature	-10 to +60°C								
Protection structure	Grommet type is IEC standard IP67, JIS C0920 (Immersible type)								
Contact protection circuit *2	Yes								None
Option	With terminal box R□B (Not waterproof)								
Weight	1 m: 42 g 3 m: 100 g 5 m: 158 g								

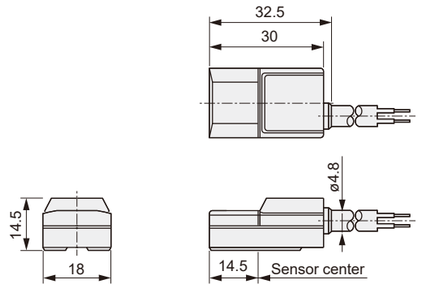
*1: Internal resistance 10Ω or less

*2: For contact protection measures, see P. 783.

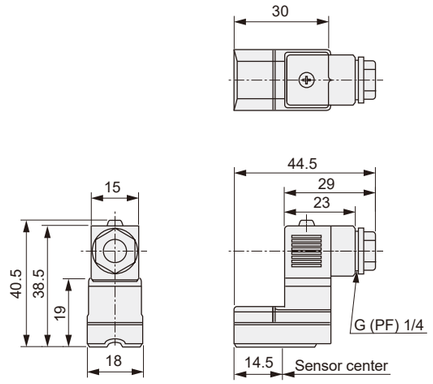
External dimension diagram / Switch internal circuit diagram

Outline Dimension Drawing

● R Series (Grommet Type)

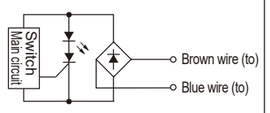


● R Series (Terminal box R□B type)

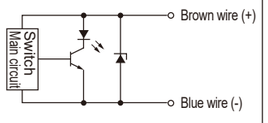


Switch internal circuit diagram

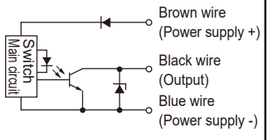
● R1



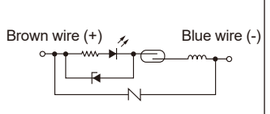
● R2 / R2Y



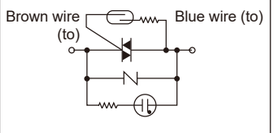
● R3 / R3Y



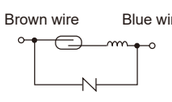
● R0



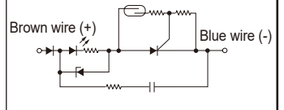
● R4



● R5

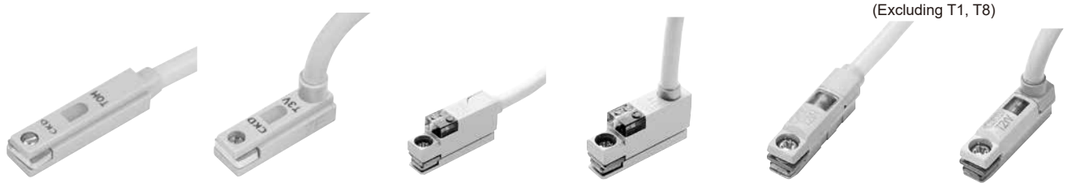


● R6



T Series	Applicable Cylinder	CAC4 CKV2 CMA2 CMK2 HCM JSC3 JSC4 JSG JSK2 JSM2 LCG LCR LCW LCX MRG2 MRL2 RCS2 RCC2 RRC SCA2 SCG SCM SCP□3 SCS2 SRM3 SSD SSD2 SSG STG STS/STL STK UCA2 UCAC2 ULK Gripper Check Valve

(Excluding T1, T8)



T□H / T□WH　T□V / T□WV　T1H　T1V　T8H / T2JH　T8V / T2JV

Specifications

Item	Solid state 2-wire type					Solid state 3-wire type		
	T1H, T1 V	T2H, T2V	T2HR3, T2VR3 (Flexible lead wire type)	T2JH, T2JV (Off-delay type)	T2WH, T2WV (2-color indicator type)	T3H, T3V	T3PH, T3PV (PNP output type)	T3WH, T3WV (2-color indicator type)
Applications	For programmable controller, relay, small solenoid valve	For programmable controller only				For programmable controller, relay		
Output method	–					NPN output	PNP output	NPN output
Power supply voltage	–					10 to 28 VDC		
Load voltage	85 to 265 VAC	10 to 30 VDC			24 VDC ±10%	30 VDC or less		
Load current	5 to 100 mA	5 to 20 mA (*1)				100 mA or less		50 mA or less
Current consumption	–	–				10 mA or less at 24 VDC	10 mA or less at 24 VDC	10 mA or less at 24 VDC
Internal voltage drop	10% or less of load voltage	4 V or less				0.5 V or less		
Off-delay time	–			200 ±50 ms	–	–		
Indicator LED	Red LED (Lights up when ON)				Red/Green LED (Lights up when ON)	Red LED (Lights up when ON)	Yellow LED (Lights up when ON)	Red/Green LED (Lights up when ON)
Leakage current	1 mA or less at 100 VAC, 2 mA or less at 200 VAC	1 mA or less				10 μA or less		
Lead wire length *6	1 m (Oil-resistant vinyl cabtyre cord 2-core 0.3 mm²)	1 m (Oil-resistant vinyl cabtyre cord 2-core 0.2 mm²)	3 m (Flexible, oil-resistant vinyl cabtyre cord 2-core 0.2 mm²)	1 m (Oil-resistant vinyl cabtyre cord 2-core 0.3 mm²)	1 m (Oil-resistant vinyl cabtyre cord 2-core 0.2 mm²)	1 m (Oil-resistant vinyl cabtyre cord 3-core 0.2 mm²)		1 m (Oil-resistant vinyl cabtyre cord 3-core 0.2 mm²)
Shock resistance	980 m/s²							
Insulation resistance	100 MΩ or more with 500 VDC megger	20 MΩ or more with 500 VDC megger		100 MΩ or more with 500 VDC megger	20 MΩ or more with 500 VDC megger	20 MΩ or more with 500 VDC megger		20 MΩ or more with 500 VDC megger
Dielectric strength	No abnormality when 1000 VAC is applied for 1 minute	No abnormality when 1000 VAC is applied for 1 minute						
Ambient Temperature	-10 to +60°C							
Protection structure	IEC standard IP67, JIS C0920 (Immersible type)							
Weight	1 m: 33 g 3 m: 87 g 5 m: 142 g	1 m: 18 g 3 m: 49 g 5 m: 80 g		1 m: 33 g 3 m: 87 g 5 m: 142 g	1 m: 18 g 3 m: 49 g 5 m: 80 g	1 m: 18 g 3 m: 49 g 5 m: 80 g		1 m: 18 g 3 m: 49 g 5 m: 80 g

Item	Reed 2-wire type						
	T0H, T0V		T5H, T5V		T8H, T8V		
Applications	For programmable controller, relay		For programmable controller, relay, IC circuit (no indicator light), series connection		For programmable controller, relay		
Power supply voltage	–						
Load voltage	12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC
Load current	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA
Current consumption	–						
Internal voltage drop	3 V or less (In case of DC, when load current is 30 mA)		0.1 V or less (*4)		4 V or less		
Indicator LED	Red LED (Lights up when ON)		No Indicator LED		Red LED (Lights up when ON)		
Leakage current	0 mA						
Lead wire length	1 m (Oil-resistant vinyl cabtyre cord 2-core 0.2 mm²)				1 m (Oil-resistant vinyl cabtyre cord 2-core 0.3 mm²)		
Shock resistance	294 m/s²						
Insulation resistance	20 MΩ or more with 500 VDC megger				100 MΩ or more with 500 VDC megger		
Dielectric strength	No abnormality when 1000 VAC is applied for 1 minute				No abnormality when 1500 VAC is applied for 1 minute		
Ambient Temperature	-10 to +60°C						
Protection structure	IEC standard IP67, JIS C0920 (Immersible type)						
Contact protection circuit *5	None				Yes		
Weight	1 m: 18 g 3 m: 49 g 5 m: 80 g				1 m: 33 g 3 m: 87 g 5 m: 142 g		

*1: Maximum load current for T2H, T2V, T2HR3, T2VR3: 20 mA, is at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (It will be 5 to 10 mA at 60°C.)
*2: For T2JH and T2JV switches, when mounting on SRL3 (ø32 to ø100), MRL2, LCR, UCAC2, or gripper/chuck, it will be handled as a custom product.
*3: Some cylinders have limited mountable switches. Please refer to the P. for each cylinder for details.
*4: Internal resistance 0.5 Ω or less.　*5: For contact protection measures, see P. 783.

Cylinder Switch

T Series	For AC Magnetic Field	Applicable Cylinder	CAC4 JSC3 JSC4 JSG RCC2 RCS2 SCA2 SCG SCM SCS2 SRG3 SRL3 SRM3 SRT3 SSD SSD2 SSG STG STS / STL UCAC2 USC USSD

(Excluding T1, T8)

T2YD

Specifications

Item	Solid state 2-wire type		
	T2YD	T2YDT	T2YDU (Custom Products)
Applications	For programmable controller only		
Indicator LED	Red/Green LED (Lights up when ON)		
Load voltage	24 VDC ±10%		
Load current	5 to 20 mA		
Internal voltage drop	6 V or less		
Leakage current	1.0 mA or less		
Output delay time *1 (ON-delay, OFF-delay)	60 ms or less		
Lead wire length	1 m (Oil-resistant vinyl cabtyre cord ø6, 0.5 mm² x 2 cores) *2	1 m (Flame-retardant cabtyre cord ø6, 0.5 mm² x 2 cores) *2	0.3 m (Flame-retardant vinyl cabtyre cord with M12 cable connector, AWG20, 2-core)
Insulation resistance	100 MΩ or more with 500 VDC megger		
Dielectric strength	No abnormality when 1000 VAC is applied for 1 minute		
Shock resistance	980 m/s²		
Ambient Temperature	-10 to +60°C		
Protection structure	JIS C0920 (Immersible type), IEC standard IP67		
Weight	1 m: 61 g 3 m: 166 g 5 m: 272 g		35

*1: Indicates the time from when the magnetic sensor detects the piston magnet until the switch output occurs.
*2: 3 m and 5 m lead wire lengths are available as options.
*3: Since AC magnetic field switches (T2YD□) are for AC welding machines, the strong magnetic field resistance performance cannot be obtained with DC welding machines.

T Series	For Cutting Oil	Applicable Cylinder	CMK2-G2 / 3 HRL-G2 / 3 SCA2-G2 / 3 SCG-G2 / 3 SSD-G2 / 3 SSD2-G2 / 3 STG-G2 / 3 STS/STL-G2 / 3

T□YLH

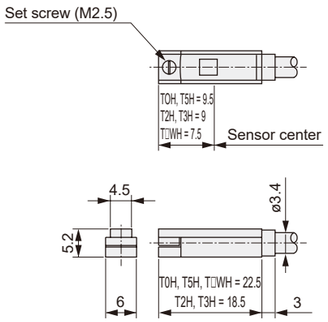
Specifications

Item	Solid state 2-wire type	Solid state 3-wire type
	T2YLH, T2YLV	T3YLH, T3YLV
Applications	For programmable controller only	Programmable controller, Relay
Output method	–	NPN output
Power supply voltage	–	10 to 28 VDC
Load voltage	10 to 30 VDC	30 VDC or less
Load current	5 to 20 mA	50 mA or less
Current consumption	–	10 mA or less at 24 VDC (When ON)
Internal voltage drop	4 V or less	0.5 V or less
Leakage current	1 mA or less	10 μA or less
Indicator LED	Red/Green LED (Lights up when ON)	
Lead Wire	Oil-resistant vinyl cabtyre cord 0.3 mm², 2-core 1 m	Oil-resistant vinyl cabtyre cord 0.2 mm², 3-core 1 m
Insulation resistance	100 MΩ or more with 500 VDC megger	
Dielectric strength	No abnormality when 1000 VAC is applied for 1 minute	
Shock resistance	980 m/s²	
Hysteresis	1.5 mm or less	
Ambient Temperature	-10 to +60°C	
Protection structure	IEC standard IP67, JIS C0920 (Immersible type), Oil resistant (PCB coating)	
Weight	1 m: 33 g 3 m: 87 g 5 m: 142 g	

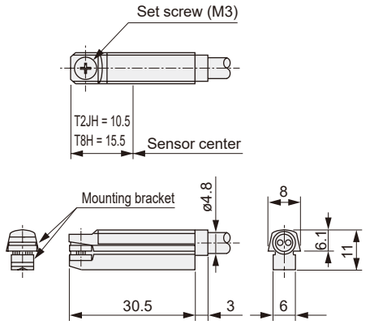
Cylinder Switch

Outline Dimension Drawing

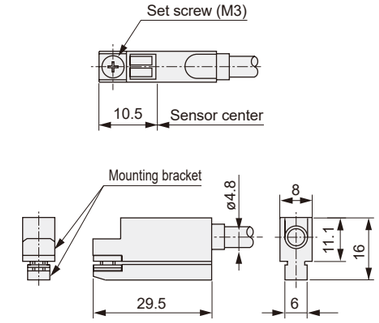
● T□H, T□WH Series
(Straight lead wire type)



● T2JH, T8H Series4
(Straight lead wire type)



● T1H Series
(Straight lead wire type)



● T□V, T□WV Series
(L-shaped lead wire type)

● T2JV, T8V Series
(L-shaped lead wire type)

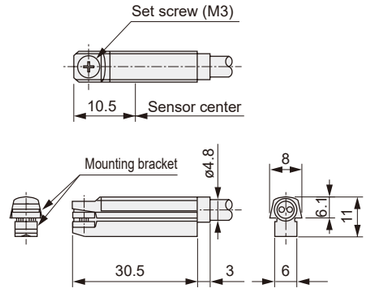
● T1 V Series
(L-shaped lead wire type)

● T2YD (AC magnetic field switch)

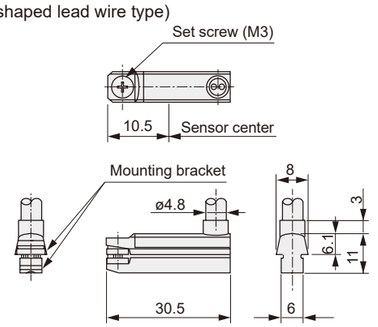
● T2YDU (Switch for AC magnetic field with M12 cable connector)

Outline Dimension Drawing

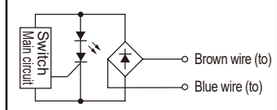
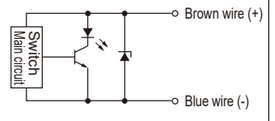
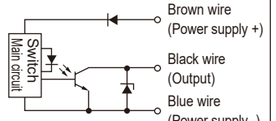
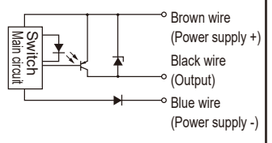
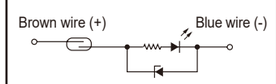
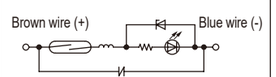
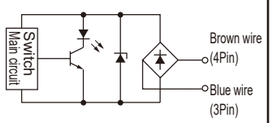
● T□YLH Series
(Straight lead wire type)



● T□YLV Series
(L-shaped lead wire type)



Switch internal circuit diagram

● T1H / T1V	● T2H / T2V, T2WH / T2WV / T2JH / T2JV / T2YLH / T2YLV	● T3H / T3V / T3WH / T3WV / T3YLH / T3YLV	● T3PH / T3PV
			
● T0H / T0V	● T5H / T5V	● T8H / T8V	● T2YD / T2YDT / T2YDU
			

This switch has no polarity.
Values in ( ) are pin assignments for T2YDU.
However, Pin 1 and Pin 2 are N.C. (Not Connected).

T Series	Improved Water Resistance	Applicable Cylinder										
			SCP□3	CMK2	CMA2	SCM	SCG	SCA2	SCS2	CKV2	COV□2	CAV2	SSD2
			SSG	SSD	STK	SRL3	SRG3	SRM3	SRT3	MRL2	MRG2	LCR	LCG
			LCX	STG	STS/L	HCM	CAC4	CAC-N	RCS2	RCC2	MCP	RRC	GRC

T2WLH

T2WLV

Specifications

Item	Solid state 2-wire type	
	T2WLH, T2WLV	T2WLHW, T2WLVW
Applications	For programmable controller only	
Load voltage	24 VDC ±10%	
Load current	5 to 20 mA	
Internal voltage drop	4 V or less	
Leakage current	1 mA or less	
Indicator LED	Red/Green LED (Lights up when ON)	
Lead wire length	1 m (PUR cord 2-core 0.2 mm²)	0.3 m (PUR cord with M8 connector)
Insulation resistance	20 MΩ or more with 500 VDC megger	
Dielectric strength	No abnormality when 1000 VAC is applied for 1 minute	
Shock resistance	980 m/s²	
Ambient Temperature	-10 to +60°C	
Protection structure	IEC standard IP67 JIS C0920 (Immersible type)	
Weight	1 m: 18 g 3 m: 49 g 5 m: 80 g	11 g

*1: Cannot be mounted on drop prevention type.
*2: For switch mountability, refer to the next page.

Model No. Notation Method

● Water-resistant Cylinder Switch

SW - T2WL H W

1 Lead Wire Extraction Direction

2 Lead wire length, connector specification

1 Lead Wire Extraction Direction

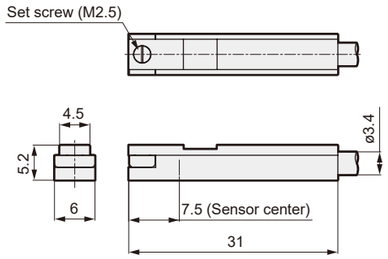
Code	Content
H	Straight lead wire type
V	L-shaped lead wire type

2 Lead wire length, connector specification

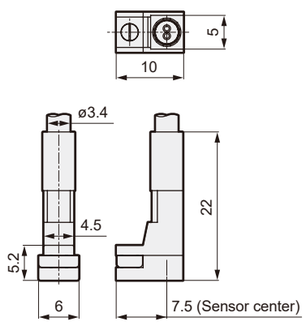
Code	Content
Blank	1 m lead wire
3	3 m lead wire
5	5 m lead wire
W	M8 connector, 1PIN (+) 4PIN (-)

Outline Dimension Drawing

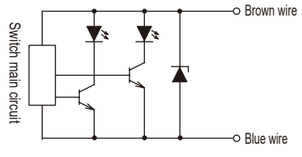
● T2WLH Series (Straight lead wire type)



● T2WLV Series (L-shaped lead wire type)



Switch internal circuit diagram



Switch applicable model list

Applicable Model		Bore size
Pencil Shaped Cylinder	SCP□3	ø6 to 16
Tight Cylinder	CMK2	ø20 to 40
Small Bore Size Cylinder	CMA2	ø20 to 40
Round shaped cylinder	SCM	ø20 to 100
Tie Rod Cylinder	SCG	ø32 to 100
Medium Bore Size Cylinder	SCA2	ø40 to 100
Large Bore Size Cylinder	SCS2	ø125 to 250
Compact cylinder with valve	CKV2	ø20 to 40
Cell Cylinder	COV□2	ø50 to 100
Cell Cylinder	CAV2	ø50 to 100
Compact Cylinder	SSD2	ø12 to 100
Guided Compact Cylinder	SSG	ø12 to 100
Compact Cylinder	SSD	ø12 to 160
Stopper Cylinder	STK	ø20 to 50
Rodless Cylinder	SRL3	ø12 to 100
Rodless Cylinder with High-Precision Guide	SRG3	ø12 to 25
Rodless Cylinder with High-Precision Guide	SRM3	ø25 to 63
Rodless Cylinder with Brake	SRT3	ø12 to 63
Super rodless cylinder with magnet	MRL2	ø6 to 32
Super rodless cylinder with magnet, high precision guide type	MRG2	ø50 to 700
Linear Slide Cylinder	LCR	ø16 to 25
Linear Slide Cylinder	LCG	ø16
Low Profile Linear Slide Cylinder	LCX	ø25, 32
Guided Cylinder	STG	ø12 to 100
Guided Cylinder	STS/L	ø8 to 100
High Energy Absorption Cylinder	HCM	ø20 to 63
Clamp Cylinder	CAC4	ø40 to 80
Lightweight Clamp Cylinder	CAC-N	N32, N40
Rotary Clamp Cylinder	RCS2	ø12 to 63
Rotary Clamp Cylinder	RCC2	ø16 to 63
Mechanical Power Cylinder	MCP	Size 2t, 5t
Selex Rotary	RRC	Size 8 to 63
Table Type Rotary Actuator	GRC	Size 5 to 80

T Series	Magnetized environment	Applicable Cylinder							
			CMK2	SCM	SCG	SCA2	SCS2	SSD2	SSG	SSD
			STK	STG	STS/L	JSG	JSC3	JSC4	USSD	HCM
			CAC4	UCAC2	CAC-N	UCAC-N32		RCS2	RCC2	PCC

TOY

Specifications

Item	Reed 2-wire type		
	T0Y	T0YL	T0YT
Applications	For programmable controller only		
Switch polarity	No polarity		
Load voltage	24 VDC ±10%		
Load current	5 to 20 mA		
Internal voltage drop	4.5 V or less		
Leakage current	0.5 mA or less		
Indicator LED	Red/Green LED (Lights up when ON)		
Lead wire length	1 m (Oil-resistant vinyl cabtyre cord 2-core 0.2 mm²)	1 m (Flame-retardant cabtyre cord 2-core 0.2 mm²) UL certified wire	1 m (Flame-retardant vinyl cabtyre cord 2-core 0.2 mm²)
Insulation resistance	20 MΩ or more with 500 VDC megger		
Dielectric strength	No abnormality when 1000 VAC is applied for 1 minute		
Shock resistance	294 m/s²		
Ambient Temperature	-10 to +60°C		
Protection structure	IEC standard IP67 JIS C0920 (Immersible type)		
Contact protection circuit	None		
Weight	1 m: 18 g 3 m: 49 g 5 m: 80 g		
Weight of connector only	M12: Connector code B/M: 10 g M8: Connector code F: 4 g		

Note) For switch mountability, please refer to the next page.

Model No. Notation Method

● Magnetic Field Resistant Cylinder Switch

SW- T0Y L M K

❶ Lead wire type
❷ Lead wire length, connector specification
❸ Option

❶ Lead wire type

Code	Content
Blank	Oil-resistant vinyl cabtyre cord
L	UL wire
T	Spatter-resistant wire

❷ Lead wire length, connector specification

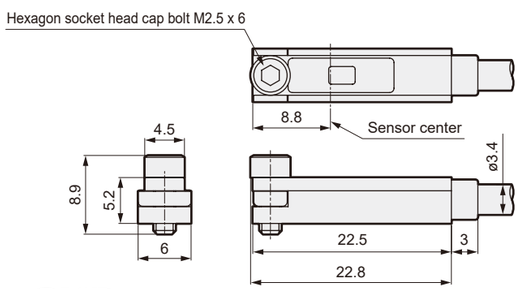
Code	Content
Blank	1 m lead wire
3	3 m lead wire
5	5 m lead wire
B	M12 connector (4PIN specification), 3-4PIN no polarity, 0.3 m lead wire
M	M12 connector (4PIN specification), 1-4PIN no polarity, 0.3 m lead wire
* F	M8 connector (3PIN specification), 1-4PIN no polarity, 0.3 m lead wire

*: For connector specification "F", only lead wire type "L" can be selected.

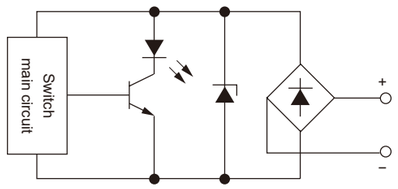
❸ Option

Code	Content
Blank	No option
K	With spatter adhesion prevention cover

Outline Dimension Drawing



Switch internal circuit diagram



Switch applicable model list

Applicable Model		Bore size
Small bore size cylinder	CMK2	ø32, ø40
Round shaped cylinder	SCM	ø32 to 100
Tie Rod Cylinder	SCG	ø40 to 100
Medium Bore Size Cylinder	SCA2	ø40 to 100
Large Bore Size Cylinder	SCS2	ø125 to 250
Compact Cylinder	SSD2	ø32 to 200
Guided Compact Cylinder	SSG	ø32 to 100
Compact Cylinder	SSD	ø32 to 160
Stopper Cylinder	STK	ø32 to 50
Guided Cylinder	STG	ø32 to 80
Guided Cylinder	STS/L	ø32 to 100
Tie Rod Cylinder with Brake	JSG	ø40 to 100
Cell top cylinder (Medium bore)	JSC3	ø40 to 100
Cell top cylinder (Large bore)	JSC4	ø125 to 180
Compact Cylinder with Drop Prevention	USSD	ø40 to 63
High Energy Absorption Cylinder	HCM	ø32 to 63
Clamp Cylinder	CAC4	ø40 to 80
Clamp Cylinder with Fall Prevention	UCAC2	ø50, ø63
Lightweight Clamp Cylinder	CAC-N	ø32, ø40
Lightweight Clamp Cylinder	UCAC-N32	ø32, ø40
Rotary Clamp Cylinder	RCS2	ø32 to 63
Rotary Clamp Cylinder	RCC2	ø32 to 63
Pin Clamp Cylinder	PCC	(ø50)

K Series	Applicable Cylinder	SMG STR2

K□H
K3PH

K□V
K3PV

K□YH

K□YV

Specifications

Item	Solid state 2-wire type		Solid state 3-wire type		
	K2H, K2 V	K2YH, K2YV	K3H/V (NPN output type)	K3PH/V (PNP output type)	K3YH/V (2-color indicator type)
Applications	For programmable controller only		For programmable controller, relay		
Output method	–		NPN output	PNP output	NPN output
Power supply voltage	–		10 to 28 VDC		
Load voltage	10 to 30 VDC		30 VDC or less		
Load current	5 to 20 mA (*1)		50 mA or less		
Current consumption	–		10 mA or less at 24 VDC	10 mA or less at 24 VDC	10 mA or less at 24 VDC
Internal voltage drop	4 V or less		0.5 V or less		
Indicator LED	Red LED (Lights up when ON)	Red/Green LED (Lights up when ON)	Red LED (Lights up when ON)	Yellow LED (Lights up when ON)	Red/Green LED (Lights up when ON)
Leakage current	1 mA or less		10 μA or less		
Lead wire length	1 m (Oil-resistant vinyl cabtyre cord 2-core 0.2 mm²)	1 m (Oil-resistant vinyl cabtyre cord 2-core 0.3 mm²)	1 m (Oil-resistant vinyl cabtyre cord 3-core 0.2 mm²)		1 m (Oil-resistant vinyl cabtyre cord 3-core 0.2 mm²)
Shock resistance	980 m/s²				
Insulation resistance	20 MΩ or more with 500 VDC megger	100 MΩ or more with 500 VDC megger	20 MΩ or more with 500 VDC megger		100 MΩ or more with 500 VDC megger
Dielectric strength	No abnormality when 1000 VAC is applied for 1 minute				
Ambient Temperature	-10 to +60°C				
Protection structure	IEC standard IP67, JIS C0920 (Immersible type)				
Weight	1 m: 18 g 3 m: 49 g 5 m: 80 g	1 m: 31 g 3 m: 85 g 5 m: 139 g	1 m: 18 g 3 m: 49 g 5 m: 80 g		1 m: 31 g 3 m: 85 g 5 m: 142 g

Item	Reed 2-wire type			
	K0H, K0 V		K5H, K5 V	
Applications	For programmable controller, relay		For programmable controller, relay, IC circuit (no indicator light), series connection	
Power supply voltage	–			
Load voltage	12/24 VDC	110 VAC	5/12/24 VDC	110 VAC
Load current	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less
Current consumption	–			
Internal voltage drop	3 V or less (In case of DC, when load current is 30 mA)		0.1 V or less (*2)	
Indicator LED	Red LED (Lights up when ON)		–	
Leakage current	0 mA			
Lead wire length	1 m (Oil-resistant vinyl cabtyre cord 2-core 0.2 mm²)			
Shock resistance	294 m/s²			
Insulation resistance	20 MΩ or more with 500 VDC megger			
Dielectric strength	No abnormality when 1000 VAC is applied for 1 minute			
Ambient Temperature	-10 to +60°C			
Protection structure	IEC standard IP67, JIS C0920 (Immersible type)			
Contact protection circuit *3	None			
Weight	1 m: 18 g 3 m: 49 g 5 m: 80 g			

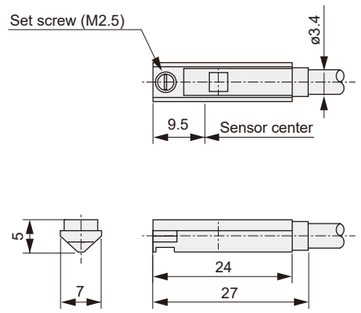
*1: Max. load current of K2H, K2V: 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (It will be 5 to 10 mA at 60°C.)
*2: Internal resistance 0.5Ω or less
*3: For contact protection measures, see P. 783.

Cylinder Switch

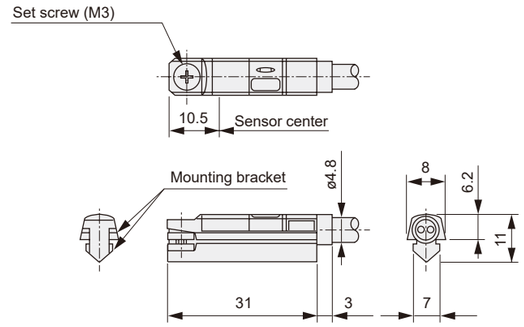
External dimension diagram / Switch internal circuit diagram

Outline Dimension Drawing

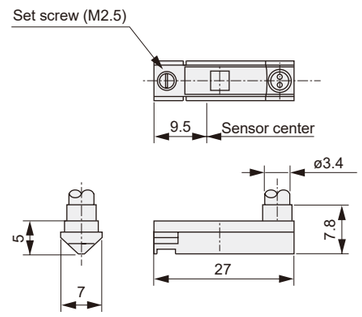
● K□H Series (Straight lead wire type)



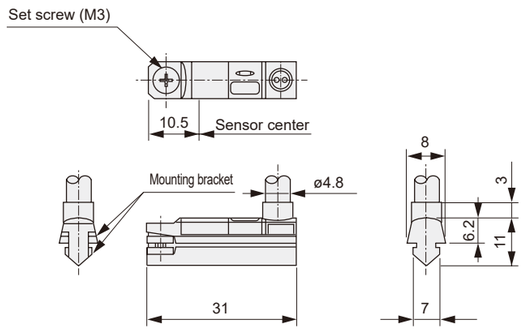
● K□YH Series
(2-color indicator type, Straight lead wire type)



● K□V Series (L-shaped lead wire type)

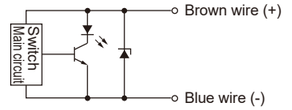


● K□YV Series
(2-color indicator type, L-shaped lead wire type)

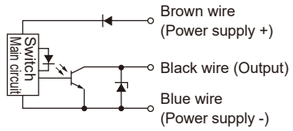


Switch internal circuit diagram

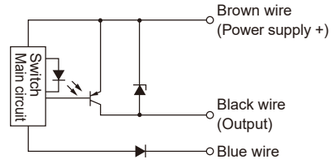
● K2H / K2V / K2YH / K2YV



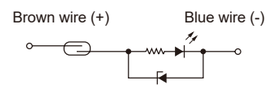
● K3H / K3V / K3YH / K3YV



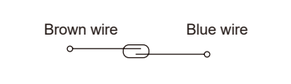
● K3PH / K3PV



● K0H / K0V



● K5H / K5V



Cylinder Switch

F Series	Application Cylinder	CKL2, LCG, LCM, LCR, MDC2, MSD, MSDG-L, MVC, RCS2, SSD2, STM, Gripper (LSH, BSA2, LHA)

Flexible lead wires are used as standard.

* Some bore sizes cannot be combined.

F□S

F□V

F□H

F□YV
F3PV

F□YH
F3PH

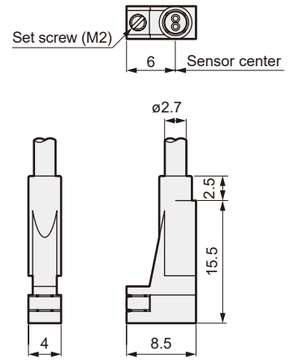
Specifications

Item	Reed 2-wire type	Solid state 2-wire type		Solid state 3-wire type		
	F0H/V	F2H/V, F2S	F2YH, F2YV	F3H/V, F3S	F3PH/V	F3YH, F3YV
Applications	For programmable controller only			For programmable controller, relay		
Output method	–			NPN output	PNP output	NPN output
Power supply voltage	–			10 to 28 VDC	4.5 to 28 VDC	10 to 28 VDC
Load voltage	24 VDC ±10%	10 to 30 VDC	24 VDC ±10%	30 VDC or less		
Load current	5 to 20 mA (*1)			50 mA or less		
Current consumption	–			10 mA or less at 24 VDC		
Internal voltage drop	4 V or less			0.5 V or less	0.5 V or less at 30 mA	0.5 V or less
Indicator LED	Yellow LED (Lights up when ON) *3		Red/Green LED (Lights up when ON)	Yellow LED *3 (Lights up when ON)	Yellow LED (Lights up when ON)	Red/Green LED (Lights up when ON)
Leakage current	1 mA or less			10 μA or less		
Lead wire length	1 m (Flexible, oil-resistant vinyl cabtyre cord 2-core 0.15 mm²)			1 m (Flexible, oil-resistant vinyl cabtyre cord 3-core 0.15 mm²)		
Shock resistance	294 m/s²	980 m/s²				
Insulation resistance	20 MΩ or more with 500 VDC megger					
Dielectric strength	No abnormality when 1000 VAC is applied for 1 minute					
Ambient Temperature	-10 to +60°C					
Protection structure	IEC standard IP67, JIS C0920 (Immersible type)					
Contact protection circuit *4	None	–				
Weight	1 m: 10 g 3 m: 29 g		1 m: 10 g 3 m: 29 g			

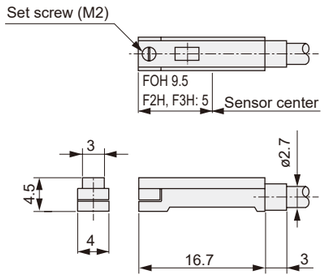
*1: The maximum load current for F2H and F2 V is 20 mA at 25°C. If the switch operating ambient temperature is higher than 25°C, it will be lower than 20 mA. (It will be 5 to 10 mA at 60°C.)
*2: For F2S and F3S, when mounting two switches in one groove for both-end detection, please mount them so that the set screw parts of each switch face outward.
*3: The indicator light for F2S and F3S is red.
*4: For contact protection measures, see P. 783.
*5: Flexible lead wires are used.

Outline Dimension Drawing

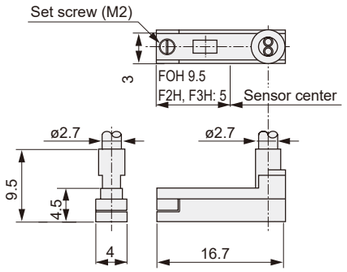
● F□S series (Lead wire vertical extraction short stroke detection type)



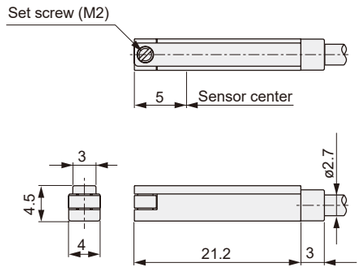
● F□H series (Straight lead wire type)



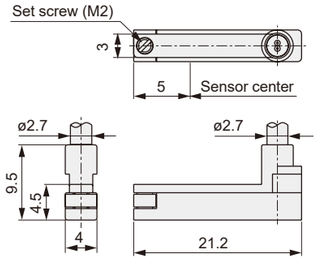
● F□V series (L-shaped lead wire type)



●F□YH / F3PH series (Straight lead wire type)

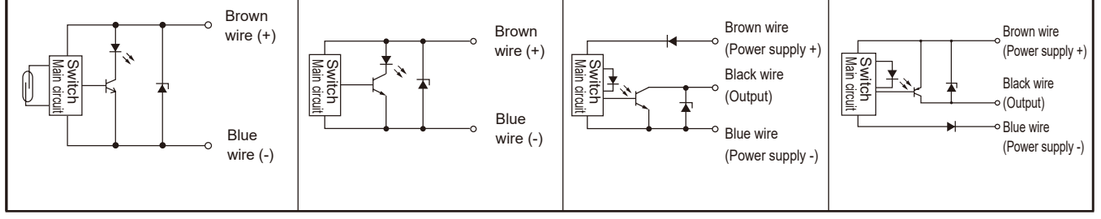


●F□YV / F3PV series (L-shaped lead wire type)



Switch internal circuit diagram

● F0H / F0V	● F2S / F2H / F2V / F2YH / F2YV	● F3S / F3H / F3V / F3YH / F3YV	● F3PH / F3PV



H Series	For strong magnetic field	Applicable Cylinder	CAC4-L2, GLC-L2, JSC3-L2, SCA2-L2, SHC-L2, UCAC2-L2, USC-L2

H0

H0Y

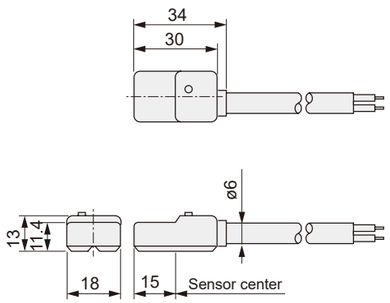
Specifications

Item	Reed 2-wire type		
	H0		H0Y (2-color indicator type)
Applications	For programmable controller, relay		For programmable controller only
Load voltage	12/24 VDC	110 VAC	24 VDC ±10%
Load current	5 to 50 mA	7 to 20 mA	5 to 20 mA
Internal voltage drop	5 V or less		6 V or less
Indicator LED	Green LED (Lights up when ON)		Red/Green LED (Lights up when ON)
Leakage current	0 mA		10 μA or less
Lead wire length	1 m (Flame-retardant cabtyre cord 2-core 0.5 mm²)		
Insulation resistance	100 MΩ or more with 500 VDC megger		
Dielectric strength	No abnormality when 1000 VAC is applied for 1 minute		
Shock resistance	294 m/s²		
Ambient temperature range	-10 to +60°C		
Protection structure	IEC standard IP67, JIS C0920 (Immersible type), Oil resistant		
Contact protection circuit *1	None		
Weight	1 m: 76 g 3 m: 181 g 5 m: 289 g		

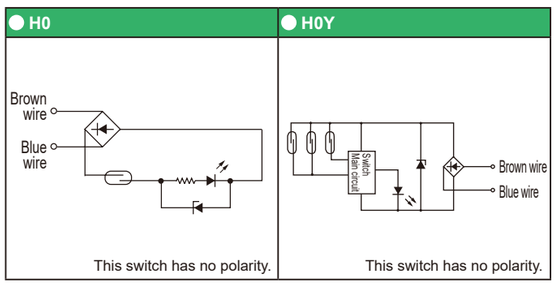
*1: For contact protection measures, see P. 783.

Outline Dimension Drawing

● H series (For strong magnetic field resistance)



Switch internal circuit diagram



Specifications / External dimension diagram / Switch internal circuit diagram

V Series	For small strong magnetic field resistance	Application Cylinder	SSD-L4, SSD2-L4, USSD-L4

VO

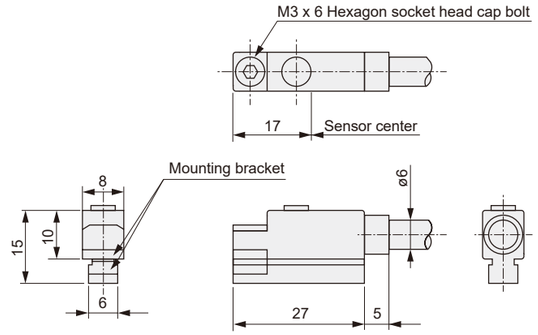
Specifications

Item	Reed 2-wire type	
	V0	
Applications	For relay, programmable controller	
Load voltage	24 VDC	110 VAC
Load current	5 to 50 mA	7 to 20 mA
Internal voltage drop	3.0 V or less (When load current is 40 mA)	
Indicator LED	LED (Lights up when ON)	
Leakage current	0 mA	
Lead wire length	1 m (Flame-retardant cabtyre cord 2-core 0.5 mm²)	
Insulation resistance	100 MΩ or more with 500 VDC megger	
Dielectric strength	No abnormality when 1000 VAC is applied for 1 minute	
Shock resistance	294 m/s²	
Ambient Temperature	-10 to +60°C	
Protection structure	IEC standard IP67, JIS C0920 (Immersible type), Oil resistant	
Contact protection circuit *1	None	
Weight	1 m: 63 g 3 m: 170 g 5 m: 277 m	

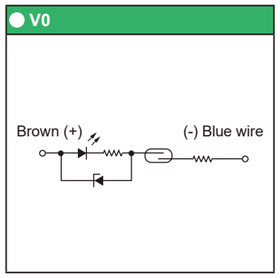
*1: For contact protection measures, see P. 783.

