Apr 2013 D-AG02
Compressed Air Systems Catalogue

Striving to make products that move you.

ORION

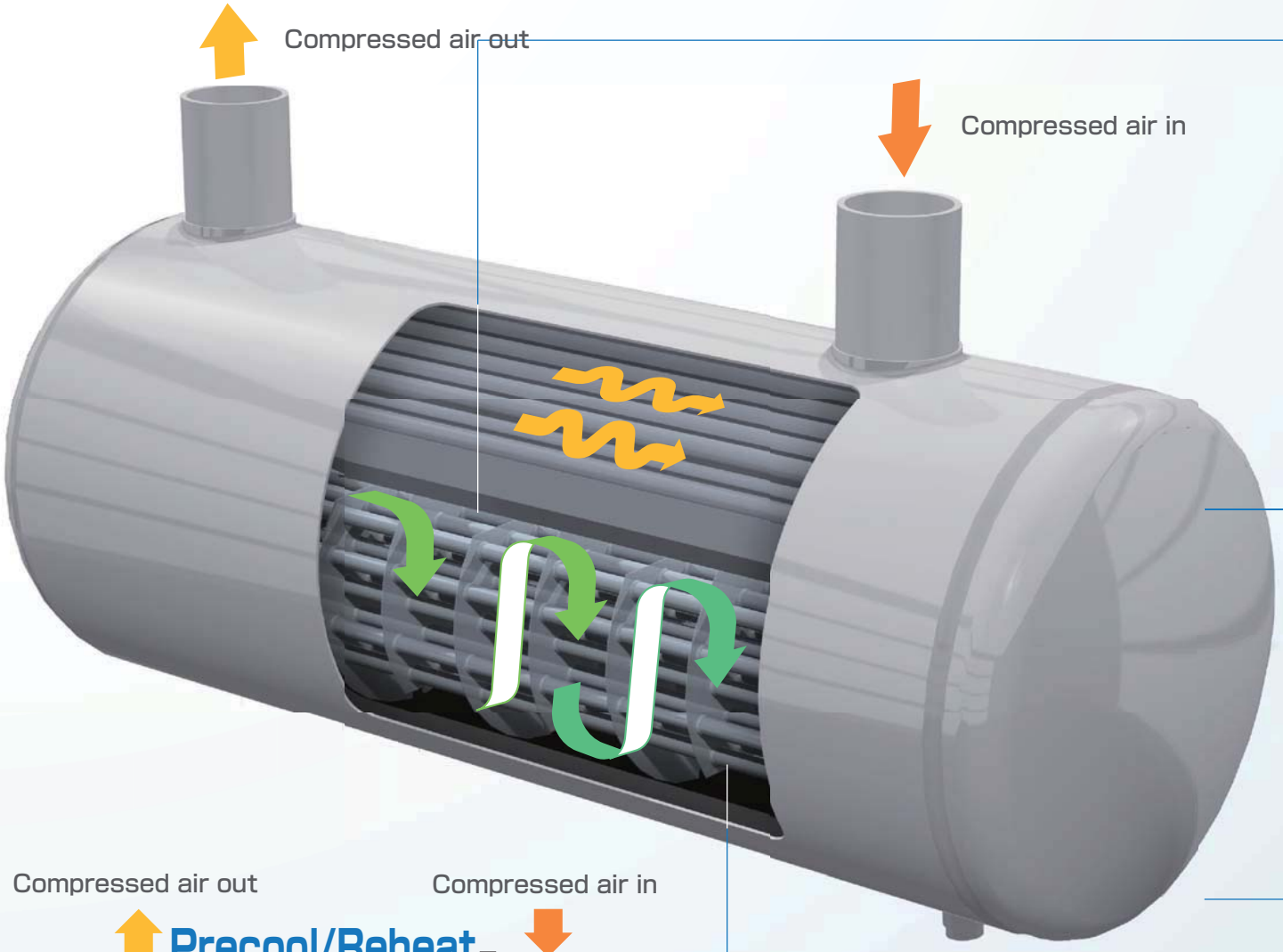
Compressed Clean Air System

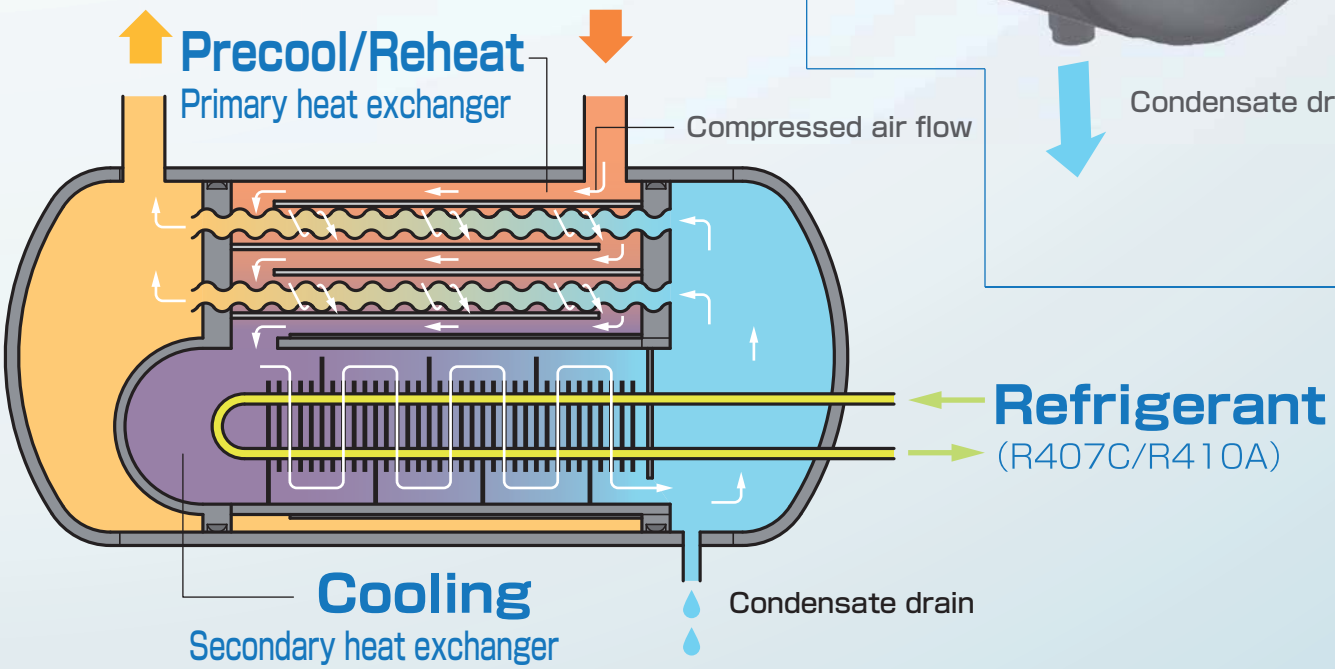
Clean Air System

