CKD



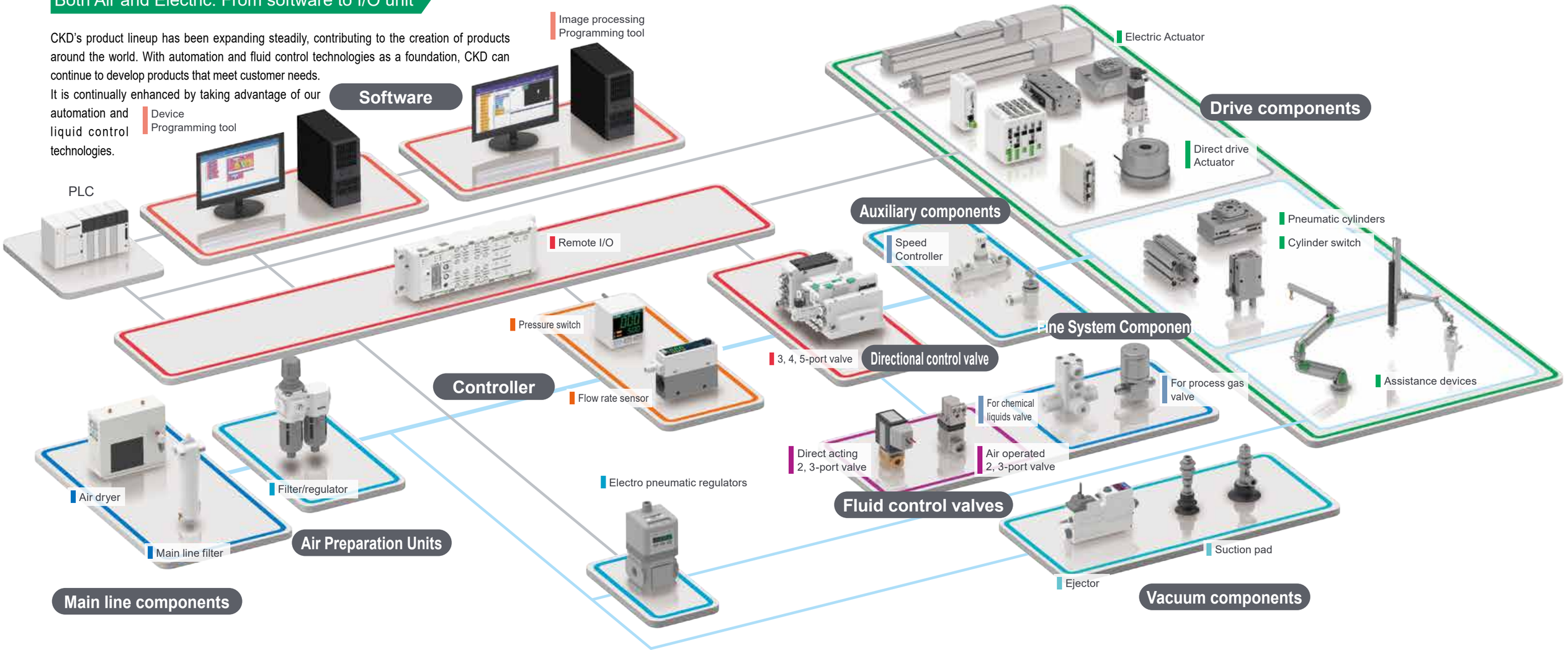
Main Line Components Gas Generators

- Air dryers
- Main line filters
- Drain dischargers
- Nitrogen gas extraction units

CKD products seen from their configuration images

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

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-007AA



Sensors/Controllers

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

RJ-008AA



Precision Components / Vacuum Components

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

RJ-010AA



Fluid Control Valves

Solenoid valve | Air operated valve | Ball valve

RJ-013AA



Wet Fine System/High Purity Chemical Liquid System

CB-031A

Dry Fine System/High Purity Gas Control System Components

CB-035A



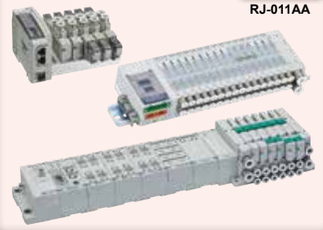
Learn more in the WEB

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

Directional Control Valves (1)

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

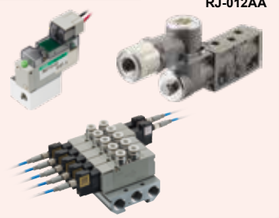
RJ-011AA



Directional Control Valves (2)

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

RJ-012AA



Pneumatic Cylinders (1)

Standard

RJ-002AA



Pneumatic Cylinders (2)

Space saving structures

RJ-003AA



Pneumatic Cylinders (3)

With linear guide | With guide

RJ-004AA



Pneumatic Cylinders (4)

Rodless | With brake | Clamps | Oscillation / Rotation

RJ-005AA



Pneumatic Cylinders (5)

Hands/Grippers | Chucks

RJ-006AA



Visual Programming Tool for Image Processing

Faciлea
CC-1548AA

Faciлea AI
CC-1623AA

Device Visual Programming Tool

ExiaStudio
CC-1579AA



Electric Actuators

ROBODEX Pulse

RJ-014AA



Electric Actuators

ROBODEX Std.
CB-055A



Electric Actuators

ROBODEX Servo
CC-1275AA, CC-1436AA



ABSODEX

ABSODEX
CC-1614AA



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Search by product name / model No.
Product name Intro 1
Model No. in alphabetic order Ending 8

Search by product series Intro 3
Select from appearance and product overview of each series.

Guide to using CAD data Intro 7

Website Information Intro 9

Guide to the Model Selection System Intro 10

⚠Safety Precautions Intro 15
* For cautions for each product, read the safety precautions for each model series in the text.

How Flow Characteristics are Displayed Intro 11

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International unit system (SI units)

Circuit diagram code list

Published on the CKD website.

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

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>>> Page **1**

Main Line Component Products
>>> Page **55**

Product group	Product name	Page
 Nitrogen Gas Extraction Unit >>> Page **3**	System types NSU	**4**
	Unit types NS	**36**
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	Xeroaqua Dryer GX5200D	**96**
	Xeroaqua Dryer GT9000	**107**
 Desiccant Air Dryers >>> Page **137**	Compact Heatless Dryer HD	**144**
	Super Heatless Dryer SHD	**154**
	Manual Air Dryer 4001 / 4002	**163**
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 High Polymer Membrane Air Dryers >>> Page **169**	Super Dryer (High polymer membrane air dryer) SU300E/400E, SD300E/400E-W	**172**
	Super Dryer (High polymer membrane air dryer) SU300D/400D, SD300D/400D-W	**180**
	Super Dryer (High polymer membrane air dryer) SU3000 / 4000-W	**186**
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	Super Dryer (High polymer membrane air dryer) SDM4000	**198**
 Main Line Filters >>> Page **207**	Medium Main Line Filter AF2	**219**
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 Condensate Drains >>> Page 287	Automatic drain DT3000 / 4000-W	**288**
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	Heavy duty drain 5100-4C	**304**

Search by product series

Select from appearance and product overview of each series.

Gas Generators >>> Page 1



Listed page From Page 3

Gas Generators

Nitrogen Gas Extraction Units

■ System type

Series	Port size (Rc, G, NPT)	Features	Page
NSU	3/8	Easily and stably supplying nitrogen gas	14

■ Unit type

Series	Port size (Rc, G, NPT)	Features	Page
NS	3/8, 3/4, 1	Extracts nitrogen gas just by supplying compressed air	36



Listed page From Page 47

Gas Generators

Inline Oxygen Monitor

■ Inline oxygen monitor

Series	Port size (Rc, G, NPT)	Features	Page
PNA	3/8	Measures oxygen concentrations while pressurized	50

Main Line Components >>> Page 55

● Contents/Page 55
● Series variation/Page 60



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Main Line Component Products

Refrigeration Air Dryers

Xeroaqua Dryers

■ Xeroaqua dryer GX Series ● Contents/Page 83

Series	Applicability Air Compressor	Features	Page
GX3200D	Up to 55 kW	For assembling device, standard inlet air (35°C)	90
GX5200D	Up to 75 kW	For direct compressor connection, high temperature inlet air (55°C)	96

■ Xeroaqua dryer GT9000 Series ● Contents/Page 107

Series	Applicability Air Compressor	Features	Page
GT9000(D)	75 kW to 450 kW	Standard inlet air (40°C), air-cooling	114
GT9000W(D)	75 kW to 450 kW	Standard inlet air (40°C), water-cooling	122
GT9000WV2	710 kW / 960 kW	Standard inlet air (40°C), inverter-controlled water cooling	130

● Contents/Page 55
● Series variation/Page 142



Listed page From Page 137

Main Line Component Products

Desiccant Air Dryers

Heatless Dryers

■ Compact heatless dryer

Series	Processing air flow rate	Features	Page
HD-□□	75 to 1235 L /min (ANR)	Stable supply of ultra dry air with atmospheric dew point -72°C.	146

■ Super heatless dryer

Series	Processing air flow rate	Features	Page
SHD	2.5 to 24m^3/min(ANR)	Purge flow rate is minimized with the energy-saving dew point monitor.	156

Manual Air Dryers

■ Manual Air Dryer

Series	Processing air flow rate	Features	Page
4001 4002	280 L/min (ANR) or less	Disposable desiccant, supporting low pressure	164

Moisture Indicators

■ Moisture Indicator

Series	Port size	Features	Page
6119-2C	Rc1/4	Ideal for dew point monitor of desiccant air dryer	166

Search by product series

Select from appearance and product overview of each series.

Main Line Components >>> Page 55

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Main Line Component Products

High Polymer Membrane Air Dryers

■ Super Dryers (High polymer membrane air dryer)

Series	Processing air flow rate	Features	Page
Super Dryer (High polymer membrane air dryer)			
SD300E-W	75 to 450 L/min (ANR)	A high capacity dryer that can be used like a filter, producing ultra dry air easily and stably	174
SD400E-W			
SD300D-W	125 to 750 L/min (ANR)		180
SD400D-W			
SD3000	35 to 890 L/min (ANR)		192
SD4000			
Super Dryer Combination			
SU300E-W	75 to 450 L/min (ANR)	Super dryer with integrated pre-filter, etc.	174
SU400E-W			
SU300D-W	125 to 750 L/min (ANR)		180
SU400D-W			
SU3000-W	35 to 890 L/min (ANR)		186
SU4000-W			
SDM4000	1.36 to 12.4m^3/min (ANR)	Large flow rate achieved with polymer separation membrane	198

● Contents / Page 55
●Series variation / Page 208



Main Line Component Products

Main Line Filters

■ Medium Main Line Filters

Series	Processing air flow rate	Features	Page
Regular			
AF2-□P	4.95 to 24.1m^3/min (ANR)	Solids / Oil Removing Filter	222
AF2-□M		High-performance solids/oil removing filter	
AF2-□X		Deodorizing Filter	
For oil-free			
AF4000P	3.7 to 18.8m^3/min (ANR)	Pre-filter	232
AF4000S		Solids Removing Filter	
AF4000M		Oil Mist Removing Filter	
AF4000X		Deodorizing Filter	

■ Large Main Line Filters

Series	Processing air flow rate	Features	Page
Regular type			
AF3000P	16 to 256m^3/min (ANR)	Pre-filter	246
AF3000S		Oil Removing Filter	250
AF3000M		High-Performance Oil Removing Filter	254
AF3000X		Deodorizing (activated carbon) filter	258
For oil-free			
AF5000P	16 to 256m^3/min (ANR)	Pre-filter, stainless steel vessel used	268
AF5000S		Oil removal filter, stainless steel vessel used	272
AF5000M		High-performance oil removal filter, stainless steel vessel used	276
AF5000X		Deodorizing (activated carbon) filter, stainless steel vessel used	280

●Contents / Page 55



Main Line Component Products

Condensate Drains

■ Automatic Drains

Series	Port size	Features	Page
DT3000-W	Rc/G/NPT 3/8, 1/2	Lightweight and compact automatic drain discharger	290
DT4000-W			
DT3010-W			
DT4010-W			

■ Heavy Duty Drains

Series	Port size	Features	Page
5100-4C	Rc/NPT 1/2	Ideal for Circuits with High Drain Generation	304

■ Super Drains

Series	Port size	Features	Page
DB1000	G1/2", 3/4", 1"	Compressor discharge flow rate2.5 to 1000m^3/min (ANR) Sensor with high reliability is used.	298
DB3000			
DBS1006	G1/2"	High-Reliability Liquid Level Sensor Detects Drain in Pneumatic Circuits	302

CKD How to use CAD data

Free download!

This is what makes CKD's CAD great!

Comprehensive list of CKD's leading products



Japanese, English, Chinese (Simplified and Traditional), and Korean are supported.

Simultaneous with new product launch

NEW Model No. AX1R

ABSODEX



Supports various data formats



More than 25 types of 2D and more than 35 types of 3D

Supports PDF and JPEG formats!

*To use 3D CAD, you must register as a CKD plus member.

CKD plus How to register as a member

STEP 1 From the CKD components product top page, click "New member registration"



STEP 2. Enter your name, company name, contact information, and email address

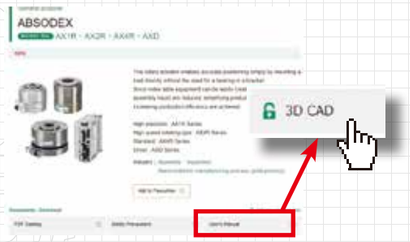
Easy registration in 2 STEPS

Registration complete!



How to download CAD

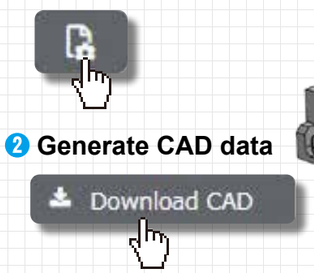
STEP 1 Click on "3D CAD" from the product detail page



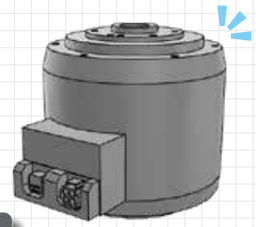
STEP 2. Select model No.

STEP 3 ❶ Specify CAD format

❷ Generate CAD data



Download complete!



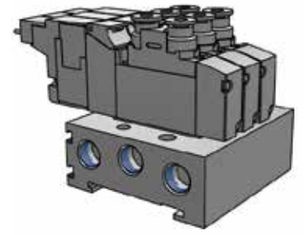
Pneumatic valve manifold specifications and CAD data are easily available on the Web.

Specifications are available



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

Get CAD data



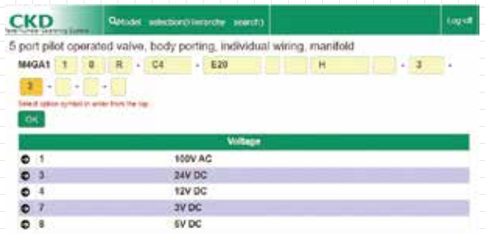
2D and 3D CAD data available for pneumatic valve manifold assemblies

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. © 2025. CKD Corporation All Rights Reserved.

Website Guide

Various information is provided on our website.
Please make use of it.

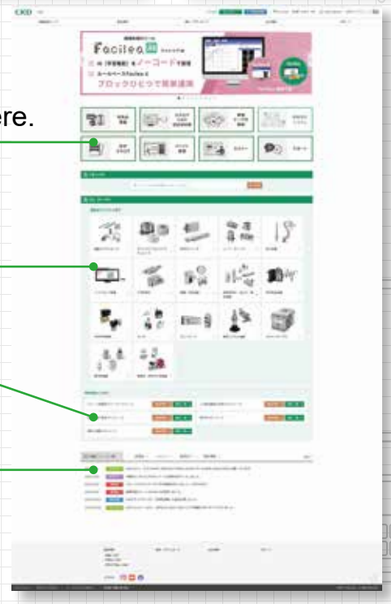
Catalogs	CAD	Instruction Manuals
Maintenance Parts	Software	Model Selection
FAQ	Technical Information	Standard Compliant Product Information
Columns	Event Information	Seminars

You can find the information you need here.

You can search for desired products.

You can find suitable products by application.

You can check the latest news.





Each product page provides various information.



Various information is published by product axis and application.

Model Selection System Guide

About Using the Model Selection System

We provide a system that supports the selection of the following items. Please use it when selecting models and designing.

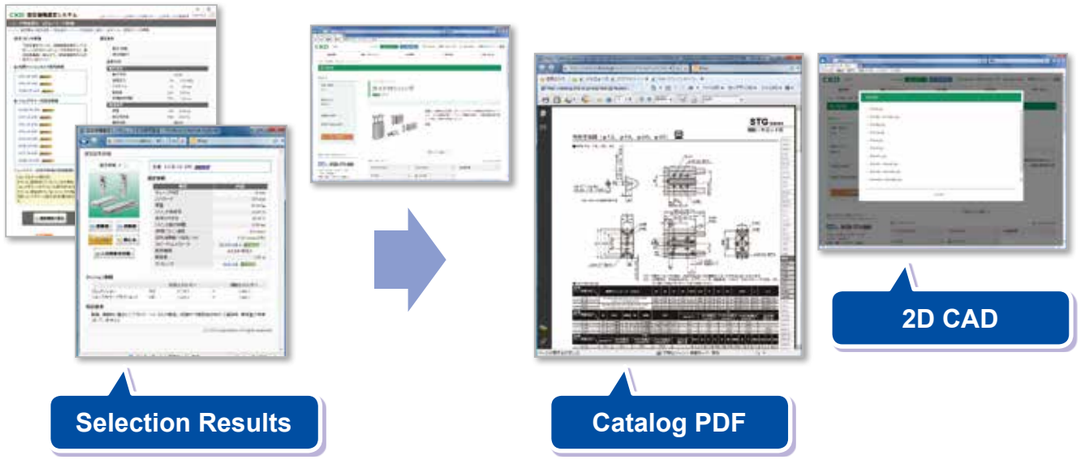
Published on our website

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!



No registration required, available anytime!

We offer various services for CKD products, including catalogs, PDFs, CAD data, and model selection. Please take a look.

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

How Flow Characteristics are Displayed

1. Flow Characteristics Display

The catalog specifications indicate the flow rate as follows.

Applicable Components	Indicator	Unit	Standards
Pneumatic Components	New JIS compliant indication	C, b	ISO 6358:1989 "Pneumatic fluid power - components for compressible fluids - test of 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 "4- and 5-port solenoid valves for pneumatic applications" JIS B 8379:1995 "Pneumatic noise reduction device"
		Cv	ANSI (NFPA) T3. 21. 3:1990

2. Explanation

The flow characteristic of a solenoid valve has conventionally been indicated by the effective cross-sectional area S. However, the JIS has been revised (JIS B 8390:2000), and it is now indicated by the pair of the sound velocity conductance C and the critical pressure ratio b.

● **Sound velocity conductance C**: The value obtained by dividing the mass flow rate through the equipment in the choke flow state by the product of the upper absolute pressure limit and the density of the standard state. (Sonic Conductance) S≈5. 0C (C enables sizing as before.)

● Critical pressure ratio b: Pressure ratio (downstream / upstream pressures) that result in choke flow when less than this value (critical pressure ratio)

● Effective cross-sectional area S (mm²): The value of the ideal cross-sectional area of an aperture without friction or constriction flow, derived by calculation from the pressure change in the air tank when released from a device attached to the air tank in a choke flow condition.

∗Choked flow: Flow at which upstream pressure is higher than downstream pressure, and speeds at components sections reach acoustic velocity. The mass flow rate of the gas is proportional to the upstream pressure and independent of the downstream pressure. (Choked flow)

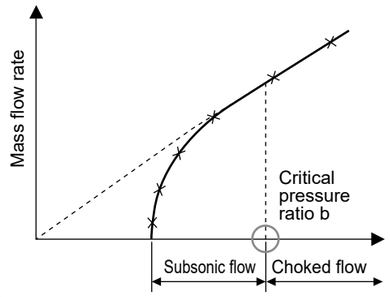


Fig. 1 Mass flow characteristics for upstream pressure

Flow Rate Formula

Depending on the actual unit, they are shown as follows.

$\frac{P2+0.1}{P1+0.1}$ Choked flow when ≤ b

$$Q=600\times C\,(P1+0.1)\sqrt{\frac{293}{273+t}} \quad \text{..... (1)}$$

$\frac{P2+0.1}{P1+0.1}$ Subsonic flow when >b

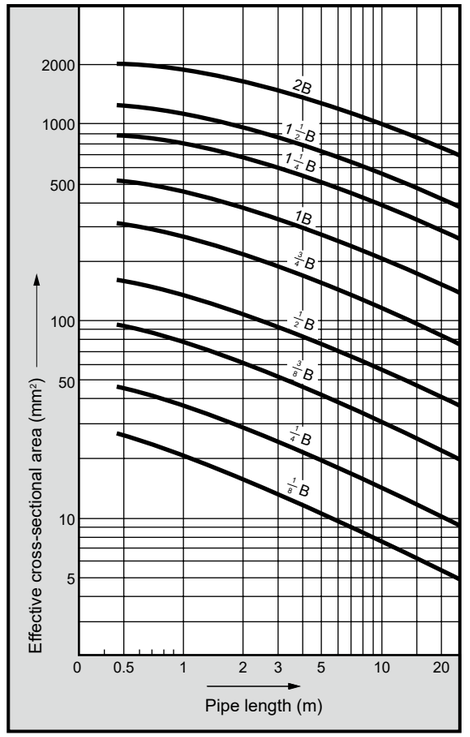
$$Q=600\times C\,(P1+0.1)\sqrt{1-\left[\frac{\frac{P2+0.1}{P1+0.1}-b}{1-b}\right]^2}\sqrt{\frac{293}{273+t}} \quad \text{..... (2)}$$

Q : Air flow rate [dm³/min (ANR)], SI unit dm³(deci cubic meter) can also be expressed in L (liter). 1 dm³=1 L
C :Conductance of sound velocity [dm³/(s·bar)]
b :Critical pressure ratio [-]
P1 : Upstream pressure [MPa]
P2 : Downstream pressure [MPa]
t : Temperature (°C)

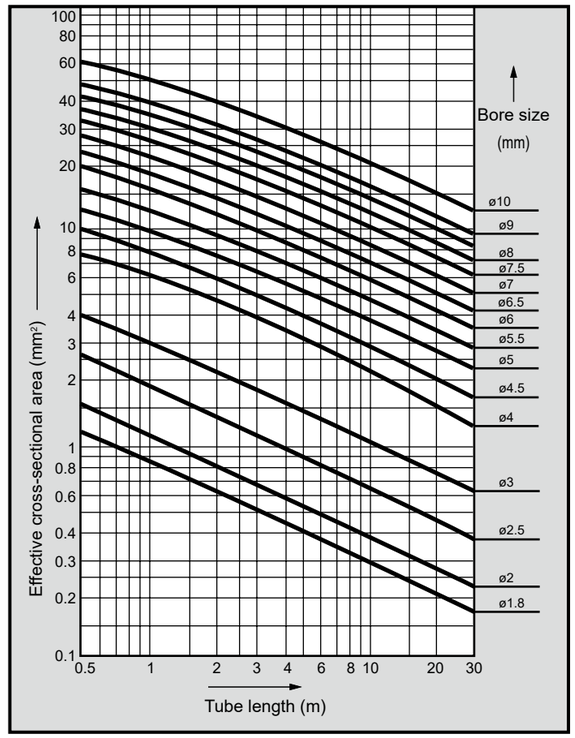
When calculating with an effective cross-sectional area of S,, substitute value C obtained by C=S/5 into the above formula to obtain the value.
For subsonic flow, substitute b=0.5 into the formula (2).

Effective cross-sectional area for steel pipes and nylon tubes, and recommended max. flow rate for gas pipes

Effective cross-sectional area of steel pipes



Effective cross-sectional area of nylon tubes



Recommended max. flow rate table of gas tube

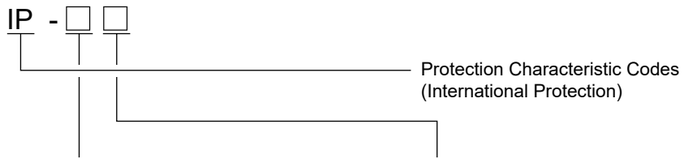
Nominal size	1/8B	1/4B	3/8B	1/2B	3/4B	1B	1 1/4B	1 1/2B
Pressure drop MPa (*1)	0.124	0.0707	0.0576	0.0425	0.0276	0.0209	0.0133	0.0105
Inlet pressure MPa	Recommended max. flow rate (L/min)							
0.05	127	244	518	838	1,465	2,460	3,870	5,150
0.1	146	282	598	965	1,690	2,828	4,460	5,950
0.15	163	314	668	1,076	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 tube length: 10 m)

(Remarks)
In the main line where the piping distance tends to increase, it is necessary to consider a pressure drop occurring at the end of the main line when air passes.
The recommended max. flow rate refers to the max. flow rate that can be recommended in the range of allowable pressure drop with respect to piping length, determined from actual use.
This does not mean that a higher flow is not possible, but rather that the pressure will further decrease if the flow exceeds this value.

Degree of Protection

●Degree of Protection
■IEC (International Electrotechnical Commission) Standards (IEC60529)
■JIS C 0920 : 2003



1st Characteristic No. (degree of protection for foreign solid matter)

1st Characteristic No.	Degree of protection	
0	No protection	
1	◯ø50 mm	Protection against inflow of solids 50 mm and over in diameter
2	◯ø12.5 mm	Protection against inflow of solids 12.5 mm and over in diameter
3	2.5 mm	Protection against inflow of solids 2.5 mm and over in diameter
4	1 mm	Protection against inflow of solids 1.0 mm and over in diameter
5	Dust-proof	No inflow of dust at levels adversely affecting normal device operation or safety
6	Dust resistant	No inflow of dust

2nd Characteristic No. (degree of protection for water entry)

2nd Characteristic No.	Degree of protection	
0	No protection	
1	Protection against water dripping	No harmful effects from water dripping vertically.
2	Protection against dripping water tilted at an angle of up to 15° (15°)	Water dripping vertically has no adverse effect when the product is tilted at an angle of up to 15° from its normal position.
3	Protection for watering	Water falling as a spray at any angle up to 60° from the vertical has no adverse effect.
4	Protection against splashing water	Water splashing against the product from any direction has no adverse effect.
5	Protection against water jets	No harmful effects occur even when water is sprayed with nozzles from all directions.
6	Protection against powerful water jets	Water projected in powerful jets against the product from any direction has no adverse effect.
7	Protection against immersion	Water will not enter the product even when it is immersed in water under defined conditions.
8	Protection against immersion	The product can be used for continuous immersion in water.

MEMO

Safety Precautions

Be sure to read this section before use.

When designing and manufacturing equipment using CKD wet fine system 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 all systems 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 attention to possible water leakage and leakage of electricity.
❹ When starting or restarting a machine or device that incorporates pneumatic components, make sure that the system safety, such as pop-out prevention measures, is secured.

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 and a half (1.5) years 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 is 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, which are specified for items 1 to 15
・“Catch-all controls” that do not indicate specifications by item, but restrict by application (Section 16)

Scope of products or related technologies requiring approval
→ List controls, which are specified for items 1 to 15
Listed in the “Export Trade Control Order Appendix Table 1” or “Foreign Exchange Order Appendix Table”
→ Catch-all controls 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 list controls of the Foreign Exchange and Foreign Trade Control Law.
For information on the products or related technologies subject to the list controls of the Foreign Exchange and Foreign Trade Control Law, refer to the applicable product page.
If exporting or providing products or related technologies that fall under the list controls, be sure to obtain export permission under the Foreign Exchange and Foreign Trade Control Law.
In addition, 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.

Design / Selection

1 .Checking the specifications

⚠WARNING

■Use the product in the range of conditions specified for the product. The product in this catalog is designed for use only in a compressed air system. Use with pressures or temperatures outside the specifications range may result in damage or operation failure. (Refer to specifications) Contact CKD when using fluids other than those specified in the specifications for each component.

2.Safety Design

⚠WARNING

■Take measures to prevent physical harm or property damage in the event of breakdown.

⚠CAUTION

■Understand compressed air features before designing a pneumatic circuit.

- The same functions as mechanical, hydraulic and electrical methods cannot be anticipated if instantaneous service interruption and holding are required during an emergency stop.
- Pop-out, air discharge, or leakage due to air compression and expansion may occur.
- Design the circuit so that compressed air in the system is exhausted.

■Decide on a method of lubricating the pneumatic components, and provide correct maintenance.

- Is it a lubrication type? Is it a no-lubrication type? Specify either of the above for control of lubricant.

■Check for leakage current to avoid malfunction caused by the leakage current.

- When using a programmable controller, leakage current may cause malfunction.

3. Design by Application

⚠CAUTION

■Exerts no influence on performance as it uses compressed air and a small amount of leakage is tolerable. Contact CKD if no-leakage is required.

4. Working Environment

⚠WARNING

■Install the product where it will not be exposed to rain, water or direct sunlight.

■Do not use this product in a corrosive environment. Use in such an environment could lead to damage or operation failure.

■Avoid using this product in environments where ozone is generated. Consult with CKD if ozone is generated in the air supply, as an ozone-resistant series is available.

■If ambient temperature is less than 5°C, moisture in the circuit could freeze and lead to misoperations, etc. Remove moisture to prevent freezing.

⚠CAUTION

■Confirm before use that the product will withstand the working environment.

- This product cannot be used in environments where functional obstacles could occur. Such environments include high temperatures, chemical atmospheres, or those where chemical liquids, vibration, moisture, dripping water, coolant or gas are present. Environments where ozone is generated.

5. Securing of space

⚠CAUTION

■Secure sufficient space around the pneumatic components for installation, removal, wiring, and piping work.

6. Clearly state in the instruction manual

⚠CAUTION

■Indicate the maintenance conditions in the device's instruction manual.

- The product's performance may drop too low to maintain an appropriate safety level depending on usage conditions, working environment and maintenance status. With correct maintenance, the product functions can be used to the fullest.

Mounting, Installation and Adjustment

⚠CAUTION

1. Mounting

■Do not remove the pneumatic components packaging and the piping port seat cap until just before starting to pipe.

- If the piping port cap is removed from the piping port before piping work is started, foreign matter could enter the pneumatic component from the piping port and result in faults or faulty operation.

■When mounting a pneumatic components, do not use a mounting method that relies on support from the piping.

■Remove the dust-proof seal of piping port just before starting to pipe.

- Removing it before starting piping work may cause foreign matter to enter the inside from the piping port, resulting in breakdown malfunction.

2. Pre-operation confirmation

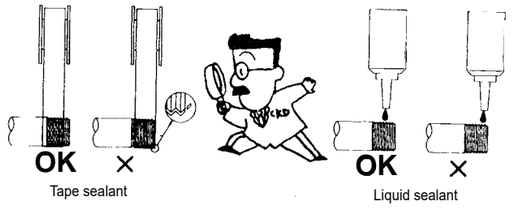
■After connecting the pipes, check pipe connections for air leaks before supplying compressed air.

- Apply a leakage detection agent on pipe connections with a brush and check for air leaks. Make sure that the leak detection agent does not adhere to the plastic bowl. The plastic bowl could break, which is dangerous.

3. Piping

■When connecting pipes, wrap sealing tape in the opposite direction from the threading, from the inside position to within 2 mm from the pipe end.

- If sealing tape protrudes from the pipe threads, it could be cut when screwing the bolts in. This could cause the tape to enter the solenoid valve, causing breakdowns.



When using a liquid sealant, make sure that it does not adhere to the plastic bowl. The plastic bowl could break, which is dangerous.

■Check that the piping connected to the pneumatic components is not dislocated due to vibration, looseness, or tension.

- Piping dislocation is dangerous.

■Observe the following precautions when using nylon or urethane tubes as the piping material.

- Use flame-resistant tubes or metal steel pipes in an environment where spattering may occur.
- Use a hydraulic hose for common piping for hydraulic and pneumatic specifications.
- When using the standard push-in fitting on the spiral tube, fix the base of the tube with a hose clamp. Rotation may occur, causing a reduction in holding force.
- When using for hot liquids, use a spigot fitting. The push-in fitting cannot be used.

■Connect the piping so that connections are not dislocated by equipment movement, vibration, tension, etc.

■Always flush just before piping pneumatic component.

- Any foreign matter that has entered the pneumatic components during piping must not enter the valve.

■Tighten pipes with the appropriate torque.

- The purpose is to prevent air leakage and damage to bolts.
- First tighten the bolts by hand to ensure that the threads are not damaged, then use a tool.

[Recommended values]

Port thread	Tightening torque N·m
M3	0.3 to 0.6
M5	1 to 1.5
Rc1/8	3 to 5
Rc1/4	6 to 8
Rc3/8	13 to 15
Rc1/2	16 to 18
Rc3/4	19 to 40
Rc1	41 to 70

Note: If a specific tightening torque is recommended for the model, use the torque.



4. Pneumatic source

■Install a pneumatic filter just before the pneumatic component in the circuit.

■When supplying compressed air after connecting pipes, do not suddenly apply high pressure.

- The pipe connection could dislocate causing the pipe to fly off and result in accidents.
- CAUTION: If compressed air is supplied too slowly, sealing pressure may not be generated depending on the internal sealing mechanism of the solenoid valve and may cause air leaks.

■Air Quality

- Use CKD clean air system components appropriate for your application.
- Use compressed air that does not contain oil oxides, tar, carbon, etc., from the air compressor.
- Use compressed air that does not contain solid foreign matter.

Use / Maintenance

CAUTION

1. Disassembly / Assembly

■Pneumatic components products must be disassembled and assembled by qualified personnel.

- Personnel involved in this step must have passed the Pneumatic Pressure Skill Test Class 2 or higher.

■Read the relevant product's instruction manual thoroughly and fully familiarize yourself with the work before disassembling or assembling the pneumatic components.

- Personnel must be fully familiar with pneumatic component structure and operational principles and safety requirements.

2. Maintenance / Inspection

■Be sure to turn power OFF, stop the compressed air supplied, and check that there is no residual pressure before starting maintenance.

- This is required to ensure safety.

MEMO

Gas Generators

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Inline Oxygen Monitor (PNA) 47

Nitrogen Gas Extraction Unit

NSU / NS

■ Gas Generator

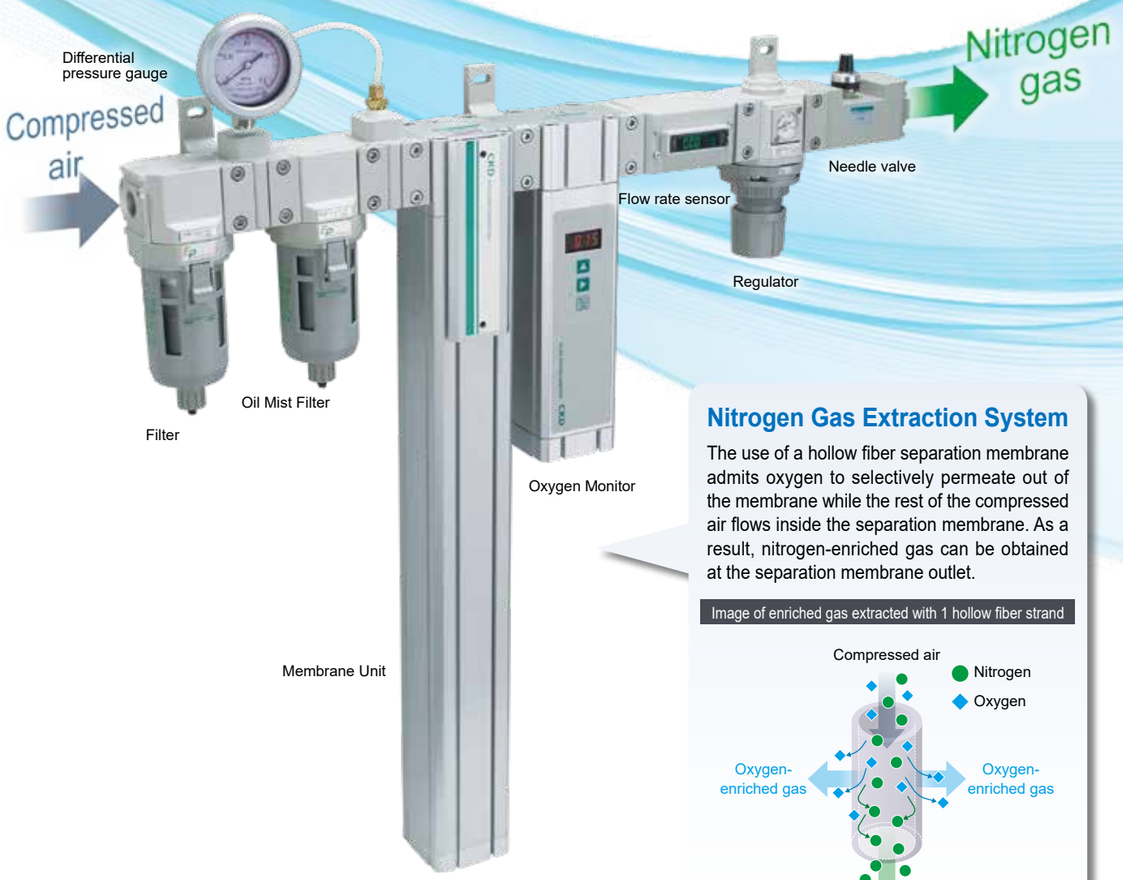


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Gas Generators
Nitrogen Gas Extraction Unit
Oxygen Conc. Monitor

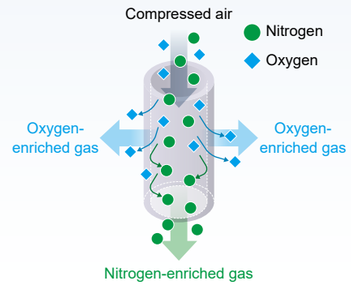
Nitrogen gas can be extracted easily from compressed air.



Nitrogen Gas Extraction System

The use of a hollow fiber separation membrane admits oxygen to selectively permeate out of the membrane while the rest of the compressed air flows inside the separation membrane. As a result, nitrogen-enriched gas can be obtained at the separation membrane outlet.

Image of enriched gas extracted with 1 hollow fiber strand



Support for safe food production process FP Series (optional)

For Safe and Secure Food Manufacturing Processes.

NSF H1 grease for foodstuffs is used

Material compatible with the Food Sanitation Act
Fluid passage section
Resin /rubber

FP Food Process™

This logo represents our commitment to support food manufacturing processes with safe CKD products.
*Refer to catalog No.CC-1271AA for details.

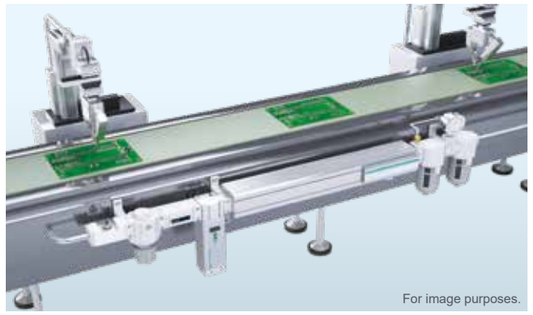
A new recommendation for nitrogen supply

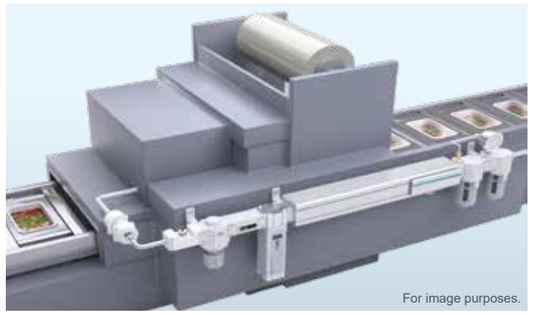
Design Flexibility

New horizontal mounting available

Installation in dead spaces. Built-in installation into equipment.



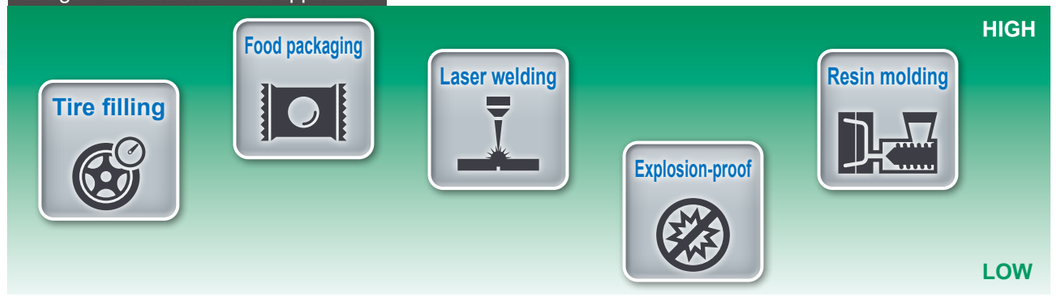

For image purposes.


For image purposes.

Degrees of freedom in concentrations

Nitrogen is now available from 90% concentration. Nitrogen supply to low oxygen concentration environments for explosion protection, etc.

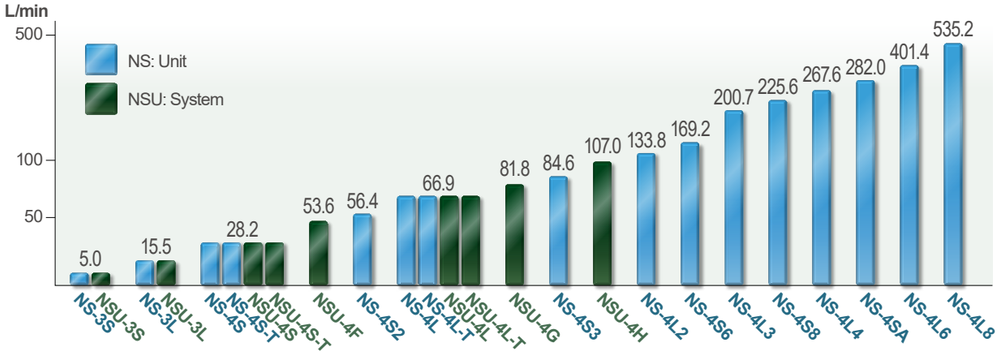
Nitrogen concentration and application



Degrees of freedom in selection

Select the ideal model from the 17 flow rates and 25 model lineup.

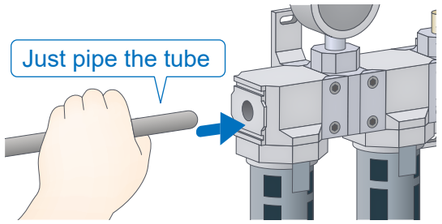
*Nitrogen concentration 99%
Inlet air pressure 0.7 MPa
Inlet air temperature 25°C

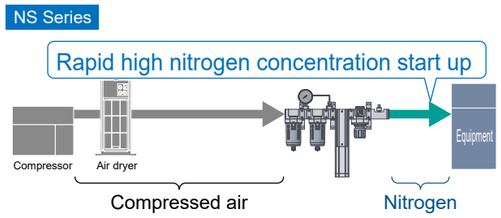


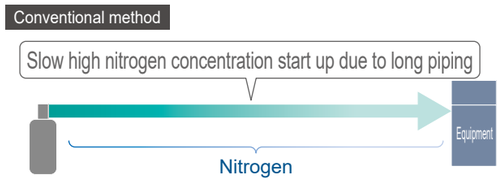
Install anywhere

Reduces processes, piping, and space

Nitrogen-enriched gas can be obtained simply by supplying compressed air. Design and piping are done easily by providing system components. Its small size and light weight allows it to be installed near the device. No need for long piping work dedicated to nitrogen.

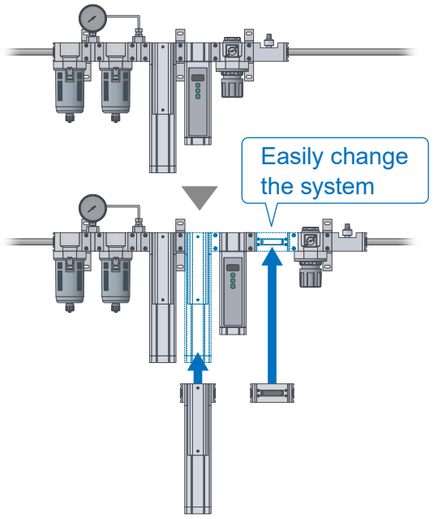






Freedom in selection

The ideal system can be selected according to the required flow rate and concentration. Modular connection enables easy system changes such as expansion of stations after installation.



Power supply not required

Usable even in explosion-proof atmospheres, different voltage Regions, etc. No malfunctions due to electrical noise. Quiet, with no heat generation as there is no drive system.

*Power supply will be required when oxygen monitor and flow rate sensor (option) are selected.

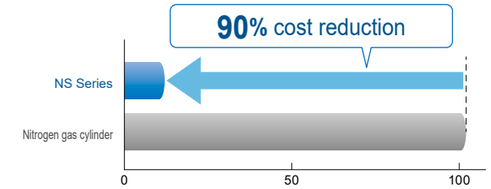
Low cost and reduced processes

Running cost reduction

Running cost is only the cost of electricity for the air compressor. No ongoing costs such as tank replenishments.

*Power supply will be required when oxygen monitor and flow rate sensor (option) are selected.

Nitrogen gas cylinder and gas unit price comparison



*Comparison assuming that the nitrogen gas concentration is 99% and the gas unit price is 100.

Reduced administrative processes

Nitrogen volume control is no longer required. Oxygen monitor and flow rate sensor can be installed inline, enabling continuous control.

●Control of oxygen concentration (nitrogen concentration)



Oxygen Monitor

●Nitrogen flow rate management



Flow rate sensor

●Management of supplied compressed air quality

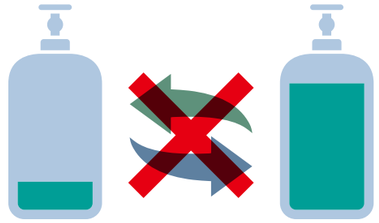


Differential pressure gauge

*Modular connection enables easy connection of required components. Sales Contact CKD for details.

Replacement not required

Troublesome tank management of remaining gases or replacement work is not required.



Easy maintenance

Sustainable reliability

Since there are no movable parts, stable performance can be maintained. Parts replacement is possible without disassembling the piping.



Not subject to High Pressure Gas Safety Laws

There is no need for notifications or assignment of qualified personnel.

NS Series configuration

System	
1-station	2-station
NSU	
Horizontal mounting	Vertical mounting







Unit	
Single cylinder	Multi-cylinder
NS	
Horizontal mounting	Vertical mounting







Case Study

Packaging Gas-filled packaging

When pillow packaging is used, nitrogen gas is filled inside the container to prevent oxidation and deterioration, prevent discoloration, and preserve the aroma.

2-port solenoid valve for dry air



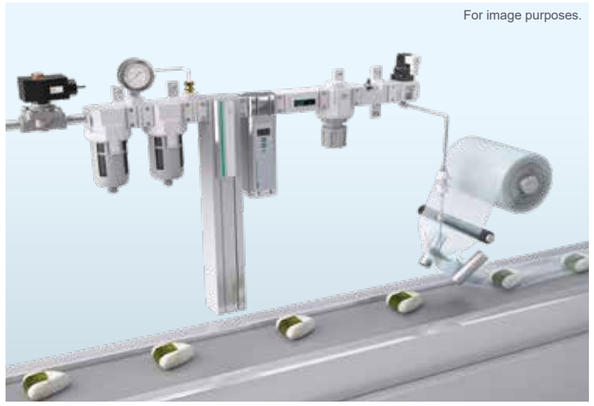
Bacteria Removing Filter



Air nozzle point type



For image purposes.



Production Laser welding

Shield with nitrogen gas to prevent degradation of welding strength due to oxidation at molten parts during laser welding.

Drain Separator



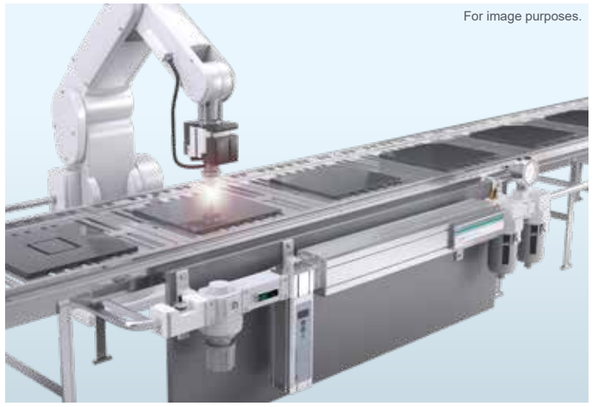
High Polymer Membrane Air Dryers



Direct acting 2-port valve



For image purposes.



Food / Chemicals Dissolved oxygen removal

By passing nitrogen gas through the liquid, oxygen gas dissolved in the liquid is removed.

Oil-free main line filter



Compressed air flow rate sensor



2-port solenoid valve



For image purposes.



Machining / Assembling Explosion-proof atmospheres

By filling the container with nitrogen gas, air is purged and positive internal pressure is created, preventing the ingress of explosive or corrosive gases.

Refrigeration Air Dryers



Main Line Filters



2-port solenoid valve



For image purposes.



Inspection Electron microscope

Nitrogen is used as a gas for vent, actuator and damper.

Modular 2-port solenoid valve



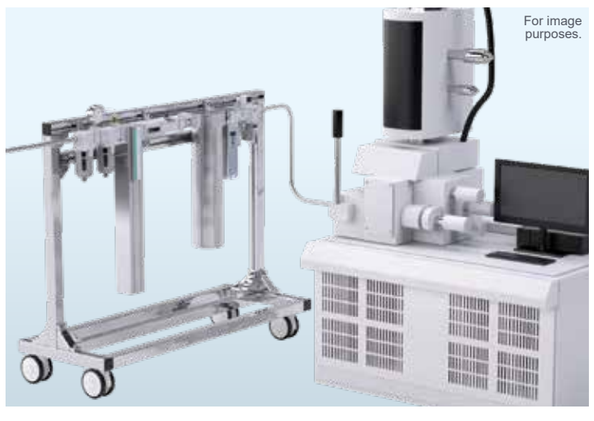
High-performance oil mist filter



Digital Pressure Sensor



For image purposes.



Base Improved solder wettability

Improves lead-free solder wettability by blocking oxygen with nitrogen gas and preventing oxidation on the tip or surface of the soldering iron.

Drain Separator



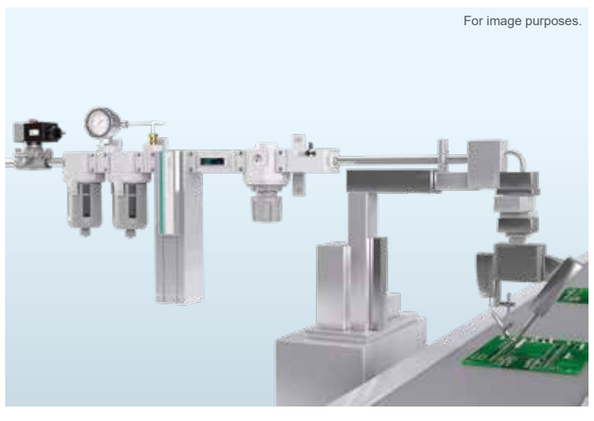
Cylinder valve



Electric Actuator



For image purposes.



Nitrogen Gas Extraction Unit
NSU Series

■Qty.: 1 unit

Model No.	Qty.:	Appearance	Flow rate (L/min ANR) and nitrogen concentration (%)	Listed page
NSU-3S	1		10: 99.9 99.5 99 98 97 96 95 94 93 92 91 90	14
NSU-3L	1		20: 99.9 99.5 99 98 97 96 95 94 93 92 91 90	
NSU-4S	1		40: 99.9 99.5 99 98 97 96 95 94 93 92 91 90	
NSU-4L	1		60: 99.9 99.5 99 98 97 96 95 94 93 92 91 90	

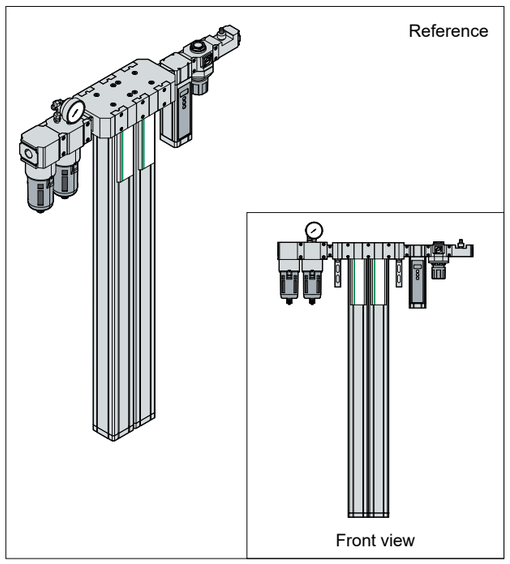
■Qty.: 2 units

Model No.	Qty.:	Appearance	Flow rate (L/min ANR) and nitrogen concentration (%)	Listed page
NSU-4F	2		50: 99.9 99.5 99 98 97 96 95 94 93 92 91 90	14
NSU-4G	2		100: 99.9 99.5 99 98 97 96 95 94 93 92 91 90	
NSU-4H	2		150: 99.9 99.5 99 98 97 96 95 94 93 92 91 90	

Note: The above figures represent the outlet nitrogen gas flow rate at an inlet air pressure of 0.7 MPa and an inlet air temperature of 25°C.

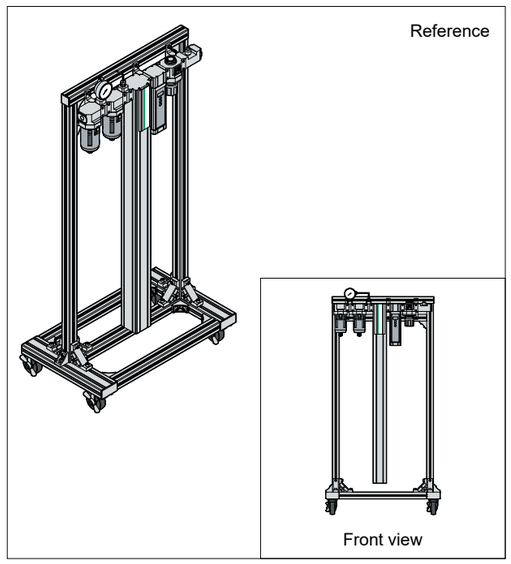
System example

●Compatible with the NS double cylinder system

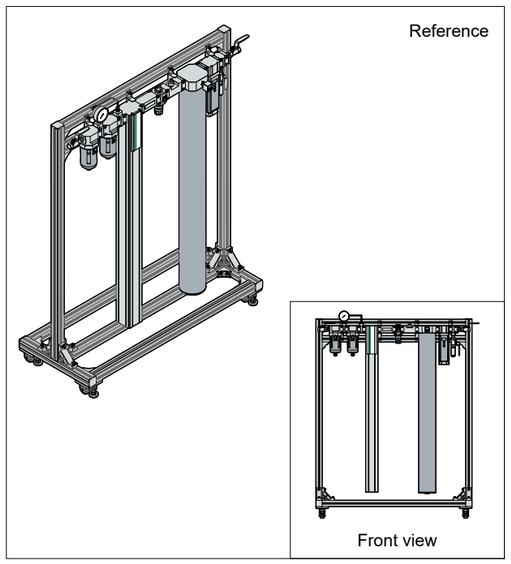


Note: Contact CKD for details.

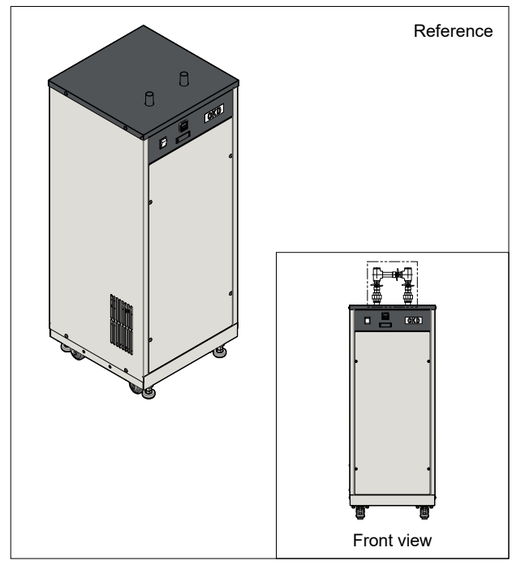
●Installation stand



●Intermittent operation tank system



●Housing installation system



Nitrogen Gas Extraction Unit
NS Series

Remarks: The indication of nitrogen concentration of nitrogen gas obtained from the Nitrogen Gas Extraction Unit accurately represents the total concentration of components other than oxygen (O_2). In addition to nitrogen and oxygen, the raw air contains argon, carbon dioxide and water vapor. Therefore, argon, which like nitrogen is difficult to permeate the membrane, is contained in about 1% of the product nitrogen gas, carbon dioxide gas, which permeates the membrane easily, is about 10 to 50 ppm, and water vapor is reduced in concentration to about -40°C on an atmospheric pressure dew point basis.

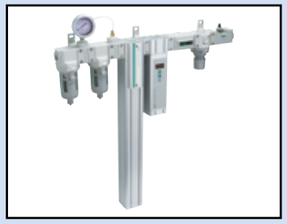
Single cylinder

Model No.	Appearance	Flow rate (L/min ANR) and nitrogen concentration (%)	Listed page
		10 / 20 / 40 / 60 / 80 / 120 / 160 / 200 / 260 / 320	
NS-3S1		99.9 99.5 99 98 97 96 95 94 93 92 91 90	36
NS-3L1		99.9 99.5 99 98 97 96 95 94 93 92 91 90	
NS-4S1		99.9 99.5 99 98 97 96 95 94 93 92 91 90	
NS-4L1		99.9 99.5 99 98 97 96 95 94 93 92 91 90	

Multi-cylinder

Model No.	Qty.:	Appearance	Flow rate (L/min ANR) and nitrogen concentration (%)	Listed page
			50 / 100 / 150 / 300 / 450 / 600 / 750 / 900 / 1050 / 1300 / 2000 / 2700	
NS-4S2	2		99.9 99.5 99 98 97 96 95 94 93 92 91 90	36
NS-4S3	3		99.9 99.5 99 98 97 96 95 94 93 92 91 90	
NS-4L2	2		99.9 99.5 99 98 97 96 95 94 93 92 91 90	
NS-4L3	3		99.9 99.5 99 98 97 96 95 94 93 92 91 90	
NS-4L4	4		99.9 99.5 99 98 97 96 95 94 93 92 91 90	
NS-4S6	6		99.9 99.5 99 98 97 96 95 94 93 92 91 90	
NS-4S8	8		99.9 99.5 99 98 97 96 95 94 93 92 91 90	
NS-4SA	10		99.9 99.5 99 98 97 96 95 94 93 92 91 90	
NS-4L6	6		99.9 99.5 99 98 97 96 95 94 93 92 91 90	
NS-4L8	8		99.9 99.5 99 98 97 96 95 94 93 92 91 90	

Note: The above figures represent the outlet nitrogen gas flow rate at an inlet air pressure of 0.7 MPa and an inlet air temperature of 25°C.



Nitrogen Gas Extraction Unit System

NSU Series

Easily and stably supplying nitrogen gas
- Nitrogen gas is obtained just by piping to a pneumatic source.
- All-in-one design with superior installation performance.

Refer to the CKD website for detailed compatible model Nos.

Model No. Notation

NSU - 4 S A 10 A NN - N T

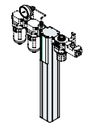
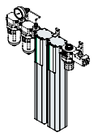
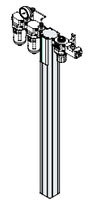
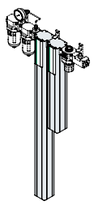
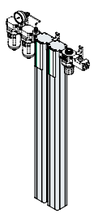
Note: Sales Contact CKD for other combinations.

- NSU: Model No.
- 4: ❷Membrane unit size
- S: ❶Body size
- A: ❸Needle valve
- 10 A: ❹Port size
- NN: ❺Oxygen monitor / Flow rate sensor
- N: ❻Option
- T: ❼Mounting direction

❶Body size

Code	Description
3	Body width 63
4	Body width 79

❷Membrane unit size

	Code	Description	
	S	Short	
*1	F	Short + Short	
	L	Long	
*1	G	Long + Short	
*1	H	Long + Long	

*1: Only the body size "4" is available for the membrane unit sizes "F", "G" and "H".

❸Needle valve

Code	Description			Body size, membrane unit size (❶❷ Assembled) 3S	3L	4S / 4F	4L / 4G/ 4H
A	Max. flow rate	20 L/min		●	●	●	●
B		80L/min		●	●	●	●
C		160L/min			●	●	●
D		240L/min				●	●
E		400 L/min					●

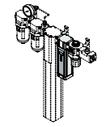
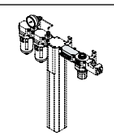
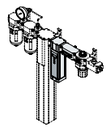
Note: Select a flow rate sensor with a suitable range for the needle valve.

❹Port size

	Code	Description
	10 A	Rc3/8
*1	10B	G3/8
*2	10C	NPT3/8

*1: When selecting G3/8, the regulator pressure gauge units will be shown as bar.
*2: When selecting NPT3/8, the regulator pressure gauge units will be shown as psi.

❺Oxygen monitor / Flow rate sensor

Description			Code
None			NN
With oxygen monitor (*1)			AK
With oxygen monitor, traceability certification with series variation diagram and company certification (*1)			AM
With flow rate sensor (*2)	(20 L/min specifications)		BA
	(50 L/min specifications)		BB
	(100 L/min specifications)		BC
	(200 L/min specifications)		BD
	(500 L/min specifications)		BE
With oxygen monitor/ flow sensor (*1,*2)	(20 L/min specifications)		CA
	(50 L/min specifications)		CB
	(100 L/min specifications)		CC
	(200 L/min specifications)		CD
	(500 L/min specifications)		CE
Oxygen monitor (with traceability) with flow rate sensor (*1,*2)	(20 L/min specifications)		CF
	(50 L/min specifications)		CG
	(100 L/min specifications)		CH
	(200 L/min specifications)		CJ
	(500 L/min specifications)		CK

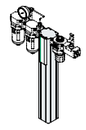
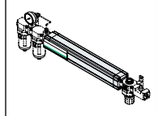
*1: The oxygen sensor does not include connector cables. Order the connector cable discrete model No.
*2: Switch output for the flow rate sensor is NPN. ❻Specify the option "P" to obtain PNP output.

❻Option *1

	Code	Description	
	N	No option	
*1	E	With exhaust port	
	K	Flow rate sensor With unit change function (only for overseas)	
	P	Flow rate sensor Switch output: PNP output	
*2	X	Reverse flow	

*1 : Exhaust air (oxygen-enriched gas) from Standard Products is released into the atmosphere. "When selecting "E", piping connection for exhaust (oxygen-rich gas) is possible. Size of exhaust port is Rc1/2.
*2 : Viewed from the front, standard products have an air inlet on the left port and a nitrogen gas outlet on the right port.

❼Mounting direction

Code	Description	
Blank	Vertical mounting	
T	Horizontal mounting (available with NSU-4S, 4L)	

Connector Cable Standalone Model No.

●DC cable

PNA- 1D

❶ Cable length

❶Cable length

Code	Description
1D	1000 mm
3D	3000 mm
5D	5000 mm

●AC adapter single unit

PNA-A

●AC adapter + conversion plug set

PNA-AG

Supports food manufacturing processes (Catalog No.CC-1271AA)

●Food grade lubricants that can be used in food manufacturing processes, and resin and rubber materials that conform to the Food Sanitation Laws are used.

NSU -・・・・- FP□

For Dimensions diagrams, refer to P. 29.

Specifications

Item			NSU-3S	NSU-3L	NSU-4S	NSU-4F	NSU-4L	NSU-4G	NSU-4H
Range of working conditions	Working fluid		Compressed air						
	Inlet air pressure	MPa	0.4 to 1.0 (*1)						
	Proof pressure	MPa	1.5						
	Inlet air temperature	°C	5 to 50						
	Relative humidity of inlet air	RH	50%						
	Ambient temperature	°C	5 to 50						
Rating	Inlet air pressure dew point	°C	10						
	Inlet air pressure	MPa	0.7						
	Inlet air temperature	°C	25						
	Ambient temperature	°C	25						
Rated flow rate	Outlet nitrogen gas flow rate L/min (ANR) (*2)	Nitrogen concentration (%) or higher 99.9	1.9	5.6	11.0	20.9	30.6	31.9	49.0
		99	5.0	15.5	28.2	53.6	66.9	81.8	107 .0
		97	8.9	28.7	49.9	94.8	118.1	159.7	189 .0
		95	14.0	39.8	65.3	124.1	169.2	222.0	270.7
		90	27.0	78.1	137.3	260.9	313.5 (*4)	- (*5)	
	Inlet air flow rate L/min (ANR)	99.9	17.3	50.9	100.0	190.0	278.2	290 .0	445.5
		99	20.9	64.6	117.5	223.3	278.8	340.8	445.8
		97	24.1	77.6	134.9	256.2	319.2	431.6	510.8
		95	31.2	88.5	145.2	275.8	376.0	493.3	601.6
		90	60.0	173.6	305.1	579.7	696.7 (*4)	- (*5)	
Air Filters		Filtration rating μm	5						
Oil Mist Filter		Oil removal mg/m³	0.01 or less (0.1 or less after oil saturation) *The measured value when primary oil concentration is 30 mg/m³ at 21°C.						
Regulator		Pressure setting range MPa	0.05 to 0.85						
Oxygen Monitor			For specifications, see Page 50.						
Flow rate sensor			For specifications, see Page 31.						
Needle valve		Flow Characteristics	See Page 18.						
Standard Accessories			Pressure gauge/differential pressure gauge/bracket						

*1: The inlet air pressure when assembling the NS-QFS-E is 0.4 to 0.75 MPa.
*2: When the membrane unit size "H" is selected and the inlet temperature is 50 °C, use the outlet flow rate with a nitrogen gas concentration of 99.9% at 39 L/min or less. Contact CKD when working beyond the specified range.
*3: Refer to the outlet nitrogen gas flow rate and needle valve flow characteristics to confirm that the value is within the working range. Contact CKD when working outside the specified range.
*4: When the "L" sized membrane unit is selected and the outlet nitrogen gas with a concentration of 90% is used, the inlet air temperature should be 40 °C or less. Please contact CKD if you intend to use the product above 40 °C.
*5: When selecting Membrane Unit Size 'G' or 'H' and using outlet nitrogen gas at 90% concentration, please contact us.

Selection Guide

Temperature and inlet air pressure affect the outlet nitrogen gas flow rate, which must be compensated for if it differs from the rating in the specification column.

STEP1 Confirming working conditions
Outlet nitrogen gas flow rate [L/min (ANR)]
Outlet nitrogen gas pressure [MPa]
Inlet air pressure [MPa]
Inlet air temperature [°C]

STEP2 Confirm the compensation coefficient for outlet nitrogen gas flow rate affected by inlet air temperature.

(1) Temperature - Gas flow rate compensation coefficient

Temperature (°C)	Outlet nitrogen gas concentration				
	99.9%	99%	97%	95%	90%
5	0.64	0.79	0.79	0.75	0.78
10	0.73	0.84	0.84	0.81	0.84
25	1	1	1	1	1
35	0.97	1.05	1.04	1.07	1.07
40	0.95	1.08	1.06	1.11	1.11
50	0.9	1.09	1.11	1.15	1.2

STEP3 Confirm the compensation coefficient for outlet nitrogen gas flow rate affected by inlet air pressure.

(2) Pressure - Gas flow rate compensation coefficient

Pressure(MPa)						
0.4	0.5	0.6	0.7	0.8	0.9	1.0
0.4	0.65	0.75	1	1.07	1.2	1.3

STEP4 Find the appropriate body size and membrane unit size based on the rated outlet nitrogen gas flow rate of each model.
Rated outlet nitrogen gas flow rate × (1) Temperature gas flow rate correction coefficient × (2)Pressure gas flow rate correction coefficient = corrected refined nitrogen gas flow rate. Select the body size and membrane unit size whose refined nitrogen gas flow rate after correction with the above formula is sufficient for the required gas flow rate.

STEP5 Select the required needle valve according to the outlet nitrogen gas flow rate.
Using the outlet nitrogen gas flow rate and the outlet nitrogen gas pressure confirmed in STEP1, set the needle valve flow rate characteristics (Page 18) and select the needle valve

STEP 6 Select the model from STEP4 and STEP5.

STEP 7 Confirm the compensation coefficient for inlet air flow rate affected by inlet air temperature.

(3) Temperature - Air flow rate compensation coefficient

Temperature (°C)	Outlet nitrogen gas concentration				
	99.9%	99%	97%	95%	90%
5	0.73	0.68	0.75	0.69	0.76
10	0.8	0.76	0.81	0.77	0.82
25	1	1	1	1	1
35	1.21	1.17	1.11	1.13	1.11
40	1.32	1.25	1.17	1.2	1.16
50	2.05	1.38	1.31	1.31	1.3

STEP 8 Confirm the compensation coefficient for inlet air flow rate affected by inlet air pressure.

(4) Pressure - Air flow rate compensation coefficient

Pressure(MPa)						
0.4	0.5	0.6	0.7	0.8	0.9	1.0
0.61	0.79	0.91	1	1.07	1.2	1.3

STEP 9 Find the inlet air flow rate from the rated outlet nitrogen gas flow rate of each model.
Inlet air flow rate of the model selected in STEP 4 × (3) Temperature air flow rate correction factor × (4) Pressure air flow rate correction factor = corrected inlet air flow rate
From the above corrected inlet air flow rate, confirm that the compressor can be used at its capacity.

Example of calculation

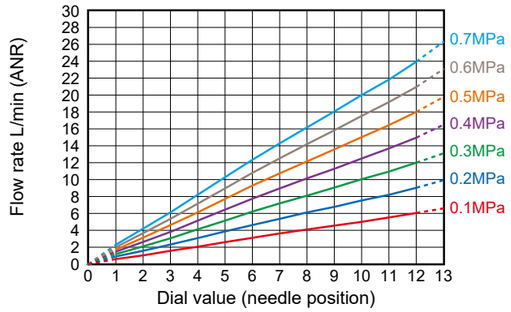
Conditions	Working Conditions	Selecting Conditions	Compensation coefficient for outlet nitrogen gas flow rate	Compensation coefficient for inlet air flow rate
Outlet nitrogen concentration	99 [%]	99 [%]	-	-
Outlet nitrogen pressure	0.2 [MPa]	0.2 [MPa]	-	-
Inlet air temperature	35 [°C]	35 [°C]	(1) 1.05	(3) 1.17
Inlet air pressure	0.6 to 0.7 [MPa]	0.6 [MPa]	(2) 0.75	(4) 0.91

Substitute the above conditions into the equation above to obtain the outlet nitrogen gas flow rate when using NSU-4L□ at a nitrogen concentration of 99%.
66.9 (rated outlet nitrogen gas flow rate) × 1.05×0.75 = 52.7 L/min (ANR).
If the required nitrogen gas flow rate is less than or equal to this value, select that model. In this case, the inlet air flow rate is 278.8×1.17×0.91=296.8 L/min (ANR). For needle size, select NS-QDVL-160 at 0.2 MPa, which can be adjusted at 53 L/min (ANR).

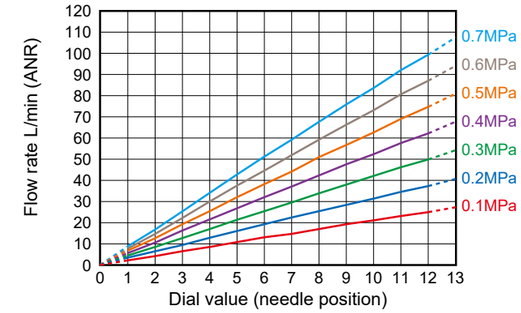
Needle valve flow characteristics

Note: The flow characteristics graph gives reference values but does not guarantee the values.

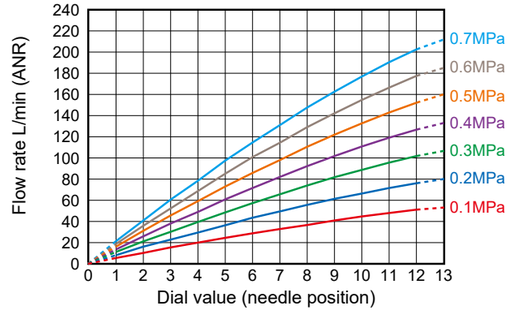
●NS-QDVL-020



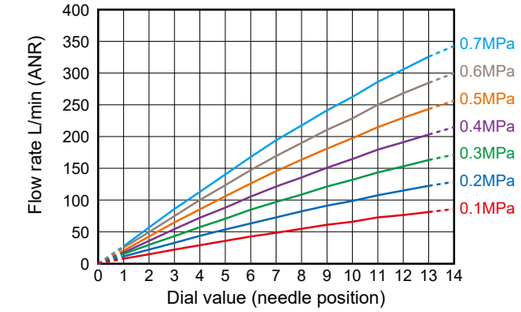
●NS-QDVL-080



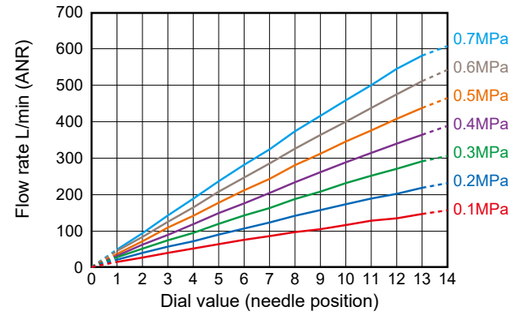
●NS-QDVL-160



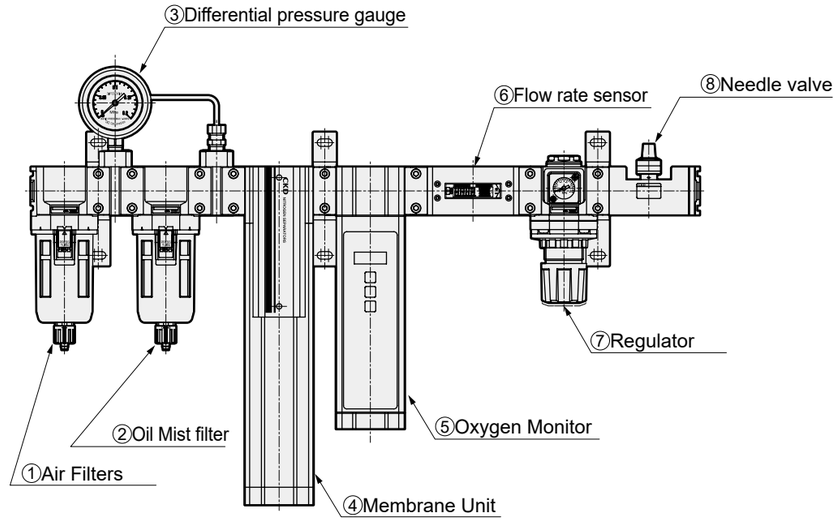
●NS-QDVL-240



●NS-QDVL-400



System Components (vertical mount)

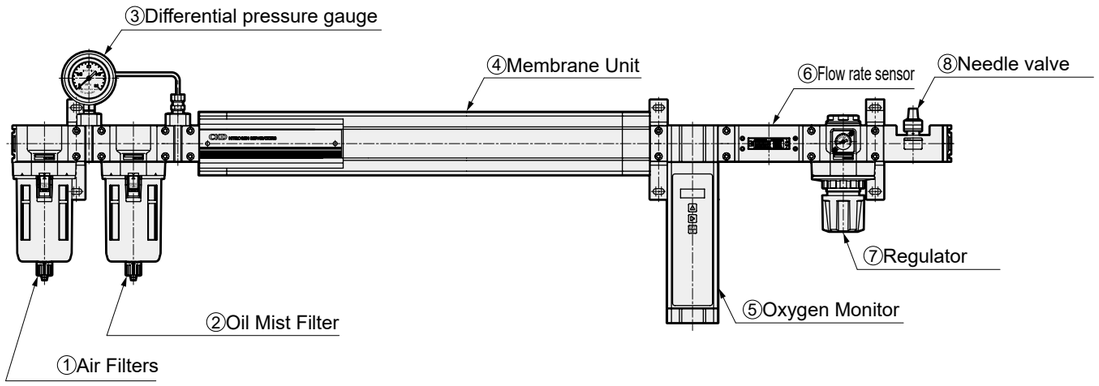


■ Standard (for port size Rc3/8)

Unit model No.	NSU-3S□	NSU-3L□	NSU-4S□	NSU-4F□	NSU-4L□	NSU-4G□	NSU-4H□
(1) Air Filter	F3000-10-W-F		F4000-10-W-F				
(2)Oil Mist Filter	M3000-10-W-F1		M4000-10-W-F1				
(3) Differential pressure gauge	GA400-8-P02						
(4) Membrane unit	NS-3S110A-□	NS-3L110A-□	NS-4S110A-□	NS-4S110A-□ NS-4S110A-□	NS-4L110A-□	NS-4L110A-□ NS-4S110A-□	NS-4L110A-□ NS-4L110A-□
(5) Oxygen monitor	PNA-10A-□-FP2						
(6) Flow rate sensor	NS-QFS-□						
(7) Regulator	NS-QR3-FP1		NS-QR4-FP1				
(8) Needle valve	NS-QDVL-020 NS-QDVL-080	NS-QDVL-020 NS-QDVL-080 NS-QDVL-160	NS-QDVL-020 NS-QDVL-080 NS-QDVL-160 NS-QDVL-240	NS-QDVL-020 NS-QDVL-080 NS-QDVL-160 NS-QDVL-240 NS-QDVL-400			

Note: Sales If the port sizes are G3/8 or NPT3/8, contact CKD.

System Components (horizontal mount)



■ Standard (for port size Rc3/8)

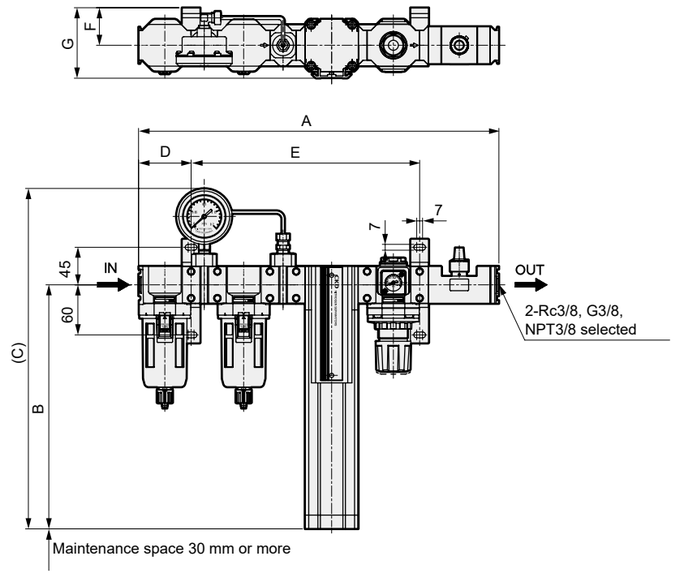
Unit model No.	NSU-4S□-□T	NSU-4L□-□T
(1) Air Filter	F4000-10-W-F	
(2) Oil Mist Filter	M4000-10-W-F1	
(3) Differential pressure gauge	GA400-8-P02	
(4) Membrane unit	NS-4S110A-□T	NS-4L110A-□T
(5) Oxygen monitor	PNA-10A-□-FP2	
(6) Flow rate sensor	NS-QFS-□	
(7) Regulator	NS-QR4-FP1	
(8) Needle valve	NS-QDVL-020 NS-QDVL-080 NS-QDVL-160 NS-QDVL-240	NS-QDVL-020 NS-QDVL-080 NS-QDVL-160 NS-QDVL-240 NS-QDVL-400

Note: Sales If the port sizes are G3/8 or NPT3/8, contact CKD.

For maintenance parts, refer to the CKD Components Product site.
(https://www.ckd.co.jp/kiki/en/)→ "Model No." → Maintenance Parts

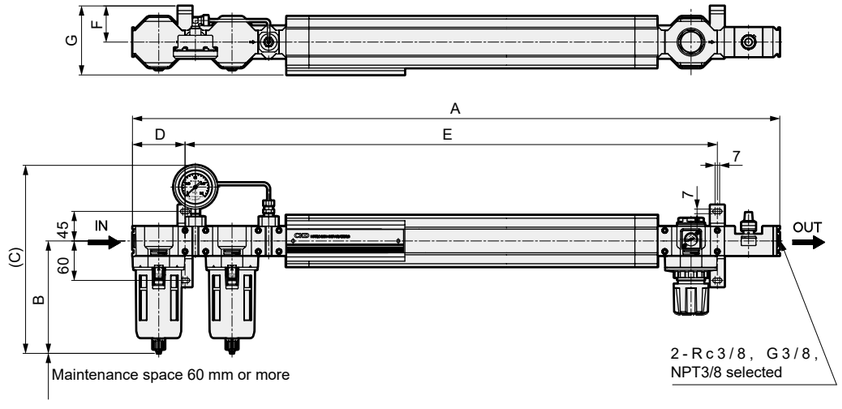
Dimensions (1 station)

●Without oxygen monitor/without flow rate sensor (NSU-$^{3S}_{4L}$□10□NN)



Model No.	A	B	C	D	E	F	G	Weight (kg)
NSU-3S□10□NN	432	293	408	63	274	45	85	4.0
NSU-3L□10□NN	432	543	658	63	274	45	85	4.9
NSU-4S□10□NN	498	543	658	80	323	55	106	6.9
NSU-4L□10□NN	498	1043	1158	80	323	55	106	9.7

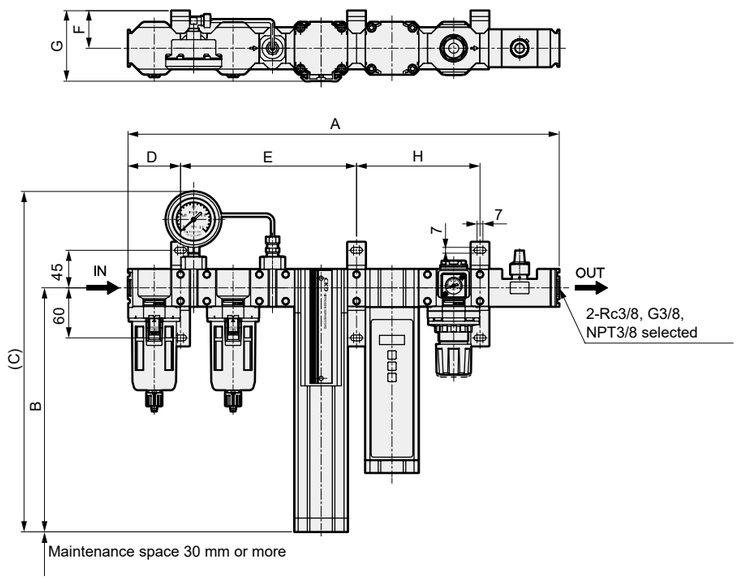
●Without oxygen monitor/without flow rate sensor (NSU-4 $^{S}_{L}$□10□NN-□T)



Model No.	A	B	C	D	E	F	G	Weight (kg)
NSU-4S□10□NN-□T	985	171	286	80	810	55	106	7.1
NSU-4L□10□NN-□T	1485	171	286	80	1310	55	106	9.9

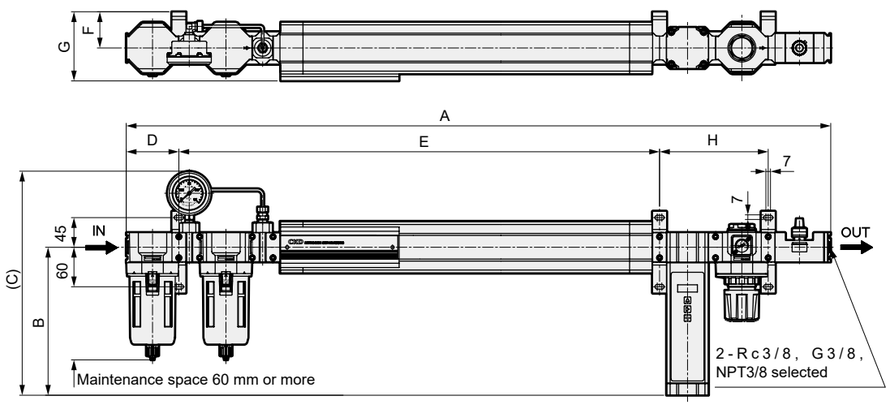
Dimensions

●With oxygen monitor without flow rate sensor (NSU-$^{3S}_{4L}$□10□A□)



Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-3S□10□A□	517	293	408	63	211	45	85	148	5.6
NSU-3L□10□A□	517	543	658	63	211	45	85	148	6.5
NSU-4S□10□A□	583	543	658	80	243	55	106	165	8.5
NSU-4L□10□A□	583	1043	1158	80	243	55	106	165	11.3

●With oxygen monitor without flow rate sensor (NSU-4 $^{S}_{L}$□10□A□-□T)

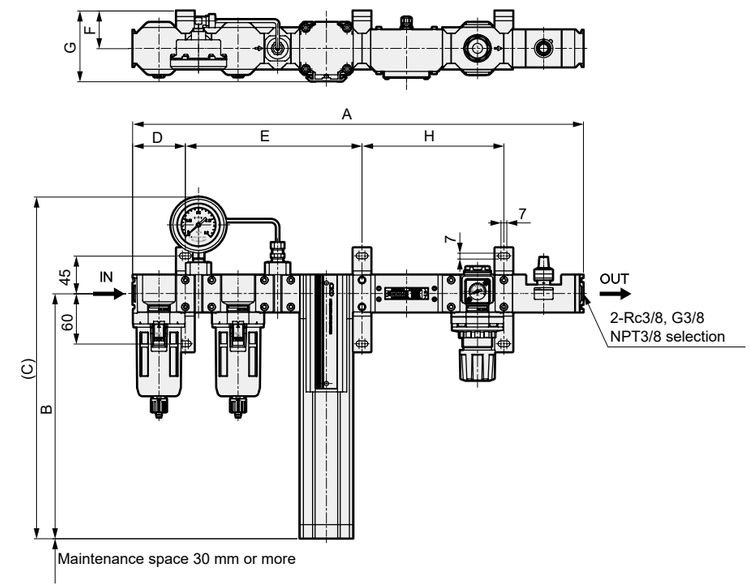


Note: Wiring space of 60 mm or more is required under the oxygen concentration monitor.

Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-4S□10□A□-□T	1070	225	340	80	730	55	106	165	8.7
NSU-4L□10□A□-□T	1570	225	340	80	1230	55	106	165	11.5

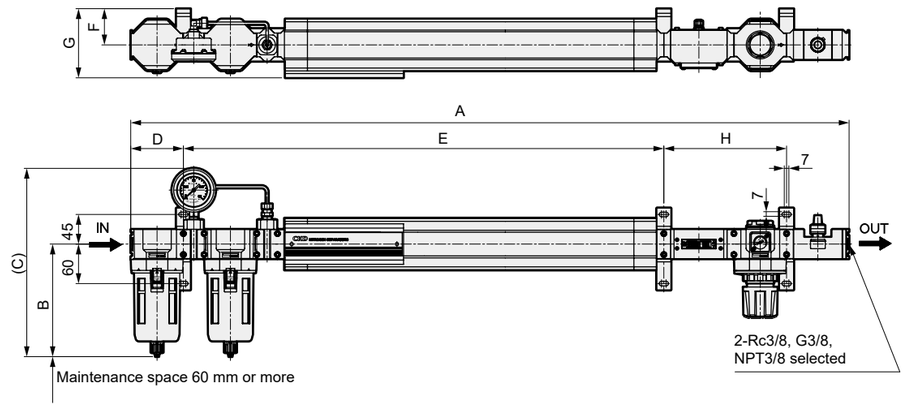
Dimensions (1 station)

●Without oxygen monitor/with flow rate sensor (NSU-$^{3S}_{4L}$□10□B□)



Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-3S□10□B□	538.5	293	408	63	211	45	85	169.5	4.8
NSU-3L□10□B□	538.5	543	658	63	211	45	85	169.5	5.7
NSU-4S□10□B□	604.5	543	658	80	243	55	106	186.5	7.7
NSU-4L□10□B□	604.5	1043	1158	80	243	55	106	186.5	10.5

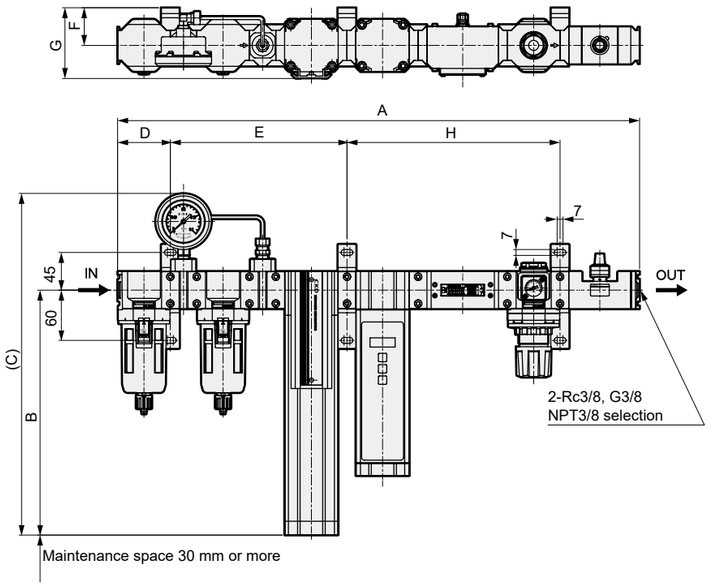
●Without oxygen monitor/with flow rate sensor (NSU-4 $^{S}_{L}$□10□B□-□T)



Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-4S□10□B□-□T	1091.5	171	286	80	730	55	106	186.5	7.9
NSU-4L□10□B□-□T	1591.5	171	286	80	1230	55	106	186.5	10.7

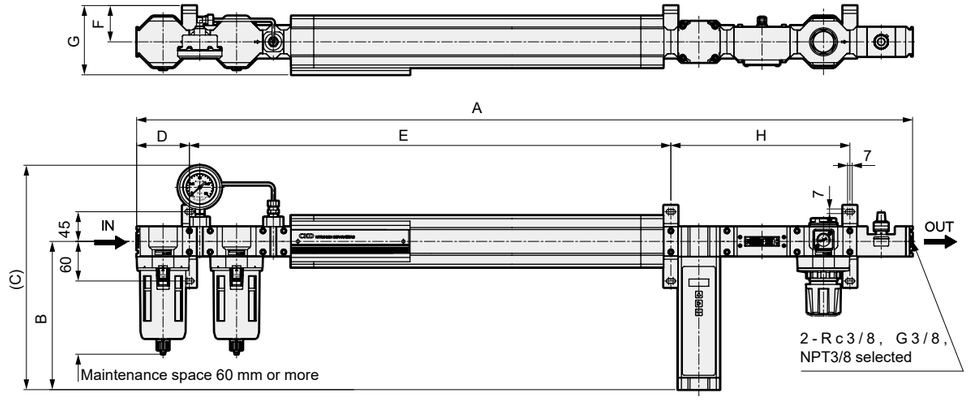
Dimensions (1 station)

●With oxygen monitor with flow rate sensor (NSU-$^{3S}_{4L}$ □10□C□)



Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-3S□10□C□	623.5	293	408	63	211	45	85	254.5	6.4
NSU-3L□10□C□	623.5	543	658	63	211	45	85	254.5	7.3
NSU-4S□10□C□	689.5	543	658	80	243	55	106	271.5	9.3
NSU-4L□10□C□	689.5	1043	1158	80	243	55	106	271.5	12.1

●With oxygen monitor/with flow rate sensor (NSU-4$^{S}_{L}$ □10□C□-□T)

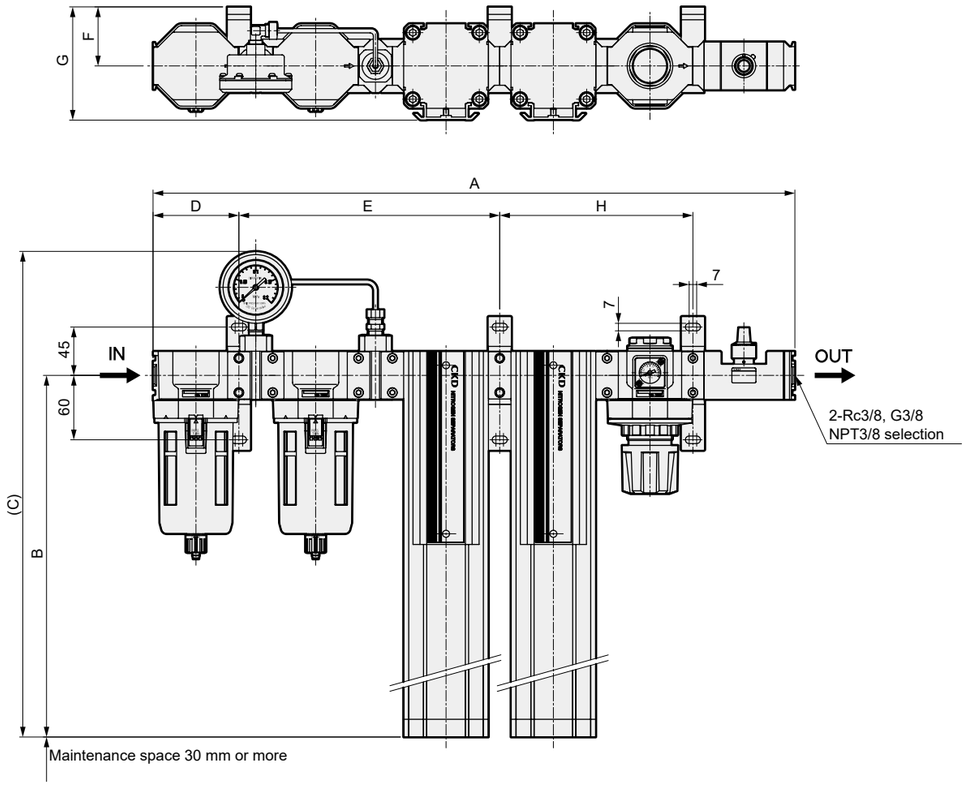


Note: Wiring space of 60 mm or more is required under the oxygen concentration monitor.

Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-4S□10□C□-□T	1176.5	225	340	80	730	55	106	271.5	9.5
NSU-4L□10□C□-□T	1676.5	225	340	80	1230	55	106	271.5	12.3

Dimensions (2 stations)

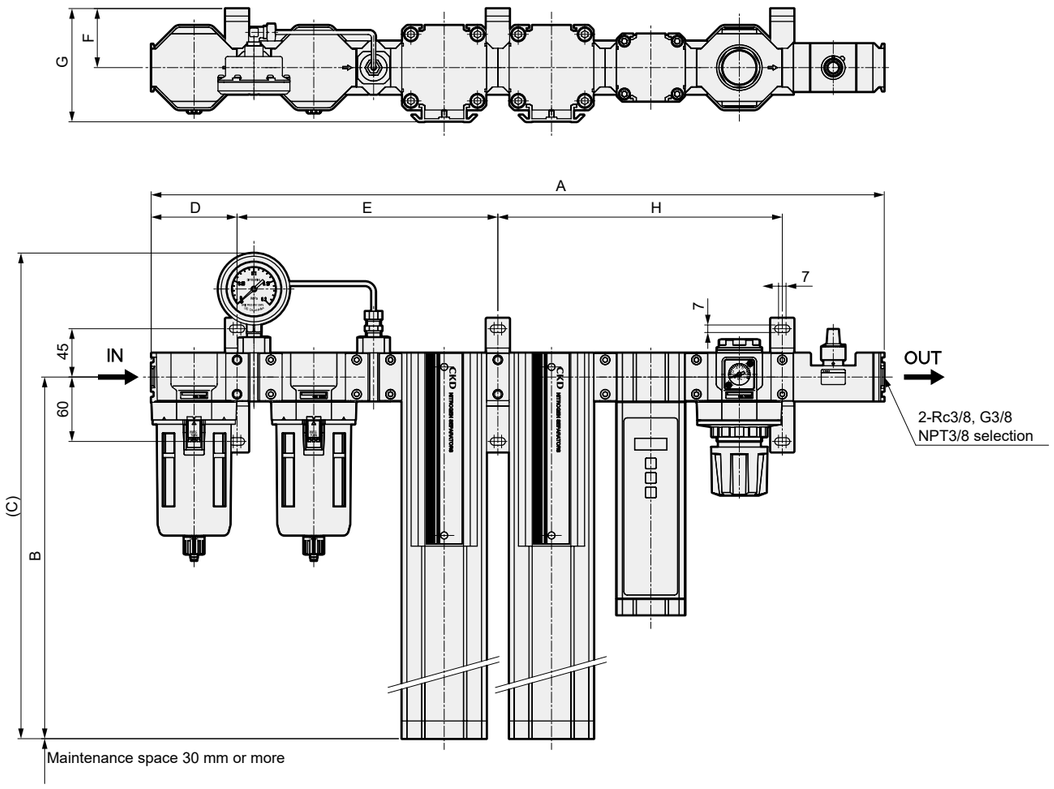
●No oxygen monitor or flow rate sensor (NSU-4$^{F}_{G}_{H}$ □10□NN)



Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-4F□10□NN	598	543	658	80	243	55	106	180	10.9
NSU-4G□10□NN	598	1043	1158	80	243	55	106	180	13.7
NSU-4H□10□NN	598	1043	1158	80	243	55	106	180	16.5

Dimensions (2 stations)

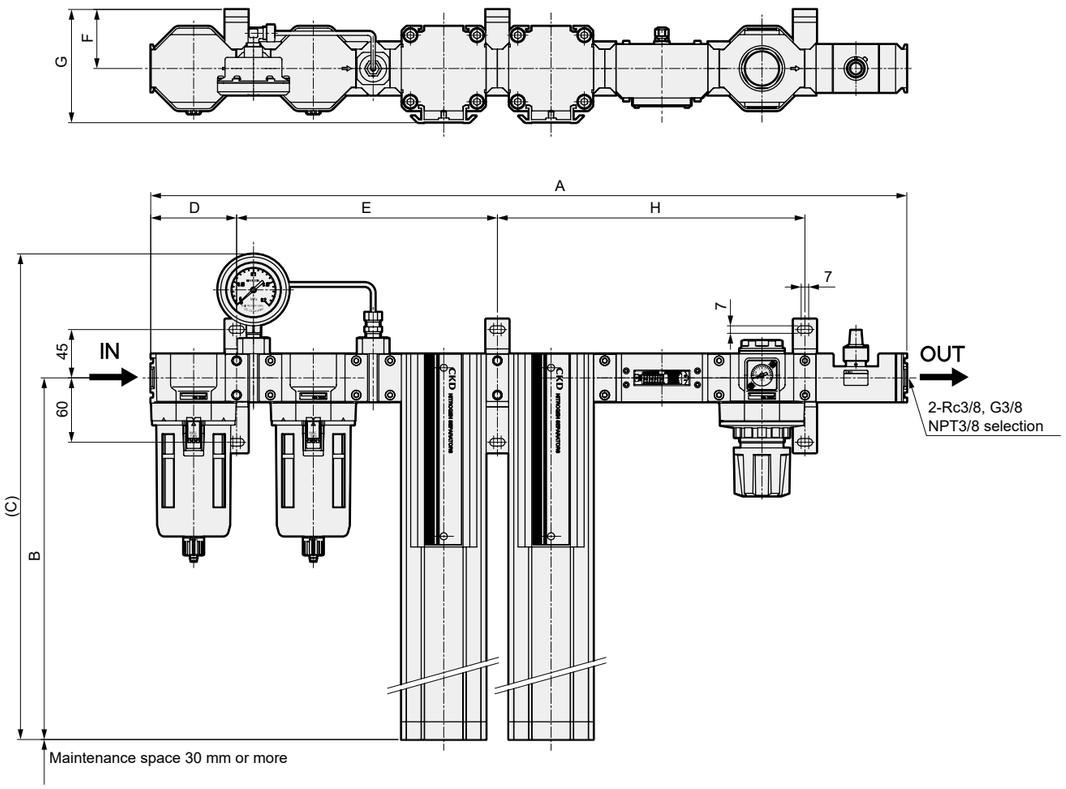
●With oxygen monitor, no flow rate sensor (NSU-4 F G H □10□A□)



Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-4F□10□A□	683	543	658	80	243	55	106	265	12.5
NSU-4G□10□A□	683	1043	1158	80	243	55	106	265	15.3
NSU-4H□10□A□	683	1043	1158	80	243	55	106	265	18.1

Dimensions (2 stations)

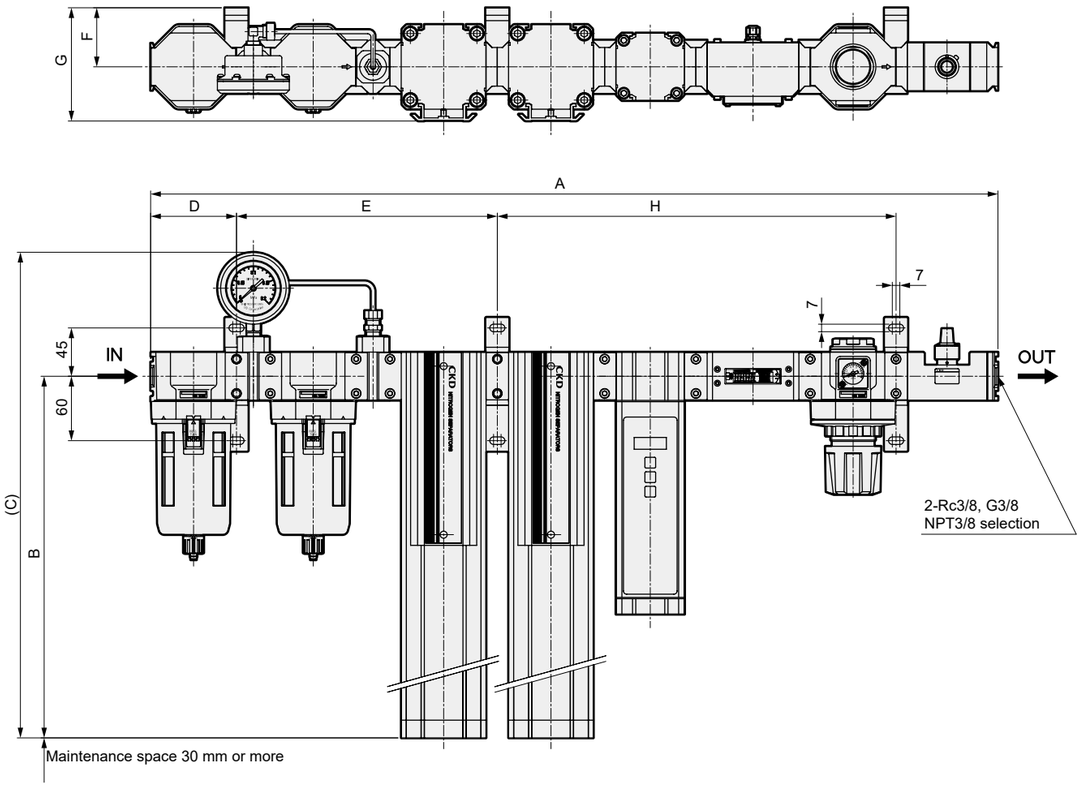
●Without oxygen monitor with flow rate sensor (NSU-4 F G H □□10□B)



Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-4F□10□B□	704.5	543	658	80	243	55	106	286.5	11.7
NSU-4G□10□B□	704.5	1043	1158	80	243	55	106	286.5	14.5
NSU-4H□10□B□	704.5	1043	1158	80	243	55	106	286.5	17.3

Dimensions (2 stations)

●With oxygen monitor/with flow rate sensor (NSU-4F/G/H □10□C□)



Model No.	A	B	C	D	E	F	G	H	Weight (kg)
NSU-4F□10□C□	789.5	543	658	80	243	55	106	371.5	13.3
NSU-4G□10□C□	789.5	1043	1158	80	243	55	106	371.5	16.1
NSU-4H□10□C□	789.5	1043	1158	80	243	55	106	371.5	18.9

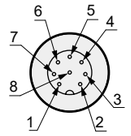
Connector cable for oxygen concentration monitor

Model No. Notation connector cable for oxygen concentration monitor and Dimensions diagram

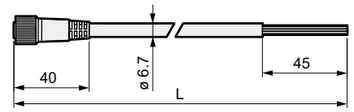
Note: The connector cable is sold separately from the main body.