Outline Dimension Drawing

● V series (For strong magnetic field resistance)



Switch internal circuit diagram



E Series	Heat resistant	Application Cylinder	SCA2-L2T (E0) SSD-T1L (ET0) SSD2-T1L (ET0)

EO

ETO

(EO is not subject to CE, UKCA)

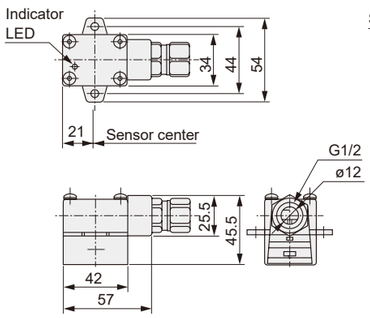
Specifications

Item	Reed 2-wire type				
	E0			ET0	
Applications	For relay, programmable controller				
Load voltage	12/24 VDC	110 VAC	220 VAC	12/24 VDC	110 VAC
Load current	5 to 50 mA	7 to 20 mA	7 to 10 mA	5 to 50 mA	7 to 20 mA
Internal voltage drop	4 V or less			3.0 V or less	
Leakage current	0 mA				
Indicator LED	Red LED (Lights up when ON)			Yellow LED (Lights up when ON)	
Conduit thread	G1/2			–	
Lead wire length	–			1 m (Heat-resistant fluorine insulated cabtyre cord 2-core 0.5 mm²)	
Insulation resistance	100 MΩ or more with 500 VDC megger				
Dielectric strength	No abnormality when 1500 VAC is applied for 1 minute			No abnormality when 1000 VAC is applied for 1 minute	
Shock resistance	294 m/s²				
Ambient Temperature	-10 to +120°C			-10 to +150°C	
Protection structure	IEC standard IP67, JIS C0920 (Immersible type), Oil resistant				
Contact protection circuit *	None				
Weight	164 g			44 g	

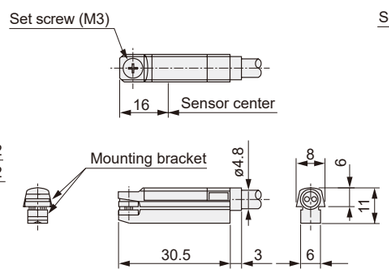
*: For contact protection measures, refer to P. 783.

Outline Dimension Drawing

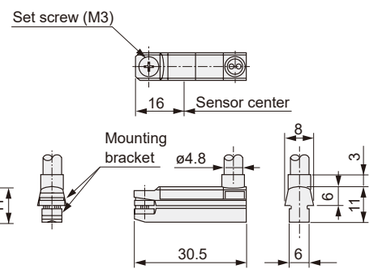
● E Series



● ET0H Series (Straight lead wire type)

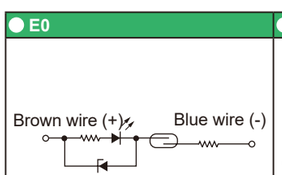


● ET0V Series (L-shaped lead wire type)

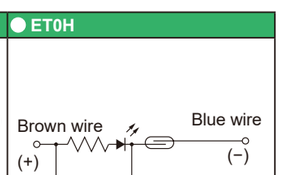


Switch internal circuit diagram

● E0



● ET0H



Cylinder Switch

Contact Protection Circuit Box	SKAC, SKDC

Specifications

Item	For AC circuit		For DC circuit
	SKAC		SKDC
Load voltage	100/110 VAC	200/220 VAC	24 VDC
Load current	20 mA or less	10 mA or less	50 mA or less
Lead wire length	1 m (Oil-resistant vinyl cabtyre cord 2-core, 0.2 mm²)		
Shock resistance	980 m/s²		
Insulation resistance	100 MΩ or more with 500 VDC megger		
Dielectric strength	No abnormality when 1500 VAC is applied for 1 minute		
Ambient Temperature	-10 to +60°C		
Protection structure	IEC standard IP67, JIS C0920 (Immersible type), Oil resistant		

Model No. Notation Method

SW-SKAC

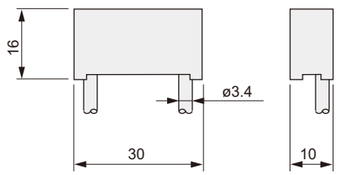
❶ Contact protection circuit

❶ Contact protection circuit

Code	Content
SKAC	For AC circuit
SKDC	For DC circuit

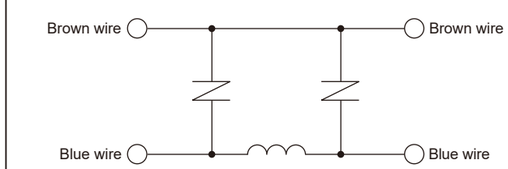
Outline Dimension Drawing

● SKAC / SKDC Series



Internal circuit diagram

● SKAC / SKDC

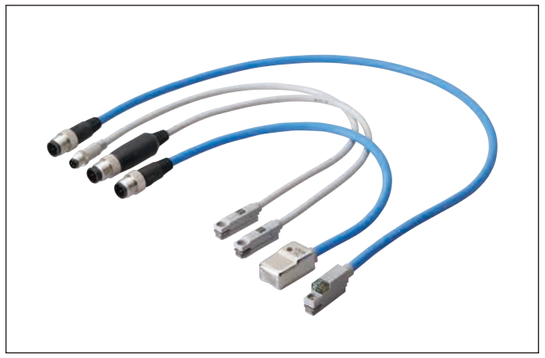


*: There is no polarity on the input or output side, and either can be connected to the switch side.

Note) SKAC is exclusively for AC circuits, and SKDC is exclusively for DC circuits.

Cylinder Switch

Cylinder Switch with Connector



Adopts highly versatile M8 and M12 connectors

- Compliant with Standard No. NECA4202, IEC947-5-2
- Reduction of wiring man-hours, Easy maintenance
- Protection structure is IP67
- Spatter adhesion prevention protective cover available

● For T0H

● For T2YD

Model No. Notation Method

* This is a custom order product.

● 2-wire Cylinder Switch

SW - T0 (1) H (2) F (3) K (4)

❶ Model	❷ Lead Wire Extraction Direction		❸ Connector Type, PIN Layout		Lead wire length		❹ Option *3	
T0	H	Straight type	F	M8 connector 4PIN (+) 3PIN (-) *1	Blank	0.3 m	K	Spatter adhesion prevention protective cover
T2	V	L-shaped type	M	M12 connector 1PIN (+) 4PIN (-)				
T2W			U	M12 connector 3,4PIN no polarity *2				
T2YL								
K2Y								
F2Y								

*1: Compatible only with T0, T2, T2W
*2: T2YL is not compatible. Please note that the "internal voltage drop" will be 1 V higher than the specification value described in the catalog.
*3: Applicable only to T0H□□

● 3-wire Cylinder Switch

SW - T3 (1) H (2) F (3)

❶ Model	❷ Lead Wire Extraction Direction		❸ Connector Type		Lead wire length	
T3	H	Straight type	F	M8 1PIN(+) 3PIN(-) 4PIN: (OUT)	Blank	0.3 m
T3P	V	L-shaped type				
T3W						

● Cylinder switch for strong magnetic fields

SW - H0 (1) M (2)

❶ Model	❷ Connector Type		Lead wire length	
H0	M	M12 connector 1,4PIN no polarity *4	Blank	0.3 m
H0Y	U	M12 connector 3,4PIN no polarity *5		
V0				

*4: Compatible only with H0, H0Y
*5: V0 only 4PIN (+) 3-pin (-)

● AC Magnetic Field Specific Cylinder Switch

SW - T2YD (1) G (2) K (3)

❶ Model	❷ Connector Type		Lead wire length		❸ Option	
T2YD	G	Spatter-resistant lead wire M12 connector 1,4PIN no polarity	Blank	0.3 m	K	Spatter adhesion prevention protective cover
	B	Spatter-resistant lead wire M12 connector 3,4PIN no polarity				
	U	Flame-retardant lead wire UL wire M12 connector 3,4PIN non-polar				
	W	Flame-retardant lead wire UL wire M12 connector 1,4PIN non-polar				

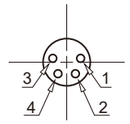
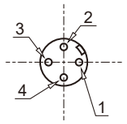
*6: The switch specifications for the cylinder are the same as the lead wire type. For details, please refer to P. 768 to 782.

Connector pin assignment

Series	Connector pin assignment					
	Code	Connector type	1PIN	2PIN	3PIN	4PIN
2-wire type	F	M8	-	-	(−)	(+)
	M	M12	(+)	-	-	(−)
	U		-	-	(±)	(±)
For strong magnetic field	M, G, W		(±)	-	-	(±)
Exclusively for AC magnetic fields	U, B *1		-	-	(±)	(±)
3-wire type	F	M8	(+)	-	(−)	(OUT)

*1: Only SW-V0U has polarity (4PIN (+), 3PIN (-)).

Connector specifications

Item	M8	M12
Pin assignment		
Shock resistance	294 m/s²	
Protection structure	IP67	
Insulation resistance	100 MΩ with 500 VDC megger	
Dielectric strength	1000 VAC for 1 minute (Between contacts and between contact housing) Leakage current 1 mA or less	

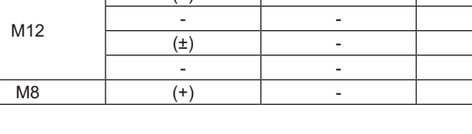
Outline Dimension Drawing

① M12 connector (Only for 2-wire cylinder switch connector type, PIN assignment code "U")

Standard for external shape of connector part: IEC64076-2-101

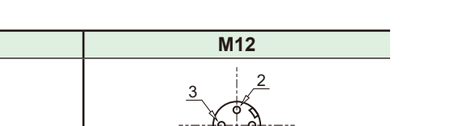
② M12 connector (M12 connectors other than ①)

Standard for external shape of connector part: IEC64076-2-101



③ M8 connector (Applicable to all models)

Standard for external shape of connector part: IEC64076-2-104



* For external dimensions diagrams of cylinder switches, please refer to P. 768 to 782.

T-type cylinder switch with off-delay timer
T2JH / T2JV

Overview

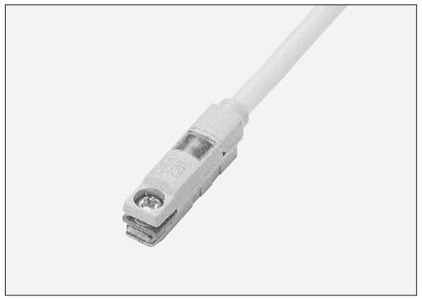
Optimal for high-speed intermediate detection of cylinders.
Ensures reliable PC input by providing an off-delay timer.

Features

- Eliminates PC input problems that tend to occur during high-speed intermediate detection of cylinders.
- Off-delay timer is 200 ±50 ms
- Can be mounted on Rodless Cylinder SRL3.
- Wide variety of mountable cylinders.

* If ordered with cylinder mounting, it will be a custom order product.
* Some cylinders have limited mountable switches. Please refer to the P. for each cylinder for details.

T-type cylinder switch for cutting oil resistance
T2YLH/V, T3YLH/V



Overview

This is a cylinder switch designed to prevent cutting oil used for machine tools in machining sites, etc., from entering the inside of the switch.

Features

- Oil resistance improved by applying a coating agent to the board. Can be used even in environments where cutting oil splashes.
- Wide variety of mountable cylinders

* If ordered with cylinder mounting, it will be a custom order product.

Water-resistant Cylinder Switch
T2WLH/V

Features

Product with improved water (coolant) resistance

- Water (coolant) resistance performance: 6 times or more compared to conventional products
- Space saving (70% down compared to conventional), Lightweight (46% down compared to conventional)
- Compatible with existing switch SW-T2YL
- Reduction of wiring space (Can be stored in T-slot)
- Protection structure IP67

Magnetic Field Resistant Cylinder Switch
TOY

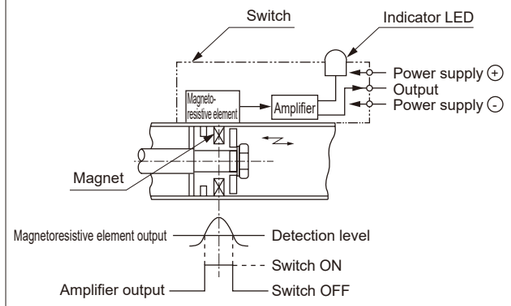
Features

Product with improved reliability in magnetized environments (Optimal for DC welding processes)

- Space saving (70% down compared to conventional products)
- Power saving (50% down compared to conventional products)
- Compatible with existing switch SW-T2YD (excluding some models and bores)
- Wide range of variations (cable material, connectors, spatter adhesion prevention cover)
- Protection structure IP67

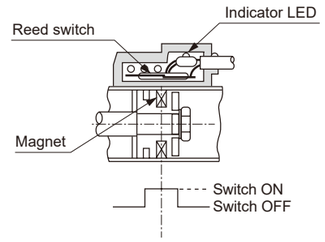
Operating Principle

Solid state switch



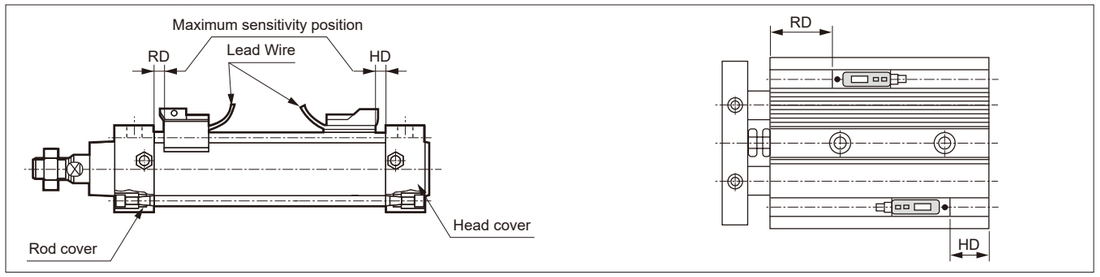
When the piston magnet approaches, a change occurs in the magnetic field, and the output voltage of the magnetoresistive element changes as shown in the figure. By amplifying this signal, a switching output as shown in the figure can be obtained.

Reed switch



When the piston magnet approaches, a magnetic field is generated, the opposing contacts of the reed switch are magnetized, an attractive force is generated, and the contacts close.

Switch mounting position



● When mounting at stroke end

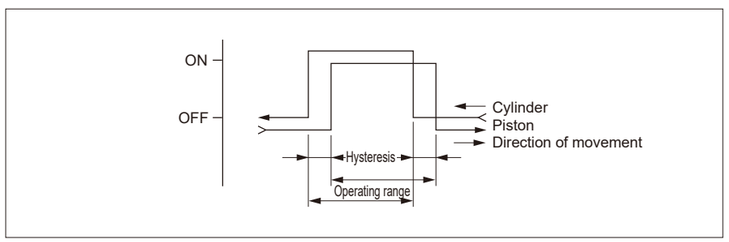
To operate the switch at the maximum sensitivity position, please mount it at the RD dimension on the rod side and the HD dimension on the head side, respectively.
Note that the HD and RD dimensions vary depending on the cylinder. Please refer to the external dimension diagram for each cylinder.
Also, please mount the switch with the lead wire facing inward as shown in the figure above.

● When mounting at intermediate stroke position

When detecting in the middle of the stroke, fix the piston at the stopping position and move the switch back and forth over the piston to find the position where the switch first turns ON. The midpoint between those two positions is the maximum sensitivity position at that piston position, and becomes the mounting position.

● About circumferential direction mounting

Varies depending on the mounting bracket. The band method has no restrictions in the circumferential direction.
For the tie-rod method, rotation in 90° increments is possible. For rail type, circumferential rotation is not possible.



Hysteresis

●This is the distance from the position where the piston moves and the switch turns ON, to when it moves in the reverse direction and turns OFF. If the piston stops during this time, the switch operation becomes unstable and susceptible to external influences. Please be careful.

Operating range

● This refers to the range from when the piston moves and the switch turns ON, to when it moves further in the same direction and turns OFF.
The center of the operating range is the maximum sensitivity position. If this position is set as the piston stop position, it will be less susceptible to disturbances and the switch operation will also be stable.

Operating range and hysteresis of each cylinder model with switch

(Unit: mm)

Model No.	Bore size (mm)	Solid state switch				Reed switch	
		Operating range		Hysteresis		Operating range	Hysteresis
		1-color type	2-color type	1-color type	2-color type		
Pencil Shaped Cylinder	● Applicable switches: Solid state switches (T2□,T3□,T2W□,T3W□,T2WL□), Reed switches (T0□,T5□)						
SCP□3	ø6	1.5 to 4	2.5 to 5	1.5 or less	1.0 or less	4 to 6	3 or less
	ø10	1.5 to 5.5	2.5 to 6			3.5 to 7	
	ø16	2 to 6	2.5 to 6			3.5 to 7.5	
Small bore size cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T1□), Reed switches (T0□, T5□, T8□)						
CMK2	ø20	2.5 to 5.5	3.5 to 7.5	1.5 or less	1.0 or less	6.5 to 11	3 or less
	ø25	2.5 to 5.5	3.5 to 7.5			7.5 to 12	
	ø32	2.5 to 6	3.5 to 8			6.5 to 11.5	
	ø40	3 to 7	4 to 9			7.5 to 13.5	
Small Bore Size Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T1□), Reed switches (T0□, T5□, T8□)						
CMA2	ø20	3 to 6	5 to 6.5	1.5 or less	1.0 or less	8.5 to 12	3 or less
	ø30	3 to 5.5	6 to 7			8 to 13	
	ø40	2.5 to 5.5	5.5 to 7.5			8.5 to 12.5	
Round shaped cylinder	● Applicable Switch: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
SCM	ø20	3 to 8	4.5 to 9	1.5 or less	1.0 or less	6 to 14	3 or less
	ø25	3 to 9	5 to 9			5 to 14	
	ø32	3 to 8	5 to 9			5 to 12	
	ø40	3 to 9	5.5 to 9.5			6 to 14	
	ø50	3 to 9	6 to 10			6 to 14	
	ø63	3 to 9	6 to 10.5			7 to 15	
	ø80	4 to 10	6.5 to 11			7 to 15	
	ø100	4 to 10	7 to 11.5			9 to 15	
Tie Rod Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
SCG	ø32	2 to 7	6 to 9	1.5 or less	1.0 or less	6 to 11	3 or less
	ø40	2 to 7	6.5 to 9			7 to 12	
	ø50	2 to 7	7 to 10			7.5 to 12	
	ø63	2 to 7.5	7 to 10			8.5 to 13	
	ø80	2.5 to 8	7.5 to 10.5			9 to 13.5	
	ø100	2.5 to 8	8 to 11			9 to 14	
Medium Bore Size Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
SCA2	ø40	2 to 7	3 to 10	1.5 or less	1.0 or less	5 to 12.5	3 or less
	ø50	2 to 7.5	3 to 10			5.5 to 13.5	
	ø63	2.5 to 7.5	3.5 to 10.5			5.5 to 14	
	ø80	3 to 8	4 to 11.5			6.5 to 14.5	
	ø100	3 to 8.5	4 to 11.5			6.5 to 15.5	
Medium Bore Size Cylinder	● Applicable Switch: Reed switch for strong magnetic field (H0□)					* ( ) indicates HOY value.	
SCA2-L2	ø40	-		-	-	4 to 7.5 (10.5 to 13.5)	3 or less
	ø50					4 to 7.5 (11 to 14)	
	ø63					5 to 8 (11.5 to 14.5)	
	ø80					5 to 8 (10.5 to 14.5)	
	ø100					5 to 8 (10.5 to 14.5)	
Large Bore Size Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
SCS2	ø125	7.5 to 14	14 to 21	1.5 or less	1.0 or less	11 to 16	3 or less
	ø140	7.5 to 14	18 to 26				
	ø160	7.5 to 14	18 to 26				
	ø180	7.5 to 14	18 to 26				
	ø200	7.5 to 14	18 to 26				

Operating range and hysteresis of each cylinder model with switch

(Unit: mm)

Model No.	Bore size (mm)	Solid state switch				Reed switch	
		Operating range		Hysteresis		Operating range	Hysteresis
		1-color type	2-color type	1-color type	2-color type		
Tie Rod Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T1□), Reed switches (T0□, T5□, T8□)						
CKV2	ø20	2.5 to 5.5	3.5 to 7.5	1.5 or less	1.0 or less	6.5 to 11	3 or less
	ø25	2.5 to 5.5	3.5 to 7.5			7.5 to 12	
	ø32	2.5 to 6	3.5 to 8			6.5 to 11.5	
	ø40	3 to 7	4 to 9			7.5 to 13.5	
Tie Rod Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
CAV2-L **COVP2-L** **COVN2-L**	ø50	3.8 to 6.7	4 to 6	0.8 or less	0.7 or less	7.7 to 8.3	1 or less
	ø75	3.8 to 6.7	4 to 6			7.7 to 8.3	
	ø100	3.8 to 6.7	4 to 6			7.7 to 8.3	
Compact Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
SSD2	ø12	1.5 to 5.5	3 to 6	1.5 or less	1.0 or less	5 to 8	3 or less
	ø16	1.5 to 4.5	3 to 7			4 to 9	
	ø20	3 to 8	4.5 to 8			6 to 14	
	ø25	3 to 9	4.5 to 8			5 to 14	
	ø32	3 to 8	4.5 to 8			5 to 12	
	ø40	3 to 9	5 to 8.5			6 to 14	
	ø50	3 to 9	5.5 to 9.5			6 to 14	
	ø63	3 to 9	5.5 to 9.5			7 to 15	
	ø80	4 to 10	6 to 10			7 to 15	
	ø100	4 to 10	6 to 10			9 to 15	
	ø125	4 to 10	8 to 10			9 to 15	
	ø140	4 to 10	8 to 10			9 to 15	
	ø160	4 to 10	8 to 10			9 to 15	
Compact Cylinder	● Applicable switches: Reed switch (ET0□)						
SSD2-T1L	ø16	-		-	-	8 to 11.5	3 or less
	ø20					9 to 13.5	
	ø25					9.5 to 14	
	ø32					9 to 13	
	ø40					9 to 14	
	ø50					11 to 16	
	ø63					13 to 18	
Compact Cylinder	● Applicable Switch: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
SSG	ø12	1.5 to 5.5	3 to 6	1.5 or less	1.0 or less	5 to 8	3 or less
	ø16	1.5 to 4.5	3 to 7			4 to 9	
	ø20	3 to 8	4.5 to 8			6 to 14	
	ø25	3 to 9	4.5 to 8			5 to 14	
	ø32	3 to 8	4.5 to 8			5 to 12	
	ø40	3 to 9	5 to 8.5			6 to 14	
	ø50	3 to 9	5.5 to 9.5			7 to 15	
	ø63	3 to 9	5.5 to 9.5			7 to 15	
	ø80	4 to 10	6 to 10			9 to 15	
	ø100	4 to 10	6 to 10			9 to 15	

Operating range and hysteresis of each cylinder model with switch

(Unit: mm)

Model No.	Bore size (mm)	Solid state switch				Reed switch	
		Operating range		Hysteresis		Operating range	Hysteresis
		1-color type	2-color type	1-color type	2-color type		
Compact Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
SSD	ø12	1.5 to 5.5	3 to 6	1.5 or less	1.0 or less	5 to 8	3 or less
	ø16	1.5 to 4.5	3 to 7			4 to 9	
	ø20	3 to 8	4.5 to 8			6 to 14	
	ø25	3 to 9	4.5 to 8			5 to 14	
	ø32	3 to 8	4.5 to 8			5 to 12	
	ø40	3 to 9	5 to 8.5			6 to 14	
	ø50	3 to 9	5.5 to 9.5			6 to 14	
	ø63	3 to 9	5.5 to 9.5			7 to 15	
	ø80	4 to 10	6 to 10			7 to 15	
	ø100	4 to 10	6 to 10			9 to 15	
	ø125	4 to 10	8 to 10			9 to 15	
	ø140	4 to 10	8 to 10			9 to 15	
	ø160	4 to 10	8 to 10			9 to 15	
Compact Cylinder	● Applicable switches: Reed switch (ET0□)						
SSD-T1L	ø16	-		-	-	8 to 11.5	3 or less
	ø20					9 to 13.5	
	ø25					9.5 to 14	
	ø32					9 to 13	
	ø40					9 to 14	
	ø50					11 to 16	
	ø63					13 to 18	
Compact Direct Cylinder	● Applicable switches: Solid state switches (F2□, F3□), Reed switch (F0□)						
MDC2	ø6	1.5 to 3.5	-	1.0 or less	-	3.5 to 6.0	1.0 or less
	ø8						
	ø10						
MDC2-X	ø6	2.0 to 3.5	-	1.0 or less	-	5.5 to 7.5	1.0 or less
	ø8						
	ø10						
MDC2-Y	ø6	1.5 to 3.5	-	1.0 or less	-	4.5 to 6.0	1.0 or less
	ø8						
	ø10						
Compact direct cylinder with vacuum pad	● Applicable switches: Solid state switches (F2□, F3□), Reed switch (F0□)						
MVC	ø6	1.5 to 3.5	-	1.0 or less	-	3.5 to 6.0	1.0 or less
	ø10					4.5 to 6.0	
Compact cylinder	● Applicable switches: Solid state switches (K2□, K3□, K3P□, K2Y□, K3Y□), Reed switches (K0□, K5□)						
SMG	ø6	1.5 to 7	3.5 to 7.5	2 or less	1.5 or less	3 to 9.5	3 or less
	ø10	1.5 to 7	3.5 to 7.5			3.5 to 9.5	
	ø16	1.5 to 7	4.5 to 8.5			4 to 11	
	ø20	2.5 to 9	5 to 9			5 to 12.5	
	ø25	3.5 to 11	5.5 to 9.5			6.5 to 14	
	ø32	3.5 to 11.5	1.5 to 10.5			5.5 to 14	
Compact Cylinder	● Applicable switches: Solid state switches (F2□, F3□), Reed switch (F0□)						
MSD-□L **MSDG-L**	ø6	1.5 to 3.0	-	1.0 or less	-	5 to 6	1.0 or less
	ø8	1.5 to 3.5	-			5.5 to 6.5	
	ø12	1.5 to 3.5	-			5.5 to 7.5	
	ø16	1.5 to 3.5	-			4.5 to 7	

Operating range and hysteresis of each cylinder model with switch

(Unit: mm)

Model No.	Bore size (mm)	Solid state switch				Reed switch	
		Operating range		Hysteresis		Operating range	Hysteresis
		1-color type	2-color type	1-color type	2-color type		
Flat Cylinder Compact Demi	● Applicable switches: Applicable switches: Solid state switches (M2V,M3V,M3PV,M2WV,M3WV), Reed switches (M0V,M5V)						
FCS-L	ø25	9 to 12	6 to 11	1.5 or less	1.0 or less	7 to 8.5	3 or less
	ø32	9 to 12	6 to 11			7 to 8.5	
	ø40	8.5 to 12	6 to 11			7 to 8.5	
	ø50	8 to 12	6 to 11			6.5 to 8.5	
	ø63	8 to 12	6 to 11			6.5 to 8.5	
FCH-L **FCD-L** **FCD-DL** **FCD-KL**	ø25	6 to 12	5 to 11	1.5 or less	1.0 or less	7 to 12	3 or less
	ø32	6 to 12	5 to 11			7 to 12	
	ø40	6 to 12	5 to 11			7 to 12	
	ø50	6 to 12	5 to 11			7 to 12	
	ø63	6 to 12	5 to 11			7 to 12	
Stopper Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T1□), Reed switches (T0□, T5□, T8□)						
STK	ø20	3 to 8	4.5 to 8	1.5 or less	1.5 or less	6 to 14	3 or less
	ø32	3 to 8	4.5 to 8			5 to 12	
	ø40	3 to 9	5 to 8.5			6 to 14	
	ø50	3 to 9	5.5 to 9.5			6 to 14	
Brake Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
ULK	ø20	2.5 to 5.5	3.5 to 7.5	1.5 or less	1.0 or less	6.5 to 11	3 or less
	ø25	2.5 to 5.5	3.5 to 7.5			7.5 to 12	
	ø32	2.5 to 6	3.5 to 8			6.5 to 11.5	
	ø40	3 to 7	4 to 9			7.5 to 13.5	
Brake Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
JSK2	ø20	2.5 to 5.5	3.5 to 7.5	1.5 or less	1.0 or less	6.5 to 11	3 or less
	ø25	2.5 to 5.5	3.5 to 7.5			7.5 to 12	
	ø32	2.5 to 6	3.5 to 8			6.5 to 11.5	
	ø40	3 to 7	4 to 9			7.5 to 13.5	
Brake Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
JSM2	ø20	3 to 6	5 to 6.5	1.5 or less	1.0 or less	8.5 to 12	3 or less
	ø30	3 to 5.5	6 to 7			8 to 13	
	ø40	2.5 to 5.5	5.5 to 7.5			8.5 to 12.5	
Tie Rod Cylinder with Brake	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
JSG	ø32	2 to 7	6 to 9	1.5 or less	1.0 or less	6 to 11	3 or less
	ø40	2 to 7	6.5 to 9			7 to 12	
	ø50	2 to 7	7 to 10			7.5 to 12	
	ø63	2 to 7.5	7 to 10			8.5 to 13	
	ø80	2.5 to 8	7.5 to 10.5			9 to 13.5	
	ø100	2.5 to 8	8 to 11			9 to 14	

Operating range and hysteresis of each cylinder model with switch

(Unit: mm)

Model No.	Bore size (mm)	Solid state switch				Reed switch	
		Operating range		Hysteresis		Operating range	Hysteresis
		1-color type	2-color type	1-color type	2-color type		
Brake Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
JSC3 (Medium bore)	ø40	2 to 7	3 to 10	1.5 or less	1.0 or less	5 to 12.5	3 or less
	ø50	2 to 7.5	3 to 10			5.5 to 13.5	
	ø63	2.5 to 7.5	3.5 to 10.5			5.5 to 14	
	ø80	3 to 8	4 to 11.5			6.5 to 14.5	
	ø100	3 to 8.5	4 to 11.5			6.5 to 15.5	
Brake Cylinder	● Applicable switches: Reed switch for strong magnetic field (H0□)					* ( ) indicates H0Y value.	
JSC3-L2 (Medium bore)	ø40	-		-		4 to 7.5 (10.5 to 13.5)	3 or less
	ø50					4 to 7.5 (11 to 14)	
	ø63					5 to 8 (11.5 to 14.5)	
	ø80					5 to 8 (10.5 to 14.5)	
	ø100					5 to 8 (10.5 to 14.5)	
Brake Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
JSC4 (Large bore)	ø125	7.5 to 14	14 to 21	1.5 or less	1.0 or less	11 to 16	3 or less
	ø140	7.5 to 14	18 to 26			11 to 16	
	ø160	7.5 to 14	18 to 26			11 to 16	
	ø200	7.5 to 14	18 to 26			11 to 16	
Compact Cylinder with Drop Prevention	● Applicable Switch: Solid state switches (T2□,T3□,T2W□,T3W□,T2WL□,T1□), Reed switches (T0□, T5□, T8□)						
USSD	ø20	3 to 8	4.5 to 8	1.5 or less	1.0 or less	6 to 14	3 or less
	ø25	3 to 9	4.5 to 8			5 to 14	
	ø32	3 to 8	4.5 to 8			5 to 12	
	ø40	3 to 9	5 to 8.5			6 to 14	
	ø50	3 to 9	5.5 to 9.5			6 to 14	
	ø63	3 to 9	5.5 to 9.5			7 to 15	
Flat Cylinder with Free Position Drop Prevention	● Applicable Switch: Solid state switches (M2□, M3□, M3P□, M2W□, M3W□), Reed switches (M0□, M5□)						
UFCD	ø25	6 to 12	5 to 11	1.5 or less	1.0 or less	7 to 12	3 or less
	ø32	6 to 12	5 to 11			7 to 12	
	ø40	6 to 12	5 to 11			7 to 12	
	ø50	6 to 12	5 to 11			7 to 12	
	ø63	6 to 12	5 to 11			7 to 12	
Medium Bore Size Cylinder with Free Position Fall Prevention	● Applicable Switch: Solid state switches (T2□,T3□,T2W□,T3W□,T2WL□,T1□), Reed switches (T0□, T5□, T8□)						
USC	ø40	2 to 7	3 to 10	1.5 or less	1.0 or less	5 to 12.5	3 or less
	ø50	2 to 7.5	3 to 10			5.5 to 13.5	
	ø63	2.5 to 7.5	3.5 to 10.5			5.5 to 14	
	ø80	3 to 8	4 to 11.5			6.5 to 14.5	
	ø100	3 to 8.5	4 to 11.5			6.5 to 15.5	
Medium Bore Size Cylinder with Free Position Fall Prevention	● Applicable Switch: Reed switch for strong magnetic field (H0□)					* ( ) indicates H0Y value.	
USC-L2	ø40	-		-	-	4 to 7.5 (10.5 to 13.5)	3 or less
	ø50					4 to 7.5 (11 to 14)	
	ø63					5 to 8 (11.5 to 14.5)	
	ø80					5 to 8 (10.5 to 14.5)	
	ø100					5 to 8 (10.5 to 14.5)	
Guided Cylinder	● Applicable switches: Proximity switch (F2□, F3□, F2Y□, F3Y□)						
STM	ø10	2.5 to 4.5	2.5 to 5.5	1.5 or less	1.5 or less	-	-
	ø16	2.5 to 4.5	2.5 to 5.5				

Operating range and hysteresis of each cylinder model with switch

(Unit: mm)

Model No.	Bore size (mm)	Solid state switch				Reed switch	
		Operating range		Hysteresis		Operating range	Hysteresis
		1-color type	2-color type	1-color type	2-color type		
Guided Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
STG	ø12	1.5 to 4.5	4 to 6	1.5 or less	1.5 or less	6 to 10	3 or less
	ø16	1.5 to 4.5	4 to 6			4 to 9	
	ø20	3 to 8	5 to 8.5			6 to 14	
	ø25	3 to 9	5 to 8.5			5 to 14	
	ø32	3 to 9	5 to 9			5 to 12	
	ø40	3 to 9	6 to 10			6 to 14	
	ø50	3 to 9	6 to 10			6 to 14	
	ø63	3 to 9	6 to 10			7 to 15	
	ø80	4 to 10	7 to 10			7 to 15	
Guided Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
STS/L	ø8	1.5 to 3.5	4 to 6	1.5 or less	1.5 or less	5 to 9	3 or less
	ø12	1.5 to 4.5	4 to 6			6 to 10	
	ø16	1.5 to 4.5	4 to 6			4 to 9	
	ø20	3 to 8	5 to 8.5			6 to 14	
	ø25	3 to 9	5 to 8.5			5 to 14	
	ø32	3 to 8	5 to 9			5 to 12	
	ø40	3 to 9	6 to 10			6 to 14	
	ø50	3 to 9	6 to 10			6 to 14	
	ø63	3 to 9	6 to 10			7 to 15	
	ø80	4 to 10	7 to 10			7 to 15	
	ø100	2 to 9	7 to 10			7 to 15	
Linear Slide Cylinder	● Applicable switches: Proximity switch (F2□, F3□, F2Y□, F3Y□)						
LCW	ø12	3.5 to 6.5	4.5 to 6.5	1.0 or less	1.0 or less	-	-
Linear Slide Cylinder	● Applicable switches: Solid state switches (T2□,T3□,T2W□,T3W□), Reed switches (T0□,T5□)						
LCW	ø16	3 to 5	4 to 5.5	1.0 or less	1.0 or less	6.5 to 9.5	3.0 or less
	ø20	4.5 to 6.5	5.5 to 6.5			8 to 12	
Linear Slide Cylinder	● Applicable switches: Proximity switch (F2□, F3□, F2Y□, F3Y□)						
LCR	ø6	2 to 4	2.5 to 5.5	1.0 or less	1.0 or less	-	-
	ø8		3.5 to 6				
	ø12		3 to 4.5				
Linear Slide Cylinder	● Applicable switches: Solid state switches (T2□,T3□,T3P□,T2W□,T3W□,T2WL□,T1□), Reed switches (T0□,T5□)						
LCR	ø16	2 to 4	3 to 4.5	1.0 or less	1.0 or less	5 to 9	1.0 or less
	ø20	2 to 5.5	4 to 5.5			6.5 to 11	
	ø25	2.5 to 6	3.5 to 6			8 to 12	
Linear Slide Cylinder	● Applicable switches: Proximity switch (F2□, F3□, F2Y□, F3Y□)						
LCG	ø6	2 to 4	2.5 to 5.5	1.0 or less	1.0 or less	-	-
	ø8		3.5 to 6				
	ø12		3 to 4.5				
Linear Slide Cylinder	● Applicable switches: Solid state switches (T2□,T3□,T3P□,T2W□,T3W□,T2WL□,T1□), Reed switches (T0□,T5□)						
LCG	ø16	2 to 4	3 to 4.5	1.0 or less	1.0 or less	5 to 9	1.0 or less
	ø20	2 to 5.5	4 to 5.5			6.5 to 11	
	ø25	2.5 to 6	3.5 to 6			8 to 12	
Linear Slide Cylinder	● Applicable switches: Solid state switches (T2□,T3□,T3P□,T2W□,T3W□,T2WL□,T1□), Reed switches (T0□,T5□)						
LCX	ø25	0.5 to 6	1.0 to 5.5	2 or less	2 or less	2 to 10.5	3.5 or less
	ø32	1.0 to 5.5	0.5 to 5.0			1 to 11	

Operating range and hysteresis of each cylinder model with switch

(Unit: mm)

Model No.	Bore size (mm)	Solid state switch				Reed switch	
		Operating range		Hysteresis		Operating range	Hysteresis
		1-color type	2-color type	1-color type	2-color type		
Linear Slide Cylinder	● Applicable switches: Proximity switch (F2□, F3□, F2Y□, F3Y□)						
LCM	ø4.5	1 to 3	2 to 4	1.0 or less	1.0 or less	-	-
	ø6						
	ø8						
Twin Rod Cylinder	● Applicable switches: Solid state switches (K2□, K3□, K3P□, K2Y□, K3Y□), Reed switches (K0□, K5□)						
STR2	ø6	1 to 6	4 to 7.5	2.0 or less	1.5 or less	4 to 9 (STR2-M)	3.0 or less
	ø10	1 to 5.5	4 to 7.5			4 to 9 (STR2-M)	
	ø16	1.5 to 7.5	4.5 to 9			5 to 12.5	
	ø20	3 to 9	5.5 to 10			6.5 to 14.5	
	ø25	3.5 to 10.5	6.5 to 10.5			8 to 14.5	
	ø32	-	-			-	
Unit Cylinder	● Applicable switches: Solid state switches (T2□,T3□), Reed switches (T0□,T5□)						
UCA2-□L	ø10	1.5 to 4	-	1.5 or less	-	4.5 to 8	3.0 or less
	ø16						
	ø25						
	ø32						
High Energy Absorption Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
HCM	ø20	3 to 8	4.5 to 9	1.5 or less	1.0 or less	6 to 14	3 or less
	ø25	3 to 9	5 to 9			5 to 14	
	ø32	3 to 8	5 to 9			5 to 12	
	ø40	3 to 9	5.5 to 9.5			6 to 14	
	ø50	3 to 9	6 to 10			6 to 14	
	ø63	3 to 9	6 to 10.5			7 to 15	
High Speed Cylinder	● Applicable switches: Solid state switches (R1, R2, R3, R2Y, R3Y), Reed switches (R0, R4, R5, R6)						
HCA	ø20	6 to 14	11 to 18	1.5 or less	1.0 or less	7 to 14	3.0 or less
	ø25	6 to 14	11 to 18			8 to 13	
	ø32	6 to 14	11 to 18			9 to 14	
	ø50	6 to 14	11 to 18			9 to 14	
Rodless Cylinder	● Applicable switches: Solid state switches (M2□, M3□, M3P□, M2WV, M3WV), Reed switches (M0□, M5□)						
SRL3	ø12	4 to 13	4 to 12	1.5 or less	1.0 or less	3 to 11	3.0 or less
	ø16	4 to 13	4 to 12	1.5 or less	1.0 or less	3 to 11	
	ø20	4 to 13	4 to 12	1.5 or less	1.0 or less	3 to 11	
	ø25	9.5 to 15.5	9 to 14	2.0 or less	1.5 or less	8.5 to 13.5	3.5 or less
	ø32	7.5 to 15	8 to 14	2.0 or less	1.5 or less	7 to 13.5	
	ø40	11.5 to 17.5	10 to 16.5	2.0 or less	1.5 or less	10 to 16	
	ø50	11 to 24	17 to 27	2.5 or less	1.5 or less	17 to 27	3.0 or less
	ø63	11 to 24	17 to 27	2.5 or less	1.5 or less	17 to 27	
	ø80	26.5 to 45.5	16.5 to 40	5.0 or less	3.0 or less	20.5 to 41	
	ø100	25.5 to 40.5	21.5 to 36	3.0 or less	2.5 or less	24 to 37	
Rodless Cylinder	● Applicable switches: Proximity switch (T2W□, T3W□, T2WL□, T2YD)						
SRL3	ø12	-	2 to 7	-	1.0 or less	-	-
	ø16	-	2 to 7				
	ø20	-	3 to 8	-	1.5 or less		
	ø25	-	3 to 10				
	ø32	-	3 to 10				
	ø40	-	4 to 11				
	ø50	-	9 to 16				
	ø63	-	9 to 16				
	ø80	-	10 to 24	-	2.0 or less		
	ø100	-	10 to 24				

Operating range and hysteresis of each cylinder model with switch

(Unit: mm)