Energy Saving Clean Air and Environmentally Conscious

ORION
Clean Air System

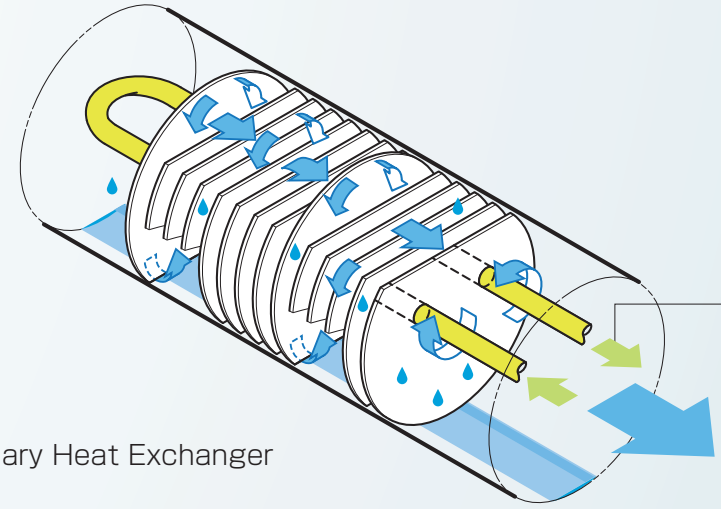
Better heat exchanger performance thanks to 40 years of experience with our original design.





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!

