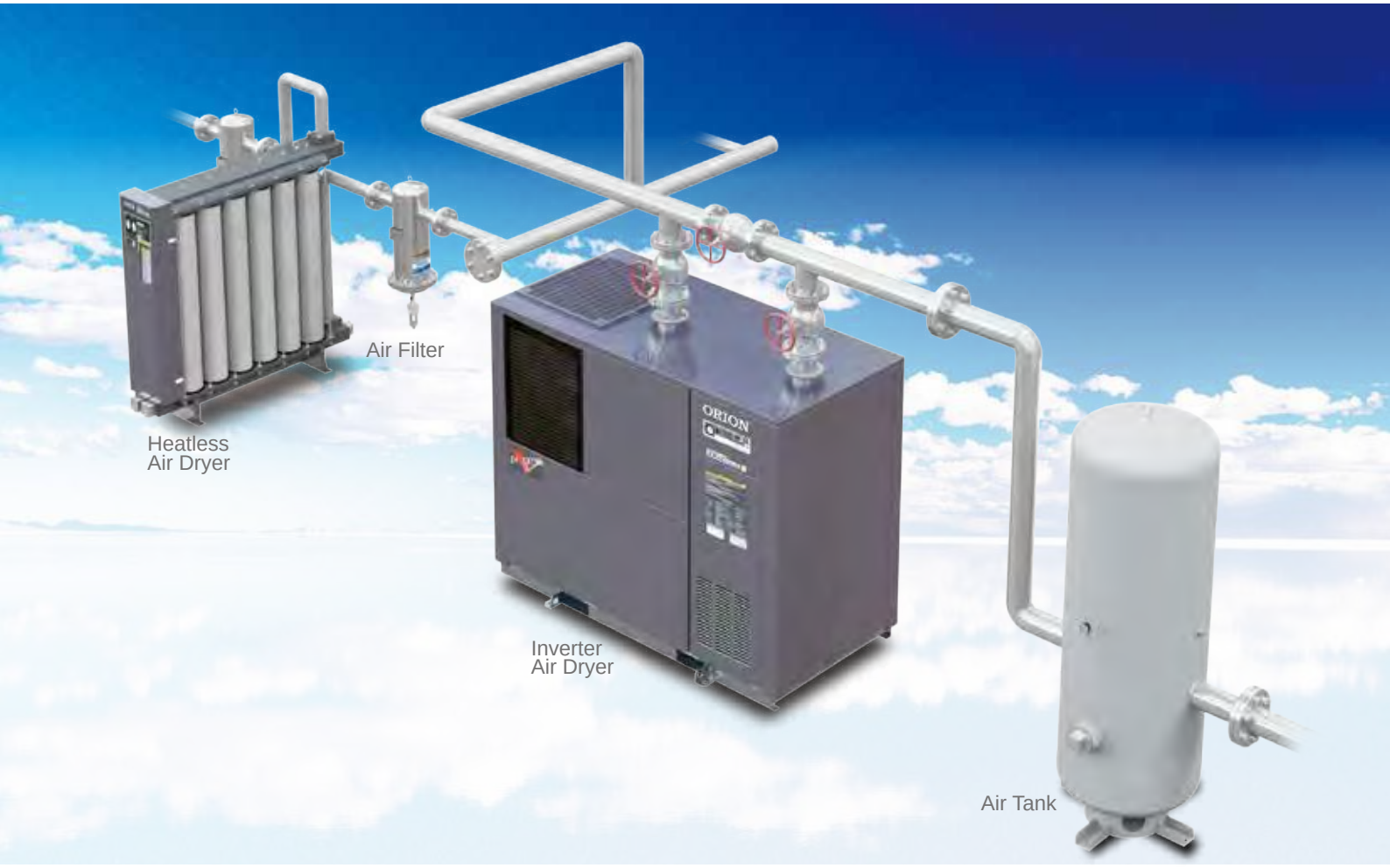
ORION
冷熱と真空でイノベーション

Compressed Air Equipment



ORION Clean Air System

Energy Saving Clean Air and Environ mentally Conscious

Feb. 2022 | D-AG02
Compressed Air Equipment Catalog

Striving to Make Products that Move You

Wide-Ranging Lineup
ORION Clean Air

Energy Saving Clean Air and Environ

Starting with refrigerated air dryers, the ORION Clean and applications that can improve air quality to the needs covered, including drain processing. ORION is

Refrigerated Air Dryer
Energy Saving Model RAXE Series

Heatless
Air Dryer
QSQ-EDC
Series

Air Dryer Refrigerated Air Dryer

Compressed Air Dehumidification Drying
(Standard dew point, under pressure: 10 ℃)※

Energy Saving Model	RAXE	P.17
	RAXD	P.17
General Purpose Model	RAX	P.25
General Purpose Model (Works with high temperature inlet air)	RAX-SE	P.31

※ Pressure Conditions: 0.69 MPa

Air Dryer Heatless Air Dryer

Compressed Air Dehumidification Drying
(Compact and Medium Duty: Standard dew point, under pressure: –20 ℃;
Heavy Duty: Standard dew point, under pressure: –40 ℃)※

QSQ Compact Duty Series「Super Pack」	P.43
QSQ Medium Duty Series「Super Pack」	P.43
QSQ Heavy Duty Series「Super Pack」	P.43
QSQ-EDC Series「Eco Pack」	P.43

※ Pressure Conditions: 0.69 MPa

Air Dryer Compact Special-use Air Dryer

Compressed Air Dehumidification Drying

Membrane Type Air Dryer「MD」	P.51
Expansion Separation Dryer「AE7」	P.53

Expansion Separation Dryer
AE

Membrane Type Air Dryer
MD

Refrigerated Air Dryer
General Purpose Model
RAX Series

Refrigerated Air Dryer
Energy Saving Model RAXE-SE Series

History of Compressed Air Technology Development

ORION
Clean Air System

1961
Refrigeration Technology
Start of Production of Unit Coolers for Dairy Farms

1970
Air Dryer Release to Market
RAD-250,500

1978
Heat Exchanger Technology
Twin-pipe Heat Exchanger Changed to Single-pipe

Clean Air Dryer
Released to Market
Aftercooler Released to Market

1979
Clean Air System
Released to Market
Air Dryer High Temperature Inlet Spec. Model Released to Market

Micro-mist Filter
Line Filter
Released to Market

1981
Activated Carbon Filter Released to Market

1982
Air Dryer using IC Controller
Released to Market

1985
Heat Exchanger Technology
High Efficiency
Heat Exchanger Developed
RAX Series Released

1986
Final Filter Released

System

mentally Conscious

Air System has a wide range of air filters and other equipment level that meets your needs. We have all of your air-related a top manufacturer of clean air equipment!

Air Filter Air Filter

Drain Processing Drain Processing Equipment

Compressed Air Drain Water Processing

Monitor Monitor Equipment

Other Items Other Items

Drain Processing Equipment - Drain Master

Air Filter

Filter Type Drain Processing Equipment - Pico-Drain

Dew Point Monitor "MG"

Stainless Steel Air Tank

See our Compressed Air Temperature Control & Refrigeration Equipment Catalog.

ACU · RAV · APX · KSC
D-AG04
Compressed Air Temperature Control Equipment

Further Evolution!

1989 CFC-Free Adsorption Type Air Dryer Released

1992 Separate Dryer Released

1993 Heat Exchanger Technology Stainless Steel Shell Heat Exchanger Released
Fine Dryer Released

1994 Drain Master Released

1998 Super Filter Super Drain Filter

2001 Super Final Filter

2003 AC Inverter Control Refrigerated Air Dryer

2005 Digi-Eco Refrigerated Air Dryer

2007 DC Inverter Control Refrigerated Air Dryer

2016 Heavy Duty RAX-J Series Released

1 Product Lineup
Refrigerated Air Dryer

Guideline Based on Inlet Air Temperature and Air Compressor Output

Category	Energy Saving Model		
Series Model	RAXE-SE	RAXD	RAXE
Refrigeration Compressor Operating Method	Inverter Control (DC)	Digital Control	Inverter Control (DC)
Inlet Air Temperature (Catalog Standard Value)	55 ℃	55 ℃	40 ℃
	P.17	P.17	P.17
Intake Air Temperature Range	5~80 ℃	5~80 ℃	5~60 ℃

Air Processing Capacity 50/60Hz (m^3/min)	Air Compressor Output Equiv. (kW)	RAXE-SE	RAXD	RAXE
1.3/1.5	15			
7.4	37	7.4 m^3/min – 37 kW		
9.1/10.5	55	10.6 m^3/min – 55 kW		
12.1/13.4	75		12/13 m^3/min – 75 kW	
19.7/22.0	100		19.7/22.0 m^3/min – 100 kW	23 m^3/min – 100 kW
83.0/98.0	450			
296	1300			296 m^3/min – 1300 kW

[Note] 1. The above values are catalog-standard-value guideline values. When choosing a model, please refer to the section on "Model Choice and Determining the Maximum Air Processing Capacity" for each series.

Energy Saving Model
RAXE-SE / RAXD / RAXE

Air Compressor Equiv. Guideline
From below 37 kW ~ 1300 kW

Inlet Air Temperature Range
5 ℃~ 80 ℃ ※1

DC Inverter Air Dryer P.17

Digi-Eco Air Dryer P.17

Inverter Air Dryer P.17

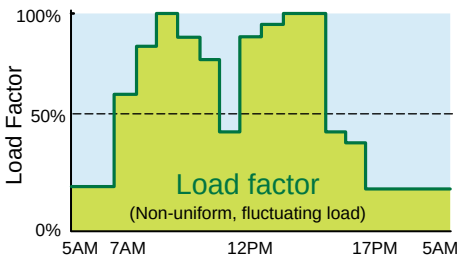
Refrigerated air dryer Energy Saving Model

Inverter Air Dryer RAXE Series

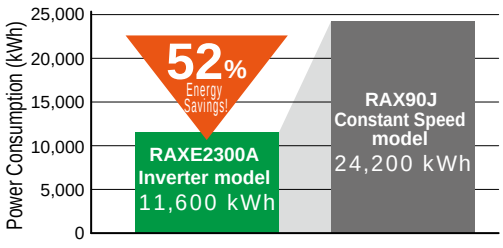
Energy Saving Effectiveness from Energy Saving Air Dryers

Factory loads are not uniform. By being able to adapt to fluctuations in load, inverter dryers offer great energy savings when compared to constant-speed models.

Daily air dryer load factor
(graph data assuming a factory line operating 24 hours)



Yearly Power Consumption Comparison



Amount of Energy Savings (calculation)

Electricity cost : JPY15/kWh
Difference in Yearly Power Consumption : 24,200 kWh − 11,600 kWh = 12,600 kWh
Effective energy savings : 12,600 kWh×15 yen = **189,000 yen/year**

※1 The upper limit of the inlet air temperature range for RAXE2300A ~ 29600A1-W models is 60 ℃. For help with selecting the right energy saving model refer to the conditions stated from page 23.

General Purpose Standard Inlet Air Temperature Models

General Purpose High Temperature Inlet Air Temperature Model

Compact and Medium-Duty Model RAX	Heavy Duty RAX	Medium Duty RAX	RAX-SE
Constant Speed	Constant Speed	Constant Speed	Constant Speed
Inlet Air Temperature (Catalog Standard Value) **35 ℃**	Inlet Air Temperature (Catalog Standard Value) **40 ℃**	Inlet Air Temperature (Catalog Standard Value) **55 ℃**	Inlet Air Temperature (Catalog Standard Value) **55 ℃**
Intake Air Temperature Range **5～50 ℃**	Intake Air Temperature Range **5～60 ℃**	Intake Air Temperature Range **5～80 ℃**	Intake Air Temperature Range **5～80 ℃**
P.25 ※ Inlet air temperature for models RAX55J, J-W: 40 ℃	P.25	P.41	P.31
55 kW 9.1/10.4 m³/min	75 kW 12.1/13.4 m³/min	15 kW 1.3/1.5 m³/min	75 kW 12.1/13.4 m³/min
	450 kW 83.0/98.0 m³/min		

Air Processing Conditions (Catalog value)

Series	Inlet Air Pressure (Gauge Pressure)	Inlet Air Temperature	Outlet Air Dew Point	Ambient Temperature
RAXE-SE	0.69 MPa	55 ℃	Under Atmospheric Pressure: -17 ℃ (Under pressure: 10 ℃)	32 ℃
RAXD				
RAXE		40 ℃		
RAX-J (Compact and Medium-Duty)		35 ℃		
RAX-J,F (Heavy Duty)		40 ℃		
RAX-H (Medium Duty)	1.57 MPa	55 ℃	Atmospheric Pressure: -17 ℃ (Under pressure: 15 ℃)	
RAX-SE	0.69 MPa		Atmospheric Pressure: -17 ℃ (Under pressure: 10 ℃)	

※ Air processing capacity is calculated based on conversion from the air compressor intake conditions. (Atmospheric pressure, 23 ℃, relative humidly: 75 %)

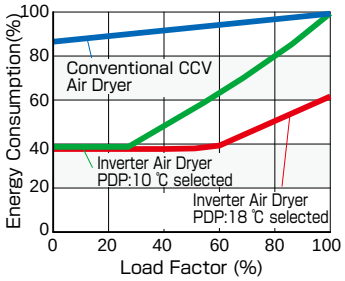
RAXE-SE / RAXD / RAXE Page 23, RAX / RAX-SE Page 35, or consult with your sales representative.

INVERTER

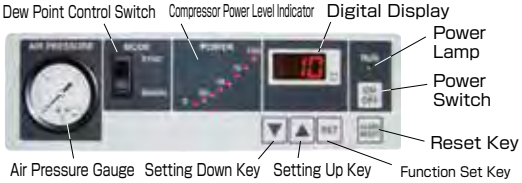
Dew point temperature energy saving mode switching.
Comes standard with energy saving drain trap.
Responds to low-pressure needs.

Load vs. Energy consumption

Max. Energy Savings 60%
※ RAXE type



Control Panel



Note: There may be minor differences in the operation panel depending on the model.

General Purpose Standard Inlet Air Temperature Models

Compact and Medium Duty RAX / Heavy Duty RAX / Medium-Pressure RAX

Standard Inlet Air Temperature Models	Medium Pressure Model
Air Compressor Equiv. Guideline ※3: From below **3 kW ～ 450 kW**	Air Compressor Equiv. Guideline: From below **3 kW ～ 15 kW**
Inlet Air Temperature Range ※2: **5 ℃ ～ 40/45/50/60 ℃**	Inlet Air Temperature Range: **5 ℃ ～ 80 ℃**
Compact to Medium Duty (RAX-H) P.25 / Heavy Duty (RAX-J, F) P.25	Compact to Medium Duty (RAX-H) P.41

General Purpose High Temperature Inlet Air Temperature Model RAX-SE

Air Compressor Equiv. Guideline: From below **3 kW ～ 75 kW**

Inlet Air Temperature Range: **5 ℃ ～ 80 ℃**

RAX-SE Series
High Temperature Inlet Air Type
P.31

※2 Inlet air temperature upper limit differs depending on the model. Refer to the nominal value for specifics.
※3 See page 35 for assistance in choosing the right model.

1 Product Lineup
Heatless Air Dryer

Category	QSQ"Super Pack"						QSQ-EDC"Eco-Pack"	
	Compact Model		Medium Duty Model		Heavy Duty Model		Heavy Duty Model	
Product Photograph	 P.43		 P.43		 P.43		 P.43	
Dew Point (PDP) Inlet Air Pressure: 0.7MPa	−20 ℃	−40 ℃	−20 ℃	−40 ℃	−40 ℃	−60 ℃	−40 ℃	−60 ℃
Outlet Air Flow (m³/min)	0.086 m³/min 0.3 m³/min	0.071 m³/min 0.247 m³/min	0.68 m³/min 2.3 m³/min	0.56 m³/min 1.9 m³/min	3.6 m³/min 21.5 m³/min	2.1 m³/min 12.5 m³/min	3.6 m³/min 21.5 m³/min	2.1 m³/min 12.5 m³/min
Pressure Display	−		Digital Display ★					
Dew Point Display	−		Digital Display (in 5 ℃ increments) ★				Digital Display (in 1 ℃ increments)	
Energy Saving Dew Point sensor	−		○					
Energy Saving Dew Point Setting Functionality	−		− 40 ℃ to 0 ℃ (in 10 ℃ increments) ★				− 60 ℃ to 0 ℃ (in 10 ℃ increments)	
Equal Pressure Switchover Control	−				○ ★			
Universal Power Supply	○ (100 V to 230 V Common terminals) ★							
Remote Operation	○ ★							
Operation / Alarm Signal Output	○ ★							

Note 1: The above values are catalog-standard guideline values. Please refer to page 49 to make a suitable model choice.
Note 2: ★ denotes new models.

QSQ Super Pack Heavy Duty and Medium Duty Models

Settable Energy Saving Dew Point

- Energy saving dew point (under pressure) settable from − 40 to 0 ℃ in 10 ℃ increments.
- 5 ℃ increments for (pressure) dew point display.

QSQ Eco-Pack Heavy Duty Model

High Precision Energy Saving Dew Point Setting Possible

- The energy saving (pressure) dew point can be set from − 60 ℃ to 0 ℃ in 1 ℃ increments.
- (Pressure) Dew point display in 1 ℃ increments.
- We recommend the Eco Pack for users who require precision dew point control.

First Heavy-duty Model With a Stainless Steel Tank

Wide-Ranging Air Processing Capacity of **0.35** m³/min to **318.9** m³/min

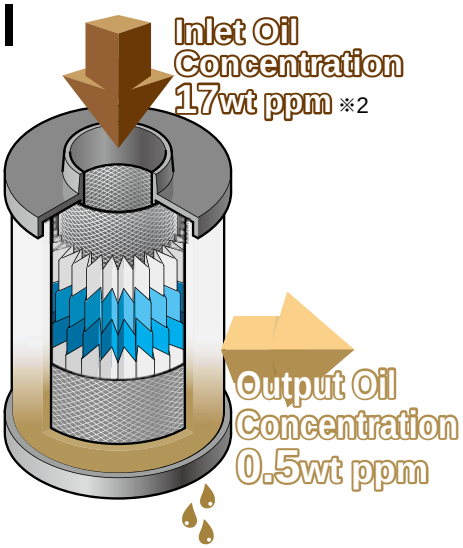
※1 DSF/LSF/MSF/KSF75 ～ 250 models do not have a stainless steel tank.

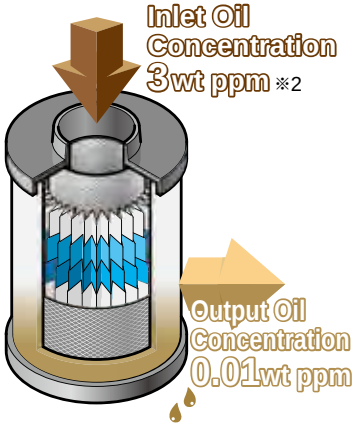
■ Uses the New EMS □□□ -H Element (For Oil-Mist Removal)

Suitable for High Oil Concentrations※1

The construction of the EMS □□□- H filter element has been upgraded for a maximum increased oil capacity of 1.8 times (compared with previous models).

New Filter Element Part Number: EMS□□□-H	
Oil Concentration wt ppm (mg/m³) ※2	
Inlet	Outlet
17(20.4) →	**0.5**(0.6)
3(3.6) →	0.01(0.01)



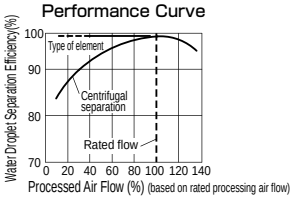


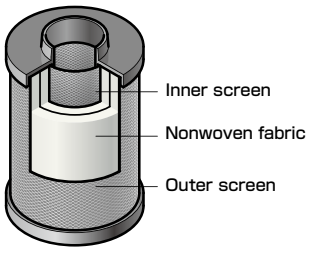
※1. Note that it may not be suitable for every oil condition.
※2. Does not contain oil vapor under the JIS B 8392-2 (ISO8573-2) Oil Mist Test Method. (As measured by our standard value.)

Improved Filtration by Employing a Combination of Filters. (Super Filter Element)

For water droplet and particulate removal **DSF**
EDS Element
filter rating : 5 μm

Performance Curve



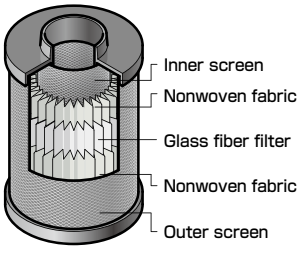


Cross section

P.54

For particulate removal **LSF**
ELS Element
filter rating : 1 μm

Glass fiber filter



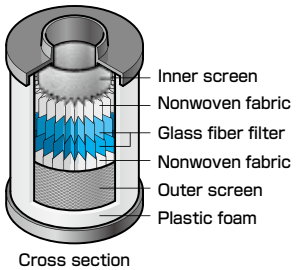
Cross section

P.54

For oil mist removal **MSF**
EMS Element
filter rating : 0.01 μm

Plastic foam

Glass fiber filter

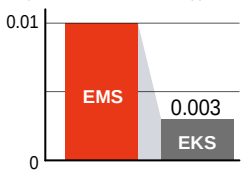


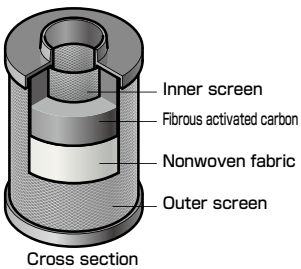
Cross section

P.54

For odor removal **KSF**
EKS Element
Filter output oil concentration 0.003 wt ppm

Output Oil Concentration (wt ppm)





Cross section

P.54

※For details, see pages 60 and 61.

3 Product Lineup
Drain Processing Equipment

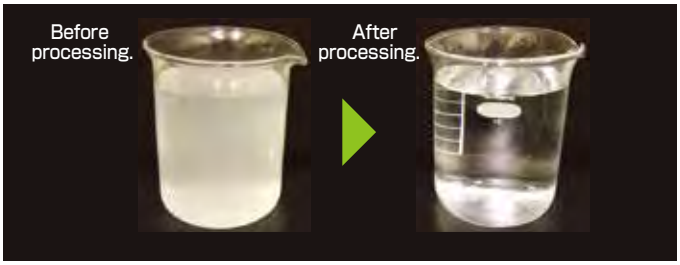
Model Table based on Air Pressure Output and Processing Method

Air Compressor Output Equiv. (kW)		15～22	37	55	75	150	300～720
Method	Demulsification Sheet + Adsorption Material Air Transport	ODF5  P.69	OWD10  P.71				
Relevant Equipment Compatibility (Example)	(From Drain Water) + Activated Carbon Type Low Concentration Unit Processing		OWD10+OWL8 				
Method	Electrolyzed Coagulation + Adsorption Material Air Transport			OWC75  P.73		OWC150  P.73	
Relevant Equipment Compatibility (Example)	(From Drain Water) Previous Stage Strong Electrolyte Processing			(Strong Electrolyte) OWH20+OWC75 		(Strong Electrolyte) OWH20+OWC150 	
Method	Demulsifying Agent + Activated Carbon + Other Under Natural Flow					OWM30  P.73	OWM60/90/160  P.73

[Note] ※ The above details are only estimates. Processing conditions will differ depending on the quantity and concentration of inlet drain water. Refer to page 65 for details. ※ Regarding drain water processing, relevant equipment compatibility will differ depending on drain water properties. Refer to page 67 for details. ※ The ODF is a handy filter-type drain water processing unit and, as such, doesn't include relevant equipment compatibility information.

Meets Water Pollution Control Law effluent standard, greatly reduces condensate treatment costs!

Drain processing equipment that separates water and oil from air compressor drain.



Filter Type

Drain Processing Equipment - Pico-Drain "ODF"

Air Compressor Output Equiv. ～22 kW and below P.69

ODF5-W1/ODF5-W2

- ○ A New Concept in Ecological Friendliness
  No Electricity Required, Lightweight
  Space Saving
  Energy Saving
- ○ Main-processing concentrations below 5 mg/L (hexane content)

Drain Processing Equipment - Drain Master "OWD"

Air Compressor Output Equiv. ～37 kW and below P.71

Medium duty OWD10 ／
Cold-climate model OWD10-H

- ○ Main unit does not need electricity. (Excluding cold-climate models)
- ○ Main-processing concentrations below 5 mg/L (hexane content)

Drain Processing Equipment - Drain Master "OWC/OWM"

Air Compressor Output Equiv. ～150 kW and below(OWC)～720 kW and below(OWM) P.73

Medium duty OWC75・150/Heavy Duty OWM30～160
Cold-climate model OWC75-H・150-H

- ○ Compatible with Heavy Duty Screw Air Compressors
- ○ Main-processing concentrations below 5 mg/L (hexane content)

Improved peace-of-mind and safety thanks to air tracking from a tracking dew point monitor for air quality control and a digital display gauge that shows the differential pressure conditions of the filter element.

Easy temperature and humidity monitoring
Dew Point Monitor "MG"

P.75

MG40/MG40A-P
Humidity display:
0.1 ～ 99.9 %. 1/10 resolution (MG40)
0.1 ～ 50.0 %. 1/10 resolution (MG40A-P)
Dew point display:
− 40.0 ～ + 40.0 ℃ , 1/10 resolution.
Temperature display:
− 20.0 ～ + 80.0 ℃ , 1/10 resolution.

MG40A-P
(For compressed air)

MG40
(For air at atmospheric pressure)

MG40 **(For air at atmospheric pressure)**

- ○ Simultaneous display of temperature and humidity or dew point. (Can choose either humidity or dew point.)
- ○ Comes equipped with dewpoint and humidity warning signal outputs (2 sets of non-voltage contacts.)
- ○ Also comes standard equipped with analogue outputs. (DC outputs for temperature, humidity/dew point)

MG40A-P **(For compressed air)**

- ○ Simultaneous display of temperature and humidity or dew point. (Can choose either humidity or dew point.)
- ○ Comes equipped with dewpoint and humidity warning signal outputs (2 sets of non-voltage contacts.)
- ○ Also comes standard equipped with analogue outputs. (DC outputs for temperature, humidity/dew point)

Digital Differential Pressure Gauge --Detects When Filter Element Replacement is Needed (Digital differential pressure display gauge)
Digital Differential Pressure Gauge "DGE"

P.77

DGE70
Differential pressure display range: − 1.050 ～ 1.050 MPa
Minimum resolution: 0.001 MPa

- ○ Differential pressure detection for optimum air filter management
- ○ Output signals for remote monitoring of differential pressure
- ○ Management of differential pressure of vapor and fluids

Items Needed to Support a Clean Air Supply

Choose the model from our selection that best fits your needs.
Auto Drain Trap

Solenoid Type / Motor Valve Type

ADE450 Series P.78

- ○ Variable drain release interval via adjustable timer.
- ○ Drain interval automatically changes due to ambient temperature for energy saving operation.
- ○ The included drain detection unit can detect water-full and drainage, and minimize air losses. (Limited to FS type.)
- ○ Can output an alarm signal upon detecting abnormal drainage. (Limited to FS type.)
- ○ Automatic freeze-prevention startup based on the outside air temperature. (-H models only)


ADE450

ADE-2-B/3-B P.79

ADE-2-B/3-B

Float Type / Disk Type

FD2・5・6・10-A / AD-5 P.80

- ○ Drains without air loss
  Float operated (FD2・5・6・10-A)
- ○ Adjustable timed drain release
  Disc operated (AD-5)


FD2 Float Type


FD-5 Float Type


FD6 Float Type


FD-10-A Float Type


AD5 Disk Type

Choose from Air-Cooled or Water-Cooled Models
Aftercooler

Air-Cooled SE Series P.81

- ○ Compatible Air Compressor: 11 ～ 150 kW

Water-Cooled TH Series P.83

- ○ Compatible Air Compressor: 11-1500 kW

Choose from Stainless Steel or Steel Tank Construction
Air Tank

OAT P.85

- ○ Stainless Steel Construction (SUS304)
- ○ Compatible Air Compressor: 6 ～ 37 kW

MST P.86

- ○ Steel Tank
- ○ Compatible Air Compressor: 6 ～ 75 kW

INDEX

Introduction

「Clean Air System」

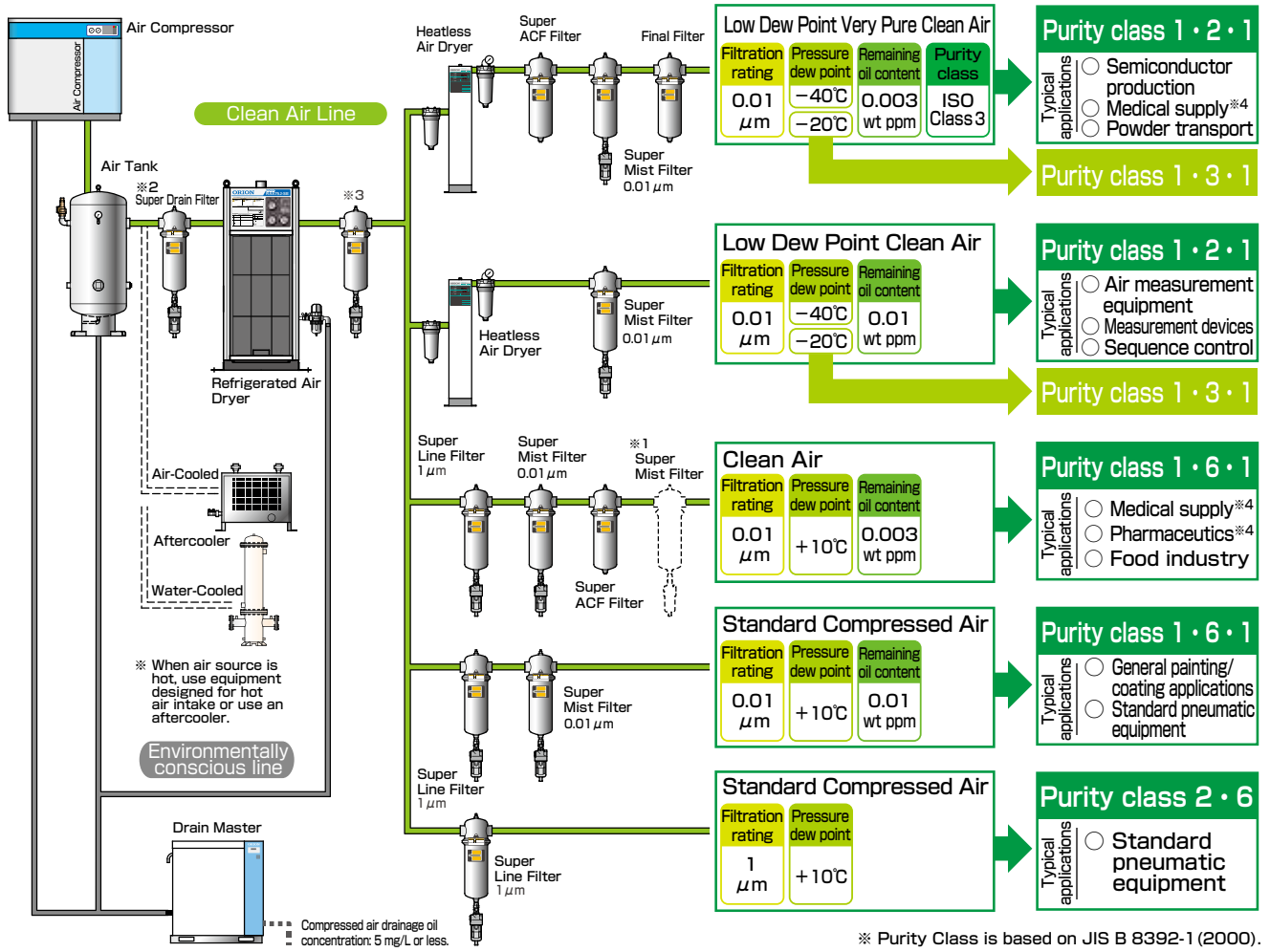
System Configuration Examples

■ ORION Clean Air System supplies you with useful clean air using less energy, and also provides consistent oil/water drain separation.

Important Information Regarding Model Choice	Equipment and model selection should be conducted by knowledgeable and experienced personnel. When choosing equipment, in addition to referring to this catalogue, be sure to match its intended purpose and the way it is to be used with the machine's specifications and performance abilities.

Diagram shows examples of typical configurations

※1 Dotted line indicates usage on an as-needed basis.
※2 Install a Super Drain Filter before the air dryer when there is the possibility of heavy scaling occurring in the piping, such as when using an oil-free air compressor, etc.
※3 Install a Super Drain Filter if there is a chance of air being adulterated with liquid oil (oil mist) or drain water.
※4 Please read pages 90 to 92 and use as prescribed.



※ Purity Class is based on JIS B 8392-1 (2000).

※ When using a heatless air dryer, be sure to confirm the piping system design standards outlined in the product specifications before installation.
※ When making Clean Air System choices:
Always confirm the air compressor type, discharge air flow rate, temperature, pressure, ambient temperature, power source frequency, and required dew point.
※ Install a Super Drain Filter before the air dryer if there is a chance of compressed air going to the air dryer becoming adulterated with water droplets or oil droplets.(In cases where the compressed air temperature is the same as the room temperature.)

ISO 8573-1 (1991) / JIS B 8392-1 (2000) Contaminants and Purity Classes

Purity Class	Solid Particle Size	Water Content		Remaining oil content	
	μ m	Pressure dew point	Atmospheric Pressure Dew Point (pressure 0.69MPa)	mg/m³	(wtppm)
1	0.1	−70 ℃	−83 ℃	0.01	(0.01)
2	1	−40 ℃	−58 ℃	0.1	(0.08)
3	5	−20 ℃	−42 ℃	1	(0.83)
4	15	+ 3 ℃	−23 ℃	5	(4.2)
5	40	+ 7 ℃	−19 ℃	25	(20.8)
6	−	+ 10 ℃	−17 ℃	−	

※ Particulate collection efficiency is 95% or higher.
※ This standard has been revised in accordance with the current ISO8573-1 (2010) / JIS B8392-1 (2012), however our standard is based on ISO 8573-1 (1991) / JIS B 8392-1 (2000).

Air Purity Class

Air quality class numbers show the size and number of particulate contaminants in a volume of air. But the number used depends on the standard being referred to. Be sure not to confuse one standard with another.

Standard	ISO14644-1	Fed.Std.209D
Purity Class	Class X (X: 1 ～ 9)	Class X (X: 1 ～ 100,000)
Allowable Particle Concentration	10^X / m^3	X / ft^3
Particulate Size	≧ 0.1 μ m	≧ 0.5 μ m

Comparison of ISO14644-1 and F.S.209D

Air Purity Class Standard		Max. Concentration of Particulate at Designated Particle Diameter (no. of particles/m³) ※ Values based on ISO14644-1					
ISO14644-1	F.S.209D	Specified Particle Size	0.1 μm	0.2 μm	0.3 μm	0.5 μm	1 μm
ISO Class 1		Allowable Particle Concentration Particles/m³	10	2			
ISO Class 2			100	24	10	4	
ISO Class 3	Class1		1,000	237	102	35	8
ISO Class 4	Class10		10,000	2,370	1,020	352	83
ISO Class 5	Class100		100,000	23,700	10,200	3,520	832

[Refrigerant-Free Clean Air Line]

System Configuration Examples

- For use with small air compressors
- Terminal connection to air compressor piping

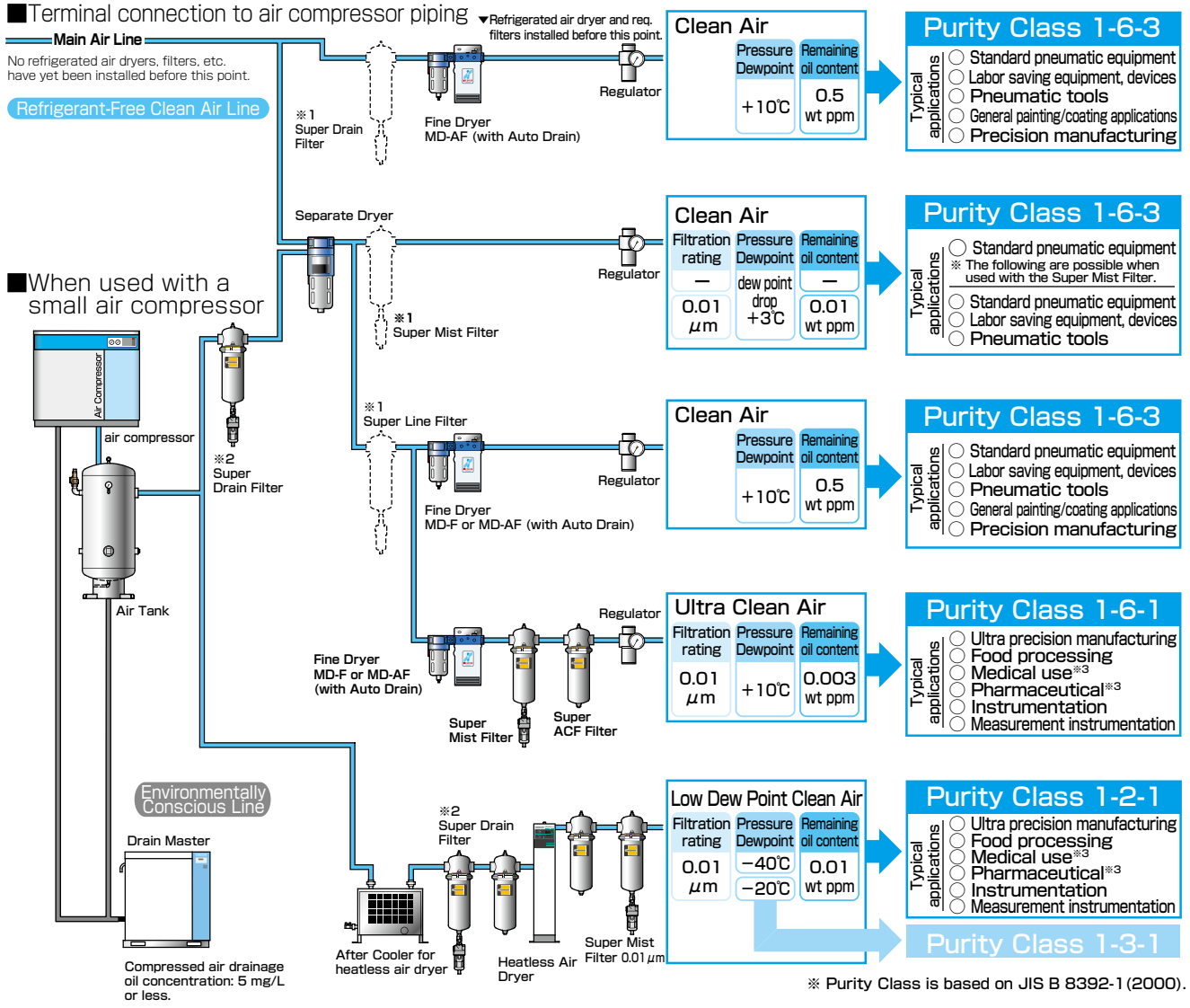
Important Information Regarding Model Choice	Equipment and model selection should be conducted by knowledgeable and experienced personnel. When choosing equipment, in addition to referring to this catalogue, be sure to match its intended purpose and the way it is to be used with the machine's specifications and performance abilities.

Diagram shows examples of typical configurations

※1 Dotted line indicates usage on an as-needed basis.
※2 In particular, install a Super Drain Filter before the air dryer if there is the possibility of heaving scaling, etc. in the piping due to use of an oil-free air compressor, or if there is a chance of air being adulterated with liquid oil (oil mist) or drain water.
※3 Please read pages 90 to 92 and use as prescribed.

■Terminal connection to air compressor piping

■When used with a small air compressor



Clean Air

Pressure Dewpoint	Remaining oil content
+10℃	0.5 wt ppm

→ **Purity Class 1-6-3**
Typical applications
- ○ Standard pneumatic equipment
- ○ Labor saving equipment, devices
- ○ Pneumatic tools
- ○ General painting/coating applications
- ○ Precision manufacturing

Clean Air

Filtration rating	Pressure Dewpoint	Remaining oil content
—	dew point drop +3℃	—
0.01 μm		0.01 wt ppm

→ **Purity Class 1-6-3**
Typical applications
- ○ Standard pneumatic equipment
  ※ The following are possible when used with the Super Mist Filter.
- ○ Standard pneumatic equipment
- ○ Labor saving equipment, devices
- ○ Pneumatic tools

Clean Air

Pressure Dewpoint	Remaining oil content
+10℃	0.5 wt ppm

→ **Purity Class 1-6-3**
Typical applications
- ○ Standard pneumatic equipment
- ○ Labor saving equipment, devices
- ○ Pneumatic tools
- ○ General painting/coating applications
- ○ Precision manufacturing

Ultra Clean Air

Filtration rating	Pressure Dewpoint	Remaining oil content
0.01 μm	+10℃	0.003 wt ppm

→ **Purity Class 1-6-1**
Typical applications
- ○ Ultra precision manufacturing
- ○ Food processing
- ○ Medical use※3
- ○ Pharmaceutical※3
- ○ Instrumentation
- ○ Measurement instrumentation

Low Dew Point Clean Air

Filtration rating	Pressure Dewpoint	Remaining oil content
0.01 μm	−40℃	0.01 wt ppm
	−20℃	

→ **Purity Class 1-2-1**
Typical applications
- ○ Ultra precision manufacturing
- ○ Food processing
- ○ Medical use※3
- ○ Pharmaceutical※3
- ○ Instrumentation
- ○ Measurement instrumentation

→ **Purity Class 1-3-1**

※ Purity Class is based on JIS B 8392-1 (2000).

※ When using a heatless air dryer, be sure to confirm the piping system design standards outlined in the product specifications before installation.
※ When making model selections:
Always confirm the air compressor type, discharged air quantity, temperature, pressure, ambient temperature, power source frequency, and required dew point.
※ Always install pre-processing equipment (such as aftercoolers, etc.) directly before the heatless air dryer and ensure that drain water or oil mist, etc. do not enter the dryer.
※ In systems where the volume of air or air pressure fluctuates constantly, a secondary air tank should be used after the air dryer.
※ Do not install vertical piping between the air compressors and air dryer. But in cases where it is necessary to do so, be sure set up a drain trap.
※ Bypass piping should be set up around the air compressors and filters.

Introduction ORION Clean Air System Application Examples

The Orion Clean Air System is being used in a Variety of Applications

1. General Applications

2. Also Useful in These Industries

Also being used in the following industries as a source of dry air.
In addition to compressed air equipment, ORION has various other equipment lineups to meet our customers' needs.

〈From our Website〉

Industry Specific Product Intro URL http://www.orionkikai.co.jp/product/

Product Proposal for Scientific and Research Institution Applications

Product Proposal for Secondary Cell Industry Applications

Product Proposal for Pharmaceutical and Cosmetic Industry Applications

Compressed Air Temperature Control and Cooling Application Examples

■ Details can be found in catalog D-AG04.

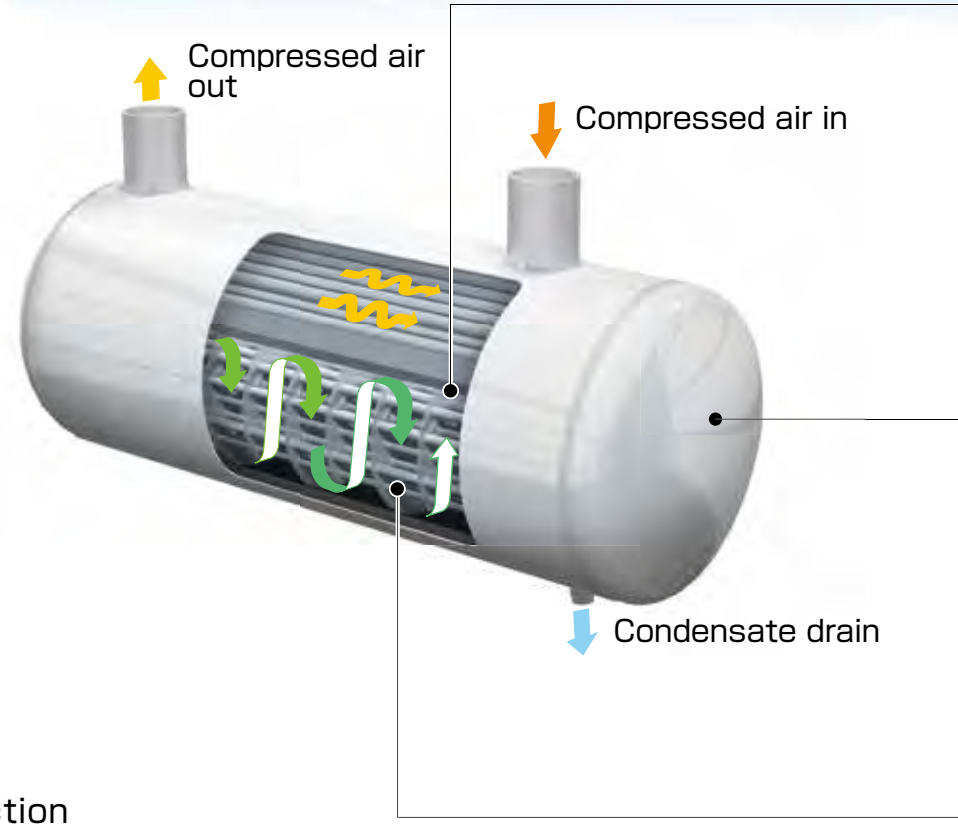
	Control Precision / Cooling Temperature / Features	Series	Application / Image
General Purpose Compressed Air	**±0.01°C** ●Temperature Control Range 15.00~40.00°C ●Air Processing Capacity 30~2100L/min ●How Peltier Temperature Control Works	Nano Thermo ACU ACU100-MD ACU2000B	■Precision Processing Machine ■Precision Measurement Instrument ■Semiconductor / FPD Production Equipment ■Analysis Equipment ■Precision Painting/ Coating Machine ■Localized Precision Temperature Control ■Temperature Control of Processed Works and Measurement Targets Air Bearing for Precision Processing Machine Air Slide for 3-D Measuring Equipment
	±0.1°C ●Temperature Control Range 15.0~30.0°C ●Operable Air Flow 100~900L/min ●Heat Pump Balance Control (Heaterless. 70% energy savings compared to other companies' offerings.)	RAV RAV600B-HPF	■Machine Tool (Air bearing) ■Laser Processing Machine ■Powder Coating ■Localized Precision Temperature Control
	Custom Parts (Please ask for details.) ●±2°C ●Temperature Control Range: 10 ℃ to Normal Temperature ●Air Processing Capacity (Please ask for details.) ●Refrigerated Dryer (without reheater) Cooling Function + Control Valve ※Ask your ORION dealer for details.	Refrigerated Dryer without reheater RAX Custom Part	■Temperature Control for Painting Air ■Tea Leaf Drying ■Precision Temperature Control for Research Facilities
	Air Heater (Please ask for details.) ●Air Temperature ~65°C ●Air Processing Capacity 50L/min ※Application and order lot will depend on a consultation. ※Will supply to target customers that can expect a continuous number of unit orders. ※Ask your ORION dealer for details.		■Temperature Control for Painting Air
Compressed Air Cooling	**−30~0°C** ※Outlet Temperature Control Range ●Outlet Air Flow 40~1500L/min ●Outlet Air Temperature Precision ±1°C	Cold Fresh APX APX-8A APX15A-500	■Rapid Cooling of Resin-Blown Castings ■Protective Packaging for Food and Cosmetics ■Simplified Low Temp Inspection of Production Lines ■Cold-Air Resin Polishing
	Max. Temp Drop Inlet Air Temp −45°C ●Air Consumption 100~1050L/min (Spray type -- follows precision)	Spiral Cooler KSC	■Rapid Cooling of Solder-Processed Electronic Components ■Milling/Tapping/Reaming Cutter Cooling
	Custom Part ●8~18°C ●Outlet Air Flow (Please ask for details.) ●Refrigerated Dryer (without reheater) ※Ask your ORION dealer for details.	RAX Custom Part	■Cooling for Powder Transport Air ■Remove Latent Heat from Work Process (Reduced takt time)

A good match for the oil-free age — ORION's Original Heat Exchanger

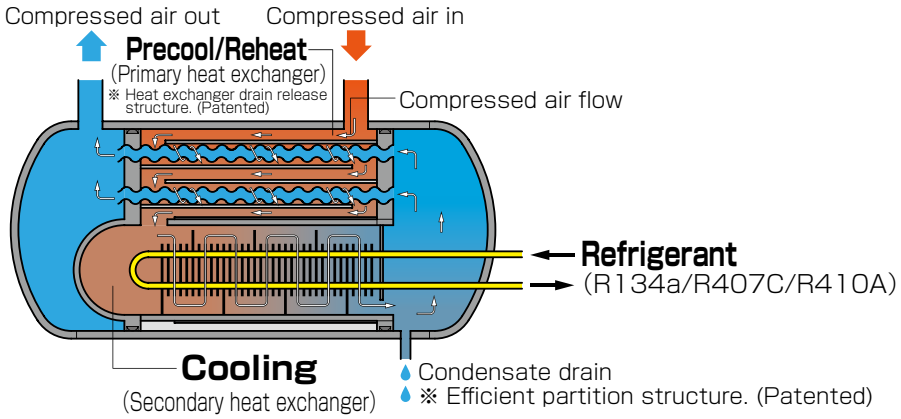
Air Dryer Core Technology Cultivated Throughout ORION's

■ORION's Original Heat Exchanger

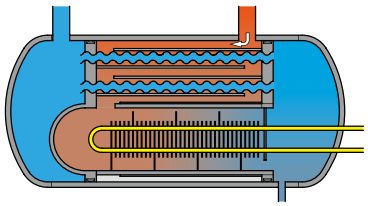
Illustration: RAXE-SE



■Heat Exchanger Construction



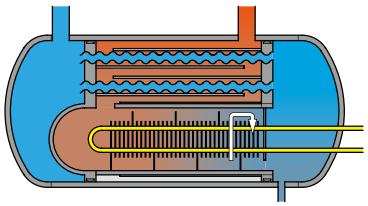
Precooling



Compressed air containing humid air coming from the air compressor enters the primary heat exchanger for precooling.

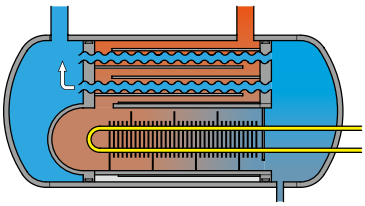
Air Flow

Cooling



Precooled air enters the secondary heat exchanger where it is cooled. (This stage of cooling further condenses water vapor and oil.) The condensed water vapor and oil is released through the drain outlet.

Reheating



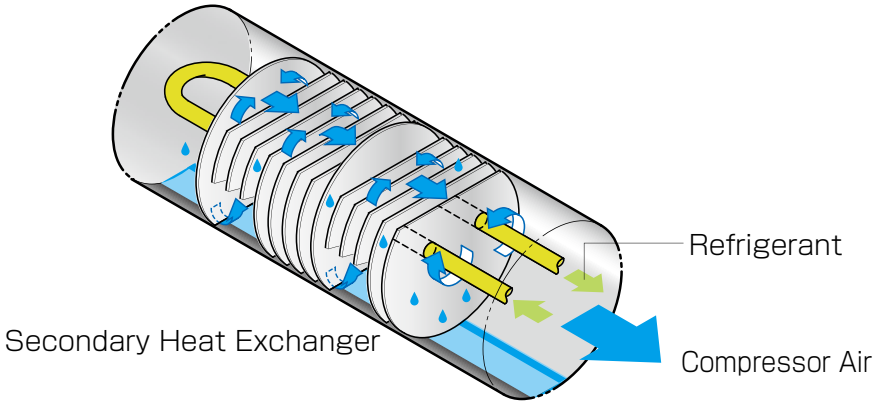
Cooled air coming from the secondary heat exchanger again enters the primary heat exchanger, and is warmed from the hot compressed air coming in. This regenerative heat exchange results in a rise in the temperature of the outflowing air, providing a supply of dry air while helping to prevent exhaust piping condensation.

Long History

Features

Low Clogging, Low Pressure Cross Wave Fins

Water droplets and oil mist are separated with high efficiency so we can use less refrigerant, making these units even more environmentally friendly.



Our Stainless Steel Shell is a First in the Industry!

The pressure-receiving part uses SUS304-equivalent stainless steel that is strong against rust and the perfect match for clean air supplies.

- For oil-free compressor air.
- High corrosion resistance prevents dust emissions from the heat exchanger.

Increased Durability Nickel Plated Copper Piping

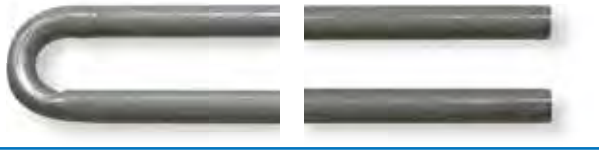
Improved reliability of our heat exchanger from electroless nickel plating.

- Nickel Plated Copper Pipe ※1, 2

※1 Actual corrosion resistance depends on nature of the corrosive substance.
※2 Models RAX8J-A1/A2 and below, and models RAX6J-SE-A1/A2 and below are built-to-order models.

- Stainless steel piping ※3

※3 Available with stainless steel piping for even better corrosion resistance.



ORION heat exchanger features are found in heat exchangers from our compact to heavy duty models.

General Purpose Standard Inlet Air Temperature Models	General Purpose High Temperature Inlet Air Temperature Model	Energy Saving Model	
Compact to Heavy Duty		Inverter (DC)	Inverter (AC)


RAX-J


RAX-J Heavy Duty


RAXE-SE


RAXE Heavy Duty

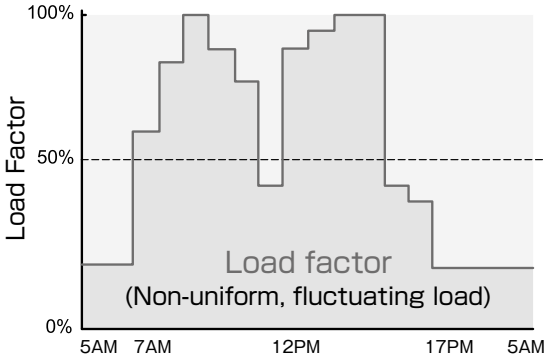
RAXE-SE/RAXD/RAXE

☐ Wide Ranging Configuration Lineup that Covers a Wide Range of Air Compressors from 37-1300 kW.

1. Energy Savings of Inverter Air Dryer

Saves Energy by Adapting to Changes in Loads.

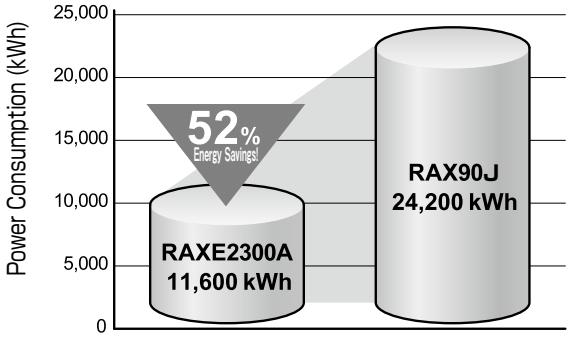
■Daily air dryer load factor
(graph data assuming a factory line operating 24 hours)



Standard air dryers constantly operate at a 100 % load, resulting in high energy consumption.
The inverter air dryer adapts to fluctuations in the load for potentially lower power consumption.

Comparing a standard air dryer (RAX90F) with an inverter air dryer (RAXE2300A).

■Yearly Power Consumption Comparison



Amount of Energy Savings (calculation)

Electricity cost : JPY15/kWh
Difference in Yearly Power Consumption : 24,200 kWh−11,600 kWh=12,600 kWh
Effective energy savings : 12,600 kWh×15 yen=**189,000** yen / year

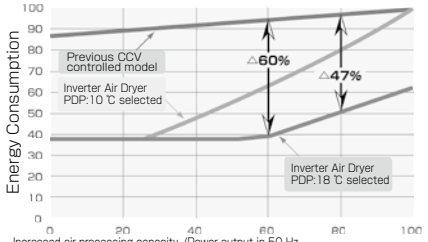
2. Dew point temperature energy saving mode switching

Pressure dew point settings of 10 ℃ or 18 ℃ . Greatly increased energy savings during high outside temperatures. Also prevention of dew formation due to inside/outside temperature differences means reduced installation costs for insulation etc. Newly added pressure dew point setting based on outside temperature. Thanks to this, troublesome manual pressure dewpoint adjustments need not be done during seasonal changes.(Auto switching based on outside temperature available on RAXE4900 models and above.)