●DC cable
Use this cable when driving with a DC power supply or when using analog output or switch output.

Model No.	Dimension L
PNA-1D	1000
PNA-3D	3000
PNA-5D	5000



No.	Cable color	Description
1	White	Power supply +
2	Brown	Power supply -
3	Green	Analog output +
4	Yellow	Analog output -
5	Gray	Contact output (relay output)
6	Pink	
7	Blue	-
8	-	-

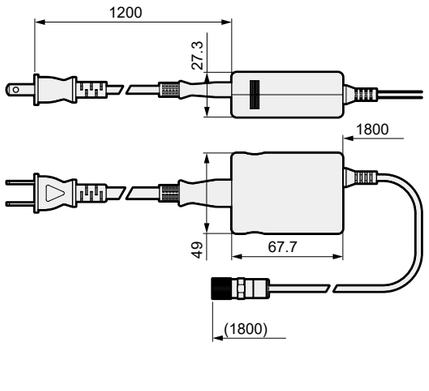


●AC adapter
Use when driving with an AC power supply.

Model No.	Description
PNA-A	AC adapter single unit A
PNA-AG	AC adapter + conversion plug set *Global power supply conversion plug B, C, O, BF included

・Plug shape

B-type	C-type	O-type	BF-type





Flow sensor for the Nitrogen Gas Extraction Unit

NS-QFS Series

Modular structure that can be connected to the Nitrogen Gas Extraction Unit NS Series

●Flow rate range: 20 L/min to 500 L/min

Refer to the CKD website for detailed compatible model Nos.

Model No. Notation

NS-QFS - A N 1

- Model No.
- ❷Switch Output
- ❶Flow rate range (Full scale flow rate)
- ❸Unit Specifications

*1: When using with the NSU Series reverse flow option, reverse the display. The display inversion settings are on Page 35.
*2: The joiner set (joiner, bolt, O-ring) and one gasket are included.

❶Flow rate range (full scale flow rate)

Code	Description
A	Flow rate range 20 L/min
B	Flow rate range 50 L/min
C	Flow rate range 100 L/min
D	Flow rate range 200 L/min
E	Flow rate range 500 L/min

❷Switch Output

Code	Description
N	NPN open collector output 1 point
P	PNP open collector output 1 point

❸Unit Specifications

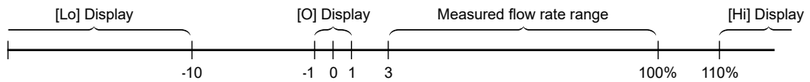
	Code	Description
	1	SI units only
*	2	With unit switching function (only for overseas)

* Models with unit switching cannot be sold in Japan.

NS-QFS specifications

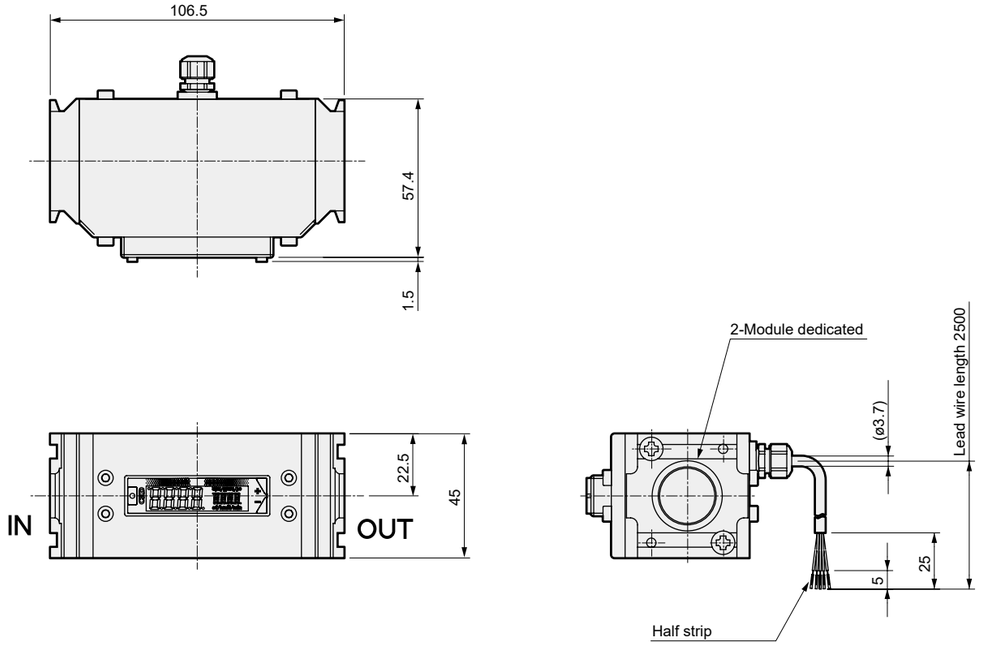
Item			NS-QFS-A	NS-QFS-B	NS-QFS-C	NS-QFS-D	NS-QFS-E
Flow direction			Uni-direction				
Measurement flow rate range *1		(L/min)	0.6 to 20	1.5 to 50	3 to 100	6 to 200	15 to 500
Indicator type			4 digit + 4 digit 2 color LCD				
Flow rate display range *2		(L/min)	-1.9 to 21.9	-4.9 to 54.9	-9.9 to 109.9	-19 to 219	-49 to 549
Integration display (*3)	Indicator range	L	0.0 to ±999999.9 L			0 to ±9999999 L	
	Pulse output rate	L	0.2	0.5	1	2.	5
Working Conditions	Applicable fluid		Nitrogen gas				
	Temperature range	°C	5 to 50 (no condensation)				
	Pressure range	MPa	0 to 1.0				0 to 0.75
	Proof pressure	MPa	1.5				
Operating ambient temperature / humidity			5 to 50 °C, 90% RH or less				
Storage temperature		°C	-10 to 60				
Accuracy *4 (Fluid: in dry air)	Accuracy	*5	Within ±3%F.S. (Secondary side released to atmosphere) (The scope of warranty is in accordance with the "measurement flow rate range.")				
	Repeatability	*6	Within ±1%F.S. (Secondary side released to atmosphere)				
	Temperature characteristics		Within ±0.2% F.S./°C (15 to 35°C, base temperature 25°C)				
	Pressure characteristics		Within ±5%F.S. (0.35 MPa reference)				
Response time		*7	50 msec. or less (setting response time OFF)				
Switch Output	[❷]	N	NPN open collector 1-point output (50 mA or less, voltage drop 2.4 V or less)				
		P	PNP open collector 1-point output (50 mA or less, voltage drop 2.4 V or less)				
Analog output			4-20 mA current output (connecting load impedance 0 to 300 Ω)				
Power supply voltage			24 VDC (21.6 to 26.4 V) ripple rate 1% or less				
Current consumption		*8	45 mA or less				
Lead wire			ø3.7 AWG26 or equivalent × 5-conductor, insulator outer diameter ø1.0, length 2.5 m				
Functions			(1) Setting copy function, (2) Flow rate integration, (3) Peak hold, etc.				
Degree of Protection			IP40 or equivalent (IEC standard)				
Protection circuit		*9	Power reverse connection protection, switch output reverse connection protection, switch output load short-circuit protection				
EMC Directive			EN55011, EN61000-6-2, EN61000-4-2/3/4/6/8				
Weight		kg	0.8				

*1: The value converted to volumetric flow rate at standard condition (20°C, 1 barometric pressure (101 kPa) relative humidity 65%Rh).
*2: The displays of various flow rates are as shown below.



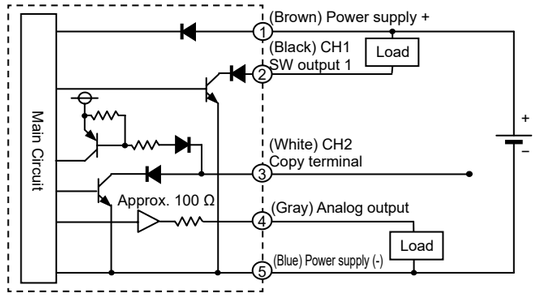
*3: The accumulated flow is a calculated (reference) value. When using the integrated save function, take care to prevent the number of saves from exceeding the access count limit of the storage device (1 million times). (Changes to the settings are counted in number of accesses.)
Number of saves = Usage time / 5 minutes < 1 million times
When instantaneous flow rate is below 1% it is not counted as integrating flow.
*4: Compressed air is used for adjusting and inspecting this product.
*5: Accuracy is based on CKD's standard flow rate meter. It does not show absolute accuracy. Repeatability, temperature characteristics, and pressure characteristics are not included for an accuracy of ± 3% F.S.
*6: Repeatability is calculated during a short period of time. Change over time is not included.
*7: The actual response time changes depending on the piping conditions. As a guideline, the response time can be set within the range of 50 msec. to 1.5 sec.
*8: Current for when no load is applied. Please note that the current consumption changes depending on the load connection status.
*9: This product's protection function is effective only for specific misconnections and load short-circuits. It does not provide protection for all misconnections.

Dimensions

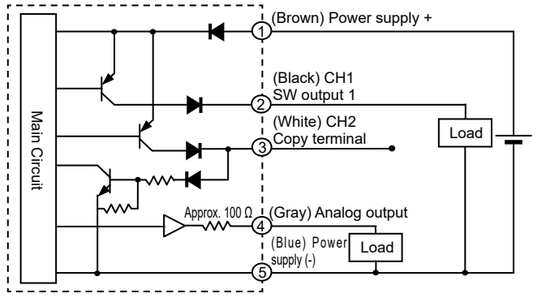


Example of internal circuit and load connection

●NPN output

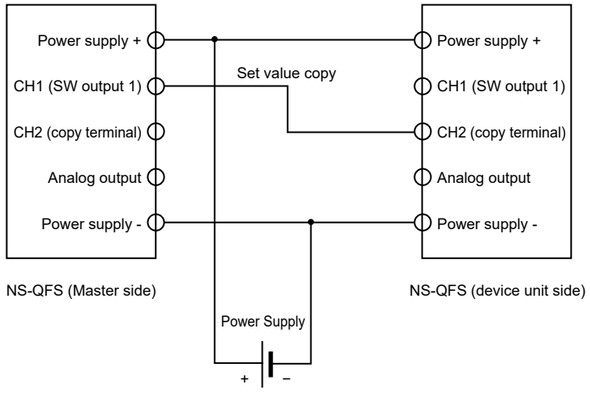


●PNP output



Terminal No.	Option Lead wire color	Name
①	Brown	Power supply + (24 V)
②	Black	CH1 (switch output 1:max 50 mA)
③	White	CH2 (copy terminal)
④	Gray	Analog output Current output: 4-20 mA load impedance 300 Ω or less
⑤	Blue	Power supply - (GND)

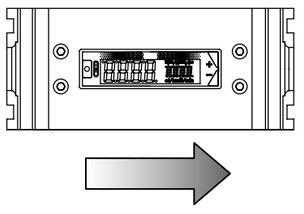
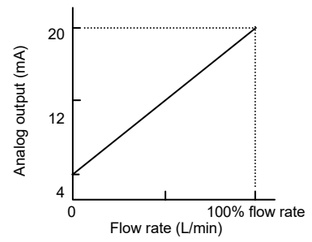
[When using the setting copy function]



Connect CH1 (SW output 1) on the master side to CH2 (copy terminal) on the device unit side and power ON the sensor to use the setting copy function (F93).
Note that this connection can only be used when using the setting copy function.

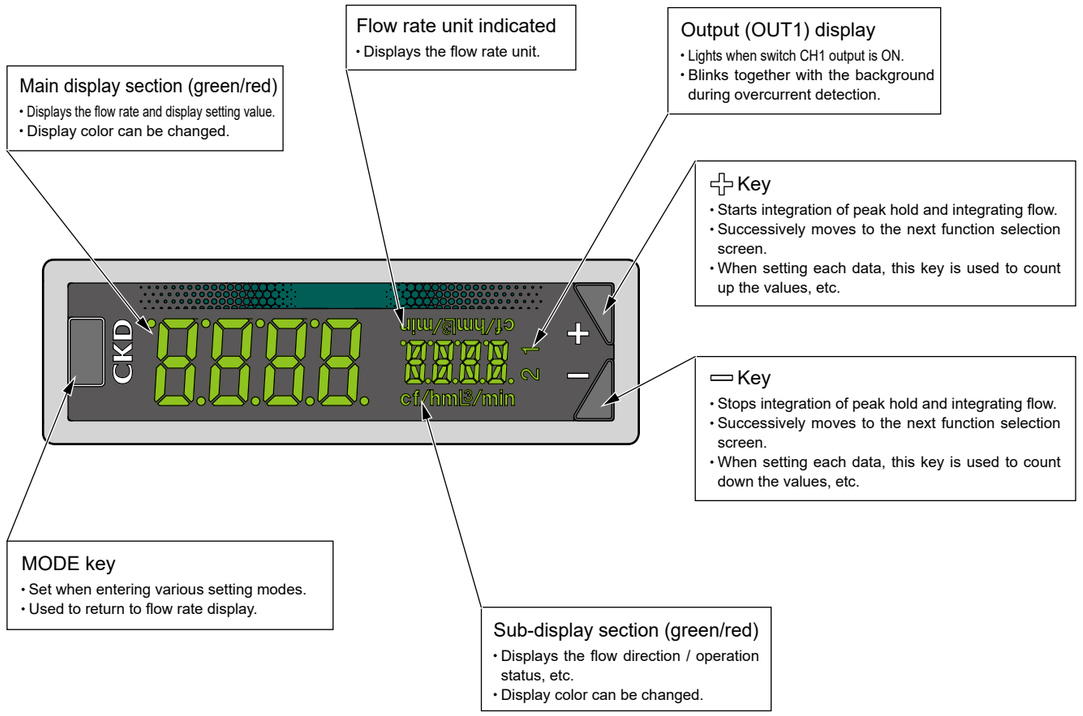
As in the above load connection example, if copying is performed with the load connected to CH1 or the switch is operated with CH1 and CH2 connected, the device may operate unexpectedly or the device and NS-QFS may breakdown. Never use the product while connected to the copy terminal.

Analog output characteristics

Flow direction	Current output
[Uni-directional] 	

Names and functions of display / operation section

●Indicator section name



Names and functions of display / operation section

The function and various settings may be performed during normal flow rate display or after entering each mode.
The modes are also divided into Maintenance mode, SET mode, and Setting Monitor mode according to the frequency of use.

●Normal Operation (RUN mode)

Item	Explanation	Default setting
Instantaneous flow rate display	Indicators the instantaneous flow rate.	Indicator (measurement)
Peak hold function	Max. and min. values for the flow rate within a set interval are displayed.	Hidden (Stopped)
Accumulated flow display	The accumulated flow can be displayed. The switch output function includes a function to turn the switch ON/OFF at a level higher than the recommended cumulative value, and an integrated pulse function to output the pulse at a set cumulative value.	Non-display (measurement)

●SET mode

No.	Item	Explanation	Default setting
F.01	Selection of CH1 operation	Select the CH1 feature. Switch output operation and integrated pulse settings can be set.	No switch output
F.03	Integrating function settings	You can choose to acquire integrating flow values consecutively or at set times. You can also choose to keep the data or not.	Continuous acquisition: Data hold OFF
F.04	Sub-screen display setting	Sets the display method for the sub-display. The display can be switched to Flow direction, Reference state, or Numbering display.	Flow direction
F.05	Indicator color setting	Set the display color. (red, green) Display color can be set for normal display and when switch output is ON.	At normal: Green At switch ON: Red
F.07	Indicator inversion function	The LCD display can be vertically inverted.	Standard display
F.08	Reference state setting	Select from the standard state or reference state. Standard condition (ANR): flow rate converted to volume at 20°C, 1 atm, 65%RH Reference condition (NOR): flow rate converted to volume at 0°C, 1 atm, 0% RH	ANR
F.09	Unit setting (overseas models only)	The units can be set. Can be selected from L/min, cf/h.	Domestic model: L/min Overseas model: L/min
F.10	Indicator cycle setting	The digital display refresh cycle can be set in three stages from 0.25 sec to 1 sec. If the display flickers, it can be improved by increasing the display refresh cycle.	0.5 sec
F.11	Setting response time of analog output	Set the response time. The response can be set in seven steps from 0.05 sec to 1.50 sec. Chattering and mis-operation caused by sudden flow rate changes or noise are prevented.	0.05 sec
F.12	Numbering setting	You can set the numbering.	0000
F.14	Setting ECO mode	An ECO mode can be set. If the buttons are not operated for approx. 1 minute, the eco mode will activate and turn OFF the display's backlight. Current consumption can be reduced with this mode.	OFF
F.16	Lock setting	Key lock method and PIN method can be set. Use selectively depending on the working environment.	OFF
F.17	Peak hold setting	You can choose to acquire peak bottom values consecutively or at set times. You can also choose to keep the data or not.	Continuous acquisition: Data hold OFF

●Maintenance mode

No.	Item	Explanation	Default setting
F.91	Forced output function	Forces the switch output to turn ON and is used to check the initial operation of wiring connections and input devices.	-
F.92	Zero adjustment	The zero point deviation is compensated.	Adjust value: 0
F.93	Setting copy function	Set values can be copied if the model supports copying between two NS-QFS's. (Copying is only possible between products with the same model No.)	-
F.99	Reset function	Returns the settings to the default settings.	-

●Setting Monitor mode

Item	Explanation	Default setting
Settings monitor function	You can check the settings made in the SET mode. (Setting details cannot be edited.)	-



Nitrogen Gas Extraction Unit

NS Series

Modular design for easy system expansion with peripheral components

■ Nitrogen gas is obtained just by supplying compressed air.

RoHS

Model No. Notation

NS - 4 S 1 10A - B T

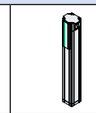
Model No. | ❷Membrane unit size | ❹Port size | ❻Mounting direction

❶Body size | ❸Qty.: | ❺Option

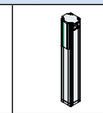
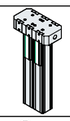
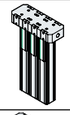
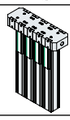
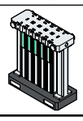
❶Body size

Code	Description
3	Body width 63
4	Body width 79

❷Membrane unit size

Code	Description	
S	Short	
L	Long	

❸Qty.:

Code	Description		Body size, membrane unit size (❶❷Combination) 3S	3L	4S	4L
1	1 pc.		●	●	●	●
2	2 units				●	●
3	3 units				●	●
4	4 units					●
6	6 units				●	●
8	8 units				●	●
A	10 units				●	

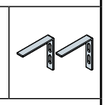
Note: For configurations with 6 or more units, the product is a floor-standing type, and brackets are not included.

❹Port size

Code	Description	❸Qty.: 1	2	3	4	6	8	A
10A	Rc 3/8	●						
10B	G3/8	●						
10C	NPT 3/8	●						
20A	Rc 3/4		●	●	●			
20B	G3/4		●	●	●			
20C	NPT 3/4		●	●	●			
25A	Rc1					●	●	●
25B	G1					●	●	●
25C	NPT 1					●	●	●

❺Option

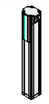
*1,*2

	Code	Description	
	N	No option	
	B	Bracket	
*2	C	Bracket + reverse flow	
*1	D	Bracket + exhaust port	
*1, *2	F	Bracket + reverse flow + exhaust port	
*2	X	Reverse flow	
*1	E	With exhaust port	
*1, *2	H	Reverse flow + exhaust port	

*1: Exhaust (oxygen-rich gas) from standard products is released into the atmosphere. When "D", "F", "E", or "H" is selected, piping connection for exhaust (oxygen-enriched gas) is possible. Size of exhaust port is Rc1/2.

*2: Viewed from the front, a standard product has an air inlet on the left port, while an air outlet on the right port. When "C", "F", "X", or "H" is selected, an air inlet is provided on the right port, while an air outlet is provided on the left port.

❻Mounting direction

Code	Description	
Blank	Vertical mounting	
T	Horizontal mounting (available with NS-4S1, 4L1)	

Specifications for Food Manufacturing (Catalog No.CC-1271AA)

●Food grade lubricants that can be used in food manufacturing processes, and resin and rubber materials that conform to the Food Sanitation Laws are used.

NS - · · · · - FP□

Specifications

■Single cylinder

Item				NS-3S1	NS-3L1	NS-4S1	NS-4L1
Range of working conditions	Working fluid			Compressed air			
	Inlet air pressure	MPa		0.4 to 1.0			
	Proof pressure	MPa		1.5			
	Inlet air temperature	°C		5 to 50			
	Relative humidity of inlet air	RH		50% or less			
	Ambient temperature	°C		5 to 50			
Rating	Inlet air purity class			1:6:1 (ISO 8573-1: 2010)			
	Inlet air pressure	MPa		0.7			
	Inlet air temperature	°C		25			
	Ambient temperature	°C		25			
Rated flow rate	Outlet nitrogen gas flow rate L/min (ANR)	Nitrogen concentration(%) or more	99.9	1.9	5.6	11.0	30.6
			99	5.0	15.5	28.2	66.9
			97	8.9	28.7	49.9	118.1
			95	14.0	39.8	65.3	169.2
			90	27.0	78.1	137.3	313.5
	Inlet air flow rate L/min (ANR)		99.9	17.3	50.9	100.0	278.2
			99	20.9	64.6	117.5	278.8
			97	24.1	77.6	134.9	319.2
			95	31.2	88.5	145.2	376.0
			90	60.0	173.6	305.1	696.7

■Multi-cylinder

Item				NS-4S2	NS-4S3	NS-4L2	NS-4L3	NS-4L4	NS-4S6	NS-4S8	NS-4SA	NS-4L6	NS-4L8
Range of working conditions	Working fluid			Compressed air									
	Inlet air pressure	MPa		0.4 to 1.0									
	Proof pressure	MPa		1.5									
	Inlet air temperature	°C		5 to 50									
	Relative humidity of inlet air	RH		50% or less									
	Ambient temperature	°C		5 to 50									
Rating	Inlet air purity class			1:6:1 (ISO 8573-1: 2010)									
	Inlet air pressure	MPa		0.7									
	Inlet air temperature	°C		25									
	Ambient temperature	°C		25									
Rated flow rate	Outlet nitrogen gas flow rate L/min (ANR)	Nitrogen concentration(%) or more	99.9	22.0	33.0	61.2	91.8	122.4	66.0	88.0	110.0	183.6	244.8
			99	56.4	84.6	133.8	200.7	267.6	169.2	225.6	282.0	401.4	535.2
			97	99.8	149.7	236.2	354.3	472.4	299.4	399.2	499.0	708.6	944.8
			95	130.6	195.9	338.4	507.6	676.8	391.8	522.4	653.0	1015.2	1353.6
			90	274.6	411.9	627.0	940.5	1254.0	823.8	1098.4	1373.0	1881.0	2508.0
	Inlet air flow rate L/min (ANR)		99.9	200.0	300.0	556.4	834.6	1112.8	600.0	800.0	1000.0	1669.2	2225.6
			99	235.0	352.5	557.6	836.4	1115.2	705.0	940.0	1175.0	1672.8	2230.4
			97	269.8	404.7	638.4	957.6	1276.8	809.4	1079.2	1349.0	1915.2	2553.6
			95	290.4	435.6	752.0	1128.0	1504.0	871.2	1161.6	1452.0	2256.0	3008.0
			90	610.2	915.3	1393.4	2090.1	2786.8	1830.6	2440.8	3051.0	4180.2	5573.6

Note: The product will be floor-mounted for 6 units or more.

Selection Guide

Temperature and inlet air pressure affect the outlet nitrogen gas flow rate, which must be compensated for if it differs from the rating in the specification column.

STEP 1 Confirm the working conditions and the rated values listed in the specifications.
Working conditions: Inlet air pressure, inlet air temperature, required nitrogen gas flow rate

STEP 2 Confirm the compensation coefficient for outlet nitrogen gas flow rate affected by inlet air temperature.

(1) Temperature - Gas flow rate compensation coefficient

Temperature (°C)	Outlet nitrogen gas concentration				
	99.9%	99%	97%	95%	90%
5	0.64	0.79	0.79	0.75	0.78
10	0.73	0.84	0.84	0.81	0.84
25	1	1	1	1	1
35	0.97	1.05	1.04	1.07	1.07
40	0.95	1.08	1.06	1.11	1.11
50	0.9	1.09	1.11	1.15	1.2

STEP 3 Confirm the compensation coefficient for outlet nitrogen gas flow rate affected by inlet air pressure.

(2) Pressure - Gas flow rate compensation coefficient

Pressure (MPa)						
0.4	0.5	0.6	0.7	0.8	0.9	1.0
0.4	0.65	0.75	1	1.07	1.2	1.3

STEP 4 Find the appropriate model based on the rated outlet nitrogen gas flow rate of each model.
Rated outlet nitrogen gas flow rate x (1) temperature gas flow rate correction coefficient x (2) pressure gas flow rate correction coefficient = corrected outlet nitrogen gas flow rate
Select one with sufficient outlet nitrogen gas flow rate after correction with the above formula.

STEP 5 Confirm the compensation coefficient for inlet air flow rate affected by inlet air temperature.

(3) Temperature - Air flow rate compensation coefficient

Temperature (°C)	Outlet nitrogen gas concentration				
	99.9%	99%	97%	95%	90%
5	0.73	0.68	0.75	0.69	0.76
10	0.8	0.76	0.81	0.77	0.82
25	1	1	1	1	1
35	1.21	1.17	1.11	1.13	1.11
40	1.32	1.25	1.17	1.2	1.16
50	2.05	1.38	1.31	1.31	1.3

STEP 6 Confirm the compensation coefficient for inlet air flow rate affected by inlet air pressure.

(4) Pressure - Air flow rate compensation coefficient

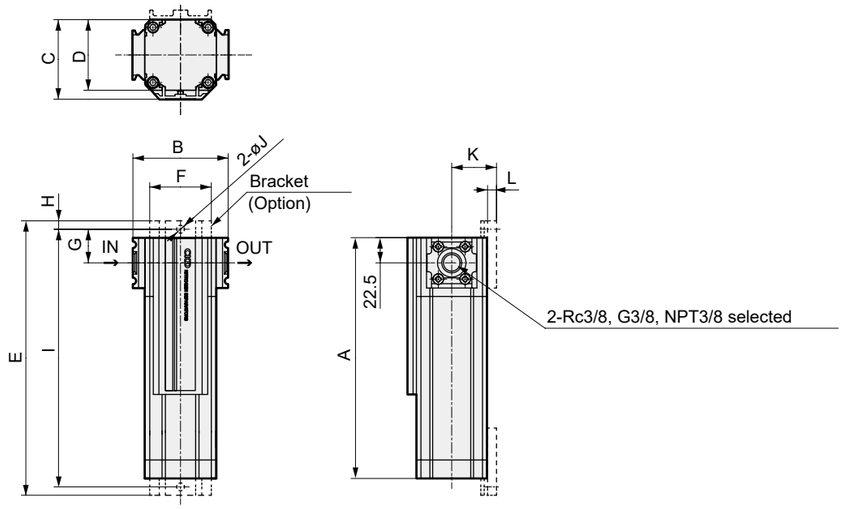
Pressure (MPa)						
0.4	0.5	0.6	0.7	0.8	0.9	1.0
0.61	0.79	0.91	1	1.07	1.2	1.3

STEP 7 Find the inlet air flow rate from the rated outlet nitrogen gas flow rate of each model.
Inlet air flow rate of the model selected in STEP4 × temperature air flow rate correction coefficient × pressure air flow rate correction coefficient = corrected inlet air flow rate L/min (ANR)
Based on the inlet air flow rate corrected as above, confirm whether the compressor capacity is sufficient.
Example of calculation

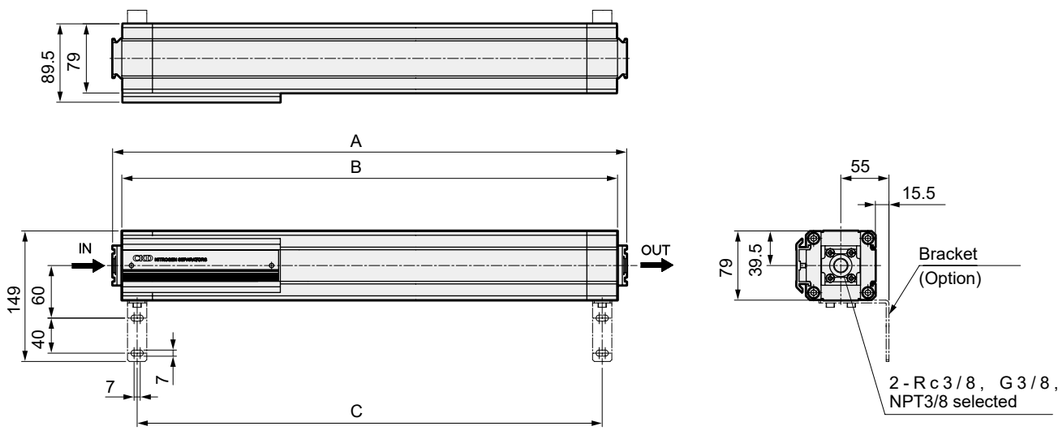
Conditions	Working Conditions	Selecting Conditions	Compensation coefficient for outlet nitrogen gas flow rate	Compensation coefficient for inlet air flow rate
Inlet air temperature	35 to 39°C	35°C	(1) 1.05	(3) 1.17
Inlet air pressure	0.5 to 0.55 MPa	0.5 MPa	(2) 0.65	(4) 0.79

Substitute the above conditions into the above formula to obtain the outlet nitrogen gas flow rate when NS-4L1 is used at 99% nitrogen concentration.
66.9 (rated outlet nitrogen gas flow rate) × 1.05×0.65=45.7 L/min (ANR).
If the required nitrogen gas flow rate is less than or equal to this value, select that model.
In this case, the inlet air flow rate is 278.8×1.17×0.79=257.7 L/min (ANR).

Dimensions



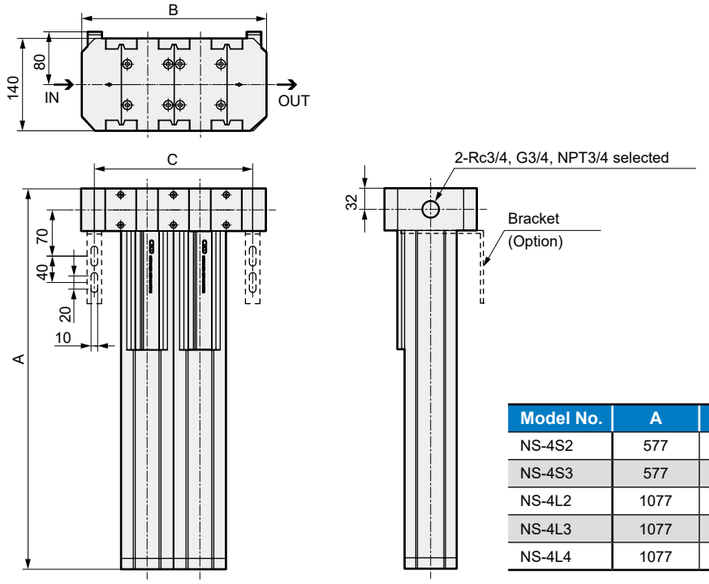
Model No.	A	B	C	D	Weight (kg)	Bracket relational dimensions							
						E	F	G	H	I	J	K	L
NS-3S1	315	85	71	63	1.8	345	55	30	7.5	330	7	40	8
NS-3L1	565	85	71	63	2.7	595	55	30	7.5	580	7	40	8
NS-4S1	565	100	90	79	4.0	605	70	32.5	10	585	9	50	10
NS-4L1	1065	100	90	79	6.8	1105	70	32.5	10	1085	9	50	10



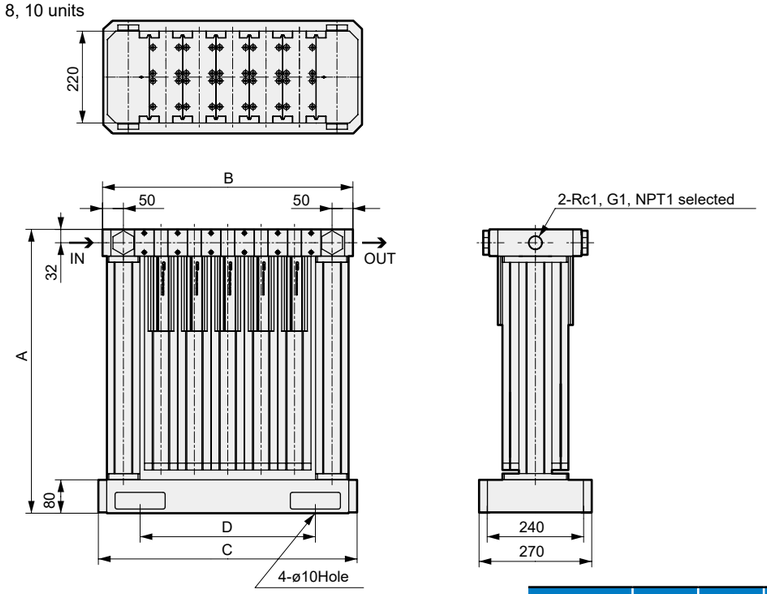
Model No.	A	B	C	Weight (kg)
NS-4S1□-□T	587	566	531	4.2
NS-4L1□-□T	1087	1066	1031	7.0

Dimensions

●Quantity: 2, 3, 4 units



●Quantity: 6, 8, 10 units



Model No.	A	B	C	Weight (kg)
NS-4S2	577	280	240	12
NS-4S3	577	360	320	17
NS-4L2	1077	280	240	18
NS-4L3	1077	360	320	25
NS-4L4	1077	440	400	32

Model No.	A	B	C	D	Weight (kg)
NS-4S6	680	440	460	260	41
NS-4S8	680	520	540	340	50
NS-4SA	680	600	620	420	59
NS-4L6	1180	440	460	260	63
NS-4L8	1180	520	540	340	78

For maintenance parts, refer to the CKD Components Product site
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." → Maintenance Parts

Safety Precautions

Be sure to read this section before use.
For general precautions for pneumatic equipment, please refer to Intro 15.

Product-specific cautions: Nitrogen Gas Extraction Unit NS, NSU Series

* For cautions of PNA and NS-QFS Series, refer to the product-specific cautions for each model (P. 52 and 44).

Design / Selection

WARNING

■ **Nitrogen gas may cause a risk of oxygen deprivation; therefore, use nitrogen gas in accordance with the following instructions.**
- Use in well ventilated locations.
- Ventilate the work area when nitrogen gas is being used.
- Periodically inspect the nitrogen gas piping for leaks.

■ **Oxygen-rich gas is discharged from the exhaust port of the membrane unit, so be aware of the following points when installing the equipment.**
- Install away from sources of fire and flammable substances.
- Ventilate the work area when equipment is being used.

■ **Do not use this product for purposes that directly concern human life.**

CAUTION

■ Working environment
- Avoid installing this product where it will be subject to direct sunlight or rain.
- As the bowl material is polycarbonate, avoid use with the following chemicals or in an atmosphere containing these chemicals. [NSU Series]
- Avoid use in environments where ozone is generated.
- Avoid use where vibration and impact are present.
- Avoid using this product where it will be subject to air with a relative humidity of 50% or more. (Performance will decrease sharply if the separation membrane gets wet with droplets (such as water).)
- Avoid using air containing corrosive gases (strong acidic gases such as hydrogen sulfide, sulfur dioxide, hydrogen chloride, fluorine, etc.) or strong alkali gases (amines, ammonia, caustic soda, etc.).

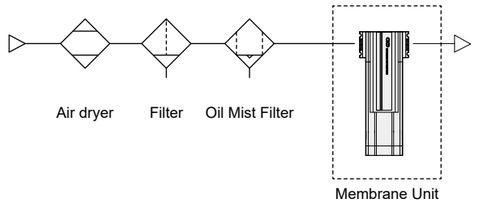
■ The needle valve cannot be used as a stop valve that requires no leakage. Slight leakage is allowed for in this product's specifications.

■ Dust cannot be completely kept out of the flow path. Install a final clean filter if dust could be a problem with the circuit. (Use anti-bacterial/bacteria-removing filters for food processes.)

■ Please use at your own discretion after thoroughly confirming the compatibility of the materials used in each device with the valve structure, fluid used, and atmosphere in which the device is used.

■ Internal parts may wear when the needle valve operates. If there is any influence, take necessary measures such as installing a filter on the secondary side.

■ Check the working circuit and working fluid.
To prevent drop in membrane unit performance, install the dryer, air filter and oil mist filter on the primary side, and remove water or oil. If the working fluid could contain hydrocarbons, install an activated carbon filter.



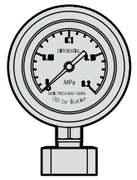
■ Install an oil removing filter (M-type) in front of the membrane unit inlet to remove all water drops and oil. If oil adheres to the separation membrane, nitrogen concentration may decrease. If oil adheres to the separation membrane, nitrogen concentration may decrease.

■ Install the regulator on the outlet side of the membrane unit.

■ When installing NS (2, 3 or 4 units), fix the inlet and outlet pipes or fix the body with a bracket.

■ When installing NS (6 or more units), place on a solid and flat surface that does not vibrate and fix the base with anchor bolts.

■ The oil mist filter comes to the end of its service life when the pressure drops to 0.07 MPa or after one year of use, whichever comes first. Replace the mantle with a new one at the end of its life. (Check the pressure drop with the differential pressure gauge.) (Do not touch the urethane rubber foam layer when replacing the mantel)
[NSU Series]





■ The service life of the membrane unit differs according to the working conditions. As a guideline, replace the membrane every 3 to 5 years..

■ Please note that it takes time to obtain the required nitrogen concentration after supplying compressed air.

Types of Chemicals	Categories of Chemicals	Main Products of Chemicals	General Applications	Polycarbonate
Inorganic compounds	Acids	Hydrochloric acid, sulfuric acid, fluorine, phosphoric acid, chromic acid, etc.	Acid washing of metals, acidic degreasing solutions, Coating treatment solution	×
	Alkalines	Caustic soda, caustic potash, calcium hydroxide, aqueous ammonia, sodium carbonate, etc.	Alkaline degreasing solution for metals	×
	Inorganic salts	Sodium sulfide, potassium nitrate, potassium bichromate, sodium sulfate, etc.		×
Organic compounds	Aromatic hydrocarbons	Benzene, toluene, xylene, ethyl benzene, styrene, etc.	Contained in paint thinner (benzene, toluene, xylene)	×
	Chlorinated Aliphatic Hydrocarbons	Methyl chloride, ethylene chloride, methylene chloride, acetylene chloride, chloroform, trichlene, perchlene, carbon tetrachloride	Organic Solvent-Based Washing Solution for Metals(Trichloroethylene, Tetrachloroethylene, Carbon Tetrachloride, etc.)	×
	Chlorinated Aromatic Hydrocarbons	Chlorobenzene, dichlorobenzene, benzene hexachloride (B/H/C), etc.	Agricultural chemicals	×
	Petroleum components	Solvent, naphtha, gasoline		×
	Alcohols	Methanol, ethanol, cyclohexanol, benzyl alcohol	Used as an antifreeze agent	×
	Phenol	Carbolic acid, cresol, naphthol, etc.	Disinfectant solution	×
	Ethers	Methyl ether, methyl ethyl ether, ethyl ether	Brake fluid additive	×
	Ketones	Acetone, methyl ethyl ketone, cyclohexanone, acetophenone, etc.		×
	Carboxylic acids	Formic acid, acetic acid, butyl acid, acrylic acid, oxalic acid, phthalic acid, etc.	Dyes/oxalic acid are used for aluminum treatment Phthalic Acid Is Used as a Paint Base	×
	Phosphate ester	Dimethyl phthalate (DMP), diethyl phthalate (DEP), dibutyl phthalate (DBP), dioctyl phthalate (DOP)	Lubricant, synthetic hydraulic fluid, rust preventative additives used as plasticizers for synthetic resins	×
	Oxyacids	Glycolic acid, lactic acid, malic acid, citric acid, tartaric acid		×
	Nitro compounds	Nitromethane, nitroethane, nitroethylene, nitrobenzene, etc.		×
	Amines	Methylamine, dimethylamine, ethylamine, aniline, acetanilide, etc.	Brake fluid additive	×
	Nitriles	Acetonitrile, acrylonitrile, benzonitrile, acetoisonitrile, etc.	Raw material for nitrile rubber	×

For precautions during mounting, installation, adjustment, use and maintenance, refer to the CKD Components Product Site (https://www.ckd.co.jp/kiki/en/) → "Model No. → Instruction Manual

Safety Precautions

Be sure to read this section before use.
For general precautions for pneumatic equipment, please refer to Intro 15.

Product-specific cautions: Flow rate sensor NS-QFS Series

Design / Selection

Working fluids

DANGER

■Never use this product with flammable fluids.

WARNING

■This product cannot be used as a billing meter.
Do not use this product for commercial transactions as it is not compliant with the Measurement Act. Intended applications include industrial sensors.

■Do not use fluids which are not applicable.

■Use dry gas which does not contain corrosive elements such as chlorine, sulfur or acids, and which is clean and does not contain dust or oil mist.

■Depending on the fluid, retaining the fluid for long periods could adversely affect the performance. Do not seal the fluid in the pipe for long periods of time.

■Working pressure / flow rate range
Applications exceeding the max. working pressure and specified flow rate range may result in breakdown. Use this product only within the specified range.

■When using a valve on the primary side of the sensor, use only valves with oil-prohibited specifications. This sensor could malfunction or fail if exposed to splattering grease, oil, etc. As friction powder may be generated depending on the valve, mount a filter to prevent the powder from entering the sensor.

Working environment

DANGER

■Explosion-proof environments: Never use this product in an explosive gas atmosphere. The structure is not explosion-proof, and explosions or fires could occur.

WARNING

■Corrosive environments: Do not use this product in an atmosphere containing corrosive gases such as sulfur dioxide.

■Ambient/fluid temperatures: Use ambient / fluid temperatures from 5 to 50°C within the specified range. Even if the temperature is within the specified range, do not use this product if the ambient temperature and fluid temperature could suddenly change and cause dew to condense.

■Drip-proof environments: The degree of protection of this product is equivalent to IP40. Do not install this product where water, salt, dust, or swarf is present or in a pressurized or depressurized environment. The product cannot be used with large temperature variations or high temperature/humidity since condensation may occur inside the body.

Flow rate unit

CAUTION

■This product's flow rate is measured at a mass flow rate unaffected by temperature or pressure. The unit is L/min, but this is the display when the mass flow rate is converted to volumetric flow rate at 20°C 1 atmosphere (101 kPa) relative humidity 65%RH.

Overflow

CAUTION

■There is no problem with the sensor even if an excess flow of about twice the measuring range is applied, but if dynamic pressure near the maximum working pressure is applied (pressure difference between the primary and secondary sides greater than the maximum working pressure), there is a possibility of sensor failure. When dynamic pressure is applied, such as when filling a workpiece for leakage inspection, be sure to provide a bypass circuit or a squeezer to prevent dynamic pressure from being applied to the sensor.

Other

CAUTION

■The flow path is not completely free of dust generation, so if dust generation is a problem, a final clean filter should be used in conjunction.

Piping

CAUTION

■Do not install a pressure reducing valve (regulator), solenoid valve, etc. immediately before this product. Deflected currents may occur and cause errors.

■This product is exclusively for Nitrogen Gas Extraction Unit system type NSU. When piping, use modular connections with our products.

For precautions during mounting, installation, adjustment, use and maintenance, refer to the CKD Components Product Site (https://www.ckd.co.jp/kiki/en/) → "Model No. → Instruction Manual

MEMO

Gas Generators
Nitrogen Gas Extraction Unit
Oxygen Conc. Monitor
Ending

Inline Oxygen Monitor
PNA

■ Gas generator



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Gas Generators
Nitrogen Extraction Unit
Oxygen Conc. Monitor

Inline Oxygen Monitor **PNA Series**

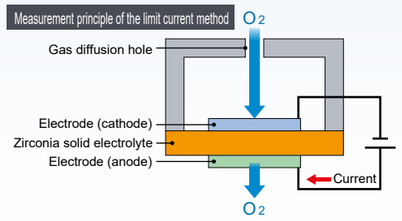
Oxygen concentration under pressurization can be known.



Limit current method

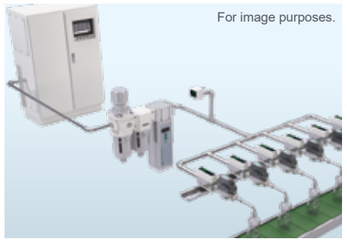
The PNA Series uses the limit current method. When voltage is applied to the zirconia element, an ion current flows with oxygen ions as carriers. When the oxygen concentration changes, the current characteristics change proportionally, enabling detection of the oxygen concentration. Durability and a long service life can be expected from this method.

Measurement principle of the limit current method



Examples of applications

Terminal concentration check



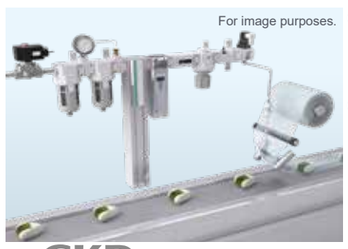
- Concentration check at start of work
- Normal concentration check
- Understanding maintenance timing

Gas concentration check in explosion-proof areas



- Concentration check at start of work
- Normal concentration check
- Alarm for hazardous concentrations

Nitrogen filling concentration check



- Concentration check when filling nitrogen
- Concentration setting

Checking gas for remaining oxygen removal

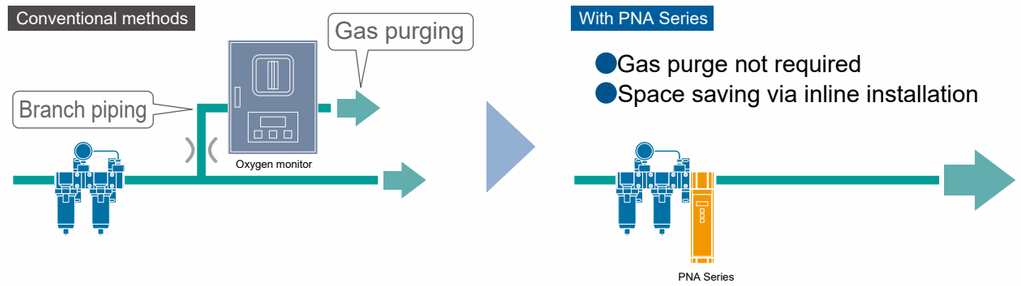


- Oxygen concentration check of removal gas
- Status monitoring

Saves energy, piping, and space

Realized pressure resistant structure for inline use. Modular structure saves piping space. Conventional gas purging is no longer necessary.





Easy to use

Oxygen/inert gas concentration display is switchable

With 100-oxygen concentration, the inert gas concentration is clear at a glance.

Upper/lower limit switch output setting and analog output are available

Alarms can be set for concentration changes, and status monitoring is possible.

With self-diagnostic function

Keeps you posted about abnormalities in the detector element.

Degree of protection IP65 or equivalent

Wet or dry, it still functions.

Pressure-resistant structure

Usable at pressures from atmospheric pressure through 1.0 MPa.



Oxygen concentration display



Inert gas concentration display

Compatible with FP Series for secure food manufacturing processes

For Safe and Secure Food Manufacturing Processes.

Food Sanitation Act Compliant Materials
Wetted parts resin/rubber

FP Food Process™

This logo represents our commitment to support food manufacturing processes with safe CKD products.
*Refer to catalog No.CC-1271AA for details.

CKD after-sales service

Calibration certificates (with traceability series variation diagram) can be issued.

The sensor of the oxygen monitor may deteriorate depending on the working conditions. Therefore, regular inspection and adjustment is required to maintain stable performance. To maintain performance longer, we recommend an annual inspection and adjustment service (with calibration certificate).



Inspection / Calibration / Repair Feel free to contact CKD for details.



Inline oxygen monitor

PNA Series

Purging not required due to the inline pressure resistant structure
A modular structure that can be connected to the Nitrogen Gas Extraction Unit NS Series and F.R unit

Refer to the CKD website for detailed compatible model Nos.

Model No. Notation

PNA - 10A - N - FP2

- PNA: Model No.
- 10A: ❶Port size
- N: ❷Traceability

Note: Connector cable is not included.

❶Port size

Code	Description
10A	Rc3/8
10B	G3/8
10C	NPT3/8

❷Traceability

Code	Description
N	None
M	Traceability certification with series variation diagram and company certification

Connector Cable Standalone Model No.

●DC cable

PNA-1D

❶ Cable length

❶Cable length

Code	Description
1D	1000 mm
3D	3000 mm
5D	5000 mm

●AC adapter single unit

PNA-A

●AC adapter + conversion plug set

PNA-AG

For Dimensions diagrams, refer to P. 51.

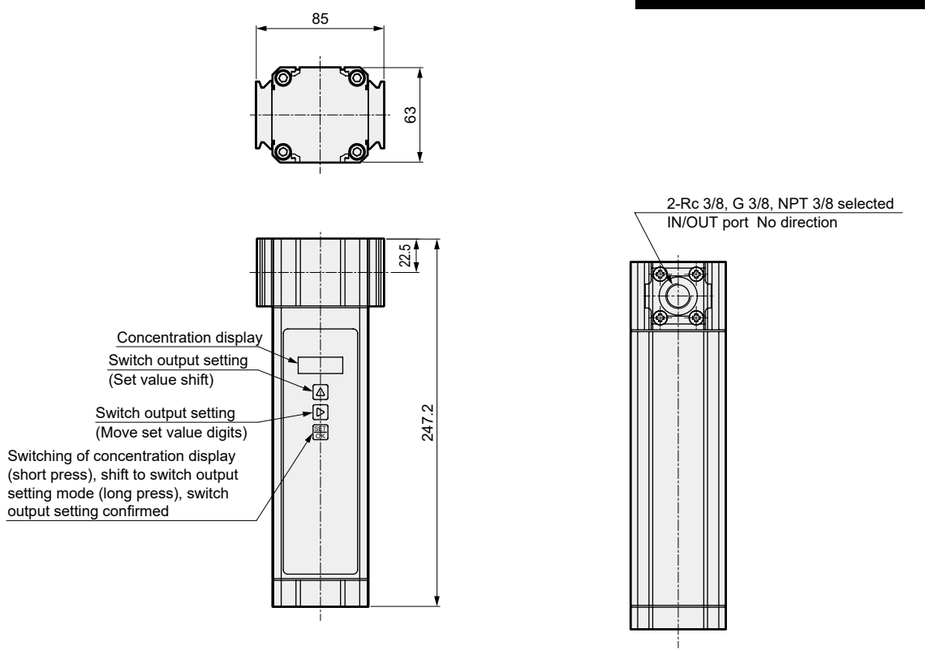
Specifications

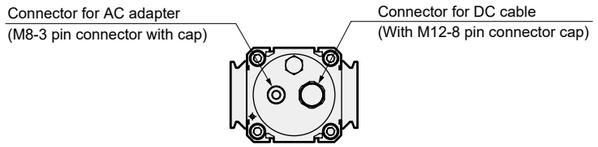
Item		PNA
Measuring method		Zirconia solid electrolyte method
Sampling method		Natural diffusion
Indicator		Can be switched between oxygen concentration display and nitrogen concentration display (100 - oxygen concentration)
Working fluid		Nitrogen-rich compressed air
Working pressure	MPa	0 to 1.0
Proof pressure	MPa	1.5
Ambient temperature, humidity		0 to 50°C, 80%RH or less (no condensation)
Fluid temperature		0 to 50°C (no condensation)
Storage ambient temperature, humidity		-10 to 60°C, 80%RH or less (no condensation)
Max. flow rate	L/min(ANR)	500 (*1)
Measured range	% **O2**	0.00 to 25.00
Accuracy	*2	±0.05% O_2 ±1digit (For 0.00 to 1.00% O_2) ±0.10% O_2 ±1digit (For 1.01 to 2.50% O_2) ±0.5% O_2 ±1digit (For 2.51 to 10.00% O_2) ±1.0% O_2 ±1digit (For 10.01 to 25.00% O_2)
Response time		90% response within 20 seconds (*3)
Analog output		4 to 20 mA current output (for 0.00 to 25.00% O_2)
Load resistance of analog output		0 to 400 Ω
Analog output accuracy		0.064 mA/0.1% O_2
Switch Output		Setting value and detection element abnormality: 1 (relay output)
Switch output capacity		24 VDC, 1A (*4)
Power supply voltage		24 VDC ±15% (when AC adapter is used: 100 to 240 VAC)
Power consumption		10 W or less
Degree of Protection		IP 65 or equiv.
EMC Directive		EN61326-1
Weight	kg	1.6
Warmup time		Approx. 5 minutes after power ON (*5)

*1: For 500 L/min (ANR) or more, contact CKD.
*2: Value in dry gas composed of oxygen and nitrogen.
*3: The response time is a value at a flow rate of 5 L/min (ANR) and over.
*4: Switch output capacity is DC only. Cannot be used with AC.
*5: Analog output and switch output are not output while warming up.

Dimensions

Do not disassemble



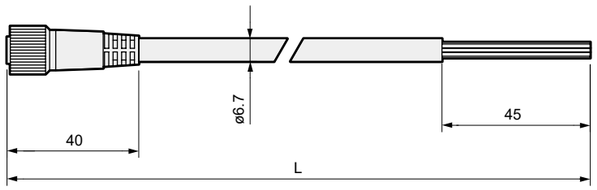


Model No. notation of connector cable / Dimensions

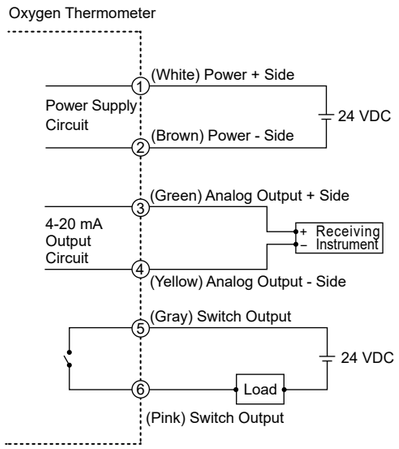
Note: The connector cable is sold separately from the main body.

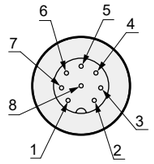
●DC cable
Use this cable when driving with a DC power supply or when using analog output or switch output.

Model No.	Dimension L
PNA-1D	1000
PNA-3D	3000
PNA-5D	5000



Wiring Example





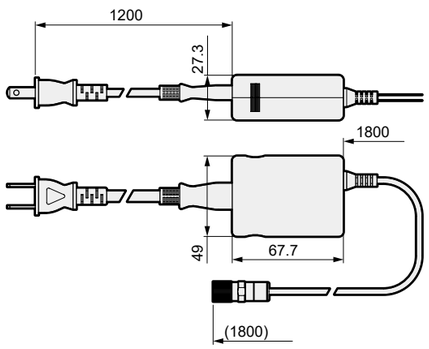
No.	Cable color	Description
1	White	Power supply +
2	Brown	Power supply -
3	Green	Analog output +
4	Yellow	Analog output -
5	Gray	Contact output (relay
6	Pink	output)
7	Blue	-
8	-	-

●AC adapter
Use when driving with an AC power supply.

Model No.	Description
PNA-A	AC adapter single unit A
PNA-AG	AC adapter + conversion plug set *Global power supply conversion plug B, C, O, BF included

・Plug shape

B-type	C-type	O-type	BF-type
			



Pneumatic components (oxygen monitor)

Safety Precautions

Be sure to read this section before use.
For general precautions for pneumatic equipment, please refer to Intro 15.

Product-specific cautions: Oxygen Sensor PNA Series

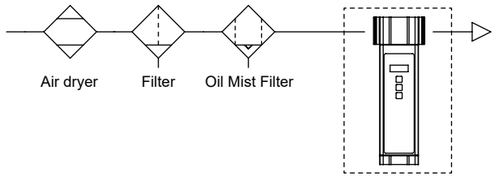
Design / Selection

⚠CAUTION

■Working environment
- Avoid installing this product where it will be subject to direct sunlight or rain.
- In the following atmospheres, the oxygen concentration monitor may generate measurement errors, or the performance of the components or oxygen detection element may suffer.
- Use outside the 0 to 50°C temperature range or with elements other than air causes significant measurement errors. Avoid using in such conditions.
- Air containing freon gas, silicon-based gas, SOx (sulfur oxide), H2S (hydrogen sulfide) or other corrosive gases, Cl2 (chlorine), F2 (fluorine), Br2 (bromine) or other halogen gases, or air that separates into these gases at high temperatures of approx. 500°C cannot be used.
- If used in air containing flammable gases, the flammable gas will burn and the results will decrease.
- Use in air containing large quantities of dust or oil mist will lead to element deterioration.
- The element will be damaged if the sensor is exposed to liquids such as water drops or liquid solutions.
- The element will be damaged if used in locations with strong impacts or vibrations.
- Avoid use in locations with strong magnetic fields or significant electrical noise.
- The results will fail to stabilize in environments where the pressure pulses (changes continuously) in a short cycle. Static pressure is required for stable measurements.

■Use after confirming the structure and material, valve structure, working fluids, and working atmospheres of each component carefully for yourself.

■Check the working circuit and working fluid.
To prevent decreased oxygen concentration monitor performance, install the dryer, air filter and oil mist filter on the primary side, and remove water or oil.



■This product does not have explosion-proof specifications. Since the detection element is heated by the heater, it may lead to an explosion if used in an explosive atmosphere.

■This product is not an oxygen detector. Do not use it as an oxygen concentration monitor in accordance with the Industrial Safety and Health Laws.

■When using this product as a CE compliant product, prepare a dedicated power supply.

■CE-compliance working conditions
This product is CE-marked, indicating conformity with the EMC Directives. The standard for the immunity for industrial environments applied to this product is EN61326-1. The following stability is applicable in an EMC Directive demand test environment.
Stability ±0.5% O_2 ±1digit (For 0.00 to 10.00% O_2 .)
±1.0% O_2 ±1digit (For 10.01 to 25.00% O_2.)

■Do not disassemble or modify the product as this may cause malfunctions.

■The sensor may deteriorate depending on the working conditions. Calibration once a year is recommended for maintaining long-term performance.

For precautions during mounting, installation, adjustment, use and maintenance, refer to the CKD Components Product Site (https://www.ckd.co.jp/kiki/en/) → "Model No. → Instruction Manual

Main Line Components

Listed page

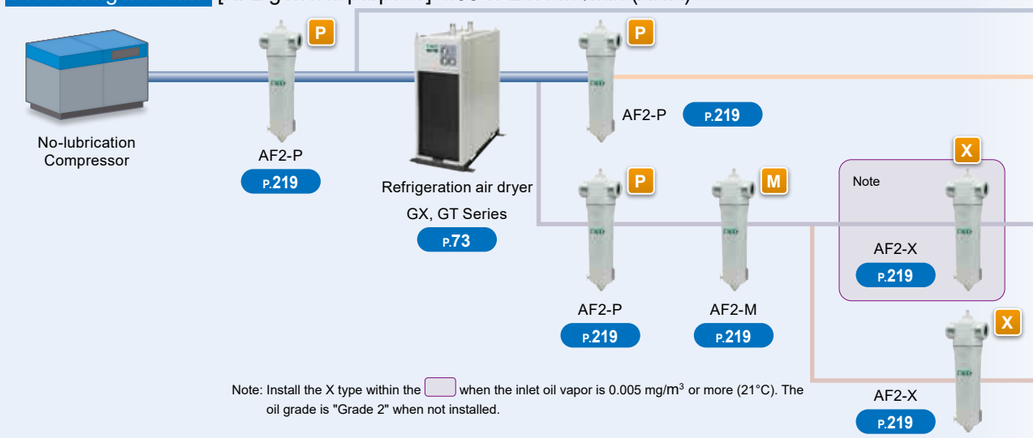
CONTENTS

System configuration	56
Roles and functions of main line components	58
Series variation	60
Indicatoring air flow rate	66
Cost of air and energy saving	67
Dew point	68
Selection guide of air dryer	70
Refrigeration Air Dryers	**73**
Desiccant Air Dryers	**137**
High Polymer Membrane Air Dryers	**169**
Main Line Filters	**207**
Condensate Drains	**287**

Recommended system configuration for Main Line Filter Components

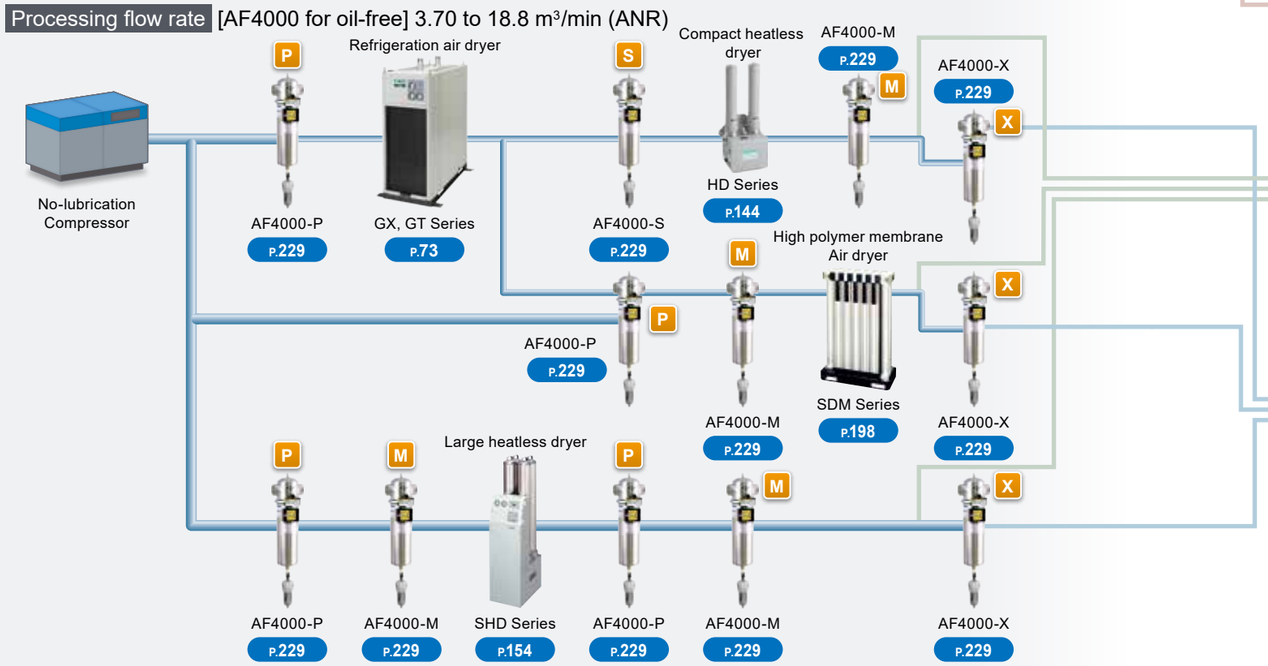
Medium Main Line Filters

Processing flow rate [AF2 general purpose] 4.95 to 24.1 m³/min (ANR)



Note: Install the X type within the ☐ when the inlet oil vapor is 0.005 mg/m³ or more (21°C). The oil grade is "Grade 2" when not installed.

Processing flow rate [AF4000 for oil-free] 3.70 to 18.8 m³/min (ANR)



Air Quality	Applications	Impurities in the Air: Individual particles	Impurities in the Air: Moisture	Impurities in the Air: Oil content	ISO 8573-1 compressed air purity grade
Dewatered air **Coarse dust removed air**	Air for cleaning (dry air not required)	1 µm	–	–	2: -: -
General dry air	General pneumatic components General pneumatic tools Labor-saving components Pneumatic jigs and tools Air chucks	1 µm	Pressure dew point 10°C	0.6 mg/m³	2.6.3
			Pressure dew point 7°C		2.5.3
Dry air (oil-free)	Instrumentation Measurement Sequence control Painting	0.01 µm	Pressure dew point 10°C	0.01 mg/m³ (0.003 mg/m³)	1.6.1
			Pressure dew point 7°C		1.5.1
Dry air (odorless)	Food and Pharmaceutical Processes (Stirring, dry blowing, packaging, brewing, pressure-feeding, filling) Cosmetic Manufacturing Processes *If the product directly contacts the workpiece, it is recommended to install a bacteria-removing filter.	0.01 µm	Pressure dew point 10°C	0.003 mg/m³	1.6.1
			Pressure dew point 7°C		1.5.1
Ultra dry air (oil-free)	Ozone generator Powder transfer Drying furnace gas Drying the insulation gas of a high-voltage generator Drying computer rooms Centralized control instrumentation Liquid crystal panel manufacturing Chemical plants Painted	0.01 µm	Pressure dew point -20°C	0.01 mg/m³	1.3.1
			Pressure dew point -40°C		1.2.1
			Pressure dew point -60°C		1.2.1
Ultra dry air (odorless)	Food and Pharmaceutical Processes (Stirring, dry blowing, packaging, brewing, pressure-feeding, filling) Cosmetic Manufacturing Processes *If the product directly contacts the workpiece, it is recommended to install a bacteria-removing filter.	0.01 µm	Pressure dew point -20°C	0.003 mg/m³	1.3.1
			Pressure dew point -40°C		1.2.1
			Pressure dew point -60°C		1.2.1

*1. The system No. is based on the class below. X not found in the table indicates odor removal; and "–" indicates no specification.

AF2 Series Variations

Removes oil mist and solids
Protects Expensive Pneumatic Components.



- Removes particles 1 µm and larger
- Removes oil content up to 0.3 mg/m³ concentration on the secondary side (21°C)

P TYPE

High-performance removal of oil mist and solids.
For Pneumatic Circuits Which Prohibit Passage of Oil.



- Removes particles 0.01 µm and larger
- Removes oil content up to 0.01 mg/m³ concentration on the secondary side (21°C)

M TYPE

Removes oil mist and odors
Protects Expensive Pneumatic Components.



- Suction by activated carbon
- Removes oil vapor and odors up to 0.003 mg/m³ concentration on the secondary side (21°C)

X TYPE

AF4000 Series Variations

Removing Water Drops Solid Particle Removal
Ideal for use as a pre-filter for air dryers.



- Removes particles 5 µm and larger
- Water separation efficiency 99%

P TYPE

Solid Particle Removal
Protects Expensive Pneumatic Components.



- Removes particles 1 µm and larger

S TYPE

High-performance removal of oil mist and solids
For Pneumatic Circuits Which Prohibit Passage of Oil.



- Removes particles 0.01 µm and larger
- Oil content is removed up to 0.01 mg/m³ concentration on the secondary side (20°C)

M TYPE

Removes oil vapor and odors
For pneumatic circuits which prohibit passage of odors



- Activated carbon fiber adsorption
- Removes oil vapor and odors up to 0.003 mg/m³ concentration on the secondary side (20°C)

X TYPE

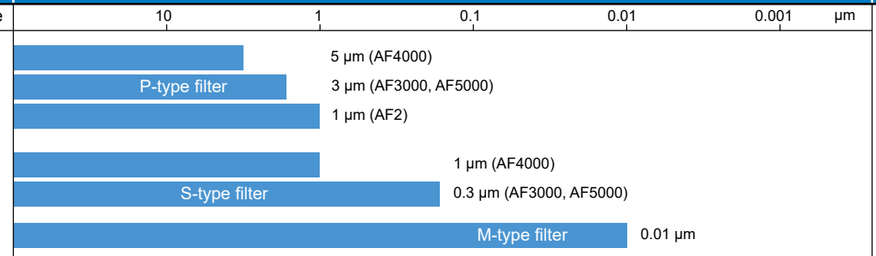
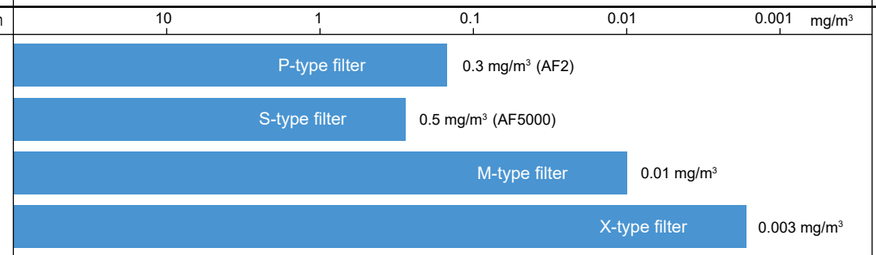
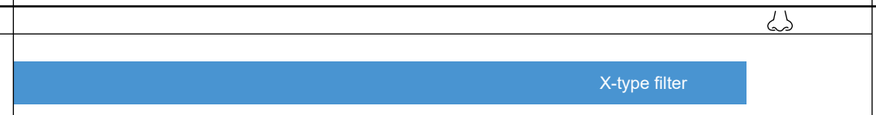
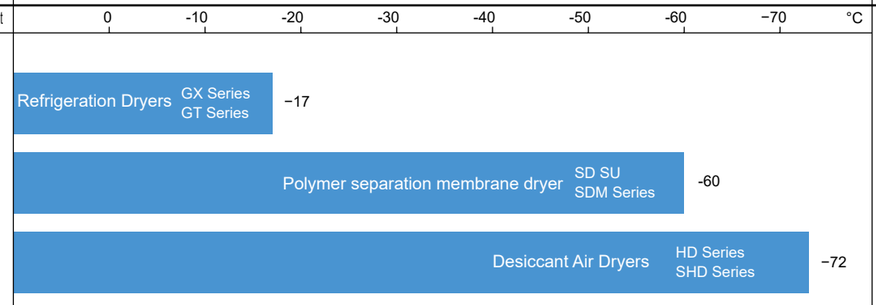
*1: If your conditions are different, refer to the specifications in the catalog in order to select a model.
*2: This example of system selection is based on an air-cooling refrigeration air dryer. When making a selection based on an air-cooling refrigeration air dryer, the model No. of the filter may vary since the standard processing air flow rate may differ. Contact CKD Sales for details.
*3: Air filter and oil mist filter are to be used where the inlet air temperature is 60°C or less, and X-type where the inlet air temperature is 30°C or less. If air temperature from the secondary side of the refrigeration air dryer is high, keep enough distance from the refrigeration air dryer to maintain a temperature no greater than the inlet air temperature.
*4: This system cannot be used for high pressure specifications (1 to 1.6 MPa). In that case, contact CKD Sales.
*5: Use anti-rust processed materials for piping (zinc plated pipe, lined pipe or stainless steel pipe).
*6: If there is a possibility of a large instantaneous air flow rate greater than the amount of air treated by the refrigeration air dryer, install a tank on the secondary side of the refrigeration air dryer. Installing a tank supplies stable moisture removed air.
*7: The air filter at the secondary side of the refrigeration air dryer can be used as a pre-filter before an oil mist filter.
*8: Depending on working conditions, condensation may form on the inside of the refrigeration air dryer and drip to the floor. To prevent water drops from flowing out, install a drain-pan, etc., before installing the dryer.
*9: Please feel free to consult with our sales staff when considering energy-saving systems.
*10: Install a filter immediately before the equipment to be used to remove contaminants existing in the piping.

ISO 8573-1: 2010 Compressed air purity grade

Grade	Solid Particles: Max. number of particles per m³ for particle diameter d (µm) 0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0	Solid Particles: Mass Concentration Cp mg/m³	Humidity and Water Content: Pressure dew point °C	Humidity and Water Content: Water Concentration Cw g/m³	Oil: Total Oil Concentration mg/m³
0	Conditions stricter than Grade 1, is to be specified by the user or supplier						
1	≤ 20,000	≤ 400	≤ 10	-	≤ -70	-	≤ 0.01
2	≤ 400,000	≤ 6,000	≤ 100	-	≤ -40	-	≤ 0.1
3	-	≤ 90,000	≤ 1,000	-	≤ -20	-	≤ 1
4	-	-	≤ 10,000	-	≤ +3	-	≤ 5
5	-	-	≤ 100,000	-	≤ +7	-	-
6	-	-	-	0 < Cp ≤ 5	≤ +10	-	-
7	-	-	-	5 < Cp ≤ 10	-	Cw ≤ 0.5	-
8	-	-	-	-	-	0.5 < Cw ≤ 5	-
9	-	-	-	-	-	5 < Cw ≤ 10	-
X	-	-	-	Cp > 10	-	Cw > 10	> 5

For example, "Grade 1: 2: 1" means:
●Solid particles 0.1 to 0.5 µm are 20,000 particles or less, 0.5 to 1.0 µm are 400 particles or less, and 1.0 to 5.0 µm are 10 particles or less
●Pressure dew point −40°C or less
●Oil concentration 0.01 mg/m³or less
and these indicate the class.

Roles and functions of Main Line Components

Appearance		Components removed	Removal performance	Page
Main Line Filters	 ・AF2 Series  ・AF4000 Series  ・AF3000 Series  ・AF5000 Series	Particle Solid foreign matter Contaminant Dust		207
		Oil content		207
		Odor		207
Air dryer	 ・GX Series  ・SU Series  ・SDM Series  ・GT Series  ・HD Series  ・SHD Series	Moisture		Refrigeration 73 High polymer membrane 169 Desiccant 137

Refrigeration Air Dryers

Compressor kW (horsepower *1)	Standard processing air flow rate m³/min (ANR)	Refrigeration Dryers GX Series	GT Series	Water Cooling Series	Main Line Filters P-type Water and solid removing (Filtration rating)	Micro-mist separator S-type Oil removing (Degree of filtration)	M-type High-performance oil removing (Degree of filtration)	X-type For deodorizing (Degree of filtration)
		Pressure dew point 10°C						
Up to 0.75 (-1)	0.10/0.11	GX3203D GX5203D	-	-	F2000-10-W-F1 (5 μm)	M2000-10-W-F1S (0.3 μm)	M2000-10-W-F1 (0.01 μm)	M2000-10-W-X
1.5 (2)	0.20/0.22	GX3203D GX5203D	-	-	F2000-10-W-F1 (5 μm)	M2000-10-W-F1S (0.3 μm)	M2000-10-W-F1 (0.01 μm)	M2000-10-W-X
2.2 (3)	0.30/0.35	GX3203D GX5203D	-	-	F3000-10-W-F (5 μm)	M3000-10-W-F1S (0.3 μm)	M4000-10-W-F1 (0.01 μm)	M4000-10-W-X
3.7 (5)	0.40/0.52	GX3206D GX5204D	-	-	F3000-10-W-F (5 μm)	M4000-10-W-F1S (0.3 μm)	M6000-20-W-F1 (0.01 μm)	M6000-20-W-X
5.5 (7.5)	0.64/0.72	GX3206D GX5206D	-	-	F4000-15-W-F (5 μm)	M4000-15-W-F1S (0.3 μm)	M6000-20-W-F1 (0.01 μm)	M6000-20-W-X
7.5 (10)	1.22/1.32	GX3208D GX5208D	-	-	F6000-20-W-F (5 μm)	M6000-20-W-F1S (0.3 μm)	M8000-20-W-F1 (0.01 μm)	M8000-20-W-X
11 (15)	1.65/1.82	GX3211D GX5211D	-	-	F8000-25-W-F (5 μm)	M8000-25-W-F1S (0.3 μm)	M8000-25-W-F1 (0.01 μm)	M8000-25-W-X

Compressor kW (horsepower *1)	Standard processing air flow rate m³/min (ANR)	Refrigeration Dryers GX Series	GT Series	Water Cooling Series	Main Line Filters General Purpose P-type Water and Solid Removing (Filtration rating)	Micro-mist separator General Purpose S-type For oil removal (Filtration rating)	Main Line Filters Oil-free P-type Water and Solid Removing (Filtration rating)	Micro-mist separator Oil-free S-type For oil removal (Filtration rating)	Micro-mist separator General Purpose M-type High-performance oil removing (Filtration rating)	Micro-mist separator General Purpose X-type For deodorizing (Filtration rating)	Micro-mist separator Oil-free M-type High-performance oil removing (Filtration rating)	Micro-mist separator Oil-free X-type For deodorizing (Filtration rating)
		Pressure dew point 10°C										
15 (20)	2.40/2.80	GX3215D GX5215D	-	-	AF2-05P25A (1 μm)		AF4004P-25 (5 μm)	AF4004S-25 (1 μm)	AF2-05M25A (0.01 μm)	AF2-05X25A	AF4004M-25 (0.01 μm)	AF4004X-25
22 (30)	3.70/4.20	GX3222D GX5222D	-	-	AF2-08P40A (1 μm)		AF4007P-40 (5 μm)	AF4007S-40 (1 μm)	AF2-08M40A (0.01 μm)	AF2-08X40A	AF4007M-40 (0.01 μm)	AF4007X-40
37 (50)	5.70/6.10	GX3237D GX5237D	-	-	AF2-08P40A (1 μm)		AF4010P-40 (5μm)	AF4010-S-40 (1μm)	AF2-08M40A (0.01 μm)	AF2-08X40A	AF4010M-40 (0.01 μm)	AF4010X-40
55 (75)	8.40/9.80	GX3255D GX5255D	-	-	AF2-13P50A (1 μm)		AF4013P-50 (5 μm)	AF4013S-40 (1 μm)	AF2-13M50A (0.01 μm)	AF2-13X50A	AF4013M-50 (0.01 μm)	AF4013X-50
75 (100)	11.4/12.6	GX5275D	GT9075D	GT9075WD	AF2-20P50A (1μm) AF3016P-50 (3 μm)	AF3016S-50 (0.3 μm)	AF5016P-50 (3 μm)	AF4020S-50 (1 μm) AF5016S-50 (0.3 μm)	AF2-20M50A AF3016M-50 (0.01 μm)	AF2-20X50A AF3016X-50	AF4020M-50 AF5016M-50 (0.01 μm)	AF4020X-50 AF5016X-50
90 (120)	16.3/18.9	-	GT9090D	GT9090WD	AF2-20P50A (1μm) AF3032P-80 (3 μm)	AF302S-80 (0.3 μm)	AF5032P-80 (3 μm)	AF4020S-50 (1 μm) AF5032S-50 (0.3 μm)	AF2-20M50A (0.01 μm)	AF2-20X50A	AF4020M-50 AF5032M-80 (0.01 μm)	AF4020X-50 AF5032X-80
120 (160)	20.8/23.8	-	GT9120D	GT9120WD	AF2-24P65A (1μm) AF3032P-80 (3 μm)	AF3032S-80 (0.3 μm)	AF5032P-80 (3 μm)	AF5032S-50 (0.3 μm)	AF2-24M65A AF3032M-80 (0.01 μm)	AF2-24X65A AF3032X-80	AF5032M-80 (0.01 μm)	AF5032X-80
150 (200)	25.9/30.1	-	GT9150D	GT9150WD	AF3032P-80 (3 μm)	AF3032S-80 (0.3 μm)	AF5032P-80 (3 μm)	AF5032S-80 (0.3 μm)	AF3032M-80 (0.01 μm)	AF3032X-80	AF5032M-80 (0.01 μm)	AF5032X-80
190 (250)	32.1/38.1	-	GT9190D	GT9190WD	AF3048P-100 (3 μm)	AF3048S-100 (0.3 μm)	AF5048P-100 (3 μm)	AF5048S-100 (0.3 μm)	AF3048M-100 (0.01 μm)	AF3048X-100	AF5048M-100 (0.01 μm)	AF5048X-100
240 (320)	36.5/43.0	-	GT9240	GT9240W	AF3048P-100 (3 μm)	AF3048S-100 (0.3 μm)	AF5048P-100 (3 μm)	AF5048S-100 (0.3 μm)	AF3048M-100 (0.01 μm)	AF3048X-100	AF5048M-100 (0.01 μm)	AF5048X-100
300 (400)	44.2/52.0	-	GT9300	GT9300W	AF3064P-100 (3 μm)	AF3064S-100 (0.3 μm)	AF5064P-100 (3 μm)	AF5064S-100 (0.3 μm)	AF3064M-100 (0.01 μm)	AF3064X-100	AF5064M-100 (0.01 μm)	AF5064X-100
380 (505)	55.2/65.0	-	GT9380	GT9380W	AF3080P-100 (3 μm)	AF3080S-100 (0.3 μm)	AF5080P-100 (3 μm)	AF5080S-100 (0.3 μm)	AF3080M-100 (0.01 μm)	AF3080X-100	AF5080M-100 (0.01 μm)	AF5080X-100
450 (600)	70.3/82.8	-	GT9450	GT9450W	AF3096P-150 (3 μm)	AF3096S-150 (0.3 μm)	AF5096P-150 (3 μm)	AF5096S-150 (0.3 μm)	AF3096M-150 (0.01 μm)	AF3096X-150	AF5096M-150 (0.01 μm)	AF5096X-150
710 (950)	139.1	-	-	GT9710WV2	AF3160P-200 (3 μm)	AF3160S-200 (0.3 μm)	AF5160P-200 (3 μm)	AF5160S-200 (0.3 μm)	AF3160M-200 (0.01 μm)	AF3160X-200	AF5160M-200 (0.01 μm)	AF5160X-200
960 (1280)	184.2	-	-	GT9960WV2	AF3192P-200 (3 μm)	AF3192S-200 (0.3 μm)	AF5192P-200 (3 μm)	AF5192S-200 (0.3 μm)	AF3192M-200 (0.01 μm)	AF3192X-200	AF5192M-200 (0.01 μm)	AF5192X-200

*1: 1 PS (horsepower) is equivalent to 0.7355 kW, but conventionally expressed in 1 PS=0.75 kW.
*2: This list is for selection guide. For the final selection, refer to the relevant page and select a model upon confirming installation and operating conditions.
*3: Use AF2 and AF3000 Series in oil type compressor systems, and AF4000 and AF5000 Series in oil-prohibited compressor systems.

Desiccant Air Dryer (heatless dryer)

Compressor	Standard processing air flow rate	Desiccant Dryers					Main Line Filters		Micro-mist separator		
		Compact HD Series			Large SHD Series						
kw (horsepower) *1	m^3/min (ANR)	Atmospheric dew point -17.5°C	Atmospheric dew point -40°C	Atmospheric dew point -72°C	Pressure dew point -20°C (-40°C) /*5 -40°C (-57°C)	Pressure dew point -60°C (-74°C) *5	P-type Water and Solid Removing (Filtration rating)		S-type For oil removal (Filtration rating)	M-type High-performance oil removing (Filtration rating)	X-type For deodorizing (Filtration rating)
Up to 0.4 (0.53)	0.042/0.049	-	-	HD-0.5	-	-	F2000-10-W-F1 (5 µm)		M2000-10-W-F1S (0.3 µm)	M2000-10-W-F1 (0.01 µm)	M2000-10-W-X
0.75 (-1)	0.10/0.11	HD-0.5	HD-0.5	HD-1	-	-	F2000-10-W-F1 (5 µm)		M2000-10-W-F1S (0.3 µm)	M2000-10-W-F1 (0.01 µm)	M2000-10-W-X
1.5 (2)	0.20/0.22	HD-1	HD-1	HD-1.5	-	-	F2000-10-W-F1 (5 µm)		M2000-10-W-F1S (0.3 µm)	M2000-10-W-F1 (0.01 µm)	M2000-10-W-X
2.2 (3)	0.30/0.35	HD-1.5	HD-1.5, -2	HD-2	-	-	F3000-10-W-F (5 µm)		M3000-10-W-F1S (0.3 µm)	M4000-10-W-F1 (0.01 µm)	M4000-10-W-X
3.7 (5)	0.40/0.52	HD-2	HD-4	HD-4	-	-	F3000-10-W-F (5 µm)		M4000-10-W-F1S (0.3 µm)	M6000-20-W-F1 (0.01 µm)	M6000-20-W-X
5.5 (7.5)	0.64/0.72	HD-4	-	HD-6	-	-	F4000-15-W-F (5 µm)		M4000-15-W-F1S (0.3 µm)	M6000-20-W-F1 (0.01 µm)	M6000-20-W-X
7.5 (10)	1.22/1.32	HD-6	HD-6	HD-9	-	-	F6000-20-W-F (5 µm)		M6000-20-W-F1S (0.3 µm)	M8000-20-W-F1 (0.01 µm)	M8000-20-W-X
11 (15)	1.65/1.82	HD-9	HD-9	-	-	-	F8000-25-W-F (5 µm)		M8000-25-W-F1S (0.3 µm)	M8000-25-W-F1 (0.01 µm)	M8000-25-W-X

Compressor	Standard processing air flow rate	Desiccant Dryers					Main Line Filters	Micro-mist separator	Main Line Filters	Micro-mist separator	Micro-mist separator			
		Compact HD Series			Large SHD Series		General Purpose		Oil-free		General Purpose		Oil-free	
kw (horsepower) *1	m^3/min (ANR)	Atmospheric dew point -17.5°C	Atmospheric dew point -40°C	Atmospheric dew point -72°C	Pressure dew point -20°C (-40°C) /*5 -40°C (-57°C)	Pressure dew point -60°C (-74°C) *5	P-type/Water and Solid Removing (Filtration rating)	S-type For oil removal (Filtration rating)	P-type Water and Solid Removing (Filtration rating)	S-type For oil removal (Filtration rating)	M-type High-performance oil removing (Filtration rating)	X-type For deodorizing (Filtration rating)	M-type High-performance oil removing (Filtration rating)	X-type For deodorizing (Filtration rating)
15 (20)	2.40/2.80	HD-9	-	-	SHD3025-G/M	SHD3025-M	AF2-05P25A (1 µm)		AF4004P-25 (5 µm)	AF4004S-25 (1 µm)	AF2-05M25A (0.01 µm)	AF2-05X25A	AF4004M-25 (0.01 µm)	AF4004X-25
22 (30)	3.70/4.20	-	-	-	SHD3045-G/M	SHD3045-M	AF2-11P40A (1 µm)		AF4007P-40 (5 µm)	AF4007S-40 (1 µm)	AF2-08M40A (0.01 µm)	AF2-08X40A	AF4007M-40 (0.01 µm)	AF4007X-40
37 (50)	5.70/6.10	-	-	-	SHD3075-G/M	SHD3075-M	AF2-08P40A (1 µm)		AF4010P-40 (5µm)	AF4010-S-40 (1µm)	AF2-11M40A (0.01 µm)	AF2-11X40A	AF4010M-40 (0.01 µm)	AF4010X-40
55 (75)	8.40/9.80	-	-	-	SHD3100-G/M	SHD3100-M	AF2-13P50A (1 µm)		AF4010P-40 (5µm)	AF4010S-40 (1µm)	AF2-13M50A (0.01 µm)	AF2-13X50A	AF4010M-40 (0.01 µm)	AF4010X-50
75 (100)	11.4/12.6	-	-	-	SHD3125-G/M SHD3150-G/M	SHD3125-M SHD3150-M	AF2-13P50A AF2-20P50A (1 µm)	-	AF4013P-50 (5µm) AF4020S-50 (1 µm)	AF4013S-50 (1 µm) AF4020S-50 (1µm)	AF2-13M50A AF2-20M50A (0.01 µm)	AF2-13X50A AF2-20X50A	AF4013M-50 AF4020M-50 (0.01 µm)	AF4013X-50 AF4020X-50
90 (120)	16.3/18.9	-	-	-	SHD3200-G/M	SHD3200-M	AF2-24P65A (1 µm)	-	AF5032P-80 (3 µm)	AF5032S-50 (0.3 µm)	AF2-24M65A (0.01 µm)	AF2-24X65A	AF5032M-80 (0.01 µm)	AF5032X-80
120 (160)	20.8/23.8	-	-	-	SHD3240-G/M	SHD3240-M	AF2-24P65A (1 µm)	-	AF5032P-80 (3 µm)	AF5032S-50 (0.3 µm)	AF2-24M65A AF3032M-80 (0.01 µm)	AF2-24X65A AF3032X-80	AF5032M-80 (0.01 µm)	AF5032X-80

*1: 1 PS (horsepower) is equivalent to 0.7355 kW, but conventionally expressed in 1 PS=0.75 kW.
*2: This list is for selection guide. For the final selection, refer to the relevant page and select a model upon confirming installation and operating conditions.
*3: Use AF2 and AF3000 Series in oil type compressor systems, and AF4000 and AF5000 Series in oil-prohibited compressor systems.
*4: This table has been prepared based on the conditions of "inlet air pressure: 0.7 MPa, inlet air temperature: in accordance with the rating of each series". In cases when the conditions are different, a model will be corrected based on multiplier calculations.
*5: The value in ( ) is the atmospheric dew point converted value.

High Polymer Membrane Air Dryer (Super Dryer)

Compressor	Standard processing air flow rate m^3/min (ANR)	Standard dew point		Low dew point					Large flow rate manifold			Main Line Filters	Micro-mist separator		
kw (horsepower) *1		Low purge type Purge rate 10% atmospheric dew point -15°C	Large flow rate type Purge rate 20% atmospheric dew point -20°C	Standard dew point Unit type atmospheric dew point -20°C	Low dew point Unit type atmospheric dew point -40°C	Standard dew point Discrete type atmospheric dew point -20°C	Low dew point atmospheric dew point -40°C	Ultra-low dew point Discrete atmospheric dew point -60°C	Atmospheric dew point -20°C	Atmospheric dew point -40°C	Atmospheric dew point -60°C	P-type Water and Solid Removing (Filtration rating)	S-type For oil removal (Filtration rating)	M-type High-performance oil removing (Filtration rating)	X-type For deodorizing (Filtration rating)
Up to 0.2 (0.15)	0.021/0.025	-	-	-	-	-	-	SD3015-C	-	-	-	F2000-10-W-F1 (5 µm)	M2000-10-W-F1S (0.3 µm)	M2000-10-W-F1 (0.01 µm)	M2000-10-W-X
0.4 (0.53)	0.042/0.049	SD/SU301E	-	-	SU3015-B	-	SD3015-B	SD3025-C	-	-	-	F2000-10-W-F1 (5 µm)	M2000-10-W-F1S (0.3 µm)	M2000-10-W-F1 (0.01 µm)	M2000-10-W-X
0.75 (1)	0.10/0.11	SD/3U302E	SD/SU301D	SU3015-A	SU3025-B	SD3015-A	SD3035-B	SD3050-C	-	-	-	F2000-10-W-F1 (5 µm)	M2000-10-W-F1S (0.3 µm)	M2000-10-W-F1 (0.01 µm)	M2000-10-W-X
1.5 (2)	0.20/0.22	-	SD/SU302D	-	SU3050-B	-	SD3050-B	SD3075/ 4050-C	-	-	-	F2000-10-W-F1 (5 µm)	M2000-10-W-F1S (0.3 µm)	M2000-10-W-F1 (0.01 µm)	M2000-10-W-X
2.2 (3)	0.30/0.35	SD/SU401E	-	SU3025-A	-	SD3025-A	SD3075/ 4050-B	SD4075-C	-	-	-	F3000-10-W-F (5 µm)	M3000-10-W-F1S (0.3 µm)	M4000-10-W-F1 (0.01 µm)	M4000-10-W-X
3.7 (5)	0.40/0.52	SD/SU402E	SD/SU401D	SU3035-A	-	SD3035/ 4050-A	SD4075-B	SD4100-C	-	-	SDM4050-2-C	F3000-10-W-F (5 µm)	M4000-10-W-F1S (0.3 µm)	M6000-20-W-F1 (0.01 µm)	M6000-20-W-X
5.5 (7.5)	0.64/0.72	-	SD/SU402D	SU3050-A	-	SD3050-A	SD4100-B	-	-	SDM4050-2-B	SDM4075-2-C	F4000-15-W-F (5 µm)	M4000-15-W-F1S (0.3 µm)	M6000-20-W-F1 (0.01 µm)	M6000-20-W-X
7.5 (10)	1.22/1.32	-	-	SU3075-A	-	SD3075/ 4075-A	-	-	SDN4050-2-A	SDM4075-2-B	SDM4075-3-C	F6000-20-W-F (5 µm)	M6000-20-W-F1S (0.3 µm)	M8000-20-W-F1 (0.01 µm)	M8000-20-W-X
11 (15)	1.65/1.82	-	-	SU4100-A	-	SD4100-A	-	-	SDM4075-2-A	SDM4075-3-B	SDM4100-3-C	F8000-25-W-F (5 µm)	M8000-25-W-F1S (0.3 µm)	M8000-25-W-F1 (0.01 µm)	M8000-25-W-X

Compressor	Standard processing air flow rate m^3/min (ANR)	Standard dew point		Low dew point					Large flow rate manifold			Main Line Filters	Micro-mist separator	Main Line Filters	Micro-mist separator	Micro-mist separator			
												General Purpose		Oil-free		General Purpose		Oil-free	
kw (horsepower) *1		Low purge type Purge rate 10% atmospheric dew point -15°C	Large flow rate type Purge rate 20% atmospheric dew point -20°C	Standard dew point Unit type atmospheric dew point -20°C	Low dew point Unit type atmospheric dew point -40°C	Standard dew point Discrete type atmospheric dew point -20°C	Low dew point atmospheric dew point -40°C	Ultra-low dew point Discrete atmospheric dew point -60°C	Atmospheric dew point -20°C	Atmospheric dew point -40°C	Atmospheric dew point -60°C	P-type/Water and Solid Removing (Filtration rating)	S-type For oil removal (Filtration rating)	P-type/Water and Solid Removing (Filtration rating)	S-type/For oil removal (Filtration rating)	M-type/High-performance oil removing (Filtration rating)	X-type For deodorizing (Filtration rating)	M-type/High-performance oil removing (Filtration rating)	X-type For deodorizing (Filtration rating)
15 (20)	2.40/2.80	-	-	-	-	-	-	-	SDM4075-3-A	SDM4100-3-B	SDM4075-8-C	AF2-05P25A (1 µm)		AF4004P-25 (5 µm)	AF4004S-25 (1 µm)	AF2-05M25A (0.01 µm)	AF2-05X25A	AF4004M-25 (0.01µm)	AF4004X-25
22 (30)	3.70/4.20	-	-	-	-	-	-	-	SDM4050-6-A	SDM4075-6-B	SDM4075-10-C	AF2-08P40A (1 µm)		AF4007P-40 (5 µm)	AF4007S-40 (1 µm)	AF2-08M40A (0.01 µm)	AF2-08X40A	AF4007M-40 (0.01µm)	AF4007X-40
37 (50)	5.70/6.10	-	-	-	-	-	-	-	SDM4075-6-A	SDM4075-10-B	-	AF2-08P40A (1 µm)		AF4010P-40 (5 µm)	AF4010S-40 (1 µm)	AF2-08M40A (0.01 µm)	AF2-08X40A	AF4010M-40 (0.01µm)	AF4010X-40
55 (75)	8.40/9.80	-	-	-	-	-	-	-	SDM4100-6-A	-	-	AF2-13P50A (1 µm)		AF4013P-50 (5 µm)	AF4013S-40 (1 µm)	AF2-13M50A (0.01 µm)	AF2-13X50A	AF4013M-50 (0.01µm)	AF4013X-50
75 (100)	11.4/12.6	-	-	-	-	-	-	-	SDM4100-8-A	-	-	AF2-20P50A (1 µm)		AF4020P-50 (5 µm) AF5016P-50 (3 µm)	AF4020S-50 (1 µm) AF5016S-50 (0.3 µm)	AF2-20M50A AF3016M-50 (0.01 µm)	AF2-20X50A AF3016X-50	AF4020M-50 AF5016M-50 (0.01 µm)	AF4020X-50 AF5016X-50
												AF3016P-50 (3 µm)	AF3016S-50 (0.3 µm)						

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*3 : Use AF2 and AF3000 Series in oil type compressor systems, and AF4000 and AF5000 Series in oil-prohibited compressor systems.
*4 : This table has been prepared based on the conditions of "inlet air pressure: 0.7 MPa, inlet air temperature: in accordance with the rating of each series". In cases when the conditions are different, a model will be corrected based on multiplier calculations.

Indicatoring air flow rate

Indicator values of air flow rate differ depending on the state of the air. Pneumatic components must be selected upon checking the condition for displayed flow rate.
There are two main methods for displaying the air flow rate.
(1) Flow rate unit expressing volume in reference state L/min (normal) (N L/min)
(2) Flow rate unit expressing volume in standard condition L/min (ANR)

The reference state refers to the absolute pressure: 101.3 KPa
Temperature: 0°C
relative humidity: 0%
This state is usually used for the flow rate meter.
The standard condition refers to absolute pressure: 101.3 KPa
Temperature: 20°C
relative humidity: 65%
This is the standard condition (refer to Japan Fluid Power Association Standards JPAS008) in which people are active.
The approximation formula is usually used to convert both conditions.

1 L/min (normal) (1N L/min) ≈ 1.08 L/min (ANR)

Even if the air flow rate is the same, smaller values are displayed for NL/min. Under the Japan Fluid Power Association Standards, the air flow rate unit is ANR(Note)The display is integrated with the display, and all flow rates in the catalog are displayed in ANR. (Excluding flow rate sensor) Other than the above, some flow rates are displayed with the manufacturer's original reference values. In these cases, make sure to convert values to ANR when selecting the model.

Note: The origin of ANR comes from the French expression "Conditions de l'atmosphère normale de référence" (which is French for "Standard reference atmospheric conditions").

Cost of air and energy saving

1 Cost of air

The cost of compressed air is calculated as the total sum of all expenses required to compress 1 m³ of air to a specified pressure with atmospheric pressure conversion.
Cost of compressed air =

$$\frac{\text{Electricity cost (compressor/auxiliary components such as dryer, pump, etc.) + facility depreciation cost + running cost + maintenance cost [yen/year]}}{\text{Amount of compressed air discharged [m}^3\text{/year]}}$$

When simply calculated from equipment performance, it differs due to contracted basic power rates. However, it is generally 2.5 yen/m³ or less. Practically, the used flow rate (air discharge rate) differs with the daily operation time zone, such as daytime, nighttime, weekday, or month. When the flow rate and pressure change, power consumption also changes. To calculate the actual cost of air, the average annual cost must be found by measuring the total amount of power and amount of used air flow rate through the year.
When assuming the general operation state, some calculation examples provide 3.0 yen/m³ for the cost of air.

The cost of air must be understood to promote energy conservation of the pneumatic system, and to illustrate the improvement effect. This is also important for increasing awareness in making improvements.

2 Points of energy saving

(1) Suppressing wasted air consumption
- Reduction of air leakage
- Review and reduction of air blow consumption
- Optimization of air components sizing, etc.

(2) Selecting devices and components with low power consumption

(3) Lowering pneumatic pressure
Driving the compressor shaft, which consumes the most energy, is reduced by lowering discharge pressure. (Example: If using a screw, savings of 8% or more are achieved by lowering discharge from 0.7 to 0.6 MPa). Thus, the working pressure at the end must be reduced and pneumatic components with small pressure loss must be selected.

3 Efforts by CKD

- High efficiency is pursued in every aspect of CKD products.
  By enhancing efficiency, high processing performance is realized with small power consumption.
- By reducing pressure loss of components, low pressure air sources can be used, reducing compressor shaft force (power consumption).

Dew point

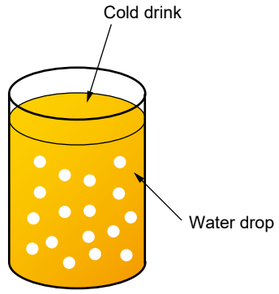
The term dew point is used with dryers to express their performance. Along with the valve's effective cross-sectional area, Cv, and cylinder bore size, this is one of the most important specifications when selecting a model. There are two dew points, which are atmospheric dew point and pressure dew point. Both are used often so the differences between them must be understood.

What is Dew Point?

In addition to nitrogen and oxygen, air contains water in the form of vapor. Air can contain a larger amount of water vapor when the temperature is higher. The point where the water vapor changes to water drops (dew) when lowering the temperature is called the dew point. When a cold drink is poured into a glass on a hot day, dew is formed soon on the outside of the glass. This happens because the air around the glass is cooled and the water vapor in the air becomes water drops.

☆Water vapor is invisible. Steam in a bath room is fine water drops.

The air we breathe is called atmospheric air. The temperature at which water drops form in atmospheric (dew point) is strictly called 'dew point temperature'.



Atmospheric dew point

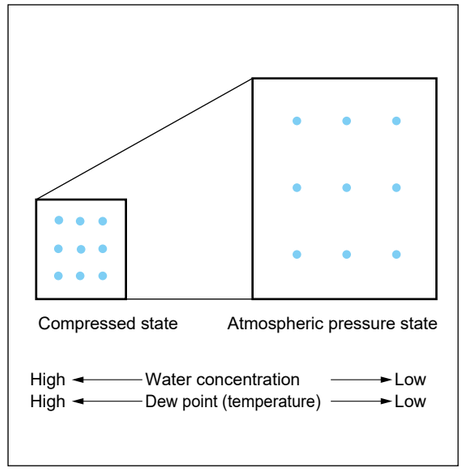
pressure dew point.

Pressure dew point

As shown in the lower right figure, the temperature at which the water vapor changes to water drops in compressed air is called

Pressure dew point

pressure dew point.



Atmospheric dew point and pressure dew point

When the air pressure and temperature are known, the pressure dew point is determined from the atmospheric dew point, and vice versa, using a saturated water vapor rate table or pressure dew point - atmospheric dew point conversion table (provided in catalog).

Dryer types and achieved dew point

A dryer is the device to remove water vapor from compressed air to create dry air. The achieved dew point differs by the type of dryer.

Dew point conversion table

[°C]

Pressure dew point	15	10	7	5	3	−8	-10	-20	-30	−31	-40	−43	-50	-60	−70
atmospheric dew point	−13	−17	−19	-20	−22	-30	−32	-40	−48	-50	−57	-60	−66	−74	−83

Note: The pressure dew point is for 0.7 MPa.

Saturated vapor rate table (Relative humidity 100%)

(Unit: g/m³)

Temperature at 10°C unit	Temperature at 1°C unit 0	1	2	3	4	5	6	7	8	9
90	418	433	449	465	481	498	515	532	551	569
80	291	302	313	325	337	350	363	376	390	404
70	197	205	213	222	231	240	250	259	270	280
60	130	135	141	147	154	160	167	174	182	189
50	82.8	86.7	90.8	95.0	95.5	104	109	114	119	124
40	51.1	53.7	56.4	59.3	62.2	65.3	68.5	71.9	75.4	79.0
30	30.3	32.0	33.7	35.6	37.6	39.6	41.7	43.9	46.2	48.6
20	17.2	18.3	19.4	20.6	21.8	23.0	24.4	25.8	27.2	28.7
10	9.39	10.0	10.7	11.3	12.1	12.8	13.6	14.5	15.4	16.3
0	4.85	5.19	5.56	5.94	6.36	6.79	7.26	7.75	8.27	8.81
−0	4.84	4.84	4.13	3.82	3.52	3.24	2.99	2.75	2.53	2.33
-10	2.14	1.96	1.80	1.65	1.51	1.39	1.27	1.16	1.06	0.967
-20	0.882	0.804	0.732	0.667	0.607	0.551	0.501	0.454	0.412	0.373
-30	0.338	0.305	0.276	0.249	0.225	0.203	0.183	0.164	0.148	0.133
-40	0.119	0.107	0.0955	0.0854	0.0763	0.0681	0.0608	0.0541	0.0482	0.0428
-50	0.0381	0.0338	0.0299	0.0265	0.0234	0.0207	0.0183	0.0161	0.0142	0.0125
-60	0.0109	0.00959	0.00840	0.00734	0.00642	0.00560	0.00488	0.00425	0.00369	0.00320
−70	0.00277	0.00240	0.00207	0.00179	0.00154	0.00133	0.00114	0.000977	0.000836	0.000715
−80	0.000610	0.000520	0.000442	0.000376	0.000318	0.000269	0.000228	0.000192	0.000162	0.000136
−90	0.000114	0.0000952	0.0000795	0.0000663	0.0000551	0.0000458	0.0000379	0.0000313	0.0000259	0.0000213

Reading saturated vapor rate table

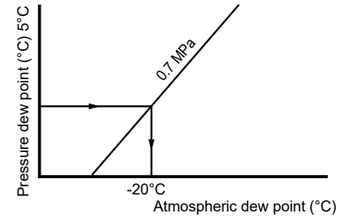
The temperature in 10°C units is shown in the vertical column, and the temperature in 1°C units is shown in the horizontal row.
(Example) Finding saturated vapor rate for 32°C.

Temperature at 10°C unit	Temperature at 1°C unit 0	1	2	3		
40						
30			33.7			
20						

33.7 g/m³ can be selected from the above table.