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

Using Zero Ozone Depletion Potential HFC Refrigerant (In All Models)

R134a
R407C
R410A

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 and below, and models RAX6J-SE and below are built-to-order models.

Stainless steel piping (optional)

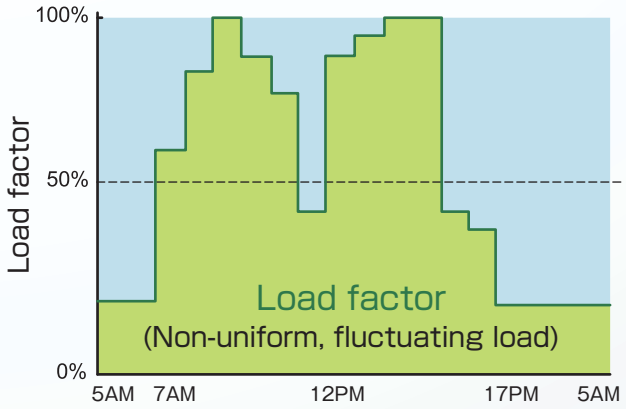
ORION
Clean Air System

ORION Energy Saving Air Dryers Saves Energy by Adapting to Changes in Loads.

Energy Savings of Inverter Air Dryer

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

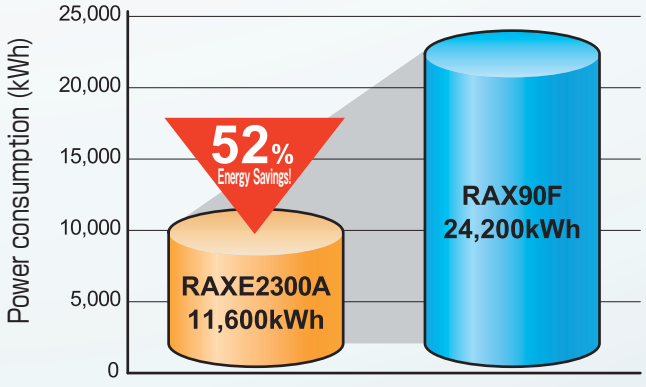
■Daily air dryer load factor
(graph data assuming a factory line operating 24 hours)



Standard air dryers constantly operate at a 100% load, resulting in high energy consumption.

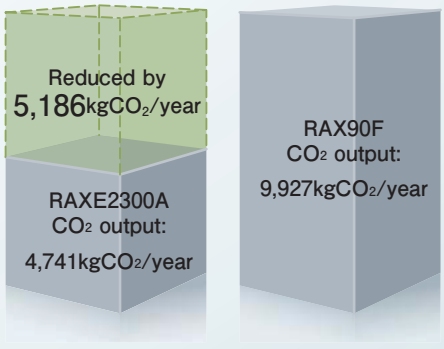
The inverter air dryer adapts to fluctuations in the load for potentially lower power consumption.

■Yearly Power Consumption Comparison



■Reduced CO_2 output

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



Amount of Energy Savings (calculation)

Electricity cost：JPY15/kWh

Difference in Yearly Power Consumption：24,200kWh−11,600kWh=12,600kWh

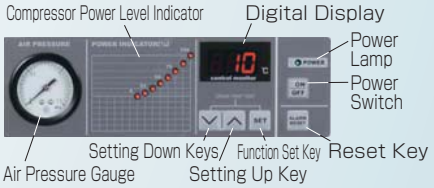
Effective energy savings：12,600kWh×15yen=**189,000** yen / year

Refrigerated Compressed Air Dryer
DC Inverter Air Dryer

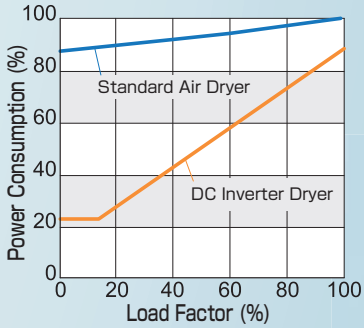
- First in the Industry DC inverter motor control for energy saving operation.
- Safe and dependable design plus added functionality.
  - · Processes 26% more air volume (compared with previous models.)
  - · Automatic switching based on combination of ambient temperature and dewpoint.
- Environmentally conscious
  - · RoHS Directive Compliant
  - · Uses environmentally friendly R410A refrigerant