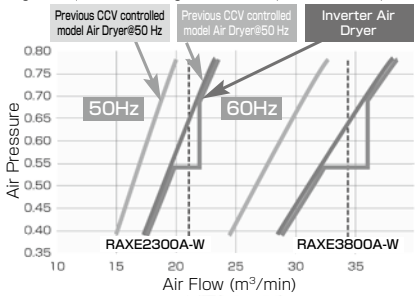
※ Dew point will fall below selected setting (10 ℃ /18 ℃) if load (air flow・inlet air temperature etc.) is too low.

	Pressure dewpoint (PDP)	
Energy saving mode	18 ℃	Summer
Normal mode	10 ℃	Winter

Load vs. Energy consumption (RAXE2300A-W)



Increased air processing capacity. (Power output in 50 Hz regions to equal that of 60 Hz regions and increased power at 0.54 MPa operation.)



3. Useful for low-pressure applications, and works at any power frequency.

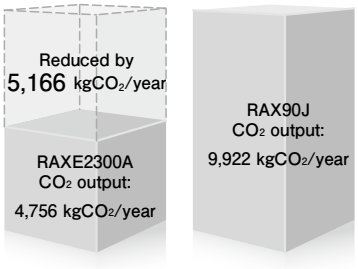
Suitable for low pressure applications (0.54 MPa standard)
For low pressure needs, designed standard pressure is lowered 0.69 MPa to 0.54 MPa. No equipment upgrades needed in order to deal with low pressures. (RAXE2300 ～ 4900 models)

Same capacity at 50 Hz/60 Hz.
Thanks to our inverter control, regions with 50 Hz and 60 Hz power can realize the same drying performance.
(RAXE-SE、RAXE)

4. Reduced CO_2 emission

Compared to constant-speed model air dryers, the energy savings offered by inverter dryers can contribute to effective reductions in CO_2 quantities of over 50 %.

5. See page 15 for details of Orion's original heat exchanger.



■Reduced CO_2 output

※ CO_2 emission coefficient used is 0.410, the average of 8 power companies.

DC Inverter Air Dryer

RAXE-SE Series

Air-Cooled RAXE740B-SE/1100B-SE
Air Processing Capacity 7.4/10.6 m^3/min
Can process high temperature compressed air 5～80 ℃
Compatible with air compressors from 37/55 kW

Features

1. energy saving
   First in the market DC inverter controlled compressor tackles fluctuating loads, achieving energy savings up to 65 %.
2. A safe design you can count on along with improved functionality.
   - Designed for increased air compressor flow rate.
   - Dew point auto switching in response to ambient temperature.
   - Optimized automatic control along with monitoring of operating conditions.
   - Designed to keep going even in summertime load conditions.
   - Condenser exhaust heat vented out from top of the dryer.
   - Drain piping access from either the left side or rear of the dryer.
   - Rust resistant heat exchanger
     (Built with stainless steel shell and nickel plated copper piping)

   ※ Optional stainless steel piping is also available for higher corrosion resistance.
3. Environmentally conscious
   - RoHS Directive compliant
   - Uses environmentally friendly R410A refrigerant

Digi-Eco Air Dryer

RAXD Series

Air-Cooled RAXD75A-SE・100A-SE
Air Processing Capacity 13.9/15・19.7/22 m^3/min
Can process high temperature compressed air 5～80 ℃
Compatible with air compressors from 75/100 kW

Features

1. energy saving
   - Adapts to varying loads for energy saving operation. (Max. 68 % energy savings)
   - Manual or automatic (based on outside temperature) dew point setting for further energy savings (10 ℃～ 18 ℃)
2. High Temp. Air Processing Model (Air inlet temp. 5 ℃～ 80 ℃)
3. Optimized Design
   - Minimal downtime from self protection/control even during heavy summertime loads.
   - Energy saving operation means less heat output.

   ※ Optional stainless steel piping is also available for higher corrosion resistance.

Inverter Air Dryer

RAXE Series (Built-to-order models)

Air-Cooled RAXE2300A～9800A / Water-Cooled RAXE2300A-W～29600A1-W
Air Processing Capacity 23～296 m^3/min
Inlet air temperature 5～60 ℃
Suitable air compressors

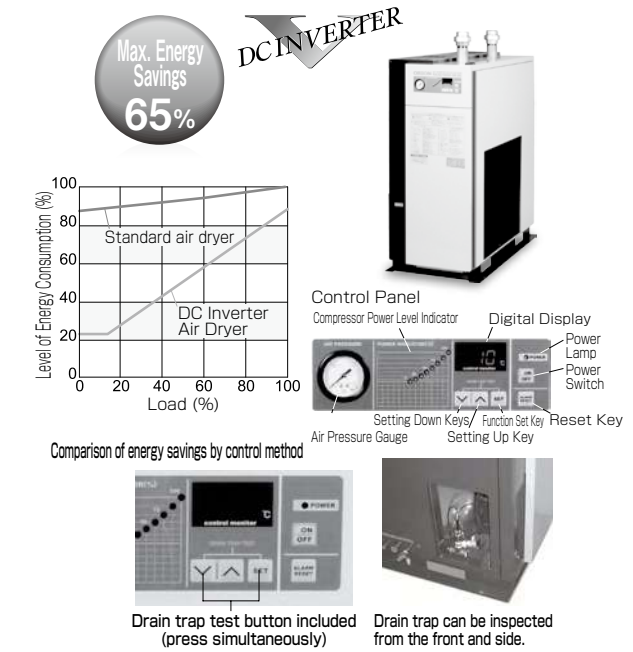
RAXE2300A (A-W)	120 kW and below	RAXE3800A (A-W)	190 kW and below
RAXE4900A (A-W)	240 kW and below	RAXE6000A (A-W)	300 kW and below
RAXE7500A (A-W)	380 kW and below	RAXE9800A (A-W)	450 kW and below
RAXE14800B1-W	680 kW and below	RAXE19600A1-W	900 kW and below
RAXE29600A1-W	1300 kW and below		

Features

1. Energy Savings up to 60 %. Choose between pressure dew points of 10 ℃ or 18 ℃ . (Patent Pending)
   By utilizing ORION's originally developed "Inverter Compressor Frequency PID Control" and "Optimized Cooling Cycle Control using Electronic Expansion Valve Non-Step PID Control", wide ranging energy savings can be realized during normal operation, compared with previous models. Furthermore, with a pressure dew point of 18 ℃ , a maximum of 60 % in energy savings is possible. (Maximum energy savings for the RAXE4900 model is 53 %.)
2. Continuous Operation even at High Loads ※ "High load" can refer to high degrees of any of the following conditions: ambient temperature, inlet air temperature, air pressure, air flow, etc. ※ There are cases where, depending on the operating environment, the dew point temperature may rise. Basically, operation will continue even during unexpected periods of high load, and internal controls will act in order to avoid overload related shutdowns that would result from activation of built-in safety devices
3. Function choices that best suit your operating environment
   Orion offers dryers with a variety of user-selectable functions to match your current work environment and needs.
4. Designed for considerable ease-of-use.
   - Dew point temperature and error code viewable on easy to read digital display.

   ※ Dew point temperature is calculated based on temperature of air during processing within the dryer.

Inverter Control for High Temp. Inlet Applications (DC)



Digital Control for High Temp. Inlet Applications

Inverter Control (AC)

RAXE-SE/RAXD/RAXE

Standard Inlet Air Temperature | High Temperature Inlet Air | Inverter Control | Digital Control | HFC Refrigerant | IoT※

※See pages 93~94.

□ Specifications

RAXE-SE

● RAXE740B-SE / RAXE1100B-SE

Item			Air-Cooled RAXE740B-SE	Air-Cooled RAXE1100B-SE
Air Processing Capacity (50/60 Hz)		m^3/min	7.4	10.6
Outlet Air Dew Point		℃	Pressure dew point 10	
Inlet Air Temp. Range		℃	5 ～ 80	
Pressure Dew Point Switching Range		℃	10 ～ 18 (Manual or automatic setting based on ambient temperature.)	
Working Fluid / Operable Ambient Temperature Range		℃	Compressed air / 2 ～ 43	
Compressed Air Pressure Range (Gauge Pressure)		MPa	0.25 ～ 0.98	
Outside Dimensions	Height	mm	1063	1120
	Depth	mm	1000	1080
	Width	mm	470	470
Mass		kg	105	130
Air Inlet/Outlet Connection			Rc1 1/2 union coupling	Rc2 union coupling
Electrical Specifications	Power	V	Three phase 200 ± 10 % · 50/60 Hz、Three phase 220 ± 10 % · 60 Hz	
	Power Consumption	kW	2.2	3.1
	Electric Current	A	8.0	10.5
	Power Capacity	kVA	3.4	4.8
	Breaker Capacity	A	20	30
Legal Refrigeration Tonnage			0.69	1.19
Refrigerant			R-410A	
Refrigerant Filling Volume		kg	1.2	1.3
Chiller Compressor Output		kW	0.7	1.7

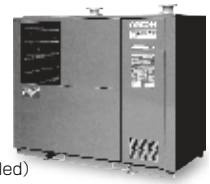
※ Air processing conditions: compressed air inlet pressure (gauge pressure): 0.69 MPa, inlet air temperature: 55 ℃, outlet air dew point : 10 ℃ under pressure, ambient temperature: 32 ℃. ※ Please contact us for guaranteed performance specifications. ※ Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32 ℃、75 %.) ※ Outlet pressure dewpoint is calculated based on outlet air pressure and depends on flow of supersaturated air going into the dryer. In the event that supersaturated vapor will be present in compressed air, it is recommended that a drain filter be installed before the dryer. ※ Remote operation terminals (no-voltage), signal terminals (alarm: no-voltage, operation: no-voltage, warning: no-voltage) ※ In the event that the dryer is operated at below the specified load, the dewpoint will fall below the lowest set point of 10 ℃ . ※ This equipment is for indoor use only. ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above. ● Secondary heat exchanger utilizing stainless steel piping available. Please inquire for details. Please inquire for further information.

RAXD

● RAXD75A-SE / RAXD100A-SE

Item			Air-Cooled RAXD75A-SE		Air-Cooled RAXD100A-SE	
Air Processing Capacity (50/60 Hz)		m^3/min	12/13	13.9/15	17/19	19.7/22
Outlet Air Dew Point		℃	Pressure dew point 10	Pressure dew point 15	Pressure dew point 10	Pressure dew point 15
Inlet Air Temp. Range		℃	5 ～ 80			
Pressure Dewpoint Switching Range		℃	10 ～ 18 (Manual or automatic setting based on ambient temperature.)			
Working Fluid / Operable Ambient Temperature Range		℃	Compressed air / 2 ～ 43			
Compressed Air Pressure Range (Gauge Pressure)		MPa	0.25 ～ 0.98			
Outside Dimensions	Height	mm	1276		1332	
	Depth	mm	1260		1290	
	Width	mm	672		870	
Mass		kg	260		325	
Air Inlet/Outlet Connection			Rc2 union coupling			
Electrical Specifications	Power	V	Three phase 200 ± 10 % · 50/60 HZ、Three phase 220 ± 10 % · 60 Hz			
	Power Consumption (50/60 Hz)	kW	2.7/3.5,3.4		5.4/6.0,5.9	
	Electric Current (50/60 Hz)	A	10.6/11.9,11.4		18.1/19.1,18.8	
	Power Capacity	kVA	6.6		10.7	
	Breaker Capacity	A	30		40	
Legal Refrigeration Tonnage（50 / 60Hz）			0.88 / 1.06		1.52 / 1.83	
Refrigerant			R-407C			
Refrigerant Filling Volume		kg	2.0		3.5	
Chiller Compressor Output		kW	2.2		3.7	

※ Air processing conditions: compressed air inlet pressure (gauge pressure): 0.69 MPa, inlet air temperature: 55 ℃, outlet air dew point : 10 ℃ under pressure, ambient temperature: 32 ℃. ※ Please contact us for guaranteed performance specifications. Heavy duty models have had performance specifications confirmed with a substitute load (inspection under low pressure air). ※ Processing air capacity is calculated based on compressor intake condition. (atmospheric pressure, 32 ℃、75 %) ※ Remote operation terminals (no-voltage), signal terminals (alarm: no-voltage, operation: no-voltage, warning: no-voltage) ※ In the event that the dryer is operated at below the specified load, the dewpoint will fall below the lowest set point of 10 ℃. ※ This equipment is for indoor use only. ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above. ● Secondary heat exchanger utilizing stainless steel piping available. Please inquire for details. Please inquire for further information.


RAXE
(Air-Cooled)


RAXE
(Water-Cooled)

● RAXE2300A・A-W～29600A1-W（Built-to-order models）

Item		Model RAXE	Air-Cooled		Water-Cooled		Air-Cooled	Water-Cooled
			2300A	3800A	2300A-W	3800A-W	4900A	4900A-W
Air Processing Capacity (50/60 Hz)		m^3/min	23	38	23	38	49	
Outlet Air Dew Point		℃	Pressure dew point 10					
Inlet Air Temperature Range		℃	5～60					
Pressure Dewpoint Switching Range (Power Saving Pressure Dew Point Setting Method)		℃	10～18 (Manual setting)		10～18 (Manual setting)		10～18 (Manual setting or automatic switching based on ambient temp.)	
Working Fluid / Operable Ambient Temperature Range		℃	Compressed air / 2～40		Compressed air / 2～45		Compressed air / 2～40	Compressed air / 2～45
Compressed Air Pressure Range (Gauge Pressure)		MPa	0.25～0.98					
Cooling Water Flow (Water Temp : 32℃)		m^3/h	—		2.8	3.2	—	3.7
Outside Dimensions	Height	mm	1276	1332	1276	1332	1583	
	Depth	mm	1260	1290	1260	1290	905	
	Width	mm	672	950	672	950	1969	
Mass		kg	280	395	270	365	570	560
Air Inlet/Outlet Connection			2 1/2 B 65 A Flange	3 B 80 A Flange	2 1/2 B 65 A Flange	3 B 80 A Flange	4 B 100 A Flange	4 B 100 A Flange
Cooling Water Inlet/Outlet Connection		female	—		Rp1		—	Rc1
Electrical Specifications	Power	V	Three phase 200 ± 10 % · 50/60 Hz、Three phase 220 ± 10 % · 60 Hz					
	Power Consumption	kW	4.2	6.1	3.9	5.2	6.1	4.7
	Electric Current	A	13	20.3	11.8	17.1	20.0	16.0
	Power Capacity	kVA	6.6	10.7	6.2	10.0	10.7	10.0
	Breaker Capacity	A	30	40	30	40		
Legal Refrigeration Tonnage			1.24	2.12	1.24	2.12		
Refrigerant			R-407C					
Refrigerant Filling Volume		kg	2.6	4.6	2.5	3.0	5.5	3.0
Chiller Compressor Output		kW	1.9	3.0	1.9	3.0		

Item		Model RAXE	Air-Cooled			Water-Cooled					
			6000A	7500A	9800A	6000A-W	7500A-W	9800A-W	14800B1-W	19600A1-W	29600A1-W
Air Processing Capacity (50/60 Hz)		m^3/min	55	69	82	60	75	98	148	196	296
Outlet Air Dew Point		℃	Pressure dew point 10								
Inlet Air Temperature Range		℃	5～60								
Pressure Dewpoint Switching Range (Power Saving Pressure Dew Point Setting Method)		℃	10～18 (Manual setting or automatic switching based on ambient temperature)								
Working fluid / Operable Ambient Temperature Range		℃	Compressed air / 2～40			Compressed air / 2～45			Compressed air / 2～50		
Compressed Air Pressure Range (Gauge Pressure)		MPa	0.25～0.93								
Cooling Water Flow (Water Temp : 32℃)		m^3/h	—			4	5	7.1	10.7	14.2	21.4
Outside Dimensions	Height	mm	1650		1703	1650		1703	1850	1763	1910
	Depth	mm	1100		1145	1100		1145	1151	2000	2251
	Width	mm	2020		2077	2020		2077	2090	2077	2090
Mass		kg	740	860	1230	720	840	1190	1330	2500	3000
Air Inlet/Outlet Connection			5 B 125 A Flange		6 B 150 A Flange	5 B 125 A Flange		6 B 150 A Flange	8 B 200 A Flange		10 B 250 A Flange
Cooling Water Inlet/Outlet Connection		female	—			Rc1 1/2			Rc2		
Electrical Specifications	Power	V	Three phase 200 ± 10 % · 50/60 Hz、Three phase 220 ± 10 % · 60 Hz								
	Power Consumption	kW	7.2	9.7	11.8	5.8	7.7	9.8	14.8	19.6	29.6
	Electric Current	A	24.2	32	41	19.4	26	35	49	68.6	98
	Power Capacity	kVA	12.1	17.3	21	10.4	17.3		21	35	42
	Breaker Capacity	A	50	75		50	75			125	150
Legal Refrigeration Tonnage			2.12	4.70		2.64	4.70		5.29	9.40	10.58
Refrigerant			R-407C								
Refrigerant Filling Volume		kg	5.5	6.0	9.0	3.5	5.0	6.0	9.0	6.0 × 2	9.0 × 2
Chiller Compressor Output		kW	3.0	7.5		4.5	7.5			7.5 × 2	

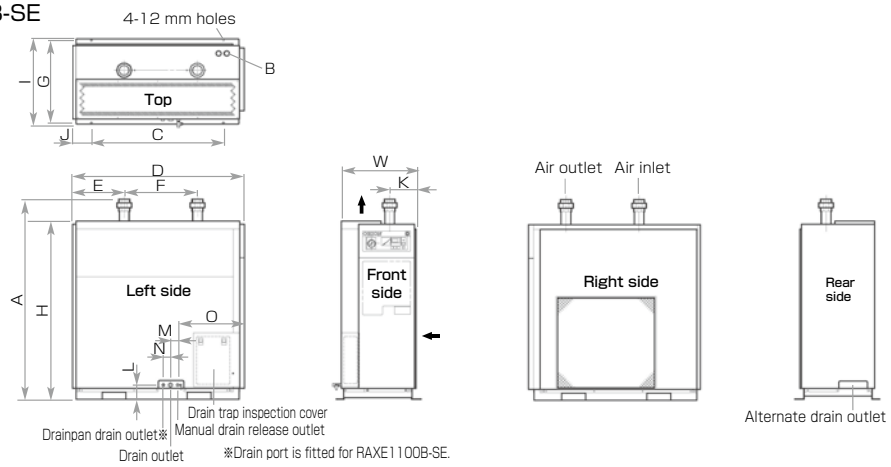
※ Air processing conditions: compressed air inlet pressure (gauge pressure): 0.69 MPa, inlet air temperature 40 ℃, outlet air dew point : 10 ℃ under pressure, ambient temperature 32 ℃ (Cooling water 32 ℃). ※ Please contact us for the guaranteed performance specifications. Heavy duty models have had performance specifications confirmed with a substitute load (inspection under low pressure air). ※ Air processing capacity is calculated based on air compressor intake condition. (Atmospheric pressure, 32 ℃ and 75 %RH) ● Secondary heat exchanger utilizing stainless steel piping available. Please inquire for details. ※ Please contact ORION regarding custom built models of specifications outside the rages listed above. ※ RAXE4900A / 4900A-W～29600A1-W are subject to JBA 2nd class pressure vessel regulation. ※ Air pressure inlet/outlet connection companion flanges not included.

RAXE-SE/RAXD/RAXE

□ External Dimensions

(Air-Cooled)

● RAXE740B-SE/1100B-SE

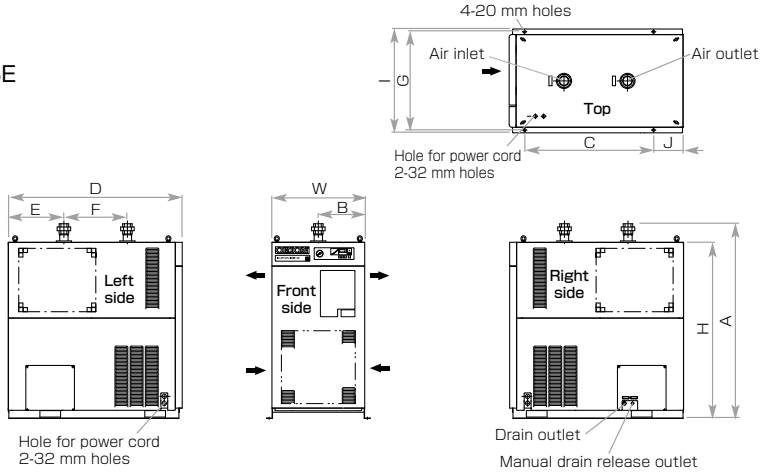


External Dimensions (Units:mm)

Model	H	D	W	A	B	C	E	F
RAXE740B-SE	1063	1000	470	(1155)	2-26	750	315	500
RAXE1100B-SE	1126	1080		(1255)	2-32	830	321	460
Model	G	I	J	K	L	M	N	O
RAXE740B-SE	515.4	535	120	82	92	45	—	(448)
RAXE1100B-SE				165	90		45	(420)

(Air-Cooled)

● RAXD75A-SE/100A-SE

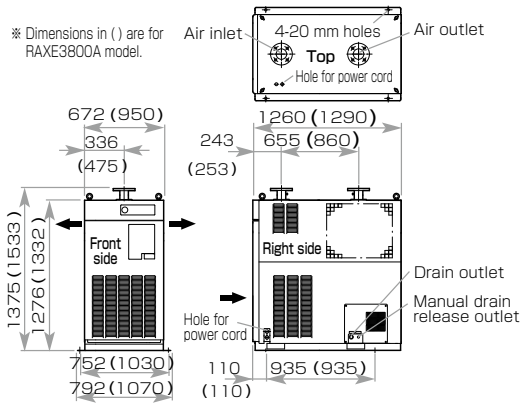


External Dimensions (Units:mm)

Model	H	D	W	A	B	C	E	F	G	I	J
RAXD75A-SE	1276	1260	672	(1411)	336 ± 5	935	403 ± 2	460 ± 5	712	(752)	214
RAXDI00A-SE	1332	1290	870	(1476)	435 ± 5		426 ± 2		935	(975)	244

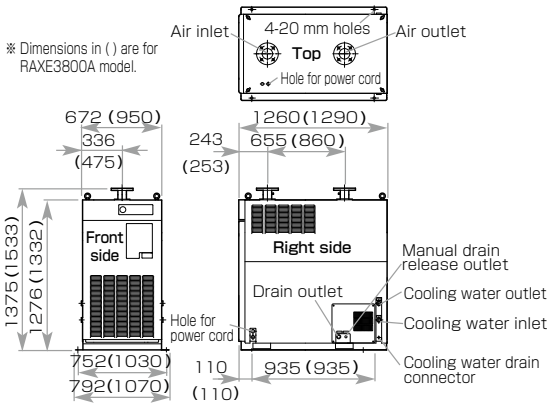
(Air-Cooled)

● RAXE2300A/3800A



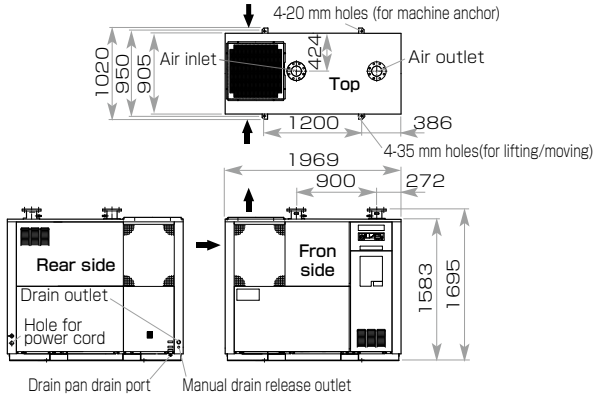
(Water-Cooled)

● RAXE2300A-W/3800A-W



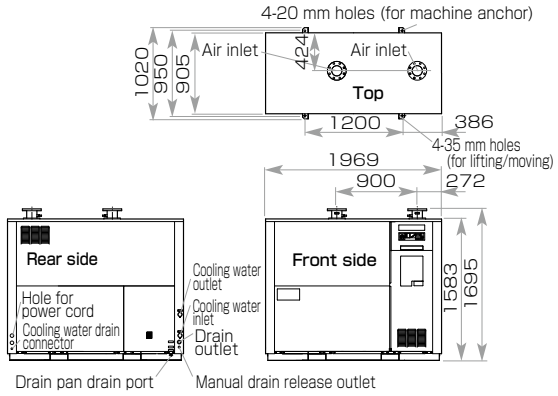
(Air-Cooled)

● RAXE4900A



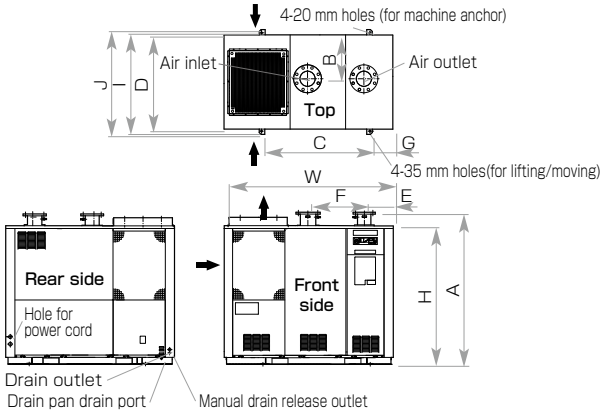
(Water-Cooled)

● REXE4900A-W



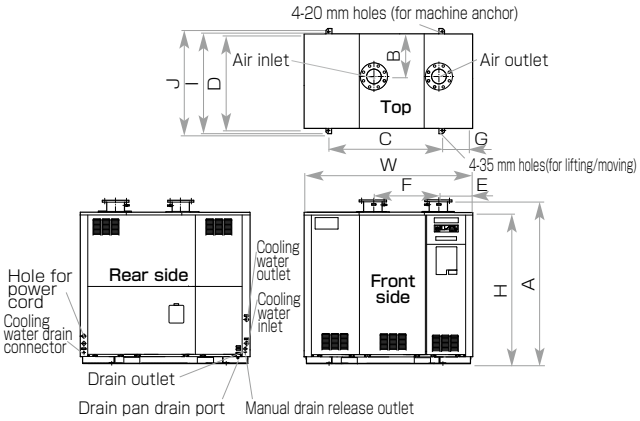
(Air-Cooled)

● RAXE6000A/7500A/9800A



(Water-Cooled)

● RAXE6000A-W/7500A-W/9800A-W/14800B1-W

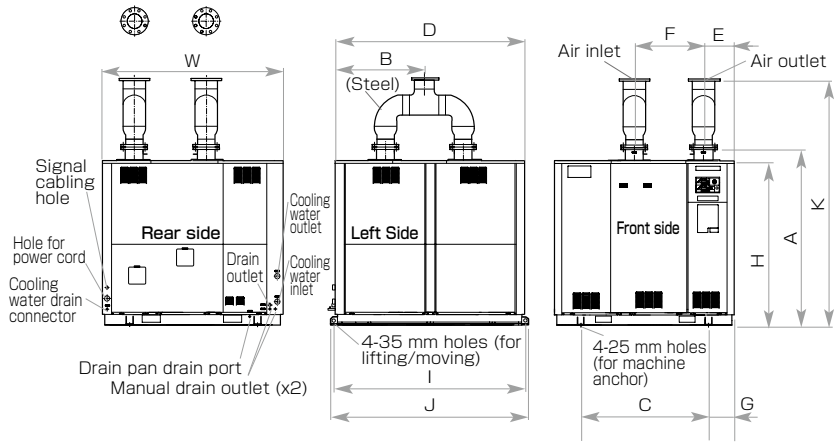


External Dimensions (Units:mm)

Model	H	D	W	A	B	C	E	F	G	I	J
RAXE6000A / -W	1650	1100	2020	1825	503	1310	330	700	280	1145	1205
RAXE7500A / -W	1650	1100	2020	1825	503	1310	330	700	280	1145	1205
RAXE9800A / -W	1703	1145	2077	1825	525	1326	359	700	293	1190	1250
RAXE14800B1-W	1850	1151	2090	2000	523	1407	428	800	374	1196	1256

(Water-Cooled)

● RAXE19600A1-W/29600A1-W



External Dimensions (Units:mm)

Model	H	D	W	A	B	C	E	F	G	I	J	K
RAXE19600A1-W	1763	2000	2077	1985	925	1500	359	700	296	2056	2126	2725
RAXE29600A1-W	1910	2251	2090	2060	1053	1500	428	800	295	2307	2377	2915

RAXE-SE/RAXD/RAXE

□ Model Selection and Determining Maximum Air Processing Capacity

※ When choosing an air dryer model, always confirm the air compressor type, inlet air temperature (water temperature when employing water cooling), pressure, air processing capacity, required dew point, and power frequency.
※ Temperature correction, air pressure and power frequency correction coefficients, and standard air processing capacities, please refer to the next page.

Finding the right model for you

① Regarding coefficients for operating conditions, see table A regarding temperature coefficients, table B regarding pressure coefficients, and table C regarding power frequency coefficients.

Temperature requirements

● Inverter Air Dryer

For models RAXE □□□□ A (Air-Cooled)、RAXE □□□□ A-SE (Air-Cooled)、and RAXE □□□□ A-W (Water-Cooled), see table **A** ⋯⋯► **B**

Air pressure requirements

Refer to table B for coefficients affecting all models.

② Compute the corrected air processing capacity by combining the temperature coefficient from table A and the air pressure coefficient from table B.
Adjusted air processing capacity =
air processing capacity ÷ (Ⓐ×Ⓑ)

③ Choose a dryer from Table C that exceeds the adjusted air processing capacity derived in section ② above.

Finding maximum air processing capacity

① Regarding coefficients for operating conditions, see table A regarding temperature coefficients, table B regarding pressure coefficients, table C regarding power frequency coefficients, and table D regarding standard air processing capacity coefficients.

② Gather air processing capacity coefficient from table C, air temperature coefficient from table A and air pressure coefficient from table B in order to compute the corrected air processing capacity value.
Ⓒ×Ⓐ×Ⓑ

③ The resulting value from this calculation is the maximum air processing capacity.

Model Selection Example

Making a model selection based on the following criteria:

Inlet Air Temperature	35 ℃	Ambient Temperature	30 ℃	Desired Capacity	27 m^3/min (ANR)
Pressure Dew Point	10 ℃	Air Pressure	0.49 MPa	Power Frequency	60 Hz

① From these requirements, the temperature coefficient is 1.20, the air pressure coefficient is 0.87.

② From section ①,
27 ÷ (1.20 × 0.87) = 25.86 m^3/min(ANR)

③ For a dryer that has an air processing capacity of 25.86 m^3/min(ANR) refer to Table C. Appropriate models that exceed 25.86 are RAXE3800A (Air-Cooled) or RAXE3800A-W (Water-Cooled.)

Model Selection Example

The following shows how to compute the maximum processing capacity of the RAXE4900A.

Inlet Air Temperature	35 ℃	Ambient Temperature	30 ℃	Power Frequency	60 Hz
Pressure Dew Point	10 ℃	Air Pressure	0.69 MPa		

① From these requirements, the temperature coefficient is 1.20, the air pressure coefficient is 1.00, and the standard air processing capacity of the RAXE4900A is 46.1 m^3/min.

② From section ①,
1.20 × 1.00 × 46.1 = 55.3 m^3/min (ANR)

③ Therefore, the maximum processing capacity of the RAXE4900A is 55.3 m^3/min (ANR).

Note: If a dew point temperature of 10 ℃ is insufficient, please consult ORION or your ORION dealer.
Note: If air pressure of 0.29 MPa is insufficient, please consult ORION or your ORION dealer.
Note: Model selection of heavy duty models of RAXE2300A(-W) and above models, and RAXD75A-SE and above models may differ based on the requirements specification or method of application; please contact Orion or your Orion dealer with your questions.

□ RAXE-SE Series Models

Ⓐ Temperature correction coefficients: Processing capacity varies depending on temperature. Coefficients are shown in this table.

■ RAXE740B-SE/1100B-SE (Air-Cooled)

Ambient Temperature ℃ \ Inlet Air Temperature ℃	45		50		55		60		65	
Dew Point Temperature ℃	10	18	10	18	10	18	10	18	10	18
25	1.20	1.20	1.20	1.20	1.08	1.20	0.92	1.04	0.76	0.84
30	1.20	1.20	1.20	1.20	1.06	1.20	0.91	1.02	0.75	0.82
32	1.20	1.20	1.20	1.20	1.00	1.15	0.86	0.97	0.72	0.78
35	1.20	1.20	1.20	1.20	0.98	1.13	0.84	0.95	0.70	0.76
40	1.20	1.20	1.18	1.20	0.97	1.12	0.83	0.94	0.69	0.75
43	1.20	1.20	1.13	1.17	0.92	1.08	0.80	0.91	0.67	0.73

※ These are different from the high input temperature capable RAX-SE Series models.

□ RAXD Series Models

Ⓐ Temperature correction coefficients:Processing capacity varies depending on temperature. Coefficients are shown in this table.

■ RAXD75A-SE/100A-SE（Air-Cooled）

Ambient Temperature ℃ \ Inlet Air Temperature ℃	45		50		55		60		65	
Dew Point Temperature ℃	10	18	10	18	10	18	10	18	10	18
25	1.20	1.20	1.20	1.20	1.20	1.20	1.18	1.20	1.15	1.20
30	1.14	1.20	1.10	1.20	1.06	1.20	1.02	1.19	0.97	1.11
32	1.10	1.20	1.05	1.20	1.00	1.20	0.95	1.11	0.90	1.03
35	1.02	1.20	0.96	1.17	0.89	1.09	0.85	0.99	0.80	0.91
40	0.82	1.01	0.76	0.93	0.70	0.86	0.68	0.79	0.65	0.74
43	0.62	0.76	0.56	0.69	0.50	0.61	0.48	0.56	0.45	0.51

Ⓑ Air pressure correction coefficients: Processing capacity varies depending on air pressure as shown in this table.

■ RAXD75A-SE/100A-SE（Air-Cooled）

Air Pressure in MPa	0.29	0.39	0.49	0.59	0.69	0.78	0.88	0.93	0.98
Pressure Coefficient	0.73	0.80	0.87	0.93	1.00	1.07	1.13	1.16	1.20

Ⓒ Standard air processing capacity:m^3/min(ANR)(ANR is 20 ℃ at atmospheric pressure, relative humidity of 65 %.)
Processing capacities listed here are for 60 Hz operation at ANR.

■ RAXD75A-SE/100A-SE（Air-Cooled）

Model	RAXD	75A-SE	100A-SE
Air Processing Capacity	50 Hz	11.3	16.0
	60 Hz	12.3	17.9

□ RAXE Series Models・RAXE-SE Series Models

Ⓐ Temperature correction coefficients:Processing capacity varies depending on temperature. Coefficients are shown in this table.

■ RAXE2300A～9800A（Air-Cooled）/RAXE2300A1-W～29600A1-W（Water-Cooled）

Ambient Temperature ℃ \ Inlet Air Temperature ℃	35		40		45		50		55		60	
Dew Point Temperature ℃	10	18	10	18	10	18	10	18	10	18	10	18
25	1.20	1.20	1.15	1.20	0.95	1.14	0.69	0.83	0.49	0.63	0.29	0.39
30	1.20	1.20	1.03	1.20	0.85	1.03	0.62	0.74	0.41	0.51	0.21	0.28
32	1.20	1.20	1.00	1.20	0.83	1.00	0.60	0.72	0.40	0.50	0.20	0.26
35	1.14	1.20	0.95	1.15	0.79	0.94	0.57	0.69	0.38	0.49	0.19	0.24
40	—	—	0.85	1.03	0.71	0.84	0.51	0.61	0.33	0.41	0.16	0.21

※ For Water Cooled models, select 32 ℃ for ambient temperature Maximum cooling water temperature is 34 ℃ .

Ⓑ Air pressure correction coefficients: Processing capacity varies depending on air pressure as shown in this table.

■ RAXE2300A～4900A（Air-Cooled）/RAXE2300A-W～4900A-W（Water-Cooled）

Air Pressure in MPa	0.29	0.39	0.49	0.54	0.59	0.69	0.78	0.88	0.93	0.98
Pressure Coefficient	0.73	0.80	0.87	1.00	1.00	1.00	1.07	1.13	1.16	1.20

■ RAXE740B-SE/1100B-SE（Air-Cooled）/RAXE6000A～9800A（Air-Cooled）/RAXE6000A-W～29600A1-W（Water-Cooled）

Air Pressure in MPa	0.29	0.39	0.49	0.54	0.59	0.69	0.78	0.88	0.93
Pressure Coefficient	0.73	0.80	0.87	0.90	0.93	1.00	1.07	1.13	1.16

Ⓒ Standard air processing capacity:m^3/min(ANR)

Processing capacities listed here are for 50 Hz/60 Hz operation at ANR. (ANR is 20 ℃ at atmospheric pressure, relative humidity of 65 %.)

■ RAXE740B-SE/1100B-SE（Air-Cooled）

Model	RAXE	740B-SE	1100B-SE
Air Processing Capacity		7.0	10.0

■ RAXE2300A～4900A(Air-Cooled)/RAXE2300A-W～4900A-W（Water-Cooled）

Model	RAXE	2300A	3800A	4900A	2300A-W	3800A-W	4900A-W
Air Processing Capacity		21.6	35.7	46.1	21.6	35.7	46.1

■ RAXE6000A～9800A（Air-Cooled）/RAXE6000A-W～29600A1-W（Water-Cooled）

Model	RAXE	6000A	7500A	9800A	6000A-W	7500A-W	9800A-W	14800B1-W	19600A1-W	29600A1-W
Air Processing Capacity		51.7	64.9	77.1	56.4	70.5	92.1	139.1	184.2	278.5

※ If there is a sudden fluctuation in compressed air pressure or fluid velocity variation to the air dryer, dehumidified drain water may temporarily flow out to the end-piping side. In order to prevent this, a clean air system that is not prone to pressure and flow velocity fluctuations must be constructed. Please consult with your ORION dealer for further details.

Compact to Medium Duty RAX-J/Heavy Duty RAX-J/Heavy Duty RAX-F

☐ General Purpose Standard Inlet Air Temperature Covers Air Compressor Range of 3-450 kW

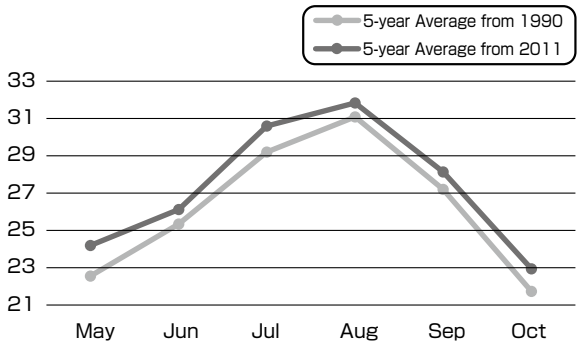
1. Increased Ambient Temperature Range

Air Dryer that's Hard to Stop Even During Summer Months

(Compared with previous compact to medium duty RAX-J, and medium to heavy duty RAX-J series models)

■ Compared to approx. 20 years ago, Japan's summertime temperatures have risen by approx. 1 ℃ .

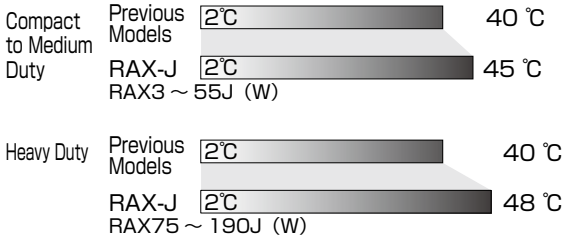
Change in Maximum Temperature by Month



Measured Location: Tokyo
Japanese Meteorological Agency Data

■ Many production facilities require air dryers that must not stop working even during high summertime temperatures. Compact to heavy duty RAX-J series models have a wider ambient temperature range compared with previous models.

Ambient Temperature



〈Please Note〉
- Operation under harsh conditions beyond product specifications is not guaranteed.
- Phrasing is with regard to air-cooled models only.

2. Stainless Steel Heat Exchanger (See page 15 for details.)

Built with a stainless steel shell heat exchanger, it's a perfect match for the age of clean, oil-free compressed air.

※ Please contact your dealer for information on degreasing and cleaning.
※ Stainless steel piping for improved corrosion-resistance is available by special order.

3. Intake filter included as standard equipment

Comes standardly with a filter on the condenser intake port.

Standard Refrigerated Air Dryer (Refrigerated Compressed Air Drying Equipment)

Compact and Medium Duty RAX-J

Air-Cooled RAX3J～55J / Water-Cooled RAX55J-W

Air Processing Capacity
- Air-Cooled 0.32/0.37～8.9/10.4 m^3/min
- Water-Cooled 9.1/10.4 m^3/min

Inlet air temperature 5～50 ℃
Suitable air compressors
- Air-Cooled 3～55 kW
- Water-Cooled 55 kW

Features

1. Compatible with High-temperature Environments
   Operable at ambient temperature of 45 ℃ .
2. Stainless steel shell heat exchanger
   (See page 15 for details.)
   Built with a stainless steel shell heat exchanger, the RAX provides clean air and makes it the perfect match for the age of oil-free compressed air.
   ※ Please inquire regarding degreasing.
   ※ Optional stainless steel piping is also available for higher corrosion resistance.
3. Air intake filter standard equipment

Air dryer that directly connects to your air compressor (Refrigerated compressed air drying equipment)

Heavy Duty RAX-J

Air-Cooled RAX75J ～ 190J ／ Water-Cooled RAX75J-W ～ 190J-W

Air Processing Capacity
- Air-Cooled 12.1/13.4 ～ 34.1/40.5 m^3/min
- Water-Cooled 12.1/14 ～ 35/41 m^3/min

Inlet air temperature 5 ～ 60 ℃
Suitable air compressors
- Air-Cooled 75 ～ 190 kW
- Water-Cooled 75 ～ 190 kW

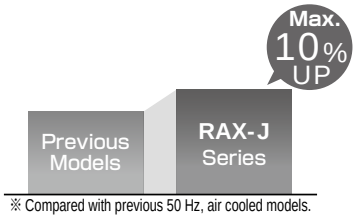
RAX75J RAX120J

Features

RAX75J ～ RAX190J (W)
Stainless steel shell heat exchanger
Built with a stainless steel shell heat exchanger, the RAX provides clean air and makes it the perfect match for the age of oil-free compressed air. (See page 15 for details.)
※ Please inquire regarding degreasing.
※ Optional stainless steel piping is also available for higher corrosion resistance.

- RAX75J ～ 190J-W
  Not Subject to the Class 2 Pressure Vessel Safety Law
  This equipment does not fall under the Class 2 Pressure Vessel Safety Law and therefore is not subject to the required certification procedures etc.
  ※ Built with multiple, connected heat exchangers.

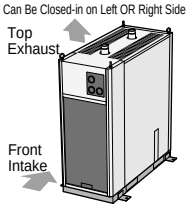
1. Ambient Temperature Range
   2-48 ℃ (See page 25 for details.)
2. Increased Air Processing Capacity



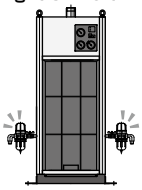
※ Compared with previous 50 Hz, air cooled models.

3. Space Saving & Compact
   30 % reduced overall size and setup surface area (compared with previous models).

Front Intake・Top Exhaust
Can Be Closed-in on Left OR Right Side

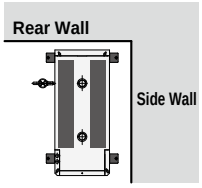


Drain Trap Installation on Right OR Left



※ Right-side drain trap installation requires optional parts.

Can be Installed Next to Left, Right, and Rear Walls
※ Right-wall-only on RAX150J(W) and 190J(W) models.



Air dryer that directly connects to your air compressor (Refrigerated compressed air drying equipment)

Heavy Duty RAX-F

Air-Cooled RAX240F ～ 380F-E ／ Water-Cooled RAX240F-W ～ 450F-WE

Air Processing Capacity
- Air-Cooled 38/45 ～ 59/69 m^3/min
- Water-Cooled 42/49 ～ 83/98 m^3/min

Inlet air temperature 5 ～ 60 ℃
Suitable air compressors
- Air-Cooled 240 ～ 380 kW
- Water-Cooled 240 ～ 450 kW

○ RAX240F ~ 450F-WE
(Subject to the Class 2 Pressure Vessel Safety Law)

RAX240F ～ 450F-WE

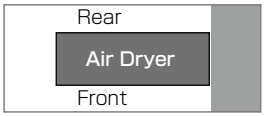
1. Stainless steel shell heat exchanger
   (Subject to the Class 2 Pressure Vessel Safety Law)
   Built with a stainless steel shell heat exchanger, the RAX provides clean air and makes it the perfect match for the age of oil-free compressed air.
   ※ Please inquire regarding degreasing.
   ※ Optional stainless steel piping is also available for higher corrosion resistance.
2. Low pressure loss: less than 0.01 MPa(RAX240F,240F-W)

0.69 MPa	0.006 ～ 0.01 MPa ※
0.98 MPa (Max. Operable Pressure)	0.004 ～ 0.008 MPa ※

※ Figure is for flow rate at 50 Hz.

3. Save energy by controlling the number of refrigeration compressors required.
   Automatic single refrigerant cycle operation (50 %) or double refrigerant cycle operation (100 %) based on processed air load. Up to 50 % savings in electricity costs. (Energy saving type)

4. Easy maintenance and layout set up
   (1) Exhaust duct may be installed above the dryer, saving precious floor space. (air-cooled models)
   (2) Design allows front access to main parts for maintenance and inspection.



※ If space is lacking, the right side of the dryer can be placed against a wall.

RAX300F-E

General Purpose Standard Inlet Air Temperature Models (Refrigerated Compressed Air Drying Equipment)

Compact to Medium Duty RAX-J/Heavy Duty RAX-J/Heavy Duty RAX-F

Standard Inlet Air Temperature | Flow Control | HFC Refrigerant (R-134a R-407C R-410A) | IoT (75min.)※ Contact Monitoring

※See pages 93～94.

□ Compact and Medium Duty RAX-J Specifications

Compact RAX-J

Medium Duty RAX-J

● RAX3J ～ 55J / 55J-W

Item		Model	Air-Cooled							
		RAX	3J-A1	3J-A2	6J-A1	6J-A2	8J-A1	8J-A2	11J-A1	11J-A2
Air Processing Capacity（50/60 Hz）		m^3/min	0.32/0.37		0.68/0.77		1.0/1.2		1.75/1.93	
Inlet Air Temp. Range / Outlet Air Dew Point		℃	5 ～ 50 / Pressure dew point: 10							
Working Fluid / Operable Ambient Temperature Range		℃	Compressed air / 2 ～ 45 ※ 1							
Compressed Air Pressure Range (Gauge Pressure)		MPa	0.2 ～ 0.98							
Outside Dimensions	Height	mm	480		510				580	
	Depth	mm	450		540		600		660	
	Width	mm	180				240			
Mass		kg	18		21		26		33	
Auto Drain Trap	Model		FD2-NC		FD2					
	Drain Release Port Size		ϕ4（Use nylon-based tubes of I.D. ϕ5.7～ϕ6.0 O.D. ϕ8.0）, Rc1/4※2							
Air Inlet / Outlet Connection			R1/2				R3/4			
Electrical Specifications: Power (50/60 Hz)		V	Single phase 100/100,110	Single phase 200,220/200,220	Single phase 100/100,110	Single phase 200,220/200,220	Single phase 100/100,110	Single phase 200,220/200,220	Single phase 100/100,110	Single phase 200,220/200,220
Electrical Specifications: Power Consumption (50/60 Hz)		kW	0.17/ 0.19,0.20	0.16,0.17/ 0.19,0.21	0.26/ 0.27,0.30	0.24,0.28/ 0.26,0.29	0.32/ 0.34,0.41	0.29,0.35/ 0.32,0.34	0.52/ 0.52,0.55	0.44,0.49/ 0.52,0.53
Electrical Specifications: Electric Current (50/60 Hz)		A	1.9/ 1.9,1.8	0.8/1.0	3.2/2.8	1.4,1.6/ 1.3,1.3	3.9/ 3.4,3.7	1.7,2.1/ 1.6,1.6	6.5/ 5.2,5.0	2.6,2.9/ 2.6,2.4
Electrical Specifications: Power Capacity		kVA	0.3		0.4		0.6	0.5	0.8	
Electrical Specifications: Breaker Capacity		A	5		10	5	10	5	15	10
Legal Refrigeration Tonnage（50 / 60Hz）			0.05 / 0.05		0.07 / 0.08		0.09 / 0.11		0.15 / 0.19	
Refrigerant			R-134a						R-410A	
Refrigerant Filling Volume		kg	0.11		0.14		0.23		0.26	
Chiller Compressor Output		kW	0.2		0.25	0.3	0.4		0.55	0.6
Operating Noise Level（50/60 Hz）		dB(A)	60/60				61/61		60/61	

Item		Model	Air-Cooled				Water-Cooled
		RAX	15J	22J	37J	55J	55J-W
Air Processing Capacity（50/60 Hz）		m^3/min	2.6/3.0	3.9/4.5	6.1/6.5	8.9/10.4	9.1/10.4
Inlet Air Temp. Range / Outlet Air Dew Point		℃	5 ～ 50 / Pressure dew point: 10				
Working Fluid / Operable Ambient Temperature Range		℃	Compressed air / 2 ～ 45				
Compressed Air Pressure Range (Gauge Pressure)		MPa	0.2 ～ 0.98				
Cooling Water	Water Temp	℃	—				32
	Flow Rate	m^3/h	—				1.3
Outside Dimensions	Height	mm	580		900	1100	
	Depth	mm	780	870	960	990	
	Width	mm	240		300	330	
Mass		kg	39	42	68	84	85
Auto Drain Trap	Model		FD2	FD6			
	Drain Release Port Size		ϕ4（Use nylon-based tubes of I.D. ϕ5.7～ϕ6.0 O.D. ϕ8.0）, Rc1/4※2				
Air Inlet / Outlet Connection			R1		R1 1/2	R2	
Cooling Water Inlet / Outlet Connection			—				Inlet Rc3/4 Outlet Rp3/4
Electrical Specifications: Power (50/60 Hz)		V	Three phase 200 / 200,220				
Electrical Specifications: Power Consumption (50/60 Hz)		kW	0.61/ 0.71,0.73	0.65/ 0.79,0.79	1.16/ 1.41,1.41	1.30/ 1.63,1.60	1.12/ 1.37,1.38
Electrical Specifications: Electric Current (50/60 Hz)		A	2.6/ 2.5,2.5	3.0/ 2.8,2.9	4.5/ 4.6,4.4	5.3/ 5.7,5.4	4.7/ 4.8,4.7
Electrical Specifications: Power Capacity		kVA	1.3	1.5	2.5	2.9	2.4
Electrical Specifications: Breaker Capacity		A	5		10		
Legal Refrigeration Tonnage（50 / 60Hz）			0.25 / 0.30	0.28 / 0.33	0.46 / 0.55	0.55 / 0.66	
Refrigerant			R-410A				
Refrigerant Filling Volume		kg	0.4	0.47	0.87	1.15	0.64
Chiller Compressor Output		kW	0.8	0.85	1.5	1.8	
Operating Noise Level（50/60 Hz）		dB(A)	59/61	58/59	63/63	60/63	52/52

※ Compressed air processing conditions: compressed air inlet pressure (gauge pressure): 0.69 MPa, inlet air temperature for models RAX3J～37J: 35 ℃, models RAX55J, 55J-W: 40 ℃, outlet air dew point : 10 ℃ under pressure, ambient temperature: 32 ℃. ※ Please contact us for guaranteed performance specifications. ※ Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32 ℃, 75 %.) ※ RAX55J-W cooling water flow rate is for 60 Hz operation. ※ Operating noise levels are from a position of 1 m in front of the unit and at a height of 1 m. ● RAX15～55J-W come standard equipped with control terminals for remote operation (no-voltage switch.) ● Secondary heat exchanger utilizing stainless steel piping available. Please inquire for details. Please inquire for further information. ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above.
※1 In case power source fluctuation is within ±5 %. 2～40 ℃ for ±10 %. ※2 When using the included screw adjuster.