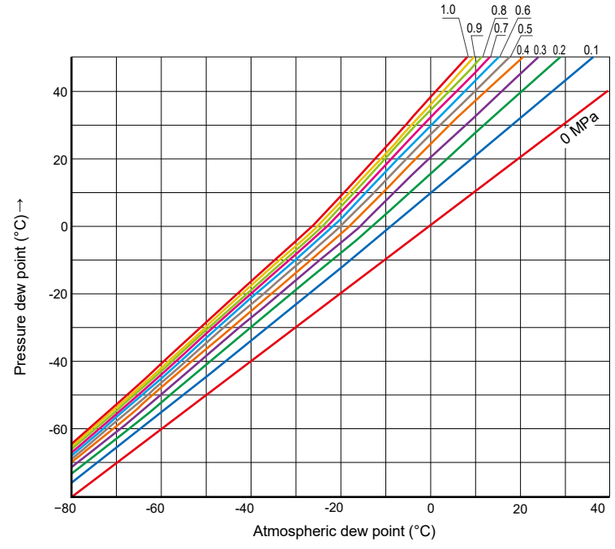
Reading pressure dew point - atmospheric dew point conversion table

This table is used to convert the pressure dew point at each pressure into the atmospheric dew point, or vice versa.
(Example) Obtaining the atmospheric dew point when the pressure is 0.7 MPa and the pressure dew point is 5°C.



When the pressure dew point of 5°C at 0.7 MPa pressure is converted to the atmospheric dew point, the result is -20°C.

Pressure dew point - atmospheric dew point conversion table

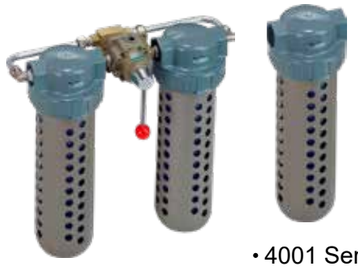


Main Line Components

Selection Guide of Air Dryers

The air dryers include refrigeration dryers, desiccant dryers, and polymer separation membrane dryers. The types are selectable according to the required dew point, usage conditions, and applications.

Type of air dryer	Refrigeration	Desiccant Heatless
Atmospheric dew point performance (°C)	Down to −17	−20 to −72
Drying Principle	Compressed air is cooled by a refrigerating machine to condense water vapor in the air and to remove it as drain water.	Water vapor in compressed air is suctioned and removed by desiccant. Basic structure is the same as the heat type. Heat is not used to regenerate the desiccant. Some dried air is depressurized and expanded, and passed through humid desiccant to regenerate it.
Features	• Most common • Both equipment and operating costs are reduced.	• Stable low dew point is obtained • Equipment cost is less expensive than the heat type • Large air consumed to regenerate desiccant
Major Applications	• General plants General pneumatic circuits and pneumatic components	• Ultra-dry air required manufacturing line Semiconductor manufacturing facilities, liquid crystal panel manufacturing lines, foodstuffs, pharmaceutical plants, chemical plants, ozone generators, powder transfer
Appearance (examples)	 • GX / GT Series	 • HD Series  • SHD Series
Listed page	73	137

Desiccant Manual	Polymer membrane
−43, −72	−15 to −60
Water vapor in compressed air is suctioned and removed by desiccant. Desiccant is not regenerated.	High polymer membrane easily penetrated by water vapor is used to separate moisture in compressed air and discharge it out of the membrane. In the basic structure, thousands of membranes in the form of thin hollow fibers are bundled.
• Disposable (Desiccant replacement is required each time) • Power supply not required • Low pressure use is also available	• High reliability • Power supply not required • Explosion-proof • Purge air is required
• Ultra-dry air required manufacturing line • Medical components protection • Analytic components protection	• Point-of-use drying in plants Instrument for analysis, inspection device, working machine
 • 4002 Series • 4001 Series	 • SD / SU Series  • SDM Series
137	169

CKD

Refrigeration Air Dryers

■Main Line Components

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Xeroaqua Dryer
GX Series 83

Xeroaqua Dryer
GT Series 107

Main Line Components

Refrigeration Dryers
Desiccant Dryers
High Polymer Membrane Dryers
Main Line Filters
Drain discharger, etc.

Ending

Principles of Refrigeration Air Dryers

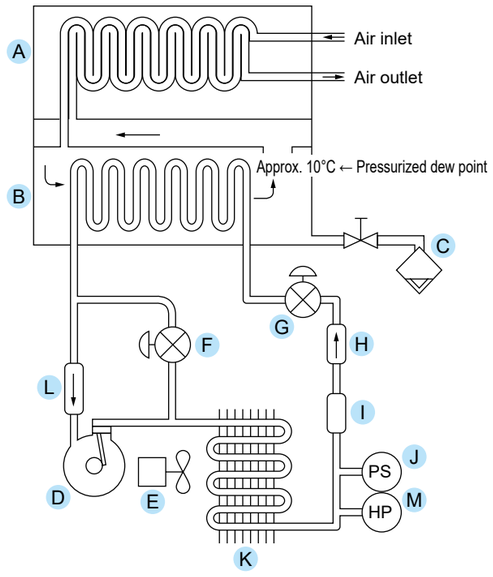
Air Circuit

Warm moist compressed air is precooled by cold dehumidified compressed air in the air equalizer Ⓐ (precooler). Pre-cooled compressed air is directed to the cooling chamber Ⓑ (evaporator), where it is cooled to a pressurized dew point of 10°C by the vaporization heat of the cold CFC gas. Water vapor in the cooled compressed air condenses and accumulates as water droplets (drain), which are automatically discharged outside by the automatic drain Ⓒ. Compressed air cooled in the cooling chamber Ⓑ re-enters the air equalizer Ⓐ (reheater), is reheated by warm compressed air from the inlet, and exits through the air outlet as warm dry air.

Refrigerant Circuit

The high-temperature, high-pressure CFC gas discharged from the refrigeration compressor (Ⓓ) is led to the condenser (Ⓚ), where it is cooled at ambient temperature by the cooling fan (Ⓔ) and condensed into a warm high-pressure liquid. The warm, high-pressure CFC liquid is led to the filter dryer Ⓗ, which captures dust and moisture in the refrigerant, and is then throttled and expanded by the temperature-type automatic expansion valve Ⓖ (or capillary tube) to a specified low-pressure, low-temperature liquid, which is then led to the cooling chamber Ⓑ (evaporator). Low-pressure, low-temperature liquid (mist) entering the cooling chamber evaporates by heat exchange with warm, moist compressed air and is sucked into the refrigeration compressor as gas. The capacity control valve Ⓕ bypasses the refrigerant gas and returns it to the refrigeration compressor inlet when the heat load in the cooling chamber is reduced. This suppresses the amount of refrigerant that flows into the cooling chamber, and prevents freezing from over-cooling. When the refrigerating compressor suction pressure drops to the set pressure or lower, the valve opens automatically, and high humidity/ high pressure gas is bypassed. As a result, it allows the refrigeration compressor to operate continuously even under no-load conditions. The fan control switch Ⓙ is used to turn the cooling fan Ⓔ ON and OFF to keep the high-pressure pressure (condensation pressure) within a certain range, and is a pressure switch that detects and operates the high-pressure pressure.

(System diagram)



Function of service parts

No.	Name		Operation
Ⓐ	Heat exchanger	Precooler/Reheater	Exchanges heat between high temperature/high humidity compressed air and low temperature compressed air.
Ⓑ		Evaporator	Cools compressed air with liquid refrigerant evaporative latent heat and condenses water vapor to remove moisture.
Ⓒ	Auto-drain (drain discharger)		Automatically discharges drain.
Ⓓ	Refrigerating compressor		Compresses low pressure refrigerant vapor to turn it to high pressure refrigerant vapor.
Ⓔ	Cooling fan		Sends cold air to condenser.
Ⓕ	Capacity regulator valve		When air flow drops, flows high temperature refrigerant gas to prevent overcooling.
Ⓖ	Automatic expansion valve		Depressurizes high pressure liquid refrigerant to turn it to low pressure/low temperature liquid.
Ⓗ	Filter dryer		Filters out foreign matter from the refrigerant circuit (water, foreign materials).
Ⓘ	Receiver		Collects refrigerant liquefied by the condenser, separates it into air and liquid, and feeds only liquid refrigerant to the automatic expansion valve.
Ⓙ	Fan control switch		The cooling fan operates when refrigerant pressure on the high pressure side rises to the specified pressure and stops when the pressure drops to the specified level. This controls refrigerant temperature.
Ⓚ	Condenser		Cools high temperature/high pressure refrigerant vapor to turn it to high pressure liquid refrigerant.
Ⓛ	Accumulator		Separates liquid refrigerant from vapor so that liquid refrigerant is not sucked into the refrigerating compressor.
Ⓜ	High pressure switch		Stops refrigerating compressor operation when high pressure side refrigerant pressure rises to a specified pressure.

CKD Features of Refrigeration Air Dryers

1 Highly efficient

2 Environment-friendly new refrigerants R-134a, R-410A, and R-407C in various sizes (capacities) from compact to super large are adopted

3 Energy saving
① Energy-saving operation with 50% decreased power by limiting the number of refrigerating compressors (GT9300 (W) to GT9450 (W))
② Energy-saving operation with 60% decreased power through inverter control (GT9000WV2 Series)

4 Stainless steel is used as standard for compact to super large heat exchange vessel (container)

5 Dust filter is standard for air cooling condenser

Air cooling and water cooling

● Refrigerated air dryers are generally categorized into air cooling and water cooling types.
Refer to the following explanation to select a model according to required applications and performance.
○Refrigeration air dryers use evaporative latent heat of the refrigerant to cool compressed air, and condense and remove the moisture content.
○In a set closed circuit, the refrigerant repeatedly changes: high temperature/high pressure gas → high temperature/high pressure liquid → low temperature/low pressure liquid → low temperature/low pressure gas → high temperature/high pressure gas. When evaporating and changing from low temperature/low pressure liquid to low temperature/low pressure gas, the heat is drawn from the surroundings. It means that the compressed air loses heat and cools. This part is called the evaporator in the refrigerating cycle.
○Conversely, the section to liquefy high temperature/high pressure gas is called the condenser. High temperature/high pressure gas discharged from the compressor must be changed to high temperature/high pressure liquid. So the refrigerant is forced-cooled.
○There are two types of forced cooling methods: air-cooled and water-cooled.

Air-cooled type (Compact to Super Large)

Ambient air is fed by a fan to cool refrigerant piping, to which fins are installed for improving conductivity. Since it is cooled by the air surrounding the dryer, it is greatly affected by the air temperature. During summer, the place where the dryer is installed (compressor room) gets very hot, so this method is not effective for cooling. The fan runs continually, but is still insufficient for cooling. By contrast, the air temperature is low during winter, so the fan starts and stops to adjust the state to avoid overcooling.
Advantages: (1)Easy maintenance. The condenser's dust filter must be cleaned for clogging once every several months, but this only involves blowing with air. Little technical knowledge is required.. (If the filter is heavily contaminated, it must be washed or replaced.)
(2)Only space required for taking in and exhausting air must be secured. Affected by installation work.No.

Disadvantages: (1)The refrigerant's high pressure is adjusted by turning the fan ON/OFF, so it is hard to stabilize the high pressure side and cooling the waterComparedIt is also difficult to stabilize the dew point.
(2)Cooling performance is often insufficient in the summer, and the overload state occurs easily.
(3)A large amount of air is fed by the fan, so the noise level is high and dust is raised. Heat exhaust (ventilation)may be required.

Water-cooled type (Medium to Super Large)

The refrigerant pipe is cooled with water in this method. A plate or double pipe condenser is often used.
The cooling water rate is adjusted by the water regulating valve on the top of the cooling water pipe. The high pressure value of the refrigerant is detected, and valve opening is automatically adjusted by the pressure balance mechanical structure.
Advantages: (1)Cooling water is adjusted variably so high pressure stability is high, and it is easy to stabilize the dew point.
(2)A stable cooling effect is obtained in summer so the system does not fail easily. Stable dew point performance is achieved throughout the year.
(3)The installation environment is not affected. Dust is not raised. There is no fan noise. There is no heat by discharged wind, so the room temperature does not rise.
Disadvantages: (1)Accompanying work, such as water piping, is required.
(2) The condenser must be back-washed by qualified personnel once every 6 months to 1 year.

⚠ Cooling water of a water cooling air dryer

Observe the following cautions for cooling water for the water-cooled condenser in the refrigerating compressor. If the following water quality standards are not met, performance may be compromised, and the service life of the condenser could be reduced significantly.

1 The cooling water quality should be as per the “Guideline of Water Quality for Refrigeration and Air Conditioning Equipment” provided by the Japan Refrigeration and Air Conditioning Industry Association.

			CKD Water cooling For dryer Cooling water	Japan Refrigeration and Air Conditioning Industry Association For refrigeration/air conditioning components Guideline of Water Quality Cooling water system I Circulating type (i) Circulating water (JRA-GL-02-1994)
Japan Refrigeration and Air Conditioning Industry Association				
Item	**Chemical formula**	**Unit**	**Water quality standard**	**Water quality standard**
Beher	-	pH(25°C)	6.5 to 8.2	6.5 to 8.2
Electrical conductivity	-	mS/m (25°C) μS/cm (25°C)	0.2 to 80 (2 to 800)	80 or less (800 or less)
Chloride ion	Cl-	mg/L(ppm)	200 or less	200 or less
Sulfate ion	SO4-	mg/L(ppm)	100 or less	200 or less
Acid consumption (pH 4.8)	CaCO3	mg/L(ppm)	100 or less	100 or less
Total hardness	CaCO3	mg/L(ppm)	200 or less	200 or less
Calcium hardness	CaCO3	mg/L(ppm)	150 or less	150 or less
Ionized silica	SiO2	mg/L(ppm)	50 or less	50 or less
Iron	Fe	mg/L(ppm)	0.5 or less	1.0 or less
Copper	Cu	mg/L(ppm)	0.3 or less	0.3 or less
Sulfide ion	S-	mg/L(ppm)	Not detected	Not detected
Ammonium ion	NH4+	mg/L(ppm)	1.0 or less	1.0 or less
Residue chlorine	Cl	mg/L(ppm)	0.3 or less	0.3 or less
Free carbonic acid	CO2	mg/L(ppm)	4.0 or less	4.0 or less
Stability index	-		6.0 to 7.0	6.0 to 7.0
Matson rate	HCO3-/SO4--		1.0 or more	
Hydrogen carbonate ion	HCO3-	mg/L(ppm)		
Oxygen rate		mg/L(ppm)	0.1 or less	
Aluminum	Al	mg/L(ppm)	0.2 or less	
Manganese	Mn	mg/L(ppm)	0.1 or less	
Nitric acid ion	NO3-	mg/L(ppm)	100 or less	
Sodium ion	Na+	mg/L(ppm)	20 or less	
	PO4--	mg/L(ppm)	2.0 or less	
	NH3	mg/L(ppm)	0.5 or less	
	Mn++	mg/L(ppm)	10 or less	
	H2S	mg/L(ppm)	0.05 or less	
Evaporation residue		mg/L(ppm)	50 or less	
Turbidity			2 degrees or less	

- Cooling water containing many elements that could accumulate or precipitate in the condenser/cooling water piping, or containing many corrosive elements must not be used.

- Soften hard water before use.

2 Install a strainer of approximately 20 mesh at the cooling water inlet.

3 Wash the condenser on a periodic basis.

⚠ Installation environment and air quality

Refrigeration air dryers use copper pipes (phosphorus deoxidized copper pipes) for the refrigerant gas pipes and pipes within the heat exchanger. When corrosion causes a hole in these copper pipes, the refrigerant gas will leak and make it impossible to operate the unit, or cause failure such as water leaking from the compressed air outlet side of the air dryer. Copper is also used as a conductive material for electrical wiring, etc., and corrosion can lead to malfunctions that can cause safety problems such as electrical leakage accidents. In addition, copper is also used as conductive materials for the electrical wiring, etc. Corrosion thereof may cause failures which may lead to safety problems such as electrical leakage accidents. Failures caused by corrosion are not covered by the warranty. Plant exhaust may contain NOx (nitrogen oxides), SOx (sulfur oxides), Co_2 (carbon dioxide), and other substances that may promote corrosion, and consideration must be given to the installation location of air dryers and air compressors to ensure that they are not affected by factory exhaust. In rare cases, if chlorine-based organic solvents (trichloroethylene, etc.), aldehyde or alcohol (formaldehyde generated from building materials or methanol in the chemicals used) are absorbed by the air dryer and hydrolyzed, the copper piping could corrode (like an ant nest). Caution is required in these cases.

MEMO

This list is for selection guide. Refer to the appropriate page for selection, and select a model after checking installation conditions.

	General Purpose					
Series	GX3200D	GX5200D		GT9000(D)	GT9000W(D)	GT9000WV2
Installation Application	Terminal installation in plant, device integrated			Compressor direct connection		
Features / Main specifications / Applications	General	Air cooling compressor directly connected		Air cooling air compressor directly connected	Water cooling air compressor directly connected	Water cooling air compressor directly connected
Applicability Air Compressor kW	• Ambient temperature Max. 45°C • Inlet air temperature 35°C (40°C for GX3255D)	• Ambient temperature Max. 45°C (48°C for GX5255D and GX5275D) • Inlet air temperature 55°C		• Ambient temperature Max. 40°C (48°C for GT9075D, 9090D, 9120D, 9100D, and 9190D) • Inlet air temperature 40°C	• Inlet air temperature 40°C	• Inlet air temperature 40°C
0.75	●	●				
1.5	●	●				
2.2	●	●				
3.7	●	●				
5.5	●	●				
7.5	●	●				
11	●	●				
15	●	●				
22	●	●				
37	●	●				
55	●	●				
75		●		●	●	
90				●	●	
120				●	●	
150				●	●	
190				●	●	
240				●	●	
300				●	●	
380				●	●	
450				●	●	
710						●
960						●
Digital dew point monitor	×	×		● Standard (GT9300 and higher)	● Standard (GT9300W and higher)	● Standard Equipment
Medium pressure	×	×		×	×	×
CE Compliant	×	×		×	×	×
New refrigerant (R-134a, R-410A, R-407C)	● Standard Compliance	● Standard Compliance		● Standard Compliance	● Standard Compliance	● Standard Compliance
Stainless steel heat exchanger	● Standard Equipment	● Standard Equipment		● Standard Equipment	● Standard Equipment	● Standard Equipment
Drain forcible discharge method	×	×		×	×	● Standard Equipment
Multi-voltage (transformer integrated)	Contact CKD Option for GX5255D and 5275D			● Option	● Option	● Option
Copper tube rust proof coating	● Option	● Option		● Option	● Option	● Option
Bypass piping set	● Accessory	● Accessory		×	×	×
Remote control	● Option (standard for GX3215D and higher)	● Option (standard for GX5211D and higher)		● Standard Equipment	● Standard Equipment	● Standard Equipment
External signal	● Option	● Option (standard for GX5255D and GX5275D)		● Standard Equipment	● Standard Equipment	● Standard Equipment
Outdoor specifications	×	× (Contact CKD for GX5255D and GX5275D)		Contact CKD for details.		
Instantaneous power failure	● Standard Compliance (GX3215D and higher)	● Standard Compliance (GX5211D and higher)		● Standard compliance (except for GT9240)	● Standard compliance (except for GT9240W)	● Standard Compliance
Dust filter for condenser	● Standard Equipment	● Standard Equipment		● Standard Equipment	–	–
Anchor bolt	● Accessory	● Accessory		● Accessory	● Accessory	● Accessory
Companion flange	–	–		● Accessory (GT9120D and higher)	● Accessory (GT9120WD and higher)	● Accessory
Stainless steel nameplate	● Option	● Option		● Option	● Option	● Option
English Language Specifications	● Standard Equipment	● Standard Equipment		● Standard Equipment	● Standard Equipment	● Standard Equipment
Product Photo	Contact CKD for details.			Contact CKD for details.		
Listed page	90	96		114	122	130

Periodic inspection items

Conduct the following inspections periodically to use devices over a long period.

Inspection Item	Inspection Term				Inspection Point	Inspection Method	Judgment Reference
	Daily	Every week	Every month	Every 6 months			
Operation confirmation	○				Operation lamp	Visual inspection	• This should be lit at operation
	○				Operation sound of refrigerating compressor	Listening to the sound	• No abnormal noise
	○				Fan rotation	Visual inspection Listening to the sound	• Smooth rotation without abnormal noise • ON and OFF operation or turned ON
Dew point (cooling) temperature	○				Refrigerant pressure gauge	Visual inspection	• It should be in the green zone
Inlet air pressure		○			Air pressure gauge	Visual inspection	• It should be within product specifications (should be specification pressure)
Drain discharge	○	Cleaning			Drain trap	Visual inspection	• Drainage should be discharged • Air should not be left blowing
Ambient temperature	○				Near condenser inlet	Measuring with thermometer	• It should be within specifications
Condenser Clogging			○	Cleaning	Air Cooling Condenser fin section	Visual inspection	• Foreign materials and dust should not be accumulated. • Condenser inlet section should not be plugged. • Condenser inlet section should not be exposed to hot air.
					Water Cooling Refrigerant high pressure gauge		• 1.95MPa or less (cleaning is required for 2.15MPa and over)
Power supply voltage			○		Power supply	Measuring with a tester	• Rated voltage of specifications within ±10%
Operating current			○		Power supply	Measuring with a tester	• Rated voltage of specifications within ±20%

Guide to Recommend Replacements for Refrigeration Dryers

As of November 2024

Production and sales of the "Old Products" listed in the table below have been discontinued. Please select a replacement model from the "Current Products."

Note: The comparison table given below shall only be used as a guide. When selecting a replacement, consider the current operating pressure, inlet air temperature, ambient temperature, required dew point, etc., to ensure adequate performance.

(1) Air Cooling (standard inlet air temperature)

Old product Group A	Old product Group B	Old product Group C	Old product Group D	Old product Group E	Current Product
	RD(A)1003(A) RDA-3(E)	GK3103	GK3103D	GX3203D	**GX3203D**
	RD(M)1004(A) RD(M)1006(A) RDA-6(E)	GK3106	GK3106D	GX3206D	**GX3206D**
4304-25PD	RDA-12(E) RD(M)1008(A)	GX3108	GK3108D	GX3208D	**GX3208D**
4304-35PD	RDA-12(E) RD(M)1011(A)	GX3111	GK3111D	GX3211D	**GX3211D**
	RD-15D(E) RD(M)1015(A) GX3015	GX3115	GX3215	GX3215D	**GX3215D**
4308-50PD 4308-75PD	RD-22D GX3022	GX3122	GX3222	GX3222D	**GX3222D**
4308-100PD 4308-125PD 4310-150PD	RD-37D GX3037	GX3137	GX3237	GX3237D	**GX3237D**
4316-250PD	RD-55D	GT7055	GX3255	GX3255D	**GX3255D**
4316-375PD	RD-75D	GT7075		GT9075	**GT9075D**
		GT7095		GT9090	**GT9090D**
4332-575PD	RD-120D	GT7120		GT9120	**GT9120D**
4332-700PD	RD-150D	GT7150(D)		GT9150	**GT9150D**
4332-1000PD	RD-190D	GT7200(D)		GT9190	**GT9190D**
4332-1200PD	RD-240D	GT7250(D)		GT9240	**GT9240**
4332-1500PD	RD-300D(E,F)	GT7300(D)		GT9300	**GT9300**
4332-1750PD	RD-360D(E,F)	GT7400(D)		GT9380	**GT9380**
	RD-450D(E,F)	GT7480(D)		GT9450	**GT9450**

(2) Air Cooling (high temperature inlet air temperature)

Old product Group A	Old product Group B	Old product Group D	Old product Group E	Current Product
RD(M)2001(A) RD(M)2002(A) RD(M)2003(A) GX5003	GX5103	GK5103	GX5203D	**GX5203D**
RD-3.7(E)-AC RD(M)2004(A) GX5004	GX5104	GK5104	GX5204D	**GX5204D**
RD-5.5(E)-AC RD(M)2006(A) GX5006	GX5106	GK5106	GX5206D	**GX5206D**
RD-7.5(E)-AC RD(M)2008(A) GX5008	GX5108	GX5208	GX5208D	**GX5208D**
RD-11(E)-AC RD(M)2011(A) GX5011	GX5111	GX5211	GX5211D	**GX5211D**
RD-15(E)-AC RD(M)2015(A) GX5015	GX5115	GX5215	GX5215D	**GX5215D**
RD-22D-AC GX5022	GX5122	GX5222	GX5222D	**GX5222D**
RD-37D-AC GX5037	GX5137	GX5237	GX5237D	**GX5237D**
RD-55D-AC	GT5055	GX5255	GX5255	**GX5255D**
RD-75D-AC	GT5075D	GX5275	GX5275	**GX5275D**

(3) Water Cooling

Old product Group A	Old product Group B	Old product Group C	Old product Group D	Current Product
4310-150PDW	RDW-37D	GT7055W	GT9075W	**GT9075WD**
4316-250PDW	RDW-55D	GT7055W	GT9075W	**GT9075WD**
4324-375PDW	RDW-75D	GT7075W	GT9075W	**GT9075WD**
		GT7095W	GT9090W	**GT9090WD**
4332-575PDW	RDW-120D	GT7120W(D)	GT9120W	**GT9120WD**
4332-700PDW	RDW-150D	GT7150W(D)	GT9150W	**GT9150WD**
4332-1000PDW	RDW-190D	GT7200W(D)	GT9190W	**GT9190WD**
4332-1200PDW	RDW-240D	GT7250W(D)	GT9240W	**GT9240W**
4332-1500PDW	RDW-300D(F)	GT7300W(D)	GT9300W	**GT9300W**
4332-1750PDW	RDW-360D(F)	GT7400W(D)	GT9380W	**GT9380W**
	RDW-450D(F)	GT7480W(D)	GT9450W	**GT9450W**
	RDW-680D(F)	GT7710W(D)	GT9710WV	**GT9710WV2**
	RDW-900D(F)	GT7960W(D)	GT9960WV	**GT9960WV2**

Xeroaqua Dryer
GX3200D / GX5200D

■ Main Line Components / Refrigeration Air Dryer



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Example of System Selection List 88
●For assembling device, standard inlet air (35°C) (GX3200D) 90
●For direct compressor connection, high temperature inlet air (55°C) (GX5200D) 96
Accessory (optional) 103
⚠Safety Precautions 104

Refrigeration Air Dryer
Xeroaqua Dryer

GX Series

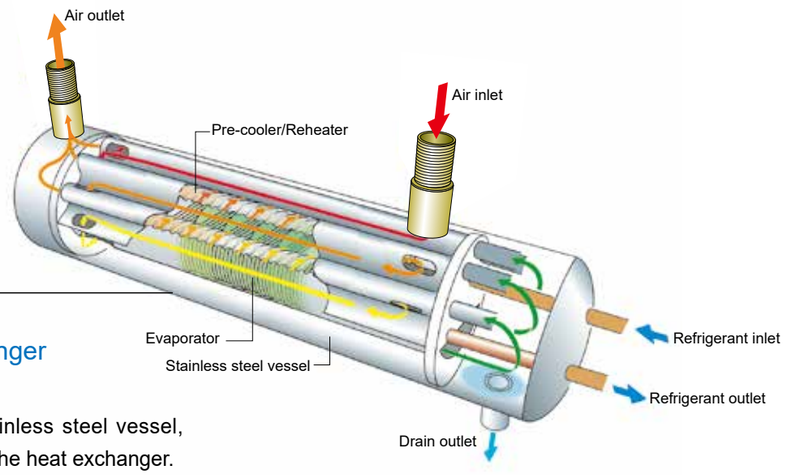
Standard inlet air **GX3200D Series / up to 55 kW**

High-temperature inlet air **GX5200D Series / up to 75 kW**

High reliability, energy saving, space saving.

The Xeroaqua dryer GX Series has been reinvented with even higher reliability and support for high-temperature environments, etc.

High quality and high reliability guaranteed



Stainless steel heat exchanger compatible with oil-free air

The heat exchanger uses a stainless steel vessel, preventing dust generation from the heat exchanger.

High weather resistance

The refrigerant pipes (copper pipes) within the heat exchanger are nickel plated for improved corrosion resistance.

Increased capacity for high-temperature environment support

Operable even at an ambient temperature of 45°C. (40°C for GX5255 and 5275)

Thin and Slim

Thin and compact body

Can be installed anywhere, whether in a line or mounted on equipment.



Width 180 mm (GX3203D)

Energy saving

Low air loss drain discharger adopted

No wasteful air loss, as the use of a float enables discharge every time drain is generated with the dryer.

Achieves low power consumption

Up to 15% energy savings in electricity (compared to our conventional GX3237D)

Environment-friendly refrigerant

Environment-friendly new refrigerants R-134a, R-410, and AR-407C adopted

Ozone safe.

Easy maintenance



GX3215D to 3255D,
GX5211D to 5237D

Inspection via control panel

Regular inspection can be performed by simply looking at the control panel. The refrigerant pressure gauge and operation lamp make operating status visible at a glance.

Easy error diagnostics

(GX3215D to 3255D, GX5211D to 5237D)
The causes of error-induced stoppages can be identified through the blinking pattern of the alarm lamp.



Dust filter installed as standard (excluding GX5275)

Reduces the hassle of condenser cleaning. Attachment and removal are extremely easy.

External drain discharger

Easily service the unit even while it is running.

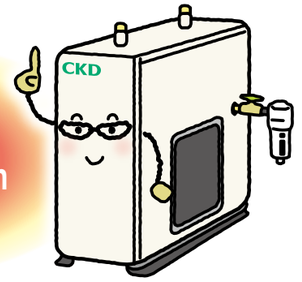
Centralized control possible

Remote control and operation/alarm signals (options) are also available.

Bypass piping set also available as an accessory (optional)

Ambient temperature Compatible up to 45°C

With error diagnostic function







GX5255D (55 kW)
GX5275D (75 kW)

Simple, reliable, space saving

Further increased reliability and ease of use. The Xeroaqua Dryer GX Series has been reborn in response to the changing needs of our customers.

Ambient temperature **48°C** Operable — High-temperature environments are supported

Installation area up to **30%** Reduced — Space saving is supported

Processing air rate up to **10%** More — Increased facility efficiency is supported



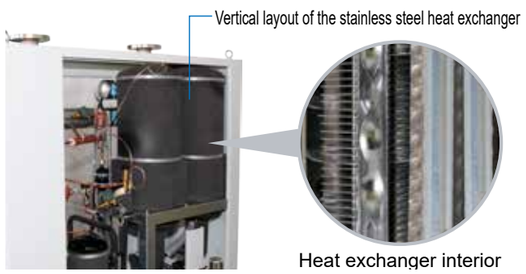
High quality, High reliability

Keeps working even at high temperatures

Operation won't stop even in hot summers. (Max. ambient temperature 48°C)

Heat exchanger with excellent climate resistance

The use of a stainless steel vessel prevents dust generation from the heat exchanger. The refrigerant pipes within the heat exchanger are nickel plated for improved corrosion resistance.



Easy maintenance

Inspection via control panel

Regular inspection can be performed by simply looking at the control panel. The refrigerant pressure gauge and operation lamp make operating status visible at a glance.

Easy error diagnostics

The causes of error-induced stoppages can be identified through the blinking pattern of the ALARM LED.

When ON	Refrigerant circuit pressure error
2 blinks	Refrigerant circuit temperature error
3 blinks	Current error



Dust filter installed as standard

Reduces the hassle of condenser cleaning. Attachment and removal are extremely easy.

Centralized control possible

Remote control, operating and alarm signal interface equipped as standard.



Space saving

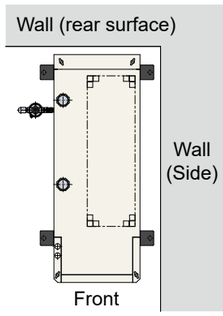
Space saving realized with top surface exhaust

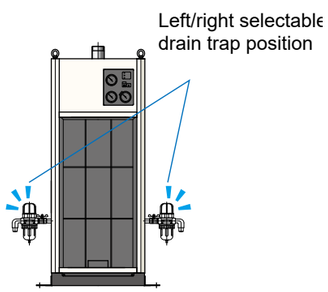
Top surface exhaust allows the unit to be mounted flush against a wall.

Flush-mounting and freely installable

Select drain trap left or right mounting: depending on the environment, installation is possible flush with the rear and either left or right walls.

*Right side mount of the drain trap is available as an option.





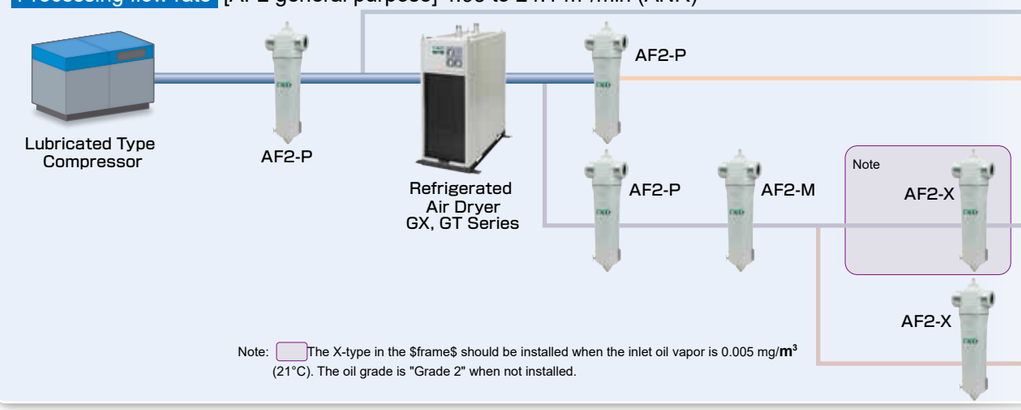
✱However, optional parts are required for right side leadout.

[Series variation]

		Applications	Rated conditions: Pressure dew point (°C)	Rated conditions: Inlet air pressure (MPa)	Rated conditions: Ambient temperature (°C)	Rated conditions: Inlet air temperature (°C)	Applicable air compressor (kW)
Standard inlet air	GX3200D	For installation	10	0.7	32	35 (GX3203D to GX3237D) 40 (GX3255D)	up to 2.2, 3.7, 5.5, 7.5, 11, 15, 22, 37, 55, 75
High-temperature inlet air	GX5200D	Air compressor directly connected	10	0.7	32	55	up to 2.2, 3.7, 5.5, 7.5, 11, 15, 22, 37, 55, 75

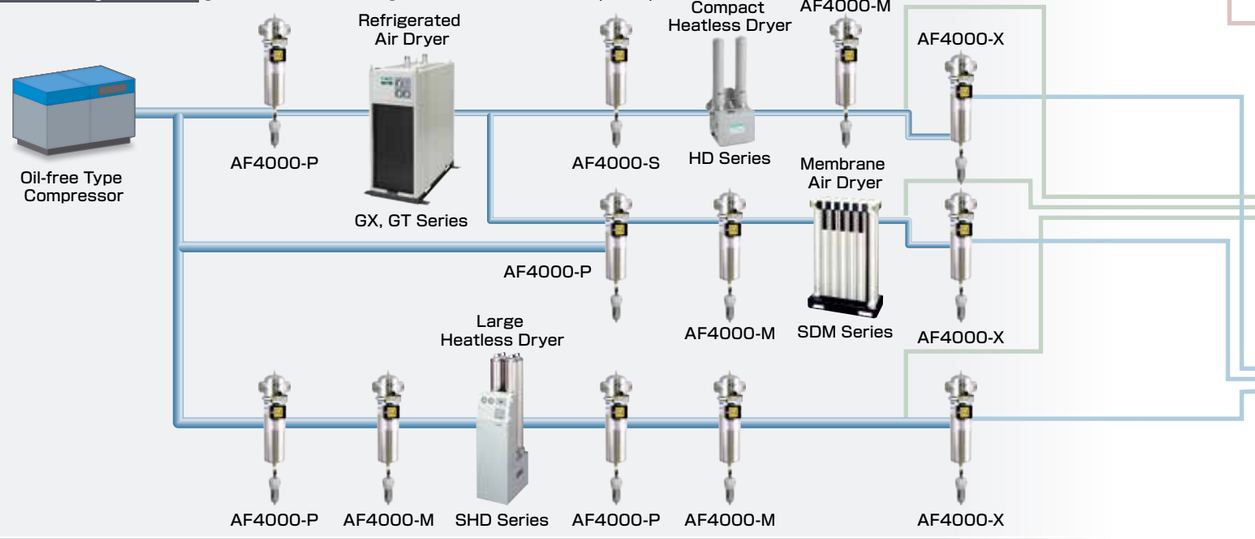
Example of system selection list

Processing flow rate [AF2 general purpose] 4.95 to 24.1 m³/min (ANR)



Note: ☐ The X-type in the $frame$ should be installed when the inlet oil vapor is 0.005 mg/**m³** (21°C). The oil grade is "Grade 2" when not installed.

Processing flow rate [AF4000 for oil-free] 3.70 to 18.8 m³/min (ANR)



Air Quality	Applications	Impurities in the Air: Individual particles	Impurities in the Air: Moisture	Impurities in the Air: Oil content	ISO 8573-1 compressed air purity grade
Dewatered Air Coarse dust removed air	Air for cleaning (dry air not required)	1 μm	–	–	2: -: -
General Dry Air	General Pneumatic Components General Pneumatic Tools Labor-Saving Components Pneumatic Jigs and Tools Air Chucks	1 μm	Pressure dew point 10°C	0.6 mg/**m³**	2.6.3
			Pressure dew point 7°C		2.5.3
Dry Air (oil-free)	Instrumentation Measurement Sequence control Painting	0.01 μm	Pressure dew point 10°C	0.01 mg/**m³** (0.003 mg/**m³**)	1.6.1
			Pressure dew point 7°C		1.5.1
Dry air (odorless)	Food and Pharmaceutical Processes (Stirring, dry blowing, packaging, brewing, pressure-feeding, filling) Cosmetic Manufacturing Processes *If the product directly contacts the workpiece, it is recommended to install a bacteria-removing filter.	0.01 μm	Pressure dew point 10°C	0.003 mg/**m³**	1.6.1
			Pressure dew point 7°C		1.5.1
Ultra dry air (oil-free)	Ozone generator Powder transfer Drying furnace gas Drying the insulation gas of a high-voltage generator Drying computer rooms Centralized control instrumentation Liquid crystal panel manufacturing Chemical plants Painting	0.01 μm	Pressure dew point -20°C	0.01 mg/**m³**	1.3.1
			Pressure dew point -40°C		1.2.1
			Pressure dew point -60°C		1.2.1
Ultra-Dry Air (odorless)	Food and Pharmaceutical Processes (Stirring, dry blowing, packaging, brewing, pressure-feeding, filling) Cosmetic Manufacturing Processes *If the product directly contacts the workpiece, it is recommended to install a bacteria-removing filter.	0.01 μm	Pressure dew point -20°C	0.003 mg/**m³**	1.3.1
			Pressure dew point -40°C		1.2.1
			Pressure dew point -60°C		1.2.1

*1. The system No. is based on the class below. X not found in the table indicates odor removal; and "–" indicates no specification.

●For installation (GX3200D Series)

Air Compressor: Output kW	Air Compressor: Reference processing air rate m³/min (ANR)	Refrigeration Air Dryers	Main Line Filters P-type (1 μm)	Main Line Filters M-type (0.01 μm)	Main Line Filters X-type (deodorizing)
Up to 2.2	0.30/0.35	GX3203D-AC100/200V	F3000-10-W-F1	M3000-10-W-F1	M3000-10-W-X
3.7	0.44/0.50	GX3206D-AC100/200V	F4000-15-W-F1	M4000-15-W-F1	M4000-15-W-X
5.5	0.64/0.72		F4000-15-W-F1	M4000-15-W-F1	M4000-15-W-X
7.5	0.94/1.13	GX3208D-AC100/200V	F6000-20-W-F1	M6000-20-W-F1	M6000-20-W-X
11	1.65/1.82	GX3211D-AC100/200V	F8000-20-W-F1	M8000-20-W-F1	M8000-20-W-X
15	2.40/2.80	GX3215D-AC200V	AF2-05P25A	AF2-05M25A	AF2-05X25A
22	3.70/4.20	GX3222D-AC200V	AF2-08P32A	AF2-08M32A	AF2-08X32A
37	5.70/6.10	GX3237D-AC200V	AF2-08P32A	AF2-08M32A	AF2-08X32A
55	8.40/9.80	GX3255D-AC200V	AF2-13P50A	AF2-13M50A	AF2-13X50A

●For direct compressor connection (GX5200D Series)

Air Compressor: Output kW	Air Compressor: Reference processing air rate m³/min (ANR)	Refrigeration Air Dryers	Main Line Filters P-type (1 μm)	Main Line Filters M-type (0.01 μm)	Main Line Filters X-type (deodorizing)
Up to 2.2	0.30/0.35	GX5203D-AC100/200V	F3000-10-W-F1	M3000-10-W-F1	M3000-10-W-X
3.7	0.44/0.50	GX5204D-AC100/200V	F4000-15-W-F1	M4000-15-W-F1	M4000-15-W-X
5.5	0.64/0.72	GX5206D-AC100/200V	F4000-15-W-F1	M4000-15-W-F1	M4000-15-W-X
7.5	1.22/1.32	GX5208D-AC200V	F8000-20-W-F1	M8000-20-W-F1	M8000-20-W-X
11	1.65/1.82	GX5211D-AC200V	F8000-25-W-F1	M8000-25-W-F1	M8000-25-W-X
15	2.10/2.40	GX5215D-AC200V	AF2-05P25A	AF2-05M25A	AF2-05X25A
22	3.70/4.20	GX5222D-AC200V	AF2-08P32A	AF2-08M32A	AF2-08X32A
37	5.70/6.10	GX5237D-AC200V	AF2-08P32A	AF2-08M32A	AF2-08X32A
55	8.60/9.90	GX5255D-AC200V	AF2-13P50A	AF2-13M-50A	AF2-13X50A
75	11.40/12.60	GX5275D-AC200V	AF2-13P50A	AF2-13M-50A	AF2-13X50A

*1: Use anti-rust treated materials for piping (zinc plated pipe, lined pipe, stainless steel pipe). If there is a high possibility that rust or flakes are generated in the pipe due to the piping material, install an air filter in front of the dryer.

ISO 8573-1:2010 Compressed air purity grade

Grade	Solid Particles: Max. number of particles per 1 **m3** for particle diameter d (μm): 0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0	Mass Concentration Cp mg/m³	Humidity and Water Content: Pressure dew point °C	Water Concentration Cw g/m³	Oil: Total Oil Concentration mg/m³
0	Conditions stricter than Grade 1, is to be specified by the user or supplier						
1	≤ 20,000	≤ 400	≤ 10	-	≤ -70	-	≤ 0.01
2	≤ 400,000	≤ 6,000	≤ 100	-	≤ -40	-	≤ 0.1
3	-	≤ 90,000	≤ 1,000	-	≤ -20	-	≤ 1
4	-	-	≤ 10,000	-	≤ +3	-	≤ 5
5	-	-	≤ 100,000	-	≤ +7	-	-
6	-	-	-	0 < Cp ≤ 5	≤ +10	-	-
7	-	-	-	5 < Cp ≤ 10	-	Cw ≤ 0.5	-
8	-	-	-	-	-	0.5 < Cw ≤ 5	-
9	-	-	-	-	-	5 < Cw ≤ 10	-
X	-	-	-	Cp > 10	-	Cw > 10	> 5

For example, "Grade 1: 2: 1" means:
●Solid particles of 0.1 to 0.5 μm are ≤20,000 particles; 0.5 to 1.0 μm are ≤400 particles; and 1.0 to 5.0 μm are ≤10 particles
●Pressure dew point −40°C or less
●Oil concentration 0.01mg/m³or less
This indicates the class.



Refrigeration Air Dryer Xeroaqua Air Cooling

GX3200D Series

Standard inlet air

Applicable air compressor: Up to 2.2, 3.7, 5.5, 7.5, 11, 15, 22, 37, 55 kW

Circuit Diagram Symbol



RoHS

Model No. Notation

GX32 | 03D | - | M | - | AC200V

Model No. | ❷Option | ❶Capacity Category | ❸Voltage

*1: The instruction manual and nameplates are provided in Japanese and English.
*2: Contact CKD if a photo of the completed product is required.
*3: Contact CKD to designate the color of the body panel.

❶Capacity Category

Code	Description
03D	Up to 2.2 kW
06D	3.7, 5.5kW
08D	7.5 kW
11D	11 kW
15D	15 kW
22D	22 kW
37D	37 kW
55D	55 kW

❷Option

*1

	Code	Description
	Blank	Standard product
	H2	Stainless steel nameplate
*2	H3	Simple export packaging
*3	M	Operation/fault signal output (Only compatible with GX3215D, 3222D, 3237D, 3255D)
*3	M3	Remote control and operation/fault signal output (Only compatible with GX3203D, 3206D, 3208D, 3211D)
	N1	Copper tube rust proof coating

*1: Indicate options in alphabetical order.
*2: Option "H3" is packaged in plywoodis attached.
*3: Provision of remote control and operation/error signals are shown in the following table.

Model No.	Terminal for remote control	Operation/error signal
GX3203D, 3206D 3208D, 3211D	Option M3 (Momentary)	Option M3
GX3215D, 3222D 3237D, 3255D	Standard Equipment (Alternate)	Option M

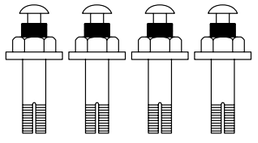
❸Voltage

Code	Description	
AC100V	100 VAC	Only compatible with GX3203D, GX3206D, GX3208D, GX3211D
AC200V	200 VAC	-

Optional accessory model No.

●Foundation bolt set

Part No.	Compatibility	Size	Material	Quantity
RD-QFL-436495	GX3203D, GX3206D GX3208D, GX3211D GX3215D, GX3222D GX3237D, GX3255D	M10×100	SUS	4



●Bypass piping set

Part No.	Compatibility
RD-AD3-311269	GX3203D
RD-AD3-311270	GX3206D
RD-AD3-311271	GX3208D
RD-AD3-311272	GX3211D
RD-AD3-219888	GX3215D, GX3222D
RD-AD3-219889	GX3237D
RD-AD3-249894	GX3255D

Note: Refer to P. 103 for details on dimensions..

Specifications

Item		GX3203D	GX3206D	GX3208D	GX3211D	GX3215D	GX3222D	GX3237D	GX3255D
Applicable air compressor kW		Up to 2.2	3.7, 5.5	7.5	11	15	22	37	55
Working range	Working fluid	Compressed air							
	Inlet air temperature °C	5 to 50							
	Inlet air pressure MPa	0.15 to 1.0	0.1 to 1.0						
	Ambient temperature °C	2 to 45 (*2)				2 to 45			
Rating	Processing air rate m³/min (ANR) 50/60 Hz (*3)	0.30/0.35	0.64/0.72	0.94/1.13	1.65/1.82	2.40/2.80	3.70/4.20	5.70/6.10	8.40/9.80
	Processing air rate (Compressor intake condition) m³/min 50/60Hz (*4)	0.31/0.37	0.67/0.76	0.99/1.19	1.73/1.91	2.52/2.94	3.88/4.41	5.98/6.40	8.81/10.3
	Inlet air temperature °C	35							40
	Inlet air pressure MPa	0.7							
	Ambient temperature °C	32							
Performance	Outlet air pressure dew point °C (*5)	10							
	Pressure drop MPa 50/60Hz (*6)	0.002/0.003	0.009/0.011	0.009/0.013	0.011/0.013	0.012/0.017	0.024/0.031	0.023/0.026	0.018/0.025
Power Supply		Single-phase 100 VAC / 100, 110 VAC 50/60Hz Single-phase 200, 220 VAC / 200, 220 VAC 50/60Hz				Three-phase 200 VAC / 200, 220 VAC 50/60Hz			
Electrical Specifications (*7)	Power consumption (at 100, 110V) kW 50/60Hz	0.17/0.19, 0.20	0.26/0.27,0.30	0.32/0.34,0.41	0.52/0.52, 0.55	-	-	-	-
	Power consumption (at 200, 220V) kW 50/60Hz	0.16, 0.17/ 0.19, 0.21	0.24, 0.28/ 0.26, 0.29	0.29, 0.35/ 0.32, 0.34	0.44, 0.49/ 0.52, 0.53	0.61/0.71, 0.73	0.65/0.79, 0.79	1.16/1.41, 1.41	1.30/1.63, 1.60
	Current consumption (at 100, 110V) A 50/60Hz	1.9/1.9, 1.8	3.2/2.8, 2.8	3.9/3.4, 3.7	6.5/5.2, 5.0	-	-	-	-
	Current consumption (at 200, 220V) A 50/60Hz	0.8, 0.8/1.0, 1.0	1.4, 1.6/1.3, 1.3	1.7, 2.1/1.6, 1.6	2.6, 2.9/2.6, 2.4	2.6/2.5, 2.5	3.0/2.8, 2.9	4.5/4.6, 4.4	5.3/5.7, 5.4
	Starting current (at 100 V) A 50/60Hz	7.1/7.9	11.1/12.1	16.4/17.3	26.5/24.8	-	-	-	-
	Starting current (at 200 V) A 50/60Hz	3.0/3.3	6.3/6.2	7.7/7.3	13.2/12.4	22.5/25.0	27.5/31.5	31.5/40.6	41.3/43.8
Refrigerant		R-134a			R-410A				
Air inlet and outlet port size		R1/2	R1/2	R3/4	R3/4	R1	R1	R1-1/2	R2
Weight kg		18	21	26	33	39	42	68	84
Released heat kW 50/60Hz (*7)		0.29/0.32	0.57/0.65	0.72/0.81	1.2/1.3	1.6/1.8	2.3/2.5	3.0/3.3	4.8/5.6

*1: Outer panel: Quality Cool White (Munsell NO.5GY7.5/0.5)
*2: When the power supply voltage is ±5%. 2 to 40°C for power supply voltage ±10%.
*3: ANR shows conditions of 20°C atmospheric pressure and relative humidity 65%.
*4: This is a value converted to the intake condition of the air compressor in an environment of 32°C with a relative humidity of 75%.
*5: Contact CKD for information on the dew point performance guarantee.
*6: The pressure drop value is a typical value and is not a guaranteed value.
*7: The power consumption, current consumption and released heat are all reference values under the rated conditions, and are not guaranteed

For maintenance parts, refer to the CKD Components Product site
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." → Maintenance Parts

Selection Guide

As the max. processing air rate of each model is affected by the outlet air pressure dew point temperature, inlet air temperature, ambient temperature and inlet air pressure, compensation is required if it differs from the rated conditions in the usage section.

STEP 1 Confirm the working conditions and the rated values listed in the specifications.
Working Conditions: Required processing air rate, required outlet air pressure dew point temperature, inlet air temperature, ambient temperature, inlet air pressure

STEP 2 Confirm the compensation coefficient of the processing air rate according to the required outlet air pressure dew point temperature.

(1) Pressure dew point coefficient

Pressure dew point	Coefficient
15°C	1.15
10°C	1.00
7°C	0.72
5°C	0.58

STEP 3 Check the compensation coefficient of the processing air rate by the inlet air temperature.

(2) Inlet air temperature coefficient

Inlet air temperature	Coefficient		
	GX3203D GX3206D GX3208D	GX3211D GX3215D GX3222D GX3237D	GX3255D
25°C	1.25	1.25	1.30
30°C	1.13	1.13	1.23
35°C	1.00	1.00	1.12
40°C	0.80	0.80	1.00
45°C	0.65	0.65	0.80
50°C	0.40	0.54	0.65

STEP 4 Check the compensation coefficient of the processing air rate by the ambient temperature.

(3) Ambient temperature coefficient

Ambient temperature	Coefficient
25°C	1.08
30°C	1.02
32°C	1.00
35°C	0.90
40°C	0.72
45°C	0.47

STEP 5 Check the compensation coefficient for processing air rate by inlet air pressure.

(4) Inlet air pressure coefficient

Inlet air pressure	Coefficient
0.1 MPa *1	0.50
0.2 MPa	0.65
0.3MPa	0.75
0.4 MPa	0.83
0.5 MPa	0.89
0.6 MPa	0.94
0.7 MPa	1.00
0.8 MPa	1.01
0.9 MPa	1.02
1.0 MPa	1.03

*1: GX3203D is 0.15 MPa.

STEP 6 Confirming upper limit coefficient
It is checked whether the value of the product of each coefficient ((1)×(2)×(3)×(4)) exceeds the upper limit coefficient . If not, find the max. processing air rate by the product of each coefficient ((1)×(2)×(3)×(4)). When this value is exceeded, find the maximum processing air rate by using the upper limit coefficient (5).

(5) Ceiling coefficient

Use conditions (inlet air pressure)	Coefficient		
	GX3203D GX3211D GX3215D GX3222D GX3237D GX3255D	GX3206D	GX3208D
0.1 MPa *1	0.65	0.55	0.57
0.2 MPa	0.84	0.71	0.74
0.3MPa	0.97	0.82	0.86
0.4 MPa	1.07	0.91	0.95
0.5 MPa	1.15	0.97	1.02
0.6 MPa	1.22	1.03	1.08
0.7 MPa	1.30	1.10	1.15
0.8 MPa	1.31	1.11	1.16
0.9 MPa	1.32	1.12	1.17
1.0 MPa	1.33	1.13	1.18

*1: GX3203D is 0.15 MPa.

STEP 7 Find the maximum processing air rate from each model rated processing air rate. Max. air processing rate = Rated processing air rate × compensation coefficient determined by STEP 6. Select the model so that the required processing air rate is less than the maximum processing air rate.

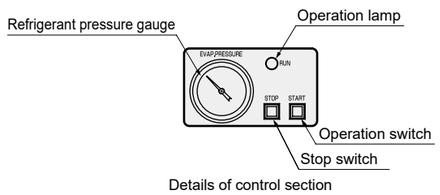
Example of calculation

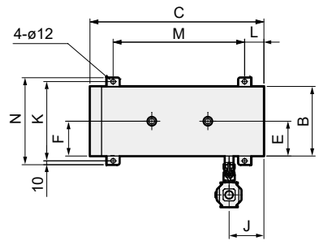
Conditions	Working Conditions	Selecting Conditions	Coefficient
Pressure dew point	17Below °C	15°C	(1) 1.15
Inlet air temperature	20 to 23°C	25°C	(2) 1.25
Ambient temperature	20 to 23°C	25°C	(3) 1.08
Inlet air pressure	0.35 to 0.45 MPa	0.3MPa	(4) 0.75
Frequency	50Hz	50Hz	50Hz

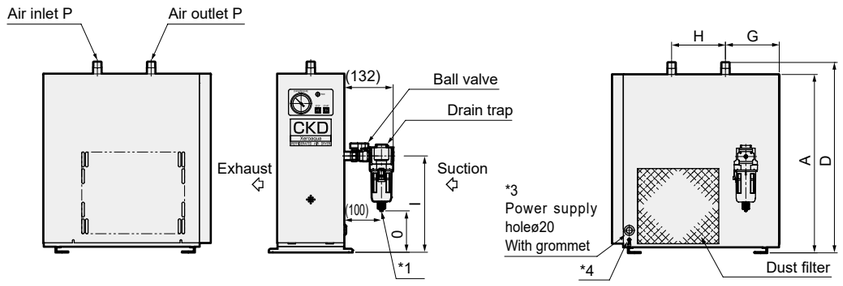
Substitute the above conditions into the equation above to obtain the max. processing air rate when using the GX3215D.
Product of each coefficient ((1)×(2)×(3)×(4)) = 1.15×1.25×1.08×0.75 = 1.16
The (5) ceiling coefficient of 0.97 at the inlet air pressure 0.3 MPa (use conditions) is exceeded.
Therefore, the max. processing air rate used is 2.40 (rated processing air rate) × 0.97 = 2.32 using the ceiling coefficient 0.97 m³/min (ANR). If the required processing flow rate is less than or equal to this value, select that model.

Dimensions

●GX3203D, GX3206D, GX3208D





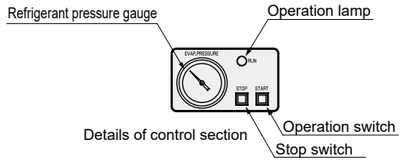


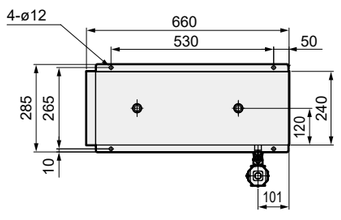
*1: Insert a nylon tube with an inner diameter of ø5.7 to ø6.0 directly into the drain cock.
*2: The drain trap and ball valve are attachments.
*3: A power supply cable (approx. 1.8 m) with plug is included with the 100 VAC.
*4: A grounding terminal (TMEV2-4) is attached to the panel with the 100 VAC.

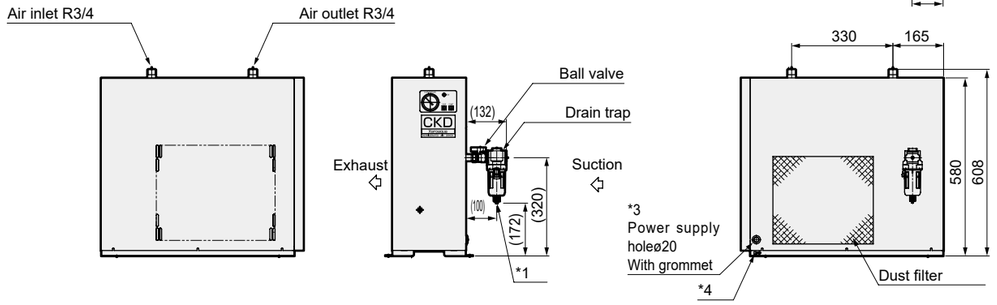
Model No.	A	B	C	D	E	F	G	H	I	J	K	L	M
GX3203D	480	180	450	513	90	90	145	145	(260)	90	205	50	340
GX3206D	510	180	540	542	113	83	120	300	(274)	96	205	60	420
GX3208D	510	240	600	537	140	140	138	335	(280)	78	265	60	480

Model No.	N	O	P
GX3203D	225	(112)	R1/2
GX3206D	225	(126)	R1/2
GX3208D	285	(132)	R3/4

●GX3211D



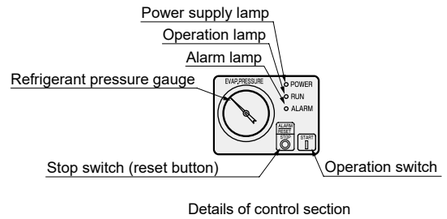


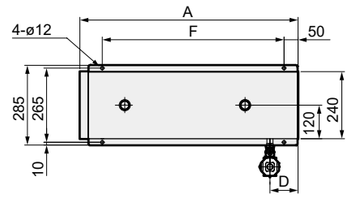


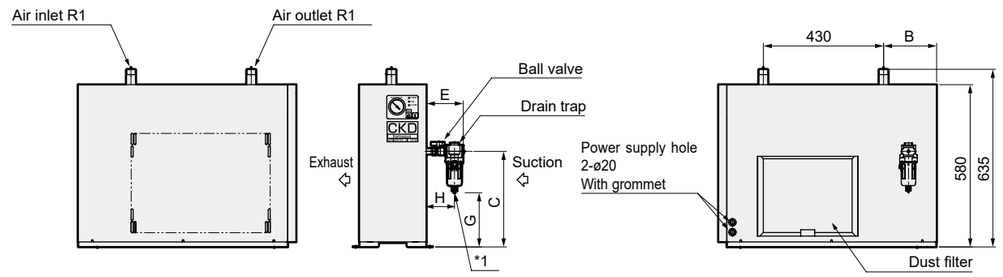
*1: Insert a nylon tube with an inner diameter of ø5.7 to ø6.0 directly into the drain cock.
*2: The drain trap and ball valve are attachments.
*3: A power supply cable (approx. 1.8 m) with plug is included with the 100 VAC.
*4: A grounding terminal (TMEV2-4) is attached to the panel with the 100 VAC.

Dimensions

●GX3215D, GX3222D



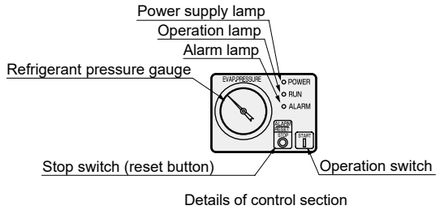


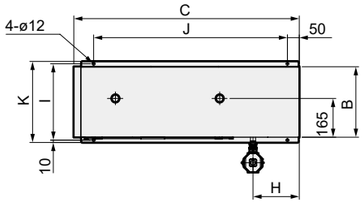


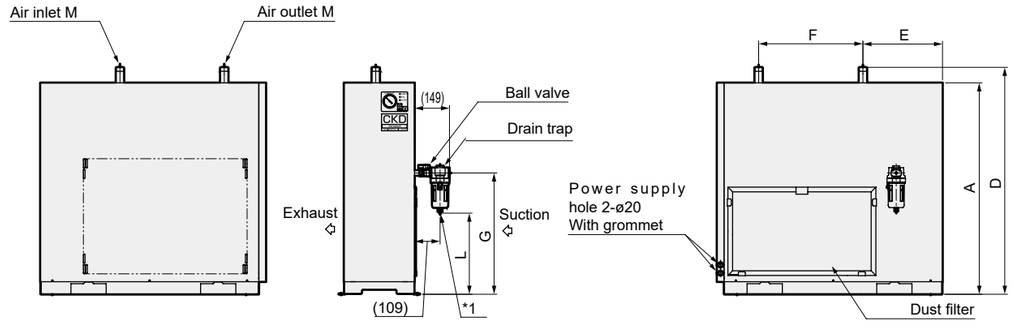
*1: Insert a nylon tube with an inner diameter of ø5.7 to ø6.0 directly into the drain cock.
*2: The drain trap and ball valve are attachments.

Model No.	A	B	C	D	E	F	G	H
GX3215D	780	190	(340)	101	(132)	650	(192)	(100)
GX3222D	870	280	(370)	105	(149)	740	(199)	(109)

●GX3237D, GX3255D







*1: Insert a nylon tube with an inner diameter of ø5.7 to ø6.0 directly into the drain cock.
*2: The drain trap and ball valve are attachments.

Model No.	A	B	C	D	E	F	G	H	I	J	K	L	M
GX3237D	900	300	960	966	338	447	(516)	197	325	825	345	(345)	R1-1/2
GX3255D	1100	330	990	1165	325	500	(701)	145	355	855	375	(530)	R2



Refrigeration Air Dryer Xeroaqua Air Cooling

GX5200D Series

High-temperature inlet air

Applicable air compressor: Up to 2.2, 3.7, 5.5, 7.5, 11, 15, 22, 37, 55, 75 kW

Circuit Diagram Symbol



RoHS

Model No. Notation

GX52 | 03D | - | M | - | AC200V

Model No. | ❶Capacity Category | ❷Option | ❸Voltage

*1: The instruction manual and nameplates are provided in Japanese and English.
*2: Contact CKD if a photo of the completed product is required.
*3: Contact CKD to designate the color of the body panel.

❶Capacity Category

Code	Description
03D	Up to 2.2 kW
04D	3.7 kW
06D	5.5 kW
08D	7.5 kW
11D	11 kW
15D	15 kW
22D	22 kW
37D	37 kW
55D	55 kW
75D	75 kW

❷Option *1

Code	Description	
Blank	Standard product	
G	Supports different voltages (GX5255D, GX5275D only)	
H2	Stainless steel nameplate	
H3	Simple export packaging	*2
M	Operation/fault signal output (only compatible with GX5211D, 5215D, 5222D, 5237D)	*3
M3	Remote control and operation/fault signal output (only compatible with GX5203D, 5204D, 5206D, 5208D)	*3
N1	Copper tube rust proof coating	
Q1	Drain piping right (GX5255D, GX5275D only)	

*1: Indicate options in alphabetical order.
*2: Option "H3" is packaged in plywood.
*3: Provision of remote control and operation/error signals are shown in the following table.

Model No.	Terminal for remote control	Operation/error signal
GX5203D, 5204D 5206D, 5208D	Option M3 (Momentary)	Option M3
GX5211D, 5215D 5222D, 5237D	Standard Equipment (Alternate)	Option M
GX5255D		Standard Equipment
GX5275D		

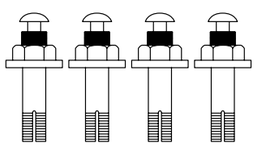
❸Voltage

Code	Description	
AC100V	100 VAC	Only compatible with GX5203D, GX5204D, GX5206D
AC200V	200 VAC	—
AC220V	220 VAC (standard only for 60Hz)	Only GX5255D, GX5275D supported
AC230V	230 VAC	
AC240V	240 VAC	
AC380V	380 VAC	
AC400V	400 VAC	
AC415V	415 VAC	
AC440V	440 VAC	
AC480V	480 VAC	

Optional accessory model No.

●Foundation bolt set

Part No.	Compatibility	Size	Material	Quantity
RD-QFL-436495	GX5203D, GX5204D GX5206D, GX5208D GX5211D, GX5215D GX5222D, GX5237D	M10 x 100	SUS	4
RD-QFL-436465	GX5255D, GX5275D	M16 x 100	SUS	4



●Bypass piping set

Part No.	Compatibility
RD-AD3-311270	GX5203D
RD-AD3-311271	GX5204D
RD-AD3-219888	GX5211D, GX5215D
RD-AD3-311273	GX5206D
RD-AD3-311274	GX5208D
RD-AD3-219890	GX5222D
RD-AD3-219891	GX5237D
RD-AD3-249896	GX5255D, GX5275D

Note: For details on DimensionsPage 103.

Specifications

Item		GX5203D	GX5204D	GX5206D	GX5208D	GX5211D	GX5215D	GX5222D	GX5237D	GX5255D	GX5275D
Applicable air compressor kW		Up to 2.2	3.7	5.5	7.5	11	15	22	37	55	75
Working range	Working fluid	Compressed air									
	Inlet air temperature °C	5 to 80									
	Inlet air pressure MPa	0.15 to 1.0	0.1 to 1.0								0.29 to 0.98
	Ambient temperature °C	2 to 45 (*2)				2 to 45				2 to 48	2 to 48
Rating	Processing air rate m³/min (ANR) 50/60 Hz (*3)	0.30/0.35	0.44/0.50	0.64/0.72	1.22/1.32	1.65/1.82	2.10/2.40	3.70/4.20	5.70/6.10	8.60/9.90	11.4/12.6
	Processing air rate(Compressor intake condition) m³/min 50/60Hz (*4)	0.31/0.37	0.46/0.52	0.67/0.76	1.28/1.38	1.73/1.91	2.20/2.52	3.88/4.41	5.98/6.40	9.10/10.5	12.1/13.4
	Inlet air temperature °C	55									
	Inlet air pressure MPa	0.7									
	Ambient temperature °C	32									
Performance	Outlet air pressure dew point °C (*5)	10									
	Pressure drop MPa 50/60Hz (*6)	0.002/0.003	0.002/0.003	0.010/0.013	0.005/0.006	0.006/0.007	0.009/0.012	0.016/0.020	0.011/0.013	0.008/0.011	0.005/0.006
Power Supply		Single-phase 100 VAC / 100, 110 VAC 50/60Hz Single-phase 200, 220 VAC / 200, 220 VAC 50/60Hz			Single phase 200, 220 VAC/ 200, 220 VAC 50/60Hz	Three-phase 200 VAC / 200, 220 VAC 50/60Hz					
Electrical Specifications (*7)	Power consumption (at 100, 110V) kW 50/60Hz	0.26/0.27,0.30	0.32/0.34,0.41	0.34/0.37,0.40	-	-	-	-	-	-	-
	Power consumption (at 200, 220V) kW 50/60Hz	0.24,0.28/ 0.26,0.29	0.29,0.35/ 0.32,0.34	0.32,0.36/ 0.36,0.40	0.42,0.47/ 0.48,0.49	0.63/ 0.75, 0.78	0.69/ 0.78,0.87	1.21/ 1.48, 1.48	1.31/ 1.62, 1.64	2.50/ 3.00, 3.00	3.00/ 3.90, 3.90
	Current consumption (at 100, 110V) A 50/60Hz	3.2/2.8, 2.8	3.9/3.4, 3.7	4.3/3.8, 3.8	-	-	-	-	-	-	-
	Current consumption (at 200, 220V) A 50/60Hz	1.4, 1.6/1.3, 1.3	1.7, 2.1/1.6, 1.6	1.8, 2.0/1.8, 1.8	2.6, 2.9/2.5, 2.3	2.5/2.5, 2.5	3.0/2.8, 3.0	4.7/4.8, 4.6	5.4/5.7, 5.5	9.5/9.5, 9.4	10.7/11.7, 11.5
	Starting current (at 100 V) A 50/60Hz	11.1/12.1	16.4/17.3	16.4/17.3	-	-	-	-	-	-	-
	Starting current (at 200 V) A 50/60Hz	6.3/6.2	7.7/7.3	7.7/7.3	13.2/12.4	22.5/25.0	27.5/31.5	31.5/40.6	41.3/43.8	110/100	110/115
Refrigerant		R-134a			R-410A						
Air inlet and outlet port size		R1/2	R3/4	R3/4	R3/4	R1	R1	R1	R1-1/2	R2	R2
Weight kg		21	26	31	37	39	42	68	84	139	190
Released heat kW 50/60Hz (*7)		0.63/0.70	0.74/0.80	1.1/1.3	1.6/1.7	2.1/2.3	2.3/2.5	4.4/5.0	5.4/6.0	10.3/11.9	13.2/14.9

*1: Outer panel: Quality Cool White (Munsell NO.5GY7.5/0.5)
*2: When the power supply voltage is ±5%. 2 to 40°C for power supply voltage ±10%.
*3: ANR shows conditions of 20°C atmospheric pressure and relative humidity 65%.
*4: This is a value converted to the intake condition of the air compressor in an environment of 32°C with a relative humidity of 75%.
*5: Contact CKD for information on the dew point performance guarantee.
*6: The pressure drop value is a typical value and is not a guaranteed value.
*7: The power consumption, current consumption and released heat are all reference values under the rated conditions, and are not guaranteed

For maintenance parts, refer to the CKD Components Product site
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." → Maintenance Parts

Selection Guide (GX5203D to GX5237D)

As the max. processing air rate of each model is affected by the outlet air pressure dew point temperature, inlet air temperature, ambient temperature and inlet air pressure, compensation is required if it differs from the rated conditions in the usage section.

STEP 1 Confirm the working conditions and the rated values listed in the specifications.
Working Conditions: Required processing air rate, required outlet air pressure dew point temperature, inlet air temperature, ambient temperature, inlet air pressure

STEP 2 Confirm the compensation coefficient of the processing air rate according to the required outlet air pressure dew point temperature.

(1) Pressure dew point coefficient

Pressure dew point	Coefficient
15°C	1.15
10°C	1.00
7°C	0.72
5°C	0.58

STEP 3 Check the compensation coefficient of the processing air rate by the inlet air temperature.

(2) Inlet air temperature coefficient

Inlet air temperature	Coefficient	
	GX5203D GX5204D GX5206D	GX5208D GX5211D GX5215D GX5222D GX5237D
40°C	1.12	1.30
45°C	1.08	1.20
50°C	1.04	1.10
55°C	1.00	1.00
60°C	0.84	0.84
65°C	0.72	0.72
70°C	0.60	0.60
75°C	0.45	0.45
80°C	0.30	0.30

STEP 4 Check the compensation coefficient of the processing air rate by the ambient temperature.

(3) Ambient temperature coefficient

Ambient temperature	Coefficient
25°C	1.08
30°C	1.02
32°C	1.00
35°C	0.90
40°C	0.72
45°C	0.47

STEP 5 Check the compensation coefficient for processing air rate by inlet air pressure.

(4) Inlet air pressure coefficient

Inlet pressure	Coefficient
0.1 MPa *1	0.50
0.2 MPa	0.65
0.3MPa	0.75
0.4 MPa	0.83
0.5 MPa	0.89
0.6 MPa	0.94
0.7 MPa	1.00
0.8 MPa	1.01
0.9 MPa	1.02
1.0 MPa	1.03

STEP 6 Confirming upper limit coefficient
It is checked whether the value of the product of each coefficient ((1)×(2)×(3)×(4)) exceeds the upper limit coefficient.
If not, find the max. processing air rate by the product of each coefficient ((1)×(2)×(3)×(4)).
When this value is exceeded, find the maximum processing air rate by using the upper limit coefficient (5).

(5) Ceiling coefficient

Use conditions (inlet air pressure)	Coefficient
0.1 MPa *1	0.65
0.2 MPa	0.84
0.3MPa	0.97
0.4 MPa	1.07
0.5 MPa	1.15
0.6 MPa	1.22
0.7 MPa	1.30
0.8 MPa	1.31
0.9 MPa	1.32
1.0 MPa	1.33

*1: GX5203D is 0.15 MPa.

STEP 7 Find the maximum processing air rate from each model rated processing air rate.
Max. air processing rate = compensation coefficient determined by rated processing air rate × STEP 6
Select the model so that the required processing air rate is less than the maximum processing air rate.

Example of calculation

Conditions	Working Conditions	Selecting Conditions	Coefficient
Pressure dew point	Below 7°C	5°C	(1) 0.58
Inlet air temperature	55 to 63°C	65°C	(2) 0.72
Ambient temperature	25 to 33°C	35°C	0.90
Inlet air pressure	0.55 to 0.75 MPa	0.5 MPa	(4) 0.89
Frequency	50Hz	50Hz	50Hz

Substitute the above conditions into the equation above to obtain the processing air rate when using the GX5208D.
Product of each coefficient (1) × (2) × (3) × (4) = 0.58 × 0.72 × 0.90 × 0.89 = 0.33
As the ceiling coefficient of 1.15 is not exceeded when the inlet air pressure of the working conditions is 0.5MPa, the max. processing air rate will be 1.22 (reference processing air rate) × 0.33 = 0.40 **m³**/min (ANR). If the used flow rate is less than or equal to this value, select that model.

Selection guide (GX5255D, GX5275D)

As the max. processing air rate of each model is affected by the outlet air pressure dew point temperature, inlet air temperature, ambient temperature and inlet air pressure, compensation is required if it differs from the rated conditions in the usage section.

STEP 1 Confirm the working conditions and the rated values listed in the specifications. Working conditions: Required processing air rate, required outlet air pressure dew point temperature, inlet air temperature, ambient temperature, inlet air pressure

STEP 2 Check the correction coefficient for the processing air rate according to the required outlet air pressure dew point temperature, inlet air temperature, and ambient temperature.

(1) Temperature Compensation Coefficient

Inlet air temperature (°C)		45				55				60			
Pressure dew point (°C)		5	7	10	15	5	7	10	15	5	7	10	15
Ambient temperature (°C)	25	0.93	1.04	1.15	1.15	0.89	1.01	1.15	1.15	0.85	0.91	1.01	1.09
	30	0.76	0.94	1.15	1.15	0.73	0.86	1.06	1.15	0.71	0.78	0.89	1.06
	32	0.75	0.93	1.15	1.15	0.68	0.81	1.00	1.15	0.65	0.73	0.84	1.05
	35	0.66	0.83	1.08	1.15	0.60	0.72	0.90	1.09	0.58	0.65	0.76	0.97
	40	0.51	0.65	0.86	1.00	0.51	0.59	0.72	0.89	0.47	0.52	0.60	0.75
	45	0.28	0.47	0.76	0.90	0.27	0.41	0.63	0.75	0.20	0.33	0.53	0.70
	48	0.23	0.40	0.65	0.72	0.21	0.34	0.54	0.68	0.15	0.27	0.45	0.63

Inlet air temperature (°C)		65				70				75				80			
Pressure dew point (°C)		5	7	10	15	5	7	10	15	5	7	10	15	5	7	10	15
Ambient temperature (°C)	25	0.80	0.82	0.86	0.89	0.77	0.80	0.84	0.90	0.74	0.75	0.76	0.83	0.70	0.69	0.67	0.76
	30	0.68	0.71	0.76	0.87	0.64	0.65	0.67	0.87	0.60	0.58	0.56	0.80	0.53	0.50	0.45	0.72
	32	0.62	0.66	0.72	0.86	0.59	0.60	0.61	0.84	0.55	0.53	0.49	0.76	0.47	0.43	0.37	0.68
	35	0.55	0.59	0.65	0.80	0.52	0.53	0.55	0.75	0.49	0.47	0.44	0.65	0.36	0.35	0.33	0.55
	40	0.43	0.47	0.52	0.61	0.41	0.42	0.44	0.55	0.39	0.37	0.35	0.46	0.33	0.31	0.27	0.36
	45	0.14	0.26	0.45	0.58	0.13	0.23	0.38	0.52	0.09	0.17	0.30	0.44	0.06	0.13	0.23	0.34
	48	0.08	0.20	0.39	0.52	0.06	0.17	0.33	0.51	0.03	0.12	0.26	0.43	0.01	0.09	0.20	0.33

STEP 3 Check the compensation coefficient for processing air rate by inlet air pressure.

(2) Inlet air pressure coefficient

GX5255D

Inlet air pressure (MPa)	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
Coefficient	0.60	0.67	0.73	0.80	0.87	0.93	1.00	1.07	1.13	1.20

GX5275D

Inlet air pressure (MPa)	0.29	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.98
Coefficient	0.72	0.73	0.80	0.87	0.93	1.00	1.07	1.13	1.20

STEP 4 Confirming upper limit coefficient
It is checked whether the value of the product of each coefficient ((1)×(2)) exceeds the upper limit coefficient .
If not, find the max. processing air rate by the product of each coefficient ((1)×(2)). When this value is exceeded, find the maximum processing air rate by using the upper limit coefficient .

(3) Ceiling coefficient

Working conditions (inlet air pressure (MPa))	0.10	0.20	0.29	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.98	1.00
Coefficient	0.69	0.77	0.82	0.83	0.92	1.00	1.06	1.15	1.23	1.29	1.38	1.38

STEP 5 Find the maximum processing air rate from each model rated processing air rate.
Max. air processing rate = Rated processing air rate × Compensation coefficient determined by STEP 4
Select the model so that the required processing air rate is less than the maximum processing air rate.

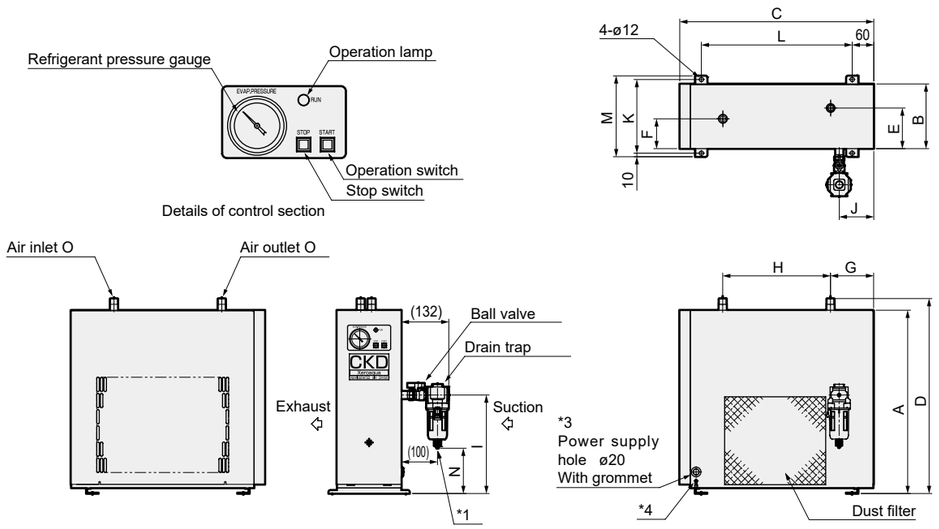
Example of calculation

Conditions	Working Conditions	Selecting Conditions	Coefficient
Inlet air temperature	55 to 63 °C	65°C	(1) 0.55
Pressure dew point	Below 7°C	5°C	
Ambient temperature	25 to 33 °C	35°C	
Inlet air pressure	0.55 to 0.75 MPa	0.5 MPa	(2) 0.87
Frequency	50Hz	50Hz	50Hz

Substitute the above conditions into the equation above to obtain the processing air rate when using the GX5255D.
Product of each coefficient
(1) × (2) = 0.55 × 0.87 = 0.47
As the (3) ceiling coefficient of 1.00 is not exceeded when the inlet air pressure of the working conditions is 0.5 MPa, the max. processing air rate will be 8.6 (reference processing air rate) × 0.47 = 4.0**m³**/minis (ANR). If the used air quantity is less than or equal to this value, select that model.

Dimensions

●GX5203D, GX5204D, GX5206D

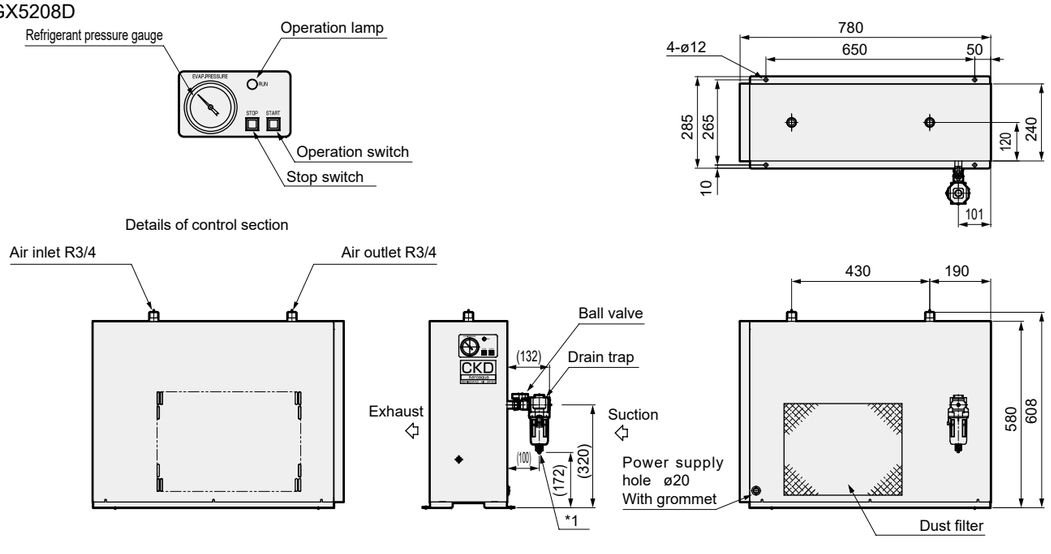


*1: Insert a nylon tube with an inner diameter of ø5.7 to ø6.0 directly into the drain cock.
*2: The drain trap and ball valve are attachments.
*3: A power supply cable (approx. 1.8 m) with plug is included with the 100 VAC.
*4: A grounding terminal (TMEV2-4) is attached to the panel with the 100 VAC.

Model No.	A	B	C	D	E	F	G	H	I	J	K	L	M
GX5203D	510	180	540	542	113	83	120	300	(274)	96	205	420	225
GX5204D	510	240	600	537	140	140	138	335	(280)	78	265	480	285
GX5206D	600	240	660	627	140	140	84	416	(370)	105	265	542	285

Model No.	N	O
GX5203D	(126)	R1/2
GX5204D	(132)	R3/4
GX5206D	(222)	R3/4

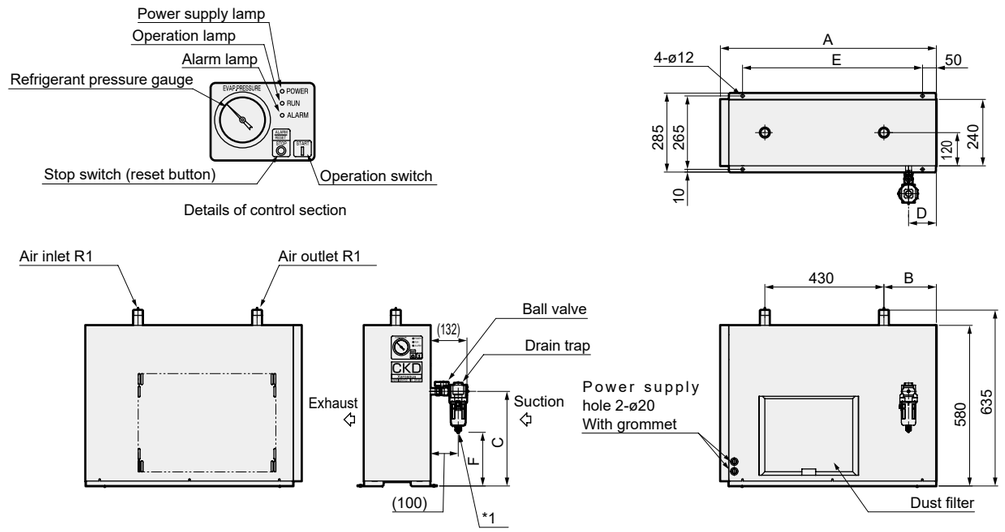
●GX5208D



*1: Insert a nylon tube with an inner diameter of ø5.7 to ø6.0 directly into the drain cock.
*2: The drain trap and ball valve are attachments.

Dimensions

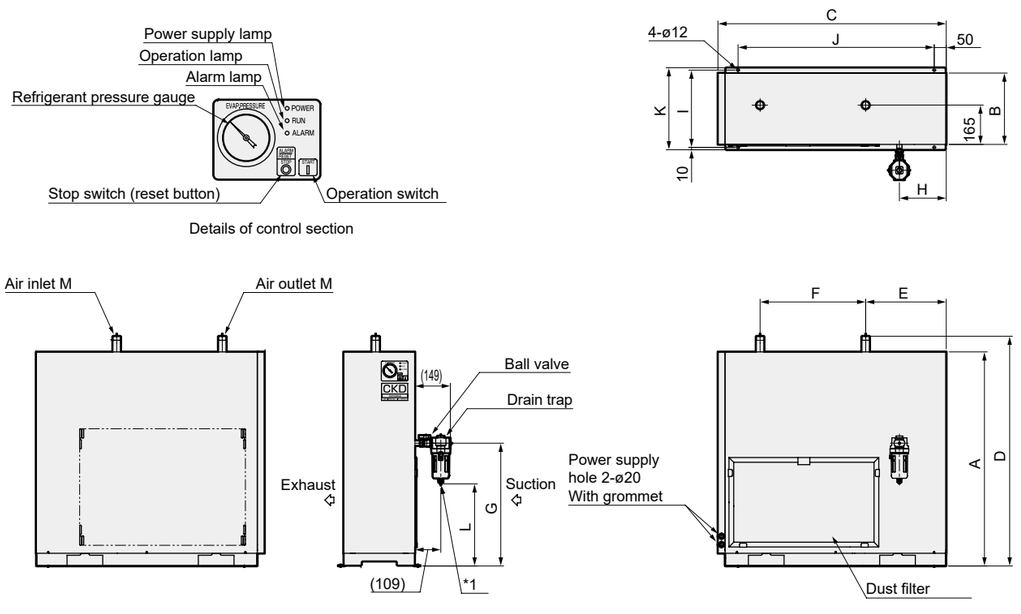
●GX5211D, GX5215D



*1: Insert a nylon tube with an inner diameter of ø5.7 to ø6.0 directly into the drain cock.
*2: The drain trap and ball valve are attachments.

Model No.	A	B	C	D	E	F
GX5211D	780	190	(340)	101	650	(192)
GX5215D	870	280	(370)	105	740	(222)

●GX5222D, GX5237D

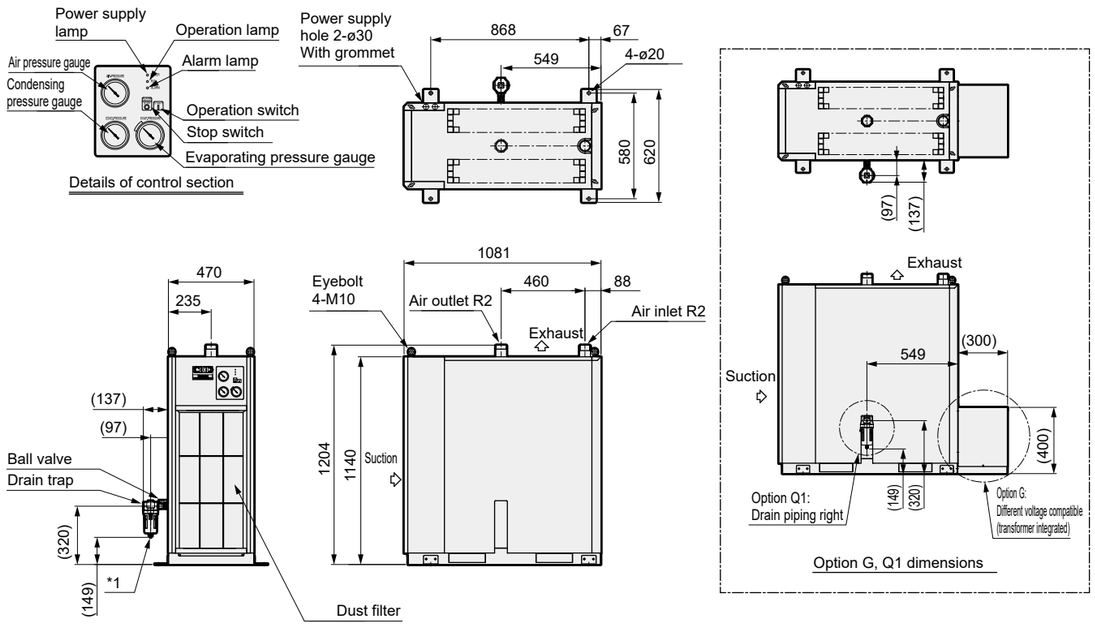


*1: Insert a nylon tube with an inner diameter of ø5.7 to ø6.0 directly into the drain cock.
*2: The drain trap and ball valve are attachments.

Model No.	A	B	C	D	E	F	G	H	I	J	K	L	M
GX5222D	900	300	960	966	341	444	(516)	197	325	825	345	(345)	R1
GX5237D	1100	330	990	1165	325	500	(701)	145	355	855	375	(530)	R1-1/2

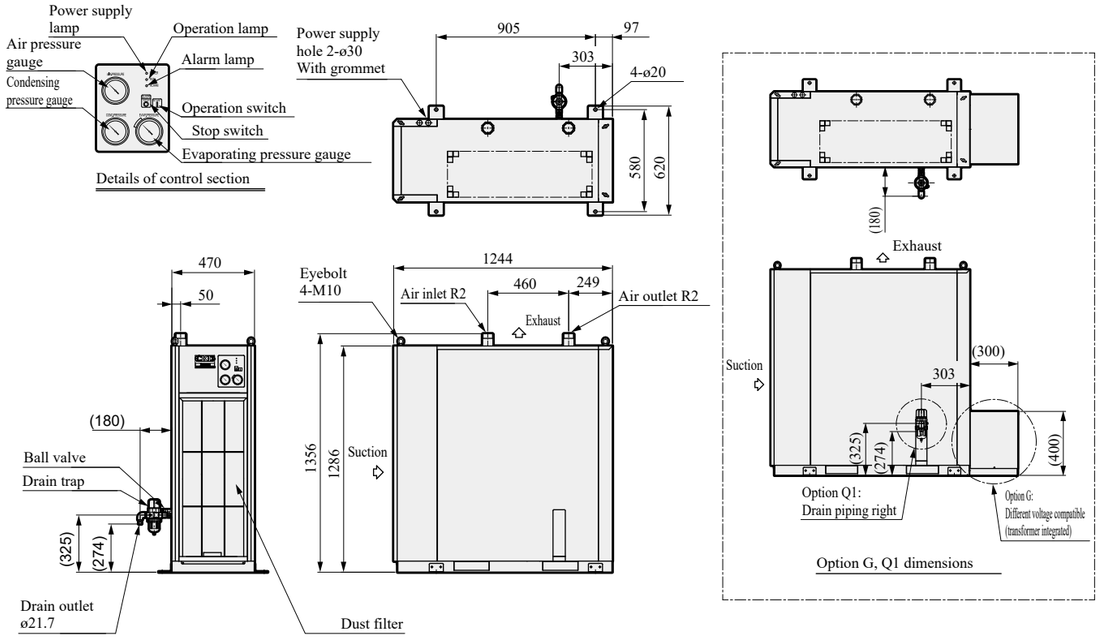
Dimensions

●GX5255D



*1: Insert a nylon tube with an inner diameter of ø5.7 to ø6.0 directly into the drain cock.
*2: The drain trap and ball valve are attachments.

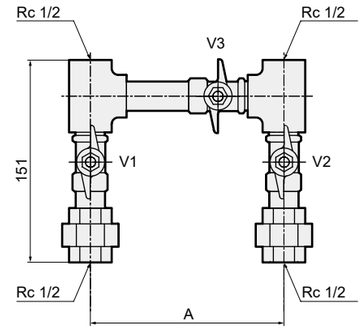
●GX5275D



*1: The drain trap and ball valve are attachments.

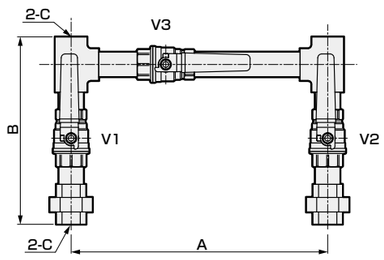
Accessory (optional)

Bypass piping set (optional)



Part No.	Compatibility	A
RD-AD3-311269	GX3203D	145
RD-AD3-311270	GX3206D, GX5203D	300

V1, V2, V3 • • • • • • Ball valve
V1, V2: Normally Open
V3: Normally Closed



Part No.	Compatibility	A	B	C
RD-AD3-311271	GX3208D, GX5204D	335	208	Rc3/4
RD-AD3-311272	GX3211D	330	209	Rc3/4
RD-AD3-219888	GX3215D, GX3222D GX5211D, GX5215D	430	258	Rc1
RD-AD3-219889	GX3237D	447	314	Rc1-1/2
RD-AD3-249894	GX3255D	500	343	Rc2
RD-AD3-311273	GX5206D	416	208	Rc3/4
RD-AD3-311274	GX5208D	430	209	Rc3/4
RD-AD3-219890	GX5222D	444	258	Rc1
RD-AD3-219891	GX5237D	500	314	Rc1-1/2
RD-AD3-249896	GX5255D, GX5275D	460	343	Rc2

V1, V2, V3 • • • • • • Ball valve
V1, V2: Normally Open
V3: Normally Closed

Safety Precautions

Be sure to read this section before use.
For general precautions for pneumatic equipment, refer to Intro 15.

Product-specific cautions: Refrigeration air dryer GX Series

Manufacturer's Disclaimer

WARNING

■The manufacturer cannot be held liable in the following cases:
- In the case where there are serious errors in the operator's use.
- Illegal modifications or repairs using non-standard parts by user.

Design / Selection

Applications

WARNING

■Do not use for applications other than removing moisture from compressed air.
■Do not use for caisson shields or medical devices such as breathing devices.
Doing so may result in serious injury.

CAUTION

■Do not mount and use this device on transportation equipment such as vehicles or ships. Vibration may cause internal damage.
■When using the product in a compressed air line subject to rapid fluctuations of pressure, install an air tank, etc., after the air dryer to ensure that the fluctuations of pressure are kept at 0.34 MPa/min or less. Rapid fluctuations of pressure may cause failure.
■When sudden load fluctuations can be expected to occur, select a model with a margin of capacity.

Air Quality

CAUTION

■Do not use when the inlet air contains corrosive gas, chemical solutions, organic solvents, or combustible gas.
■Refrigeration air dryers use copper pipes (phosphorus deoxidized copper pipes) for the refrigerant gas pipes and pipes within the heat exchanger. When corrosion causes a hole in these copper pipes, the refrigerant gas will leak and make it impossible to operate the unit, or cause failure such as water leaking from the compressed air outlet side of the air dryer. In addition, copper is also used as conductive materials for the electrical wiring, etc. Corrosion thereof may cause breakdowns such as electrical leakage accidents. In particular, copper piping in heat exchangers is subject to repeated condensation and drying, and if corrosive components are present, they are likely to be concentrated on the copper piping surface and accelerate corrosion. Therefore, sufficient attention should be paid not only to the installation environment of air dryers but also to the intake air from air compressors. Failures caused by corrosion are not covered by the warranty. Plant exhaust may contain NOx (nitrogen oxides), SOx (sulfur oxides), Co_2 (carbon dioxide), and other substances that may promote corrosion, and consideration must be given to the installation location of air dryers and air compressors to ensure that they are not affected by factory exhaust. In rare cases, if chlorine-based organic solvents (trichloroethylene, etc.), aldehyde or alcohol (formaldehyde generated from building materials or methanol in the chemicals used) are absorbed by the air dryer and hydrolyzed, the copper piping could corrode (like an ant nest). Caution is required in these cases.

Air temperature

CAUTION

■Do not use in an environment that exceeds the max. inlet air temperature or max. working pressure.
■When the inlet air temperature is high, install an after cooler, etc., in order to lower the temperature to the max. inlet air temperature or below for use. The drainage generated with the after cooler should be removed before the dryer.

Maintenance Space

CAUTION

■Make sure that the space is well ventilated, and secure enough space for maintenance and inspection.
- Series: GX3203D to 3255D, GX5203D to 5237D
  All 4 sides: 600 mm or more
- Applicable models: GX5255D, 5275D
  Front: 1000 mm or more, either left or right side: 600 mm or more

Other

WARNING

■This product uses Freon (HFC) and falls under the Freon Gas Emissions Act (April 1, 2015) as a Class 1 Specified components (commercial refrigeration air conditioning product). Management responsibility is imposed and penalties apply for violations. Be sure to collect the Freon gas when repairing or disposing of the product, and perform a simple inspection at least once every three months. Contact CKD for inspection and Freon gas collection.

During transport

WARNING

■This product is filled with less than 12 kg of refrigerant (R-134a, R-410A, R-407C). Upon transport (land, sea, air), be sure to comply with the laws and regulations applicable to each situation.

For precautions during mounting, installation, adjustment, use and maintenance, refer to the CKD Components Product Site (https://www.ckd.co.jp/kiki/en/) → "Model No. → Instruction Manual

Xeroaqua Dryer
GT9000(D)

Compatible air compressors: 75, 90, 120, 150, 190, 240, 300, 380, 450, 710, 960 kW

■ Main Line Components / Refrigeration Air Dryer



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Example of System Selection List 112
●Air cooling / standard inlet air (40°C) type (GT9000 (D)) 114
●Water cooling / standard inlet air (40°C) type (GT9000W(D)) 122
●Water Cooling/standard inlet air (40°C) type (GT9000WV2) 130
Safety Precautions 134

"Xeroaqua dryer GT Series" Meeting Customer Needs such as Reliability and Ease of Use



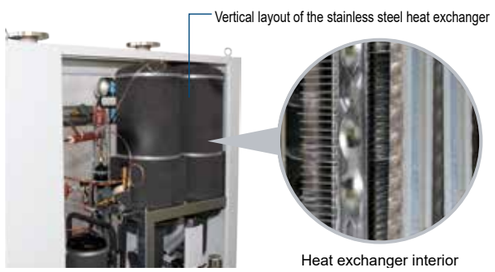
High quality, High reliability

Keeps working even at high temperatures

Operation won't stop even in hot summers. (Max. ambient temperature 48°C)

Heat exchanger with excellent climate resistance

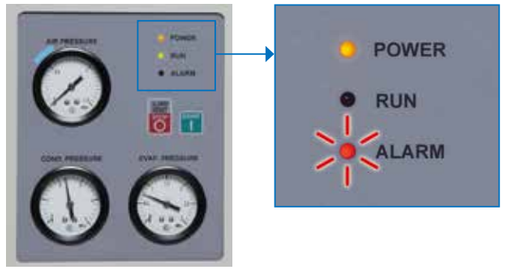
The use of a stainless steel vessel prevents dust generation from the heat exchanger. The refrigerant pipes (copper pipes) within the heat exchanger are nickel plated for improved corrosion resistance. Stainless steel piping specifications are also available. Contact CKD for details.



Easy maintenance

Inspection via control panel

Regular inspection can be performed by simply looking at the control panel. The refrigerant pressure gauge and operation lamp make operating status visible at a glance.



Easy error diagnostics

They can be identified by the flashing pattern of the alarm lamp.

When ON	Refrigerant circuit pressure error
2 blinks	Refrigerant circuit temperature error
3 blinks	Current error

Air pressure gauge provided as standard

All models are equipped with pressure gauges on the operation panel.

Centralized control possible

Central control within the plant is possible with remote operation and operation/error signal output takeout.

Equipped with dust filter

Equipped with dust filter for condenser. It can also be attached/detached easily without tools.



Space saving

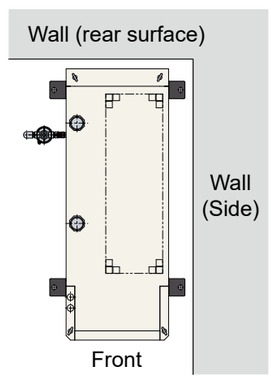
Space saving realized with top surface exhaust

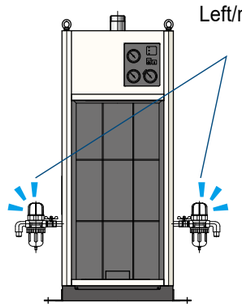
Top surface exhaust allows the unit to be mounted flush against a wall.

Flush-mounting and freely installable

Select drain trap left or right mounting: depending on the environment, installation is possible flush with the rear and either left or right walls.

*GT9150D(WD) and 9190D(WD) can only be installed flush against the right side wall.
*Right side mount of the drain trap is available as an option.





*However, optional parts are required for right side leadout.

Improved Energy-Saving, Ease of Use, and Environmental Friendliness



High quality, High reliability

Stainless steel heat exchanger compatible with oil-free areas

The heat exchanger uses a stainless steel vessel, preventing dust generation from the heat exchanger.

High weather resistance

The refrigerant pipes (copper pipes) within the heat exchanger are nickel plated for improved corrosion resistance. Stainless steel piping specifications are also available. Contact CKD for details.

No abnormal stop under high load

When operating with high load, self-protection control is activated to reduce the rotation speed of the compressor. This enables continuous operation without abnormal stoppage.

Easy maintenance

The operation status is visible at a glance

The electronic operation panel makes the operating status, dew point and failure status of the dryer visible at a glance.

Air pressure gauge provided as standard

All models are equipped with pressure gauges on the operation panel.

Centralized control possible

Central control within the plant is possible with return operation and operation/error signal output takeout.



GT9960WV2



GT9300(W) to 9450(W)

Equipped with dust filter(GT9240 to 9450)

Equipped with dust filter for condenser. It can also be attached/detached easily without tools.

Space saving

Space saving realized with top surface exhaust(GT9240 to 9450)

An exhaust duct is mounted on the top of the body to save floor layout space.

Energy saving

Operation with 50% energy-saving by limiting the numbers of unit (GT9300 to 9450, GT9300W to 9450W)

Equipped with a two-stage switching refrigerant system, it automatically switches to energy-saving operation with one stage at low load. Power can be reduced by up to 50%.

Energy-saving operation with 60% decreased power through inverter control (GT9000WV2 Series)

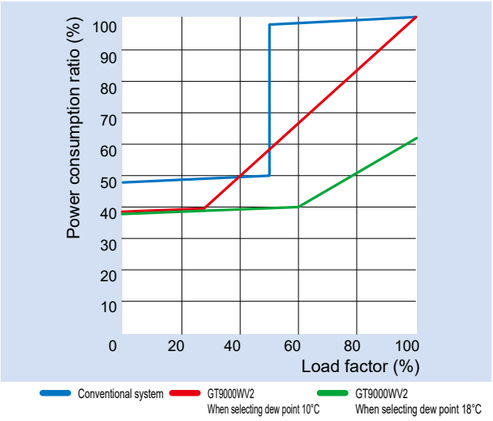
Compressor inverter control enables optimum energy-saving operation according to the load. Power savings up to 60%.

Dew point temperature setting is available (GT9000WV2 Series)

Pressure dew point can be set within a range of 10 to 18°C. If condensation inside the piping does not easily occur, such as in summer, setting the temperature to 10°C or more will result in significantly energy-saving operation.

* The dew point is lower than the set value with small load.

Load factor and power consumption of GT9000WV2 Series



Dew point temperature is linked to ambient temperature (GT9000WV2 Series)

A function is provided to automatically control the pressure dew point by linking it with the ambient temperature. The dew point automatically changes to a dew point temperature that does not condense according to the ambient temperature, saving time in manually changing the dew point setting value and enabling ideal energy-saving operation.