Max. Energy Savings 65%

Control Panel



Energy savings based on Control Method



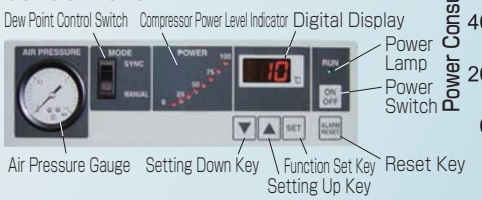
DC INVERTER

Refrigerated Compressed Air Dryer
Inverter Air Dryer

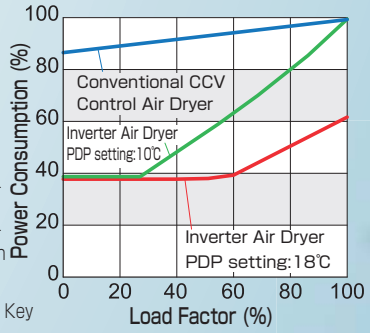
- Energy saving dewpoint temperature switching mode.
- Maximum 60% energy savings. (Patent application being filed.)
- Suitable for low pressure applications.
- Standard equipment includes energy saving drain trap.

Max. Energy Savings 60%

Control Panel



Load vs Electrical Consumption



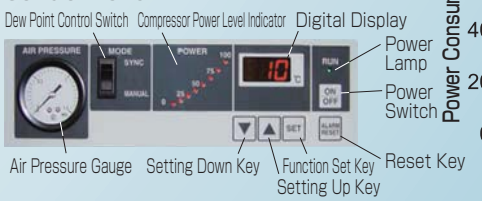
INVERTER

Refrigerated Compressed Air Dryer
Digi-Eco Air Dryer®

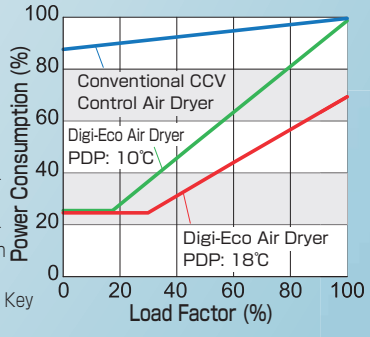
- Max. 68% Energy Savings
- High Temp Air Processing Model (Air inlet temp. (2℃~80℃)
- Safe and Reliable Design and Additional Features
  (Avoids shutdowns in summer months due to high loads / Lower heat output during energy saving operation)

Max. Energy Savings 68%

Control Panel



Load vs Electrical Consumption

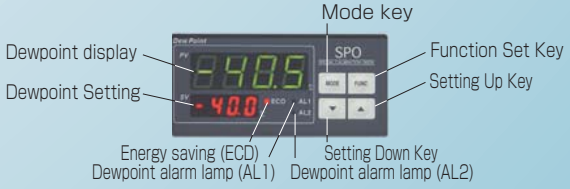


デジエコ Digital Economy

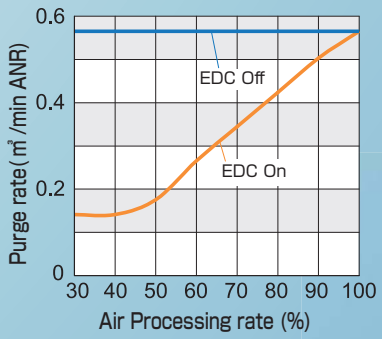
Heatless Type Compressed Air Dryer
Heatless Air Dryer

- Digital dewpoint monitor allows constant tracking of dewpoint for further energy savings.
- Dewpoint monitor precision: -60℃~+20℃ ±3℃