□ Heavy Duty RAX-J Specifications


Heavy Duty RAX-J


Heavy Duty RAX-F

● RAX75J / 75J-W ～ 190J / 190J-W

Item		Model RAX	Air-Cooled					Water-Cooled				
			75J	90J	120J	150J	190J	75J-W	90J-W	120J-W	150J-W	190J-W
Air Processing Capacity（50/60 Hz）		m^3/min	12.1/13.4	17.3/20.1	22.1/25.3	27.5/32.0	34.1/40.5	12.1/14.0	17.3/20.1	22.1/25.3	27.5/32.0	35.0/41.0
Inlet Air Temp. Range / Outlet Air Dew Point		℃	5 ～ 60 / Pressure dew point: 10									
Working Fluid / Operable Ambient Temperature Range		℃	Compressed air / 2 ～ 48									
Compressed Air Pressure Range (Gauge Pressure)		MPa	0.29 ～ 0.98									
Cooling Water	Water Temp	℃	—					32				
	Flow Rate	m^3/h	—					1.7	2.8	2.9	3.0	3.2
Outside Dimensions	Height	mm	1140	1286		1332		1140	1286		1332	
	Depth	mm	1081	1244		1290		1081	1244		1290	
	Width	mm	470			700		470			700	
Mass		kg	146	186	205	279	286	140	183	203	270	277
Auto Drain Trap	Model		AD-5									
	Drain Release Port Size		Rc1/2									
Air Inlet / Outlet Connection			R2		2 1/2 B 65 A flange	3 B 80 A flange		R2		2 1/2 B 65 A flange	3 B 80 A flange	
Cooling Water Inlet / Outlet Connection		female	—					Rp3/4				
Electrical Specifications	Power (50/60 Hz)	V	Three phase 200 / 200,220									
	Power Consumption (50/60 Hz)	kW	2.5/3.0,3.0	3.0/3.9,3.9		4.1/5.2,5.2	5.7/7.5,7.4	1.7/2.0,2.0	2.1/2.6,2.5		3.5/4.2,4.2	4.7/6.2,6.1
	Electric Current (50/60 Hz)	A	9.5/ 9.5,9.4	11.5/12.0,12.0		14.0/ 16.5,15.5	20.5/ 24.5,22.5	8.0/ 8.0,8.0	8.6/9.4,8.9		11.5/ 12.0,11.0	15.5/ 17.0,16.0
	Power Capacity	kVA	5.0	6.3		7.8	10.4	4.0	5.2		7.1	9.8
	Breaker Capacity	A	20	30			40	15	20		30	40
Legal Refrigeration Tonnage（50 / 60Hz）			0.92 / 1.10	1.09 / 1.30		1.47 / 1.76	1.99 / 2.39	0.92 / 1.10	1.09 / 1.30		1.47 / 1.76	1.99 / 2.39
Refrigerant			R-410A									
Refrigerant Filling Volume		kg	1.6	1.82	2.1	3.7	4.0	1.1	1.7		1.9	2.0
Chiller Compressor Output		kW	1.9	2.2		3.0	4.2	1.9	2.2		3.0	4.2
Operating Noise Level（50/60 Hz）		dB（A）	67/70	70/73			71/74	54/56	56/56		57/57	57/58

□ Heavy Duty RAX-F Specifications

● RAX240F / 240F-W ～ 450F-WE（built to order）

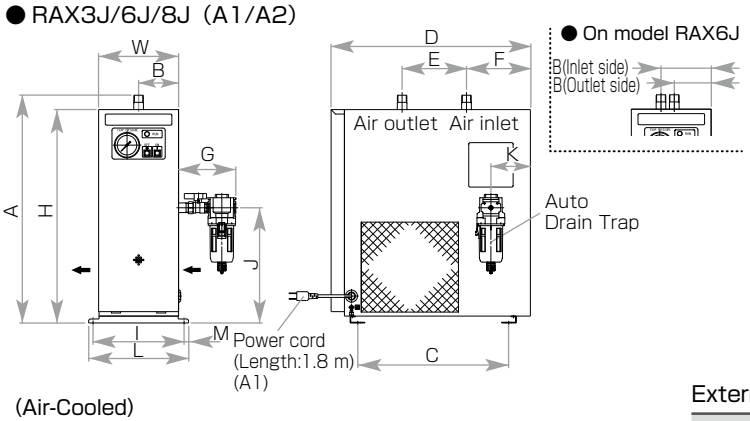
Item		Model RAX	Air-Cooled			Water-Cooled			
			Standard	Energy Saving		Standard	Energy Saving		
			240F	300F-E	380F-E	240F-W	300F-WE	380F-WE	450F-WE
Air Processing Capacity（50/60 Hz）		m^3/min	38/45	47/55	59/69	42/49	51/60	64/75	83/98
Inlet Air Temp. Range / Outlet Air Dew Point		℃	5 ～ 60 / Pressure dew point: 10						
Working Fluid / Operable Ambient Temperature Range		℃	Compressed air / 2 ～ 40			Compressed air / 2 ～ 45			
Compressed Air Pressure Range (Gauge Pressure)		MPa	0.29 ～ 0.98	0.29 ～ 0.93		0.29 ～ 0.98	0.29 ～ 0.93		
Cooling Water	Water Temp	℃	—			32			
	Flow Rate	m^3/h	—			3.8	4.0	5.0	7.1
Outside Dimensions	Height	mm	1583	1650		1583	1650		1703
	Depth	mm	905	1100		905	1100		1145
	Width	mm	1969	2020		1969	2020		2077
Mass		kg	555	790	870	532	790	870	940
Auto Drain Trap	Model		AD-5						
	Drain Release Port Size		Rc1/2						
Air Inlet / Outlet Connection			4 B 100 A flange	5 B 125 A flange		4 B 100 A flange	5 B 125 A flange		6 B 150 A flange
Cooling Water Inlet / Outlet Connection		female	—			Rp1	Rc1 1/2		
Electrical Specifications	Power (50/60 Hz)	V	Three phase 200/200,220						
	Power Consumption (50/60 Hz)	kW	4.6/5.7,5.6	5.9/6.8,6.8	8.6/10.1,10.0	3.5/4.4,4.3	5.1/5.7,5.7	6.5/7.6,7.5	8.5/9.0,8.9
	Electric Current (50/60 Hz)	A	17.9/ 19.2,19.1	19.9/ 22.3,21.2	26.4/ 29.4,28.9	14.8/ 15.0,14.9	17.6/ 18.9,18.4	22.5/ 25.0,24.5	29.6/ 32.0,31.4
	Power Capacity	kVA	9.7	10.4	15.6	8.3	8.7	11.4	15.6
	Breaker Capacity	A	40	50	60	30	50		60
Legal Refrigeration Tonnage（50 / 60Hz）			1.52 / 1.82	1.82 / 2.18	2.41 / 2.89	1.52 / 1.82	1.82 / 2.18	2.41 / 2.89	3.03 / 3.64
Refrigerant			R-407C						
Refrigerant Filling Volume		kg	4.4	2.5 × 2	3.0 × 2	3.4	2.0 × 2	2.0 × 2	2.5 × 2
Chiller Compressor Output		kW	3.75	2.2 × 2	3.0 × 2	3.75	2.2 × 2	3.0 × 2	3.75 × 2
Operating Noise Level（50/60 Hz）		dB（A）	60/64	62/66	64/67	52/55	57/58	55/58	55/62

Remarks for all models（RAX-J / RAX-F / F-E / F-WE）
※ Air processing conditions: compressed air inlet pressure (gauge pressure): 0.69 MPa, inlet air temperature: 40 ℃, outlet air dew point : 10 ℃ under pressure, ambient temperature: 32 ℃ . ※ Please contact us for guaranteed performance specifications. Heavy duty models have had performance specifications confirmed with a substitute load (inspection under low pressure air). ※ Processing air capacity is calculated based on compressor intake condition. (atmospheric pressure, 32 ℃、75 %) ※ Cooling water flow rate is for 60 Hz operation. ※1 Operating noise levels are from a position of 1 m in front of the unit and at a height of 1 m. ※2 Operating noise levels are from a position of 1.5m in front of the unit and at a height of 1 m. ● Standard equipped with remote control terminals (no-voltage), operation signal terminals (no-voltage), alarm signal terminals (no-voltage.) ● Air inlet/outlet connection companion flanges not included. ● Flange: JIS10K FF. ● Secondary heat exchanger utilizing stainless steel piping available. Please inquire for details. Please inquire for further information.
※ Please contact ORION regarding custom built models of specifications outside the ranges listed above.
Remarks for specific model（RAX-F / F-E / F-WE）
※ RAX240F～450F-WE are subject to JBA 2nd class pressure vessel regulation. ※ Models subject to JBA 2nd class pressure vessel regulation are built-to-order models.
● Remote operation and stop signals are controlled by momentary switches. ● RAX □ F-E · □ F-WE models have 2 power modes (50 % and 100 %.) For power outages of 0.2 seconds and less, operation will resume automatically. The dryer will automatically switch between refrigeration compressors 1 and 2. There are separate alarm monitors. Terminals for 2 types of alarm are provided: main alarm and preliminary caution. ● An air-cooled model, RAX450F-E is available as a built to order item. ● Alarm equipped electric drain trap is available by special order.

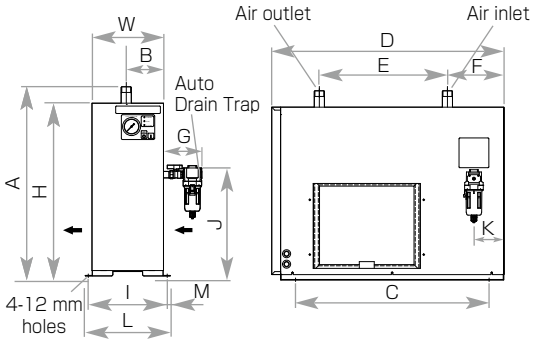
Compact to Medium Duty RAX-J/Heavy Duty RAX-J/Heavy Duty RAX-F

☐ Compact and Medium Duty RAX-J External Dimensions

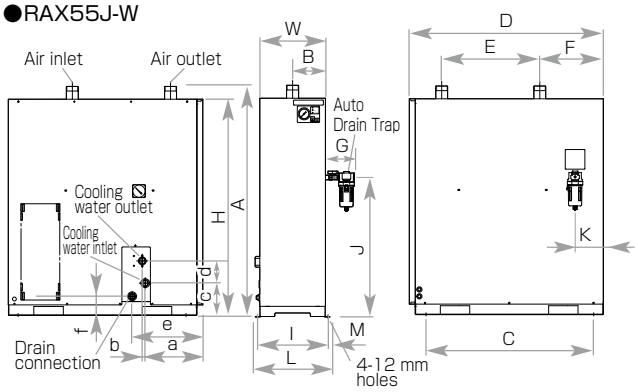
(Air-Cooled)
● RAX3J/6J/8J (A1/A2)



(Air-Cooled)
●RAX11J/15J/22J/37J/55J



(Air-Cooled)
●RAX55J-W



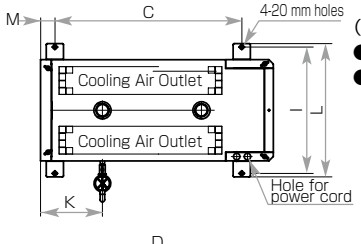
Model	a	b	c	d	e	f
RAX55J-W	(290)	(15)	(164)	(113)	(360)	(97)

External Dimensions (A1/A2) (Units:mm)

Model	H	D	W	A	B inlet	B outlet	C	E
RAX3J	480	450	180	(513)	90		340	145
RAX6J	510	540		(542)	113	83	420	300
RAX8J		600	240	(537)	140		480	335
RAX11J	580	660		(608)	120		530	330
RAX15J		780		(635)			650	430
RAX22J		870		(635)			740	
RAX37J	900	960	300	(966)	165		825	447
RAX55J/J-W	1100	990	330	(1165)			855	500

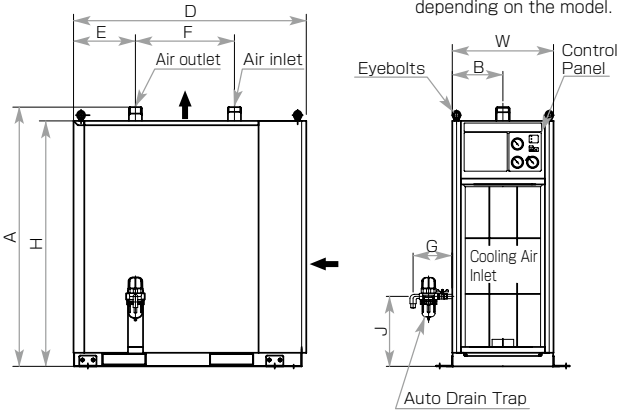
Model	F	G	I	J	K	L	M
RAX3J	145	(130)	205	260	90	225	10
RAX6J	120			274	96		
RAX8J	138		265	280	78	285	
RAX11J	165		265	(320)	101	285	
RAX15J	190	(129)		(340)			
RAX22J	280	(145)		(370)	105		
RAX37J	338		325	(516)	197	345	
RAX55J/J-W	325		355	(701)	145	375	

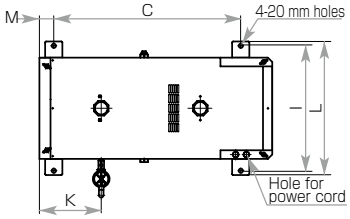
☐ Heavy Duty RAX-J External Dimensions



(Air-Cooled)
● RAX75J/90J
● RAX120J/150J/190J

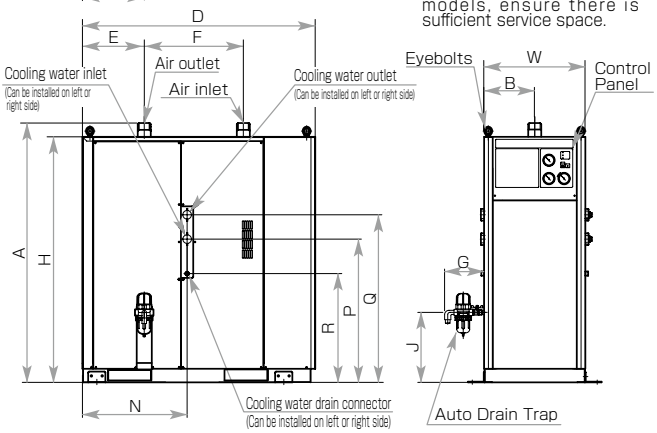
※ Air-Cooled model includes a condenser filter.
※ RAX120J or higher models have inlet and outlet piping flanges. See items above for details.
※ The cooling air drain port configuration will differ depending on the model.





(Water-Cooled)
● RAX75J-W/90J-W/
120J-W/150J-W/
190J-W

※ RAX120J or higher models have inlet and outlet piping flanges. See items above for details.
※ For right-side piping on RAX150J-W and 190J-W models, ensure there is sufficient service space.



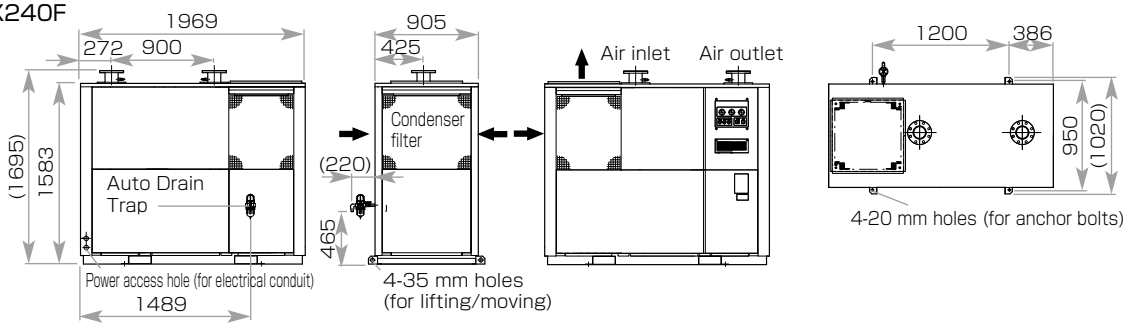
● External Dimensions (Units:mm)

Model	H	D	W	A	B	C	E	F	G	I	J	K	L	M	N	P	Q	R	Eyebolts
RAX75J/J-W	1140	1081	470	1204	235	868	287	460	(169)	580	(320)	287	620	67	486	665	778	505	4-M10
RAX90J/J-W	1286	1244	470	1356	55	905	249	460	(169)	580	(325)	303	620	97	642	678	849	573	
RAX120J/J-W	1286	1244	470	1375	60	905	249	655	(169)	580	(325)	303	620	97	642	678	849	573	
RAX150J/J-W	1332	1290	700	1432	225	1030	305	720	(169)	810	(325)	325	850	67	1000	190	563	120	4-M16
RAX190J/J-W	1332	1290	700	1432	225	1030	107	860	(169)	810	(325)	325	850	67	1000	190	563	120	

□ Heavy Duty RAX-F External Dimensions

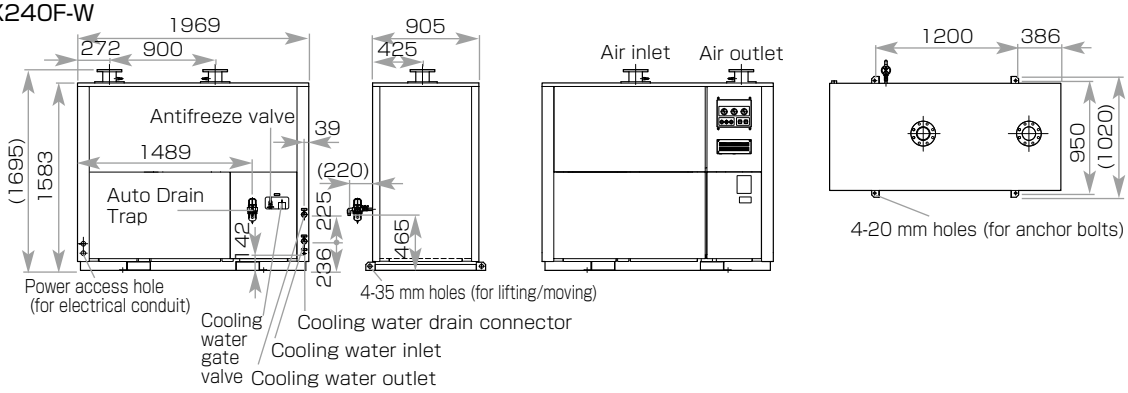
(Air-Cooled)

● RAX240F



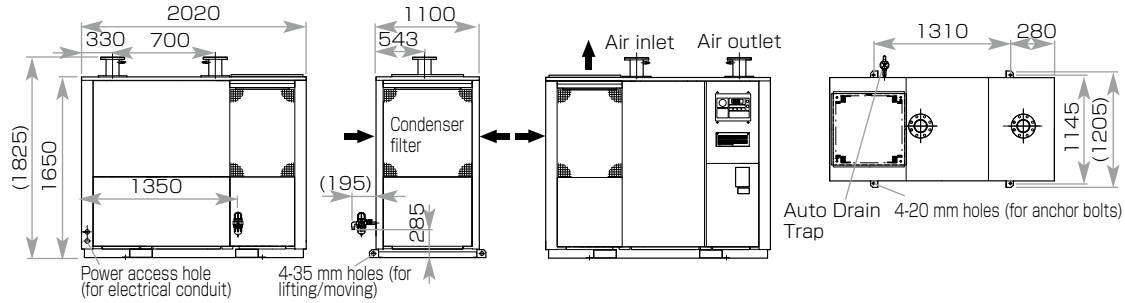
(Water-Cooled)

● RAX240F-W



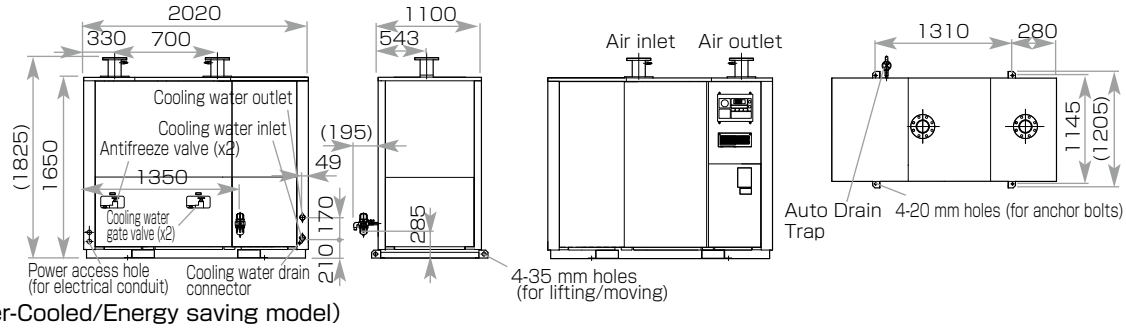
(Air-Cooled/Energy saving model)

● RAX300F-E/380F-E



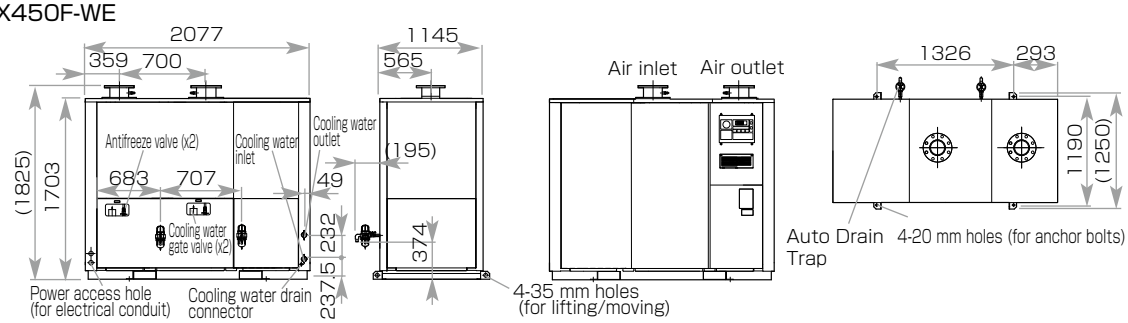
(Water-Cooled/Energy saving model)

● RAX300F-WE/380F-WE



(Water-Cooled/Energy saving model)

● RAX450F-WE



RAX-SE "High Temp. Inlet Air Models"

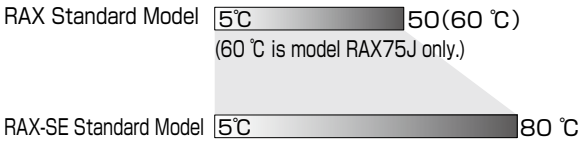
□ Models Built to Handle High Temperature Inlet Air. Covers Air Compressor Output in the 3-75 kW Range.

1. A dryer that can handle high intake temperatures and will keep going even in hot summer months!

(Compared with previous compact to medium duty RAX-G, and heavy duty RAX-J series models)

■ The Difference in Inlet Air Temperature Range from General Purpose Standard Models

Difference in Inlet Air Temperature Range (Compared with standard inlet air models)

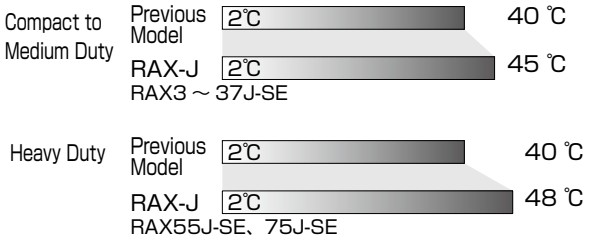


※ Make a suitable model choice following the Model Selection Table on page 35 based on each of your environmental conditions

〈Keeps Going in Summer Months〉

■ Many production facilities require air dryers that must not stop working even during high summertime temperatures. Compact to heavy duty RAX-J series models have a wider ambient temperature range compared with previous models.

Ambient Temperature



〈Please Note〉

- Operation will follow product specifications, therefore operation under harsh conditions is not warranted.
- Phrasing is with regard to air cooled models only.

2. Stainless Steel Heat Exchanger

Built with a stainless steel shell heat exchanger, it's a perfect match for the age of clean, oil-free compressed air. (See page 15 for details.)

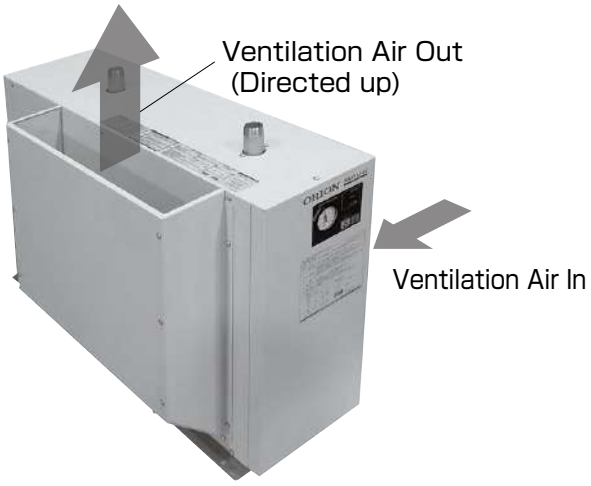
※ Please contact your dealer for information on degreasing and cleaning.
※ Stainless steel piping for improved corrosion-resistance is available by special order.

3. Intake filter included as standard equipment.

Comes standard with filter on the condenser intake port for easy maintenance.

■ Accessories (Sold separately) Introduction — Ventilation Air Outlet Duct Assembly

Using the Ventilation Air Outlet Duct Assembly, exhaust air can be guided upward. This can prevent short-cycling and make layout, such as the placement the air compressor intake and outlet, more convenient. The duct can be added after the dryer is installed. (Applicable models are listed below.)



Part Name	Part Number	Applicable Models
Ventilation Air Outlet Duct Assembly	03107722010	RAX15J、RAX22J RAX11J-SE、RAX15J-SE
	03107723010	RAX37J、RAX22J-SE
	03107724010	RAX55J、RAX37J-SE

※ Used to change the direction of cooling airflow upward.

Air dryer that directly connects to your air compressor AND can process high temperature compressed air (Refrigerated compressed air drying equipment)

Compact and Medium Duty RAX-SE "High Temp. Inlet Air Models"

Air-Cooled RAX3J-SE ~ 37J-SE
Air Processing Capacity 0.32/0.37 ~ 6.1/6.5 m^3/min
Can process high temperature compressed air 5 ~ 80 ℃
Suitable air compressors 3 ~ 37 kW

Features

1. Compatible with High-temperature Environments (RAX3J-SE ~ 37J-SE)
   Operable at ambient temperature of 45 ℃ .
2. Stainless steel shell heat exchanger
   Built with a stainless steel shell heat exchanger, the RAX provides clean air and makes it the perfect match for the age of oil-free compressed air. (See page 15 for details.)
   ※ Please inquire regarding degreasing.
   ※ Optional stainless steel piping is also available for higher corrosion resistance.
3. Air intake filter standard equipment (RAX3J-SE ~ 37J-SE)
   Comes with condenser intake filter as standard equipment for easy maintenance.

RAX11J-SE RAX22J-SE

Air dryer that directly connects to your air compressor AND can process high temperature compressed air (Refrigerated compressed air drying equipment)

Heavy Duty RAX-SE "High Temp. Inlet Air Models"

Air-Cooled RAX55J-SE ~ 75J-SE
Air Processing Capacity 9.1/10.5 ~ 12.1/13.4 m^3/min
Can process high temperature compressed air 5 ~ 80 ℃
Suitable air compressors 55 ~ 75 kW

Features

1. Compatible with High-temperature Environments
   Operable at ambient temperature of 48 ℃ .
2. Stainless steel shell heat exchanger
   Built with a stainless steel shell heat exchanger, the RAX provides clean air and makes it the perfect match for the age of oil-free compressed air. (See page 15 for details.)
   ※ Please inquire regarding degreasing.
   ※ Optional stainless steel piping is also available for higher corrosion resistance.
3. Low pressure loss: less than 0.015 MPa (RAX75J-SE)
   Little clogging even after long periods of use, and a heat exchanger that has little pressure loss (pressure drop.)

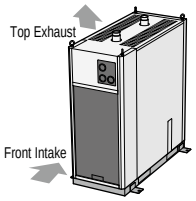
0.69 MPa	0.008 ~ 0.015 MPa ※
0.98 MPa (Max. Operable Pressure)	0.006 ~ 0.013 MPa ※

※ Figure is for flow rate at 50 Hz.

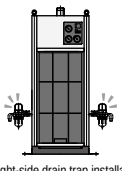
RAX75J-SE

4. Does not fall under the Class 2 Pressure Vessel Safety Law
   This equipment does not fall under the Class 2 Pressure Vessel Safety Law and therefore is not subject to the required certification procedures etc.
5. Air intake filter standard equipment
   Comes with condenser intake filter as standard equipment for easy maintenance.
6. Space Saving & Compact

Front Intake・Top Exhaust
Can be Closed-in on the Left OR Right Side

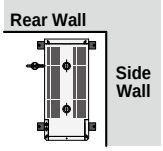


Drain Trap Installation on Right OR Left



※ Right-side drain trap installation requires optional parts. (P18)

Can be Installed Next to Left, Right, and Rear Walls
※ Right-wall-only on RAX150J(W) and 190J(W) models.



RAX-SE "High Temp. Inlet Air Models"

High Temperature Inlet Air | HFC Refrigerant | IoT (55min.)※

※See pages 93~94.

□ Specifications

Compact RAX-SE

Medium to Heavy Duty RAX-SE

● RAX3J-SE ～ 75J-SE

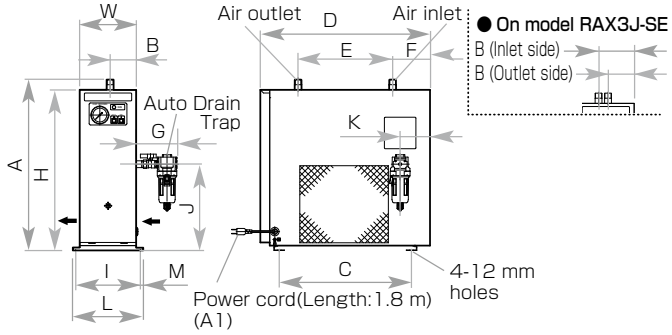
Item		Model	Air-Cooled							
		RAX	3J-SE-A1	3J-SE-A2	4J-SE-A1	4J-SE-A2	6J-SE-A1	6J-SE-A2	8J-SE-A1	8J-SE-A2
Air Processing Capacity（50/60 Hz）		m^3/min	0.32/0.37		0.47/0.53		0.68/0.77		1.30/1.40	
Inlet Air Temp. Range / Outlet Air Dew Point		℃	5 ～ 80/ Pressure dew point: 10							
Working Fluid / Operable Ambient Temperature Range		℃	Compressed air /2 ～ 45 ※ 1							
Compressed Air Pressure Range (Gauge Pressure)		MPa	0.2 ～ 0.98							
Outside Dimensions	Height	mm	510				600		580	
	Depth	mm	540		600		660		780	
	Width	mm	180		240					
Mass		kg	21		26		31		37	
Auto Drain Trap	Model		FD2-NC		FD2					
	Drain Release Port Size		ϕ4（Use nylon-based tubes of I.D. ϕ5.7～ϕ6.0 O.D. ϕ8.0）or Rc1/4※2							
Air Inlet/Outlet Connection			R1/2		R3/4					
Electrical Specifications	Voltage (50/60 Hz)	V	Single phase 100/100,110	Single phase 200,220/200,220	Single phase 100/100,110	Single phase 200,220/200,220	Single phase 100/100,110	Single phase 200,220/200,220	Single phase 100/100,110	Single phase 200,220/200,220
	Power Consumption (50/60 Hz)	kW	0.26/ 0.27,030	0.24,0.28/ 0.26,0.29	0.32/ 0.34,0.41	0.29,0.35/ 0.32,0.34	0.34/ 0.37,0.40	0.32,0.36/ 0.36,0.40	0.52/ 0.50,0.53	0.42,0.47/ 0.48,0.49
	Electric Current (50/60 Hz)	A	3.2/ 2.8,2.8	1.4,1.6/ 1.3,1.3	3.9/ 3.4,3.7	1.7,2.1/ 1.6,1.6	4.3/ 3.8,3.8	1.8,2.0/ 1.8,1.8	6.5/ 5.1,4.9	2.6,2.9/ 2.5,2.3
	Power Capacity	kVA	0.4		0.6	0.5	0.7	0.6	0.8	
	Breaker Capacity	A	10	5	10	5	10	5	15	10
Legal Refrigeration Tonnage（50 / 60Hz）			0.07 / 0.08		0.09 / 0.11		0.09 / 0.11		0.15 / 0.19	
Refrigerant			R-134a						R-410A	
Refrigerant Filling Volume		kg	0.14		0.23		0.28		0.33	
Chiller Compressor Output		kW	0.25	0.3	0.4		0.4		0.55	0.6
Operating Noise Level (50/60 Hz)		dB（A）	60/60		61/61		62/62		60/61	

Item		Model	Air-Cooled					
		RAX	11J-SE	15J-SE	22J-SE	37J-SE	55J-SE	75J-SE
Air Processing Capacity（50/60 Hz）		m^3/min	1.75/1.93	2.2/2.6	3.9/4.5	6.1/6.5	9.1/10.5	12.1/13.4
Inlet Air Temp. Range / Outlet Air Dew Point		℃	5 ～ 80/ Pressure dew point: 10					
Working Fluid / Operable Ambient Temperature Range		℃	Compressed air /2 ～ 45				Compressed air /2 ～ 48	
Compressed Air Pressure Range (Gauge Pressure)		MPa	0.2 ～ 0.98 MPa					0.29 ～ 0.98
Outside Dimensions	Height	mm	580		900	1100	1140	1286
	Depth	mm	780	870	960	990	1081	1244
	Width	mm	240		300	330	470	470
Mass		kg	39	42	68	84	139	190
Auto Drain Trap	Model		FD2	FD2	FD6	FD6		AD-5
	Drain Release Port Size		ϕ4（Use nylon-based tubes of I.D. ϕ5.7～ϕ6.0 O.D. ϕ8.0）or Rc1/4※2					Rc1/2
Air Inlet/Outlet Connection			R1			R1 1/2	R2	
Electrical Specifications	Voltage (50/60 Hz)	V	Three phase 200/200,220					
	Power Consumption (50/60 Hz)	kW	0.63/ 0.75,0.78	0.69/ 0.78,0.87	1.21/ 1.48,1.48	1.31/ 1.62,1.64	2.5/ 3.0,3.0	3.0/ 3.9,3.9
	Electric Current (50/60 Hz)	A	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
	Power Capacity	kVA	1.3	1.5	2.5	2.9	5.0	6.1
	Breaker Capacity	A	5		10	10	20	30
Legal Refrigeration Tonnage（50 / 60Hz）			0.25 / 0.30	0.28 / 0.33	0.46 / 0.55	0.55 / 0.66	0.92 / 1.10	1.09 / 1.30
Refrigerant			R-410A					
Refrigerant Filling Volume		kg	0.4	0.47	0.87	1.15	1.6	2.1
Chiller Compressor Output		kW	0.8	0.85	1.5	1.8	1.9	2.2
Operating Noise Level (50/60 Hz)		dB（A）	59/61	58/59	63/63	60/63	67/70	70/73

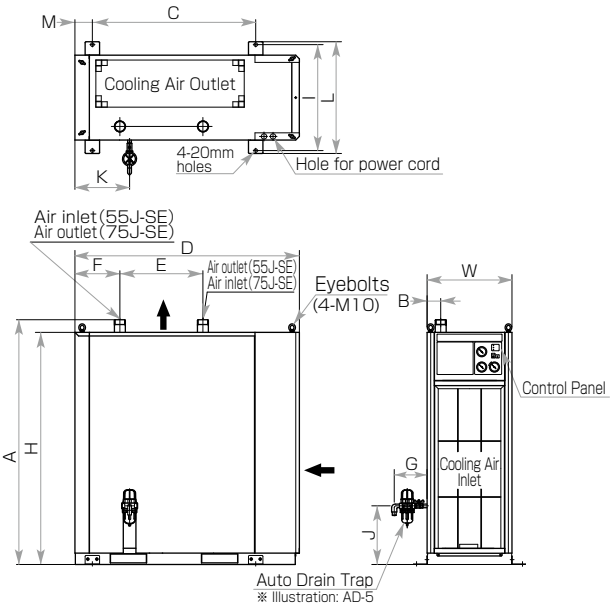
※ Air processing conditions: compressed air inlet pressure (gauge pressure): 0.69 MPa, inlet air temperature: 55 ℃ , outlet air dew point : 10 ℃ under pressure, ambient temperature: 32 ℃ . ※ Please contact us for guaranteed performance specifications. ※ Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32 ℃、75 %.) ● RAX11J-SE ～ 37J-SE comes standard equipped with remote control terminals (no-voltage.) RAX55J-SE ～ 75J-SE comes standard equipped with remote control terminals (no-voltage), operation signal terminals (no-voltage), alarm signal terminals (no-voltage.) ● RAX75F-SE is equipped with suspension eyebolts. ● Secondary heat exchanger utilizing stainless steel piping available. Please inquire for details. Please inquire for further information. ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above. ※ Operating noise levels are from a position of 1 m in front of the unit and at a height of 1 m.
※1 In case power source fluctuation is within ±5 %. 2～40 ℃ for ±10 %. ※2 When using the included screw adjuster.

□ External Dimensions

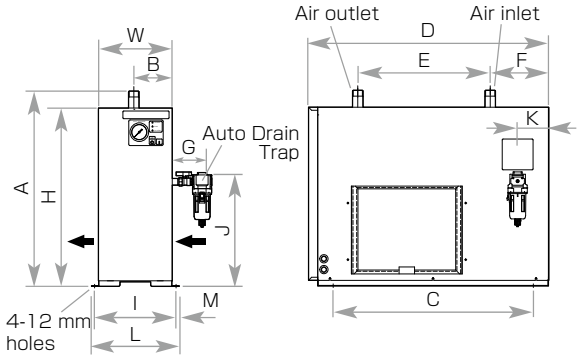
(Air-Cooled)
● RAX3J-SE/4J-SE/6J-SE/8J-SE（A1/A2）



(Air-Cooled)
● RAX55J-SE/75J-SE



(Air-Cooled)
●RAX11J-SE/15J-SE/22J-SE/37J-SE



External Dimensions（A1/A2）(Units:mm)

Model	H	D	W	A	B		C	E	F	G	I	J	K	L	M
					inlet	outlet									
RAX3J-SE	510	540	180	(542)	113	83	420	300	120	(130)	205	274	96	225	10
RAX4J-SE		600	240	(537)	140		480	335	138		265	280	78	285	
RAX6J-SE	600	660		(627)			542	416	84			370	105		
RAX8J-SE	580	780		(608)	120		650	430	190			(320)	101	285	
RAX11J-SE				(635)						(129)		(340)			
RAX15J-SE		870					740		280			(370)	105		
RAX22J-SE	900	960	300	(966)	165		825	444	341	(145)	325	(516)	197	345	
RAX37J-SE	1100	990	330	(1165)			855	500	325		355	(701)	145	375	
RAX55J-SE	1140	1081	470	1204	235		868	460	88	(135)	580	(320)	549	620	67
RAX75J-SE	1286	1244		1356	50		905		249	(169)		(325)	303		97

RAX/RAX-SE "High Temp. Inlet Air Models"

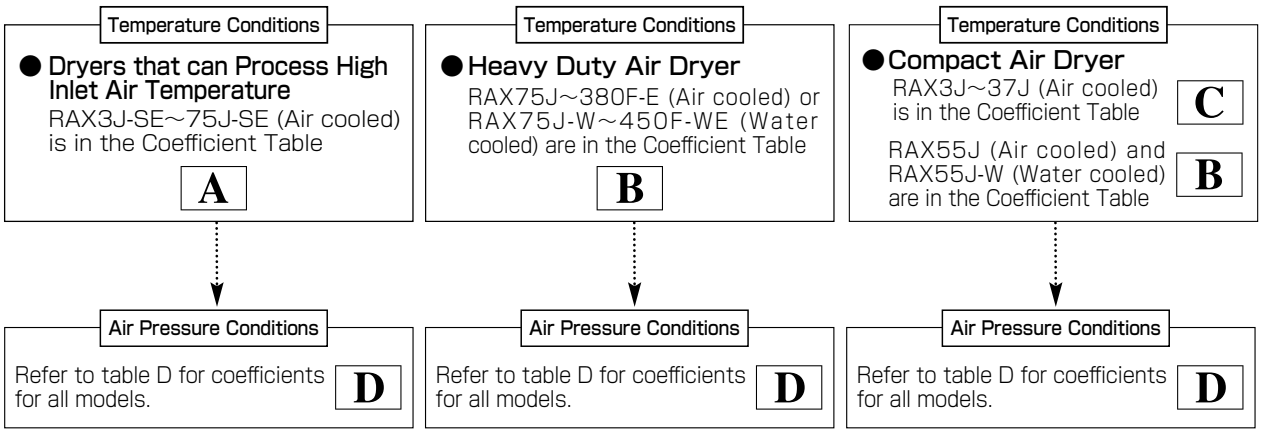
□ Model Choice and Determining the Maximum Air Processing Capacity

Finding the Right Model

① Look up the coefficients for your operating conditions from Temperature Coefficient Tables A to C for temperature conditions, and the Air Pressure Coefficient Table D for air pressure conditions.

Find the Maximum Air Processing Capacity

① Look up the coefficients for your operating conditions from Temperature Coefficient Tables A to C for temperature conditions, and the Air Pressure Coefficient Table D for the air pressure conditions, and Standard Air Processing Capacity Table E for the air processing capacity of the model in question.



② Determine the corrected air flow by applying the coefficient from the Temperature Coefficient Tables A to C and the coefficient from the Air Pressure Correction Coefficient Table D.

Corrected Air Flow
= Operating Air Flow ÷ (Ⓐ ~ Ⓒ × Ⓓ)

③ Using the Standard Air Processing Capacity Table E, select a model that exceeds the corrected airflow from ② .

② Calculate with the coefficients from Standard Air Processing Capacity Table E, Temperature Correction Coefficient Tables A to C, and Air Pressure Correction Coefficient Table D.

Ⓐ ～ Ⓒ × Ⓓ ×Ⓔ

③ The calculated value is the maximum air processing capacity.

Model Selection Example

(In case of RAX75J〔Air cooled〕~ 190J-W〔Water cooled〕)
Making a model selection based on the following criteria:

Inlet Air Temperature	45 ℃	Ambient Temperature	35 ℃	Operating Air Flow	10 m³/min(ANR)
Pressure Dew Point	10 ℃	Air Pressure	0.49 MPa	Power Frequency	60 Hz

① Based on these conditions:
Temperature Correction Coefficient ⇒ 0.79; Air Pressure Correction Coefficient ⇒ 0.92.

② According to the correction calculation in ① ,
10 ÷ (0.79 × 0.92) = 13.76 m³/min (ANR)

③ Looking at Standard Processing Air Flow Table E, the models that can process at least 13.76 m³/min (ANR) are, RAX90J (air cooled) and RAX90J-W (water cooled).

Note: For dew point temperatures below 10 ℃ , please consult ORION or your ORION dealer.

Note: For air pressures below 0.29 MPa, please consult ORION or your ORION dealer.

Model Selection Example

For the following conditions, the maximum air processing capacity offered by the RAX90J is indicated.

Inlet Air Temperature	35 ℃	Ambient Temperature	30 ℃	Power Frequency	60 Hz
Pressure Dew Point	10 ℃	Air Pressure	0.69 MPa		

① Based on these conditions:
Temperature Correction Coefficient ⇒ 1.2; Air Pressure Correction Coefficient ⇒ 1.00. The standard air processing capacity of the RAX90J ⇒ 18.9 m³/min is indicated.

② From the correction coefficient in ① :
1.20 × 1.00 × 18.9 = 22.68 m³/min (ANR)

③ The maximum air processing capacity of the RAX90J of 22.68 m³/min (ANR) is indicated.

Note: When choosing heavy duty models of the RAX240F class and higher, choose a model with a safety factor of approx. 20 % over the demanded specifications and operating conditions. If you have any questions, please consult your Orion sales representative.

A Temperature Correction Coefficients: Processing capacity varies depending on specific temperature conditions. Coefficients are shown in this table. ※ Please contact ORION for inlet temperatures beyond 65 ℃ or for values outside those listed below.

■ High Inlet Air Temperature Processing Models RAX3J-SE ~ 6J-SE (Air cooled)

Ambient Temperature ℃ \ Inlet Air Temperature ℃	45	55	60	65
Dew Point Temperature ℃	10	10	10	10
25	1.20	1.20	1.18	1.15
30	1.14	1.06	1.02	0.97
32	1.10	1.00	0.95	0.90
35	1.02	0.89	0.85	0.80
40	0.82	0.70	0.68	0.65
45	0.51	0.47	0.44	0.42

■ High Inlet Air Temperature Models RAX8J-SE ~ 37J-SE

Ambient Temperature ℃ \ Inlet Air Temperature ℃	45	55	60	65
Dew Point Temperature ℃	10	10	10	10
25	1.30	1.08	0.91	0.78
30	1.22	1.02	0.86	0.73
32	1.20	1.00	0.84	0.72
35	1.08	0.90	0.76	0.65
40	0.86	0.72	0.60	0.52
45	0.56	0.47	0.39	0.34

■ High Inlet Air Temperature Models RAX55J-SE / 75J-SE (Air cooled)

Ambient Temperature ℃ \ Inlet Air Temperature ℃	45	55	60	65
Dew Point Temperature ℃	10	10	10	10
25	1.20	1.20	1.01	0.86
30		1.06	0.89	0.76
32		1.00	0.84	0.72
35	1.08	0.90	0.76	0.65
40	0.86	0.72	0.60	0.52
45	0.76	0.63	0.53	0.45
48	0.65	0.54	0.45	0.39

B Temperature Correction Coefficients: Processing capacity varies depending on specific temperature conditions. Coefficients are shown in this table. ※ Please contact ORION if the dew point will be outside the above specifications.

■ Standard Inlet Air Models RAX75J ~ 120J (Air cooled) / RAX75J-W ~ 120J-W (Water cooled)

Ambient Temperature ℃ \ Inlet Air Temperature ℃	30	35	40	45	50	55	60
Dew Point Temperature ℃	10	10	10	10	10	10	10
25	1.20	1.20	1.06	0.88	0.71	0.61	0.51
30			1.02	0.85	0.68	0.59	0.49
32		1.18	1.00	0.83	0.67	0.58	0.48
35	1.14	1.12	0.95	0.79	0.64	0.55	0.46
40	1.00	0.98	0.83	0.69	0.56	0.48	0.40
45	0.84	0.83	0.70	0.58	0.47	0.41	0.34
48	0.74	0.73	0.62	0.51	0.42	0.36	0.30

※ In water cooled models, an ambient air temperature of 32 ℃ is indicated, regardless of the cooling water temperature. The cooling water temperature upper limit is 34 ℃.

■ Standard Inlet Air Models RAX150J (Air cooled) / RAX150J-W (Water cooled)

Ambient Temperature ℃ \ Inlet Air Temperature ℃	30	35	40	45	50	55	60
Dew Point Temperature ℃	10	10	10	10	10	10	10
25	1.20	1.20	1.06	0.88	0.71	0.61	0.51
30			1.02	0.85	0.68	0.59	0.49
32		1.18	1.00	0.83	0.67	0.58	0.48
35	1.14	1.12	0.95	0.79	0.64	0.55	0.46
40	1.00	0.98	0.83	0.69	0.56	0.48	0.40
45	0.80	0.79	0.58	0.50	0.45	0.38	0.33
48	0.66	0.65	0.48	0.40	0.35	0.31	0.27

※ In water cooled models, an ambient air temperature of 32 ℃ is indicated, regardless of the cooling water temperature. The cooling water temperature upper limit is 34 ℃.

■ Standard Inlet Air Models RAX190J (Air cooled) / RAX190J-W (Water cooled)

Ambient Temperature ℃ \ Inlet Air Temperature ℃	30	35	40	45	50	55	60
Dew Point Temperature ℃	10	10	10	10	10	10	10
25	1.20	1.20	1.06	0.88	0.71	0.61	0.51
30			1.02	0.85	0.68	0.59	0.49
32		1.18	1.00	0.83	0.67	0.58	0.48
35	1.14	1.12	0.95	0.79	0.64	0.55	0.46
40	1.00	0.98	0.83	0.69	0.56	0.48	0.40
45	0.84	0.83	0.70	0.58	0.47	0.41	0.34
48	0.66	0.65	0.48	0.40	0.35	0.31	0.27

※ In water cooled models, an ambient air temperature of 32 ℃ is indicated, regardless of the cooling water temperature. The cooling water temperature upper limit is 34 ℃.

■ Heavy Duty Air Dryer Models RAX240F ~ 380F-E (Air cooled) / RAX240F-W ~ 450F-WE (Water cooled)

Ambient Temperature ℃ \ Inlet Air Temperature ℃	30	35	40	45	50	55	60
Dew Point Temperature ℃	10	10	10	10	10	10	10
25	1.29	1.29	1.15	0.95	0.69	0.49	0.29
30		1.24	1.03	0.85	0.62	0.41	0.21
32		1.20	1.00	0.83	0.60	0.40	0.20
35	—	1.14	0.95	0.79	0.57	0.38	0.19
40	—	—	0.85	0.71	0.51	0.33	0.16

※ In water cooled models, an ambient air temperature of 32 ℃ is indicated, regardless of the cooling water temperature. The cooling water temperature upper limit is 34 ℃.
※ Maximum inlet temperature of RAX55J and 55J-W: 50 ℃. (Others: 60 ℃)

■ RAX55J (Air cooled) and 55J-W (Water cooled)

Ambient Temperature ℃ \ Inlet Air Temperature ℃	30	35	40	45	50
Dew Point Temperature ℃	10	10	10	10	10
25	1.30	1.21	1.08	0.86	0.70
30	1.25	1.14	1.02	0.82	0.66
32	1.23	1.12	1.00	0.80	0.65
35	1.11	1.01	0.90	0.72	0.59
40	0.89	0.81	0.72	0.58	0.47
45	0.56	0.53	0.47	0.38	0.30

C Temperature Correction Coefficients: Processing capacity varies depending on specific temperature conditions. Coefficients are shown in this table. ※ Please contact ORION if the dew point will be outside the above specifications.

■ Compact Air Dryer RAX3J ~ 8J (Air cooled)

Ambient Temperature ℃ \ Inlet Air Temperature ℃	30	35	40	45	50
Dew Point Temperature ℃	10	10	10	10	10
25	1.30	1.17	0.90	0.78	0.50
30		1.04	0.84	0.73	0.47
32		1.00	0.82	0.70	0.45
35	1.28	0.96	0.78	0.65	0.43
40	1.20	0.90	0.70	0.55	0.37
45	0.61	0.47	0.38	0.33	0.21

※ The temperature correction coefficient upper limit of the RAX6J is 1.10.
※ The temperature correction coefficient upper limit of the RAX8J is 1.15.

■ Standard Inlet Air RAX11J ~ 37J (Air cooled)

Ambient Temperature ℃ \ Inlet Air Temperature ℃	30	35	40	45	50
Dew Point Temperature ℃	10	10	10	10	10
25	1.22	1.08	0.86	0.70	0.58
30	1.15	1.02	0.82	0.66	0.55
32	1.13	1.00	0.80	0.65	0.54
35	1.02	0.90	0.72	0.59	0.49
40	0.81	0.72	0.58	0.47	0.39
45	0.53	0.47	0.38	0.30	0.25

D Air Pressure Correction Coefficients: The air processing capacity will change depending on the air pressure. This is the coefficient listed here.

Air Pressure MPa		0.20	0.29	0.39	0.49	0.59	0.69	0.78	0.88	0.93	0.98
Pressure Coefficient	J Models (Other than below)	0.67	0.73	0.80	0.87	0.93	1.00	1.07	1.13	1.16	1.20
	11J ~ 55J / 8J-SE ~ 37J-SE	0.65	0.75	0.83	0.89	0.94	1.00	1.01	1.02	1.02	1.03
	75J~190J/75JW~190J-W	0.75	0.8	0.86	0.92	0.96	1.00	1.04	1.08	1.1	1.12
	F Models	0.67	0.73	0.80	0.87	0.93	1.00	1.07	1.13	1.16	1.20

E Standard Air Processing Capacity m³/min (ANR) ※ ANR values below are air processing specifications under conditions of 20 ℃ at atmospheric pressure; relative humidity of 65 % (60 Hz operation).

■ Compact Air Dryer 3J ~ 8J (Air cooled)

Model	RAX	3J	6J	8J
Air Processing Capacity	50 Hz	0.30	0.64	0.94
	60 Hz	0.35	0.72	1.13

■ Compact Air Dryer RAX11J ~ 55J (Air-Cooled)/55J-W (Water-Cooled)

Model	RAX	11J	15J	22J	37J	55J	55J-W
Air Processing Capacity	50 Hz	1.65	2.4	3.7	5.7	8.4	8.6
	60 Hz	1.82	2.8	4.2	6.1	9.8	9.8

■ High Inlet Air Temperature Processing Models RAX3J-SE ~ 6J-SE (Air cooled)

Model	RAX	3J-SE	4J-SE	6J-SE
Air Processing Capacity	50 Hz	0.30	0.44	0.64
	60 Hz	0.35	0.50	0.72

■ High Inlet Air Temperature Processing Models RAX8J-SE ~ 75J-SE (Air-Cooled)

Model	RAX	8J-SE	11J-SE	15J-SE	22J-SE	37J-SE	55J-SE	75J-SE
Air Processing Capacity	50 Hz	1.22	1.65	2.1	3.7	5.7	8.6	11.4
	60 Hz	1.32	1.82	2.4	4.2	6.1	9.9	12.6

■ Heavy Duty Air Dryer Models RAX75J ~ 190J (Air cooled) / RAX75J-W ~ 190J-W (Water cooled)

Model	RAX	75J	90J	120J	150J	190J	75J-W	90J-W	120J-W	150J-W	190J-W
Air Processing Capacity	50 Hz	11.4	16.3	20.8	25.9	32.1	11.4	16.3	20.8	25.9	32.9
	60 Hz	12.6	18.9	23.8	30.1	38.1	13.2	18.9	23.8	30.1	38.6

■ Heavy Duty Air Dryer Models RAX240F~380F-E (Air Cooled) /RAX240F-W ~ 450F-WE (Water Cooled)

Model	RAX	240F	300F-E	380F-E	240F-W	300F-WE	380F-WE	450F-WE
Air Processing Capacity	50 Hz	35.8	44.2	55.5	39.5	48.0	60.2	78.1
	60 Hz	42.3	51.8	64.9	46.1	56.5	70.6	92.2

※ If there is a sudden fluctuation in compressed air pressure or a fluctuation in flow rate to the air dryer, dehumidified drain water may temporarily flow out of the end-piping side. In order to prevent this, a clean air system that is not prone to pressure and flow velocity fluctuations must be constructed. Please consult ORION for further details.

1-1 Refrigerated Air Dryers
Manufacturer Options and Accessories (Sold separately)
(These options let us meet the varied needs of our users.)

☐ Refrigerated Air Dryer Optional Equipment Part Number Nomenclature

Part numbers for optional equipment have 6 digits. Please refer to the following chart to confirm the proper part number when making orders.

Product number — Part Number of Optional Equipment

RAX3J + [1st Digit] [2nd Digit] [3rd Digit] [4th Digit] [5th Digit] [6th Digit]

1st Digit	2nd Digit	3rd Digit ※ 1、4、7	4th Digit ※ 5	5th Digit	6th Digit ※ 2、3、6
0 · Standard	0 · Standard	0 · Standard	0 · Standard	0 · Standard	0 · Standard
1 · Different voltage 380 V	1 · Remote switch included	1 · Rated for Outdoor Use (Install under an awning or other overhead protection.)		1 · Anchor bolt A	1 · English documentation
2 · Different voltage 400 V	2 · Includes external signal	2 · Does not include re- heater	2 · Anti-rust treated A	2 · Anchor bolt B	2 · Includes test manual
3 · Different voltage 440 V	3 · Custom lamp, switch color	3 · Custom cabinet color	3 · Export Packing	3 · Anchor bolt C	3 · Includes test results chart
4 · Includes breaker	4 · Includes external signal · Remote switch Included	4 · Rated for Outdoor Use (Install under an awning or other overhead protection.) · Does not include reheater	4 · Anti-rust treated A · Export Packing	4 · Anchor bolt D	4 · Photo
5 · Different voltage 380 V · Includes breaker	5 · Remote switch Included · Custom lamp, switch color	5 · Rated for Outdoor Use (Install under an awning or other overhead protection.) · Custom cabinet color	5 · Anti-rust treated B	5 · Anchor bolt E	5 · English documentation · Includes test results chart
6 · Different voltage 400 V · Includes breaker	6 · Includes external signal · Custom lamp, switch color	6 · Does not include reheater · Custom cabinet color		6 · Anchor bolt F	6 · Includes test manual · Includes test results chart
7 · Different voltage 440 V · Includes breaker	7 · Remote switch Included · Includes external signal · Custom lamp, switch color	7 · Rated for Outdoor Use (Install under an awning or other overhead protection.) · Does not include reheater · Custom cabinet color			7 · Includes test results chart · Photo
					8 · Includes test manual · Includes test results chart · Photo
					9 · English documentation · Includes test manual · Includes test results chart
A · Different voltage 380 V/50 Hz	A · control circuit 100 V	A · Rated for outdoor use (IPX4)	A · Anti-rust treated B · Export Packing	A · Auto drain trap removed	A · Includes mill sheet
B · Different voltage 380 V/60 Hz	B · Remote switch Included (Momentary)	B · Medium Pressure Spec. (1.57 MPa)	B · Anti-rust treatment	B · Auto drain trap changed (FD-10-A)	B · Includes mill sheet · English documentation
C · Different voltage 400 V/50 Hz	C · Momentary power interruption (3 s)	C · Rated for outdoor use (IPX4) · Does not include re- heater	C · Air Inlet/Outlet Flange FF	C · Auto drain trap changed (ADE450-FS)	C · Includes mill sheet · English documentation · Includes test manual · Includes test results chart
D · Different voltage 400 V/60 Hz	D · Incl. auto recovery after power outage.	D · Rated for outdoor use (Install under an awning or other overhead protection.) · Medium Pressure Spec. (1.57 MPa)	D · Air Inlet/Outlet Flange RF	D · Auto drain trap changed (ADE450-FS) · Incl.anchor bolt A	D · Includes mill sheet · Includes test manual · Includes test results chart
E · Different voltage 440 V/50 Hz	E · Remote switch Included (Momentary) · Incl. Ext. Signal(RUN, ALARM)	E · Rated for outdoor use (IPX4) · Medium Pressure Spec. (1.57 MPa)	E · Anti-rust treated A · Air Inlet/Outlet Flange FF	E · Auto drain trap changed (ADE450-FS) · Incl.anchor bolt B	
F · Different voltage 440 V/60 Hz	F · Remote switch Included(Momentary) · Custom lamp, switch color	F · Rated for outdoor use (Install under an awning or other overhead protection.) · Does not include re- heater · Medium Pressure Spec. (1.57 MPa)	F · Export Packaging(Plywood siding) · Air Inlet/Outlet Flange FF	F · Auto drain trap changed (ADE450-FS) · Incl.anchor bolt C	
G · Different voltage 380 V/50 Hz · Includes breaker	G · Remote switch Included(Momentary) · Incl. Ext. Signal (RUN, ALARM) · Custom lamp, switch color	G · Rated for outdoor use (IPX4) · Does not include re- heater · Medium Pressure Spec. (1.57 MPa)	G · Anti-rust treated A · Export Packaging(Plywood siding) · Air Inlet/Outlet Flange FF	G · Auto drain trap changed (ADE450-FS) · Incl.anchor bolt D	
H · Different voltage 380 V/60 Hz · Includes breaker	H · Incl. Ext. Signal (RUN, STOP, ALARM)		H · Anti-rust treated B · Air Inlet/Outlet Flange FF	H · Auto drain trap changed (ADE450-FS) · Incl.anchor bolt E	
J · Different voltage 400 V/50 Hz · Includes breaker	J · Incl. Remote Switch (Alternate Switch) · Incl. Ext. Signal (RUN, STOP, ALARM)	J · High Pressure Spec. (2.94 MPa)	J · Anti-rust treated B · Export Packaging(Plywood siding) · Air Inlet/Outlet Flange FF	J · Auto drain trap changed (ADE450-FS) · Incl.anchor bolt F	
K · Different voltage 400 V/60 Hz · Includes breaker	K · Incl. Ext. Signal (RUN, STOP, ALARM) · Custom lamp, switch color	K · High Pressure Spec. (4.8 MPa)	K · Anti-rust treated A · Air Inlet/Outlet Flange RF		
L · Different voltage 440 V/50 Hz · Includes breaker	L · Incl. Remote Switch(Alternate Switch) · Incl. Ext. Signal (RUN, STOP, ALARM) · Custom lamp, switch color	L · Rated for Outdoor Use (Install under an awning or other overhead protection.) · High Pressure Spec. (2.94 MPa)	L · Export Packaging(Plywood siding) · Air Inlet/Outlet Flange RF		
M · Different voltage 440 V/60 Hz · Includes breaker	M · Remote switch Included(Momentary) · Incl. Ext. Signal (RUN, STOP, ALARM)	M · Rated for outdoor use (IPX4) · High Pressure Spec. (2.94 MPa)	M · Anti-rust treated A · Export Packaging(Plywood siding) · Air Inlet/Outlet Flange RF		
N · Different voltage 420 V/50 Hz	N · Remote switch Included(Momentary) · Incl. Ext. Signal (RUN, STOP, ALARM) · Custom lamp, switch color	N · Rated for Outdoor Use (Install under an awning or other overhead protection.) · Does not include re- heater · High Pressure Spec. (2.94 MPa)	N · Anti-rust treated B · Air Inlet/Outlet Flange RF		
P · Different voltage 420 V/60 Hz	P · Momentary power interruption (0.2 s)	P · Rated for outdoor use (IPX4) · Does not include re- heater · High Pressure Spec. (2.94 MPa)	P · Anti-rust treated B · Export Packaging(Plywood siding) · Air Inlet/Outlet Flange RF		
Q · Different voltage 380 V/50 Hz · Includes breaker · Transformer Coil	Q · Momentary power interruption (0.5 s)	Q · Rated for Outdoor Use (Install under an awning or other overhead protection.) · High Pressure Spec. (4.8 MPa)			
R · Different voltage 380 V/60 Hz · Includes breaker · Transformer Coil	R · Momentary power interruption (1 s)	R · Rated for outdoor use (IPX4) · High Pressure Spec. (4.8 MPa)			
S · Different voltage 400 V/50 Hz · Includes breaker · Transformer Coil		S · Rated for Outdoor Use (Install under an awning or other overhead protection.) · Does not include re- heater · High Pressure Spec. (4.8 MPa)			
T · Different voltage 400 V/60 Hz · Includes breaker · Transformer Coil		T · Rated for outdoor use (IPX4) · Does not include re- heater · High Pressure Spec. (4.8 MPa)			
U · Different voltage 420 V/50 Hz · Includes breaker · Transformer Coil					
V · Different voltage 420 V/60 Hz · Includes breaker · Transformer Coil					
W · Different voltage 440 V/50 Hz · Includes breaker · Transformer Coil					
X · Different voltage 440 V/60 Hz · Includes breaker · Transformer Coil					

※1. Please consult your dealer regarding special painting/coating requirements.
※2. Installation photos are available by special request if needed.
※3. Please advise if photos of completed product are required.
※4. When specifying colors via Munsell numbers, a color sample is necessary.
※5. Anti-rust properties are not guaranteed in anti-rust treated items.
※6. ORION can manufacture and supply items other than the above optional items. Please contact us for details.
※7. J to T markings in the 3rd digit of the item number will be quoted separately. Please contact ORION Sales for information.
Note 1: All exports are treated as optional items.
Note 2: Inspection Guides and Inspection Result Reports are formatted according to ORION's specifications.