Model No.	Bore size (mm)	Solid state switch				Reed switch	
		Operating range		Hysteresis		Operating range	Hysteresis
		1-color type	2-color type	1-color type	2-color type		
Rodless Cylinder with High-Precision Guide	● Applicable Switch: Solid state switches (M2□, M3□, M3P□, M2WV, M3WV), Reed switches (M0□, M5□)						
SRG3	ø12	4 to 13	4 to 12	1.5 or less	1.0 or less	3 to 11	3.0 or less
	ø16	4 to 13	4 to 12			3 to 11	
	ø20	9.5 to 15.5	9 to 14	2.0 or less	1.5 or less	3 to 11	
	ø25	9.5 to 15.5	9 to 14			8.5 to 13.5	3.5 or less
Rodless Cylinder with High-Precision Guide	● Applicable switches: Proximity switch (T2W□, T3W□, T2WL□, T2YD)						
SRG3	ø12	-	2 to 7	-	1.0 or less	-	-
	ø16	-	2 to 7				
	ø20	-	3 to 8	-	1.5 or less		
	ø25	-	3 to 10				
Rodless Cylinder with High-Precision Guide	● Applicable Switch: Solid state switches (T2WL□, T2W□, T3W□, T2YD), Reed switch (T0□, T5□, T8□)						
SRM3	ø25	-	6 to 9	-	1.0 or less	5.5 to 11	2.0 or less
	ø32	-	6.5 to 9			5.5 to 10	
	ø40	-	7.5 to 10.5			5.5 to 9	
	ø63	-	8 to 11			5.5 to 10	
Rodless Cylinder with Brake	● Applicable switches: Solid state switches (M2□, M3□, M3P□, M2WV, M3WV), Reed switches (M0□, M5□)						
SRT3	ø12	4 to 13	4 to 12	1.5 or less	1.0 or less	3 to 11	3.0 or less
	ø16	4 to 13	4 to 12			3 to 11	
	ø20	4 to 13	4 to 12			3 to 11	
	ø25	9.5 to 15.5	9 to 14	2.0 or less	1.5 or less	8.5 to 13.5	3.5 or less
	ø32	7.5 to 15	8 to 14			7 to 13.5	
	ø40	11.5 to 17.5	10 to 16.5			10 to 16	
	ø50	16.5 to 24	14 to 21			14.5 to 21.5	
	ø63	16 to 24	14 to 21			14 to 21.5	
Rodless Cylinder	● Applicable switches: Proximity switch (T2W□, T3W□, T2WL□, T2YD)						
SRT3	ø12	-	2 to 7	-	1.0 or less	-	-
	ø16	-	2 to 7				
	ø20	-	3 to 8	-	1.5 or less		
	ø25	-	3 to 10				
	ø32	-	3 to 10				
	ø40	-	4 to 11				
	ø50	-	9 to 16				
	ø63	-	9 to 16				
Magnet Type Rodless Cylinder	● Applicable switches: Solid State Switch (T2□, T3□, T3P□, T2W□, T3W□, T2WL□, T1□)						
MRL2	ø6	2 to 5	5.5 to 6.5	1.0 or less	1.0 or less	-	-
	ø10	2.5 to 5.5	6 to 7.5				
	ø16	2 to 5	5.5 to 7				
	ø20	2 to 5	6 to 5.5				
	ø25	2 to 5	6 to 5.5				
	ø32	2 to 4.5	5.5 to 6.5				
Magnet type super rodless cylinder high precision guide	● Applicable switches: Solid state switches (T2□,T3□,T3P□,T2W□,T3W□,T2WL□,T1□), Reed switches (T0□,T5□)						
MRG2	ø10	2 to 4.5	5.5 to 7	0.5 or less	0.5 or less	6.5 to 7.5	1 or less
	ø16	2 to 5	6 to 7.5			7 to 8	2 or less
	ø25	2 to 5	6 to 7			7.5 to 8	2 or less

Operating range and hysteresis of each cylinder model with switch

(Unit: mm)

Model No.	Bore size (mm)	Solid state switch				Reed switch	
		Operating range		Hysteresis		Operating range	Hysteresis
		1-color type	2-color type	1-color type	2-color type		
Clamp Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
CAC4	ø40	2 to 6.5	5.7 to 6.5	1.5 or less	1.0 or less	6.7 to 10.8	3 or less
	ø50	2.5 to 6.0	5.9 to 6.8			7.8 to 11.3	
	ø63	2.5 to 6	6.1 to 6.8			8.2 to 11.4	
	ø80	3 to 7	7.7 to 8.5			9 to 10.9	
Clamp Cylinder	● Applicable switches: Reed switch for strong magnetic field (H0□)						
CAC4-L2	ø40	-		-	-	6.7 to 10.8	3 or less
	ø50					7.8 to 11.3	
	ø63					8.2 to 11.4	
	ø80					6.6 to 7.5	
Clamp Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
UCAC2	ø50	2.5 to 6.0	5.9 to 6.8	1.5 or less	1.0 or less	7.8 to 11.3	3 or less
	ø63	2.5 to 6.5	6.1 to 6.8			8.2 to 11.4	
Clamp Cylinder	● Applicable switches: Reed switch for strong magnetic field (H0□)						
UCAC2-L2	ø50	-		-	-	7.8 to 11.3	3 or less
	ø63					8.2 to 11.4	
Lightweight Clamp Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
CAC	ø32	2.5 to 6	3.5 to 8	1.5 or less	1.0 or less	6.5 to 11.5	3 or less
	ø40	3 to 7	4 to 9			7.5 to 13.5	
Lightweight clamp cylinder with fall prevention	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
UCAC	ø32	2.5 to 6	3.5 to 8	1.5 or less	1.0 or less	6.5 to 11.5	3 or less
	ø40	3 to 7	4 to 9			7.5 to 13.5	
Rotary Clamp Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T2YD, T1□), Reed switches (T0□, T5□, T8□)						
RCS2	ø12	1.5 to 5.5	3 to 6	1.5 or less	1.0 or less	5 to 8	3 or less
	ø16	1.5 to 4.5	3 to 7			4 to 9	
	ø20	3 to 8	4.5 to 8			6 to 14	
	ø25	3 to 9	4.5 to 8			5 to 14	
	ø32	3 to 8	4.5 to 8			5 to 12	
	ø40	3 to 9	5 to 8.5			6 to 14	
	ø50	3 to 9	5.5 to 9.5			6 to 14	
	ø63	3 to 9	5.5 to 9.5			7 to 15	
Rotary Clamp Cylinder	● Applicable switches: Solid state switches (T2□,T3□,T3P□,T2W□,T3W□,T2WL□,T2YD), Reed switches (T0□,T5□)						
RCC2	ø16	2 to 5	3 to 7	1.5 or less	1.0 or less	4 to 9	3 or less
	ø20	3 to 8	4.5 to 8			6 to 14	
	ø25	3 to 9	4.5 to 8			5 to 14	
	ø32	3 to 8	4.5 to 8			5 to 12	
	ø40	3 to 9	5 to 8.5			6 to 14	
	ø50	3 to 9	5.5 to 9.5			6 to 14	
	ø63	3 to 9	5.5 to 9.5			7 to 15	
Rotary Clamp Cylinder	● Applicable switches: Solid state switches (T2□,T3□,T2W□,T3W□), Reed switches (T0□,T5□)						
RCS	ø16	2 to 5	3 to 7	1.5 or less	1.0 or less	4 to 9	3 or less

Operating range and hysteresis of each cylinder model with switch

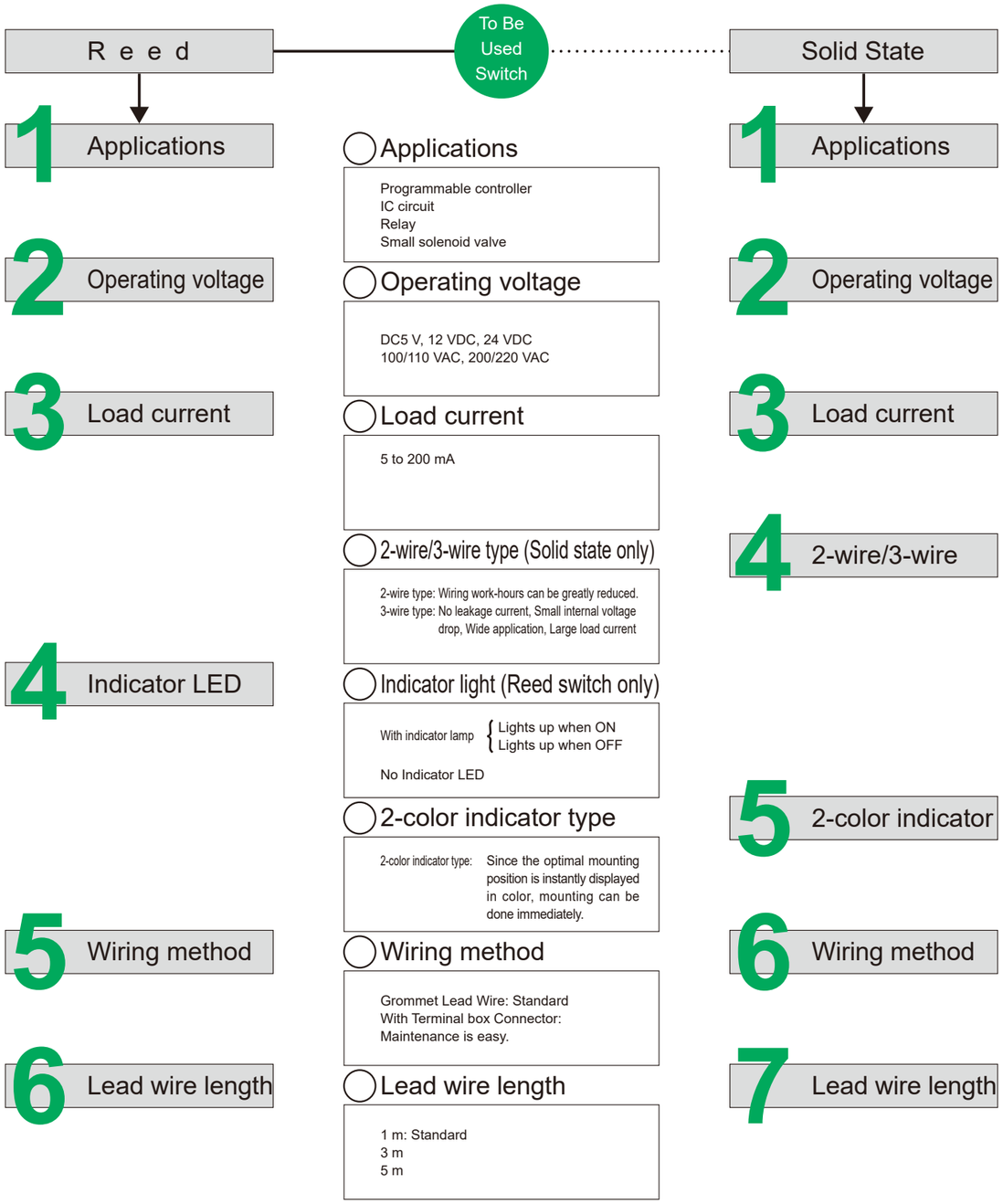
Model No.	Bore size (mm)	Solid state switch				Reed switch	
		Operating range		Hysteresis		Operating range	Hysteresis
		1-color type	2-color type	1-color type	2-color type		
Mechanical Power Cylinder	● Applicable switches: Solid state switches (T2□, T3□, T3P□, T2J□, T2W□, T3W□, T2WL□, T1□), Reed switches (T0□, T5□, T8□)						
MCP-S	2t	4 to 10	6 to 10	1.5 or less	1.0 or less	7 to 15	3 or less
	5t	4 to 10	8 to 10			9 to 15	
MCP-W (Fast feed part)	2t	3.5 to 6.0	4.6 to 9.2	1.5 or less	1.0 or less	7.6 to 12.8	3 or less
	5t	4.0 to 8	5.5 to 11.9			8.9 to 14.1	
Guideless Cylinder	● Applicable switches: Solid state switches (R1, R2, R3, R2Y, R3Y), Reed switches (R0, R4, R5, R6)						
GLC	ø40	7 to 17		1.5 or less		11.5 to 16.5	3.0 or less
	ø50	9 to 17				13 to 18	
	ø63	10 to 18				15 to 20	
	ø80	8 to 19				15 to 20	
	ø100	11 to 20.5				13.5 to 19	
Guideless Cylinder	● Applicable switches: Reed switch (H0)						
GLC-L2	ø40	-		-		4 to 9	3.0 or less
	ø50					4 to 9	
	ø63					4 to 10	
	ø80					5 to 11	
	ø100					5 to 11	
Selex Rotary	● Applicable switches: Solid state switches (T2□,T3□,T2W□,T3W□,T2WL□,T1□), Reed switches (T0□, T5□, T8□)						
RRC	8	15° to 60°	20° to 70°	-	-	70° to 90°	-
	32	10° to 30°	10° to 30°			30° to 40°	
	63	10° to 30°	10° to 30°			30° to 40°	
Table Type Rotary Actuator	● Applicable switches: Proximity switch (T2□,T3□,T2W□,T3W□,T2WL□,T1□)						
GRC	5	10° to 35°	30° to 40°	-	-	-	-
	10	5° to 30°	20° to 30°				
	20	10° to 35°	25° to 35°				
	30	5° to 25°	15° to 25°				
	50	5° to 25°	15° to 25°				
	80	5° to 25°	15° to 25°				
Compact Selex Rotary	● Applicable switches: Solid state switch (SR-□)						
RV3□	3	15° ±7°	-	3° or less	-	-	-
	10	15° ±7°	-				
	20	15° ±7°	-				
	30	15° ±7°	-				
Compact Selex Rotary	● Applicable switches: Proximity switch (FR-□)						
RV3□	3	23° ±7°	-	2° or less	-	-	-
	10	23° ±7°	-				
	20	23° ±7°	-				
	30	23° ±7°	-				
Large Selex Rotary	● Applicable switches: Solid state switches (M2V,M3V,M3PV), Reed switches (M0V,M5V)						
RV3□	50	Approx. 40°	-		-	Approx. 25°	-
	150	Approx. 25°	-			Approx. 15°	
	300	Approx. 25°	-			Approx. 15°	
	800	Approx. 25°	-			Approx. 15°	

Cylinder Switch

Selection method

When selecting a cylinder switch, first check whether it is a reed type or solid state type, and then select the appropriate switch according to the order of the selection chart below.

Cylinder switch selection chart



MEMO

Cylinder Switch

Troubleshooting and countermeasures in case of failure [Cylinder switch] ①

Malfunction phenomenon	Cause	Factor	Countermeasure
Remains ON, remains outputting * Load ・Programmable Controller ・Relay ・Other	Load was short-circuited	Internal circuit damage of the switch	① Replace the cylinder switch and reselect one where the maximum rating of the cylinder switch matches the rating of the load
	Load current exceeding the catalog value was applied		
	Load voltage or power supply voltage exceeding the catalog value was applied		
	Wiring is incorrect	Malfunction due to incorrect wiring	① Correct the wiring
		Internal circuit damage due to incorrect wiring (AC, DC, polarity, etc.)	① Replace the cylinder switch and correct the wiring
	Wiring length is long (Refer to catalog P. 808)	Internal circuit damage of the switch	① Replace the cylinder switch and wire the protection circuit (Refer to catalog P. 808, P. 810)
	Surge voltage is generated due to connection of inductive load (relay, solenoid valve)	Internal circuit damage of the switch	① Replace the cylinder switch and wire the protection circuit (Refer to catalog P. 808, P. 810)
	In solid state switches, there are noise sources such as servo motors or robots in the same facility	Noise is being applied	① Add a noise filter or replace with a reed switch
	Power lines and signal lines are wired together		② Separate power lines and signal lines
	Using the same power supply as the noise source		③ Separate power supplies
	The mounting position of the cylinder switch does not match the piston stop position	Position adjustment is incorrect	① Readjust the position
		Mounting position is misaligned due to loose screws	① Tighten within the specified tightening torque range
		Cylinder switch mounting direction is reversed	① Correct to the normal orientation
	Ambient temperature is -10°C or less	The magnetic force of the piston magnet built into the cylinder has become stronger	① Raise the ambient temperature to -10°C or higher
	Water, oil, etc. splashed on the cylinder switch	Water or oil infiltrated the cylinder switch, causing internal circuit destruction	① Replace the standard cylinder switch with a cutting oil resistant specification T□YL (T-type switch only) ② Replace the cylinder switch and install a shielding plate, etc. to prevent excessive splashing of water or oil
	Water or oil has entered the lead wire junction box Water or oil has splashed onto the load terminal part	Malfunction due to infiltration of water/oil	① Install a shielding plate to prevent water or oil from splashing on the junction box, or place it inside a waterproof box
	There are objects that generate magnetic fields in the vicinity ・Spot welder ・Magnetizing equipment, etc.	Cylinder switch is reacting to external magnetic field	① Change to a strong magnetic field cylinder switch (Cylinder body also needs to be changed for strong magnetic field) ② Prevent magnetic field from being applied a Move the source of the magnetic field away b Install a shielding plate made of magnetic material between the source of the magnetic field ③ Apply magnetic shielding
	There are magnetic materials in the vicinity	There are iron bolts in the vicinity	① Replace with stainless steel bolts ② Move the cylinder switch to a mounting surface away from iron bolts
		There are magnetic materials around the cylinder switch	① Move the cylinder switch away from the magnetic material to the catalog recommended distance ② Move the cylinder switch to a mounting surface away from magnetic materials ③ Change the material of the magnetic body to a non-magnetic material such as stainless steel, aluminum, or copper
		Iron powder has accumulated around the cylinder switch	① Remove iron powder
	External force was applied to the cylinder switch	Internal circuit damage of the switch	① Replace the cylinder switch and prevent external force from being applied to the cylinder switch

Cylinder Switch

Cylinder Switch

Troubleshooting and countermeasures in case of failure [Cylinder switch] ②

Malfunction phenomenon	Cause	Factor	Countermeasure
Cylinder switch turns ON-OFF, but the load remains ON	The relationship between the leakage current of the cylinder switch and the input specification of the load is Leakage current > OFF current.	Load is reacting to leakage current	① Change the cylinder switch from ☐2 type to ☐0 type or ☐ type 3 ② Change to a load with a larger OFF current value ③ Wire a bleeder resistor
		Leakage current is increasing due to parallel connection (Refer to catalog P. 809)	
Output turns ON-OFF normally, but the indicator light does not turn on	Wiring polarity (plus, minus) is reversed (Only when using reed switch ☐0 with DC)	Malfunction due to incorrect wiring	① Correct to normal wiring

* Does not malfunction due to leakage current of solid state switch
Please select a programmable controller, relay, etc.
* For the input specifications of the load, please check the Model No.and contact each manufacturer or our company.

Troubleshooting and countermeasures in case of failure [Cylinder switch] ②

Malfunction phenomenon	Cause	Factor	Countermeasure
Cylinder switch does not turn ON **Does not output Load does not respond** * Load ・Programmable Controller ・Relay ・Other	Applied voltage is incorrect	Internal circuit damage of the switch	① Replace the cylinder switch and change to the regular voltage ② Replace with a cylinder switch of the regular voltage
	Load was short-circuited	Internal circuit damage of the switch	① Replace the cylinder switch and reselect one where the maximum rating of the cylinder switch matches the rating of the load
	Load current exceeding the catalog value was applied		
	Load voltage or power supply voltage exceeding the catalog value was applied		
	Wiring is incorrect	Switch is not operating due to incorrect wiring	① Correct the wiring
		Internal circuit damage due to incorrect wiring (AC, DC, polarity, etc.)	① Replace the cylinder switch and correct the wiring
	Excessive bending was applied to the lead wire	Lead wire breakage	① Replace the cylinder switch and ensure a sufficient bending radius (9 mm or more) for the lead wire to prevent excessive bending at one point ② Change the cylinder switch to T2□R with flexible cable specification (T-type switch only)
	Excessive pulling force was applied to the lead wire	Lead wire breakage	① Replace the cylinder switch and take measures to prevent excessive pulling force
	Wiring length is long (Refer to catalog P. 808)	Internal circuit damage of the switch	① Replace the cylinder switch and wire the protection circuit (Refer to catalog P. 808, P. 810)
	Surge voltage is generated due to connection of inductive load (relay, valve)	Internal circuit damage of the switch	① Replace the cylinder switch and wire the protection circuit (Refer to catalog P. 808, P. 810)
	In solid state switches, there are noise sources such as servo motors or robots in the same facility	Noise is being applied	① Add a noise filter or replace with a reed switch
	Power lines and signal lines are wired together		② Separate power lines and signal lines
	Using the same power supply as the noise source		③ Separate power supplies
	The mounting position of the cylinder switch does not match the piston stop position	Position adjustment is incorrect	① Readjust the position
		Mounting position is misaligned due to loose screws	① Tighten within the specified tightening torque range
		Cylinder switch mounting direction is reversed	① Correct to the normal orientation
	Ambient temperature exceeds 60°C	The magnetic force of the piston magnet built into the cylinder has weakened	① Lower the ambient temperature to 60°C or less ② Replace with a heat-resistant cylinder switch (Limited models: Refer to catalog)
	Water, oil, etc. splashed on the cylinder switch	Water or oil infiltrated the cylinder switch, causing internal circuit destruction	① Replace the standard cylinder switch with a cutting oil resistant specification T□YL (T-type switch only) ② Replace the cylinder switch and install a shielding plate, etc. to prevent excessive splashing of water or oil
	Water or oil has entered the lead wire junction box Water or oil has splashed onto the load terminal part	Internal circuit abnormality due to infiltration of water/oil	① Install a shielding plate to prevent water or oil from splashing on the junction box, or place it inside a waterproof box
	There are objects that generate magnetic fields in the vicinity ● Spot welder ● Magnetizing equipment, etc.	Cylinder switch does not react due to the influence of the surrounding magnetic field	① Change to a strong magnetic field cylinder switch (Cylinder body also needs to be changed for strong magnetic field) ② Prevent magnetic field from being applied a Move the source of the magnetic field away b Install a shielding plate made of magnetic material between the source of the magnetic field ③ Apply magnetic shielding
	There are magnetic materials in the vicinity	There are iron bolts in the vicinity	① Replace with stainless steel bolts ② Move the cylinder switch to a mounting surface away from iron bolts
		There are magnetic materials around the cylinder switch	① Move the cylinder switch away from the magnetic material to the catalog recommended distance ② Move the cylinder switch to a mounting surface away from magnetic materials ③ Change the material of the magnetic body to a non-magnetic material such as stainless steel, aluminum, or copper
		Iron powder has accumulated around the cylinder switch	① Remove iron powder
	External force was applied to the cylinder switch	Internal circuit damage of the switch	① Replace the cylinder switch and prevent external force from being applied to the cylinder switch

Cylinder Switch

Troubleshooting and countermeasures in case of failure [Cylinder switch] ④

Malfunction phenomenon	Cause	Factor	Countermeasure
The cylinder switch indicator light turns ON, but the load does not operate	The relationship between the voltage drop of the cylinder SW and the input specification of the load is (Power supply voltage - Internal voltage drop) < Minimum operating voltage.	Load and cylinder switch do not match	① Replace the cylinder switch with a model with a smaller internal voltage drop value ☐2 type → ☐0 type → ☐3 type → ☐5 type ② Replace the load with one that has a smaller minimum operating voltage
		Generation of internal voltage drop due to series connection (Refer to catalog P. 809)	
	In the case of 3-wire type, the input specifications (source input, sink input) of the programmable controller (PLC) do not match	Does not accept cylinder switch signal	① Source input —— Select NPN output ☐3 type (NPN output is standard type) ② Sink input ——— Select PNP output ☐3P type (Only for T, K, M, F type switches) ③ Change the cylinder switch to a 2-wire type
	The output of the cylinder switch is used in the middle of the air cylinder stroke	Cylinder speed is fast and load does not react	① Change to T2J with OFF-delay specification (T-type switch only) ② Connect multiple cylinder switches in parallel to widen the operating range. ③ Connect a sensor controller, etc. between the cylinder SW and the load and change to a signal time suitable for the load performance Example: Omron S3D2 ④ Slow down the cylinder speed

Cylinder Switch

To Use This Product Safely

Be sure to read this before use.

Individual Precautions: Cylinder Switch

During Design / Selection

⚠Warning

■ Use outside the specified range of application, load current, voltage, temperature, impact, environment, etc., can cause destruction or malfunction, so please use correctly within the specified range.

■ Never use in an explosive gas atmosphere. The cylinder switch does not have an explosion-proof structure. If used in an explosive gas atmosphere, it may cause an explosion disaster, so never use it.

⚠Caution

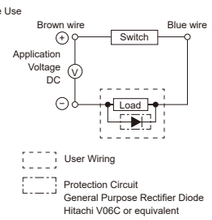
■ Be careful when using for interlock circuits.
When using a cylinder switch for an interlock signal that requires high reliability, please implement a double interlock system, such as providing a mechanical protection function in case of failure, or using another switch (sensor) in addition to the cylinder switch. Also, inspect regularly and confirm that it operates normally.

■ Pay attention to contact capacity.
Do not use a load that exceeds the voltage and current of the switch specifications. This will cause a malfunction.

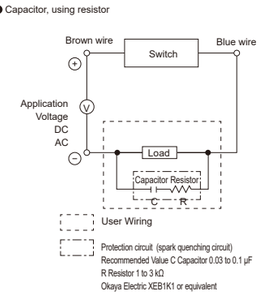
■ Pay attention to the contact protection circuit. (Reed switch)

● When connecting and using an inductive load (relay, solenoid valve, etc.), a surge voltage will occur when the switch is turned OFF, so be sure to provide a contact protection circuit.

● Diode Use



● Capacitor, using resistor



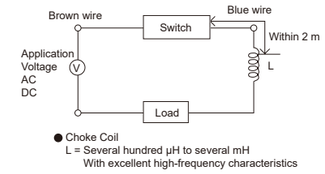
● When connecting and using a capacitive load (capacitor), an inrush current will occur when the switch is ON, so be sure to provide a contact protection circuit.

● If the wiring becomes long, it becomes wiring capacity, inrush current occurs, and switch damage or life reduction occurs, so if the wiring length exceeds Table 1, provide a contact protection circuit. When T8 is used with 200 VAC, the usable wiring length will be shorter, so please consult us.

Switch	Voltage	Wiring length
M, T, K, H, V, F, ETO type	DC	50 m
M, T, K, H, V, ETO type	AC	10 m
RO, 5, 6, EO type	DC	100 m
RO, 5, EO type	AC	10 m
R4 type	AC	50 m

Table 1

● Choke Coil Use



● Choke Coil
L = Several hundred μH to several mH
With excellent high-frequency characteristics

● Resistor Use

● Inrush Current Limiting Resistor
R = Resistance as large as the load circuit allows

For specifications of the contact protection circuit, see P. 783.

■ Avoid use in environments where water, etc., is constantly present.

● May cause malfunction due to insulation failure, etc.

■ Avoid use in environments with oil or chemicals.

● Use in environments with various oils, coolant, cleaning fluids, or chemicals may adversely affect the cylinder switch (insulation failure, malfunction due to swelling of filling resin, hardening of lead wire coating, etc.), so please consult us.

● For cutting oil resistant cylinder switches, a separate "Cutting Oil Compatible Pneumatic Component Guide" (No. CC-N-375) is available, so please refer to it.

■ Do not use in environments with large impacts.
For reed switches, if a large impact (294 m/s² or more) is applied during use, there is a possibility of malfunction where the contact momentarily (1 ms or less) connects or disconnects. It may also be necessary to use a solid state switch depending on the operating environment, so please consult us.

■ Do not use in places where surge generation sources are present.
If there is equipment that generates large surges (electromagnetic lifters, high-frequency induction furnaces, motors, etc.) around the cylinder with a solid state switch, it may cause deterioration or damage to the switch internal circuit elements, so consider surge countermeasures at the source.

■ Pay attention to accumulation of iron powder and close proximity of magnetic materials.
If a large amount of iron powder such as cutting chips or welding spatter accumulates around a cylinder with a cylinder switch, or if a magnetic material (something attracted to a magnet) is in close contact, the magnetic force within the cylinder may be lost, potentially causing the cylinder switch to stop operating. Please be careful.

■ Pay attention to the proximity of cylinders to each other, etc.

● When using two or more cylinders with switches in parallel and close to each other, use them with the cylinder tube spacing at the value indicated for the allowable spacing for each cylinder series. The switches may malfunction due to mutual magnetic interference.

■ Pay attention to the magnetic environment.

● In environments with strong magnetic fields, or large currents (large magnets, spot welders, etc.), use a strong magnetic field resistant switch. (HO, HOY, T2YD) If a magnetic body moves very close to the cylinder, they may interfere with each other and affect detection accuracy.

■ At stroke intermediate positions, pay attention to the cylinder switch ON time.

● If the cylinder switch is set to a stroke intermediate position and the load is driven when the piston passes, if the speed is too high, the cylinder switch will operate, but the operating time will be short, and the load may not be able to respond fully, so please be careful.
The maximum detectable piston speed is

$$V\ (\text{mm/s}) = \frac{\text{Cylinder Switch Operating Range (mm)}}{\text{Load Operating Time (s)}}$$

If the piston speed is high, please use an off-delay output type cylinder switch T2JH/V (limited to compatible models).

■ Pay attention to how to use series connection.

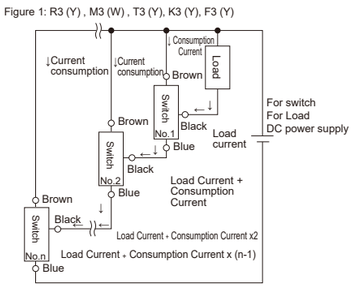
● When using multiple 2-wire switches connected in series, the voltage drop across the switches will be the sum of the voltage drops of all connected switches. The voltage applied to the load side will be the power supply voltage minus the voltage drop across the switches. Check the load specifications before deciding on the number of units to connect.

● Using 2-wire solid state switches connected in series may cause malfunction, so please contact us. Use with reed switches is recommended.

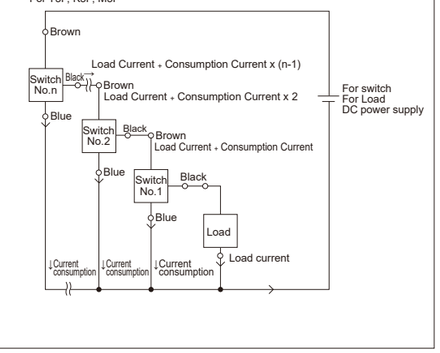
● When using multiple 3-wire solid state switches connected in series, the voltage drop at the switches will be the sum of the voltage drops of all connected switches, similar to the 2-wire type above. Also, the current flowing through the switches will be the sum of the current consumption of the connected switches and the load current, as shown in the upper right diagram. Check the load specifications to ensure the maximum load current of the switch is not exceeded before deciding on the number of units to connect.

● The indicator lamp will only light up when all switches are ON.

Figure 1: R3 (Y) , M3 (W) , T3 (Y), K3 (Y), F3 (Y)



For T3P, K3P, M3P



■ Pay attention to how to use parallel connection.

● When using multiple 2-wire switches connected in parallel, the leakage current will increase by the number of connected units. Therefore, check the load specifications and determine the number of connected units.

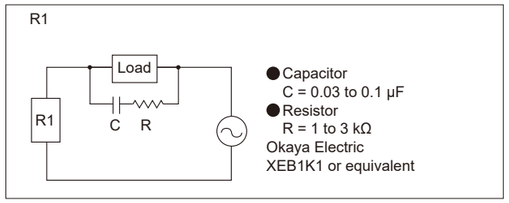
● For 2-wire solid state switches, from when one switch turns ON until it turns OFF, the voltage across the parallel-connected switches drops to the internal voltage drop value when the switch is ON, falling below the load voltage range, so other switches will no longer turn ON. Therefore, check the input specifications of the connected load, such as a programmable controller, before use.

● Since 3-wire solid state switches have a very small leakage current value (10 μA or less), there are usually no problems in normal use.

● The switch indicator light may dim or not light up.

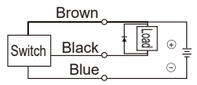
■ Output Circuit Protection (Solid State Switch)

● When connecting and using an inductive load (relay, solenoid valve, etc.), a surge voltage will occur when the switch is turned OFF, so be sure to provide a protection circuit as shown in the diagram below.



● Capacitor
C = 0.03 to 0.1 μF
● Resistor
R = 1 to 3 kΩ
Okaya Electric
XEB1K1 or equivalent

R3 (Y), M3 (W), T3 (Y), K3 (Y), F3 (Y)

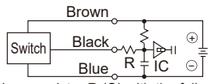


● Diode
D = Hitachi
V06C or equivalent

Example of using a surge absorber with an inductive load.

● When connecting and using a capacitive load (capacitor), an inrush current will occur when the switch is turned ON, so be sure to provide a protection circuit as shown in the diagram below.

R3 (Y), M3 (W), T3 (Y), K3 (Y), F3 (Y)



Use a resistor R (Ω) with the following formula or more at this time.

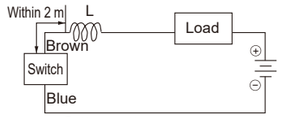
$\frac{V}{0.15}$ =R (Ω) (R3 (Y), M3 (W))

$\frac{V}{0.05}$ =R (Ω) (T3 (Y), K3 (Y), F3 (Y))

● If the lead wire length exceeds 10 m, be sure to provide a protection circuit as shown in the diagram below.

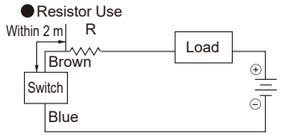
R1, R2 (Y), M2 (W), T2 (Y/J), K2 (Y), F2

●Choke Coil Use



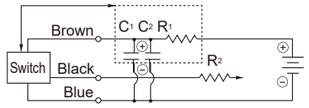
● Choke Coil
L = Several hundred μH to several mH
With excellent high-frequency characteristics

●Resistor Use



● Inrush Current Limiting Resistor
R = Resistance as large as the load circuit allows

●Resistor Use
Within 2 m



Power Supply Noise Absorption Circuit
C_1 = 20 to 50μF
Electrolytic capacitor (withstand voltage 50 V or more)
C_2 = 0.01 to 0.1μF
Ceramic capacitor
Inrush current limiting resistor
R_1 = 20 to 30Ω
R_2 = Use a resistor as large as the load side circuit allows.

■ Take care regarding the service life of the reed switch.

● The service life of a reed switch varies depending on the usage conditions, but it is generally about several million cycles.The contact service life is reached sooner if the device is used continuously or operated at a high frequency. In this case, use a proximity switch with no contact.

During Use

⚠ Caution

■ Do not drop or strike.

When handling, do not drop, strike, or apply excessive impact (reed switch 294m/s² or more, solid state switch 980m/s² or more). Even if the switch case body is not damaged, the switch internals may be damaged, potentially leading to malfunction.

■ Do not carry the cylinder by the switch lead wires.

This can not only cause lead wire breakage, but also apply stress to the inside of the switch, potentially damaging internal switch elements. Absolutely do not do this.

■ Do not wire with power lines or high-voltage lines.

Avoid parallel wiring or using the same conduit as power lines/high-voltage lines; use separate wiring. Control circuits including cylinder switches may malfunction due to noise.

■ Do not short-circuit the load.

If turned ON in a load short-circuited state, overcurrent will flow and the switch will be instantaneously damaged.

■ Pay attention to lead wire connection.

Turn off the power to the equipment on the connected electrical circuit side before performing wiring work. Working with the power on can cause electric shock or accidents due to unexpected operation.

● Reed Switch

Do not connect the switch lead wires directly to the power supply; always connect a load in series. Also, for RO, MO, TO, KO, EO, FO, ETO, please also pay attention to ① and ② below.

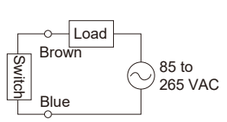
① When using for DC, connect so that the brown wire is the + side and the blue wire is the - side.
If connected in reverse, the switch will operate, but the indicator light will not turn on. (HO has no polarity.)

② When connecting to an AC relay or programmable controller input, if those circuits perform half-wave rectification, the indicator light may not light up. In that case, reversing the polarity of the switch lead wire connection will turn on the indicator light.

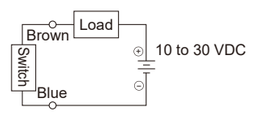
● Solid State Switch

Connect correctly according to the lead wire color coding in the diagram on the right. Incorrect wiring may cause damage. Please be careful.

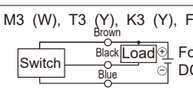
●R1



●R2 (Y), M2 (W), T2 (Y), T2J, K2 (Y), F2 (T2YD has no polarity)

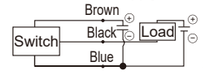


●R3 (Y), M3 (W), T3 (Y), K3 (Y), F3



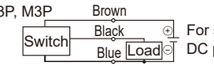
For switch, For load
DC power supply

DC Power Supply for Switch



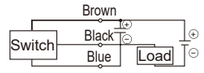
DC Power Supply for Load
30 VDC or less

●T3P, K3P, M3P



For switch, For load
DC power supply

DC Power Supply for Switch

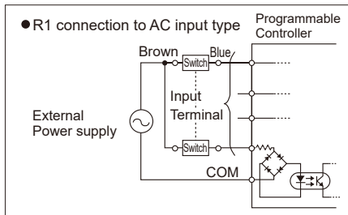


For Load
DC power supply

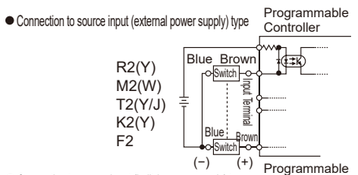
(Connection to Programmable Logic Controller (PLC))

● Connection method varies depending on the programmable controller type. Connect according to the input specifications.

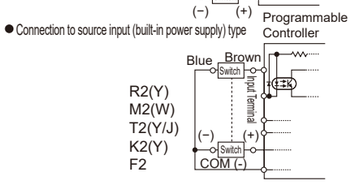
●R1 connection to AC input type



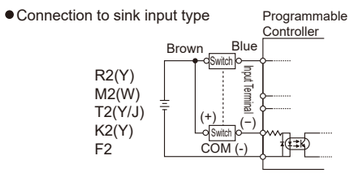
●Connection to source input (external power supply) type



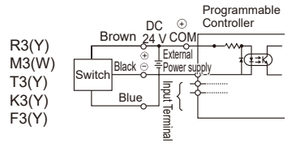
●Connection to source input (built-in power supply) type



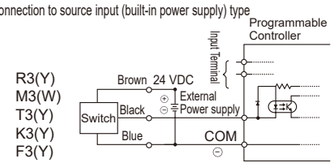
●Connection to sink input type



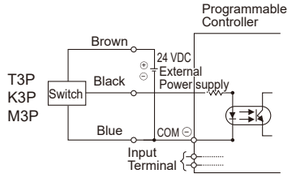
● Connection to source input (external power supply) type



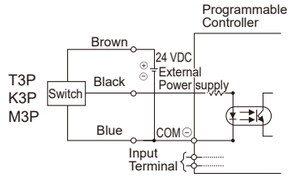
● Connection to source input (built-in power supply) type



● Example of connection to sink input (external power supply) type



● Example of connection to sink input (internal power supply) type



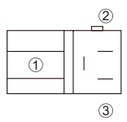
■ Set the switch to the center of the operating range.

Adjust the mounting position of the cylinder switch so that the piston stops at the center of the operating range (the range where it is ON). (The mounting position described in the catalog indicates the optimal position at the stroke end.) If set to the end of the operating range (near the ON/OFF boundary line), operation may become unstable.

■ Mount the switch observing the tightening torque.

If tightened beyond the maximum tightening torque, the set screw, mounting bracket, switch, etc., may be damaged. Also, if tightened below the minimum tightening torque, the switch mounting position may shift. (For switch mounting method, moving method, tightening torque, etc., please refer to P. 814 to P. 816.)

■ Pay attention to wiring for terminal box types.



Model \ Terminal	①	②	③
R0 (DC), R2, R2Y, R6		+	−
R0 (AC), R1, R4, R5		±	±
R3, R3Y	OUT	+	−

■ Lead Wire Protection

The minimum bending radius of the lead wire should be 9 mm or more (when fixed). Ensure that repeated bending stress and tensile force are not applied to the lead wire during wiring. For moving parts, please connect and use T2H/VR3 cylinder switch with flex-resistant lead wire specification for higher flexibility (limited to compatible models).

■ Relay

Use the following equivalent relays.

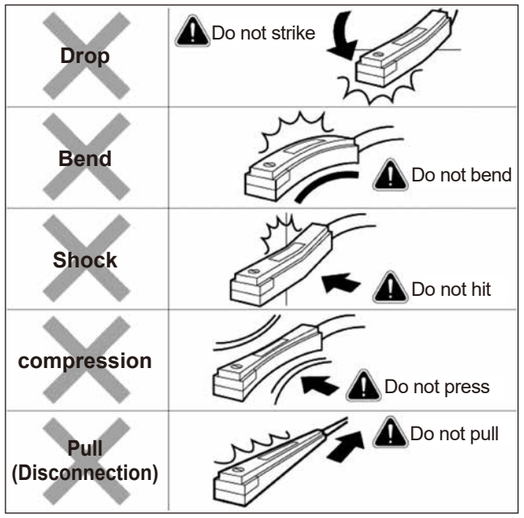
○ Omron ..... MY type
○ Fuji Electric ..... HH5 type
○ Tokyo Denki ..... MPM type
○ Panasonic ..... HC type

1. Notes on "External Force"

⚠ Caution

■ Especially for reed types, the reed switch (glass tube) may break or its sensitivity may decrease.

Example: T0□ T5□ T8□ type

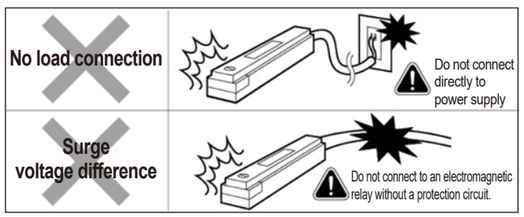


2. Notes on "Overcurrent / Overvoltage"

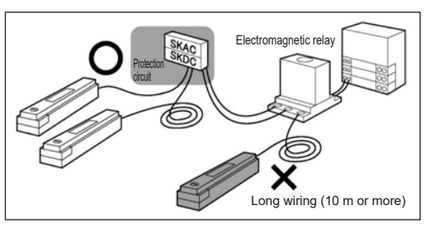
⚠ Caution

■ Do not connect directly to the power supply.

■ Do not connect to an electromagnetic relay without a protection circuit.



■ For electromagnetic relays and long wiring, install a "protection circuit."



During Use

⚠ Warning

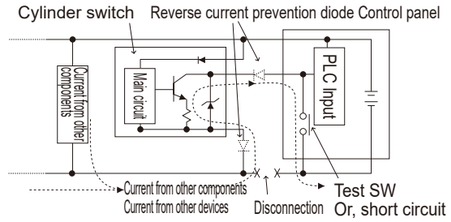
■ Do not allow overcurrent to flow.

If overcurrent flows through the cylinder switch due to a load short circuit, etc., not only will the cylinder switch be damaged, but there is also a risk of fire. If necessary, install an overcurrent protection circuit such as a fuse on the output and power lines.

⚠ Caution

■ Pay attention to reverse current due to disconnection/wiring resistance.