EDC Controller



Purge vs. Air Processing Rates



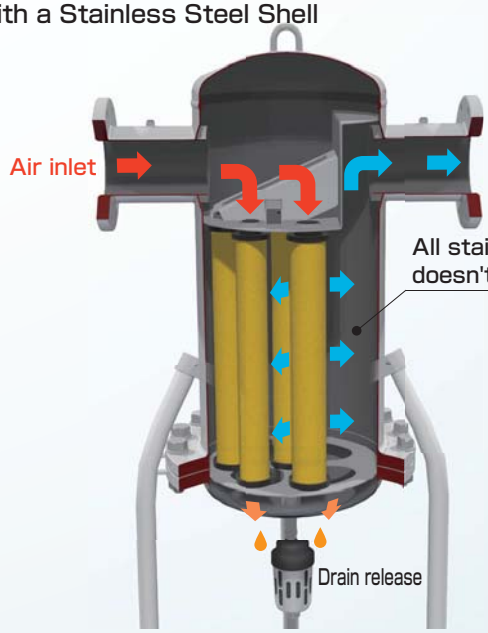
ECO PACK

ORION
Clean Air System

First Heavy-duty Model With a Stainless Steel Tank

Compressed Air Filter
SUPER FILTER

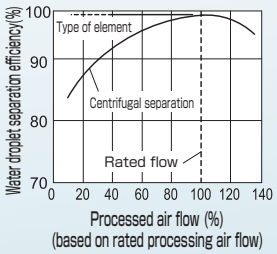
■Super Filter built with a Stainless Steel Shell

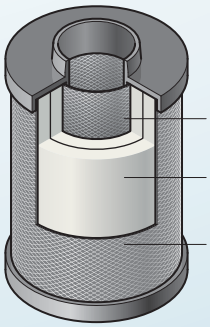


■Improved filtration by employing a combination of filters.

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

Performance Curve

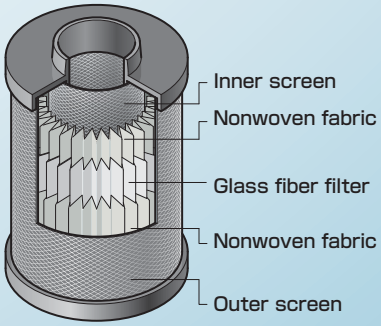




Cross section

For particulate removal
ELS Element
filter rating : 1 μm

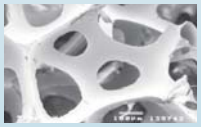
Glass fiber filter



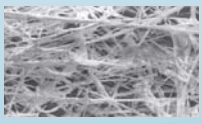
Cross section

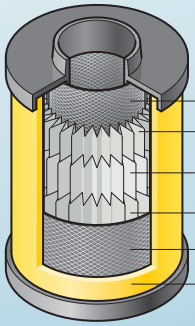
For oil mist removal
EMS Element
filter rating : 0.01 μm

Plastic foam



Glass fiber filter

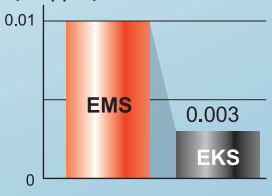


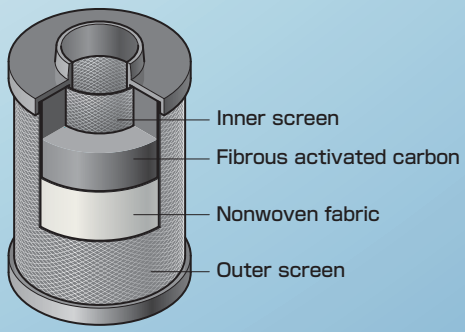


Cross section

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

Output oil concentration (wt ppm)





Cross section

Index

Energy Saving and Environmentally Conscious

Refrigerated Air Dryers

RAX Light Duty RAX-H RAX Heavy Duty

RAXE-SE RAXD RAXE

Heatless Air Dryer

QSQ QSQ-EDC

QAP

Filters

DSF LSF OFF

OPF DFH

Compressed Air Related Equipment

AE7 MD APX ACU KSC

ADE SE TH

THP OAT MST MG MGR

DG DGE70 ODF OWD・OWC

OWT OWH OWL OWS

Important Data and Information

※ For installation guidelines for RAX, RAXD, and RAXE models, please see page 25.
※ For installation guidelines for APX models, please see page 51

(Clean Air System)