Same capacity at 50/60Hz (GT9000WV2 Series)

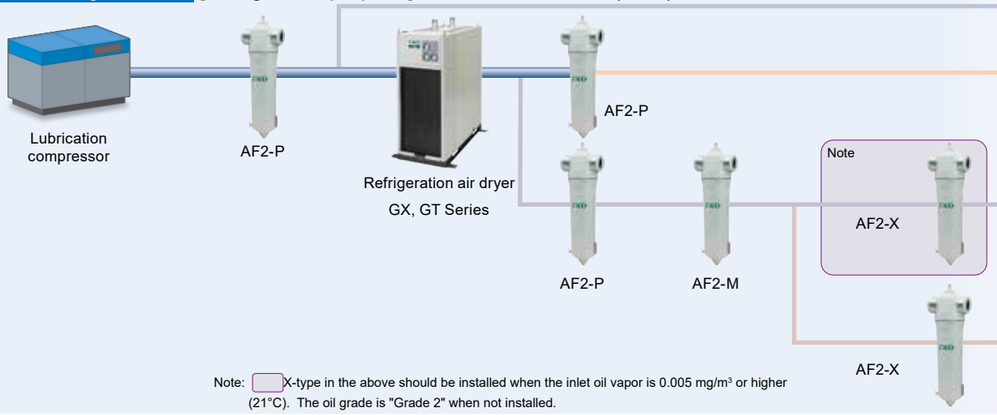
The inverter control of the compressor achieves the same capacity in the 50/60Hz area.

[Series variation]

	Rated conditions					Applicable air compressor (kW)
	Pressure dew point (°C)	Inlet air pressure (MPa)	Ambient temperature (°C)	Inlet air temperature (°C)	Cooling water inlet temperature (°C)	75 90 120 150 190 240 300 380 450 710 980
Standard inlet/air cooling GT9000 (D)	10	0.7	32	40	–	● ● ● ● ● ● ● ● ●
Standard inlet/water cooling GT9000W (D)	10	0.7	32	40	32	● ● ● ● ● ● ● ● ●
Inverter-controlled/water-cooling type GT9000WV2	10	0.7	32	40	32	● ●

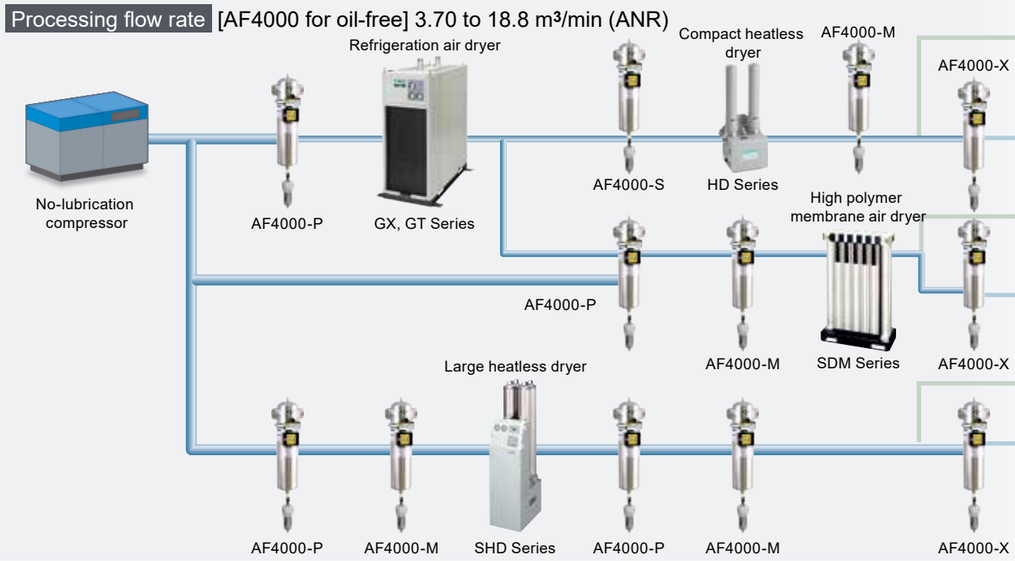
Example of system selection list

Processing flow rate [AF2 general purpose] 4.95 to 24.1 m3/min (ANR)



Note: X-type in the above should be installed when the inlet oil vapor is 0.005 mg/m³ or higher (21°C). The oil grade is "Grade 2" when not installed.

Processing flow rate [AF4000 for oil-free] 3.70 to 18.8 m³/min (ANR)



■ Table of system selections

Rating (ambient temperature: 32°C, inlet temperature: 40°C, pressure dew point: 10°C)

Air Compressor		Refrigeration Air Dryers		Main Line Filters P-type (1 µm or 3 µm)	Main Line Filters M-type (0.01 µm)	Main Line Filters X-type (deodorizing)
Output kW	Reference processing air rate m³/min (ANR)	Air cooling	Water cooling			
75	10.4/12.3	GT9075D	GT9075WD	AF2-13P50A AF4013S-50	AF2-13M50A AF4013M-50	AF2-13X50A AF4013X-50
90	14.8/17.5	GT9090D	GT9090WD	AF2-20P65A AF4020S-50	AF2-24M50A AF4020M-50	AF2-20X50A AF4020X-50
120	18.7/22.0	GT9120D	GT9120WD	AF2-24P65A	AF2-24M-65A	AF2-24X65A
150	23.8/28.0	GT9150D	GT9150WD	AF5032P-80	AF5032M-80	AF5032X-80
190	27.5/32.4	GT9190D	GT9190WD	AF5048P-100	AF5048M-100	AF5048X-100
240	36.5/43.0	GT9240	GT9240W	AF5048P-100	AF5048M-100	AF5048X-100
300	44.2/52.0	GT9300	GT9300W	AF5064P-100	AF5064M-100	AF5064X-100
380	55.2/65.0	GT9380	GT9380W	AF5080P-150	AF5080M-150	AF5080X-150
450	70.3/82.8	GT9450	GT9450W	AF5096P-150	AF5096M-150	AF5096X-150
710	139.1	—	GT9710WV2	AF5160P-200	AF5160M-200	AF5160X-200
960	184.2	—	GT9960WV2	AF5192P-200	AF5192M-200	AF5192X-200

Air Quality	Applications	Impurities in the Air			ISO 8573-1 compressed air purity grade
		Individual particles	Moisture	Oil content	
Dewatered Air **Coarse dust removed air**	Air for cleaning (dry air not required)	1 µm	–	–	2: -: -
General Dry Air	General Pneumatic Components General Pneumatic Tools Labor-Saving Components Pneumatic Jigs and Tools Air Chuck	1 µm	Pressure dew point 10°C	0.6 mg/m³	2.6.3
			Pressure dew point 7°C		2.5.3
Dry Air (oil-free)	Instrumentation Measurement Sequence control Painted	0.01 µm	Pressure dew point 10°C	0.01 mg/m³ (0.003 mg/m³)	1.6.1
			Pressure dew point 7°C		1.5.1
Dry air (odorless)	Food and Pharmaceutical Processes (Stirring, dry blowing, packaging, brewing, pressure-feeding, filling) Cosmetic Manufacturing Processes *If the product directly contacts the workpiece, it is recommended to install a bacteria-removing filter.	0.01 µm	Pressure dew point 10°C	0.003 mg/m³	1.6.1
			Pressure dew point 7°C		1.5.1
Ultra dry air (oil-free)	Ozone generator Powder transfer Drying furnace gas Drying the insulation gas of a high-voltage generator Drying computer rooms Centralized control instrumentation Liquid crystal panel manufacturing Chemical plants Painted	0.01 µm	Pressure dew point -20°C	0.01 mg/m³	1.3.1
			Pressure dew point -40°C		1.2.1
			Pressure dew point -60°C		1.2.1
Ultra-Dry Air (odorless)	Food and Pharmaceutical Processes (Stirring, dry blowing, packaging, brewing, pressure-feeding, filling) Cosmetic Manufacturing Processes *If the product directly contacts the workpiece, it is recommended to install a bacteria-removing filter.	0.01 µm	Pressure dew point -20°C	0.003 mg/m³	1.3.1
			Pressure dew point -40°C		1.2.1
			Pressure dew point -60°C		1.2.1

*1. The system No. is based on the class below. X not found in the table indicates odor removal; and "–" indicates no specification.

ISO 8573-1: 2010 Compressed air purity grade

Grade	Solid Particles				Humidity and Water Content		Oil
	Max. number of particles per 1 m³ for particle diameter d (µm)			Mass Concentration Cp mg/m³	Pressure dew point °C	Water Concentration Cw g/m³	Total Oil Concentration mg/m³
	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0				
0	Conditions stricter than Grade 1, is to be specified by the user or supplier						
1	≤ 20,000	≤ 400	≤ 10	-	≤ -70	-	≤ 0.01
2	≤ 400,000	≤ 6,000	≤ 100	-	≤ -40	-	≤ 0.1
3	-	≤ 90,000	≤ 1,000	-	≤ -20	-	≤ 1
4	-	-	≤ 10,000	-	≤ +3	-	≤ 5
5	-	-	≤ 100,000	-	≤ +7	-	-
6	-	-	-	0 < Cp ≤ 5	≤ +10	-	-
7	-	-	-	5 < Cp ≤ 10	-	Cw ≤ 0.5	-
8	-	-	-	-	-	0.5 < Cw ≤ 5	-
9	-	-	-	-	-	5 < Cw ≤ 10	-
X	-	-	-	Cp > 10	-	Cw > 10	> 5

For example, "Grade 1: 2: 1" means:
- Solid particles of 0.1 to 0.5 µm are ≤20,000 particles; 0.5 to 1.0 µm are ≤400 particles; and 1.0 to 5.0 µm are ≤10 particles
- Pressure dew point −40°C or less
- Indicates a grade of oil concentration of 0.01 mg/m³ or less.



Refrigeration Air Dryer Xeroaqua Air Cooling

GT9000(D) Series

For direct air compressor connection, standard inlet air
Applicable air compressor: 75, 90, 120, 150, 190, 240, 300, 380, 450 kW

Circuit Diagram Symbol

Model No. Notation (air-cooling)

GT9 | 075D | - | G | - | AC380V

- GT9: Model No.
- 075D: ❶ Capacity Category
- G: ❷ Option
- AC380V: ❸ Voltage

*1: The instruction manual and nameplates are provided in Japanese and English. However, the proof pressure certificate (GT9240 and higher) is available as Japanese text only. Contact CKD when an English version is required.
*2: Contact CKD if a photo of the completed product is required.
*3: Contact CKD to designate the color of the body panel.

❶Capacity Category

Code	Description
075D	75 kW
090D	90 kW
120D	120 kW
150D	150 kW
190D	190 kW
240	240kW
300	300kW
380	380kW
450	450kW

❷Option *1

	Code	Description
*2	Blank	Standard product
	G	Different voltages supported
	H2	Stainless steel nameplate
*3	H3	Simple export packaging
	N1	Copper tube rust proof coating
	Q1	Drain piping right (GT9075D to GT9190D only)

*1: Indicate options in alphabetical order.
*2: Specify the voltage of ❸ even when the model is a standard product. Example) GT9090D-AC200V
*3: Option "H3" is packaged in plywoods attached.

❸Voltage

Code	Description
AC200V	200 VAC
AC220V	220 VAC (standard 60Hz only)
AC230V	230 VAC
AC240V	240 VAC
AC380V	380 VAC
AC400V	400 VAC
AC415V	415 VAC
AC440V	440 VAC
AC480V	480 VAC

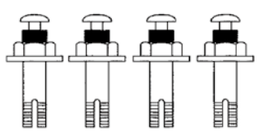
Note: Be sure to also indicate if you have selected the ❷ option as a standard product.
Example) GT9090D-AC200V

Optional accessory model No.

●Foundation bolt set

Core rod implant foundation bolts: Set of 4, made of stainless steel

Part No.	Compatibility	Size
RD-QFL-436465	GT9075D, GT9090D, GT9120D, GT9150D, GT9190D, GT9240, GT9300, GT9380, GT9450	M16×L100



●Mating flange

Insert welded flange, Hexagon head bolt, Nut, Gasket set

Part No.	Compatibility	Size
RD-KFL-436467	GT9120D	Flange 2 1/2B
RD-KFL-436468	GT9150D, GT9190D	Flange 3B
RD-KFL-436469	GT9240	Flange 4B
RD-KFL-436470	GT9300, GT9380	Flange 5B
RD-KFL-436471	GT9450	Flange 6B

Specifications

Item		GT9075D	GT9090D	GT9120D	GT9150D	GT9190D	GT9240	GT9300	GT9380	GT9450
Applicable air compressor kW		75	90	120	150	190	240	300	380	450
Working range	Working fluid	Compressed air								
	Inlet air temperature °C	5 to 60								
	Inlet air pressure MPa	0.29 to 0.98					0.1 to 0.98	0.29 to 0.93		
	Ambient temperature °C	2 to 48					2 to 40			
Rating	Processing air rate m³/min (ANR) 50/60Hz (*2)	11.4/12.6	16.3/18.9	20.8/23.8	25.9/30.1	32.1/38.1	36.5/43.0	44.2/52.0	55.2/65.0	70.3/82.8
	Processed air volume m³/min (Compressor intake condition) 50/60Hz (*3)	12.1/13.4	17.3/20.1	22.1/25.3	27.5/32.0	34.1/40.5	38.3/45.2	46.4/54.6	58.0/68.3	73.8/87.0
	Inlet air temperature °C	40								
	Inlet air pressure MPa	0.7								
	Ambient temperature °C	32								
Performance: Outlet air pressure dew point °C		10 (*4)								
Power Supply		Three-phase 200/200, 220 VAC 50/60 Hz								
Electrical Specifications	Power consumption kW 50/60Hz (*5)	2.5/3.0, 3.0	3.0/3.9, 3.9	3.0/3.9, 3.9	4.1/5.2, 5.2	5.7/7.5, 7.4	4.6/5.7, 5.6	5.9/6.8, 6.8	8.6/10.1, 10.0	9.3/11.2, 11.9
	Current consumption A 50/60Hz (*5)	9.5/9.5, 9.4	11.5/12.0, 12.0	11.5/12.0, 12.0	14.0/16.5, 15.5	20.5/24.5, 22.5	17.9/19.2, 19.1	19.9/22.3, 21.2	26.4/29.4, 28.9	36.3/38.3, 38.2
	Starting current A 50/60Hz	110/100	110/115	110/115	140/155	165/190	135/135	83/77	98/91	135/135
Refrigerant		R-410A					R-407C			
Air inlet and outlet port size (*6)		R2	R2	Flange 2 1/2 B	Flange 3B		Flange 4B	Flange 5B		Flange 6B
Weight kg		146	186	205	279	286	555	790	870	970
Released heat kW 50/60Hz		8.4/9.4	11.3/13.2	13.6/15.7	17.2/20.2	21.7/25.9	18.8/22.1	20.8/24.5	26.7/31.3	33.0/39.0

*1: Outer panel: Quality cool white (Munsell No.5GY7.5/0.5) Base: Munsell No.N3.0
*2: ANRshows conditions of 20°C atmospheric pressure and relative humidity 65%.
*3: This is a value converted to the intake condition of the air compressor in an environment of 32°C with a relative humidity of 75%.
*4: Contact CKD for information on the dew point performance guarantee.
*5: The power consumption and current consumption are both reference values under the rated conditions, and are not guaranteed
*6: The flange is JIS 10K FF or equivalent.

For maintenance parts, refer to CKD Components Product Website (https://www.ckd.co.jp/kiki/en/) → "Model No." → Maintenance Parts

Selection guide (GT9075D to 9190D)

As the max. processing air rate of each model is affected by the outlet air pressure dew point temperature, inlet air temperature, ambient temperature and inlet air pressure, compensation is required if it differs from the rated conditions in the usage section.

STEP 1 Confirm the working conditions and the rated values listed in the specifications. Working conditions: Required processing air rate, required outlet air pressure dew point temperature, inlet air temperature, ambient temperature, inlet air pressure

STEP 2 Check the correction coefficient for the processing air rate according to the required outlet air pressure dew point temperature, inlet air temperature, and ambient temperature.

(1) Temperature Compensation Coefficient

GT9075D, GT9090D, GT9120D

Inlet air temperature (°C)		35			40			45			50			55			60		
Pressure dew point (°C)		5	10	15	5	10	15	5	10	15	5	10	15	5	10	15	5	10	15
Ambient temperature (°C)	25	0.77	1.15	1.15	0.65	1.06	1.15	0.53	0.88	0.95	0.39	0.71	0.80	0.25	0.61	0.71	0.13	0.51	0.62
	30	0.70	1.15	1.15	0.58	1.02	1.11	0.47	0.85	0.93	0.35	0.68	0.75	0.23	0.59	0.66	0.11	0.49	0.58
	32	0.68	1.15	1.15	0.57	1.00	1.09	0.46	0.83	0.90	0.34	0.67	0.72	0.22	0.58	0.65	0.10	0.48	0.55
	35	0.65	1.12	1.15	0.54	0.95	1.04	0.44	0.79	0.85	0.32	0.64	0.70	0.21	0.55	0.64	0.10	0.46	0.53
	40	0.57	0.98	1.07	0.48	0.83	0.90	0.39	0.69	0.74	0.29	0.56	0.63	0.19	0.48	0.54	0.09	0.40	0.48
	45	0.23	0.83	0.92	0.20	0.70	0.85	0.15	0.58	0.68	0.14	0.47	0.56	0.14	0.41	0.44	0.08	0.34	0.42
	48	0.19	0.73	0.89	0.17	0.62	0.80	0.12	0.51	0.65	0.11	0.42	0.50	0.11	0.36	0.36	0.07	0.30	0.35

GT9150D

Inlet air temperature (°C)		35			40			45			50			55			60		
Pressure dew point (°C)		5	10	15	5	10	15	5	10	15	5	10	15	5	10	15	5	10	15
Ambient temperature (°C)	25	0.77	1.15	1.15	0.65	1.06	1.15	0.53	0.88	0.95	0.39	0.71	0.80	0.25	0.61	0.71	0.13	0.51	0.62
	30	0.70	1.15	1.15	0.58	1.02	1.11	0.47	0.85	0.93	0.35	0.68	0.75	0.23	0.59	0.66	0.11	0.49	0.58
	32	0.68	1.15	1.15	0.57	1.00	1.09	0.46	0.83	0.90	0.34	0.67	0.72	0.22	0.58	0.65	0.10	0.48	0.55
	35	0.65	1.12	1.15	0.54	0.95	1.04	0.44	0.79	0.85	0.32	0.64	0.70	0.21	0.55	0.64	0.10	0.46	0.53
	40	0.57	0.98	1.07	0.48	0.83	0.90	0.39	0.69	0.74	0.29	0.56	0.63	0.19	0.48	0.54	0.09	0.40	0.48
	45	0.22	0.79	0.88	0.17	0.58	0.70	0.14	0.50	0.59	0.13	0.45	0.54	0.13	0.38	0.41	0.08	0.33	0.38
	48	0.17	0.65	0.79	0.13	0.48	0.62	0.10	0.40	0.51	0.09	0.35	0.42	0.09	0.31	0.35	0.07	0.27	0.32

GT9190D

Inlet air temperature (°C)		35			40			45			50			55			60		
Pressure dew point (°C)		5	10	15	5	10	15	5	10	15	5	10	15	5	10	15	5	10	15
Ambient temperature (°C)	25	0.77	1.15	1.15	0.65	1.06	1.15	0.53	0.88	0.95	0.39	0.71	0.80	0.25	0.61	0.71	0.13	0.51	0.62
	30	0.70	1.15	1.15	0.58	1.02	1.11	0.47	0.85	0.93	0.35	0.68	0.75	0.23	0.59	0.66	0.11	0.49	0.58
	32	0.68	1.15	1.15	0.57	1.00	1.09	0.46	0.83	0.90	0.34	0.67	0.72	0.22	0.58	0.65	0.10	0.48	0.55
	35	0.65	1.12	1.15	0.54	0.95	1.04	0.44	0.79	0.85	0.32	0.64	0.70	0.21	0.55	0.64	0.10	0.46	0.53
	40	0.57	0.98	1.07	0.48	0.83	0.90	0.39	0.69	0.74	0.29	0.56	0.63	0.19	0.48	0.54	0.09	0.40	0.48
	45	0.23	0.83	0.92	0.20	0.70	0.85	0.15	0.58	0.68	0.14	0.47	0.56	0.14	0.41	0.44	0.08	0.34	0.42
	48	0.17	0.65	0.79	0.13	0.48	0.62	0.10	0.40	0.51	0.09	0.35	0.42	0.09	0.31	0.35	0.07	0.27	0.32

STEP 3 Check the compensation coefficient for processing air rate by inlet air pressure.

(2) Inlet air pressure coefficient

Inlet air pressure (MPa)	0.29	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.98
Coefficient	0.80	0.80	0.86	0.92	0.96	1.00	1.04	1.08	1.12

STEP 4 Confirming upper limit coefficient

It is checked whether the value of the product of each coefficient ((1)×(2)) exceeds the upper limit coefficient. If not, find the max. processing air rate by the product of each coefficient ((1)×(2)). When this value is exceeded, find the maximum processing air rate by using the upper limit coefficient .

(3) Ceiling coefficient

Working conditions (inlet air pressure (MPa))	0.29	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.98
Coefficient	0.92	0.92	0.98	1.05	1.10	1.15	1.19	1.24	1.28

STEP 5 Find the maximum processing air rate from each model rated processing air rate. Max. air processing rate = Rated processing air rate × Compensation coefficient determined by STEP 4

Select the model so that the required processing air rate is less than the maximum processing air rate.

Example of Calculation

Conditions	Working Conditions	Selecting Conditions	Coefficient
Inlet air temperature	30 to 38 °C	40°C	(1) 0.95
Pressure dew point	10°C	10°C	
Ambient temperature	25 to 33 °C	35°C	
Inlet air pressure	0.55 to 0.75 MPa	0.5 MPa	(2) 0.92
Frequency	50Hz	50Hz	50Hz

Substitute the above conditions into the equation above to obtain the max. processing air rate when using the GT9150D.

Product of each coefficient ((1)×) = 0.95×0.92 = 0.87

As the ceiling coefficient of 1.05 is not exceeded when the inlet air pressure of the working conditions is 0.5 MPa, the max. processing air rate will be 25.9 (rated processing air rate) × 0.87 = 22.5 **m³**/min (ANR). If the required processing flow rate is less than or equal to this value, select that model.

Selection guide (GT9240 to GT9450)

As the max. processing air rate of each model is affected by the outlet air pressure dew point temperature, inlet air temperature, ambient temperature and inlet air pressure, compensation is required if it differs from the rated conditions in the usage section.

STEP 1 Confirm the working conditions and the rated values listed in the specifications. Working conditions: Required processing air rate, required outlet air pressure dew point temperature, inlet air temperature, ambient temperature, inlet air pressure

STEP 2 Check the correction coefficient for the processing air rate according to the required outlet air pressure dew point temperature, inlet air temperature, and ambient temperature.

(1) Temperature Compensation Coefficient

Inlet air temperature (°C)		35		40		45		50		55		60	
Pressure dew point (°C)		10	15	10	15	10	15	10	15	10	15	10	15
Ambient temperature (°C)	25	1.29	1.29	1.14	1.24	0.91	0.99	0.69	0.75	0.46	0.50	0.23	0.25
	30	1.25	1.29	1.04	1.13	0.83	0.91	0.62	0.68	0.42	0.45	0.21	0.23
	32	1.20	1.29	1.00	1.09	0.80	0.87	0.60	0.65	0.40	0.44	0.20	0.22
	35	1.13	1.23	0.94	1.02	0.75	0.82	0.56	0.61	0.38	0.41	0.19	0.20
	40	1.01	1.10	0.84	0.92	0.67	0.73	0.50	0.55	0.34	0.37	0.17	0.18

STEP 3 Check the compensation coefficient for processing air rate by inlet air pressure.

(2) Inlet air pressure coefficient

Inlet air pressure (MPa)	0.10	0.20	0.29	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.93	0.98
Coefficient	0.60	0.66	0.72	0.73	0.80	0.87	0.93	1.00	1.07	1.13	1.15	1.19

*1: GT9300 to GT9450 working pressure range is 0.29 to 0.93 MPa.

STEP 4 Confirming upper limit coefficient

It is checked whether the value of the product of each coefficient ((1)×(2)) exceeds the upper limit coefficient .

If not, find the max. processing air rate by the product of each coefficient ((1)×(2)).

When this value is exceeded, find the maximum processing air rate by using the upper limit coefficient .

(3) Ceiling coefficient

Working conditions (inlet air pressure (MPa))	0.10	0.20	0.29	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.93	0.98
Coefficient	0.77	0.85	0.92	0.94	1.03	1.12	1.19	1.29	1.38	1.45	1.48	1.53

STEP 5 Find the maximum processing air rate from each model rated processing air rate.

Max. air processing rate = Rated processing air rate × Compensation coefficient determined by STEP 4

Select the model so that the required processing air rate is less than the maximum processing air rate.

Example of Calculation

Conditions	Working Conditions	Selecting Conditions	Coefficient
Inlet air temperature	30 to 38 °C	40°C	(1) 0.94
Pressure dew point	10°C	10°C	
Ambient temperature	25 to 33 °C	35°C	
Inlet air pressure	0.55 to 0.75 MPa	0.5 MPa	(2) 0.87
Frequency	50Hz	50Hz	50Hz

Substitute the above conditions into the equation above to obtain the processing air rate when using the GT9240.

Product of each coefficient

(1) × (2) = 0.94 × 087 = 0.81

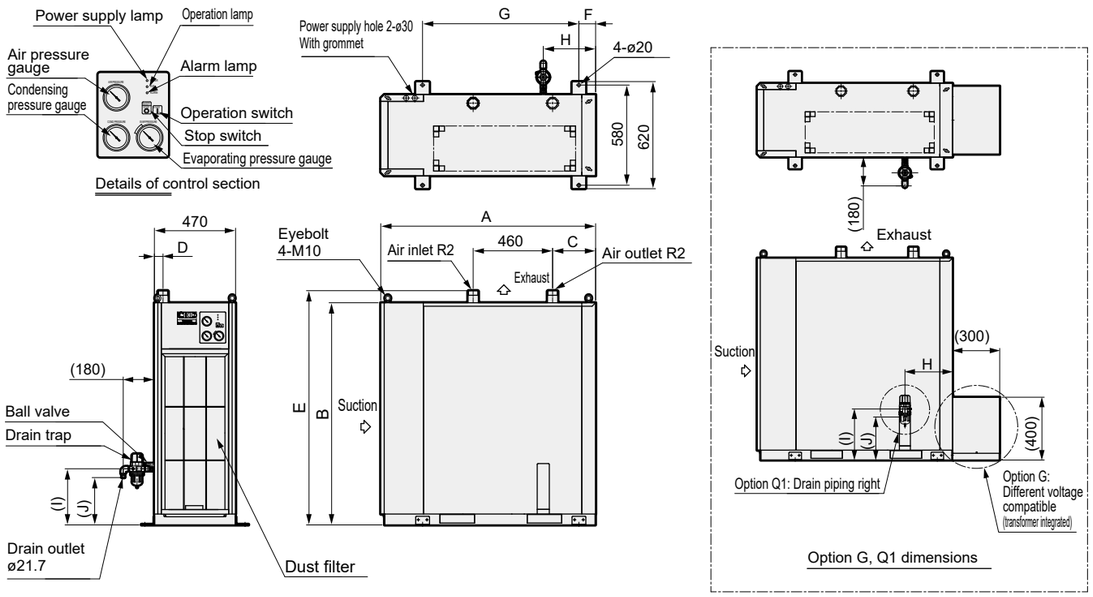
As the ceiling coefficient of 1.12 is not exceeded when the inlet air pressure of the working conditions is 0.5 MPa, the max. processing air rate will be 23.8 (reference processing air rate) × 0.81 = 19.2 m³/min (ANR).

If the used air quantity is less than or equal to this value, select that model.

Note: Contact CKD for compatibility with pressure dew points of less than 10°C.

Dimensions

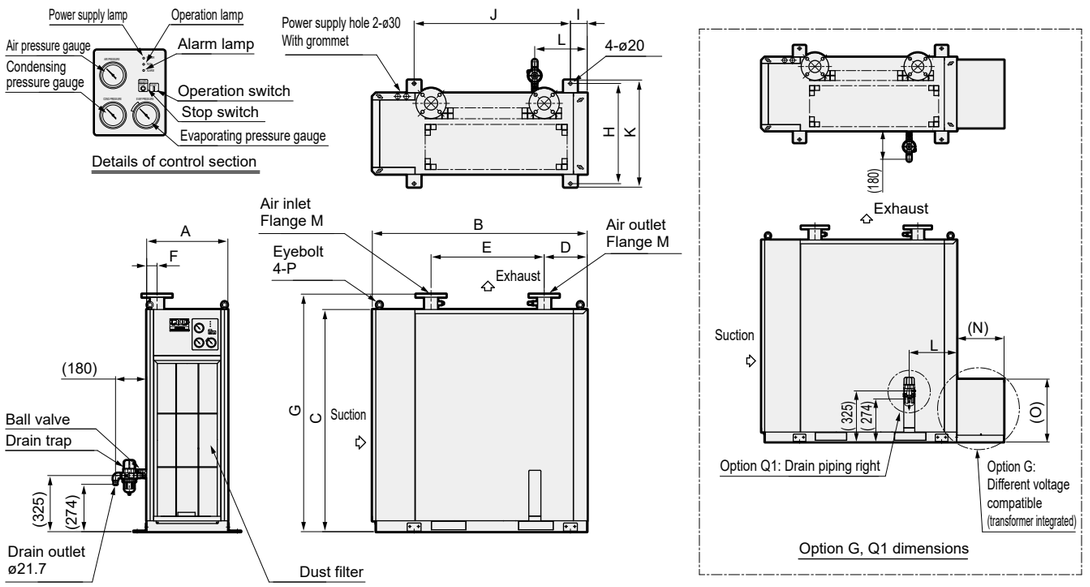
●GT9075D, GT9090D



Note: The drain trap and ball valve are attachments.

Model No.	A	B	C	D	E	F	G	H	I	J
GT9075D	1081	1140	287	235	1204	67	868	287	320	269
GT9090D	1244	1286	249	55	1356	97	905	303	325	274

●GT9120D, GT9150D, GT9190D

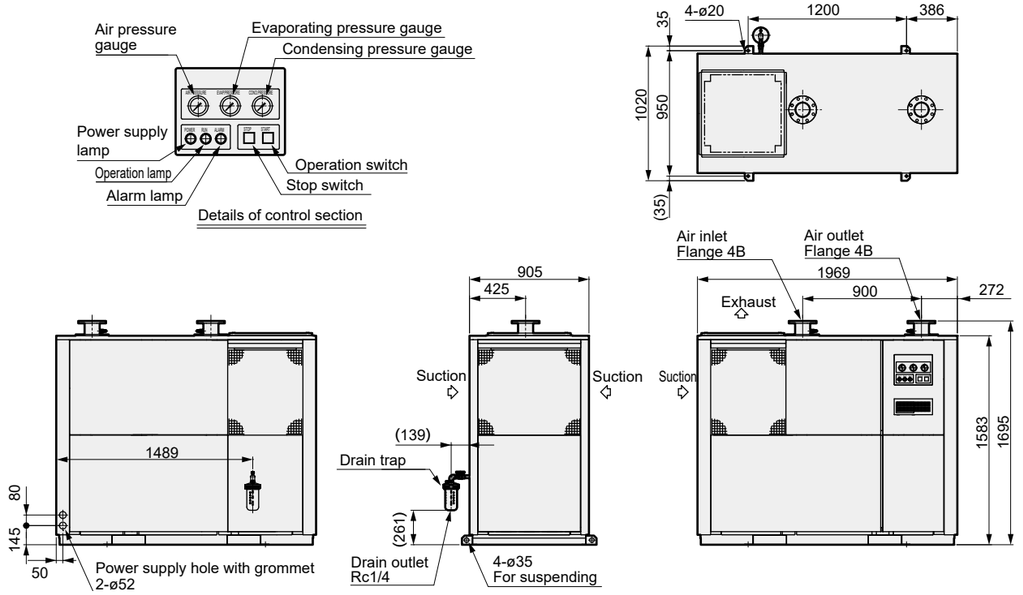


Note: The drain trap and ball valve are attachments.

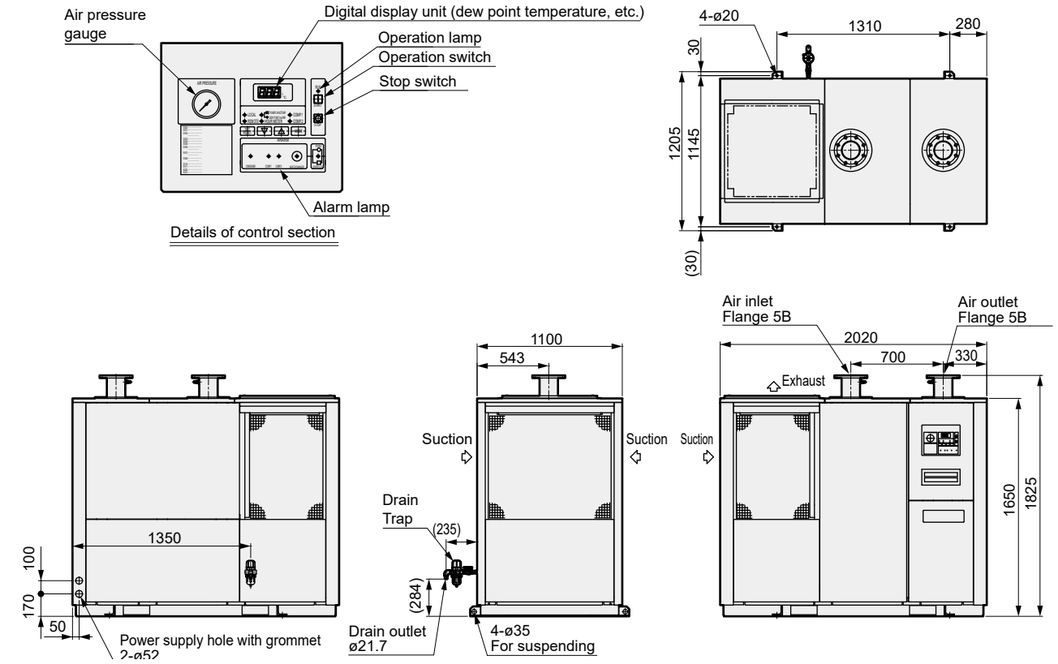
Model No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
GT9120D	470	1244	1286	249	655	60	1375	580	97	905	620	303	$2^{1}/_{2}$ B	300	400	M10
GT9150D	700	1290	1332	305	720	225	1432	810	67	1030	850	325	3B	350	420	M16
GT9190D	700	1290	1332	107	860	225	1432	810	67	1030	850	325	3B	350	420	M16

Dimensions

●GT9240



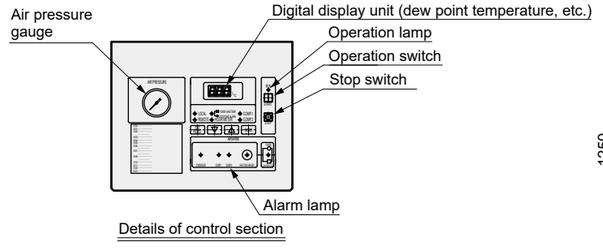
●GT9300, GT9380

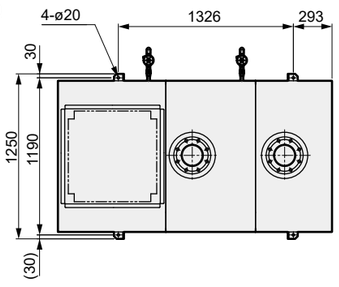


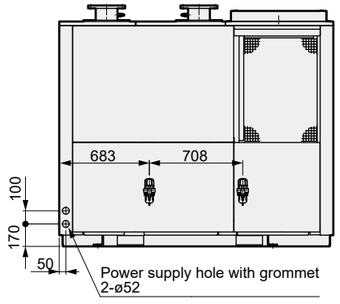
Note: The dew point display value is a guide, and is not the actual dew point. To measure the actual dew point, measure the secondary side air with a dew point gauge.

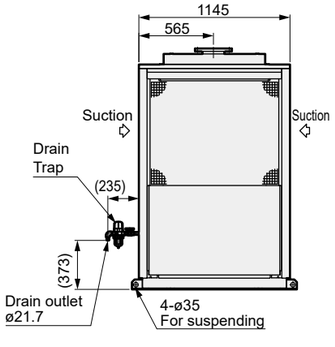
Dimensions

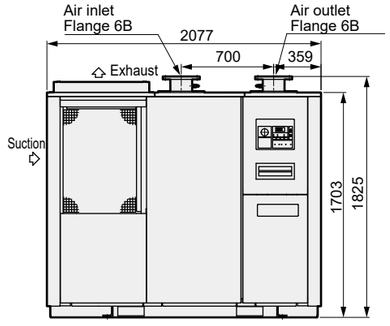
●GT9450











Note: The dew point display value is a guide, and is not the actual dew point. To measure the actual dew point, measure the secondary side air with a dew point gauge.

MEMO

Main Line Components
Refrigeration Dryers
Desiccant Dryers
High Polymer Membrane Dryers
Main Line Filters
Drain discharger, etc.
Ending



Refrigerated Air Dryer Xeroaqua Water Cooling type

GT9000W(D) Series

For direct air compressor connection, standard inlet air
Applicable air compressor: 75, 90, 120, 150, 190, 240, 300, 380, 450 kW

Circuit Diagram Symbol



Model No. Notation (water-cooling)

GT9 | 075WD | G | 380 VAC

- GT9: Model No.
- 075WD: ❶ Capacity Category
- G: ❷ Option
- 380 VAC: ❸ Voltage

*1: The instruction manual and nameplates are provided in Japanese and English. However, proof pressure certificates (GT9240W or higher) are only available in Japanese. Contact CKD when an English version is required.
*2: Contact CKD if a photo of the completed product is required.
*3: Contact CKD to designate the color of the body panel.

❶Capacity Category

Code	Description
075WD	75 kW
090WD	90 kW
120WD	120 kW
150WD	150 kW
190WD	190 kW
240 W	240kW
300 W	300kW
380 W	380kW
450 W	450kW

❷Option *1

	Code	Description
*2	Blank	Standard product
	G	Different voltages supported
	H2	Stainless steel nameplate
*3	H3	Simple export packaging
	N1	Copper tube rust proof coating
	Q1	Drain piping right (GT9075WD to GT9190WD only)

*1: Indicate options in alphabetical order.
*2: Specify the voltage of ❸ even when the model is a standard product. Example) GT9090WD-AC200V
*3: Option "H3" is packaged in plywood.

❸Voltage

Code	Description
AC200V	200 VAC
AC220V	220 VAC (standard 60Hz only)
AC230V	230 VAC
AC240V	240 VAC
AC380V	380 VAC
AC400V	400 VAC
AC415V	415 VAC
AC440V	440 VAC
AC480V	480 VAC

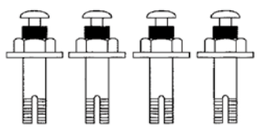
Note: Be sure to also indicate if you have selected the ❷ option as a standard product. Example) GT9090WD-AC200V

Optional accessory model No.

●Foundation bolt set

Core rod implant foundation bolts: Set of 4, made of stainless steel

Part No.	Compatibility	Size
RD-QFL-436465	GT9075WD, GT9090WD, GT9120WD, GT9150WD, GT9190WD, GT9240W, GT9300W, GT9380W, GT9450W	M16×L100



●Companion flange

Insert welded flange, Hexagon head bolt, Nut, Gasket set

Part No.	Compatibility	Size
RD-KFL-436467	GT9120WD	Flange 2-1/2B
RD-KFL-436468	GT9150WD, GT9190WD	Flange 3B
RD-KFL-436469	GT9240W	Flange 4B
RD-KFL-436470	GT9300W, GT9380W	Flange 5B
RD-KFL-436471	GT9450W	Flange 6B

Specifications

Item		GT9075WD	GT9090WD	GT9120WD	GT9150WD	GT9190WD	GT9240W	GT9300W	GT9380W	GT9450W
Applicable air compressor kW		75	90	120	150	190	240	300	380	450
Working range	Working fluid	Compressed air								
	Inlet air temperature °C	5 to 60								
	Inlet air pressure MPa	0.29 to 0.98					0.1 to 0.98	0.29 to 0.93		
	Cooling water inlet pressure MPa	0.2 to 0.74								
	Ambient temperature °C	2 to 48					2 to 45			
Rating	Processing air rate m³/min (ANR) 50/60Hz (*2)	11.4/13.2	16.3/18.9	20.8/23.8	25.9/30.1	32.9/38.6	39.9/47.0	48.4/57.0	60.3/71.0	79.0/93.0
	Processed air volume m³/min (Compressor intake condition) 50/60Hz (*3)	12.1/14.0	17.3/20.1	22.1/25.3	27.5/32.0	35.0/41.0	41.9/49.4	50.8/59.9	63.3/74.6	83.0/97.7
	Inlet air temperature °C	40								
	Inlet air pressure MPa	0.7								
	Cooling water inlet temperature °C	32								
	Cooling water volume m³/h 50/60Hz	1.5/1.7	2.4/2.8	2.5/2.9	2.7/3.0	3.0/3.2	3.6/3.8	3.4/4.0	4.3/5.0	6.0/7.1
	Ambient temperature °C	32								
Performance	Outlet air pressure dew point °C	10 (*4)								
Power Supply		Three-phase 200/200, 220 VAC 50/60 Hz								
Electrical Specifications	Power Consumption kW 50/60Hz (*5)	1.7/2.0, 2.0	2.1/2.6, 2.5	2.1/2.6, 2.5	3.5/4.2, 4.2	4.7/6.2, 6.1	3.5/4.4, 4.3	5.1/5.7, 5.7	6.5/7.6, 7.5	8.5/9.0, 8.9
	Current consumption A 50/60Hz (*5)	8.0/8.0, 8.0	8.6/9.4, 8.9	8.6/9.4, 8.9	11.5/12.0, 11.0	15.5/17.0, 16.0	14.8/15.0, 14.9	17.6/18.9, 18.4	22.5/25.0, 24.5	29.6/32.0, 31.4
	Starting current A 50/60Hz	110/100	110/115	110/115	140/155	165/190	135/135	83/77	98/91	135/135
Refrigerant		R-410A					R-407C			
Air inlet and outlet port size (*6)		R2	R2	Flange 2½ B	Flange 3B		Flange 4B	Flange 5B		Flange 6B
Weight kg		140	183	203	270	277	532	790	870	940

*1: Outer panel: Quality Cool White (Munsell No.5GY7.5/0.5) Base: Munsell No.N3.0
*2: ANRshows conditions of 20°C atmospheric pressure and relative humidity 65%.
*3: This is a value converted to the intake condition of the air compressor in an environment of 32°C with a relative humidity of 75%.
*4: Contact CKD for information on the dew point performance guarantee.
*5: The power consumption and current consumption are both reference values under the rated conditions, and are not guaranteed
*6: The flange is JIS 10K FF or equivalent.

For maintenance parts, refer to CKD Components Product Website (https://www.ckd.co.jp/kiki/en/) → "Model No." → Maintenance Parts

Selection Guide (GT9075WD to 9190WD)

As the max. processing air rate of each model is affected by the outlet air pressure dew point temperature, inlet air temperature, ambient temperature and inlet air pressure, compensation is required if it differs from the rated conditions in the usage section.

STEP 1 Confirm the working conditions and the rated values listed in the specifications. Working conditions: Required processing air rate, required outlet air pressure dew point temperature, inlet air temperature, ambient temperature, inlet air pressure

STEP 2 Check the correction coefficient for the processing air rate according to the required outlet air pressure dew point temperature, inlet air temperature, and ambient temperature.

(1) Temperature Compensation Coefficient

GT9075WD, GT9090WD, GT9120WD

Inlet air temperature (°C)	35			40			45			50			55			60		
Pressure dew point (°C)	5	10	15	5	10	15	5	10	15	5	10	15	5	10	15	5	10	15
Coefficient	0.68	1.15	1.15	0.57	1.00	1.09	0.46	0.83	0.90	0.34	0.67	0.72	0.22	0.58	0.65	0.10	0.48	0.55

GT9150WD

Inlet air temperature (°C)	35			40			45			50			55			60		
Pressure dew point (°C)	5	10	15	5	10	15	5	10	15	5	10	15	5	10	15	5	10	15
Coefficient	0.68	1.15	1.15	0.57	1.00	1.09	0.46	0.83	0.90	0.34	0.67	0.72	0.22	0.58	0.65	0.10	0.48	0.55

GT9190WD

Inlet air temperature (°C)	35			40			45			50			55			60		
Pressure dew point (°C)	5	10	15	5	10	15	5	10	15	5	10	15	5	10	15	5	10	15
Coefficient	0.68	1.15	1.15	0.57	1.00	1.09	0.46	0.83	0.90	0.34	0.67	0.72	0.22	0.58	0.65	0.10	0.48	0.55

STEP 3 Check the compensation coefficient for processing air rate by inlet air pressure.

(2) Inlet air pressure coefficient

Inlet air pressure (MPa)	0.29	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.98
Coefficient	0.80	0.80	0.86	0.92	0.96	1.00	1.04	1.08	1.12

STEP 4 Confirming upper limit coefficient

It is checked whether the value of the product of each coefficient ((1)×(2)) exceeds the upper limit coefficient .
If not, find the max. processing air rate by the product of each coefficient ((1)×(2)).
When this value is exceeded, find the maximum processing air rate by using the upper limit coefficient .

(3) Ceiling coefficient

Working conditions (inlet air pressure (MPa))	0.29	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.98
Coefficient	0.92	0.92	0.98	1.05	1.10	1.15	1.19	1.24	1.28

STEP 5 Find the maximum processing air rate from each model rated processing air rate. Max. air processing rate = Rated processing air rate × Compensation coefficient determined by STEP 4
Select the model so that the required processing air rate is less than the maximum processing air rate.

Example of calculation

Conditions	Working Conditions	Selecting Conditions	Coefficient
Inlet air temperature	30 to 33 °C	35°C	(1) 1.15
Pressure dew point	10°C	10°C	
Inlet air pressure	0.55 to 0.75 MPa	0.5 MPa	(2) 0.92
Frequency	50Hz	50Hz	50Hz

Substitute the above conditions into the equation above to obtain the processing air rate when using the GT9150WD.
Product of each coefficient
(1) × (2) = 1.15 × 0.92 = 1.05
As the (3) ceiling coefficient of 1.05, when the inlet air pressure of the working conditions is 0.5 MPa, is not exceeded, the max. processing air rate will be 25.9 (reference processing air rate) × 1.05 = 27.1 m^3/minis (ANR).
If the used air quantity is less than or equal to this value, select that model.

Selection guide (GT9240W to GT9450W)

As the max. processing air rate of each model is affected by the outlet air pressure dew point temperature, inlet air temperature, ambient temperature and inlet air pressure, compensation is required if it differs from the rated conditions in the usage section.

STEP 1 Confirm the working conditions and the rated values listed in the specifications. Working conditions: Required processing air rate, required outlet air pressure dew point temperature, inlet air temperature, ambient temperature, inlet air pressure

STEP 2 Check the correction coefficient for the processing air rate according to the required outlet air pressure dew point temperature, inlet air temperature, and ambient temperature.

(1) Temperature Compensation Coefficient

Inlet air temperature (°C)	35		40		45	
Pressure dew point (°C)	10	15	10	15	10	15
Coefficient	1.20	1.29	1.00	1.09	0.80	0.87
Inlet air temperature (°C)	50		55		60	
Pressure dew point (°C)	10	15	10	15	10	15
Coefficient	0.60	0.65	0.40	0.44	0.20	0.22

STEP 3 Check the compensation coefficient for processing air rate by inlet air pressure.

(2) Inlet air pressure coefficient

Inlet air pressure (MPa)	0.10	0.20	0.29	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.93	0.98
Coefficient	0.60	0.66	0.72	0.73	0.80	0.87	0.93	1.00	1.07	1.13	1.15	1.19

*1:GT9300W to GT9450W working pressure range is 0.29 to 0.93MPa.

STEP 4 Confirming upper limit coefficient

It is checked whether the value of the product of each coefficient ((1)×(2)) exceeds the upper limit coefficient .
If not, find the max. processing air rate by the product of each coefficient ((1)×(2)).
When this value is exceeded, find the maximum processing air rate by using the upper limit coefficient .

(3) Ceiling coefficient

Working conditions (inlet air pressure (MPa))	0.10	0.20	0.29	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.93	0.98
Coefficient	0.77	0.85	0.92	0.94	1.03	1.12	1.19	1.29	1.38	1.45	1.48	1.53

STEP 5 Find the maximum processing air rate from each model rated processing air rate. Max. air processing rate = Rated processing air rate × Compensation coefficient determined by STEP 4
Select the model so that the required processing air rate is less than the maximum processing air rate.

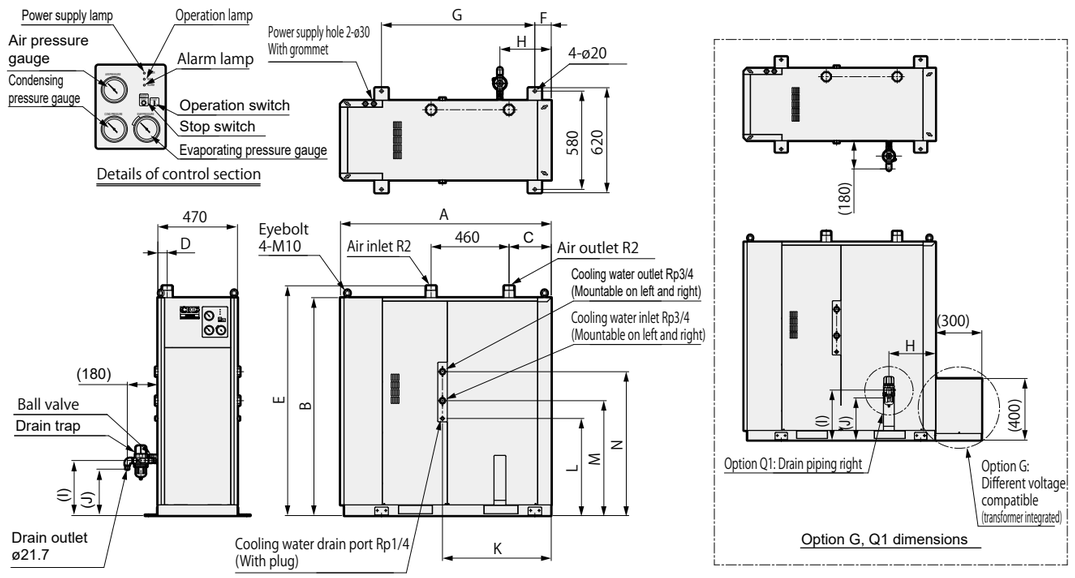
Example of calculation

Conditions	Working Conditions	Selecting Conditions	Coefficient
Inlet air temperature	30 to 33 °C	35°C	(1) 1.20
Pressure dew point	10°C	10°C	
Inlet air pressure	0.55 to 0.75 MPa	0.5 MPa	(2) 0.87
Frequency	50Hz	50Hz	50Hz

Substitute the above conditions into the equation above to obtain the processing air rate when using the GT9240W.
Product of each coefficient
(1) × (2) = 1.20 × 0.87 = 1.04
As the ceiling coefficient of 1.12 is not exceeded when the inlet air pressure of the working conditions is 0.5 MPa, the max. processing air rate will be 39.9 (reference processing air rate) × 1.04 = 41.4 m^3/min (ANR).
If the used air quantity is less than or equal to this value, select that model.
Note: Contact CKD for compatibility with pressure dew points of less than 10°C.

Dimensions

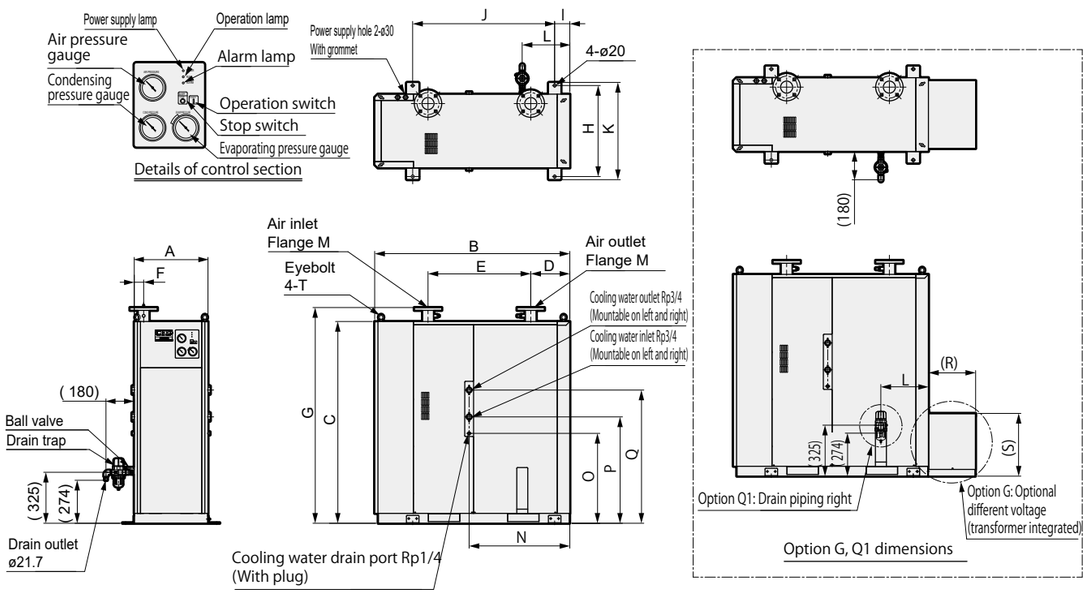
●GT9075WD, GT9090WD



*1: The drain trap and ball valve are attachments.
*2: Select either the right or left panel for installation of the cooling water piping. The installation position will be symmetrical on both the right and left side panels

Model No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N
GT9075WD	1081	1140	287	235	1204	67	868	287	320	269	486	505	665	778
GT9090WD	1244	1286	249	55	1356	97	905	303	325	274	642	573	678	849

●GT9120WD, GT9150WD, GT9190WD

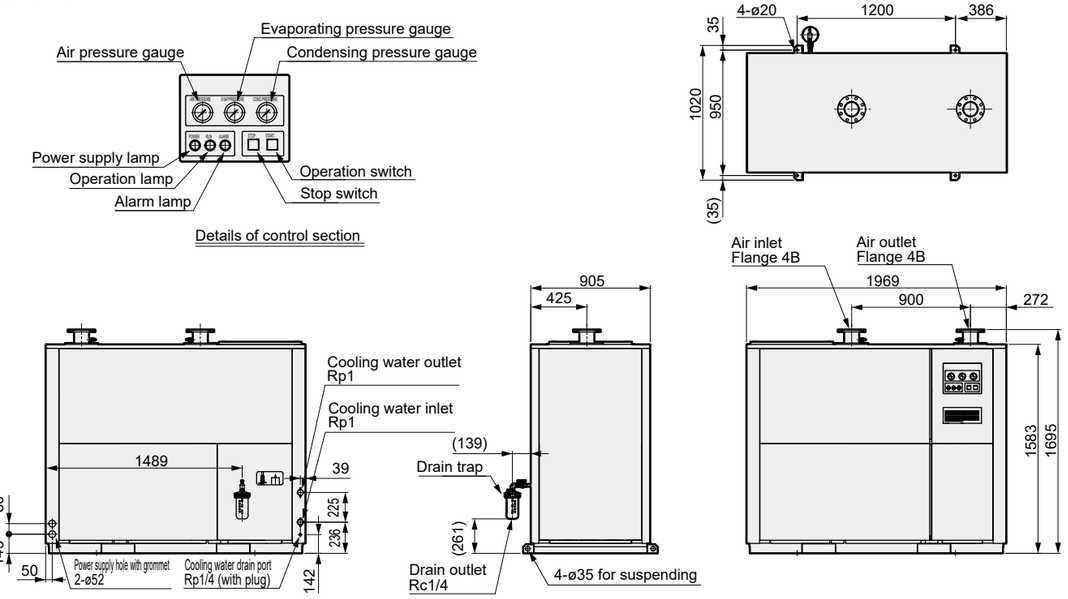


*1: The drain trap and ball valve are attachments.
*2: Select either the right or left panel for installation of the cooling water piping. The installation position will be symmetrical on both the right and left side panels.

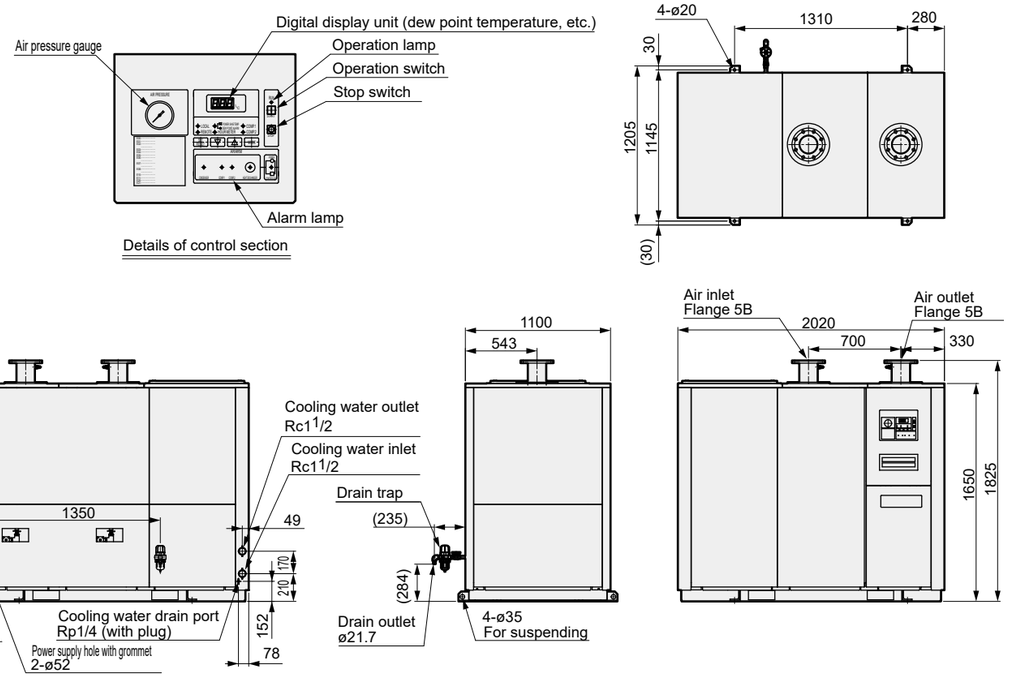
Model No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
GT9120WD	470	1244	1286	249	655	60	1375	580	97	905	620	303	$2^{1}/_{2}$B	642	573	678	849	300	400	M10
GT9150WD	700	1290	1332	305	720	225	1432	810	67	1030	850	325	3B	1000	120	190	563	350	420	M16
GT9190WD	700	1290	1332	107	860	225	1432	810	67	1030	850	325	3B	1000	120	190	563	350	420	M16

Dimensions

●GT9240W



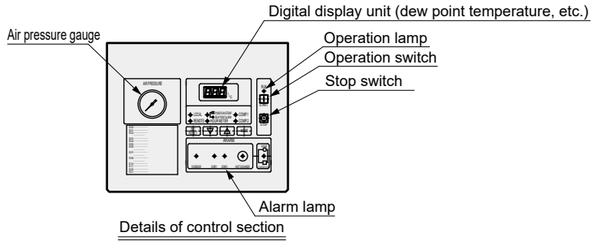
●GT9300W, GT9380W

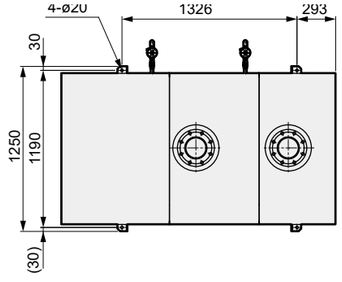


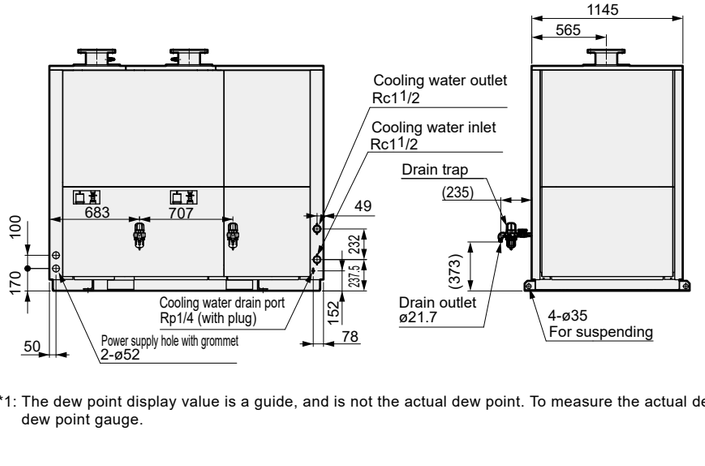
*1: The dew point display value is a guide, and is not the actual dew point. To measure the actual dew point, measure the secondary side air with a dew point gauge.

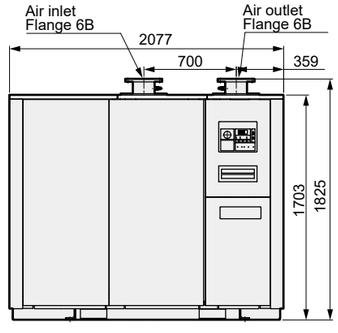
Dimensions

●GT9450W









*1: The dew point display value is a guide, and is not the actual dew point. To measure the actual dew point, measure the secondary side air with a dew point gauge.

MEMO



Refrigerated air dryer Xeroaqua (Inverter-controlled water cooling)

GT9000WV2 Series

For direct air compressor connection, standard inlet air

●Applicable air compressor: 710, 960 kW

Circuit Diagram Symbol



Model No. Notation (inverter controlled water-cooling)

GT9 | 710 | WV2 - G - AC380V

- GT9 | 710: Model No. / ❶Capacity Category
- G: ❷Option
- AC380V: ❸Voltage

*1: The instruction manual and nameplates are provided in Japanese and English. However, the proof pressure certificate is available as Japanese text only. Contact CKD when an English version is required.
*2: Contact CKD if a photo of the completed product is required.
*3: Contact CKD to designate the color of the body panel.

❶Capacity Category

Code	Description
710	710 kW
960	960 kW

❷Option *1

	Code	Description
*2	Blank	Standard product
	G	Different voltages supported
	H2	Stainless steel nameplate
*3	H3	Simple export packaging
	N1	Copper tube rust proof coating

*1: Indicate options in alphabetical order.
*2: Specify the voltage of ❸ even when the model is a standard product. Example) GT9710WV2-AC200V
*3: Option "H3" is packaged in plywoodis attached.

❸Voltage

Code	Description
AC200V	200 VAC
AC220V	220 VAC (standard 60Hz only)
AC230V	230 VAC
AC240V	240 VAC
AC380V	380 VAC
AC400V	400 VAC
AC415V	415 VAC
AC440V	440 VAC
AC480V	480 VAC

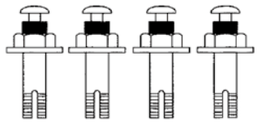
Note: Be sure to also indicate if you have selected the ❷ option as a standard product. Example) GT9710WV2-AC200V

Optional accessory model No.

●Foundation bolt set

Core rod implant foundation bolts: Set of 4, made of stainless steel

Part No.	Compatibility	Size
RD-QFL-436465	GT9710WV2	M16×L100
RD-QFL-436466	GT9960WV2	M20×L130



●Companion flange

Insert welded flange, Hexagon head bolt, Nut, Gasket set

Part No.	Compatibility	Size
RD-KFL-436472	GT9710WV2, GT9960WV2	Brandi 8B

Specifications

Item		GT9710WV2	GT9960WV2
Applicable air compressor kW		710	960
Working range	Working fluid	Compressed air	
	Inlet air temperature °C	5 to 60	
	Inlet air pressure MPa	0.1 to 0.93	
	Cooling water inlet pressure MPa	0.2 to 0.74	
	Ambient temperature °C	2 to 50	
Rating	Processing flow rate m³/min (ANR) 50/60Hz (*2)	139.1	184.2
	Processing flow rate m³/min (Compressor intake condition) 50/60Hz (*3)	146.1	193.4
	Inlet air temperature °C	40	
	Inlet air pressure MPa	0.7	
	Cooling water inlet temperature °C	32	
	Cooling water volume m³/h 50/60Hz	10.7	14.2
	Ambient temperature °C	32	
	Outlet air pressure dew point °C	10 (*4)	
Outlet air pressure dew point switching range °C		10 to 18 (Manual setting/outside temperature linkage switching function equipped)	
Power Supply		Three-phase 200/200, 220 VAC 50/60 Hz (*5)	
Electrical Specifications	Power consumption kW 50/60 Hz (*6)	14.8	19.6
	Operating current A 50/60Hz (*6)	49.0	68.6
Refrigerant		R-407C	
Air outlet/inlet piping bore size (*7)		Flange 8B	
Weight kg		1330	2200

*1: Outer panel: Quality Cool White (Munsell No.5GY7.5/0.5)
Base: Munsell No.N3.0
*2: ANRshows conditions of 20°C atmospheric pressure and relative humidity 65%.
*3: This is a value converted to the intake condition of the air compressor in an environment of 32°C with a relative humidity of 75%.
*4: Contact CKD for information on the dew point performance guarantee.
*5: Make sure that the imbalance between phases of the power supply voltage is within ±2%.
*6: The power consumption and operation current are both reference values under the rated conditions, and are not guaranteed.
*7: Flange is 10K flange.
*8: GT9960WV2 is only available in Japan. Contact CKD if export is required.

For maintenance parts, refer to CKD Components Product Website (https://www.ckd.co.jp/kiki/en/) → "Model No." → Maintenance Parts

Selection Guide

As the max. processing air rate of each model is affected by the outlet air pressure dew point temperature, inlet air temperature, ambient temperature and inlet air pressure, compensation is required if it differs from the rated conditions in the usage section.

STEP 1 Confirm the working conditions and the rated values listed in the specifications. Working conditions: Required processing air rate, required outlet air pressure dew point temperature, inlet air temperature, ambient temperature, inlet air pressure

STEP 2 Check the correction coefficient for the processing air rate according to the required outlet air pressure dew point temperature, inlet air temperature, and ambient temperature.

(1) Temperature Compensation Coefficient

Inlet air temperature (°C)	35		40		45	
Pressure dew point (°C)	10	18	10	18	10	18
Coefficient	1.20	1.20	1.00	1.20	0.80	0.96
Inlet air temperature (°C)	**50**		**55**		**60**	
Pressure dew point (°C)	**10**	**18**	**10**	**18**	**10**	**18**
Coefficient	0.60	0.72	0.40	0.48	0.20	0.24

STEP 3 Check the compensation coefficient for processing air rate by inlet air pressure.

(2) Inlet air pressure coefficient

Inlet air pressure (MPa)	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.93
Coefficient	0.60	0.66	0.73	0.80	0.87	0.93	1.00	1.07	1.13	1.15

STEP 4 Confirming upper limit coefficient

It is checked whether the value of the product of each coefficient ((1)×(2)) exceeds the upper limit coefficient .
If not, find the max. processing air rate by the product of each coefficient ((1)×(2)).
When this value is exceeded, find the maximum processing air rate by using the upper limit coefficient .

(3) Ceiling coefficient

Working conditions (inlet air pressure (MPa))	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.93
Coefficient	0.72	0.79	0.87	0.96	1.04	1.11	1.20	1.28	1.35	1.38

STEP 5 Find the maximum processing air rate from each model rated processing air rate. Max. air processing rate = Rated processing air rate × Compensation coefficient determined by STEP 4
Select the model so that the required processing air rate is less than the maximum processing air rate.

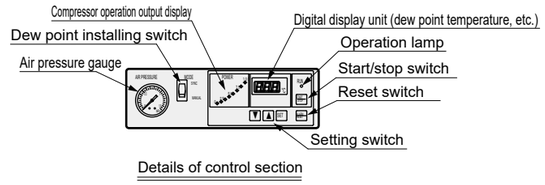
Example of calculation

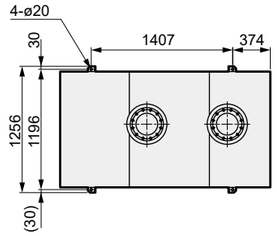
Conditions	Working Conditions	Selecting Conditions	Coefficient
Inlet air temperature	38 to 43 °C	45°C	(1) 0.80
Pressure dew point	15°C	10°C	
Inlet air pressure	0.55 to 0.75 MPa	0.5 MPa	(2) 0.87
Frequency	50Hz	50Hz	50Hz

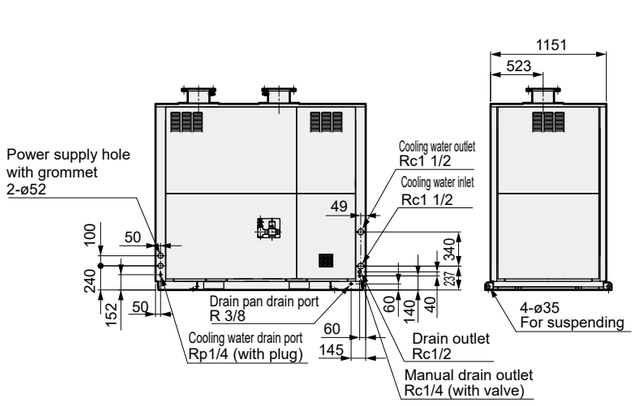
Substitute the above conditions into the equation above to obtain the processing air rate when using the GT9710WV2.
Product of each coefficient
(1) × (2) = 0.80 × 0.87 = 0.69
As the ceiling coefficient of 1.04 is not exceeded when the inlet air pressure of the working conditions is 0.5 MPa, the max. processing air rate will be 139.1 (reference processing air rate) × 0.69 = 95.9 m³/min (ANR).
If the used air quantity is less than or equal to this value, select that model.

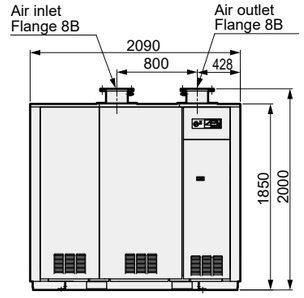
Dimensions

●GT9710WV2



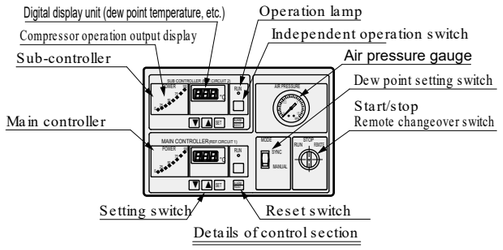




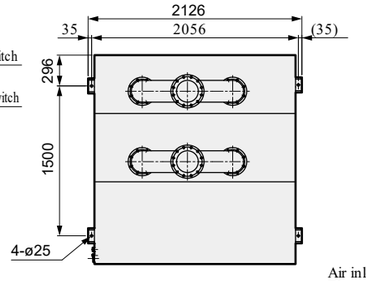


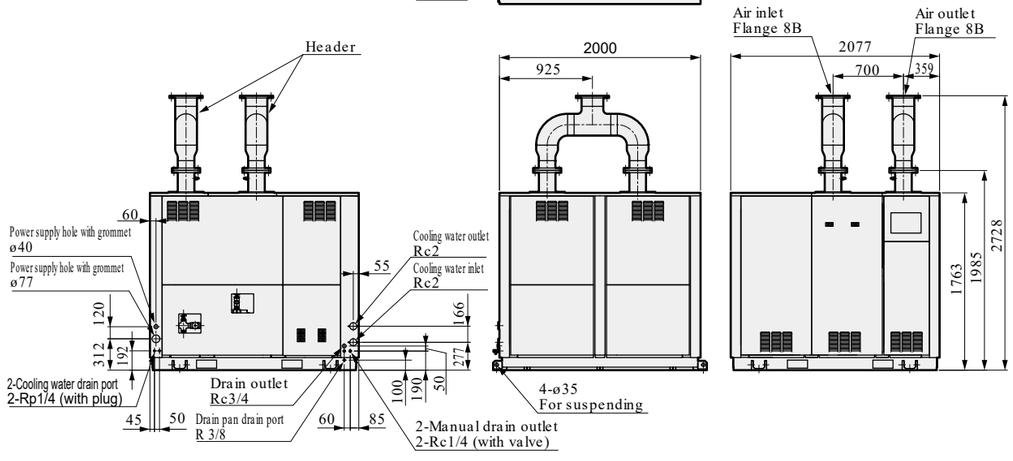
*1: The dew point display value is a guide, and is not the actual dew point.
To measure the actual dew point, measure the secondary side air with a dew point gauge.

●GT9960WV2



*1: Display contents of the main controller and sub-controller are the same.





*2: The bolts and nuts for installation of the header and gasket are included.
*3: The dew point display value is a guide, and is not the actual dew point.
To measure the actual dew point, measure the secondary side air with a dew point gauge.

Safety Precautions

Be sure to read this section before use.
For general precautions for pneumatic equipment, please refer to Intro 15.

Product-Specific Cautions: Xeroaqua Dryer GT Series

Manufacturer's Disclaimer

DANGER

The manufacturer cannot be held liable in the following cases:
- In the case where there are serious errors in the operator's use.
- Illegal modifications or repairs using non-standard parts by user.

Design / Selection

DANGER

■Do not use for applications other than removing moisture from compressed air.

CAUTION

■Do not use for caisson shields or medical devices such as breathing devices.
Doing so may result in serious injury.

■Do not mount and use this device on transportation equipment such as vehicles or ships.
Vibration may cause internal damage.

Air Quality

CAUTION

■Do not use when the inlet air contains corrosive gas, chemical solutions, organic solvents, or combustible gas.

■Refrigeration air dryers use copper pipes (phosphorus deoxidized copper pipes) for the refrigerant gas pipes and pipes within the heat exchanger. When corrosion causes a hole in these copper pipes, the refrigerant gas will leak and make it impossible to operate the unit, or cause failure such as water leaking from the compressed air outlet side of the air dryer. In addition, copper is also used as conductive materials for the electrical wiring, etc. Corrosion thereof may cause breakdowns such as electrical leakage accidents.
In particular, copper piping in heat exchangers is subject to repeated condensation and drying, and if corrosive components are present, they are likely to be concentrated on the copper piping surface and accelerate corrosion. Therefore, sufficient attention should be paid not only to the installation environment of air dryers but also to the intake air from air compressors. Failures caused by corrosion are not covered by the warranty.
Plant exhaust may contain NOx (nitrogen oxides), SOx (sulfur oxides), Co_2 (carbon dioxide), and other substances that may promote corrosion, and consideration must be given to the installation location of air dryers and air compressors to ensure that they are not affected by factory exhaust. In rare cases, if chlorine-based organic solvents (trichloroethylene, etc.), aldehyde or alcohol (formaldehyde generated from building materials or methanol in the chemicals used) are absorbed by the air dryer and hydrolyzed, the copper piping could corrode (like an ant nest). Caution is required in these cases.

Maintenance Space

CAUTION

■Make sure that the space is well ventilated, and secure enough space for maintenance and inspection.
- Applicable models: GT9075D(WD) to 9120D(WD)
  Front: 1000 mm or more, either left or right side: 600 mm or more
- Applicable models: GT9150D(WD), 9190D(WD)
  Front: 1000 mm or more, left side: 600 mm or more
- Applicable models: GT9240 to 9450, GT9240W to 9450W, GT9710WV2 to 9960WV2
  Front surface, rear surface, and left side: 600 mm or more each

During transport

WARNING

■This product is filled with refrigerant (R-410A, R-407C). (GT9960WV2 is 12 kg and over while others are less than 12 kg)Upon transport (land, sea, air), be sure to comply with the laws and regulations applicable to each situation.

Other

WARNING

■This product is subject to the Law Concerning the Rational Use and Proper Management of Fluorocarbons (Law for CFC Emission Control). One or more simplified inspection per quarter and periodic inspections based on the law (GT9710WV2, GT9960WV2) are required. Be sure to collect the Freon gas when repairing or disposing of the product. Contact CKD for inspection and Freon gas collection.

CAUTION

■This unit is accompanied by a Class 2 Pressure Vessel Pressure Resistance Certificate. Please keep it in a safe place at your company while the unit is in use.
(Applicable models: GT9240 to 9450, GT9240W to 9450W, GT9710WV2, 9960WV2)
(Applications to the Labor Standards Supervision Office are no longer required in Japan.)

For precautions during mounting, installation, adjustment, use and maintenance, refer to the CKD Components Product Site (https://www.ckd.co.jp/kiki/en/) → "Model No. → Instruction Manual

Desiccant Air Dryers

■ **Main Line Components**

CONTENTS

Compact heatless dryer
HD Series 144

Medium to Large Heatless Dryer
SHD Series 154

Manual Air Dryer
4001 / 4002 Series 163

Moisture Indicator 166

Main Line Components
Refrigeration Dryers
Desiccant Dryers
High Polymer Membrane Dryers
Main Line Filters
Drain discharger, etc.
Ending

Heatless Dryer
HD / SHD

■ Main Line Components / Desiccant Air Dryer

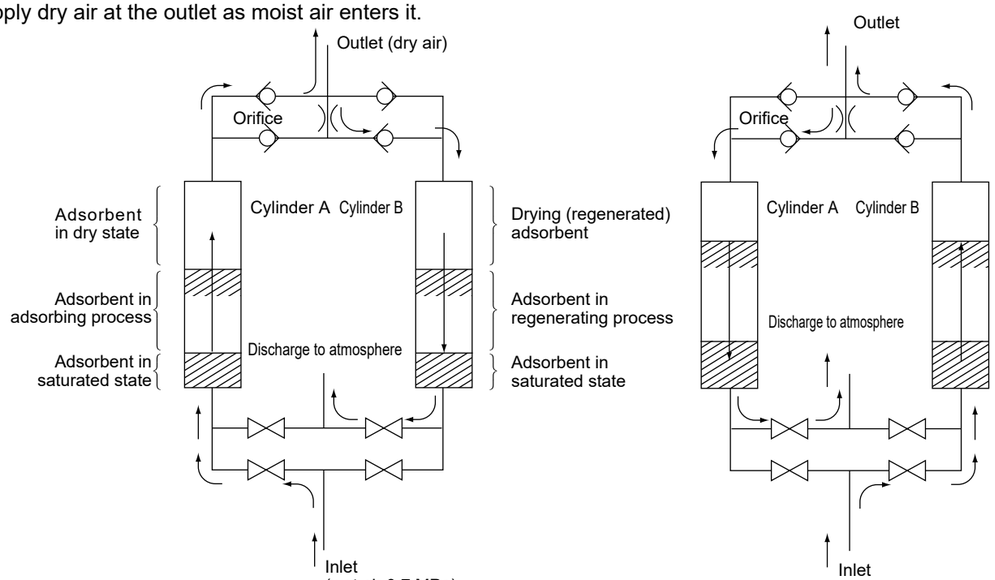


CONTENTS

Desiccant Air Dryer function description	140
System	141
Series Variation	142
Properties and Handling of Desiccants	143
●Compact (HD)	144
●Medium/ Large (SHD)	154
⚠ Safety Precautions	152, 160

Suction Principles and Circuit Diagram

The heatless dryer is a system that utilizes the characteristics of an adsorbent (desiccant) which constantly tries to create a state of equilibrium with the vapor concentration of the ambient air. The unit has 2 cylinders, repeatedly switching between the one for the process of suctioning the water vapor from the air, and the other for the regeneration process of releasing the suctioned moisture with the dry air created. This device will constantly supply dry air at the outlet as moist air enters it.



Moist air coming in from the inlet will enter cylinder A, have its moisture removed due to the adsorbent, and then leave from the outlet as dry air. Part of the dry air coming out of cylinder A will flow through the orifice, be reduced in pressure to an atmospheric pressure, enter cylinder B, remove moisture from the moist adsorbent, and be exhausted into the air. By using a part of the air dried under pressure, when it is reduced in pressure by the atmosphere to regenerate the desiccant, the drying efficiency will increase and improve regeneration efficiency. For example, when dry air of 0.7 MPa is reduced in pressure to the atmospheric pressure, the volume of air expands to approximately 8 times as much and the relative humidity per unit of volume becomes approximately 1/8. Accordingly, the adsorbent releases a greater amount of moisture in trying to create a state of equilibrium with that air. After a certain amount of time, the flow of air is reversed with a timing motor for adsorption to take place in the cylinder B while regeneration will take place in the cylinder A. Repeat this operation.

Heatless Dryer System

1. Purge flow rate

The heatless dryer uses some of the dry air created by the dryer for the regeneration of the adsorbent that has absorbed moisture. The air used in this regeneration is referred to as the purge air, and in principle the minimum amount required is fixed.

$$\text{Theoretical purge rate} = \frac{1}{\text{Air pressure during adsorption (absolute pressure)}}$$

For example, at 0.7 MPa, the theoretical purge rate is approximately 12.5% (at 100% load).

In reality, 15 to 23% is configured in consideration of the absorbing/releasing efficiency of the desiccant and the efficiency of the device. Therefore, if the operating conditions differ, the purge rate will differ and so will the processing air rate and purge volume. Be sure to review the catalog to make sure that the operating conditions of use and necessary outlet dew point will be satisfied. In addition, ideal purge volumes can be set at the plant to suit the specifications of customers(Contact CKD for Special-order products). As it will be necessary to reconfigure the unit when working conditions are changed due to relocation, etc., consult with CKD.

2. Oil removal

In the case of desiccant air dryers, if the desiccant adsorbs oil, the adsorption of moisture will be obstructed and the outlet dew point may become lower and the life of the desiccant may become shorter. Accordingly, when installing a desiccant air dryer in an air line using a lubrication air compressor, be sure to install an oil removing filter (M-type filter) on the primary side of the dryer.

3. Installation of filter on the secondary side of the dryer

In the case of desiccant air dryers, as desiccant powder may flow out to the secondary side of the dryer, depending on the air purpose (required air quality), install a filter (a P-, S-, or M-type filter or a combination thereof) on the secondary side of the dryer.

4. Silencer Replacement

When switching the adsorbing side of the desiccant cylinder, as the cylinder (in a pressurized state) that had until then been adsorbing is suddenly reduced in pressure, a loud exhaust noise will be generated every time the switching takes place. A silencer is provided to reduce this exhaust noise, but after prolonged use, desiccant powder builds up and clogs the silencer. If left unchecked, this can affect the desiccant's regenerative performance and prevent it from producing the prescribed dew point performance. In addition, if the clogging becomes worse, the silencer may become damaged by the pressure during exhaust. As a guideline, replacement should be made when the pressure on the regenerator side exceeds 0.05 MPa or after one year.

5. Pressure fluctuation on dryer secondary side

Pressure fluctuates around the switching process (suction/release) for the desiccant cylinder, as air flow rate fluctuation other than the user's is caused by temporary purge stop and the pressurized filling process of the atmospheric pressure cylinder (regeneration cylinder), etc. The range of fluctuation is greatly affected by the piping conditions in which the dryer is installed and can be as high as 0.1 MPa in large cases. In cases when this pressure fluctuation may impact factory operation, consider setting the source pressure higher or installing an air tank on the secondary side.

6. Bypass circuit

In most cases with dryers, a bypass circuit which bypasses the dryer is provided for emergency air supply. The valve is opened when the air supply must be continued even if the dryer malfunctions, or when the dryer is repaired with air flowing as a temporary measure. However, moist air from which moisture has not been removed will be supplied within the factory. Most heatless dryers are selected for the air supply with high degree of dryness. Use extreme caution when opening the bypass circuit since opening it will cause moisture to enter all the air pipes past the dryer, creating a great amount of work to recover from this state. Therefore, it is recommended that a spare unit be installed.

7. Dew Point Indication

By convention, performance has been indicated by pressure dew point for refrigeration dryers and by atmospheric pressure dew point for heatless dryers and membrane dryers (see page 68 for terminology), but with the establishment of JISB8392-1, there is a trend toward unification of pressure dew point indication. At CKD, performance will be displayed with the pressure dew point from the super heatless dryer SHD3000 Series. Note that depending on the model or manufacturer, the display signals may become mixed.

Series Variation

Desiccant Air Dryers (Heatless dryer)

Series	Compact			Large		
	HD Series			**Super Heatless SHD Series**		
Installation Application	Factory end installation, built-in type					
Features / kW	Inlet air temperature 21°C			Inlet air temperature 35°C		
	Atmospheric dew point -17.5°C	Atmospheric dew point -40°C	Atmospheric dew point -72°C	**Pressure dew point -20°C (-40°C) *2**	**Pressure dew point -40°C (-57°C) *2**	**Pressure dew point -60°C (-74°C) *2**
0.4			●(HD-0.5)			
0.75	●(HD-0.5)	●(HD-0.5)	●(HD-1)			
1.5	●(HD-1)	●(HD-1)	●(HD-1.5)			
2.2	●(HD-1.5)	●(HD-1.5, -2)	●(HD-2)			
3.7	●(HD-2)	●(HD-4)	●(HD-4)			
5.5	●(HD-4)		●(HD-6)			
7.5	●(HD-6)	●(HD-6)	●(HD-9)			
11	●(HD-9)	●(HD-9)				
15	▲(HD-9)			●(SHD3025-G/M)	●(SHD3025-G/M)	●(SHD3025-M)
22				●(SHD3045-G/M)	●(SHD3045-G/M)	●(SHD3045-M)
37				●(SHD3075-G/M)	●(SHD3075-G/M)	●(SHD3075-M)
55				●(SHD3100-G/M)	●(SHD3100-G/M)	●(SHD3100-M)
75				●(SHD3125-G/M) ●(SHD3150-G/M)	●(SHD3125-G/M) ●(SHD3150-G/M)	●(SHD3125-M) ●(SHD3150-M)
95				●(SHD3200-G/M)	●(SHD3200-G/M)	●(SHD3200-M)
120				●(SHD3240-G/M)	●(SHD3240-G/M)	●(SHD3240-M)
150						
200						
250						
300						
400						
480						
710						
960						
1450						
Dew point monitor	×	×	×	● Standard Equipment	● Standard Equipment	● Standard Equipment
Energy-saving device equipped	×	×	×	● Standard Equipment	● Standard Equipment	● Standard Equipment
Different voltages supported	● Option	● Option	● Option	● Option	● Option	● Option
Paint color designation	▲ Special-order product	▲ Special-order product	▲ Special-order product	▲ Special-order product	▲ Special-order product	▲ Special-order product
Remote control, external signals	▲ Special-order product	▲ Special-order product	▲ Special-order product	● Standard Equipment	● Standard Equipment	● Standard Equipment
Outdoor specifications	×	×	×	×	×	×
Anchor bolt	×	×	×	● Option	● Option	● Option
Stainless steel nameplate	● Option	● Option	● Option	▲ Special-order product	▲ Special-order product	▲ Special-order product
Export specifications	● Option	● Option	● Option	● Option	● Option	● Option
Export packing	▲ Special-order product	▲ Special-order product	▲ Special-order product	▲ Special-order product	▲ Special-order product	▲ Special-order product
Product photo	● Option	● Option	● Option	▲ Special-order product	▲ Special-order product	▲ Special-order product
Appearance						
Listed page	144			154		

*1: This table has been prepared based on the conditions listed below; correction of models will be necessary depending on multiplier calculations in cases when the conditions are different.
Inlet air pressure: 0.7 MPa,
Inlet air temperature: in accordance with the rating of each series.

*2: The value in ( ) is the atmospheric dew point converted value.

*3: Please contact our sales staff for information on delivery dates and prices of special-order products.

Properties and handling of desiccant

1. Desiccant disposal methods

The desiccant is an adsorbent and there is a possibility that various substances other than moisture contained in the compressed air have been suctioned. Please be sure to appropriately process used desiccant as industrial waste.

2. Inlet air temperature and suction performance

The adsorption performance of the desiccant is greatly dependent on the temperature, and the adsorption performance will suddenly decrease when exceeding a temperature of 55°C. (This is why the inlet air temperature range of the heatless dryer is rated up to 50°C.) In general, as the lower the temperature, the higher the suction performance, efficient operation is made possible by installing the heatless dryer in a position where the lowest possible inlet air temperature can be realized.

3. Oil removal

Unlike the heated type, instead of fully adsorbing moisture with the desiccant, heatless dryers repeat the process of adsorbing a little moisture on the surface and quickly removing this moisture (regenerating). Accordingly, the surface of the desiccant must be kept clean and in a state where it is easy for the moisture to be suctioned.
The desiccant will adsorb oil as well if the compressed air contains oil. However, oil is not removed as easily as moisture and will infiltrate the desiccant and cause interference with the adsorption of moisture.
Accordingly, when installing the product in a lubrication air line, be sure to install an oil removing filter (M-type) on the primary side of the heatless dryer.

4. Desiccant replacement period

Replace the desiccant every 2 years.

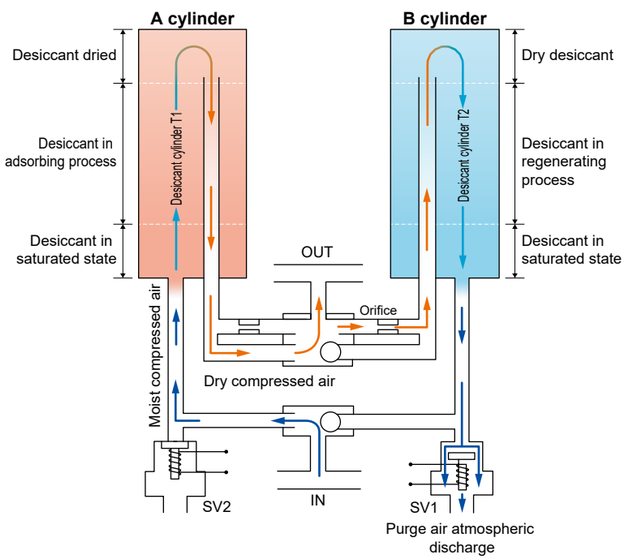
Desiccant Air Dryer (Heatless Dryer) HD Series (0.4 to 15kw)

A compact, self-regenerating heatless dryer that provides a stable, low dew point. This compact type can be installed at the end of a factory line or near equipment.



Suction Principle

The drying device supplies dry air by alternately repeating an adsorption step of having two cylinders and the desiccant adsorbing water vapor from the air, and a regeneration step of releasing the moisture from the desiccant by the dry air. Ultra-low dew point -60 to -72°C (at atmospheric pressure).



MEMO

Main Line Components
Refrigeration Dryers
Desiccant Dryers
High Polymer Membrane Dryers
Main Line Filters
Drain discharger, etc.
Ending

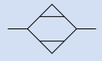


Desiccant Air Dryer (Compact Heatless Dryer)

HD Series

Stable supply of ultra-dry air with atmospheric dew point -72°C.

●Processing air flow rate: 75 to 1235 L/min (ANR) (0.7 MPa, atmospheric dew point -72°C)

Circuit Diagram Symbol 

RoHS

Model No. Notation

HD - 0.5 - ( ) - AC100V

Model No. / ❶Flow Rate Category / ❷Option / ❸Voltage

*1: For lubrication compressors, mount an oil removal filter (oil mist filter) on the inlet side of the heatless dryer. Attach a filter with a filtration rating that suits the usage purpose on the OUT side.
*2: As the heatless dryer is equipped with a dew point monitoring device (moisture indicator), it is possible to check the drying status.
*3: Unit performance may not be attained if used at less than the selected pressure. Always select the model No. for the working pressure.

❶Flow Rate Category

Code	Description
0.5	0.5
1	1
1.5	1.5
2.	2.
4	4
6	6
9	9

❷Option

Code	Description
Blank	Standard
G	Voltage designation
H	English Language Specifications
H2	Stainless steel nameplate
Y2	Product Photo

Note: When ordering several options, indicate the required options in alphabetical order.

❸Voltage

Code	Description
AC100V	100 VAC
AC200V	200 VAC

Specifications

Item	HD-0.5	HD-1	HD-1.5	HD-2	HD-4	HD-6	HD-9
Port size Rc	3/8						3/4
Inlet air pressure range MPa	0.2 to 1.0						
Inlet air temperature range °C	5 to 52						
Ambient temperature °C	−1 to 52						
Regenerating system	Self-regeneration non-heating system						
RegenerationCycle	1 minute (0.5-minute switch)					4 minute (2-minute switch)	
Power supply V	Single-phase 100 VAC, 200 VAC 50/60 Hz						
Power consumption W	26						52
Desiccant	Synthetic zeolite						
Weight kg	6.5	7.0	7.5	9.5	11.5	21.5	42.5
Desiccant cylinder No.	15-8771	15-8772	15-8773	15-8774	15-8775	F3-505026	F3-505026
Desiccant filling No.	15-8771-D	15-8772-D	15-8773-D	15-8774-D	15-8775-D	F3-505026-D	F3-505026-D
For dew point monitoringIndicator	Standard Equipment						
Silencer	Standard Equipment						

*1: In cases when the fluid contains oil, attach an oil removing filter (oil mist filter) on the inlet side. Attach a filter (5μm, 0.3μm, oil mist filter) with a filtration rating that suits the usage purpose on the OUT side.
*2: There are two IN and two OUT ports on each side, so blank plug the unused ports.
*3: The standard paint color is Quality Cool White (Munsell No.5GY7.5/0.5).
*4: For applications for use within clean rooms, consult with your CKD branch or dealer.

When placing an order

●The heatless dryer is adjusted to the required atmospheric dew point, flow rate, etc., at shipment. Always indicate the Items on the right when placing an order.

●Model No. [ ]
●Required outlet flow rate [ ] L/min (ANR)
●Required atmospheric dew point [ ] °C
●Inlet air pressure [ ] MPa
●Inlet air temperature [ ] °C

Selection Guide

●Reading the max. flow rate table
Two numbers are listed in each box in the max. flow rate table. The number on the top indicates the inlet air flow rate necessary to dry the flow rate listed on the bottom. The number on the bottom indicates the max. outlet flow rate of the dry air. The difference between the number on the top and the number on the bottom is the purge flow rate necessary for regenerative drying.

Max. flow rate table

Unit: L/min (ANR)

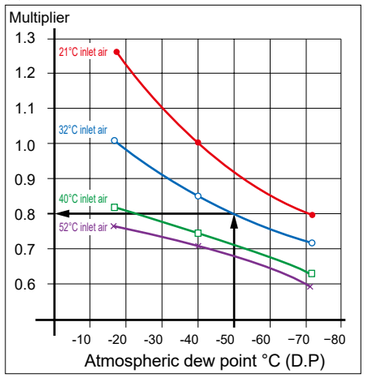
Inlet air pressure (MPa)	Model No. HD-0.5	HD-1	HD-1.5	HD-2	HD-4	HD-6	HD-9	Atmospheric dew point -40°C HD-0.5	HD-1	HD-1.5	HD-2	HD-4	HD-6	HD-9	Atmospheric dew point -72°C HD-0.5	HD-1	HD-1.5	HD-2	HD-4	HD-6	HD-9
1.0	165	325	445	665	1,225	1,870	3,000	130	255	335	500	935	1,405	2,150	105	210	290	435	735	1,105	1,685
	145	280	380	570	1,085	1,645	2,605	110	210	270	405	795	1,180	1,830	85	165	225	340	595	880	1,345
0.9	150	300	405	615	1,120	1,710	2,740	115	235	310	460	855	1,285	1,970	95	195	265	400	670	1,010	1,540
	130	255	340	520	980	1,485	2,345	95	190	245	365	715	1,060	1,650	75	150	200	305	530	785	1,200
0.8	135	270	370	555	1,015	1,545	2,475	105	215	280	415	775	1,160	1,780	85	175	240	360	610	910	1,390
	115	225	305	460	875	1,320	2,080	85	170	215	320	635	935	1,460	65	130	175	265	470	685	1,050
0.7	120	240	325	490	890	1,370	2,195	95	190	245	370	685	1,030	1,575	75	155	215	320	540	810	1,235
	100	195	260	395	750	1,145	1,800	75	145	180	275	545	805	1,255	55	110	150	225	400	585	895
0.6	105	210	285	430	785	1,195	1,915	80	165	215	320	600	900	1,375	65	135	185	280	470	705	1,075
	85	165	220	335	645	970	1,520	60	120	150	225	460	675	1,055	45	90	120	185	330	480	735
0.5	90	180	245	370	675	1,030	1,650	70	140	185	280	515	775	1,185	55	115	160	240	405	610	930
	70	135	180	275	535	805	1,255	50	95	120	185	375	550	865	35	70	95	145	265	385	590
0.4	75	150	205	305	560	855	1,370	60	120	155	230	430	640	985	45	95	135	200	335	505	770
	55	105	140	210	420	630	975	40	75	90	135	290	415	665	25	50	70	105	195	280	430
0.3	60	120	165	245	450	690	1,105	45	95	125	185	345	520	795	40	80	105	160	270	405	620
	40	75	100	150	310	465	710	25	50	60	90	205	295	475	20	35	40	65	130	180	280
0.2	45	90	125	185	340	515	825	35	70	95	140	260	385	595	30	60	80	120	205	305	465
	25	45	60	90	200	290	430	15	25	30	45	120	160	275	10	15	15	25	65	80	125

Note: The above flow rate table is for conditions of an inlet air temperature of 21°C and an atmospheric dew point of -17.5°C, -40°C, and -72°C.

STEP 1 Confirm the working conditions and the rated values listed in the specifications.
Working Conditions: Inlet air pressure, inlet air temperature, required atmospheric dew point
If the conditions in the max. flow rate table are satisfied, read the flow rate in the table.

STEP 2 Check the correction factor for inlet air flow rate affected by inlet air temperature and atmospheric dew point.

(1) Temperature/dew point - flow rate correction factor



STEP 3 Find the inlet air flow rate from the rated inlet air flow rate of each model.

Inlet air flow rate at -40°C in the maximum flow table × (1)
Temperature/dew point flow rate correction factor
= Corrected inlet air flow rate

STEP 4 **Find the outlet air flow rate from the purge flow rate and inlet air flow rate of each model.**

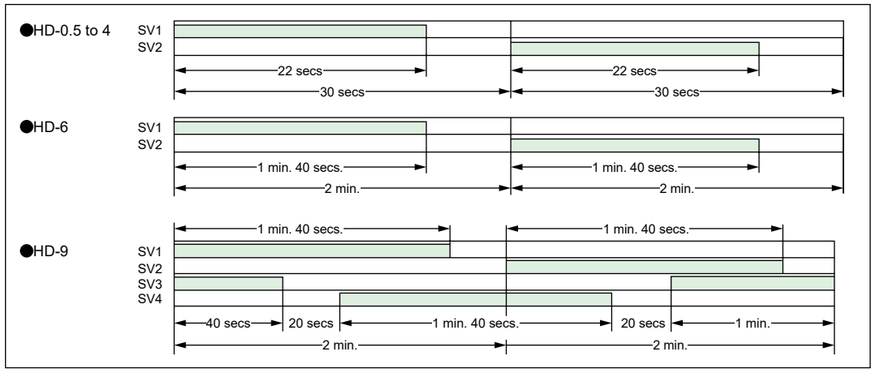
Difference between inlet air flow rate at -40°C and outlet air flow rate at -40°C in the max. flow table = Purge flow rate
Inlet air flow rate corrected by STEP 3 - Purge flow rate = Outlet air flow rate

Example of calculation

Conditions	Working Conditions	Selecting Conditions	Inlet flow rate Compensation coefficient
Inlet air pressure	0.5 to 0.55 MPa	0.5 MPa	-
Inlet air temperature	35 to 40 °C	40°C	0.75
Outlet atmospheric dew point	−40°C	−40°C	

Substitute the above conditions into the equation above to obtain the outlet air flow rate when using the HD-6.
Inlet air flow rate is 775 × 0.75 = 581 L/min (ANR)
Purge flow rate is 775 - 550 = 225 L/min (ANR)
In this case, the outlet air flow rate is 581 - 225 = 356 L/min (ANR).

Time Chart



*The number of seconds indicates the time of 60 Hz. When used at 50 Hz, it is about 1.2 times higher.

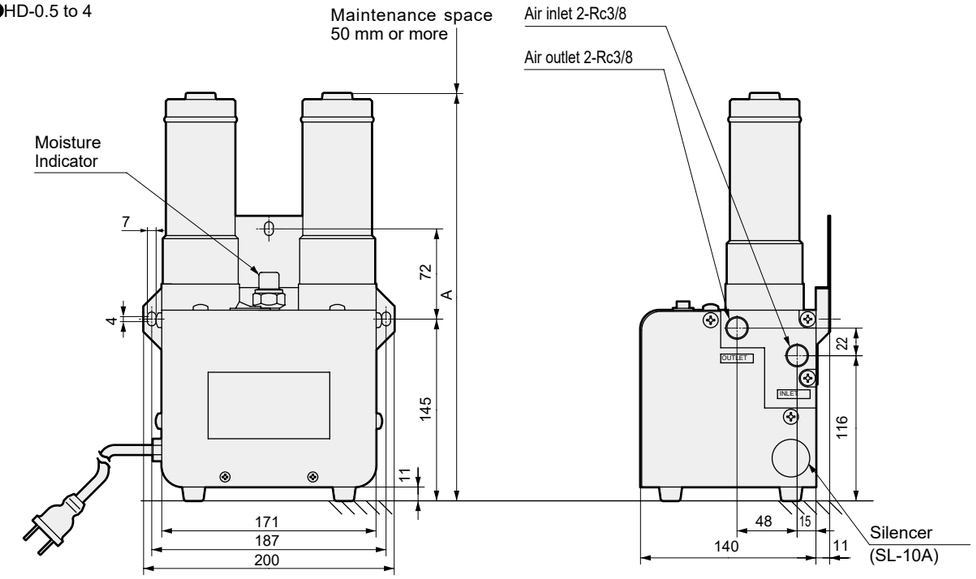
When a heatless dryer is installed

●When starting up a trial run after installation of the unit, flow at a rate of about 10 to 20% of the flow rate used and run for the following time.