● If other equipment, including the cylinder switch, is connected to the same power supply as the cylinder switch, shorting the output line and the power supply - side, or disconnection of the power supply - side, to check the operation of the control panel's input device may cause reverse current to flow into the cylinder switch's output circuit, resulting in damage.

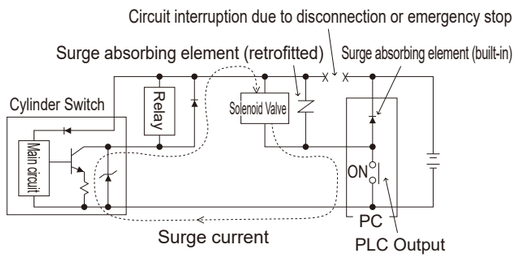


● To prevent damage due to reverse current, take the following measures.

① Avoid concentrating current on the power lines, especially the - side power line, and make the wiring as thick as possible.
② Limit the equipment connected to the same power supply as the cylinder switch.
③ Insert a diode in series with the cylinder switch output line to prevent reverse current flow.
④ Insert a diode in series on the negative side of the cylinder switch's power wire to prevent reverse current.

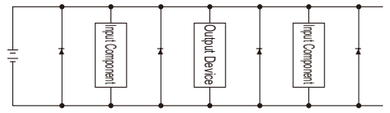
■ Pay attention to surge current sneak paths.

● If the power supply is shared between the cylinder switch and an inductive load that generates surges, such as a solenoid valve or relay, and the circuit is interrupted while the inductive load is operating, surge current may flow into the output circuit and cause damage, depending on the mounting position of the surge absorbing element.



● To prevent damage due to surge current sneak paths, take the following measures.

① Separate the power supplies for the output system with inductive loads such as solenoid valves and relays, and the input system such as cylinder switches.
② If separate power supplies cannot be used, directly install surge absorbing elements for all inductive loads. Consider surge absorbing elements connected to PLCs, etc., as protecting only that equipment.
③ Furthermore, connect surge absorbing elements at various points in the power supply wiring as shown in the diagram below to prepare for disconnection at unspecified locations.



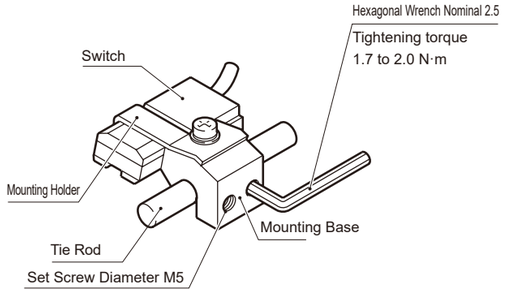
Furthermore, if equipment is connected with connectors, disconnecting the connector while power is on may cause the output circuit to be damaged due to the above phenomenon. Always turn off the power before connecting or disconnecting connectors.

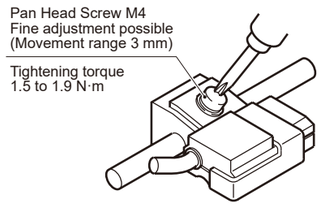
⚠Caution: Switch Mounting Method

Tie Rod Mount Type

Loosening the set screws (2 screws) for fixing the mounting base by 1/2 to 3/4 turn allows axial movement without detachment. For fixing after adjustment, lightly press the holder so that the switch is fixed to the tube, and then tighten the set screws. Tightening torque is 1.7 to 2.0 N·m. As a guide, it is sufficient if the hex wrench begins to deflect.

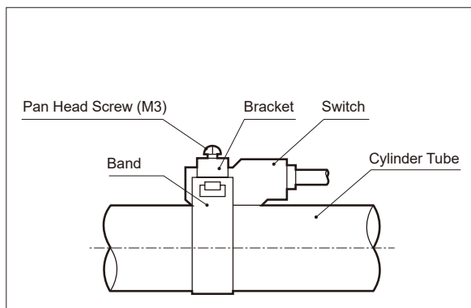
● Movement and tightening diagram





Band Mount Type

Loosen the tightening screw (pan head screw), move the switch body and band along the cylinder tube, and tighten at the specified position. For fine adjustment, fix the band position and move only the switch body. Tightening torque is 0.5 to 0.7 N·m. The tightening torque for HCA ø80, ø100 is 1.0 to 1.5 N·m.

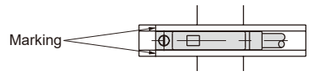


Band Mount Type

① When moving the switch position in the stroke direction

● The 1-color indicator switch can be finely adjusted by about ±3 mm from the mounting position at the time of shipment. If the adjustment range exceeds ±3 mm, or when finely adjusting the position of the 2-color indicator switch, move the band position.

● The switch rail has a marking 4 mm from the end face of the rail. Use this as a guide for the mounting position when replacing the switch. The marking on the switch rail is set to the switch's highest sensitivity position at the time of factory shipment. If the type of switch changes or if the band is moved, the maximum sensitivity position will change, so adjust the position each time.

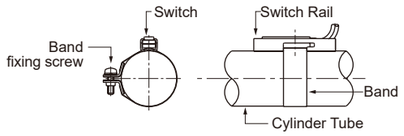


② When moving the switch position in the circumferential direction

● Loosen the band fixing screw, move the switch rail circumferentially, and tighten it at the specified position. Tightening torque is 0.8 to 1.0 N·m.

③ When moving the band position

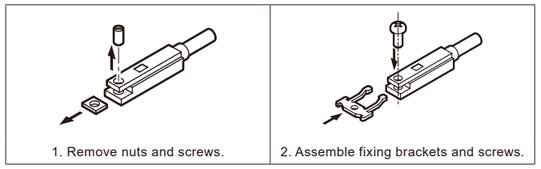
● Loosen the band fixing screw, move the switch rail and band along the cylinder tube, and tighten them at the specified position. Tightening torque is 0.8 to 1.0 N·m.



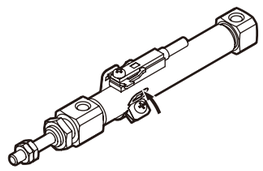
Band Mount Type

Install T-type switches as shown in the diagram below.

When using standard T-type switch (SW-T□)



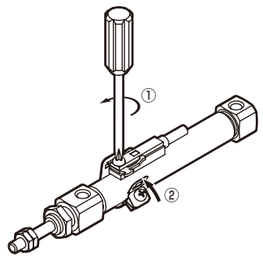
① Insert the square hole of the band into the fixing bracket and attach it to the cylinder.



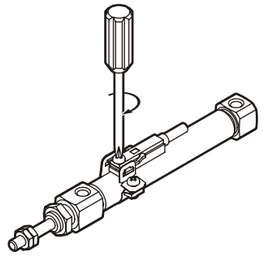
● If it is difficult to install, follow the steps below.

① Loosen the screw on the switch side.

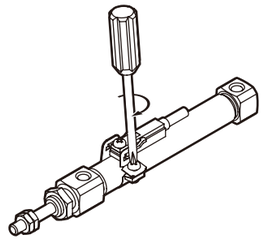
② Insert the square hole of the band into the fixing bracket.



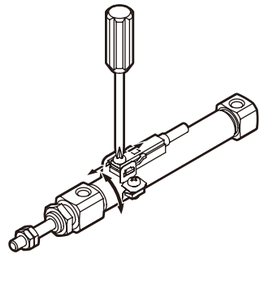
② Tighten the screw on the switch side.
Tightening torque: 0.1 to 0.15 N·m



③ Tighten the screw on the band side.
Tightening torque: 0.1 to 0.15 N·m



④ For switch mounting position adjustment
Loosen the screw on the switch side, adjust the position, and tighten the screw to fix it at the optimal position.
Tightening torque: 0.1 to 0.15 N·m



Switch Groove Mount Type

Loosen the tightening screw (set screw), move the switch body along the switch groove, and tighten at the specified position.

For T2, T2W, T3, T3W, T0, T5, K2, K3, K0, K5, use a flat-blade screwdriver (watchmaker's screwdriver, precision screwdriver, etc.) with a grip diameter of 5 to 6 mm, tip width of 2.4 mm or less, and thickness of 0.3 mm or less to tighten the switch fixing screw with a tightening torque of 0.1 to 0.2 N·m.

For T□C, T2J, T2Y, T3Y, K2Y, K3Y, T2YD, T1, T8, T2YL, T3YL, ET0, tighten with a torque of 0.5 to 0.7 N·m.

For F2□, F3□, F2Y□, F3Y□, tighten with a torque of 0.03 to 0.08 N·m.

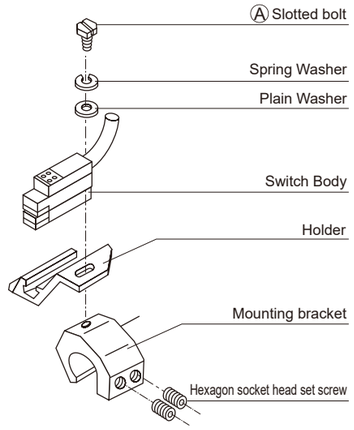
T2YD Tie Rod Mount Type

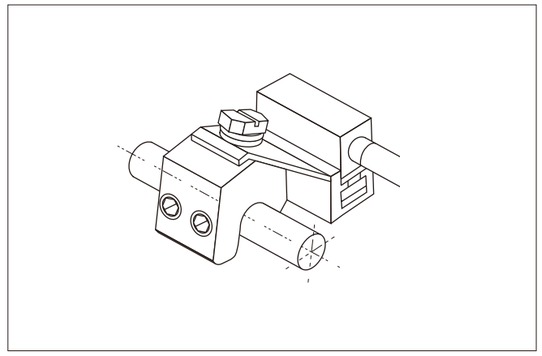
① Fine adjustment

Loosen the slotted hex bolt Ⓐ, move only the switch body, and tighten it at the specified position. Tightening torque is 0.5 to 0.7 N·m.

② Coarse adjustment

Loosen all slotted bolts Ⓐ and set screws, move the entire mounting bracket to the specified position, and then tighten the slotted bolt Ⓐ. Tightening torque is 0.5 to 0.7 N·m. Then tighten the set screws. Tightening torque is 1.7 to 2.0 N·m.





Caution

Contact protection circuit (SKAC, SKDC)

If you are using a reed switch and the circuit configuration with the load falls under the following, the contact life may be reduced (may remain ON). Connect a contact protection circuit within 2 m of the switch.

- When the operating load is an inductive load (relays, valves, etc. (coil-driven loads)) or a capacitive load (programmable controllers, etc. (loads containing capacitors))
- When the lead wire wiring length is as follows
  - 12 VDC : 100m or more
  - 24 VDC : 50m or more
  - 100 VAC : 20m or more
  - 200 VAC : 10m or more
- When there are other factors that cause overvoltage or overcurrent

For details on the contact protection circuit, refer to P. 783.

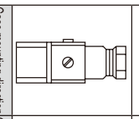
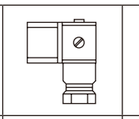
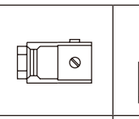
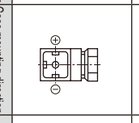
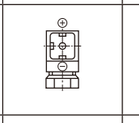
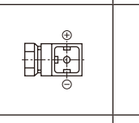
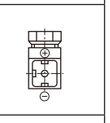
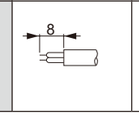
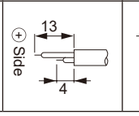
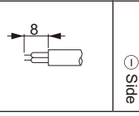
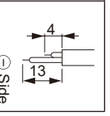
Mounting method to R□B terminal box

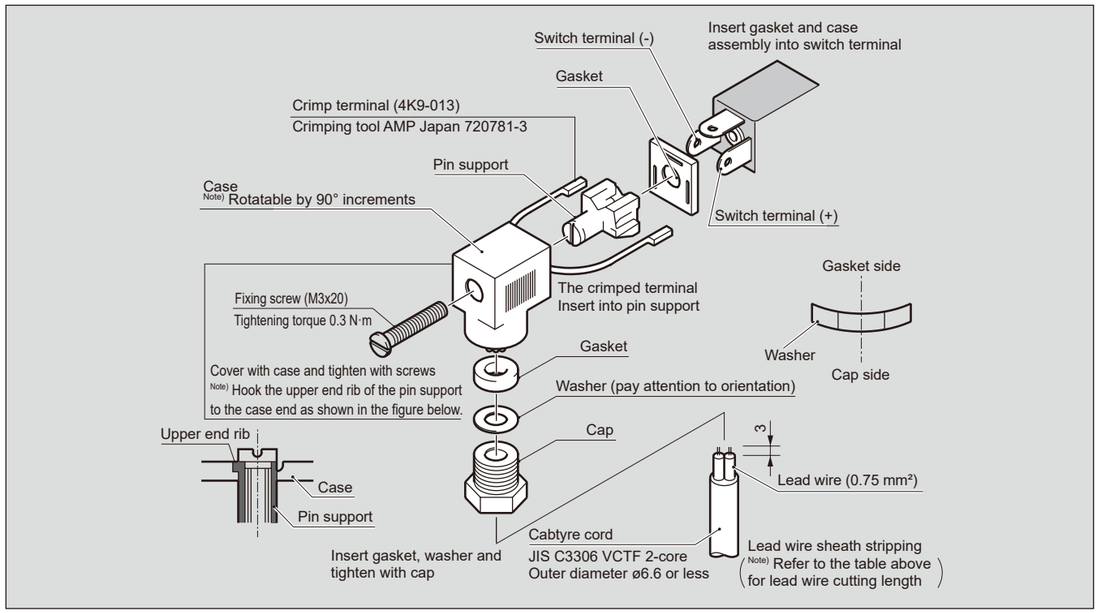
Connection to the R□B terminal box should be done according to the following procedure, referring to the diagram below.

① After completely removing the fixing screws, pull the terminal box out from the switch.
② From the top of the case, push out the pin support to separate the case and pin support.
③ Remove the cap, and take out the washer and gasket.
④ Determine the lead wire exit direction of the terminal box.
⑤ Referring to the top view of the case mounting direction, cut the lead wire to match the exit direction, and strip the seal/sheath.
⑥ Crimp the included terminal.
⑦ Pass the lead wire through the cap, washer, gasket, and case in that order, paying attention to the orientation. Pass the lead wire through the case and pull it out with needle-nose pliers.
⑧ While inserting the terminal into the pin support, push it into the case, paying attention to the orientation. Push until the upper end rib of the pin support comes out to the top surface of the case.
⑨ Insert the fixing screws into the case/pin support.
⑩ Insert the gasket and washer into the case and tighten with the cap.
⑪ Insert the case into the switch terminal and fix it with the fixing screws.

● Lead wire cutting length

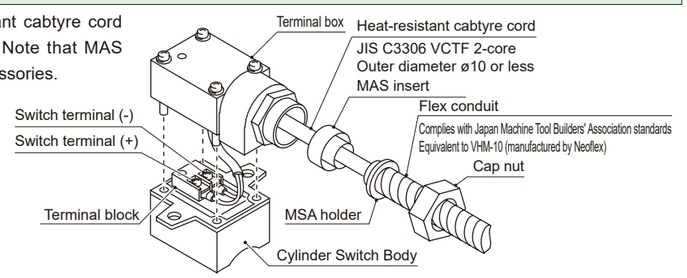
The lead wire cutting length varies depending on the case mounting direction. Please refer to the table below. For 3-wire type, please consult us.

Case mounting direction Top View				
Case mounting direction Bottom View				
Lead wire length				



Mounting method to E0 terminal box

For wiring to the terminal box, prepare heat-resistant cabtyre cord and flex conduit, and refer to the diagram below. Note that MAS insert, MAS holder, and cap nut are included as accessories.



For precautions regarding mounting, installation, adjustment, use, and maintenance, please see "Precautions for Use" in this catalog and the CKD Components Product website (https://www.ckd.co.jp/kiki/en/) → "Model No." → Instruction Manual

Clevis dimension list

Page

Single Knuckle Dimension List (by Model Type) Ending 2

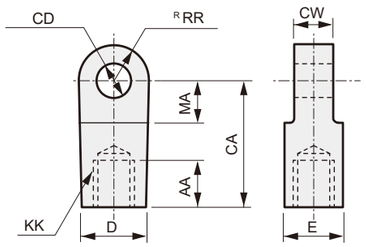
Single Knuckle Dimension List (by Thread Diameter) Ending 4

Double Knuckle Dimension List (by Model Type) Ending 6

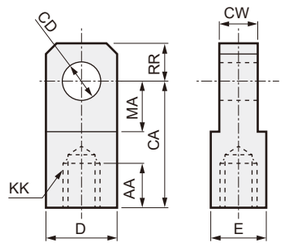
Double Knuckle Dimension List (by Thread Diameter) Ending 8

Single Knuckle

Pad Shape Code: A



Pad Shape Code: B



Model	Shape Code	Model No.	Applicable bore size (ø)	AA	CA	CD	CW	D	E	KK	MA	RR
CMK2	B	M1-I-20	20	14	30	10 H10	8 -0.1 -0.2	19	19	M8 × 1.0	13	10
		M1-I-30	25, 32	14	36	12 H10	10 -0.1 -0.2	25	19	M10 × 1.25	16	12
		M1-I-40	40	14	36	12 H10	10 -0.1 -0.2	25	19	M12 × 1.5	16	12
CMA2	B	M1-I-20	20	14	30	10 H10	8 -0.1 -0.2	19	19	M8 × 1.0	13	10
		M1-I-30	30	14	36	12 H10	10 -0.1 -0.2	25	19	M10 × 1.25	16	12
		M1-I-40	40	14	36	12 H10	10 -0.1 -0.2	25	19	M12 × 1.5	16	12
CKV2	B	M1-I-20	20	14	30	10 H10	8 -0.1 -0.2	19	19	M8 × 1.0	13	10
		M1-I-30	25, 32	14	36	12 H10	10 -0.1 -0.2	25	19	M10 × 1.25	16	12
		M1-I-40	40	14	36	12 H10	10 -0.1 -0.2	25	19	M12 × 1.5	16	12
CAV2 COV2	A	CAV2-50-I	50	25	50	14 H10	20 0 -0.3	26	26	M16 × 1.5	20	15
		CAV2-75-I	75.100	30	65	20 H10	28 0 -0.3	38	35	M22 × 1.5	28	22.5
HCA	B	M1-I-20	20	14	30	10 H10	8 -0.1 -0.2	19	19	M8 × 1.0	13	10
		M1-I-30	25, 32	14	36	12 H10	10 -0.1 -0.2	25	19	M10 × 1.25	16	12
	A	S1-I-40	40	20	50	12 H10	18 -0.1 -0.4	(27)	27	M14 × 1.5	21	16
		S1-I-50	50	21	50	12 H10	18 -0.1 -0.4	(27)	27	M18 × 1.5	21	16
		S1-I-63	63	21	50	14 H10	20 -0.1 -0.4	(27)	27	M18 × 1.5	21	16
		S1-I-80	80	30	70	20 H10	28 -0.1 -0.4	(46)	41	M22 × 1.5	30	25
		S1-I-100	100	30	70	20 H10	28 -0.1 -0.4	(46)	41	M26 × 1.5	30	25
JSG	B	SCG-I-40	40	19	40	10 H10	14 -0.1 -0.3	ø22	ø22	M14 × 1.5	19	10
		SCG-I-50	50, 63	24	50	14 H10	20 -0.1 -0.3	ø28	ø28	M18 × 1.5	24	14
		SCG-I-80	80	26	60	22 H10	30 -0.1 -0.3	ø40	ø40	M22 × 1.5	34	20
		SCG-I-100	100	26	60	22 H10	30 -0.1 -0.3	ø40	ø40	M26 × 1.5	34	20
JSM2	B	M1-I-20	20	14	30	10 H10	8 -0.1 -0.2	19	19	M8 × 1.0	13	10
		M1-I-30	30	14	36	12 H10	10 -0.1 -0.2	25	19	M10 × 1.25	16	12
		M1-I-40	40	14	36	12 H10	10 -0.1 -0.2	25	19	M12 × 1.5	16	12
JSK2	B	M1-I-20	20	14	30	10 H10	8 -0.1 -0.2	19	19	M8 × 1.0	13	10
		M1-I-30	25, 32	14	36	12 H10	10 -0.1 -0.2	25	19	M10 × 1.25	16	12
		M1-I-40	40	14	36	12 H10	10 -0.1 -0.2	25	19	M12 × 1.5	16	12
JSC3	A	S1-I-40	40	20	50	12 H10	18 -0.1 -0.4	(27)	27	M14 × 1.5	21	16
		S1-I-50	50	21	50	12 H10	18 -0.1 -0.4	(27)	27	M18 × 1.5	21	16
		S1-I-63	63	21	50	14 H10	20 -0.1 -0.4	(27)	27	M18 × 1.5	21	16
		S1-I-80	80	30	70	20 H10	28 -0.1 -0.4	(46)	41	M22 × 1.5	30	25
		S1-I-100	100	30	70	20 H10	28 -0.1 -0.4	(46)	41	M26 × 1.5	30	25
JSC4	B	SCS2-125-I	125	50	85	25 H10	32 -0.1 -0.4	ø55	ø55	M30 × 1.5	32	27.5
		SCS2-140-I	140	50	90	28 H10	36 -0.1 -0.4	ø60	ø60	M30 × 1.5	35	30
		SCS2-160-I	160	60	105	32 H10	40 -0.1 -0.4	ø70	ø70	M36 × 1.5	40	35
		SCS2-180-I	180	65	115	40 H10	50 -0.1 -0.4	ø85	ø85	M40 × 1.5	47.5	42.5
SCP□3	B	P2-I-10	10	8	21	3.2 H10	3.1 0 -0.1	12	12	M4	9	7
		P2-I-16	16	8	25	5 H10	6.4 0 -0.1	12	12	M5	14	7

Note: The A and B figures are a guide only. For details, refer to the accessories and dimensions diagrams of each model.

Ending

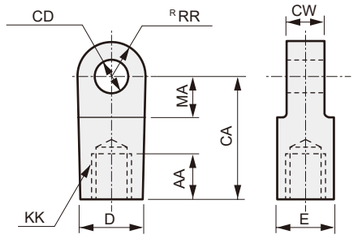
Single Knuckle

Model	Shape Code	Model No.	Applicable bore size (ø)	AA	CA	CD	CW	D	E	KK	MA	RR
SCA2	A	S1-I-40	40	20	50	12 H10	18 -0.1 -0.4	(27)	27	M14 × 1.5	21	16
		S1-I-50	50	21	50	12 H10	18 -0.1 -0.4	(27)	27	M18 × 1.5	21	16
		S1-I-63	63	21	50	14 H10	20 -0.1 -0.4	(27)	27	M18 × 1.5	21	16
		S1-I-80	80	30	70	20 H10	28 -0.1 -0.4	(46)	41	M22 × 1.5	30	25
		S1-I-100	100	30	70	20 H10	28 -0.1 -0.4	(46)	41	M26 × 1.5	30	25
SCG	B	SCG-I-32	32	14	30	10 H10	14 -0.1 -0.3	ø20	ø20	M10 × 1.25	16	10
		SCG-I-40	40	19	40	10 H10	14 -0.1 -0.3	ø22	ø22	M14 × 1.5	19	10
		SCG-I-50	50, 63	24	50	14 H10	20 -0.1 -0.3	ø28	ø28	M18 × 1.5	24	14
		SCG-I-80	80	26	60	22 H10	30 -0.1 -0.3	ø40	ø40	M22 × 1.5	34	20
		SCG-I-100	100	26	60	22 H10	30 -0.1 -0.3	ø40	ø40	M26 × 1.5	34	20
SCS2	B	SCS2-125-I	125	50	85	25 H10	32 -0.1 -0.4	ø55	ø55	M30 × 1.5	32	27.5
		SCS2-140-I	140	50	90	28 H10	36 -0.1 -0.4	ø60	ø60	M30 × 1.5	35	30
		SCS2-160-I	160	60	105	32 H10	40 -0.1 -0.4	ø70	ø70	M36 × 1.5	40	35
		SCS2-180-I	180	65	115	40 H10	50 -0.1 -0.4	ø85	ø85	M40 × 1.5	47.5	42.5
		SCS2-200-I	200	75	125	40 H10	50 -0.1 -0.4	ø85	ø85	M45 × 1.5	47.5	42.5
		SCS2-250-I	250	88	150	50 H10	63 -0.1 -0.4	ø105	ø105	M56 × 2	57.5	52.5
SCM	B	SCM-I-20	20	8.5	25	8 H10	8 -0.2 -0.4	16	16	M8	11.5	9
		SCM-I-25	25, 32	10.5	30	10 H10	10 -0.2 -0.4	20	20	M10 × 1.25	14	11
	A	SCM-I-40	40	14	30	10 H10	18 -0.3 -0.5	22	22	M14 × 1.5	14	12
		SCM-I-50	50, 63	18	40	14 H10	22 -0.3 -0.5	28	28	M18 × 1.5	20	16
		SCM-I-80	80	21	50	18 H10	28 -0.3 -0.5	38	38	M22 × 1.5	27	21
		SCM-I-100	100	21	55	22 H10	32 -0.3 -0.5	44	44	M26 × 1.5	31	24
SSD2	B	SSD2-I-12	12	6	16	5 H10	5 -0.2 -0.4	10	10	M5 × 0.8	7	5.5
		SSD2-I-16	16	8	25	5 H10	6.5 -0.2 -0.4	12	12	M6×1	14	7
		SSD2-I-20	20	8.5	25	8 H10	8 -0.2 -0.4	16	16	M8 × 1.25	11.5	9
		SSD2-I-25	25	10.5	30	10 H10	10 -0.2 -0.4	20	20	M10 × 1.25	14	11
	A	SSD2-I-32	32, 40	14	30	10 H10	18 -0.3 -0.5	ø22	ø22	M14 × 1.5	14	12
		SSD2-I-50	50, 63	18	40	14 H10	22 -0.3 -0.5	ø28	ø28	M18 × 1.5	20	16
		SSD2-I-80	80	21	50	18 H10	28 -0.3 -0.5	ø38	ø38	M22 × 1.5	27	21
		SSD2-I-100	100	21	55	22 H10	32 -0.3 -0.5	ø44	ø44	M26 × 1.5	31	24
SSD	B	P2-I-16	12	8	25	5 H10	6.4 0 -0.1	12	12	M5	14	10
	A	SSD-I-16	16	8	25	5 H10	6.5 -0.1 -0.2	12	12	M6	14	10
	B	SSD-I-20	20	13.5	30	10 H10	8 -0.1 -0.2	19	19	M8	13	10
		M1-I-30	25	14	36	12 H10	10 -0.1 -0.2	25	19	M10 × 1.25	16	12
		SSD-I-32	32	15	36	12 H10	10 -0.1 -0.2	25	19	M14	16	12
	A	SSD-I-40	40	20	50	12 H10	18 -0.1 -0.4	27	27	M14 × 1.5	21	16
		SSD-I-50	50	21	50	12 H10	18 -0.1 -0.4	27	27	M18 × 1.5	21	16
		SSD-I-63	63	21	50	14 H10	20 -0.1 -0.4	(27)	27	M18 × 1.5	21	16
		SSD-I-80	80	30	70	20 H10	28 -0.1 -0.4	46	41	M22 × 1.5	30	25
		SSD-I-100	100	30	70	20 H10	28 -0.1 -0.4	46	41	M26 × 1.5	30	25
	B	SCS-125-I	125, 140	50	85	25 H10	32 -0.1 -0.4	55	55	M30 × 1.5	32	27.5
		SCS-160-I	160	60	105	32 H10	40 -0.1 -0.4	70	70	M36 × 1.5	40	35
ULK	B	M1-I-20	20	14	30	10 H10	8 -0.1 -0.2	19	19	M8 × 1.0	13	10
		M1-I-30	25, 32	14	36	12 H10	10 -0.1 -0.2	25	19	M10 × 1.25	16	12
		M1-I-40	40	14	36	12 H10	10 -0.1 -0.2	25	19	M12 × 1.5	16	12

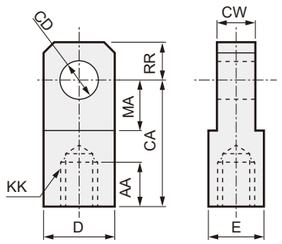
Ending

Single Knuckle (by thread size)

Pad Shape Code: A



Pad Shape Code: B



Thread size KK	Model No.	Pad Shape Code	Applicable Model	Applicable bore size (ø)	AA	CA	CD	CW	D	E	MA	RR
M4	P2-I-10	B	SCP□3	10	8	21	3.2 H10	3.1 0 -0.1	12	12	9	7
M5	P2-I-16	B	SCP□3	16	8	25	5 H10	6.4 0 -0.1	12	12	14	7
			SSD	12								
	SSD2-I-12	B	SSD2	12	6	16	5 H10	5 -0.2 -0.4	10	10	7	5.5
M6	SSD-I-16	A	SSD	16	8	25	5 H10	6.5 -0.1 -0.2	12	12	14	10
	SSD2-I-16	B	SSD2	16	8	25	5 H10	6.5 -0.2 -0.4	12	12	14	7
M8 × 1.0	M1-I-20	B	CKV2, CMA2, CMK2 HCA, JSK2, JSM2 ULK	20	14	30	10 H10	8 -0.1 -0.2	19	19	13	10
M8	SCM-I-20	B	SCM	20	8.5	25	8 H10	8 -0.2 -0.4	16	16	11.5	9
	SSD-I-20	B	SSD	20	13.5	30	10 H10	8 -0.1 -0.2	19	19	13	10
	SSD2-I-20	B	SSD2	20	8.5	25	8 H10	8 -0.2 -0.4	16	16	11.5	9
M10 × 1.25	SCG-I-32	B	SCG	32	14	30	10 H10	14 -0.1 -0.3	ø20	ø20	16	10
	M1-I-30	B	CMA2, CMK2, HCA JSK2, JSM2, ULK, SSD	25, 30, 32	14	36	12 H10	10 -0.1 -0.2	25	19	16	12
	SCM-I-25	B	SCM	25, 32	10.5	30	10 H10	10 -0.2 -0.4	20	20	14	11
	SSD2-I-25	B	SSD2	25	10.5	30	10 H10	10 -0.2 -0.4	20	20	14	11
M12 × 1.5	M1-I-40	B	CKV2, CMA2, CMK2 JSK2, JSM2, ULK	40	14	36	12 H10	10 -0.1 -0.2	25	19	16	12
M14 × 1.5	SCG-I-40	B	SCG, JSG	40	19	40	10 H10	14 -0.1 -0.3	ø22	ø22	19	10
	SSD2-I-32	A	SSD2	32, 40	14	30	10 H10	18 -0.3 -0.5	ø22	ø22	14	12
	S1-I-40	A	HCA, JSC3 SCA2, SSD	40	20	50	12 H10	18 -0.1 -0.4	(27)	27	21	16
	SCM-I-40	A	SCM	40	14	30	10 H10	18 -0.3 -0.5	22	22	14	12
M14	SSD-I-32	B	SSD	32	15	36	12	10 -0.1 -0.2	25	19	16	12
M16 × 1.5	CAV2-50-I	A	CAV2, COV2	50	25	50	14 H10	20 0 -0.3	26	26	20	15
M18 × 1.5	SCG-I-50	B	SCG, JSG	50, 63	24	50	14 H10	20 -0.1 -0.3	ø28	ø28	24	14
	SSD2-I-50	A	SSD2	50, 63	18	40	14 H10	22 -0.3 -0.5	ø28	ø28	20	16
	S1-I-50	A	HCA, JSC3, SCA2	50	21	50	12 H10	18 -0.1 -0.4	(27)	27	21	16
	SSD-I-50		SSD									
	S1-I-63	A	HCA, JSC3, SCA2	63	21	50	14 H10	20 -0.1 -0.4	(27)	27	21	16
	SSD-I-63		SSD									
	SCM-I-50	A	SCM	50, 63	18	40	14 H10	22 -0.3 -0.5	28	28	20	16
M22 × 1.5	SCG-I-80	B	SCG, JSG	80	26	60	22 H10	30 -0.1 -0.3	ø40	ø40	34	20
	CAV2-75-I	A	CAV2, COV2	75.100	30	65	20 H10	28 0 -0.3	38	35	28	22.5
	S1-I-80	A	HCA, JSC3, SCA2	80	30	70	20 H10	28 -0.1 -0.4	(46)	41	30	25
	SSD-I-80		SSD									
	SCM-I-80	A	SCM	80	21	50	18 H10	28 -0.3 -0.5	38	38	27	21
	SSD2-I-80	A	SSD2	80	21	50	18 H10	28 -0.3 -0.5	ø38	ø38	27	21
M26 × 1.5	SCG-I-100	B	SCG, JSG	100	26	60	22 H10	30 -0.1 -0.3	ø40	ø40	34	20
	S1-I-100	A	HCA, JSC3, SCA2	100	30	70	20 H10	28 -0.1 -0.4	(46)	41	30	25
	SSD-I-100		SSD									
	SCM-I-100	A	SCM	100	21	55	22 H10	32 -0.3 -0.5	44	44	31	24

Note: The A and B figures are a guide only. For details, refer to the accessories and dimensions diagrams of each model.

Clevis dimension list

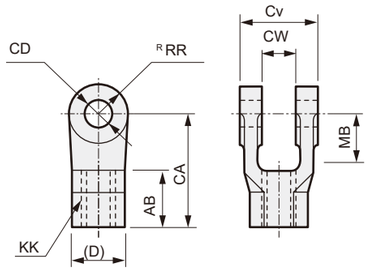
Single Knuckle (by thread size)

Thread size KK	Model No.	Pad Shape Code	Applicable Model	Applicable bore size (ø)	AA	CA	CD	CW	D	E	MA	RR
M26 × 1.5	SSD2-I-100	A	SSD2	100	21	55	22 H10	32 -0.3 -0.5	ø44	ø44	31	24
M30 × 1.5	SCS2-125-I	B	JSC4, SCS2	125	50	85	25 H10	32 -0.1 -0.4	ø55	ø55	32	27.5
			SSD	125, 140								
	SCS2-140-I	B	JSC4, SCS2	140	50	90	28 H10	36 -0.1 -0.4	ø60	ø60	35	30
M36 × 1.5	SCS2-160-I	B	JSC4, SCS2, SSD	160	60	105	32 H10	40 -0.1 -0.4	ø70	ø70	40	35
M40 × 1.5	SCS2-180-I	B	JSC4, SCS2	180	65	115	40 H10	50 -0.1 -0.4	ø85	ø85	47.5	42.5
M45 × 1.5	SCS2-200-I	B	SCS2	200	75	125	40 H10	50 -0.1 -0.4	ø85	ø85	47.5	42.5
M56 × 2	SCS2-250-I	B	SCS2	250	88	150	50 H10	63 -0.1 -0.4	ø105	ø105	57.5	52.5

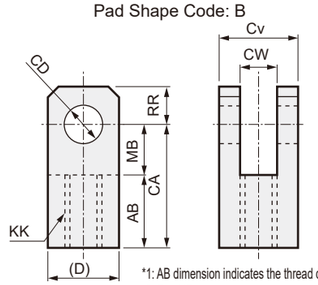
Note: The A and B figures are a guide only. For details, refer to the accessories and dimensions diagrams of each model.

Double Knuckle (by series)

Pad Shape Code: A



Pad Shape Code: B



*1: AB dimension indicates the thread depth.
*2: The MB dimension represents the CW dimension effective length.

Model	Shape Code	Model No.	Applicable bore size (ø)	AB	CA	CW	CD	Cv	D	KK	MB	RR
CMK2	B	M1-Y-20	20	17	30	8 $^{+0.3}_{+0.1}$	10 H10	19	19	M8 × 1.0	13	10
		M1-Y-30	25, 32	20	36	10 $^{+0.3}_{+0.1}$	12 H10	25	25	M10 × 1.25	16	12
		M1-Y-40	40	20	36	10 $^{+0.3}_{+0.1}$	12 H10	25	25	M12 × 1.5	16	12
CMA2	B	M1-Y-20	20	17	30	8 $^{+0.3}_{+0.1}$	10 H10	19	19	M8 × 1.0	13	10
		M1-Y-30	30	20	36	10 $^{+0.3}_{+0.1}$	12 H10	25	25	M10 × 1.25	16	12
		M1-Y-40	40	20	36	10 $^{+0.3}_{+0.1}$	12 H10	25	25	M12 × 1.5	16	12
CKV2	B	M1-Y-20	20	17	30	8 $^{+0.3}_{+0.1}$	10 H10	19	19	M8 × 1.0	13	10
		M1-Y-30	25, 32	20	36	10 $^{+0.3}_{+0.1}$	12 H10	25	25	M10 × 1.25	16	12
		M1-Y-40	40	20	36	10 $^{+0.3}_{+0.1}$	12 H10	25	25	M12 × 1.5	16	12
CAV2 COV2	A	CAV2-50-Y	50	25	50	20 $^{+0.3}_{0}$	14 H10	42	(23)	M16 × 1.5	18	15
		CAV2-75-Y	75.100	30	65	28 $^{+0.3}_{0}$	20 H10	60	(35)	M22 × 1.5	28	22.5
HCA	B	M1-Y-20	20	17	30	8 $^{+0.3}_{+0.1}$	10 H10	19	19	M8 × 1.0	13	10
		M1-Y-30	25, 32	20	36	10 $^{+0.3}_{+0.1}$	12 H10	25	25	M10 × 1.25	16	12
	A	S1-Y-40	40	24	50	18 $^{+0.4}_{+0.1}$	12 H10	36	(27)	M14 × 1.5	19	16
		S1-Y-50	50	24	50	18 $^{+0.4}_{+0.1}$	12 H10	36	(27)	M18 × 1.5	19	16
		S1-Y-63	63	24	50	20 $^{+0.4}_{+0.1}$	14 H10	40	(27)	M18 × 1.5	19	16
		S1-Y-80	80	35	70	28 $^{+0.4}_{+0.1}$	20 H10	56	(41)	M22 × 1.5	30	25
		S1-Y-100	100	35	70	28 $^{+0.4}_{+0.1}$	20 H10	56	(41)	M26 × 1.5	30	25
JSG	A	SCG-Y-40	40	21	40	14 $^{+0.3}_{+0.1}$	10 H10	28	(22)	M14 × 1.5	19	11
		SCG-Y-50	50, 63	26	50	20 $^{+0.3}_{+0.1}$	14 H10	40	(28)	M18 × 1.5	24	14
		SCG-Y-80	80	31	65	30 $^{+0.3}_{+0.1}$	22 H10	60	(40)	M22 × 1.5	34	20
		SCG-Y-100	100	31	65	30 $^{+0.3}_{+0.1}$	22 H10	60	(40)	M26 × 1.5	34	20
JSM2	B	M1-Y-20	20	17	30	8 $^{+0.3}_{+0.1}$	10 H10	19	19	M8 × 1.0	13	10
		M1-Y-30	30	20	36	10 $^{+0.3}_{+0.1}$	12 H10	25	25	M10 × 1.25	16	12
		M1-Y-40	40	20	36	10 $^{+0.3}_{+0.1}$	12 H10	25	25	M12 × 1.5	16	12
JSK2	B	M1-Y-20	20	17	30	8 $^{+0.3}_{+0.1}$	10 H10	19	19	M8 × 1.0	13	10
		M1-Y-30	25, 32	20	36	10 $^{+0.3}_{+0.1}$	12 H10	25	25	M10 × 1.25	16	12
		M1-Y-40	40	20	36	10 $^{+0.3}_{+0.1}$	12 H10	25	25	M12 × 1.5	16	12
JSC3	A	S1-Y-40	40	24	50	18 $^{+0.4}_{+0.1}$	12 H10	36	(27)	M14 × 1.5	19	16
		S1-Y-50	50	24	50	18 $^{+0.4}_{+0.1}$	12 H10	36	(27)	M18 × 1.5	19	16
		S1-Y-63	63	24	50	20 $^{+0.4}_{+0.1}$	14 H10	40	(27)	M18 × 1.5	19	16
		S1-Y-80	80	35	70	28 $^{+0.4}_{+0.1}$	20 H10	56	(41)	M22 × 1.5	30	25
		S1-Y-100	100	35	70	28 $^{+0.4}_{+0.1}$	20 H10	56	(41)	M26 × 1.5	30	25
JSC4	A	SCS2-125-Y	125	50	85	32 $^{+0.4}_{+0.1}$	25 H10	64	(46)	M30 × 1.5	35	27.5
		SCS2-140-Y	140	50	90	36 $^{+0.4}_{+0.1}$	28 H10	72	(46)	M30 × 1.5	40	30
		SCS2-160-Y	160	60	105	40 $^{+0.4}_{+0.1}$	32 H10	80	(55)	M36 × 1.5	45	35
		SCS2-180-Y	180	65	115	50 $^{+0.4}_{+0.1}$	40 H10	100	(60)	M40 × 1.5	50	42.5
SCP□3	B	P2-Y-10	10	8	21	3.2 $^{+0.2}_{+0.1}$	3.2 H10	12	12	M4	10	7
		P2-Y-16	16	11	21	6.5 $^{+0.2}_{+0.1}$	5 H10	12	12	M5	10	7

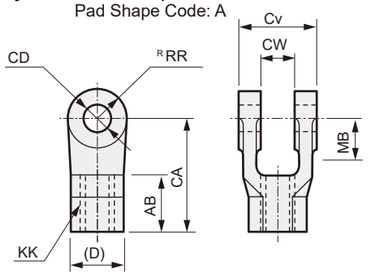
Note: The A and B figures are a guide only. For details, refer to the accessories and dimensions diagrams of each model.