☐ We also have a wide selection of other specifications available. Please contact ORION Sales for details.

□ Manufacturer Option Details

Optional Item	Description
Different Voltage	· The designated voltage is met by adding a transformer(380 V · 420 V · 440 V) to the existing power supply.
Electric Leakage Breaker	· Leakage breaker sensitivity is 30 mA (for outside use is 100 mA)
Remote Switching	· Alternate (on/off) signal, includes switch
External Output Signal	· Includes "Operation" and "Warning" signals
Lamp/Switch Color Options	· Can change to: "Run" red, "Stop" Green, "Warning" orange
Outdoor Operation Specification	· Install under an awning or other overhead protection. · IPX4
Custom Colors	· Please specify Munsell No., or JPMA (Japan Paint Manufacturers Association) No. (Attach color sample.)
English Specifications	· Name plate, English Operation Manual
Photograph	· Photo of finished equipment
Anti-Rust Treatment A ※1	· Condenser: Cathodic electrodeposition coating · Exposed copper pipes: Corrosion resistant coating (paint) · Evaporator: Nickel plating processing
Anti-Rust Treatment B ※1	· Condenser Cathodic Electrodeposition Coating · Corrosion Resistant Coating of Exposed Copper Piping · Nickel Plating Processing of the Evaporator · Stainless Steel Piping for the Cooling Unit · Stainless Steel Drain Piping（RAX3～55J，RAX3J-SE～37J-SE）
Anchor Bolts A	· SS grade stainless steel, L-type
Anchor Bolts B	· SS grade stainless steel, Hole-in anchor
Anchor Bolts C	· SS grade stainless steel, chemical anchor
Anchor Bolts D	· SUS grade stainless steel, L-type
Anchor Bolts E	· SUS grade stainless steel, Hole-in anchor
Anchor Bolts F	· SUS grade stainless steel, chemical anchor
Test Manual	· Document produced by ORION
Test Results Chart	· Document produced by ORION
Export Packing	· Packaged in plywood (plywood sided)

※1 Note that specific surface processing will differ by model. Please consult your dealer for details.

□ Accessories (Sold separately)

■ Alarm Signal Output Unit Assembly

Part Name	Part Number	Applicable Models
Alarm Signal Output Unit Assembly	03105972010	RAX3J-A1，RAX6J-A1，RAX8J-A1 RAX3J-SE-A1，RAX4J-SE-A1 RAX6J-SE-A1，RAX3.7J-H-A1 RAX7.5J-H-A1
	03105972020	RAX3J-A2，RAX6J-A2，RAX8J-A2 RAX3J-SE-A2，RAX4J-SE-A2 RAX6J-SE-A2
	03105972030	RAX15J-H-A2，RAX8J-SE-A2
	03107707010	RAX8J-SE-A1
	03107707020	RAX11J-A1
	03107707030	RAX11J-A2
	03107721010	RAX22J，RAX55J，RAX55J-W
	03107721020	RAX15J，RAX37J，RAX11J-SE RAX15J-SE，RAX22J-SE RAX37J-SE

※ This unit monitors operating load conditions and if a high operating load is detected, it will output an abnormal-load-stop-signal.

※ Please consult your dealer regarding installation.

■ Exhaust Duct Assembly

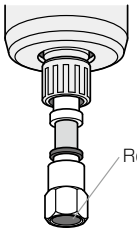
Top Exhaust

Install on an RAX-J unit to guide exhaust air out the top. Effective when restrictions to the installation layout, etc., would otherwise hinder installation.
※ Compatible models listed below.

Part Name	Part Number	Applicable Models
Exhaust Duct Assembly	03107722010	RAX15J，RAX22J RAX11J-SE，RAX15J-SE
	03107723010	RAX37J，RAX22J-SE
	03107724010	RAX55J，RAX37J-SE

※ Used to change the direction of cooling airflow upward.

■ Screw Adapter Assembly(For Auto Drain Trap FD)



Part Name	Part Number	Applicable Models
Screw Adapter Assembly	04105352010	FD2, FD6

■ Bypass Piping Assembly

Installed on the RAX-J, inlet and outlet piping installation can be made more compact.

※ Compatible models listed below.

Part Name	Part Number	Applicable Models
Bypass Piping Assembly	03105780010	RAX3J-A1/A2
	03105780020	RAX6J-A1/A2，RAX3J-SE-A1/A2 RAX3.7J-H-A1
	03105781010	RAX8J-A1/A2，RAX4J-SE-A1/A2
	03105781020	RAX6J-SE-A1/A2，RAX7.5J-H-A1
	03107698010	RAX11J-A1/A2
	03107698020	RAX8J-SE-A1/A2
	03108349010	RAX15J-H-A2
	03104558010	RAX15J，RAX22J，RAX11J-SE，RAX15J-SE
	03104558020	RAX22J-SE
	03104559010	RAX37J
	03104559020	RAX37J-SE
	03104560010	RAX55J，RAX55J-W

■ Pack-Test (Drain Water Quality Testing)

Part Name	Part Number
Pack-Test 5-Test Kit ※	0A004641000
Pack-Test Single Test (Chloride)	03092771010
Pack-Test Single Test (Nitric Acid)	03092771020
Pack-Test Single Test (pH)	03092771030
Pack-Test Single Test (Ammonium)	03092771040
Pack-Test Single Test (Sulfate)	03092771050

※ Pack-Test water quality analysis kits are an easy way to measure the concentration of corrosive components contained in drain water. (Due to the diversity of possible operating environments, these tests cannot provide precise measured concentration values, but should be used to estimate and manage corrosive components in drain water. If a corrosive component is detected, it could be an indication that such constituents have formed and could be progressing. In such cases, measures to reduce such concentrations in order to improve the lifespan of facilities should be taken. Installation of heat exchangers made with corrosion-resistant stainless steel piping (special-order item) is recommended.)

■ Right Side Drain Piping Installation Set

Part Name	Part Number	Applicable Models
Right-Side Drain Installation Piping Set	03109482020	RAX75J，RAX75J-W，RAX55J-SE
	03109482010	RAX90J，RAX90J-W，RAX120J，120J-W，RAX75J-SE
	03109483010	RAX150J，RAX150J-W，RAX190J，190J-W

□ Standard Equipment (including lamps, switches, contacts)

○ : indicates standard equipment. △ : indicates optional configuration or special order items

<table>
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(Air-Cooled)</th><th rowspan="2">Standard
(Water-Cooled)</th><th colspan="4">Lamp</th><th colspan="3">Switch</th><th colspan="4">Contacts</th><th rowspan="2">Different Voltage
Transformer
Support</th></tr>
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Operation</th><th>Operation
Signal</th><th>Warning
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option</td><td rowspan="6">△
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<tr><td></td><td></td><td>RAX4J-SE-A1･A2</td></tr>
<tr><td>RAX6J-A1･A2</td><td></td><td>RAX6J-SE-A1･A2</td></tr>
<tr><td>RAX8J-A1･A2</td><td></td><td></td></tr>
<tr><td></td><td></td><td>RAX8J-SE-A1</td></tr>
<tr><td></td><td></td><td>RAX8J-SE-A2</td></tr>
<tr><td>RAX11J-A1</td><td></td><td></td><td rowspan="2">○
(Yellow)</td><td rowspan="2">○
(Green)</td><td>△
option</td><td rowspan="2">○
(Red)</td><td rowspan="2">○
(Green)</td><td rowspan="2">○
(Red)</td><td>△
special order</td><td rowspan="2">○
(Alternate)</td><td>△
special
order</td><td>△
option</td><td>△
option</td><td rowspan="2">Built-in but with change in external dimensions</td></tr>
<tr><td>RAX11J-A2</td><td></td><td></td><td rowspan="2">△
special
order</td><td rowspan="2">○</td><td rowspan="2">△
special
order</td><td rowspan="2">○</td><td rowspan="2">△
special
order</td><td rowspan="2">○</td><td rowspan="2">△
special
order</td><td rowspan="2">○</td></tr>
<tr><td></td><td></td><td>RAX11J-SE</td><td rowspan="2">○
(Green)</td><td rowspan="2">○
(Green)</td><td rowspan="2">○
(Red)</td><td rowspan="2">○
(Green)</td><td rowspan="2">○
(Red)</td></tr>
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special
order</td><td rowspan="2">○</td><td rowspan="2">△
special
order</td><td rowspan="2">△
option</td><td rowspan="2">△
option</td><td rowspan="2">External
(extended base)</td></tr>
<tr><td>RAX22J</td><td></td><td>RAX22J-SE</td></tr>
<tr><td>RAX37J</td><td></td><td>RAX37J-SE</td><td rowspan="2">○
(White)
△
Note 1:</td><td rowspan="2">○
(Green)</td><td rowspan="2">△
special
order</td><td rowspan="2">○
(Red)</td><td rowspan="2">○
(Green)</td><td rowspan="2">○
(Red)</td><td rowspan="2">○</td><td rowspan="2">○
(Momentary)</td><td rowspan="2">○</td><td rowspan="2">△
special
order</td><td rowspan="2">○</td><td rowspan="6">Built-in, maintaining standard dimensions</td></tr>
<tr><td>RAX55J</td><td>RAX55J-W</td><td></td></tr>
<tr><td></td><td></td><td>RAX55J-SE</td><td rowspan="4">△</td><td rowspan="4">○
(Green)</td><td rowspan="4">○
(No.)</td><td rowspan="4">○
(No.)</td><td rowspan="4">○
(White)</td><td rowspan="4">○
(White)</td><td rowspan="4">△</td><td rowspan="4">○
(Alternate)</td><td rowspan="4">○</td><td rowspan="4">○</td><td rowspan="4">○</td></tr>
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<tr><td>RAX90J</td><td>RAX90J-W</td><td></td></tr>
<tr><td>RAX120J</td><td>RAX120J-W</td><td></td></tr>
<tr><td>RAX150J</td><td>RAX150J-W</td><td></td><td rowspan="4">△
Note 1:</td><td rowspan="4">○
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(No.)</td><td rowspan="4">○
(No.)</td><td rowspan="4">○
(White)</td><td rowspan="4">○
(White)</td><td rowspan="4">○</td></tr>
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△
Note 1:</td><td rowspan="3">○
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special
order</td><td rowspan="3">○
(Red)</td><td rowspan="3">○
(Green)</td><td rowspan="3">○
(Red)</td><td rowspan="3">○</td><td rowspan="3">○
(Momentary)</td><td rowspan="3">○</td><td rowspan="3">△
special
order</td><td rowspan="3">○</td></tr>
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<tr><td>RAX380F-E</td><td>RAX380F-WE</td><td></td></tr>
<tr><td></td><td>RAX450F-WE</td><td></td><td rowspan="4">△</td><td rowspan="4">○
(Green)</td><td rowspan="4">○
(No.)</td><td rowspan="4">○
(No.)</td><td rowspan="4">○
(White)</td><td rowspan="4">○
(White)</td><td rowspan="4">△</td><td rowspan="4">○
(Alternate)</td><td rowspan="4">○</td><td rowspan="4">○</td><td rowspan="4">○</td></tr>
<tr><td></td><td></td><td>RAXE740B-SE</td></tr>
<tr><td></td><td></td><td>RAXE1100B-SE</td></tr>
<tr><td></td><td></td><td>RAXD75A-SE</td></tr>
<tr><td></td><td></td><td>RAXD100A-SE</td><td rowspan="9">△
Note 1:</td><td rowspan="9">○
(Green)</td><td rowspan="9">○
(No.)</td><td rowspan="9">○
(No.)</td><td rowspan="9">○
(White)</td><td rowspan="9">○
(White)</td><td rowspan="8">△</td><td rowspan="9">○
(Alternate)</td><td rowspan="9">○</td><td rowspan="9">○</td><td rowspan="9">○</td></tr>
<tr><td>RAXE2300A</td><td>RAXE2300A-W</td><td></td></tr>
<tr><td>RAXE3800A</td><td>RAXE3800A-W</td><td></td></tr>
<tr><td>RAXE4900A</td><td>RAXE4900A-W</td><td></td></tr>
<tr><td>RAXE6000A</td><td>RAXE6000A-W</td><td></td></tr>
<tr><td>RAXE7500A</td><td>RAXE7500A-W</td><td></td></tr>
<tr><td>RAXE9800A</td><td>RAXE9800A-W</td><td></td></tr>
<tr><td></td><td>RAXE14800B1-W</td><td></td></tr>
<tr><td></td><td>RAXE19600A1-W</td><td></td><td>○</td></tr>
<tr><td></td><td>RAXE29600A1-W</td><td></td></tr>
</table>

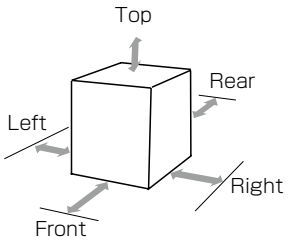
Note 1: RAX □□□ F-E/F-WE and RAXE □□□ A/A（B）-W Series models are not equipped with a power lamp, however the digital display will light up when the product is powered. Also note that power must be applied before starting operation.

□ List of Anchor Bolt

Model ＼ Type	L Type	Hole-in	Chemical
RAX3J ～ 55J,55J-W	M10 × L200　4 pcs.	M10 × L80　4 pcs.	M10 × L100　4 pcs.
RAX3J-SE ～ 55J-SE			
RAX3.7J-H ～ 15J-H			
RAXE740B-SE,1100B-SE			
RAX75J（J-W）～ 450F-WE	M16 × L200　4 pcs.	M16 × L120　4 pcs.	M16 × L160　4 pcs.
RAX75J-SE			
RAXE2300A（A-W）			
RAXE3800A（A-W）～ 14800B1-W			
RAXD75A-SE,100A-SE			
RAXE19600A1-W	M20 × L250　4 pcs.	M20 × L150　4 pcs.	M20 × L200　4 pcs.
RAXE29600A1-W			

Installation Space Requirements

Secure enough space around equipment to allow for adequate ventilation and space for easy inspection and maintenance.

Model		Front	Right	Left	Rear	Top	Comments
RAX	3J-A1/A2	60 cm	60 cm	60 cm	60 cm		
	6J-A1/A2						
	8J-A1/A2						
	11J-A1/A2						
	15J						
	22J						
	37J						
	55J						
	55J-W						
RAX	75J	100 cm	* 60 cm	* 60 cm		100 cm	* When space is lacking, the rear and either of the right or left sides may be placed against a wall. (Space is needed on the exhaust port side and the side where the drain trap is installed.)
	90J						
	120J						
	150J		60 cm	60 cm			
	190J						
	240J	60 cm	60 cm	60 cm	60 cm	200 cm	When space is lacking, the right side can be placed against a wall and exhaust vented out the top.
	300F-E						
	380F-E						
RAX	75J-W	60 cm	* 60 cm	* 60 cm			* When space is lacking, the rear and either of the right or left sides may be placed against a wall. (Space is needed on the side where the drain trap is installed.)
	90J-W						
	120J-W						
	150J-W		60 cm	60 cm			
	190J-W						
	240F-W	60 cm	60 cm	60 cm	60 cm		When space is lacking, the right side can be placed against a wall.
	300F-WE						
	380F-WE						
	450F-WE						
RAX	3J-SE-A1/A2	60 cm	60 cm	60 cm	60 cm		
	4J-SE-A1/A2						
	6J-SE-A1/A2						
	8J-SE-A1/A2						
	11J-SE						
	15J-SE						
	22J-SE						
	37J-SE						
	55J-SE	100 cm	* 60 cm	* 60 cm		100 cm	* When space is lacking, the rear and either of the right or left sides may be placed against a wall. (Space is needed on the exhaust port side and the side where the drain trap is installed.)
	75J-SE						
RAX	3.7J-H-A1	60 cm	60 cm	60 cm	60 cm		
	7.5J-H-A1						
	15J-H-A2						
RAXE	740B-SE	100 cm	100 cm	50 cm	50 cm	200 cm	When space is lacking, the rear side can be placed against a wall and exhaust vented out the top.
	1100B-SE						
RAXD	75A-SE	100 cm	100 cm	100 cm	100 cm		When space is lacking, the rear and either of the right or left sides may be placed against a wall. (Space is needed on the exhaust port side and the side where the drain trap is installed.)
	100A-SE						
RAXE	2300A	100 cm	100 cm	100 cm	100 cm		
	3800A						
	4900A	60 cm	60 cm	60 cm	60 cm	200 cm	When space is lacking, the right side can be placed against a wall and exhaust vented out the top.
	6000A						
	7500A						
	9800A						
	2300A-W	100 cm	100 cm	100 cm	100 cm		When space is lacking, the rear and either of the right or left sides may be placed against a wall. (Space is needed on the side where the drain trap is installed.)
	3800A-W						
	4900A-W	60 cm	60 cm	60 cm	60 cm		When space is lacking, the right side can be placed against a wall.
	6000A-W						
	7500A-W						
	9800A-W						
	14800B1-W						
	19600A1-W						
	29600A1-W						

RAX-H/DFH/LFH/MFH-D/KFH

Max Press. 1.57MPa Medium Pressure Spec

HFC R-134a R-410A HFC Refrigerant

Air-Cooled RAX3.7J-H-A1 ～ 15J-H-A2
Working Air pressure 1.57 MPa
Air Processing Capacity 0.36/0.42 ～ 1.3/1.5 m^3/min
Can process high temperature compressed air 5 ～ 80 ℃
Suitable air compressors 3.7 ～ 15 kW

RAX3.7J-H-A1

RAX15J-H-A2

Features

Stainless steel shell heat exchanger
Built with a stainless steel shell heat exchanger, the RAX provides clean air and makes it the perfect match for the age of oil-free compressed air. (See page 15 for details.)
※ Optional stainless steel piping is also available for higher corrosion resistance.

☐ Specifications

Item		Model	Air-Cooled		
		RAX	3.7J-H-A1	7.5J-H-A1	15J-H-A2
Air Processing Capacity (50/60 Hz)		m^3/min	0.36/0.42	0.82/0.97	1.3/1.5
Inlet Air Temp. Range / Outlet Air Dew Point		℃	5 ～ 80 / Pressure dew point: 15		
Working Fluid / Operable Ambient Temperature Range		℃	Compressed air / 2 ～ 45 ※ 1		
Compressed Air Pressure Range (Gauge Pressure)		MPa	0.2 ～ 1.57		
Outside Dimensions	Height	mm	510	600	
	Depth	mm	540	660	780
	Width	mm	180	240	
Mass		kg	22	32	37
Auto Drain Trap	Model		NH-503SR-15A		
	Drain Release Port Size		G1/4 (Female)		
Air Inlet/Outlet Connection			R1/2	R3/4	R1
Electrical Specifications	Voltage (50/60 Hz)	V	Single phase 100/100,110		Single phase 200,220/200,220
	Power Consumption (50/60 Hz)	kW	0.26/0.27,0.30	0.34/0.37,0.40	0.44,0.52/0.47,0.50
	Electric Current (50/60 Hz)	A	3.2/2.8,2.8	4.3/3.8,3.8	2.7,3.2/2.4,2.4
	Power Capacity	kVA	0.4	0.7	
	Breaker Capacity	A	10		5
Legal Refrigeration Tonnage (50 / 60Hz)			0.07 / 0.08	0.09 / 0.11	0.15 / 0.19
Refrigerant			R-134a		R-410A
Refrigerant Filling Volume		kg	0.14	0.28	0.33
Chiller Compressor Output		kW	0.25	0.4	0.6
Operating Noise Level (50/60 Hz)		dB (A)	60/60	62/62	60/61

※1 In case power source fluctuation is within ±5 %. 2～40 ℃ for ±5 %.
※ Air processing conditions: compressed air inlet pressure (gauge pressure): 1.57 MPa, inlet air temperature: 55 ℃, outlet air dew point (under pressure) 15 ℃, ambient temperature: 32 ℃. ※ Please contact us for guaranteed performance specifications. ※ Processing air capacity is calculated based on compressor intake conditions (Atmospheric pressure, 32 ℃, 75 %.) ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above. ※ Operating noise levels are from a position of 1 m in front of the unit and at a height of 1 m.

☐ Model Selection and Determining Maximum Air Processing Capacity (Refer to page 35)

A Temperature Correction Coefficients: Processing capacity varies depending on specific temperature conditions. Coefficients are shown in this table.
※ Please contact ORION for inlet temperatures beyond 65 ℃ or for values outside those listed below.

■ High Inlet Air Temperature Processing Models RAX3.7J-H ～ 7.5J-H-A1

Ambient Temperature ℃ \ Inlet Air Temperature ℃	45	55	60	65
Dew Point Temperature ℃	15	15	15	15
25	1.20	1.20	1.18	1.15
30	1.14	1.06	1.02	0.97
32	1.10	1.00	0.95	0.90
35	1.02	0.89	0.85	0.80
40	0.82	0.70	0.68	0.65
45	0.51	0.47	0.44	0.42

■ High Inlet Air Temperature Models RAX15J-H-A2

Ambient Temperature ℃ \ Inlet Air Temperature ℃	45	55	60	65
Dew Point Temperature ℃	15	15	15	15
25	1.30	1.08	0.91	0.78
30	1.22	1.02	0.86	0.73
32	1.20	1.00	0.84	0.72
35	1.08	0.90	0.76	0.65
40	0.86	0.72	0.60	0.52
45	0.56	0.47	0.39	0.34

B Air Pressure Correction Coefficients:The air processing capacity will change depending on the air pressure. This is the coefficient listed here.

Air Pressure MPa	1.08	1.18	1.27	1.37	1.47	1.57
Pressure Coefficient	0.79	0.83	0.87	0.91	0.96	1.00

C Standard Air Processing Capacity m^3/min (ANR)
ANR values below are air processing specifications under conditions of 20 ℃ at atmospheric pressure; relative humidity of 65 %.

Model	RAX	3.7J-H-A1	7.5J-H-A1	15J-H-A2
Air Processing Capacity	50Hz	0.34	0.77	1.22
	60Hz	0.39	0.91	1.41

DFH/LFH/MFH/KFH600 ～ 2900
Working Air pressure: 1.57 MPa
Air processing capacity: 5.7 ～ 29.0 m^3/min
Inlet air temperature: 5 ～ 60 ℃

Features

1. A lineup that includes 4 series of filters and a total of 20 different models which provide water droplet and solid particulate removal, solid particulate removal, oil mist removal, or odor elimination.
2. Tie-Rod Stacking Available (Applicable model: 600. Sold separately.)

□ Specifications

Item			Model	Water Droplet / Particulate Removal: DFH, Particulate Removal: LFH, Oil Mist Removal: MFH-D, Odor Removal: KFH				
				600	900	1400	1900	2900
Air Processing Capacity ※1 ※2			m^3/min	5.7	9.6	14.6	19.0	29.0
Processing Capacity	Processed Fluid			Compressed air				
	Compressed Air Pressure Range (Gauge Pressure)		MPa	0.05 ～ 1.57				
	Inlet Air Temperature Range		℃	5 ～ 60				
	Ambient Temperature Range		℃	2 ～ 60				
Performance Specifications	Substance Filtered · Collection Efficiency · Output oil Concentration			DFH: ≧ 5 μm particulate, water droplet · 99 % (water droplet separation efficiency) · - LFH: ≧ 1 μm particulate · 99.999 % · - MFH: ≧ 0.01 μm fine particulate · 99.999 % · 0.01 wt ppm KFH: oil vapor · - · 0.003 wt ppm (Remaining oil content 0.004 mg/m^3)				
	Initial Pressure Loss		MPa	DFH: 0.005 MPa, LFH: 0.005 MPa, MFH: 0.01 MPa, KFH: 0.009 MPa				
	When to Replace Element		MPa	1 year or when differential pressure reaches 0.07 MPa (0.02 for DFH model), whichever comes first (KFH ※ 6)				
Main Dimensions	Piping Connection Size			Rc1	Rc11/2	Rc11/2	Rc2	Rc2
	Differential Pressure Gauge Connection Size			Rc1/4				
	Drain Port Size			Rc1/4			G1/4	
	Mass		kg	2.1	5.0	6.0	6.5	9.0
Element ※3		EDS,ELS,EMS,EKS		400(-H)※7	700(-H)※7	1000(-H)※7	1300(-H)※7	2000(-H)※7
Auto Drain Trap ※4				DFH, LFH, MFH: Built-in, KFH: no auto drain trap			DFH, LFH, MFH: external (included). KFH: no auto drain trap	
Differential Pressure Gauge ※5				MFH: included, DFH, LFH, KFH: optional equipment				

※1 Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32 ℃, 75 % humidity.) ※2 Processing air conditions: pressure: 1.57 MPa, temperature: 32 ℃, oil concentration: 3 wt ppm (for L and M models), 0.01 wt ppm (for K models). ※3 Used in our Super Filter line of filters. ※4 Internal type is model NH-503MR, external type is model NH-503SR-15A. ※5 Model DGX-50B. ※6 Always install an air dryer, Super Line Filter, and Super Mist Filter on the air line before the KFH series filter. There should be almost no increase in pressure loss when using the EKS element as long as proper pre-processing is carried out. If there is an increase in pressure, then immediate inspection of the pre-processing filters should be carried out. ※7.EMS □□□ -H ※ All models are configured for use with our tie-rod filter stacking system. Bracketing hardware is available by special order. ※ Replacement period is not guaranteed. In addition, some parts may require replacement sooner depending on the specific operating environment or operating conditions of the unit.

□ Making the right model choice (Choose a model that allows plenty of leeway in capacity. Refer to page 60.)

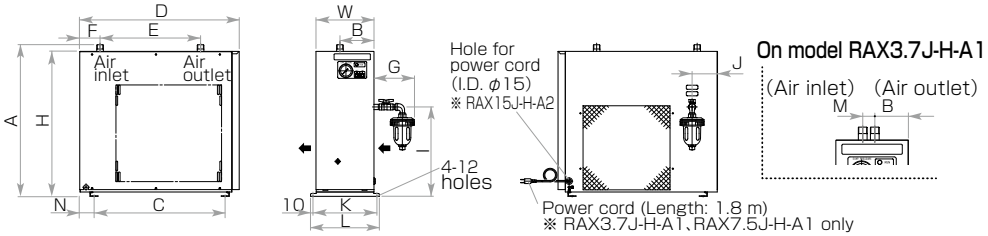
$$\text{Air processing capacity} \geqq \frac{\text{Desired capacity}}{\text{Pressure correction coefficient}}$$

■ Pressure Correction Coefficient (inlet pressure)

Pressure (MPa)	1.0	1.1	1.2	1.3	1.4	1.5	1.57
Pressure Correction Coefficient	0.80	0.84	0.87	0.91	0.94	0.97	1.0

□ External Dimensions

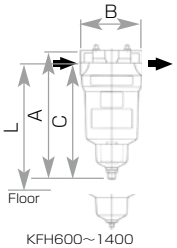
●RAX3.7J-H-A1/7.5J-H-A1/15J-H-A2



External Dimensions (Units:mm)

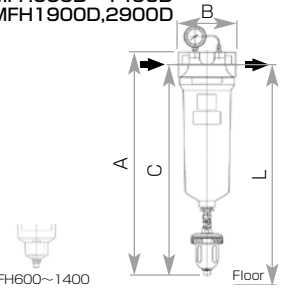
Model	H	D	W	A	B	C	E	F	G	I	J	K	L	M	N
RAX3.7J-H-A1	510	540	180	(542)	83	420	300	120	(170)	274	96	205	225	30	60
RAX7.5J-H-A1	600	660	240	(627)	140	542	416	84		370	105	265	285	—	
RAX15J-H-A2		780		(679)	100	632	330	220		340	156				69.5

● LFH,DFH,KFH
● 600～1400



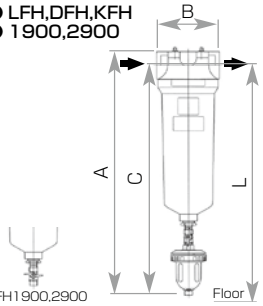
KFH600～1400

● MFH600D～1400D
● MFH1900D,2900D



MFH600～1400

● LFH,DFH,KFH
● 1900,2900



KFH1900,2900

External Dimensions (Units:mm)

Model		A	B	C	L	A(Including plug)
LFH MFH-D DFH	600	279.5	130	252.5	400 min.	290.5
	900	360.5	178	320.5	710 min.	371.5
	1400	468.5		428.5	920 min.	479.5
	1900	718.5		678.5	1080 min.	729.5
	2900	875.5		835.5	1400 min.	886.5
KFH	600	270.5	130	243.5	400 min.	281.5
	900	351.5	178	311.5	710 min.	362.5
	1400	459.5		419.5	920 min.	470.5
	1900	580.5		540.5	1080 min.	591.5
	2900	737.5		697.5	1400 min.	748.5

QSQ "Super Pack" and "Eco Pack"

□ CFC-free, Low Purge, Low Dew Point Air Supply

1. CFC-free Air Dryer

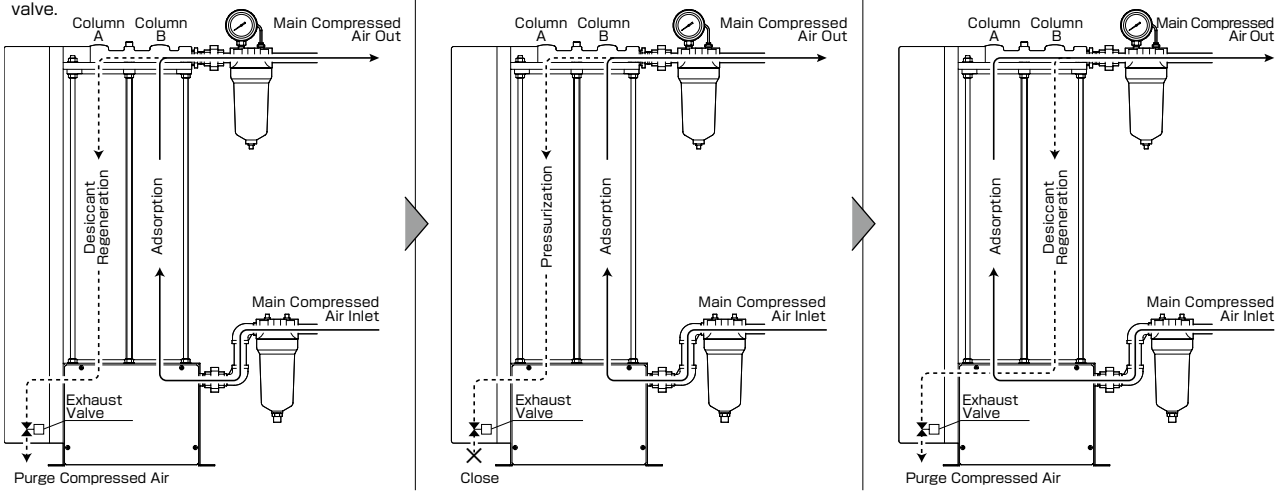
The QSQ Series of Heatless Air Dryers use desiccant (drying agent) to adsorb and remove water vapor contained in compressed air. They differ from refrigerated air dryers because they don't rely on CFCs for operation, and can provide an air supply with a low dew point. Desiccant regeneration occurs by passing a portion of dehumidified compressed air through the desiccant (purge compressed air). Medium to heavy duty models have an energy saving dew point sensor built in. When the set dew point is reached, the purge cycle is automatically lengthened, thus reducing the amount of air loss.

■ Function Diagram ——— Main Compressed Air - - - - - - - - Purge Compressed Air

Column A :
Regeneration (Desiccant drying)
Column B :
Adsorption (Compressed air dehumidification)
Compressed air from the air inlet flows to column B and is dehumidified by adsorption. A portion of adsorption-dehumidified air is passed through Column A, and is then released through the exhaust valve.

Column A : Pressurization
Column B : Adsorption
When the regeneration of Column A is complete, the exhaust valve is closed, and the inside of Column A is pressurized.

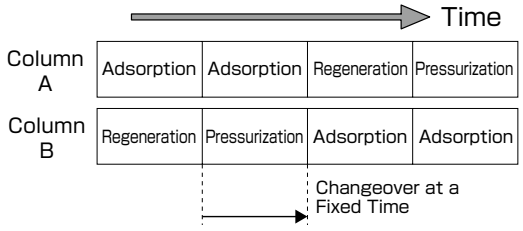
Column A : Adsorption
Column B : Regeneration
After the pressurization of Column A is complete, the respective duties of adsorption Columns A and B are reversed. By continuously repeating this series of actions, the adsorption-dehumidification of the compressed air is achieved.



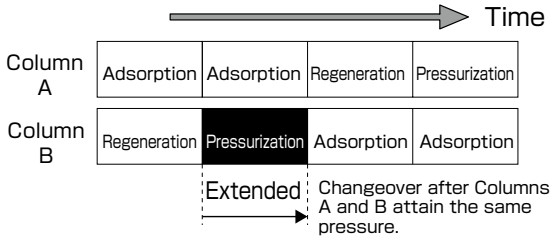
2. Equalization Switchover Control (Heavy Duty Series)

The adsorption column changeover will take place after detecting that the pressure of the pressurized side has become the same as the pressure of the adsorption side, thereby controlling the pressure fluctuation at the time of the changeover. Also, by adopting this functionality, it is possible to select a model that takes into consideration the future increase in air capacity needs. (Please consult your ORION dealer for details.)

■ Previous Control System

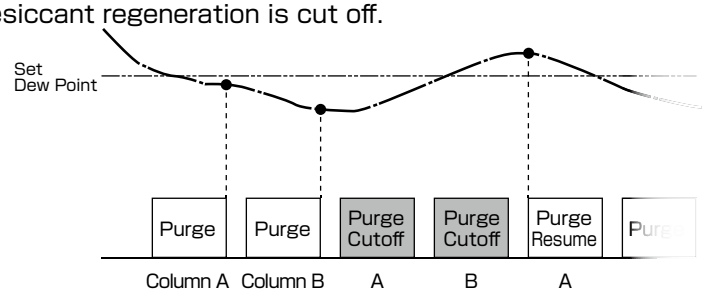


■ New Control System



3. Energy Saving Operation / Purge Cutoff Functionality (Medium / Heavy Duty Series)

If the outlet dew point falls below the Set Dew Point, then the compressed air purge used for desiccant regeneration is cut off.



Note: The energy saving dew point setting is not a setting used to control the dew point of the compressed air.
This function sets the dew point temperature at which the changeover to energy saving operation will occur.
When setting the energy saving dew point, set the dew point temperature lower than the required dew point temperature.

Functionality Common Within the QSQ Series

1. Universal Power Supply (100 to 230 VAC common terminals)
2. Desiccant and Filter Element Replacement-Period Sign
3. Remote Operation and Operation/Alarm Signal Outputs Possible

CFC-FREE, Low Purge Heatless Air Dryer (Adsorption technology compressed air dehumidifying equipment)

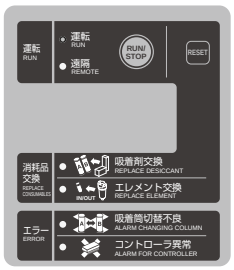
QSQ Compact Duty Series "Super Pack"

QSQ010D1 ～ 035D1 (Compact Series / Dew Point − 20℃)
Inlet air flow capacity 0.1 ～ 0.35m^3/min
Outlet air flow capacity 0.086 ～ 0.3m^3/min
Regeneration air purge 0.014 ～ 0.05m^3/min

Features

1. All models come with lamp indicators.
2. Compact・Light weight・Easy maintenance

Control Panel Detail



※ Compact Model: Please inquire if a column switch-over alarm is required.

Heatless Air Dryer with Energy Saving Dew Point Management(Adsorption technology compressed air dehumidifying equipment)

QSQ Medium Duty / Heavy Duty Series "Super Pack" (The QSQ1000D1-E～2500D1-E is a built-to-order item)

QSQ080D1-E～270D1-E (Medium Duty Series / Dew Point − 20℃)
Inlet air flow capacity 0.68 ～ 2.7 m^3/min
Outlet air flow capacity 0.56 ～ 2.3 m^3/min
Regeneration air purge 0.12 ～ 0.4 m^3/min

QSQ420D1-E～2500D1-E (Heavy Duty Series / Dew Point − 40℃)
Inlet air flow capacity 4.2 ～ 25.0 m^3/min
Outlet air flow capacity 3.6 ～ 21.5 m^3/min
Regeneration air purge 0.6 ～ 3.5 m^3/min

Features

1. Digital display of pressure, dew point
   (in 5 ℃ increments), alarm signal.
2. The energy saving dew point sensor offers reduced purge volume, and energy saving dew point setting possible from − 40 to 0 ° C in 10 ° C increments.
   ※ Functionality equivalent to the Eco Pack is possible by changing to our high precision dew point sensor. (Please contact us for details.)

Control Panel Detail

Simultaneous display of pressures for columns A and B is possible.

3. The pressure sensor offers equivalent pressure changeover control (in the Heavy Duty Series) and pressure fluctuation control during column changeover.
4. Multiple unit control for large capacity is optional. (Heavy Duty Series / Special specifications)

Heatless Air Dryer with Energy Saving Dew Point Management(Adsorption technology compressed air dehumidifying equipment)

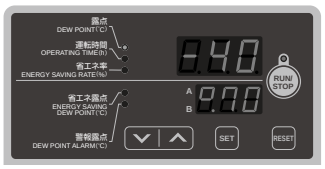
QSQ Heavy Duty Series "Eco Pack" (The QSQ1000D1-EDC～2500D1-EDC is a built-to-order item)

QSQ420D1-EDC ～ 2500D1-EDC (Heavy Duty Series / Dew Point − 40℃)
Inlet air flow capacity 4.2 ～ 25.0m^3/min
Outlet air flow capacity 3.6 ～ 21.5m^3/min
Regeneration air purge 0.6 ～ 3.5m^3/min

Features

1. Digital display of pressure, dew point
   (at a more precise 1 ℃ display increment) and alarm signal.
2. The energy saving dew point sensor provides a reduced purge volume, and the Eco Pack offers energy saving dew point setting in 1℃ increments. (-60 to 0 ℃.)
3. The pressure sensor offers equivalent pressure changeover control and pressure fluctuation control during column changeover.
4. Also support for high flowrates and central-use applications. (Special specifications)

Control Panel Detail



Item		Specification 1		Specification 2	
dew point	℃	−40	−60	−40	−60
Inlet Air Capacity	㎥/min	40.00	28.00	50.00	35.00
Outlet Air Capacity	㎥/min	34.40	20.00	43.00	25.00
Purge Air Flow	㎥/min	5.60	8.00	7.00	10.00

※ Please contact ORION Sales for details.

QSQ "Super Pack" and "Eco Pack"

IoT※

※See pages 93~94.

□ Specifications

● 「Super Pack」

Item		Model QSQ	Compact Duty Series						Medium Duty Series							
			010D1		020D1		035D1		080D1-E		120D1-E		180D1-E		270D1-E	
Capacity	Pressure Dew Point	℃	−20	−40	−20	−40	−20	−40	−20	−40	−20	−40	−20	−40	−20	−40
	Inlet Air Capacity	m³/min	0.1	0.085	0.2	0.17	0.35	0.297	0.8	0.68	1.2	1.02	1.8	1.53	2.7	2.3
	Outlet Air Capacity	m³/min	0.086	0.071	0.172	0.142	0.3	0.247	0.68	0.56	1.03	0.85	1.54	1.27	2.3	1.9
	Purge Air Flow	m³/min	0.014		0.028		0.05		0.12		0.17		0.26		0.4	
Range	Allowable Medium		Compressed air													
	Max. Air Pressure (G)	MPa	0.39 ～ 1.0													
	Ambient Temp.	℃	2 ～ 40													
	Inlet Air Condition	℃ /%	5 ～ 50 / Less than saturated humidity（No drain water.）													
Dimensions	Height	mm	470		560		810		680		930		1130		1480	
	Depth	mm	260						430							
	Width	mm	113						163							
Mass		kg	7.5		8.5		11		26.5		34		43		53	
Air Pipe Connection	Air Inlet/Outlet		Rc3/8						Rc3/4						Rc1	
	Purge Air Outlet		—						Rc1/2							
Power Source (50/60 Hz)		V	Single phase 100 ～ 230													
Included Filter ※1	Inlet	MSF	75D		75D		75D		150D		150D		200D		250D	
	Outlet	LSF	75B		75B		75B		150B		150B		200B		250B	

Item		Model QSQ	Heavy Duty Series											
			420D1-E		700D1-E		1000D1-E ※1		1400D1-E ※1		2000D1-E ※1		2500D1-E ※1	
Capacity	Pressure Dew Point	℃	−40	−60 ※2	−40	−60 ※2	−40	−60 ※2	−40	−60 ※2	−40	−60 ※2	−40	−60 ※2
	Inlet Air Capacity	m³/min	4.20	2.94	7.00	4.90	10.00	7.00	14.00	9.80	20.00	14.00	25.00	17.50
	Outlet Air Capacity	m³/min	3.60	2.10	6.00	3.50	8.60	5.00	12.00	7.00	17.20	10.00	21.50	12.50
	Purge Air Flow	m³/min	0.60	0.84	1.00	1.40	1.40	2.00	2.00	2.80	2.80	4.00	3.50	5.00
Range	Allowable Medium		Compressed air											
	Max. Air Pressure (G)	MPa	0.39 ～ 1.0											
	Ambient Temp.	℃	2 ～ 40											
	Inlet Air Condition	℃ /%	5 ～ 50 / Less than saturated humidity（No drain water.）											
Dimensions	Height	mm	1475											
	Depth	mm	589		763		937		1111		1296		1470	
	Width	mm	335											
Mass		kg	110		156		202		246		307		340	
Air Pipe Connection	Air Inlet/Outlet		Rc1 1/2						Rc2				Rc2 1/2	
	Purge Air Outlet		Rc1											
Power Source (50/60 Hz)		V	Single phase 100 ～ 230											
Included Filter ※1	Inlet	MSF	700D		1000D		1000D		2000D		2000D		2700D	
	Outlet	LSF	700		1000		1000		2000		2000		2700C1	

● 「Eco Pack」

Item		Model QSQ	Heavy Duty Series											
			420D1-EDC		700D1-EDC		1000D1-EDC ※1		1400D1-EDC ※1		2000D1-EDC ※1		2500D1-EDC ※1	
Capacity	Pressure Dew Point	℃	−40	−60 ※2	−40	−60 ※2	−40	−60 ※2	−40	−60 ※2	−40	−60 ※2	−40	−60 ※2
	Inlet Air Capacity	m³/min	4.20	2.94	7.00	4.90	10.00	7.00	14.00	9.80	20.00	14.00	25.00	17.50
	Outlet Air Capacity	m³/min	3.60	2.10	6.00	3.50	8.60	5.00	12.00	7.00	17.20	10.00	21.50	12.50
	Purge Air Flow	m³/min	0.60	0.84	1.00	1.40	1.40	2.00	2.00	2.80	2.80	4.00	3.50	5.00
Range	Allowable Medium		Compressed air											
	Max. Air Pressure (G)	MPa	0.39 ～ 1.0											
	Ambient Temp.	℃	2 ～ 40											
	Inlet Air Condition	℃ /%	5 ～ 50 / Less than saturated humidity（No drain water.）											
Dew Point Display Range		℃	−80 ～+20											
Dew Point Control Range		℃	−60 ～ 0											
Dew Point Accuracy		℃	−60 ～+20±3											
Dimensions	Height	mm	1475											
	Depth	mm	589		763		937		1111		1296		1470	
	Width	mm	335											
Mass		kg	110		156		202		246		307		340	
Air Pipe Connection	Air Inlet/Outlet		Rc1 1/2						Rc2				Rc2 1/2	
	Purge Air Outlet		Rc1											
Power Source (50/60 Hz)		V	Single phase 100 ～ 230											
Included Filter ※1	Inlet	MSF	700D		1000D		1000D		2000D		2000D		2700D	
	Outlet	LSF	700		1000		1000		2000		2000		2700C1	

Remarks for all models（QSQ010～2500）

※ This is a special product and is different from the filters listed on pages 56 and 57. ※ Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32 ℃, 75 %.) ※ Processing conditions: Inlet air temperature and humidity 35 ℃ less than saturated humidity (no water droplets), Inlet air pressure (gauge pressure) 0.7 MPa. Ambient temperature: 32 ℃. ※ For 24h continuous operation, a refrigerated dryer should be used just before this equipment or at an earlier stage. ※ For 24h continuous operation, a backup dryer should be made available. ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above.

Remarks for specific model（QSQ420～2500）

※ Operation in atmospheres that include corrosive gases or ozone can lead to product breakdown. ※ Operation or storage in the following atmospheres can lead to deterioration of the product sensors. (Organic gases, acetic acid, hydrochloric acid, ammonia, ethyl acetate, xylene, butanol, ethylene dichloride) ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above.
※1 Built-to-Order Item. ※2 This is a special-order item as a special orifice is required for the -60 ˚C dew point.

When the dryer is connected directly to the air compressor

※ Before installation, be sure to confirm the piping system design standards outlined in the product specifications. ※ If the inlet air pressure is more than 5 ℃ higher than the ambient temperature, be sure to install an after cooler (sold separately) or a refrigerated air dryer. ※ Always use an air tank and install it before the dryer. ※ Refer to pages 11 ～ 12 regarding system configuration. Please consult your ORION dealer for further details.

Also support for high flowrates and central-use applications. (Special specifications)

Remember ORION for new factory construction projects targeting electronic devices or those related to secondary cell production, etc.

40・50 m³/min equiv.

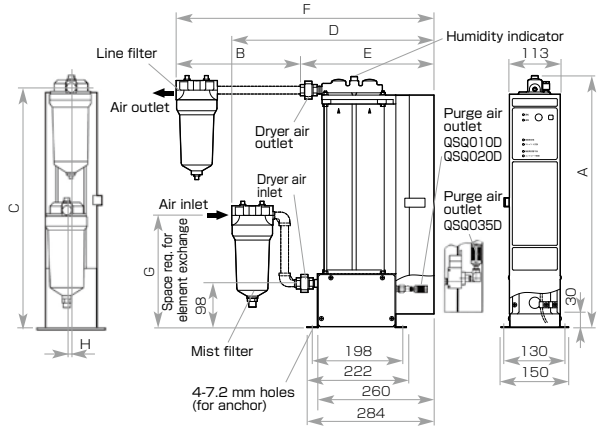
Item		Specification 1		Specification 2	
dew point	℃	−40	−60	−40	−60
Inlet Air Capacity	m³/min	40.00	28.00	50.00	35.00
Outlet Air Capacity	m³/min	34.40	20.00	43.00	25.00
Purge Air Flow	m³/min	5.60	8.00	7.00	10.00

※ Please contact ORION Sales for details.

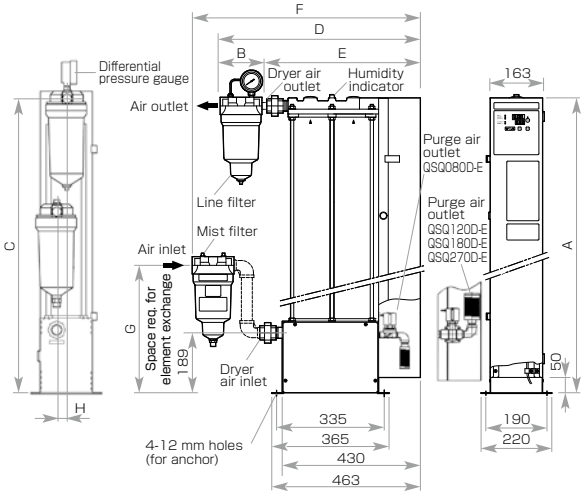
□ External Dimensions

When installing dryer, ensure there is enough space to allow for filter removal and replacement.

● QSQ010D1/020D1/035D1
(Super Pack Compact duty model)



● QSQ080D1-E/120D1-E/180D1-E-/270D1-E
(Super Pack Medium duty model)



※ Piping indicated by dotted lines ┈┈┈ is not included and must be provided by end user.
※ Ensure there is a maintenance space of 600 mm to the front and 600 mm to both sides of the dryer.
※ Install on a level surface.

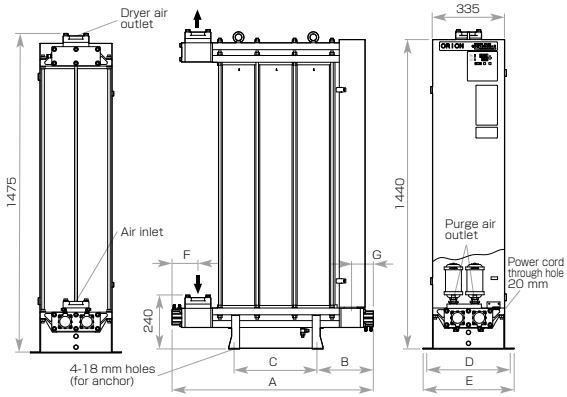
External Dimensions (Units:mm)

Model	Compact Duty Series			Medium Duty Series			
QSQ	010D1	020D1	035D1	080D1-E	120D1-E	180D1-E	270D1-E
A	470	560	810	680	930	1130	1480
B	(277)		(102)	(108)		(148)	(147)
C	440	530	780	645	895	1095	1445
D	(450)			(590)		(630)	(625)
E	(298)			(482)		(482)	(478)
F	(575)		(400)	(645)	(650)	(690)	(710)
G	250 min.			300 min.		370 min.	400 min.
H	9			30			

□ External Dimensions

● QSQ420D1-E/700D1-E/1000D1-E
QSQ1400D1-E/2000D1-E/2500D1-E
(Super Pack Heavy Duty model)

● QSQ420D1-EDC/700D1-EDC/1000D1-EDC
QSQ1400D1-EDC/2000D1-EDC/2500D1-EDC
(Eco Pack)



※ Diagram shows Super Pack model
※ Please install the included filter.
※ Dryer bases for QSQ420D1-E、700D1-E and 1000D1-E～2500D1-E models are different.
※ Ensure there is a maintenance space of 600 mm to the front and 600 mm to both sides of the dryer.
※ Install on a level surface.

External Dimensions (Units:mm)

Model	Heavy Duty Series					
QSQ	420D1-E/EDC	700D1-E/EDC	1000D1-E/EDC	1400D1-E/EDC	2000D1-E/EDC	2500D1-E/EDC
A	589	763	937	1111	1296	1470
B	130	127	260		265	
C	300	480	388	562	736	910
D	366		385			
E	406		424			
F	121				126	
G	106				111	

※ Please refer to Page 47 and 48 for installation dimension.

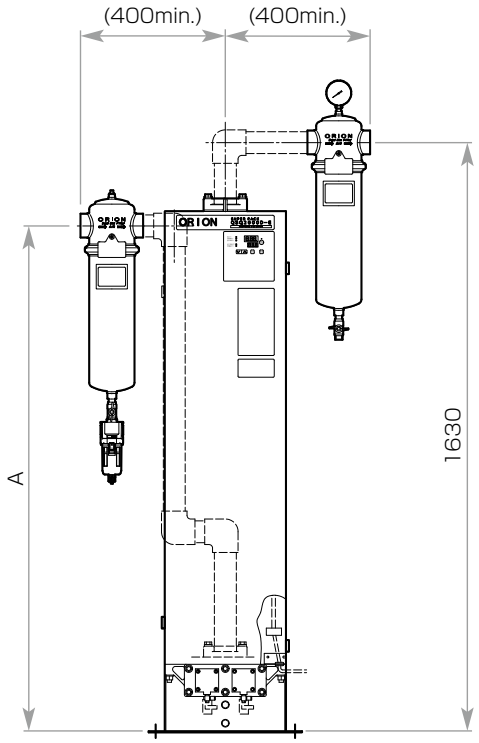
1-2 Heatless Air Dryer (Adsorption technology compressed air dehumidifying equipment)
QSQ "Super Pack" and "Eco Pack"

External Dimensions

When installing dryer, ensure there is enough space to allow for filter removal and replacement.