Atmospheric dew point (°C)	-17.5	-40	-72
Time (h)	2.	6	72

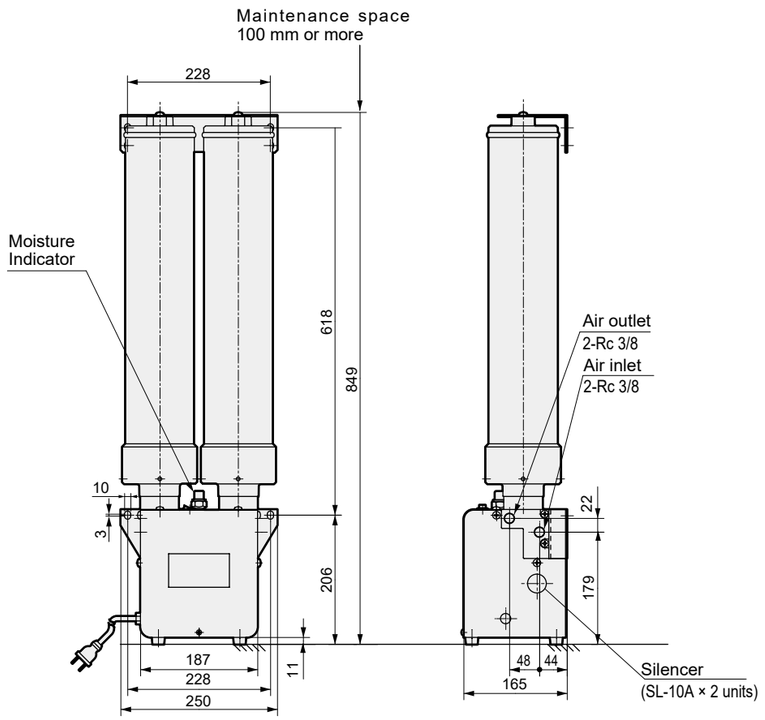
Dimensions

●HD-0.5 to 4



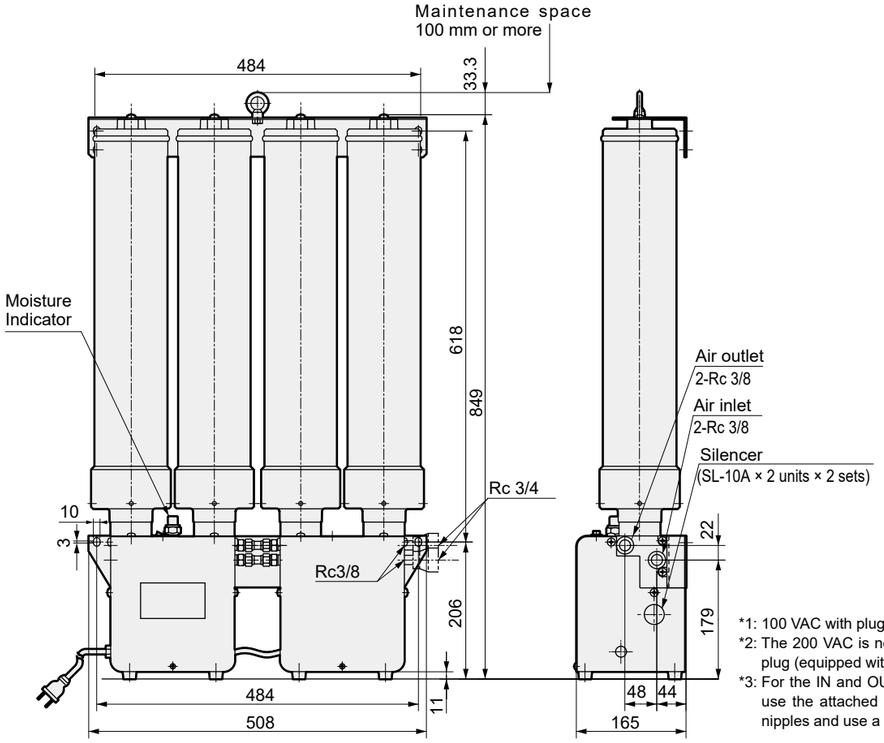
Model No.	Dimension A
HD-0.5	325
HD-1	440
HD-1.5	485
HD-2	467
HD-4	689

●HD-6



Dimensions

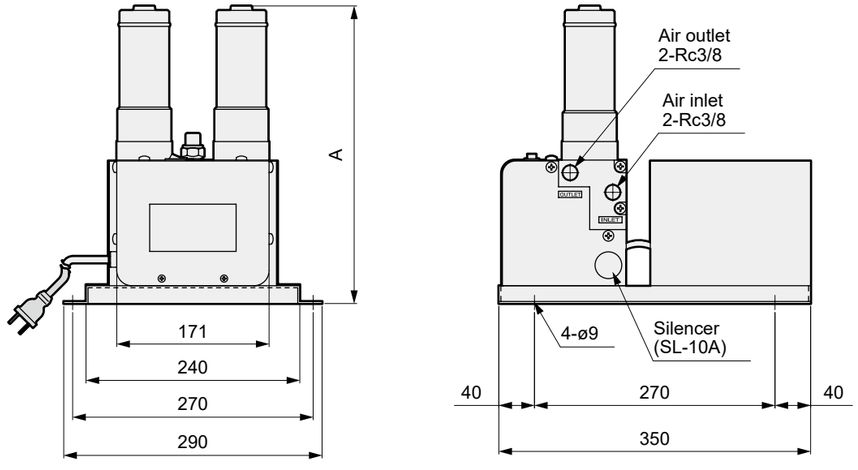
●HD-9



*1: 100 VAC with plug-in type plug (2.3 m)
*2: The 200 VAC is not equipped with a plug-in type plug (equipped with a cable 2.3m long)
*3: For the IN and OUT piping connections of HD-9, use the attached different diameter sockets and nipples and use a 3/4B connection bore.

●Voltage specification option

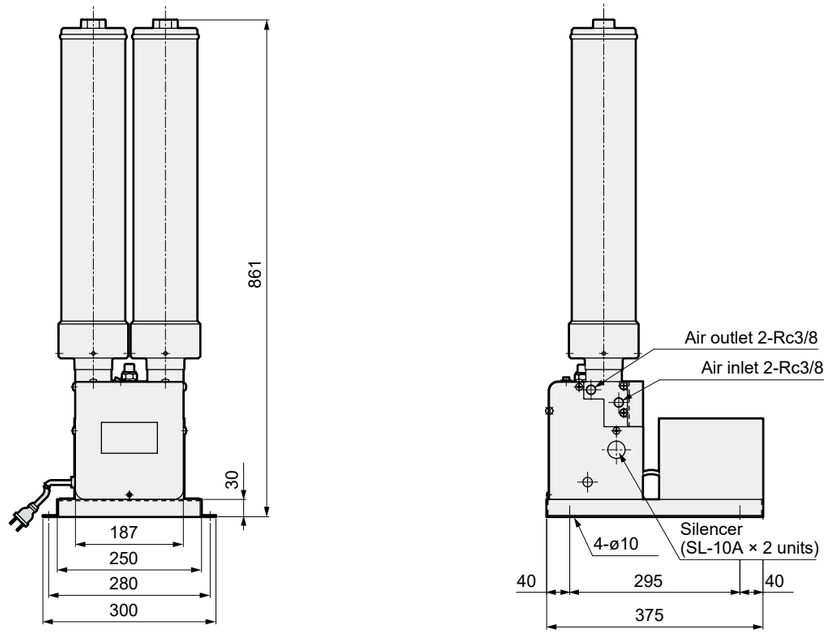
HD-0.5 to 4-G



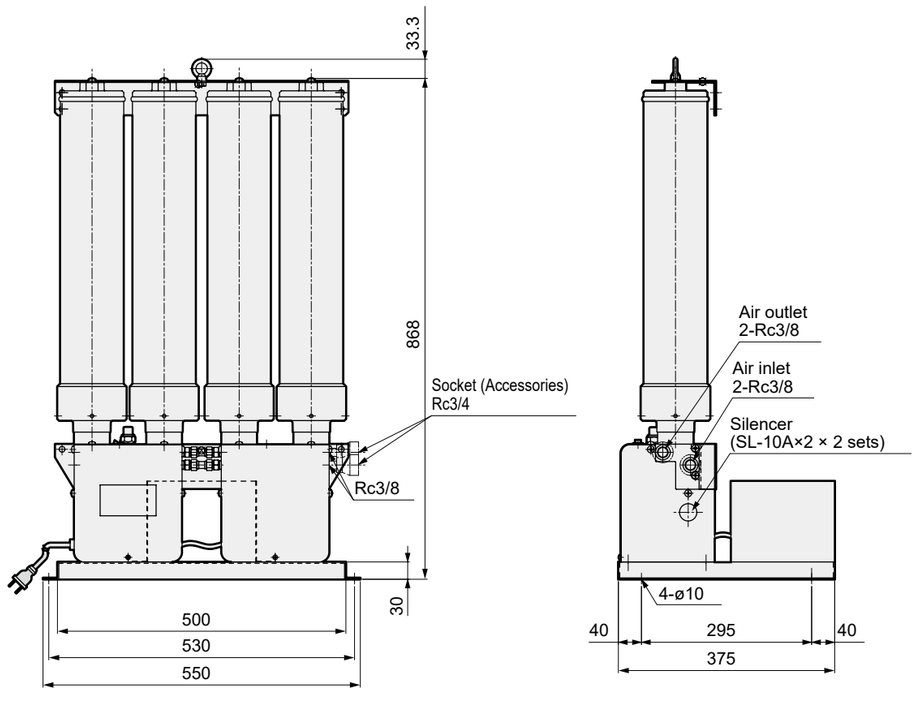
Model No.	Dimension A
HD-0.5	334
HD-1	449
HD-1.5	494
HD-2	476
HD-4	698

Dimensions

●HD-6-G



●HD-9-G



For maintenance parts, refer to the CKD Components Product site
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." →Maintenance Parts

Safety Precautions

Be sure to read this section before use.
For general precautions for pneumatic equipment, please refer to Intro 15.

Product-specific cautions: Heatless dryer HD Series

Manufacturer's Disclaimer

⚠WARNING

■The manufacturer cannot be held liable in the following Items:
- In the case where there are serious errors in the operator's use.
- Illegal modifications or repairs using non-standard parts by user.

Design / Selection

⚠WARNING

■Avoid direct sunlight and rain water.Resin parts may deteriorate and break.

■Do not use in locations with corrosive gases.

■Use this product within the range of the working temperature.

■Do not use the product where it could freeze.
There is a risk of damage to the product due to freezing of condensation water, etc. that have accumulated inside the product.

■Do not use in hazardous locations (e.g., potentially explosive atmospheres).

■Do not use this product in an ozone generating environment.

■We recommend keeping the inlet air temperature as low as possible.Adsorption performance of desiccants will be lower at high temperatures.

■Do not use when the inlet air contains corrosive gas, chemical solutions, organic solvents, or combustible gas.

■Carefully prevent water drops from entering inside.

For precautions regarding Installation and Adjustment, Use and Maintenance, refer to CKD Components Product website (https://www.ckd.co.jp/kiki/en/) → "Model No. →Instruction Manual

MEMO

Desiccant Air Dryers (Heatless Dryer) **SHD Series**

Improved environmental performance, heatless

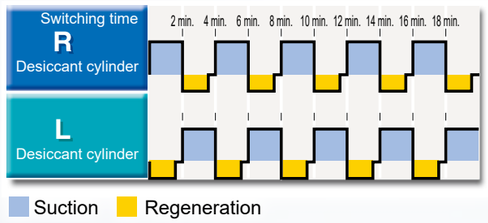
An energy-saving dew point monitoring device drastically reduces the purge flow rate (by up to approx. 96%). Additionally, a proprietary exhaust system achieves low-noise operation. The SHD Series Super Heatless Dryer, perfecting reliability, performance, and ease of use.

Energy saving

Reduces unnecessary purge by dew point monitoring

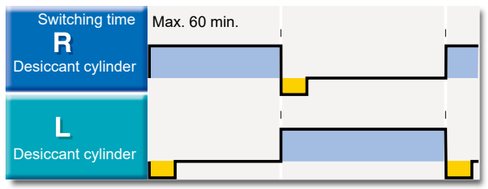
Normal operation

Regardless of the outlet dew point, adsorption ⇆ regeneration switches at 2 minute intervals.



Energy saving operation

If the set dew point is cleared at the time of switching, the state is maintained without switching the desiccant cylinder. When it reaches the set dew point, it switches the cylinder, returns to normal operation and maintains the dew point. The changeover time is up to 60 minutes (in this case, the purge flow rate is reduced by about 96%).



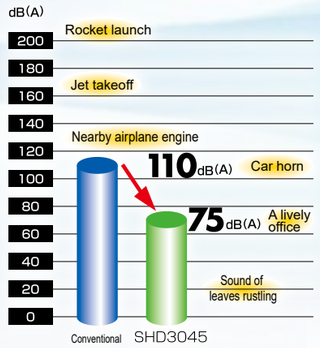
Low noise

Significantly reduces noise when switching

Variable exhaust method (PAT. By adopting P), a significant noise reduction of about 35dB (A) is achieved compared to conventional products.

Noise reduction

When the noise level is reduced by 10 dB, human hearing perceives the noise level to be “halved”.



Achieves 1/3 lower power consumption

The electronic control system reduces the main power consumption by 1/3. (Compared to CKD conventional products)

Equipped with filters at inlet and outlet as standard

An AF2 Series filter is equipped as standard on both the inlet filter for maintaining the performance of the heatless dryer and outlet filter for maintaining the quality of supply air. (Included)

Air compressor can be connected directly

Refrigeration dryer is not required on the inlet side. Just one unit reliably maintains performance.



Stainless steel tower adopted

Operability improved by the electronic control system



Digital display of pressure dew point

Pressure dew point, sensor abnormalities, etc., are also displayed.

Can be switched between energy saving and normal operation

Selectable energy-saving set dew point

G-type: 3 stages of -10, -20 and -40°C
M-type: 3 stages of -20, -40 and -60°C

Allows centralized management in control rooms, etc.

Equipped as standard with remote operation/dew point sensor abnormality output/dew point abnormality output/ dew point analog output. The operating status of the device can be centrally managed.

ECO display

Lights when entering energy-saving mode.

Energy-saving rate display

It can display the energy saving rate per 24 hours.

Easy maintenance

The desiccant cylinder can be easily removed by simply rotating it 45˚. Moreover, the latch mechanism locks the cylinder for safety.

Significantly reduced footprint

1/3 to 1/2 (Compared to CKD conventional products)

A wide variety of 16 models are available.

A total of 16 models are available, with 8 models based on air flow rate (2.5 to 24 m³/min ANR) and 2 sensor types (G: Temperature/Humidity Sensor, M: Dew Point Meter).

Compatible compressor kW	15	22	55	75		90		125
Inlet air flow rate m³/min(ANR)	2.5	4.5	7.5	10	12.5	15	20	24
G type (Wet temperature sensor)	●	●	●	●	●	●	●	●
M type (Dew point meter)	●	●	●	●	●	●	●	●

Inlet air pressure 0.7 MPa
Inlet air temperature of 35°C (no water drops)



Desiccant Air Dryer (heatless dryer)

SHD Series

Circuit Diagram Symbol



Model No. Notation

SHD3 045 - G 07 - 40 - E3 - AC100V

- SHD3: Model No.
- 045: ❶ Flow rate category
- G: ❷ Sensor
- 07: ❸ Inlet air pressure
- 40: ❹ Outlet pressure dew point
- E3: ❺ Option
- AC100V: ❻ Voltage

Note: The unit's full performance may not be obtained if used at less than the selected pressure. Be sure to select the model No. with your working pressure.

❶ Flow Rate Category

Code	Description
025	2.5 m³/min (ANR)
045	4.5 m³/min (ANR)
075	7.5 m³/min (ANR)
100	10 m³/min (ANR)
125	12.5 m³/min (ANR)
150	15 m³/min (ANR)
200	20 m³/min (ANR)
240	24 m³/min (ANR)

❷ Sensor

Code	Description	
G	Temperature and Humidity Sensor	
M	Dew point meter	

Note: With the sensor type "G", ❹ outlet pressure dew point "60" - 60°C specification cannot be selected. In addition, the "G" type dew point indication value is only a guide accuracy, and the accuracy decreases especially in the low dew point range. When prioritizing dew point management, use of the "M" type is recommended.

❸ Inlet air pressure

Code	Description
04	0.4 MPa
05	0.5 MPa
06	0.6 MPa
07	0.7 MPa
08	0.8 MPa
09	0.9 MPa
10	1 MPa

❹ Outlet pressure dew point

Code	Description
20	−20°C
40	−40°C
60	−60°C

❺ Option

Code	Description	
E1	Without accessory filter	
E2	AF4000 Series included	
E3	Standard (AF2 included)	
G	Voltage designation	
H	English text	
L	Foundation bolt nut (SS400)	
L1	Foundation bolt nut (SUS304)	

Note: If there is more than one option, please list them in alphabetical order.,

❻ Voltage

Code	Description
AC100V	100 VAC
AC200V	200 VAC

	Dew point sensor	Rated dew point °C (*1)	Energy-saving/setting dew point °C (*2)	
SHD3000 Series	−G	-20	-10	3-step switching
		-40	-20	
			-40	
	−M	-20	-20	3-step switching
		-40	-40	
		-60	-60	

*1: Default setting
(Setting purge rate)

*2: Configured by the user
Can be set to any of three levels depending on application and usage conditions

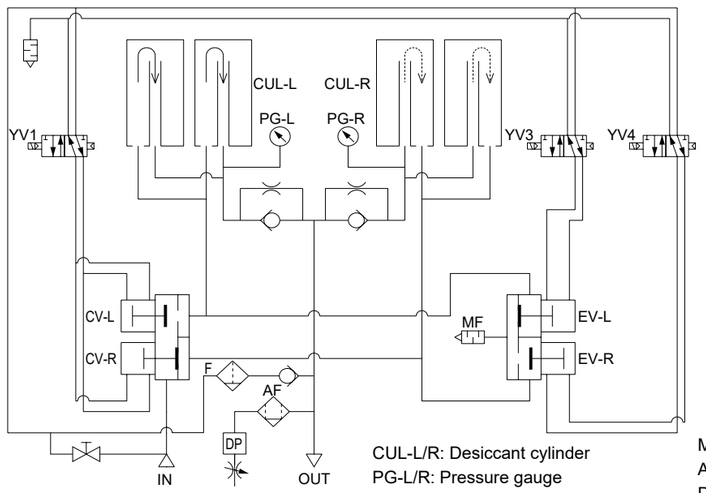
When the load is smaller than the rating, the unit will enter the energy conservation operating mode at this configured temperature.

Specifications

Item		SHD3025	SHD3045	SHD3075	SHD3100	SHD3125	SHD3150	SHD3200	SHD3240
Working fluid		Compressed air							
Inlet air pressure range MPa		0.4 to 1.0							
Inlet air temperature range °C		5 to 50							
Ambient temperature °C		0 to 40							
Rated conditions	Inlet air temperature °C	35 (no water drops)							
	Ambient temperature °C	25							
	Inlet air pressure MPa	0.7							
	Inlet air flow rate m³/min (ANR)	2.5	4.5	7.5	10	12.5	15	20	24
	Outlet pressure dew point °C	−20, −40, −60							
	Average purge rate %	-20°C:14 / -40°C:16.5 / -60°C:23							
Desiccant cylinder module quantity		1	2	3	4	5	6	8	10
Regenerating method		Self-regeneration non-heating system							
Desiccant		Activated alumina, synthetic zeolite							
Dew point sensor		:G-type: Capacitive temperature/humidity sensor / M-type: Dew point meter (capacitive polymer sensor):							
Power Supply		Single-phase 100/200 VAC 50/60 Hz							
Power consumption		15 W							
Port size	Rc	1	1	1-1/2	1-1/2	2.	2.	2-1/2	2-1/2
Weight	kg	120	180	240	300	370	430	550	670
Accessory filter (for inlet side) standard		AF2-05M25A	AF2-08M32A	AF2-11M40A	AF2-13M50A	AF2-13M50A	AF2-20M50A	AF2-24M65A	AF2-24M65A
Accessory filter (for outlet side) standard		AF2-05P25A	AF2-08P32A	AF2-11P40A	AF2-13P50A	AF2-13P50A	AF2-20P50A	AF2-24P65A	AF2-24P65A
Accessory filter (for inlet side) option E2		AF4004M-25	AF4007M-40	AF4010M-40	AF4010M-40	AF4013M-50	AF4020M-50	AF5032M-80	AF5032M-80
Accessory filter (for outlet side) option E2		AF4004P-25	AF4007P-40	AF4010P-40	AF4010P-40	AF4013P-50	AF4020S-50	AF5032P-80	AF5032P-80

*1: The standard paint color is Quality Cool White (Munsell No.5GY7.5/0.5).
*2: Attach the included filters on the inlet side and the outlet side. Filters may be required for the sake of the system. In such cases, please prepare them separately.
*3: ANR shows conditions of 20°C atmospheric pressure and relative humidity 65%.
*4: For the SHD3150, only the outlet for option E2 is the 'S-type'.
*5: For the SHD3200 and SHD3240, only option E2 uses the AF5032.
*6: See the AF2 series on page 219 and the AF4000 series on page 229 of the catalog for details on attached filters.
*7: The G-type sensor requires regular replacement and the M-type dew point meter requires regular calibration.
(CKD components product website (https://www.ckd.co.jp/kiki/en/) → "Model No. → Instruction Manual)

Functions



Wet compressed air entering from IN passes through valve CV into desiccant cylinder CUL-L.,Enters desiccant cylinder CUL-L passing through valve CV. Wet compressed air flows evenly inside the desiccant, and the desiccant absorbs the water vapor in the compressed air to become super-dry air, which exits OUT through the check valve. Some ultra-dry air, depressurized through the orifice, enters the desiccant cylinder CUL-R, is used to regenerate and dry the desiccant in the CUL-R, and is then released to the atmosphere. A portion of the air coming out of the OUT is directed to the dew point sensor DP for dew point measurement. Depending on the dew point, it will enter the energy-saving mode in which the switching time is extended. (After the desorption process is completed, both cylinders are held in a boosted state to extend the changeover time.)

CUL-L/R: Desiccant cylinder
PG-L/R: Pressure gauge
CV-L/R: Inlet switching valve
EV-L/R: Exhaust switching valve
(L/R indicates the left and right sides.)

MF: Silencer
AF: Dew point sensor protection filter
DP: Dew point sensor
YV1: Valve for inlet switching
YV3/4: Valve for exhaust switching

Selection Guide

Max. flow rate table

Values are with an inlet temperature of 35°C.

Model No.	SHD3025	SHD3045	SHD3075	SHD3100	SHD3125	SHD3150	SHD3200	SHD3240
Inlet air flow rate	2.5	4.5	7.5	10	12.5	15	20	24

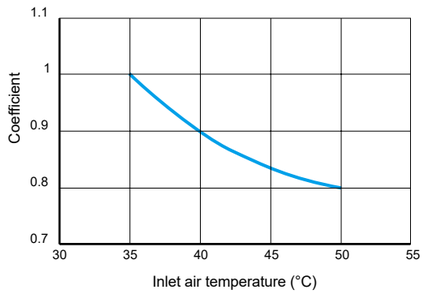
Note: The -20, -40, and -60°C specifications will be of the same air flow rate.

Unit: m³/min (ANR)

STEP 1 Confirm the working conditions and the rated values listed in the specifications.
Working Conditions: Inlet air pressure, inlet air temperature, required pressure dew point

STEP 2 Confirm the compensation coefficient for inlet air flow rate affected by inlet air temperature.

(1) Temperature - Flow rate compensation coefficient



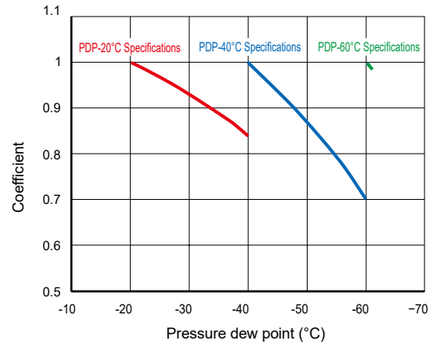
STEP 3 Confirm the compensation coefficient for inlet air flow rate affected by inlet air pressure.

(2) Pressure - Flow rate compensation coefficient

Inlet air pressure (MPa)	0.4	0.5	0.6	0.7	0.8	0.9	1
Coefficient	0.63	0.75	0.88	1.00	1.13	1.25	1.38

STEP 4 Confirm the compensation coefficient for inlet air flow rate affected by outlet pressure dew point.

(3) Dew point - Flow rate compensation coefficient



STEP 5 **Find the inlet air flow rate from the rated inlet air flow rate of each model.**
Rated inlet air flow rate × Temperature flow rate correction coefficient × Pressure correction coefficient × Dew point correction coefficient = Corrected inlet air flow rate

STEP 6 **Find the outlet air flow rate from the purge flow rate and inlet air flow rate of each model.**
Rated inlet air flow rate × Purge rate (*1) = Purge flow rate
Inlet air flow rate corrected by STEP 5 - Purge flow rate = Outlet air flow rate

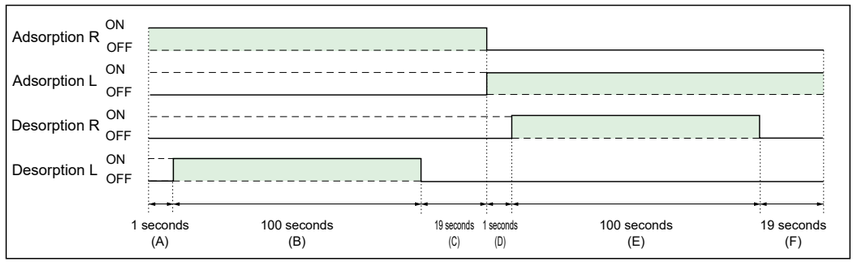
*1 at -20°C: 14%
-40°C: 16.5%
-60°C: 23%

Example of Calculation

Conditions	Working Conditions	Selecting Conditions	Compensation coefficient for inlet flow rate
Inlet air temperature	35 to 40 °C	40°C	0.9
Inlet air pressure	0.5 to 0.55 MPa	0.5 MPa	0.75
Outlet pressure dew point	-40°C	-40°C	1.0

Substitute the conditions on the left into the equation above to obtain the outlet air flow rate when using the SHD3240.
Inlet air flow rate is 24 × 0.9 × 0.75 × 1.0 = 16.2 m³/min (ANR)
Purge flow rate is 24 × 0.165 = 3.96 m³/min (ANR)
In this case, the outlet air flow rate is 16.2–3.96 = 12.24 m³/min (ANR).

Time Chart



The normal processes are listed on the left. During energy conservation, after the desorption has been completed, the state (C,F) is maintained. If the subsequent dew point worsens, switching is resumed and the process returns to normal.

B and E are desorption (regeneration) times
C and F indicate rising pressure time.

When a heatless dryer is installed

●Model Nos. SHD3075 to SHD3240 are equipped with a Class II Pressure Vessel Pressure Resistance Certificate. Please keep it in a safe place at your company while the unit is in use. (Applications to the Labor Standards Supervision Office are no longer required in Japan.)

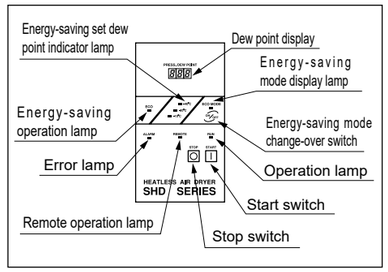
●When starting a test after the installation of this unit, operate the unit for the period of time designated below with a flow rate that is approximately 10 to 20% of the flow rate that will be used.

Pressure dew point (°C)(*1)	-20	-30	-40	-60
(Reference) Atmospheric dew point (°C)	-40	−48	−57	−74
Time (h)	6	12	24	72

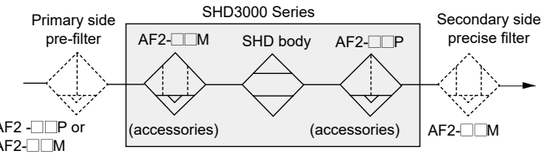
*1: The pressure dew point is for when the pressure is 0.7 MPa.

Dimensions

Operation panel



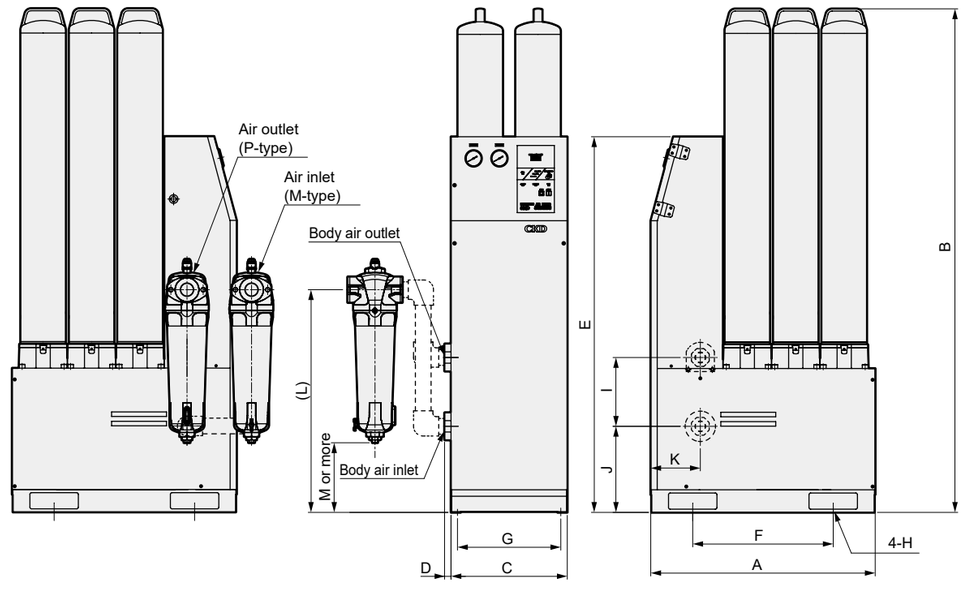
■Piping system



Assuming use with a line of a lubrication air compressor, although the SHD3000 Series is attached with the AF2-□□M type for the primary side of the heatless dryer and the AF2-□□P type for the secondary side, as needed, separately install a primary side pre-filter or a secondary side fine filtration filter. Furthermore, in cases when the AF4000 or 5000 Series has been selected with the options, select the AF4000 or 5000 Series for the filter to install separately as well.

●Filter performance

	AF2-□P	AF2-□M	AF4000P AF5000P	AF4000S	AF4000M AF5000M
Filtration rating (μm)	1	0.01	5	1	0.01
Secondary side oil Concentration (mg/m³)	0.6	0.01	–	–	0.01



Note: The figure shows AF2.

Model No.	Port size	A	B	C	D	E	F	G	H	I	J	K	L	M	L (Option E2)	M (Option E2)
SHD3025	Rc1	545	1559	360	20	1163	285	320	ø12	213	266.5	153.5	410	70	570	126
SHD3045	Rc1	545	1559	360	20	1163	285	320	ø12	213	266.5	153.5	500	70	730	212
SHD3075	Rc1-1/2	695	1559	360	20	1163	435	320	ø12	213	266.5	153.5	591	100	940	314
SHD3100	Rc1-1/2	845	1559	360	20	1163	585	320	ø12	213	266.5	153.5	683	100	940	314
SHD3125	Rc2	995	1589	360	20	1193	590	330	ø15	213	296.5	153.5	683	100	1100	387
SHD3150	Rc2	1145	1589	360	20	1193	700	330	ø15	213	296.5	153.5	683	100	1420	550
SHD3200	Rc2 1/2	1445	1589	360	20	1193	780	330	ø15	213	296.5	153.5	810	120	1255	–
SHD3240	Rc2 1/2	1745	1589	360	20	1193	780	330	ø15	213	296.5	153.5	810	120	1255	–

*1: The piping illustrated with the broken lines in the figure is not included with the product. Customers are asked to prepare them as necessary.
*2: The filters are included with the product.
*3: Install the M-type on the inlet side and the P-type on the outlet side. Filters may be required for the sake of the system. In such cases, please prepare them separately.
*4: The M dimension shows the min. dimension required to remove the element. Allow for the auto-drain piping dimensions when actually laying the pipe.

For maintenance parts, refer to the CKD Components Product site
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." → Maintenance Parts

Pneumatic Components (Desiccant air dryers)

Safety Precautions

Be sure to read this section before use.
For general precautions for pneumatic equipment, please refer to Intro 15.

Product-specific cautions: Heatless Dryer SHD Series

Manufacturer's Disclaimer

⚠WARNING

■The manufacturer cannot be held liable in the following Items:
●In the case where there are serious errors in the operator's use.
●Illegal modifications or repairs using non-standard parts by user.

Design / Selection

⚠WARNING

■Avoid direct sunlight and rain water.Resin parts may deteriorate and break.

■Do not use in locations with corrosive gases.

■Use this product within the range of the working temperature.

■Do not use the product where it could freeze.
There is a risk of damage to the product due to freezing of condensation water, etc. that have accumulated inside the product.

■Do not use in hazardous locations (e.g., potentially explosive atmospheres).

■Do not use this product in an ozone generating environment.

■We recommend keeping the inlet air temperature as low as possible.Adsorption performance of desiccants will be lower at high temperatures.

■Do not use when the inlet air contains corrosive gas, chemical solutions, organic solvents, or combustible gas.

■Carefully prevent water drops from entering inside.

■The dew point indication value of G-type is an approximate accuracy, and the accuracy decreases especially in the low dew point range. M-type is recommended for dew point control.

⚠CAUTION

■Model Nos. SHD3075 to SHD3240 are applicable to “Class 2 Pressure Vessels” under the “Boiler and Pressure Vessel Safety Regulations” based on the Industrial Safety and Health Law.

■The Model Nos. SHD3075 to SHD3240 are accompanied by a Class II Pressure Vessel Pressure Certificate, which should be kept in a safe place at your company while the unit is in use. (Application to the Labor Standards Supervision Office in Japan is not required.)

For precautions during mounting, installation, adjustment, use and maintenance, refer to the CKD Components Product Site (https://www.ckd.co.jp/kiki/en/) → "Model No. →Instruction Manual

MEMO

Manual Air Dryer
4001 / 4002

■ Main Line Components / Desiccant Air Dryer

Overview

Desiccant is used in this air dryer. The desiccant does not have a self-regenerating function, but can be used at low pressures of 0.1 MPa or less. Since there is a limit to the moisture absorption capacity, it should be used for small flow rate applications (280 L/min or less).

Features

(1) Atmospheric dew point down to -72°C is possible
(2) Easy Desiccant Replacement
(3) Just mount it, no power source needed



CONTENTS

●4001 / 4002 164
⚠ Safety Precautions 165



Manual Air Dryer (desiccant)

4001 / 4002 Series

Stable supply of ultra-dry air with atmospheric dew point -72°C.
●Processing air flow rate: 280 L/min (ANR) or less

RoHS

Model No. Notation

4001 -2C- ( )

❶Model No.
❷Accessory code
Port size: Rc1/4 (8A)

❶Model No.

Code	Description
4001	1 station
4002	2 stations

❷Accessory code

Code	Description
Blank	Without accessory
U	For low dew point
X	For oil removal

Specifications

Item	4001-2C	4002-2C
Max. Working Pressure, MPa	1.0 (*1)	
Proof pressure MPa	1.5	
Inlet air temperature range °C	5 to 32	
Ambient temperature °C	5 to 65	
Atmospheric dew point °C	−43	
Max. flow rate L/min (ANR)	280 (at 0.7MPa) (*2, *3)	
Desiccant	Silica gel	
Port size Rc	1/4	1/4
Weight kg	4.6	10

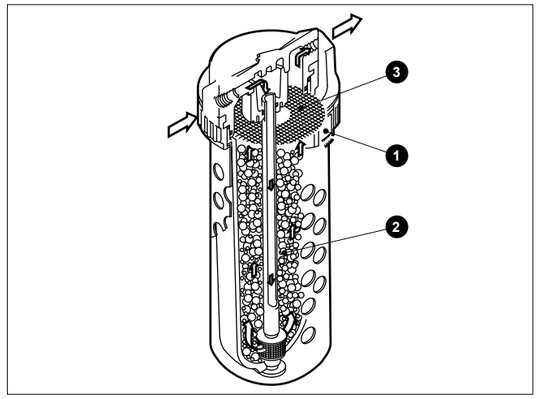
*1: 4002-2C only has a working pressure of 0.2 MPa to 1.0 MPa.
*2: The max. flow rate at 0.7 MPa inlet air pressure calculated with atmospheric pressure conversion.
*3: 4002-2C only requires the min. flow rate 30 L/min (ANR).

Performance list

Model No.	Atmospheric dew point	Max. inlet air temperature	Max. flow rate	Desiccant	Desiccant No.	Remarks
4001-2C 4002-2C	−43°C	32°C	280 L/min (ANR)	Silica gel	4001-SILICA-GEL	Non-regenerable
4001-2C-U 4002-2C-U	−72°C	32°C	280 L/min (ANR)	4AM.S.	85-060	Non-regenerable
4001-2C-X 4002-2C-X	Oil removal 24 PPM W/W	32°C	280 L/min (ANR)	13XM.S.	85-061	Non-regenerable

Note: M.S. means molecular sieves.

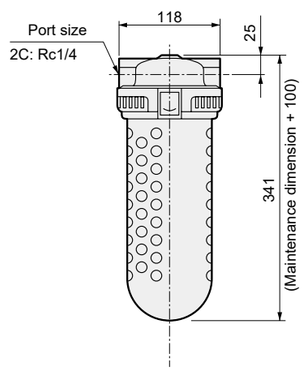
Functions



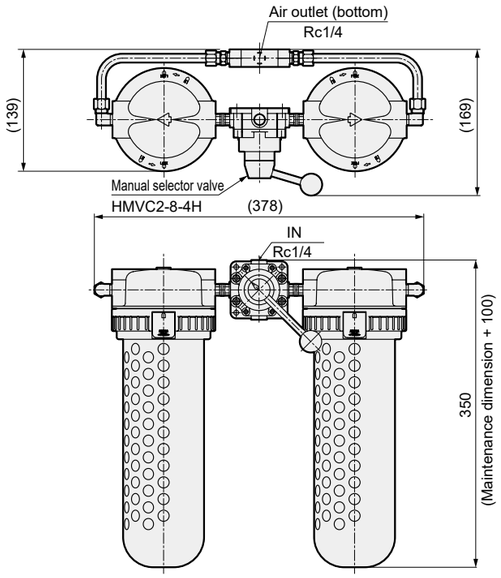
(1) Clamp ring
A push-in clamp ring system allows easy replacement of desiccant.
(2) Desiccant
Molecular Sieves (atmospheric dew point -72°C) as well as silica gel (atmospheric dew point -43°C) are available as desiccants. These desiccants dry compressed air by adsorbing water vapor in the compressed air as it passes through the desiccant by capillary action caused by the desiccant's microscopic pores.
(3) Screen
Desiccant prevents scattering due to air flow.

Dimensions

●4001-2C



●4002-2C



For maintenance parts, refer to the CKD Components Product site
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." →Maintenance Parts

Safety Precautions

●Fill the bowl with desiccant up to just below the screen (approximately 0.8 kg) Be careful not to allow any desiccant to enter the tube.
●Keep the max. flow rate below 280 L/min. Replace the desiccant (silica gel) if it has changed from green to orange. Adsorbs approx. 100 g of moisture. (Contains about 0.8 kg of desiccant.)
●Use 4001-2C-U if the atmospheric dew point of -72°C is required. As the color does not change even when moisture is suctioned, attach a moisture indicator (6119-2C) after 4001-2C-U or 4002-2C-U. The desiccant life can be checked.
●To remove oil of the compressed air, use 4001-2C-X or 4002-2C-X. The color will change from yellowish brown to blackish brown when oil is suctioned. Replace when the color changes. 113 g of oil content is suctioned by the time of replacement.
●Avoid direct exposure to sunlight.
●Installing an air filter is recommended to obtain cleaner air.
●Carefully prevent water drops from entering the inside. Otherwise heat generation may occur.



Moisture Indicator

6119-2C Series

For dew point monitoring of Desiccant Air Dryer.

●Port size: Rc1/4

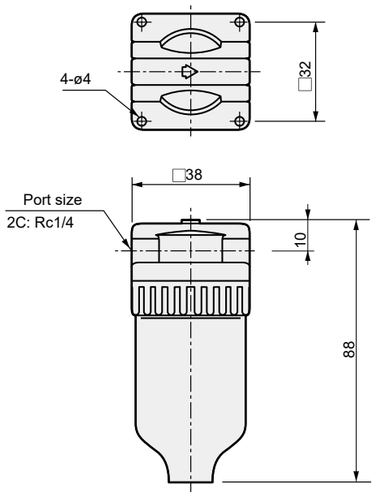
RoHS

Specifications

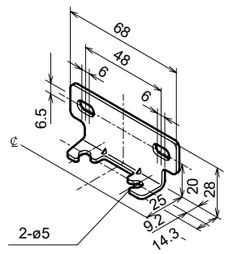
Item	6119-2C
Max. Working Pressure, MPa	1.0
Proof pressure MPa	1.5
Fluid temperature °C	5 to 65
Max. inlet air temperature °C	32
Max. flow rate L/min (ANR)	50
Port size Rc	1/4
Weight kg	0.2

Dimensions

●6119-2C



●Wall bracket: 6506

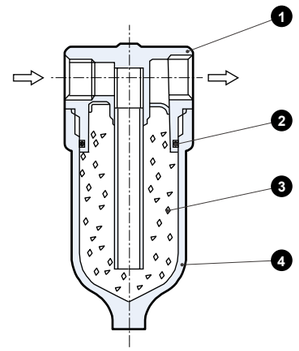


Note: Tapping screw included

Operational Principle

The Moisture Indicator monitors the dew point of ultra-dry air using the chemical properties of silica gel - the color of silica gel changes from green to orange as it absorbs moisture. If relative humidity in compressed air reaches 50%, the color changes to orange, so maintenance of the desiccant air dryer is easy.

Internal Structure Diagram / Material



No.	Main Part	6119
1	Body	Zinc Die-Cast

Parts List

No.	Part name	Material	Model No.
2	O-ring	Special nitrile rubber	A1019-ORING
3	Silica gel	Silica gel	6119-SILICA-GEL (20g)
4	Bowl	Polycarbonate	A3019-BOWL

For maintenance parts, refer to the CKD Components Product site
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." → Maintenance Parts

Safety Precautions

Avoid using in a place where the working air flow can increase or decrease vigorously or where the max. flow rate is exceeded. The silica gel could flow to the secondary side.

High Polymer Membrane Air Dryers
(Super Dryer)

■ Main Line Components

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Series Variation

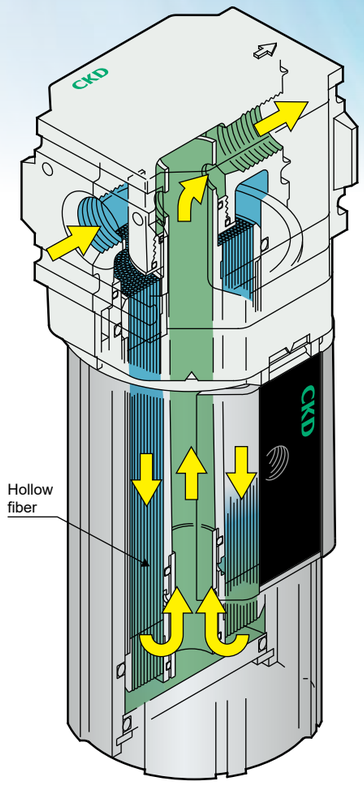
High Polymer Membrane Air Dryer (Super Dryer)

Series	Standard dew point		Low dew point					Large flow rate manifold				
	SD300E / 400E-W SU300E / 400E-W	SD300D / 400D-W SU300D / 400D-W	SU3000-A-W SU4000-A-W	SU3000-B-W SU4000-B-W	SD3000-A/4000-A			SD3000-B/4000-B	SD3000-C/4000-C	SDM4000		
Features Applicability Air Compressor kW	Low purge Purge rate 10% Atmospheric dew point -15°C	Large flow rate Purge rate 20% Atmospheric dew point -20°C	Standard dew point unit Atmospheric dew point -20°C	Low dew point unit Atmospheric dew point -40°C	Standard dew point discrete Atmospheric dew point -20°C			Low dew point discrete Atmospheric dew point -40°C	Ultra low dew point discrete Atmospheric dew point -60°C	Atmospheric dew point -20°C	Atmospheric dew point -40°C	Atmospheric dew point -60°C
0.2									●(SD3015-C)			
0.4	●(SD301E)							●(SD3015-B)	●(SD3025-C)			
0.75	●(SD / SU302E)	●(SD / SU301D)	●(SU3015-A)	●(SU3025-B)	●(SD3015-A)			●(SD3035-B)	●(SD3050-C)			
1.5		●(SD / SU302D)		●(SU3050-B)				●(SD3050-B)	●(SD3075 / 4050-C)			
2.2	●(SD / SU401E)		●(SU3025-A)		●(SD3025-A)			●(SD3075 / 4050-B)	●(SD4075-C)			
3.7	●(SD / SU402E)	●(SD / SU401D)	●(SU3035-A)		●(SD3035 / 4050-A)			●(SD4075-B)	●(SD4100-C)			●(SDM4050-2-C)
5.5		●(SD / SU402D)	●(SU3050-A)		●(SD3050-A)			●(SD4100-B)			●(SDM4050-2-B)	●(SDM4075-2-C)
7.5			●(SU3075-A)		●(SD3075 / 4075-A)					●(SDM4050-2-A)	●(SDM4075-2-B)	●(SDM4075-3-C)
11			●(SU4100-A)		●(SD4100-A)					●(SDM4075-2-A)	●(SDM4075-3-B)	●(SDM4100-3-C)
15										●(SDM4075-3-A)	●(SDM4100-3-B)	●(SDM4075-8-C)
22										●(SDM4050-6-A)	●(SDM4075-6-B)	●(SDM4075-10-C)
37										●(SDM4075-6-A)	●(SDM4075-10-B)	
55										●(SDM4100-6-A)		
75										●(SDM4100-8-A)		
95												
120												
150												
200												
250												
300												
400												
480												
710												
960												
1450												
With common exhaust port	● Option	● Option	● Option	● Option	● Option			● Option	● Option	▲ Special-order product	▲ Special-order product	▲ Special-order product
Medium pressure	×	×	×	×	● Standard Equipment			● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment
CE Compliant	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment			● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment
Freon-free	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment			● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment
Power supply not required	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment			● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment
Drain treatment not required	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment			● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment
Appearance												
Listed page	174	180	186	186	192			192	192	198	198	198

*1: Use this list as a selection guide. For the final selection, refer to the relevant page and select a model upon confirming installation and operating conditions.
*2: Contact our sales staff for information on delivery dates and prices of Special-order products.

High Polymer Membrane Air Dryer (Super Dryer) SU-SD Series

High-tech dryer that uses a polymer separation membrane. Ease of use, long service life, and high reliability are realized.



Pursuing ease of use

Easy-to-use unit
Super dryer with integrated pre-filter, etc., is available. Easily used by just connecting directly to the pneumatic source.

Modular design
The system can be easily fitted to our quality control components, reducing design and piping work, and making upgrades easy.

Amenity
The unpleasant effects of conventional air dryers, such as vibration, heat discharge, power source noise, impact noise, and dust generation, have been eliminated.

No power supply needed
Electricity is not required, so expertise in electricity is not required when installing the dryer. The dryer can be installed anywhere including explosion-proof areas with different voltages.

No more problems
There are no mechanical moving parts, so no need for concern about unexpected failures. Clean dry air is stably supplied for long periods of time.

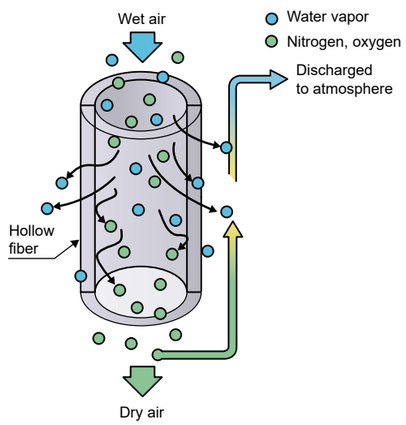
Diverse series to match your applications

Low purge, Purge rate 10%
Reduces operation costs through energy-saving moisture removal with an atmospheric dew point of -15°C and a purge ratio of 10%. [E Series]

Low dew point, Atmospheric dew point -60°C
Clean ultra-dry air can be supplied easily and stably. [3000 / 4000 Series]

Large flow rate, Compatible with 75 kW compressor
Large flow rate achieved with polymer separation membrane
In addition, compared to suction air dryers, this unit is very compact and slim at 1/3 the installation area and 1/6 the occupied volume of our conventional products. [SDM Series]

Compatible with medium pressure Max. working pressure 1.5 MPa
Suitable for a wide range of applications with 1.5 MPa max. working pressure. [SD3000 / 4000 Series, SDM Series]

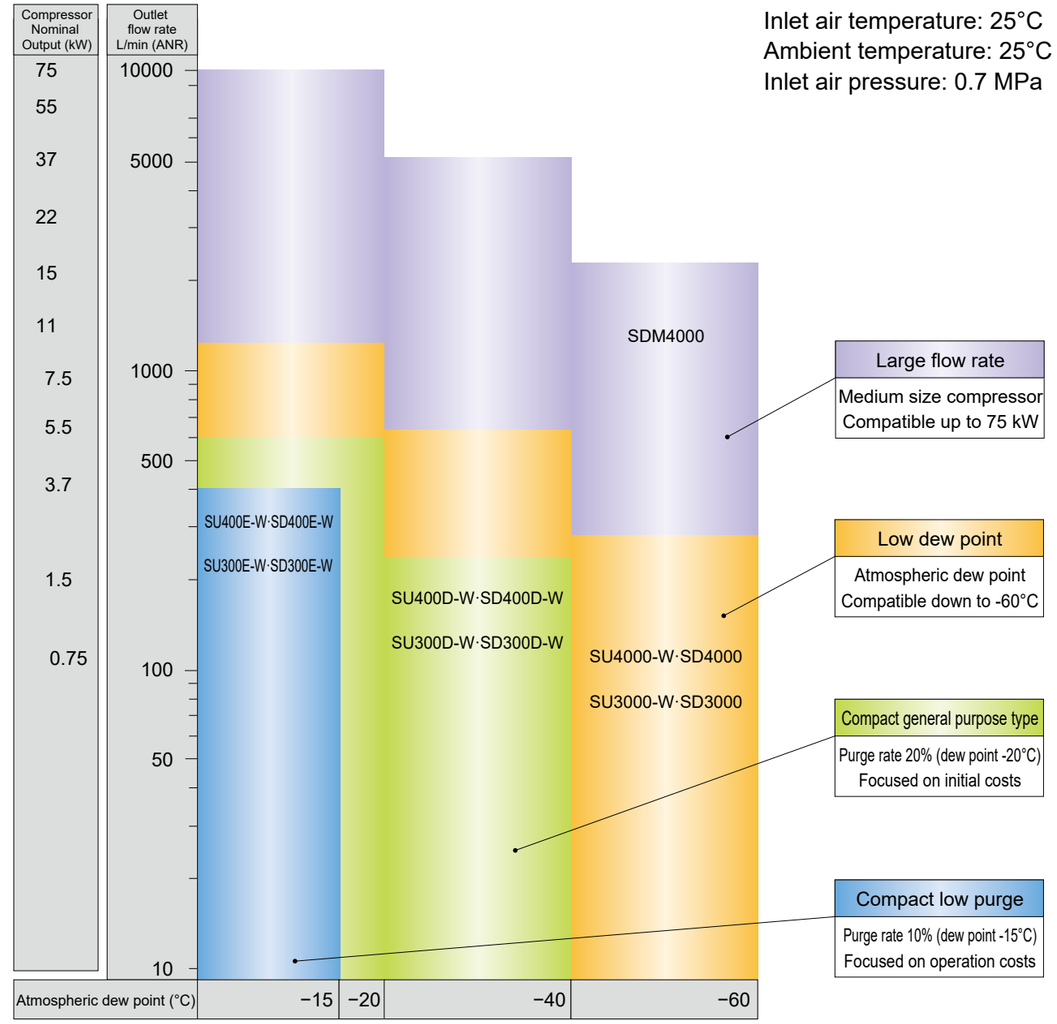


Principles of Dehumidification

The gaseous molecules can freely pass through the high polymer material, but the ease of passage varies widely according to the mutual properties of the gas and the high polymer material being used. In order to remove the water vapor only, the Super Dryer uses a high polymer material which allows water vapor, but not nitrogen or oxygen, to pass through easily. Since the concentration of each gas is high inside the hollow fibers of this material, gases try to move toward the outside of the hollow fibers where concentration is lower when fed with moist compressed air. However, because the hollow fiber is made of a material that allows only water vapor to enter and exit easily, only water vapor moves out of each gas one after another to the outside of the hollow fibers. Moist air supplied from the inlet leaves the outlet as dry air. By having part of the outlet's dry air flow toward the outside of the hollow fibers as purge air, water vapor moved to the outside is quickly discharged into the atmosphere. This keeps the concentration of water vapor on the outside of the hollow fibers low, enabling continuous dehumidification.

7 Series and 65 Models
Select the best suited model for your application.

Selection Guide MAP



Compact low purge		Compact general purpose type		Low dew point		Large flow rate
E Series (purge rate 10%)		D Series (purge rate 20%)				
SU300E-W·SU400E-W	SD300E-W·SD400E-W	SU300D-W·SU400D-W	SD300D-W·SD400D-W	SU3000-W·SU4000-W	SD3000·SD4000	SDM4000
						



Super Dryer Combination Super Dryer

SU300E, SU400E, SD300E, SD400E-W Series

E series with low air loss and filter-like operation

- Reduces operation costs through energy-saving moisture removal with a purge ratio of 10%.
- 3 types of units are available. Choose the best system for your application.
- Processing air flow rate: 75 to 450 L/min (ANR) (0.7 MPa, atmospheric dew point -15°C)

RoHS

Model No. Notation

●Super dryer combination

SU301E - 05 - W - C1 - X1

1 Model No. | 2. Inlet air pressure | 3 Unit (configuration) | 4 Option

1 Model No.

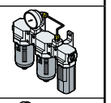
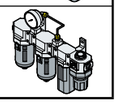
Code	Description
SU301E	SU301E
SU302E	SU302E
SU401E	SU401E
SU402E	SU402E

2. Inlet air pressure

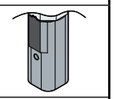
Code	Description
05	0.5 MPa
07	0.7 MPa

Note: If inlet air pressure is less than 0.7 MPa, indicate "05"; for 0.7 MPa and over, indicate "07".

3 Unit (configuration)

Code	Description	
C1	Oil Mist Filter Super Dryer (High polymer membrane air dryer)	
C2	Air Filters Oil Mist Filter (with differential pressure gauge) Super Dryer (High polymer membrane air dryer)	
C3	Air Filters Oil Mist Filter (with differential pressure gauge) Super Dryer (High polymer membrane air dryer) Regulator	

4 Option *1

	Code	Description	
	Blank	None	
*2	E	Common exhaust	
*3	X1	IN-OUT reverse	

*1: When ordering several options, indicate the required options in alphabetical order.
*2: Purge air of standard products is released to the atmosphere. If "E" is selected, common exhaust of purge air is enabled. The size of exhaust ports include the Rc1/8 for the 300 Series and the Rc1/4 for the 400 Series.
*3: When viewed from the front, standard products have an air inlet on the left port and an air outlet on the right port. When "X1" is selected, an air inlet is provided on the right port, while an air outlet is provided on the left port.

●Super dryer (High polymer membrane air dryer)

SD402E - 05 - W - B

1 Model No. | 2. Inlet air pressure | 3 Option

1 Model No.

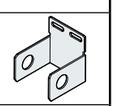
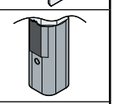
Code	Description
SD301E	SD301E
SD302E	SD302E
SD401E	SD401E
SD402E	SD402E

2. Inlet air pressure

Code	Description
05	0.5 MPa
07	0.7 MPa

Note: If inlet air pressure is less than 0.7 MPa, indicate "05"; for 0.7 MPa and over, indicate "07".

3 Option *1

	Code	Description	
	Blank	None	
*2	B	With C-bracket	
*3	E	Common exhaust	
*4	X1	IN-OUT reverse	

*1: When ordering several options, indicate the required options in alphabetical order.
*2: If fixed by C-bracket, modular connection with peripheral devices is not possible.
*3: Purge air from standard products is released to the atmosphere. If "E" is selected, common exhaust of purge air is enabled. The size of exhaust ports include the Rc1/8 for the 300 Series and the Rc1/4 for the 400 Series.
*4: When viewed from the front, standard products have an air inlet on the left port and an air outlet on the right port. When "X1" is selected, an air inlet is provided on the right port, while an air outlet is provided on the left port.

Specifications for Rechargeable Batteries (Catalog No.CC-1226AA)

●Design compatible with rechargeable battery manufacturing processes

SU□0□E -..... - P4*
SD□0□E -..... - P4*

Specifications for Food Manufacturing Processes (Catalog No.CC-1271AA)

●Food grade lubricants that can be used in food manufacturing processes, and resin and rubber materials that conform to the Food Sanitation Laws are used.

SU□0□E -..... - FP*
SD□0□E -..... - FP*

*Contact CKD for details.

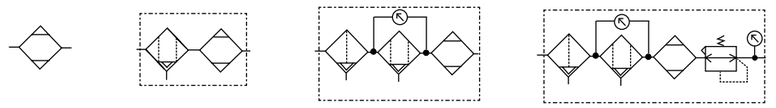
Specifications

Item	SU301E -□-W-C1	SU302E -□-W-C1	SU401E -□-W-C1	SU402E -□-W-C1	SU301E -□-W-C2	SU302E -□-W-C2	SU401E -□-W-C2	SU402E -□-W-C2	SU301E -□-W-C3	SU302E -□-W-C3	SU401E -□-W-C3	SU402E -□-W-C3	SD301E -□-W	SD302E -□-W	SD401E -□-W	SD402E -□-W
Appearance	 A simple and space-saving unit that dehumidifies air from which solid impurities have already been removed. (*1)				 A unit that supplies clean dry air in a line that does not require pressure regulation.				 A unit that supplies clean, regulated dry air simply by supplying compressed air.				 Discrete super dryer enabling easy system configuration with peripheral devices due to modular design.			
Configuration	Oil Mist Filter Super Dryer (High polymer membrane air dryer)				Air Filters Oil Mist Filter (with differential pressure gauge) Super Dryer (High polymer membrane air dryer)				Air Filters Oil Mist Filter (with differential pressure gauge) Super Dryer (High polymer membrane air dryer) Regulator				Super Dryer (High polymer membrane air dryer)			
Range of working conditions: Working fluid	Compressed air															
Range of working conditions: Inlet air pressure MPa	0.4 to 1.0															
Range of working conditions: Proof pressure MPa	1.5															
Range of working conditions: Inlet air temperature °C	5 to 50															
Range of working conditions: Ambient temperature °C	5 to 50															
Standard rating: Outlet air atmospheric dew point°C	-15															
Standard rating: Inlet air flow rate L/min (ANR)	75	150	300	450	75	150	300	450	75	150	300	450	75	150	300	450
Standard rating: Outlet air flow rate L/min (ANR)	67	135	270	405	67	135	270	405	67	135	270	405	67	135	270	405
Standard rating: Purge flow rate L/min (ANR)	8	15	30	45	8	15	30	45	8	15	30	45	8	15	30	45
Standard rating: Inlet air pressure dew point°C	25															
Standard rating: Inlet air pressure MPa	0.7															
Standard rating: Inlet air temperature °C	25															
Standard rating: Ambient temperature °C	25															
Air Filters: Degree of Filtration µm	–				5								–			
Oil Mist Filter: Oil Mist Removal for improved air quality. mg/m³	0.01 (inlet air 21°C)												–			
Regulator: Set pressure range MPa	–								0.05 to 0.85				–			
Regulator: Relief pressure MPa	–								Setting pressure plus 0.05				–			
Standard Accessories	Bracket				Differential pressure gauge/bracket				Pressure gauge/differential pressure gauge/bracket				–			

*1: The C1 type cannot control the oil mist filter with a differential pressure gauge. Replace the oil mist filter mantle every year.
*2: The purge flow rate in the Standard Rating column is the same value at 0.5 MPa.

Circuit Diagram Symbol

SD301E to 402E-□ | SU301E to 402E-□-C1 | SU301E to 402E-□-C2 | SU301E to 402E-□-C3



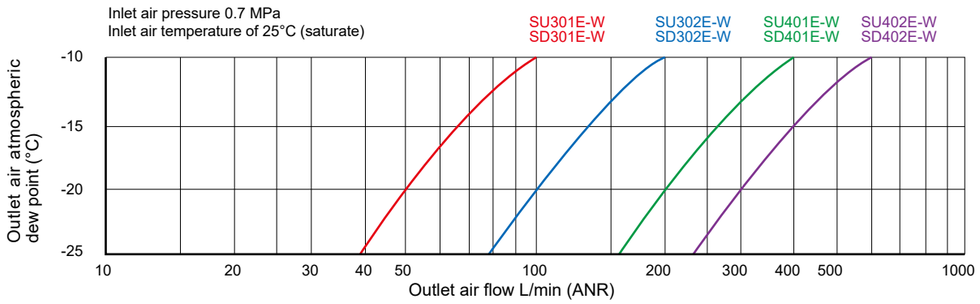
System Components

System Components / Model No.	(1) Air Filter	(2)Oil Mist Filter	(3) Super Dryer (High polymer membrane air dryer)	(4) Regulator	(5) Differential Pressure Gauge
SU301E-□-W-C1	–	M3000-10-W-F1	SD301E-□-W	–	–
SU302E-□-W-C1	–	M4000-10-W-F1	SD302E-□-W	–	–
SU401E-□-W-C1	–	M4000-10-W-F1	SD401E-□-W	–	–
SU402E-□-W-C1	–	SM4100-W	SD402E-□-W	–	–
SU301E-□-W-C2	F3000-10-W-F	M3000-10-W-F1	SD301E-□-W	–	GA400-8-P02
SU302E-□-W-C2	F4000-10-W-F	M4000-10-W-F1	SD302E-□-W	–	GA400-8-P02
SU401E-□-W-C2	F4000-10-W-F	M4000-10-W-F1	SD401E-□-W	–	GA400-8-P02
SU402E-□-W-C2	F4000-10-W-F	SM4100-W	SD402E-□-W	–	GA400-8-P02
SU301E-□-W-C3	F3000-10-W-F	M3000-10-W-F1	SD301E-□-W	R3000-10-W	GA400-8-P02
SU302E-□-W-C3	F4000-10-W-F	M4000-10-W-F1	SD302E-□-W	R4000-10-W	GA400-8-P02
SU401E-□-W-C3	F4000-10-W-F	M4000-10-W-F1	SD401E-□-W	R4000-10-W	GA400-8-P02
SU402E-□-W-C3	F4000-10-W-F	SM4100-W	SD402E-□-W	R4000-10-W	GA400-8-P02

Dew point performance

For the correction method, please refer to P. 203.

●Dew point performance curve



Selection Guide

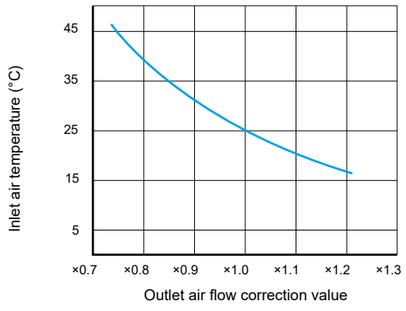
STEP 1 Confirm the working conditions and the rated values listed in the specifications.
Working conditions: Inlet air pressure, inlet air temperature, required air flow rate, required atmospheric dew point

STEP 2 Confirm the compensation coefficient for outlet air flow rate affected by inlet air temperature.

(1) Temperature - Outlet air flow rate compensation coefficient

*If the inlet air is air that has passed through a refrigerated air dryer, select the inlet air temperature as 10°C, regardless of the actual temperature.

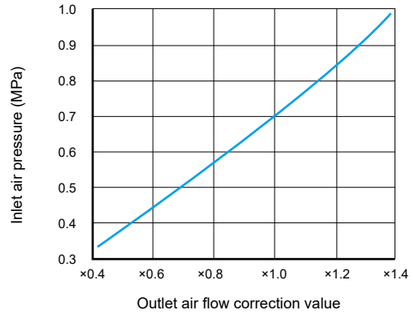
●Inlet temperature - outlet air flow rate correction curve



STEP 3 Confirm the compensation coefficient for outlet air flow rate affected by inlet air pressure.

(2) Pressure - Outlet air flow rate correction coefficient

●Inlet pressure - outlet air flow rate correction curve

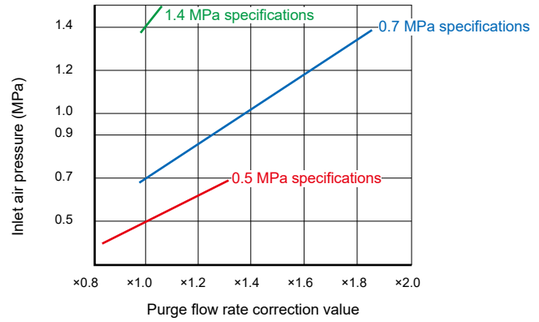


STEP 4 **Determine the appropriate model from the outlet air flow rate of each model.**
Rated outlet air flow rate × (1) Temperature correction coefficient × (2) Pressure correction coefficient = Corrected outlet air flow rate
Select one with sufficient outlet air flow rate after correction with the above formula.

STEP 5 Confirming purge air flow rate

(3) Pressure - Purge flow rate compensation coefficient

●Inlet pressure - purge flow rate correction curve



STEP 6 **Find the inlet air flow rate from the outlet air flow rate and the purge flow rate of each model.**
Outlet air flow rate obtained in STEP 4 + Purge flow rate obtained in STEP 5 = corrected inlet air flow rate
Based on the inlet air flow rate corrected as above, confirm whether the compressor capacity is sufficient.

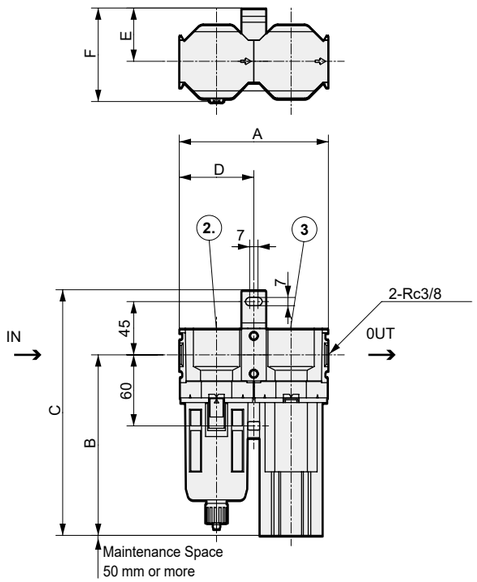
Example of Calculation

Conditions	Working Conditions	Selecting Conditions	Compensation coefficient for inlet flow rate	Compensation coefficient for purge flow rate
Inlet air temperature	25 to 30 °C	30°C	0.93	-
Inlet air pressure	0.5 to 0.55 MPa	0.5 MPa	0.7	1.0
Outlet atmospheric dew point	-15°C	-15°C	-	-

Substitute the above conditions into the equation above to obtain the outlet air flow rate when using the SD301E-05.
Outlet air flow rate is 67×0.93×0.7=43.6 L/min (ANR)
Purge flow rate is 8×1=8 L/min (ANR)
In this case, the inlet air flow rate is 43.6+8=51.6 L/min (ANR).

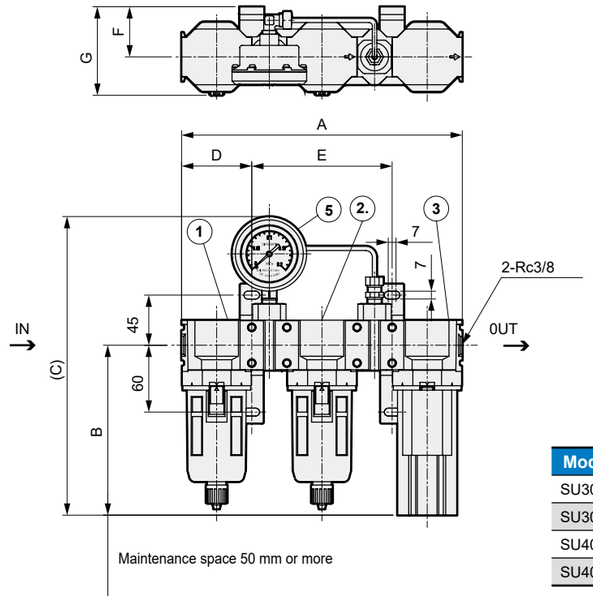
Dimensions

●Unit C1



Model No.	A	B	C	D	E	F	Weight (kg)
SU301E-□-W-C1	126	153	208	63	45	79	1.0
SU302E-□-W-C1	143	223	278	80	55	97	1.6
SU401E-□-W-C1	160	223	278	80	55	97	2.1
SU402E-□-W-C1	160	328	383	80	55	95	3.5

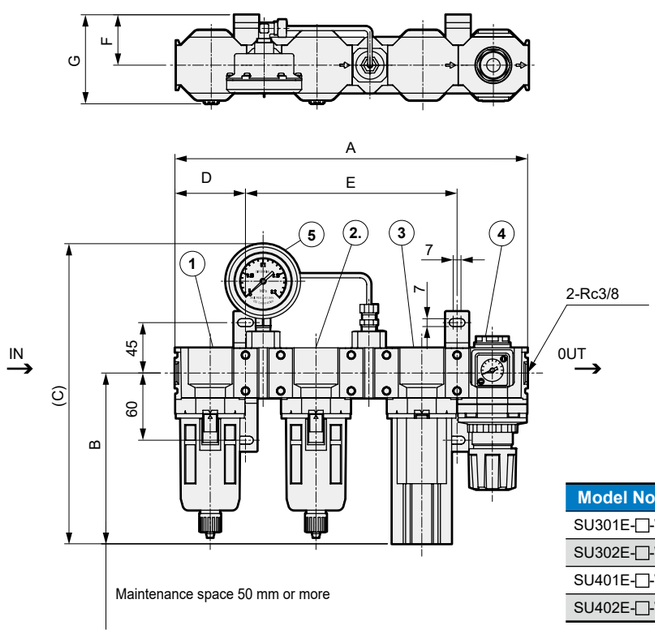
●Unit C2 type



Model No.	A	B	C	D	E	F	G	Weight (kg)
SU301E-□-W-C2	252	153	268	63	126	45	79	2.0
SU302E-□-W-C2	286	223	338	80	143	55	97	2.8
SU401E-□-W-C2	303	223	338	80	143	55	97	3.3
SU402E-□-W-C2	303	328	443	80	143	55	97	4.7

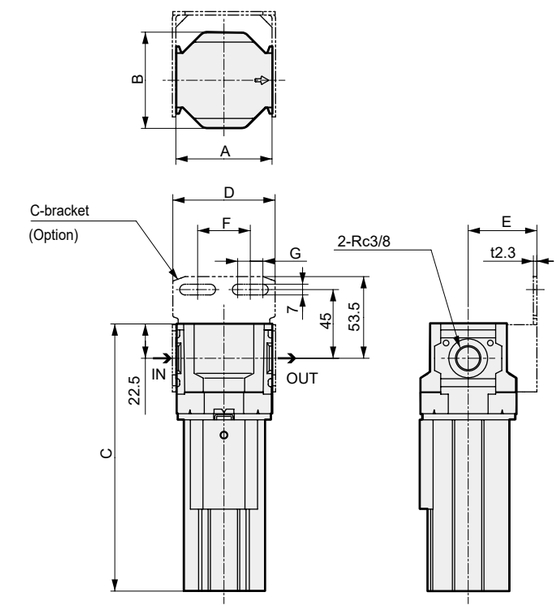
Dimensions

●Unit C3 tiePlunger



Model No.	A	B	C	D	E	F	G	Weight (kg)
SU301E-□-W-C3	315	153	268	63	189	45	79	2.5
SU302E-□-W-C3	366	223	338	80	206	55	97	3.5
SU401E-□-W-C3	383	223	338	80	223	55	97	4.0
SU402E-□-W-C3	383	328	443	80	223	55	97	5.4

●SD300E, SD400E



Model No.	A	B	C	D	E	F	G	Weight (kg)
SD301E-□-W	63	63	175	67	45	34.5	16.5	0.6
SD302E-□-W	63	63	245	67	45	34.5	16.5	0.9
SD401E-□-W	80	79	245	84	55	55	14	1.4
SD402E-□-W	80	79	315	84	55	55	14	1.8

For maintenance parts, refer to the CKD Components Product site
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." →Maintenance Parts



Super Dryer Combination Super Dryer

SU300D, SU400D, SD300D, SD400D-W Series

Slim body and high performance D series

- Small in size but with ample dehumidification capacity in terms of both quality and quantity, making it suitable for integration into equipment.
- 3 types of units are available. Choose the best system for your application.
- Processing air flow rate: 125 to 750 L/min (ANR) (0.7 MPa, atmospheric dew point -20°C)

Model No. Notation

●Super dryer combination

SU301D - 05 - W - C1 - X1

1 Model No. | 2 Inlet air pressure | 3 Unit (configuration) | 4 Option

1 Model No.

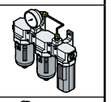
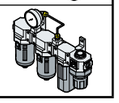
Code	Description
SU301D	SU301D
SU302D	SU302D
SU401D	SU401D
SU402D	SU402D

2 Inlet air pressure

Code	Description
05	0.5 MPa
07	0.7 MPa

Note: If inlet air pressure is less than 0.7 MPa, indicate "05"; for 0.7 MPa and over, indicate "07".

3 Unit (configuration)

Code	Description	
C1	Oil Mist Filter Super Dryer (High polymer membrane air dryer)	
C2	Air Filters Oil Mist Filter (with differential pressure gauge) Super Dryer (High polymer membrane air dryer)	
C3	Air Filters Oil mist filter (with differential pressure gauge)Super dryer (High polymer membrane air dryer) Regulator	

4 Option *1

	Code	Description	
	Blank	None	
*2	E	Common exhaust	
*3	X1	IN-OUT reverse	

*1: When ordering several options, indicate the required options in alphabetical order.
*2: Purge air of standard products is released to the atmosphere. If "E" is selected, common exhaust of purge air is enabled. The size of exhaust ports include the Rc1/8 for the 300 Series and the Rc1/4 for the 400 Series.
*3: When viewed from the front, standard products have an air inlet on the left port and an air outlet on the right port. When "X1" is selected, an air inlet is provided on the right port, while an air outlet is provided on the left port.

●Super dryer (High polymer membrane air dryer)

SD402D - 05 - W - B

1 Model No. | 2. Inlet air pressure | 3 Option

1 Model No.

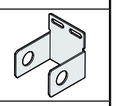
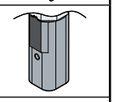
Code	Description
SD301D	SD301D
SD302D	SD302D
SD401D	SD401D
SD402D	SD402D

2. Inlet air pressure

Code	Description
05	0.5 MPa
07	0.7 MPa

Note: If inlet air pressure is less than 0.7 MPa, indicate "05"; for 0.7 MPa and over, indicate "07".

3 Option *1

	Code	Description	
	Blank	None	
*2	B	With C-bracket	
*3	E	Common exhaust	
*4	X1	IN-OUT reverse	

*1: When ordering several options, indicate the required options in alphabetical order.
*2: If fixed by C-bracket, modular connection with peripheral devices is not possible.
*3: Purge air from standard products is released into the atmosphere. If "E" is selected, common exhaust of purge air is enabled. The size of exhaust ports include the Rc1/8 for the 300 Series and the Rc1/4 for the 400 Series.
*4: When viewed from the front, standard products have an air inlet on the left port and an air outlet on the right port. When "X1" is selected, an air inlet is provided on the right port, while an air outlet is provided on the left port.

Specifications for Rechargeable Batteries (Catalog No.CC-1226AA)

●Design compatible with rechargeable battery manufacturing processes

SU□0□D -..... - P4*
SD□0□D -..... - P4*

*Contact CKD for details.

Specifications for Food Manufacturing (Catalog No.CC-1271AA)

●Food grade lubricants that can be used in food manufacturing processes, and resin and rubber materials that conform to the Food Sanitation Laws are used.

SU□0□D -..... - FP1
SD□0□D -..... - FP1

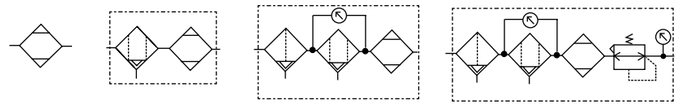
Specifications

Item	SU301D -□-W-C1	SU302D -□-W-C1	SU401D -□-W-C1	SU402D -□-W-C1	SU301D -□-W-C2	SU302D -□-W-C2	SU401D -□-W-C2	SU402D -□-W-C2	SU301D -□-W-C3	SU302D -□-W-C3	SU401D -□-W-C3	SU402D -□-W-C3	SD301D -□-W	SD302D -□-W	SD401D -□-W	SD402D -□-W
Appearance	 A simple and space-saving unit that dehumidifies air from which solid impurities have already been removed. (*1)				 A unit that supplies clean dry air in a line that does not require pressure regulation.				 A unit that supplies clean, regulated dry air simply by supplying compressed air.				 Discrete super dryer enabling easy system configuration with peripheral devices due to modular design.			
Configuration	Oil Mist Filter Super Dryer (High polymer membrane air dryer)				Air Filters Oil mist filter (with differential pressure gauge) Super dryer (High polymer membrane air dryer)				Air Filters Oil mist filter (with differential pressure gauge) Super dryer (High polymer membrane air dryer) Regulator				Super Dryer (High polymer membrane air dryer)			
Range of working conditions: Working fluid	Compressed air															
Range of working conditions: Inlet air pressure MPa	0.4 to 1.0															
Range of working conditions: Proof pressure MPa	1.5															
Range of working conditions: Inlet air temperature °C	5 to 50															
Range of working conditions: Ambient temperature °C	5 to 50															
Standard rating: Outlet air atmospheric dew point°C	-20															
Standard rating: Inlet air flow rate L/min (ANR)	125	250	500	750	125	250	500	750	125	250	500	750	125	250	500	750
Standard rating: Outlet air flow rate L/min (ANR)	100	200	400	600	100	200	400	600	100	200	400	600	100	200	400	600
Standard rating: Purge flow rate L/min (ANR)	25	50	100	150	25	50	100	150	25	50	100	150	25	50	100	150
Standard rating: Inlet air pressure dew point°C	25															
Standard rating: Inlet air pressure MPa	0.7															
Standard rating: Inlet air temperature °C	25															
Standard rating: Ambient temperature °C	25															
Air Filters: Degree of Filtration µm	—				5								—			
Oil Mist Filter: For removing oil mist mg/m³	0.01 (inlet air 21°C)												—			
Regulator: Set pressure range MPa	—								0.05 to 0.85				—			
Regulator: Relief pressure MPa	—								Setting pressure plus 0.05				—			
Standard Accessories	Bracket				Differential pressure gauge/bracket				Pressure gauge/differential pressure gauge/bracket				—			

*1: The C1 type cannot control the oil mist filter with a differential pressure gauge. Replace the oil mist filter mantle every year.
*2: The purge flow rate in the Standard Rating column is the same value at 0.5 MPa.

Circuit Diagram Symbol

SD301D to 402D-□ | SU301D to 402D-□-C1 | SU301D to 402D-□-C2 | SU302D to 402D-□-C3



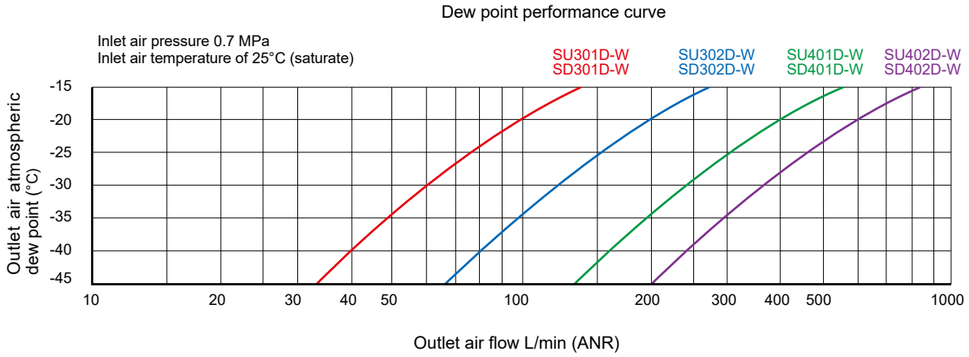
System Components

System Components / Model No.	(1) Air Filter	(2)Oil Mist Filter	(3) Super Dryer (High polymer membrane air dryer)	(4) Regulator	(5) Differential Pressure Gauge
SU301D-□-W-C1	—	M4000-10-W-F1	SD301D-□-W	—	—
SU302D-□-W-C1	—	M4000-10-W-F1	SD302D-□-W	—	—
SU401D-□-W-C1	—	SM4100-W	SD401D-□-W	—	—
SU402D-□-W-C1	—	SM4100-W	SD402D-□-W	—	—
SU301D-□-W-C2	F4000-10-W-F	M4000-10-W-F1	SD301D-□-W	—	GA400-8-P02
SU302D-□-W-C2	F4000-10-W-F	M4000-10-W-F1	SD302D-□-W	—	GA400-8-P02
SU401D-□-W-C2	F4000-10-W-F	SM4100-W	SD401D-□-W	—	GA400-8-P02
SU402D-□-W-C2	F4000-10-W-F	SM4100-W	SD402D-□-W	—	GA400-8-P02
SU301D-□-W-C3	F4000-10-W-F	M4000-10-W-F1	SD301D-□-W	R4000-10-W	GA400-8-P02
SU302D-□-W-C3	F4000-10-W-F	M4000-10-W-F1	SD302D-□-W	R4000-10-W	GA400-8-P02
SU401D-□-W-C3	F4000-10-W-F	SM4100-W	SD401D-□-W	R4000-10-W	GA400-8-P02
SU402D-□-W-C3	F4000-10-W-F	SM4100-W	SD402D-□-W	R4000-10-W	GA400-8-P02

Dew point performance

For the correction method, please refer to P. 203.

●Dew point performance curve



Selection Guide

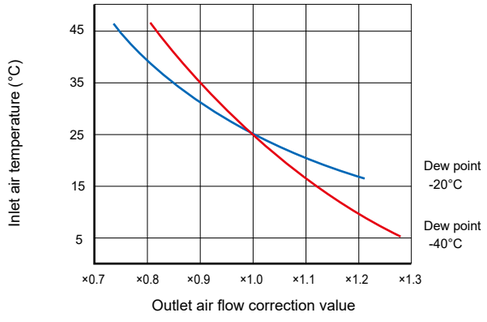
STEP 1 Confirm the working conditions and the rated values listed in the specifications. Working conditions: Inlet air pressure, inlet air temperature, required air flow rate, required atmospheric dew point

STEP 2 Confirm the compensation coefficient for outlet air flow rate affected by inlet air temperature.

(1) Temperature - Outlet air flow rate compensation coefficient

*If the inlet air is air that has passed through a refrigerated air dryer, select the inlet air temperature as 10°C, regardless of the actual temperature.

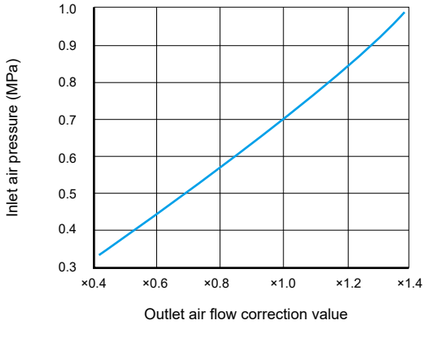
●Inlet temperature - outlet air flow rate correction curve



STEP 3 Confirm the compensation coefficient for outlet air flow rate affected by inlet air pressure.

(2) Pressure - Outlet air flow rate correction coefficient

●Inlet pressure - outlet air flow rate correction curve



STEP 4 **Determine the appropriate model from the outlet air flow rate of each model.**

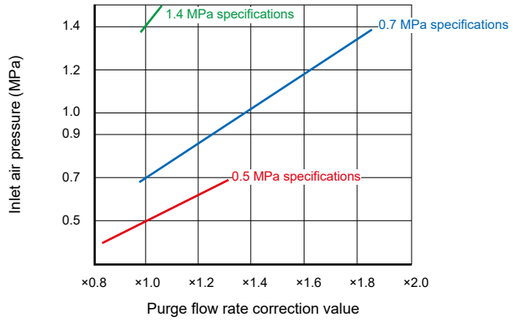
Rated outlet air flow rate × (1) Temperature correction coefficient × (2) Pressure correction coefficient = Corrected outlet air flow rate

Select one with sufficient outlet air flow rate after correction with the above formula.

STEP 5 Confirming purge air flow rate

(3) Pressure - Purge flow rate compensation coefficient

●Inlet pressure - purge flow rate correction curve



STEP 6 **Find the inlet air flow rate from the outlet air flow rate and the purge flow rate of each model.**

Outlet air flow rate obtained in STEP 4 + Purge flow rate obtained in STEP 5 = corrected inlet air flow rate

Based on the inlet air flow rate corrected as above, confirm whether the compressor capacity is sufficient.

Example of Calculation

Conditions	Working Conditions	Selecting Conditions	Compensation coefficient for inlet flow rate	Compensation coefficient for purge flow rate
Inlet air temperature	25 to 30 °C	30°C	0.93	-
Inlet air pressure	0.5 to 0.55 MPa	0.5 MPa	0.7	1.0
Outlet atmospheric dew point	-20°C	-20°C	-	-

Substitute the above conditions into the equation above to obtain the outlet air flow rate when using the SD301D-05.

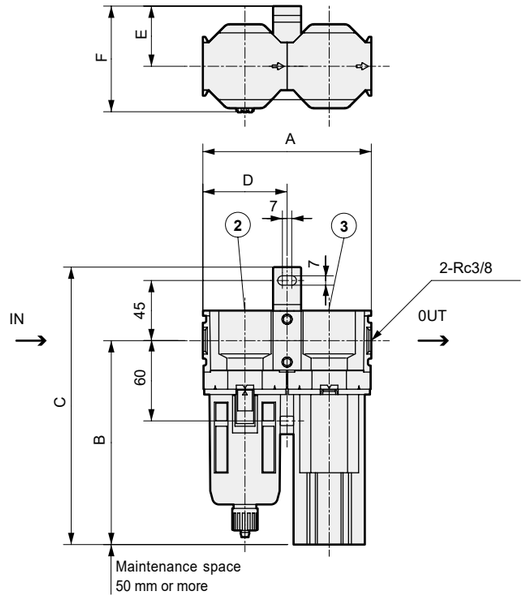
Outlet air flow rate is 100×0.93×0.7=65.1 L/min (ANR)

Purge flow rate is 25×1.0=25 L/min (ANR)

In this case, the inlet air flow rate is 65.1+25=90.1 L/min (ANR).

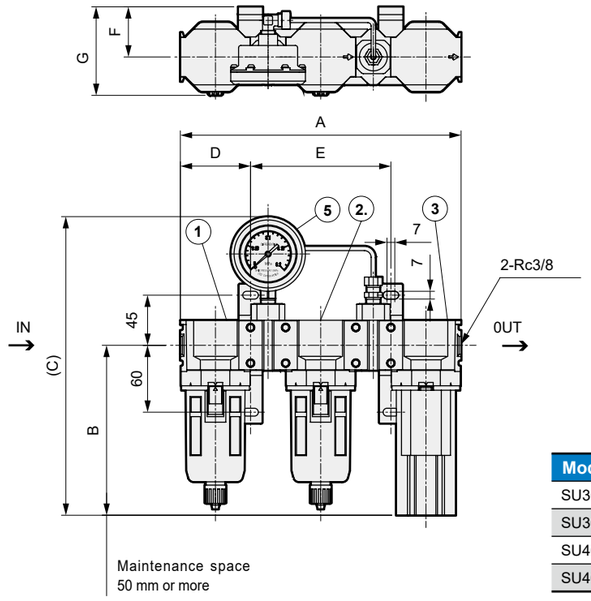
Dimensions

●Unit C1



Model No.	A	B	C	D	E	F	Weight (kg)
SU301D-□-W-C1	143	171	226	80	55	97	1.3
SU302D-□-W-C1	143	223	278	80	55	97	1.6
SU401D-□-W-C1	160	328	383	80	55	95	3.1
SU402D-□-W-C1	160	328	383	80	55	95	3.5

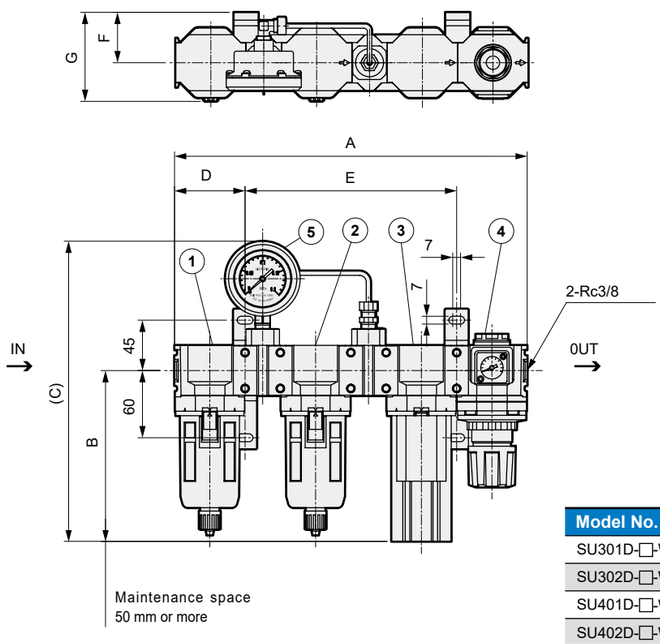
●Unit C2 type



Model No.	A	B	C	D	E	F	G	Weight (kg)
SU301D-□-W-C2	286	171	286	80	143	55	97	2.5
SU302D-□-W-C2	286	223	338	80	143	55	97	2.8
SU401D-□-W-C2	303	328	443	80	143	55	97	4.3
SU402D-□-W-C2	303	328	443	80	143	55	97	4.7

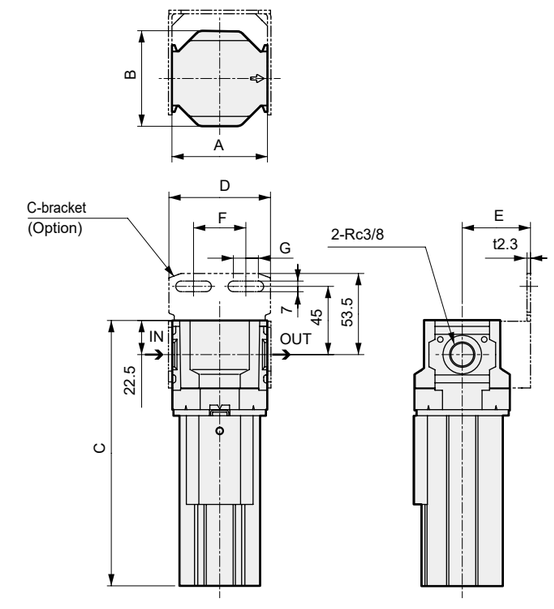
Dimensions

●Unit C3 type



Model No.	A	B	C	D	E	F	G	Weight (kg)
SU301D-□-W-C3	366	171	286	80	206	55	97	3.2
SU302D-□-W-C3	366	223	338	80	206	55	97	3.5
SU401D-□-W-C3	383	328	443	80	223	55	97	5.0
SU402D-□-W-C3	383	328	443	80	223	55	97	5.4

●SD300D, SD400D



Model No.	A	B	C	D	E	F	G	Weight (kg)
SD301D-□-W	63	63	175	67	45	34.5	16.5	0.6
SD302D-□-W	63	63	245	67	45	34.5	16.5	0.9
SD401D-□-W	80	79	245	84	55	55	14	1.4
SD402D-□-W	80	79	315	84	55	55	14	1.8

For maintenance parts, refer to the CKD Components Product site
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." → Maintenance Parts



Super Dryer Combination

SU3000, SU4000-W Series

Easily and Stably supply Ultra-Dry Air.

- Ultra dry air with an atmospheric dew point -60°C is obtained just by piping to a pneumatic source.
- All in one unit with superior installability.
- Processing air flow rate: 35 to 1500 L/min (ANR) (0.7 MPa, atmospheric dew point -40°C)

Model No. Notation

●Super dryer combination

SU3015 - A 05 -W- E

1. Model No.
2. Outlet air atmospheric dew point
3. Inlet air pressure
4. Option

Note: Purge flow rate in standard rating section is also the same value at 0.5 MPa.

1 Model No.

Code	Description
SU3015	SU3015
SU3025	SU3025
SU3035	SU3035
SU3050	SU3050
SU3075	SU3075
SU4050	SU4050
SU4100	SU4100

2 Outlet air atmospheric dew point

	Code	Description
Note	A	−20°C
	B	-40°C, -60°C

Note: For an outlet air atmospheric pressure dew point of -60°C, the same type number “B” as for -40°C.

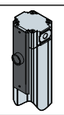
3 Inlet air pressure

Code	Description
05	0.5 MPa
07	0.7 MPa

Note: If inlet air pressure is less than 0.7 MPa, indicate "05"; for 0.7 MPa and over, indicate "07".

4 Option

*1

	Code	Description	
	Blank	None	
*2	E	Common exhaust	
*3	X1	IN-OUT reverse	

*1: When ordering several options, indicate the required options in alphabetical order.
*2: Purge air of standard products is released to the atmosphere. If "E" is selected, common exhaust of purge air is enabled. Size of exhaust port is Rc1/2.
*3: When viewed from the front, standard products have an air inlet on the left port and an air outlet on the right port. When "X1" is selected, an air inlet is provided on the right port, while an air outlet is provided on the left port.

Specifications for Rechargeable Batteries (Catalog No.CC-1226AA)

●Design compatible with rechargeable battery manufacturing processes

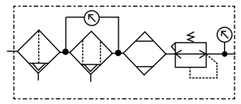
SU□000 -..... - P4□

*Contact CKD for details.

Specifications

Item		SU 3015-A-W	SU 3025-A-W	SU 3035-A-W	SU 3050-A-W	SU 3075-A-W	SU 4100-A-W	SU 3015-B-W	SU 3025-B-W	SU 3050-B-W	SU 4050-B-W	SU 4100-B-W
Range of working conditions	Working fluid	Compressed air										
	Inlet air pressure MPa	0.4 to 1.0										
	Proof pressure MPa	1.5										
	Inlet air temperature °C	5 to 50										
	Ambient temperature °C	5 to 50										
Standard rating	Outlet air atmospheric dew point°C	-20						-40				
	Inlet air flow rate L/min (ANR)	125	300	490	760	1200	1500	35	90	230	410	890
	Outlet air flow rate L/min (ANR)	100	240	390	610	960	1260	25	65	170	300	650
	Purge flow rate L/min (ANR)	25	60	100	150	240	240	10	25	60	110	240
	Inlet air pressure dew point °C	25										
	Inlet air pressure MPa	0.7										
	Inlet air temperature °C	25										
	Ambient temperature °C	25										
Air Filters	Degree of Filtration µm	5										
Oil Mist Filter	Oil removal mg/m³	0.01 (inlet air 21°C)										
Regulator	Set pressure range MPa	0.05 to 0.85										
	Relief pressure MPa	Setting pressure plus 0.05										
Standard Accessories		Pressure gauge/differential pressure gauge/bracket										

Circuit Diagram Symbol

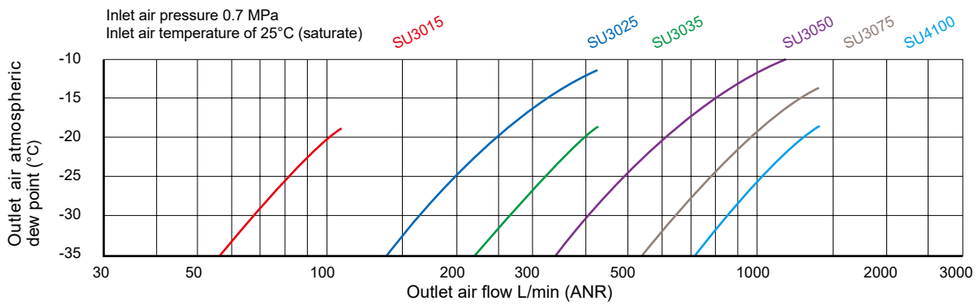


System Components

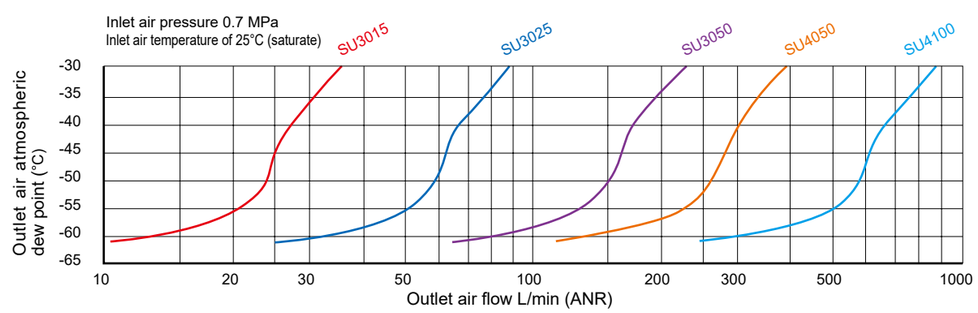
System Components / Model No.	①Air Filters	②Oil Mist Filter	③Super Dryer (High polymer membrane air dryer)	④Regulator	Differential pressure gauge
SU3015-A-W	F3000-10-W-F	M3000-10-W-F1	SD3015-A	R3000-10-W	GA400-8-P02
SU3025-A-W	F4000-10-W-F	M4000-10-W-F1	SD3025-A	R4000-10-W	GA400-8-P02
SU3035-A-W	F4000-10-W-F	M4000-10-W-F1	SD3035-A	R4000-10-W	GA400-8-P02
SU3050-A-W	F4000-10-W-F	SM4000	SD3050-A	R4000-10-W	GA400-8-P02
SU3075-A-W	F4000-10-W-F	SM4000	SD3075-A	R4000-10-W	GA400-8-P02
SU4100-A-W	F4000-15-W-F	SM4000	SD4100-A	R4000-15-W	GA400-8-P02
SU3015-B-W	F3000-10-W-F	M3000-10-W-F1	SD3015-B	R3000-10-W	GA400-8-P02
SU3025-B-W	F3000-10-W-F	M3000-10-W-F1	SD3025-B	R3000-10-W	GA400-8-P02
SU3050-B-W	F4000-10-W-F	M4000-10-W-F1	SD3050-B	R4000-10-W	GA400-8-P02
SU4050-B-W	F4000-15-W-F	SM4000	SD4050-B	R4000-15-W	GA400-8-P02
SU4100-B-W	F4000-15-W-F	SM4000	SD4100-B	R4000-15-W	GA400-8-P02

Dew point performance For the correction method, please refer to P. 203.

●Dew point performance curve (-20°C specifications)



●Dew point performance curve (-40, -60°C specifications)



Selection Guide

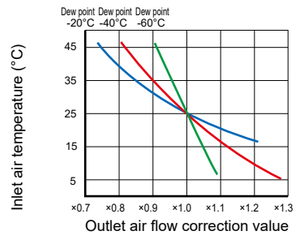
STEP 1 Confirm the working conditions and the rated values listed in the specifications.
Working conditions: Inlet air pressure, inlet air temperature, required air flow rate, required atmospheric dew point

STEP 2 Confirm the compensation coefficient for outlet air flow rate affected by inlet air temperature.

(1) Temperature - Outlet air flow rate compensation coefficient

*If the inlet air is air that has passed through a refrigerated air dryer, select the inlet air temperature as 10°C, regardless of the actual temperature.

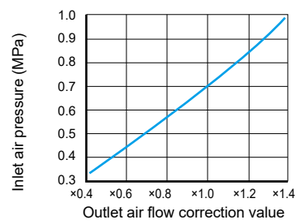
●Inlet temperature - outlet air flow rate correction curve



STEP 3 Confirm the compensation coefficient for outlet air flow rate affected by inlet air pressure.

(2) Pressure - Outlet air flow rate correction coefficient

●Inlet pressure - outlet air flow rate correction curve

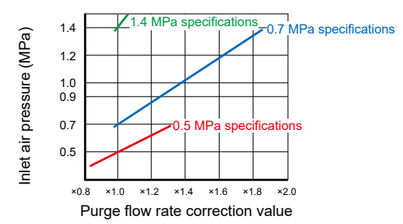


STEP 4 **Determine the appropriate model from the outlet air flow rate of each model.**
Rated outlet air flow rate × (1) Temperature correction coefficient × (2) Pressure correction coefficient = Corrected outlet air flow rate
Select one with sufficient outlet air flow rate after correction with the above formula.

STEP 5 Confirming purge air flow rate

(3) Pressure - Purge flow rate compensation coefficient

●Inlet pressure - purge flow rate correction curve



STEP 6 **Find the inlet air flow rate from the outlet air flow rate and the purge flow rate of each model.**
Outlet air flow rate obtained in STEP 4 + Purge flow rate obtained in STEP 5 = corrected inlet air flow rate
Based on the inlet air flow rate corrected as above, confirm whether the compressor capacity is sufficient.

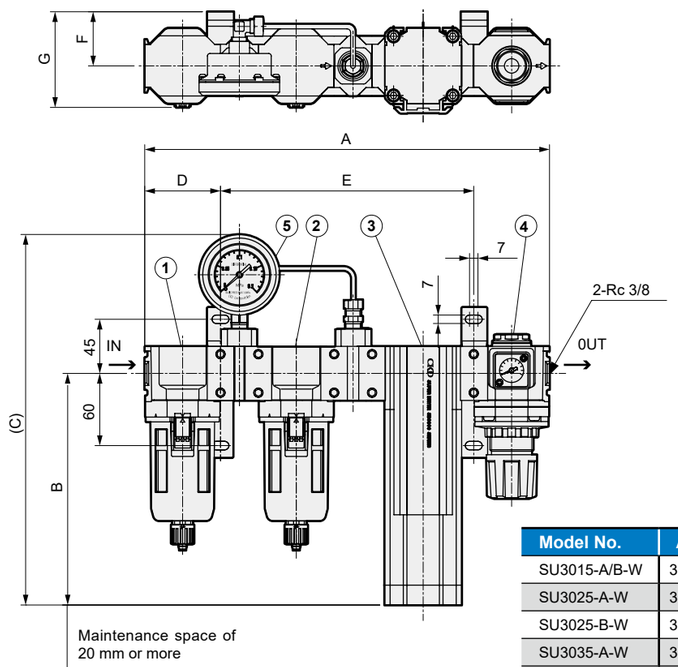
Example of Calculation

Conditions	Working Conditions	Selecting Conditions	Compensation coefficient for inlet flow rate	Compensation coefficient for purge flow rate
Inlet air temperature	25 to 30 °C	30°C	0.95	-
Inlet air pressure	0.5 to 0.55 MPa	0.5 MPa	0.7	1.0
Outlet atmospheric dew point	-40°C	-40°C	-	-

Substitute the above conditions into the equation above to obtain the outlet air flow rate when using the SU3025-B05-W.
Outlet air flow rate is 65×0.95×0.7=43.2 L/min (ANR)
Purge flow rate is 25×1.0=25 L/min (ANR)
In this case, the inlet air flow rate is 43.2+25=68.2 L/min (ANR).

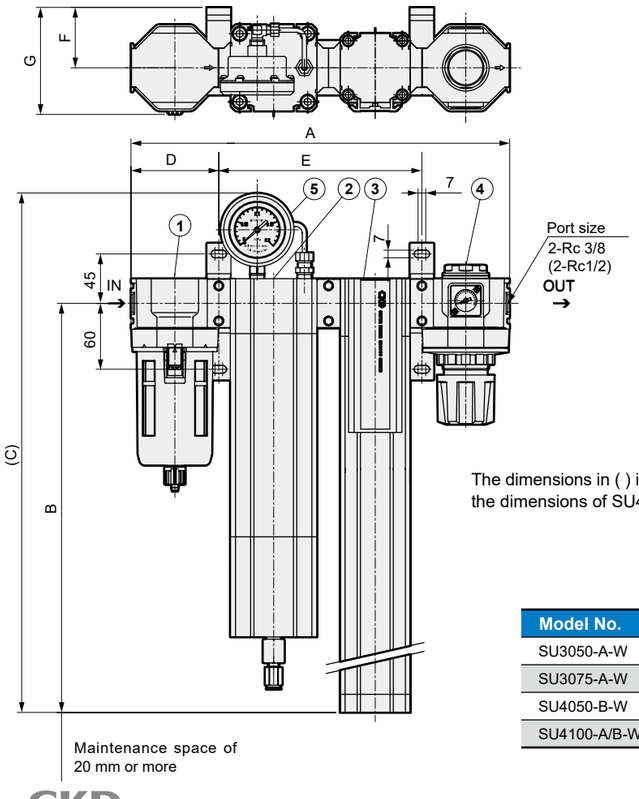
Dimensions

●SU3015-A/B-W, SU3025-A/B-W, SU3035-A-W, SU3050-B-W



Model No.	A	B	C	D	E	F	G	Weight (kg)
SU3015-A/B-W	337	193	308	63	211	45	85	3.3
SU3025-A-W	388	293	408	80	228	55	97	4.4
SU3025-B-W	337	293	408	63	211	45	85	3.7
SU3035-A-W	388	393	508	80	228	55	97	4.8
SU3050-B-W	388	543	658	80	228	55	97	5.3

●SU3050-A-W, SU3075-A-W, SU4050-B-W, SU4100-A/B-W



The dimensions in ( ) indicate
the dimensions of SU4000.