Double Knuckle (by series)

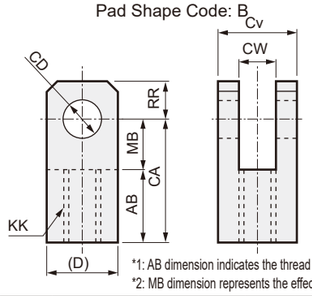
Model	Shape Code	Model No.	Applicable bore size (ø)	AB	CA	CW	CD	Cv	D	KK	MB	RR
SCG	A	SCG-Y-32	32	14	30	14 $^{+0.3}_{+0.1}$	10 H10	28	(20)	M10 × 1.25	16	10
		SCG-Y-40	40	21	40	14 $^{+0.3}_{+0.1}$	10 H10	28	(22)	M14 × 1.5	19	11
		SCG-Y-50	50, 63	26	50	20 $^{+0.3}_{+0.1}$	14 H10	40	(28)	M18 × 1.5	24	14
		SCG-Y-80	80	31	65	30 $^{+0.3}_{+0.1}$	22 H10	60	(40)	M22 × 1.5	34	20
		SCG-Y-100	100	31	65	30 $^{+0.3}_{+0.1}$	22 H10	60	(40)	M26 × 1.5	34	20
SCA2	A	S1-Y-40	40	24	50	18 $^{+0.4}_{+0.1}$	12 H10	36	(27)	M14 × 1.5	19	16
		S1-Y-50	50	24	50	18 $^{+0.4}_{+0.1}$	12 H10	36	(27)	M18 × 1.5	19	16
		S1-Y-63	63	24	50	20 $^{+0.4}_{+0.1}$	14 H10	40	(27)	M18 × 1.5	19	16
		S1-Y-80	80	35	70	28 $^{+0.4}_{+0.1}$	20 H10	56	(41)	M22 × 1.5	30	25
		S1-Y-100	100	35	70	28 $^{+0.4}_{+0.1}$	20 H10	56	(41)	M26 × 1.5	30	25
SCS2	A	SCS2-125-Y	125	50	85	32 $^{+0.4}_{+0.1}$	25 H10	64	(46)	M30 × 1.5	35	27.5
		SCS2-140-Y	140	50	90	36 $^{+0.4}_{+0.1}$	28 H10	72	(46)	M30 × 1.5	40	30
		SCS2-160-Y	160	60	105	40 $^{+0.4}_{+0.1}$	32 H10	80	(55)	M36 × 1.5	45	35
		SCS2-180-Y	180	65	115	50 $^{+0.4}_{+0.1}$	40 H10	100	(60)	M40 × 1.5	50	42.5
		SCS2-200-Y	200	75	125	50 $^{+0.4}_{+0.1}$	40 H10	100	(70)	M45 × 1.5	50	42.5
		SCS2-250-Y	250	88	150	63 $^{+0.4}_{+0.1}$	50 H10	126	(85)	M56 × 2	62	52.5
SCM	B	SCM-Y-20	20	13.5	25	8 $^{+0.4}_{+0.2}$	8 H10	16	16	M8	11.5	9
		SCM-Y-25	25, 32	16	30	10 $^{+0.4}_{+0.2}$	10 H10	20	20	M10 × 1.25	14	11
	A	SCM-Y-40	40	16	30	18 $^{+0.5}_{+0.3}$	10 H10	36	22	M14 × 1.5	14	12
		SCM-Y-50	50, 63	20	40	22 $^{+0.5}_{+0.3}$	14 H10	44	28	M18 × 1.5	20	16
		SCM-Y-80	80	23	50	28 $^{+0.5}_{+0.3}$	18 H10	56	38	M22 × 1.5	27	21
		SCM-Y-100	100	24	55	32 $^{+0.5}_{+0.3}$	22 H10	64	44	M26 × 1.5	31	24
SSD	B	P2-Y-16	12	11	21	6.5 $^{+0.2}_{+0.1}$	5 H10	12	12	M5	10	7
	A	SSD-Y-16	16	11	21	6.5 $^{+0.2}_{+0.1}$	5 H10	12	12	M6	10	10
	B	SSD-Y-20	20	17	30	8 $^{+0.3}_{+0.1}$	10 H10	19	19	M8	13	10
		M1-Y-30	25	20	36	10 $^{+0.3}_{+0.1}$	12 H10	25	25	M10 × 1.25	16	12
		SSD-Y-32	32	15	36	10 $^{+0.3}_{+0.1}$	12 H10	25	25	M14	16	12
	A	SSD-Y-40	40	24	50	18 $^{+0.4}_{+0.1}$	12 H10	36	(27)	M14 × 1.5	19	16
		SSD-Y-50	50	24	50	18 $^{+0.4}_{+0.1}$	12 H10	36	(27)	M18 × 1.5	19	16
		SSD-Y-63	63	24	50	20 $^{+0.4}_{+0.1}$	14 H10	40	(27)	M18 × 1.5	19	16
		SSD-Y-80	80	35	70	28 $^{+0.4}_{+0.1}$	20 H10	56	(41)	M22 × 1.5	30	25
		SSD-Y-100	100	35	70	28 $^{+0.4}_{+0.1}$	20 H10	56	(41)	M26 × 1.5	30	25
	B	SCS2-125-Y	125, 140	50	85	32 $^{+0.4}_{+0.1}$	25 H10	64	(46)	M30 × 1.5	35	27.5
		SCS2-160-Y	160	60	105	40 $^{+0.4}_{+0.1}$	32 H10	80	(55)	M36 × 1.5	45	35
SSD2	B	SSD2-Y-12	12	6	16	5 $^{+0.4}_{+0.2}$	5 H10	10	10	M5 × 0.8	7	5.5
		SSD2-Y-16	16	11	21	6.5 $^{+0.4}_{+0.2}$	5 H10	12	12	M6×1	10	7
		SSD2-Y-20	20	13.5	25	8 $^{+0.4}_{+0.2}$	8 H10	16	16	M8 × 1.25	11.5	9
		SSD2-Y-25	25	16	30	10 $^{+0.4}_{+0.2}$	10 H10	20	20	M10 × 1.25	14	11
	A	SSD2-Y-32	32, 40	16	30	18 $^{+0.5}_{+0.3}$	10 H10	36	ø22	M14 × 1.5	14	12
		SSD2-Y-50	50, 63	20	40	22 $^{+0.5}_{+0.3}$	14 H10	44	ø28	M18 × 1.5	20	16
		SSD2-Y-80	80	23	50	28 $^{+0.5}_{+0.3}$	18 H10	56	ø38	M22 × 1.5	27	21
		SSD2-Y-100	100	24	55	32 $^{+0.5}_{+0.3}$	22 H10	64	ø44	M26 × 1.5	31	24
ULK	B	M1-Y-20	20	17	30	8 $^{+0.3}_{+0.1}$	10 H10	19	19	M8 × 1.0	13	10
		M1-Y-30	25, 32	20	36	10 $^{+0.3}_{+0.1}$	12 H10	25	25	M10 × 1.25	16	12
		M1-Y-40	40	20	36	10 $^{+0.3}_{+0.1}$	12 H10	25	25	M12 × 1.5	16	12

Double-knuckle (by thread size)

Pad Shape Code: A



Pad Shape Code: B



*1: AB dimension indicates the thread depth.
*2: MB dimension represents the effective length of CW dimension.

Thread size KK	Model No.	Shape Code	Compatible model	Applicable Bore (ø)	AB	CA	CW	CD	Cv	D	MB	RR
M4	P2-Y-10	B	SCP□3	10	8	21	3.2 $^{+0.2}_{0}$	3.2 ^{H10}	12	12	10	7
M5	P2-Y-16	B	SCP□3	16	11	21	6.5 $^{+0.2}_{0}$	5 ^{H10}	12	12	10	7
			SSD	12								
	SSD2-Y-12	B	SSD2	12	6	16	5 $^{+0.4}_{+0.2}$	5 ^{H10}	10	10	7	5.5
M6	SSD-Y-16	A	SSD	16	11	21	6.5 $^{+0.2}_{+0.1}$	5	12	12	10	10
	SSD2-Y-16	B	SSD2	16	11	21	6.5 $^{+0.4}_{+0.2}$	5 ^{H10}	12	12	10	7
M8 × 1.0	M1-Y-20	B	CKV2, CMA2, CMK2 HCA, JSK2, JSM2 ULK	20	17	30	8 $^{+0.3}_{+0.1}$	10 ^{H10}	19	19	13	10
M8	SCM-Y-20	B	SCM	20	13.5	25	8 $^{+0.4}_{+0.2}$	8 ^{H10}	16	16	11.5	9
	SSD-Y-20	B	SSD	20	17	30	8 $^{+0.3}_{+0.1}$	10	19	19	13	10
M8 × 1.25	SSD2-Y-20	B	SSD2	20	13.5	25	8 $^{+0.4}_{+0.2}$	8 ^{H10}	16	16	11.5	9
M10 × 1.25	SCG-Y-32	A	SCG	32	14	30	14 $^{+0.3}_{+0.1}$	10 ^{H10}	28	(20)	16	10
	M1-Y-30	B	CKV2, CMA2, CMK2 HCA, JSK2, JSM2 ULK, SSD	25, 30, 32	20	36	10 $^{+0.3}_{+0.1}$	12 ^{H10}	25	25	16	12
	SCM-Y-25	B	SCM	25, 32	16	30	10 $^{+0.4}_{+0.2}$	10 ^{H10}	20	20	14	11
	SSD2-Y-25	B	SSD2	25	16	30	10 $^{+0.4}_{+0.2}$	10 ^{H10}	20	20	14	11
M12 × 1.5	M1-Y-40	B	CKV2, CMA2, CMK2 JSK2, JSM2, ULK	40	20	36	10 $^{+0.3}_{+0.1}$	12 ^{H10}	25	25	16	12
M14 × 1.5	SCG-Y-40	A	SCG, JSG	40	21	40	14 $^{+0.3}_{+0.1}$	10 ^{H10}	28	(22)	19	11
	S1-Y-40	A	HCA, JSC3 SCA2, SSD	40	24	50	18 $^{+0.4}_{+0.1}$	12 ^{H10}	36	(27)	19	16
	SCM-Y-40	A	SCM	40	16	30	18 $^{+0.5}_{+0.3}$	10 ^{H10}	36	22	14	12
M14	SSD-Y-32	B	SSD	32	15	36	10 $^{+0.3}_{+0.1}$	12	25	25	16	12
M14 × 1.5	SSD2-Y-32	A	SSD2	32, 40	16	30	18 $^{+0.5}_{+0.3}$	10 ^{H10}	36	ø22	14	12
M16 × 1.5	CAV2-50-Y	A	CAV2, COV	50	25	50	20 $^{+0.3}_{0}$	14 ^{H10}	42	(23)	18	15
M18 × 1.5	SCG-Y-50	A	SCG, JSG	50, 63	26	50	20 $^{+0.3}_{+0.1}$	14 ^{H10}	40	(28)	24	14
	S1-Y-50	A	HCA, JSC3, SCA2	50	24	50	18 $^{+0.4}_{+0.1}$	12 ^{H10}	36	(27)	19	16
	SSD-Y-50		SSD									
	S1-Y-63	A	HCA, JSC3, SCA2	63	24	50	20 $^{+0.4}_{+0.1}$	14 ^{H10}	40	(27)	19	16
	SSD-Y-63		SSD									
	SCM-Y-50	A	SCM	50, 63	20	40	22 $^{+0.5}_{+0.3}$	14 ^{H10}	44	28	20	16
	SSD2-Y-50	A	SSD2	50, 63	20	40	22 $^{+0.5}_{+0.3}$	14 ^{H10}	44	ø28	20	16
M22 × 1.5	SCG-Y-80	A	SCG, JSG	80	31	65	30 $^{+0.3}_{+0.1}$	22 ^{H10}	60	(40)	34	20
	CAV2-75-Y	A	CAV2, COV2	75.100	30	65	28 $^{+0.3}_{0}$	20 ^{H10}	60	(35)	28	22.5
	S1-Y-80	A	HCA, JSC3, SCA2	80	35	70	28 $^{+0.4}_{+0.1}$	20 ^{H10}	56	(41)	30	25
	SSD-Y-80		SSD									
	SCM-Y-80	A	SCM	80	23	50	28 $^{+0.5}_{+0.3}$	18 ^{H10}	56	38	27	21
	SSD2-Y-80	A	SSD2	80	23	50	28 $^{+0.5}_{+0.3}$	18 ^{H10}	56	ø38	27	21
M26 × 1.5	SCG-Y-100	A	SCG, JSG	100	31	65	30 $^{+0.3}_{+0.1}$	22 ^{H10}	60	(40)	34	20
	S1-Y-100	A	HCA, JSC3, SCA2	100	35	70	28 $^{+0.4}_{+0.1}$	20 ^{H10}	56	(41)	30	25
	SSD-Y-100		SSD									
	SCM-Y-100	A	SCM	100	24	55	32 $^{+0.5}_{+0.3}$	22 ^{H10}	64	44	31	24

Note: The A and B figures are a guide only. For details, refer to the accessories and dimensions diagrams of each model.

Double-knuckle (by thread size)

Thread size KK	Model No.	Shape Code	Compatible model	Applicable Bore (ø)	AB	CA	CW	CD	Cv	D	MB	RR
M26 × 1.5	SSD2-Y-100	A	SSD2	100	24	55	32 $^{+0.5}_{+0.3}$	22 ^{H10}	64	ø44	31	24
M30 × 1.5	SCS2-125-Y	A	JSC4, SCS2	125	50	85	32 $^{+0.4}_{+0.1}$	25 $^{+0.084}_{0}$	64	(46)	35	27.5
			SSD	125, 140								
	SCS2-140-Y	A	JSC4, SCS2	140	50	90	36 $^{+0.4}_{+0.1}$	28 $^{+0.084}_{0}$	72	(46)	40	30
M36 × 1.5	SCS2-160-Y	A	JSC4, SCS2, SSD	160	60	105	40 $^{+0.4}_{+0.1}$	32 $^{+0.100}_{0}$	80	(55)	45	35
M40 × 1.5	SCS2-180-Y	A	JSC4, SCS2	180	65	115	50 $^{+0.4}_{+0.1}$	40 $^{+0.100}_{0}$	100	(60)	50	42.5
M45 × 1.5	SCS2-200-Y	A	SCS2	200	75	125	50 $^{+0.4}_{+0.1}$	40 $^{+0.100}_{0}$	100	(70)	50	42.5
M56 × 2	SCS2-250-Y	A	SCS2	250	88	150	63 $^{+0.4}_{+0.1}$	50 $^{+0.100}_{0}$	126	(85)	62	52.5

Note: The A and B figures are a guide only. For details, refer to the accessories and dimensions diagrams of each model.

Custom Products

	Page
■ Rod End Shape Modification	
Model No. Indication Method	Ending 12
• Rod End Female Thread (with Undercut) "N1"	Ending 13
• Rod End Female Thread "N11"	Ending 14
• Rod End No Thread "N12"	Ending 15
• Rod End Male Thread "N13"	Ending 16
• Rod End Spherical Radius "N14"	Ending 17
• Rod End Male Thread (with Undercut) "N15"	Ending 18
• Rod End Single Knuckle Shape "N2"	Ending 19
• Rod End Double Knuckle Shape "N21"	Ending 20
• Rod End with Groove "N3"	Ending 21
• Rod End with Groove and Spherical Radius "N31"	Ending 22

■Rod End Shape Modification (N**)

For detailed specifications, dimensions, price, and delivery, please contact us.

Model No. Notation Method

SCM - 00 - 40 B - 200 - N13 A23 WF25

Model No.

Applicable Model

Model No.	Name
SCG	Tie Rod Cylinder
JSG	Tie Rod Cylinder with Brake
SCP□3	Pencil Shaped Cylinder
CMK2	Small bore size cylinder
SCA2	Medium Bore Size Cylinder
SCS2	Medium Bore Size Cylinder
SCP□3-V	Ultra Compact Cell Cylinder
MDC2	Small Direct Cylinder
SSD	Compact Cylinder
SCM	Round shaped cylinder
ULK	Brake Cylinder
JSC3/JSC4	Brake Cylinder
FC□	Flat Cylinder Compact Demi

Model No.

Please refer to the model number indication method for each model.

Rod End Patterns

Code	Contents
N1	Rod End Female Thread (with Undercut)
N11	Rod end female thread
N12	Rod end without thread
N14	Rod End Spherical Radius
N13	Rod end male thread
N15	Rod End Male Thread (with Undercut)
N2	Rod End Single Knuckle Shape
N21	Rod End Double Clevis Shape
N3	Rod End with Groove
N31	Rod End with Groove and Spherical Radius

Custom dimension

Refer to the external dimensions list.

* Please enter only when different from the basic dimensions.

Precautions for Changing Rod End Shape

1. Depending on the specified dimensions, the same strength as the standard product may not be guaranteed.
2. Please leave dimensions, tolerances, and finishes not specified on the drawing to CKD's discretion.

Notes for model No. Selection

1. When it is necessary to change some dimensions, enter the pattern code followed by the dimension code, then the specified dimension.
2. When specifying multiple items, specify them in order from the left dimension code in the outline dimension table.

(Example) Model No.-N13KKM18×1.5A40WF20

3. If a thread size is specified, the rod end nut is not included.
4. The basic dimensions for N11 are the same as the dimensions for the female thread specification of each model.

The basic dimensions for N13 are the same as the dimensions for the male thread specification of each model.

If specified dimensions are not required for both N11 and N13, follow the model number indication method for each model.

(Incorrect) (Correct)

(Example) SCM-00-40B-200-N13 -> SCM-00-40B-200 (Symbol not required as N13 is standard)

SSD-50-50-N11 -> SSD-50-50 (Symbol not required as N11 is standard)

SSD-50-50-N13 -> SSD-50-50-N (Because "N" exists as the female thread code)

For models that do not have a code for male or female threads in their model number indication method, follow the rod end patterns on this page.

5. Even when there are accessories, etc., enter the codes after the rod end pattern at the very end of the model number.

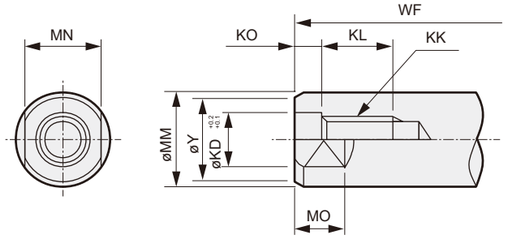
(Incorrect) (Correct)

(Example) SSD-50-50-N13KKM8-CB -> SSD-50-50-CB-N13KKM8

6. This custom model number is for ordering purposes and may differ from the official model number.
7. For double rod types and back-to-back types, please consult with us separately regarding the model number indication.

Rod End Female Thread (with Undercut) (Pattern Code "N1")

Outline Dimension Drawing



When manufacturing with the dimensions in the dimension table, please specify pattern code "N1". When it is necessary to change some dimensions, enter the pattern code followed by the dimension code, then the specified dimension.

(Example) SCM-00-40B-200-N1WF25

WF standard dimension is 20, but this is available at 25.

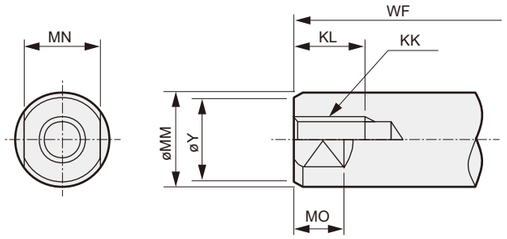
When specifying multiple items, specify them in order from the left code.

*1: CMK2-G2/G3 dimensions are shown in ( ).
*2: For CMA2-E, use the dimensions shown in parentheses.
*3: For SSD-G2, G3, KG2, and KG3, use the dimensions shown in parentheses.
*4: For SSD, the WF dimension is different when LB2 or FA is selected. Please consult us separately.
*5: For SCM-LD, use the dimensions shown in parentheses.

Series	Bore Size	øMM	KK	øKD	KO	KL	øY	MN	MO	WF
CMK2	20	10	M5 × 0.8	5	2.5	10	8	8	5	24
CKV2	25	12	M6×1	6	3	10	10	10	5	23 (28)
ULK	32	12	M6×1	6	3	10	10	10	5	23 (28)
*1	40	14	M8 × 1.25	8	4	14	12	12	6	23 (28)
CMA2	20	10	M5 × 0.8	5	2.5	10	8	8	5	24 (11)
JSM2	30	12	M6×1	6	3	10	10	10	5	23 (7)
*2	40	14	M8 × 1.25	8	4	14	12	12	6	23 (6)
SCG	32	12	M6×1	6	3	10	10	10	5	25
SCG	40	16	M8 × 1.25	8	4	14	14	14	6	21
JSG	50	20	M10×1.5	10	5	16	18	17	8	23
	63	20	M10×1.5	10	5	16	18	17	8	23
	80	25	M12×1.75	12	5.5	18	22	22	11	32
	100	30	M16×2	16	6	24	27	27	13	32
SCA2	40	16	M8 × 1.25	8	4	14	14	14	8	33.5
	50	20	M10×1.5	10	5	16	18	17	8	37
	63	20	M10×1.5	10	5	16	18	17	8	35
	80	25	M12×1.75	12	5.5	18	22	22	11	48
	100	30	M16×2	16	6	24	27	27	13	53
SCS2	125	32	M18×2.5	18	7.5	26	29	27	14	65
	140	32	M18×2.5	18	7.5	26	29	27	14	67
	160	40	M20×2.5	20	7.5	28	36	36	15	71
	180	45	M22×2.5	22	7.5	30	41	41	17	78
	200	50	M24×3	24	9	32	46	46	20	88
	250	60	M30×3.5	30	10.5	36	56	55	22	94
JSC3	40	16	M8 × 1.25	8	4	14	14	14	8	30
	50	20	M10×1.5	10	5	16	18	17	8	34
	63	20	M10×1.5	10	5	16	18	17	8	30
	80	25	M12×1.75	12	5.5	18	22	22	11	43.5
	100	30	M16×2	16	6	24	27	27	13	48
JSC4	125	35	M18×2.5	18	7.5	26	32	30	14	55
	140	35	M18×2.5	18	7.5	26	32	30	14	57
	160	40	M20×2.5	20	7.5	28	36	36	16	71.5
	180	45	M22×2.5	22	7.5	30	41	41	18	78.5
SSD	12	6	M3×0.5	3	2	6	5	5	3.5	3.5
*3	16	8	M4×0.7	4	2.5	8	7	6	3.5	3.5 (8.5)
*4	20	10	M5 × 0.8	5	2.5	7	8	8	4.5	4.5 (9.5)
	25	12	M6×1	6	3	12	10	10	5	5 (10)
	32	16	M8 × 1.25	8	4	13	14	14	7	7 (12)
	40	16	M8 × 1.25	8	4	13	14	14	7	7 (12)
	50	20	M10 × 1.5	10	4.5	15	18	17	8	8 (13)
	63	20	M10 × 1.5	10	4.5	15	18	17	8	8 (13)
	80	25	M16 × 2	16	6	21	22	22	10	10 (15)
	100	30	M20 × 2.5	20	7.5	27	27	27	12	12 (17)
	125	35	M22 x 2.5	22	7.5	30	33	30	11	16
	140	35	M22 x 2.5	22	7.5	30	33	30	11	16
	160	40	M24 x 3	24	9	33	38	36	14	17
FCD	25	12	M5 × 0.8	5	2.5	9	10	10	5	5
	32	16	M6×1	6	3	11	14	14	7	7
	40	16	M8 × 1.25	8	4	13	14	14	7	8
	50	20	M8 × 1.25	8	4	13	18	17	8	9.5
	63	20	M10 × 1.5	10	5	15	18	17	8	9.5
SCM	20	8	M4×0.7	4	2.5	8	7	6	4	17 (9)
*5	25	10	M5 × 0.8	5	2.5	10	8	8	5	18 (10)
	32	12	M6×1	6	3	10	10	10	5.5	18 (10)
	40	16	M8 × 1.25	8	4	14	14	14	6	20 (9)
	50	20	M10 × 1.5	10	5	16	18	17	8	23 (10)
	63	20	M10 × 1.5	10	5	16	18	17	8	23 (10)
	80	25	M12 × 1.75	12	5.5	18	22	22	11	31
	100	30	M16 × 2	16	6	24	27	27	13	31

Rod End Female Thread (Pattern Code "N11")

Outline Dimension Drawing



*1: The Y dimension may change slightly.

When manufacturing with the dimensions in the dimension table, please specify pattern code "N11". When it is necessary to change some dimensions, enter the pattern code followed by the dimension code, then the specified dimension.

(Example) SCM-00-40B-200-N11WF25

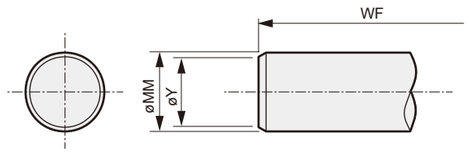
WF standard dimension is 20, but this is available at 25.

*2: CMK2-G2/G3 dimensions are shown in ( ).
*3: For CMA2-E, use the dimensions shown in parentheses.
*4: SSD-G2/G3/KG2/KG3 are the dimensions in ( ).
*5: For SSD, the WF dimension is different when LB2 or FA is selected. Please consult us separately.
*6: For SCM-LD, use the dimensions shown in parentheses.
*7: "WF" is not listed in the MDC2 catalog. The dimension labeled (O) should be taken as "WF".

Series	Bore Size	øMM	KK	KL	øY	MN	MO	WF
CMK2 CKV2 ULK *2	20	10	M5 × 0.8	10	8	8	5	24
	25	12	M6×1	10	10	10	5	23 (28)
	32	12	M6×1	10	10	10	5	23 (28)
	40	14	M8 × 1.25	14	12	12	6	23 (28)
CMA2 JSM2 *3	20	10	M5 × 0.8	10	8	8	5	24 (11)
	30	12	M6×1	10	10	10	5	23 (7)
	40	14	M8 × 1.25	14	12	12	6	23 (6)
SCG	32	12	M6×1	10	10	10	5	25
SCG JSG	40	16	M8 × 1.25	14	14	14	6	21
	50	20	M10 × 1.5	16	18	17	8	23
	63	20	M10 × 1.5	16	18	17	8	23
	80	25	M12 × 1.75	18	22	22	11	32
	100	30	M16 × 2	24	27	27	13	32
SCA2	40	16	M8 × 1.25	14	14	14	8	33.5
	50	20	M10 × 1.5	16	18	17	8	37
	63	20	M10 × 1.5	16	18	17	8	35
	80	25	M12 × 1.75	18	22	22	11	48
	100	30	M16 × 2	24	27	27	13	53
SCS2	125	32	M18 × 2.5	26	29	27	14	65
	140	32	M18 × 2.5	26	29	27	14	67
	160	40	M20 × 2.5	28	36	36	15	71
	180	45	M22 x 2.5	30	41	41	17	78
	200	50	M24 x 3	32	46	46	20	88
	250	60	M30×3.5	36	56	55	22	94
JSC3	40	16	M8 × 1.25	14	14	14	8	30
	50	20	M10 × 1.5	16	18	17	8	34
	63	20	M10 × 1.5	16	18	17	8	30
	80	25	M12 × 1.75	18	22	22	11	43.5
	100	30	M16 × 2	24	27	27	13	48
JSC4	125	35	M18 × 2.5	26	32	30	14	55
	140	35	M18 × 2.5	26	32	30	14	57
	160	40	M20 × 2.5	28	36	36	16	71.5
	180	45	M22 x 2.5	30	41	41	18	78.5
SSD *4 *5	12	6	M3×0.5	6	5	5	3.5	3.5
	16	8	M4×0.7	8	7	6	3.5	3.5 (8.5)
	20	10	M5 × 0.8	7	8	8	4.5	4.5 (9.5)
	25	12	M6×1	12	10	10	5	5 (10)
	32	16	M8 × 1.25	13	14	14	7	7 (12)
	40	16	M8 × 1.25	13	14	14	7	7 (12)
	50	20	M10 × 1.5	15	18	17	8	8 (13)
	63	20	M10 × 1.5	15	18	17	8	8 (13)
	80	25	M16 × 2	21	22	22	10	10 (15)
	100	30	M20 × 2.5	27	27	27	12	12 (17)
	125	35	M22 x 2.5	30	33	30	11	16
	140	35	M22 x 2.5	30	33	30	11	16
	160	40	M24 x 3	33	38	36	14	17
FCD	25	12	M5 × 0.8	9	10	10	5	5
	32	16	M6×1	11	14	14	7	7
	40	16	M8 × 1.25	13	14	14	7	8
	50	20	M8 × 1.25	13	18	17	8	9.5
	63	20	M10 × 1.5	15	18	17	8	9.5
SCM *6	20	8	M4×0.7	8	7	6	4	17 (9)
	25	10	M5 × 0.8	10	8	8	5	18 (10)
	32	12	M6×1	10	10	10	5.5	18 (10)
	40	16	M8 × 1.25	14	14	14	6	20 (9)
	50	20	M10 × 1.5	16	18	17	8	23 (10)
	63	20	M10 × 1.5	16	18	17	8	23 (10)
	80	25	M12 × 1.75	18	22	22	11	31
	100	30	M16 × 2	24	27	27	13	31
MDC2 *7	6	4	M2.5×0.45	4	3.5	3.5	2.5	3
	8	5	M3×0.5	5	4.5	4.5	2.5	3
	10	6	M3×0.5	5	5	5	2.5	3

Rod End No Thread (Pattern Code "N12")

Outline Dimension Drawing



*1: "WF" is not listed in the SCP*3 catalog. The "13 mm" dimension should be taken as "WF".
*2: CMK2-G2/G3 dimensions are shown in ( ).
*3: For CMA2-E, use the dimensions shown in parentheses.
*4: This pattern cannot be specified for SSD-KU, SCM-U, or SCA2-U (low-friction cylinders).
*5: The same applies to SCP*3-V.
*6: For SSD-G2, G3, KG2, and KG3, use the dimensions shown in parentheses.
*7: For SSD, the WF dimension is different when LB2 or FA is selected. Please consult us separately.
*8: For SCM-LD, use the dimensions shown in parentheses.
*9: "WF" is not listed in the MDC2 catalog. The dimension labeled (O) should be taken as "WF".

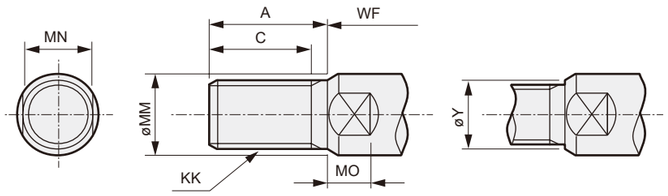
When manufacturing with the dimensions in the dimension table, please specify pattern code "N12". When it is necessary to change some dimensions, enter the pattern code followed by the dimension code, then the specified dimension.

Example
SCM-00-40B-200-N12WF25
WF standard dimension is 20, but this is available at 25.

Series	Bore Size	øMM	øY	WF
SCP□3 *1	6	3	2.5	13
	10	4	3.5	13
	16	5	4.5	13
CMK2	20	10	8	24
CKV2	25	12	10	23 (28)
ULK	32	12	10	23 (28)
*2	40	14	12	23 (28)
CMA2	20	10	8	24 (11)
JSM2	30	12	10	23 (7)
*3	40	14	12	23 (6)
SCG	32	12	10	25
SSG	40	16	14	21
	50	20	18	23
	63	20	18	23
	80	25	22	32
	100	30	27	32
SCA2	40	16	14	33.5
*4	50	20	18	37
	63	20	18	35
	80	25	22	48
	100	30	27	53
SCS2	125	32	29	65
	140	32	29	67
	160	40	36	71
	180	45	41	78
	200	50	46	88
	250	60	56	94
JSC3	40	16	14	30
	50	20	18	34
	63	20	18	30
	80	25	22	43.5
	100	30	27	48
JSC4	125	35	32	55
	140	35	32	57
	160	40	36	71.5
	180	45	41	78.5
SCP□3-V *5	10	4	3.5	13
	16	5	4.5	13
SSD *4 *6 *7	12	6	5	3.5
	16	8	7	3.5 (8.5)
	20	10	8	4.5 (9.5)
	25	12	10	5 (10)
	32	16	14	7 (12)
	40	16	14	7 (12)
	50	20	18	8 (13)
	63	20	18	8 (13)
	80	25	22	10 (15)
	100	30	27	12 (17)
	125	35	33	16
	140	35	33	16
	160	40	38	17
FCD	25	12	10	5
	32	16	14	7
	40	16	14	8
	50	20	18	9.5
	63	20	18	9.5
SCM *4 *8	20	8	7	17 (9)
	25	10	8	18 (10)
	32	12	10	18 (10)
	40	16	14	20 (9)
	50	20	18	23 (10)
	63	20	18	23 (10)
	80	25	22	31
	100	30	27	31
MDC2 *9	4	2	1.5	3
	6	4	3.5	3
	8	5	4.5	3
	10	6	5	3

Rod End Male Thread (Pattern Code "N13")

Outline Dimension Drawing



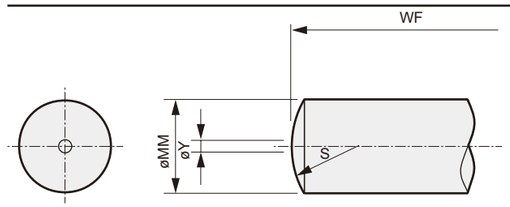
*1: "WF" is not listed in the SCP□3 catalog. The "13 mm" dimension should be taken as "WF".
*2: CMK2-G2/G3 dimensions are shown in ( ).
*3: For CMA2-E, use the dimensions shown in parentheses.
*4: The same applies to SCP□3-V.
*5: For SSD-G2, G3, KG2, and KG3, use the dimensions shown in parentheses.
*6: For SSD, the WF dimension is different when LB2 or FA is selected.Please consult us separately.
*7: For SCM-LD, use the dimensions shown in parentheses.
*8: If a thread size is specified, the rod end nut is not included. Additionally, the Y dimension may change slightly.

When manufacturing with the dimensions in the dimension table, please specify pattern code "N13". When it is necessary to change some dimensions, enter the pattern code “N13” followed by the dimension code, then the specified dimension.
(Example) SCM-00-40B-200-N13A23WF27
The standard WF dimension is 20, but it will be manufactured as 27. The standard A dimension is 30, but it will be manufactured as 23. If the C dimension is not specified, it will be manufactured with the standard (A-C) dimensional difference.

Series	Bore Size	øMM	KK	C	A	øY	MN	MO	WF
SCP□3 *1	6	3	M3×0.5	15	–	–	–	–	13
	10	4	M4×0.7	15	–	–	–	–	13
	16	5	M5 × 0.8	15	–	–	–	–	13
CMK2 CKV2 ULK *2	20	10	M8 x 1	18	20	8	8	5	24
	25	12	M10 × 1.25	20	23	10	10	5	23 (28)
	32	12	M10 × 1.25	20	23	10	10	5	23 (28)
	40	14	M12 × 1.5	22	25	12	12	6	23 (28)
CMA2 JSM2 *3	20	10	M8 x 1	18	20	8	8	5	24 (11)
	30	12	M10 × 1.25	20	23	10	10	5	23 (7)
	40	14	M12 × 1.5	22	25	12	12	6	23 (6)
SCG	32	12	M10 × 1.25	19.5	22	10	10	5.5	25
SCG JSG	40	16	M14 × 1.5	27	30	14	14	6	21
	50	20	M18 × 1.5	32	35	18	17	8	23
	63	20	M18 × 1.5	32	35	18	17	8	23
	80	25	M22 × 1.5	37	40	22	22	11	32
	100	30	M26 × 1.5	37	40	26	27	13	32
SCA2	40	16	M14 × 1.5	20	22	14	14	8	33.5
	50	20	M18 × 1.5	26	28	18	17	8	37
	63	20	M18 × 1.5	26	28	18	17	8	35
	80	25	M22 × 1.5	34	36	22	22	11	48
	100	30	M26 × 1.5	43	45	26	27	13	53
SCS2	125	32	M30 × 1.5	47	50	30	27	14	65
	140	32	M30 × 1.5	47	50	30	27	14	67
	160	40	M36 × 1.5	53	56	36	36	15	71
	180	45	M40 × 1.5	60	63	40	41	17	78
	200	50	M45 × 1.5	69	72	45	46	20	88
	250	60	M56 × 2	84	88	56	55	22	94
JSC3	40	16	M14 × 1.5	20	22	14	14	8	30
	50	20	M18 × 1.5	26	28	18	17	8	34
	63	20	M18 × 1.5	26	28	18	17	8	30
	80	25	M22 × 1.5	34	36	22	22	11	43.5
	100	30	M26 × 1.5	43	45	26	27	13	48
JSC4	125	35	M30 × 1.5	47	50	30	30	14	55
	140	35	M30 × 1.5	47	50	30	30	14	57
	160	40	M36 × 1.5	53	56	36	36	16	71.5
	180	45	M40 × 1.5	60	63	40	41	18	78.5
SCP□3-V *4	10	4	M4×0.7	15	–	–	–	–	13
	16	5	M5 × 0.8	15	–	–	–	–	13
SSD *5 *6	12	6	M5 × 0.8	9	10.5	5	5	3.5	3.5
	16	8	M6×1	10	12	6	6	3.5	3.5 (8.5)
	20	10	M8 × 1.25	12	14	8	8	4.5	4.5 (9.5)
	25	12	M10 × 1.25	15	17.5	10	10	5	5 (10)
	32	16	M14 × 1.5	20.5	23.5	14	14	5	5 (10)
	40	16	M14 × 1.5	20.5	23.5	14	14	5	5 (10)
	50	20	M18 × 1.5	26	28.5	18	17	5	5 (10)
	63	20	M18 × 1.5	26	28.5	18	17	5	5 (10)
	80	25	M22 × 1.5	32.5	35.5	22	22	8	8 (13)
	100	30	M26 × 1.5	32.5	35.5	26	27	8	8 (13)
	125	35	M30 × 1.5	42	45	30	30	11	13
	140	35	M30 × 1.5	42	45	30	30	11	13
	160	40	M36 × 1.5	47	50	36	36	11	14
FCD	25	12	M10 × 1.25	20	22	10	10	4	5
	32	16	M14 × 1.5	20	22	14	14	6	7
	40	16	M14 × 1.5	20	22	14	14	6	7
	50	20	M18 × 1.5	26	28	18	17	8	8
	63	20	M18 × 1.5	26	28	18	17	8	8
SCM *7	20	8	M8 × 1.25	16	18	–	6	4	17 (9)
	25	10	M10 × 1.25	20	22	–	8	5	18 (10)
	32	12	M10 × 1.25	20	22	10	10	5.5	18 (10)
	40	16	M14 × 1.5	27	30	14	14	6	20 (9)
	50	20	M18 × 1.5	32	35	18	17	8	23 (10)
	63	20	M18 × 1.5	32	35	18	17	8	23 (10)
	80	25	M22 × 1.5	37	40	22	22	11	31
	100	30	M26 × 1.5	37	40	26	27	13	31
MDC2 *8	6	4	M3×0.5	6	8	3.5	3.5	2.5	3
	8	5	M4×0.7	7	9	4.5	4.5	2.5	3
	10	6	M5 × 0.8	9	11	5	5	2.5	3

Rod End Spherical Radius (Pattern Code "N14")

Outline Dimension Drawing



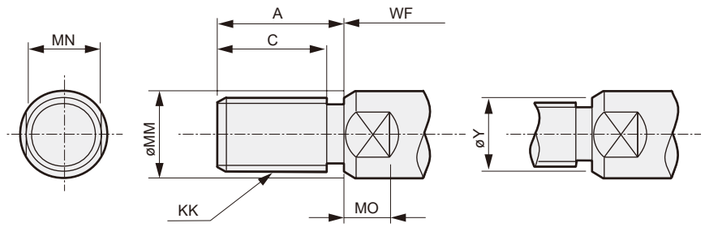
*1: "WF" is not listed in the SCP□3 and SCP□3-V catalogs. The "13 mm" dimension should be taken as "WF".
*2: CMK2-G2/G3 dimensions are shown in ( ).
*3: This pattern cannot be specified for SSD-KU, SCM-U, or SCA2-U (low-friction cylinders).

When manufacturing with the dimensions in the dimension table, please specify pattern code "N14". When it is necessary to change some dimensions, enter the pattern code followed by the dimension code, then the specified dimension.
(Example) SCM-00-40B-200-N14WF25
WF standard dimension is 20, but this is available at 25.
*4: SSD-G2/G3/KG2/KG3 are the dimensions in ( ).
*5: For SSD, the WF dimension is different when LB2 or FA is selected. Please consult us separately.
*6: For SCM-LD, use the dimensions shown in parentheses.

Series	Bore Size	øMM	øY	S	WF
SCP□3 *1	6	3	0.3	3	13
	10	4	0.3	4	13
	16	5	0.3	5	13
CMK2 CKV2 ULK *2	20	10	0.5	10	24
	25	12	0.5	12	23 (28)
	32	12	0.5	12	23 (28)
	40	14	0.5	14	23 (28)
SCG	32	12	0.5	12	25
SCG JSG	40	16	1	16	21
	50	20	1	20	23
	63	20	1	20	23
	80	25	1	25	32
	100	30	1	30	32
SCA2 *3	40	16	1	16	33.5
	50	20	1	20	37
	63	20	1	20	35
	80	25	1	25	48
	100	30	1	30	53
SCS2	125	32	2	32	65
	140	32	2	32	67
	160	40	2	40	71
	180	45	2	45	78
	200	50	2	50	88
	250	60	2	60	94
JSC3	40	16	1	16	30
	50	20	1	20	34
	63	20	1	20	30
	80	25	1	25	43.5
	100	30	1	30	48
JSC4	125	35	2	35	55
	140	35	2	35	57
	160	40	2	40	71.5
	180	45	2	45	78.5
SCP□3-V *1	10	4	0.3	4	13
	16	5	0.3	5	13
SSD *3 *4 *5	12	6	0.5	6	3.5
	16	8	0.5	8	3.5 (8.5)
	20	10	0.5	10	4.5 (9.5)
	25	12	0.5	12	5 (10)
	32	16	1	16	7 (12)
	40	16	1	16	7 (12)
	50	20	1	20	8 (13)
	63	20	1	20	8 (13)
	80	25	1	25	10 (15)
	100	30	1	30	12 (17)
	125	35	2	35	16
	140	35	2	35	16
	160	40	2	40	17
SCM *3 *6	20	8	0.5	8	17 (9)
	25	10	0.5	10	18 (10)
	32	12	0.5	12	18 (10)
	40	16	1	16	20 (9)
	50	20	1	20	23 (10)
	63	20	1	20	23 (10)
	80	25	1	25	31
	100	30	1	30	31

Rod End Male Thread (with Undercut) (Pattern Code "N15")

Outline Dimension Drawing



*1: If a thread size is specified, the rod end nut is not included. Additionally, the Y dimension may change slightly.