● QSQ420D1-E/700D1-E/1000D1-E
QSQ1400D1-E/2000D1-E
(Super Pack Heavy Duty model)
● QSQ420D1-EDC/700D1-EDC/1000D1-EDC
QSQ1400D1-EDC/2000D1-EDC
(Eco Pack)

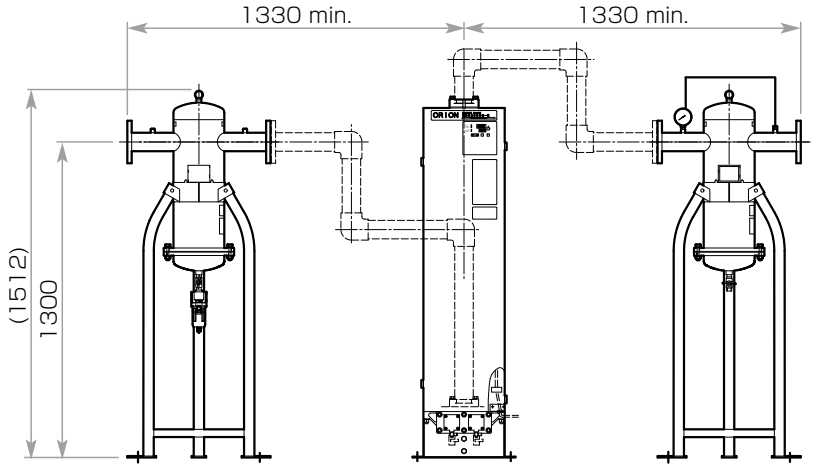
※ Piping indicated by dotted lines is not included and must be provided by end user.
※ Diagram shows Eco-Pack model
※ Please install the included filter.
※ Install on a level surface.
※ When running dryers in parallel, arrange piping so that the back pressure from piping in each feed is the same.
※ Provide an installation and maintenance space as shown in the shaded areas in the diagrams on page 48.



External Dimensions (Units:mm)

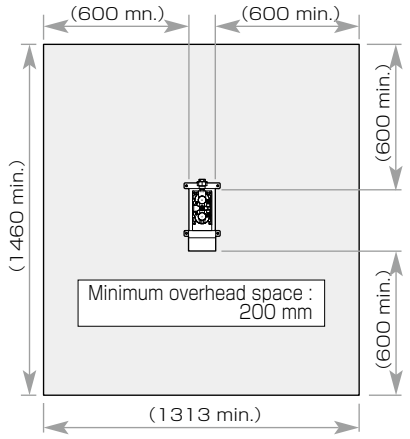
Model	Super Pack Heavy Duty Mode				
QSQ	420D1-E	700D1-E	1000D1-E	1400D1-E	2000C-E
Model	Eco Pack				
QSQ	420D1-EDC	700D1-EDC	1000D1-EDC	1400D1-EDC	2000C-EDC
A	710	920	920	1400	1400
B	(1749 min.)	(1923 min.)	(2097 min.)	(2271 min.)	(2496 min.)

● QSQ2500D1-E
(Super Pack Heavy Duty model)
● QSQ2500D1-EDC
(Eco Pack)

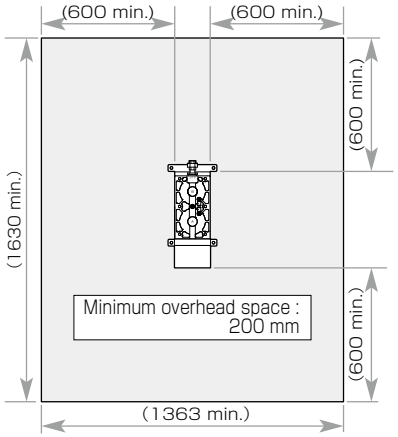


□ Installation and Maintenance Space

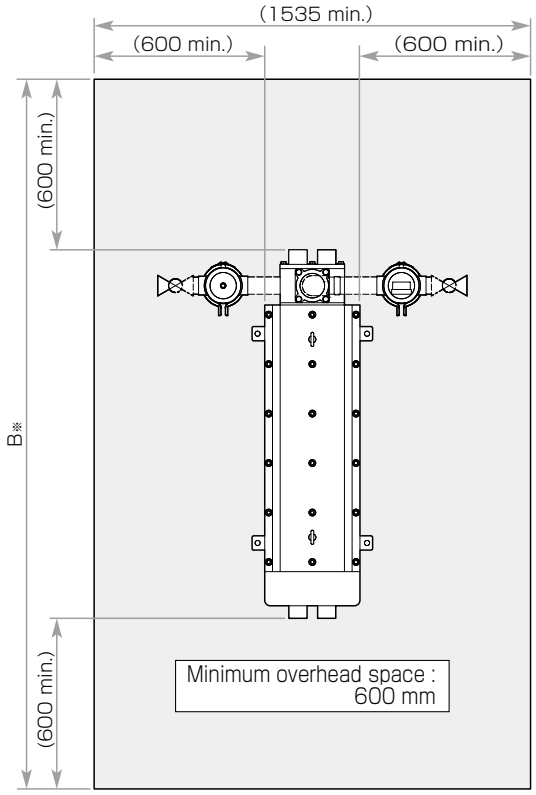
● QSQ010D1/020D1/035D1
(Super Pack Compact duty model)



● QSQ080D1-E/120D1-E/180D1-E-/270D1-E
(Super Pack Medium duty model)



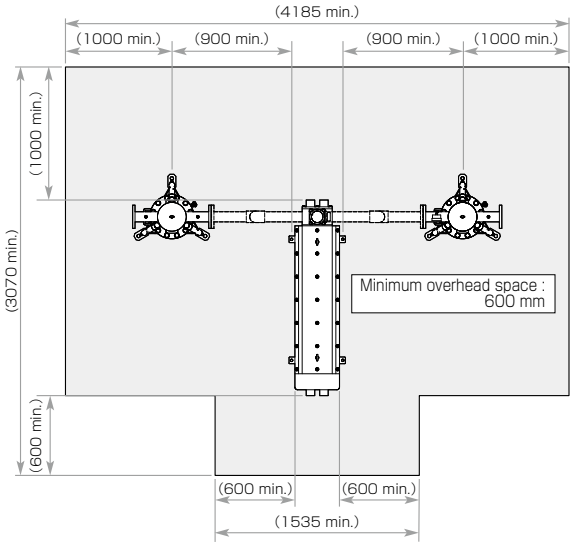
● QSQ420D1-E/700D1-E/1000D1-E
QSQ1400D1-E/2000D1-E
(Super Pack Heavy Duty model)
● QSQ420D1-EDC/700D1-EDC/1000D1-EDC
QSQ1400D1-EDC/2000D1-EDC
(Eco Pack)



※Refer to the Dimensions Table on page 47 for the B-dimension.

● QSQ2500D1-E
(Super Pack Heavy Duty model)
● QSQ2500D1-EDC
(Eco Pack)

※ [ ] Piping indicated by dotted lines is not included and must be provided by end user.
※ Diagram shows Eco-Pack model
※ Please install the included filter.
※ Install on a level surface.
※ When running dryers in parallel, arrange piping so that the back pressure from piping in each feed is the same.
※ Provide an installation and maintenance space as shown in the shaded areas in the diagrams.



QSQ "Super Pack" and "Eco Pack"

□ Model Selection

※ When choosing an air dryer model, always confirm the air compressor type, inlet air temperature (water temperature when employing water cooling), pressure, air processing capacity, required dew point, and power frequency.

A Maximum Air Processing Capacity〔Inlet temperature: 35 ℃ , Flow rate converted to ANR〕 Units:m^3/min

Model QSQ		Inlet Pressure (MPa)													
		0.40		0.50		0.60		0.70		0.80		0.90		1.0	
		Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
Compact Duty	010D1	0.06	0.05	0.07	0.06	0.08	0.07	0.09	0.08	0.11	0.10	0.12	0.11	0.13	0.12
	020D1	0.12	0.09	0.14	0.11	0.17	0.14	0.19	0.16	0.22	0.19	0.24	0.21	0.26	0.23
	035D1	0.21	0.16	0.25	0.20	0.29	0.24	0.33	0.28	0.38	0.33	0.42	0.37	0.46	0.41
Medium Duty	080D1-E	0.48	0.37	0.58	0.47	0.67	0.56	0.75	0.64	0.87	0.76	0.96	0.85	1.05	0.94
	120D1-E	0.72	0.56	0.87	0.71	1.00	0.84	1.13	0.97	1.30	1.14	1.45	1.29	1.58	1.42
	180D1-E	1.08	0.83	1.30	1.05	1.51	1.26	1.69	1.44	1.95	1.70	2.17	1.92	2.37	2.12
	270D1-E	1.63	1.25	1.96	1.58	2.26	1.88	2.54	2.16	2.92	2.54	3.25	2.87	3.56	3.18
Heavy Duty	420D1-E（EDC）	2.53	1.96	3.04	2.47	3.52	2.95	3.95	3.38	4.54	3.97	5.06	4.49	5.53	4.96
	700D1-E（EDC）	4.22	3.28	5.07	4.13	5.86	4.92	6.59	5.65	7.58	6.64	8.43	7.49	9.22	8.28
	1000D1-E（EDC）	6.00	4.70	7.20	5.90	8.40	7.10	9.40	8.10	10.80	9.50	12.00	10.70	13.20	11.90
	1400D1-E（EDC）	8.40	6.50	10.10	8.20	11.70	9.80	13.20	11.30	15.20	13.30	16.90	15.00	18.40	16.50
	2000D1-E（EDC）	12.00	9.40	14.50	11.90	16.70	14.10	18.80	16.20	21.60	19.00	24.10	21.50	26.30	23.70
	2500D1-E（EDC）	15.10	11.80	18.10	14.80	20.90	17.60	23.50	20.20	27.10	23.80	30.10	26.80	32.90	29.60

※ Start with the desired inlet air temperature and required dew point, and look up the corresponding coefficients in tables B and C. Use the coefficients to compute the maximum air processing capacity. ※ Choose a model such that your actual required air inlet processing capacity will not go beyond the processing capacity of the dryer. ※ Actual outlet air flow rate must take into consideration that regenerative air purge will be subtracted from inlet air flow. ※ In the event that the operating pressure is lower than 0.7 MPa, the purge orifice should be changed. Please consult with your dealer.

■ Model choice when the inlet air temperature and/or outlet dewpoint vary.

① Consider the required operating inlet air temperature and look up the inlet air temperature correction coefficient from table B, and then, based on the required outlet dew point, find the outlet dew point correction coefficient from table C.

② Compute the corrected maximum processing capacity of the dryer by first finding the air inlet temperature correction coefficient B and the outlet dew point correction coefficient C.

Maximum processing capacity ≧ inlet air flow $\times \frac{1}{(B \times C)}$

or

Maximum air processing capacity × inlet air correction coefficient × outlet dew point correction coefficient ≧ inlet air flow rate

③ Choose a dryer from Table A that exceeds the adjusted maximum air processing capacity derived in section ② above.

Model Selection Example

Making a model selection based on the following criteria:

Inlet Air Temperature	40℃	Ambient Temperature	40℃	Air Pressure	0.5MPa
Air Flow	3m^3/min	Pressure Dew Point	−40℃	Type	Heavy Duty

① Under these conditions, the inlet air correction coefficient is 0.88 and the outlet air dew point coefficient is 1.

② Using the coefficients gotten in ① above:

$$3 \times \frac{1}{(0.88 \times 1)} = 3.41 \text{ m}^3/\text{min}$$

③ According to the Maximum Air Processing Capacity chart above, the dryer that can handle an air flow of 3.41 m^3/min at a pressure of 0.49 MPa is model QSQ700D1-E.

● Outlet air flow is inlet air flow minus the regenerative air purge, therefore: 3 m^3/min − 0.941 m^3/min = 2.059 m^3/min

B Inlet air temperature correction coefficient

Inlet Air Temperature	35 ℃ and Below	40 ℃ and Below	45 ℃ and Below	50 ℃ and Below
Compact/ Medium Duty	1.0（1.0）	0.77（1.0）	0.61（0.93）	0.48（0.85）
Heavy Duty	1.0（1.0）	0.88（1.0）	0.78（1.0）	0.64（1.0）

※ There is no correction for ambient temperature, however ambient temperature should be considered to be the same as the inlet temperature (max. 40 ℃ .)
※ A pressure dew point of − 40 ℃ would be converted to − 58 ℃ under atmospheric pressure. (Case where operating pressure is 0.7 MPa.)
※ Numbers in ( ) indicate coefficient to be used when used along with refrigerated air dryers.

C Outlet air dewpoint correction coefficient

Correction Coefficient \ Dewpoint (PDP)	−20℃	−30℃	−40℃	−50℃	−60℃
Compact/ Medium Duty	1.0（1.0）	0.9（1.0）	0.85(0.95)	—	—
Heavy Duty	1.0（1.0）	1.0（1.0）	1.0（1.0）	0.85(1.0)	0.7(0.93)

※ These sections are different in the ratio of quantity of regenerative air purge. Please consult with your dealer for details.
※ Numbers in ( ) indicate coefficient to be used when used along with refrigerated air dryers.

■ Regeneration air purge chart (flow rates converted to ANR) Units:m^3/min（14％）

※ Regenerative air purge is not based on pressure and is consistent.

Model QSQ	010D1	020D1	035D1	080D1-E	120D1-E	180D1-E	270D1-E	420D1-E (EDC)	700D1-E (EDC)	1000D1-E (EDC)	1400D1-E (EDC)	2000D1-E (EDC)	2500D1-E (EDC)
Regeneration Air Flow	0.014	0.027	0.048	0.113	0.16	0.245	0.377	0.565	0.941	1.318	1.882	2.635	3.29

※ In case 24 hour operation is required, a backup dryer should be made available to ensure continued operation

Manufacturer Options and Accessories (Sold separately)

☐ Heatless Air Dryer Optional Equipment Part Number Nomenclature

Part numbers for optional equipment have 6 digits. Please refer to the following chart to confirm the proper part number when making orders.

Product number ——— Part Number of Optional Equipment ———

QSQ420D1-E + [1st Digit] [2nd Digit] [3rd Digit] [4th Digit] [5th Digit] [6th Digit]

1st Digit	2nd Digit	3rd Digit	4th Digit	5th Digit	6th Digit
0 · Standard	0 · Standard	0 · Standard (none included)	0 · Standard (none included)	0 · Standard (none included)	0 · Standard
	1 · Remote switch included	1 · Finished equipment	1 · Includes test results chart	1 · Anchor bolts A	1 · 110 V
		2 · English documentation	2 · Includes test manual	2 · Anchor bolts B	2 · 120 V
		3 · Export Packing · English documentation	3 · Mil sheet	3 · Anchor bolts C	3 · 210 V
		4 · Export Packing	4 · Includes test results chart · Includes test manual	4 · Anchor bolts D	
		5 · Finished equipment · English documentation	5 · Includes test results chart · Includes test manual · Mil sheet	5 · Anchor bolts E	5 · 380 V
				6 · Anchor bolts F	6 · 400 V
					7 · 440 V
A · Differential Pressure Gauge for Inlet Filter Included.					
B · Custom Color (Front cabinet panel only)					
D · Muffler Box					
E · Protective Cabinet (IPX4 equiv.)	E · Start/Stop Signal Output Contacts Included (100 V)				
	F · Start/Stop Signal Output Contacts Included (200 V)				
	L · Remote switch Included · Start/Stop Signal Output Contacts Included (100 V)				
	M · Remote switch Included · Start/Stop Signal Output Contacts Included (200 V)				

☐ Manufacturer Option Details

Optional Item	Description
Includes remote changeover switch.	· External output signals are "Running indicator out" and "Warning out" · For models QSQ120D-E and below, the size of the control panel.
Mil Sheet	· Cartridge cylinder inspection results
Anchor Bolts A	· SS grade stainless steel L-type
Anchor Bolts B	· SS grade stainless steel Hole-in anchor
Anchor Bolts C	· SS grade stainless steel, chemical anchor
Anchor Bolts D	· SUS grade stainless steel L-type
Anchor Bolts E	· SUS grade stainless steel, Hole-in anchor
Anchor Bolts F	· SUS grade stainless steel, chemical anchor
Test Manual	· Document produced by ORION
Test Results Chart	· Document produced by ORION
Photography	· Documentation outlining the sort of photos required is necessary. · Max. 3 photos of the manufacturing process.
Transformer	· All models are internal
Export Packing	· Packaged in plywood (plywood sided)

☐ List of Anchor Bolt Options for Heatless Air Dryers

Model / Type	L Type	Hole-in	Chemical
QSQ010D ～ 035D	—	M6 × L60 4 pcs.	—
QSQ080 D-E ～ 270 D-E	M10 × L160 4 pcs.	M10 × L80 4 pcs.	M10 × L120 4 pcs.
QSQ420D-E ～ 2500D-E（EDC）	M16 × L200 4 pcs.	M16 × L120 4 pcs.	M16 × L160 4 pcs.

☐ Accessories (Sold separately)

Part Number	Part Name	Qty / Unit	Comments
03112834010	Communication Daughter Board Assembly ※1※2	1	For external communications.
03112835010	LAN Board Assembly ※3	1	For external communications.
04109886010	Analogue Output Wiring Assy	1 ～ 2 (※4)	Analog output（Cable length: 3 m）
03112831010	Pressure Sensor Assembly	1	Incl. 2 pcs.（Only req. for QSQ010~035D1.）

※1.The communication software can be downloaded from the ORION website.
※2.The communication software only works with the Communication Daughter Board.
※3. When using the LAN Board, please download the "Operation Data Acquisition Software" from the ORION website.
※4. Each one item will have 1 connector.

☐ Other

Support for Inlet Airflow of 40 to 50 m³ /min. (See page 45 for details, or contact ORION sales.)

1-3 Membrane Type Air Dryer "MD"

CFC-Free・Hollow Fiber Membrane Fine Dryer (Membrane type compressed air drying equipment)

MD15～75/MD15-F～75-F/MD15-AF～75-AF

Outlet air flow capacity : 21～573 L/min
Purge air flow : 14～80 L/min
Outlet air dew point : −26～−12 ℃

Features

1. No power source required
2. Confirm drying conditions with the dewpoint indicator.
3. No vibration, No heat output, Easy maintenance
4. No drain output
   Removed water moisture is vented off as water vapor so there's no drain.
5. Small, lightweight, space saving design
   (Compared with our refrigerated dryers)
   Required set up space is about 1/5 and dryer weight is less than 1/10 that of conventional dryers.

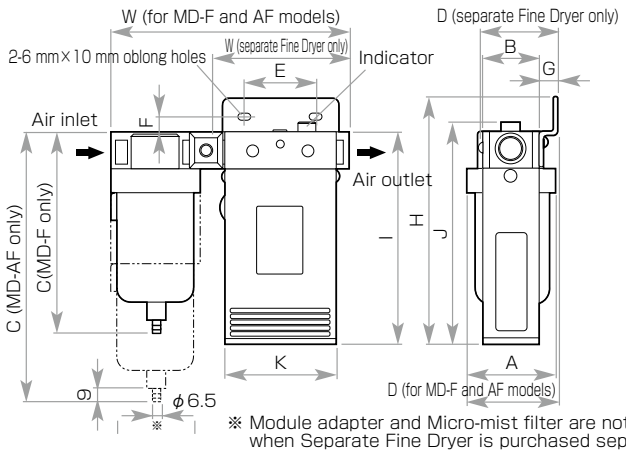
□ Specifications

Item		Model MD	15	15-F	15-AF	25	25-F	25-AF
			Separate Fine Dryer	Including Manual Drain	Separate Fine Dryer	Including Auto Drain Trap	Including Manual Drain	Including Auto Drain Trap
Processing Capacity	Processed Fluid		Compressed air					
	Operable Pressure Range	MPa	0.2～0.85					
	Inlet Air Temperature	℃	−20～55 (Not frozen)	5～55		−20～55 (Not frozen)	5～55	
	Ambient Temperature	℃						
Standard Specifications	Ambient Temperature	℃	30					
	Inlet Air Temperature	℃	28					
	Inlet Air Water Vapor Content		28 ℃, saturated					
	Inlet Air Pressure	MPa	0.69					
	Purge Air Flow	L/min	14			27		
	Outlet Air Flow	L/min	106					
	Outlet Air Dew Point (at Atmospheric Pressure)	℃	−10 and below			−17 and below		
Piping/Purge-air Connection Sizes			Rc1/4/Rc1/8					
Micro-mist Filter			—	Standard equipment		—	Standard equipment	
Degree of Filtration / Collection Efficiency		μm/%	—	0.01/99		—	0.01/99	
Mass		kg	0.4	0.9	1.0	0.4	0.9	1.0

Item		Model MD	75	75-F	75-AF
			Separate Fine Dryer	Including Manual Drain	Including Auto Drain trap
Processing Capacity	Processed Fluid		Compressed air		
	Operable Pressure Range	MPa	0.2～0.85		
	Inlet Air Temperature	℃	−20～55 (Not frozen)	5～55	
	Ambient Temperature	℃			
Standard Specifications	Ambient Temperature	℃	30		
	Inlet Air Temperature	℃	28		
	Inlet Air Water Vapor Content		28 ℃, saturated		
	Inlet Air Pressure	MPa	0.69		
	Purge Air Flow	L/min	80		
	Outlet Air Flow	L/min	318		
	Outlet Air Dew Point (at Atmospheric Pressure)	℃	−17 and below		
Piping/Purge-air Connection Sizes			Rc1/2/Rc1/4		
Micro-mist Filter			—	Standard equipment	
Degree of Filtration / Collection Efficiency		μm/%	—	0.01/99	
Mass		kg	0.9	1.5	2.0

※ Purged air can be piped out. ※ For processing fluids other than compressed air, please consult with your dealer. ※ **Be sure that the intake air has water droplets and oil removed before it enters the product.** ※ Air processing capacity calculated based on conditions of air entering air compressor. (Atmospheric pressure, 32 ℃, 75 %) ※ This equipment should not be used with air that is adulterated with chemicals such as corrosive gases, organic solvents, etc., nor in an environment that contains such compounds. ※ When used with an oiled compressor, the output of the compressor should be equipped with an oil mist separator. ※ Please contact us for further details.

□ External Dimensions (Units:mm)



※ Module adapter and Micro-mist filter are not included when Separate Fine Dryer is purchased separately

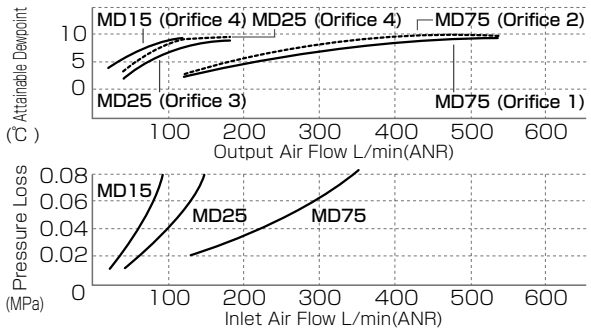
External Dimensions

Model	W	D	H	A	B	C
MD15/25	82	54	175	—	40	—
MD15-F/25-F	155	63		62		140
MD15-AF/25AF						170
MD75	124	69	220	—	50	—
MD75-F	216	82		79		168
MD75-AF						240

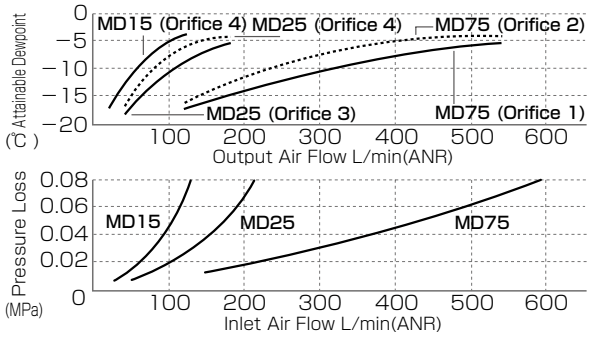
Model	E	F	G	I	J	K
MD15/25	46	13	12	150	161	72
MD15-F/25-F						
MD15-AF/25AF						
MD75	66	15	17	190	200	100
MD75-F						
MD75-AF						

Operating conditions and outlet air dewpoint comparisons

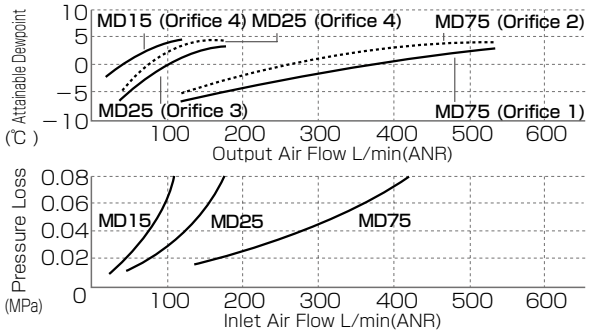
■ Inlet air: 0.2 MPa (28 ℃ saturated)



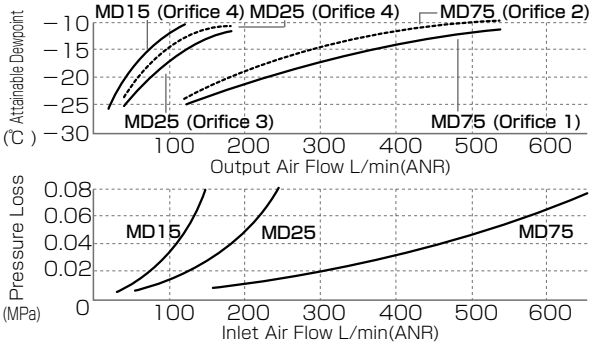
■ Inlet air: 0.5 MPa (28 ℃ saturated)



■ Inlet air: 0.3 MPa (28 ℃ saturated)



■ Inlet air: 0.69 MPa (28 ℃ saturated)

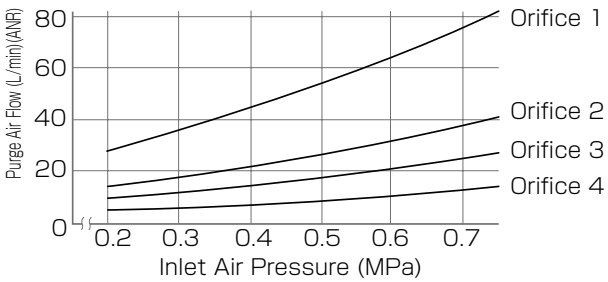


Inlet air pressure and refrigeration air flow

If the purge air flow rate is high, the installed orifice may be changed, and the purge air flow can be cut to about half. In this case the dewpoint will increase slightly.

■ Orifice

Model	Standard	Included
MD15	Orifice 4	—
MD25	Orifice 3	Orifice 4
MD75	Orifice 1	Orifice 2



1-3 Expansion Separation Dryer "AE7"

The Optimum Separate Dryer for Final Air Processing (Expansion separation compressed air drying equipment)

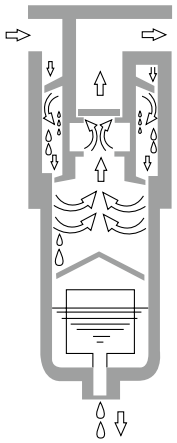
AE7
Air processing capacity: 740 L/min / Air inlet temperature: 5 ～ 60 ℃ /
Compatible air compressors: 5 kW

Auto drain trap included
AE7

Features

1. Get dry air simply by adding the Separate Dryer to your existing air line.
   Using our original expansion method, we've achieved a lightweight and compact design. Furthermore, no power is required, which adds up to a dry air source that's simple to install.
2. Our original design responds well to fluctuating loads.
   Works at drying air reliably even under varying air flows and pressures for optimum end-of-line air processing.
3. Maintenance free!
   No filter medium means no clogging. Automated drainage via auto drain trap.

Drying Principle



1. Supersaturated water separation
   A highly efficient centrifugal force is created by our unique rotating louvers, which forces heavier water to the outside edge and the resulting condensation is then collected in the center.
2. Water fog turns to water droplets
   When moisture from the fog collected in the center comes into contact with wall surfaces, it cools, condenses, and is thrown out to the outer wall of the dryer.
3. Impact separation of microscopic water droplets occurs
   In other words, ultra fine fog mist droplets collide on the baffles and become larger water droplets.
4. Water droplets are separated out by gravity.
   Within the dryer, moisture is reliably separated from air and the separated moisture collects at the bottom of the vessel.
5. Our original mechanism for wall surface cooling
   Through this distinctive mechanism, adiabatic expansion occurs and internal wall surfaces are cooled.
6. Inlet air and heat exchange
   Through adiabatic expansion, drying occurs during the heat exchange between the cooled air in the dryer and the new air entering the system.
7. Drain the water droplets collected inside the bowl to the outside of the product using a float, operating with an airflow that does not exceed the processing airflow.

Notes regarding usage

1. Avoid installation near the air compressor. The Separation Dryer should be installed as near the end of the line as possible to ensure that air flowing into it is lower than the outside air temperature.
2. According to the principles of air drying, the output dew point drop will be about 3 ℃ below that of the inlet air. If a greater range in dew point drop is required, use of a refrigerated air dryer is recommended.

Air flow capacity

Use at or below the indicated processing air flow.

■ Pressure correction coefficient (inlet pressure)

Pressure (MPa)	0.2	0.29	0.39	0.49	0.59 ～ 0.98
Pressure Correction Coefficient	0.49	0.67	0.83	1.0	1.0

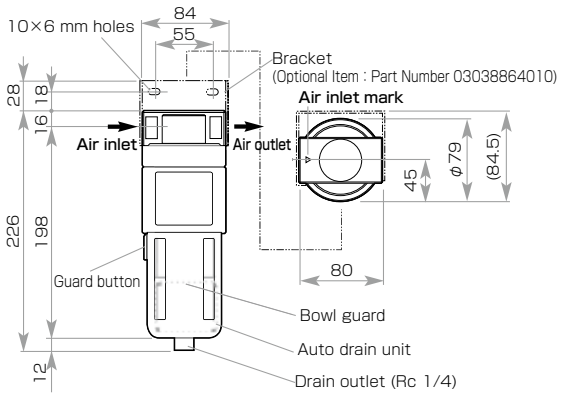
$$\text{Air processing capacity} \geqq \frac{\text{Desired capacity}}{\text{Pressure correction coefficient}}$$

□ Specifications

Item			Model	AE7
Performance Specifications	Air Processing Capacity		L/min	740（at 0.49 MPa）
	Dew Point Drop		℃	3（under pressure）※
Processing Conditions	Inlet Air Pressure		MPa	0.49
	Inlet Air Temperature		℃	30
	Ambient Temperature		℃	30
Operating Conditions	Processed Fluid			Compressed air
	Operable Temperature Range		℃	5 ～ 60
	Operable Pressure Range		MPa	0.1 ～ 0.98
Outside Dimensions		Height	mm	226
		Width	mm	80
Air Inlet/Outlet Connection				Rc1/2
Drain Port Connection Size				Rc1/4
Mass			kg	1.1

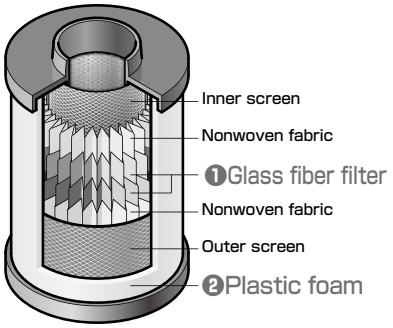
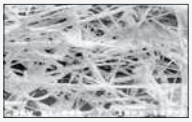
※ Dew point at an air pressure of 0.69 MPa is 2.5 ℃. ※ Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32 ℃, 75 %.) ※ Please contact us for further details.

□ External Dimensions (Units: mm)



DSF/LSF/MSF/KSF

1. The Evolved EMS □□□ -H Filter Element

Element Cross section		Item	Newly Developed EMS□□□-H	Previous Model EMS□□□	Closeup of Filter Media	Comments
	❶ Primary Filter Medium	Material	***NEW*** Glass fiber filter	Glass fiber filter	Glass fiber filter 	Greater filtration surface area for increased oil collection capacity
		Filtration Surface	Approx. 2x that of prev. models	–		
		Number of Layers	2	1		
	❷ Secondary Filter Medium	Material	***NEW*** Plastic foam (Polyurethane)	Plastic foam (Polyurethane)	Plastic foam 	Cell ※ More cells yield greater oil collection capacity Reducing the cell size helps prevent release of oil.

※ Cell: Space created from plastic formation

2. Stainless Steel Vessels Adopted on Medium and Heavy Duty Class Models

※ Stainless steel shell design is available on DSF/LSF/MSF/KSF 400 Series models and above.

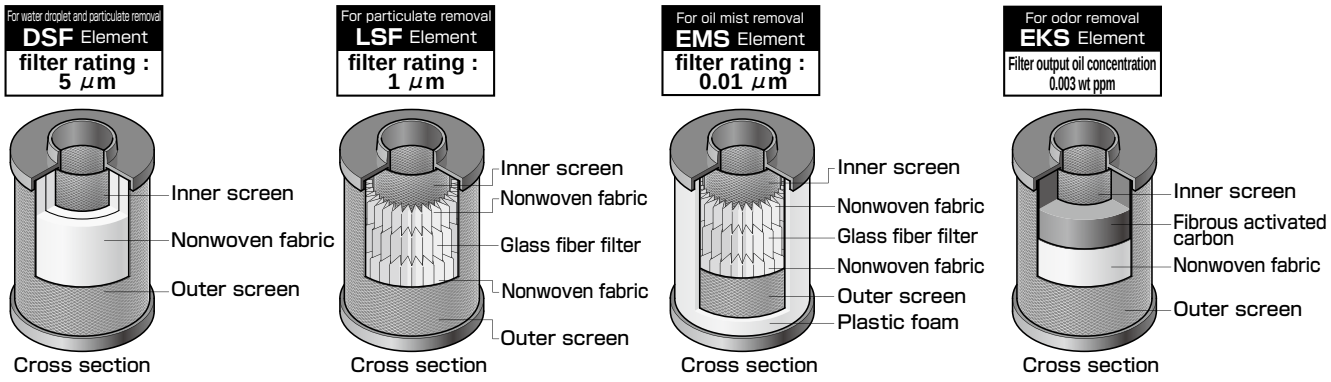
3. Clamp Joint Design is Standard, for Easy Element Replacement (400 ～ 2000)

The lower body can be removed by simply loosening the wingnut inside the band cover. Filter element replacement is easy!

4. The MSF Series has a "Life Indicator" LED that shows approximately when the filament element should be replaced. (Models 400D and above)

※ (The LED indicator sign is set for 8000 h. The element replacement period will differ depending on inlet contaminants and operating conditions.)

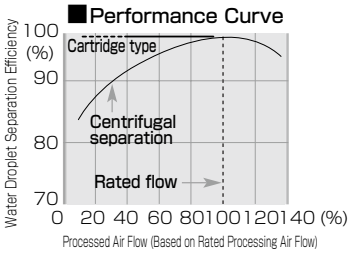
□ Improved filtration by employing a combination of filters.



2 DSF Series

Water Droplet and Solid Particulate Removal Super Filter (Compressed air purification equipment)

DSF75B ～ 31800B
Removes particulate 5 μ m and greater.
Air processing capacity: 0.35 ～ 318.9 m³/min
Inlet air temperature: 5 ～ 60 ℃




DSF1300-1

Features

1. Stainless steel vessel (models 400-1 and above)
2. High efficiency means consistent filtration efficiency.
   No drop in filtration performance due to flow rate fluctuations thanks to our element filtration design.
3. Low pressure loss (0.005 MPa or less.)
4. Increased pressure range (75B ～ 250B)
5. Tie-Rod Stacking Available (Compatible Models: 75B to 250B. Sold separately.)

□ Specifications

Item			Model DSF	75B	150B	200B	250B	400-1	404	500	700-1
Air Processing Capacity		※1	m³/min	0.35	1.2	1.8	2.7	3.9		5.2	6.6
Processing Capacity	Processed Fluid			Compressed air							
	Compressed Air Pressure Range (Gauge Pressure)		MPa	0.05 ～ 1.57 ※ 3				0.1 ～ 1.0			
	Inlet Air Temperature / Ambient Temperature Range		℃	5 ～ 60/2 ～ 60							
Performance Specifications	Degree of Filtration		μm	5							
	Processed Air Conditions	Inlet Air Pressure	MPa	0.69							
		Inlet Air Temperature	℃	32							
	Water Droplet Filtration Efficiency / Initial Pressure Loss		%/MPa	99/0.005							
	When to Replace Element ※2	Pressure Loss	MPa	0.02							
		Period of Use		1 year							
Main Dimensions	Differential Pressure Gauge Connection Size			Rc 1/4				High pressure side: Rp1/4, Low pressure side: M5			
	Piping Connection Size		B · A	Rc 3/8 · 10	Rc 3/4 · 20		Rc1 · 25		Rc1 1/2 · 40		
	Drain Port Size			Rc1/4, Outside diameter φ16				Hose nipple (for hose with inside diameter φ5.7- φ6) ※4			
	Mass		kg	1.0		2.0	2.1	3.0	3.1	3.2	3.3
Auto Drain Traps				NH-503MR (built-in)				FD2			
Element	Model		EDS	75	150	200	250	400		500	700
	No. of Filter Elements Used		qty.	1							

Item			Model DSF	850	1000-1	1005	1200	1300-1	2700C	3200C	4000C
Air Processing Capacity		※1	m³/min	8.6	10.6		12.8	13.8	27.6	32.0	40.0
Processing Capacity	Processed Fluid			Compressed air							
	Compressed Air Pressure Range (Gauge Pressure)		MPa	0.1 ～ 1.0					0.20 ～ 1.0		
	Inlet Air Temperature / Ambient Temperature Range		℃	5 ～ 60/2 ～ 60							
Performance Specifications	Degree of Filtration		μm	5							
	Processed Air Conditions	Inlet Air Pressure	MPa	0.69							
		Inlet Air Temperature	℃	32							
	Water Droplet Filtration Efficiency / Initial Pressure Loss		%/MPa	99/0.005							
	When to Replace Element ※2	Pressure Loss	MPa	0.02							
		Period of Use		1 year							
Main Dimensions	Differential Pressure Gauge Connection Size			High pressure side: Rp1/4, Low pressure side: M5					Rc 1/4		
	Piping Connection Size		B · A	Rc1 1/2 · 40		Rc 2 · 50			2 1/2 · 65	3 · 80	
	Drain Port Size			Hose nipple (for hose with inside diameter φ5.7- φ6) ※4					Rc 3/8		
	Mass		kg	3.5	3.7	4.2	4.3		26	28	
Auto Drain Traps				FD2					FD-10-A		
Element	Model		EDS	850	1000		1200	1300	1300	2000	
	No. of Filter Elements Used		qty.	1					2		

Item			Model DSF	5000B	6000B	7700B	10300B	12900B	15500B	20700B	31800B
Air Processing Capacity		※1	m³/min	50.0	60.0	77.8	103.7	129.7	155.6	207.5	318.9
Processing Capacity	Processed Fluid			Compressed air							
	Compressed Air Pressure Range (Gauge Pressure)		MPa	0.20 ～ 1.0				0.29 ～ 1.0			
	Inlet Air Temperature / Ambient Temperature Range		℃	5 ～ 60/2 ～ 60							
Performance Specifications	Degree of Filtration		μm	5							
	Processed Air Conditions	Inlet Air Pressure	MPa	0.69							
		Inlet Air Temperature	℃	32							
	Water Droplet Filtration Efficiency / Initial Pressure Loss		%/MPa	99/0.005							
	When to Replace Element ※2	Pressure Loss	MPa	0.02							
		Period of Use		1 year							
Main Dimensions	Differential Pressure Gauge Connection Size			Rc 1/4							
	Piping Connection Size		B · A	4 · 100		5 · 125	6 · 150		8 · 200		10 · 250
	Drain Port Size			Rc 3/8				Rc 1/2			
	Mass		kg	73		95	155	190	250	310	380
Auto Drain Traps				FD-10-A				AD-5			
Element	Model		EDS	2000							
	No. of Filter Elements Used		qty.	3		4	6	7	9	12	18

※1 Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32 ℃, 75 % humidity.) ※2 To be replaced either the accumulated running time or pressure drop of filter elements as indicated above, whichever comes first to set figure. ※ Optional differential pressure gauge sold separately. ※3 When models 75B or 150B are used without an auto drain, the maximum operable pressure is 2.94 MPa. (Special order configuration.)
※4 Can be adapted for use with Rc1/4 using the included adapter. ※ Auto Drain Trap: Float type (Built-in or individual)/Disc type
Note: The loading weight to flanges to be less than 120 Kg. Please ensure adequate support for the piping that leads to the filter. (2700C ～ 31800B series)
※ DSF5000B ～ 31800B are subject to JBA 2nd class pressure vessel regulation. ※ DSF2700C ～ 31800B are built to order. ※ **Legs on the DSF2700C, 3200C and 4000C are optional.** ※ The differential pressure gauge is sold separately.

2 LSF Series

Solid Particulate Removal Super Filter (Compressed air purification equipment)

LSF75B ～ 31800B
Removes particulate 1 μm and greater.
Air processing capacity: 0.35 ～ 318.9 m³/min
Inlet air temperature: 5 ～ 60 ℃

Features

1. First in its class to come standard equipped with a stainless steel vessel (models 400-1 and above.)
2. Standard equipped with clamp joint (models 400-1 ～ 2000-1) Now equipped with band clamps for easier housing removal (compared with earlier flange-type models.)
3. Improved water resistance thanks to our newly developed filter element. (Improvement of 200 % compared to our earlier models.)
4. Increased pressure range (75B ～ 250B)
5. Tie-rod filter stacking system (Compatible Models: 75B to 250B. Sold separately.)

□ Specifications

Item			Model LSF	75B	150B	200B	250B	400-1	404	500	700-1
Air Processing Capacity		※1	m³/min	0.35	1.2	1.8	2.7	3.9		5.2	6.6
Processing Capacity	Processed Fluid			Compressed air							
	Compressed Air Pressure Range (Gauge Pressure)		MPa	0.05 ～ 1.57 ※3				0.1 ～ 1.0			
	Inlet Air Temperature / Ambient Temperature Range		℃	5 ～ 60/2 ～ 60							
Performance Specifications	Degree of Filtration / Efficiency		μm/%	1/99.999							
	Pressure Loss		MPa	Initial 0.005							
	When to Replace Element ※2	Pressure Loss	MPa	0.07							
		Period of Use		1 year							
Main Dimensions	Differential Pressure Gauge Connection Size			Rc 1/4				High pressure side: Rp1/4, Low pressure side: M5			
	Piping Connection Size		B・A	Rc 3/8・10	Rc 3/4・20		Rc1・25		Rc1 1/2・40		
	Drain Port Size			Rc1/4, Outside diameter φ16				Hose nipple（for hose with inside diameter φ5.7- φ6）※4			
	Mass		kg	1.0		2.0	2.1	3.0	3.1	3.2	3.3
Auto Drain Traps				NH-503MR（built-in）				FD2			
Element	Model		ELS	75	150	200	250	400		500	700
Elements Used	No. of Filter		qty.	1							

Item			Model LSF	850	1000-1	1005	1200	1300-1	1700	2000-1	2700C1
Air Processing Capacity		※1	m³/min	8.6	10.6		12.8	13.8	17.3	20	27.6
Processing Capacity	Processed Fluid			Compressed air							
	Compressed Air Pressure Range (Gauge Pressure)		MPa	0.1 ～ 1.0							
	Inlet Air Temperature / Ambient Temperature Range		℃	5 ～ 60/2 ～ 60							
Performance Specifications	Degree of Filtration / Efficiency		μm/%	1/99.999							
	Pressure Loss		MPa	Initial 0.005							
	When to Replace Element ※2	Pressure Loss	MPa	0.07							
		Period of Use		1 year							
Main Dimensions	Differential Pressure Gauge Connection Size			High pressure side: Rp1/4, Low pressure side: M5							Rc 1/4
	Piping Connection Size		B・A	Rc1 1/2・40		Rc 2・50					2 1/2・65
	Drain Port Size			Hose nipple（for hose with inside diameter φ5.7- φ6）※4							
	Mass		kg	3.5	3.7	4.2	4.3		4.9	6.0	26
Auto Drain Traps				FD2							
Element	Model		ELS	850	1000		1200	1300	1700	2000	1300
Elements Used	No. of Filter		qty.	1							2

Item			Model LSF	3200C1	4000C1	5000B1	6000B1	7700B1	10300B	12900B	15500B	20700B	31800B
Air Processing Capacity		※1	m³/min	32	40	50	60	77.8	103.7	129.7	155.6	207.5	318.9
Processing Capacity	Processed Fluid			Compressed air									
	Compressed Air Pressure Range (Gauge Pressure)		MPa	0.1 ～ 1.0					0.20 ～ 1.0				
	Inlet Air Temperature / Ambient Temperature Range		℃	5 ～ 60/2 ～ 60									
Performance Specifications	Degree of Filtration / Efficiency		μm/%	1/99.999									
	Pressure Loss		MPa	Initial 0.005									
	When to Replace Element ※2	Pressure Loss	MPa	0.07									
		Period of Use		1 year									
Main Dimensions	Differential Pressure Gauge Connection Size			Rc 1/4									
	Piping Connection Size		B・A	3・80		4・100		5・125	6・150		8・200		10・250
	Drain Port Size			Hose nipple（for hose with inside diameter φ5.7- φ6）※4					Rc 3/8				
	Mass		kg	28		73		95	155	190	250	310	380
Auto Drain Traps				FD2					FD-10-A				
Element	Model		ELS	2000									
Elements Used	No. of Filter		qty.	2		3		4	6	7	9	12	18

※1 Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32 ℃, 75 % humidity.) Processed air conditions: Inlet air pressure: 0.7 MPa, inlet air temp: 32 ℃, intel dew point at atmospheric pressure: -17 ℃ (PDP10 ℃) inlet oil concentration: 3 wt ppm. ※2 Replace filter when there is pressure loss or after the recommended period use, whichever comes first. ※3 When models 75B or 150B are used without an auto drain, the maximum operable pressure is 2.94 MPa. (Special order configuration.) ※4 Can be adapted for use with Rc1/4 using the included adapter. ※ Auto Drain Trap: Float type (Built-in or individual)
Note: Load placed on air inlet/outlet flanges should be no more than 120 kg. Please ensure adequate support for the piping that leads to the filter. (LSF2700C1 ～ 31800B) ※ Models LSF5000B1 ～ 31800B are subject to JBA 2nd class pressure vessel regulation. ※ LSF2700C1 ～ 31800B are built to order. ※ **Legs on the LSF2700C1, 3200C1 and 4000C1 are optional.** ※ Optional differential pressure gauge sold separately.

2 Oil Mist Removal Super Filter (Compressed air purification equipment)

MSF Series

MSF75D ～ 31800D

Removes oil mist of 0.01 μm and up (Output concentration: 0.01 wt ppm)

Air processing capacity: 0.35 ～ 318.9 m^3/min

Inlet air temperature: 5 ～ 60 ℃

Features

1. New element suitable with high oil concentrations. (17wt ppm input ⇒ 0.5wt ppm output)
   In order to increase oil collection capacity, the number of layers in the primary filter medium is increased and the area of filtration is also increased. This results in a pressure loss value of 0.02 MPa (which is equiv. to previous models).
2. First in its class to come standard equipped with a stainless steel tank. (Models 400 and above)
3. Comes standard with a clamp joint configuration (on models 400D ～ 2000D). The band structure allows for easy removal of the housing.
4. An element life indicator lamp (on models 400 and above) clearly shows when it's time to replace the element.
5. Tie-rod connection possible. (Applicable models: 75D ～ 250D. Available as an accessory -- sold separately)

□ Specifications

Item			Model MSF	75D	150D	200D	250D	400D	404D	500D	700D
Air Processing Capacity ※1			m^3/min	0.35	1.2	1.8	2.7	3.9		5.2	6.6
Processing Capacity	Processed Fluid			Compressed air							
	Compressed Air Pressure Range (Gauge Pressure)		MPa	0.05 ～ 1.57 ※3				0.1 ～ 1.0			
	Inlet Air Temperature / Ambient Temperature Range		℃	5 ～ 60/2 ～ 60							
Performance Specifications	Degree of Filtration / Output Oil Concentration		μm	0.01/0.01wt ppm（Remaining oil content 0.01mg/m^3）							
	Collection Efficiency / Pressure Loss		%/MPa	99.999 / Initial: 0.01・Typical: 0.02							
	When to Replace	Pressure Loss	MPa	0.07							
	Element ※2	Period of Use		1 year							
Main Dimensions	Differential Pressure Gauge Connection Size			Rc 1/4				High pressure side: Rp1/4, Low pressure side: M5			
	Piping Connection Size		B・A	Rc 3/8・10	Rc 3/4・20		Rc1・25		Rc1 1/2・40		
	Drain Port Size			Rc1/4, Outside diameter φ16				Hose nipple（for hose with inside diameter φ5.7- φ6）※4			
	Mass		kg	1.0		2.5	2.6	3.0	3.1	3.2	3.3
Auto Drain Traps				NH-503MR（built-in）				FD2			
Element	Model		EMS	75	150	200	250	400		500	700
	No. of Filter Elements Used		qty.	1							

Item			Model MSF	850D	1000D	1005D	1200D	1300D	1700D	2000D	2700D
Air Processing Capacity ※1			m^3/min	8.6	10.6		12.8	13.8	17.3	20.0	27.6
Processing Capacity	Processed Fluid			Compressed air							
	Compressed Air Pressure Range (Gauge Pressure)		MPa	0.1 ～ 1.0							
	Inlet Air Temperature / Ambient Temperature Range		℃	5 ～ 60/2 ～ 60							
Performance Specifications	Degree of Filtration / Output Oil Concentration		μm	0.01/0.01wt ppm（Remaining oil content 0.01mg/m^3）							
	Collection Efficiency / Pressure Loss		%/MPa	99.999 / Initial: 0.01・Typical: 0.02							
	When to Replace	Pressure Loss	MPa	0.07							
	Element ※2	Period of Use		1 year							
Main Dimensions	Differential Pressure Gauge Connection Size			High pressure side: Rp1/4, Low pressure side: M5							Rc 1/4
	Piping Connection Size		B・A	Rc1 1/2・40		Rc 2・50					2 1/2・65
	Drain Port Size			Hose nipple（for hose with inside diameter φ5.7- φ6）※4							
	Mass		kg	3.5	3.7	4.2	4.3		4.9	6.0	26
Auto Drain Traps				FD2							
Element	Model		EMS	850	1000		1200	1300	1700	2000	1300
	No. of Filter Elements Used		qty.	1							2

Item			Model MSF	3200D	4000D	5000D	6000D	7700D	10300D	12900D	15500D	20700D	31800D
Air Processing Capacity ※1			m^3/min	32.0	40.0	50.0	60.0	77.8	103.7	129.7	155.6	207.5	318.9
Processing Capacity	Processed Fluid			Compressed air									
	Compressed Air Pressure Range (Gauge Pressure)		MPa	0.1 ～ 1.0					0.20 ～ 1.0				
	Inlet Air Temperature / Ambient Temperature Range		℃	5 ～ 60/2 ～ 60									
Performance Specifications	Degree of Filtration / Output Oil Concentration		μm	0.01/0.01wt ppm（Remaining oil content 0.01mg/m^3）									
	Collection Efficiency / Pressure Loss		%/MPa	99.999 / Initial: 0.01・Typical: 0.02									
	When to Replace	Pressure Loss	MPa	0.07									
	Element ※2	Period of Use		1 year									
Main Dimensions	Differential Pressure Gauge Connection Size			Rc 1/4									
	Piping Connection Size		B・A	3・80		4・100		5・125	6・150		8・200		10・250
	Drain Port Size			Hose nipple（for hose with inside diameter φ5.7- φ6）※4					Rc 3/8				
	Mass		kg	28		73		95	155	190	250	310	380
Auto Drain Traps				FD2					FD-10-A				
Element	Model		EMS	2000									
	No. of Filter Elements Used		qty.	2		3		4	6	7	9	12	18

※1 Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32 ℃, 75 % humidity.) Processed air conditions: Inlet air pressure: 0.7 MPa, inlet air temp: 32 ℃, inlet dew point at atmospheric pressure: −17 ℃ (PDP: 10 ℃), inlet oil concentration: 3 wt ppm (3.6 mg/m^3). ※2 Replace filter when there is pressure loss or after the recommended replacement period, whichever comes first. Noted replacement periods are not guaranteed periods. Some parts may require replacement sooner depending on the specific operating environment or operating conditions. ※3 When models 75D or 150D are used without an auto drain, the maximum operable pressure is 2.94 MPa. (Special specifications) ※4 Can be adapted for use with Rc1/4 using the included adapter. ※ Optional differential pressure gauge sold separately. (Comes standard equipped on models 200B/250B) ※ Always install an air dryer before the MSF series filters. ※ Auto drain trap: float operated type. (internal or separate)
Note: Load placed on air inlet/outlet flanges should be no more than 120 kg. Please ensure adequate support for the piping that leads to the filter. (MSF2700C1 ～ 31800B) ※ Models MSF5000B1 ～ 31800B are subject to JBA 2nd class pressure vessel regulation. ※ MSF2700C1 ～ 31800B are built to order. ※ **Legs on the MSF2700C1, 3200C1 and 4000C1 are optional.** ※ As the construction of the Final Filter is different, it is not compliant with ISO14644-1 (F.S.209D) air purity class standard.

2 KSF Series

Odor Removal Super Filter (Compressed air purification equipment)

KSF150B ～ 31800B
Removes odor due to oil vapors
Air processing capacity: 1.2 ～ 318.9 m^3/min
Inlet air temperature: 5 ～ 60 ℃

Features

1. First in its class to come standard equipped with a stainless steel vessel (models 400 and above.)
2. Uses our newly developed "fiberous activated carbon" Compared with previous granular activated carbon filters, the amount of carbon that flows into secondary filter stages has been greatly reduced.
3. Outlet oil concentration reduced to 0.003 wt ppm.
   Using our newly developed filter element which combines line and mist filters, outlet oil concentration has been greatly reduced. Gives you a cleaner air supply.
4. Increased pressure range (150B ～ 250B)
5. Tie-rod filter stacking system (Compatible Models: 150B to 250B. Sold separately.)