Model No.	A	B	C	D	E	F	G	Weight (kg)
SU3050-A-W	345	543	644	80	185	55	97	7.7
SU3075-A-W	345	793	894	80	185	55	97	8.6
SU4050-B-W	360	543	644	80	200	55	106	9.0
SU4100-A/B-W	360	1043	1144	80	200	55	106	11.8

MEMO



Super Dryer (High polymer membrane air dryer)

SD3000, SD4000 Series

Modular design for easy system expansion with peripheral components

- ■Quickly supplies ultra-dry air of -60°C atmospheric dew point.
- ■Suitable for a wide range of applications with 1.5 MPa max. working pressure.
- ●Processing air flow rate: 35 to 890 L/min (ANR)
  (0.7 MPa, atmospheric dew point -40°C)

Model No. Notation

●Super dryer (High polymer membrane air dryer)

SD3015 - A 05 - B

1. Model No.
2. Outlet air atmospheric dew point
3. Inlet air pressure
4. Option

1 Model No.

Code	Description
SD3015	SD3015
SD3025	SD3025
SD3035	SD3035
SD3050	SD3050
SD3075	SD3075
SD4050	SD4050
SD4075	SD4075
SD4100	SD4100

2 Outlet air atmospheric dew point

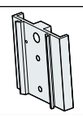
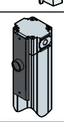
Code	Description
A	−20°C
B	−40°C
C	−60°C

3 Inlet air pressure

	Code	Description
*1	05	0.5 MPa
*1	07	0.7 MPa
*2	14	1.4 MPa (❷Not available when the outlet air atmospheric dew point is "A" (-20°C).)

*1: Select "05" if the inlet air pressure is less than 0.7 MPa, and "07" if it is 0.7 MPa and over and less than 1.4 MPa.
*2: 1.4 MPa inlet air pressure and -20°C outlet air atmospheric dew point cannot be selected together. This is because the atmospheric pressure dew point is -14°C at an inlet temperature of 25°C and pressure of 1.4 MPa, -making the use of a dryer almost meaningless. Select -40°C or -60°C.

4 Option *1

	Code	Description	
	Blank	None	
	B	With bracket	
*2	E	Common exhaust	
*3	X1	IN-OUT reverse	

*1: When ordering several options, indicate the required options in alphabetical order.
*2: Purge air of standard products is released to the atmosphere. If "E" is selected, common exhaust of purge air is enabled.
Size of exhaust port is Rc1/2.
*3: Viewed from the front, a standard product has an air inlet on the left port, while an air outlet on the right port. When "X1" is selected, an air inlet is provided on the right port, while an air outlet is provided on the left port.

Specifications for Rechargeable Batteries (Catalog No.CC-1226AA)

●Design compatible with rechargeable battery manufacturing processes

SD□□□□ - ..... - P4*

*Contact CKD for details.

Specifications

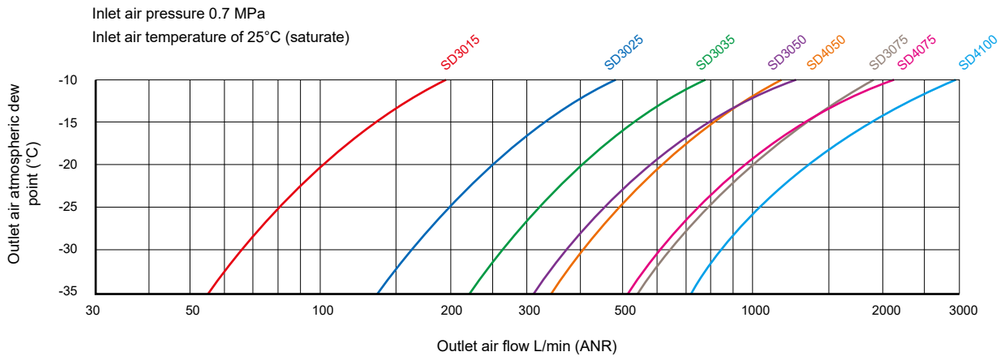
Item		SD3015	SD3025	SD3035	SD3050	SD3075	SD4050	SD4075	SD4100
Range of working conditions	Working fluid	Compressed air							
	Inlet air pressure MPa	0.4 to 1.5							
	Proof pressure MPa	2.25							
	Inlet air temperature °C	5 to 50							
	Ambient temperature °C	5 to 50							
Standard rating	Inlet air pressure dew point °C	25							
	Inlet air pressure MPa	0.7							
	Inlet air temperature °C	25							
	Ambient temperature °C	25							
Outlet air atmospheric dew point		Inlet air flow rate L/min (ANR)	125	300	490	760	1200	680	1100	1500
	−20°C	Outlet air flow rate L/min (ANR)	100	240	390	610	960	570	930	1260
		Purge flow rate L/min (ANR)	25	60	100	150	240	110	170	240
	−40°C	Inlet air flow rate L/min (ANR)	35	90	150	230	370	410	650	890
		Outlet air flow rate L/min (ANR)	25	65	110	170	270	300	480	650
		Purge flow rate L/min (ANR)	10	25	40	60	100	110	170	240
	−60°C	Inlet air flow rate L/min (ANR)	20	55	90	140	220	240	380	520
		Outlet air flow rate L/min (ANR)	10	30	50	80	120	130	210	280
		Purge flow rate L/min (ANR)	10	25	40	60	100	110	170	240

Circuit Diagram Symbol

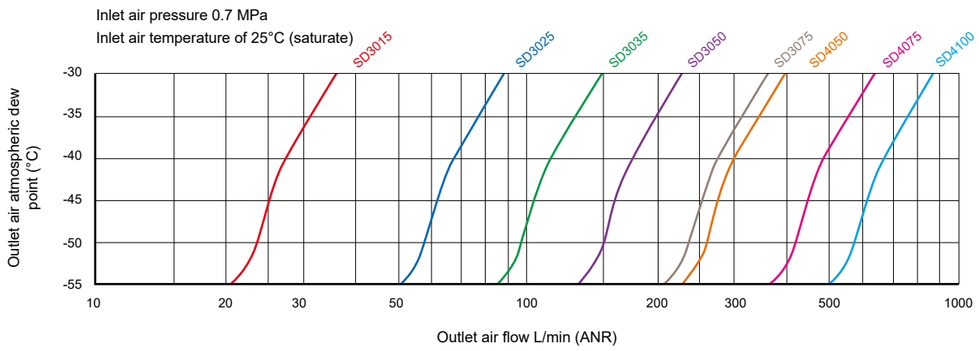


Dew point performance For the correction method, please refer to P. 203.

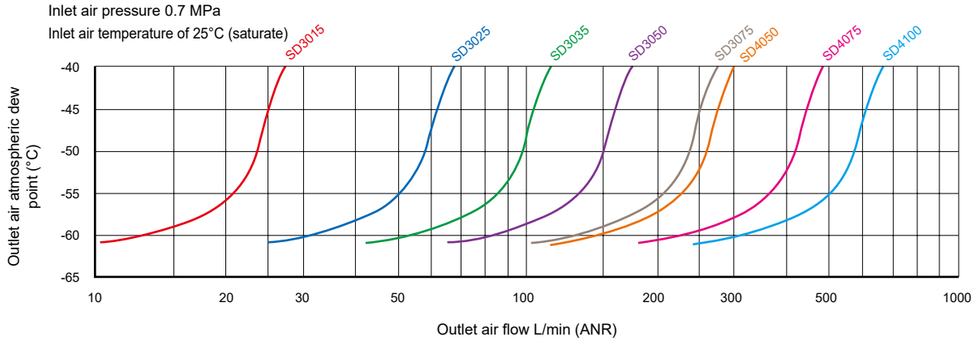
●Dew point performance curve (-20°C specifications)



●Dew point performance curve (-40°C specifications)



●Dew point performance curve (-60°C specifications)



Selection Guide

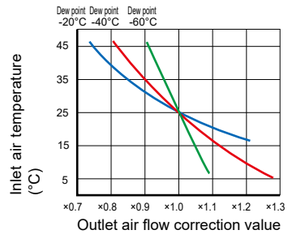
STEP 1 Confirm the working conditions and the rated values listed in the specifications. Working conditions: Inlet air pressure, inlet air temperature, required air flow rate, required atmospheric dew point

STEP 2 Confirm the compensation coefficient for outlet air flow rate affected by inlet air temperature.

(1) Temperature - Outlet air flow rate compensation coefficient

*If the inlet air is air that has passed through a refrigerated air dryer, select the inlet air temperature as 10°C, regardless of the actual temperature.

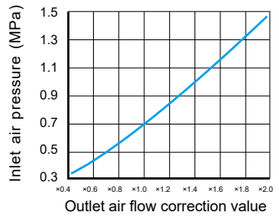
●Inlet temperature - outlet air flow rate correction curve



STEP 3 Confirm the compensation coefficient for outlet air flow rate affected by inlet air pressure.

(2) Pressure - Outlet air flow rate correction coefficient

●Inlet pressure - outlet air flow rate correction curve



STEP 4 **Determine the appropriate model from the outlet air flow rate of each model.**

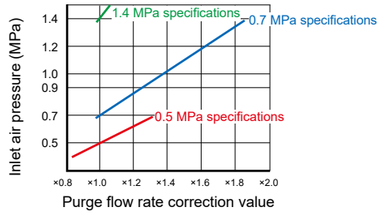
Rated outlet air flow rate × (1) Temperature correction coefficient × (2) Pressure correction coefficient = Corrected outlet air flow rate

Select one with sufficient outlet air flow rate after correction with the above formula.

STEP 5 Confirming purge air flow rate

(3) Pressure - Purge flow rate compensation coefficient

●Inlet pressure - purge flow rate correction curve



STEP 6 **Find the inlet air flow rate from the outlet air flow rate and the purge flow rate of each model.**

Outlet air flow rate obtained in STEP 4 + Purge flow rate obtained in STEP 5 = corrected inlet air flow rate

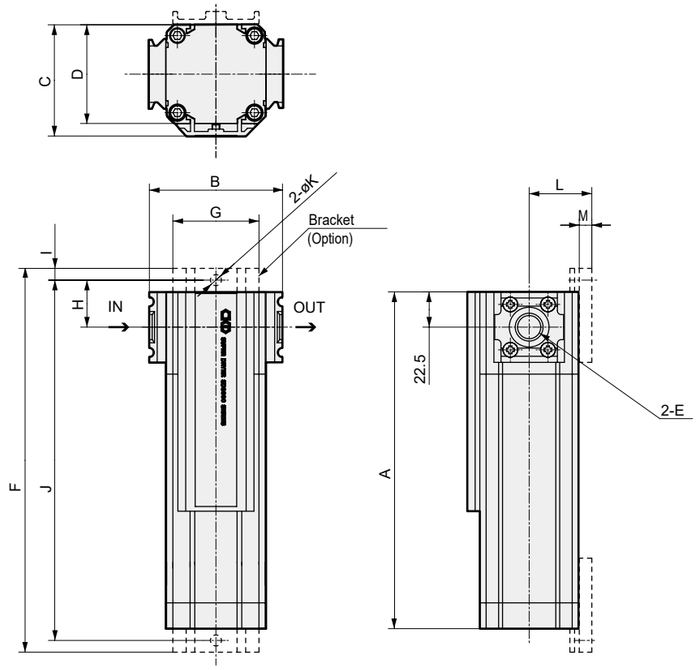
Based on the inlet air flow rate corrected as above, confirm whether the compressor capacity is sufficient.

Example of Calculation

Conditions	Working Conditions	Selecting Conditions	Compensation coefficient for inlet flow rate	Compensation coefficient for purge flow rate
Inlet air temperature	25 to 30 °C	30°C	0.95	-
Inlet air pressure	0.5 to 0.55 MPa	0.5 MPa	0.7	1.0
Outlet atmospheric dew point	-40°C	-40°C	-	-

Substitute the above conditions into the equation above to obtain the outlet air flow rate when using the SD3025-B05.
Outlet air flow rate is 65×0.95×0.7=43.2 L/min (ANR)
Purge flow rate is 25×1.0=25 L/min (ANR)
In this case, the inlet air flow rate is 43.2+25=68.2 L/min (ANR).

Dimensions



Model No.	A	B	C	D	E	Weight (kg)	Bracket relational dimensions							
							F	G	H	I	J	K	L	M
SD3015	215	85	71	63	Rc 3/8	1.4	245	55	30	7.5	230	7	40	8
SD3025	315	85	71	63	Rc 3/8	1.8	345	55	30	7.5	330	7	40	8
SD3035	415	85	71	63	Rc 3/8	2.2	445	55	30	7.5	430	7	40	8
SD3050	565	85	71	63	Rc 3/8	2.7	595	55	30	7.5	580	7	40	8
SD3075	815	85	71	63	Rc 3/8	3.6	845	55	30	7.5	830	7	40	8
SD4050	565	100	90	79	Rc 1/2	4.0	605	70	32.5	10	585	9	50	10
SD4075	815	100	90	79	Rc 1/2	5.4	855	70	32.5	10	835	9	50	10
SD4100	1065	100	90	79	Rc 1/2	6.8	1105	70	32.5	10	1085	9	50	10

For maintenance parts, refer to the CKD Components Product site
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." →Maintenance Parts

MEMO



Super Dryer Modular Series

SDM4000 Series

Large flow rate achieved with polymer separation membrane

- A single unit can support up to 75 kW compressor.
- Joined headers enable flexible expansion according to the use conditions.
- Suitable for area where explosion must strictly be prevented.
- Processing air flow rate: 1.36 to 12.4 m³/min. (ANR) (0.7 MPa, atmospheric dew point -20°C)

Model No. Notation

●Super dryer (High polymer membrane air dryer)

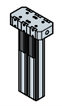
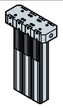
SDM4050 - 2 - A - 05 - B

❶Model No. ❷Station No. ❸Outlet air atmospheric dew point ❹Inlet air pressure ❺Option

❶Model No.

Code	Description
SDM4050	SDM4050
SDM4075	SDM4075
SDM4100	SDM4100

❷Station No.

Code	Description	
2.	2 stations	
3	3 stations	
6	6 stations	
8	8 stations	
10	10 stations (not available for SDM4100)	

❸Outlet air atmospheric dew point

Code	Description
A	−20°C
B	−40°C
C	−60°C

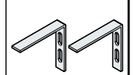
❹Inlet air pressure

	Code	Description
*1	05	0.5 MPa
*1	07	0.7 MPa
*2	14	1.4 MPa (❸Not available when the outlet air atmospheric dew point is "A" (-20°C).)

*1: If inlet air pressure is less than 0.7 MPa, indicate "05"; for 0.7 MPa and over, indicate "07".

*2: 1.4 MPa inlet air pressure and -20°C outlet air atmospheric dew point cannot be selected together. As the atmospheric dew point will be -14°C when the inlet air temperature is 25°C and the pressure is 1.4 MPa, there is no point in using the dryer. Select -40°C or -60°C type.

❺Option

Code	Description	
Blank	None	
B	With bracket	

Note: The product will be floor-mounted type without bracket for 6 stations or more.

Specifications

Item		SDM 4050-2	SDM 4050-3	SDM 4075-2	SDM 4075-3	SDM 4100-2	SDM 4100-3	SDM 4050-6	SDM 4050-8	SDM 4050-10	SDM 4075-6	SDM 4075-8	SDM 4075-10	SDM 4100-6	SDM 4100-8
Range of working conditions	Working fluid	Compressed air													
	Inlet air pressure MPa	0.4 to 1.5													
	Proof pressure MPa	2.25													
	Inlet air temperature °C	5 to 50													
	Ambient temperature °C	5 to 50													
Standard rating	Outlet air atmospheric dew point°C	-20													
	Inlet air flow rate m³/min (ANR)	1.36	2.04	2.20	3.30	3.00	4.50	4.08	5.44	6.80	6.60	8.80	11.00	9.20	12.40
	Outlet air flow m³/min (ANR)	1.14	1.71	1.86	2.79	2.52	3.78	3.42	4.56	5.70	5.58	7.44	9.30	7.76	10.48
	Purge flow rate m³/min (ANR)	0.22	0.33	0.34	0.51	0.48	0.72	0.66	0.88	1.10	1.02	1.36	1.70	1.44	1.92
	Inlet air pressure dew point°C	25													
	Inlet air pressure MPa	0.7													
	Inlet air temperature °C	25													
	Ambient temperature °C	25													

Note: The product will be floor-mounted for 6 stations or more.

Circuit Diagram Symbol



Selection guide by compressor capacity

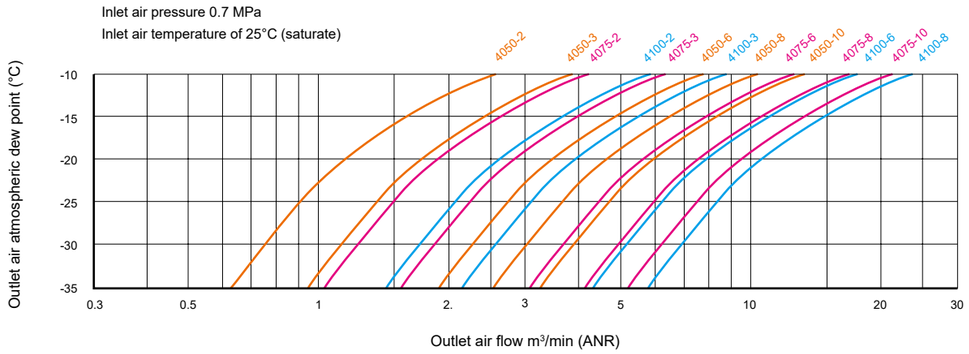
Inlet air pressure 0.7 MPa
Inlet air temperature of 25°C (saturate) m³/min (ANR)

Compatible compressor kw / atmospheric dew point		3.7	5.5	7.5	11	15	22	37	55	75
-20°C	Model No.			SDM4050-2-A07	SDM4075-2-A07	SDM4075-3-A07	SDM4050-6-A07	SDM4075-6-A07	SDM4100-6-A07	SDM4100-8-A07
	Inlet air flow rate			1.36	2.20	3.30	4.08	6.60	9.20	12.40
	Outlet air flow			1.14	1.86	2.79	3.42	5.58	7.76	10.48
-40°C	Model No.		SDM4050-2-B07	SDM4075-2-B07	SDM4075-3-B07	SDM4100-3-B07	SDM4075-6-B07	SDM4075-10-B07		
	Inlet air flow rate		0.82	1.30	1.95	2.67	3.90	6.50		
	Outlet air flow		0.60	0.96	1.44	1.95	2.88	4.80		
-60°C	Model No.	SDM4050-2-C07	SDM4075-2-C07	SDM4075-3-C07	SDM4100-3-C07	SDM4075-8-C07	SDM4075-10-C07			
	Inlet air flow rate	0.50	0.76	1.14	1.65	3.04	3.80			
	Outlet air flow	0.28	0.42	0.63	0.93	1.68	2.10			

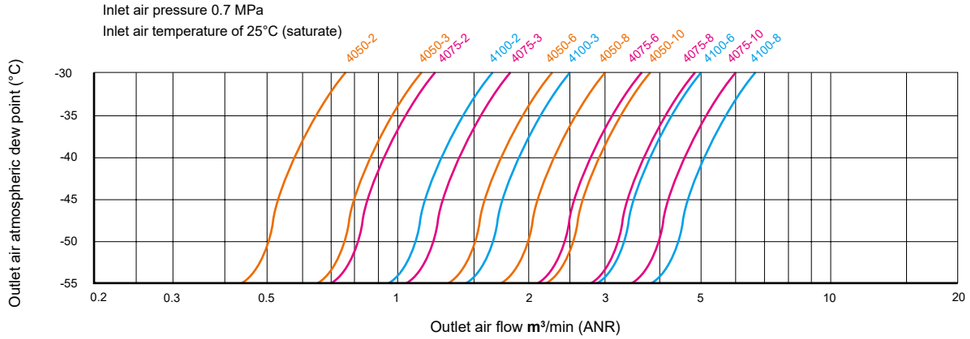
With different flow rate and conditions, select the model based on the dew point performance curve on page 200 according to the required outlet air flow rate.

Dew point performance For the correction method, please refer to P. 203.

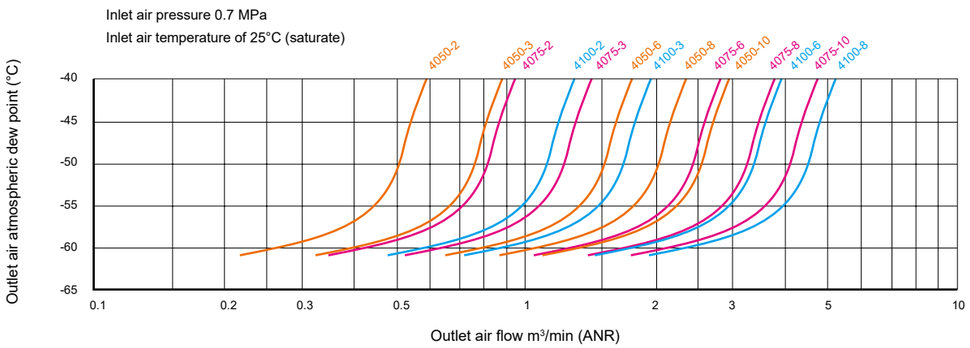
●Dew point performance curve (-20°C specifications)



●Dew point performance curve (-40°C specifications)



●Dew point performance curve (-60°C specifications)



Selection Guide

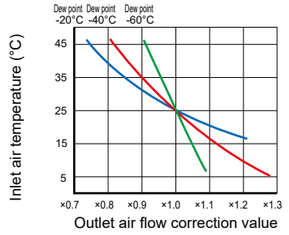
STEP 1 Confirm the working conditions and the rated values listed in the specifications.
Working conditions: Inlet air pressure, inlet air temperature, required air flow rate, required atmospheric dew point

STEP 2 Confirm the compensation coefficient for outlet air flow rate affected by inlet air temperature.

(1) Temperature - Outlet air flow rate compensation coefficient

*If the inlet air is air that has passed through a refrigerated air dryer, select the inlet air temperature as 10°C, regardless of the actual temperature.

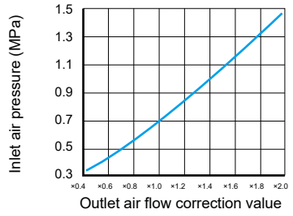
●Inlet temperature - outlet air flow rate correction curve



STEP 3 Confirm the compensation coefficient for outlet air flow rate affected by inlet air pressure.

(2) Pressure - Outlet air flow rate correction coefficient

●Inlet pressure - outlet air flow rate correction curve

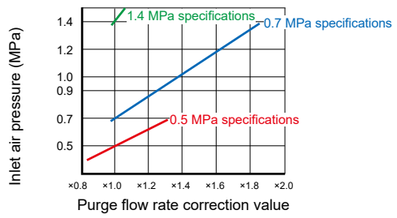


STEP 4 **Determine the appropriate model from the outlet air flow rate of each model.**
Rated outlet air flow rate × (1) Temperature correction coefficient × (2) Pressure correction coefficient = Corrected outlet air flow rate
Select one with sufficient outlet air flow rate after correction with the above formula.

STEP 5 Confirming purge air flow rate

(3) Pressure - Purge flow rate compensation coefficient

●Inlet pressure - purge flow rate correction curve



STEP 6 **Find the inlet air flow rate from the outlet air flow rate and the purge flow rate of each model.**
Outlet air flow rate obtained in STEP 4 + Purge flow rate obtained in STEP 5 = corrected inlet air flow rate
Based on the inlet air flow rate corrected as above, confirm whether the compressor capacity is sufficient.

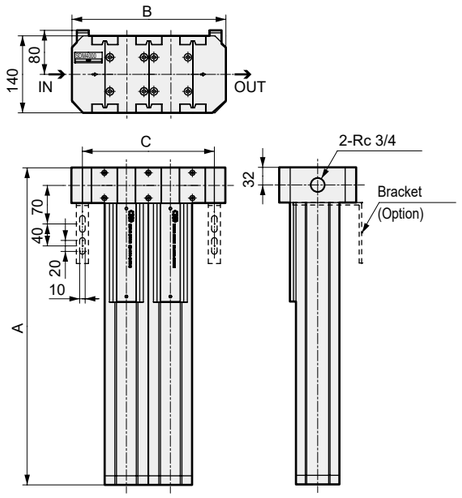
Example of Calculation

Conditions	Working Conditions	Selecting Conditions	Compensation coefficient for inlet flow rate	Compensation coefficient for purge flow rate
Inlet air temperature	25 to 30 °C	30°C	0.95	-
Inlet air pressure	0.5 to 0.55 MPa	0.5 MPa	0.7	1.0
Outlet atmospheric dew point	-40°C	-40°C	-	-

Substitute the above conditions into the equation above to obtain the outlet air flow rate when using the SDM4050-2-B05.
Outlet air flow rate is 600×0.95×0.7=399 L/min (ANR)
Purge flow rate is 220×1=220 L/min (ANR)
In this case, the inlet air flow rate is 399+220=619 L/min (ANR).

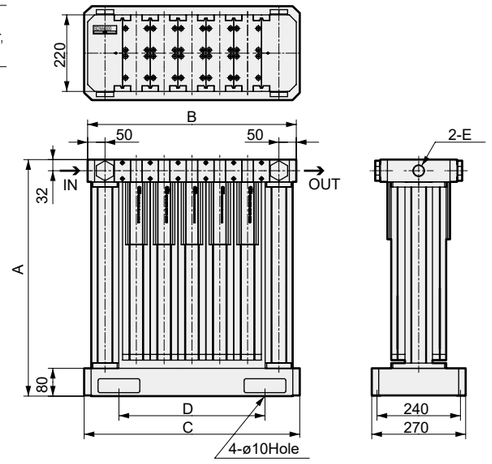
Dimensions

●2, 3 stations



Model No.	A	B	C	Weight (kg)
SDM4050-2	577	280	240	12
SDM4050-3	577	360	320	17
SDM4075-2	827	280	240	15
SDM4075-3	827	360	320	21
SDM4100-2	1077	280	240	18
SDM4100-3	1077	360	320	25

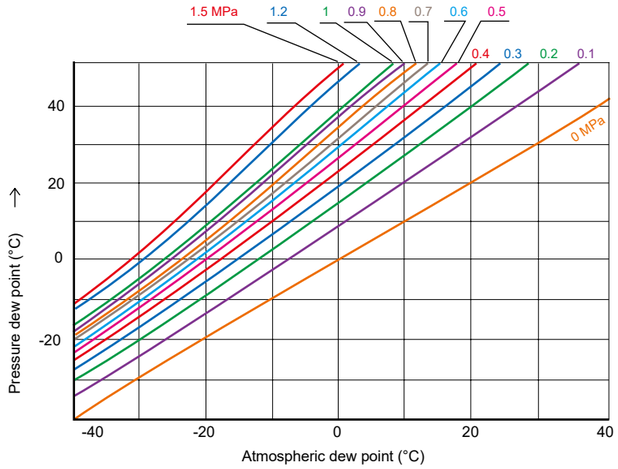
●6, 8, 10 stations



Model No.	A	B	C	D	E	Weight (kg)
SDM4050-6	680	440	460	260	Rc1	41
SDM4050-8	680	520	540	340	Rc1	50
SDM4050-10	680	600	620	420	Rc1	59
SDM4075-6	930	440	460	260	Rc1-1/2	52
SDM4075-8	930	520	540	340	Rc1-1/2	64
SDM4075-10	930	600	620	420	Rc1-1/2	76
SDM4100-6	1180	440	460	260	Rc1-1/2	63
SDM4100-8	1180	520	540	340	Rc1-1/2	78

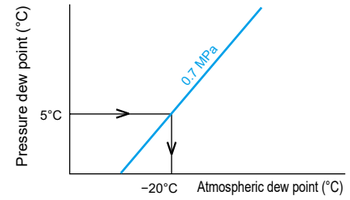
For maintenance parts, refer to the CKD Components Product site
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." →Maintenance Parts

Pressure dew point - atmospheric dew point conversion table



Reading pressure dew point - atmospheric dew point conversion table

This table,The pressure dew point at each pressure is changed to the atmospheric dew point, or when converting the atmospheric dew point into a pressure dew point.
Example: Obtain the atmospheric dew point when the pressure is 0.7 MPa and the pressure dew point is 5°C.



According to the above table, when the pressure is 0.7 MPa, the 5°C pressure dew point is converted into a -20°C atmospheric dew point.

Safety Precautions

Be sure to read this section before use.
For general pneumatic components precautions, refer to Intro 15.

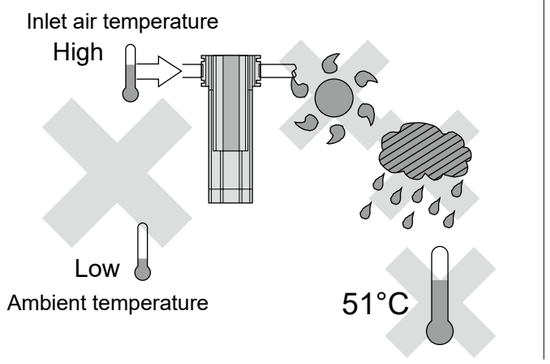
Product-specific cautions: Super dryer SU/SD Series

Design / Selection

⚠CAUTION

■Working environment

- Avoid using in a state where the inlet air temperature is higher than the ambient temperature. (Water drops may form and accumulate inside if the super dryer body cools)
- Avoid installing this product where it will be subject to direct sunlight or rain.
- As the bowl material is polycarbonate, avoid use with the following chemicals or in an atmosphere containing these chemicals. [SUSeries]
- Avoid use in environments where ozone is generated.
- Avoid use where vibration and impact are present.



■The oil mist filter comes to the end of its service life when the pressure drops to 0.07 MPa or after one year of use, whichever comes first. Replace the mantle with a new one at the end of its life. (Check the pressure drop with the differential pressure gauge.) (Do not touch the urethane rubber foam layer when replacing the mantel) [SUSeries]

■The life of the membrane module of the Super Dryer varies depending on the conditions of use, but it should be replaced after 3 to 5 years.

■Be aware that adequate time is necessary to obtain a required dew point after compressed air is supplied.

Types of Chemicals	Categories of Chemicals	Main Products of Chemicals	General Applications	Polycarbonate
Inorganic compounds	Acids	Hydrochloric acid, sulfuric acid, fluorine, phosphoric acid, chromic acid, etc.	Acid washing of metals, acidic degreasing solutions, Coating treatment solution	×
	Alkalines	Caustic soda, caustic potash, calcium hydroxide, aqueous ammonia, sodium carbonate, etc.	Alkaline degreasing solution for metals	×
	Inorganic salts	Sodium sulfide, potassium nitrate, potassium bichromate, sodium sulfate, etc.		×
Organic compounds	Aromatic hydrocarbons	Benzene, toluene, xylene, ethyl benzene, styrene, etc.	Contained in paint thinner (benzene, toluene, xylene)	×
	Chlorinated aliphatic hydrocarbons	Methyl chloride, ethylene chloride, methylene chloride, acetylene chloride, chloroform, trichlene, perchlene, carbon tetrachloride	Organic Solvent-Based Washing Solution for Metals(Trichloroethylene, Tetrachloroethylene, Carbon Tetrachloride, etc.)	×
	Chlorinated aromatic hydrocarbons	Chlorobenzene, dichlorobenzene, benzene hexachloride (B/H/C), etc.	Agricultural chemicals	×
	Petroleum components	Solvent, naphtha, gasoline		×
	Alcohols	Methanol, ethanol, cyclohexanol, benzyl alcohol	Used as an antifreeze agent	×
	Phenol	Carbolic acid, cresol, naphthol, etc.	Disinfectant solution	×
	Ethers	Methyl ether, methyl ethyl ether, ethyl ether	Brake fluid additive	×
	Ketones	Acetone, methyl ethyl ketone, cyclohexanone, acetophenone, etc.		×
	Carboxylic acids	Formic acid, acetic acid, butyl acid, acrylic acid, oxalic acid, phthalic acid, etc.	Dyes/oxalic acid are used for aluminum treatment Phthalic Acid Is Used as a Paint Base	×
	Phosphate ester	Dimethyl phthalate (DMP), diethyl phthalate (DEP), dibutyl phthalate (DBP), dioctyl phthalate (DOP)	Lubricant, synthetic coolant, rust preventing agent additives Used as plasticizer for synthetic resin	×
	Oxyacids	Glycolic acid, lactic acid, malic acid, citric acid, tartaric acid		×
	Nitro compounds	Nitromethane, nitroethane, nitroethylene, nitrobenzene, etc.		×
	Amines	Methylamine, dimethylamine, ethylamine, aniline, acetanilide, etc.	Brake fluid additive	×
	Nitriles	Acetonitrile, acrylonitrile, benzonitrile, acetoisonitrile, etc.	Raw material for nitrile rubber	×

For precautions during mounting, installation, adjustment, use and maintenance, refer to the CKD Components Product Site (https://www.ckd.co.jp/kiki/en/) → Model No. → Instruction Manual

Main Line Filters

■ **Main Line Components**

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Large Main Line Filter
Large Main Line Filter Device Recommended System Configuration 240
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AF5000 Series (oil-free) 265

Medium / Large Filter

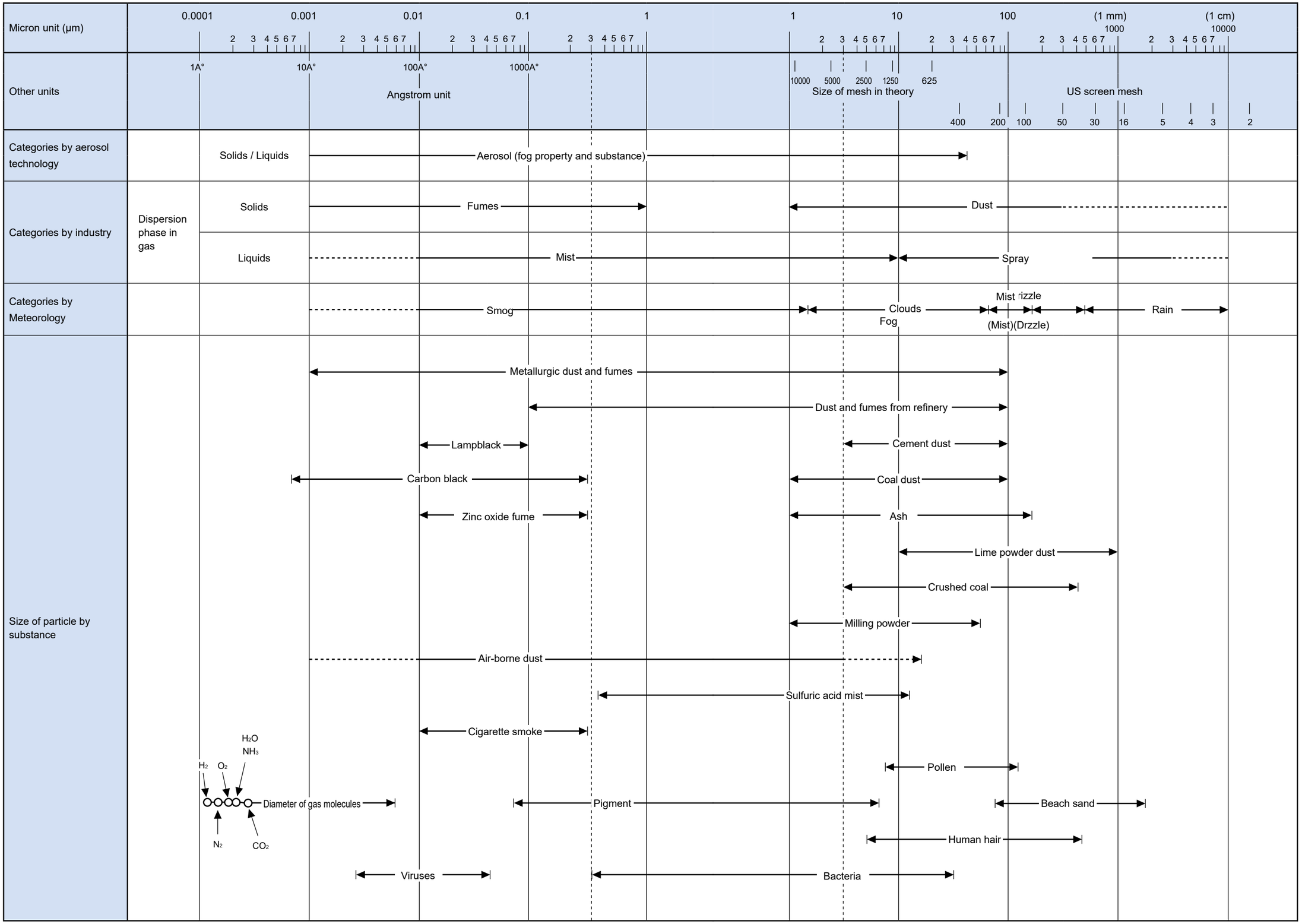
Note: This list is for selection guide. Refer to the page for selection, and select a model after checking installation and operating conditions.

Series		Medium (general purpose)			Medium (oil-free)			
		AF2-□P	AF2-□M	AF2-□X	AF4000P	AF4000S	AF4000M	AF4000X
					Stainless steel vessel			
Specs. Applicability Air Compressor kW (reference) / Processing flow rate m³/min		• Dust 1 μm	• Dust 0.01 μm • Oil content 0.01 mg/m³	• Oil content 0.003 mg/m³ • Deodorizing	• Dust 5 μm	• Dust 1 μm	• Dust 0.01 μm • Oil content 0.01 mg/m³	• Oil content 0.003 mg/m³ • Deodorizing
0.75	0.15							
1.5	0.22							
2.2	0.35							
3.7	0.5							
5.5	0.825							
7.5	1.0							
11	1.5							
15	3.7/4.95	●(4.95)	●(4.95)	●(4.95)				
22	3.7/4.95	●(4.95)	●(4.95)	●(4.95)	●(3.7)	●(3.7)	●(3.7)	●(3.7)
37	6.2/7.93	●(7.93)	●(7.93)	●(7.93)	●(6.2)	●(6.2)	●(6.2)	●(6.2)
55	10/11.3	●(11.3)	●(11.3)	●(11.3)	●(10)	●(10)	●(10)	●(10)
75	12.8/13	●(12.8)	●(12.8)	●(12.8)	●(13)	●(13)	●(13)	●(13)
95	16/18.8/19.8	●(19.8)	●(19.8)	●(19.8)		●(18.8)	●(18.8)	●(18.8)
120	24.1	●	●	●				
150	32							
200								
250	48							
300	64							
400	80							
480	96							
-	128							
710	160							
960	192							
1450	256							
Differential pressure gauge		● Standard Equipment	● Standard Equipment	–	● Option	● Option	● Option	● Option
Differential pressure alarm output		–	–	–	–	–	–	–
Automatic Condensate Drain		Float	Float	–	Float	Float	Float	–
Low pressure loss element		● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment
Residual pressure exhaust valve		● Standard Equipment	● Standard Equipment	● Standard Equipment	● Included in auto-drain	● Included in auto-drain	● Included in auto-drain	–
Specified color paint		×	×	×	–	–	–	–
Companion flange included		×	×	×	–	–	–	–
Foundation bolts and nuts included		×	×	×	–	–	–	–
Foundation bolts and nuts included (SUS)		×	×	×	–	–	–	–
Outdoor specifications		×	×	×	–	–	–	–
IN-OUT Reverse Direction		–	–	–	–	–	–	–
Product Photo		×	×	×	–	–	–	–
Appearance								
Listed page		222			232			

Note: Contact CKD for Special-order products, sales delivery dates, prices, etc.

Series		Large (regular)				Large (oil-free)			
		AF3000P	AF3000S	AF3000M	AF3000X	AF5000P	AF5000S	AF5000M	AF5000X
						Stainless steel vessel			
Specs. Applicability Air Compressor kW (reference) / Processing flow rate m³/min		• Dust 3 μm	• Dust 0.3 μm • Oil content 0.5 mg/m³	• Dust 0.01 μm • Oil content 0.01 mg/m³	• Oil content 0.03 mg/m³ • Deodorizing	• Dust 3 μm	• Dust 0.3 μm • Oil content 0.5 mg/m³	• Dust 0.01 μm • Oil content 0.01 mg/m³	• Oil content 0.003 mg/m³ • Deodorizing
0.75	0.15								
1.5	0.22								
2.2	0.35								
3.7	0.5								
5.5	0.825								
7.5	1.0								
11	1.5								
15	3.7/4.95								
22	3.7/4.95								
37	6.2/7.93								
55	10/11.3								
75	12.8/13								
95	16/17/18.8	●(16)	●(16)	●(16)	●(16)	●(16)	●(16)	●(16)	●(16)
120	24.1								
150	32	●	●	●	●	●	●	●	●
200									
250	48	●	●	●	●	●	●	●	●
300	64	●	●	●	●	●	●	●	●
400	80	●	●	●	●	●	●	●	●
480	96	●	●	●	●	●	●	●	●
-	128	●	●	●	●	●	●	●	●
710	160	●	●	●	●	●	●	●	●
960	192	●	●	●	●	●	●	●	●
1450	256	●	●	●	●	●	●	●	●
Differential pressure gauge		● Standard Equipment	● Standard Equipment	● Standard Equipment	–	● Standard Equipment	● Standard Equipment	● Standard Equipment	–
Differential pressure alarm output		▲ Special-order product	▲ Special-order product	▲ Special-order product	–	● Standard Equipment	● Standard Equipment	● Standard Equipment	–
Automatic Condensate Drain		Float	Float	Float	–	Electronic (with alarm output)	Electronic (with alarm output)	Float	–
Low pressure loss element		● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment	● Standard Equipment
Residual pressure exhaust valve		● Included in auto-drain	● Included in auto-drain	● Included in auto-drain	×	● Included in auto-drain	● Included in auto-drain	● Included in auto-drain	● Standard Equipment
Specified color paint		▲ Special-order product	▲ Special-order product	▲ Special-order product	▲ Special-order product	–	–	–	–
Companion flange included		● Option	● Option	● Option	● Option	● Option	● Option	● Option	● Option
Foundation bolts and nuts included		● Option	● Option	● Option	● Option	● Option	● Option	● Option	● Option
Foundation bolts and nuts included (SUS)		● Option	● Option	● Option	● Option	● Option	● Option	● Option	● Option
Outdoor specifications		● Option	● Option	● Option	● Option	▲ Special-order product	▲ Special-order product	▲ Special-order product	▲ Special-order product
IN-OUT Reverse Direction		● Option	● Option	● Option	● Option	● Option	● Option	● Option	● Option
Product Photo		● Option	● Option	● Option	● Option	● Option	● Option	● Option	● Option
Appearance									
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Guide to particle sizes



Air Filters
Guide to particle sizes
Main Line Components
Refrigeration Dryers
Desiccant Dryers
High Polymer Membrane Dryers
Main Line Filters
Drain discharger, etc.
Ending

Replacing the element

1 ⚠ Spent element must be disposed properly as industrial waste. The filter cannot be regenerated and reused. Also, if the filter contains toxic or harmful substances, dispose of substances based on local laws.

2 Replace the element based on the following replacement standards.

P-type: Replace when the differential pressure indicator in the filter body reaches the red zone or after one year of use, whichever comes first. If use is continued while the indicator is in the red zone, the filter element could be damaged by the pressure difference, Also, pressure required for device operation may not be attained.

S-type, M-type:
Replace when the differential pressure indicator in the filter body reaches the red zone or after one year of use, whichever comes first. If use is continued while the indicator is beyond the red zone, the filter element could be damaged by the pressure difference. Also, pressure required for device operation may not be attained. When using the filter to remove oil, if the indicator is in the red zone and it is still being used, the oil captured by the element will flow out into the air again, and be carried to the secondary side. This will inhibit oil removal.

X-type: Replace after the period stipulated for each model, or when the deodorizing effect is lost. The X-type filter adsorbs odorous molecules with adsorbent, so the service life cannot be detected by the element's pressure difference. Judge the status by odor or manage the service life based on usage time.

⚠ Valve operation at start and end of daily operations

If the large ball valve, etc., is opened when starting and ending operations, pay attention to the following and open the valve slowly.

- If the large bore size valve is opened suddenly, an excessive flow rate several-fold larger than set components specifications may flow and damage the internal structure.
- If the large bore size valve is opened suddenly to discharge any residual pressure from the air line at the end of daily operations, excessive amounts of flow may result as above and reverse flow could occur, damaging devices.
- Note that the differential pressure gage can be easily damaged by the increase of pressure loss due to an excessive flow rate (proportional to the square of the flow rate), and reverse pressure caused by reverse flow.

Recommended Replacement Models for Flange-Type Air Filters

As of November 2024

Production and sales of the "Old Products" listed in the table below have been discontinued.
Please select a replacement model from the "Current Products."

* This comparison table is for reference only. When selecting a replacement, consider the current operating pressure, inlet air temperature, ambient temperature, required dew point, etc., to ensure adequate performance.

Air Filter Model Number Comparison Table

Class Equivalent to 3 µm

Old Product		Current Product	
Flow rate (m³/min)	Model No.	Flow rate (m³/min)	Model No.
12	1113-16C-MD		
		16	AF3016P-50
20	1114-40C-MD		
		32	AF3032P-80
40	1123-48C-MD		
		48	AF3048P-100
60	1128-64C-MD		
		64	AF3064P-100
		80	AF3080P-150
		96	AF3096P-150
		128	AF3128P-150
		160	AF3160P-200
		192	AF3192P-200
		256	AF3256P-200

Class Equivalent to 0.3 µm

Old Product		Current Product	
Flow rate (m³/min)	Model No.	Flow rate (m³/min)	Model No.
7.2	1113-16C-MDY		
9.5	1151J-16C-MD		
		16	AF3016S-50
19	1152-24C-MD		
28.5	1152J-32C-MD		
		32	AF3032S-80
38	1153-32C-MD		
		48	AF3048S-100
57	1154-32C-MD		
		64	AF3064S-100
76	1155-48C-MD		
		80	AF3080S-150
95	1155J-48C-MD	96	AF3096S-150
114	1156-48C-MD		
		128	AF3128S-150
152	1157-48C-MD		
		160	AF3160S-200
190	1158-64C-MD	192	AF3192S-200
		256	AF3256S-200

Class equivalent to 0.01 µm

Old Product		Current Product	
Flow rate (m³/min)	Model No.	Flow rate (m³/min)	Model No.
11.9	1251J-16C-MD		
		16	AF3016M-50
23.8	1252-24C-MD		
		32	AF3032M-80
35.7	1252J-32C-MD		
47.6	1253-32C-MD	48	AF3048M-100
		64	AF3064M-100
71.4	1254-32C-MD		
		80	AF3080M-150
95.2	1255-48C-MD	96	AF3096M-150
119	1255J-48C-MD		
		128	AF3128M-150
142.8	1256-48C-MD		
		160	AF3160M-200
190.4	1257-48C-MD	192	AF3192M-200
238	1258-64C-MD		
		256	AF3256M-200

Class equivalent to deodorizing

Old Product		Current Product	
Flow rate (m³/min)	Model No.	Flow rate (m³/min)	Model No.
11.9	1251J-16C-MX		
		16	AF3016X-50
23.8	1252-24C-MX		
		32	AF3032X-80
35.7	1252J-32C-MX		
47.6	1253-32C-MX	48	AF3048X-100
		64	AF3064X-100
71.4	1254-32C-MX		
		80	AF3080X-150
95.2	1255-48C-MX	96	AF3096X-150
119	1255J-48C-MX		
		128	AF3128X-150
142.8	1256-48C-MX		
		160	AF3160X-200
190.4	1257-48C-MX	192	AF3192X-200
238	1258-64C-MX		
		256	AF3256X-200

indicates the general purpose type. Processing flow rates are approximate. (based on 0.7 MPa inlet pressure and 0.01 MPa pressure drop, but may vary slightly depending on the model).

Medium Main Line Filter

■ Main Line Components

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Medium main line filter device recommended system configuration 216

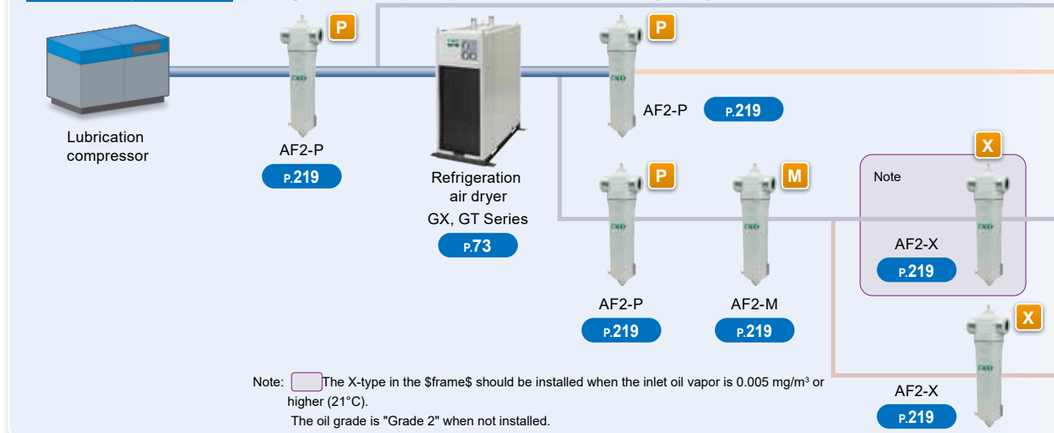
General Purpose Type
AF2 Series 219

For oil-free
AF4000 Series 229

Recommended system configuration for Main Line Filter Components

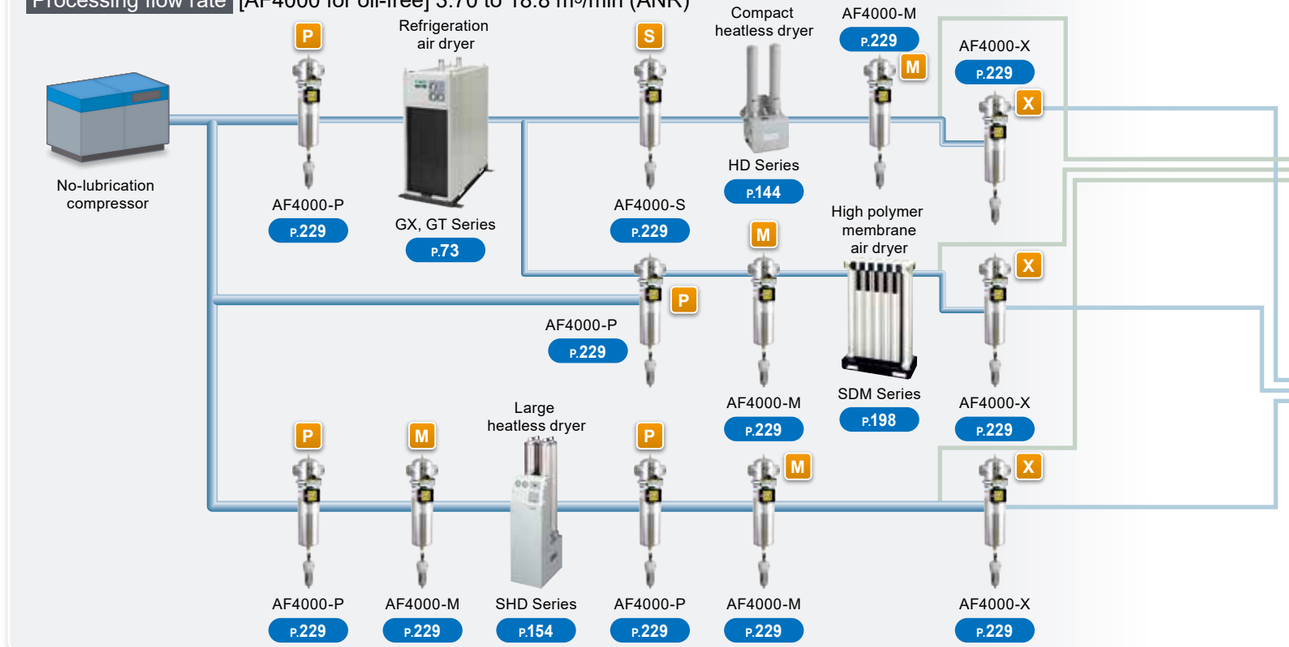
Medium Main Line Filter

Processing flow rate [AF2 general purpose] 4.95 to 24.1 m³/min (ANR)



Note: ☐ The X-type in the $frame$ should be installed when the inlet oil vapor is 0.005 mg/m³ or higher (21°C).
The oil grade is "Grade 2" when not installed.

Processing flow rate [AF4000 for oil-free] 3.70 to 18.8 m³/min (ANR)



AF2 Series Variations

Removes oil mist and solids
Protects Expensive Pneumatic Components.
- Removes particles 1 μm and larger
- Removes oil to a secondary oil content of 0.3 mg/m³ at 21°C.

P TYPE

High-performance removal of oil mist and solids.
For Pneumatic Circuits Which Prohibit Passage of Oil.
- Removes particles 0.01 μm and larger
- Removes oil to a secondary oil content of 0.1 mg/m³ at 21°C.

M TYPE

Removes oil mist and odors
Protects Expensive Pneumatic Components.
- Suction by activated carbon
- Removes oil and odors to a secondary oil content of 0.003 mg/m³ at 21°C.

X TYPE

*1: If your conditions are different, refer to the specifications in the catalog in order to select a model.
*2: This example of system selection is based on an air-cooling refrigeration air dryer. When making a selection based on an air-cooling refrigeration air dryer, the model No. of the filter may vary since the standard processing air flow rate may differ. Contact CKD Sales for details.
*3: Air filter and oil mist filter are to be used where the inlet air temperature is 60°C or less, and X-type where the inlet air temperature is 30°C or less. If air temperature from the secondary side of the refrigeration air dryer is high, keep enough distance from the refrigeration air dryer to maintain a temperature no greater than the inlet air temperature.
*4: This system cannot be used for high pressure specifications (1 to 1.6 MPa). In that case, contact CKD Sales.

AF4000 Series Variations

Removing Water Drops Solid Particle Removal
Ideal for use as a pre-filter for air dryers.
- Removes particles 5 μm and larger
- Water separation efficiency 99%

P TYPE

Solid Particle Removal
Protects Expensive Pneumatic Components.
- Removes particles 1 μm and larger

S TYPE

High-performance removal of oil mist and solids
For Pneumatic Circuits Which Prohibit Passage of Oil.
- Removes particles 0.01 μm and larger
- Removes oil content up to secondary side oil concentration of 0.01 mg/m³ (20°C)

M TYPE

Removes oil vapor and odors
For pneumatic circuits which prohibit passage of odors
- Activated carbon fiber adsorption
- Removes oil vapor and odors up to secondary side oil concentration of 0.003 mg/m³ (20°C)

X TYPE

*5: Use anti-rust processed materials for piping (zinc plated pipe, lined pipe or stainless steel pipe).
*6: If there is a possibility of a large instantaneous air flow rate greater than the amount of air treated by the refrigeration air dryer, install a tank on the secondary side of the refrigeration air dryer. Installing a tank supplies stable moisture removed air.
*7: The air filter at the secondary side of the refrigeration air dryer can be used as a pre-filter before an oil mist filter.
*8: Depending on working conditions, condensation may form on the inside of the refrigeration air dryer and drip to the floor. To prevent water drops from flowing out, install a drain-pan, etc., before installing the dryer.
*9: Please feel free to consult with our sales staff when considering energy-saving systems.
*10: Install a filter immediately before the equipment to be used to remove contaminants existing in the piping.

Air Quality	Applications	Impurities in the Air			ISO 8573-1 compressed air purity grade
		Individual particles	Moisture	Oil content	
Dewatered Air **Coarse dust removed air**	Air for cleaning (dry air not required)	1 μm	–	–	2: -: -
General Dry Air	General Pneumatic Components General Pneumatic Tools Labor-Saving Components Pneumatic Jigs and Tools Air Chuck	1 μm	Pressure dew point 10°C	0.6 mg/m³	2.6.3
			Pressure dew point 7°C		2.5.3
Dry Air (oil-free)	Instrumentation Measurement Sequence control Painted	0.01 μm	Pressure dew point 10°C	0.01 mg/m³ (0.003 mg/m³)	1.6.1
			Pressure dew point 7°C		1.5.1
Dry air (odorless)	Food and Pharmaceutical Processes (Stirring, dry blowing, packaging, brewing, pressure-feeding male, filling) Cosmetic Manufacturing Processes *If the product directly contacts the workpiece, it is recommended to install a bacteria-removing filter.	0.01 μm	Pressure dew point 10°C	0.003 mg/m³	1.6.1
			Pressure dew point 7°C		1.5.1
Ultra dry air (oil-free)	Ozone generator Powder transfer Drying furnace gas Drying the insulation gas of a high-voltage generator Drying computer rooms Centralized control instrumentation Liquid crystal panel manufacturing Chemical plants Painted	0.01 μm	Pressure dew point -20°C	0.01 mg/m³	1.3.1
			Pressure dew point -40°C		1.2.1
			Pressure dew point -60°C		1.2.1
Ultra-Dry Air (odorless)	Food and Pharmaceutical Processes (Stirring, dry blowing, packaging, brewing, pressure-feeding male, filling) Cosmetic Manufacturing Processes *If the product directly contacts the workpiece, it is recommended to install a bacteria-removing filter.	0.01 μm	Pressure dew point -20°C	0.003 mg/m³	1.3.1
			Pressure dew point -40°C		1.2.1
			Pressure dew point -60°C		1.2.1

*1. The system No. is based on the class below. X not found in the table indicates odor removal; and "–" indicates no specification.

ISO 8573-1: 2010 Compressed air purity grade

Grade	Solid Particles				Humidity and Water Content		Oil
	Max. number of particles per 1 m3 for particle diameter d (μm)			Mass Concentration Cp mg/m³	Pressure dew point °C	Water Concentration Cw g/m³	Total Oil Concentration mg/m³
	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0				
0	Conditions stricter than Grade 1, is to be specified by the user or supplier						
1	≤ 20,000	≤ 400	≤ 10	-	≤ -70	-	≤ 0.01
2	≤ 400,000	≤ 6,000	≤ 100	-	≤ -40	-	≤ 0.1
3	-	≤ 90,000	≤ 1,000	-	≤ -20	-	≤ 1
4	-	-	≤ 10,000	-	≤ +3	-	≤ 5
5	-	-	≤ 100,000	-	≤ +7	-	-
6	-	-	-	0 < Cp ≤ 5	≤ +10	-	-
7	-	-	-	5 < Cp ≤ 10	-	Cw ≤ 0.5	-
8	-	-	-	-	-	0.5 < Cw ≤ 5	-
9	-	-	-	-	-	5 < Cw ≤ 10	-
X	-	-	-	Cp > 10	-	Cw > 10	> 5

For example,
"Grade 1: 2: 1" means:
●Solid particles of 0.1 to 0.5 μm are ≤20,000 particles; 0.5 to 1.0 μm are ≤400 particles; and 1.0 to 5.0 μm are ≤10 particles
●Pressure dew point −40°C or less
●Oil concentration 0.01 mg/m³ or less
This indicates the class.

Medium Main Line Filter
AF2

■ Main Line Components / Main Line Filters



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●Medium size oil removing filter (AF2-□P) 222
●Medium size high performance oil removing filter (AF2-□M) 222
●Medium odor removal filter (AF2-□X) 222
Accessory 225
⚠ Safety Precautions 226

Energy Saving Filter

Unique Design for Lower Pressure Loss

Medium Main Line Filter AF2 Series helps reduce operation costs.



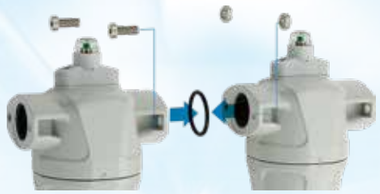
Pop-up indicator

A 360-degree high-visibility indicator, enabling differential pressure checking from all directions, is equipped as standard. (P/M-types)
Clear Visual Indication: Turns red for immediate notification.



Modular Connections for Space-Saving Installations

Modular Connections for Space-Saving Installations: The filters can be connected with the modular kit, enabling space-saving installation. The linked structure is simplified for easy connection.

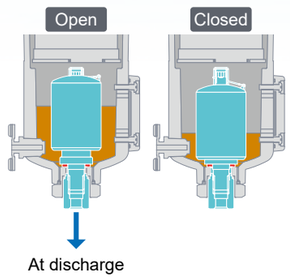


Easy element replacement

Easy Installation: Push-fit elements allow for quick and easy installation.



Highly reliable automatic drain equipped as standard



With residual pressure exhaust valve

A residual pressure air release valve is equipped as standard. Versatile Drainage: This unit can also be used for manual condensate drainage for added flexibility.



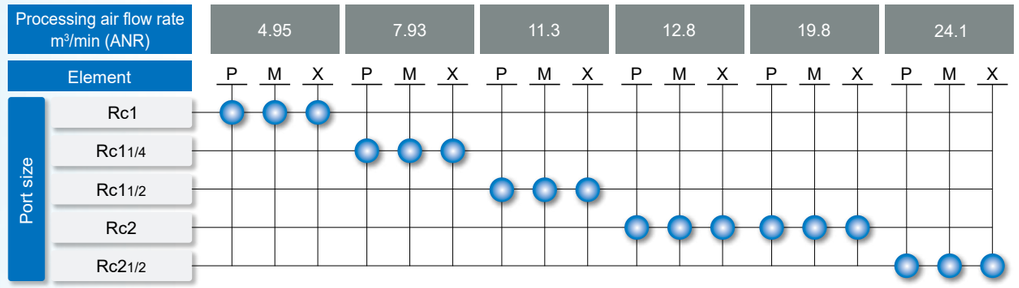
Liquid level gauge

The drain level can be visually confirmed.



Diverse Lineup

Choose from 18 models across 3 types, each with 6 flow rates. The ideal model can be selected based on the flow rate and quality of air.



*Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa.

Internal filter structure

Double seal structure

Realizes high sealing performance.

Colored end cap

Elements are easily identifiable due to the different colors assigned to each type.





Pleated structure

With a large filtration area, the capacity for catching impurities is increased. Pressure loss reduction and compactness are realized

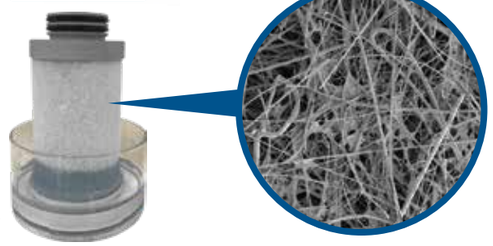
Conventional Material Sample



For image purposes.

The conventional element where water and oil are adhering to the material, causing pressure loss.

AF2 Series



With hydrophobic/lipophobic borosilicate media, pressure loss is minimized.

AF2 series variation

Oil Mist Removal for improved air quality. Solid Particle Removal

Protects expensive pneumatic components



- Removal of particles 1 μm and over
- Removes oil up to secondary side oil concentration of 0.3 mg/m³ (21°C)

P TYPE

High-performance removal of oil mist and solids

For Pneumatic Circuits Which Prohibit Passage of Oil.



- Removal of particles 0.01 μm and over
- Removes oil up to secondary side oil concentration of 0.01 mg/m³ (21°C)

M TYPE

Removes oil vapor and odors

For pneumatic circuits which prohibit passage of odors



- Suction by activated carbon
- Removes oil vapor and odors in steam up to secondary side oil concentration of 0.003 mg/m³ (21°C)

X TYPE

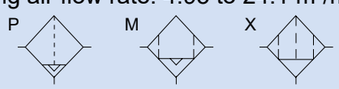


Medium Main Line Filter

AF2 Series

Ideal for removal of solids, oil removing and deodorizing applications
Processing air flow rate: 4.95 to 24.1 m³/min (ANR) (0.7 MPa)

Circuit Diagram Symbol



Model No. Notation

AF2 - 05 P 25A

- AF2: Model No.
- 05: ❶ Flow rate Category
- P: ❷ Element
- 25A: ❸ Bore size

Note: The unit's full performance may not be obtained if used at less than the selected pressure. Be sure to select the model No. with your working pressure.

❶Flow Rate Category

Code	Description
05	4.95 m³/min (ANR)
08	7.93 m³/min (ANR)
11	11.3 m³/min (ANR)
13	12.8 m³/min (ANR)
20	19.8 m³/min (ANR)
24	24.1 m³/min (ANR)

❷Element

Code	Description
P	P-type (Solids / Oil Removing Filter)
M	M-type (High-Performance Solids / Oil Removing Filter)
X	X-type (Deodorizing Filter)

❸Bore size

Code	Description
25A	Rc1
32A	Rc1-1/4
40A	Rc1-1/2
50A	Rc2
65A	Rc2-1/2

Flow rate compensation coefficient

Pressure (MPa)	Compensation coefficient
0.1	0.38
0.2	0.53
0.3	0.65
0.4	0.76
0.5	0.84
0.6	0.92
0.7	1.0
0.8	1.07
0.9	1.13
1.0	1.19

If working pressure is other than 0.7 MPa, multiply processing air flow rate by the above coefficient.

Specifications for Rechargeable Batteries

(Catalog No.CC-1226AA)

●Design compatible with rechargeable battery manufacturing processes

AF2-·····-P4

*Contact CKD for details.

Specifications

Item		AF2-05 □25A	AF2-08 □32A	AF2-11 □40A	AF2-13 □50A	AF2-20 □50A	AF2-24 □65A
Processing air flow rate m³/min (ANR)		4.95	7.93	11.3	12.8	19.8	24.1
Working fluid		Compressed air					
Working pressure	MPa	0.1 to 1.0					
Proof pressure	MPa	1.5					
Port size	Rc	1	1-1/4	1-1/2	2.		2-1/2
Weight	kg	2.2	6	5.9	5.7	6.9	13
Pop-up indicator		Standard equipment (Excluding X-type)					
Condensate Drains		Integrated (NO: exhausts when not pressurized). Excluding X-type)					
Drain outlet bore size	Rc	1/8 (Excluding X-type)					

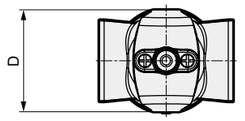
* indicates-type name.

Item		P-type	M-type	X-type
Operating ambient temperature range	°C	5 to 60		5 to 50
Filtration rating	μm	1	0.01	Suction by activated carbon
Secondary side oil concentration	mg/m³	0.3	0.01	0.003
Initial pressure drop	MPa	0.0055	0.0085	0.0115
Regular pressure drop	MPa	0.0125	0.0125	–

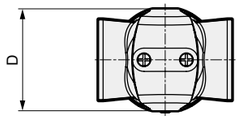
*1: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa.
*2: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.
*3: The secondary side oil concentration is the value when the inlet air temperature is 21°C.
*4: The drain discharger is NO. Air is purged with initial drainage until pressure reaches 0.1 MPa.
*5: The P/M elements must be replaced after one year or when the pop-up indicator turns red, whichever comes first.
*6: Replace the X element after 1,000 hours (at 21°C) or when the deodorizing effect is lost.
*7: The X-type has a ball valve (G1/4) at the discharge outlet.
*8: The initial pressure drop is 0.008 MPa for AF2-20P50A and 0.011 MPa for AF2-20M50A.

Dimensions

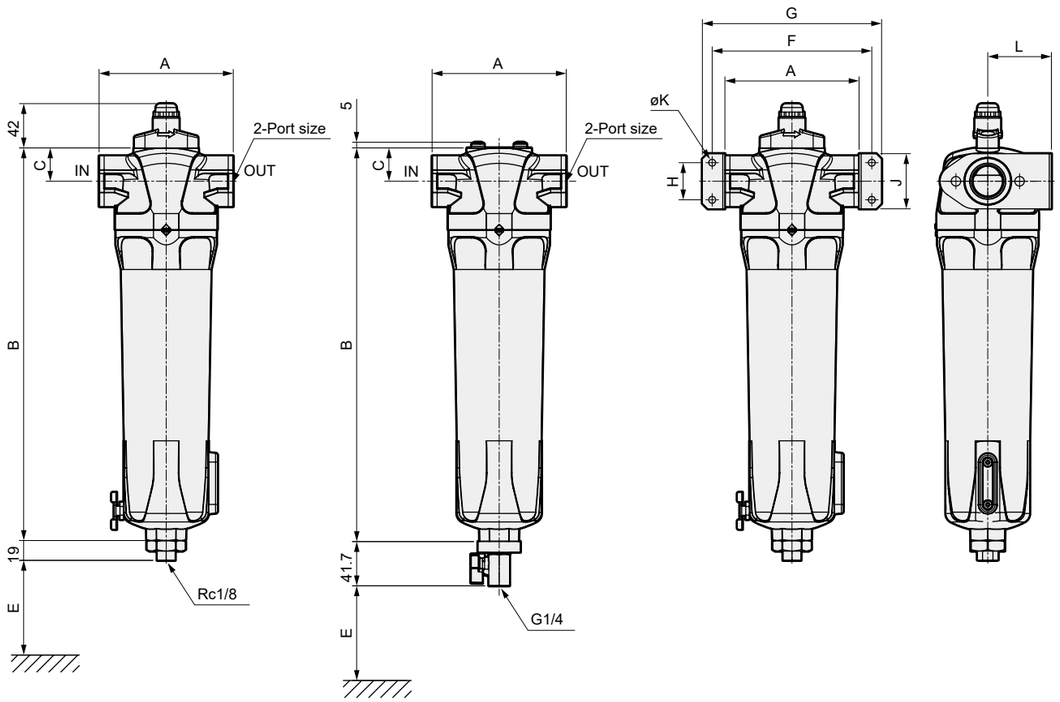
●AF2-05P25A to AF2-24P65A
AF2-05M25A to AF2-24M65A



●AF2-05X25A to AF2-24X65A



●With bracket

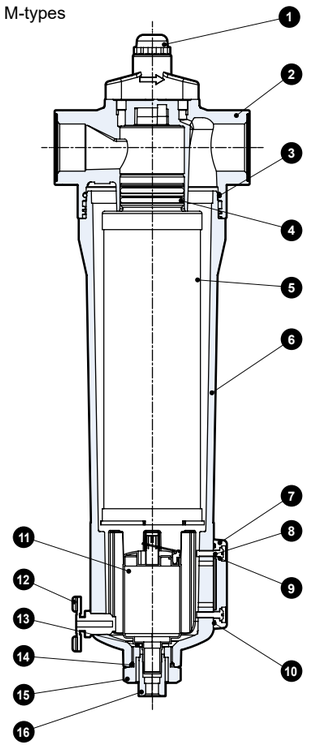


Model No.	Port size	A	B	C	D	E	F	G	H	J	K	L
AF2-05P25A / 05M25A	Rc1	127	370	31.4	96	80	151	169	36	52	6.5	60
AF2-05X25A	Rc1	127	370	31.4	96	80	151	169	36	52	6.5	60
AF2-08P32A / 08M32A	Rc1-1/4	170	508	53	133	100	206	230	65	95	9	90
AF2-08X32A	Rc1-1/4	170	508	53	133	100	206	230	65	95	9	90
AF2-11P40A / 11M40A	Rc1-1/2	170	508	53	133	100	206	230	65	95	9	90
AF2-11X40A	Rc1-1/2	170	508	53	133	100	206	230	65	95	9	90
AF2-13P50A / 13M50A	Rc2	170	508	53	133	100	206	230	65	95	9	90
AF2-13X50A	Rc2	170	508	53	133	100	206	230	65	95	9	90
AF2-20P50A/20M50A	Rc2	170	708	53	133	100	206	230	65	95	9	90
AF2-20X50A	Rc2	170	708	53	133	100	206	230	65	95	9	90
AF2-24P65A/24M65A	Rc2-1/2	219	735	69	185	100	257	283	95	125	11	118
AF2-24X65A	Rc2-1/2	219	735	69	185	100	257	283	95	125	11	118

*1: The X-type does not have a pop-up indicator.
*2: E dimension shows the minimum dimension required to remove the element. When actually installing the auto-drain, be sure to consider the piping dimensions and maintenance workability of the auto-drain and set dimensions with sufficient margin.

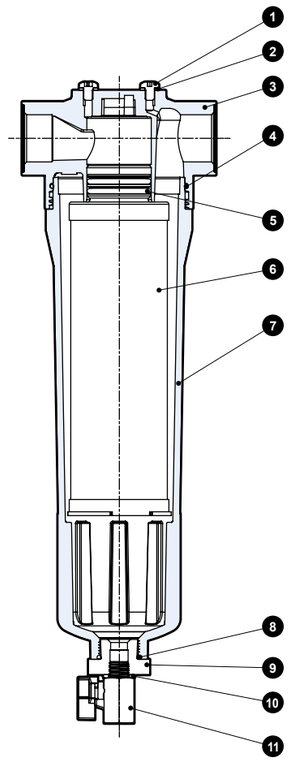
Internal Structure Diagram / Material

●P, M-types



NO.	Part name	Material
1	Pop-up indicator	Polyamide Resin
2	Cover	Aluminum
3	O-ring	Nitrile Rubber
4	O-ring	Nitrile Rubber
5	Element	
6	Bowl	Aluminum
7	Sight Glass	Polyamide Resin
8	Small Machine Screw	Steel
9	Packing	Polyamide Resin
10	Packing	Nitrile Rubber
11	Automatic Condensate Drain	
12	Valve	Brass
13	Packing	Nitrile Rubber
14	O-ring	Nitrile Rubber
15	Drain Adapter	Aluminum
16	Adapter Nut	Brass

●X-type



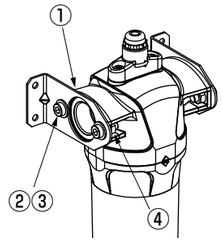
NO.	Part name	Material
1	Small Machine Screw	Steel
2	Seal Washer	Polyamide Resin, Nitrile Rubber
3	Cover	Aluminum
4	O-ring	Nitrile Rubber
5	O-ring	Nitrile Rubber
6	Element	
7	Bowl	Aluminum
8	O-ring	Nitrile Rubber
9	Drain Adapter	Aluminum
10	Seal Washer	Steel, Nitrile Rubber
11	Valve	Brass

For maintenance parts, refer to the CKD Components Product site
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." → Maintenance Parts

Accessory

Bracket kit

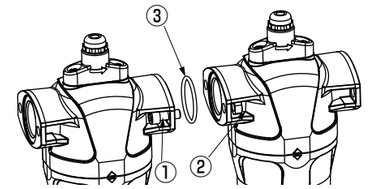
Model	Model No.
AF2-05□	AF2-05M-FLA12524
AF2-08□ to AF2-20□	AF2-08M-FLA12525
AF2-24□	AF2-24M-FLA12526



Part No.	Part name	Quantity
(1)	Mounting bracket	2.
(2)	Hexagon socket head cap screw	4
(3)	Flat washer	4
(4)	Hexagon nut	4

Modular kit

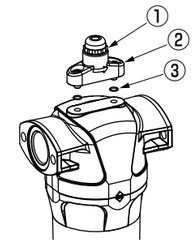
Model	Model No.
AF2-05□	AF2-05C-FLA12521
AF2-08□ to AF2-20□	AF2-08C-FLA12522
AF2-24□	AF2-24C-FLA12523



Part No.	Part name	Quantity
(1)	Hexagon socket head cap screw	2.
(2)	Hexagon nut	2.
(3)	O-ring	1
Accessory	Allen wrench (mounting tool)	1

Pop-up indicator

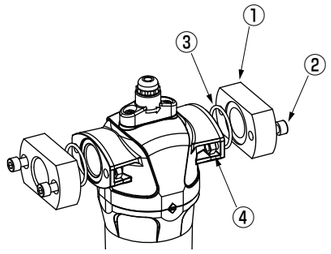
Model	Model No.
AF2-05□ to AF2-24□	AF2-DPU-FLA12527



Part No.	Part name	Quantity
(1)	Pop-up indicator	1
(2)	Mounting screw	2.
(3)	O-ring	2.

Pipe adaptor

Model		Model No.
AF2-05□	For Rc1	AF2-05A-FLA15316
	For G1	AF2-05A-FLA15317
	For NPT1	AF2-05A-FLA15318
AF2-08□	For $Rc1^{1}/_{4}$	AF2-08A-FLA15319
	For $G1^{1}/_{4}$	AF2-08A-FLA15320
	For $NPT1^{1}/_{4}$	AF2-08A-FLA15321
AF2-11□	For $Rc1^{1}/_{2}$	AF2-11A-FLA15322
	For $G1^{1}/_{2}$	AF2-11A-FLA15323
	For $NPT1^{1}/_{2}$	AF2-11A-FLA15324
AF2-13□, AF2-20□	For Rc2	AF2-13A-FLA15325
	For G2	AF2-13A-FLA15326
	For NPT2	AF2-13A-FLA15327
AF2-24□	For $Rc2^{1}/_{2}$	AF2-24A-FLA15328
	For $G2^{1}/_{2}$	AF2-24A-FLA15329
	For $NPT2^{1}/_{2}$	AF2-24A-FLA15330



Part No.	Part name	Quantity
(1)	Piping adapter	2
(2)	Hexagon socket head cap screw	4
(3)	O-ring	2
(4)	Hexagon nut	4

Pneumatic components (Main Line Filter)

Safety Precautions

Be sure to read this section before use.
Refer to Intro 15 for General Precautions.

Product-Specific Cautions: Medium Main Line Filter AF2 Series

Manufacturer's Disclaimer

⚠WARNING

■The manufacturer cannot be held liable in the following cases:
- In the case where there are serious errors in the operator's use.
- Illegal modifications or repairs using non-standard parts by user.

Design / Selection

⚠WARNING

■Do not use for applications other than compressed air.

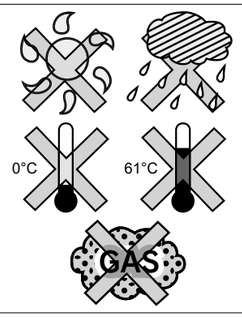
■Do not use for caisson shields or medical devices such as breathing devices.
Doing so may result in serious injury.

■Do not mount and use this device on transportation components such as vehicles or ships.
Vibration may cause internal damage.

■Avoid direct sunlight and rain water. Resin parts, etc., are likely to deteriorate and break.

■Do not use in locations with corrosive gases.

■Use this product within the range of the working temperature.



■Do not use in locations where there is a risk of freezing. There is a risk that condensate accumulated inside the product may freeze and damage the product.

■Do not use in hazardous locations (e.g., potentially explosive atmospheres).

■The inlet air temperature should be kept as low as possible. The higher the temperature, the worse the oil removal rate.

■Avoid use in environments where ozone is generated.

■Avoid use in places subject to vibration or shock.

■Do not use this product in areas containing dust, etc.

■Do not use in environments where the following gaseous substances are contained in compressed air.

- Sulfur dioxide, Chlorine gas
- Aromatic hydrocarbon compounds(For example, benzene, toluene, phenol, cyclohexane, etc.)
- Chlorinated hydrocarbon compounds (Example: Trichloroethylene, Chloroform ,etc.)
- Ketones (Example: Acetone, etc.)
- Aldehydes (Example: Formaldehyde, Acetaldehyde, etc.)
- Amines (Example: Ethylamine, Methylamine ,etc.)

■Always set the air flow to within the working pressure range and the processing air rate.
Otherwise, water, dust, and oil removal performance may be compromised.

■Install indoors.

■The drain discharger is a normally open type. Applicable compressor should be 0.75 kW or more (discharge flow 90 L/min or more).

■The filter life is one year or when the pop-up indicator turns red, whichever comes first. Replace the element with a new one when its lifespan is reached. (However, the X-type should be replaced after 1000 hours (at 21°C) or when it loses its deodorizing effect.)

■The condensate drain purges air with the initially generated condensate until the pressure rises to 0.1 MPa.

For precautions during mounting, installation, adjustment, use and maintenance, refer to the CKD Components Product Site (https://www.ckd.co.jp/kiki/en/) → "Model No. → Instruction Manual

MEMO

Main Line Components
Refrigeration Dryers
Desiccant Dryers
High Polymer Membrane Dryers
Main Line Filters
Drain discharger, etc.
Ending

Medium Main Line Filter
AF4000 (oil-free)

■ Main Line Components / Main Line Filter



CONTENTS

Medium main line filter device recommended system configuration 216
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● Medium solid removing filter (AF4000S) 232
● Medium oil mist filter (AF4000M) 232
● Medium odor removal filter (AF4000X) 232
⚠ Safety Precautions 236

Medium
Main Line Filter

AF4000 Series

Meeting the Demands of Oil-Free Air Lines

High performance main line filter AF4000 Series with stainless steel housing for clean environments.
Ideal for use with oil-free air lines.



Differential pressure gauge port



A differential pressure gauge (option) mounting port is provided on the top of the filter.

prevention



With residual pressure release function

It is equipped with a band cover as standard to prevent the band from being removed inadvertently during operation or when there is residual pressure. If the band cover fixing screws are loosened, a small amount of air will leak and inform the operator.



Easy element replacement

A band method has been adopted for tightening the housing. The element can be replaced without tools.

Time management of element replacement



Compatible with liquid oil mist, etc., for which the replacement time is difficult to determine with the conventional differential pressure method. Time management of replacement interval (approx. one year) by indication of blinking lamp.

Mechanism preventing housing dislocation

The mechanism prevents the housing from falling when the band cover is removed when replacing the element, etc. Can be removed and installed with both hands.



Highly reliable drain discharger mounted

A highly reliable automatic drain (DT Series) is provided for the drain discharger. Drainage can be discharged without wasteful air loss.



Diverse lineup

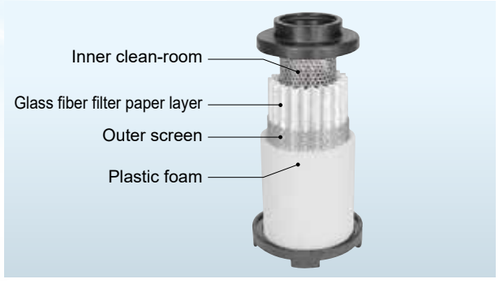
Choose from 19 models, with 5 flow rate options for each of the four types (P-type: 4 flow rates). The ideal model can be selected based on the flow rate and quality of air.

Processing air flow rate m³/min (ANR)	3.7	6.2	10	13	18.8
Element	P S M X	P S M X	P S M X	P S M X	S M X
Port size Rc1	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	● ● ●
Port size Rc1 1/2		● ● ● ●	● ● ● ●		
Port size RC2				● ● ● ●	

*Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa.

M-Type Element Structure

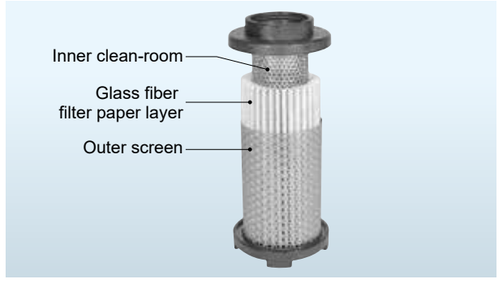
- Removes particles 0.01 µm and larger
- Outlet oil concentration 0.01 mg/m³ (20°C)
- Reduced pressure drop for increased efficiency.



1. Efficient Oil Mist Removal: The use of water- and oil-repellent glass fiber filter paper allows for efficient oil mist collection and coalescing while reducing pressure loss for optimized performance.
2. Large Filtration Area: The pleated structure provides a large filtration area for superior performance.
3. Eco-friendly: Vinyl chloride resin is not used.

S-Type Element Structure

- Removes particles 1 µm and larger



1. Glass fiber filter paper is used as standard to improve the collection performance and water resistance.
2. The new pleated structure provides a large filtration area.
3. Ensures consistent, reliable collection performance even with water droplets in the air stream.

AF4000 Series Variations

Removing Water Drops Solid Particle Removal

Ideal for use as a pre-filter for air dryers.



P-Type

- Removes particles 5 µm and larger
- 99% Water Separation Efficiency

Solid Particle Removal

Protects Expensive Pneumatic Components.



S-Type

- Removes particles 1 µm and larger

High-performance removal of oil mist and solids

For Pneumatic Circuits Which Prohibit Passage of Oil.



M-Type

- Removes particles 0.01 µm and larger
- Removes oil to a secondary side oil concentration of 0.01 mg/m³ (20°C)

Removes oil vapor and odors

For pneumatic circuits which prohibit passage of odors



X-Type

- Activated carbon fiber adsorption
- Removes oil vapor and odors up to secondary side oil concentration of 0.003 mg/m³ (20°C)



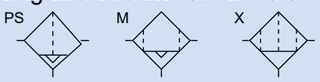
Medium main line stainless steel filter

AF4000P/S/M/X Series

Ideal for pre-filter, oil removal and deodorizing applications

●Processing air flow rate: 3.7 to 18.8 m³/min (ANR) (0.7 MPa)

Circuit Diagram Symbol



Model No. Notation

AF4 004 P - 25 - GA

- AF4: Model No.
- 004: ❶Flow rate category
- P: ❷Element
- 25: ❸Bore size
- GA: ❹Accessories

Note: The required performance may not be attained if using at a level less than the selected pressure. Always select the model No. with the working pressure.

❶Flow Rate Category

Code	Description
004	3.7 m³/min (ANR)
007	6.2 m³/min (ANR)
010	10 m³/min (ANR)
013	13 m³/min (ANR)
020	18.8 m³/min (ANR) (❷Items S, M, X only)

❷Element

Code	Description
P	P-type (solids/water removing filter)
S	S-type (solids removing filter)
M	M-type (oil mist filter)
X	X-type (deodorizing filter)

❸Bore size

Code	Description
25	Rc1
40	Rc1-1/2
50	Rc2

❹Accessories

Code	Description	
Blank	None	
GA	Differential pressure gauge (GA400-8-P02) included	
Note EL	Element Life Indicator included	

Note: The M-type in Item ❷ comes standard with an element life indicator.

Flow rate compensation coefficient

Pressure (MPa)	Auxiliary coefficient
0.2	0.36
0.3	0.5
0.4	0.62
0.5	0.75
0.6	0.88
0.7	1.0
0.8	1.13
0.9	1.25
1.0	1.38

If the inlet pressure is not 0.7 MPa, multiply the coefficient above with the processing air flow rate.

Specifications for Food Manufacturing Processes

(Catalog No.CC-1271AA)

●Food grade lubricants that can be used in food manufacturing processes, and resin and rubber materials that conform to the Food Sanitation Laws are used.

AF4□□□□ - · · · · · · - FP□

Specifications

Item		AF4004□-25	AF4007□-40	AF4010□-40	AF4013□-50	AF4020□-50
Processing air flow rate m³/min (ANR)		3.7	6.2	10	13	18.8
Working fluid		Compressed air				
Working pressure	MPa	0.1 to 1.0				
Ambient temperature	°C	5 to 60				
Proof pressure	MPa	1.5				
Port size	Rc	1	1-1/2		2.	
Weight	kg	3	3.3	3.7	4.3	6
Element life indicator		Standard only for M-type				
Condensate Drains		DT3000-15-W (Excluding X-type)				
Drain outlet bore size		Directly connecting bore size ø5.7 to ø6 nylon tube (Excluding X-type)				

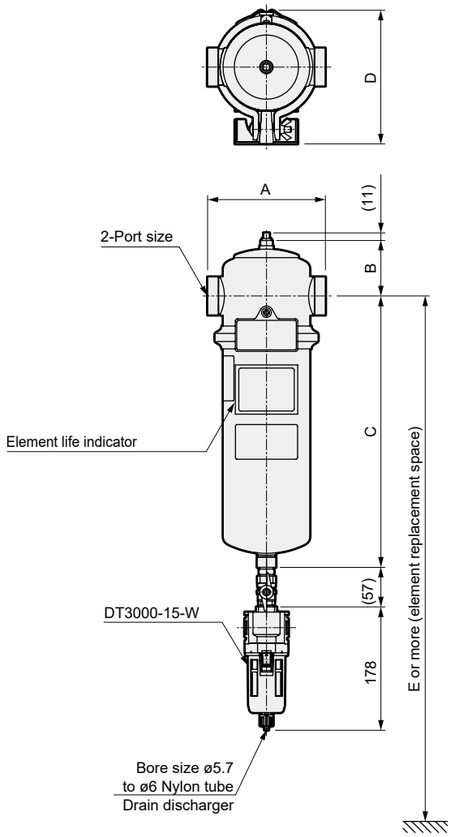
□ indicates the series name.

Item			P-type	S-type	M-type	X-type
Performance	Processing air conditions	Inlet air pressure MPa	0.7			
		Inlet air temperature °C	32			
		Inlet air dew point °C	–	–	No water infiltration or droplet generation	Pressure dew point10°C
		Inlet oil concentration mg/m³	–	–	3	0.01
	Degree of Filtration µm		5	1	0.01	Activated carbon fiber adsorption
	Secondary side oil concentration mg/m³		–	–	0.01	0.003
	Water separation efficiency %		99	–	–	–
	Pressure drop	Initial MPa	0.005	0.005	0.01	0.009
	Element Replacement time	Pressure drop MPa	0.02	0.07	0.07	–
		Duration of use	8000 hours or 1 year			

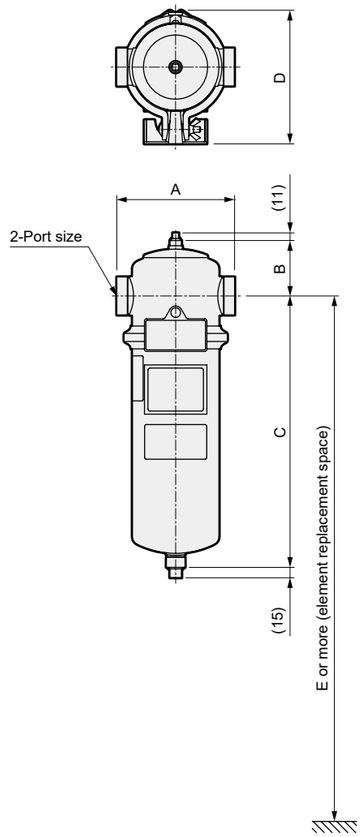
*1: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa.
*2: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.
*3: The secondary side oil concentration is the value when the inlet air temperature is 20°C.
*4: The drain discharger is NO. Air is purged with initial drainage until pressure reaches 0.1 MPa.
*5: The P/S/M-type element must be replaced when the pressure drops or the service life is reached, whichever comes first.
*6: Replace the X-type element when the service life is reached or when the deodorizing effect is lost.
*7: AF4020 does not have P-type.

Dimensions

●AF4004P/S/M to AF4020S/M



●AF4004X to AF4020X

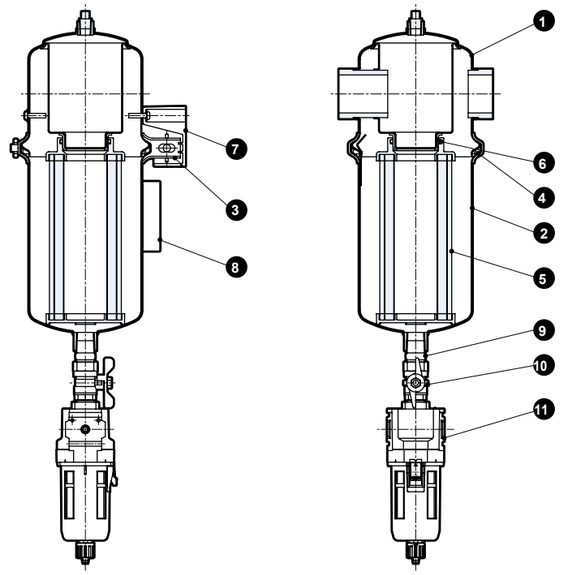


Model No.	Port size	A	B	C	D	E
AF4004P/S/M/X-25	Rc1	160	72.5	209	192.7	570
AF4007P/S/M/X-40	Rc1-1/2	170	80	283.5	192.7	730
AF4010P/S/M/X-40	Rc1-1/2	170	80	391.5	192.7	940
AF4013P/S/M/X-50	Rc2	173	86.5	478	192.7	1100
AF4020S/M/X-50	Rc2	173	86.5	635	192.7	1420

*1: The element life indicator is mounted only on the M-type.
*2: E dimensions indicate the maintenance space.
*3: Drain discharger and ball valve are attached.

Internal Structure Diagram / Material

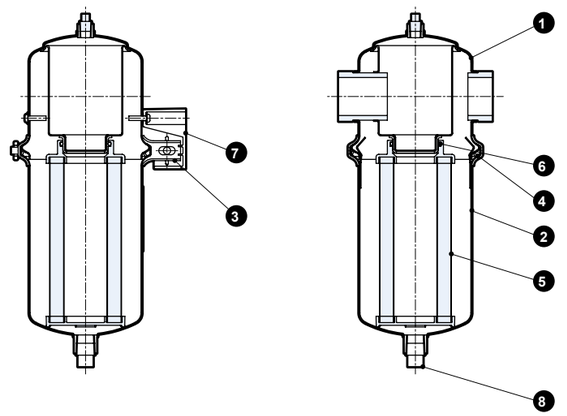
●P, S, M-types



No.	Part name	Material
1	Cover	SUS304
2.	Bowl	SUS304
3	Band	SUS304
4	O-ring	NBR
5	Element	
6	O-ring	NBR
7	Band cover	Polyamide
8	Element life indicator	
9	Nipple	SUS304
10	Ball valve	C3771, PTFE, SUS, etc.
11	Condensate Drains	DT3000-15-W

Drain discharger and ball valve are attached. The element life indicator is mounted only on the M-type.

●X-type



No.	Part name	Material
1	Cover	SUS304
2.	Bowl	SUS304
3	Band	SUS304
4	O-ring	NBR
5	Element	
6	O-ring	NBR
7	Band cover	Polyamide
8	Plug	SUS304

For maintenance parts, refer to the CKD Components Product site
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." → Maintenance Parts

Safety Precautions

Be sure to read this section before use.
Refer to Intro 15 for General Precautions.

Product-specific cautions: Medium main line filter AF4000 Series

Manufacturer's Disclaimer

⚠WARNING

■The manufacturer cannot be held liable in the following cases:
- In the case where there are serious errors in the operator's use.
- Illegal modifications or repairs using non-standard parts by user.

Design / Selection

⚠WARNING

■Do not use for applications other than compressed air.

■Do not use for caisson shields or medical devices such as breathing devices.
Doing so may result in serious injury.

■Do not mount and use this device on transportation equipment such as vehicles or ships.
Vibration may cause internal damage.

■Avoid direct sunlight and rain water. Resin parts may deteriorate and break.

■Do not use in locations with corrosive gases.

■Use this product within the range of the working temperature.

■Do not use the product where it could freeze. Accumulated drain may freeze and damage the product.

■Do not use in hazardous locations (possibly explosive atmospheres, etc.).

■The inlet air temperature should be kept as low as possible. Higher temperatures reduce oil removal efficiency.

■Do not use this product in an ozone generating environment.

■Avoid use where vibration and impact are present.

■Do not use this product in areas containing dust, etc.

■Do not use this product in an environment in which the compressed air contains the following gases.
- Sulfur dioxide, Chlorine gas
- Aromatic hydrocarbon compounds (For example, benzene, toluene, phenol, cyclohexane, etc.)
- Chlorinated hydrocarbon compounds (Example: Trichloroethylene, Chloroform, etc.)
- Ketones (Example: Acetone, etc.)
- Aldehydes (Example: Formaldehyde, Acetaldehyde, etc.)
- Amines (Example: Ethylamine, Methylamine, etc.)

■Always set the air flow to within the working pressure range and the processing air rate.
Otherwise, water, dust, and oil removal performance may be compromised.

■Install indoors.

■The drain discharger is a normally open type. The compatible compressor capacity is 0.75 kW or more (discharge flow rate 90 L/min or more).

■The air filter service life is reached when the pressure drops, or after 8000 hours or one year of use. Replace the element with a new one when its lifespan is reached. When using an element life indicator, replace the indicator battery with a new one when replacing the element. (Replace the X type element when the service life is reached, or when the deodorizing effect is lost.)

■The drain discharger is air purged with the initially generated drainage until the pressure rises to 0.1 MPa.

● Chemical resistance of drain discharger plastic bowl

Types of Chemicals	Categories of Chemicals	Main Products of Chemicals	General Applications	Polycarbonate	Nylon
Inorganic compounds	Acids	Hydrochloric acid, sulfuric acid, fluorine, phosphoric acid, chromic acid, etc.	Acid washing of metals, acidic degreasing solutions, Coating treatment solution	×	×
	Alkalines	Caustic soda, caustic potash, calcium hydroxide, aqueous ammonia, sodium carbonate, etc.	Alkaline degreasing solution for metals	×	○
	Inorganic salts	Sodium sulfide, potassium nitrate, potassium bichromate, sodium sulfate, etc.		×	○
Organic compounds	Aromatic hydrocarbons	Benzene, toluene, xylene, ethyl benzene, styrene, etc.	Contained in paint thinner (benzene, toluene, xylene)	×	×
	Chlorinated aliphatic hydrocarbons	Methyl chloride, ethylene chloride, methylene chloride, acetylene chloride, chloroform, trichlene, perchlene, carbon tetrachloride	Organic Solvent-Based Washing Solution for Metals(Trichloroethylene, Tetrachloroethylene, Carbon Tetrachloride, etc.)	×	○
	Chlorinated aromatic hydrocarbons	Chlorobenzene, dichlorobenzene, benzene hexachloride (B/H/C), etc.	Agricultural chemicals	×	○
	Petroleum components	Solvent, naphtha, gasoline		×	○
	Alcohols	Methanol, ethanol, cyclohexanol, benzyl alcohol	Used as an antifreeze agent	×	×
	Phenol	Carbolic acid, cresol, naphthol, etc.	Disinfectant solution	×	×
	Ethers	Methyl ether, methyl ethyl ether, ethyl ether	Brake fluid additive	×	○
	Ketones	Acetone, methyl ethyl ketone, cyclohexanone, acetophenone, etc.		×	×
	Carboxylic acids	Formic acid, acetic acid, butyl acid, acrylic acid, oxalic acid, phthalic acid, etc.	Dyes/oxalic acid are used for aluminum treatment Phthalic acid used for paint base	×	×
	Phosphate ester	Dimethyl phthalate (DMP), diethyl phthalate (DEP), dibutyl phthalate (DBP), dioctyl phthalate (DOP)	Lubricant, synthetic coolant, rust preventing agent additives Used as plasticizer for synthetic resin	×	○
	Oxyacids	Glycolic acid, lactic acid, malic acid, citric acid, tartaric acid		×	×
	Nitro compounds	Nitromethane, nitroethane, nitroethylene, nitrobenzene, etc.		×	○
	Amines	Methylamine, dimethylamine, ethylamine, aniline, acetanilide, etc.	Brake fluid additive	×	×
	Nitriles	Acetonitrile, acrylonitrile, benzonitrile, acetoisonitrile, etc.	Raw material for nitrile rubber	×	○

○symbol: Usable × symbol: Not usable

For precautions during mounting, installation, adjustment, use and maintenance, refer to the CKD Components Product Site (https://www.ckd.co.jp/kiki/en/) → "Model No. → Instruction Manual

Large Main Line Filter

■ Main Line Components

CONTENTS

Large Main Line Filter Unit - Recommended system configuration 240

Regular type
AF3000 243

For oil-free
AF5000 265

Main Line Components

Refrigeration Dryers

Desiccant Dryers

High Polymer Membrane Dryers

Main Line Filters

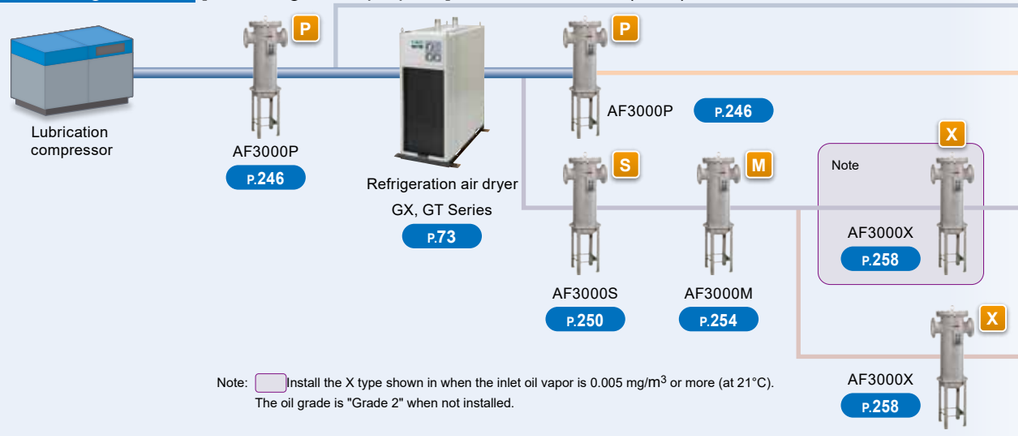
Drain discharger, etc.

Ending

Recommended system configuration for Main Line Filter Components

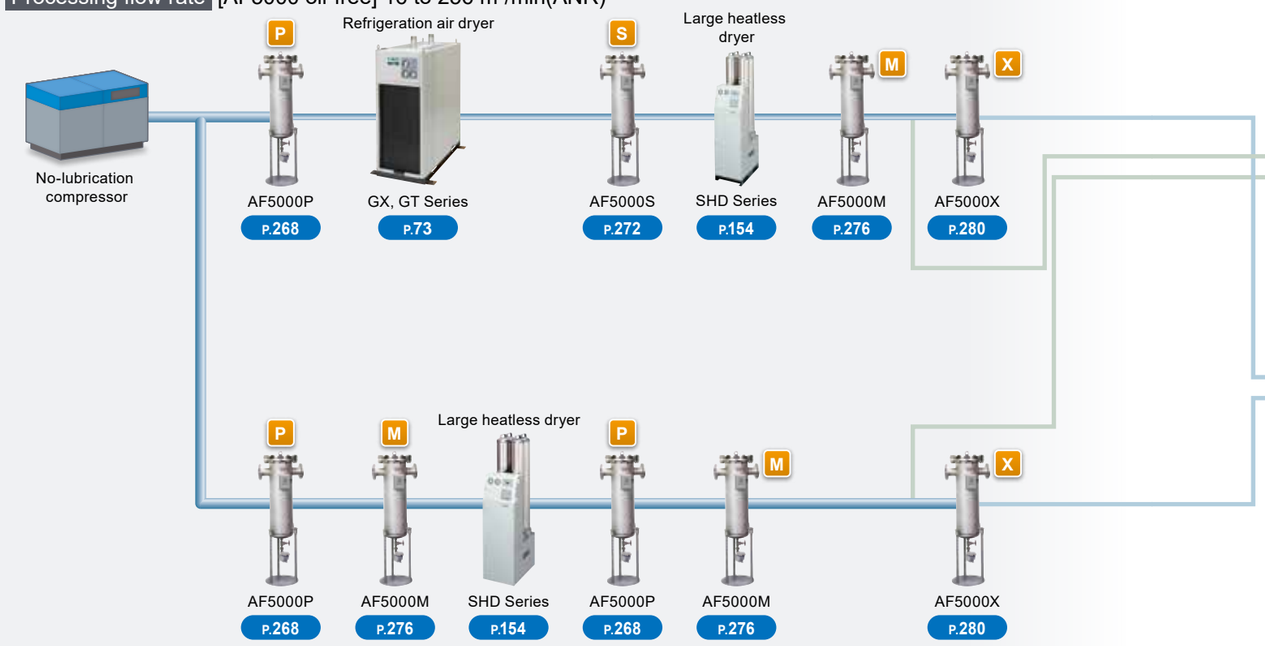
Large Main Line Filter

Processing flow rate [AF3000 general purpose] 16 to 256 m³/min (ANR)



Note: ☐ Install the X type shown in when the inlet oil vapor is 0.005 mg/m³ or more (at 21°C).
The oil grade is "Grade 2" when not installed.

Processing flow rate [AF5000 oil-free] 16 to 256 m³/min(ANR)



Air Quality	Applications	Impurities in the Air			ISO 8573-1 compressed air purity grade
		Individual particles	Moisture	Oil content	
Dewatered Air **Coarse dust removed air**	Air for cleaning (dry air not required)	3 µm	–	–	4: -: -
General Dry Air	General Pneumatic Components General Pneumatic Tools Labor-Saving Components Pneumatic Jigs and Tools Air Chuck	3 µm	Pressure dew point 10°C	0.5 mg/m³	4:6:3
			Pressure dew point 7°C		4:5:3
Dry Air (oil-free)	Instrumentation Measurement Sequence control Painted	0.01 µm	Pressure dew point 10°C	0.01 mg/m³ (0.003 mg/m³)	1.6.1
			Pressure dew point 7°C		1.5.1
Dry air (odorless)	Food and Pharmaceutical Processes (Stirring, dry blowing, packaging, brewing, pressure-feeding, filling) Cosmetic Manufacturing Processes *If the product directly contacts the workpiece, it is recommended to install a bacteria-removing filter.	0.01 µm	Pressure dew point 10°C	0.003 mg/m³	1.6.1
			Pressure dew point 7°C		1.5.1
Ultra dry air (oil-free)	Ozone generator Powder transfer Drying furnace gas Drying the insulation gas of a high-voltage generator Drying computer rooms Centralized control instrumentation Liquid crystal panel manufacturing Chemical plants Painted	0.01 µm	Pressure dew point -20°C	0.01 mg/m³	1.3.1
			Pressure dew point -40°C		1.2.1
			Pressure dew point -60°C		1.2.1
Ultra-Dry Air (odorless)	Food and Pharmaceutical Processes (Stirring, dry blowing, packaging, brewing, pressure-feeding, filling) Cosmetic Manufacturing Processes *If the product directly contacts the workpiece, it is recommended to install a bacteria-removing filter.	0.01 µm	Pressure dew point -20°C	0.003 mg/m³	1.3.1
			Pressure dew point -40°C		1.2.1
			Pressure dew point -60°C		1.2.1

*1. The System No. is based on the grades in the table below. 'X' indicates odor removal, and '-' indicates 'not specified'.