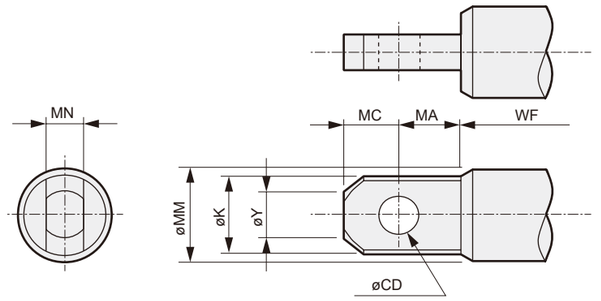
When manufacturing with the dimensions in the dimension table, please specify pattern code "N15".
When it is necessary to change some dimensions, enter the pattern code followed by the dimension code, then the specified dimension.
(Example) SCM-00-40B-200-N15C20A23
The standard C dimension is 27, but it will be manufactured as 20. The standard A dimension is 30, but it will be manufactured as 23. If the C dimension is not specified, it will be manufactured with the standard (A-C) dimensional difference.

*2: CMK2-G2/G3 dimensions are shown in ( ).
*3: For CMA2-E, use the dimensions shown in parentheses.
*4: SSD-G2/G3/KG2/KG3 are the dimensions in ( ).
*5: For SSD, the WF dimension is different when LB2 or FA is selected. Please consult us separately.
*6: For SCM-LD, use the dimensions shown in parentheses.

Series	Bore Size	øMM	KK	C	A	øY	MN	MO	WF
CMK2 CKV2 ULK *2	20	10	M8 x 1	18	20	8	8	5	24
	25	12	M10 × 1.25	20	23	10	10	5	23 (28)
	32	12	M10 × 1.25	20	23	10	10	5	23 (28)
	40	14	M12 × 1.5	22	25	12	12	6	23 (28)
CMA2 JSM2 *3	20	10	M8 x 1	18	20	8	8	5	24 (11)
	30	12	M10 × 1.25	20	23	10	10	5	23 (7)
	40	14	M12 × 1.5	22	25	12	12	6	23 (6)
SCG	32	12	M10 × 1.25	19.5	22	10	10	5	25
SCG JSG	40	16	M14 × 1.5	27	30	14	14	6	21
	50	20	M18 × 1.5	32	35	18	17	8	23
	63	20	M18 × 1.5	32	35	18	17	8	23
	80	25	M22 × 1.5	37	40	22	22	11	32
	100	30	M26 × 1.5	37	40	26	27	13	32
SCA2	40	16	M14 × 1.5	20	22	14	14	8	33.5
	50	20	M18 × 1.5	26	28	18	17	8	37
	63	20	M18 × 1.5	26	28	18	17	8	35
	80	25	M22 × 1.5	34	36	22	22	11	48
	100	30	M26 × 1.5	43	45	26	27	13	53
SCS2	125	32	M30 × 1.5	47	50	30	27	14	65
	140	32	M30 × 1.5	47	50	30	27	14	67
	160	40	M36 × 1.5	53	56	36	36	15	71
	180	45	M40 × 1.5	60	63	40	41	17	78
	200	50	M45 × 1.5	69	72	45	46	20	88
	250	60	M56 × 2	84	88	56	55	22	94
JSC3	40	16	M14 × 1.5	20	22	14	14	8	30
	50	20	M18 × 1.5	26	28	18	17	8	34
	63	20	M18 × 1.5	26	28	18	17	8	30
	80	25	M22 × 1.5	34	36	22	22	11	43.5
	100	30	M26 × 1.5	43	45	26	27	13	48
JSC4	125	35	M30 × 1.5	47	50	30	30	14	55
	140	35	M30 × 1.5	47	50	30	30	14	57
	160	40	M36 × 1.5	53	56	36	36	16	71.5
	180	45	M40 × 1.5	60	63	40	41	18	78.5
SSD *4 *5	12	6	M5 × 0.8	9	10.5	5	5	3.5	3.5
	16	8	M6×1	10	12	6	6	3.5	3.5 (8.5)
	20	10	M8 × 1.25	12	14	8	8	4.5	4.5 (9.5)
	25	12	M10 × 1.25	15	17.5	10	10	5	5 (10)
	32	16	M14 × 1.5	20.5	23.5	14	14	5	5 (10)
	40	16	M14 × 1.5	20.5	23.5	14	14	5	5 (10)
	50	20	M18 × 1.5	26	28.5	18	17	5	5 (10)
	63	20	M18 × 1.5	26	28.5	18	17	5	5 (10)
	80	25	M22 × 1.5	32.5	35.5	22	22	8	8 (13)
	100	30	M26 × 1.5	32.5	35.5	26	27	8	8 (13)
	125	35	M30 × 1.5	42	45	30	30	11	13
	140	35	M30 × 1.5	42	45	30	30	11	13
	160	40	M36 × 1.5	47	50	36	36	11	14
FCD	25	12	M10 × 1.25	20	22	10	10	4	5
	32	16	M14 × 1.5	20	22	14	14	6	7
	40	16	M14 × 1.5	20	22	14	14	6	7
	50	20	M18 × 1.5	26	28	18	17	8	8
	63	20	M18 × 1.5	26	28	18	17	8	8
SCM *6	20	8	–	–	–	–	–	–	–
	25	10	–	–	–	–	–	–	–
	32	12	M10 × 1.25	20	22	10	10	5.5	18 (10)
	40	16	M14 × 1.5	27	30	14	14	6	20 (9)
	50	20	M18 × 1.5	32	35	18	17	8	23 (10)
	63	20	M18 × 1.5	32	35	18	17	8	23 (10)
	80	25	M22 × 1.5	37	40	22	22	11	31
	100	30	M26 × 1.5	37	40	26	27	13	31

Rod End Single Knuckle Shape (Pattern Code "N2")

Outline Dimension Drawing



Angle Tolerance

Code	Dimension	Angle Tolerance
CD	The tolerance shown to the right is applied uniformly regardless of the dimensions. When manufacturing with the dimensions in the dimension table, please specify pattern code "N2".	H10
MN	10 or less	-0.1 -0.2
	Over 10 30 or less	-0.1 −0.3
	Over 30 80 or less	-0.1 -0.4

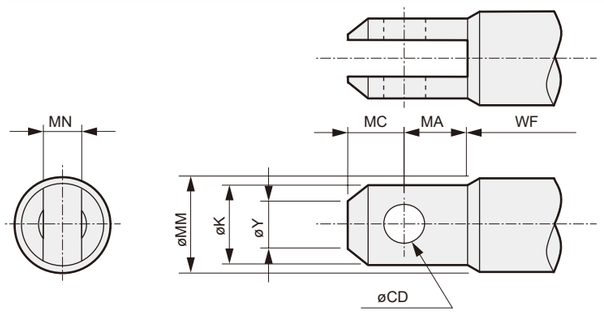
When manufacturing with the dimensions in the dimension table, please specify pattern code "N2". When it is necessary to change some dimensions, enter the pattern code followed by the dimension code, then the specified dimension.
(Example) SCM-00-40B-200-N2CD5MA7.5
The standard dimension for CD is 6, but it will be manufactured as 5.
The standard dimension for MA is 9, but it will be manufactured as 7.5.

*1: CMK2-G2/G3 dimensions are shown in ( ).
*2: For SSD-G2, G3, KG2, and KG3, use the dimensions shown in parentheses.
*3: For SSD, the WF dimension is different when LB2 or FA is selected. Please consult us separately.
*4: For SCM-LD, use the dimensions shown in parentheses.

Series	Bore Size	øMM	øCD	MN	MA	MC	øY	øK	WF
CMK2 CKV2 ULK *1	20	10	4	4	6	4	5.4	9	24
	25	12	5	5	7.5	5	6.6	11	23 (28)
	32	12	5	5	7.5	5	6.6	11	23 (28)
	40	14	6	6	9	6	7.8	13	23 (28)
SCG	32	12	5	5	7.5	5	6.6	11	25
SCG JSG	40	16	6	6	9	6	9	15	21
	50	20	8	8	12	8	11.4	19	23
	63	20	8	8	12	8	11.4	19	23
	80	25	10	10	15	10	14.4	24	32
	100	30	12	12	18	12	17.4	29	32
SCA2	40	16	6	6	9	6	9	15	33.5
	50	20	8	8	12	8	11.4	19	37
	63	20	8	8	12	8	11.4	19	35
	80	25	10	10	15	10	14.4	24	48
	100	30	12	12	18	12	17.4	29	53
SCS2	125	32	14	14	21	14	19.8	30	65
	140	32	14	14	21	14	19.8	30	67
	160	40	16	16	24	16	22.8	38	71
	180	45	18	18	27	18	25.8	43	78
	200	50	20	20	30	20	28.8	48	88
	250	60	24	24	36	24	34.8	58	94
JSC3	40	16	6	6	9	6	9	15	30
	50	20	8	8	12	8	11.4	19	34
	63	20	8	8	12	8	11.4	19	30
	80	25	10	10	15	10	14.4	24	43.5
	100	30	12	12	18	12	17.4	29	48
JSC4	125	35	14	14	21	14	19.8	33	55
	140	35	14	14	21	14	19.8	33	57
	160	40	16	16	24	16	22.8	38	71.5
	180	45	18	18	27	18	25.8	43	78.5
SSD *2 *3	12	6	–	–	–	–	–	–	–
	16	8	–	–	–	–	–	–	–
	20	10	4	4	6	4	5.4	9	4.5 (9.5)
	25	12	5	5	7.5	5	6.6	11	5 (10)
	32	16	6	6	9	6	9	15	5 (10)
	40	16	6	6	9	6	9	15	5 (10)
	50	20	8	8	12	8	11.4	19	5 (10)
	63	20	8	8	12	8	11.4	19	5(13)
	80	25	10	10	15	10	14.4	24	8 (13)
	100	30	12	12	18	12	17.4	29	8 (13)
	125	35	14	14	21	14	19.8	33	13
	140	35	14	14	21	14	19.8	33	13
	160	40	16	16	24	16	22.8	38	14
SCM *4	20	8	–	–	–	–	–	–	–
	25	10	4	4	6	4	5.4	9	18 (10)
	32	12	5	5	7.5	5	6.6	11	18 (10)
	40	16	6	6	9	6	9	15	20 (9)
	50	20	8	8	12	8	11.4	19	23 (10)
	63	20	8	8	12	8	11.4	19	23 (10)
	80	25	10	10	15	10	14.4	24	31
	100	30	12	12	18	12	17.4	29	31

Rod End Double Knuckle Shape (Pattern Code "N21")

Outline Dimension Drawing



Angle Tolerance

Code	Dimension	Angle Tolerance
CD	The tolerance shown to the right is applied uniformly regardless of the dimensions.	H10
MN	10 or less	+0.2 +0.1
	Over 10 to 30 or Less	+0.3 +0.1
	Over 30 to 80 or Less	+0.4 +0.1

When manufacturing with the dimensions in the dimension table, please specify pattern code "N21". When it is necessary to change some dimensions, enter the pattern code followed by the dimension code, then the specified dimension.

(Example) SCM-00-40B-200-N21CD5MA7.5

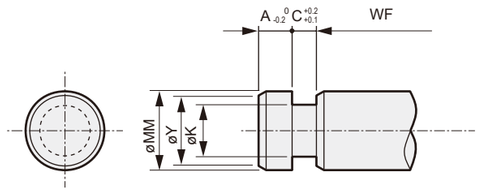
The standard dimension for CD is 6, but it will be manufactured as 5. The standard dimension for MA is 9, but it will be manufactured as 7.5.

*1: CMK2-G2/G3 dimensions are shown in ( ).
*2: For SSD-G2, G3, KG2, and KG3, use the dimensions shown in parentheses.
*3: For SSD, the WF dimension is different when LB2 or FA is selected. Please consult us separately.
*4: For SCM-LD, use the dimensions shown in parentheses.

Series	Bore Size	øMM	øCD	MN	MA	MC	øY	øK	WF
CMK2 CKV2 ULK *1	20	10	4	4	6	4	5.4	9	24
	25	12	5	5	7.5	5	6.6	11	23 (28)
	32	12	5	5	7.5	5	6.6	11	23 (28)
	40	14	6	6	9	6	7.8	13	23 (28)
SCG	32	12	5	5	7.5	5	6.6	11	25
SCG JSG	40	16	6	6	9	6	9	15	21
	50	20	8	8	12	8	11.4	19	23
	63	20	8	8	12	8	11.4	19	23
	80	25	10	10	15	10	14.4	24	32
	100	30	12	12	18	12	17.4	29	32
SCA2	40	16	6	6	9	6	9	15	33.5
	50	20	8	8	12	8	11.4	19	37
	63	20	8	8	12	8	11.4	19	35
	80	25	10	10	15	10	14.4	24	48
	100	30	12	12	18	12	17.4	29	53
SCS2	125	32	14	14	21	14	19.8	30	65
	140	32	14	14	21	14	19.8	30	67
	160	40	16	16	24	16	22.8	38	71
	180	45	18	18	27	18	25.8	43	78
	200	50	20	20	30	20	28.8	48	88
	250	60	24	24	36	24	34.8	58	94
JSC3	40	16	6	6	9	6	9	15	30
	50	20	8	8	12	8	11.4	19	34
	63	20	8	8	12	8	11.4	19	30
	80	25	10	10	15	10	14.4	24	43.5
	100	30	12	12	18	12	17.4	29	48
JSC4	125	35	14	14	21	14	19.8	33	55
	140	35	14	14	21	14	19.8	33	57
	160	40	16	16	24	16	22.8	38	71.5
	180	45	18	18	27	18	25.8	43	78.5
SSD *2 *3	12	6	–	–	–	–	–	–	–
	16	8	–	–	–	–	–	–	–
	20	10	4	4	6	4	5.4	9	4.5 (9.5)
	25	12	5	5	7.5	5	6.6	11	5 (10)
	32	16	6	6	9	6	9	15	5 (10)
	40	16	6	6	9	6	9	15	5 (10)
	50	20	8	8	12	8	11.4	19	5 (10)
	63	20	8	8	12	8	11.4	19	5 (10)
	80	25	10	10	15	10	14.4	24	8 (13)
	100	30	12	12	18	12	17.4	29	8 (13)
	125	35	14	14	21	14	19.8	33	13
	140	35	14	14	21	14	19.8	33	13
	160	40	16	16	24	16	22.8	38	14
SCM *4	20	8	–	–	–	–	–	–	–
	25	10	4	4	6	4	5.4	9	18 (10)
	32	12	5	5	7.5	5	6.6	1	18 (10)
	40	16	6	6	9	6	9	15	20 (9)
	50	20	8	8	12	8	11.4	19	23 (10)
	63	20	8	8	12	8	11.4	19	23 (10)
	80	25	10	10	15	10	14.4	24	31
	100	30	12	12	18	12	17.4	29	31

Rod End with Groove (Pattern Code "N3")

Outline Dimension Drawing



When manufacturing with the dimensions in the dimension table, please specify pattern code "N3".
When it is necessary to change some dimensions, enter the pattern code followed by the dimension code, then the specified dimension.

(Example) SCM-00-40B-200-N3WF25

WF standard dimension is 20, but this is available at 25.

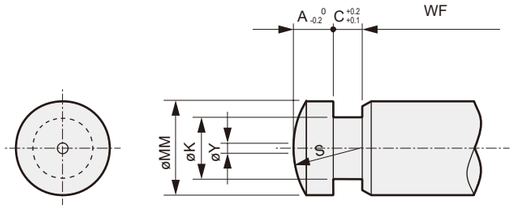
*1: CMK2-G2/G3 dimensions are shown in ( ).
*2: For SSD-G2, G3, KG2, and KG3, use the dimensions shown in parentheses.
*3: For SSD, the WF dimension is different when LB2 or FA is selected. Please consult us separately.
*4: For SCM-LD, use the dimensions shown in parentheses.

Series	Bore Size	øMM	øK	C	A	øY	WF
CMK2 CKV2 ULK *1	20	10	6	4	4	8	24
	25	12	7.2	4.8	4.8	10	23 (28)
	32	12	7.2	4.8	4.8	10	23 (28)
	40	14	8.4	5.6	5.6	12	23 (28)
SCG	32	12	7.2	4.8	4.8	10	25
SCG JSG	40	16	9.6	6.4	6.4	14	21
	50	20	12	8	8	18	23
	63	20	12	8	8	18	23
	80	25	15	10	10	22	32
	100	30	18	12	12	27	32
SCA2	40	16	9.6	6.4	6.4	14	33.5
	50	20	12	8	8	18	37
	63	20	12	8	8	18	35
	80	25	15	10	10	22	48
	100	30	18	12	12	27	53
SCS2	125	32	21	14	14	29	65
	140	32	21	14	14	29	67
	160	40	24	16	16	36	71
	180	45	27	18	18	41	78
	200	50	30	20	20	46	88
	250	60	36	22	22	56	94
JSC3	40	16	9.6	6.4	6.4	14	30
	50	20	12	8	8	18	34
	63	20	12	8	8	18	30
	80	25	15	10	10	22	43.5
	100	30	18	12	12	27	48
JSC4	125	35	21	14	14	32	55
	140	35	21	14	14	32	57
	160	40	24	16	16	36	71.5
	180	45	27	18	18	41	78.5
SSD *2 *3	12	6	–	–	–	–	–
	16	8	–	–	–	–	–
	20	10	6	4	4	8	4.5 (9.5)
	25	12	7.2	4.8	4.8	10	5 (10)
	32	16	9.6	6.4	6.4	14	7 (12)
	40	16	9.6	6.4	6.4	14	7 (12)
	50	20	12	8	8	18	8 (13)
	63	20	12	8	8	18	8 (13)
	80	25	15	10	10	22	10 (15)
	100	30	18	12	12	27	12 (17)
	125	35	21	14	14	33	16
	140	35	21	14	14	33	16
	160	40	24	16	16	38	17
SCM *4	20	8	–	–	–	–	–
	25	10	6	4	4	8	18 (10)
	32	12	7.2	4.8	4.8	10	18 (10)
	40	16	9.6	6.4	6.4	14	20 (9)
	50	20	12	8	8	18	23 (10)
	63	20	12	8	8	18	23 (10)
	80	25	15	10	10	22	31
	100	30	18	12	12	27	31

Custom

Rod End with Groove and Spherical Radius (Pattern Code "N31")

Outline Dimension Drawing



When manufacturing with the dimensions in the dimension table, please specify pattern code "N31".
When it is necessary to change some dimensions, enter the pattern code followed by the dimension code, then the specified dimension.
(Example) SCM-00-40B-200-N31WF25
WF standard dimension is 20, but this is available at 25.
*1: CMK2-G2/G3 dimensions are shown in ( ).
*2: For SSD-G2, G3, KG2, and KG3, use the dimensions shown in parentheses.
*3: For SSD, the WF dimension is different when LB2 or FA is selected. Please consult us separately.
*4: For SCM-LD, use the dimensions shown in parentheses.

Series	Bore Size	øMM	øK	C	A	S	øY	WF
CMK2	20	10	6	4	4	10	0.5	24
CKV2	25	12	7.2	4.8	4.8	12	0.5	23 (28)
ULK	32	12	7.2	4.8	4.8	12	0.5	23 (28)
*1	40	14	8.4	5.6	5.6	14	0.5	23 (28)
SCG	32	12	7.2	4.8	4.8	12	0.5	25
SCG	40	16	9.6	6.4	6.4	16	1	21
JSG	50	20	12	8	8	20	1	23
	63	20	12	8	8	20	1	23
	80	25	15	10	10	25	1	32
	100	30	18	12	12	30	1	32
SCA2	40	16	9.6	6.4	6.4	16	1	33.5
	50	20	12	8	8	20	1	37
	63	20	12	8	8	20	1	35
	80	25	15	10	10	25	1	48
	100	30	18	12	12	30	1	53
SCS2	125	32	21	14	14	32	1	65
	140	32	21	14	14	32	2	67
	160	40	24	16	16	40	2	71
	180	45	27	18	18	45	2	78
	200	50	30	20	20	50	2	88
	250	60	36	22	22	60	2	94
JSC3	40	16	9.6	6.4	6.4	16	1	30
	50	20	12	8	8	20	1	34
	63	20	12	8	8	20	1	30
	80	25	15	10	10	25	1	43.5
	100	30	18	12	12	30	1	48
JSC4	125	35	21	14	14	35	1	55
	140	35	21	14	14	35	2	57
	160	40	24	16	16	40	2	71.5
	180	45	27	18	18	45	2	78.5
SSD	12	6	–	–	–	–	–	–
*2	16	8	–	–	–	–	–	–
*3	20	10	6	4	4	10	0.5	4.5 (9.5)
	25	12	7.2	4.8	4.8	12	0.5	5 (10)
	32	16	9.6	6.4	6.4	16	1	7 (12)
	40	16	9.6	6.4	6.4	16	1	7 (12)
	50	20	12	8	8	20	1	8 (13)
	63	20	12	8	8	20	1	8 (13)
	80	25	15	10	10	25	1	10 (15)
	100	30	18	12	12	30	1	12 (17)
	125	35	21	14	14	35	2	16
	140	35	21	14	14	35	2	16
	160	40	24	16	16	40	2	17
SCM	20	8	–	–	–	–	–	–
*4	25	10	6	4	4	10	0.5	18 (10)
	32	12	7.2	4.8	4.8	12	0.5	18 (10)
	40	16	9.6	6.4	6.4	16	1	20 (9)
	50	20	12	8	8	20	1	23 (10)
	63	20	12	8	8	20	1	23 (10)
	80	25	15	10	10	25	1	31
	100	30	18	12	12	30	1	31

MEMO

Product guide

	Page
Booster (B)	Ending 26
Air-Hydro Booster (AHB)	Ending 26
Celcon Cylinder / Celcon Hydro Cylinder	Ending 27

Booster (High hydraulic pressure can be obtained using only pneumatic pressure)

Model No.	Bore size mm	Pneumatic Pipe Connection Port Rc	Boosting ratio	Pressure Generated at 0.5 MPa	Discharge Oil Volume (cc)	Hydraulic Piping Connection Port Rc	Cushion
B-80-11	100	1/2	11.0	55	80	1/4	None
B-120-25	160		25.8	128	120		
B-160-25	160		25.8	128	160		

● B Series

RoHS

Air-Hydro Booster

Model No.	Bore size mm	Max. working pressure MPa	Min. Operating Pressure MPa	Boosting ratio	Generated Hydraulic Pressure (at 0.5 MPa) MPa	Fast-feed Discharge Volume cm^3 (min-max)	High-pressure Discharge Volume cm^3 (min-max)
AHB	50	1.0	0.2	1:13	65	90 to 360	7 to 28
				1:25	125	94 to 366	3.5 to 14
	100			1:4	20	294 to 1,176	95 to 380
				1:16	80	370 to 1,480	22 to 88
				1:30	150		11 to 44
	160			1:4	20	750 to 3,000	240 to 960
				1:16	80	940 to 3,760	60 to 240
				1:28	140	950 to 3,800	33 to 132

RoHS

Overview

An air-hydro booster is a booster device that converts pneumatic pressure, which is the operating source, into hydraulic pressure several to several tens of times higher using a built-in intensifier with hydraulic fluid. It is particularly convenient as it allows for a two-stage discharge: a low-pressure, large oil volume discharge for fast-feed, and a high-pressure, small oil volume discharge for intensified feed. With a low-cost pneumatic source, it can achieve automation requiring high hydraulic pressure, such as for marking, caulking, and pressing.

Main features

●Converts pneumatic pressure to high hydraulic pressure
High hydraulic pressure can be obtained using only pneumatic pressure.

●Stepless pressure adjustment
Hydraulic pressure can be adjusted steplessly just by adjusting the pneumatic pressure.

●No rise in oil temperature
Since there is no rise in oil temperature, stable operation can be obtained.

●Can switch between fast-feed and intensified feed.
Two-stage discharge for fast-feed and intensified feed can be easily performed with an air directional valve.

●Low air consumption.
For the same output, air consumption is 1/8.

Celcon Cylinder / Celcon Hydro Cylinder

Model No.	Actuation method	Bore Size mm	Standard Stroke (mm)	Max. Stroke mm	Mounting type		Connection Port Rc: Cylinder part	Connection Port Rc: Brake Part	Max. operating pressure MPa: Cylinder part	Max. operating pressure MPa: Brake Part	Min. Operating Pressure MPa: Cylinder part	Min. Operating Pressure MPa: Brake Part
JCC2 JCC2-H	Double Acting	20	20.50	700	Basic type	00	1/8	M5×0.8	0.7	0.6	0.15	0.35
		30	75		Axial Foot Type	LB		1/8				
		40	100		Rod Side Flange Type	FA						
			150		Single Clevis Type	CA						
			200		Head Side Flange Type	TB						
JCC3 JCC3-H	Double Acting	40	50	600	Basic type	00	1/4	1/8	1.0	0.7	0.05	0.3
		50	75		Axial Foot Type	LB	3/8					
		63	100		Rod Side Flange Type	FA		1/4				
		80		700	Head Side Flange Type	FB						
		100	150		Single Clevis Type	CA	1/2	3/8				
		125	200	800	Double Clevis Type	CB						
		140	300		Intermediate Trunnion Type	TC		1/2		1.0	0.1	
		160	400		Rod Side Flange Type	TA	3/4					
		180	500	900	Head Side Flange Type	TB						
PCU2	Double Acting	40	50	600	Basic type	00	1/4		0.2		1.0	
		50	75		Axial Foot Type	LB	3/8					
		63	100		Rod Side Flange Type	FA						
		80		700	Head Side Flange Type	FB						
		100	150		Single Clevis Type	CA	1/2					
			200	800	Double Clevis Type	CB						
			300		Intermediate Trunnion Type	TC						
			400		Rod Side Flange Type	TA						
			500		Head Side Flange Type	TB						

Overview

The CKD Celcon Cylinder is an actuator equipped with a position detection sensor. Its operating principle is that a controller (sold separately) receives pulse signals for the travel distance oscillated from the actuator, compares them with the program input, and freely controls intermediate stops and directional changes. It is an FMS-oriented cylinder with excellent accuracy and flexible control.

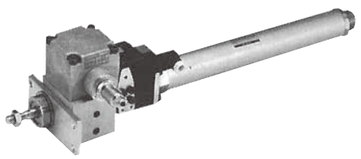
Main features

●Stop Position
Since it has a built-in position detection sensor, it can be stopped intermediately at any position.

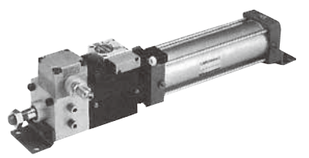
●**Excellent Stopping Accuracy**
The stopping accuracy is excellent, at ±1.0 mm or less at a cylinder speed of 300 mm/s. (at no load).

●High Safety
When the pneumatic source and power supply are OFF (such as during a power outage or accident), the piston rod is locked and operates on the safe side.

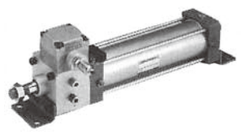
●Strong Holding Force
It has a holding force approximately twice the cylinder thrust (at 0.4 MPa). (JCC3: ø40 to ø180)



JCC2-FA-30



JCC3-LB-63B



PCU2-LB-63B

Standard-Compliant Products, ISO

Listed Page

CE Marking Ending 30

RoHS Compliance Ending 32

ISO9001/ISO14001 Certification Acquisition Ending 34

CE Marking

CKD offers a variety of European standard compliant equipment to support customers in achieving CE Marking for their machinery products.

CE : Displayed on European standard compliant products

What is CE Marking?

- CE Marking is a mark that proves a product conforms to the essential requirements of all applicable EC directives.
- CE marking is a product passport within the EU, and products displaying the CE marking can be freely circulated within the EU.
- Machinery exported to the EU is required to comply with the Machinery Directive, EMC Directive, Low Voltage Directive, etc., but since CE marking is, in principle, mandatory for final products that flow directly to the market, marking on built-in components is not originally required. However, if built-in components (CKD equipment products) are certified for European standards, it makes CE Marking easier for the final product (your machinery product).

Content of Each EC Directive

CKD's main products, such as solenoid valves, sensors, and ABSODEX, are required to conform to the following directives, and many models are European standard compliant.

Directive	Requirements	Applicable
Machinery Directive (2006/42/EC)	Essential safety requirements for machinery	■ Machinery with drive parts Equipment such as solenoid valves are not subject to this, but ensuring compliance with standards makes CE Marking easier for customers.
EMC Directive (2014/30/EU)	Measures for both the generation of electromagnetic disturbance (EMI/emission) and the ability to eliminate electromagnetic disturbance (EMS/immunity)	■ Equipment that generates electromagnetic disturbance or equipment that is affected by electromagnetic disturbance Solenoid valves composed of simple solenoids do not generate electromagnetic disturbance, but ensuring compliance with standards makes CE Marking easier for customers.
Low Voltage Directive (2014/35/EU)	Electrical safety regarding electric shock, etc.	■ Components operating at 50 VAC to 1000 VAC and 75 VDC to 1500 VDC
Pressure Equipment Directive (2014/68/EU)	Safety regarding the hazards of fluid energy possessed by pressure equipment	■ When certain conditions are exceeded within pressure equipment
Simple Pressure Vessels Directive (2014/29/EU)	Safety regarding leakage and explosion of containers	■ Welded containers where the product of maximum operating pressure and volume (PV·S) exceeds 50 bar-liters Our air tanks (AT type) do not conform, so they cannot be exported to the EU.
RoHS Directive (2011/65/EU)	Restriction of 6 environmentally hazardous substances	■ Electrical/Electronic Equipment
2011/65/EU and (EU) 2015/863	Restriction of 10 environmentally hazardous substances	■ Electrical/Electronic Equipment

The countries to which CE marking applies are EU (European Union) member states, EFTA (European Free Trade Association) member states, and Turkey.

CKD's Compliance with European Standard Compliant Products

⚠Compliant products may not be available depending on the specification and detailed model number combination; for details, please contact our sales representative. For the latest information, please visit our website.
Home Page Address https://www.ckd.co.jp/en/productinfo/eu/

CKD RoHS Compliance

At CKD, our theme is the development of environmentally friendly products.

RoHS

RoHS is the abbreviation for Restriction Of the use of certain Hazardous Substances in electrical and electronic equipment. This is the directive prohibiting use of certain hazardous substances issued by the EU.

- ◆CKD products are approved as in conformity to RoHS directive in order of priority from July 1, 2006.
- ◆RoHS-compliant products are designed to reduce environmental load and can be distributed in the EU countries.

Environmental Policy

Based on the CKD Environmental Policy established in 2001, our company is engaged in environmental management system activities company-wide to protect the global environment.

CKD's Environmental Policy

1. Promote development and sales of low environmental load
2. Clarify and comply with the requirements of environmental laws and regulations, and promote the realization of carbon neutrality and the prevention of environmental pollution.
   a) Reduce CO_2 emissions b) Promote resource conservation
   c) Reduce waste d) Reduce environmental pollutants

Response to RoHS of CKD

For our main equipment products, we have been progressively implementing RoHS compliance since July 2006. This catalog indicates RoHS-compliant products with the "RoHS-compliant" mark.

(Note) For the latest compliance status, please check our website.

Technical Data

RoHSDirective

(Directive 2011/65/EU of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment)

This directive assimilates laws related to limiting the use of hazardous substances in electrical and electronics components set forth by each EU member state, contributes to the protection of human health, and provides sufficient means for processing and recycling waste electrical and electric products.

1 Scope of Application

1. Large household electrical appliances
2. Small appliances
3. IT Components and Telecommunications Components
4. Civilian Components
5. Lighting Components
6. Electric tools
7. Toys, leisure goods and sports components
8. Medical components, in-vitro diagnostics components
9. Monitoring and control components, industrial monitoring and control equipment
10. Vending machines
11. Other electrical and electronic equipment not falling into the above categories

Our components products mainly correspond to category 9, industrial monitoring and control equipment. (Some medical devices in Category 8 and non-applicable products also exist)

2 Directive Contents

Regulated substances (2011/65/EU)
- Lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBBs)
- Polybrominated diphenyl ethers (PBDE)

Additional regulated substances ((EU) 2015/863)
- Specific phthalates (DEHP, DBP, BBP, DIBP)

Electrical and electronic equipment containing the above substances, products in Categories 8 and 9, will not be able to be brought into the EU from July 22, 2021, and other categories from July 22, 2019, in principle.

Regarding ISO9001/ISO14001 Certification Acquisition

We deliver reliable quality that is gentle to people, machines, and the environment.

CKD has obtained ISO 9001 and ISO 14001 certification and established a quality and environmental management system. With safety, the environment, and energy saving as our primary themes, our entire company is dedicated to creating safe, reliable products and quality that pose no harm to people, machinery, society, or the global environment.

ISO 9001
マネジメントシステム登録証
CKD株式会社
JGA

ISO 14001
マネジメントシステム登録証
CKD株式会社
JGA

MEMO

MEMO

Ending

MEMO

MEMO

MEMO

MEMO

Ending

Model No. [Alphabetical Index]

Model No.	Model Name	Catalog No./Page
HS	Fluid Actuated Valve for Gas Combustion System	1024
HSV	(SV) Manual Valve/Standard	RJ-012AA

■Listed Page
This is the specification/model number page for models listed in this catalog.

■Listed Catalog No.

RJ-002AA ... Pneumatic Cylinder ①
RJ-003AA ... Pneumatic Cylinder ②
RJ-004AA ... Pneumatic Cylinder ③
RJ-005AA ... Pneumatic Cylinder ④
RJ-006AA ... Pneumatic Cylinder ⑤
RJ-007AA ... Air Preparation, Pressure Control, and Auxiliary Components
RJ-008AA ... Sensors/Controllers
RJ-009AA ... Main Line Equipment/Gas Generators
RJ-010AA ... Precision Components/Vacuum Components
RJ-011AA ... Directional Control Valve ①
RJ-012AA ... Directional Control Valve ②
RJ-013AA ... Fluid Control Valve
RJ-014AA ... Electric Actuator ROBODEX Pluse
RJ-015AA ... Electric Actuator ROBODEX Std.
RJ-016AA ... Dry Fine Equipment
CB-019SAA ... Indexman General
CB-031AA ... Wet Fine Equipment General
CB-054AA ... ABSODEX General
CB-055AA ... Electric Actuator Motorless General
CC-1055AA ... Life Science Equipment
CC-1276AA ... Outdoor Products WP Series
CC-1590AA ... Gas Combustion System
CC-1637AA ... Pharmaceutical Manufacturing Process Equipment
CC-297AA ... Automatic Watering Control Equipment

Others list the single item catalog No. for each series.

■Symbols
(SV)...Single Valve (WR)…Wiring Reduced Manifolds (IM) …Individual Manifold
(MX)...Mixed Manifold (BM)…Block Manifolds (MN)…Manifold

Model No.	Model Name	Catalog No./Page
1		
1219	Micro-mist Separator/Micro Naught Type (For Oil Mist Removal)	RJ-007AA
1238	Micro-mist Separator/Micro Naught Type (For Oil Mist Removal)	RJ-007AA
1326	Heavy Duty Air Filter	RJ-007AA
1126-□-□Y	Submicron Air Filter (For Tar Removal)	RJ-007AA
1126-□-E	Air Filter	RJ-007AA
1138-□-□Y	Submicron Air Filter (For Tar Removal)	RJ-007AA
1138-□-E	Air Filter	RJ-007AA
1226(J)	Micro-mist Separator/Micro Naught Type (For Oil Mist Removal)	RJ-007AA
1226(J)-□-X	Micro-mist Separator/Odor Naught Type (For Odor Removal)	RJ-007AA
1238-□-X	Micro-mist Separator/Odor Naught Type (For Odor Removal)	RJ-007AA
1326-□-□Y	Submicron Air Filter (For Tar Removal)	RJ-007AA
2		
2215	Regulator	RJ-007AA
2216	Regulator	RJ-007AA
2302 to 2304-□C	Dial Air Regulator	RJ-007AA
2302 to 2304-□C-R	Remote Control Dial Air Regulator	RJ-007AA
2415	Reverse Regulator (Built-in Check Valve)	RJ-007AA
2415-P11	Reverse Regulator (Built-in Check Valve)/Ozone Resistant	RJ-007AA
2419	Reverse Regulator (Built-in Check Valve)	RJ-007AA
2619	Regulator	RJ-007AA
2QV	Quick Valve with One-touch Fitting	RJ-007AA
3		
3003E to 3005E	Lubricator/Economist Type	RJ-007AA
3003E-□C-V	Lubricator/Auto Fill Type	RJ-007AA
3GA1/2/3	(SV)Pilot Operated 3-Port Valve/Direct Piping	RJ-012AA
3GA1/2/3	(SV)Air Operated 3-Port Valve (Master Valve)/Direct Piping	RJ-012AA
3GB1/2	(SV)Pilot Operated 3-Port Valve Dual Unit/Base Piping	RJ-012AA
3GD1/2/3	(SV)Pilot Operated 3-Port Valve/Direct Piping	RJ-012AA
3GD1/2□0EJ	(SV)Intrinsically Safe Explosion-proof Pilot Operated 3-Port Valve/Direct Piping	RJ-012AA
3GD1/2□0EX	(SV)Intrinsically Safe Explosion-proof Pilot Operated 3-Port Valve/Direct Piping	RJ-012AA
3GE1/2	(SV)Pilot Operated 3-Port Valve Dual Unit/Base Piping	RJ-012AA
3GE1/2□0EJ	(SV)Intrinsically Safe Explosion-proof Pilot Operated 3-Port Valve/Base Piping	RJ-012AA
3GE1/2□0EX	(SV)Intrinsically Safe Explosion-proof Pilot Operated 3-Port Valve/Base Piping	RJ-012AA
3KA1	(SV)Pilot Operated 3-Port Valve/Direct Piping	RJ-012AA
3KA1	(SV)Air Operated 3-Port Valve (Master Valve)/Direct Piping	RJ-012AA
3MA0	(SV)Direct Acting 3-Port Valve/Direct Piping	RJ-012AA
3MB0	(SV)Direct Acting 3-Port Valve/Sub-plate Piping	RJ-012AA
3PA1/2	(SV)Direct Acting 3-Port Valve/Direct Piping	RJ-012AA
3PB1/2	(SV)Direct Acting 3-Port Valve/Sub-plate Piping	RJ-012AA
3QB1	(SV)Direct Acting 3-Port Valve/Sub-plate Piping	RJ-012AA
3QE1	(SV)Direct Acting 3-Port Valve/Sub-plate Piping	RJ-012AA
3QRA1	(SV)Direct Acting 3-Port Valve/Direct Piping	RJ-012AA
3QRB1	(SV)Direct Acting 3-Port Valve/Sub-plate Piping	RJ-012AA
3QV	Quick Valve with One-touch Fitting	RJ-007AA
4		
4001, 4002	Desiccant Air Dryer/Manual Air Dryer	RJ-009AA
4F0/1/2/3	(SV)Pilot Operated 5-Port Valve/Direct Piping	RJ-012AA
4F0/1/2/3	(SV)Air Operated 5-Port Valve (Master Valve)/Direct Piping	RJ-012AA
4F2/3	(SV)Pilot Operated 5-Port Valve Outdoor Specification	CC-1276AA
4F3□□0EX	(SV)Explosion-proof Pilot Operated 5-Port Valve/Direct Piping	RJ-012AA
4F3□□0E	(SV)Explosion-proof Pilot Operated 5-Port Valve/Direct Piping	RJ-012AA
4F4/5/6/7	(SV)Pilot Operated 5-Port Valve/Sub-plate Piping	RJ-012AA
4F4/5/6/7	Air Operated 5-Port Valve (Master Valve)/Sub-plate Piping	RJ-012AA
4F4/5/6/7□□0EX	(SV)Explosion-proof Pilot Operated 5-Port Valve/Sub-plate Piping	RJ-012AA
4F4/5/6/7□□0E	(SV)Explosion-proof Pilot Operated 5-Port Valve/Sub-plate Piping	RJ-012AA
4GA1/2/3	(SV)Pilot Operated 5-Port Valve/Direct Piping	RJ-011AA
4GA1/2/3	(SV)Air Operated 5-Port Valve (Master Valve)/Direct Piping	RJ-012AA
4GA4	(SV)Pilot Operated 5-Port Valve/Direct Piping	RJ-011AA
4GB1/2/3	(SV)Pilot Operated 5-Port Valve/Base Piping	RJ-011AA
4GB1/2/3	(SV)Air Operated 5-Port Valve (Master Valve)/Base Piping	RJ-012AA
4GB4	(SV)Pilot Operated 5-Port Valve/Base Piping	RJ-011AA
4GD1/2/3	(SV)Pilot Operated 5-Port Valve/Direct Piping	RJ-011AA
4GD1/2/3/4□0EJ	(SV)Intrinsically Safe Explosion-proof Pilot Operated 5-Port Valve/Direct Piping	RJ-012AA
4GD1/2/3/4□0EX	(SV)Intrinsically Safe Explosion-proof Pilot Operated 5-Port Valve/Direct Piping	RJ-012AA
4GE1/2/3	(SV)Pilot Operated 5-Port Valve/Base Piping	RJ-011AA
4GE1/2/3/4□0EJ	(SV)Intrinsically Safe Explosion-proof Pilot Operated 5-Port Valve/Base Piping	RJ-012AA
4GE1/2/3/4□0EX	(SV)Intrinsically Safe Explosion-proof Pilot Operated 5-Port Valve/Base Piping	RJ-012AA
4KA1/2/3/4	(SV)Pilot Operated 5-Port Valve Direct Piping	RJ-012AA
4KA1/2/3/4	(SV)Air Operated 5-Port Valve (Master Valve)/Direct Piping	RJ-012AA
4KB1/2/3/4	(SV)Pilot Operated 5-Port Valve/Sub-plate Piping	RJ-012AA
4KB1/2/3/4	(SV)Air Operated 4, 5-Port Valve (Master Valve)/Sub-plate Piping	RJ-012AA
4SA0	(SV)Pilot Operated 5-Port Valve/Direct Piping	RJ-011AA
4SB0	(SV)Pilot Operated 5-Port Valve/Sub-plate Piping	RJ-011AA
5		
5100-4C	Heavy Duty Drain	RJ-009AA
6		
6119-2C	Moisture Indicator	RJ-009AA
A		
A100 to 800-W	Piping Adapter/Standard White Series	RJ-007AA
A101 to 801-W	L-type Piping Adapter/Standard White Series	RJ-007AA
A1019	Air Filter	RJ-007AA
A1338	Heavy Duty Air Filter	RJ-007AA
A1338-□Y	Submicron Air Filter (For Tar Removal)	RJ-007AA
A2-3400	Cryogenic 2-Port Solenoid Valve	RJ-013AA
A2-5201	Direct Acting 2-Port Solenoid Valve (For High Frequency Operation)	RJ-013AA
A2-5202	Pilot Operated 2-Port Solenoid Valve (For High Frequency Operation)	RJ-013AA
A2-5800	Cryogenic 2-Port Solenoid Valve	RJ-013AA
A3019	Lubricator/Economist Type	RJ-007AA
AB21	Direct Acting 2-Port Solenoid Valve (Multilex)	RJ-013AA
AB31	Direct Acting 2-Port Solenoid Valve Single Unit (Multilex)	RJ-013AA
AB31-ZAA	Direct Acting 2-Port Solenoid Valve for Dry Air (Multilex)	RJ-013AA
AB41	Direct Acting 2-Port Solenoid Valve Single Unit (Multilex)	RJ-013AA
AB41E2	Explosion-proof Direct Acting 2-Port Solenoid Valve (Multilex)/d2G2	RJ-013AA
AB41E4	Explosion-proof Direct Acting 2-Port Solenoid Valve (Multilex)/d2G4	RJ-013AA