☐ Specifications

Item			Model KSF	150B	200B	250B	400	404	500	700	850
Air Processing Capacity ※1			m^3/min	1.2	1.8	2.7	3.9		5.2	6.6	8.6
Processing Capacity	Processed Fluid			Compressed air							
	Compressed Air Pressure Range(Gauge Pressure)		MPa	0.05 ～ 1.57 ※ 2			0.05 ～ 1.0				
	Inlet Air Temperature Range		℃	5 ～ 60							
	Ambient Temperature Range		℃	2 ～ 60							
Performance Specifications	Filtration Method			Adsorption by activated carbon fiber							
	Output Oil Concentration / Pressure Loss		MPa	0.003wt ppm（Remaining oil content 0.004mg/m^3）/ 0.009							
	When to Replace Element ※ 3	Pressure Loss	MPa	0.07							
		Period of Use		1 year							
Main Dimensions	Differential Pressure Gauge Connection Size			Rc 1/4			High pressure side: Rp1/4, Low pressure side: M5				
	Piping Connection Size		B・A	Rc 3/4・20		Rc1・25		Rc1 1/2・40			
	Mass		kg	1.0	2.0	2.1	3.0	3.1	3.2	3.3	3.5
Element	Model		EKS	150	200	250	400		500	700	850
	No. of Filter Elements Used		qty.	1							

Item			Model KSF	1000	1005	1200	1300	1700	2000	2700C	3200C
Air Processing Capacity ※1			m^3/min	10.6		12.8	13.8	17.3	20.0	27.6	32.0
Processing Capacity	Processed Fluid			Compressed air							
	Compressed Air Pressure Range(Gauge Pressure)		MPa	0.05 ～ 1.0							
	Inlet Air Temperature Range		℃	5 ～ 60							
	Ambient Temperature Range		℃	2 ～ 60							
Performance Specifications	Filtration Method			Adsorption by activated carbon fiber							
	Output Oil Concentration / Pressure Loss		MPa	0.003wt ppm（Remaining oil content 0.004mg/m^3）/ 0.009							
	When to Replace Element ※ 3	Pressure Loss	MPa	0.07							
		Period of Use		1 year							
Main Dimensions	Differential Pressure Gauge Connection Size			High pressure side: Rp1/4, Low pressure side: M5						Rc 1/4	
	Piping Connection Size		B・A	Rc1 1/2・40	Rc 2・50					2 1/2・65	3・80
	Mass		kg	3.7	4.2	4.3		4.9	6.0	26	28
Element	Model		EKS	1000		1200	1300	1700	2000	1300	2000
	No. of Filter Elements Used		qty.	1						2	

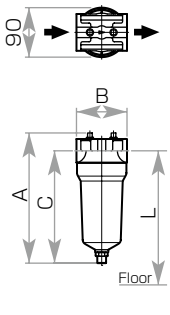
Item			Model KSF	4000C	5000B	6000B	7700B	10300B	12900B	15500B	20700B	31800B
Air Processing Capacity ※1			m^3/min	40.0	50.0	60.0	77.8	103.7	129.7	155.6	207.5	318.9
Processing Capacity	Processed Fluid			Compressed air								
	Compressed Air Pressure Range(Gauge Pressure)		MPa	0.05 ～ 1.0								
	Inlet Air Temperature Range		℃	5 ～ 60								
	Ambient Temperature Range		℃	2 ～ 60								
Performance Specifications	Filtration Method			Adsorption by activated carbon fiber								
	Output Oil Concentration / Pressure Loss		MPa	0.003wt ppm（Remaining oil content 0.004mg/m^3）/ 0.009								
	When to Replace Element ※ 3	Pressure Loss	MPa	0.07								
		Period of Use		1 year								
Main Dimensions	Differential Pressure Gauge Connection Size			Rc 1/4								
	Piping Connection Size		B・A	3・80	4・100		5・125	6・150		8・200		10・250
	Mass		kg	28	74		96	155	190	250	311	380
Element	Model		EKS	2000								
	No. of Filter Elements Used		qty.	2	3		4	6	7	9	12	18

※1 Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32 ℃, 75 % humidity.) Processed air conditions: Inlet air pressure: 0.7 MPa, inlet air temp: 32 ℃, inlet dew point at atmospheric pressure: −17 ℃ (PDP: 10 ℃), inlet oil concentration: 0.01 wt ppm (0.01 mg/m^3). ※2 Model 150B can be configured to handle pressures of 2.94 MPa. (This is a special order item.) ※3. The actual replacement time will be whichever occurs first. There should be almost no increase in pressure loss when using the EKS element as long as proper pre-processing (removal of water mist, solid particulate, and oil mist) is carried out. If there is an increase in pressure, then immediate inspection of the pre-processing filters should be carried out. ※ Optional differential pressure gauge sold separately. ※ Always install an air dryer, super line filter, and super mist filter before the KSF series filters.
Note: Load placed on air inlet/outlet flanges should be no more than 120 kg. Please ensure adequate support for the piping that leads to the filter. (KSF2700C ～ 31800B) ※ Models KSF12900B ～ 31800B are built-to-order models. ※ Models KSF5000B ～ 31800B are subject to JBA 2nd class pressure vessel regulation. ※ KSF2700C ～ 31800B are built to order. ※ Replacement period is not guaranteed. In addition, some parts may require replacement sooner depending on the specific operating environment or operating conditions of the unit. ※ **Legs on the KSF2700C, 3200C and 4000C are optional.** ※ As the construction of the Final Filter is different, it is not compliant with ISO14644-1 (F.S.209D) air purity class standard.

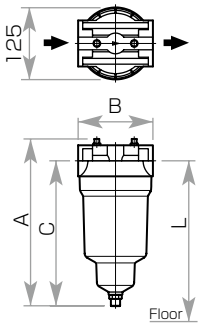
DSF/LSF/MSF/KSF

□ External Dimensions

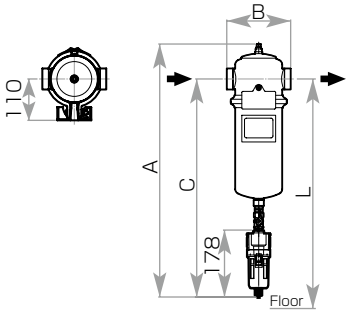
● □SF75
● □SF150



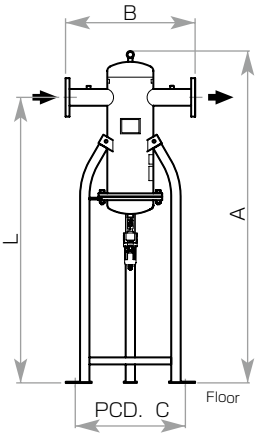
● □SF200
● □SF250



● □SF400 / 404 / 500 / 700 / 850
● □SF1000 / 1005 / 1200 / 1300
1700 / 2000



● □SF2700 / 3200 / 4000
※ When mounted on optional legs.
(Part Number 02101762010)
● □SF5000 / 6000 / 7700
● □SF10300 / 12900
● □SF15500 / 20700 / 31800



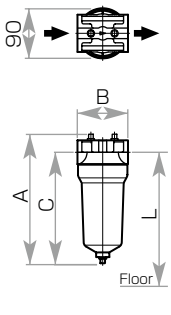
External Dimensions (Units:mm)

DSF LSF	MSF-D	A	B	C	L	Piping Connection Size B · A
75B	75D	237	92	205	300 min	Rc 3/8 · 10
150B	150D					Rc 3/4 · 20
200B	200D	290.5	130	253	370 min	
250B	250D				400 min	Rc 1 · 25
400-1	400D	536	160	452	550 min	
404	404D	557	170	466		Rc 11/2 · 40
500	500D	588		495	680 min	
700-1	700D	618		526.5	710 min	
850	850D	673		580	770 min	
1000-1	1000D	726		634.5	920 min	
1005	1005D	747	173	649		2 · 50
1200	1200D	799		700	1060 min	
1300-1	1300D	819		721	1080 min	
1700 ※	1700D	913		814	1180 min	
2000-1 ※	2000D	976		878	1400 min	
2700C	2700D	(1511)	590	575	1300	2 1/2 · 65
3200C	3200D					3 · 80
4000C	4000D					
5000B	5000D	(1735)	640	630	1500	4 · 100
6000B	6000D					
7700B	7700D	(1757)	680	682		5 · 125
10300B	10300D	(1992)	790	810	1700	6 · 150
12900B	12900D	(2102)	970	987	1800	
15500B	15500D	(2142)	1010	1038		8 · 200
20700B	20700D	(2252)	1060	1089	1900	
31800B	31800D	(2391)	1100	1140	2000	10 · 250

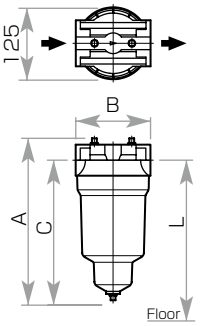
※ LSF models only.

□ External Dimensions

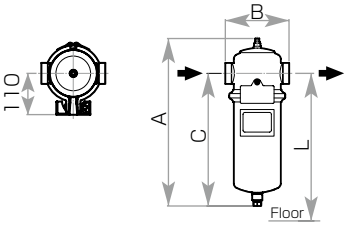
● KSF150B



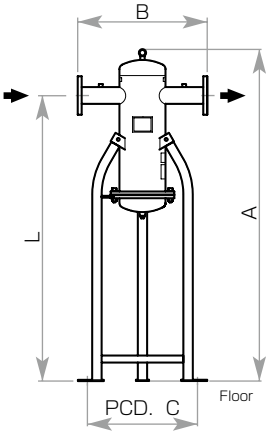
● KSF200B
● KSF250B



● KSF400/404/500/700/850/
1000/1005
● KSF1200/1300/1700/2000



● KSF2700C/3200C/4000C
※ When mounted on optional legs.
(Part Number 02101762010)
● KSF5000B/6000B/7700B
● KSF10300B/12900B
● KSF15500B/20700B/31800B



External Dimensions (Units:mm)

KSF	A	B	C	L	Piping Connection Size B · A
150B	232	92	199	300 min.	Rc 3/4 · 20
200B	281.5	130	244	370 min.	
250B				400 min.	Rc 1 · 25
400	307.5	160	224	550 min.	
404	327	170	235		Rc 11/2 · 40
500	362		269	680 min.	
700	389.5		298.5	710 min.	
850	447		354	770 min.	
1000	497.5		406.5	920 min.	
1005	515	173	417		2 · 50
1200	573		474	1060 min.	
1300	590.5		493	1080 min.	
1700	687		588	1180 min.	
2000	747.5		650	1400 min.	
2700C	(1511)	590	575	1300	2 1/2 · 65
3200C					3 · 80
4000C					
5000B	(1735)	640	630	1500	4 · 100
6000B					
7700B	(1757)	680	682		5 · 125
10300B	(1992)	790	810	1700	6 · 150
12900B	(2102)	970	987	1800	
15500B	(2142)	1010	1038		8 · 200
20700B	(2252)	1060	1089	1900	
31800B	(2391)	1100	1140	2000	10 · 250

2 Choosing the Right Super Filter

☐ Air quality will differ depending on the type of contaminants present at the filter inlet. System construction of a clear air line may be required depending on the suitable combination of components. (If the type of contaminant present at the inlet changes, the change on the outlet side will be proportional.)

Please make your system line filter choice based on the table below.

Performance Specification Chart

Remaining Oil Content \ Particulate Size	0.01μm	1μm	5μm
0.01mg/m³ (0.01wt ppm) 0.6mg/m³ (0.5wt ppm)	Super Mist Filter MSF-D シリーズ		
1mg/m³ (0.83wt ppm)			
5mg/m³ (4.2wt ppm)			
–		Super Line Filter LSF Series	Super Drain Filter DSF Series

※ Regarding remaining oil content, please confirm the inlet conditions of the filter in question.

Making the right model choice
Choose a model that allows plenty of leeway in capacity.

(Common with DSF, LSF, MSF, and KSF models)

$$\text{Air processing capacity} \geqq \frac{\text{Desired capacity}}{\text{Pressure correction coefficient}}$$

■ Pressure Correction Coefficient (inlet pressure)

Pressure (MPa)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.57
Pressure Correction Coefficient	0.38	0.49	0.62	0.75	0.87	1.0	1.06	1.12	1.17	1.23	1.28	1.32	1.37	1.41	1.46

Super Filter Operating Ranges

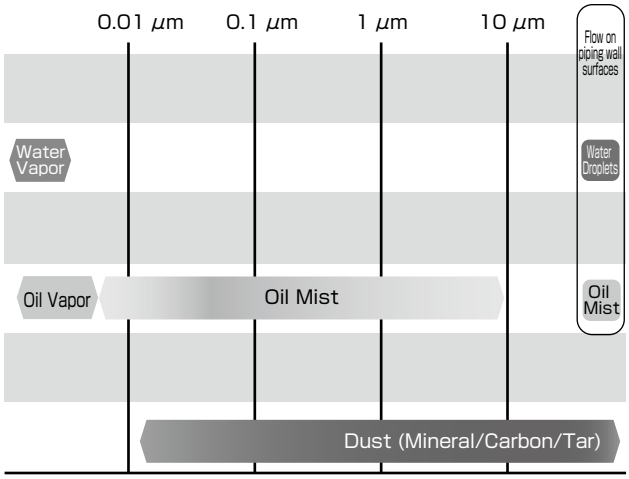
Item			DSF	LSF	MSF	KSF
Operating Range	Pressure [MPa]	75～250	0.05～1.57			
		400～2000	0.1～1.0			0.05～1.0
		2700～7700	0.20～1.0	0.1～1.0		0.05～1.0
		10300	0.20～1.0			0.05～1.0
		12900～31800	0.29～1.0	0.20～1.0		0.05～1.0
	Pressure Fluctuation [MPa/min]		0.34 or lower			
	Inlet Air Temperature [℃]		5～60			
	Inlet Air Pressure Dew Point [℃]		–		10 or lower	
	Inlet Air Oil Concentration [wt ppm]		–	3 or lower		0.01 or lower
Filter Element Replacement Period※	Differential Pressure [MPa]		0.02	0.07		–
	Maximum Operating Period		1 year			

※ The filter element replacement period will depend on operating conditions and is not a warranted value. ※ Cannot be operated under reverse pressure. There will not be a large pressure loss. The filter element can be deteriorated even if there is no differential pressure, and should be replaced after one year at the latest.

Air Compressor Classification and Discharged Contaminant Type Table (General guideline)

Air Compressor		①Lubricated Reciprocal Pump	②Lubricated Screw Pump	③Oil Free
Typical Compression Method		 Air compression from reciprocating movement of a piston	 Compression from the movement of 2 rotating rotors	(Screw and turbo types, etc.)  Generic name of models that don't use lubrication. Includes models where the compression method uses water, etc., instead of lubricating oil.
Type of Contaminant	Dust	Tar	Little	Minerals, Carbon
	Oil	Liquid Oil Oil Mist Oil Vapor	Liquid Oil Oil Mist Oil Vapor	Little (Substances contained in the intake air)
	Water	Liquid Water (Water droplets) and Moisture		
Air Characteristics		High discharge temperature and a variety of contaminant types due to the use of high viscosity lubrication	There are a variety of contaminants, however there is some collection of lubrication, so there is little dust.	Since these don't operating with lubricating oil, most of the contaminants are dust.

Contaminant Size (Reference guideline)



Manufacturer Options and Accessories (Sold separately)

☐ Super Filter, Clean Air Filter Optional Equipment Part Number Nomenclature

Part numbers for optional equipment have 6 digits. Please refer to the following chart to confirm the proper part number when making orders.

Product number ——— Part Number of Optional Equipment ———

MSF400D + [1st Digit] [2nd Digit] [3rd Digit] [4th Digit] [5th Digit] [6th Digit]

1st Digit	2nd Digit	3rd Digit	4th Digit	5th Digit	6th Digit
0 · Standard	0 · Standard	0 · Standard	0 · Standard	0 · Standard	0 · Standard
	1 · Includes differential pressure gauge	1 · Rated for outdoor use	1 · Export packaging	1 · Anchor bolt A	1 · Test manual included
	2 · Includes indicator	2 · Custom color	2 · Includes Inspection Certificate	2 · Anchor bolt B	2 · Test results chart included
	3 · Includes differential pressure gauge · Includes indicator	3 · Anti-rust treated		3 · Anchor bolt C	3 · Photo
	4 · Incl. Optional Legs	4 · Rated for outdoor use · Custom color	4 · Export packaging · Includes Inspection Certificate	4 · Anchor bolt D	4 · Test manual included · Test results chart included
	5 · Incl. Optional Legs · Incl. Differential Pressure Gauge	5 · Rated for outdoor use · Anti-rust treated	5	5 · Anchor bolt E	5 · Test manual included · Photo
	6 · Incl. Optional Legs · Incl. Indicator	6 · Custom color · Anti-rust treated	6 · English documentation · Includes Inspection Certificate	6 · Anchor bolt F	6 · Test results chart included · Photo
	7 · Incl. Optional Legs · Incl. Differential Pressure Gauge · Incl. Indicator	7 · Rated for outdoor use · Custom color · Anti-rust treated	7 · English documentation · Export packaging		7 · Test manual included · Test results chart included · Photo
			8 · English documentation		

☐ Manufacturer Option Details and Compatible Models

Optional Item	Description	Compatible Models
Includes Differential Pressure Gauge	· Differential pressure gauge is included. (Customer installation required.)	LSF · KSF · DSF (all models) All MSF models except for MSF200D, 250D. All models of medium-pressure filters (Includes MFH)
Outdoor Operation Spec ※	· Life-Indicator removed. Includes differential pressure gauge.	MSF400D ～ 2000D
	· Special Leg Coating, SUS Bolts	All 2700 ～ 31800 models Life Indicator changed to Differential Pressure Gauge on MSF models only.
Custom Colors (We don't coat to custom user-specified thicknesses.)	· Please specify Munsell No., or JPMA (Japan Paint Manufacturers Association) No. (Attach color sample.)	All 2700 ～ 31800 models (Legs only)
Degreasing Processing	· Alcohol wipe-down of body and inside-housing · Flange Gasket: Teflon	(All models)
Packaging for Export	· Packaged in plywood (Plywood sided)	(All models)
Inspection Certificate Included	· Body and Housing Inspection	All models excluding 75 ～ 250 and medium pressure filters.
English Specifications	· Machine Plates, English Operation Manual	(All models)
Anchor Bolts A	· SS grade stainless steel L-type	All 2700 ～ 31800 models.
Anchor Bolts B	· SS grade stainless steel Hole-In Anchor	
Anchor Bolts C	· SS grade stainless steel, Chemical Anchor	
Anchor Bolts D	· SS grade stainless steel L-Type	
Anchor Bolts E	· SUS grade stainless steel Hole-In Anchor	
Anchor Bolts F	· SUS grade stainless steel, Chemical Anchor	
Inspection Manual	· Document Produced by ORION.	All Models (Process photographs not included.)
Test Results Chart	· Document Produced by ORION.	
Photograph	· Photos of finished equipment (of designated views of the equipment)	
Element Life Indicator	· Element Life Indicator Factory Installed	Models 400 ～ 31800 excluding MSF models. (DSF2000 not equipped.), excluding medium pressure filters.
Optional Legs	· Legs require on-site installation.	DSF · LSF · MSF · KSF2700 ～ 4000

※ Can be used outdoors as is under the standard specifications. (DSF400-1 ～ 1300-1、LSF400-1 ～ 2000-1、KSF400 ～ 2000)

☐ List of Anchor Bolt

Model \ Type	L Type	Hole-in	Chemical
DSF · LSF · MSF · KSF 2700 ～ 31800	M16 × L200 3 pcs.	M16 × L120 3 pcs.	M16 × L160 3 pcs.

□ Accessories (Sold separately)

■ DG-50(A)/DG-50(B)/DG-50(D)
Differential pressure display range: 0 ～ 0.15 MPa

Features

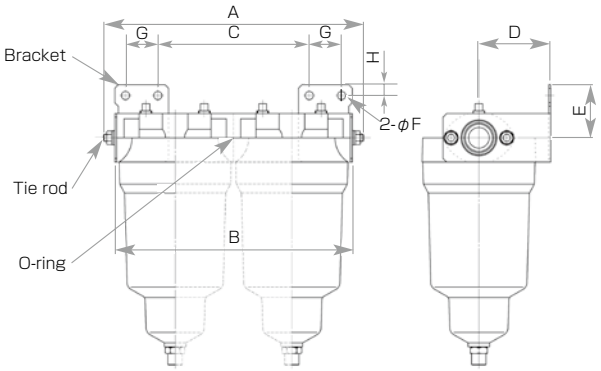
Measures the difference in pressure between a filter's inlet and outlet in a single gauge.

□ Specifications

Item \ Model			DG-50（A）	DG-50（B）	DG-50（D）
Maximum Operating Pressure (Gauge Pressure)		MPa	1.0	1.6	1.0
Differential Pressure Display Range (Gauge Pressure)		MPa	0 ～ 0.15		
Connection			R1/4		
Outside Dimensions (Outside Diameter x Depth)		mm	φ70×43		
Mass		kg	0.5		
Included Parts	Nylon Tubing		O.D.: φ4 mm × L1000 mm		
	Straight Coupler		R1/4×φ4 mm (for tubing)		
	Elbow Coupler		R1/4×φ4 (for tubing)		M5×φ4 (for tubing)
Applicable Model	LSF- MSF- KSF- DSF-		2700,3200,4000, 5000,6000,7700, 10300,12900,15500, 20700,31800	75 150 200 250 ※ 75 not on KSF models.	400,404,500,700,850,1000, 1005,1200,1300,1700,2000 ※ 1700,2000-1 not on DSF models.
	LFH MFH KFH DFH		—	600,900,1400,1900,2900	—
Part Number			03A30984010	03A30985010	0A000338010

※ When ordering, please specify the model name. ※ Please contact us for guaranteed performance specifications.

■ Bracket set · Tie rod set
（75 ～ 250, Medium Pressure Spec 600）



Set Details

Bracket Set Contents	Tie Rod Set Contents	Tie rods (2 pcs) Hex nuts (4 pcs) Flat washers (4 pcs) Spring washers (4 pcs) O-ring (1 pc per filter unit)
	Brackets (2 pcs), assembly guide	

※ The bracket set includes the tie rod set.

● External Dimension (Units:mm)

※ The following part numbers are for the Blanket Set. (The Blanket Set contains the Tie-Rod Set.)

Model	Filter Units	Part Number	A	B	C	D	E	F	G	H
75 150	1	03101363010	120	97	27	60.5	51.5	7.2	25	10
	2	03101363020	210	189	119					
	3	03101363030	305	281	211					
200 250 600	1	03101373010	160	135	39	80	59	9.2	36	12
	2	03101373020	290	265	169					
	3	03101373030	420	395	299					

□ Others

■ Element Life Indicator

Indicator Lamp That Tells When Filter Element Needs Replacing
Super Filter
Comes standard on models MSF400D and above
(Does not work with models 250D and below.)
Available as Special Specifications on models
LSF/KSF/DSF400-1 and above.
(Does not work with models 250B and below.)

Judging when to change filters has become more difficult due to the evolution in air compressors and the fact that oil from them is in the form of mist. ORION has started a new era in element management with a suggested replacement time of Approx. 8000h.

Element Life Indicator

2 OFF/OFH

Final Filter That Meets Air Purity Class 3・5 Specs. (Compressed air ultra purification equipment)

OFF-025 ～ 100-04-A（ISO14644-1 class 5）
OFH-025 ～ 100-04-A（ISO14644-1 class 3）
Gives you highly clean air
Air processing capacity: 0.26 ～ 1.06 m^3/min

Features

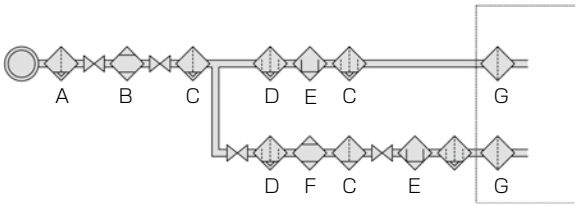
1. Ultra filtration to 0.5 μm
2. Casing constructed of polished stainless steel, filter elements are made of PTFE membrane or fiberglass.
3. Comes standardly with outlet particle flow measurement port.

□ Specifications

Item		Model	OFF-（class 100）			OFH-（class 1）		
			025-04-A	050-04-A	100-04-A	025-04-A	050-04-A	100-04-A
Air Processing Capacity ※1		m^3/min	0.26	0.53	1.06	0.26	0.53	1.06
Processing Capacity	Processed Fluid		Compressed air					
	Compressed Air Pressure Range (Gauge Pressure)	MPa	0.05 ～ 0.93					
	Inlet Air Temperature Range	℃	5 ～ 80					
	Ambient Temperature Range	℃	2 ～ 60					
Performance Specifications	Output Air Purity Class ※2		ISO14644-1・class 5（F.S.209D class 100）			ISO14644-1・class 3（F.S.209D class 1）		
	Initial Pressure Loss	MPa	0.005 or less					
	When to Replace Element		3000 hours or 1 year, whichever comes first					
Main Dimensions	Piping Connection Size		Rc1/2					
	Mass	kg	1.8	2.2	3.0	1.8	2.2	3.0
Element	Model		FF-025-A	FF-050-A	FF-100-A	FH-025-A	FH-050-A	FH-100-A
	No. of Filter Elements Used		1					
Composition	Filter Media		Fiberglass, Polypropylene			PTFE membrane, Polypropylene		
	Housing		Stainless steel (SUS304, polished)					
	O-ring		Silicon rubber					

※1 Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32 ℃, 75 % humidity.) ※2 Purity class in ( ) indicates the amount of particulate contained in 1ft^3(cubicfeet) of air. Please see page 11 regarding F.S.209D. ※ Conditions of air to be processed should be as follows: Inlet air pressure: 0.69 MPa, inlet air temp: 32 ℃, inlet dew point at atmospheric pressure: −17 ℃, inlet oil concentration: 0.05 wt ppm or less. ※ Comes standard equipped with measurement joint. ※ Swagelock fittings are also available and sold separately.

Clean Air System



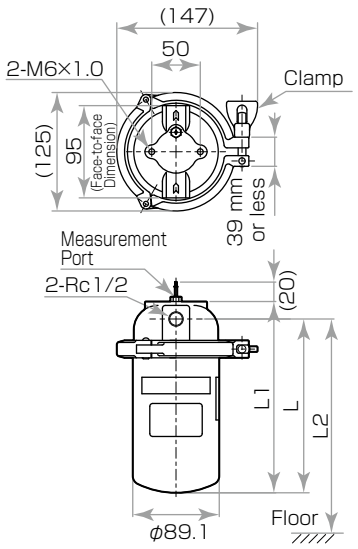
A: Line filter
B: Refrigerated air dryer
C: Line filter
D: Mist Filter
E: ACF Filter
F: Heatless air dryer
G: Final Filter
※ For blower air use, be careful when installing valves and other piping after the final filter.

Making the right model choice

Choose a model that allows plenty of leeway in capacity.

$$\text{Air processing capacity} \geqq \frac{\text{Desired capacity}}{\text{Pressure correction coefficient}}$$

□ External Dimensions



● External Dimensions (Units:mm)

OFF・OFH	L1	L2	L
025-04-A	134	200 min.	117
050-04-A	196	300 min.	179
100-04-A	317	550 min.	300

■ Pressure Correction Coefficient (inlet pressure)

Pressure (MPa)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0.93
Pressure Correction Coefficient	0.38	0.49	0.62	0.75	0.87	1.0	1.06	1.12	1.15

OPF

OPF200/500（ISO014644-1 Class 3）
Air purity class ISO14644-1 Class 3 (F.S.209D Class 1) fine particulate removal


OPF200　OPF500

Features

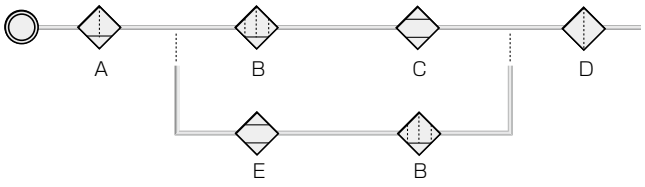
1. Very fine particle filtration
2. Compact and lightweight
3. Easy maintenance
   Easy to replace filter cartridge

□ Specifications

Item \ Model OPF			200	500
Air Processing Capacity ※1		L/min	200	500
Processing Capacity	Processed Fluid		Compressed air	
	Compressed Air Pressure Range (Gauge Pressure)	MPa	0.05 ～ 0.98	
	Operable Temperature Range	℃	5 ～ 50	
Performance Specifications	Purity Class ※2		ISO14644-1 Class 3 (F.S.209D Class 1)	
	Initial Pressure Loss	MPa	0.02	
Materials	Head		Die cast zinc	Die cast aluminum
	Body		Polycarbonate resin	
	Hollow Fiber Membrane		Polypropylene resin	
	Potting Material		Polyurethane resin	
Inlet/Outlet Connection			Rc1/4	Rc1/2
Mass		kg	0.4	0.5

※1 Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32 ℃, 75 % humidity.) ※2 Please see page 11 regarding F.S.209D. ※ Conditions of air to be processed should be as follows: Inlet air pressure: 0.69 MPa, inlet air temp: 32 ℃, inlet dew point at atmospheric pressure: −17 ℃, inlet oil concentration: 0.05 wt ppm or less. ※ When using the final filter, make sure the supplied air is dry, and is free of water droplets and oil mist. ※ This equipment should not be used with air that is adulterated with corrosive gases, organic solvents, etc., nor in an environment that contains such compounds. ※ Regarding bacteria removal performance of (LRV ≧ 7), please consult with your Orion dealer.

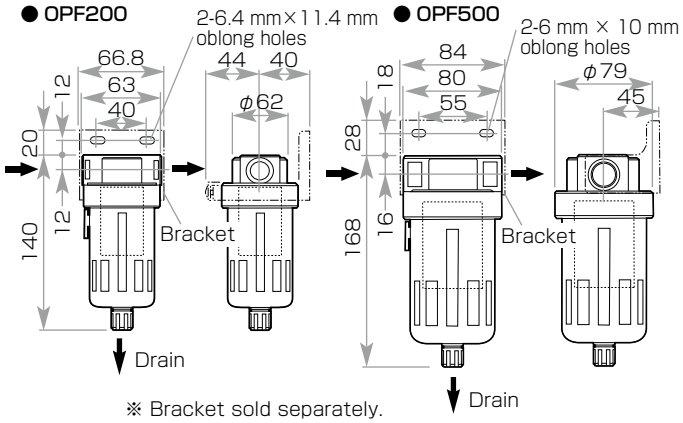
Clean air system flow



A: Line filter
B: Mist filter
C: Fine dryer
D: Final filter
E: Heatless air dryer

⚠ Use at pressures of 0.98MPa and below.
Operation at higher pressures may damage the filter and lead to the risk of injury.

□ External Dimensions (Units:mm)



※ Bracket sold separately.
OPF200: Part No. 04A30217010
OPF500: Part No. 03038864010

Making the right model choice

Choose a model that allows plenty of leeway in capacity.

$$\text{Air processing capacity} \geqq \frac{\text{Desired capacity}}{\text{Pressure correction coefficient}}$$

■ Pressure Correction Coefficient (inlet pressure)

Pressure (MPa)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0.98
Pressure Correction Coefficient	0.38	0.49	0.62	0.75	0.87	1.0	1.06	1.12	1.17

Drain Master Features

Why Drain Processing Equipment is Necessary

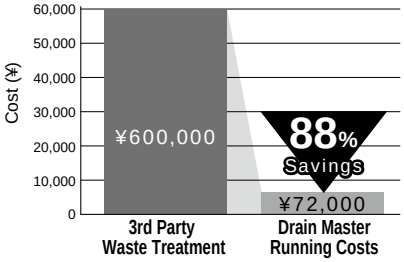
(1) The Law
According to the Water Pollution Control Law, it is illegal to discharge untreated drainage from air compressors.

(2) Regulation Standard
The Japanese national standard for compressed air drain water that can be discharged is that which has an oil concentration of 5 mg/L or lower.

(3) Concentration
On average, drainage from screw type air compressors has an oil concentration of 30-50 mg/L.

Merits of adopting the Drain Master (Calculation Based on the Medium Duty OWC Model)

Large Reductions in Drain Processing Expenses
Comparison of costs to treat 100 L/day of drainage using the Drain Master or having the drainage managed by a 3rd party industrial waste treatment company:



※ Calculation based on 3rd party industrial waste treatment costs of ¥25/L, and the running operational cost (for parts and consumables) of the Drain Master of ¥30/L (OWC model, oil concentration of 150 mg/L.)

Maximum Drainage Volume (L/h)

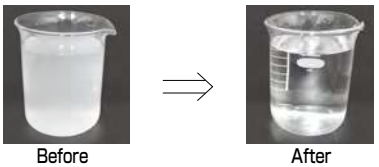
Please calculate your maximum drainage requirements using the formula below:

Air Compressor Discharge Volume (m³/min) × 60 × {(Water Content of Air at Inlet) (g/m³) − (Water Content of Dried Air) (g/m³)} × 1/1000

Conditions

- Air Compressor Discharge Air Quantity: Atmospheric Pressure Conversion
- Air Moisture Content at Inlet: Installation in Place with Summer Season Conditions (Air temperature is 30 ℃, relative humidity is 70 %, therefore the moisture content is 21.2 g/m³.)
- Moisture Content of Dried Air: At a pressure of 0.69 MPa, dew point of 10 ℃, therefore the moisture saturation is 1.37 g/m³.
- Spring and autumn drainage requirements are approximately 1/2 of winter requirements and 1/3 of summer requirements.

Drain Water

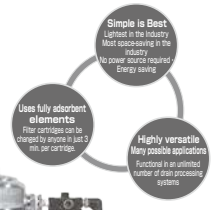


Before Processing → After Processing

2. Model Suggestion Based on Air Compressor Output and Drain Processing Method

Air Compressor (KW)		15 ～ 22	37	55	75	150	300 ～ 720	For other drain water properties, see Peripheral Equipment on page 67.
Method	Demulsification Sheet + Desiccant Air Ransport	ODF5 	OWD10 					
Relevant Model Compatibility	(From Drain Water) + Activated Carbon Type Low Concentration Unit		OWD10 + OWL8 					· Gravity Type Oil/Water Separation Tank OWT350 · Low Concentration Unit with Cohesion Treatment OWH20-GB(H) · Activated Carbon Type Low Concentration Unit OWL8-K(H) · Treated Effluent Inspection Tank OWSK7 P.68
Method	Electrocoagulation + Desiccant Air Transport			OWC75 		OWC150 		
Relevant Model Compatibility	(From Drain Water) Strong Electrolysis			(Strong Electrolysis) OWH20 + OWC75 		(Strong Electrolysis) OWH20+OWC150 		· Gravity Type Oil/Water Separation Tank OWT350 · Low Concentration Unit with Cohesion Treatment OWH20-GB(H) · Activated Carbon Type Low-Concentration Unit OWL8-K(H) · Treated Effluent Inspection Tank OWSK7 P.68
Method	Demulsifying Agent + Activated Carbon + Other Under Natural Flow					OWM30 	OWM60,90,160 	Same as Above

· For drain water processing, note that peripherals which can be combined will differ depending on drain water properties. See, "System Recommendations According to Drain Properties" on page 67 for details.
· The ODF is a handy filter-type drain water processing unit and, as such, doesn't include relevant equipment compatibility information.

Processing Method (Drain Transport)	Ease of Installation	Drain Water Resistance Compatibility (Related to nearby units)	Ease of Replacing Consumables	Corresponding Model
Demulsification Sheet + Desiccant (Air Transport)	○	—	◎	Pico-Drain Oil and Water Separation from Air Compressed Air Condensate (Filter Type Condensate Processing Equipment) **Filter Type Drain Processing Equipment - Pico-Drain "ODF"** ODF5-W1/ODF5-W2 A New Concept in Ecological Friendliness (No Electricity Required, Lightweight, Space Saving, Energy Saving) Concentration After Processing: 5 mg or less (of hexane extracts) Applicable air compressors: Screw type or Reciprocal type, 22 kW and below.  Features 1. No Electricity Required! And therefore Light Weight, Space and Energy Saving. Thanks to our non-electric design, the main unit weighs in at only 10 kg. (ODF5-W1 model) Can be wall mounted, thus requiring zero floor space. Running cost is just ¥6.3/L. 2. Replaceable filter element design Anyone can replace the elements easily and reliably. Filter element replacement in only 6 minutes. Can easily be done during a lunch break. 3. Suitable for many applications Meets requirements of installations that have infrequent operating rates. Can be added to existing installations for preprocessing. 
〃	○	○ P.68	○	Oil and Water Separation from Air Compressed Air Condensate -- Drain Master (Compressed air condensate processing equipment) **Drain Processing Equipment - Drain Master "OWD"** Medium duty model OWD10/Cold climate model OWD10-H Meets Water Pollution Control Law effluent standard. Potential for greatly reduced condensate treatment costs. Main-processing concentrations below 5 mg/L (hexane content) Applicable air compressors: Screw type or Reciprocal type, 37 kW and below.  Features 1. No electric power source required, light weight, space saving (50 % smaller compared with previous models) Main unit does not need electricity. Running cost: ¥5.3/L 2. Easy filter replacement Filters in each tank can be replaced and sent back to the factory. Lower amount of material to be disposed of by the user. 3. Cold climate lineup available. (OWD10-H) Can process air in temperatures as low as − 10 ℃ without drainage freeze
Electrocoagulation + Desiccant (Air Transport)	△	○ P.68	○	Oil and Water Separation from Air Compressed Air Condensate -- Drain Master (Compressed air condensate processing equipment) **Drain Processing Equipment - Drain Master "OWC"** Medium duty models OWC75・150/Cold climate models OWC75-H・150-H Meets Water Pollution Control Law effluent standard, greatly reduces condensate treatment costs. Post-processing concentrations below 5 mg/L (hexane content) Applicable air compressors: Screw type or Reciprocal type, 75 kW・150 kW and below.  Features High efficiency filter material. Compatible with screw and reciprocal air compressors. Separates out mineral oils, synthetic oil emulsions, yielding clean water. (Hexane concentration less than 5 mg/L)
Demulsifying Agent + Activated Carbon + Other (Under Natural Flow)	△	○ P.68	△	Oil and Water Separation from Air Compressed Air Condensate -- Drain Master (Compressed air condensate processing equipment) **Drain Processing Equipment - Drain Master "OWM"** Heavy duty models OWM30 ～ 160 Meets Water Pollution Control Law effluent standard, greatly reduces condensate treatment costs. Post-processing concentrations below 5 mg/L (hexane content) Applicable air compressors: Screw type, 720 kW and below.  Features 1. Energy saving models that require no power source No electric moving parts -- perfect for outdoor use. (Excluding cold-climate models) 2. High capacity separation and adsorption tanks in one compact design Separation and adsorption tanks are built into one unit for easy installation. 3. Filter can be changed on-site. 4. Cold-climate models are built-to-order items.

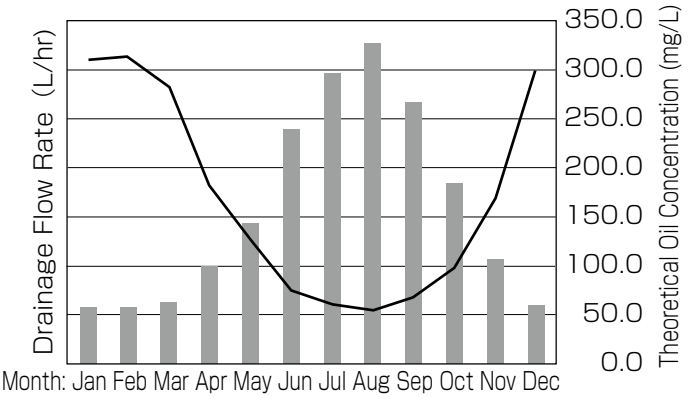
DRAIN MASTER Peripheral Equipment

Chart of System Considerations According to Drain Properties

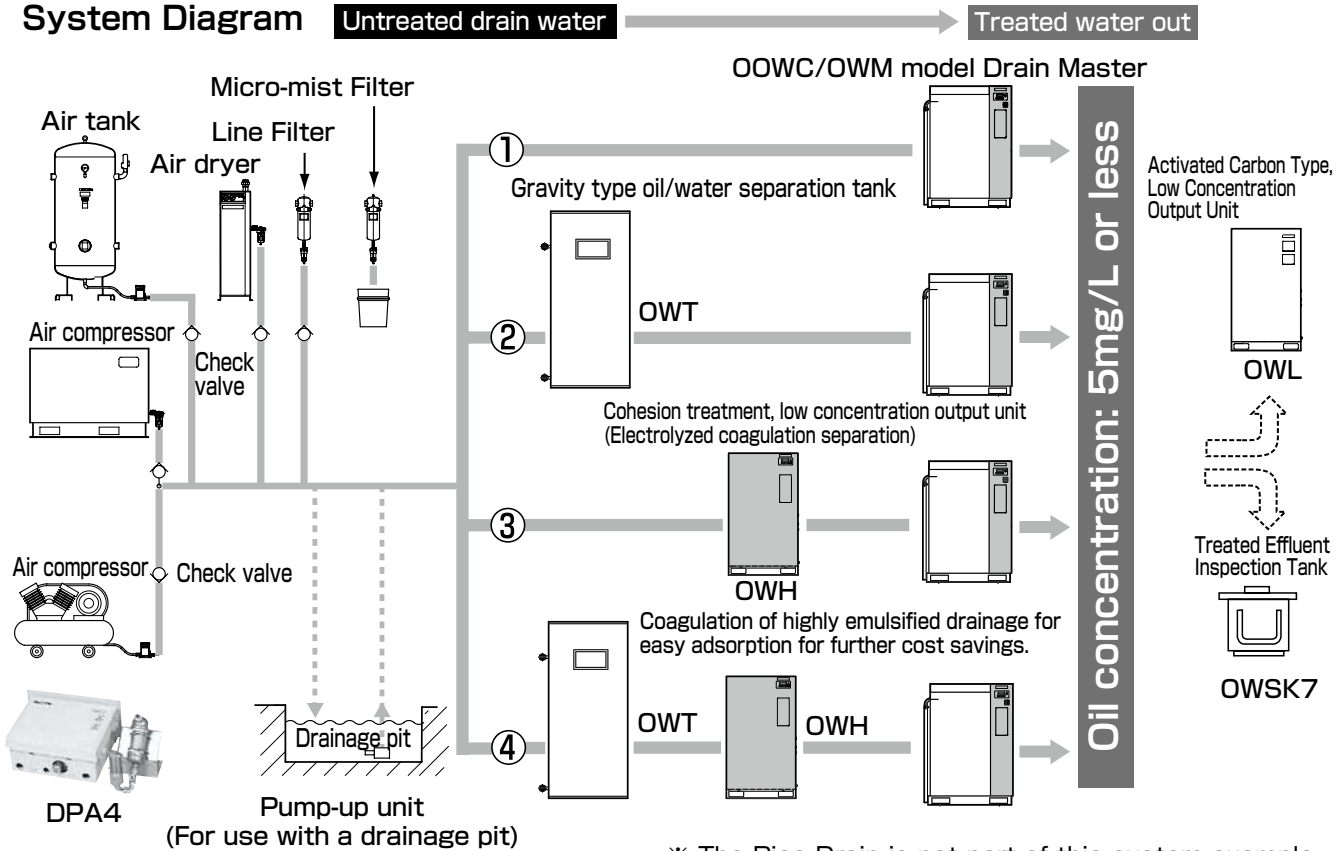
		Gravity Separation Suitability		
		Good	Average	Poor
Average Oil Concentration Throughout The Year	Low	①	①	③
	Average	① ②	① ② ③	③ ④
	High	②	② ④	④

※ How to Use this Chart
Model selection example:
Average yearly oil concentration: High. Gravity separation suitability: Good. In this case, model ② would be indicated as the most economical and best performing choice. A more precise calculation based on your specific needs is possible. Please consult your dealer for further information.

Amount of Drainage Per Month



System Diagram



※ The Pico Drain is not part of this system example.

OWT/OWH/OWL/OWSK/DPA

Equipment and model selection should be conducted by knowledgeable and experienced personnel.
When choosing equipment, in addition to referring to this catalogue, be sure to match its intended purpose and the way it is to be used with the machine's specifications and performance abilities.
Oil concentrations will differ according to the season. Please refer to the graph below for typical oil concentrations throughout the year.
Calculation of drainage concentration may vary depending on the collection day or district. We can offer suggestions regarding existing and newly established solutions. Please contact us for details.

DRAIN MASTER Peripheral Equipment

Gravity Type Oil/Water Separation Tank

・All stainless steel construction
・No electric power source required

Easily separated surface oils and emulsified drainage are treated by gravity separation. By employing this pre-stage separator, oil load to the main drainage processor is decreased and running costs can be greatly reduced.

※ Best used with high-concentration, easy to separate drainage.

● External Dimensions (H×D×W):1489×525×625
● Mass : 64 kg (Dry)
● Storage Capacity : 350 L

Cohesion Treatment Filtration for Very Low Concentration Output OWH20-GB Series.

・OWH20-GB (Single phase 200V)
・OWH20-GBH (Cold climate model, single phase 200V)

Ionized oil particulate within emulsified drainage is removed and the oil coagulates, making it much easier to process.

※ Best used with high-concentration, easy to separate drainage.

● External Dimensions (H×D×W):1201×580×642
● Mass : 81 kg (H type: dry)
● Inlet condition : Oil concentration 600 mg/L and below
● Processing capacity: 20 L/hr and below

Activated Carbon Type, Low Concentration Output Unit OWL8-K Series

・OWL8-K (No electric power required)
・OWL8-KH (Cold climate model, single phase 200V)

Even lower concentration levels of drainage previously processed by the Drain Master can be achieved through our high efficiency activated carbon filtration.

※ Please consult with your dealer for details regarding treatment levels that surpass water pollution control standards.

● External Dimensions (H×D×W):810×396×530
● Mass : 43 kg (H type: dry)
● Inlet condition: Oil concentration 5 mg/L and below
● Processing capacity: 8 L/hr and below

Treated Effluent Inspection Tank OWSK7

・All stainless steel construction

Allows for visual inspection of drainage previously processed with the Drain Master.

● External Dimensions (H×D×W):240×240×250
● Mass : 5 kg (Dry)
● Storage Capacity : 7 L

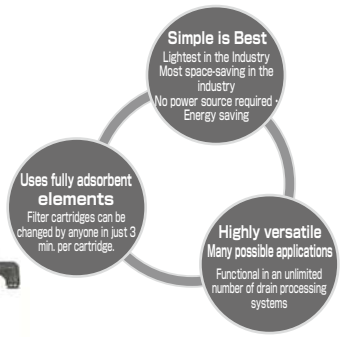
Pump-up Unit DPA4

For pumping drainage up from a drain pit or sump.
● Power requirement: 200 V
● Pumping capacity: 2～36 L/hr (variable speed)

3 Filter Type Drain Processing Equipment

Pico-Drain "ODF"

ODF5-W1/ODF5-W2
A New Concept in Ecological Friendliness (No Electricity Required, Lightweight, Space Saving, Energy Saving)
Concentration After Processing: 5 mg or less (of hexane extracts)
Applicable air compressors: Screw type or Reciprocal type, 22 kW and below.



Features

1. No Electricity Required! And therefore Light Weight, Space and Energy Saving.
   Thanks to our non-electric design, the main unit weighs in at only 10 kg. (ODF5-W1 model)
   Can be wall mounted, thus requiring zero floor space.
   Running cost is just ¥6.3/L.
2. Replaceable Filter Element Design
   Anyone can replace the elements easily and reliably.
   Filter element replacement in only 6 minutes.
   Can easily be done during a lunch break.
3. Suitable for Many Applications
   Meets requirements of installations that have infrequent operating rates.
   Can be added to existing installations for preprocessing.

□ Specifications

Item		Model	ODF5-W1	ODF5-W2
Application			Collected Drain Processing	Individual Drain Processing
Compatible Air Compressor (Estimate)		kW	22 kW or under (screw or reciprocal type compressors)	
Compatible Oil Type			Compressor lube oil (mineral and synthetic oils)	
Operable Ambient Temperature Range ※1		℃	2 ～ 40	
Compressed Air Pressure Range (Gauge Pressure)		MPa	0.98 or less	0.29 ～ 0.98
Performance Specifications	Average Yearly Processing Capacity	L/hr	5	
	Oil Concentration of Treated Drain	mg/L	5 or less (of hexane extracts)	
	Drain Processing Capacity ※2	L	5000	
Inlet Conditions	Untreated Drain Water	MPa	Compressed air drain at a pressure of 0.98 MPa or less	
	Maximum Oil Oncentration of Untreated Drain	mg/L	500 or less	
	Temperature Range of Untreated Drain	℃	2 ～ 40	
Outside Dimensions (W x D x H)		mm	600 × 191 × 505	700 × 191 × 515
Unit Mass (Dry Weight)		kg	10	12
Connection (Inlet and Outlet)			ϕ12 one-touch fitting	
Optional Equipment ※3			Self standing assembly / Anti-freeze unit assembly	
Comments	Required Power Source		No electric power source required	
	Additional Required Equipment		Solenoid, disc, or motor valve type trap	Not needed

※1 When used with the optional Anti-freeze Unit Assembly (two 50 W specialized heaters), the allowable ambient operating temperature range is: −5～40 ℃.
※2 Based on an average drain oil concentration of 125 mg/L (ideal figure.) The capacity when used with a reciprocal air compressor will be approximately half of this amount. ※3 A bracket and restraining bands are included with the unit

Installation Notes

Information that applies to both models

1. Filter life depends on type of air compressor oil used as well as specifics of drain being processed. Do not use Pico-Drain to process drainage from oil-mist filters. Such drainage should be processed separately.
2. Outlet piping should be ϕ12 tubing, have a maximum length of 5 m, and should not have vertically rising segments.

ODF5-W1

1. Inlet piping should be ϕ12 tubing, have a maximum length of 10 m, and have less than 2 m in vertical rise.
2. When implementing common drain piping, make sure pipes for each drain trap are fitted with their own check valve.
3. When using a solenoid type, motor valve type, or disk type, do not use 2 or more.
4. When using a drain trap for discharge use, install it as far upstream on the drain line as possible.

ODF5-W2

1. Inlet piping should be ϕ12 tubing, have a maximum length of 10 m, and have less than 0.5 m in vertical rise.
2. Do not install a drain trap on the secondary side.

Construction and Working Principles

○ Element Construction
There are 2 special identical filter canisters, each containing a different kind of filter cartridge. Each canister is stamped for clear identification. The canister is semi-transparent so it is possible to gauge the filter condition by simply looking at it. (Pre-processing filter material: adsorbent sheet. Postprocessing filter material: adsorbent material similar to cotton fiber.)

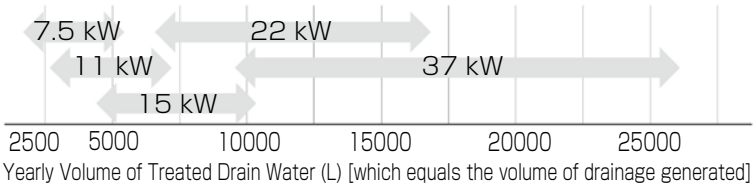
○ Drain Flow
After the drain has been mostly processed by the pre-processing element, it flows to the main-processing element and is further filtered down to a concentration of 5 mg/L or less. Drain water enters each element from the bottom, flows through the filter material, and out the top. In this way, the oil part is adsorbed by the filter material.

○ Working Principles (ODF5-W1)
Drain water is discharged via pressure from the drain trap (solenoid type / disc type / motor-valve type) which is installed before this filter.
Working Principles (ODF5-W2)
Drain water is discharged via the pressure from attached drain trap (AD5) when the drain trap is activated.

Estimated Drain Water Volumes by Air Compressors

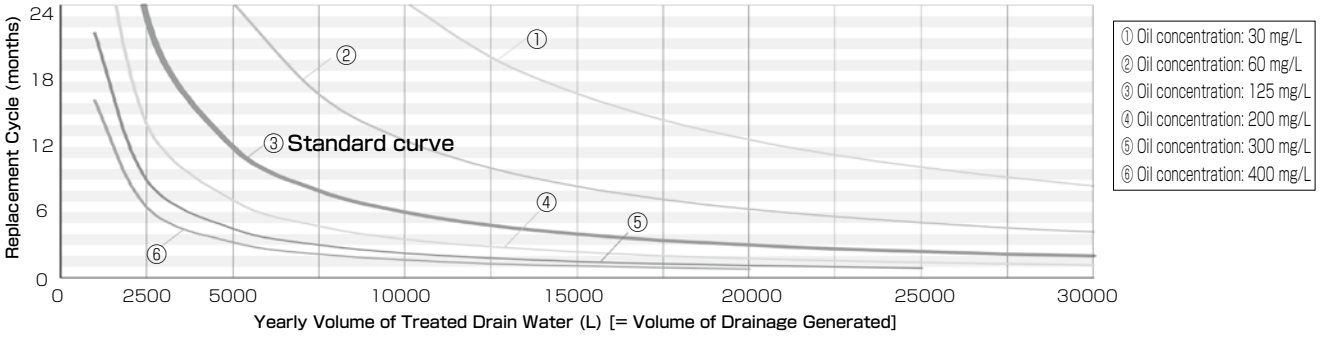
※ The arrows in the following diagram are estimates based on calculations using the conditions noted below. The volume of drainage to be processed per year (that is, the amount of drain generated per year) can change depending on the operating conditions of the air compressor, load rates, and operating environment (temperature and humidity.)

Range of Drainage Volume Based on Air Compressor Output



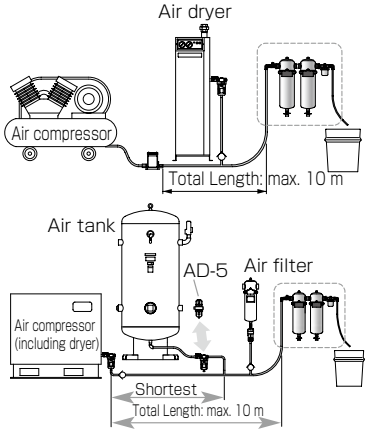
○ Air Compressor operating conditions:
10 hours/day, 20 days/month (left side of arrow) ~
20 hours/day, 30 days/month (right side of arrow)
○ Relative air compressor load: 60 %
○ Intake conditions: 30 ℃ 60 %RH
○ Conditions after having passed through a dryer:
Air pressure: 0.69 MPa, dew point: 10 ℃ .

Filter Element Replacement Estimates



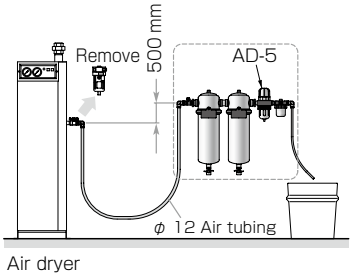
□ Sample Applications

OODF5-W1 (shown within dashed lines, not including hoses)



※ One drain trap should be replaced for discharge use.

ODF5-W2 (within dashed lines, not including hoses)



□ Accessories

Anti-Freeze Unit Assembly
(Power source: Single phase, 100 V, 50 W x 2)
Cord length: 3 m

Self Standing Assembly

Drain Master "OWD"

Medium duty OWD10 / Cold climate model OWD10-H
Meets Water Pollution Control Law effluent standard. Potential for greatly reduced condensate treatment costs.
Main-processing concentrations below 5 mg/L (hexane content)
Applicable compressors: Screw type・Reciprocal type, 37 kW and below.

OWD10　　OWD10-H

Features

1. No electric power source required, light weight, space saving (50 % smaller compared with previous models)
   Main unit does not need electricity.
   Running cost: ¥5.3/L
2. Easy filter replacement
   Filters in each tank can be replaced and sent back to the factory.
   Lower amount of material to be disposed of by the user.
3. Cold climate lineup available. (OWD10-H)
   Can process air in temperatures as low as −10 ℃ without drainage freeze

□ Specifications

Item		Model	OWD10	OWD10-H
Processing Method		—	Collected drain processing	
Compatible Air Compressor (Guideline)		—	37kW or below (screw or reciprocal)	
Compatible Oil		—	Compressor lubrication oil (mineral oil or synthetic oil)	
Ambient Temp. Range		℃	2 ～ 40	−10 ～ 40
Operable Pressure Range		MPa	0.29 ～ 0.98	
Performance Specifications	Average Yearly Processing Capacity	L/hr	10	
	Oil Concentration of Treated Drain	mg/L	5 or less (of hexane extracts)	
	Gross Processing Quantity ※1	L	18000	
Inlet Conditions	Untreated Drain Water		Compressor air drain of 0.98 MPa or less	
	Maximum oil Concentration of Untreated Drain	mg/L	500 or less	
	Temperature Range of Untreated Drain	℃	2 ～ 40	
Power Specifications	Power (50/60 Hz)	V	—	Single phase 200
	Power Consumption	W	—	146
	Current Rating	A	—	0.73
Outside Dimensions (W × D × H)		mm	413 × 334 × 1175	
Unit Mass (Dry Weight)		kg	36	37
Drain Inlet		B	Rc1/2	
Treated Water Outlet		B	Rc1/4	
Compatible Discharge Drain Trap ※2			Solenoid or disc type	

※1 When processing an average oil concentration throughout the year of 125 mg/L. (Theoretical) ※2 These are recommended models. Please consult your dealer for further information.

Installation Notes

1. Filter life depends on type of air compressor oil used as well as specifics of drain being processed. Do not use Drain Master to process drainage from oil-mist filters. Such drainage should be processed separately.
2. Do not use 2 or more discharge drain traps (solenoid or disk type).
3. Have drainage flow into the drain trap from drainage collection piping from a point as upstream as possible.
4. Make inlet piping length 10 m or shorter, and if using a tubing, use Φ12 nylon tubing.
5. Output piping should be 1/4B or larger and 5 m in length or shorter.
6. When implementing common drain piping, make sure pipes for each drain trap are fitted with their own check valve.