Main Line Filters

Pre-filter

Ideal for use as a pre-filter for air dryers.



- Contaminants 3 µm and larger are removed
- 95% Water Separation Efficiency

P TYPE

Oil Mist Filter

Oil Removing Filter

Protects expensive pneumatic components



- Contaminants 0.3 µm and over are removed
- Oil content up to a concentration of 0.5 mg/m³ (at 21°C) is removed from the oil content on the secondary side

S TYPE

High-Performance Oil Removing Filter

For Pneumatic Circuits Which Prohibit Passage of Oil.

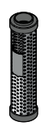


- Contaminants 0.01 µm and larger are removed
- Oil content up to a concentration of 0.01mg/m³ (at 21°C) is removed from the oil content on the secondary side

M TYPE

Activated Carbon Filter

For pneumatic circuits which prohibit passage of odors



- Suction by activated carbon
- Vaporized oil content up to a concentration of 0.003 mg/m³ (at 21°C) and odors are removed from the oil content on the secondary side

X TYPE

*1: If your conditions are different, refer to the specifications in the catalog in order to select a model.
*2: This example of system selection is based on an air-cooling refrigeration air dryer. When making a selection based on an air-cooling refrigeration air dryer, the model No. of the filter may vary since the standard processing air flow rate may differ. Contact CKD Sales for details.
*3: Air filter and oil mist filter are to be used where the inlet air temperature is 60°C or less, and X-type where the inlet air temperature is 30°C or less. If air temperature from the secondary side of the refrigeration air dryer is high, keep enough distance from the refrigeration air dryer to maintain a temperature no greater than the inlet air temperature.
*4: This system cannot be used for high pressure specifications (1 to 1.6 MPa). In that case, contact CKD Sales.
*5: Use anti-rust processed materials for piping (zinc plated pipe, lined pipe or stainless steel pipe).
*6: If there is a possibility of a large instantaneous air flow rate greater than the amount of air treated by the refrigeration air dryer, install a tank on the secondary side of the refrigeration air dryer. Installing a tank supplies stable moisture removed air.
*7: The air filter at the secondary side of the refrigeration air dryer can be used as a pre-filter before an oil mist filter.
*8: Depending on working conditions, condensation may form on the inside of the refrigeration air dryer and drip to the floor. To prevent water drops from flowing out, install a drain-pan, etc., before installing the dryer.
*9: Please feel free to consult with our sales staff when considering energy-saving systems.
*10: Install a filter immediately before the equipment to be used to remove contaminants existing in the piping.

ISO 8573-1: 2010 Compressed air purity grade

Grade	Solid Particles				Humidity and Water Content		Oil
	Max. number of particles per 1 m3 for particle diameter d (µm)			Mass Concentration Cp mg/m³	Pressure dew point °C	Water Concentration Cw g/m³	Total Oil Concentration mg/m³
	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0				
0	Conditions stricter than Grade 1, is to be specified by the user or supplier						
1	≤ 20,000	≤ 400	≤ 10	-	≤ -70	-	≤ 0.01
2	≤ 400,000	≤ 6,000	≤ 100	-	≤ -40	-	≤ 0.1
3	-	≤ 90,000	≤ 1,000	-	≤ -20	-	≤ 1
4	-	-	≤ 10,000	-	≤ +3	-	≤ 5
5	-	-	≤ 100,000	-	≤ +7	-	-
6	-	-	-	0 < Cp ≤ 5	≤ +10	-	-
7	-	-	-	5 < Cp ≤ 10	-	Cw ≤ 0.5	-
8	-	-	-	-	-	0.5 < Cw ≤ 5	-
9	-	-	-	-	-	5 < Cw ≤ 10	-
X	-	-	-	Cp > 10	-	Cw > 10	> 5

For example, "Grade 1: 2: 1" means:
●Solid particles 0.1 to 0.5 µm are 20,000 particles or less, 0.5 to 1.0 µm are 400 particles or less, and 1.0 to 5.0 µm are 10 particles or less
●Pressure dew point −40°C or less
●Oil concentration 0.01 mg/m³ or less
This indicates the class.

Large Main Line Filter
AF3000 (regular)

■ Main Line Components / Main Line Filters



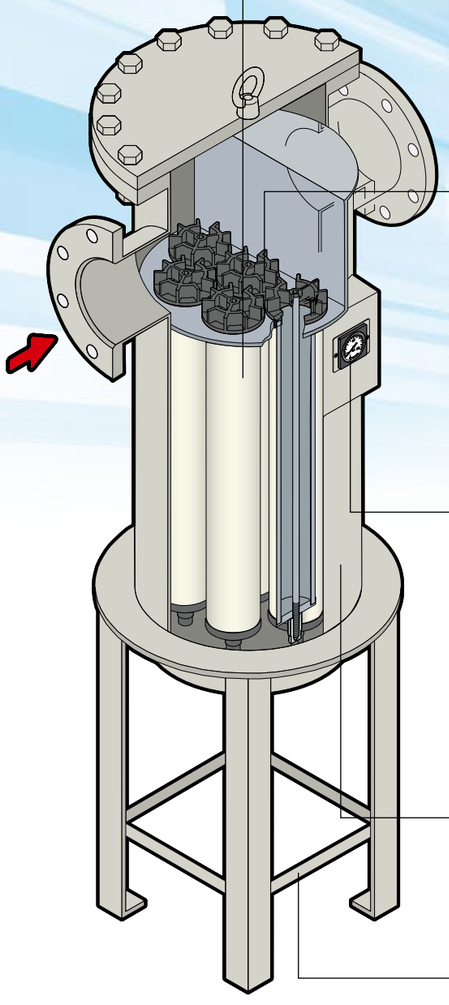
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● Pre-filter (AF3000P)	246
● Oil removing filter (AF3000S)	250
● High-performance oil removing filter (AF3000M)	254
● Activated carbon filter (AF3000X)	258
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AF3000 Series

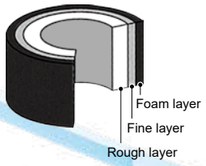
Energy Savings and Long Life

40 models in 4 series are available to select from 16 to 256 m³/min (ANR).



Contributes to energy savings

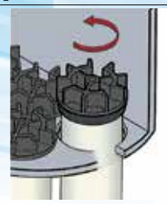
The 3 µm element employs CKD's unique chemical fiber permanent element structure. This structure minimizes clogging and reduces pressure loss.



Permanent element

Easy element replacement

The screw-in element design simplifies element replacement. The stainless steel screws eliminate seizing due to rust.



Easy daily checks

Equipped with a front-facing differential pressure gauge. Easy-to-read during daily checks. This differential pressure gauge can be used to determine when to replace the element.



Simplified equipment design

All series share the same dimensions and port sizes for the same flow rate, simplifying design and installation.

Easy installation

Mounting feet are included as standard. No special equipment is needed for installation. (Excluding AF3016). Mounting feet can be removed if not needed.

Diverse lineup

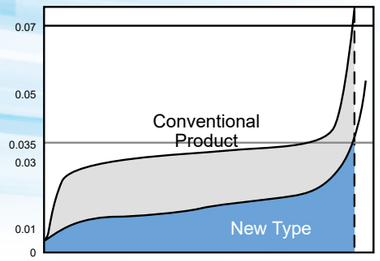
40 models are available in four types, each with 10 flow rate options. The ideal model can be selected based on the flow rate and quality of air.

Processing air flow rate m³/min (ANR)	16	32	48	64	80	96	128	160	192	256
Element	P S M X	P S M X	P S M X	P S M X	P S M X	P S M X	P S M X	P S M X	P S M X	P S M X
Port size (flange) 2B	●									
3B		●	●	●						
4B					●	●	●			
6B								●	●	●
8B										

*Processing air flow rate is the atmospheric pressure conversion value when the inlet pressure is 0.7 MPa, the initial pressure drop is P-type 0.005 MPa, and the S/M/X type is 0.01 MPa.

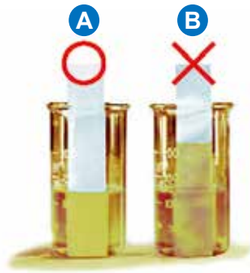
Long-life, low-pressure-loss element

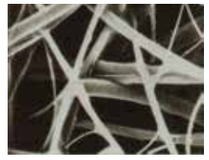
Element Service Life Curve



Element Replacement
One year under normal operating conditions.

- Pressure loss is reduced by half compared to conventional products.
- The element is replaced when the pressure drops to 0.035 MPa.
- Element lifespan is one year under normal operating conditions.





ANew Filter

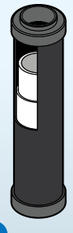
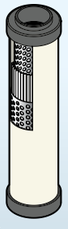
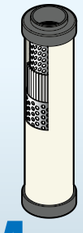
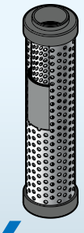
The borosilicate glass microfiber filtration layer strongly repels water and oil, minimizing pressure drop and running costs.

BConventional Filter

Conventional glass microfiber filters absorb water and oil, increasing pressure drop, reducing filtration performance, and raising running costs.

The element's high porosity (96%) contributes to low pressure loss and long life.

AF3000 Series Variations

Removing water drops Solid Particle Removal	Oil Mist Removal Solid Particle Removal	High-performance removal of oil mist, solids	Oil vapor removal Deodorizing
Ideal for use as a pre-filter for air dryers.	Protects expensive pneumatic components	For Pneumatic Circuits Which Prohibit Passage of Oil.	For pneumatic circuits which prohibit passage of odors
			
P-Type	**S-Type**	**M-Type**	**X-Type**
• Removal of particles 3 µm and larger • 95% Water Separation Efficiency	• Removal of particles 0.3 µm and over • Removes oil up to secondary oil concentration of 0.5 mg/m³ (21°C)	• Removes particles 0.01 µm and larger • Removes oil up to secondary oil concentration of 0.01 mg/m³ (21°C)	• Suction by activated carbon • Removes oil and odors in steam up to secondary concentration of 0.003 mg/m³ (21°C)



Main Line Filters

AF3000P Series

Suitable for large pre-filters.

●Processing air flow rate: 16 to 256 m³/min (ANR)

Circuit Diagram Symbol



Model No. Notation

AF3 016 P - 50 - K

- AF3: Model No.
- 016: ❶Flow Rate Category
- P: Pre-filter
- 50: ❷Bore size
- K: ❸Option

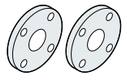
❶Flow Rate Category

Code	Description
016	16 m³/min (ANR)
032	32 m³/min (ANR)
048	48 m³/min (ANR)
064	64 m³/min (ANR)
080	80 m³/min (ANR)
096	96 m³/min (ANR)
128	128 m³/min (ANR)
160	160 m³/min (ANR)
192	192 m³/min (ANR)
256	256 m³/min (ANR)

❷Bore size

Code	Description	Flow Rate Category 016	032	048	064	080	096	128	160	192	256
50	Flange 2B	●									
80	Flange 3B		●								
100	Flange 4B			●	●						
150	Flange 6B					●	●	●			
200	Flange 8B								●	●	●

❸Option *1

	Code	Description	
	Blank	None	
	H	English Language Specifications	
	K	Companion flange included	
*2	L	Foundation bolts and nuts included	
*2	L1	Stainless steel foundation bolts and nuts included	
	O	Outdoor specifications	
*3	X1	IN-OUT Reverse Direction	
	Y2	Product Photo	

*1: When ordering several options, indicate the required options in alphabetical order.
*2: AF3032P to AF3256P are supported.
*3: Viewed from the front, standard products have an air inlet on the left port, and an air outlet on the right port. For “X1”, An air inlet is provided on the right port, while an air outlet is provided on the left port.

Specifications for Rechargeable Batteries

(Catalog No.CC-1226A)

●Design compatible with rechargeable battery manufacturing processes

AF3□□□P - ····· - P4

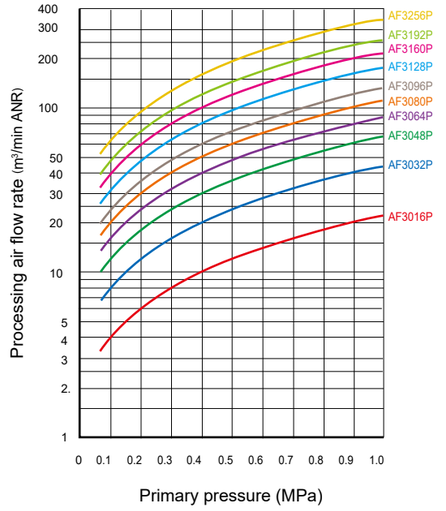
*Contact CKD for details.

Specifications

Item	AF3016 P-50	AF3032 P-80	AF3048 P-100	AF3064 P-100	AF3080 P-150	AF3096 P-150	AF3128 P-150	AF3160 P-200	AF3192 P-200	AF3256 P-200
Processing air flow rate m³/min (ANR)	16	32	48	64	80	96	128	160	192	256
Working fluid	Compressed air									
Working pressure MPa	0.07 to 1.0									
Proof pressure MPa	1.5									
Ambient temperature °C	5 to 60									
Degree of Filtration µm	3									
Pressure drop: Initial MPa	Within 0.005									
Pressure drop: Regular MPa	0.005 to 0.02									
Pressure drop: Element Replacement MPa	0.07									
Element quantity	1	2	3	4	5	6	8	10	12	16
Port size (*1) Flange	2B	3B	4B	4B	6B	6B	6B	8B	8B	8B
Weight kg	45	95	98	130	160	190	250	260	300	350
Differential pressure gauge	Standard (model No.: GA5102)									
Condensate Drains	Standard (model No.: 5100-4C)									

*1: Flange is 10K flange.
*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa and initial pressure drop is 0.005 MPa.
*3: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.

Flow Characteristics

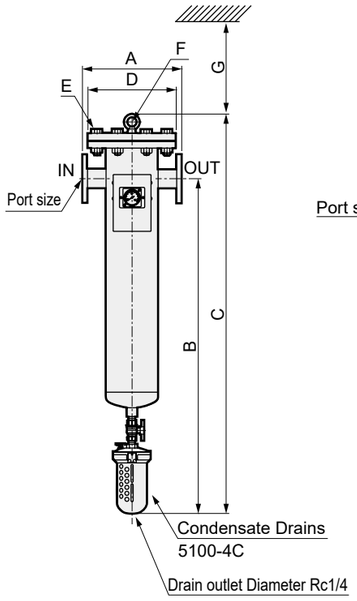


Note on selection

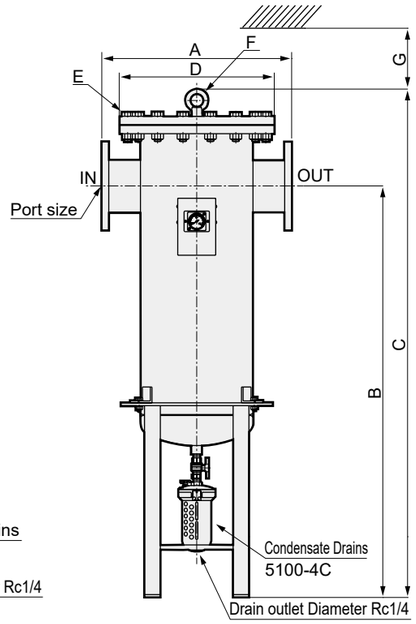
1. Never use model numbers found to be below the point of intersection of the selection conditions.
2. When the point of intersection found according to selecting conditions and flow characteristics curve are on the same line, the time to reach the service life will be shorter, so please select a one rank higher model No.
3. If the pressure is less than the selected pressure, the unit’s performance may not be demonstrated. Always select the Model No. for the working pressure.

Dimensions

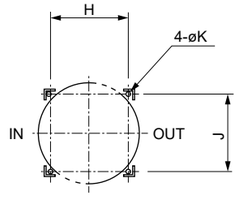
●AF3016P



●AF3032P to 3256P



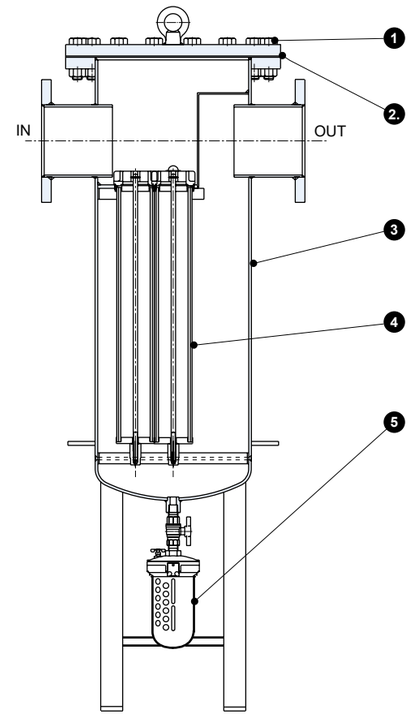
●Installation legs foundation bolt hole dimension



Model No.	Port size	A	B	C	D	E	F	G
AF3016P-50	Flange 2B	315	1045	1250	280	8-M20×70	M12	600
AF3032P-80	Flange 3B	500	1255	1495	400	12-M22×80	M12	600
AF3048P-100	Flange 4B	500	1255	1495	400	12-M22×80	M12	600
AF3064P-100	Flange 4B	550	1270	1522	445	16-M22×80	M16	600
AF3080P-150	Flange 6B	600	1300	1606	490	16-M22×80	M20	600
AF3096P-150	Flange 6B	650	1320	1630	560	16-M24×90	M20	600
AF3128P-150	Flange 6B	700	1350	1693	620	20-M24×90	M20	600
AF3160P-200	Flange 8B	700	1350	1693	620	20-M24×90	M20	600
AF3192P-200	Flange 8B	750	1360	1709	675	20-M24×100	M20	600
AF3256P-200	Flange 8B	850	1400	1786	745	20-M30×110	M24	600

Model No.	H	J	K
AF3032P-80	210	210	ø15
AF3048P-100	210	210	ø15
AF3064P-100	250	250	ø15
AF3080P-150	280	280	ø15
AF3096P-150	320	320	ø15
AF3128P-150	350	350	ø15
AF3160P-200	350	350	ø15
AF3192P-200	400	400	ø15
AF3256P-200	450	450	ø15

Internal Structure Diagram / Material



*Consumable Parts

No.	Part name	Material
1	Upper flange	SS400
2	*Gasket	NBR
3	Body	SS400
4	*Element kit	PP, NBR, etc.
5	*Condensate Drains	ZDC, PC, etc.

The drain discharger and stop valve are attached.

For maintenance parts, refer to the CKD Components Product site
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." →Maintenance Parts



Micro-mist separator

AF3000S Series

Protects expensive pneumatic components

●Flow rate range: 16 to 256 m³/min (ANR)

Circuit Diagram Symbol



Model No. Notation

AF3 **016** S - **50** - **K**

- AF3: Model No.
- 016: ❶Flow rate category
- S: Oil Removing Filter
- 50: ❷Bore size
- K: ❸Option

❶Flow rate Category

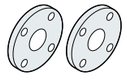
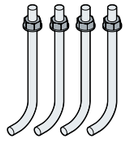
Code	Description
016	16 m³/min (ANR)
032	32 m³/min (ANR)
048	48 m³/min (ANR)
064	64 m³/min (ANR)
080	80 m³/min (ANR)
096	96 m³/min (ANR)
128	128 m³/min (ANR)
160	160 m³/min (ANR)
192	192 m³/min (ANR)
256	256 m³/min (ANR)

❷Bore size

Code	Description	Flow Rate Category 016	032	048	064	080	096	128	160	192	256
50	Flange 2B	●									
80	Flange 3B		●								
100	Flange 4B			●	●						
150	Flange 6B					●	●	●			
200	Flange 8B								●	●	●

❸Option

*1

	Code	Description	
	Blank	None	
	H	English Language Specifications	
	K	Companion flange included	
*2	L	Foundation bolts and nuts included	
*2	L1	Stainless steel foundation bolts and nuts included	
	O	Outdoor specifications	
*3	X1	IN-OUT Reverse Direction	
	Y2	Product Photo	

*1: When ordering several options, indicate the required options in alphabetical order.
*2: AF3032S to AF3256S are supported.
*3: Viewed from the front, standard products have an air inlet on the left port, and an air outlet on the right port. For "X1", An air inlet is provided on the right port, while an air outlet is provided on the left port.

Specifications for Rechargeable Batteries

(Catalog No.CC-1226AA)

●Design compatible with rechargeable battery manufacturing process

AF3□□□S - · · · · - **P4**

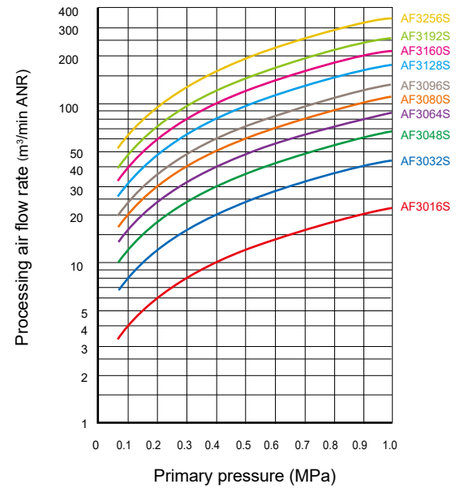
*Contact CKD for details.

Specifications

Item		AF3016 S-50	AF3032 S-80	AF3048 S-100	AF3064 S-100	AF3080 S-150	AF3096 S-150	AF3128 S-150	AF3160 S-200	AF3192 S-200	AF3256 S-200
Processing air flow rate m³/min (ANR)		16	32	48	64	80	96	128	160	192	256
Working fluid		Compressed air									
Working pressure	MPa	0.07 to 1.0									
Proof pressure	MPa	1.5									
Ambient temperature	°C	5 to 60									
Filtration rating	μm	0.3									
Secondary side oil concentration mg/m³		0.5 (inlet air 21°C)									
Pressure drop	Initial MPa	Within 0.01									
	Regular MPa	0.01 to 0.03									
	Element Replacement MPa	0.07									
Element quantity		1	2	3	4	5	6	8	10	12	16
Port size	(*1) Flange	2B	3B	4B	4B	6B	6B	6B	8B	8B	8B
Weight	kg	45	95	98	130	160	190	250	260	300	350
Differential pressure gauge		Standard (model No.: GA5102)									
Condensate Drains		Standard (model No.: 5100-4C)									

*1: Flange is 10K flange.
*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa and initial pressure drop is 0.01 MPa.
*3: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.

Flow Characteristics

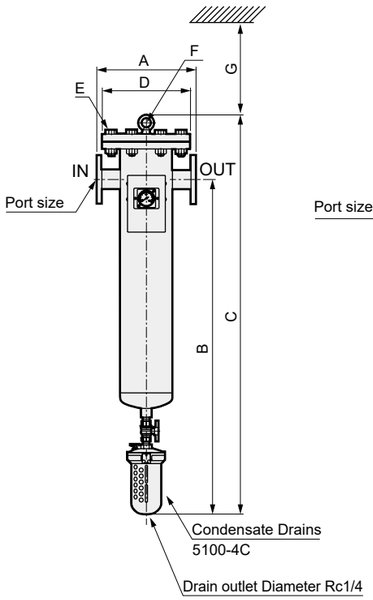


Note on selection

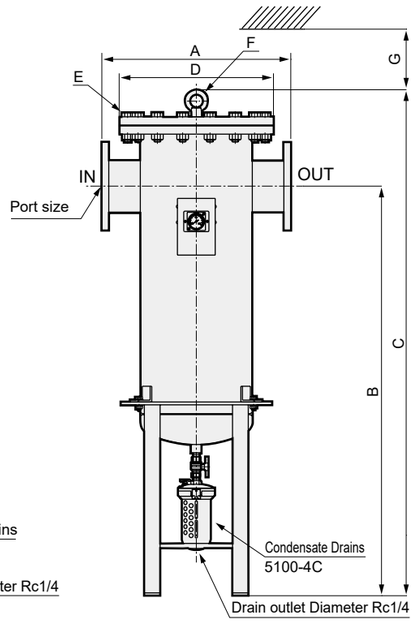
1. Never use model numbers found to be below the point of intersection of the selection conditions.
2. When the point of intersection found according to selecting conditions and flow characteristics curve are on the same line, the time to reach the service life will be shorter, so please select a one rank higher model No.
3. The oil removing ratio drops if the inlet air temperature is 30°C and over. Maintain the inlet air temperature at 30°C or less.
4. If the pressure is less than the selected pressure, the unit's performance may not be demonstrated. Always select the Model No. for the working pressure.

Dimensions

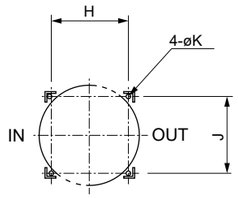
●AF3016S



●AF3032S to 3256S



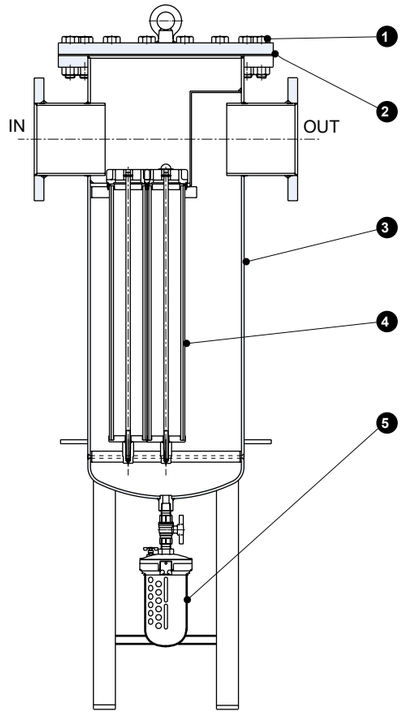
●Installation legs foundation bolt hole dimension



Model No.	Port size	A	B	C	D	E	F	G
AF3016S-50	Flange 2B	315	1045	1250	280	8-M20×70	M12	600
AF3032S-80	Flange 3B	500	1255	1495	400	12-M22×80	M12	600
AF3048S-100	Flange 4B	500	1255	1495	400	12-M22×80	M12	600
AF3064S-100	Flange 4B	550	1270	1522	445	16-M22×80	M16	600
AF3080S-150	Flange 6B	600	1300	1606	490	16-M22×80	M20	600
AF3096S-150	Flange 6B	650	1320	1630	560	16-M24×90	M20	600
AF3128S-150	Flange 6B	700	1350	1693	620	20-M24×90	M20	600
AF3160S-200	Flange 8B	700	1350	1693	620	20-M24×90	M20	600
AF3192S-200	Flange 8B	750	1360	1709	675	20-M24×100	M20	600
AF3256S-200	Flange 8B	850	1400	1786	745	20-M30×110	M24	600

Model No.	H	J	K
AF3032S-80	210	210	ø15
AF3048S-100	210	210	ø15
AF3064S-100	250	250	ø15
AF3080S-150	280	280	ø15
AF3096S-150	320	320	ø15
AF3128S-150	350	350	ø15
AF3160S-200	350	350	ø15
AF3192S-200	400	400	ø15
AF3256S-200	450	450	ø15

Internal Structure Diagram / Material



*Consumable parts

No.	Part name	Material
1	Upper flange	SS400
2	*Gasket	NBR
3	Body	SS400
4	*Element kit	Filter paper, NBR, etc.
5	*Drain discharger	ZDC, PC, etc.

The drain discharger and stop valve are attached.

For maintenance parts, refer to the CKD Components Product site.
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." → Maintenance Parts



Micro-mist separator

AF3000M Series

For Pneumatic Circuits Which Prohibit Passage of Oil.

●Flow rate range: 16 to 256 m³/min (ANR)

Circuit Diagram Symbol



Model No. Notation

AF3 016 M - 50 - K

- AF3: Model No.
- 016: ❶Flow rate category
- M: High-Performance Oil Removing Filter
- 50: ❷Bore size
- K: ❸Option

❶Flow rate Category

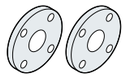
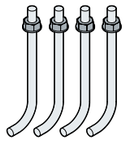
Code	Description
016	16 m³/min (ANR)
032	32 m³/min (ANR)
048	48 m³/min (ANR)
064	64 m³/min (ANR)
080	80 m³/min (ANR)
096	96 m³/min (ANR)
128	128 m³/min (ANR)
160	160 m³/min (ANR)
192	192 m³/min (ANR)
256	256 m³/min (ANR)

❷Bore size

Code	Description	Flow Rate Category 016	032	048	064	080	096	128	160	192	256
50	Flange 2B	●									
80	Flange 3B		●								
100	Flange 4B			●	●						
150	Flange 6B					●	●	●			
200	Flange 8B								●	●	●

❸Option

*1

	Code	Description	
	Blank	None	
	H	English Language Specifications	
	K	Companion flange included	
*2	L	Foundation bolts and nuts included	
*2	L1	Stainless steel foundation bolts and nuts included	
	O	Outdoor specifications	
*3	X1	IN-OUT Reverse Direction	
	Y2	Product Photo	

*1: When ordering several options, indicate the required options in alphabetical order.
*2: AF3032M to AF3256M are supported.
*3: Viewed from the front, standard products have an air inlet on the left port, and an air outlet on the right port. For “X1”, An air inlet is provided on the right port, while an air outlet is provided on the left port.

Specifications for Rechargeable Batteries

(Catalog No.CC-1226AA)

●Design compatible with rechargeable battery manufacturing process

AF3□□□M - · · · · - P4

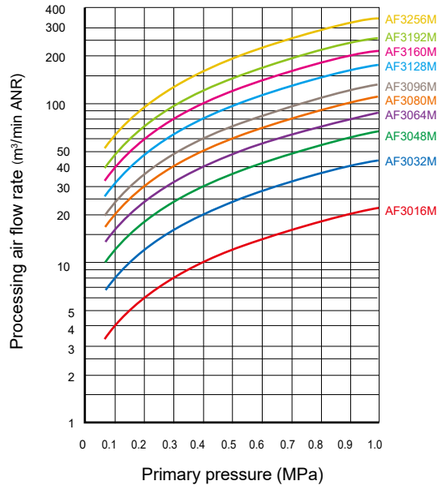
*Contact CKD for details.

Specifications

Item	AF3016 M-50	AF3032 M-80	AF3048 M-100	AF3064 M-100	AF3080 M-150	AF3096 M-150	AF3128 M-150	AF3160 M-200	AF3192 M-200	AF3256 M-200
Processing air flow rate m³/min (ANR)	16	32	48	64	80	96	128	160	192	256
Working fluid	Compressed air									
Working pressure MPa	0.07 to 1.0									
Proof pressure MPa	1.5									
Ambient temperature °C	5 to 60									
Filtration rating μm	0.01									
Secondary side oil concentration mg/m³	0.01 (inlet air 21°C)									
Pressure drop Initial MPa	Within 0.01									
Pressure drop Regular MPa	0.02 to 0.04									
Pressure drop Element Replacement MPa	0.07									
Element quantity	1	2	3	4	5	6	8	10	12	16
Port size (*1) Flange	2B	3B	4B	4B	6B	6B	6B	8B	8B	8B
Weight kg	45	95	98	130	160	190	250	260	300	350
Differential pressure gauge	Standard (model No.: GA5102)									
Condensate Drains	Standard (model No.: 5100-4C)									

*1: Flange is 10K flange.
*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa and initial pressure drop is 0.01 MPa.
*3: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.

Flow Characteristics

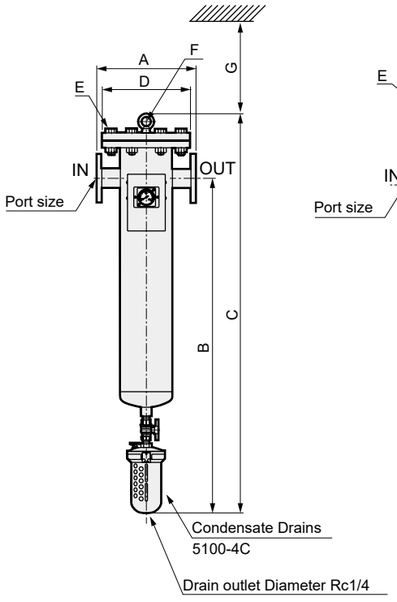


Note on selection

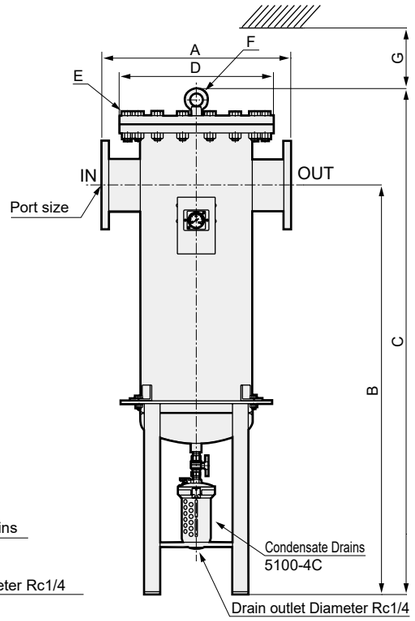
1. Never use model numbers found to be below the point of intersection of the selection conditions.
2. When the point of intersection found according to selecting conditions and flow characteristics curve are on the same line, the time to reach the service life will be shorter, so please select a one rank higher model No.
3. The oil removing ratio drops if the inlet air temperature is 30°C and over. Maintain the inlet air temperature at 30°C or less.
4. If the pressure is less than the selected pressure, the unit’s performance may not be demonstrated. Always select the Model No. for the working pressure.

Dimensions

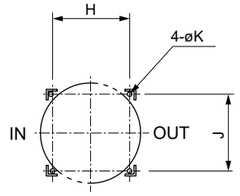
●AF3016M



●AF3032M to 3256M



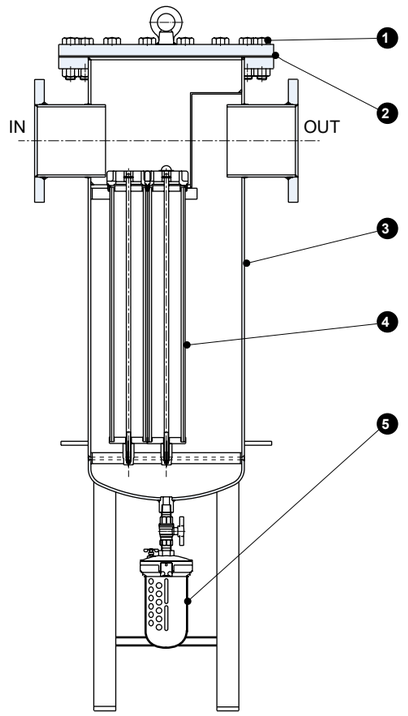
●Installation legs foundation bolt hole dimension



Model No.	Port size	A	B	C	D	E	F	G
AF3016M-50	Flange 2B	315	1045	1250	280	8-M20×70	M12	600
AF3032M-80	Flange 3B	500	1255	1495	400	12-M22×80	M12	600
AF3048M-100	Flange 4B	500	1255	1495	400	12-M22×80	M12	600
AF3064M-100	Flange 4B	550	1270	1522	445	16-M22×80	M16	600
AF3080M-150	Flange 6B	600	1300	1606	490	16-M22×80	M20	600
AF3096M-150	Flange 6B	650	1320	1630	560	16-M24×90	M20	600
AF3128M-150	Flange 6B	700	1350	1693	620	20-M24×90	M20	600
AF3160M-200	Flange 8B	700	1350	1693	620	20-M24×90	M20	600
AF3192M-200	Flange 8B	750	1360	1709	675	20-M24×100	M20	600
AF3256M-200	Flange 8B	850	1400	1786	745	20-M30×110	M24	600

Model No.	H	J	K
AF3032M-80	210	210	ø15
AF3048M-100	210	210	ø15
AF3064M-100	250	250	ø15
AF3080M-150	280	280	ø15
AF3096M-150	320	320	ø15
AF3128M-150	350	350	ø15
AF3160M-200	350	350	ø15
AF3192M-200	400	400	ø15
AF3256M-200	450	450	ø15

Internal Structure Diagram / Material



*Consumable parts

No.	Part name	Material
1	Upper flange	SS400
2	*Gasket	NBR
3	Body	SS400
4	*Element kit	Filter paper, NBR, etc.
5	*Drain discharger	ZDC, PC, etc.

The drain discharger and stop valve are attached.

For maintenance parts, refer to the CKD Components Product site.
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." → Maintenance Parts



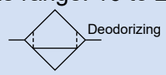
Micro-mist separator

AF3000X Series

For pneumatic circuits which prohibit passage of odors

●Flow rate range: 16 to 256 m³/min (ANR)

Circuit Diagram Symbol



Model No. Notation

AF3 016 X - 50 - K

- AF3: Model No.
- 016: ❶Flow rate category
- X: Activated Carbon Filter
- 50: ❷Bore size
- K: ❸Option

Note: Unit performance may not be attained if used at less than the selected pressure. Always select the model No. for the working pressure.

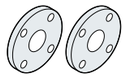
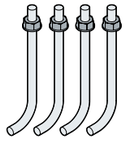
❶Flow rate Category

Code	Description
016	16 m³/min (ANR)
032	32 m³/min (ANR)
048	48 m³/min (ANR)
064	64 m³/min (ANR)
080	80 m³/min (ANR)
096	96 m³/min (ANR)
128	128 m³/min (ANR)
160	160 m³/min (ANR)
192	192 m³/min (ANR)
256	256 m³/min (ANR)

❷Bore size

Code	Description	Flow Rate Category 016	032	048	064	080	096	128	160	192	256
50	Flange 2B	●									
80	Flange 3B		●								
100	Flange 4B			●	●						
150	Flange 6B					●	●	●			
200	Flange 8B								●	●	●

❸Option *1

	Code	Description	
	Blank	None	
	H	English Language Specifications	
	K	Companion flange included	
*2	L	Foundation bolts and nuts included	
*2	L1	Stainless steel foundation bolts and nuts included	
	O	Outdoor specifications	
*3	X1	IN-OUT Reverse Direction	
	Y2	Product Photo	

*1: When ordering several options, indicate the required options in alphabetical order.
*2: AF3032X to AF3256X are supported.
*3: Viewed from the front, standard products have an air inlet on the left port, and an air outlet on the right port. For “X1”, An air inlet is provided on the right port, while an air outlet is provided on the left port.

Specifications for Rechargeable Batteries

(Catalog No.CC-1226AA)

●Design compatible with rechargeable battery manufacturing process

AF3□□□X - · · · · - P4

*Contact CKD for details.

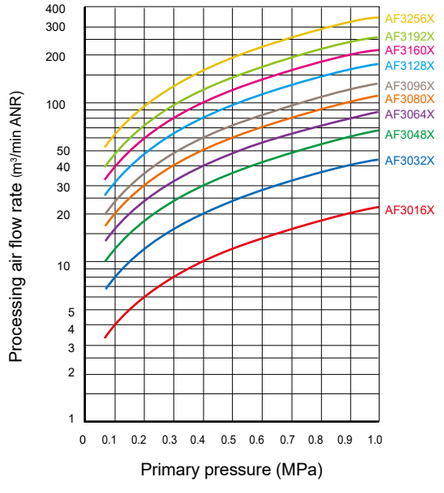
Specifications

Item	AF3016 X-50	AF3032 X-80	AF3048 X-100	AF3064 X-100	AF3080 X-150	AF3096 X-150	AF3128 X-150	AF3160 X-200	AF3192 X-200	AF3256 X-200
Processing air flow rate m³/min (ANR)	16	32	48	64	80	96	128	160	192	256
Working fluid	Compressed air									
Working pressure MPa	0.07 to 1.0									
Proof pressure MPa	1.5									
Ambient temperature °C	5 to 30									
Filtration method	Suction by activated carbon									
Secondary side oil concentration mg/m³	0.003 (inlet air 21°C)									
Pressure drop MPa	Within 0.01									
Element quantity	1	2	3	4	5	6	8	10	12	16
Port size (*1) Flange	2B	3B	4B	4B	6B	6B	6B	8B	8B	8B
Weight kg	45	95	98	130	160	190	250	260	300	350
Differential pressure gauge	Standard (model No.: GA5102)									
Condensate Drains	None									

*1: Flange is 10K flange.
*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa and initial pressure drop is 0.01 MPa.
*3: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.

Flow Characteristics

Be sure to use the AF3000M type as a pre-filter.

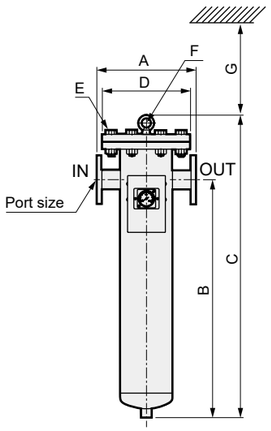


Note on selection

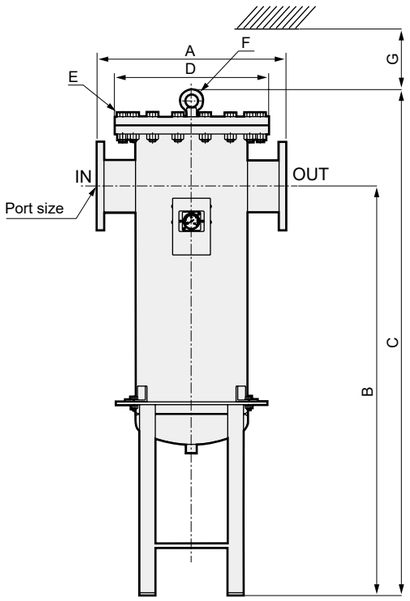
1. Never use model numbers found to be below the point of intersection of the selection conditions.
2. When the point of intersection found according to selecting conditions and flow characteristics curve are on the same line, the time to reach the service life will be shorter, so please select a one rank higher model No.
3. The oil removing ratio drops if the inlet air temperature is 30°C and over. Maintain the inlet air temperature at 30°C or less.
4. If the pressure is less than the selected pressure, the unit’s performance may not be demonstrated. Always select the Model No. for the working pressure.

Dimensions

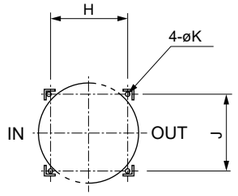
●AF3016X



●AF3032X to 3256X



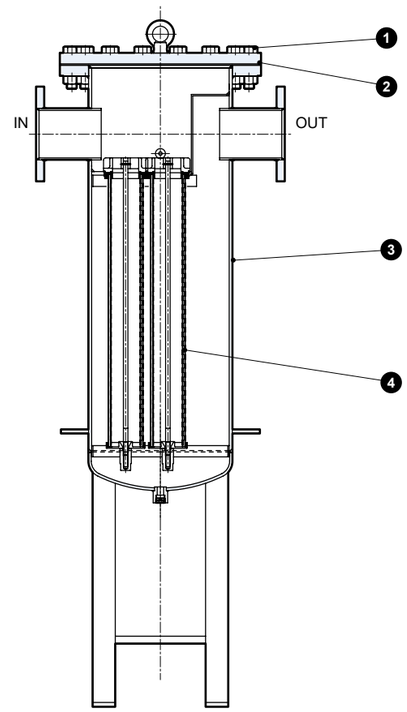
●Installation legs foundation bolt hole dimension



Model No.	Port size	A	B	C	D	E	F	G
AF3016X-50	Flange 2B	315	755	960	280	8-M20×70	M12	600
AF3032X-80	Flange 3B	500	1255	1495	400	12-M22×80	M12	600
AF3048X-100	Flange 4B	500	1255	1495	400	12-M22×80	M12	600
AF3064X-100	Flange 4B	550	1270	1522	445	16-M22×80	M16	600
AF3080X-150	Flange 6B	600	1300	1606	490	16-M22×80	M20	600
AF3096X-150	Flange 6B	650	1320	1630	560	16-M24×90	M20	600
AF3128X-150	Flange 6B	700	1350	1693	620	20-M24×90	M20	600
AF3160X-200	Flange 8B	700	1350	1693	620	20-M24×90	M20	600
AF3192X-200	Flange 8B	750	1360	1709	675	20-M24×100	M20	600
AF3256X-200	Flange 8B	850	1400	1786	745	20-M30×110	M24	600

Model No.	H	J	K
AF3032X-80	210	210	ø15
AF3048X-100	210	210	ø15
AF3064X-100	250	250	ø15
AF3080X-150	280	280	ø15
AF3096X-150	320	320	ø15
AF3128X-150	350	350	ø15
AF3160X-200	350	350	ø15
AF3192X-200	400	400	ø15
AF3256X-200	450	450	ø15

Internal Structure Diagram / Material



*Consumable parts

No.	Part name	Material
1	Upper flange	SS400
2	*Gasket	NBR
3	Body	SS400
4	*Element kit	Activated carbon, NBR, etc.

For maintenance parts, refer to the CKD Components Product site.
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." →Maintenance Parts

Safety Precautions

Be sure to read this section before use.
Refer to Intro 15 for General Precautions.

Large main line filter AF3000 Series

Manufacturer's Disclaimer

⚠WARNING

■The manufacturer cannot be held liable in the following cases:
- In the case where there are serious errors in the operator's use.
- Illegal modifications or repairs using non-standard parts by user.

Design / Selection

⚠WARNING

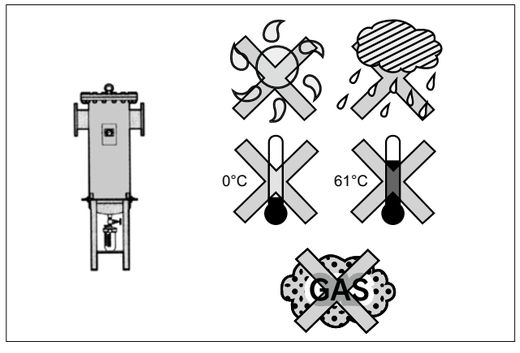
■Do not use for applications other than compressed air.

■Do not use for caisson shields or medical devices such as breathing devices, or for direct air blow onto foodstuffs.
Doing so may result in serious injury.

■Do not mount and use this device on transportation equipment such as vehicles or ships.
Vibration may cause internal damage.

■Avoid direct sunlight and rain water. Resin parts, etc., are likely to deteriorate and break.

■Do not use in locations with corrosive gases.



■Use this product within the range of the working temperature.

■Do not use in locations where there is a risk of freezing. There is a risk that condensate accumulated inside the product may freeze and damage the product.

■Do not use in hazardous locations (e.g., potentially explosive atmospheres).

■The inlet air temperature should be kept as low as possible. The higher the temperature, the worse the oil removal rate.

■Do not use this product in an ozone generating environment.

■Avoid using this product where vibration and impact are present.

■Do not use this product in areas containing dust, etc.

■Do not use in environments where the following gaseous substances are contained in compressed air.

· Sulfur dioxide, Chlorine gas
· Aromatic hydrocarbon compounds(For example, benzene, toluene, phenol, cyclohexane, etc.)
· Chlorinated hydrocarbon compounds (For example, trichloroethylene, chloroform, etc.)
· Ketones (Example: Acetone, etc.)
· Aldehydes (For example, formaldehyde or acetaldehyde, etc.)
· Amines (Example: Ethylamine, Methylamine ,etc.)

■Always set the air flow to within the working pressure range and the processing air rate.
Otherwise, water, dust, and oil removal performance may be compromised.

■Install indoors.

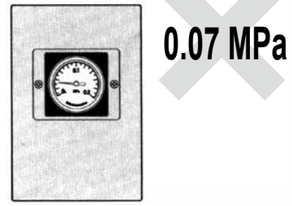
■The inside of the AF3000 Series is coated to prevent rust. However, when using this series for applications susceptible to rust, the stainless steel housing "AF5000 Series (Page 265)" is recommended.

⚠CAUTION

■Class 2 pressure vessel according to "Safety regulation of boiler and pressure vessel" in Occupational Safety Sanitation Laws is applied in model No. AF3032 to 3256.

■Model No. AF3032 to 3256 have a Class 2 pressure vessel pressure proof certificate. This certificate must be kept in safe-keeping while using this product. (Labor Standards Supervision Officenotification to is not required.)

■The air filter life is spent when the pressure drops to 0.07 MPa or after one year of use, whichever comes first. Change all elements when the service life is reached.
(X Series cannot control service life due to the differential pressure. Therefore, replace the filter after 1,000 hours of use or when the deodorizing effect is lost.)



● Chemical resistance of drain discharger plastic bowl

Types of Chemicals	Categories of Chemicals	Main Products of Chemicals	General Applications	Polycarbonate	Nylon
Inorganic compounds	Acids	Hydrochloric acid, sulfuric acid, fluorine, phosphoric acid, chromic acid, etc.	Acid washing of metals, acidic degreasing solutions, coating treatment solutions	×	×
	Alkalines	Caustic soda, caustic potash, calcium hydroxide, aqueous ammonia, sodium carbonate, etc.	Alkaline degreasing solution for metals	×	○
	Inorganic salts	Sodium sulfide, potassium nitrate, potassium bichromate, sodium sulfate, etc.		×	○
Organic compounds	Aromatic hydrocarbons	Benzene, toluene, xylene, ethyl benzene, styrene, etc.	Contained in paint thinner (benzene, toluene, xylene)	×	×
	Chlorinated Aliphatic Hydrocarbons	Methyl chloride, ethylene chloride, methylene chloride, acetylene chloride, chloroform, trichlene, perchlene, carbon tetrachloride	Organic Solvent-Based Washing Solution for Metals (Trichloroethylene, Tetrachloroethylene, Carbon Tetrachloride, etc.)	×	○
	Chlorinated Aromatic Hydrocarbons	Chlorobenzene, dichlorobenzene, benzene hexachloride (B/H/C), etc.	Agricultural chemicals	×	○
	Petroleum components	Solvent, naphtha, gasoline		×	○
	Alcohols	Methanol, ethanol, cyclohexanol, benzyl alcohol	Used as an antifreeze agent	×	×
	Phenol	Carbolic acid, cresol, naphthol, etc.	Disinfectant solution	×	×
	Ethers	Methyl ether, methyl ethyl ether, ethyl ether	Brake fluid additive	×	○
	Ketones	Acetone, methyl ethyl ketone, cyclohexanone, acetophenone, etc.		×	×
	Carboxylic acids	Formic acid, acetic acid, butyl acid, acrylic acid, oxalic acid, phthalic acid, etc.	Dyes; oxalic acid for aluminum processing; phthalic acid for paint base	×	×
	Phosphate ester	Dimethyl phthalate (DMP), diethyl phthalate (DEP), dibutyl phthalate (DBP), dioctyl phthalate (DOP)	Lubricant, synthetic hydraulic fluid, rust preventative additives used as plasticizers for synthetic resins	×	○
	Oxyacids	Glycolic acid, lactic acid, malic acid, citric acid, tartaric acid		×	×
	Nitro compounds	Nitromethane, nitroethane, nitroethylene, nitrobenzene, etc.		×	○
	Amines	Methylamine, dimethylamine, ethylamine, aniline, acetanilide, etc.	Brake fluid additive	×	×
	Nitriles	Acetonitrile, acrylonitrile, benzonitrile, acetoisonitrile, etc.	Raw material for nitrile rubber	×	○

○ symbol: Usable, × symbol: Not usable

For precautions during mounting, installation, adjustment, use and maintenance, refer to the CKD Components Product Site (https://www.ckd.co.jp/kiki/en/) → "Model No. → Instruction Manual

Large Main Line Filter
AF5000 (oil-free)

■ Main Line Components / Main Line Filter



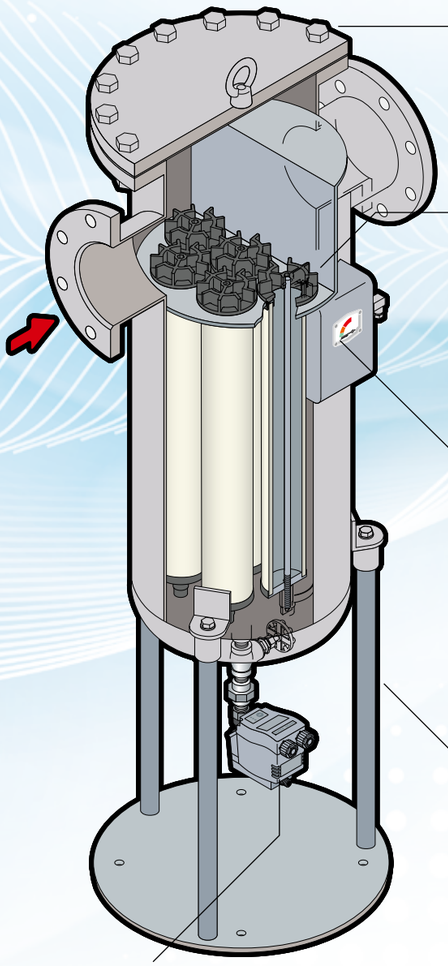
CONTENTS

Large Main Line Filter Unit - Recommended system configuration 240
Product introduction 266
●Pre-filter (AF5000P) 268
●Oil removing filter (AF5000S) 272
●High-performance oil removing filter (AF5000M) 276
●Activated carbon filter (AF5000X) 280
⚠ Safety precautions 284

Large Main Line Filter

AF5000 Series

Providing total oil-free specifications from refrigeration air dryer to filter by incorporating a stainless steel vessel.



Stainless steel vessel incorporated for all models (SUS304)

Truly clean air is supplied without rust forming.

Easy element replacement.

A screw method is used for element installation, so the element is replaced by removing the upper flange. Stainless steel is also used for the screws, with no concern for stiffness due to rust.



Remote control possible

An indicator with a differential pressure switch is standard, installed on the front. The element replacement interval is confirmed beforehand. An alarm signal is output from the differential pressure switch, providing an accurate reading and enabling remote control.

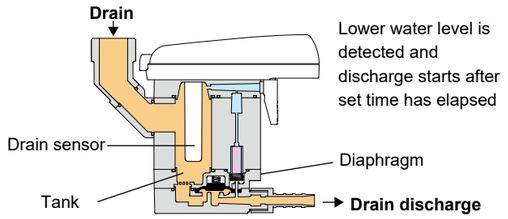


Easy installation.

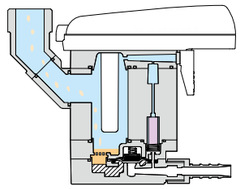
Mounting feet are included as standard. Piping work is easier. (Excluding AF5016) The legs are removed when not required.

Drain discharger with no air loss sensor prevents wasted air consumption (Provided as standard on P- and S-types)

The highly reliable drain lower end sensor and solenoid valve have been integrated in this new energy-saving drain discharger. While air is discharged with the drainage when using the float or disc drain discharger, this product detects lower water levels during drainage discharge, so air is not wasted and discharged when discharging the drainage. An alarm signal is output, enabling remote control. (Power supply 95 VAC to 240 VAC required)



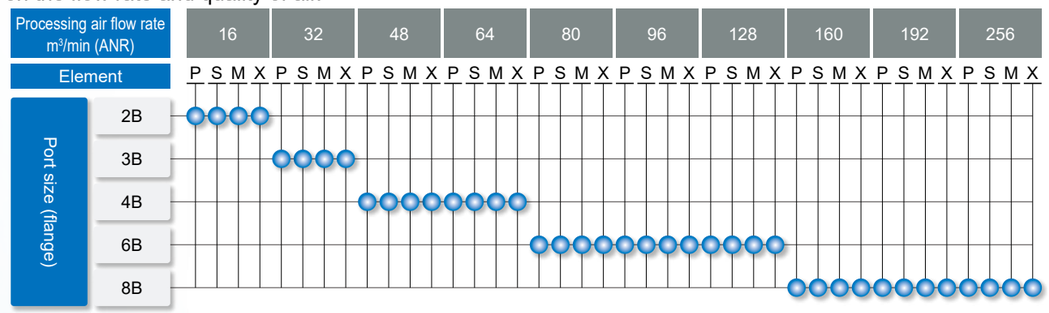
Lower water level is detected and discharge starts after set time has elapsed



Lower water level is detected again and drainage stops

Diverse lineup

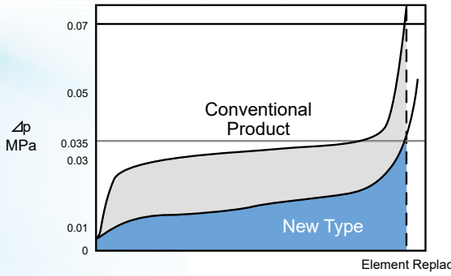
40 models are available in four types, each with 10 flow rate options. The ideal model can be selected based on the flow rate and quality of air.



*Processing air flow rate is the atmospheric pressure conversion value when the inlet pressure is 0.7 MPa, the initial pressure drop is P-type 0.005 MPa, the S-/X-type is 0.007 MPa, and the M-type is 0.01 MPa.

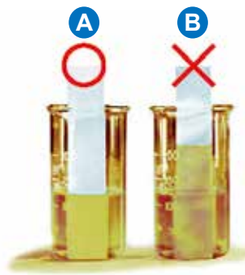
Long-life, low-pressure-loss element

Element Service Life Curve



Element Replacement
One year under normal operating conditions.

- Pressure loss is reduced by half compared to conventional products.
- The element is replaced when the pressure drops to 0.035 MPa.
- Element lifespan is one year under normal operating conditions.

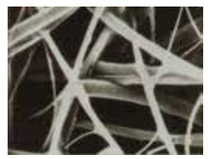


A New Filter

The borosilicate glass microfiber filtration layer strongly repels water and oil, minimizing pressure drop and running costs.

B Conventional Filter

Conventional glass microfiber filters absorb water and oil, increasing pressure drop, reducing filtration performance, and raising running costs.

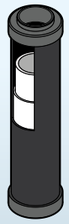


The element's high porosity (96%) contributes to low pressure loss and long life.

AF5000Series variation

Removes water drops and solid particles

Ideal for use as a pre-filter for air dryers.

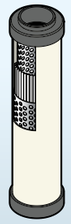


P-Type

- Removal of particles 3 µm and larger
- 95% Water Separation Efficiency

Removes oil mist and solid particles

Protects expensive pneumatic components

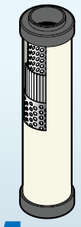


S-Type

- Removal of particles 0.3 µm and over
- Removes oil up to secondary oil concentration of 0.5 mg/m³ (21°C)

High-performance removal of oil mist and solids

For Pneumatic Circuits Which Prohibit Passage of Oil.

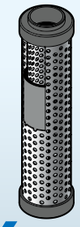


M-Type

- Removes particles 0.01 µm and larger
- Removes oil up to secondary oil concentration of 0.01 mg/m³ (21°C)

Oil vapor removal and deodorizing

For pneumatic circuits which prohibit passage of odors



X-Type

- Suction by activated carbon
- Removes oil and odors in steam up to secondary concentration of 0.003 mg/m³ (21°C)



Main Line Filters

AF5000P Series

Ideal for use as a pre-filter for air dryers.

●Flow rate range: 16 to 256 m³/min (ANR)

Circuit diagram symbol



Model No. Notation

AF5 **1** 016 P – **2** 50 – **3** X1

- AF5: Model No.
- 1 Flow rate Category: 016
- 2 Bore size: 50
- 3 Option: X1

Note: If the pressure is less than the selected pressure, the unit's performance may not be demonstrated. Always select the Model No. for the working pressure.

1 Flow rate Category

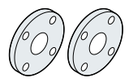
Code	Description
016	16 m³/min (ANR)
032	32 m³/min (ANR)
048	48 m³/min (ANR)
064	64 m³/min (ANR)
080	80 m³/min (ANR)
096	96 m³/min (ANR)
128	128 m³/min (ANR)
160	160 m³/min (ANR)
192	192 m³/min (ANR)
256	256 m³/min (ANR)

2 Bore size

Code	Description	Flow Rate Category 016	032	048	064	080	096	128	160	192	256
50	Flange 2B	●									
80	Flange 3B		●								
100	Flange 4B			●	●						
150	Flange 6B					●	●	●			
200	Flange 8B								●	●	●

3 Option

*1

	Code	Description	
	Blank	Standard product	
*2	D	Drain discharger 5100-4C	
	E	Without drain discharger	
	K	Companion flange included	
	H	English Language Specifications	
	H2	Stainless steel nameplate	
*3	L	Foundation bolt/nut attached (SS400)	
*3	L1	Foundation bolt/nut included (SUS304)	
*4	X1	IN-OUT Reverse Direction	
	Y2	Product photo	

*1: When ordering several options, indicate the required options in alphabetical order.
*2: "D" drain discharger 5100-4C is recommended for working environments where electric wiring is not possible.
*3: "L" and "L1" are applicable to AF5032P to AF5256P.
*4: Viewed from the front, the Standard Product has an air inlet on the left port, while an air outlet on the right port. For "X1", an air inlet is provided on the right port, while an air outlet is provided on the left port.

Specifications for Rechargeable Batteries

(Catalog No.CC-1226AA)

●Design compatible with rechargeable battery manufacturing process

AF5□□□P - . . . . - P4

*Contact CKD for details.

Specifications

Model No. / Item		AF5016P-50	AF5032P-80	AF5048P-100	AF5064P-100	AF5080P-150	AF5096P-150	AF5128P-150	AF5160P-200	AF5192P-200	AF5256P-200
Processing air flow rate	(*1,*2) m³/min (ANR)	16	32	48	64	80	96	128	160	192	256
Working fluid		Compressed air									
Working pressure	MPa	0.08 to 1.0									
Proof pressure	MPa	1.5									
Ambient temperature	°C	5 to 60									
Filtration rating	μm	3									
Pressure drop	Initial MPa	Within 0.005									
	Regular MPa	0.01									
	Element Replacement MPa	0.035									
Element quantity		1	2	3	4	5	6	8	10	12	16
Port size	(*3) flange	2B	3B	4B	4B	6B	6B	6B	8B	8B	8B
Weight	kg	38	76	78	107	140	167	223	232	269	330
Differential pressure switch											
Operating pressure differential	MPa	0.04±0.01									
Contact		1-pole "a" contact									
Max. contact current	A	0.5									
Max. contact voltage	VDC	200									
Max. contact capacitance	W	10									
Max. contact resistance (including reed switch)	mΩ	150									
Drain discharger (model No.: DBV1003D)											
Drain outlet port size		G1/4 or ø8-10 mm hose fitting (*4)									
Power Supply		Single-phase 95 VAC to 240 VAC 50/60Hz									

*1: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.
*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa and initial pressure drop is 0.005 MPa.
*3: Flange is a 10K flange.
*4: G1/4 can be connected to R1/4.

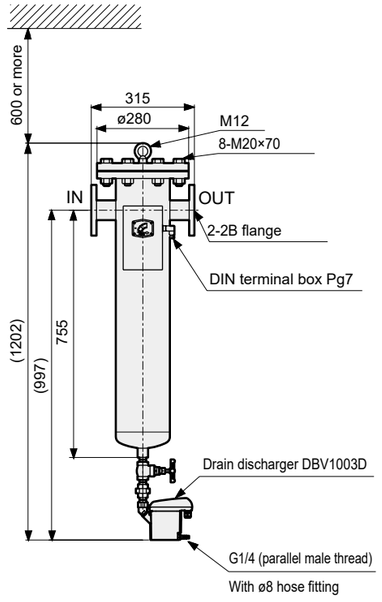
Flow rate compensation coefficient

If the working pressure is other than 0.7 MPa, multiply the processing air flow rate by the above coefficient.

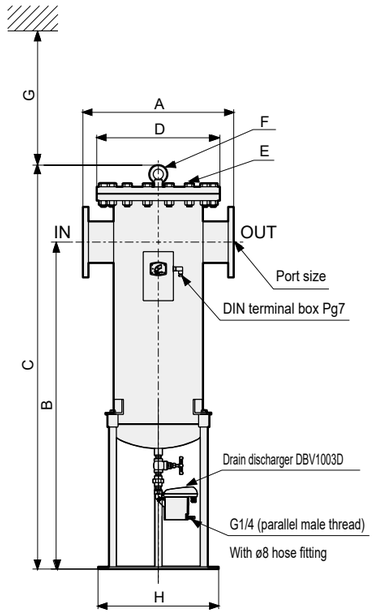
Pressure (MPa)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Compensation coefficient	0.38	0.53	0.65	0.76	0.85	0.93	1.0	1.07	1.13	1.2

Dimensions

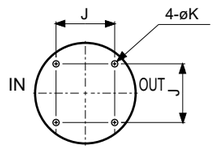
●AF5016P



●AF5032P to AF5256P



●Foundation bolt hole dimension



Model No.	Port size	A	B	C	D	E	F	G	H	J	K
AF5032P-80	Flange 3B	500	1255	1495	ø400	12-M22×80	M12	600	ø380	210	ø15
AF5048P-100	Flange 4B	500	1255	1495	ø400	12-M22×80	M12	600	ø380	210	ø15
AF5064P-100	Flange 4B	550	1270	1522	ø445	16-M22×80	M16	600	ø440	250	ø15
AF5080P-150	Flange 6B	600	1300	1606	ø490	16-M22×80	M20	600	ø480	280	ø15
AF5096P-150	Flange 6B	650	1320	1630	ø560	16-M24×90	M20	600	ø540	320	ø15
AF5128P-150	Flange 6B	700	1350	1693	ø620	20-M24×90	M20	600	ø610	350	ø15
AF5160P-200	Flange 8B	700	1350	1693	ø620	20-M24×90	M20	600	ø610	350	ø15
AF5192P-200	Flange 8B	750	1360	1709	ø675	20-M24×100	M20	600	ø670	400	ø15
AF5256P-200	Flange 8B	850	1400	1786	ø745	20-M30×110	M24	600	ø730	450	ø15

For maintenance parts, refer to the CKD Components Product site.
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." →Maintenance Parts

MEMO



Micro-mist separator

AF5000S Series

Protects expensive pneumatic components

●Flow rate range: 16 to 256 m³/min (ANR)

Circuit diagram symbol



Model No. Notation

AF5 016 S - 50 - X1

- AF5: Model No.
- 016: ❶Flow rate Category
- S: Model No.
- 50: ❷Bore size
- X1: ❸Option

Note: If the pressure is less than the selected pressure, the unit's performance may not be demonstrated. Always select the Model No. for the working pressure.

❶Flow rate Category

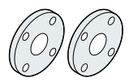
Code	Description
016	16 m³/min (ANR)
032	32 m³/min (ANR)
048	48 m³/min (ANR)
064	64 m³/min (ANR)
080	80 m³/min (ANR)
096	96 m³/min (ANR)
128	128 m³/min (ANR)
160	160 m³/min (ANR)
192	192 m³/min (ANR)
256	256 m³/min (ANR)

❷Bore size

Code	Description	Flow Rate Category 016	032	048	064	080	096	128	160	192	256
50	Flange 2B	●									
80	Flange 3B		●								
100	Flange 4B			●	●						
150	Flange 6B					●	●	●			
200	Flange 8B								●	●	●

❸Option

*1

	Code	Description	
	Blank	Standard product	
*2	D	Drain discharger 5100-4C	
	E	Without drain discharger	
	K	Companion flange included	
	H	English Language Specifications	
	H2	Stainless steel nameplate	
*3	L	Foundation bolt/nut attached (SS400)	
*3	L1	Foundation bolt/nut included (SUS304)	
*4	X1	IN-OUT Reverse Direction	
	Y2	Product photo	

*1: When ordering several options, indicate the required options in alphabetical order.
*2: "D" drain discharger 5100-4C is recommended for working environments where electric wiring is not possible.
*3: "L" and "L1" are applicable to AF5032S to AF5256S.
*4: Viewed from the front, the Standard Product has an air inlet on the left port, while an air outlet on the right port. For "X1", an air inlet is provided on the right port, while an air outlet is provided on the left port.

Specifications for Rechargeable Batteries

(Catalog No.CC-1226AA)

●Design compatible with rechargeable battery manufacturing process

AF5□□□S - · · · · - P4

*Contact CKD for details.

Specifications

Model No. / Item			AF5016S-50	AF5032S-80	AF5048S-100	AF5064S-100	AF5080S-150	AF5096S-150	AF5128S-150	AF5160S-200	AF5192S-200	AF5256S-200
Processing air flow rate	(*1,*2) m³/min (ANR)		16	32	48	64	80	96	128	160	192	256
Working fluid			Compressed air									
Working pressure		MPa	0.08 to 1.0									
Proof pressure		MPa	1.5									
Ambient temperature		°C	5 to 60									
Filtration rating		μm	0.3									
Secondary side oil concentration		mg/m³	0.5 (inlet air 21°C)									
Pressure drop	Initial	MPa	0.007									
	Regular	MPa	0.014									
	Element Replacement	MPa	0.035									
Element quantity			1	2	3	4	5	6	8	10	12	16
Port size	(*3) flange		2B	3B	4B	4B	6B	6B	6B	8B	8B	8B
Weight		kg	38	76	78	107	140	167	223	232	269	330
Differential pressure switch												
Operating pressure differential		MPa	0.04±0.01									
Contact			1-pole "a" contact									
Max. contact current		A	0.5									
Max. contact voltage		VDC	200									
Max. contact capacitance		W	10									
Max. contact resistance (including reed switch)		mΩ	150									
Drain discharger (model No.: DBV1003D)												
Drain outlet port size			G1/4 or ø8-10 mm hose fitting (*4)									
Power Supply			Single-phase 95 VAC to 240 VAC 50/60Hz									

*1: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.
*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa and initial pressure drop is 0.007 MPa.
*3: Flange is a 10K flange.
*4: G1/4 can be connected to R1/4.

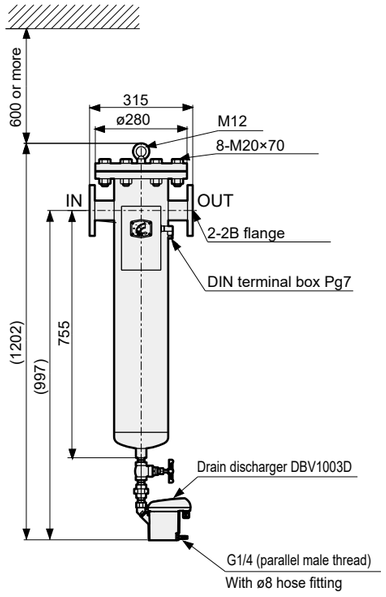
Flow rate compensation coefficient

If the working pressure is other than 0.7 MPa, multiply the processing air flow rate by the above coefficient.

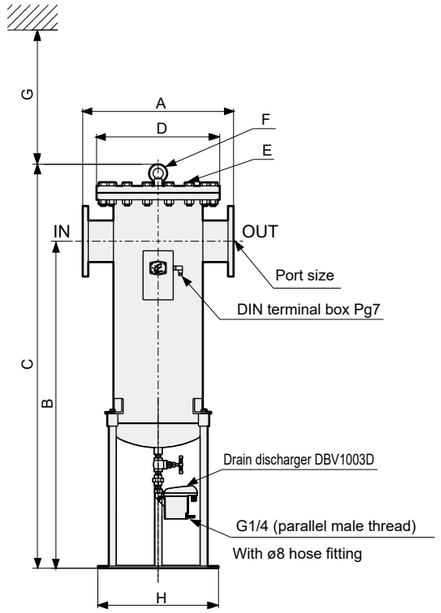
Pressure (MPa)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Compensation coefficient	0.38	0.53	0.65	0.76	0.85	0.93	1.0	1.07	1.13	1.2

Dimensions

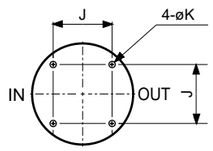
●AF5016S



●AF5032S to AF5256S



●Foundation bolt hole dimension



Model No.	Port size	A	B	C	D	E	F	G	H	J	K
AF5032S-80	Flange 3B	500	1255	1495	ø400	12-M22×80	M12	600	ø380	210	ø15
AF5048S-100	Flange 4B	500	1255	1495	ø400	12-M22×80	M12	600	ø380	210	ø15
AF5064S-100	Flange 4B	550	1270	1522	ø445	16-M22×80	M16	600	ø440	250	ø15
AF5080S-150	Flange 6B	600	1300	1606	ø490	16-M22×80	M20	600	ø480	280	ø15
AF5096S-150	Flange 6B	650	1320	1630	ø560	16-M24×90	M20	600	ø540	320	ø15
AF5128S-150	Flange 6B	700	1350	1693	ø620	20-M24×90	M20	600	ø610	350	ø15
AF5160S-200	Flange 8B	700	1350	1693	ø620	20-M24×90	M20	600	ø610	350	ø15
AF5192S-200	Flange 8B	750	1360	1709	ø675	20-M24×100	M20	600	ø670	400	ø15
AF5256S-200	Flange 8B	850	1400	1786	ø745	20-M30×110	M24	600	ø730	450	ø15

For maintenance parts, refer to the CKD Components Product site.
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." → Maintenance Parts

MEMO



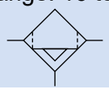
Micro-mist separator

AF5000M Series

For Pneumatic Circuits Which Prohibit Passage of Oil.

●Flow rate range: 16 to 256 m³/min (ANR)

Circuit diagram symbol



Model No. Notation

AF5 **016** M – **50** – **X1**

- AF5: Model No.
- 016: ❶Flow rate Category
- 50: ❷Bore size
- X1: ❸Option

Note: If the pressure is less than the selected pressure, the unit's performance may not be demonstrated. Always select the Model No. for the working pressure.

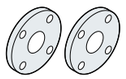
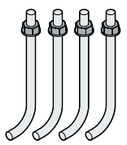
❶Flow rate Category

Code	Description
016	16 m³/min (ANR)
032	32 m³/min (ANR)
048	48 m³/min (ANR)
064	64 m³/min (ANR)
080	80 m³/min (ANR)
096	96 m³/min (ANR)
128	128 m³/min (ANR)
160	160 m³/min (ANR)
192	192 m³/min (ANR)
256	256 m³/min (ANR)

❷Bore size

Code	Description	016	032	048	064	080	096	128	160	192	256
50	Flange 2B	●									
80	Flange 3B		●								
100	Flange 4B			●	●						
150	Flange 6B					●	●	●			
200	Flange 8B								●	●	●

❸Option

	Code	Description	
	Blank	Standard product	
	E	Without drain discharger	
	K	Companion flange included	
	H	English Language Specifications	
	H2	Stainless steel nameplate	
*2	L	Foundation bolt/nut attached (SS400)	
*2	L1	Foundation bolt/nut included (SUS304)	
*3	X1	IN-OUT Reverse Direction	
	Y2	Product photo	

*1: When ordering several options, indicate the required options in alphabetical order.
*2: "L" and "L1" are applicable to AF5032M to AF5256M.
*3: Viewed from the front, the Standard Product has an air inlet on the left port, while an air outlet on the right port. For "X1", an air inlet is provided on the right port, while an air outlet is provided on the left port.

Specifications for Rechargeable Batteries

(Catalog No.CC-1226AA)

●Design compatible with rechargeable battery manufacturing processes

AF5□□□M – · · · · – P4

*Contact CKD for details.

Specifications

Model No. / Item			AF5016M-50	AF5032M-80	AF5048M-100	AF5064M-100	AF5080M-150	AF5096M-150	AF5128M-150	AF5160M-200	AF5192M-200	AF5256M-200
Processing air flow rate	(*1,*2) m³/min (ANR)		16	32	48	64	80	96	128	160	192	256
Working fluid			Compressed air									
Working pressure		MPa	0.08 to 1.0									
Proof pressure		MPa	1.5									
Ambient temperature		°C	5 to 60									
Filtration rating		μm	0.01									
Secondary side oil concentration		mg/m³	0.01 (inlet air 21°C)									
Pressure drop	Initial	MPa	0.01									
	Regular	MPa	0.02									
	Element Replacement	MPa	0.035									
Element quantity			1	2	3	4	5	6	8	10	12	16
Port size	(*3) flange		2B	3B	4B	4B	6B	6B	6B	8B	8B	8B
Weight		kg	38	76	78	107	140	167	223	232	269	330
Differential pressure switch												
Operating pressure differential		MPa	0.04±0.01									
Contact			1-pole "a" contact									
Max. contact current		A	0.5									
Max. contact voltage		VDC	200									
Max. contact capacitance		W	10									
Max. contact resistance (including reed switch)		mΩ	150									
Drain discharger (model No.: 5100-4C)												
Drain outlet port size			Rc1/4									

*1: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.
*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa and initial pressure drop is 0.01 MPa.
*3: Flange is a 10K flange.

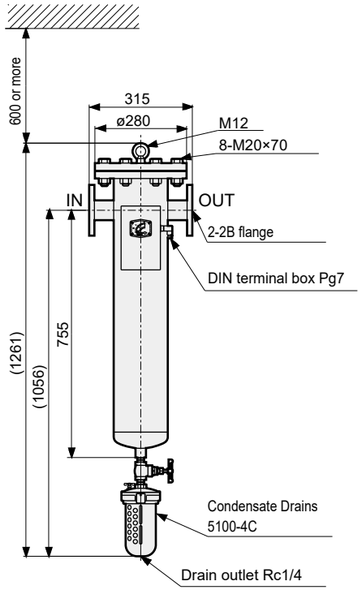
Flow rate compensation coefficient

If the working pressure is other than 0.7 MPa, multiply the processing air flow rate by the above coefficient.

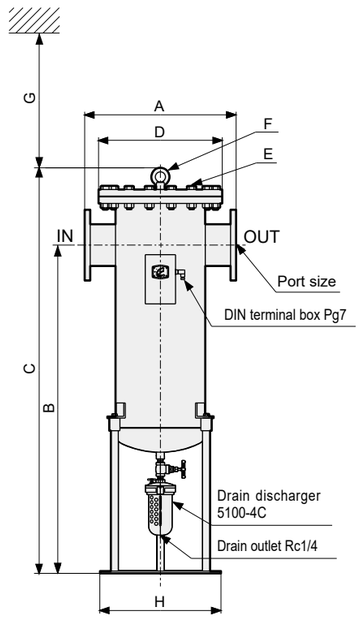
Pressure (MPa)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Compensation coefficient	0.38	0.53	0.65	0.76	0.85	0.93	1.0	1.07	1.13	1.2

Dimensions

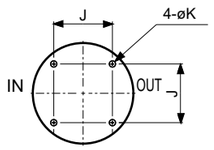
●AF5016M



●AF5032M to AF5256M



●Foundation bolt hole dimension



Model No.	Port size	A	B	C	D	E	F	G	H	J	K
AF5032M-80	Flange 3B	500	1255	1495	ø400	12-M22×80	M12	600	ø380	210	ø15
AF5048M-100	Flange 4B	500	1255	1495	ø400	12-M22×80	M12	600	ø380	210	ø15
AF5064M-100	Flange 4B	550	1270	1522	ø445	16-M22×80	M16	600	ø440	250	ø15
AF5080M-150	Flange 6B	600	1300	1606	ø490	16-M22×80	M20	600	ø480	280	ø15
AF5096M-150	Flange 6B	650	1320	1630	ø560	16-M24×90	M20	600	ø540	320	ø15
AF5128M-150	Flange 6B	700	1350	1693	ø620	20-M24×90	M20	600	ø610	350	ø15
AF5160M-200	Flange 8B	700	1350	1693	ø620	20-M24×90	M20	600	ø610	350	ø15
AF5192M-200	Flange 8B	750	1360	1709	ø675	20-M24×100	M20	600	ø670	400	ø15
AF5256M-200	Flange 8B	850	1400	1786	ø745	20-M30×110	M24	600	ø730	450	ø15

For maintenance parts, refer to the CKD Components Product site.
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." → Maintenance Parts

MEMO



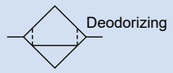
Micro-mist separator

AF5000X Series

For pneumatic circuits which prohibit passage of odors

●Flow rate range: 16 to 256 m³/min (ANR)

Circuit diagram symbol



Model No. Notation

AF5 016 X - 50 - X1

- Model No.
- ❶Flow rate Category
- ❷Bore size
- ❸Option

Note: If the pressure is less than the selected pressure, the unit's performance may not be demonstrated. Always select the Model No. for the working pressure.

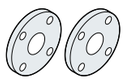
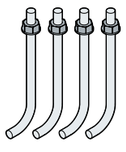
❶Flow rate Category

Code	Description
016	16 m³/min (ANR)
032	32 m³/min (ANR)
048	48 m³/min (ANR)
064	64 m³/min (ANR)
080	80 m³/min (ANR)
096	96 m³/min (ANR)
128	128 m³/min (ANR)
160	160 m³/min (ANR)
192	192 m³/min (ANR)
256	256 m³/min (ANR)

❷Bore size

Code	Description	Flow Rate Category									
		016	032	048	064	080	096	128	160	192	256
50	Flange 2B	●									
80	Flange 3B		●								
100	Flange 4B			●	●						
150	Flange 6B					●	●	●			
200	Flange 8B								●	●	●

❸Option *1

	Code	Description	
	Blank	Standard product	
	K	Companion flange included	
	H	English Language Specifications	
	H2	Stainless steel nameplate	
*2	L	Foundation bolt/nut attached (SS400)	
*2	L1	Foundation bolt/nut included (SUS304)	
*3	X1	IN-OUT Reverse Direction	
	Y2	Product photo	

*1: When ordering several options, indicate the required options in alphabetical order.
*2: "L" and "L1" are applicable to AF5032X to AF5256X.
*3: Viewed from the front, the Standard Product has an air inlet on the left port, while an air outlet on the right port. For "X1", an air inlet is provided on the right port, while an air outlet is provided on the left port.

Specifications for Rechargeable Batteries

(Catalog No.CC-1226AA)

●Design compatible with rechargeable battery manufacturing processes

AF5□□□X - · · · · - P4

*Contact CKD for details.

Specifications

Model No. / Item		AF5016X-50	AF5032X-80	AF5048X-100	AF5064X-100	AF5080X-150	AF5096X-150	AF5128X-150	AF5160X-200	AF5192X-200	AF5256X-200
Processing air flow rate	(*1,*2) m³/min (ANR)	16	32	48	64	80	96	128	160	192	256
Working fluid		Compressed air									
Working pressure	MPa	0.08 to 1.0									
Proof pressure	MPa	1.5									
Ambient temperature	°C	5 to 30									
Filtration method		Suction by activated carbon									
Secondary side oil concentration	mg/m³	0.003 (inlet air 21°C)									
Initial pressure drop	MPa	Within 0.007									
Element quantity		1	2	3	4	5	6	8	10	12	16
Port size	(*3) flange	2B	3B	4B	4B	6B	6B	6B	8B	8B	8B
Weight	kg	38	76	78	107	140	167	223	232	269	330

*1: ANR indicates conditions of 20°C atmospheric pressure and relative humidity 65%.
*2: Processing air flow rate is the atmospheric pressure conversion value where the inlet pressure is 0.7 MPa and initial pressure drop is 0.007 MPa.
*3: Flange is a 10K flange.

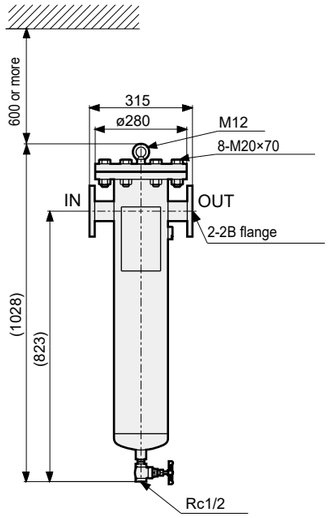
Flow rate compensation coefficient

If the working pressure is other than 0.7 MPa, multiply the processing air flow rate by the above coefficient.

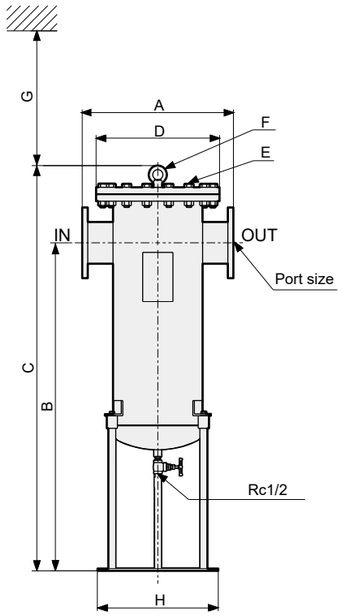
Pressure (MPa)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Compensation coefficient	0.38	0.53	0.65	0.76	0.85	0.93	1.0	1.07	1.13	1.2

Dimensions

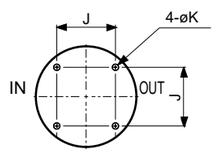
●AF5016X



●AF5032X to AF5256X



●Foundation bolt hole dimension



Model No.	Port size	A	B	C	D	E	F	G	H	J	K
AF5032X-80	Flange 3B	500	1255	1495	ø400	12-M22×80	M12	600	ø380	210	ø15
AF5048X-100	Flange 4B	500	1255	1495	ø400	12-M22×80	M12	600	ø380	210	ø15
AF5064X-100	Flange 4B	550	1270	1522	ø445	16-M22×80	M16	600	ø440	250	ø15
AF5080X-150	Flange 6B	600	1300	1606	ø490	16-M22×80	M20	600	ø480	280	ø15
AF5096X-150	Flange 6B	650	1320	1630	ø560	16-M24×90	M20	600	ø540	320	ø15
AF5128X-150	Flange 6B	700	1350	1693	ø620	20-M24×90	M20	600	ø610	350	ø15
AF5160X-200	Flange 8B	700	1350	1693	ø620	20-M24×90	M20	600	ø610	350	ø15
AF5192X-200	Flange 8B	750	1360	1709	ø675	20-M24×100	M20	600	ø670	400	ø15
AF5256X-200	Flange 8B	850	1400	1786	ø745	20-M30×110	M24	600	ø730	450	ø15

For maintenance parts, refer to the CKD Components Product site.
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." →Maintenance Parts

MEMO

Safety Precautions

Be sure to read this section before use.
Refer to Intro 15 for General Precautions.

Large main line filter AF5000 Series

Manufacturer's Disclaimer

⚠WARNING

■The manufacturer cannot be held liable in the following cases:
●In the case where there are serious errors in the operator's use.
●Illegal modifications or repairs using non-standard parts by user.

Design / Selection

⚠WARNING

■Do not use for applications other than compressed air.

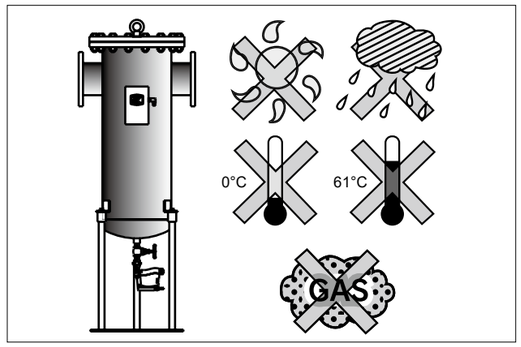
■Do not use for caisson shields or medical devices such as breathing devices, or for direct air blow onto foodstuffs.
Doing so may result in serious injury.

■Do not mount and use this device on transportation equipment such as vehicles or ships.
Vibration may cause internal damage.

■Avoid direct sunlight and rain water. Resin parts, etc., are likely to deteriorate and break.

■Do not use in locations with corrosive gases.

■Use this product within the range of the working temperature.



■Do not use the product where it could freeze. There is a risk that condensate accumulated inside the product may freeze and damage the product.

■Do not use in hazardous locations (e.g., potentially explosive atmospheres).

■The inlet air temperature should be kept as low as possible. The higher the temperature, the worse the oil removal rate.

■Do not use this product in an ozone generating environment.

■Avoid using this product where vibration and impact are present.

■Do not use this product in areas containing dust, etc.

■Do not use in environments where the following gaseous substances are contained in compressed air.

- Sulfur dioxide, Chlorine gas
- Aromatic hydrocarbon compounds(For example, benzene, toluene, phenol, cyclohexane, etc.)
- Chlorinated hydrocarbon compounds (For example, trichloroethylene, chloroform, etc.)
- Ketones (Example: Acetone, etc.)
- Aldehydes (For example, formaldehyde or acetaldehyde, etc.)
- Amines (Example: Ethylamine, Methylamine ,etc.)

■Always set the air flow to within the working pressure range and the processing air rate.
Otherwise, water, dust, and oil removal performance may be compromised.

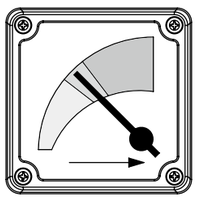
■Install indoors.

⚠CAUTION

■Class 2 pressure vessel according to “Safety regulation of boiler and pressure vessel” in Occupational Safety Sanitation Laws is applied in model No. AF5032 to AF5256.

■Model No. AF5032 to AF5256 have a Class 2 pressure vessel pressure proof certificate. This certificate must be kept in safe-keeping while using this product. (Labor Standards SupervisionApplications to the police station are not required in Japan.)

■The air filter life is spent when the pressure drops to 0.035 MPa or after one year of use, whichever comes first. Change all elements when the service life is reached. X type cannot control service life due to the differential pressure. Therefore, replace the filter after 1000 hours of use or when the deodorizing effect is lost.



0.035 MPa

●Chemical resistance of drain discharger plastic bowl

Types of Chemicals	Categories of Chemicals	Main Products of Chemicals	General Applications	Polycarbonate	Nylon
Inorganic compounds	Acids	Hydrochloric acid, sulfuric acid, fluorine, phosphoric acid, chromic acid, etc.	Acid washing of metals, acidic degreasing solutions, coating treatment solutions	×	×
	Alkalines	Caustic soda, caustic potash, calcium hydroxide, aqueous ammonia, sodium carbonate, etc.	Alkaline degreasing solution for metals	×	○
	Inorganic salts	Sodium sulfide, potassium nitrate, potassium bichromate, sodium sulfate, etc.		×	○
Organic compounds	Aromatic hydrocarbons	Benzene, toluene, xylene, ethyl benzene, styrene, etc.	Contained in paint thinner (benzene, toluene, xylene)	×	×
	Chlorinated Aliphatic Hydrocarbons	Methyl chloride, ethylene chloride, methylene chloride, acetylene chloride, chloroform, trichlene, perchlene, carbon tetrachloride	Organic Solvent-Based Washing Solution for Metals(Trichloroethylene, Tetrachloroethylene, Carbon Tetrachloride, etc.)	×	○
	Chlorinated Aromatic Hydrocarbons	Chlorobenzene, dichlorobenzene, benzene hexachloride (B/H/C), etc.	Agricultural chemicals	×	○
	Petroleum components	Solvent, naphtha, gasoline		×	○
	Alcohols	Methanol, ethanol, cyclohexanol, benzyl alcohol	Used as an antifreeze agent	×	×
	Phenol	Carbolic acid, cresol, naphthol, etc.	Disinfectant solution	×	×
	Ethers	Methyl ether, methyl ethyl ether, ethyl ether	Brake fluid additive	×	○
	Ketones	Acetone, methyl ethyl ketone, cyclohexanone, acetophenone, etc.		×	×
	Carboxylic acids	Formic acid, acetic acid, butyl acid, acrylic acid, oxalic acid, phthalic acid, etc.	Dyes; oxalic acid for aluminum processing; phthalic acid for paint base	×	×
	Phosphate ester	Dimethyl phthalate (DMP), diethyl phthalate (DEP), dibutyl phthalate (DBP), dioctyl phthalate (DOP)	Lubricant, synthetic hydraulic fluid, rust preventative additives used as plasticizers for synthetic resins	×	○
	Oxyacids	Glycolic acid, lactic acid, malic acid, citric acid, tartaric acid		×	×
	Nitro compounds	Nitromethane, nitroethane, nitroethylene, nitrobenzene, etc.		×	○
	Amines	Methylamine, dimethylamine, ethylamine, aniline, acetanilide, etc.	Brake fluid additive	×	×
	Nitriles	Acetonitrile, acrylonitrile, benzonitrile, acetoisonitrile, etc.	Raw material for nitrile rubber	×	○

○symbol: Usable, × symbol: Not usable

For precautions during mounting, installation, adjustment, use and maintenance, refer to the CKD Components Product Site (https://www.ckd.co.jp/kiki/en/) → "Model No. → Instruction Manual

Condensate Drains

■ Main Line Components

CONTENTS

Automatic drain®
DT Series 288

Super Drain
DB Series 296

Drain sensor
DBS1006 302

Heavy duty drain
5100 Series 304

Main Line Components

Refrigeration Dryers
Desiccant Dryers
High Polymer Membrane Dryers
Main Line Filters
Drain discharger, etc.
Ending

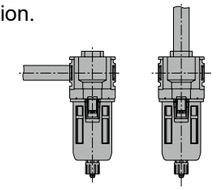
New lightweight, compact drain discharger with long service life and high reliability

Drain discharger that automatically discharges drain from the pneumatic circuit. The newly adopted snap-action mechanism has improved durability beyond the conventional types. Manual discharge as desired is possible in addition to automatic discharge.



Two connection ports

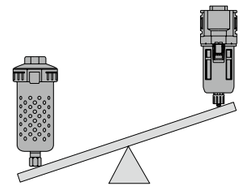
Either top or side piping can be selected based on the application.



*Mount the attached blanking plug on the unused port.

Compact & Lightweight

Combining different materials (body: aluminum die-casting, cover: resin) has enabled a strong body lighter than the conventional model.





Quick-release latch

The bowl and bowl guard are easily attached/detached together with the quick-release latch.

*Mount and remove the bowl and bowl guard after checking that pressure is not being applied.

Either NO or NC

Normally open or normally closed can be selected according to the application.

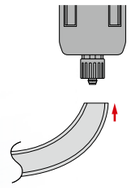
Highly corrosion resistant, safe bowl guard

Very safe and corrosion resistant plastic bowl guard is used.

Integrated fitting for drain pipe

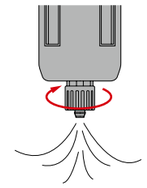
Nylon tube with inner diameter ø5.7 to ø6 can be directly connected.

*Do not use vertical piping with a length of 5 m or less.



Manual cock provided as standard

The manual cock allows manual discharging as desired. It can also be used as residual pressure exhaust function.



Main Line Components
Refrigeration Dryers
Desiccant Dryers
High Polymer Membrane Dryers
Main Line Filters
Drain discharger, etc.
Ending



Automatic drain

DT3000-W, DT4000-W Series

Lightweight and compact automatic drain discharger

●Compatible compressor: 0.75 to 75 kW

Circuit diagram symbol



RoHS

Model No. Notation

DT3000 – 10 [ ] – W – Z – BW

[ ] (White)

❶Model No. ❷Port size ❸Port thread ❹Option ❺Attachment

Note: A masking plug matching the port size is included.

❶Model No.

Code	Description
DT3000	Normally open auto-drain
DT3010	Normally closed auto-drain
DT4000	Normally open auto-drain
DT4010	Normally closed auto-drain

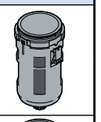
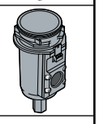
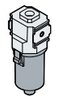
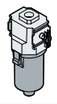
❷Port size

Code	Description
10	3/8
15	1/2

❸Port thread

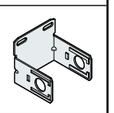
Code	Description
Blank	Rc thread
N	NPT thread
G	G thread

❹Option

Code		Description	
Bowl material	Blank	Polycarbonate bowl	
	Z	Nylon bowl	
	M	Metal bowl (with gauge) drain port Rc1/8 *1	
	M2	Metal bowl (with gauge) drain port Rc1/4 *1	
With cock	Blank	With pipe plug included	
	C	With cock (without pipe plug) *1	

*1: A cock is attached.

❺Attachment

Code	Description	
Blank	Not included	
BW	C-bracket	

Discrete attachment model No.

●C-bracket

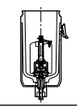
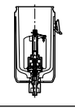
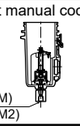
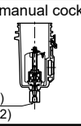
Part No.	Compatibility
B320	DT3000-W
B420	DT4000-W

Specifications

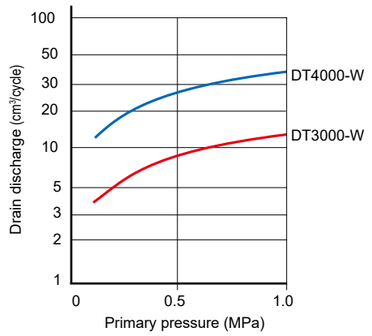
Item		DT3000-W	DT4000-W	DT3010-W	DT4010-W
Type		Normally open (*1)		Normally closed	
Working fluid		Drain contained in the compressed air (water or oil)			
Proof pressure	MPa	1.5			
Working pressure range	MPa	0.1 to 1		0.15 to 1	
Operating ambient temperature range	°C	5 to 60			
Port size	Rc, NPT, G	3/8, 1/2			
Drain outlet		Barbed nipple (soft nylon tube of ø5.7 to ø6 bore size can be connected directly)			
Weight	kg	0.3	0.45	0.3	0.45

*1: f the compressor used is less than 0.75 kW (discharge flow rate 0.09 m³/min), use normally closed.

Bowl type and shape

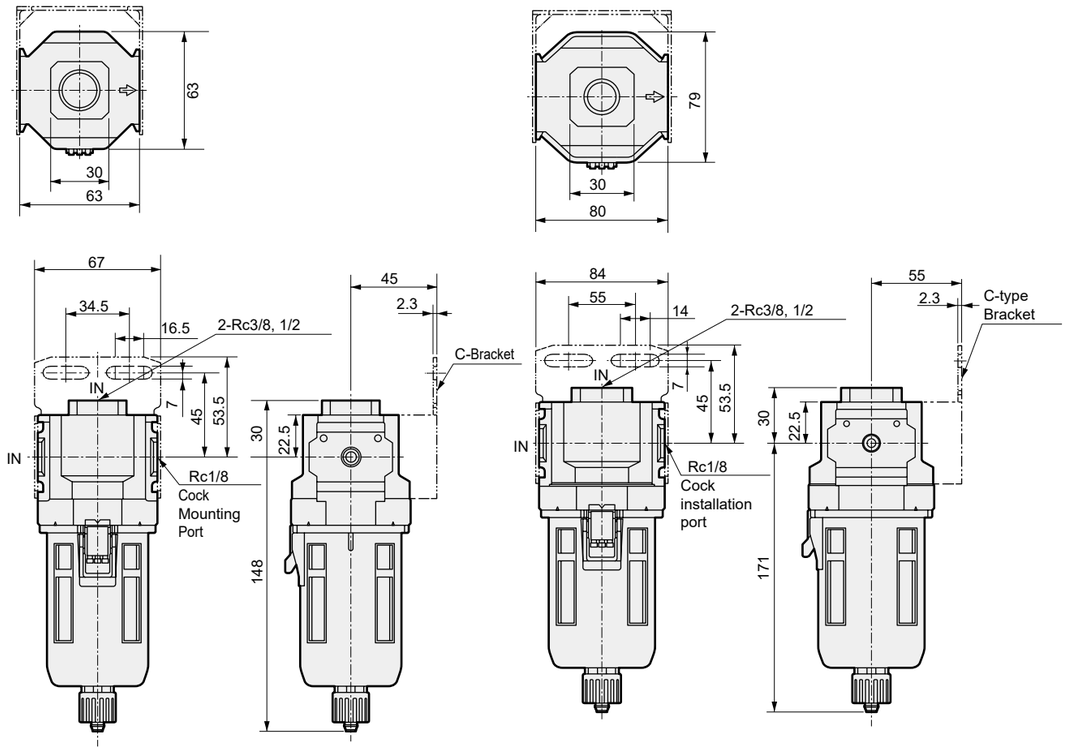
Type / Bowl material / Compatible series		Normally open (open at no pressure) DT3000-W/DT4000-W	Normally closed (closed at no pressure) DT3010-W, DT4010-W
DT3000-W DT4000-W	Plastic	●With manual cock 	●With manual cock 
	Metal	●Without manual cock [M, M2]  Rc1/8 (M) Rc1/4 (M2)	●Without manual cock [M, M2]  Rc1/8 (M) Rc1/4 (M2)

Automatic drain performance curve



Dimensions

●DT3000-W, DT3010-W

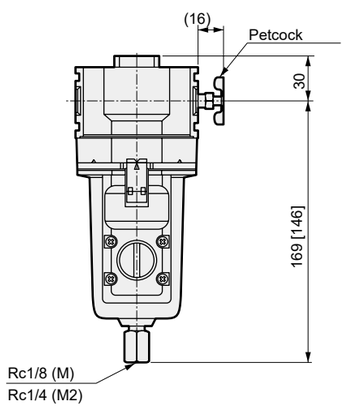


●DT4000-W, DT4010-W

Note: A soft nylon tube with bore size of ø5.7 to ø6 can be directly connected to the drain outlet.
Note: Leave a space of 60 mm or more below the bowl for maintenance.

Metal bowl specifications

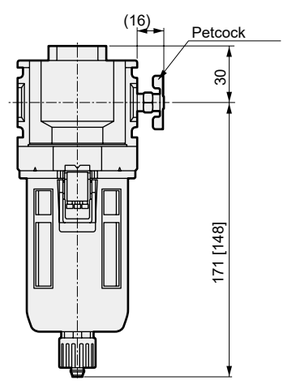
●Option [M, M2]



Note: Dimensions shown in [ ] are for DT3000-W.

Cock specifications

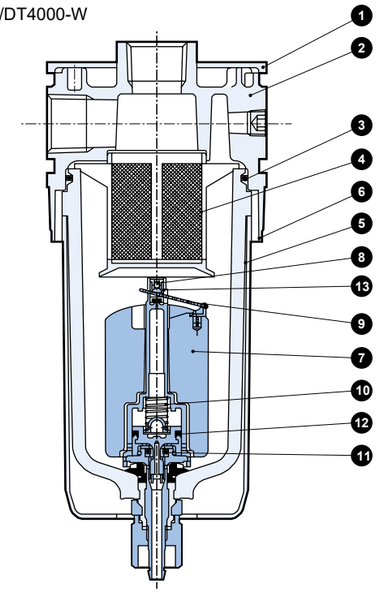
●Option [C]



Note: Dimensions shown in [ ] are for DT3000-W.

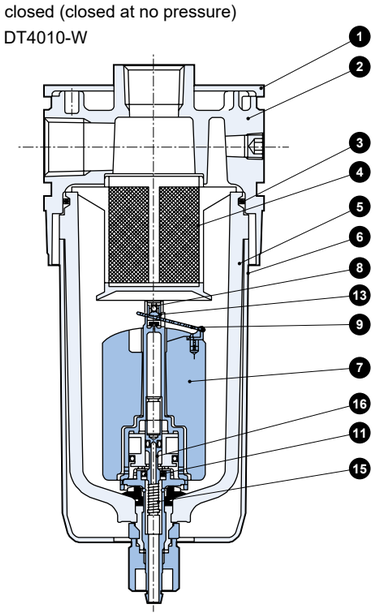
Internal Structure Diagram / Material

●Normally open (open at no pressure)
DT3000-W/DT4000-W



When pressure is not applied inside the bowl, ⑩the spring ⑫pushes down the valve, ⑪keeping it away from the stem packing. When 0.1 MPa or higher pressure is applied inside the bowl, ⑩the pressure applied to the valve becomes ⑫larger than the force of the spring and ⑫pushes up the valve, ⑪sealing it with the stem packing. When drain accumulates in the bowl, ⑦the float moves up and ⑨the float level arm ⑬pushes up the orifice spring.
Then, ⑬the orifice spring ⑧snaps open the orifice seat assembly and ⑫leads the compressed air into the upper chamber of the valve, making it pressurized. And, ⑫when the valve is pushed down apart ⑪from the stem packing, drain is discharged to air. After drain is discharged, ⑦the float moves down and ⑨the float level arm ⑧ closes the orifice seat assembly. ⑫The compressed air that has kept the upper chamber of the valve pressurized ⑫passes through the orifice of the valve to be discharged to air. Then from below ⑫ the pressure applied to the valve ⑩becomes larger than the force of the spring and ⑬pushes up the valve, ⑪sealing it with the stem packing.