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Model No.	Model Name	Catalog No./Page
A		
AB41E4-ZAA	Explosion-proof Direct Acting 2-Port Solenoid Valve for Dry Air (Multilex)/d2G4	RJ-013AA
AB41EX2	Explosion-proof Direct Acting 2-Port Solenoid Valve (Multilex)/Exd II BT2	RJ-013AA
AB41EX4	Explosion-proof Direct Acting 2-Port Solenoid Valve (Multilex)/Exd II BT4	RJ-013AA
AB41-ZAA	Direct Acting 2-Port Solenoid Valve for Dry Air (Multilex)	RJ-013AA
AB42	Direct Acting 2-Port Solenoid Valve Single Unit (Multilex)	RJ-013AA
AB42E4	Explosion-proof Direct Acting 2-Port Solenoid Valve (Multilex)/d2G4	RJ-013AA
AB71	Direct Acting 2-Port Solenoid Valve (Multilex)/Large Bore	RJ-013AA
ABP	Air Booster	RJ-007AA
AD11	Pilot Operated 2-Port Solenoid Valve (Multilex)/ Diaphragm Driven	RJ-013AA
AD11E4	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/Diaphragm Driven, d2G4	RJ-013AA
AD11EX4	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/Diaphragm Driven, Exd II BT4	RJ-013AA
AD12	Pilot Operated 2-Port Solenoid Valve (Multilex)/ Diaphragm Driven	RJ-013AA
AD12E4	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/Diaphragm Driven, d2G4	RJ-013AA
AD21	Pilot Operated 2-Port Solenoid Valve (Multilex)/ Diaphragm Driven	RJ-013AA
AD21E4	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/Diaphragm Driven, d2G4	RJ-013AA
AD21EX4	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/Diaphragm Driven, Exd II BT4	RJ-013AA
AD22	Pilot Operated 2-Port Solenoid Valve (Multilex)/ Diaphragm Driven	RJ-013AA
AD22E4	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/Diaphragm Driven, d2G4	RJ-013AA
ADK11	Pilot Kick Operated 2-Port Solenoid Valve (Multilex)/ Diaphragm Driven	RJ-013AA
ADK11E4	Explosion-proof Pilot Kick Operated 2-Port Solenoid Valve (Multilex)/Diaphragm Driven, d2G4	RJ-013AA
ADK11EX4	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/Diaphragm Driven, Exd II BT4	RJ-013AA
ADK11-ZAA	Pilot Kick Operated 2-Port Solenoid Valve for Dry Air (Multilex)	RJ-013AA
ADK12	Pilot Kick Operated 2-Port Solenoid Valve (Multilex)/ Diaphragm Driven	RJ-013AA
ADK12E4	Explosion-proof Pilot Kick Operated 2-Port Solenoid Valve (Multilex)/Diaphragm Driven, d2G4	RJ-013AA
ADK21	Pilot Kick Operated 2-Port Solenoid Valve (Multilex)/ Diaphragm Driven	RJ-013AA
AES (Facilea)	Image Processing Visual Programming Tool	CC-1548AA
AES (Facilea AI)	Image Processing AI Tool	CC-1623AA
AESM (ExiaStudio)	Device Visual Programming Tool	CC-1579AA
AF2	Medium Size Main Line Filter	RJ-009AA
AF30□□	Large Size Main Line Filter (Standard Type)	RJ-009AA
AF40□□	Medium Size Main Line Filter (For Oil-Free)	RJ-009AA
AF50□□	Large Size Main Line Filter (For Oil-Free)	RJ-009AA
AFB-RB	Active Fine Buffer	RJ-010AA
AG3□-Z	Direct Acting 3-Port Solenoid Valve for Dry Air (Multilex)	RJ-013AA
AG3□	Direct Acting 3-Port Solenoid Valve Single Unit (Multilex)	RJ-013AA
AG4□E4-Z	Explosion-proof Direct Acting 3-Port Solenoid Valve for Dry Air (Multilex)/d2G4	RJ-013AA
AG4□-Z	Direct Acting 3-Port Solenoid Valve for Dry Air (Multilex)	RJ-013AA
AG41	Direct Acting 3-Port Solenoid Valve Single Unit (Multilex)	RJ-013AA
AG41E4	Explosion-proof Direct Acting 3-Port Solenoid Valve (Multilex)/d2G4	RJ-013AA
AG41EX4	Explosion-proof Direct Acting 3-Port Solenoid Valve (Multilex)/Exd II BT4	RJ-013AA
AG43	Direct Acting 3-Port Solenoid Valve Single Unit (Multilex)	RJ-013AA
AG43E4	Explosion-proof Direct Acting 3-Port Solenoid Valve (Multilex)/d2G4	RJ-013AA
AG43EX4	Explosion-proof Direct Acting 3-Port Solenoid Valve (Multilex)/Exd II BT4	RJ-013AA
AG44	Direct Acting 3-Port Solenoid Valve Single Unit (Multilex)	RJ-013AA
AG44E4	Explosion-proof Direct Acting 3-Port Solenoid Valve (Multilex)/d2G4	RJ-013AA
AG44EX4	Explosion-proof Direct Acting 3-Port Solenoid Valve (Multilex)/Exd II BT4	RJ-013AA
AGD	Air Operated Valve for Process Gas	CB-035AA
AHB	Air-Hydro Booster	Ending 26
AL	Air Lamp/Logic Valve	RJ-007AA
AM4F0	Ⓜ Pilot Operated 5-Port Valve/Direct Piping	RJ-012AA
AMD	Air Operated Valve for Chemicals (2-Port)	CB-031AA
AMDS	Air Operated Valve for Chemicals/Integrated Suck-back Type	CB-031AA
AMG	Air Operated Valve for Chemicals (3-Port)	CB-031AA
AMS	Suck-back Valve for Chemicals	CB-031AA
AP11	Pilot Operated 2-Port Solenoid Valve (Multilex)/ Piston Driven	RJ-013AA
AP11E2	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/Piston Driven, d2G2	RJ-013AA
AP11E4	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/Piston Driven, d2G4	RJ-013AA
AP11EX2	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/Piston Driven, Exd II BT2	RJ-013AA
AP11EX4	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/Piston Driven, Exd II BT4	RJ-013AA
AP12	Pilot Operated 2-Port Solenoid Valve (Multilex)/ Piston Driven	RJ-013AA
AP12E2	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/Piston Driven, d2G2	RJ-013AA
AP12E4	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/Piston Driven, d2G4	RJ-013AA
AP21	Pilot Operated 2-Port Solenoid Valve (Multilex)/ Piston Driven	RJ-013AA
AP21E2	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/Piston Driven, d2G2	RJ-013AA
AP21EX2	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/Piston Driven/ Exd II BT2	RJ-013AA
AP21E4	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/Piston Driven, d2G4	RJ-013AA
AP21EX4	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/Piston Driven, Exd II BT4	RJ-013AA
AP22	Pilot Operated 2-Port Solenoid Valve (Multilex)/ Piston Driven	RJ-013AA
AP22E2	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/Piston Driven, d2G2	RJ-013AA
AP22E4	Explosion-proof Pilot Operated 2-Port Solenoid Valve (Multilex)/ Piston Driven, d2G4	RJ-013AA
APE	Mechanical Pressure Switch	RJ-007AA
APK11	Pilot Kick Operated 2-Port Solenoid Valve (Multilex)/ Piston Driven	RJ-013AA
APK21	Pilot Kick Operated 2-Port Solenoid Valve (Multilex)/ Piston Driven	RJ-013AA
APS	Compact Mechanical Pressure Switch	RJ-007AA
ASU	Portable Air Supply Unit	CC-1363AA
AT	Air Tank	RJ-007AA
AVB	Air Operated Valve for High Vacuum	CB-035AA
AX1000T, 2000T, 4000T	Direct Drive Actuator ABSODEX	CB-054AA
AX1R, 2R, 4R	Direct Drive Actuator ABSODEX	CC-1614AA
AX6000M	Direct Drive Actuator ABSODEX	CB-054AA
AX9000TS, TH, MU	Driver for ABSODEX	CB-054AA
AXD	Driver for ABSODEX	CC-1614AA
AZ	Tube Cutter	RJ-007AA
B		
B	Booster	Ending 26
B□P51□	Ⓜ Pilot Operated 2, 3, 5-Port Valve/Metal Base	RJ-012AA
B110 to 820-W	Bracket/For Selex F.R.L/ Standard White Series	RJ-007AA
B2019	Regulator	RJ-007AA
B2019-P11	Regulator/Ozone Resistant	RJ-007AA
B513□	Ⓢ Ⓥ Pilot Operated 3-Port Valve/Sub-base Type	RJ-012AA
B5142	Ⓢ Ⓥ Pilot Operated 5-Port Valve/Sub-base Type	RJ-012AA
B6061	Relief Valve	RJ-007AA
B7019	F.R. Unit	RJ-007AA
BBS-A	Balancer Unit Automatic Pressure Adjustment Type	RJ-005AA
BBS-O	Balancer Unit Fixed Pressure Adjustment Type	RJ-005AA
BHA	Compact Cross Roller Parallel Gripper	RJ-006AA
BHA-FC	Mechanical Gripper	RJ-006AA
BHA-LN	Gripper with Linear Norm Sensor/Cross Roller Parallel Gripper with Sensor	RJ-005AA
BHE	Centering Gripper	RJ-006AA
BHE-LN	Gripper with Linear Norm Sensor/Centering Gripper with Sensor	RJ-005AA
BHG	Compact Cross Roller Parallel Gripper with Rubber Cover	RJ-006AA
BHG-LN	Gripper with Linear Norm Sensor/Cross Roller Parallel Gripper with Rubber Cover and Sensor	RJ-005AA

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B		
BN	Air Blow Nozzle General Type	RJ-007AA
BNB	Air Blow Nozzle Blower Specification	RJ-007AA
BNE-F	Air Blow Nozzle Flat Type	RJ-007AA
BNE-R	Air Blow Nozzle Round Type	RJ-007AA
BSA2	Ultra Compact Cross Roller Parallel Gripper	RJ-006AA
BW7019	Filter Regulator/Outdoor Series	CC-1276AA
C		
C1000 to 8000-P6	F.R.L. Combination/Copper Ion Restricted (No copper/PTFE Specification)	RJ-007AA
C1000 to 8000-W	F.R.L. Combination/ Standard White Series	RJ-007AA
C1010 to 8010-W	W.L. Combination/ Standard White Series	RJ-007AA
C1020 to 8020-W	F.R. Combination/ Standard White Series	RJ-007AA
C1030 to 8030-W	F.M.R. Combination/ Standard White Series	RJ-007AA
C1040 to 8040-W	W.M. Combination/ Standard White Series	RJ-007AA
C1050 to 8050-W	R.M. Combination/ Standard White Series	RJ-007AA
C1060 to 8060-W	F.M. Combination/ Standard White Series	RJ-007AA
C25N-B	Governor for Medium Pressure Gas	CC-1590AA
C3070 to 8070-W	F.F.M. Combination/ Standard White Series	RJ-007AA
CAC4	Clamp Cylinder/ Double Acting, Single Rod	RJ-005AA
CAC-N32/40	Lightweight Clamp Cylinder/ Double Acting, Single Rod	RJ-005AA
CAT	Cartridge Cylinder/ Single Acting, Push Type	RJ-003AA
CAU30	Clean Air Unit	RJ-007AA
CAV2	Cell Cylinder/ With Valve, Double Acting, Lubricated Type	RJ-005AA
CAW	Compact Arm	CC-1613AA
CCH	Check Valve for Liquids	RJ-013AA
CCN	Check Valve for Liquids (Nozzle Type)	RJ-013AA
CG	Air Fiber One-touch Fitting (Clean Type)	RJ-007AA
CHB	Air Operated Ball Valve 2-Port (Compact Rotary Valve)	RJ-013AA
CHBF	Air Operated Ball Valve 2-Port (Compact Rotary Valve)/Full Bore	RJ-013AA
CHC	Auto Gripper Changer	RJ-006AA
CHG	Air Operated Ball Valve 3-Port (Compact Rotary Valve)	RJ-013AA
CHL	Check Valve with One-touch Fitting	RJ-007AA
CHV2	Check Valve	RJ-007AA
CK	3-Jaw Long Stroke Chuck	RJ-006AA
CKA	3-Jaw Thin Chuck	RJ-006AA
CKF	Hollow Chuck	RJ-006AA
CKG	3-Jaw Bearing Chuck	RJ-006AA
CKH2	High Gripping Force Powerful Chuck	RJ-006AA
CKJ	Ultra Long Stroke Chuck	RJ-006AA
CKL2	Powerful Chuck	RJ-006AA
CKL2-FC	Mechanical Chuck	RJ-006AA
CKLB2	Bidirectional Powerful Chuck	RJ-006AA
CKS	Low Profile Chuck	RJ-006AA
CKV2	Compact cylinder with valve/With Valve, Double Acting, Single Rod	RJ-005AA
CKW-HP1	3-Jaw Chuck	RJ-006AA
CKWL-HP1	3-Jaw Chuck	RJ-006AA
CMA2	Small Bore Size Cylinder/Double Acting, Single Rod	RJ-002AA
CMK2	Small Bore Size Cylinder/Double Acting, Single Rod	RJ-002AA
COV□2	Cell Cylinder/With Valve, Double Acting, Lubricated Type	RJ-005AA
CPD	Electronic Pressure Switch for Coolant (with Digital Display)	
CPE	Mechanical Pressure Switch for Coolant (Low Pressure Type)	
CSB	Air Operated Ball Valve 2-Port for Steam (Compact Rotary Valve)	
CSBF	Air Operated Ball Valve 2-Port for Steam (Compact Rotary Valve)	
CV3E	Low Pressure Air Operated 3-Port Valve (Coolant Valve)	RJ-013AA
CVE2, CVE22	Air Operated 2-Port Valve (Coolant Valve)	RJ-013AA
CVE3	Air Operated 3-Port Valve (Coolant Valve)	RJ-013AA
CVS3E	Low Pressure Air Operated 3-Port Valve (Coolant Valve)/ Solenoid Valve Mounted Type	RJ-013AA
CVSE2, CVSE22	Air Operated 2-Port Valve (Coolant Valve)/Solenoid Valve Mounted Type	RJ-013AA
CVSE3	Air Operated 3-Port Valve (Coolant Valve)/Solenoid Valve Mounted Type	RJ-013AA
CXU	Air Unit	RJ-007AA
D		
D101 to 801-W	Distributor/For Selex F.R.L/ Standard White Series	RJ-007AA
DB1000, 3000	Super Drain	RJ-009AA
DBS1006	Drain Sensor	RJ-009AA
DCKW	Electric Actuator with Motor D Series 3-Finger Gripper Type	RJ-014AA
DLSH	Electric Actuator with Motor D Series 2-Finger Gripper Type	RJ-014AA
DMSDG	Electric Actuator with Motor D Series Compact Guided Type	RJ-014AA
DSC	Speed Controller with Dial	RJ-007AA
DSG	Solenoid Valve for Gas Combustion System	CC-1590AA
DSG-W	Solenoid Valve for Gas Combustion System	CC-1590AA
DSSD2	Electric Actuator with Motor D Series Rod Type	RJ-014AA
DSTG	Electric Actuator with Motor D Series Guided Type	RJ-014AA
DSTK	Electric Actuator with Motor D Series Stopper Type	RJ-014AA
DSTL	Electric Actuator with Motor D Series Guided Type	RJ-014AA
DSTS	Electric Actuator with Motor D Series Guided Type	RJ-014AA
DT3000, 3010-W	Snap Drain	RJ-009AA
DT4000, 4010-W	Snap Drain	RJ-009AA
DVL	Needle Valve with Dial	RJ-007AA
E		
E0, ET0	Cylinder Switch/Heat Resistant, Reed 2-wire	782
ECS	Electric Actuator Motorless Specification Slider Type	CB-055AA
ETS	Electric Actuator Motorless Specification Slider Type	CB-055AA
EBS-L	Electric Actuator with Motor Specification Slider Type	CB-055AA
EBS-G, -M	Electric Actuator with Motor Specification Slider Type	RJ-014AA
EBR-L	Electric Actuator Motorless Specification	CB-055AA
EBR-G, -M	Electric Actuator with Motor Specification Slider Type	RJ-014AA
ECG	For Electric Actuator Single Axis Controller	RJ-014AA
ECMG	For Electric Actuator Multi Axis Controller	RJ-014AA
ECR	For Electric Actuator Single Axis Controller	RJ-014AA
ECV	Electric Actuator with Motor Specification Slider Type	CB-055AA
EH	Air Fiber Clean Type (For One-touch Fittings)	RJ-007AA
EKS-L	Electric Actuator with Motor Specification Slider Type	CB-055AA
EKS-M	Electric Actuator with Motor Specification Slider Type	CC-1457AA
EMB21, 41, 51	Metal-free 2-Port Solenoid Valve	RJ-013AA
EJSG	Electric Actuator with Motor Specification Slider Type	RJ-014AA
ESC4	For Electric Actuator Single Axis Controller	RJ-014AA
ESM	Electric Shuttle Mover	CC-1259AA
ETS	Electric Actuator Motorless Specification Slider Type	CB-055AA
ETV	Electric Actuator Motorless Specification Slider Type	CB-055AA
EV2100V, 2109V	Electro-Pneumatic Regulator/ Solenoid Valve Type Vacuum Compatible	RJ-007AA
EVR	Electro-Pneumatic Regulator/ Solenoid Valve Type Medium Flow	RJ-007AA
EVB□17	Electric Vacuum Valve	CB-035AA
EVD	Digital Electro-Pneumatic Regulator	RJ-007AA
EVL	Low Pressure Electro-Pneumatic Regulator	RJ-007AA
EVS2	Electro-Pneumatic Regulator/ Solenoid Valve Type Compact	RJ-007AA
EVT	Low Profile Electro-Pneumatic Regulator/Single Unit	RJ-007AA
EXA	Pilot Operated 2-Port Solenoid Valve for Compressed Air	RJ-013AA
ExiaStudio (AESM)	Device Visual Programming Tool	CC-1579AA
F		
F□	Soft nylon tube	RJ-007AA
F0V/H	Cylinder Switch/1-Color Indicator, Reed 2-wire	778
F1000 to 8000-P6	Air Filter/Copper Ion Restricted (No copper/PTFE Specification)	RJ-007AA
F1000 to 8000-W	Air Filter/Standard White Series	RJ-007AA
F2S, F3S	Cylinder Switch/1-Color Indicator, Solid State 2/3-wire	778
F2, 3V/H	Cylinder Switch/1-Color Indicator, Solid State 2/3-wire	778
F3PH/V	Cylinder Switch/PNP Output Type Solid State 3-wire	778
F2, 3Y V/H	Cylinder Switch/2-Color Indicator, Solid State 2/3-wire	778
F3000 to 8000-G4	Air Filter/Flame Resistant Series	RJ-007AA
FA□	Ultra Compact Joint/Adjustable Socket	RJ-007AA
FA331 to 831	Exhaust Cleaner	RJ-007AA
FAC	Clean Exhaust Filter	RJ-007AA
Facilea (AES)	Image Processing Visual Programming Tool	CC-1548AA
Facilea AI (AES)	Image Processing AI Tool	CC-1623AA
FAW	Flex Arm	CC-1615AA
FBS	Ultra Compact Joint/Bushing	RJ-007AA
FBU2	Fine Buffer	RJ-010AA
FC□	Ultra Compact Joint/Clamp Fitting	RJ-007AA
FCD	Flat Cylinder Compact Demi/ Double Acting, Single Rod	RJ-003AA
FCH	Flat Cylinder Compact Demi/ Single Acting, Retracting Type	RJ-003AA
FCK	Shock Absorber, Adjustable Type	RJ-005AA
FCM	Compact Flow Controller Rapiflow	RJ-008AA
FCS	Flat Cylinder Compact Demi/ Single Acting, Push Type	RJ-003AA
FCS1000	Inline Clean Filter	RJ-007AA
FCS500	Inline Clean Filter	RJ-007AA
FFB	Direct Acting 2-Port Solenoid Valve Multi-fit	RJ-013AA
FFBM	Direct Acting 2-Port Solenoid Valve Multi-fit	RJ-013AA
FFG	Direct Acting 3-Port Solenoid Valve Multi-fit	RJ-013AA
FFGM	Direct Acting 3-Port Solenoid Valve Multi-fit	RJ-013AA

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F		
FFLD	Electric Actuator with Motor F Series 2-Finger Gripper Type (Built-in Controller)	RJ-014AA
FGRC	Electric Actuator with Motor F Series Rotary Type	RJ-014AA
FGS	Ultra Compact Joint/Gasket	RJ-007AA
FH100	Feather Gripper (Mini Parallel Gripper)	RJ-006AA
FH500	Feather Gripper (Mini Pivot Gripper)	RJ-006AA
FJ	Free Joint	RJ-005AA
FK	Simple Flow Controller	RJ-005AA
FLCR	Electric Actuator with Motor F Series Table Type	RJ-014AA
FLS	Ultra Compact Joint/Extension	RJ-007AA
FLSH	Electric Actuator with Motor F Series 2-Finger Gripper Type	RJ-014AA
FM□	Ultra Compact Joint/Manifold	RJ-007AA
FM3000 to 8000	Air Filter/Medium Pressure Series	RJ-007AA
FMD	Flow Control Valve	CB-031AA
FMS	Metering Valve with Silencer	RJ-007AA
FNS	Ultra Compact Joint/Double Nipple	RJ-007AA
FPL	Ultra Compact Joint/Plug	RJ-007AA
FPV	Block Valve	RJ-007AA
FS□	Ultra Compact Joint/Socket	RJ-007AA
FSL100	Inline Filter	RJ-007AA
FSL200	Inline Filter	RJ-007AA
FSL500	Inline Filter	RJ-007AA
FSM2-D	Compact Flow Sensor Rapiflow	RJ-008AA
FSM3	Compact Flow Sensor Rapiflow	RJ-008AA
FSM-V	Ultra Compact Flow Sensor Rapiflow	RJ-008AA
FSM-V-D	Separate Display Unit Rapiflow	RJ-008AA
FSM-VFM	Compact Flow Sensor/Inline Filter	RJ-008AA
FSM-X	Ultra Compact Flow Switch Rapiflow	RJ-008AA
FT□	Ultra Compact Joint/Barb Fitting	RJ-007AA
FWD	Compact Pilot Operated Solenoid Valve for Water	RJ-013AA
FWS	Ultra Compact Joint/Partition Wall	RJ-007AA
FW4000, 8000	Air Filter/Outdoor Series	CC-1276AA
FX	Drain Separator	RJ-007AA
G		
G29D	Ultra Compact Pressure Gauge	RJ-007AA
G39D	Round Pressure Gauge	RJ-007AA
G401-W	Thin Pressure Gauge	RJ-007AA
G40D	Pressure Gauge with Safety Mark	RJ-007AA
G45D	Pressure Gauge with Limit Mark	RJ-007AA
G49D, 59D	General Purpose Pressure Gauge	RJ-007AA
G49D, 59D-P6	Pressure Gauge/Copper Ion Restricted (No copper/PTFE Specification)	RJ-007AA
G52D	Pressure Gauge with Switch	RJ-007AA
G53D	Pressure Gauge for Panel Mount	RJ-007AA
GA400	Differential Pressure Gauge	RJ-007AA
GAB312/352	Direct Acting 2-Port Solenoid Valve Manifold/Actuator (Multilex)	RJ-013AA
GAB312/352-Z	Direct Acting 2-Port Solenoid Valve for Dry Air Manifold/ Actuator (Multilex)	RJ-013AA
GAB412	Direct Acting 2-Port Solenoid Valve Manifold/Actuator (Multilex)	RJ-013AA
GAB412-Z	Direct Acting 2-Port Solenoid Valve for Dry Air Manifold/ Actuator (Multilex)	RJ-013AA
GAB422	Direct Acting 2-Port Solenoid Valve Manifold/Actuator (Multilex)	RJ-013AA
GAB452	Direct Acting 2-Port Solenoid Valve Manifold/Actuator (Multilex)	RJ-013AA
GAB452-Z	Direct Acting 2-Port Solenoid Valve for Dry Air Manifold/ Actuator (Multilex)	RJ-013AA
GAG31□	Direct Acting 3-Port Solenoid Valve Manifold/Actuator (Multilex)	RJ-013AA
GAG31□-Z	Direct Acting 3-Port Solenoid Valve for Dry Air Manifold/ Actuator (Multilex)	RJ-013AA
GAG33□	Direct Acting 3-Port Solenoid Valve Manifold/Actuator (Multilex)	RJ-013AA
GAG33□-Z	Direct Acting 3-Port Solenoid Valve for Dry Air Manifold/ Actuator (Multilex)	RJ-013AA
GAG34□	Direct Acting 3-Port Solenoid Valve Actuator (Multilex)	RJ-013AA
GAG34□-Z	Direct Acting 3-Port Solenoid Valve for Dry Air Actuator (Multilex)	RJ-013AA
GAG35□	Direct Acting 3-Port Solenoid Valve Manifold/Actuator (Multilex)	RJ-013AA
GAG35□-Z	Direct Acting 3-Port Solenoid Valve for Dry Air Manifold/ Actuator (Multilex)	RJ-013AA
GAG41□	Direct Acting 3-Port Solenoid Valve Manifold/Actuator (Multilex)	RJ-013AA
GAG41□-Z	Direct Acting 3-Port Solenoid Valve for Dry Air Manifold/ Actuator (Multilex)	RJ-013AA
GAG43□	Direct Acting 3-Port Solenoid Valve Manifold/Actuator (Multilex)	RJ-013AA
GAG43□-Z	Direct Acting 3-Port Solenoid Valve for Dry Air Manifold/ Actuator (Multilex)	RJ-013AA
GAG44□	Direct Acting 3-Port Solenoid Valve Actuator (Multilex)	RJ-013AA
GAG44□-Z	Direct Acting 3-Port Solenoid Valve for Dry Air Actuator (Multilex)	RJ-013AA
GAG45□	Direct Acting 3-Port Solenoid Valve Manifold/Actuator (Multilex)	RJ-013AA
GAG45□-Z	Direct Acting 3-Port Solenoid Valve for Dry Air Manifold/ Actuator (Multilex)	RJ-013AA
GAMD	Air Operated Valve for Chemicals (Manifold/Branch Valve)	CB-031AA
GCKW	Electric Actuator with Motor Specification G Series 3-Finger Gripper	RJ-014AA
GCVE2	Modular Coolant Valve Air Operated Type	RJ-013AA
GCVSE2	Modular Coolant Valve Solenoid Valve Mounted Type	RJ-013AA
GEXA	Pilot Operated 2-Port Solenoid Valve Manifold with One-touch Fittings for Compressed Air	RJ-013AA
GFM	Float Star	RJ-010AA
GHV	Gas Combination Valve	CC-1590AA
GLC	Guideless Cylinder/Double Acting Type	RJ-005AA
GMF1	Ⓜ Pilot Operated 5-Port ISO Compliant Valve/DIN Terminal Box Type/ISO Size ①	RJ-012AA
GMF1	Ⓜ Pilot Operated 5-Port ISO Compliant Valve/I/O Connector Type/ISO Size ①	RJ-012AA
GMF2	Ⓜ Pilot Operated 5-Port ISO Compliant Valve/DIN Terminal Box Type/ISO Size ②	RJ-012AA
GMF2	Ⓜ Pilot Operated 5-Port ISO Compliant Valve/I/O Connector Type/ISO Size ②	RJ-012AA
GMFZ	Ⓜ Pilot Operated 5-Port ISO Compliant Valve/DIN Terminal Box Type/ISO Size ① & ②	RJ-012AA
GMFZ	Ⓜ Pilot Operated 5-Port ISO Compliant Valve/I/O Connector Type/ISO Size ① & ②	RJ-012AA
GMMD	Manual Valve Manifold for Chemicals	CB-031AA
GNAB□	Air Operated 2-Port Valve Manifold (Compact Cylinder Valve)	RJ-013AA
GNAD□	Diaphragm Cylinder Valve Manifold	RJ-013AA
GPS2	Seating Confirmation Switch/ Single Unit	RJ-008AA
GPS3	Digital Gap Switch/Single Unit	RJ-008AA
GRC	Table Type Rotary Actuator/ Basic Type	RJ-005AA
GRV	Medium Pressure Gas Combination Valve	CC-1590AA
GSSD2	Electric Actuator with Motor Specification G Series Rod Type	RJ-014AA
GSTG	Electric Actuator with Motor Specification G Series Guided Type	RJ-014AA
GSTK	Electric Actuator with Motor Specification G Series Stopper Type	RJ-014AA
GSTL	Electric Actuator with Motor Specification G Series Guided Type	RJ-014AA
GSTS	Electric Actuator with Motor Specification G Series Guided Type	RJ-014AA
GSV	Solenoid Valve for Automatic Watering Control	CC-297AA
GSV2	Solenoid Valve for Automatic Watering Control	CC-297AA
GT9000	Refrigerated Air Dryer/	RJ-009AA
GW49D	Outdoor Pressure Gauge	CC-1276AA
GW	New Joint	RJ-007AA
GX3200D	Refrigerated Air Dryer/ Compact For Equipment Installation, Standard Inlet Air (35°C) Type	RJ-009AA
GX5200D	Refrigerated Air Dryer/ Compact For Direct Compressor Connection, High Inlet Air (55°C) Type	RJ-009AA
H		
H0	Cylinder Switch/1-Color Indicator, Reed	780
H0Y	Cylinder Switch/2-Color Indicator, Reed	780
HAP-1C	Parallel Gripper	RJ-006AA
HAP-2 to 4CS	Parallel Gripper	RJ-006AA
HB	High Corrosion Resistance Direct Acting 2-Port Solenoid Valve	RJ-013AA
HBL	Pivot Gripper	RJ-006AA
HCA	High Speed Cylinder/Double Acting, Single Rod Type	RJ-005AA
HCM	High Energy Absorption Cylinder/Double Acting, Single Rod Type	RJ-005AA
HCP	Horizontal Parallel Gripper	RJ-006AA
HD-0.5 to 9	Desiccant Air Dryer/Compact Heatless Dryer	RJ-009AA
HDL	Wide Angle Gripper	RJ-006AA
HFP	Wide Parallel Gripper	RJ-006AA
HGP	Long Stroke Parallel Gripper	RJ-006AA
HJL	Toggle Gripper	RJ-006AA
HK1	Fluid Actuated Valve for Gas Combustion System	CC-1590AA

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Model No.	Model Name	Catalog No./Page
H		
HKP	Cross Roller Parallel Gripper	RJ-006AA
HLA	Low Profile Parallel Gripper	RJ-006AA
HLB	Low Profile Parallel Gripper	RJ-006AA
HLC	Low Profile Long Stroke Parallel Gripper	RJ-006AA
HLD	Ultra Thin Parallel Gripper	RJ-006AA
HLF2	Low Profile Long Stroke Gripper	RJ-006AA
HMD	Low Profile Wide Angle Gripper	RJ-006AA
HMC-HP1	Wide Parallel Gripper	RJ-006AA
HMF	Compact Wide Parallel Gripper	RJ-006AA
HMFB	Large Wide Parallel Gripper with LM Guide	RJ-006AA
HMTB1	Metal-free Compact Lever Type 2-Port Solenoid Valve for Medical Equipment	CC-1055AA
HMTG1	Metal-free Compact Lever Type 3-Port Solenoid Valve for Medical Equipment	CC-1055AA
HMV	ⓈⓋManual Valve/Miniature	RJ-012AA
HMVE	ⓈⓋManual Valve/Miniature	RJ-012AA
HNB1	Compact Direct Acting 2-Port Solenoid Valve	RJ-013AA
HNG1	Compact Direct Acting 3-Port Solenoid Valve	RJ-013AA
HO	Worm Reducer	CC-1601AA
HPS	Adhesion Confirmation Switch/Single Unit	RJ-008AA
HRL-1	Hybrid Robot/Single Axis Unit Element for Pneumatic Robot	RJ-005AA
HS	Fluid Actuated Valve for Gas Combustion System	CC-1590AA
HSV	ⓈⓋManual Valve/Standard	RJ-012AA
HSVE	ⓈⓋManual Valve/Standard	RJ-012AA
HVB□12	High Vacuum Solenoid Valve	RJ-013AA
HVL12	Delayed Vacuum Solenoid Valve	RJ-013AA
HYA	Fine Pinch Valve	CC-1055AA
HYN	Direct Acting 2, 3-Port Valve (Fine Pinch Valve)	CC-1055AA
I		
IAGD□	Integrated Gas Supply System	CB-035AA
IAVB	Vacuum Pressure Control System	CB-035AA
J		
J100 to 800-W	Joiner/For Selex F.R.L/Standard White Series	RJ-007AA
JL	Fitting (Elbow Joint)	RJ-007AA
JSB3	Brake Unit	RJ-005AA
JSC3(-N) **JSC4(-N)**	Brake Cylinder (Medium/Large Bore)/Double Acting, Single Rod	RJ-005AA
JSG	Tie Rod Cylinder with Brake/Double Acting, Single Rod	RJ-005AA
JSK2	Brake Cylinder (Small Bore ø20 to 40, Crimped Type)/Double Acting Type	RJ-005AA
JSM2	Brake Cylinder (Small Bore ø20 to 40, Serviceable Type)/Double Acting Type	RJ-005AA
K		
K0V/H	Cylinder Switch/1-Color Indicator, Reed 2-wire	776
K2, 3 V/H	Cylinder Switch/1-Color Indicator, Solid State 2/3-wire	776
K2, 3Y V/H	Cylinder Switch/2-Color Indicator, Solid State 2/3-wire	776
K3P V/H	Cylinder Switch/PNP Output Type, Solid State 3-wire	776
K5V/H	Cylinder Switch/No Indication, Reed 2-wire	776
K60570	F.R.L. Kit	RJ-007AA
KBX	Electric Actuator with Motor Specification Slider Type Rod Type R-Axis Type	CC-1275AA
KCA	Controller	CC-1275AA
KHE	SCARA Robot	CC-1436AA
KHL	SCARA Robot	CC-1436AA
KML	Fine Level Switch	CB-031AA
KX	Coiling Tube	RJ-007AA
KZV3	Pilot Operated 2-Port Solenoid Valve	RJ-013AA
L		
L1000 to 8000-W	Lubricator/Copper Ion Restricted (No copper/PTFE Specification)	RJ-007AA
L1000 to 8000-W	Lubricator/Standard White Series	RJ-007AA
LAD	Diaphragm Cylinder Valve	RJ-013AA
LBC	Air Bearing Actuator	RJ-010AA
LCG	Linear Slide Cylinder/Double Acting, Single Rod	132
LCM	Linear Slide Cylinder/Double Acting, Single Rod	10
LCR	Linear Slide Cylinder/Double Acting, Single Rod	56
LCW	Linear Slide Cylinder/Double Acting, Single Rod	206
LCX	Linear Slide Cylinder/Double Acting, Single Rod	260
LFC-KL	Lifter Cylinder	CC-902AA
LGD	Air Operated Valve for Process Gas	CB-035AA
LHA	Linear Guide Gripper	RJ-006AA
LHAG	Linear Guide Gripper with Rubber Cover	RJ-006AA
LMB	Linear Guide Lock	RJ-005AA
LML	Linear Guide Lock	RJ-005AA
LN	Cylinder with Linear Norm Sensor/Sensor, Amplifier, Indicator	RJ-005AA
LSH	Linear Slide Gripper	RJ-006AA
LSH-HP1	Linear Slide Gripper	RJ-006AA
LSHL-HP1	Linear Slide Gripper	RJ-006AA
LSHM-HP2	Linear Slide Gripper with Length Measurement Function	RJ-006AA
LST-HP1	Low Profile Long Stroke Gripper	RJ-006AA
LSTM-HP2	Low Profile Long Stroke Gripper with Length Measurement Function	RJ-006AA
LW4000/LW8000	Lubricator Outdoor Series	CC-1276AA
LYX	Air Operated Valve for Chemicals	CB-031AA
M		
M0V/H	Cylinder Switch/1-Color Indicator, Reed 2-wire	764
M1000 to 8000-P6	Oil Mist Filter/Copper Ion Restricted (No copper/PTFE Specification)	RJ-007AA
M1000 to 8000-W	Oil Mist Filter/Standard White Series	RJ-007AA
M2, 3V/H	Cylinder Switch/1-Color Indicator, Solid State 2/3-wire	764
M2, 3WV	Cylinder Switch/2-Color Indicator, Solid State 2/3-wire	764
M3GA1/2/3	ⓂPilot Operated 3-Port Valve/Direct Piping	RJ-011AA
M3GA1/2/3	ⓌⓇPilot Operated 3-Port Valve/Direct Piping	RJ-011AA
M3GA1/2/3	ⓃⓃAir Operated 3-Port Valve (Master Valve)/Direct Piping	RJ-012AA
M3GB1/2	ⓂPilot Operated 3-Port Valve Dual Unit/Base Piping	RJ-011AA
M3GB1/2	ⓌⓇPilot Operated 3-Port Valve Dual Unit/Base Piping	RJ-011AA
M3GD1/2/3	ⓂPilot Operated 3-Port Valve/Direct Piping	RJ-011AA
M3GD1/2/3	ⓌⓇPilot Operated 3-Port Valve/Direct Piping	RJ-011AA
M3GD1/2□0EJ	ⓂIntrinsically Safe Explosion-proof Pilot Operated 3-Port Valve/Direct Piping	RJ-012AA
M3GD1/2□0EX	ⓂIntrinsically Safe Explosion-proof Pilot Operated 3-Port Valve/Direct Piping	RJ-012AA
M3GE1/2	ⓂPilot Operated 3-Port Valve Dual Unit/Base Piping	RJ-011AA
M3GE1/2	ⓌⓇPilot Operated 3-Port Valve Dual Unit/Base Piping	RJ-011AA
M3GE1/2□0EJ	ⓂIntrinsically Safe Explosion-proof Pilot Operated 3-Port Valve/Base Piping	RJ-012AA
M3GE1/2□0EX	ⓂIntrinsically Safe Explosion-proof Pilot Operated 3-Port Valve/Base Piping	RJ-012AA
M3KA1	ⓂPilot Operated 3-Port Valve/Direct Piping	RJ-012AA
M3KA1	ⓃⓃAir Operated 3-Port Valve (Master Valve)/Direct Piping	RJ-012AA
M3MA0	ⓂDirect Acting 3-Port Valve/Direct Piping	RJ-012AA
M3MB0	ⓂDirect Acting 3-Port Valve/Sub-plate Piping	RJ-012AA
M3P V/H	Cylinder Switch/1-Color Indicator, PNP Output Type, Solid State 3-wire	764
M3PA1/2	ⓂDirect Acting 3-Port Valve/Direct Piping	RJ-012AA
M3PB1/2	ⓂDirect Acting 3-Port Valve/Sub-plate Piping	RJ-012AA
M3QB1	ⓂDirect Acting 3-Port Valve/Sub-plate Piping	RJ-012AA
M3QE1	ⓂDirect Acting 3-Port Valve/Sub-plate Piping	RJ-012AA
M3QZ1	ⓂDirect Acting 3-Port Valve/Sub-plate Piping	RJ-012AA
M3QRA	ⓂDirect Acting 3-Port Valve/Direct Piping	RJ-012AA
M3QRB	ⓂDirect Acting 3-Port Valve/Sub-plate Piping	RJ-012AA
M4F0/1/2/3	ⓂPilot Operated 5-Port Valve/Direct Piping	RJ-012AA
M4F0/1/2/3	ⓃⓃAir Operated 5-Port Valve (Master Valve)/Direct Piping	RJ-012AA
M4F3□□0EX	ⓂExplosion-proof Pilot Operated 5-Port Valve/Direct Piping	RJ-012AA
M4F3□0E	ⓂExplosion-proof Pilot Operated 5-Port Valve/Direct Piping	RJ-012AA
M4F4/5/6/7	ⓂPilot Operated 5-Port Valve/Sub-plate Piping	RJ-012AA
M4F4/5/6/7	Air Operated 5-Port Valve (Master Valve)/Sub-plate Piping	RJ-012AA
M4F4/5/6/7□0EX	ⓂExplosion-proof Pilot Operated 5-Port Valve/Sub-plate Piping	RJ-012AA
M4F4/5/6/7□0E	ⓂExplosion-proof Pilot Operated 5-Port Valve/Sub-plate Piping	RJ-012AA
M4GA1/2/3	ⓂPilot Operated 5-Port Valve/Direct Piping	RJ-011AA
M4GA1/2/3	ⓌⓇPilot Operated 5-Port Valve/Direct Piping	RJ-011AA
M4GA1/2/3	ⓃⓃAir Operated 5-Port Valve (Master Valve)/Direct Piping	RJ-012AA
M4GA4	ⓂPilot Operated 5-Port Valve/Direct Piping	RJ-011AA
M4GA4	ⓌⓇPilot Operated 5-Port Valve/Direct Piping	RJ-011AA
M4GB1/2/3	ⓂPilot Operated 5-Port Valve/Base Piping	RJ-011AA
M4GB1/2/3	ⓌⓇPilot Operated 5-Port Valve/Base Piping	RJ-011AA
M4GB1/2/3	ⓃⓃAir Operated 5-Port Valve (Master Valve)/Base Piping	RJ-012AA
M4GB4	ⓂPilot Operated 5-Port Valve/Base Piping	RJ-011AA
M4GB4	ⓌⓇPilot Operated 5-Port Valve/Base Piping	RJ-011AA
M4GD1/2/3	ⓂPilot Operated 5-Port Valve/Direct Piping	RJ-011AA
M4GD1/2/3	ⓌⓇPilot Operated 5-Port Valve/Direct Piping	RJ-011AA