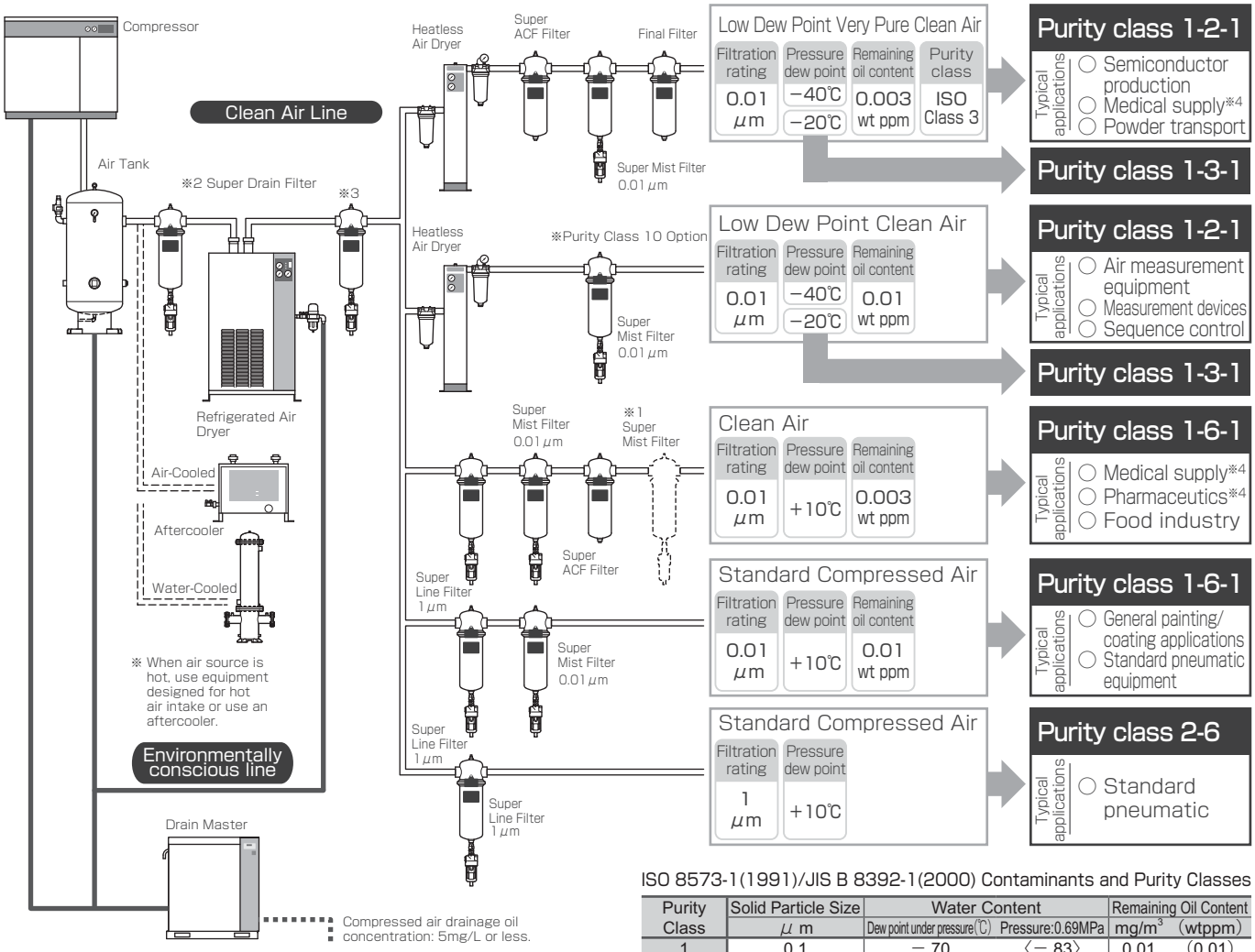
System Configuration Examples

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 When using an oil free compressor, where there may be more scaling in exhaust piping, the Super Drain Filter should be installed before the air dryer.
※3 We recommend use of the Super Drain Filter for applications where the air may be contaminated with liquid oil (oil droplet).
※4 Read the section (General Safety Precautions) on page 89, and use equipment appropriately as outlined therein.



※ When making model selections:
Always confirm the air compressor type, discharged air quantity, temperature, pressure, ambient temperature, power source frequency, and required dew point.

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

Purity Class	Solid Particle Size μ m	Water Content Dew point under pressure(℃)	Pressure:0.69MPa	Remaining Oil Content 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〉	−	

※ Number in 〈 〉 indicates water content converted to dewpoint at atmospheric pressure.
※ Solid particle collection efficiency is at least 95%.
※ The current revised standard is ISO8573(2001) /JIS B8392-1(2003)) Please refer to page 5 for further details.