● Normally closed (closed at no pressure)
DT3010-W, DT4010-W



When pressure is not applied inside the bowl, ⑮the spring ⑯pushes up the valve, ⑪keeping it sealed with the stem packing. When 0.15 MPa or higher pressure is applied inside the bowl and drain accumulates ⑦the float moves up and ⑨the float level arm ⑬pushes up the orifice spring.
Then, ⑬the orifice spring snaps open ⑧he orifice seat assembly and leads ⑯the compressed air into the upper chamber of the valve, making it pressurized. When ⑯the valve is pushed down ⑪apart from the stem packing, drain is discharged to air.
After drain is discharged, ⑦the float moves down and ⑨the float level arm ⑧closes the orifice seat assembly. ⑯The compressed air that has kept the upper chamber of the valve pressurized ⑯passes through the orifice of the valve to be discharged to air. Then from below, ⑮the force of the spring ⑯pushes up the valve, ⑪sealing it with the stem packing.

No.	Part name	Material	No.	Part name	Material
1	Plate cover	ABS resin	4	Screen	Polyacetal resin, polyester
2	Body	Aluminum alloy die-casting	5	Bowl assembly (including O-ring)	–
3	O-ring	Special nitrile rubber	6	Bowl guard	Polyamide resin, steel

For maintenance parts, refer to the CKD Components Product site.
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." → Maintenance Parts

Pneumatic components (drain discharger)

Safety Precautions

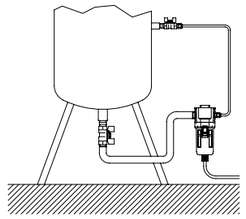
Be sure to read this section before use.
Refer to Intro 15 for General Precautions.

Product-specific cautions: Automatic drain DT3000/DT4000-W Series

Design / Selection

⚠CAUTION

- Avoid direct exposure to sunlight. Avoid installing this product where it is subject to direct sunlight.
- As the bowl is made of polycarbonate, avoid exposing it to the chemicals listed below or to an atmosphere containing them. A metal bowl is available if these chemicals must be used.
- Drain discharge piping should have an inner diameter of ø5.7 to ø6.0 and a length of 5 m or less, and avoid vertical piping. Do not route it vertically. Pipe so that no lateral load is applied on the bowl.
- Applicable compressor should be 0.75 kW or more (discharge flow 90/min or more). (Normally open auto-drain only)
- Prevent drainage exceeding the processing capability from entering the product. The product may malfunction if such a large amount of drain enters even temporarily.
- Even when the drain piping is forced to rise due to mounting restrictions, the drain can be discharged by the following procedure.
  (1)Open the cock slightly to let the air bleed.
  (2)Remove the cock and provide pressure equalization piping to the tank as shown in the figure below.
- Repeated and sudden increase and decrease in pressure must be avoided because it could adversely affect the service life of the drain discharger. Moderate the pressure change in the circuit.



●Chemical Resistance of Plastic Bowls

In areas where there is an atmosphere with the following chemicals, use metal bowls (metal).

Types of Chemicals	Categories of Chemicals	Main Products of Chemicals	General Applications	Polycarbonate bowl	Nylon bowl
Inorganic compounds	Acids	Hydrochloric acid, sulfuric acid, fluorine, phosphoric acid, chromic acid, etc.	Acid washing of metals, acidic degreasing solutions, coating treatment solutions, etc.	×	×
	Alkalines	Alkalis such as caustic soda, caustic potash, calcium hydroxide, aqueous ammonia, sodium carbonate	Alkaline degreasing solution for metals	×	○
	Inorganic salts	Sodium sulfide, potassium nitrate, potassium bichromate, sodium sulfate, etc.		×	○
Organic compounds	Aromatic hydrocarbons	Benzene, toluene, xylene, ethyl benzene, styrene, etc.	Contained in paint thinner (benzene, toluene, xylene)	×	×
	Chlorinated Aliphatic Hydrocarbons	Methyl chloride, ethylene chloride, methylene chloride, acetylene chloride, chloroform, trichlene, perchlene, carbon tetrachloride	Organic solvent-based washing solution for metals (trichlene, perchlene, carbon tetrachloride, etc.)	×	○
	Chlorinated Aromatic Hydrocarbons	Chlorobenzene, dichlorobenzene, benzene hexachloride (B/H/C), etc.	Agricultural chemicals	×	○
	Petroleum components	Solvent naphtha, gasoline, kerosene		×	○
	Alcohols	Methanol, ethanol, cyclohexanol, benzyl alcohol	Used as an antifreeze agent	×	×
	Phenol	Carbolic acid, cresol, naphthol, etc.	Disinfectant solution	×	×
	Ethers	Methyl ether, methyl ethyl ether, ethyl ether	Brake fluid additive	×	○
	Ketones	Acetone, methyl ethyl ketone, cyclohexanone, acetophenone, etc.		×	×
	Carboxylic acids	Formic acid, acetic acid, butyl acid, acrylic acid, oxalic acid, phthalic acid, etc.	Dyes; oxalic acid for aluminum processing; phthalic acid for paint base	×	×
	Esters	Dimethyl phthalate (DMP), diethyl phthalate (DEP), dibutyl phthalate (DBP), dioctyl phthalate (DOP)	Lubricant, synthetic hydraulic fluid, rust preventative additives used as plasticizers for synthetic resins	×	○
	Oxyacids	Glycolic acid, lactic acid, malic acid, citric acid, tartaric acid		×	×
	Nitro compounds	Nitromethane, nitroethane, nitroethylene, nitrobenzene, etc.		×	○
	Amines	Methylamine, dimethylamine, ethylamine, aniline, acetanilide, etc.	Brake fluid additive	×	×
	Nitriles	Acetonitrile, acrylonitrile, benzonitrile, acetoisonitrile, etc.	Raw material for nitrile rubber	×	○

For precautions during mounting, installation, adjustment, use and maintenance, refer to the CKD Components Product Site (https://www.ckd.co.jp/kiki/en/) → "Model No. → Instruction Manual

MEMO

Energy saving & highly reliable

Two sensors prevent wasteful air consumption.

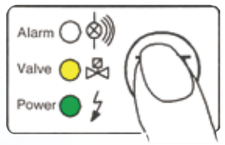
Control unit

Electronic circuit with self-diagnosis function



The electronic circuit with self-diagnosis function constantly monitors the discharge status displaying it with LEDs. (excluding DB3003D)

Arbitrary discharge of drainage

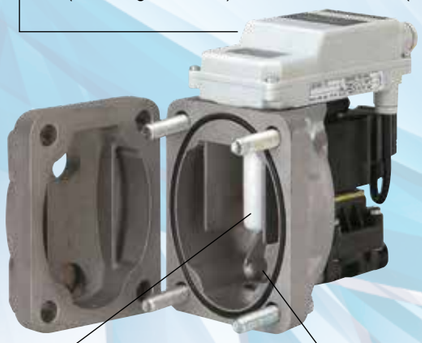


Drain can be discharged as desired by pressing the TEST button during operation check, etc. External test terminal added. (excluding DB3003D)

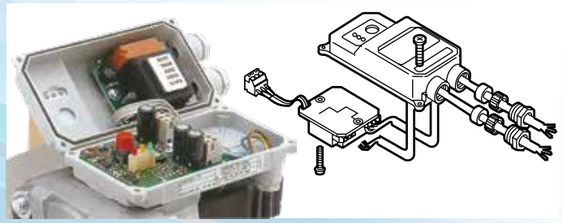
Self-avoidance operation simultaneous with alarm mode output



If drain discharge does not work normally, an alarm signal is output and self-recovery operation is repeated until the problem of the valve is removed. (excluding DB3003D)



Easy wiring



The power supply and control sections are compactly stored. The power supply section can be detached allowing you to connect the pipes easily. (excluding DB3003D)

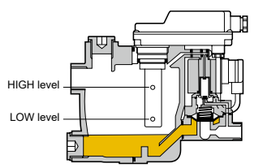
Level sensor

Highly reliable level sensor



The sensor is protected by the resin cover. Stable performance is not affected by the drain quality.

No wasteful consumption of compressed air



HIGH and LOW level sensors discharge drainage only, preventing wasteful air consumption. (DB1090D, 3090D, 3700)

Tank

Easy to clean inside the tank



You can access inside the tank easily by simply removing four bolts without disconnecting the inlet pipe. (DB102, 4/3024, 1090D, 3090D)

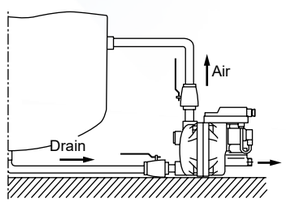
Oil-free



Rust proof treatment on the inner and outer surfaces of the housing. (DB3000 Series)

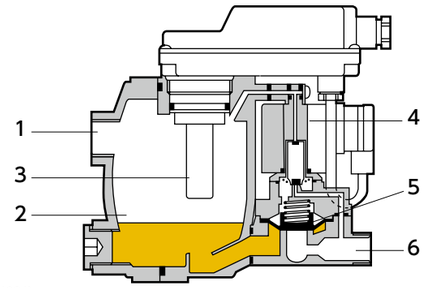
Port options that can be selected according to the installation condition





If the inlet pipe is connected to the bottom part and the amount of drain is large, the pipe at the top can be used as an air vent. (DB1024, 3024, 1090D, 3090D, 3700)

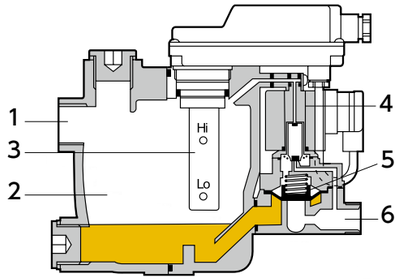
Operational explanation



(DB1024)

DB Series single sensor

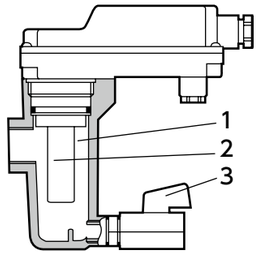
1. When drain accumulates in the tank (1), the level sensor (3) detects it.
2. The pilot valve (4) starts, and drainage is discharged.
3. The valve start time is set by the timer to minimize air leakage.
4. The alarm mode is activated if an event occurs that prevents drainage from being discharged.



(DB1090D)

DB Series double sensor

1. When drain accumulates in the tank , the high level of the level sensor is detected.
2. The pilot valve (4) starts, and drainage is discharged.
3. The valve open time is determined by calculating it from the rate at which the drain level drops.
4. The valve is closed to prevent leakage before the compressed air starts leaking.
5. The alarm mode is activated if an event occurs that prevents drainage from being discharged.



DBS1006

1. When drain accumulates in the tank , the level sensor detects it.
2. Outputs a buzzer, red LED blinks and an alarm signal.
3. When an alarm signal is output, accumulated drain can be manually discharged from the drain cock .
4. After discharge, the alarm signal disappears and the system returns to the original state. (Drain is not discharged automatically since this product is not a drain discharger.)

Automatic drain series map

Automatic drain DB Series							Drain sensor DBS1006
Compressor Nominal output (kW)		11 15 22 37 55 75 120 150 300 450 900					
Outlet flow rate m³/min (ANR)		1 5 10 50 100 500 1000					
Compatible compressor	No-lubrication	DB3003D 	DB3006E 	DB3024 	DB3090D 	DB3700 	
	Lubrication		DB1006E 	DB1024 	DB1090D 		



Super Drain

DB1000, DB3000 Series

Drain discharger with highly reliable level sensor

●Port size: G1/2" to G1"

(Compatible with air compressor discharge flow rates from 2.5 to 1000 m³/min (ANR))

Circuit diagram symbol

Model No. Notation

DB 1 024 - 20 - AC200V

Model No.
❶Application
❷Capacity Category
❸Inlet port size
❹Voltage

❶Application

Code	Description
1	For lubrication compressor
3	For no-lubrication compressor

❷Capacity Category

Code	Description
003D	22 kW or less
006E	55 kW or less
024	240 kW or less
090D	900 kW or less
700	7000 kW or less

Note: Capacity code is the capacity of air compressor for the corresponding air dryer.

❸Inlet port size

Code	Description
15	G1/2"
20	G3/4″

❹Voltage

Code	Description	
Blank	-	❷Leave blank for capacity category "003D".
AC200V	200 VAC	For capacity classification other than the above, select the 200 VAC.

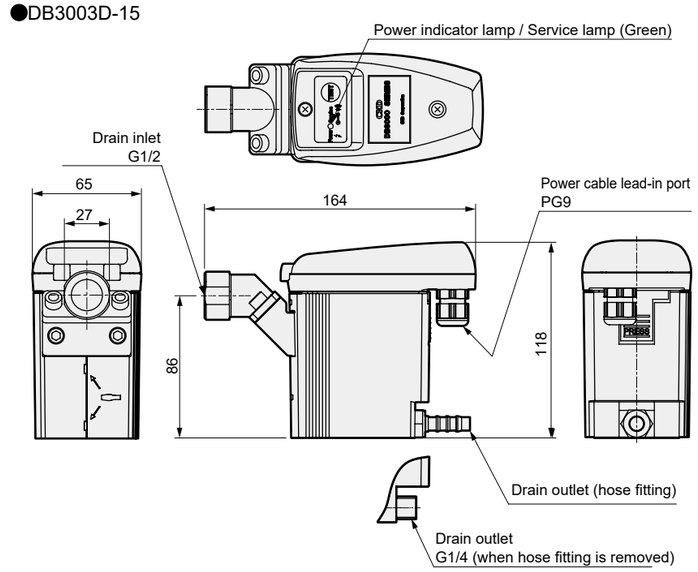
Specifications

Item		DB3003D-15	DB1006E-15 -AC200V	DB3006E-15 -AC200V	DB1024-15 -AC200V	DB3024-15 -AC200V	DB1090D-20 -AC200V	DB3090D-20 -AC200V	DB3700-20 -AC200V
Port size	Drain inlet	G1/2"	G1/2"		G1/2"		G3/4″		G3/4", G1"
	Drain outlet	8 mm hose fitting or G1/4"	10 mm hose fitting or G3/8"		13 mm hose fitting or G1/2"		13 mm hose fitting or G1/2"		G1/2"
Processing air flow rate of applicable air compressor m³/min (ANR)		2.5	4.5		20		90		1000
Processing air flow rate of applicable air dryer m³/min (ANR)		5	9		40		180		2000
[Reference] Capacity of compressor for the corresponding air dryer. (kW)		22	55		240		900		7000
Working Conditions	Working fluid	Drain contained in compressed air							
	Ambient temperature °C	1 to 60							
	Working pressure MPa	0.08 to 1.6							
Electrical Specifications	Power Supply	Single-phase 95 VAC to 240 VAC 50/60Hz	Single phase 200 VAC 50/60 Hz						
	Max. power consumption	3 VA	8.0 VA						
Alarm contact capacity		—	max.250 VAC / 1A, max.30 VDC / 1A, min.5 VDC / 10mA						
Degree of Protection		IP67	IP65						
Weight kg		0.8	0.8		2.0		2.9		5.9
Applicable air compressor type		No-lubrication	Lubrication	No-lubrication	Lubrication	No-lubrication	Lubrication	No-lubrication	No-lubrication

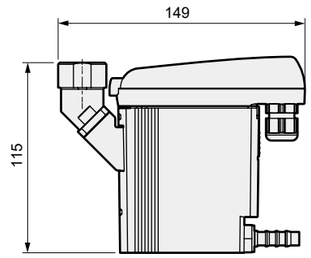
*1: G is a parallel female thread. can be connected with R thread.
*2: Use a hose fitting or G1/4" for the drain outlet of DB3003D. G1/4" is a parallel male thread.
*3: Use a hose fitting or G3/8" for the drain outlet of DB1006E/3006E. G3/8" is a parallel male thread.
*4: Use a hose fitting or G1/2" for the drain outlet of DB1024/3024 and DB1090D/3090D. G1/2" is a parallel male thread.
*5: Use G3/4" or G1" for the drain inlet of DB3700.
*6: DB3000 Series can be used for lubrication compressor.

Dimensions

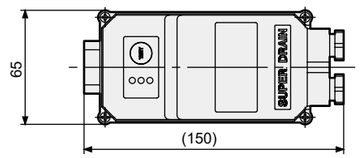
●DB3003D-15

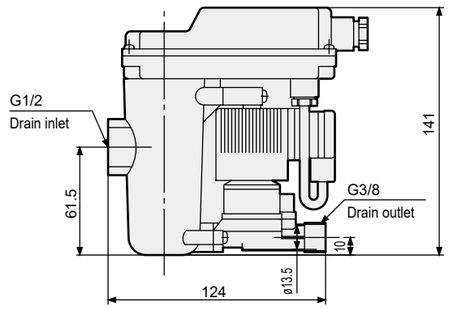


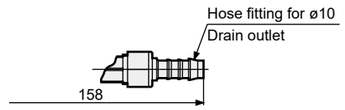
[Reference]
The inlet direction can be changed to upward when the product is installed.
(It is facing the side when shipped.)



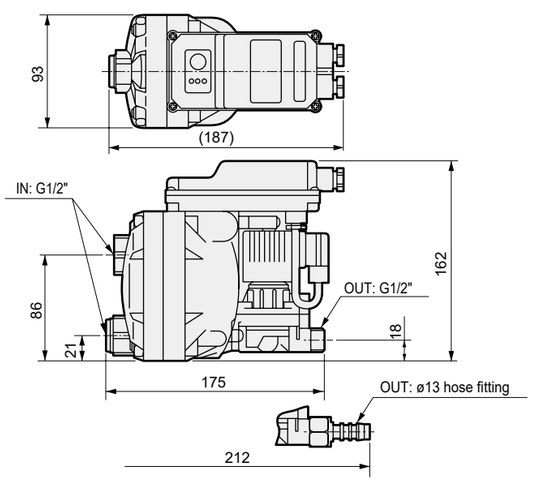
DB1006E-15, DB3006E-15





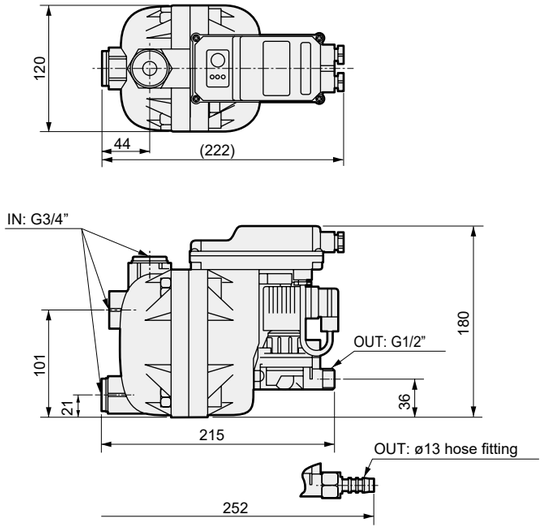


DB1024-15, DB3024-15

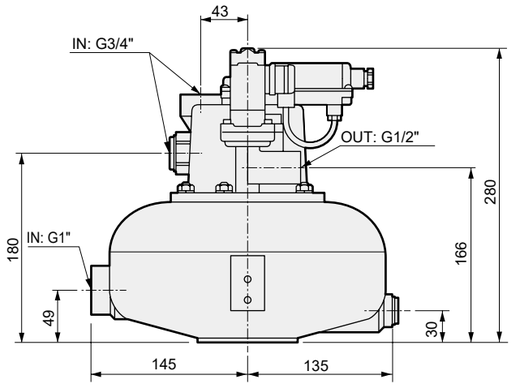


Dimensions

●DB1090D-20, DB3090D-20



●DB3700-20



Contact CKD Sales for maintenance parts.

Pneumatic Components (Drain Discharger)

Safety Precautions

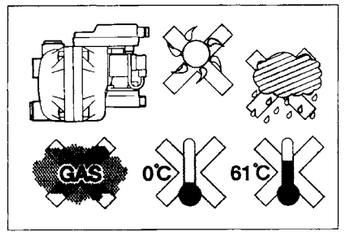
Be sure to read this section before use.
Refer to Intro 15 for General Precautions.

Product-specific cautions: Automatic Drain DB Series

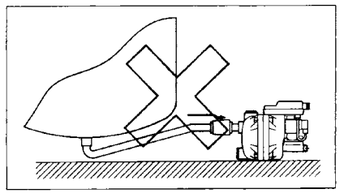
Design / Selection

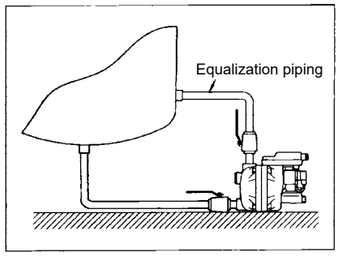
CAUTION

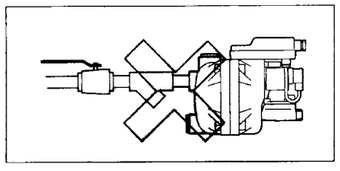
- Avoid direct sunlight and rain water. Resin parts may deteriorate and break.
- Do not use in locations with corrosive gases.
- Use this product within the range of the working temperature.
- Do not use the product where it could freeze. Accumulated drain may freeze and damage the product.
- Do not use in hazardous locations (possibly explosive atmospheres, etc.).
- Do not use this product in an ozone generating environment.
- Do not use the product in a components where the working air is forced-cooled to below the ambient temperature, such as a refrigeration air dryer or water cooling after-cooler.



- The drain inlet pipe should be 1/2" and over and continuously slope downward. Note that riser piping must be avoided. Otherwise drainage will not enter to be discharged.
- To pass drain from the bottom inlet, provide an equalization piping on the top of the product. Otherwise drainage will not enter to be discharged.
- Do not install a strainer to the drain inlet pipe. Doing so may cause a clogged strainer preventing drain from entering.
- Use a ball valve or gate valve as a stop valve. Do not use any other valves. The ball valve should be a full bore type. Using any other valves than those specified may block the drain path, preventing drainage from entering.







For precautions during mounting, installation, adjustment, use and maintenance, refer to the CKD Components Product Site (https://www.ckd.co.jp/kiki/en/) → "Model No. → Instruction Manual



Drain sensor

DBS1006 Series

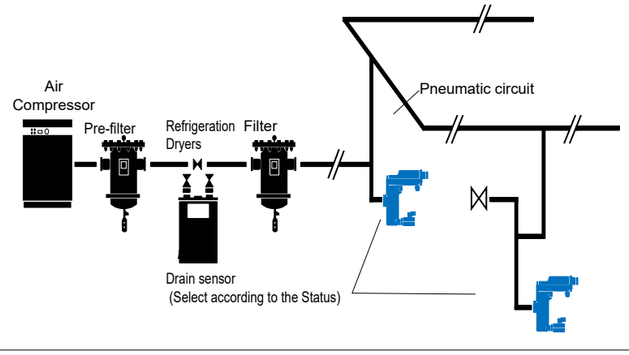
High-Reliability Liquid Level Sensor Detects Drain in Pneumatic Circuits

●Port size: G1/2"

Specifications

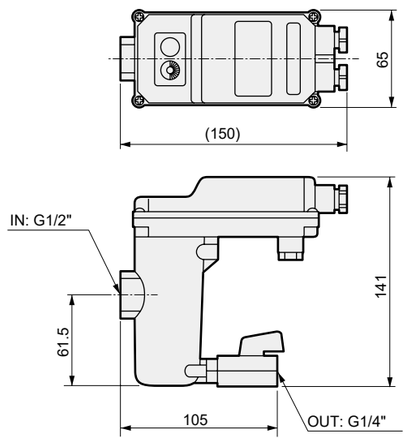
Item		DBS1006-15-AC200V
Port size	Drain inlet	G1/2"
	Drain outlet port	G1/4″
Working Conditions	Working fluid	Drain contained in compressed air
	Ambient temperature °C	1 to 60
	Working pressure MPa	0 to 1.6
Electrical Specs.	Power Supply	Single phase 200 VAC 50/60 Hz
	Max. power consumption	8.0 VA
Alarm contact capacity		max. 250 VAC/1 A, max. 30 VDC/1 A, min. 5 VDC/10 mA
Degree of Protection		IP65
Weight kg		0.65

Applications



Dimensions

●DBS1006-15



MEMO

Main Line Components
Refrigeration Dryers
Desiccant Dryers
High Polymer Membrane Dryers
Main Line Filters
Drain discharger, etc.
Ending



Condensate Drains
Heavy duty drain

5100-4C Series

Float drain (NC: no discharge when not pressurized)
Ideal for Circuits with High Drain Generation
●Port size: Rc1/2, NPT1/2

Circuit diagram symbol



RoHS

Model No. Notation

5100 - 4C - Z

- 5100: Model No.
- 4C: ❶Port size
- Z: ❷Option

❶Port size

Code	Description
4C	Rc1/2
4	NPT1/2

❷Option

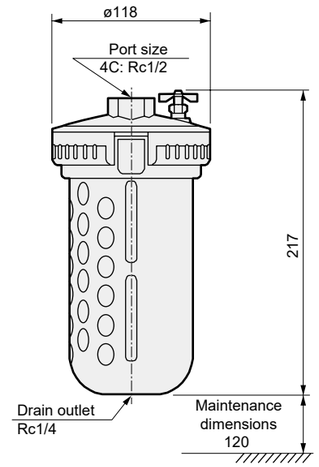
Code		Description
Bowl material	Blank	Polycarbonate bowl
	Z	Nylon bowl
	M	Metal bowl
	MG	Metal bowl with gauge

Specifications

Item		5100-4C
Max. working pressure	MPa	1.0
Proof pressure	MPa	1.5
Fluid/ambient temperatures	°C	5 to 65
Min. working pressure	MPa	0.069
Drain discharge	cm^3	170/cycle
Port size		Rc1/2, NPT1/2
Weight	kg	1.9
Bowl guard		Standard Equipment

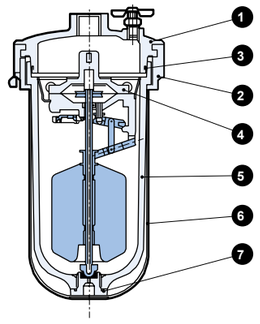
Dimensions

●5100-4C



Internal Structure Diagram / Material

●5100-4C



No.	Main Part	Material
1	Cover	Zinc Die-Cast
2	Clamp ring	Zinc Die-Cast

Parts List

No.	Part name	Material
3	O-ring	Special nitrile rubber
4	Drain unit assembly	—
5	Bowl assembly	Polycarbonate
6	Bowl guard	Steel
7	Drain seat assembly	Aluminum alloy, nitrile rubber

For maintenance parts, refer to the CKD Components Product site.
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." → Maintenance Parts

Standards compliant products/ISO

Listed page

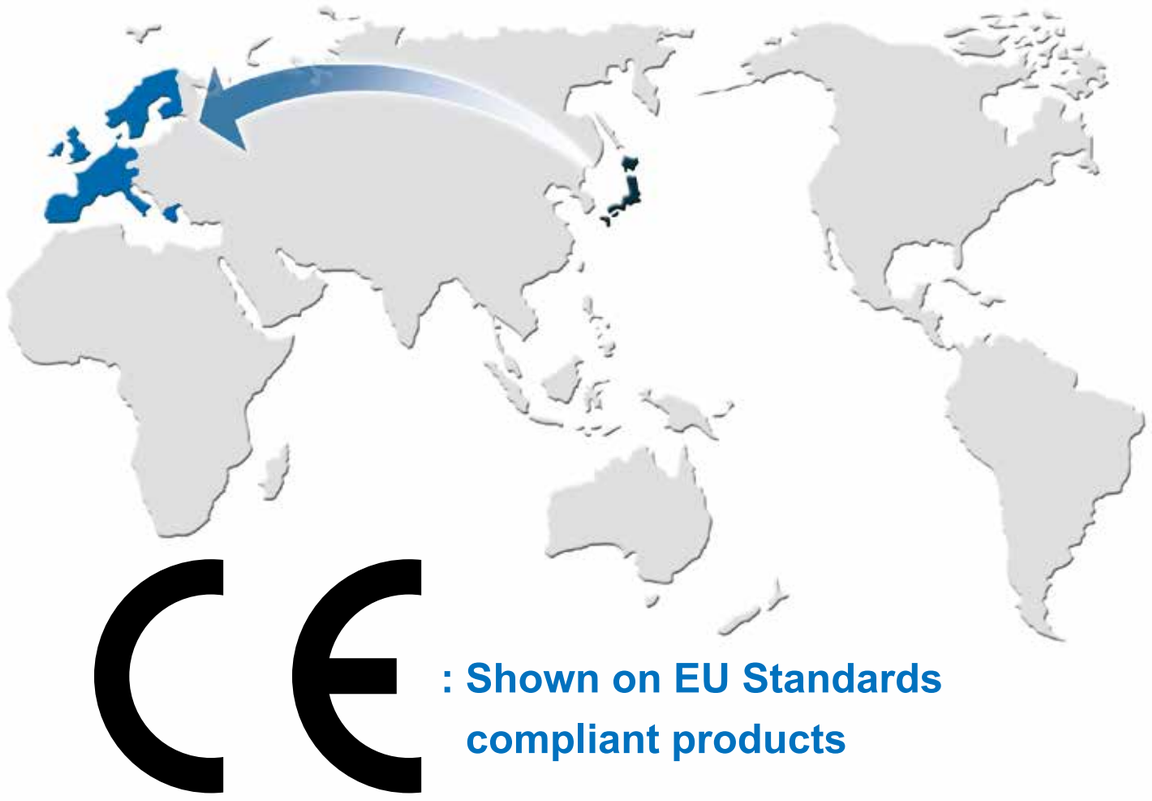
CE Marking — Ending 2

RoHS Compliance — Ending 4

ISO9001 / ISO14001 Certification — Ending 6

CEMarking

CKD offers a wide range of equipment that conforms to European standards and supports customers in achieving CE marking for their machinery products.



CE : Shown on EU Standards compliant products

CE What is Marking?

- CE marking is a mark that certifies that a product conforms to the essential requirements of all EC directives applicable to itself.
- CE marking is a passport for products within the EU, and products bearing the CE marking can be freely distributed within the EU.
- Machines exported to the EU must comply with Machinery Directives, EMC Directives, and Low-Voltage Directives, etc. In principle, CE Marking must be indicated on the final product marketed; therefore, as a rule, built-in components do not require CE Markings. If compliance of built-in parts (CKD products) with EU Standards can be verified, CE Marking of the final product (customer's machine product) can be easily obtained.

each EC Content of Directives

CKD's main components, such as the solenoid valve, sensors, and direct drive actuator, are called on to comply with the Directives below. Many models already comply with EU Standards.

Directive	Requirement	Applicability
Machinery Directives (2006/42/EC)	Safety requirements for machinery	■ Machines with drive sections components such as solenoid valves are not subject to this compliance, but the user can obtain CE Marking certification more easily by complying with Standards.
EMC Directive (2014/30/EU)	Countermeasures against electromagnetic interference generation (EMI emission) and electromagnetic interference elimination performance (EMS immunity).	■ Devices generating electromagnetic interference or affected by electromagnetic interference Solenoid valves composed of a simple solenoid are not affected by electromagnetic interference, but the user can obtain CE Marking certification more easily by complying with Standards.
Low-voltage command (2014/35/EU)	Electrical safety against electric shock and other problems	■ Components operated at 50 VAC to 1000 VAC and 75 VDC to 1500 VDC
Pressure components command (2014/68/EU)	Safety against leakage of fluid energy of pressure components	■ When specific conditions are exceeded within a pressure components
Simple pressure vessel command (2014/29/EU)	Safety against leakage and explosion of vessels	■ Welded vessels with a product of maximum working pressure and volume (PV-S) exceeding 50 bar-liter Our air tanks (AT type) are not compliant and cannot be exported within the EU.
RoHS Directive (2011/65/EU)	Environmental impact 6 Restrictions on Substances	■ Electrical and Electronic Components
2011/65/EU and (EU) 2015/863	Environmental impact 10 Restricted substances	■ Electrical and Electronic Components

CE marking is applicable to European Union (EU) countries and European Free Trade Association (EFTA) countries, as well as Turkey.

CKD European Standards compliant products

⚠Depending on specifications and detailed model No. combinations, compatible products may not be available. For details, contact your CKD Sales representative.
Visit our website for the latest information.
Home Page Address https://www.ckd.co.jp/productinfo/eu/

CKD RoHS Compliance

The development of environmentally friendly products is the theme of CKD.

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 Environment Policy enacted in 2001, CKD has been promoting company-wide environment management activities to protect the global environment.

CKD Environmental Policy

1. Promote development and sales of low environmental load products.
2. We will 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)Co_2 Reduction of emissions b) Promotion of resource saving
   c) Reduce waste d) Reduce environmental pollutants

CKD's Compliance with RoHS

From July 2006, we have sequentially enforced RoHS compliance of our components' major products. This catalog indicates RoHS-compliant products with the "RoHS-compliant" mark.

(Note) Check the CKD website for the latest supported Statuses.

Technical data

RoHS Directive

(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 appliances
2. Small appliances
3. IT equipment and telecommunications equipment
4. civilian components
5. Lighting equipment
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 components not in the above categories

Our components products mainly correspond to category 9, industrial monitoring and control equipment. (Some category 8 medical components and non-applicable products are available)

2 Objective

Restricted substances (2011/65/EU)

- Lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBBs)
- Polybrominated diphenyl ethers (PBDE)

Substances subject to additional regulation ((EU) 2015/863)

- Specified phthalates (DEHP, DBP, BBP, DIBP)

As a general rule, categories 8 and 9 electrical and electronic components containing any of the above may not be brought into the EU from July 22, 2021 on, and those in other categories from July 22, 2019 on.

ISO9001 / ISO14001of Certification acquisition

Providing safe quality, friendly to users, machines, and environment.

CKD has acquired International Standard ISO9001 and ISO14001 certification and structured a quality and environment management system. With safety, environment, and energy conservation as our most important priorities, we are working company-wide to promote safe product and quality creation friendly to users, machines, society, and the global environment.







Model No. [Index in alphabetical order]

Model No.	Model	Catalog No./page
HS	Motorized valve for gas combustion system	1024
HSV	(SV)Manual selector valve /standard	RJ-012AA

■Page
Specifications/model No. pages for the 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 Unit/auxiliary components
RJ-008AA …Sensors / Controllers
RJ-009AA …Main Line Components / Gas generator
RJ-010AA …Precision components/vacuum components
RJ-011AA …Directional Control Valves (1)
RJ-012AA …Directional control valve (2)
RJ-013AA …Fluid Control Valves
RJ-014AA …Electric actuator ROBODEX Pluse
CB-019SAA…Index units (Index Drive)
CB-031A …Wet Fine System/High Purity Chemical Liquid System
CB-035A …Dry Fine System/High Purity Gas Control System Components
CB-054AA …ABSODEX General
CB-055A …Electric Actuator Motorless General Catalog
CC-1055AA…components for Life Science
CC-1276A …Outdoor products WP Series
CC-1590AA…Gas combustion systems
CC-1637A …Pharmaceutical Manufacturing Process Components
CC-297AA …Automatic watering control systems

Other specifications include the Catalogs for individual products No. for each series.

■Code

(SV)...Single Valve (WR)…Wiring Reduced Manifolds (IM) …Individual Manifold
(MX)...Mixed Manifold (BM)…Block Manifolds (MN)…Manifold

Model No.	Model	Catalog No./page
1		
1219	Micro-mist separator / micro naught (Oil removing)	RJ-007AA
1238	Micro-mist separator / micro naught (Oil removing)	RJ-007AA
1326	Heavy duty air filter	RJ-007AA
1126-□-□Y	Submicron air filter (for tar removal)	RJ-007AA
1126 -□-E	Air Filters	RJ-007AA
1138-□-□Y	Submicron air filter (for tar removal)	RJ-007AA
1138-□-E	Air Filters	RJ-007AA
1226 (J)	Micro-mist separator / micro naught (Oil removing)	RJ-007AA
1226 (J)-□-X	Micro alescer/odor naught (Odor removing)	RJ-007AA
1238-□-X	Micro alescer/odor naught (Odor removing)	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 dial air regulator	RJ-007AA
2415	Reverse regulator (check valve integrated)	RJ-007AA
2415-P11	Reverse regulator (Check valve integrated)/Ozone-proof	RJ-007AA
2419	Reverse regulator (check valve integrated)	RJ-007AA
2619	Regulator	RJ-007AA
2QV	Quick valve with push-in fitting	RJ-007AA
3		
3003E to **3005E**	Lubricator/econo-mist	RJ-007AA
3003E-□C-V	Lubricator/auto-fill	RJ-007AA
3GA1/2/3	(SV)Pilot operated 3-port valve /body piping	RJ-012AA
3GA1/2/3	(SV)air operated 3-port valve (Master valve)/body piping	RJ-012AA
3GB1/2	(SV)Pilot operated two 3-port valve s integrated/base piping	RJ-012AA
3GD1/2/3	(SV)Pilot operated 3-port valve /body piping	RJ-012AA
3GD1/2□0EJ	(SV)Intrinsically safe explosion-proof pilot operated 3-port valve /Body piping	RJ-012AA
3GD1/2□0EX	(SV)Intrinsically safe explosion-proof pilot operated 3-port valve /Body piping	RJ-012AA
3GE1/2	(SV)Pilot operated two 3-port valve s integrated/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 /body piping	RJ-012AA
3KA1	(SV)air operated 3-port valve (Master valve)/body piping	RJ-012AA
3MA0	(SV)Direct acting 3-port valve / body piping	RJ-012AA
3MB0	(SV)Direct acting 3-port valve / sub-plate piping	RJ-012AA
3PA1/2	(SV)Direct acting 3-port valve / body 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 / body piping	RJ-012AA
3QRB1	(SV)Direct acting 3-port valve / sub-plate piping	RJ-012AA
3QV	Quick valve with push-in fitting	RJ-007AA
4		
4001,4002	Desiccant air dryer/manual air dryer	164
4F0/1/2/3	(SV)Pilot operated 5-port valve/ body piping	RJ-012AA
4F0/1/2/3	(SV)air operated 5-port valve (Master valve)/body piping	RJ-012AA
4F2/3	(SV)Pilot operated 5-port valve , outdoor type	CC-1276A
4F3□□0EX	(SV)Pilot operated explosion-proof 5-port valve /Body piping	RJ-012AA
4F3□□0E	(SV)Pilot operated explosion-proof 5-port valve /Body piping	RJ-012AA
4F4/5/6/7	(SV)Pilot operated 5-port valve /sub-plate piping	RJ-012AA
4F4/5/6/7	(SV)air operated 5-port valve (Master valve)/sub-plate piping	RJ-012AA
4F4/5/6/7□□0EX	(SV)Pilot operated explosion-proof 5-port valve /Body piping	RJ-012AA
4F4/5/6/7□□0E	(SV)Pilot operated explosion-proof 5-port valve /Sub-plate piping	RJ-012AA
4GA1/2/3	(SV)Pilot operated 5-port valve/body piping	RJ-011AA
4GA1/2/3	(SV)air operated 5-port valve (Master valve)/body piping	RJ-012AA
4GA4	(SV)Pilot operated 5-port valve/body 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/body piping	RJ-011AA
4GD1/2/3 / 4□0EJ	(SV)Intrinsically safe explosion-proof pilot operated 5-port valve /Body piping	RJ-012AA
4GD1/2/3/4□0EX	(SV)Intrinsically safe explosion-proof pilot operated 5-port valve /Body 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 /body piping	RJ-012AA
4KA1/2/3/4	(SV)air operated 5-port valve (Master valve)/body 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/body piping	RJ-011AA
4SB0	(SV)Pilot operated 5-port valve /sub-plate piping	RJ-011AA
5		
5100-4C	Heavy duty drain	304
6		
6119-2C	Moisture Indicator	166
A		
A100 to **800-W**	Pipe adaptor/Standard White Series	RJ-007AA
A101 to **801-W**	L-type pipe adaptor/Standard White Series	RJ-007AA
A1019	Air Filters	RJ-007AA
A1338	Heavy duty air filter	RJ-007AA
A1338-□Y	Submicron air filter (for tar removal)	RJ-007AA
A2-3400	Ultra-low temperature 2-port solenoid valve	RJ-013AA
A2-5201	Direct acting 2-port solenoid valve (for high frequency of use)	RJ-013AA
A2-5202	Pilot operated 2-port solenoid valve (for high frequency of use)	RJ-013AA
A2-5800	Ultra-low temperature 2-port solenoid valve	RJ-013AA
A3019	Lubricator/econo-mist	RJ-007AA
AB21	Direct acting 2-port solenoid valve (General purpose)	RJ-013AA
AB31	Direct acting 2-port solenoid valve , Discrete (General purpose)	RJ-013AA
AB31-Z	Direct acting 2-port solenoid valve for dry air (General purpose)	RJ-013AA
AB41	Direct acting 2-port solenoid valve , Discrete (General purpose)	RJ-013AA
AB41E2	Explosion-proof direct acting 2-port solenoid valve (General purpose)/d2G2	RJ-013AA
AB41E4	Explosion-proof direct acting 2-port solenoid valve (General purpose)/d2G4	RJ-013AA
AB41E4-Z	Explosion-proof direct acting 2-port solenoid valve for dry air (General purpose)/d2G4	RJ-013AA
AB41EX2	Explosion-proof direct acting 2-port solenoid valve (General purpose)/ExdIIBT2	RJ-013AA
AB41EX4	Explosion-proof direct acting 2-port solenoid valve (General purpose)/ExdIIBT4	RJ-013AA
AB41-Z	Direct acting 2-port solenoid valve for dry air (General purpose)	RJ-013AA
AB42	Direct acting 2-port solenoid valve , Discrete (General purpose)	RJ-013AA
AB42E4	Explosion-proof direct acting 2-port solenoid valve (General purpose)/d2G4	RJ-013AA
AB71	Direct acting 2-port solenoid valve (General purpose)/large bore size	RJ-013AA
ABP	Air Booster	RJ-007AA

Model No. [Index in alphabetical order]

Model No.	Model	Catalog No./page
A		
AD11	Pilot operated 2-port solenoid valve (General purpose)/diaphragm drive	RJ-013AA
AD11E4	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/diaphragm drive/d2G4	RJ-013AA
AD11EX4	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/ diaphragm drive/ExdIIBT4	RJ-013AA
AD12	Pilot operated 2-port solenoid valve (General purpose)/diaphragm drive	RJ-013AA
AD12E4	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/diaphragm drive/d2G4	RJ-013AA
AD21	Pilot operated 2-port solenoid valve (General purpose)/diaphragm drive	RJ-013AA
AD21E4	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/diaphragm drive/d2G4	RJ-013AA
AD21EX4	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/diaphragm drive/ExdIIBT4	RJ-013AA
AD22	Pilot operated 2-port solenoid valve (General purpose)/diaphragm drive	RJ-013AA
AD22E4	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/diaphragm drive/d2G4	RJ-013AA
ADK11	Pilot kick 2-port solenoid valve (General purpose)/diaphragm drive	RJ-013AA
ADK11E4	Explosion-proof pilot kick 2-port solenoid valve (General purpose)/diaphragm drive/d2G4	RJ-013AA
ADK11EX4	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/diaphragm drive/ExdIIBT4	RJ-013AA
ADK11-Z	Pilot kick for dry air 2-port solenoid valve (General purpose)	RJ-013AA
ADK12	Pilot kick 2-port solenoid valve (General purpose)/diaphragm drive	RJ-013AA
ADK12E4	Explosion-proof pilot kick 2-port solenoid valve (General purpose)/diaphragm drive/d2G4	RJ-013AA
ADK21	Pilot kick 2-port solenoid valve (General purpose)/diaphragm drive	RJ-013AA
AES (Facilea)	Visual Programming Tool for Image Processing	CC-1548AA
AES (Facilea AI)	Image processing AI tools	CC-1623A
AESM (ExiaStudio)	Device Visual Programming Tool	CC-1579A
AF2	Medium Main Line Filter	222
AF30□□	Large Main Line Filter (popular)	246
AF40□□	Medium Main Line Filter (oil-prohibited)	232
AF50□□	Large Main Line Filter (oil-prohibited)	268
AFB-RB	Active Fine Buffer	RJ-010AA
AG3□-Z	Direct acting 3-port solenoid valve for dry air (General purpose)	RJ-013AA
AG3□	Direct acting 3-port solenoid valve Discrete (General purpose)	RJ-013AA
AG4□E4-Z	Explosion-proof direct acting 3-port solenoid valve for dry air (General purpose)/d2G4	RJ-013AA
AG4□-Z	Direct acting 3-port solenoid valve for dry air (General purpose)	RJ-013AA
AG41	Direct acting 3-port solenoid valve Discrete (General purpose)	RJ-013AA
AG41E4	Explosion-proof direct acting 3-port solenoid valve (General purpose)/d2G4	RJ-013AA
AG41EX4	Explosion-proof direct acting 3-port solenoid valve (General purpose)/ExdIIBT4	RJ-013AA
AG43	Direct acting 3-port solenoid valve Discrete (General purpose)	RJ-013AA
AG43E4	Explosion-proof direct acting 3-port solenoid valve (General purpose)/d2G4	RJ-013AA
AG43EX4	Explosion-proof direct acting 3-port solenoid valve (General purpose)/ExdIIBT4	RJ-013AA
AG44	Direct acting 3-port solenoid valve Discrete (General purpose)	RJ-013AA
AG44E4	Explosion-proof direct acting 3-port solenoid valve (General purpose)/d2G4	RJ-013AA
AG44EX4	Explosion-proof direct acting 3-port solenoid valve (General purpose)/ExdIIBT4	RJ-013AA
AGD	Air operated valve for process gas	CB-035A
AHB	Air hydraulic booster	RJ-002AA, 003AA, 004AA, 005AA, 006AA
AL	air lamp/logic valve	RJ-007AA
AM4F0	Ⓜ Pilot operated 5-port valve/ body piping	RJ-012AA
AMD	air operated valve for chemical liquids (2-port)	CB-031A
AMDS	air operated valve for chemical liquids/Drip prevention integrated	CB-031A
AMG	air operated valve for chemical liquids (3-port)	CB-031A
AMS	Drip prevention valve for chemical liquids	CB-031A
AP11	Pilot operated 2-port solenoid valve (General purpose)/piston drive	RJ-013AA
AP11E2	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/piston drive/d2G2	RJ-013AA
AP11E4	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/piston drive/d2G4	RJ-013AA
AP11EX2	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/piston drive/ExdIIBT2	RJ-013AA
AP11EX4	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/piston drive/ExdIIBT4	RJ-013AA
AP12	Pilot operated 2-port solenoid valve (General purpose)/piston drive	RJ-013AA
AP12E2	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/piston drive/d2G2	RJ-013AA
AP12E4	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/piston drive/d2G4	RJ-013AA
AP21	Pilot operated 2-port solenoid valve (General purpose)/piston drive	RJ-013AA
AP21E2	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/piston drive/d2G2	RJ-013AA
AP21EX2	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/piston drive/ExdIIBT2	RJ-013AA
AP21E4	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/piston drive/d2G4	RJ-013AA
AP21EX4	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/piston drive/ExdIIBT4	RJ-013AA
AP22	Pilot operated 2-port solenoid valve (General purpose)/piston drive	RJ-013AA
AP22E2	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/piston drive/d2G2	RJ-013AA
AP22E4	Explosion-proof pilot operated 2-port solenoid valve (General purpose)/piston drive/d2G4	RJ-013AA
APE	Mechanical pressure switch	RJ-007AA
APK11	Pilot kick 2-port solenoid valve (General purpose)/piston drive	RJ-013AA
APK21	Pilot kick 2-port solenoid valve (General purpose)/piston drive	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-035A
AX1000T, 2000T,4000T	Direct drive actuator ABSODEX	CB-054AA
AX1R, 2R, 4R	Direct drive actuator ABSODEX	CC-1614A
AX6000M	Direct drive actuator ABSODEX	CB-054AA
AX9000TS, TH, MU	Driver for ABSODEX	CB-054AA
AXD	Driver for ABSODEX	CC-1614A
AZ	Tube cutter	RJ-007AA
B		
B	Booster	RJ-002AA, 003AA, 004AA, 005AA, 006AA
B□P51□	Ⓜ 2, 3, 5-port pilot operated valve /Metal base	RJ-012AA
B110 to **820-W**	Bracket/for F.R.L./Standard White Series	RJ-007AA
B2019	Regulator	RJ-007AA
B2019-P11	Regulator / Ozone-proof	RJ-007AA
B513□	Ⓢⓥ Pilot operated 3-port valve /sub-base	RJ-012AA
B5142	Ⓢⓥ Pilot operated 5-port valve /sub-base	RJ-012AA
B6061	Relief valve	RJ-007AA
B7019	F.R. unit	RJ-007AA
BBS-A	Balancer unit, automatic pressure adjustment	RJ-005AA
BBS-O	Balancer unit, fixed pressure adjustment	RJ-005AA
BHA	Compact cross roller parallel hand	RJ-006AA
BHA-FC	Mechanical hand	RJ-006AA
BHA-LN	Length measuring sensor with hand/Crossover roller parallel hand with sensor	RJ-005AA
BHE	Centering hand	RJ-006AA
BHE-LN	Length measuring sensor with hand/With sensor Centering hand	RJ-005AA
BHG	Compact cross roller parallel hand with rubber cover	RJ-006AA
BHG-LN	Length measuring sensor with hand/With sensor with rubber cover crossover roller parallel hand	RJ-005AA
BN	Air blow nozzle General	RJ-007AA
BNB	Air blow nozzle Blower specifications	RJ-007AA
BNE-F	Air blow nozzle Flat type	RJ-007AA
BNE-R	Air blow nozzle Round type	RJ-007AA
BSA2	Miniature cross roller parallel hand	RJ-006AA
BW7019	Filter/regulator/Outdoor Series	CC-1276A
C		
C1000 to **8000-P6**	F.R.L. combination/Copper ion compatible (copper and PTFE free)	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	Cylinder with valve /double acting lubrication with valve	RJ-005AA
CAW	Compact arm	CC-1613AA
CCH	Check valve for liquid	RJ-013AA
CCN	Check valve for liquid (nozzle)	RJ-013AA

Model No. [Index in alphabetical order]

Model No.	Model	Catalog No./page
C		
CG	Fiber tube push-in fitting (clean-room)	RJ-007AA
CHB	Air operated 2-port ball valve (Compact rotary valve)	RJ-013AA
CHBF	Air operated 2-port ball valve (compact rotary valve)/full bore	RJ-013AA
CHC	Auto hand changer	RJ-006AA
CHG	Air operated 3-port ball valve (Compact rotary valve)	RJ-013AA
CHL	Check valve with push-in fitting	RJ-007AA
CHV2	Check valve	RJ-007AA
CK	3-way jaw long stroke chuck	RJ-006AA
CKA	3-way jaw thin chuck	RJ-006AA
CKF	Hollow chuck	RJ-006AA
CKG	3-way finger bearing chuck	RJ-006AA
CKH2	Powerful chuck with high gripping force	RJ-006AA
CKJ	Ultra long stroke chuck	RJ-006AA
CKL2	Powerful chuck	RJ-006AA
CKL2-FC	Mechanical chuck	RJ-006AA
CKLB2	2-way powerful chuck	RJ-006AA
CKS	Low profile chuck	RJ-006AA
CKV2	Compact cylinder with valve / double acting/single rod	RJ-005AA
CKW-HP1	3-way chuck	RJ-006AA
CKWL-HP1	3-way chuck	RJ-006AA
CMA2	Medium bore size cylinder/ double acting/single rod	RJ-002AA
CMK2	Small bore size cylinder/ double acting/single rod	RJ-002AA
COV□2	Cylinder with valve /double acting lubrication with valve	RJ-005AA
CPD	Electronic pressure switch for coolants(With digital display)	RJ-008AA
CPE	Mechanical pressure switch for coolants (for low pressure)	RJ-008AA
CSB	Air operated 2-port ball valve for steam (Compact rotary valve)	RJ-013AA
CSBF	Air operated 2-port ball valve for steam (Compact rotary valve)	RJ-013AA
CV3E	Air operated 3-port valve for low pressure (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	Air operated 3-port valve for low pressure (coolant valve)/ with solenoid valve	RJ-013AA
CVSE2, CVSE22	Air operated 2-port valve (coolant valve)/with solenoid valve	RJ-013AA
CVSE3	air operated 3-port valve (coolant valve)/with solenoid valve	RJ-013AA
CXU	Air Unit	RJ-007AA
D		
D101 to **801-W**	Distributor/For F.R.L./ Standard White Series	RJ-007AA
DB1000,3000	Super Drain	298
DBS1006	Drain sensor	302
DCKW	Electric actuator Motor specification D Series 3-finger gripper	RJ-014AA
DLSH	Electric actuator Motor specification D Series 2-finger gripper	RJ-014AA
DMSDG	Electric actuator Motor specificationD Series Compact guided	RJ-014AA
DSC	Speed controller with adjusting 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 Motor specificationD Series rod type	RJ-014AA
DSTG	Electric actuator Motor specificationD Series guided	RJ-014AA
DSTK	Electric actuator Motor specificationD Series stopper	RJ-014AA
DSTL	Electric actuator Motor specificationD Series guided	RJ-014AA
DSTS	Electric actuator Motor specificationD Series guided	RJ-014AA
DT3000, 3010-W	Automatic drain	290
DT4000,4010-W	Automatic drain	290
DVL	Needle valve with adjusting dial	RJ-007AA
E		
E0,ET0	Cylinder switch/heat resistance/2-wire reed	RJ-002AA, 003AA, 004AA, 005AA, 006AA
ECS	Electric actuator Motorless specifications Slider	CB-055A
ETS	Electric actuator Motorless specifications Slider	CB-055A
EBS-L	Electric actuator Motorless specification Slider	CB-055A
EBS-G,-M	Electric actuator Motor specification Slider	RJ-014AA
EBR-L	Electric actuator Motorless specification Rod	CB-055A
EBR-G,-M	Electric actuator Motor specification Slider	RJ-014AA
ECG	Single-axis controller for electric actuator	RJ-014AA
ECMG	Multi-axis controller for electric actuators	RJ-014AA
ECR	Single-axis controller for electric actuator	RJ-014AA
ECV	Electric actuator Motorless specificationSlider	CB-055A
EH	Fiber tube for clean-room (for push-in fitting)	RJ-007AA
EKS-L	Electric actuator Motorless specificationSlider	CB-055A
EKS-M	Electric actuator Motor specificationSlider	CC-1457AA
EMB21,41,51	Metal-free 2-port solenoid valve	RJ-013AA
EJSG	Electric actuator Motor specificationSlider	RJ-014AA
ESC4	Single-axis controller for electric actuator	RJ-014AA
ESM	Electric shuttle mover	CC-1259AA
ETS	Electric actuator Motorless specifications Slider	CB-055A
ETV	Electric actuator Motorless specifications Slider	CB-055A
EV2100V, 2109V	Electro pneumatic regulator/ solenoid valve vacuum compatible	RJ-007AA
EVR	Electro pneumatic regulator/ solenoid valve medium flow rate	RJ-007AA
EVB□17	Electric vacuum valve	CB-035A
EVD	Digital electro-pneumatic regulator	RJ-007AA
EVL	Low pressure electro-pneumatic regulator	RJ-007AA
EVS2	Compact electro-pneumatic regulator/solenoid valve	RJ-007AA
EVT	Thin electro pneumatic regulator/Discrete	RJ-007AA
EXA	Pilot operated 2-port solenoid valve for compressed air	RJ-013AA
ExiaStudio (AESM)	Device Visual Programming Tool	CC-1579A
F		
F□	Soft nylon tube	RJ-007AA
F0V/H	Cylinder switch/1-color LED/ reed 2-wire	RJ-002AA, 003AA, 004AA, 005AA, 006AA
F1000 to **8000-P6**	Air filter / Copper ion compatible (copper and PTFE free)	RJ-007AA
F1000 to **8000-W**	Air filter/Standard White Series	RJ-007AA
F2S,F3S	Cylinder switch/1-color LED/2, 3-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
F2,3V/H	Cylinder switch/1-color LED/2, 3-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
F3PH/V	Cylinder switch/PNP output 3-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
F2,3Y V/H	Cylinder switch/2-color display/2, 3-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
F3000 to **8000-G4**	Air filter/flame-resistant series	RJ-007AA
FA□	Miniature fitting/adjustable socket	RJ-007AA
FA331 to **831**	Exhaust cleaner	RJ-007AA
FAC	Clean exhaust filter	RJ-007AA
Facilea (AES)	Visual Programming Tool for Image Processing	CC-1548AA
Facilea AI (AES)	Image processing AI tools	CC-1623A
FAW	Flex arm	CC-1615AA
FBS	Miniature fitting/bush	RJ-007AA
FBU2	Fine buffer	RJ-010AA
FC□	Miniature fitting/clamp fitting	RJ-007AA
FCD	Flat compact cylinder/double acting/single rod	RJ-003AA
FCH	Flat compact cylinder/Single acting/pull	RJ-003AA
FCK	Shock absorber/adjustable	RJ-005AA
FCM	Compact flow rate controller RAPIFLOW	RJ-008AA
FCS	Flat compact cylinder/single acting/push	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
FFLD	Electric actuator Motor specificationF Series 2-Finger Gripper (built-in controller)	RJ-014AA
FGRC	Electric actuator Motor specificationF Series rotary type	RJ-014AA
FGS	Miniature fitting/gasket	RJ-007AA
FH100	Feather hand (mini-parallel hand)	RJ-006AA
FH500	Feather hand (mini-fulcrum hand)	RJ-006AA
FJ	Floating fitting	RJ-005AA
FK	Simplified floating fitting	RJ-005AA
FLCR	Electric actuator Motor specificationF Series table	RJ-014AA
FLS	Miniature fitting/extension	RJ-007AA
FLSH	Electric actuator Motor specification F Series 2-Finger Gripper	RJ-014AA
FM□	Miniature fitting/manifold	RJ-007AA
FM3000 to **8000**	air filter/medium pressure series	RJ-007AA
FMD	Flow rate adjusting valve	CB-031A
FMS	Metering valve with silencer	RJ-007AA
FNS	Miniature fitting/double screw nipple	RJ-007AA
FPL	Miniature fitting/plug	RJ-007AA
FPV	Block valve	RJ-007AA

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F		
FS□	Miniature fitting/socket	RJ-007AA
FSL100	Inline filter	RJ-007AA
FSL200	Inline filter	RJ-007AA
FSL500	Inline filter	RJ-007AA
FSM2-D	Compact flow rate sensor (RAPIFLOW)	RJ-008AA
FSM3	Compact flow rate sensor (RAPIFLOW)	RJ-008AA
FSM-V	Miniature flow rate sensor RAPIFLOW	RJ-008AA
FSM-V-D	Separated display RAPIFLOW	RJ-008AA
FSM-VFM	Compact flow rate sensor/ inline filter	RJ-008AA
FSM-X	Miniature flow rate switch Rapiflow	RJ-008AA
FT□	Miniature fitting/barbed fitting	RJ-007AA
FWD	Compact pilot operated solenoid valve for water	RJ-013AA
FWS	Miniature fitting/bulkhead	RJ-007AA
FW4000,8000	air filter/Outdoor series	CC-1276A
FX	Drain Separator	RJ-007AA
G		
G29D	Miniature pressure gauge	RJ-007AA
G39D	Round pressure gauge	RJ-007AA
G401-W	Low-profile pressure gauge	RJ-007AA
G40D	Pressure gauge with safety marker	RJ-007AA
G45D	Pressure gauge with limit marker	RJ-007AA
G49D,59D	General purpose pressure gauge	RJ-007AA
G49D, 59D-P6	Pressure gauge / Copper ion compatible (copper and PTFE free)	RJ-007AA
G52D	Pressure gauge with switch	RJ-007AA
G53D	Pressure gauge for panel mounting	RJ-007AA
GA400	Differential pressure gauge	RJ-007AA
GAB312/352	Direct acting 2-port solenoid valve , manifold/actuator (General purpose)	RJ-013AA
GAB312/352-Z	Direct acting 2-port solenoid valve for dry air , manifold/ actuator (General purpose)	RJ-013AA
GAB412	Direct acting 2-port solenoid valve , manifold/actuator (General purpose)	RJ-013AA
GAB412-Z	Direct acting 2-port solenoid valve for dry air , manifold/ actuator (General purpose)	RJ-013AA
GAB422	Direct acting 2-port solenoid valve , manifold/actuator (General purpose)	RJ-013AA
GAB452	Direct acting 2-port solenoid valve , manifold/actuator (General purpose)	RJ-013AA
GAB452-Z	Direct acting 2-port solenoid valve for dry air , manifold/ actuator (General purpose)	RJ-013AA
GAG31□	Direct acting 3-port solenoid valve , manifold/actuator (General purpose)	RJ-013AA
GAG31□-Z	Direct acting 3-port solenoid valve for dry air , manifold/ actuator (General purpose)	RJ-013AA
GAG33□	Direct acting 3-port solenoid valve , manifold/ actuator(General purpose)	RJ-013AA
GAG33□-Z	Direct acting 3-port solenoid valve for dry air , manifold/ actuator (General purpose)	RJ-013AA
GAG34□	Direct acting 3-port solenoid valve , actuator (General purpose)	RJ-013AA
GAG34□-Z	Direct acting 3-port solenoid valve for dry air , actuator (General purpose)	RJ-013AA
GAG35□	Direct acting 3-port solenoid valve , manifold/actuator (General purpose)	RJ-013AA
GAG35□-Z	Direct acting 3-port solenoid valve for dry air , manifold/ actuator(General purpose)	RJ-013AA
GAG41□	Direct acting 3-port solenoid valve , manifold/actuator (General purpose)	RJ-013AA
GAG41□-Z	Direct acting 3-port solenoid valve for dry air , manifold/ actuator (General purpose)	RJ-013AA
GAG43□	Direct acting 3-port solenoid valve , manifold/actuator (General purpose)	RJ-013AA
GAG43□-Z	Direct acting 3-port solenoid valve for dry air , manifold/ actuator (General purpose)	RJ-013AA
GAG44□	Direct acting 3-port solenoid valve , actuator (General purpose)	RJ-013AA
GAG44□-Z	Direct acting 3-port solenoid valve for dry air , actuator (General purpose)	RJ-013AA
GAG45□	Direct acting 3-port solenoid valve , manifold/actuator (General purpose)	RJ-013AA
GAG45□-Z	Direct acting 3-port solenoid valve for dry air , manifold/ actuator (General purpose)	RJ-013AA
GAMD	air operated valve for chemical liquids (manifold/ branch valve)	CB-031A
GCKW	Electric actuator Motor specificationG Series 3-Finger Gripper	RJ-014AA
GCVE2	Modular coolant valve/air operated	RJ-013AA
GCVSE2	Modular coolant valve with solenoid valve	RJ-013AA
GEXA	Pilot operated 2-port solenoid valve for compressed air Push-in fitting manifold	RJ-013AA
GFM	Glass float module	RJ-010AA
GHV	Gas combination valve	CC-1590AA
GLC	Guideless cylinder/double acting	RJ-005AA
GMF1	Ⓜ Pilot operated 5-port valve ISO compliant valve /DIN terminal box/ISO size (1)	RJ-012AA
GMF1	Ⓜ Pilot operated 5-port valve ISO compliant valve / I/O connector/ISO size	RJ-012AA
GMF2	Ⓜ Pilot operated 5-port valve ISO compliant valve /DIN terminal box/ISO size (2)	RJ-012AA
GMF2	Ⓜ Pilot operated 5-port valve ISO compliant valve / I/O connector/ISO size	RJ-012AA
GMFZ	Ⓜ Pilot operated 5-port valve ISO compliant valve /DIN terminal box/ISO size /	RJ-012AA
GMFZ	Ⓜ Pilot operated 5-port ISO valve / I/O connector /ISO size (1)/(2)	RJ-012AA
GMMD	Manual valve for chemical liquids, manifold	CB-031A
GNAB□	air operated 2-port valve , manifold (Compact cylinder valve)	RJ-013AA
GNAD□	Diaphragm cylinder valveManifold	RJ-013AA
GPS2	Contact confirmation switch/ single unit	RJ-008AA
GPS3	Digital gap switch/Discrete	RJ-008AA
GRC	Table rotary actuator/basic	RJ-005AA
GRV	Medium pressure gas combination valve	CC-1590AA
GSSD2	Electric actuator Motor specificationG Series rod	RJ-014AA
GSTG	Electric actuator Motor specificationG Series Guided	RJ-014AA
GSTK	Electric actuator Motor specificationG Series stopper	RJ-014AA
GSTL	Electric actuator Motor specificationG Series Guided	RJ-014AA
GSTS	Electric actuator Motor specificationG Series Guided	RJ-014AA
GSV	Solenoid valve for automatic watering control	CC-297AA
GSV2	Solenoid valve for automatic watering control	CC-297AA
GT9000	Refrigeration air dryer/	114
GW49D	Outdoor pressure gauges	CC-1276A
GW	Fitting	RJ-007AA
GX3200D	Refrigeration air dryer/ Compact for mounting on equipment/standard inlet air (35°C)	90
GX5200D	Refrigeration air dryer/ Compact for direct compressor connection/high temperature inlet air (55°C)	96
H		
H0	Cylinder switch/1-color LED/ reed	RJ-002AA, 003AA, 004AA, 005AA, 006AA
H0Y	Cylinder switch/2-color display/reed	RJ-002AA, 003AA, 004AA, 005AA, 006AA
HAP-1C	Parallel hand	RJ-006AA
HAP-2 to 4CS	Parallel hand	RJ-006AA
HB	High corrosion resistant direct acting 2-port solenoid valve	RJ-013AA
HBL	Fulcrum hand	RJ-006AA
HCA	High speed cylinder/double acting/single rod	RJ-005AA
HCM	High energy absorption cylinder/ double acting/single rod	RJ-005AA
HCP	Lateral parallel hand	RJ-006AA
HD-0.5 to 9	Desiccant air dryer/compact heat-less dryer	146
HDL	Wide angle hand	RJ-006AA
HFP	Wide parallel hand	RJ-006AA
HGP	Long stroke parallel hand	RJ-006AA
HJL	Toggle hand	RJ-006AA
HK1	Motorized valve for gas combustion system	CC-1590AA
HKP	Cross roller parallel hand	RJ-006AA
HLA	Low profile parallel hand	RJ-006AA
HLB	Low profile parallel hand	RJ-006AA
HLC	Low profile long stroke parallel hand	RJ-006AA
HLD	Ultra thin parallel hand	RJ-006AA
HLF2	Low-profile long stroke hand	RJ-006AA
HMD	Low profile wide angle hand	RJ-006AA
HMC-HP1	Wide parallel hand	RJ-006AA
HMF	Compact wide parallel hand	RJ-006AA
HMFB	LM guided large wide parallel hand	RJ-006AA
HMTB1	Compact metal-free lever 2-port solenoid valve for medical equipment	CC-1055AA
HMTG1	Compact metal-free lever 3-port solenoid valve for medical equipment	CC-1055AA
HMV	Ⓢⓥ Manual selector valve / miniature	RJ-012AA
HMVE	Ⓢⓥ Manual selector 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	Close contact confirmation switch/single unit	RJ-008AA
HRL-1	Hybrid robot/Pneumatic robot element/single axis unit	RJ-005AA

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H		
HS	Motorized valve for gas combustion system	CC-1590AA
HSV	ⓈⓋManual selector valve / standard	RJ-012AA
HSVE	ⓈⓋManual selector valve / standard	RJ-012AA
HVB□ 12	Solenoid valve for high vacuum	RJ-013AA
HVL12	Delay vacuum solenoid valve	RJ-013AA
HYA	Pinch Valve for High Purity Fluids	CC-1055AA
HYN	Direct acting 2, 3-port valve (pinch valve for high purity fluids)	CC-1055AA
I		
IAGD□	Integrated gas supply system	CB-035A
IAVB	Vacuum pressure control system	CB-035A
J		
J100 to **800-W**	Joiner/for F.R.L./Standard White Series	RJ-007AA
JL	Fitting (elbow fitting)	RJ-007AA
JSB3	Brake unit	RJ-005AA
JSC3(-N) JSC4(-N)	Brake cylinder (medium/large bore size)/double acting/ single rod	RJ-005AA
JSG	Tie rod cylinder with brake/ Double acting/single rod	RJ-005AA
JSK2	Brake cylinder (small bore size ø20 to 40/caulking)/ Double acting	RJ-005AA
JSM2	Brake cylinder (small bore size ø20 to 40/ disassembling)/Double acting	RJ-005AA
K		
K0V/H	Cylinder switch/1-color LED/ reed 2-wire	RJ-002AA, 003AA, 004AA, 005AA, 006AA
K2, 3 V/H	Cylinder switch/1-color LED/2, 3-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
K2, 3Y V/H	Cylinder switch/2-color display/2, 3-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
K3P V/H	Cylinder switch/PNP output/3-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
K5V/H	Cylinder switch/without display/reed 2-wire	RJ-002AA, 003AA, 004AA, 005AA, 006AA
K60570	F.R.L. Kit	RJ-007AA
KBX	Electric actuator Motor specificationSlider 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-031A
KX	Coiling tube	RJ-007AA
KZV3	Pilot operated 2-port solenoid valve	RJ-013AA
L		
L1000 to **8000-W**	Lubricator / Copper ion compatible (copper and PTFE free)	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	RJ-004AA
LCM	Linear slide cylinder/double acting/single rod	RJ-004AA
LCR	Linear slide cylinder/double acting/single rod	RJ-004AA
LCW	Linear slide cylinder/double acting/single rod	RJ-004AA
LCX	Linear slide cylinder/double acting/single rod	RJ-004AA
LFC-KL	Lifter cylinder	CC-902AA
LGD	Air operated valve for process gas	CB-035A
LHA	Linear guide hand	RJ-006AA
LHAG	Linear guide hand with rubber cover	RJ-006AA
LMB	Linear guide lock	RJ-005AA
LML	Linear guide lock	RJ-005AA
LN	Cylinder with length measuring sensor/Sensor/ Amplifier/Display	RJ-005AA
LSH	Linear Slide Hand	RJ-006AA
LSH-HP1	Linear Slide Hand	RJ-006AA
LSHL-HP1	Linear Slide Hand	RJ-006AA
LSHM-HP2	Linear Slide Hand with Length Measuring Function	RJ-006AA
LST-HP1	Low-profile long stroke hand	RJ-006AA
LSTM-HP2	Low-profile long stroke hand with length measuring function	RJ-006AA
LW4000 / LW8000	Lubricator Outdoor Series	CC-1276A
LYX	air operated valve for chemical liquids	CB-031A
M		
M0V/H	Cylinder switch/1-color LED/ reed 2-wire	RJ-002AA, 003AA, 004AA, 005AA, 006AA
M1000 to **8000-P6**	Oil mist filter/Copper ion compatible (copper and PTFE free)	RJ-007AA
M1000 to **8000-W**	Oil mist filter/Standard White Series	RJ-007AA
M2, 3V/H	Cylinder switch/1-color LED/2, 3-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
M2, 3WV	Cylinder switch/2-color display/2, 3-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
M3GA1/2/3	ⓂPilot operated 3-port valve /body piping	RJ-011AA
M3GA1/2/3	ⓌⓇPilot operated 3-port valve /body piping	RJ-011AA
M3GA1/2/3	ⓃⓃair operated 3-port valve (Master valve)/body piping	RJ-012AA
M3GB1/2	ⓂPilot operated two 3-port valve s integrated/base piping	RJ-011AA
M3GB1/2	ⓌⓇPilot operated two 3-port valve s integrated/base piping	RJ-011AA
M3GD1/2/3	ⓂPilot operated 3-port valve /body piping	RJ-011AA
M3GD1/2/3	ⓌⓇPilot operated 3-port valve /body piping	RJ-011AA
M3GD1/2□0EJ	ⓂIntrinsically safe explosion-proof pilot operated 3-port valve /Body piping	RJ-012AA
M3GD1/2□0EX	ⓂIntrinsically safe explosion-proof pilot operated 3-port valve /Body piping	RJ-012AA
M3GE1/2	ⓂPilot operated two 3-port valve s integrated/base piping	RJ-011AA
M3GE1/2	ⓌⓇPilot operated two 3-port valve s integrated/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 /body piping	RJ-012AA
M3KA1	ⓃⓃair operated 3-port valve (master valve)/Body piping	RJ-012AA
M3MA0	ⓂDirect acting 3-port valve / body piping	RJ-012AA
M3MB0	ⓂDirect acting 3-port valve / sub-plate piping	RJ-012AA
M3P V/H	Cylinder switch/1-color LED/ PNP output/3-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
M3PA1/2	ⓂDirect acting 3-port valve / body 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 / body piping	RJ-012AA
M3QRB	ⓂDirect acting 3-port valve / sub-plate piping	RJ-012AA
M4F0/1/2/3	ⓂPilot operated 5-port valve/ body piping	RJ-012AA
M4F0/1/2/3	ⓃⓃair operated 5-port valve (Master valve)/body piping	RJ-012AA
M4F3□□0EX	ⓂPilot operated explosion-proof 5-port valve /Body piping	RJ-012AA
M4F3□0E	ⓂPilot operated explosion-proof 5-port valve /Body 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	ⓂPilot operated explosion-proof 5-port valve /Sub-plate piping	RJ-012AA
M4F4/5/6/7□0E	ⓂPilot operated explosion-proof 5-port valve /Sub-plate piping	RJ-012AA
M4GA1/2/3	ⓂPilot operated 5-port valve/ body piping	RJ-011AA
M4GA1/2/3	ⓌⓇPilot operated 5-port valve/ body piping	RJ-011AA
M4GA1/2/3	ⓃⓃair operated 5-port valve (Master valve)/body piping	RJ-012AA
M4GA4	ⓂPilot operated 5-port valve/ body piping	RJ-011AA
M4GA4	ⓌⓇPilot operated 5-port valve/ body 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/ body piping	RJ-011AA
M4GD1/2/3	ⓌⓇPilot operated 5-port valve/ body piping	RJ-011AA
M4GD1/2/3 / 4□0EJ	ⓂIntrinsically safe explosion-proof pilot operated 5-port valve /Body piping	RJ-012AA
M4GD1/2/3/4□0EX	ⓂIntrinsically safe explosion-proof pilot operated 5-port valve /Body 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

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M		
M4KA1/2/3/4	Ⓜ Pilot operated 5-port valve/ body piping	RJ-012AA
M4KA1/2/3/4	Ⓜ air operated 5-port valve (Master valve)/body 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/ body 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 mounting	RJ-012AA
M513□	Ⓢ Pilot operated 3-port valve /direct mounting	RJ-012AA
M5V/H	Cylinder switch/without display/reed 2-wire	RJ-002AA, 003AA, 004AA, 005AA, 006AA
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-monitors	RJ-008AA
MDC2	Compact direct mounting cylinder/double acting/single rod	RJ-003AA
MDV	Compact direct mounting cylinder	CC-905AA
MEB2/MEG2	Metal-free 2-port solenoid valve	CC-1055AA
MEVT	Low profile electro pneumatic regulator/reduced wiring manifold	RJ-007AA
MGD	Manual valve for process gas	CB-035A
MGPS2	Contact confirmation switch/ manifold	RJ-008AA
MGPS3	Digital gap switch/manifold	RJ-008AA
MHB4	Miniature motorized ball valve 2-port valve (motor valve)	RJ-013AA
MHG4	Miniature motorized ball valve 3-port valve (motor valve)	RJ-013AA
MHPS	Close contact confirmation switch manifold	RJ-008AA
MJB3	Metal-free direct acting 2-port solenoid valve	CC-1055AA
MJL□	Tightening fitting/elbow	RJ-007AA
MJN□	Tightening fitting/sleeve	RJ-007AA
MJS□	Tightening fitting/straight	RJ-007AA
MJT□	Tightening fitting/tee	RJ-007AA
MJU□	Tightening fitting/insert ring	RJ-007AA
MKB3	Metal-free 2-port solenoid valve	CC-1055AA
MKML	Fine level switch manifold	CB-031A
MM	Medium mechanical valve / detector	RJ-007AA
MM3000 to **8000**	Oil mist filter/medium pressure series	RJ-007AA
MMD	Manual valve for chemical liquids	CB-031A
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 /Body piping	RJ-011AA
MN3GA1/2	Ⓦ/Ⓑ Pilot operated 3-port valve /Body piping	RJ-011AA
MN3GAX12	Ⓦ/Ⓧ Pilot operated 3-port valve /Body piping	RJ-011AA
MN3GB1/2	Ⓜ/Ⓑ Pilot operated 3-port valve Two integrated/base piping	RJ-011AA
MN3GB1/2	Ⓦ/Ⓑ Pilot operated 3-port valve Two integrated/base piping	RJ-011AA
MN3GD1/2	Ⓜ/Ⓑ Pilot operated 3-port valve /Body piping	RJ-011AA
MN3GD1/2	Ⓦ/Ⓑ Pilot operated 3-port valve /Body piping	RJ-011AA
MN3GDX12	Ⓦ/Ⓧ Pilot operated 3-port valve /Body piping	RJ-011AA
MN3GE1/2	Ⓜ/Ⓑ Pilot operated 3-port valve Two integrated/base piping	RJ-011AA
MN3GE1/2	Ⓦ/Ⓑ Pilot operated 3-port valve Two integrated/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 /Body piping	RJ-011AA
MN4GA1/2	Ⓦ/Ⓑ Pilot operated 5-port valve /Body piping	RJ-011AA
MN4GAX12	Ⓦ/Ⓧ Pilot operated 5-port valve /Body 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 /Body piping	RJ-011AA
MN4GD1/2	Ⓦ/Ⓑ Pilot operated 5-port valve /Body piping	RJ-011AA
MN4GDX12	Ⓦ/Ⓧ Pilot operated 5-port valve /Body 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-proof product	RJ-007AA
MNRJB500	Block manifold compact direct acting precision regulator	RJ-007AA
MNV	Flow rate adjusting valve	CB-031A
MR10R	Compact metal-free 2, 3-port Solenoid valve	CC-1055AA
MR16	Compact metal-free 2, 3-port Solenoid valve	CC-1055AA
MRG2	Magnet rodless cylinder/ Double acting	RJ-005AA
MRL2	Magnet rodless cylinder/ Basic	RJ-005AA
MS	Compact mechanical valve / detector	RJ-007AA
MSB1□	Motorized 2-port ball valve for steam (Motor valve)	RJ-013AA
MSD	Small compact cylinder/ double acting/single rod	RJ-003AA
MSDG-L	Small compact cylinder/ Double acting/guided with switch	RJ-004AA
MTLPS	Cutting tool breakage detection switch/manifold	RJ-008AA
MV3QRA	3QR negative pressure switching unit Body piping	RJ-012AA
MV3QRB	3QR negative pressure switching unit Sub-plate piping	RJ-012AA
MXKML	Fine level switch manifold	CB-031A
MVB	Manual valve for high vacuum	CB-035A
MVC	Small cylinder with suction pad/double acting/single rod	RJ-005AA
MW3GA2	Ⓜ Pilot operated 3-port valve /body piping	RJ-011AA
MW3GA2	Ⓦ Pilot operated 3-port valve /body piping	RJ-011AA
MW4GA2	Ⓜ Pilot operated 5-port valve/ body piping	RJ-011AA
MW4GA2	Ⓦ Pilot operated 5-port valve/ body 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-1276A
MWD	Weir diaphragm valve	CC-1637A
MX1000 to **8000-W**	High performance oil mist filter Standard White Series	RJ-007AA
MXB1□	Motorized 2-port ball valve (Motor valve)	RJ-013AA
MXB1D-N	Oil-free motorized 2-port ball valve (Motor valve)	RJ-013AA
MXB1F	Motorized 2-port ball valve (motor valve)/full bore	RJ-013AA
MXB1-N	Oil-free motorized 2-port ball valve (Motor valve)	RJ-013AA
MXBC2	Motorized proportional control 2-port ball valve (Motor valve)	RJ-013AA
MXG1□	Motorized 3-port ball valve (Motor valve)	RJ-013AA
MXG1D-N	Oil-free motorized 3-port ball valve (Motor valve)	RJ-013AA
MXG1-N	Oil-free motorized 3-port ball valve (Motor valve)	RJ-013AA
MXGC2	Motorized proportional control 3-port ball valve (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□	Ⓑ 2, 3, 5-port pilot operated valve /Block manifolds	RJ-012AA
NAB□	Air operated 2-port valve Discrete(Compact cylinder valve)	RJ-013AA
NAD□	Diaphragm cylinder valve	RJ-013AA
NAP11	Air operated 3-port valve	RJ-012AA
NCK	Shock absorber/fixed	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 3-port solenoid valve	RJ-012AA
NPV2	Direct pressure automatic pinch valve	RJ-013AA
NS	Nitrogen gas extraction unit/ unit type	36
NSU	Nitrogen gas extraction unit/ system type	14
NSR	New handling system/X-axis module	RJ-005AA
NU	New urethane tube	RJ-007AA
NVP11R	Air operated 3-port valve with solenoid valve	RJ-012AA
NX4	ABSODEX	CC-1456AA
NXD	Driver	CC-1456AA
O		
OGD	Manual valve for process gas	CB-035A

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Model No.	Model	Catalog No./page
O		
OMC2	Sequential fluid control components for large port size dust collector valve (Controller for large port size dust collector valve)	RJ-013AA
P1100-W	Reed switch Compact mechanical pressure switch	RJ-007AA
P4000-W	Mechanical pressure switch Standard White Series	RJ-007AA
P4100-W	Reed switch Compact mechanical pressure switch	RJ-007AA
P512□	ⓈⓋPilot operated 2-port valve /pilot	RJ-012AA
P513□	ⓈⓋPilot operated 3-port valve /pilot	RJ-012AA
P5142	ⓈⓋPilot operated 5-port valve /pilot	RJ-012AA
P8100-W	Reed switch Compact mechanical pressure switch	RJ-007AA
PAW	PowerArm	CC-1418AA
PCC	Pin clamp cylinder double acting/single rod	RJ-005AA
PCIS / PCOS	Parallel cam unit	CB-019SAA
PD2	For dust collectorPilot operated 2-port air operated valve	RJ-013AA
PD3	For dust collectorPilot operated 2-port air operated valve	RJ-013AA
PDV2	For dust collector Air operated 2-port solenoid valve	RJ-013AA
PDV3	For dust collector Air operated 2-port solenoid valve	RJ-013AA
PDVE4	Explosion-proof for dust collector2-port solenoid valve (explosion-proof pulse-jet valve)	RJ-013AA
PE	Pressure switch/logic valve	RJ-007AA
PFD	Pneumatic flow rate sensor/ separated display FLUEREX flow sensor	RJ-008AA
PG	Push-in fitting for fiber tube (standard)	RJ-007AA
PGM	Regulator for process gas	CB-035A
PG-P2-B	Blanking Plug	RJ-007AA
PJVB	Control box manifold solenoid valve (2-port solenoid valve for pulse jet control)	RJ-013AA
PKA	Pilot kick 2-port solenoid valve for air	RJ-013AA
PKS	Pilot kick 2-port solenoid valve for steam	RJ-013AA
PKW	Pilot kick 2-port solenoid valve for water	RJ-013AA
PLE-B12	Side block/integrated	RJ-007AA
PLJ-C12	YES element/relay	RJ-007AA
PLK-A11	OR element/line type	RJ-007AA
PLK-B12	OR element/integrated	RJ-007AA
PLK-C12	OR element/relay	RJ-007AA
PLL-A11	AND element/line type	RJ-007AA
PLL-B12	AND element/integrated	RJ-007AA
PLL-C12	AND element/relay	RJ-007AA
PLM	Memory element/relay	RJ-007AA
PLN-B12	NOT element/integrated	RJ-007AA
PLN-C12	NOT element/relay	RJ-007AA
PLN-D12	Threshold element/relay	RJ-007AA
PMM	Fine regulator	CB-031A
PMP	Fine regulator	CB-031A
PNA	Oxygen Monitor	50
PPD3	Electronic pressure switch/ sensor-amplifier integrated with display	RJ-008AA
PPD3-S	Electronic pressure switch/ stainless steel diaphragm sensor/Sensor-amplifier integrated with display	RJ-008AA
PPE	Compact electronic pressure switch/Sensor/amplifier integrated without display	RJ-008AA
PPE-□A	Compact electronic pressure switch/Sensor-amplifier integrated without display/ analog output	RJ-008AA
PPEV-□A	Compact electronic pressure switch/Sensor-amplifier integrated without display/ analog output	RJ-008AA
PPG-D	Electronic pressure sensor with digital display	RJ-008AA
PPLX	Forward motion pick & place unit	CB-019SAA
PPR	Electronic pressure sensor with digital display	RJ-008AA
PPX	Digital Pressure Sensor	RJ-008AA
PRD	Amplifier/element and sensor	RJ-007AA
PRE-A12	Pressure switch/relay	RJ-007AA
PRF-A2	Booster/element and sensor	RJ-007AA
PRS-A12	Solenoid valve /relay	RJ-007AA
PRT	Timer/relay	RJ-007AA
PSD	PLC branch block	RJ-007AA
PSE	PLC I/O block	RJ-007AA
PSL	PLC AND element	RJ-007AA
PSM	PLC element	RJ-007AA
PSV	PLC sub-base V-type	RJ-007AA
PTN2	Fitting for fiber tube	RJ-007AA
PV5	ⓈⓋPilot operated 5-port valve ISO compliant valve / I/O connector/ISO size (1)	RJ-012AA
PV5G	ⓈⓋPilot operated 5-port valve ISO compliant valve /DIN terminal box/ISO size (1)	RJ-012AA
PV5S-0	ISO compliant master valve	RJ-012AA
PVP	Precise suction plate	RJ-010AA
PVS	Pilot operated 2-port solenoid valve	RJ-013AA
PWS	Threshold sensor	RJ-007AA
PXB-B3	Pushbutton switch and switch body/Separated	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/element and sensor	RJ-007AA
PXF	Limit sensor/element and sensor	RJ-007AA
PXV	Air lamp	RJ-007AA
PYM	Fine regulator	CB-031A
PZM	Mounting bracket/line type	RJ-007AA
PZU	Sub-base and input block/ relay 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 LED/ reed 2-wire	RJ-002AA, 003AA, 004AA, 005AA, 006AA
R 1,2	Cylinder switch/1-color display/2-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
R1000 to **8000-P11**	Regulator / Ozone-proof	RJ-007AA
R1000 to **8000-P6**	Regulator / Copper ion compatible (copper and PTFE free)	RJ-007AA
R1000 to **8000-W**	Regulator/Standard White Series	RJ-007AA
R1100 to **8100-P11**	Reverse regulator/ozone-proof	RJ-007AA
R1100 to **8100-P6**	Reverse regulator / Copper ion compatible (copper and PTFE free)	RJ-007AA
R1100 to **R8100-W**	Reverse regulator/Standard White Series	RJ-007AA
R2, 3Y	Cylinder switch/2-color display/2, 3-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
R3000 to **8000-G4**	Regulator/flame-resistant series	RJ-007AA
R3100 to **8100-G4**	Reverse regulator/flame-resistant series	RJ-007AA
R5	Cylinder switch/without display/reed 2-wire	RJ-002AA, 003AA, 004AA, 005AA, 006AA
RA800	Compact regulator/compact piston	RJ-007AA
RB500	Compact regulator	RJ-007AA
RB500-P11	Compact regulator/ozone-proof	RJ-007AA
RC2000	Clean regulator	RJ-007AA
RCC2	Rotary clamp cylinder Double acting/single rod	RJ-005AA
RCKL	Collaborative robots gripper 3-way finger	RJ-006AA
RCS2	Rotary clamp cylinder (Single guide) double acting/single rod	RJ-005AA
RG	Fiber tube push-in fitting (flame resistance)	RJ-007AA
RHLF	Collaborative robots gripper Long stroke	RJ-006AA
RJB500	Compact direct acting precision regulator	RJ-007AA
RJF	Rotary fitting	RJ-007AA
RLSH	Gripper for collaborative robots 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	Rotary actuator (rack & pinion)	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	RemoteI/O	RJ-011AA
RTD-3A	air timer/logic valve	RJ-007AA
RW4000, 8000	Regulator/outdoor series Outdoor Series	CC-1276A
RV3□	Rotary actuator/vane	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 size	RJ-007AA
SC-20A to **50A**	Speed controller/large bore size	RJ-007AA

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Model No.	Model	Catalog No./page
S		
SC3P	Speed controller/stainless steel anti-corrosion	RJ-007AA
SC3R	Speed controller/direct piping/ elbow	RJ-007AA
SC3U	Speed controller/Universal/ push-in fitting	RJ-007AA
SC3W	Speed controller/Elbow/ push-in fitting	RJ-007AA
SCA2	Medium bore size cylinder (medium bore size ø40 to 100)/double acting/single rod	RJ-002AA
SCD	Speed controller/miniature in/ out type	RJ-007AA
SCD2	Speed controller/In/out line type with push-in fitting	RJ-007AA
SCG	Tie rod cylinder/double acting/single rod	RJ-002AA
SCK	Shock absorber/adjustable	RJ-005AA
SCL2	Speed controller/Line type with push-in fitting	RJ-007AA
SCL2-N	Needle valve / Line type with push-in fitting	RJ-007AA
SCM	Round shaped cylinder/ double acting/single rod	RJ-002AA
SC-M3 / M5(-F)	Speed controller / miniature	RJ-007AA
SCPD3	Pencil shaped cylinder/double acting/single rod	RJ-002AA
SCPH3	Pencil shaped cylinder/single acting/pull	RJ-002AA
SCPS	Pencil shaped cylinder/single acting/push	RJ-002AA
SCPS3	Pencil shaped cylinder/single acting/push	RJ-002AA
SCS2	Selex cylinder (large bore size ø25 to 250)/double acting/single rod/lubrication	RJ-002AA
SD301, 302D	High polymer membrane dryer/single unit	180
SD301, 302E	High polymer membrane dryer/single unit	174
SD3015 to **3075**	High polymer membrane dryer/single unit	192
SD401, 402D	High polymer membrane dryer/single unit	180
SD401, 402E	High polymer membrane dryer/single unit	174
SD4050 to **4100**	High polymer membrane dryer/single unit	192
SDM4050 to **4100**	High polymer membrane dryer/Super dryer modular series (large)	198
SFC□	Anti-bacterial / Bacteria-removing filter	RJ-007AA
SFS10	Bacteria removing filter/inline	RJ-007AA
SFR / SFRT	Fine speed fan rotary actuator	CC-984AA
SFX	siloxane ozone remover	RJ-007AA
SHD	Desiccant air dryer/medium/ large heat-less dryer	156
SHV2	Shuttle valve	RJ-007AA
SKAC	Contact protecting circuit box (for AC circuit)	RJ-002AA, 003AA, 004AA, 005AA, 006AA
SKDC	Contact protecting circuit box (for DC circuit)	RJ-002AA, 003AA, 004AA, 005AA, 006AA
SKH	Shock absorbing valve	RJ-012AA
SKL	Shock absorber	RJ-005AA
SL	Silencer/metal body	RJ-007AA
SLM	Silencer/miniature	RJ-007AA
SLW	Silencer/small bore size/resin body	RJ-007AA
SM-25	Shuttle mover Standard / High load	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	RJ-007AA
SNS	Residual pressure exhaust valve with spool position detection	RJ-007AA
SP	Low profile pilot operated 2-port solenoid valve for compressed air	RJ-013AA
SPD	Poppet Diaphragm Valve	CC-1637A
SPK	Pilot kick 2-port solenoid valve for steam	RJ-013AA
SR	Flame-resistant tube	RJ-007AA
SRG3	High precision guided rodless cylinder (Single guide)/double acting	RJ-005AA
SRL3	Rodless cylinder/double acting	RJ-005AA
SRM3	High precision guided rodless cylinder (double guide)/ double acting	RJ-005AA
SRT3	Rodless cylinder with brake/ Double acting	RJ-005AA
SSD	Compact cylinder/double acting/single rod	RJ-003AA
SSD2	Compact cylinder/double acting/single rod	RJ-003AA
SSD-LN	With length measuring sensor	RJ-005AA
SSG	Guided super compact cylinder /double acting/single rod	RJ-003AA
STG	Guided cylinder/double acting/single rod	RJ-004AA
STK	Stopper cylinder/double acting/round rod end form	RJ-005AA
STL-□	Guided cylinder (long stroke)/ double acting/single rod	RJ-004AA
STM-M/B	Guided cylinder/double acting/single rod	RJ-004AA
STR2-□	Twin rod cylinder/double acting/single rod	RJ-004AA
STS-□	Guided cylinder (short stroke)/double acting/single rod	RJ-004AA
SU301, 302D	High polymer membrane dryer/unit	180
SU301, 302E	High polymer membrane dryer/unit	174
SU3015 to **3075**	High polymer membrane dryer/unit	186
SU401, 402D	High polymer membrane dryer/unit	180
SU401, 402E	High polymer membrane dryer/unit	174
SU4050, 4100	High polymer membrane dryer/unit	186
SVB□□	air operated 2-port valve With solenoid valve (cylinder valve)	RJ-013AA
SWD	Weir Diaphragm Valve	CC-1637A
T		
T0V/H/C	Cylinder switch/1-color LED/ reed 2-wire	RJ-002AA, 003AA, 004AA, 005AA, 006AA
T0Y	Cylinder switch/for magnetic environments2-wire reed	RJ-002AA, 003AA, 004AA, 005AA, 006AA
T1 V/H	Cylinder switch/1-color display/2-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
T2 V/H R	Cylinder switch/Bend resistance lead wire/2-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
T2,3 V/H/C	Cylinder switch/1-color LED/2, 3-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
T2,3YL V/H	Cylinder switch/coolant proof/2, 3-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
T2J V/H	Cylinder switch/Off-delay/2-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
T2YD(T)	Cylinder switch/strong magnetic field proof/2-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
T2WL V/H	Cylinder switch/water resistance improved/2-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
T3P V/H	Cylinder switch/PNP output/3-wire proximity sensor	RJ-002AA, 003AA, 004AA, 005AA, 006AA
T5 V/H/C	Cylinder switch/without display/reed 2-wire	RJ-002AA, 003AA, 004AA, 005AA, 006AA
T8 V/H	Cylinder switch/1-color LED/ reed 2-wire	RJ-002AA, 003AA, 004AA, 005AA, 006AA
TAC-25	Medium pressure gas safety shutoff control system	CC-1590AA
TGX	Torque guard	CC-1601AA
TLPS	Cutting tool breakage detection switch/single unit	RJ-008AA
TSF	Torque saver	CC-1601AA
TVG	Plug-in Block Manifold	RJ-011AA
U		
U	Urethane tube	RJ-007AA
UB	Lock unit	RJ-005AA
UCA2	Unit cylinder/Double acting/ single rod/metal bush bearing	RJ-004AA
UCAC2	Position locking clamp cylinder/double acting/single rod	RJ-005AA
UCAC-N32/40	Lightweight clamp cylinder/ Position locking/double acting/single rod	RJ-005AA
UFCD	Free position locking flat cylinder/double acting/single rod	RJ-005AA
UGPS2	Contact confirmation switch/ unit	RJ-008AA
UGPS3	Digital gap switch/unit	RJ-008AA
UHPS	Close contact confirmation switch/unit	RJ-008AA
ULK	Brake cylinder/double acting/ single rod	RJ-005AA
UMB1	For medical equipmentHigh corrosion resistant miniature direct acting 2-port solenoid valve	CC-1055AA
UMG1	For medical equipmentHigh corrosion resistant miniature direct acting 3-port solenoid valve	CC-1055AA
UP	Antistatic fiber tube (for push-in fitting)	RJ-007AA
UP-□□-F1/F2	Antistatic tube	RJ-007AA
UP-9102-20-□-F1	Antistatic fiber tube	RJ-007AA
UP-9102-SR	Flame-resistant fiber tube (for push-in fitting)	RJ-007AA
US	Compact direct acting 2, 3-port solenoid valves (Resin body)	RJ-013AA
USB□	Compact direct acting 2-port solenoid valve	RJ-013AA
USC	Free position locking medium bore size cylinders/double acting/single rod	RJ-005AA

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Model No.	Model	Catalog No./page
U		
USG□	Compact direct acting 3-port solenoid valve	[RJ-013AA]
USSD	Position locking compact cylinder/double acting/single rod	RJ-005AA
UTLPS	Cutting tool breakage detection switch/unit	RJ-008AA
V		
V0	Cylinder switch/Compact strong magnetic field proof/ reed 2-wire	RJ-002AA, 003AA, 004AA, 005AA, 006AA
V1000, 3000-W	Residual pressure exhaust valve Standard White Series	RJ-007AA
V3010, 6010-W	Residual pressure exhaust valve with locking hole With keyhole, OSHA compliant	[RJ-007AA]
V3301, 3321-W	Slow Start Valve	RJ-007AA
VFA1000 to **4000**	Vacuum filter	RJ-010AA
VG	Vacuum generator	CB-035A
VG41D	Vacuum pressure gauge with limit marker	RJ-007AA
VLA	Solenoid valve for gas combustion system	CC-1590AA
VLM	Medium pressure gas safety cutoff control system	CC-1590AA
VNA	Solenoid valve for gas combustion system	CC-1590AA
VNA-R/RH	Solenoid valve for gas combustion system	CC-1590AA
VNM	Medium pressure gas safety cutoff control system	CC-1590AA
VNM-25-K	Safety residual pressure exhaust valve (increased fire safety specifications)	CC-1590AA
VNR	Solenoid valve for gas combustion system (normally open type)	CC-1590AA
VRA2000	Vacuum regulator	RJ-010AA
VSB	Ejector system/square	RJ-010AA
VSC	Ejector system/pad direct mounting	RJ-010AA
VSECV	Vacuum-related components/ position locking valve	RJ-010AA
VSFB	Vacuum-related components/ vacuum filter Large capacity union	RJ-010AA
VSFJ	Vacuum-related components/ compact vacuum filter Filter socket type	RJ-010AA
VSFU	Vacuum-related components/ vacuum filter Compact union	RJ-010AA
VSG	Ejector system/20 mm width Discrete dedicated	RJ-010AA
VSH	Ejector system/solenoid valve direct mounting	RJ-010AA
VSJ/VSJM	Ejector system/20mm width integrated	RJ-010AA
VSJP/VSJPM	Vacuum pump system/20 mm width integrated	RJ-010AA
VSK/VSKM	Ejector system/16 mm width integrated	RJ-010AA
VSLF	Vacuum-related components/ vacuum burst unit	RJ-010AA
VSN/VSNM	Ejector system/10.3 mm width integrated	RJ-010AA
VSNP/ VSNPM	Vacuum pump system/10.3 mm width integrated	RJ-010AA
VSP	Suction Pad	[RJ-010AA]
VSQ	Ejector system/31.5 mm width Discrete dedicated	RJ-010AA
VSQP	Vacuum pump system/31.5 mm width integrated	RJ-010AA
VSRVV	Vacuum-related components/ compact vacuum regulator	RJ-010AA
VST	Vacuum-related components/ air tweezers	RJ-010AA
VSU	Ejector system/tubular	RJ-010AA
VSUS	Vacuum-related components/ vacuum pressure switch	RJ-010AA
VSX/VSXM	Ejector system/10.5 mm width integrated	RJ-010AA
VSXP/VSXPM	Vacuum pump system/10.5 mm width integrated	RJ-010AA
VSY	Ejector system/with vacuum burst function	RJ-010AA
VSZM	Ejector system/11 mm pitch manifold	RJ-010AA
VSZPM	Vacuum pump system/11 mm pitch manifold	RJ-010AA
W		
W 1000 to **8100-P11**	Filter/regulator/ozone-proof	RJ-007AA
W1000 to **8000-P6**	Filter, regulator, Copper ion compatible (copper and PTFE free)	[RJ-007AA]
W1000 to **8000-W**	Filter/regulator/Standard White Series	RJ-007AA
W1100 to **8100-P11**	Reverse filter/regulator/ Ozone-proof product	RJ-007AA
W1100 to **8100-P6**	Reverse filter, regulator, Copper ion compatible (copper and PTFE free)	[RJ-007AA]
W1100 to **8100-W**	Reverse filter/regulator/ Standard White Series	RJ-007AA
W2P513□	ⓈⓋPilot operated 5-port valve /double	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 flow rate sensor for liquidsFLUEREX flow sensor	RJ-008AA
WFK3000	Karman vortex flow rate sensor for water FLUEREX	RJ-008AA
WR1/2	Regulator for water	RJ-007AA
WW4000, 8000	Filter/regulator/outdoor series Outdoor Series	CC-1276A
WXU	Water Accumulation Unit	RJ-008AA
Y		
YS	Y shaped strainer	RJ-013AA
Z		
ZB4-B	Switch head	RJ-007AA
ZCK	Rotary head lever actuator	RJ-007AA
ZRS	Roller gear cam unit	CC-1601AA
ZSP	Fitting (stainless steel)	RJ-007AA
ZW	Fitting (stainless steel)	RJ-007AA

Products by application

-FP□	For food manufacturing processes	CC-1271AA
-HP□	High Durability components	CC-1421AA
-P4□	For rechargeable battery manufacturing processes	CC-1226AA
-P5□	For clean components	CB-033SAA
-P6	Copper ion compatible (copper and PTFE free)	RJ-001AA
-P7□	For clean components	CB-033SAA
-P8□	Oil-prohibited treatment for clean components	CB-033SAA
-P9□	Oil-prohibited treatment for clean components	CB-033SAA
-P11	Ozone specifications	RJ-001AA
-P12	Oil-prohibited	RJ-001AA
-W□	For outdoor use	CC-1276AA

Main Line Components / Gas Generators

CatalogNo.RJ-009AA

Mainline Components & Gas Generators

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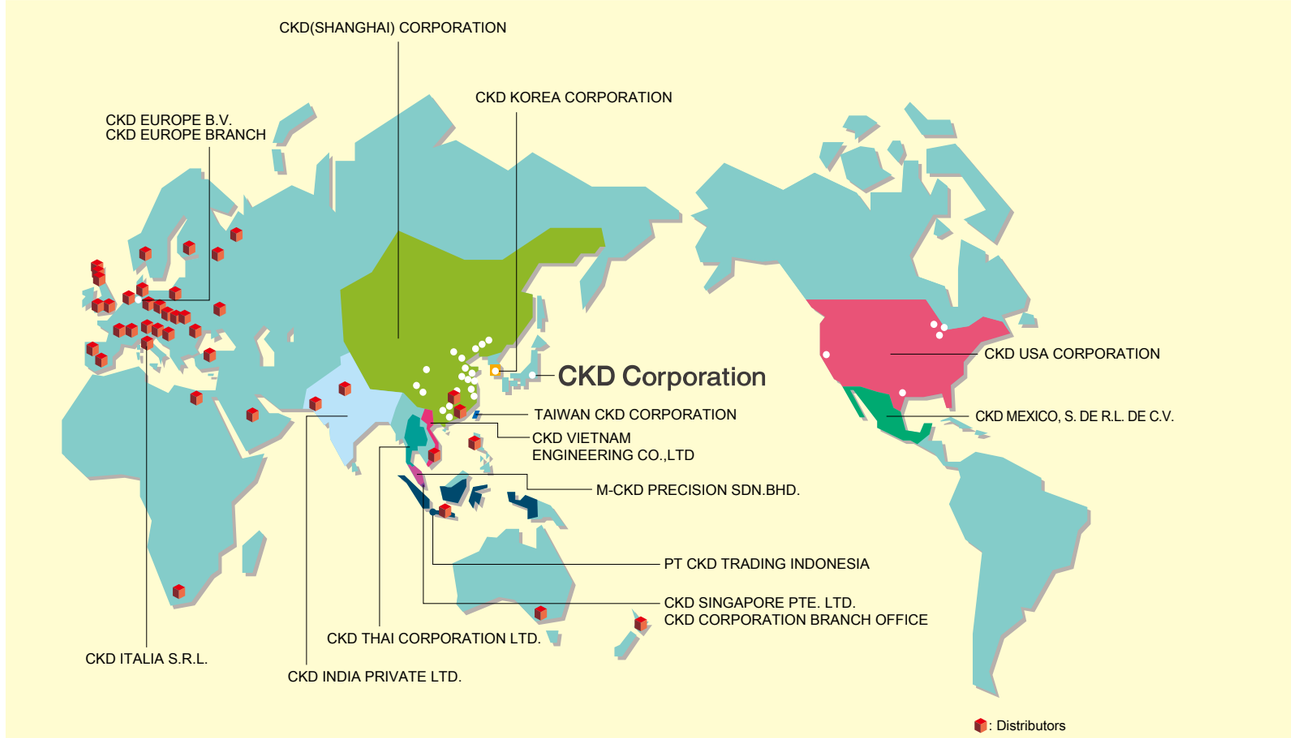
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- Main line filters
- Drain dischargers
- Nitrogen gas extraction units

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