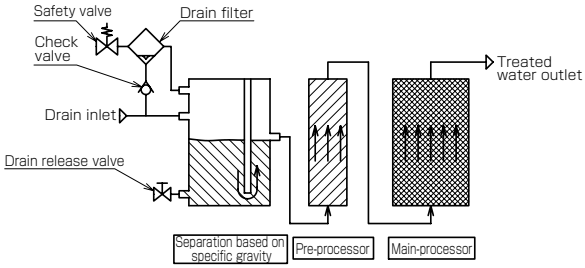
Construction and Working Principles

○ Drain flow

Drain water that enters the drain inlet is separated by differences in specific gravity in the pre-processing tank and undergoes mild processing from pre-processing element. Then it is processed in the main-processing tank where it is processed down to an oil concentration of 5 mg/L or below.

○ Working principles

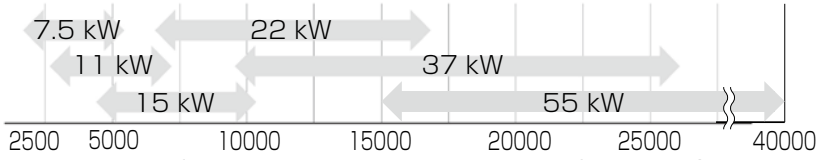
Drain water is discharged via pressure from the drain trap (solenoid type or disc type) which is installed before this filter.



Estimated Drain Water Volumes by Air Compressors

※ The arrows in the following diagram are estimates based on calculations using the conditions noted below. The yearly quantity of treated drain water (= yearly drain output) will differ depending on the working conditions of the air compressor, load factor, and the surrounding environment (temperature and humidity).

Range of Drainage Volume Based on Air Compressor Output



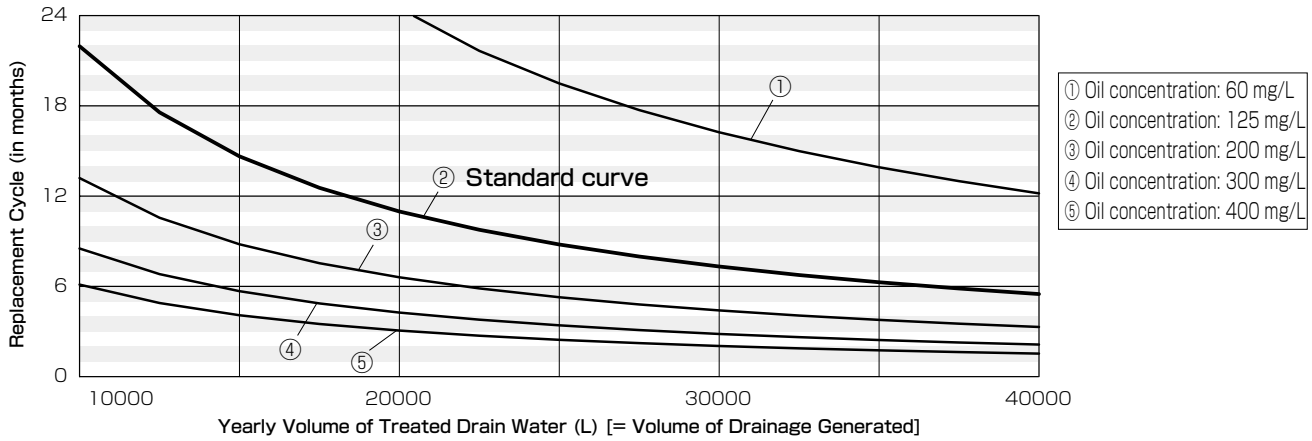
○ Air Compressor operating conditions:
10 hours/day, 20 days/month (left side of arrow) ~ 20 hours/day, 30 days/month (right side of arrow)

○ Relative air compressor load: 60 %

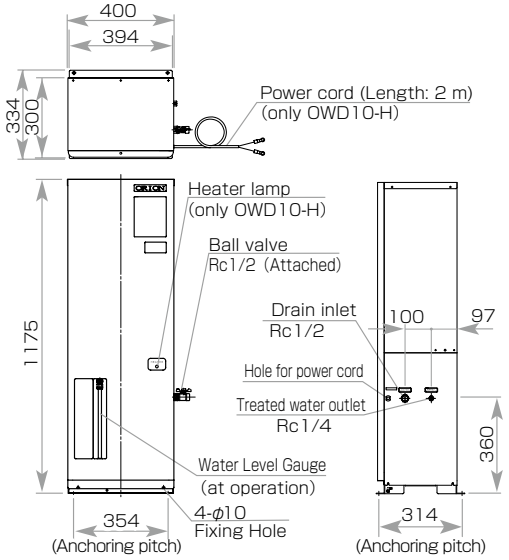
○ Intake conditions: 30 ℃ 60 %RH

○ Conditions after having passed through a dryer:
Air pressure: 0.69 MPa, dew point: 10 ℃ .

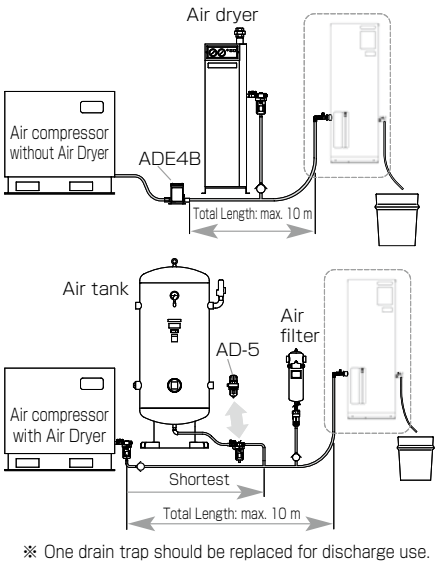
Adsorption Tank Replacement Estimate



☐ External Dimensions (Units: mm)



☐ Sample Applications

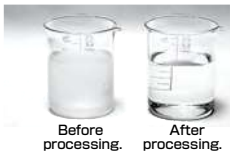


※ One drain trap should be replaced for discharge use.

3 Drain Processing Equipment

Drain Master "OWC • OWM"

Med. duty models: OWC75・150 / Heavy duty models: OWM30～160 / Cold climate models: OWC75-H・150-H
Meets Water Pollution Control Law effluent standard, greatly reduces condensate treatment costs.
Post-processing concentrations below 5 mg/L (hexane content)
Applicable compressors:
OWC : Screw type or Reciprocal type, 150 kW and below
OWM : Screw type, 720 kW and below


Before processing. After processing.


OWC75 Medium duty
OWM30 Heavy Duty

Medium duty models OWC75・150
Heavy duty models OWM30・60・90・160
Cold climate models OWC75-H・150-H

Features

1. High efficiency filter material (OWC)
   Compatible with screw and reciprocal compressors. Separates out mineral oils, synthetic oil emulsions, yielding clean water. (Hexane concentration less than 5 mg/L)
2. Energy saving models (OWM)
   No electric moving parts -- perfect for outdoor use. (Excluding cold-climate models)
3. High capacity separation and adsorption tanks in one compact design (OWM)
   Separation and adsorption tanks are built into one unit for easy installation.

□ Specifications

● OWC75・150 (Medium duty models)、OWC75-H・150-H (Cold climate models)

Item			Model OWC	75	75-H	150	150-H
Average Processing Capacity			L/hr	8		16	
Total Throughput ※1			L	29,000		58,000	
Concentration After Processing			mg/L	5 or less (of hexane extracts)			
Applicable Air Compressor			kW	Screw or Reciprocal, max: 75		Screw or Reciprocal, max: 150	
Compatible Oil Type				mineral oil, synthetic oil			
Operable Ambient Temperature Range			℃	2～40	−10～40	2～40	−10～40
Installation				Indoors or outside (in a place that won't expose it to rain water etc.)			
Inlet Conditions	Processed Fluid			Compressed air drain at pressure of 1.57 MPa or less			
	Concentration of Fluid to be Processed		mg/L	300 or less (concentration of hexane extracts)			
	Temperature Range		℃	2～40			
Power Specifications	Voltage (50/60Hz)		V	Single phase 200	Three phase 200	Single phase 200	Three phase 200
	Power Consumption		W	16	616	16	616
	Current Rating		A	0.08	1.70	0.08	1.70
Equipment Specifications	Adsorption Tank	Preprocessing Tank		Adsorption by high efficiency filtrate			
		Post Processing Tank		Adsorption by high efficiency filtrate			
	Discharge Unit	Method		Compressed air discharge (includes accumulated throughput meter)			
		Capacity	L/min	0.5		1.0	
	Drain Supply System			Pump, auto drain trap, gravity flow			
Heater Unit				—	Warm air circulation	—	Warm air circulation
Outside Dimensions (W x D x H)			mm	900 × 600 × 1200		1200 × 600 × 1200	
Mass			kg	100	120	150	170
Drain Inlet			B	Rc1/2			
Treated Water Outlet			B	Rc1/2			
Compressed Air Inlet			B	Rc1/4			

Note) Filter life depends on type of air compressor oil as well as drain configuration. ※1 Total processing capacity is simulated based on yearly average concentration 150 mg/L also max. 300 mg/L. ※ Please contact ORION the detail of applicable air compressor oil to match. ※ Please contact ORION the guaranteed performance specifications. ※ For installation in cold environments of less than 2 ℃, please use our H models which are specially designed for cold climate use. ※ Compressed air is required for operation. Please use a clean air supply of compressed air that has processed with an air dryer, filters, etc. ※ Please contact ORION regarding custom built models of specification outside the ranges listed above. ※ Compatible air compressor is given as a guideline.

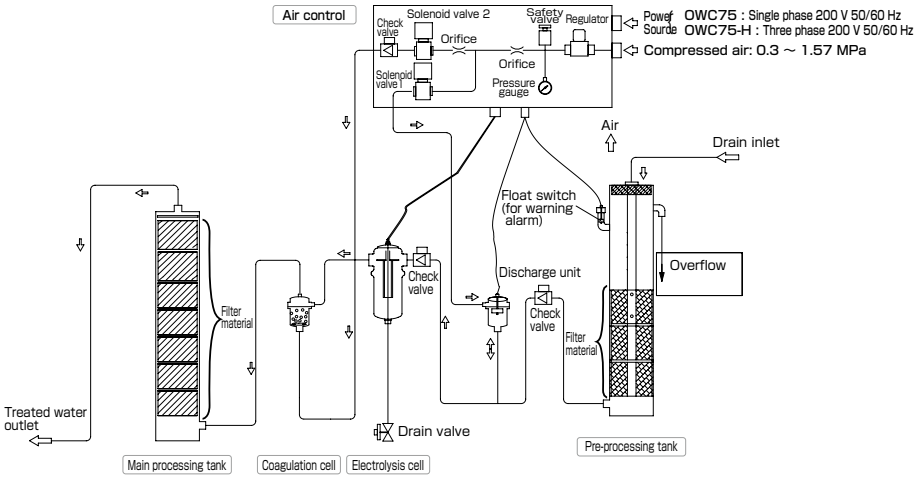
● OWM30・60・90・160 (Heavy duty models)

Item		Model OWM	30	60	90	160
Average Processing Capacity		L/hr	24	48	72	110
Total Throughput ※1		m^3	150	225	375	675
Concentration After Processing		mg/L	5 or less (of hexane extracts)			
Compatible Air Compressor (Screw Compressor) ※2		kW	150 or less	300 or less	360 or less	720 or less
Compatible Oil Type			Compressor lube oil (mineral oil) ※ Please consult your dealer regarding use with synthetic oils.			
Operable Ambient Temperature Range		℃	2～40			
Inlet Conditions	Processed Fluid		Compressed air drain			
	Water Quality at Adsorption Tank Inlet	mg/L	150 or less (concentration of hexane extracts)			
	Temp. of Water to be Treated	℃	5～40			
Equipment Specifications	Separation Tank		Gravity separation (includes level gauge and inspection cover)			
	Filtration Tank		Filter type			
	Adsorption Tank		Adsorption type			
	Drain Supply System		Pump, auto drain trap, gravity flow			
Outside Dimensions (W x D x H)		mm	1359 × 559 × 2065	1909 × 709 × 2065	2209 × 809 × 2165	2049 × 1009 × 2215
Mass		kg	610 (during operation: 1230)	880 (during operation: 2150)	1270 (during operation: 3060)	1770 (during operation: 4250)
Drain Inlet		B	Rc3/4	Rc1		Rp1
Treated Water Outlet						

Note) Filter life depends on type of air compressor oil as well as drain configuration. ※1 Total processing capacity is simulated based on yearly average concentration 150 mg/L also max. 300 mg/L. ※2 Please contact your dealer regarding use with reciprocal type compressors. Operating conditions with suitable compressor are an ambient temperature 23 ℃ and 70 %RH. ※ Please contact us for guaranteed performance specifications. ※ For installation in cold environments of less than 2 ℃, please use our cold climate models (available by special order.) ※ When choosing model, please consider your average annual drain throughput requirements as well as the type of air compressor to be used. ※ Please contact ORION regarding custom built models of specifications outside the range listed above.

Design schematic and drain processing flow chart (Illustration: Model OWC75)

This equipment is comprised of the following components: pre-processing tank, electrolysis cell, coagulation tank, and main-processing tank. Drainage is first sent to the pre-processing filter for rough oil filtration, after which, charged oil particles are removed within the electrolysis cell. In the coagulation tank, there is coagulation via bubbling and in the main processing tank, final filtering takes place. Through this process, drainage can be processed continuously to meet required nominal concentration levels (less than 5 mg/L concentration of hexane extracts.)
Note: Filter life depends on type of compressor oil used as well as drain configuration.



⚠ Attention: Regarding drain piping

1. Oil emission from a micro-mist filter must be collected in a separate tank; do not feed this oil into the Drain Master separator. (It should be processed along with surface oil in a separation tank.)
2. If released drainage is not under pressure, the feed tank must be positioned higher than the separator.

⚠ Confirm quality of treated water

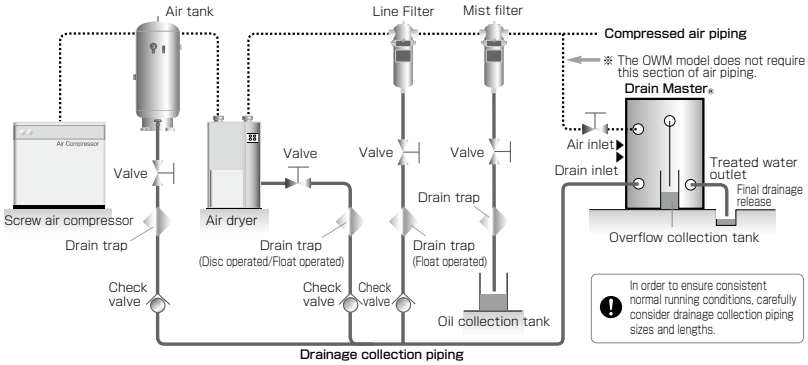
Treated drain water should be checked at regular intervals to ensure concentration levels fall within standard levels. If concentration levels of treated water go above limits for effluent standards, regulations under the Water Pollution Control Law may be applied. Effluent standards differ according to region. Please consult with your local department for details.

⚠ Proper handling of used filter material

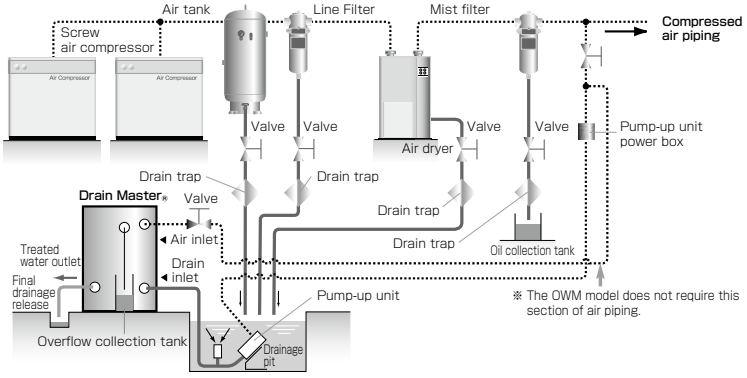
Used filter material is considered industrial waste and should be disposed of according to the advice of a qualified waste disposal professional.

System configuration and piping examples (Examples show the medium duty OWC model.)

● Drain processing flow employing an auto drain trap.



● Configuration for feeding drainage collected in a drainage pit via the compressed air operated Pump-up Unit. (Excluding OWD10)



Dew Point Monitor "MG"

MG40/MG40A-P
Humidity display:
0.1 ～ 99.9 %. 1/10 resolution (MG40)
0.1 ～ 50.0 %. 1/10 resolution (MG40A-P)
Dew point display:
− 40.0 ～ + 40.0 ℃ , 1/10 resolution.
(-40 ℃ to -60 ℃ range is for reference only.)
Temperature display:
− 20.0 ～ + 80.0 ℃ 1/10 resolution.

Features

MG40 (For air at atmospheric pressure)

1. Simultaneous display of temperature and humidity or dew point. (Can choose either humidity or dew point.)
2. Comes equipped with dewpoint and humidity warning signal outputs (2 sets of non-voltage contacts.)
3. Also comes standardly equipped with analogue outputs. (DC outputs for temperature, humidity/dew point)

MG40A-P (For compressed air)

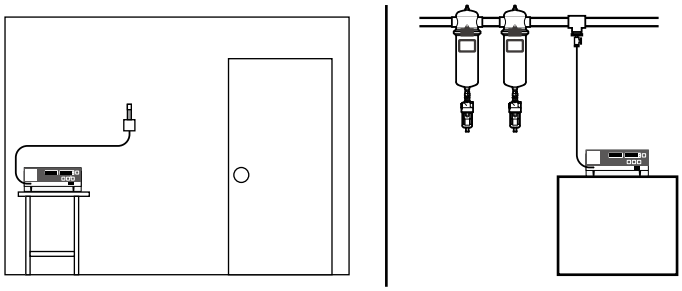
1. Simultaneous display of temperature and humidity or dew point. (Can choose either humidity or dew point.)
2. Comes equipped with dewpoint and humidity warning signal outputs (2 sets of non-voltage contacts.)
3. Also comes standardly equipped with analogue outputs. (DC outputs for temperature, humidity/dew point)

□ Typical Applications

MG40
Measuring indoor temperature, humidity, and monitoring and managing dew point.

MG40A-P
Measurement of compressed air temperature and humidity, and monitoring and managing dew point.

□ Sample Applications



MG40　　MG40A-P

□ Specifications

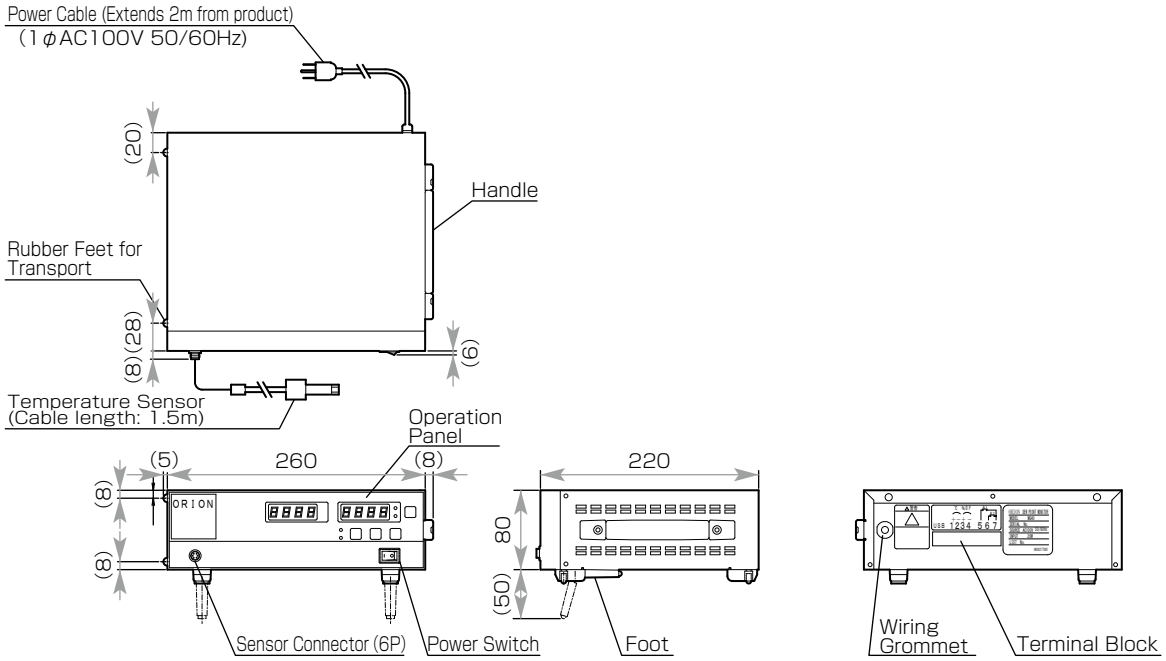
Item			Model	MG40　※4	MG40A-P　※5
Main Unit Specifications	Humidity Display: 3 Digit LED Display			0.1 ～ 99.9 %. 1/10 resolution ※1	0.1 ～ 50.0 %. 1/10 resolution　※1
				Displays " - - - - " on out-of-range, or sensor disconnected/short circuit.	
	Dew Point Display: 4 Digit LED Display (1 Digit for Sign)			−40.0 ～ +40.0 ℃, 1/10 resolution. ※1, 2 (Displays "L" below −60 ℃ and "H" over +40 ℃.) Value of –40 ° C and below is for reference only.	
	Temperature Display: 4 Digit LED Display (1 Digit for Sign)			−20.0 ～ +80.0 ℃, 1/10 resolution. (Displays "L" below −20 ℃ and "H" over +80 ℃, or "- - - -" when sensor is disconnected or shorted.)	
	Operable Ambient Temperature Range		℃	5 ～ 40	
	Operable Ambient Humidity Range		%RH	0 ～ 85 (no exposure to condensation)	
	Storage Temperature Range		℃	−5 ～+55	
	Power Source		V	AC100 ±10 %	
	Power Consumption		W	20	
	Outside Dimensions	Height	mm	80	
		Depth	mm	220	
		Width	mm	260	
	Piping Connection Size		mm	—	φ4 (one-touch fitting)
	Mass		kg	2.7	2.9
	External Signal Connections	Analog Output		Dew point: 0 ～ 5V DC （−60 ～+40 ℃）	
				Humidity: 0 ～ 5 V DC (0 ～ 100 %)	Humidity: 0 ～ 2.5 V DC (0 ～ 50 %)
				Temperature: 0 ～ 5 V DC (−20 ～+80 ℃)	
		Alarm Output		Dew point (upper/lower limits) / humidity (upper/lower limits) temperature (upper/lower limits) non-voltage, normally-open contacts 2 sets (AL1, AL2)	
Sensor Specifications	Fluids that can be Measured			Pure air (at atmospheric pressure) / Purity Class 8, free of water droplets, oil, suspended organic solvents, etc. ※6	Compressed air (must be free of water droplets, oil, dirt, or air that has been processed through a filter.) ※6
	Operating Pressure Range		MPa	Atmospheric pressure	0.1 ～ 0.8
	Temperature Gauge Accuracy		℃	±1	
	Humidity Gauge Accuracy		%RH	± 2 (20 ～ 80 %) at 25 ℃	±2 (20 ～ 40 %) at 25 ℃
	Calculated Dew Point Precision		℃	± 3　−30 ～ +40 ℃ D.P / ± 5　−30 ～ −40 ℃ D.P ※3 Values below −40 ℃ are for reference only. (when air temperature is 25 ℃)	
	Sampling Flow Rate		L/min	—	3 ～ 5 By set orifice purge

※1 Display shows Humidity or Dew Point by Switch. C ※2 Dew Point is calculated from temperature and humidity. ※3 Dew Point accuracy is based on factory inspection, not guaranteed. ※4 MG40 is a monitor to measure at atmospheric condition. To measure, please place the sensor in the measuring environment direct ※5 MG40A-P is a monitor to measure under pressure condition. To measure, please take a compressed air by the equipped air sampling tube to compressed air piping ※6 Using or storing in the following atmospheres will lead to deterioration of the sensor and necessitate recalibration in a short period of time; acetic acid, hydrogen chloride, ammonia, ethyl acetate, xylene, butanol, dichloroethane.

□ External Dimensions (Units:mm)

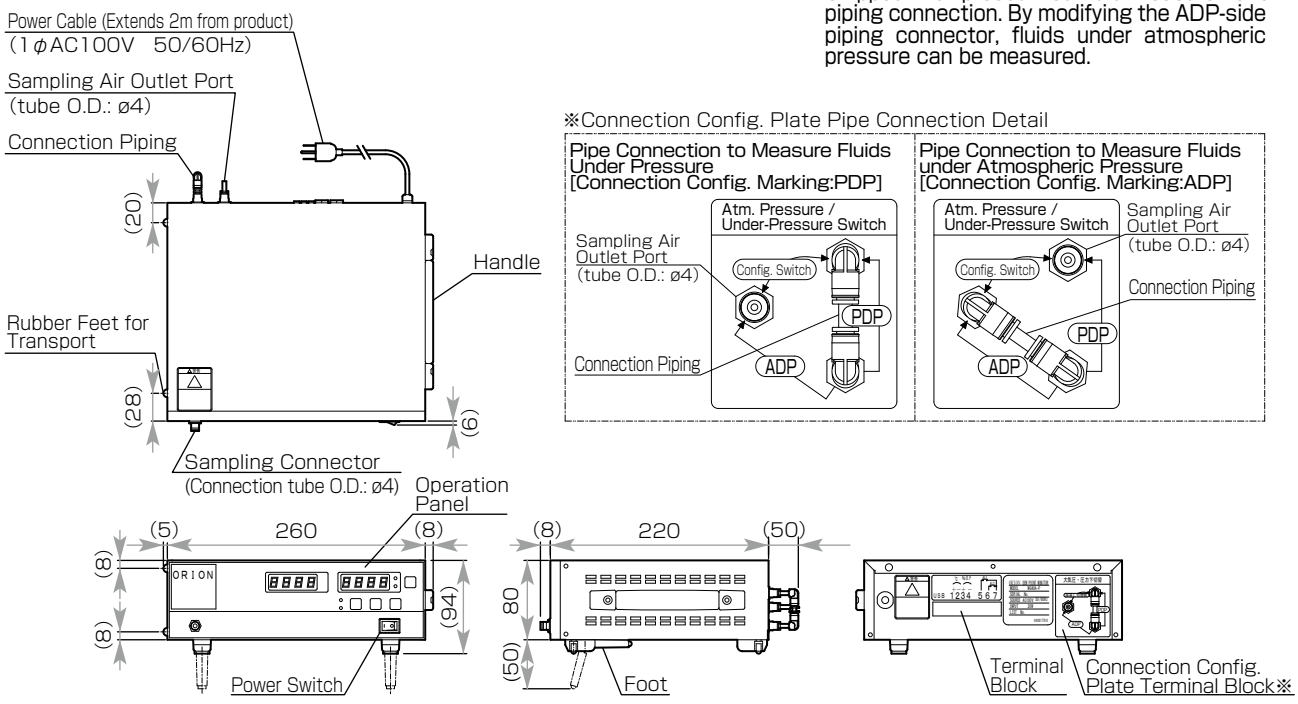
●MG40

1.Atmospheric Pressure Models



●MG40A-P

1.Under-Pressure Models
2.Shipped with pressurized fluid measurement piping connection. By modifying the ADP-side piping connector, fluids under atmospheric pressure can be measured.



※Connection Config. Plate Pipe Connection Detail

Digital Differential Pressure Gauge "DGE70"

Differential pressure display range: −1.050 ～ 1.050 MPa
Minimum resolution: 0.001 MPa

Features

1. Differential pressure detection for optimum air filter management
2. Output signals for remote monitoring of differential pressure
3. Management of differential pressure of vapor and fluids

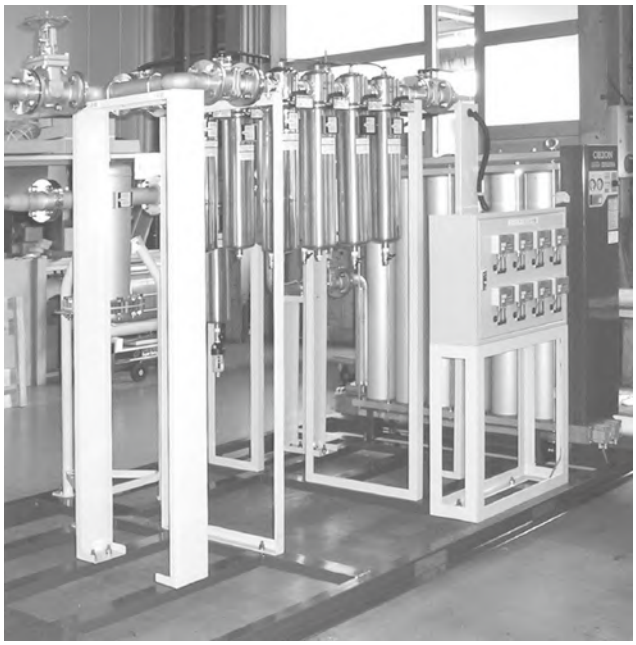
□ Specifications

Item / Model		DGE70
Pressure Range	MPa	0 ～ 1
Greatest Permissible Pressure	MPa	2
Measured Differential Pressure Range (Δ P)		− 1 ～ 1 MPa（Δ P = P1 − P2）
Piping Connection Size (High Pressure Side, Low Pressure Side)		Rc1/8
Power Source		12 ～ 24 VDC ± 10 %　60 mADC
Fluids that can be Measured		Gases or fluids (Fluids must be non-corrosive.)
Output ※1		PhotoMOS relay output (2 outputs)
Operable Temperature Range		− 10 ～ 50 ℃ (non-freezing conditions)
Operable Humidity Range		35 ～ 85 %RH (no dewing)
Case Construction		Die cast aluminum
Mass		490 g (main unit)

※1 Optional : Analog

□ Sample Applications

Instrument panel with multiple differential pressure gauges installed



□ Digital Differential Pressure Gauge Set

Contents of digital differential pressure gauge set
〈Part Number 0310090801O〉

Item	Part Detail	Qty
Digital Differential Pressure Gauge	DGE70	1
AC Adaptor	AC100 V → DC24 V (included)	1
Nylon Tubing	Nylon, L2000	2
One-touch Fitting	KQ2V04-01S (Universal elbow) φ4-1/8B	4
One-touch Fitting	KQ2V04-M5 (Universal elbow) φ4-M5	1
Bushing	Nominal Size: 1/4 × 1/8 SUS304	2
Nylon Cable Ties	Heat resistant type	1
Wiring Installation Guide	A4 Sheet	1

※ Has a set of 4 one-touch fittings. 2 for the DGE70 and 2 for 2 measurement points.

Other Items Drain Trap "Solenoid Type, Timer Type"

IoT※

※See pages 93~94.

ADE450 Series

Features

1. The drain release interval can be set by the adjustable timer.
2. Clogging due to sludge is greatly reduced due to the wide (ø 5 mm) orifice on our solenoid valve.
3. The included drain detection unit can detect water-full and release the drain, minimizing air losses. (Limited to FS type.)
4. Can output an alarm signal upon detecting abnormal drainage. (□-FS models only)
5. Automatic freeze-prevention startup based on the outside air temperature. (□-H models only)

ADE450-A1-FS

Drain Detection Unit
(Included with FS Type Models)

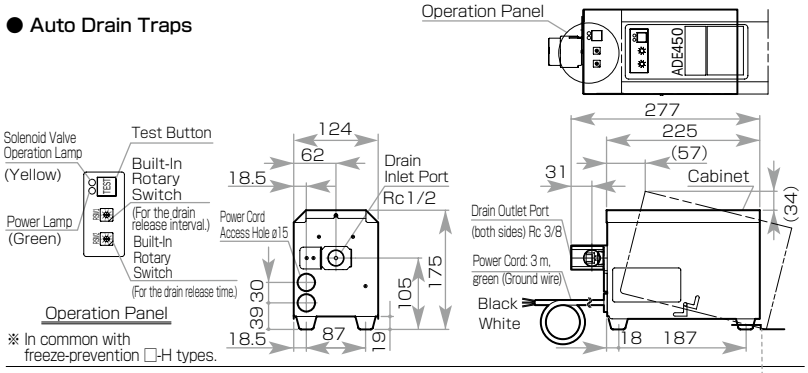
□ Specifications

Item		Model ADE450	Timer Operated · Solenoid Valve Operated							
			A1	A1-FS	A2	A2-FS	A1-H	A1-FS-H	A2-H	A2-FS-H
Maximum Drain Flow Capacity	Timer-Based Drainage	L/sec	0.4 (0.69MPa)							
	Drainage Based on Detection Unit	L/cycle	—	0.3 (0.69MPa)	—	0.3 (0.69MPa)	—	0.3 (0.69MPa)	—	0.3 (0.69MPa)
Operable Pressure Range		MPa	0.25 ~ 0.93							
Operable Temperature Range		℃	2 ~ 48 (Drain not frozen.)				-10 ~ 48 (Drain not frozen.)			
Processed Fluid			Compressed air drain							
Drain Release Method			Includes Solenoid and Timer Operation							
Power Specifications	Power Source		Single phase 100V 50/60Hz		Single phase 200V 50/60Hz		Single phase 100V 50/60Hz		Single phase 200V 50/60Hz	
	Power Consumption(Trap: Heater)	W	25/25 : 20/20		30/30 : 22/22		25/25 : 20/20		30/30 : 22/22	
Connections	Drain Inlet		Rc1/2							
	Drain Outlet		Rc3/8 (2 pcs)							
Outside Dimensions (H x D x W)		mm	175 × 277 × 124				190 × 320 × 124			
Mass	Auto Drain Traps	kg	4.0				4.5			
	Drain Detection Unit		—	1.2	—	1.2	—	1.2	—	1.2

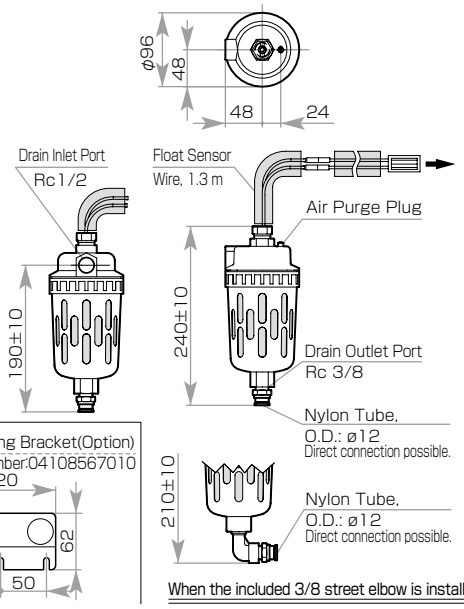
※ For indoor use. (Only for locations that are not susceptible to water splash.) ※ Refer to the instruction manual and specifications chart for details regarding drain release time and interval settings. ※ Includes manual drain release (test) button. ※ Be sure to install the included plug onto either one of the drain release ports. ※ Do not step onto nor place objects on this product.

□ External Dimensions (Units: mm)

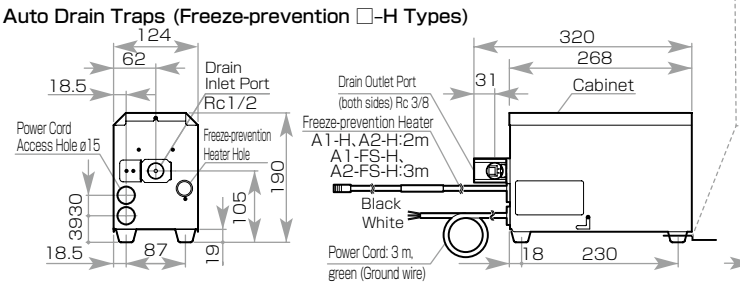
● Auto Drain Traps



● Drain Detection Unit



● Auto Drain Traps (Freeze-prevention □-H Types)



■ Parts Included with the ADE450

	Model ADE Part Name	Specification / Standard	A1	A1-FS	A2	A2-FS	A1-H	A1-FS-H	A2-H	A2-FS-H
①	Nylon Tube	Φ 12 × Φ 9mm 1000mm	1	1	1	1	1	1	1	1
②	Plug	R3/8	1	1	1	1	1	1	1	1
③	Tube Coupling	Tube Dia.: ø 12 mm, R 1/2	1	1	1	1	1	1	1	1
④	Tube Coupling	Tube Dia.: ø 12 mm, R 1/2	1	—	1	—	1	—	1	—
⑤	Cable Restraint Clip	White 100mm	—	1	—	1	4	8	4	8
⑥	Insulation Tape	4000m	—	—	—	—	1	1	1	1
⑦	Street Elbow	Stainless Steel Construction, 3/8	—	—	—	—	—	1	—	1

Other Items Drain Trap "Motor Valve Type"

ADE-2-B/3-B300

Features

1. Water level detecting automatic drain release
2. Timed drain cycle release via adjustable timer(ADE-3-B)

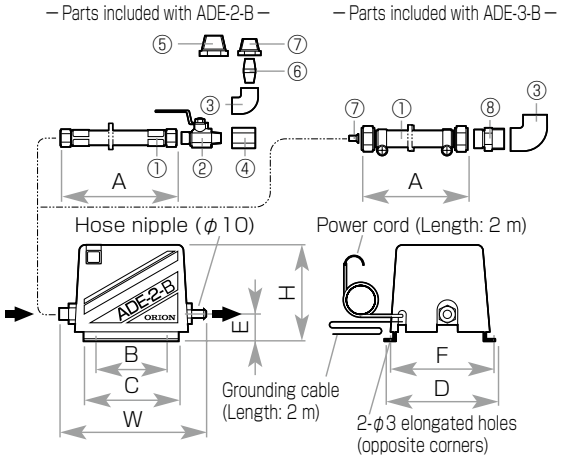
☐ Specifications

Item			Model ADE	Motor Valve Operated	
				2-B	3-B
Performance Specifications	Maximum Drain Flow Capacity	Drain (Water Only)	L/cycle	0.39	
		Air Only	L/cycle	16	
	Drain Release Cycle Time		min.	60 (fixed)	2,5,10,20,30 (adjustable)
	Minimum Drain Release Time		sec.	3.6 / 3.0	
Operable Pressure Range			MPa	0.05~1.47	0.05~0.98
Operable Temperature Range			℃	2~40	
Processed Fluid				Compressed air	
Drain Release Method				Motor valve timer, Water level detection control	
Power Specifications		Power Source		Single phase 200V 50 / 60Hz	
		Power Consumption	W	5 or lower	
Connections		Drain Inlet		Includes 1/2, 3/8,1/4 fittings	Rc1/2
		Drain Outlet		ϕ10 hose nipple	
Outside Dimensions (H x D x W)			mm	105 × 126 × 1701	105 × 126 × 175
Mass			kg	1.0	

※1 Drain conditions: Air pressure (gauge pressure): 0.69 MPa. ※2 Note that water detection might not be possible in cases where the drain water has a low electrical conductivity, such as cases where an oil-free air compressor is used, etc.
※ Adjustable timer is preset to 20 minutes. (Motor valve type) ※ Indoor specifications (Operable in environment where it would not be exposed to water splash.) ※ Comes with manual drain (test button.) ※ To prevent drain from freezing in very cold climates, an antifreeze heater may be necessary. ※ When setting up drain piping, to prevent back pressure from other traps, be sure to install a check valve. Also install drain traps at each drain port. ※ Please consult your Orion dealer for further details.

☐ External Dimensions and Piping Connection Diagram (Units: mm)

● ADE-2-B/3-B



■ Parts Included with the ADE

	Parts Name	ADE-2-B	ADE-3-B
①	Drain Hose Set	1/4B	1/2 1300L
②	Ball Valve	1/4 400L	—
③	Elbow	1/4B	1/2B
④	Socket	1/4B	—
⑤	Bushing	1/2B × 1/4B	—
⑥	Barrel Nipple	1/4B	—
⑦	Bushing	3/8B × 1/4B	ϕ 6 × ϕ 3
⑧	Connection Nipple	—	R1/2 × G1/2

■ ADE Dimensions

	ADE-2-B	ADE-3-B
H	105	
D	126	
W	170	175
A	400	1300
B	64	
C	104	
E	28	
F	119	

☐ Drain Trap compatibility chart

RAX	3J / J-SE	4J-SE	6J / J-SE	8J / J-ES	11J / J-SE	15J / J-SE	22J / J-SE	37J / J-SE	55J / J-SE / J-W
Float Operated ※1	FD2-NC-G3	FD2-G3					FD6-G3		
Float Operated ※2	FD2-NC-G4	FD2-G4					FD6-G4		
Float Operated	FD-5-G3						—	—	—
Motor Valve Operated	—	—	—	—	—	—	ADE-2-B / 3-B		
Timer Operated · Solenoid Valve Operated	—	—	—	—	—	—	ADE450-A1 / A2 / A1-FS / A2-FS		

RAX	75J / J-SE / J-W	90J / J-W	120J / J-W	150J / J-W	190J / J-W	240F-E / F-EW	300F-E / F-WE	380F-E / F-WE	450F-WE
Float Operated ※1	AD-5-G1								AD-5-G1 × 2Unit
Float Operated ※2	—	—	—	—	—	—	—	—	—
Float Operated	FD-10-A								FD-10-A × 2Unit
Motor Valve Operated	ADE-2-B / 3-B					—	—	—	—
Timer Operated · Solenoid Valve Operated	ADE450-A1 / A2 / A1-FS / A2-FS								ADE450 × 2Unit

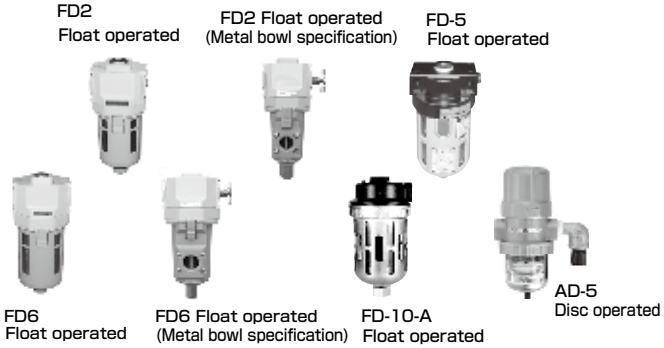
※ 1. Standard recommended trap ※ 2. Metal bowl specification.

Other Items Drain Trap "Float Type, Disk Type"

FD2/2-NC/5/6-G3/10-A
AD-5-G1

Features

1. Drains without air loss Float operated
   (FD2・5・6・10-A)
2. Adjustable timed drain release Disc operated
   (AD-5)



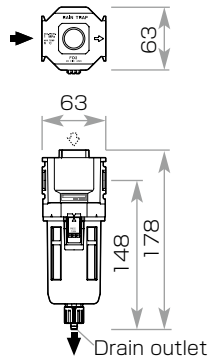
Specifications

Item			Model	Float Operated				Disc Operated
				FD2-G3/ FD2-NC-G3 ※2	FD-5-G3	FD6-G3	FD-10-A	AD-5-G1
Performance Specifications	Maximum Drain Flow Capacity ※1	Drain (Water Only)	cm³/cycle	10	10	30	80	450 L/h
		Air Only	L/cycle	—				approx. 0.3
Compressed Air Pressure Range (Gauge Pressure)			MPa	0.1 ～ 1.0/ 0.15 ～ 1.0	0.05 ～ 0.98	0.1 ～ 1.0	0.20 ～ 1.0	0.29 ～ 1.0
Operable Temperature Range			℃	2 ～ 60				
Processed Fluid				Compressed air				
Drain Release Method				Float operated				Disc operated
Connections		Inlet		Rc1/2				
		Drain Outlet		Hose nipple	Rc1/4	Hose nipple	Rc3/8	Rc1/2
Mass			kg	0.3	0.5	0.45	1.0	1.7
Outside Dimensions (H x D x W)			mm	178×63×63	173.5×φ80	201×80×80	193×φ96	198×79×86

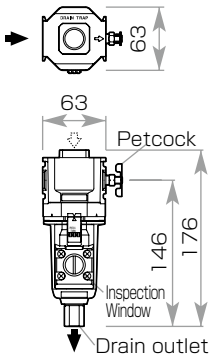
※1 Drain conditions: Air pressure (gauge pressure): 0.69 MPa. ※2 NC (normally closed): Drain release valve is closed when the unit is not under pressure. ※ Drain inlet (G3 piping connection) ports are available on the top and side of the unit. Screw the included cap onto the unused connection port. ※ Please consult your Orion dealer for further details. ※ If connecting tubing to models FD2-G3 / FD2-NC-G3, or FD6-G3, use a nylon tubing with an I.D. of φ5.7- φ6.0 (O.D. φ8).

External Dimensions (Units: mm)

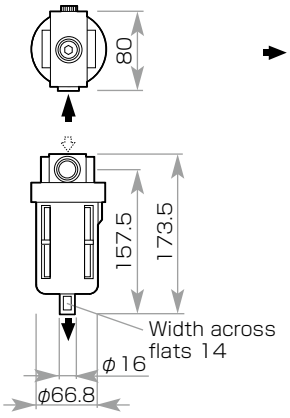
● FD2/NC-G3



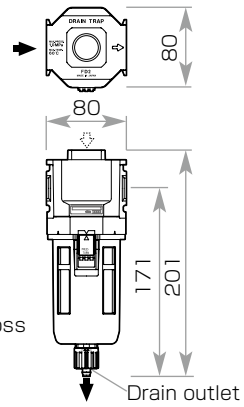
● FD2/NC-G4



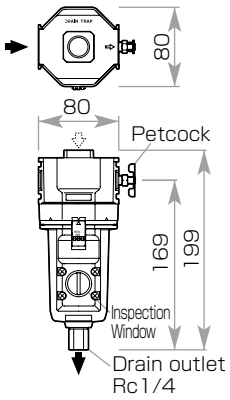
● FD-5



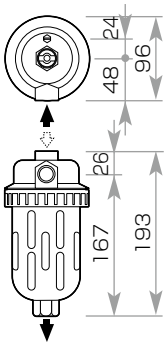
● FD6-G3



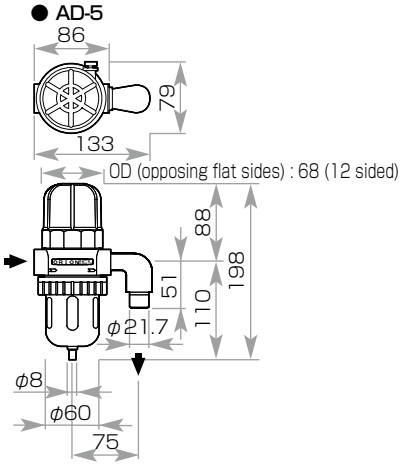
● FD6-G4



● FD-10-A



● AD-5



Other Items Air-Cooled Aftercooler "SE"

Air-Cooled model SE-250A-G1/750/1500/3000
Air processing capacity: 1.7 ～ 30 m^3/min
Maximum inlet temperature: 80 ℃
Suitable compressor: 11 ～ 150 kW


SE-250A

Features

1. Wide pitch condenser for easy maintenance
2. Corrugated fins
   Efficient heat transfer and a low profile heat exchanger along with a high cooling surface area that demonstrates unsurpassed cooling power
3. Special fin design for consistent ventilation

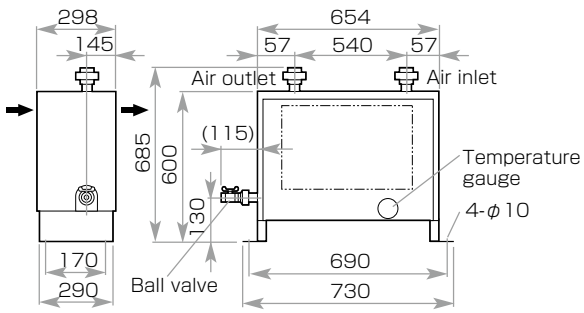
□ Specifications

Item		Model	SE-250A-G1	SE-750	SE1500	SE3000
Air Processing Capacity		m^3/min	1.7	6.9	15	30
Air Inlet Conditions	Maximum Inlet Air Temperature	℃	80			
	Pressure (Gauge Pressure)	MPa	0.69		0.83	
	Ambient Temperature	℃	32			
Outlet Air Temperature		℃	40		42	
Maximum Operating Pressure (Gauge Pressure)		MPa	0.98			
Outside Dimensions	Height	mm	685	766	1305	1619
	Depth	mm	298	353	770	
	Width	mm	730	1170	1314	2496
Mass		kg	28	60	approx. 160	approx. 410
Power Specifications	Voltage (50/60 Hz)	V	Single phase 100	Single phase 200		
	Power Consumption (50/60 Hz)	W	63/76	230/280	460/560	920/1120
	Electric Current (50/60 Hz)	A	0.7/0.8	1.24/1.30	2.48/2.60	4.96/5.20
Cooling Output		W	25	85 × 2	85 × 4	85 × 8
Air Inlet/Outlet Connection			1 B · 25 A union fitting	2 B · 50 A union fitting	2 B union fitting	3 B union fitting
Drain Port Size			Rc1/2	R1/2		R1/2 × 2

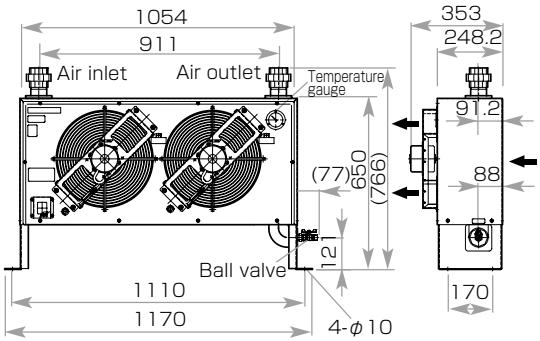
※ Please contact us for guaranteed performance specifications. ※ Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32 ℃, 75 %.) ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above.

□ External Dimensions (Units:mm)

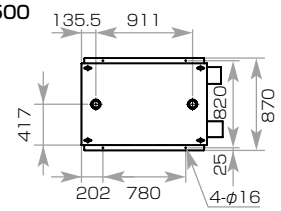
● SE-250A-G1



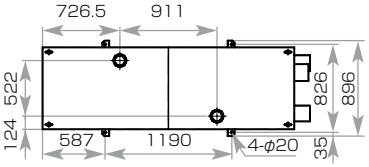
● SE-750

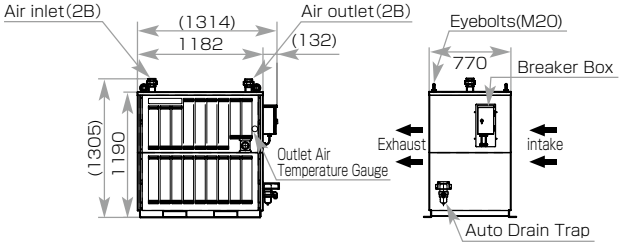


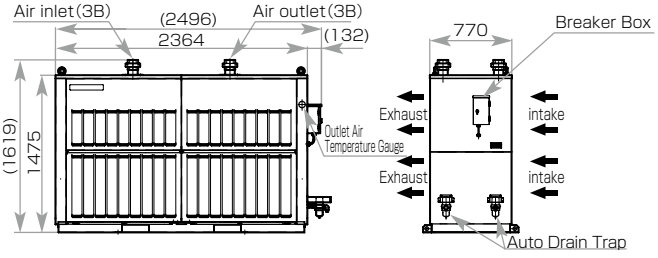
● SE1500



● SE3000







Other Items Air-Cooled Aftercooler "SE"

Built to order

Air-Cooled model SE90/150/320/600
Air processing capacity: 1.0 ~ 6.9 m^3/min
Maximum inlet temperature: 70 ℃
Suitable screw air compressor: 5.5 ~ 37 kW

Features

Wide pitched condenser, easy to maintain

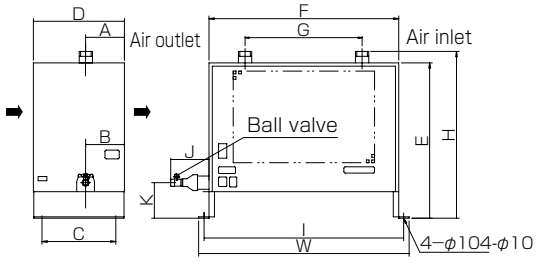
☐ Specifications

Item		Model	90	150	320	600
Air Processing Capacity		m^3/min	1.0	1.7	3.7	6.9
Air Inlet Conditions	Maximum Inlet Air Temperature	℃	70			
	Pressure (Gauge Pressure)	MPa	0.7			
	Ambient Temperature	℃	32			
Outlet Air Temperature		℃	50 ℃ or Lower			
Maximum Operating Pressure (Gauge Pressure)		MPa	0.98			
Outside Dimensions	Height	mm	648	685	666	766
	Depth	mm	300	298	333	353
	Width	mm	440	730	770	1170
Mass		kg	19	28	34	60
Power Specifications	Voltage (50/60 Hz)	V	Single phase 200	Single phase 100	Single phase 200	Single phase 200
	Power Consumption (50/60 Hz)	W	35/40	65/64	150/180	230/280
	Electric Current (50/60 Hz)	A	0.15/0.20	0.8/0.7	0.90/0.95	1.24/1.30
Cooling Output		W	25	25	85	85 × 2
Air Inlet/Outlet Connection			1/2 B union fitting	1 B union fitting	11/2 B union fitting	2 B union fitting
Drain Port Size			R1/2	Rc1/2		R1/2
Suitable Heatless Air Drier			When deciding the processing capacity of your heatless air dryer, make your choice based on the correction coefficient for operation at 50 ℃ . (See page 49)			

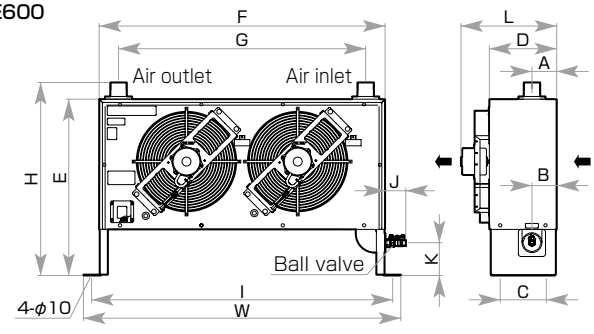
※ Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32 ℃, 75 %.) ※ Please contact us for guaranteed performance specifications. ※ When using as an aftercooler for the QSQ dryer, always install a Super Drain Filter to the outlet of the cooler. ※ A separate drain trap should be installed when used with dryers other than the QSQ series. ※ Please use in ambient temperatures of 40 ℃ or below. ※ The highest design inlet temperature is 80 ℃.

☐ External Dimensions (Units:mm) ※ The union fittings for the air inlet/outlet piping are included.

● SE90
● SE150
● SE320



● SE600



External Dimensions

Model	H	D	W	A	B	C	E	F	G	I	J	K	L
SE90	(595)	300	440	206		194	545	396	290	420	(90)	150	—
SE150	(642)	298	730	145		170	600	654	540	690	(115)	130	—
SE320	(610)	333	770	142		270	568	694	430	730	(140)	130	—
SE620	(712)	248.2	1170	91.2	88	170	650	1054	911	1110	(77)	121	353

Making the right model choice

Choose a model that allows plenty of leeway in capacity.

$$\text{Air processing capacity} \geqq \frac{\text{Useful Air Flow Capacity}}{\text{Pressure correction coefficient}}$$

■ Aftercooler pressure correction coefficient chart (be sure to add some leeway to your final choice.)