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Model No.	Model Name	Catalog No./Page
M		
M4GD1/2/3/4□0EJ	Ⓘ Intrinsically Safe Explosion-proof Pilot Operated 5-Port Valve/Direct Piping	RJ-012AA
M4GD1/2/3/4□0EX	Ⓘ Intrinsically Safe Explosion-proof Pilot Operated 5-Port Valve/Direct Piping	RJ-012AA
M4GE1/2/3	Ⓘ Pilot Operated 5-Port Valve/Base Piping	RJ-011AA
M4GE1/2/3	Ⓦ Pilot Operated 5-Port Valve/Base Piping	RJ-011AA
M4GE1/2/3/4□0EJ	Ⓘ Intrinsically Safe Explosion-proof Pilot Operated 5-Port Valve/Base Piping	RJ-012AA
M4GE1/2/3/4□0EX	Ⓘ Intrinsically Safe Explosion-proof Pilot Operated 5-Port Valve/Base Piping	RJ-012AA
M4KA1/2/3/4	Ⓘ Pilot Operated 5-Port Valve/Direct Piping	RJ-012AA
M4KA1/2/3/4	Ⓝ Air Operated 5-Port Valve (Master Valve)/Direct Piping	RJ-012AA
M4KB1/2/3/4	Ⓘ Pilot Operated 4, 5-Port Valve/Sub-plate Piping	RJ-012AA
M4KB1/2/3/4	Ⓝ Air Operated 4, 5-Port Valve (Master Valve)/Sub-plate Piping	RJ-012AA
M4SA0	Ⓘ Pilot Operated 5-Port Valve/Direct Piping	RJ-011AA
M4SB0	Ⓘ Pilot Operated 5-Port Valve/Sub-plate Piping	RJ-011AA
M4SB0	Ⓦ Pilot Operated 5-Port Valve/Sub-plate Piping	RJ-011AA
M512□	Ⓢ Pilot Operated 2-Port Valve/Direct Type	RJ-012AA
M513□	Ⓢ Pilot Operated 3-Port Valve/Direct Type	RJ-012AA
M5V/H	Cylinder Switch/No Indication, Reed 2-wire	764
MAB1/MAG1	Metal-free 2-Port Solenoid Valve	CC-1055AA
MAVL	Large Mechanical Valve/Detector	RJ-007AA
MCP	Mechanical Power Cylinder	RJ-005AA
MD	Multi Monitor	RJ-008AA
MDC2	Compact Direct Cylinder/Double Acting, Single Rod Type	RJ-003AA
MDV	Compact Direct Cylinder	CC-905AA
MEB2/MEG2	Metal-free 2-Port Solenoid Valve	CC-1055AA
MEVT	Low Profile Electro-Pneumatic Regulator/Wiring-saving Manifold Type	RJ-007AA
MGD	Manual Valve for Process Gas	CB-035AA
MGPS2	Seating Confirmation Switch/Manifold	RJ-008AA
MGPS3	Digital Gap Switch/Manifold	RJ-008AA
MHB4	Miniature Electric Ball Valve 2-Port (Motor Valve)	RJ-013AA
MHG4	Miniature Electric Ball Valve 3-Port (Motor Valve)	RJ-013AA
MHPS	Adhesion Confirmation Switch/Manifold	RJ-008AA
MJB3	Metal-free Direct Acting 2-Port Solenoid Valve	CC-1055AA
MJL□	Compression Joint/Elbow Type	RJ-007AA
MJN□	Compression Joint/Sleeve	RJ-007AA
MJS□	Compression Joint/Straight Type	RJ-007AA
MJT□	Compression Joint/Tee Type	RJ-007AA
MJU□	Compression Joint/Insert Ring	RJ-007AA
MKB3	Metal-free 2-Port Solenoid Valve	CC-1055AA
MKML	Fine Level Switch Manifold	CB-031AA
MM	Medium Mechanical Valve/Detector	RJ-007AA
MM3000 to 8000	Oil Mist Filter/Medium Pressure Series	RJ-007AA
MMD	Manual Valve for Chemicals	CB-031AA
MN3E0	Ⓦ Pilot Operated 3, 4-Port Valve	RJ-011AA
MN3E00	Ⓦ Pilot Operated 3, 4-Port Valve	RJ-011AA
MN3GA1/2	Ⓘ, Ⓑ Pilot Operated 3-Port Valve/Direct Piping	RJ-011AA
MN3GA1/2	Ⓦ, Ⓑ Pilot Operated 3-Port Valve/Direct Piping	RJ-011AA
MN3GAX12	Ⓦ, Ⓧ Pilot Operated 3-Port Valve/Direct Piping	RJ-011AA
MN3GB1/2	Ⓘ, Ⓑ Pilot Operated 3-Port Valve Dual Unit/Base Piping	RJ-011AA
MN3GB1/2	Ⓦ, Ⓑ Pilot Operated 3-Port Valve Dual Unit/Base Piping	RJ-011AA
MN3GD1/2	Ⓘ, Ⓑ Pilot Operated 3-Port Valve/Direct Piping	RJ-011AA
MN3GD1/2	Ⓦ, Ⓑ Pilot Operated 3-Port Valve/Direct Piping	RJ-011AA
MN3GDX12	Ⓦ, Ⓧ Pilot Operated 3-Port Valve/Direct Piping	RJ-011AA
MN3GE1/2	Ⓘ, Ⓑ Pilot Operated 3-Port Valve Dual Unit/Base Piping	RJ-011AA
MN3GE1/2	Ⓦ, Ⓑ Pilot Operated 3-Port Valve Dual Unit/Base Piping	RJ-011AA
MN3Q	Ⓦ Direct Acting 3-Port Valve	RJ-012AA
MN4E0	Ⓦ Pilot Operated 3, 4-Port Valve	RJ-011AA
MN4E00	Ⓦ Pilot Operated 3, 4-Port Valve	RJ-011AA
MN4EX0	Ⓦ/Ⓧ Pilot Operated 4-Port Valve	RJ-011AA
MN4GA1/2	Ⓘ/Ⓑ Pilot Operated 5-Port Valve/Direct Piping	RJ-011AA
MN4GA1/2	Ⓦ/Ⓑ Pilot Operated 5-Port Valve/Direct Piping	RJ-011AA
MN4GAX12	Ⓦ/Ⓧ Pilot Operated 5-Port Valve/Direct Piping	RJ-011AA
MN4GB1/2	Ⓘ/Ⓑ Pilot Operated 5-Port Valve/Base Piping	RJ-011AA
MN4GB1/2	Ⓦ/Ⓑ Pilot Operated 5-Port Valve/Base Piping	RJ-011AA
MN4GBX12	Ⓦ/Ⓧ Pilot Operated 5-Port Valve/Base Piping	RJ-011AA
MN4GD1/2	Ⓘ/Ⓑ Pilot Operated 5-Port Valve/Direct Piping	RJ-011AA
MN4GD1/2	Ⓦ/Ⓑ Pilot Operated 5-Port Valve/Direct Piping	RJ-011AA
MN4GDX12	Ⓦ/Ⓧ Pilot Operated 5-Port Valve/Direct Piping	RJ-011AA
MN4GE1/2	Ⓘ/Ⓑ Pilot Operated 5-Port Valve/Base Piping	RJ-011AA
MN4GE1/2	Ⓦ/Ⓑ Pilot Operated 5-Port Valve/Base Piping	RJ-011AA
MN4GEX12	Ⓦ/Ⓧ Pilot Operated 5-Port Valve/Base Piping	RJ-011AA
MN4KB1/2	Ⓑ Pilot Operated 5-Port Valve/Sub-plate Piping	RJ-012AA
MNRB500	Block Manifold Regulator	RJ-007AA
MNRB500-P11	Block Manifold Regulator/Ozone Resistant	RJ-007AA
MNRJB500	Block Manifold Compact Direct Acting Precision Regulator	RJ-007AA
MNV	Flow Control Valve	CB-031AA
MR10R	Metal-free Compact 2, 3-Port Solenoid Valve	CC-1055AA
MR16	Metal-free Compact 2, 3-Port Solenoid Valve	CC-1055AA
MRG2	Magnet Type Rodless Cylinder/Double Acting Type	RJ-005AA
MRL2	Magnet Type Rodless Cylinder/Basic Type	RJ-005AA
MS	Compact Mechanical Valve/Detector	RJ-007AA
MSB1□	Electric Ball Valve 2-Port for Steam (Motor Valve)	RJ-013AA
MSD	Compact Cylinder/Double Acting, Single Rod Type	RJ-003AA
MSDG-L	Compact Cylinder/Double Acting, Guided Type, with Switch	320
MTLPS	Tool Breakage Detection Switch/Manifold	RJ-008AA
MV3QRA	3QR Negative Pressure Switching Unit Direct Piping	RJ-012AA
MV3QRB	3QR Negative Pressure Switching Unit Sub-plate Piping	RJ-012AA
MXKML	Fine Level Switch Manifold	CB-031AA
MVB	Manual Valve for High Vacuum	CB-035AA
MVC	Compact Cylinder with Vacuum Pad/Double Acting, Single Rod Type	RJ-005AA
MW3GA2	Ⓘ Pilot Operated 3-Port Valve/Direct Piping	RJ-011AA
MW3GA2	Ⓦ Pilot Operated 3-Port Valve/Direct Piping	RJ-011AA
MW4GA2	Ⓘ Pilot Operated 5-Port Valve/Direct Piping	RJ-011AA
MW4GA2	Ⓦ Pilot Operated 5-Port Valve/Direct Piping	RJ-011AA
MW4GB2	Ⓘ Pilot Operated 5-Port Valve/Base Side Piping	RJ-011AA
MW4GB2	Ⓦ Pilot Operated 5-Port Valve/Base Side Piping	RJ-011AA
MW4GB4	Ⓘ Pilot Operated 5-Port Valve/Base Side Piping	RJ-011AA
MW4GB4	Ⓦ Pilot Operated 5-Port Valve/Base Side Piping	RJ-011AA
MW4GZ2	Ⓘ Pilot Operated 5-Port Valve/Base Bottom Piping	RJ-011AA
MW4GZ2	Ⓦ Pilot Operated 5-Port Valve/Base Bottom Piping	RJ-011AA
MW4GZ4	Ⓘ Pilot Operated 5-Port Valve/Base Bottom Piping	RJ-011AA
MW4GZ4	Ⓦ Pilot Operated 5-Port Valve/Base Bottom Piping	RJ-011AA
MW4000, 8000	Oil Mist Filter/Outdoor Series Outdoor Series	CC-1276AA
MWD	Wear Type Diaphragm Valve	CC-1637AA
MX1000 to 8000-W	High Performance Oil Mist Filter/Standard White Series	RJ-007AA
MXB1□	Electric Ball Valve 2-Port (Motor Valve)	RJ-013AA
MXB1D-N	Electric Oil-free Ball Valve 2-Port (Motor Valve)	RJ-013AA
MXB1F	Electric Ball Valve 2-Port (Motor Valve)/Full Bore	RJ-013AA
MXB1-N	Electric Oil-free Ball Valve 2-Port (Motor Valve)	RJ-013AA
MXBC2	Proportional Control Electric Ball Valve 2-Port (Motor Valve)	RJ-013AA
MXG1□	Electric Ball Valve 3-Port (Motor Valve)	RJ-013AA
MXG1D-N	Electric Oil-free Ball Valve 3-Port (Motor Valve)	RJ-013AA
MXG1-N	Electric Oil-free Ball Valve 3-Port (Motor Valve)	RJ-013AA
MXGC2	Proportional Control Electric Ball Valve 3-Port (Motor Valve)	RJ-013AA
MYB□	Metal-free 2-Port Solenoid Valve	CC-1055AA
MYG□	Metal-free 3-Port Solenoid Valve	CC-1055AA
N		
N□P51□	Ⓑ Pilot Operated 2, 3, 5-Port Valve/Block Manifold	RJ-012AA
NAB□	Air Operated 2-Port Valve Single Unit (Compact Cylinder Valve)	RJ-013AA
NAD□	Diaphragm Cylinder Valve	RJ-013AA
NAP11	Air Operated 3-Port Valve	RJ-012AA
NCK	Shock Absorber, Fixed Type	RJ-005AA
NHS-H	New Handling System/Z-axis Module HRL	RJ-005AA
NHS-S	New Handling System/Z-axis Module STL-B	RJ-005AA
NP13R/14R	Internal Pilot Operated 3-Port Valve Solenoid Valve Mounted Type	RJ-012AA
NPV2	Direct Air Pressure Automatic Pinch Valve	RJ-013AA
NS	Nitrogen Extraction Unit/Unit Type	RJ-009AA

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Model No.	Model Name	Catalog No./Page
N		
NSU	Nitrogen Extraction Unit/ System Type	RJ-009AA
NSR	New Handling System/X-axis Module	RJ-005AA
NU	New Urethane Tubing	RJ-007AA
NVP11R	Air Operated 3-Port Valve/ Solenoid Valve Mounted Type	RJ-012AA
NX4	ABSODEX	CC-1456AA
NXD	Driver	CC-1456AA
O		
OGD	Manual Valve for Process Gas	CB-035AA
OMC2	Sequential Controller for Pulse Jet Valve (Pulse Jet Controller)	RJ-013AA
P		
P1100-W	Reed Switch, Contact Type Compact Mechanical Pressure Switch	RJ-007AA
P4000-W	Mechanical Pressure Switch/ Standard White Series	RJ-007AA
P4100-W	Reed Switch, Contact Type Compact Mechanical Pressure Switch	RJ-007AA
P512□	ⓈⓋPilot Operated 2-Port Valve/Pilot Type	RJ-012AA
P513□	ⓈⓋPilot Operated 3-Port Valve/Pilot Type	RJ-012AA
P5142	ⓈⓋPilot Operated 5-Port Valve/Pilot Type	RJ-012AA
P8100-W	Reed Switch, Contact Type Compact Mechanical Pressure Switch	RJ-007AA
PAW	Powerful Arm	CC-1418AA
PCC	Pin Clamp Cylinder Double Acting, Single Rod Type	RJ-005AA
PCIS/PCOS	Parallel cam unit	CB-019SAA
PD2	Pilot Operated 2-Port Air Operated Valve for Dust Collector	RJ-013AA
PD3	Pilot Operated 2-Port Air Operated Valve for Dust Collector	RJ-013AA
PDV2	Pilot Operated 2-Port Valve with Solenoid for Dust Collector	RJ-013AA
PDV3	Pilot Operated 2-Port Valve with Solenoid for Dust Collector	RJ-013AA
PDVE4	Explosion-proof 2-Port Solenoid Valve for Dust Collector (Explosion-proof Pulse Jet Valve)	RJ-013AA
PE	Pressure Switch/Logic Valve	RJ-007AA
PFD	Flow Sensor for Compressed Air/ Separate Display Type Flurex	RJ-008AA
PG	Air Fiber One-touch Fitting (Standard Type)	RJ-007AA
PGM	Regulator for Process Gas	CB-035AA
PG-P2-B	Blank Plug	RJ-007AA
PJVB	Box Type Manifold Solenoid Valve for Operation (2-Port Solenoid Valve for Pulse Jet Control)	RJ-013AA
PKA	Pilot Kick Operated 2-Port Solenoid Valve for Air	RJ-013AA
PKS	Pilot Kick Operated 2-Port Solenoid Valve for Steam	RJ-013AA
PKW	Pilot Kick Operated 2-Port Solenoid Valve for Water	RJ-013AA
PLE-B12	Side Block/Integrated Type	RJ-007AA
PLJ-C12	YES Element/Relay Type	RJ-007AA
PLK-A11	OR Element/Line Type	RJ-007AA
PLK-B12	OR Element/Integrated Type	RJ-007AA
PLK-C12	OR Element/Relay Type	RJ-007AA
PLL-A11	AND Element/Line Type	RJ-007AA
PLL-B12	AND Element/Integrated Type	RJ-007AA
PLL-C12	AND Element/Relay Type	RJ-007AA
PLM	Memory Element/Relay Type	RJ-007AA
PLN-B12	NOT Element/Integrated Type	RJ-007AA
PLN-C12	NOT Element/Relay Type	RJ-007AA
PLN-D12	Threshold Element/Relay Type	RJ-007AA
PMM	Fine Regulator	CB-031AA
PMP	Fine Regulator	CB-031AA
PNA	Oxygen Concentration Meter	RJ-009AA
PPD3	Electronic Pressure Switch/ Sensor/Amplifier Integrated Type with Display	RJ-008AA
PPD3-S	Electronic Pressure Switch, Stainless Steel Diaphragm Sensor Type/Sensor/Amplifier Integrated Type with Display	RJ-008AA
PPE	Electronic Compact Pressure Switch/Sensor/Amplifier Integrated Type without Display	RJ-008AA
PPE-□A	Electronic Compact Pressure Switch/Sensor/Amplifier Integrated Type without Display, Analog Output Type	RJ-008AA
PPEV-□A	Electronic Compact Pressure Switch/Sensor/Amplifier Integrated Type without Display, Analog Output Type	RJ-008AA
PPG-D	Electronic Pressure Sensor with Digital Display	RJ-008AA
PPLX	Linear Pick & Place Unit	CB-019SAA
PPR	Electronic Pressure Sensor with Digital Display	RJ-008AA
PPX	Digital Pressure Sensor	RJ-008AA
PRD	Amplifier/Elements and Sensors	RJ-007AA
PRE-A12	Pressure Switch/Relay Type	RJ-007AA
PRF-A2	Booster/Elements and Sensors	RJ-007AA
PRS-A12	Solenoid Valve/Relay Type	RJ-007AA
PRT	Timer/Relay Type	RJ-007AA
PSD	Sequencer Branch Block	RJ-007AA
PSE	Sequencer Input/Output Block	RJ-007AA
PSL	Sequencer AND Element	RJ-007AA
PSM	Sequencer Element	RJ-007AA
PSV	Sequencer Sub-base V-Type	RJ-007AA
PTN2	Dedicated Fitting for Air Fiber	RJ-007AA
PV5	ⓈⓋPilot Operated 5-Port ISO Compliant Valve/I/O Connector Type/ISO Size ①	RJ-012AA
PV5G	ⓈⓋPilot Operated 5-Port ISO Compliant Valve/DIN Terminal Box Type/ISO Size ①	RJ-012AA
PV5S-0	ISO Compliant Master Valve	RJ-012AA
PVP	Precision Suction Plate	RJ-010AA
PVS	Pilot Operated 2-Port Solenoid Valve	RJ-013AA
PWS	Threshold Sensor	RJ-007AA
PXB-B3	Push Button Switch/Switch Body/Separate Type	RJ-007AA
PXC-K	Limit Switch	RJ-007AA
PXC-M	Miniature Limit Switch	RJ-007AA
PXC-M	Compact Limit Switch	RJ-007AA
PXD	Proximity Sensor/Elements and Sensors	RJ-007AA
PXF	Limit Sensor/Elements and Sensors	RJ-007AA
PXV	Air Lamp	RJ-007AA
PYM	Fine Regulator	CB-031AA
PZM	Mounting Bracket/Line Type	RJ-007AA
PZU	Sub-base/Input Block/Relay Type Sub-base	RJ-007AA
Q		
QEL	Quick Exhaust Valve	RJ-007AA
QEV2	Quick Exhaust Valve	RJ-007AA
R		
R0, 3, 4, 6	Cylinder Switch/1-Color Indicator, Reed 2-wire	766
R1, 2	Cylinder Switch/1-Color Indicator, Solid State 2-wire	766
R1000 to 8000-P11	Regulator/Ozone Resistant	RJ-007AA
R1000 to 8000-P6	Regulator/Copper Ion Restricted (No copper/PTFE Specification)	RJ-007AA
R1000 to 8000-W	Regulator/Standard White Series	RJ-007AA
R1100 to 8100-P11	Reverse Regulator/Ozone Resistant	RJ-007AA
R1100 to 8100-P6	Reverse Regulator/Copper Ion Restricted (No copper/PTFE Specification)	RJ-007AA
R1100 to R8100-W	Reverse Regulator/Standard White Series	RJ-007AA
R2, 3Y	Cylinder Switch/2-Color Indicator, Solid State 2/3-wire	766
R3000 to 8000-G4	Regulator/Flame Resistant Series	RJ-007AA
R3100 to 8100-G4	Reverse Regulator/Flame Resistant Series	RJ-007AA
R5	Cylinder Switch/ No Indication, Reed 2-wire	766
RA800	Compact Regulator/Compact Piston Type	RJ-007AA
RB500	Compact Regulator	RJ-007AA
RB500-P11	Compact Regulator/Ozone Resistant	RJ-007AA
RC2000	Clean Regulator	RJ-007AA
RCC2	Rotary Clamp Cylinder Double Acting, Single Rod	RJ-005AA
RCKL	Gripper for Collaborative Robot 3-Jaw Type	RJ-006AA
RCS2	Rotary Clamp Cylinder (Single Guide Type) Double Acting, Single Rod	RJ-005AA
RG	One-touch Fitting for Air Fiber (Flame Resistant Type)	RJ-007AA
RHLF	Gripper for Collaborative Robot Long Stroke Type	RJ-006AA
RJB500	Compact Direct Acting Precision Regulator	RJ-007AA
RJF	Rotary Joint	RJ-007AA
RLSH	Gripper for Collaborative Robot Compact Type	RJ-006AA
RM3000, 4000	Regulator/Medium Pressure Series	RJ-007AA
RN3000 to 8000	Oil-free Regulator	RJ-007AA
RP1000	Precision Regulator	RJ-007AA
RPE1000	Precision Regulator	RJ-007AA
RP2000	Precision Regulator	RJ-007AA
RRC	Selex Rotary/ Rack & Pinion Type	RJ-005AA
RS-6	Rain Sensor for Automatic Watering Control	CC-297AA
RSC	Automatic Watering Controller	CC-297AA
RSV	Solenoid Valve for Automatic Watering Control	CC-297AA
RT	Remote I/O	RJ-011AA
RTD-3A	Air Timer/Logic Valve	RJ-007AA
RW4000, 8000	Regulator/Outdoor Series Outdoor Series	CC-1276AA
RV3□	Selex Rotary/Vane Type	RJ-005AA
RVC	Shock Absorber	RJ-005AA
S		
SAB□□	Air Operated 2-Port Valve (Cylinder Valve)	RJ-013AA
SAL	Compact Air Lamp/Logic Valve	RJ-007AA
SC1	Speed Controller/Medium Bore Type	RJ-007AA
SC-20A to 50A	Speed Controller/Large Bore Type	RJ-007AA
SC3P	Speed Controller/Stainless Steel Corrosion Resistant Type	RJ-007AA
SC3R	Speed Controller/Direct Port Connection, Elbow Type	RJ-007AA
SC3U	Speed Controller/Universal Type with One-touch Fitting	RJ-007AA

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S		
SC3W	Speed Controller/Elbow Type with One-touch Fitting	RJ-007AA
SCA2	Medium Bore Size Cylinder (ø40 to 100)/Double Acting, Single Rod	RJ-002AA
SCD	Speed Controller/Ultra Compact In-Out Type	RJ-007AA
SCD2	Speed Controller/In-Out Line Type with One-touch Fitting	RJ-007AA
SCG	Tie Rod Cylinder/Double Acting, Single Rod	RJ-002AA
SCK	Shock Absorber, Adjustable Type	RJ-005AA
SCL2	Speed Controller/Line Type with One-touch Fitting	RJ-007AA
SCL2-N	Needle Valve/Line Type with One-touch Fitting	RJ-007AA
SCM	Round shaped cylinder/ Double Acting, Single Rod	RJ-002AA
SC-M3/M5(-F)	Speed Controller/ Ultra Compact	RJ-007AA
SCPD3	Pencil Shaped Cylinder/ Double Acting, Single Rod	RJ-002AA
SCPH3	Pencil Shaped Cylinder/ Single Acting, Retracting Type	RJ-002AA
SCPS	Pencil Shaped Cylinder/ Single Acting, Push Type	RJ-002AA
SCPS3	Pencil Shaped Cylinder/ Single Acting, Push Type	RJ-002AA
SCS2	Large Bore Size Cylinder (ø125 to 250)/ Double Acting, Single Rod, Lubricated Type	RJ-002AA
SD301, 302D	Membrane Air Dryer/Single Unit	RJ-009AA
SD301, 302E	Membrane Air Dryer/Single Unit	RJ-009AA
SD3015 to 3075	Membrane Air Dryer/Single Unit	RJ-009AA
SD401, 402D	Membrane Air Dryer/Single Unit	RJ-009AA
SD401, 402E	Membrane Air Dryer/Single Unit	RJ-009AA
SD4050 to 4100	Membrane Air Dryer/Single Unit	RJ-009AA
SDM4050 to 4100	Membrane Air Dryer/Super Dryer Modular Series (Large Size)	RJ-009AA
SFC□	Antibacterial/ bacteria-removing Filter	RJ-007AA
SFS10	bacteria-removing Filter/Inline	RJ-007AA
SFR/SFRT	Super Fan Rotary	CC-984AA
SFX	Siloxane/Ozone Remover	RJ-007AA
SHD	Desiccant Air Dryer/ Medium/ Large Heatless Dryer	RJ-009AA
SHV2	Shuttle Valve	RJ-007AA
SKAC	Contact Protection Circuit Box (For AC Circuit)	783
SKDC	Contact Protection Circuit Box (For DC Circuit)	783
SKH	Shockless Valve	RJ-012AA
SKL	Shock Absorber	RJ-005AA
SL	Silencer/Metal Body Type	RJ-007AA
SLM	Silencer/Ultra Compact Type	RJ-007AA
SLW	Silencer/ Small Bore, Resin Body Type	RJ-007AA
SM-25	Shuttle Mover Standard Type/ High Load Type	RJ-005AA
SMG	Compact Cylinder/Double Acting, Single Rod	RJ-003AA
SMW	Metering Valve with Silencer	RJ-007AA
SMW2	Metering Valve with Silencer	RJ-007AA
SNP	3-Port Solenoid Valve with Spool Position Detection Function	RJ-007AA
SNS	Residual Pressure Exhaust Valve with Spool Position Detection Function	RJ-007AA
SP	Low Profile Pilot Operated 2-Port Solenoid Valve for Compressed Air	RJ-013AA
SPD	Poppet Type Diaphragm Valve	CC-1637AA
SPK	Pilot Kick Operated 2-Port Solenoid Valve for Steam	RJ-013AA
SR	Flame Resistant Tubing	RJ-007AA
SRG3	High Precision Guided Rodless Cylinder (Single Guide)/Double Acting Type	RJ-005AA
SRL3	Rodless Cylinder/Double Acting Type	RJ-005AA
SRM3	High Precision Guided Rodless Cylinder (Double Guide)/Double Acting Type	RJ-005AA
SRT3	Rodless Cylinder with Brake/ Double Acting Type	RJ-005AA
SSD	Compact Cylinder/Double Acting, Single Rod	RJ-003AA
SSD2	Compact Cylinder/Double Acting, Single Rod	RJ-003AA
SSD-LN	With Linear Norm Sensor	RJ-005AA
SSG	Guided Compact Cylinder/ Double Acting, Single Rod	RJ-003AA
STG	Guided Cylinder/Double Acting, Single Rod	370
STK	Stopper Cylinder/Double Acting, Round Rod End Type	RJ-005AA
STL-□	Guided Cylinder (Long Stroke Type)/Double Acting, Single Rod	482
STM-M/B	Guided Cylinder/Double Acting, Single Rod	350
STR2-□	Twin Rod Cylinder/Double Acting, Single Rod	668
STS-□	Guided Cylinder (Short Stroke Type)/Double Acting, Single Rod	482
SU301, 302D	Membrane Air Dryer/Unit	RJ-009AA
SU301, 302E	Membrane Air Dryer/Unit	RJ-009AA
SU3015 to 3075	Membrane Air Dryer/Unit	RJ-009AA
SU401, 402D	Membrane Air Dryer/Unit	RJ-009AA
SU401, 402E	Membrane Air Dryer/Unit	RJ-009AA
SU4050, 4100	Membrane Air Dryer/Unit	RJ-009AA
SVB□□	Air Operated 2-Port Valve Solenoid Valve Mounted Type (Cylinder Valve)	RJ-013AA
SWD	Wear Type Diaphragm Valve	CC-1637AA
T		
T0V/H/C	Cylinder Switch/1-Color Indicator, Reed 2-wire	768
T0Y	Cylinder Switch/Reed 2-wire for Magnetic Environments	774
T1 V/H	Cylinder Switch/1-Color Indicator, Solid State 2-wire	768
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T2, 3YL V/H	Cylinder Switch/Solid State 2/3-wire for Cutting Oil	769
T2J V/H	Cylinder Switch/Off-delay Type, Solid State 2-wire	768
T2YD(T)	Cylinder Switch/Solid State 2-wire for Strong Magnetic Fields	769
T2WL V/H	Cylinder Switch/Improved Water Resistance, Solid State 2-wire	772
T3P V/H	Cylinder Switch/PNP Output Type, Solid State 3-wire	768
T5V/H/C	Cylinder Switch/No Indication, Reed 2-wire	768
T8 V/H	Cylinder Switch/1-Color Indicator, Reed 2-wire	768
TAC-25	Medium Pressure Gas Safety Shutoff Control System	CC-1590AA
TGX	Torque Guard	CC-1601AA
TLPS	Tool Breakage Detection Switch/Single Unit	RJ-008AA
TSF	Torque Saver	CC-1601AA
TVG	Plug-in Block Manifold	RJ-011AA
U		
U	Urethane Tubing	RJ-007AA
UB	Lock Unit	RJ-005AA
UCA2	Unit Cylinder/Double Acting, Single Rod, Plain Bearing Type	724
UCAC2	Clamp Cylinder with Fall Prevention/Double Acting, Single Rod	RJ-005AA
UCAC-N32/40	Lightweight Clamp Cylinder/ With Fall Prevention, Double Acting, Single Rod	RJ-005AA
UFCD	Flat Cylinder with Free Position Fall Prevention/ Double Acting, Single Rod	RJ-005AA
UGPS2	Seating Confirmation Switch/ Unit	RJ-008AA
UGPS3	Digital Gap Switch/Unit	RJ-008AA
UHPS	Adhesion Confirmation Switch/Unit	RJ-008AA
ULK	Brake Cylinder/Double Acting, Single Rod	RJ-005AA
UMB1	High Corrosion Resistance Ultra Compact Direct Acting 2-Port Solenoid Valve for Medical Equipment	CC-1055AA
UMG1	High Corrosion Resistance Ultra Compact Direct Acting 3-Port Solenoid Valve for Medical Equipment	CC-1055AA
UP	Air Fiber Antistatic Type (For One-touch Fittings)	RJ-007AA
UP-□□-F1/F2	Antistatic Tubing	RJ-007AA
UP-9102-20-□-F1	Air Fiber Antistatic Type	RJ-007AA
UP-9102-SR	Flame Resistant Air Fiber (For One-touch Fittings)	RJ-007AA
US	Compact Direct Acting 2, 3-Port Solenoid Valve (Resin Body Type)	RJ-013AA
USB□	Compact Direct Acting 2-Port Solenoid Valve	RJ-013AA
USC	Medium Bore Size Cylinder with Free Position Fall Prevention/Double Acting, Single Rod	RJ-005AA
USG□	Compact Direct Acting 3-Port Solenoid Valve	RJ-013AA
USSD	Compact Cylinder with Drop Prevention/Double Acting, Single Rod	RJ-005AA
UTLPS	Tool Breakage Detection Switch/Unit	RJ-008AA
V		
V0	Cylinder Switch/Compact Reed 2-wire for Strong Magnetic Fields	781
V1000, 3000-W	Residual Pressure Exhaust Valve/Standard White Series	RJ-007AA
V3010, 6010-W	Residual Pressure Exhaust Valve with Keyhole, Keyhole, OSA Compliant	RJ-007AA
V3301, 3321-W	Slow Start Valve	RJ-007AA
VFA1000 to 4000	Vacuum Filter	RJ-010AA
VG	Vacuum Generator	CB-035AA
VG41D	Vacuum Pressure Gauge with Limit Mark	RJ-007AA
VLA	Solenoid Valve for Gas Combustion System	CC-1590AA
VLM	Shutoff Valve for Medium Pressure Gas Safety Shutoff Control	CC-1590AA
VNA	Solenoid Valve for Gas Combustion System	CC-1590AA
VNA-R/RH	Solenoid Valve for Gas Combustion System	CC-1590AA
VNM	Shutoff Valve for Medium Pressure Gas Safety Shutoff Control	CC-1590AA
VNM-25-K	Safety Shutoff Valve (Fire Safety Enhanced Specification)	CC-1590AA
VNR	Solenoid Valve for Gas Combustion System (Normally Closed when energized)	CC-1590AA
VRA2000	Vacuum Regulator	RJ-010AA
VSB	Ejector System/Square Type	RJ-010AA

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V		
VSC	Ejector System/ Pad Direct Mount Type	RJ-010AA
VSECV	Vacuum Related Equipment/ Fall Prevention Valve	RJ-010AA
VSFB	Vacuum Related Equipment/ Large Capacity Union Type Vacuum Filter	RJ-010AA
VSFJ	Vacuum Related Equipment/ Compact Socket Type Vacuum Filter	RJ-010AA
VSFU	Vacuum Related Equipment/ Compact Union Type Vacuum Filter	RJ-010AA
VSG	Ejector System/20 mm Width Single Unit Dedicated Type	RJ-010AA
VSH	Ejector System/Solenoid Valve Direct Mount Type	RJ-010AA
VSJ/VSJM	Ejector System/20 mm Width General Type	RJ-010AA
VSJP/VSJPM	Vacuum Pump System/20 mm Width General Type	RJ-010AA
VSK/VSKM	Ejector System/16 mm Width General Type	RJ-010AA
VSLF	Vacuum Related Equipment/ Vacuum Break Unit	RJ-010AA
VSN/VSNM	Ejector System/10.3 mm Width General Type	RJ-010AA
VSNP/VSNPM	Vacuum Pump System/10.3 mm Width General Type	RJ-010AA
VSP	Suction Pad	RJ-010AA
VSQ	Ejector System/31.5 mm Width Single Unit Dedicated Type	RJ-010AA
VSQP	Vacuum Pump System/31.5 mm Width General Type	RJ-010AA
VSRVV	Vacuum Related Equipment/ Compact Vacuum Regulator	RJ-010AA
VST	Vacuum Related Equipment/ Air Tweezers	RJ-010AA
VSU	Ejector System/ Pipe Type	RJ-010AA
VSUS	Vacuum Related Equipment/ Vacuum Pressure Switch	RJ-010AA
VSX/VSXM	Ejector System/10.5 mm Width General Type	RJ-010AA
VSXP/ VSXPM	Vacuum Pump System/10.5 mm Width General Type	RJ-010AA
VSY	Ejector System/Vacuum Break Function Type	RJ-010AA
VSZM	Ejector System/11 mm Pitch Manifold Dedicated Type	RJ-010AA
VSZPM	Vacuum Pump System/11 mm Pitch Manifold Dedicated Type	RJ-010AA
W		
W1000 to 8100-P11	Filter Regulator/Ozone Resistant	RJ-007AA
W1000 to 8000-P6	Filter Regulator/Copper Ion Restricted (No copper/PTFE Specification)	RJ-007AA
W1000 to 8000-W	Filter Regulator/Standard White Series	RJ-007AA
W1100 to 8100-P11	Reverse Filter Regulator/ Ozone Resistant	RJ-007AA
W1100 to 8100-P6	Reverse Filter Regulator/ Copper Ion Restricted (No copper/PTFE Specification)	RJ-007AA
W1100 to 8100-W	Reverse Filter Regulator/ Standard White Series	RJ-007AA
W2P513□	Ⓢ Pilot Operated 5-Port Valve/Double Type	RJ-012AA
W3000 to 8000-G4	Filter Regulator/Flame Resistant Series	RJ-007AA
W3100 to 8100-G4	Reverse Filter Regulator/ Flame Resistant Series	RJ-007AA
W4GB2	Ⓢ Pilot Operated 3, 5-Port Valve/Base Piping	RJ-011AA
W4GB4	Ⓢ Pilot Operated 5-Port Valve/Base Side Piping	RJ-011AA
W4GZ4	Ⓢ Pilot Operated 5-Port Valve/Base Bottom Piping	RJ-011AA
WB500	Compact Filter Regulator	RJ-007AA
WFC	Capacitance Electromagnetic Flow Sensor	RJ-008AA
WFK2	Karman Vortex Type Liquid Flow Sensor Flurex	RJ-008AA
WFK3000	Karman Vortex Type Water Flow Sensor Flurex	RJ-008AA
WR1 / 2	Regulator for Water	RJ-007AA
WW4000, 8000	Filter Regulator/Outdoor Series Outdoor Series	CC-1276AA
WXU	Water Manifold Unit	RJ-008AA
Y		
YS	Y-type Strainer	RJ-013AA
Z		
ZB4-B	Switch Head	RJ-007AA
ZCK	Rotary Type Head Lever Actuator	RJ-007AA
ZRS	Roller Gear Cam Unit	CC-1601AA
ZSP	New Joint Stainless Steel Type	RJ-007AA
ZW	New Joint Stainless Steel Type	RJ-007AA

Products by Application

-FP□	For Food Manufacturing Process	CC-1271AA
-HP□	High Durability Equipment	CC-1421AA
-P4□	For Rechargeable Battery Manufacturing Process	CC-1226AA
-P5□	For Clean Components	CB-033SAA
-P6	Copper Ion Restricted (No copper/PTFE Specification)	RJ-001AA
-P7□	For Clean Components	CB-033SAA
-P8□	For Clean Components, Oil-free Treatment	CB-033SAA
-P9□	For Clean Components, Oil-free Treatment	CB-033SAA
-P11	Ozone Resistant	RJ-001AA
-P12	Oil-free Compatible	RJ-001AA
-W□	For Outdoor Use	CC-1276AA

Pneumatic Cylinder ③ Linear Guide / Guided Catalog No.RJ-004AA

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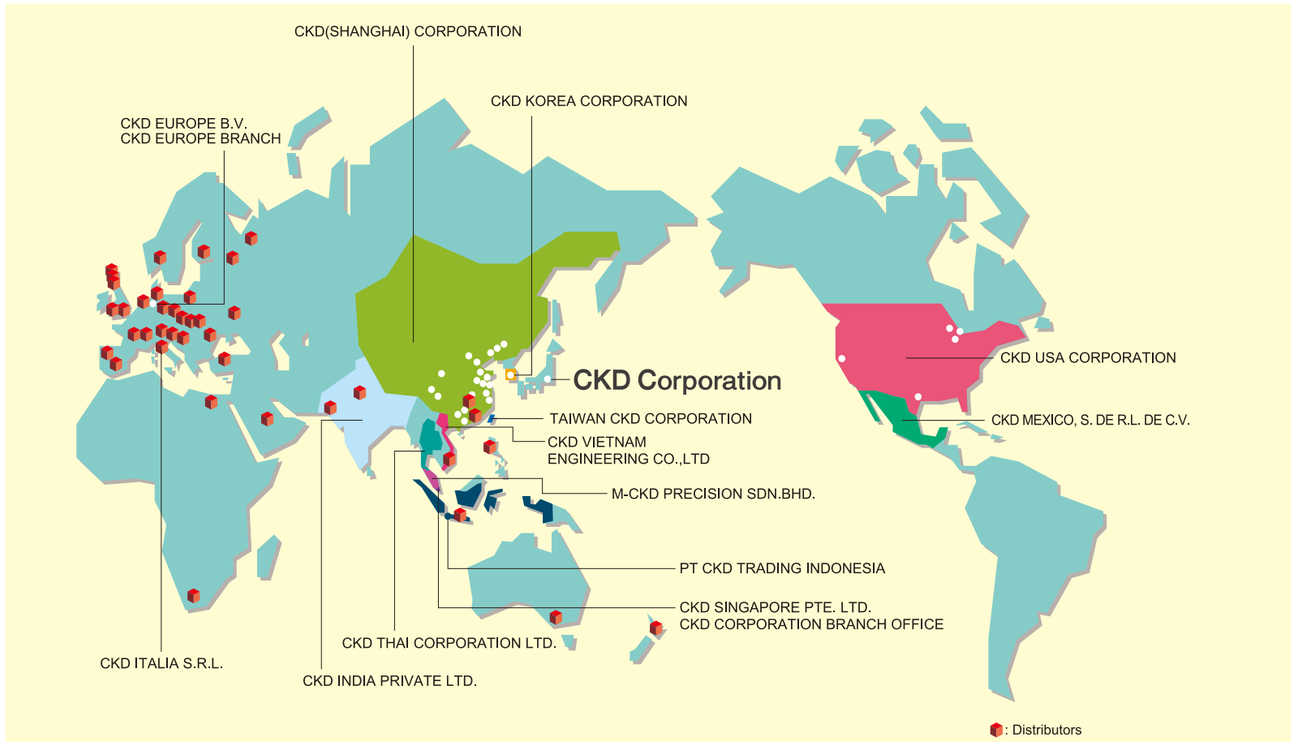

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