Pressure (MPa)	0.39	0.49	0.59	0.69	0.78	0.88	0.98
Pressure correction coefficient	0.63	0.75	0.88	1.0	1.07	1.13	1.2

Other Items Water-Cooled Aftercooler "TH"

Built to order

Water-Cooled TH-1010WG-B2V ～ 7020WG-B2V
Air processing capacity: 1.7 ～ 393 m^3/min
Typical cooling water flow rate: 0.9 ～ 184.8 m^3/h
Suitable compressor: 11 ～ 1500 kW

Features

1. Achieves 2 ～ 3 times the heat transfer of typical aftercoolers thanks to Orion's special spiral tube design.
2. Self cleaning system

TH-2010WG-B2V TH-3012WG-B2V

□ Specifications

Item \ Model TH-			1010WG-B2V	1012WG-B2V	1510WG-B2V	2010WG-B2V	3010WG-B2V	3012WG-B2V
Air Processing Capacity		m^3/min	1.7	3.7	6.7	13	23	35
Applicable Law for This Class of Equipment			Not defined			Class 2 Pressure Vessel Safety Law		
Typical Cooling Water Flow Rate		m^3/h	0.9	1.8	3.3	6.6	10.9	16.8
Pressure Loss	Water	m/Aq	0.1			0.2		0.4
	Air	m/Aq	0.1	0.3	0.2	0.2	0.2	0.25
Air Inlet/Outlet Connection			25 A socket	40 A socket	10 K-50 A flange	10 K-80 A flange	10 K-100 A flange	
Cooling Water Inlet/Outlet Connection			15 A socket		20 A socket	32 A socket	50 A socket	
Outside Dimensions	Column Diameter	mm	ϕ 114.3		ϕ 165.2	ϕ 216.3	ϕ 318.5	
	Height	mm	1396	1596	1406	1551	1716	1916
Mass		kg	approx. 48	approx. 50	approx. 95	approx. 145	approx. 295	approx. 320

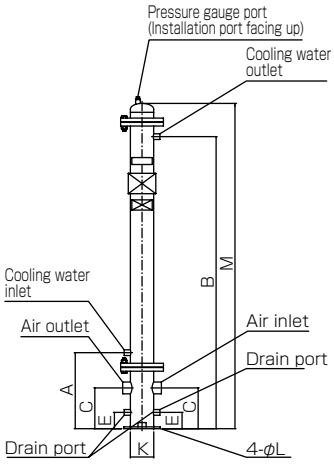
※ Maximum working pressure: 0.93 MPa. Conditions of compressed air at inlet: pressure: 0.68 MPa, temperature: 80 ℃. ※ Corrosion resistant coating (paint). ※ Indicated typical cooling water flow rate is at a water temperature of 30 ℃. ※ Includes: flange, air trap, temperature gauge (for compressed air output), anchor bolts. ※ Optional equipment: safety valve, pressure gauge. ※ Please contact us for guaranteed performance specifications. ※ Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32 ℃, 75 %.) ※ Output air temperature: 35 ℃ under the above conditions.

Item \ Model TH-			4014WG-B2V（A）	4014WG-B2V（B）	4016WG-B2V	5016WG-B2V	5018WG-B2V	7020WG-B2V
Air Processing Capacity		m^3/min	50	73	97	138	191	393
Applicable Law for This Class of Equipment			Class 2 Pressure Vessel Safety Law					
Typical Cooling Water Flow Rate		m^3/h	23.7	34.5	45.9	65.4	90	184.8
Pressure Loss	Water	m/Aq	0.5	0.6	1.0		2.0	2.5
	Air	m/Aq	0.25	0.4	0.7		1.2	
Air Inlet/Outlet Connection			10 K-125 A flange	10 K-150 A flange		10 K-200 A flange	10 K-250 A flange	10 K-300 A flange
Cooling Water Inlet/Outlet Connection			65 A socket	5 K-80 A flange	5 K-100 A flange		5 K-125 A flange	5 K-200 A flange
Outside Dimensions	Column Diameter	mm	ϕ 406.4			ϕ 508		ϕ 711.2
	Height	mm	2291		2491	2641	2941	3286
Mass		kg	approx. 560		approx. 620	approx. 820	approx. 860	approx. 1750

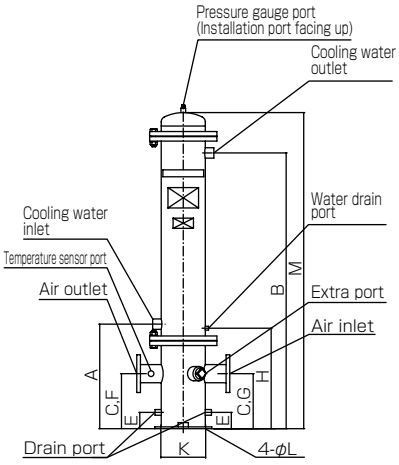
※ Maximum working pressure: 0.93 MPa. Conditions of compressed air at inlet: pressure: 0.68 MPa, temperature: 80 ℃. ※ Corrosion resistant coating (paint). ※ Indicated typical cooling water flow rate is at a water temperature of 30 ℃. ※ Includes: flange, air trap, temperature gauge (for compressed air output), anchor bolts. ※ Optional equipment: safety valve, pressure gauge. ※ Please contact us for guaranteed performance specifications. ※ Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32 ℃, 75 %.) ※ Output air temperature: 35 ℃ under the above conditions.

□ External Dimensions

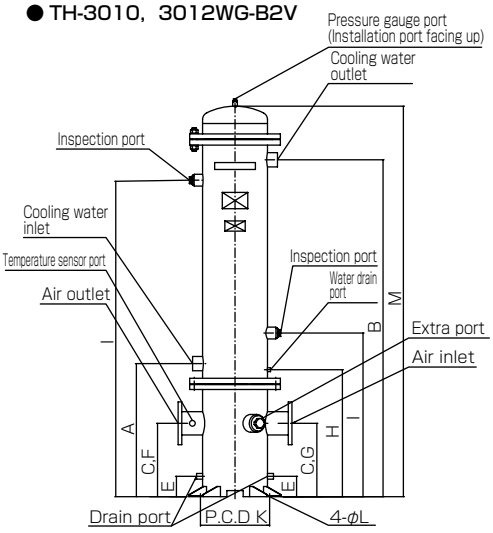
● TH-1010, 1012WG-B2V



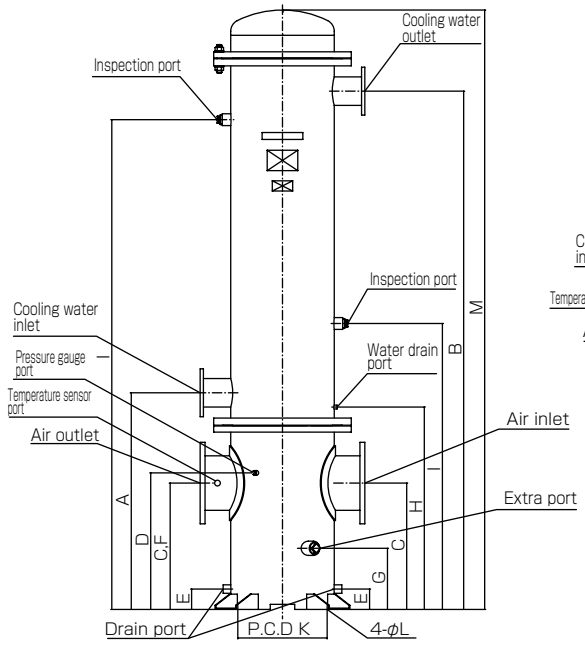
● TH-1510, 2010WG-B2V



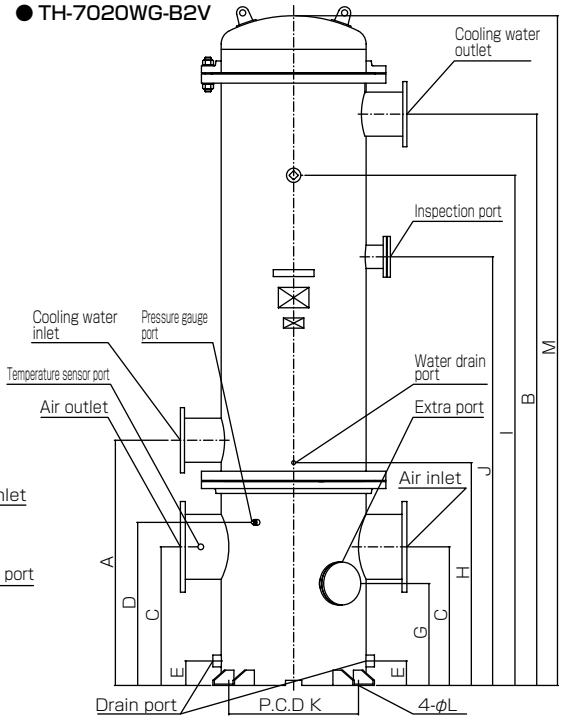
● TH-3010, 3012WG-B2V



● TH-4014(A)～5018WG-B2V



● TH-7020WG-B2V



Model Dimensions Table (Units : mm)

Model	A	B	C	D	E	F	G	H	I	J	K	L	M
1010WG-B2V	(373)	(1233)	200	—	80	—	—	—	—	—	115	14	(1396)
1012WG-B2V		(1433)				—	—	—	—	—			(1596)
1510WG-B2V		(1233)				200	—	—	—	—	170		(1406)
2010WG-B2V	(513)	(1353)	270			270	270	493	—	—	220		(1551)
3010WG-B2V	(653)	(1453)	360		100	360	360	623	803、1353	—	480	19	(1716)
3012WG-B2V		(1653)								—			(1916)
4014WG-B2V (A)	(823)	(1983)	500	550		500	250	783	1303、1753	—	510		(2291)
4014WG-B2V (B)										—			(2291)
4016WG-B2V	(843)	(2163)				550			1303、2003	—			(2491)
5016WG-B2V	(953)	(2253)	550	600			300	893	1203、2103	—	620		(2641)
5018WG-B2V	(1063)	(2543)	620	670		620		993	1403、2403	—			(2941)
7020WG-B2V	(1203)	(2803)	680	800	120	680	500	1093	2503	2103	900	23	(3286)

Other Items Stainless Steel Air Tank "OAT"

Built to order

OAT60-S ～ 1000-S
Volume: 65 ～ 1090 L
Suitable compressor: 6 ～ 37 kW

Features

1. Tank built with ※ SUS304 grade stainless steel
   ※ Coated tank (metallic silver)
   ※ Cleaning access hole and inspection port plugs made from gray cast iron. (OAT300-S and above) Please inquire if stainless steel is required.
2. Perfect for industries that shun rust in their environment, such as food, medical, semiconductor industries, etc.

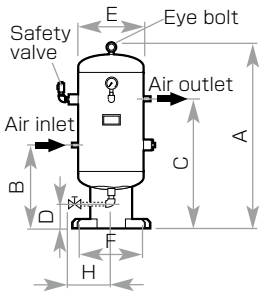
□ Specifications

Item / Model OAT		60-S	80-S	100-S	150-S	250-S	300-S	400-S	500-S	750-S	1000-S
Volume	L	65	85	104	160	258	365	449	562	772	1090
Maximum Working Pressure	MPa	0.98					0.88				
Maximum Inlet Air Temperature	℃	1.08					0.98				
Safety Valve Release Pressure	MPa	80									
Connections Inlet and Outlet		1/2 B		1 B			1 1/2 B				2 1/2 B
Pressure Gauge		1/4 B × φ60×1.6 MPa					3/8 B × φ75×1.6 MPa				
Drain Valve		1/2 B									
Safety Valve		1/2 B		1 B			11/2 B				2 B
Air Valve		1/2 B		1 B			—				
Cleaning Access Hole		—					100 A				
Mass	kg	45	50	60	100	140	200	250	280	360	550

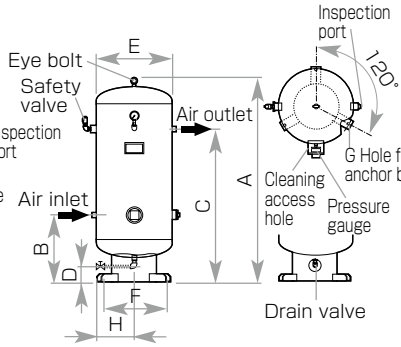
※ Optional auto drain trap. ※ Please contact us for guaranteed performance specifications. ※ Pressures listed are gauge pressures. ※ 2000L model also available by special order. ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above. ※ The material of the tank leg is the steel sheet of SS400. ※ The OAT500-S and larger models require chartered shipping (at an additional cost.)

□ External Dimensions

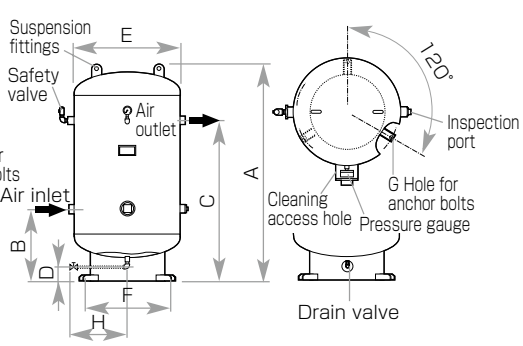
● OAT60-S～250-S



● OAT300-S～750-S



● OAT1000-S



External Dimensions (Units:mm)

Model	A	B	C	D	E	F	G	H
OAT60-S	1000	448	698	150	φ350	φ400	3- φ15	320
OAT80-S	1210		908					
OAT100-S	1410	498	1058					
OAT150-S	1612	510	1250		φ400	φ520		
OAT250-S	1661	529	1279		φ500			
OAT300-S	1663	550	1250		φ600	φ600	3- φ20	
OAT400-S	1963		1550					
OAT500-S	2377		1950					
OAT750-S	2157	580	1700		φ750	φ800		510
OAT1000-S	1940	657	1457		φ950	φ920		

□ Air Tank Anchor Bolts (special order parts)

● Air tank OAT (stainless steel construction) anchor bolt compatibility chart

Model	OAT-	60-S	80-S	100-S	150-S	250-S	300-S	400-S	500-S	750-S	1000-S
L-anchor Bolts	mm	M12 × L200					M16 × L200				
Quantity	Pcs.	3					4				

Other Items Air Tank "MST"

Built to order

MST39A-100 ～ 3000C-90
Volume: 39 ～ 3000 L
Suitable compressor: 6 ～ 75 kW

The optimum solution for the following air systems:

1. When air consumption periodically surpasses compressor discharge capacity.
2. In load balancing for system designs employing 2 or more compressors.
3. For use before heatless air dryers

MST230A-100　MST600D-100

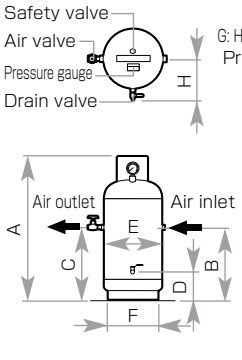
□ Specifications

Item \ Model MST		39A-100	95C-100	160C-100	230A-100	400D-100	600D-100	800D-90	1000D-90	1200D-90	1500D-90	2000D-90	3000C-90
Volume	L	39	97	162	227	400	590	799	987	1200	1498	1980	3000
Maximum Working Pressure	MPa	0.98						0.88					
Maximum Inlet Air Temperature	℃	1.08						0.98					
Safety Valve Release Pressure	MPa	75											
Connections Inlet and Outlet		1/2 B		1 B		1 1/2 B	2 1/2 B						3 B
Pressure Gauge		1/4 B × 50	1/4 B × 60			3/8 B × 75							
Drain Valve		1/4 B				1/2 B							
Safety Valve		1/4 B		3/8 B	1/2 B			1 B					
Air Valve		1/2 B		1 B		—							
Mass	kg	24	50	75	116	235	310	370	450	485	575	730	1155

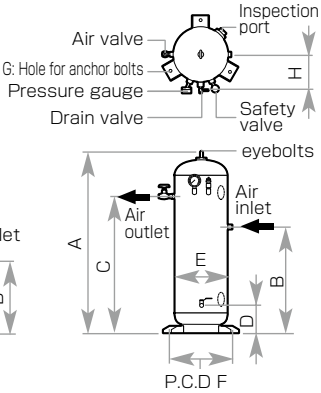
※ Optional auto drain trap. ※ Please contact us for guaranteed performance specifications. ※ Models MST1500D-90 and above require special shipping requirements (and additional shipping fees.) ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above.
※ The inner-wall of the tank has not received surface-treatment. In cases where potential rust formation would not be acceptable, please order one of our stainless steel tank OAT Series models, or specify that the tank receive an inner-wall coating. (Special order item : MST400D-100 and above)

□ External Dimensions

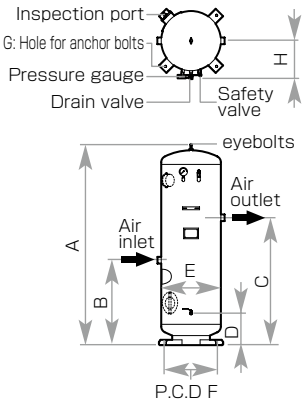
● MST39A-100



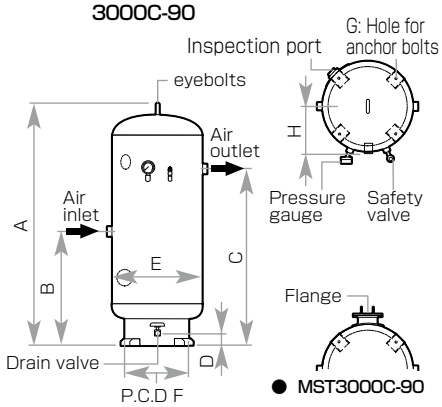
● MST95C-100/160C-100
230A-100



● MST400E-100



● MST600D-100/800D-90/1000D-90
● MST1200D-90/1500D-90/2000E-90
3000C-90



● MST3000C-90

External Dimensions (Units:mm)

Model	A	B	C	D	E	F	G	H
MST39A-100	770	382	382	149	φ304	φ267.4	—	207
MST95C-100	1190	700	900	183	φ350	φ460	3- φ 15	240
MST160C-100	1450	800	1100	187	φ406	φ550		268
MST230A-100	1531	800	1200	195	φ470	φ610		300
MST400D-100	1380		1000	120	φ718	φ630	4- φ 20	370
MST600D-100	1900	900	1400					
MST800D-90	1783		1300	125	φ868	φ775		
MST1000D-90	2106	1000	1600					
MST1200D-90	2070		1500	120	φ968	φ900		470
MST1500D-90	2490		1800					
MST2000D-90	2951		2000	125	φ1018			
MST3000C-90	2766			160	φ1324	φ1200		630

□ Air Tank Anchor Bolts (special order parts)

● Air tank MST (iron construction) anchor bolt compatibility chart

Model	MST-	39A-100	95C-100	160C-100	230A-100	400C-100	600C-100	800C-100	1000C-90	1200C-90	1500C-90	2000C1-90	3000C-90
L-anchor Bolts	mm	(※1)	M12 × L200			M16 × L200							
Quantity	Pcs.	—	3			4							

※1 No mounting holes

Saturated Moisture Content and Dew Point Conversion

Saturated Water Vapor Content and Dewpoint Conversion

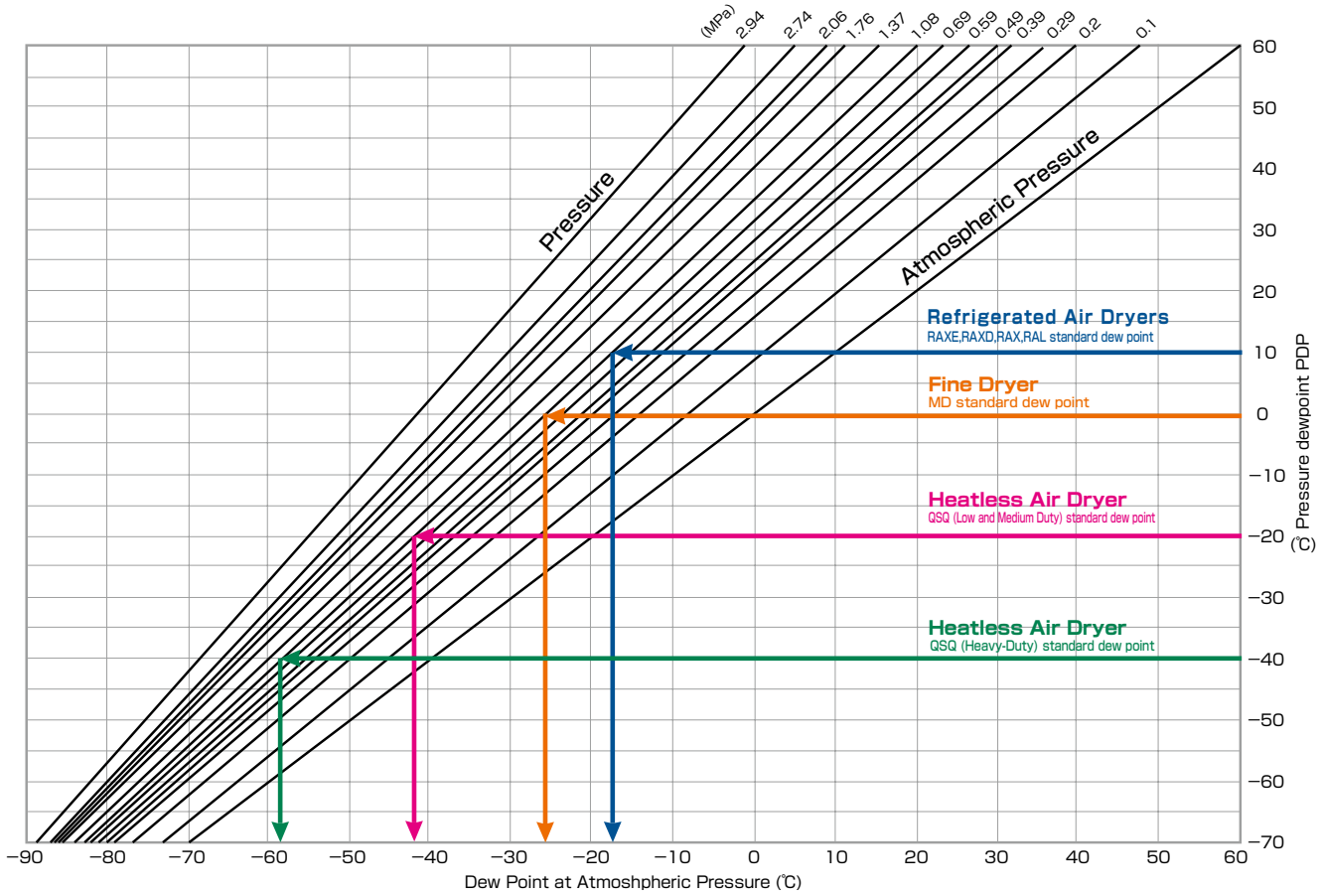
If air at the air compressor inlet is 30 ℃ (100 %) and is compressed to 0.69 MPa, how much water will be removed when the temperature is dropped to 10 ℃ by an air dryer?

1. From the Saturated Moisture Content Chart (at atmospheric pressure): The moisture content at 30 ℃ is 30.3 g/m³.
2. From the Dewpoint Conversion Chart: Air conditions are 0.69 MPa at 10 ℃ , so converting to atmospheric pressure yields -17 ℃ .
3. From the Saturated Moisture Content Chart: Moisture content at -17 ℃ is 1.37+ 3 so 28.93 g of water will be removed from each 1 m³ of air.

Saturated Moisture Content Chart (at atmospheric pressure):

Temperature (℃)	Moisture Content (g/m³)	Temperature (℃)	Moisture Content (g/m³)	Temperature (℃)	Moisture Content (g/m³)	Temperature (℃)	Moisture Content (g/m³)	Temperature (℃)	Moisture Content (g/m³)	Temperature (℃)	Moisture Content (g/m³)
−87	0.0004	−64	0.0117	−41	0.159	−18	1.26	5	6.79	28	27.2
−86	0.0004	−63	0.0133	−40	0.176	−17	1.37	6	7.26	29	28.7
−85	0.0005	−62	0.0151	−39	0.194	−16	1.48	7	7.75	30	30.3
−84	0.0006	−61	0.0171	−38	0.214	−15	1.61	8	8.27	31	32.0
−83	0.0007	−60	0.0193	−37	0.236	−14	1.74	9	8.82	32	33.8
−82	0.0009	−59	0.0218	−36	0.260	−13	1.88	10	9.40	33	35.6
−81	0.0010	−58	0.0246	−35	0.286	−12	2.03	11	10.0	34	37.5
−80	0.0012	−57	0.0277	−34	0.314	−11	2.19	12	10.7	35	39.6
−79	0.0014	−56	0.0312	−33	0.345	−10	2.36	13	11.3	36	41.7
−78	0.0016	−55	0.0351	−32	0.378	−9	2.54	14	12.1	37	43.9
−77	0.0019	−54	0.0442	−31	0.414	−8	2.74	15	12.8	38	46.2
−76	0.0022	−53	0.0442	−30	0.453	−7	2.95	16	13.6	39	48.6
−75	0.0026	−52	0.0494	−29	0.496	−6	3.17	17	14.5	40	51.5
−74	0.0030	−51	0.0553	−28	0.542	−5	3.41	18	15.4	41	53.7
−73	0.0034	−50	0.0617	−27	0.592	−4	3.66	19	16.3	42	56.4
−72	0.0040	−49	0.0689	−26	0.646	−3	3.93	20	17.3	43	59.3
−71	0.0046	−48	0.0767	−25	0.705	−2	4.22	21	18.3	44	62.2
−70	0.0053	−47	0.0853	−24	0.768	−1	4.52	22	19.4	45	65.3
−69	0.0060	−46	0.0950	−23	0.863	0	4.85	23	20.6	46	68.5
−68	0.0069	−45	0.106	−22	0.909	1	5.19	24	21.8	47	71.9
−67	0.0079	−44	0.117	−21	0.989	2	5.56	25	23.0	48	75.4
−66	0.0090	−43	0.130	−20	1.07	3	5.95	26	24.4	49	79.0
−65	0.0103	−42	0.144	−19	1.17	4	6.36	27	25.8	50	82.8

Dew Point Conversion Chart



Dew Point Conversion Chart

Pressure Dew Point (℃)	Pressure (MPa)								
	0.2	0.29	0.39	0.49	0.59	0.69	0.78	0.88	0.98
	Dew Point at Atmospheric Pressure (℃) 〈ADP〉								
−70.0	−77.2	−79.0	−80.3	−81.4	−82.4	−83.1	−83.8	−84.4	−85.0
−68.0	−75.3	−77.2	−78.6	−79.7	−80.7	−81.5	−82.2	−82.8	−83.4
−66.0	−73.5	−75.4	−76.8	−78.0	−79.0	−79.8	−80.5	−81.1	−81.7
−64.0	−71.7	−73.6	−75.1	−76.3	−77.2	−78.1	−78.8	−79.5	−80.1
−62.0	−69.9	−71.8	−73.3	−74.5	−75.5	−76.4	−77.2	−77.8	−78.5
−60.0	−68.0	−70.1	−71.6	−72.8	−73.9	−74.7	−75.5	−76.2	−76.9
−58.0	−66.2	−68.3	−69.8	−71.1	−72.2	−73.1	−73.8	−74.5	−75.2
−56.0	−64.4	−66.5	−68.1	−69.4	−70.5	−71.4	−72.2	−72.9	−73.6
−54.0	−62.6	−64.7	−66.3	−67.7	−68.8	−69.7	−70.5	−71.2	−71.9
−52.0	−60.7	−62.9	−64.6	−65.9	−67.1	−68.0	−68.9	−69.6	−70.3
−50.0	−58.9	−61.2	−62.9	−64.2	−65.4	−66.4	−67.2	−68.0	−68.8
−48.0	−57.1	−59.4	−61.1	−62.5	−63.7	−64.7	−65.6	−66.3	−67.1
−46.0	−55.3	−57.6	−59.4	−60.8	−62.0	−63.0	−63.9	−64.7	−65.5
−44.0	−53.5	−55.8	−57.7	−59.1	−60.3	−61.3	−62.2	−63.0	−63.8
−42.0	−51.7	−54.1	−55.9	−57.4	−58.6	−59.7	−60.6	−61.4	−62.2
−40.0	−49.9	−52.3	−54.2	−55.7	−56.9	−58.0	−59.0	−59.8	−60.6
−38.0	−48.0	−50.5	−52.5	−54.0	−55.3	−56.4	−57.3	−58.2	−59.1
−36.0	−46.2	−48.8	−50.7	−52.3	−53.6	−54.7	−55.7	−56.5	−57.4
−34.0	−44.4	−47.0	−49.0	−50.6	−51.9	−53.0	−54.0	−54.9	−55.8
−32.0	−42.6	−45.3	−47.3	−48.9	−50.2	−51.4	−52.4	−53.3	−54.2
−30.0	−40.8	−43.5	−45.6	−47.2	−48.6	−49.7	−50.8	−51.7	−52.6
−28.0	−39.0	−41.7	−43.8	−45.5	−46.9	−48.1	−49.1	−50.0	−50.9
−26.0	−37.2	−40.0	−42.1	−43.8	−45.2	−46.4	−47.5	−48.4	−49.3
−24.0	−35.4	−38.2	−40.4	−42.1	−43.6	−44.8	−45.9	−46.8	−47.7
−22.0	−33.6	−36.5	−38.7	−40.4	−41.9	−43.2	−44.2	−45.2	−46.2
−20.0	−31.8	−34.7	−37.0	−38.8	−40.2	−41.5	−42.6	−43.6	−44.6
−18.0	−30.0	−33.0	−35.3	−37.1	−38.6	−39.9	−41.0	−42.0	−43.0
−16.0	−28.2	−31.3	−33.6	−35.4	−36.9	−38.3	−39.4	−40.4	−41.4
−14.0	−26.4	−29.5	−31.9	−33.7	−35.3	−36.6	−37.8	−38.8	−39.8
−12.0	−24.6	−27.8	−30.2	−32.1	−33.6	−35.0	−36.2	−37.2	−38.2
−10.0	−22.9	−26.0	−28.5	−30.4	−32.0	−33.4	−34.6	−35.6	−36.6
−8.0	−21.1	−24.3	−26.8	−28.7	−30.4	−31.8	−33.0	−34.1	−35.2
−6.0	−19.3	−22.6	−25.1	−27.1	−28.7	−30.1	−31.4	−32.5	−33.6
−4.0	−17.5	−20.8	−23.4	−25.4	−27.1	−28.5	−29.8	−30.9	−32.0
−2.0	−15.7	−19.1	−21.7	−23.7	−25.5	−26.9	−28.2	−29.3	−30.4
0	−14.0	−17.4	−20.0	−22.1	−23.8	−25.3	−26.6	−27.7	−28.8
2.0	−12.2	−15.7	−18.3	−20.4	−22.2	−23.7	−25.0	−26.2	−27.3
3.0	−11.5	−14.7	−17.4	−19.6	−21.4	−22.9	−24.2	−25.2	−26.6
4.0	−10.4	−14.0	−16.6	−18.8	−20.5	−22.1	−23.4	−24.6	−25.8
6.0	−8.6	−12.2	−15.0	−17.1	−19.0	−20.5	−21.8	−23.0	−24.2
7.0	−7.9	−11.3	−14.1	−16.3	−18.2	−19.8	−21.0	−22.2	−23.5
8.0	−6.9	−10.5	−13.3	−15.5	−17.3	−18.9	−20.3	−21.5	−22.7
10.0	−5.1	−8.8	−11.6	−13.9	−15.7	−17.3	−18.7	−19.9	−21.1
12.0	−3.3	−7.1	−9.9	−12.2	−14.1	−15.7	−17.1	−18.4	−19.6
14.0	−1.6	−5.4	−8.3	−10.6	−12.5	−14.1	−15.6	−16.8	−18.1
16.0	0.2	−3.7	−6.6	−8.9	−10.9	−12.6	−14.0	−15.3	−16.6
18.0	2.0	−2.0	−4.9	−7.3	−9.3	−11.0	−12.4	−13.7	−15.0
20.0	3.7	−0.3	−3.3	−5.7	−7.7	−9.4	−10.9	−12.2	−13.5

The vertical axis indicates Pressure Dew Point, and the horizontal axis lists pressures to be converted to Dew Point Under Atmospheric Pressure.

Example 1 For a pressure dew point of 10 ℃ at 0.69 MPa, the atmospheric pressure dew point would be -17.3 ℃ .

Example 2 For a pressure dew point of 0 ℃ at 0.69 MPa, the atmospheric pressure dew point would be -25.3 ℃ .

Example 3 For a pressure dew point of -20 ℃ at 0.69 MPa, the atmospheric pressure dew point would be -41.5 ℃ .

Example 4 For a pressure dew point of -40 ℃ at 0.69 MPa, the atmospheric pressure dew point would be -58.0 ℃ .

Using Underground Water

Standard Concentration Levels for Cooling Water / Preventing Corrosion Related Breakdown

Using Underground Water

When using underground water for cooling, the concentration levels of the water should be checked. Inspection should be made through any industrial testing center, health care center, or science oriented university. Water that meets the specifications in the chart below can be used without further treatment.

☐ Standard Concentration Levels for Cooling Water used in Water-Cooled Condensers

	Item		Cooling Water Type		Has Tendency Towards	
			Circulation Water	Make-up Water	Corrosion	Scaling
Standard Components	pH	(25 ℃)	6.5 ～ 8.2	6.0 ～ 8.0	○	○
	Electrical Conductivity	(mS/m) (25℃) {μS/cm}	80 or less {800 or less}	30 or less {300 or less}	○	○
	Chloride Ion	($mgCl^-$/L)	200 or less	50 or less	○	
	Sulphate Ion	($mgS0_4^{2-}$/L)	200 or less	50 or less	○	
	Acid Consumption	(pH4.8) ($mgCaCO_3$/L)	100 or less	50 or less		○
	Total Hardness	($mgCaCO_3$/L)	200 or less	70 or less		○
	Calcium Hardness	($mgCaCO_3$/L)	150 or less	50 or less		○
	Silica Ion	($mgSiO_2$/L)	50 or less	30 or less		○
Reference Components	Iron	(mgFe/L)	1.0 or less	0.3 or less	○	○
	Copper	(mgCu/L)	0.3 or less	0.1 or less	○	
	Sulfide Ion	(mgS^{2-}/L)	Not detected	Not detected	○	
	Ammonium Ion	($mgNH_4^+$/L)	1.0 or less	0.1 or less	○	
	Residual Chlorine	(mgCl/L)	0.3 or less	0.3 or less	○	
	Free Carbon	($mgCO_2$/L)	4.0 or less	4.0 or less	○	
	Ryznar Stability Index		6.0 ～ 7.0	—	○	○

Excerpt from JRA-GL-02-1994 of The Japan Refrigeration and Air Conditioning Industry Association

- Within the "Tendency toward" column, items marked with a ○ indicate this component can lead to corrosion or scaling as indicated.
- The 15 items listed above are the primary components that can lead to corrosion or scaling.

☐ Preventing Corrosion Related Breakdown! (For refrigerated air dryers)

■ Breakdown due to Equipment Corrosion

Breakdown due to corrosion is not covered by the warranty.

Refrigerated air dryers use copper piping (phosphorous-deoxidized copper piping) for refrigerant piping and piping within the heat exchanger. In particular, if holes form due to corrosion, refrigerant may leak, the equipment to stop working, water may come out of the compressed air outlet of the dryer, and the dryer may eventually break down. Furthermore, copper is also used as a conductor in the machine wiring, and corrosion in the wiring could lead to shorting and possibly compromise the safety of the equipment. Accordingly, in order to prevent breakdowns due to copper corrosion, it becomes necessary to avoid environments that tend to encourage such corrosion. In particular, if there is repeated condensation and drying, and the presence of corrosive substances within the heat exchanger, there will be the tendency for such substances to concentrate on the walls of the pipes, leading to a condition where corrosion tends to occur easily. Careful attention is not only required regarding the environment of the air dryer, but also concerning the air flowing into the air compressor.

■ Precautions Regarding the Area Surrounding the Equipment

If NOx (nitrogen oxide), SOx (sulfur oxide), CO_2 (carbon dioxide), or other corrosion promoting compounds are present within the workplace, the air dryer and compressor should be installed in a place such that they are not affected by such substances. In particular, when these corrosive substances are present in the working environment, enough care must be taken to ensure that the air dryer and air compressor are not exposed or affected. Also, in the rare event that chlorine-based organic solvents (trichloroethylene etc.), aldehydes (from degassing of building materials such as formaldehyde) or alcohols (medicinal methanol etc.) enter the air intake of the air dryer and hydrolysis occurs, it can lead to corrosion of copper piping (formicary corrosion, also known as ants-nest corrosion) and so care must be taken to ensure that this does not happen.

■ Analysis of Drain Water

If there are corrosive substances in the environment where the air dryer is used, copper piping can become corroded and refrigerant leaks might eventually occur as a result. Conducting a survey of possibly corrosive substances beforehand can offer some assurance that the machine can be operated without the aforementioned corrosion related problems. An easy to perform on-site drain water test kit is available. Please consult your dealer for details. Drain water analysis sets are included with heavy-duty models. ORION also offers special machine anti-rust treatment as an option to allow corrosion resistant operation in more diversified environments. Please contact your dealer for further details.

MEMO

Always Follow These Safety Guidelines

Safety Symbols

The safety precautions listed herein are to ensure safe and proper use of this equipment for the protection and prevention of loss to you, the surrounding area, and people nearby.
Important safety precautions are classified into two categories, ⚠ WARNINGS and ⚠ CAUTIONS.

⚠ WARNINGS Failure to follow instructions contained in a WARNING may result in death or serious injury.

⚠ CAUTIONS Failure to follow instructions contained in a CAUTION may result in personal injury or damage to property.

⚠ symbols inform you of WARNING or CAUTIONS to observe.The illustration within the triangle shows the nature of the precaution. (For example, the symbol at the left indicates possible danger from escaping steam or air.)

⃠ symbols inform you of prohibited actions. The illustration within the circle shows the nature of the action which is prohibited. (The example to the left indicates that user disassembly is prohibited.)

● symbols indicates actions which must be taken. The illustration within the black circle indicates the necessary action. (The example to the left indicates that the equipment must be properly grounded to earth.)
Please note that times noted in ⚠ CAUTIONS can result in very serious consequences depending on the particular situation. Both CAUTIONS and WARNINGS must be heeded to ensure adequate safety.

⚠ WARNINGS | Failure to follow instructions contained in these WARNINGS may result in death or serious injury.

General Safety Precautions

Product Use Limitations
(1) If the unit is to be used as part of critical installations, safety devices and backup systems which can be switched to should be put into place to insure that serious accidents or losses do not occur in the event that the unit should break down or malfunction.
(2) This product is designed and produced as a commodity for general manufacturing. Accordingly, the warranty does not apply to nor cover the following applications. However, in cases where the customer/user takes full responsibility and confirms the performance of the equipment in advance, and takes necessary safety precautions, please consult with ORION and we will consider if use of the unit in the desired application is appropriate.
① Atomic energy, aviation, aerospace, railway works, shipping, vehicles (cars and trucks), medical applications, transportation applications, and/or any applications where it might have a great effect on human life or property.
② Electricity, gas, or water supply systems, etc. where high levels of reliability and safety are demanded.

When cleaning, do not use detergents or organic solvents.
Please clean with water, then wipe with a clean cloth. Never clean this equipment using detergents, thinner, or other organic solvents. Doing so may cause deterioration of plastic parts and may lead to injury.

Only operate equipment within specified operating ranges.
Operating equipment outside specified operating ranges can result in damage to the equipment, which may result in injury, leakage, etc.

Do not operate with the cabinet open.
Touching components inside this equipment may lead to injury or electric shock.

Service must be carried out by persons with enough knowledge and experience such as your dealer or other qualified service personnel.
Improper treatment in transport, installation, operation, maintenance, repair, etc. may lead to injury, leakage, electric shock, or fire.

During operation, do not touch the outlet head or cartridge directly with your hand.
Doing so can lead to burns.

Ensure safety precautions are conformed to while operating this equipment as well as when performing maintenance (including cleaning, servicing, inspection, etc.)
○ Always remove power from equipment before performing maintenance or repair operations. Failure to do so may result in electric shock, injury, or burns.
○ In particular, be sure to completely release all compressed air before working on machine related piping or on the machine itself. Failure to do so can result in dangerous bursts of compressed air and may result in injury.

Water droplets should be properly removed from compressed air.
Failure to adequately remove water droplets can lead to the deterioration of the filter material, reduced filter performance, and breakdown of the filter. Always install and operate an aftercooler, Super Drain Filter, refrigerated air dryer, or similar water removal equipment before this device.

Before starting the flow of compressed air, always check to make sure the equipment housing and auto drain unit are in order.
If the housing or auto drain unit are not properly secured, the housing or auto drain unit can come off, resulting in sudden bursts of compressed air and injury.

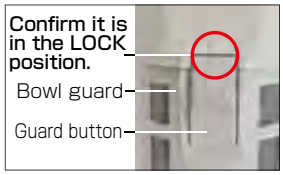
If the earth leakage breaker is tripping, please seek the advice of your dealer or a qualified repair person.
Forcing power during a leakage condition can lead to electric shock or fire.

Never use parts where the threads have been worn due to repeated disassembly or cleaning etc.
Continuing to use parts with threads worn from repeated cleaning, disassembly, and reassembly can lead to caps and other components being blown off under pressure and may lead to injury.

Always carry out proper inspections and cleaning as indicated in the operating manual.

Be sure to strictly adhere to air compressor oil management.
Please maintain proper lubrication of the air compressor according to the directions outlined in the compressor operation manual. If air compressor oil is allowed to deteriorate, it may result in buildup of carbon in the air dryer, explosion, fire, or corrosion.

Before Using This Equipment
Before starting the flow of compressed air, ensure that the guard button is in the "LOCK" position. Failure to lock may result in the bowl guard coming off or injury.



General Safety Precautions Regarding Installation

Do not modify settings of safety features and components of this equipment.
Modifying such settings can lead to an explosion or fire.

Do not install this equipment in places where flammable gases may be present or could leak out.
If by some chance gas were to leak out and gather near this equipment, a fire could break out.

Do not install this equipment where it will be exposed to wind and rain.
Rain falling on this equipment can lead to electric shock or fire.

Be certain that all electrical wiring is done in accordance with relevant electrical construction and internal wiring regulations.
Also, this equipment should be installed on its own electrical circuit. Installation with an insufficient power supply or improper installation can result in electric shock or fire.

Use eyebolts properly.
When lifting this equipment, always use all 4 suspension eyebolts and ensure the angle of the suspension cable at the eyebolts is at least 60 ℃ . Improper suspension may lead to the equipment tipping over or falling, which may lead to injury.

Do not install in environments that have corrosive gases.
Do not install this equipment in an environment where the surrounding air or air being processed might contain corrosive gases. Doing so may cause damage to the equipment.

Service must be carried out by persons with enough knowledge and experience such as your dealer or other qualified service personnel.
Improper treatment in transport, installation, operation, maintenance, repair, etc. may lead to injury, leakage, electric shock, or fire.

Do not modify this equipment.
Modifying this equipment will void the product warranty.

Always properly ground this equipment.
Do not attach the grounding wire to gas pipes, water pipes, lightning rods, etc. Improper grounding of this equipment can lead to electric shock. (Installation of a proper ground hookup must be performed by a qualified electrician.)

When wiring, use only the prescribed cables.
Also, when attaching cables to the equipment, fix cables so that there will be no external forces exerted on the contacts. Improper cable connections may lead to electric shock, overheating of the contacts, or fire.

When installing this equipment, be sure to follow the guidelines written in the installation section of the operating manual.
Improper installation can lead to water leakage, electric shock, fire, or freezing of the machine.

For proper installation, ask your dealer or a qualified specialist.
Improper installation by the end user may lead to water leakage, electric shock, and fire.

Verification of Installation Environment
Do not install this equipment in an environment where the surrounding air or air being processed might contain the substances listed below. Installation in such places raises the risk of injury due to malfunction.
- Ester based hydraulic fluids
- Organic solvents (aromatics, chlorine compounds, hydrocarbon compounds)
  —Benzene, toluene, phenol, trichlene, gasoline, thinner, alcohol, etc.
- Sulfurous acid gas, chlorine gas, CFC gases
- Acids (chlorine based acids, sulphuric acid, acetic acid, benzoic acid, etc.)

⚠ CAUTIONS
Failure to follow instructions contained in a CAUTION may result in personal injury or damage to property.

General Safety Precautions

Perform periodic checks of treated water.
Treated drain water should be checked at regular intervals to ensure concentration levels fall within standard levels. If concentration levels of treated water go above limits for effluent standards, regulations under the Water Pollution Control Law may be applied. Effluent standards differ according to region. Please consult with your local department for details.

Keep under the specified operating temperature limit.
Operating this equipment over the specified operating temperature can cause damage to the equipment and may lead to injury.(When connecting to the compressor directly, use of an aftercooler is recommended.)

Wear gloves when replacing consumables.
When replacing consumables, wear cotton or other thick gloves. Working with bare hands can lead to injuries from touching sharp metal edges.

Dispose of treated water properly.
This equipment is for compressed air drain processing only and cannot be used for other purposes such as water sterilization. Always properly dispose of processed drain water, and never use it for drinking or other purposes.

General Safety Precautions Regarding Installation

Do not install in places where equipment would be exposed to direct sunlight or would be exposed to external sources of heat.
Exposure to direct sunlight can lead to reduced performance as well as air and water leakage.

Do not sit on or put things on this equipment.
Doing so can cause the machine to tip or fall and may lead to injury.

Be sure to confirm piping system design standards.
When using a heatless air dryer, be sure to confirm the piping system design standards outlined in the product specifications before installation.

Operate this equipment within the specified ambient temperature range.
Please operate this equipment within the ambient temperature range as listed here:
- For OWC/OWC-H/ODF and OWM models, the proper working ambient temperature range is 2～40 ℃ . Operating outside this range can cause the vessel and hoses to become deformed and water to leak.

Precautions regarding Remote Operation
If remote operation is not continuous and involves starting and stopping, ensure there is always some air pressure maintained within the unit's circuit (at least 0.4 MPa.) Failure to maintain this pressure can result not only in the machine to discontinue functioning, but can also cause damage to it.

Installation of an earth-leakage-breaker is required.
Failure to install an earth-leakage-breaker can lead to electric shock.

Perform periodic checks of treated water.
Treated drain water should be checked at regular intervals to ensure concentration levels fall within standard levels. If concentration levels of treated water go above limits for effluent standards, regulations under the Water Pollution Control Law may be applied. Effluent standards differ according to region. Please consult with your local department for details.

Be sure to install this equipment in a place that can fully withstand the load of its weight.
Install on a level surface and provide adequate safety measures to ensure that the machine will not tip over. Failure to do so may lead to improper drain trap discharge, water leakage, or tipping or falling over of the machine, which could in turn could also lead to injury.

Reliably dealing water leaks in pipes and condensation.
Poor pipe installation can lead to water leaks, which in turn can lead to the area and items nearby getting wet. Furthermore, in high humidity environments, condensation can form on piping at air outlets, drain pipes, auto drain traps, etc., and floors and the surroundings may become wet. To counter this, please install insulation or a condensation collection system as required.

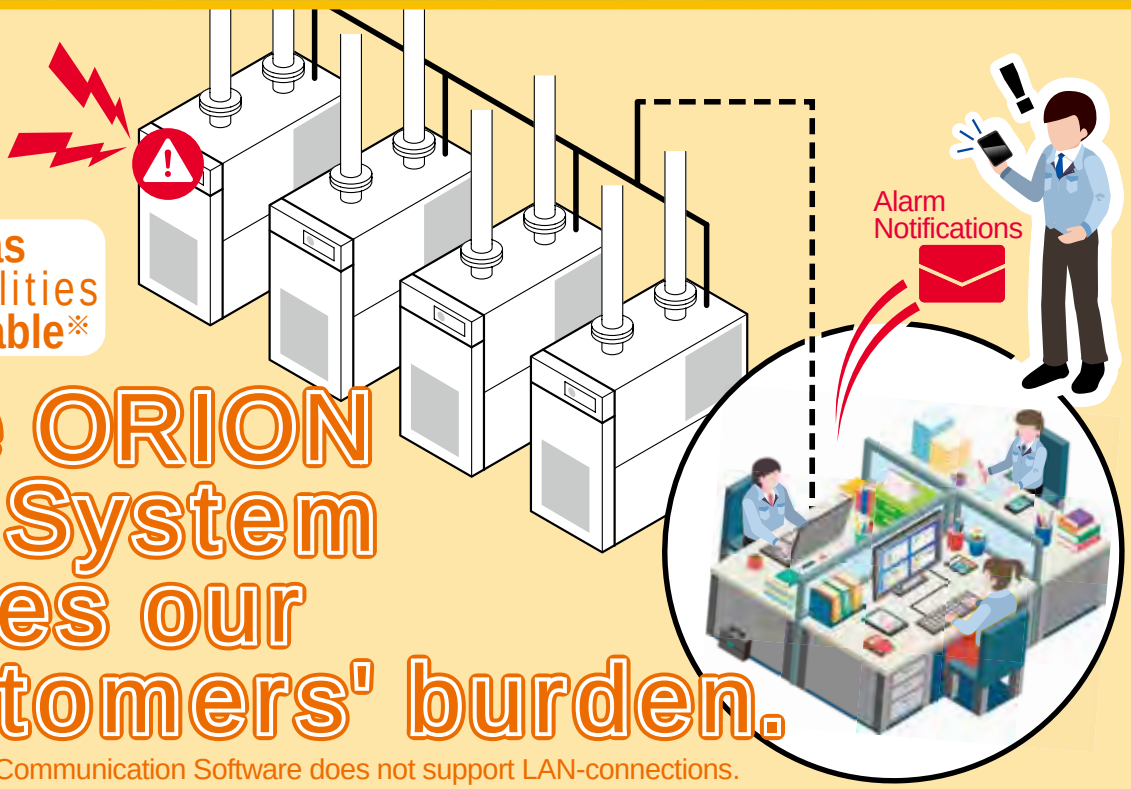
Use parallel machine installation for 24 hour continuous operation or bypass piping for intermittent operation.
For 24 hour continuous operation, heatless air dryers should be installed in parallel as a contingency against breakdown. For intermittent operation, bypass piping should be installed to allow for times when maintenance is required.

Do not install vertical piping between the air compressor and air dryer.
Vertical drain piping can result in collected drain to suddenly start flowing and be blown out. Furthermore, adsorption dryers are particularly susceptible to damage from water droplets. In cases where vertical piping is absolutely necessary, ensure that drainage does not collect by installing equipment such as drain traps, etc.

The product must not be exposed to backpressure.
Exposing the product to backpressure can damage the product or cause malfunction, or result in reduced performance.

Easy-to-Use Free Software!

Good News for ORION
Why not give
Remote Mon
Remote Ope

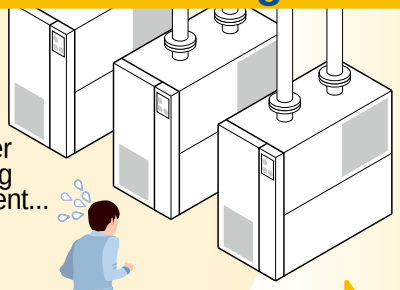


As long as LAN facilities are available※

The ORION IoT System eases our customers' burden.

※ The ORION Communication Software does not support LAN-connections.

Want to know the current operating state? … Remote Monitoring Software is the answer!



Need to walk to the site every day in order to check the operating state of your equipment...

And the constant worry that you won't be around when an alarm condition occurs!

If only I didn't have to actually go there just to check the operating state!

Contact State Monitoring Software

Includes Mail-Alert Functionality

Monitoring of product operating states from remote sites is possible. Can be used as long as contact outputs are non-voltage contacts.
Get email alerts when alarms occur!
Getting alerts while away from the PC gives peace of mind!

Checking operating states is easy! Mail alerts for alarm conditions give peace of mind when away from the site.

Product Users!

itoring and ration a try!

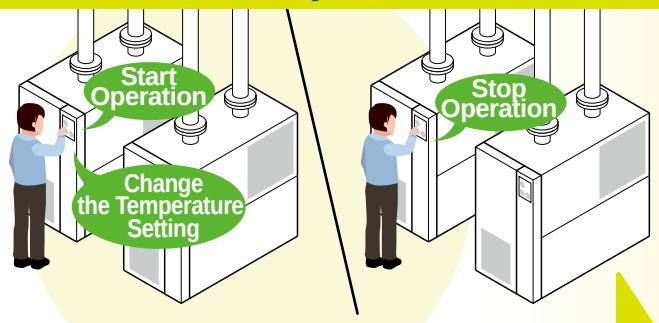
Check our website to check for compatible models.

ORION IoT System Search

https://www.orionkikai.co.jp/download/iot/

Note that our software is only offered in Japanese. Operation with non-Japanese operating systems has not been confirmed. Please refer to the instruction manual for required equipment and specifications.

Need to start or stop operation or change settings? … Remote Operation Software is the answer!



Need to walk to the factory each time to start and stop operation?

If only I didn't have to go all the way to the site just to start or stop operation...

ORION Communication Software

※ Does not support LAN connections.

Run/Stop operations are possible from remote locations. Temperature settings can also be changed.

Run/Stop and other operations are easier!

Need to collect product operating data? … Remote Monitory Software is the answer!

We need to design wiring and specialized software to enable data logging product operating-states and operating conditions...

If only there were easy access to product operating data such as measured values and load factors, etc...

Data Acquisition Software

Includes Mail-Alert Functionality

Can perform CSV-format logging of the product operating state. Data can be graphed using our free downloadable software that is easy and safe to use, even for beginners!

Data can be viewed from other PCs or tablets through the intranet.

⚠ Orion Products -- Service and Safety

● Safety Notes

・Before operating this equipment, please read the operating manual carefully, and only use as indicated.
・For installation of this equipment and required wiring, employ a qualified person or consult with your dealer.
・Be sure to select equipment which suits your needs. Do not use this equipment for purposes other than those for which it is intended. Doing so can lead to accidents or equipment breakdown.

● Air-Cooled Models

If the condenser becomes clogged with dust or dirt, heat exchange will be greatly reduced and electricity consumption will increase. This will lead not only to decreased performance, but can also lead to the activation of built-in safety devices, and eventual damage to the equipment. For these reasons, the condenser should be cleaned on a regular basis.

● Water-Cooled Models

In general, water used to cool condensers will be well-water, tap water, or water from a cooling tower. However water of insufficient quality can lead to scaling in cooling pipes resulting in lower levels of heat exchange, increased electricity consumption and lower performance. Therefore water quality should be confirmed on a regular basis.

Regarding After-Service

- For information regarding repair of equipment that has been in operation, please consult your dealer.
- The customer will be responsible for charges incurred for repairs conducted after the warranty period has expired. In cases where equipment function can be improved by certain service procedures, such procedures will be taken at the specific request of the customer.
- Regarding spare parts... "Spare parts" are those which are necessary in order to maintain the function of the product. It is the policy of ORION to maintain a stock of replacement parts for 7 years after production of the product ceases.

Recommended Maintenance Inspections

- Depending on the particular item, extended use can lead to the product becoming dirty or worn, which can lead to decreased performance. In order to realize continued best performance of this equipment, in addition to prescribed customer maintenance, it is also recommended that regular inspections be conducted. (Service and inspection fees apply.) For further information please consult your dealer or contact ORION directly.

Refrigerant Management

Some of the products in this catalog contain HFC refrigerants. Refrigeration technologies that use HFC refrigerants are essential for achieving efficient temperature control, and while such technologies make great contributions toward saving energy, there is also concern of the impact that the accidental release of HFC refrigerants into the atmosphere has on global warming.

When dealing with HFCs, please ensure compliance with laws and regulations and be sure to manage them appropriately for your safety and for the protection of the environment.

●GWP Values of Refrigerants Used in Our Products

Refrigerant	Global Warming Potential (100-year GWP)
R134a	1430
R404A	3920
R407C	1770
R410A	2090
R32	675

* For details about the refrigerant used in specific products, please refer to the product's specification page.

ORION is continuing to develop a complete and trustworthy nationwide network of expedient sales and service -- everywhere, anytime.

*ORION has wide reaching regional service bases in various countries throughout the world.
Please consult your ORION dealer for details.

PERRY JOHNSON REGISTRARS, INC.
0105
ISO 9001, 14001

ORION Machinery Co., ltd is an ISO Certified, Quality Management and Environmental Management company.

What is the ISO certification system?

ISO (International Organization for Standardization) is an established body that stipulates and certifies ISO9001 and ISO14001 directives. ISO9001 stipulates a system of Quality Management that ensures customer satisfaction and trust in a company's products and services it provides. ISO14001 stipulates a system of Environmental Management whereby production and business activities are carried out in an environmentally conscious manner.

For inquiries, please contact the following representative:

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URL: http://www.orionkikai.co.jp

This catalog contains product specifications as of February 2022.
● Actual product colors may vary slightly from the pictures.
● Please note that the structure or specifications of products contained in this catalog are subject to change without prior notice.

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