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 / m³	X / ft³
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		Permissible 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

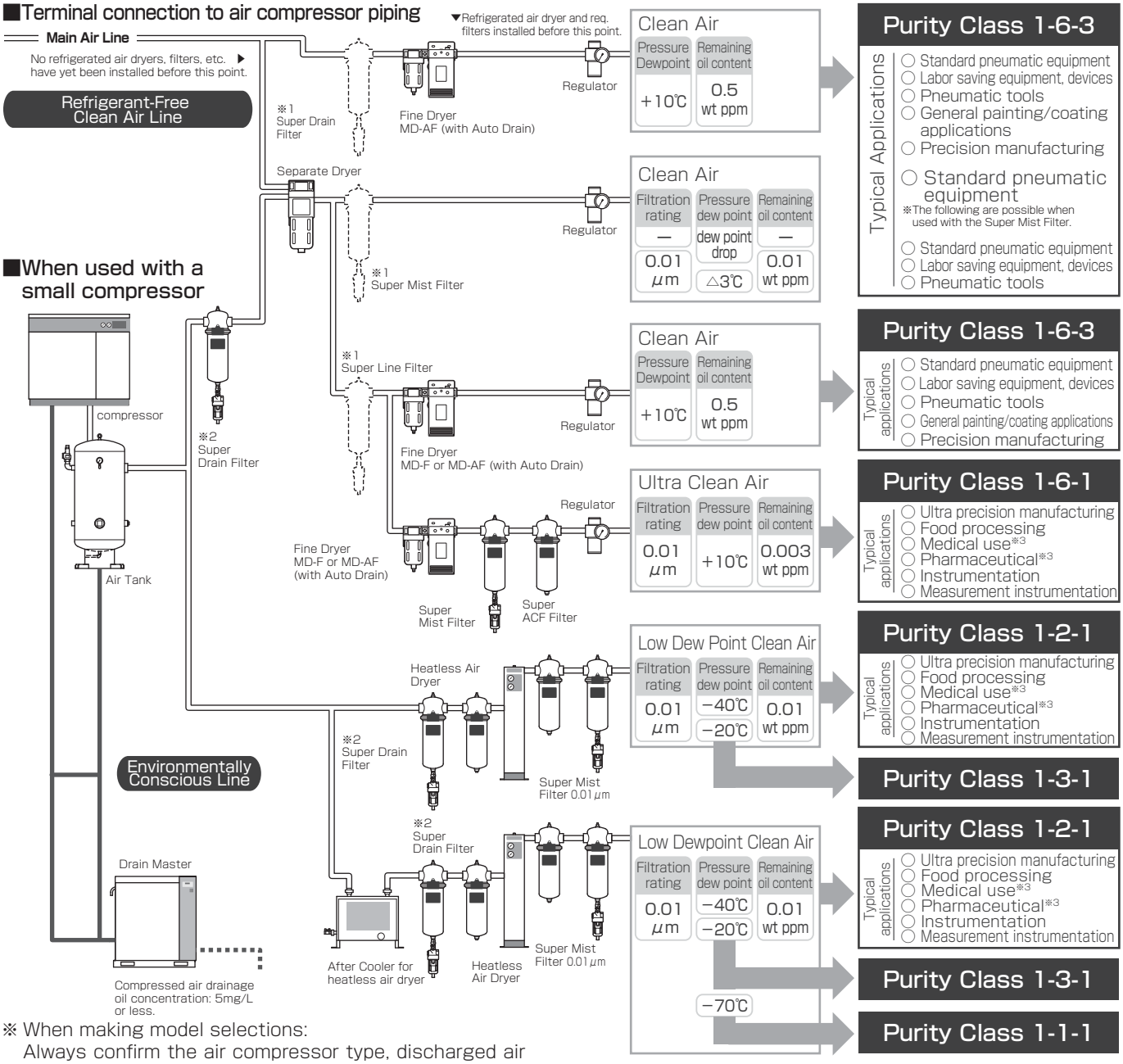
■ For use with small compressors

■ 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, when using an oil free compressor, where there may be more scaling in exhaust piping, and/or where the air may be contaminated with liquid oil (oil droplet), the Super Drain Filter should be installed before the air dryer.
※3 Read the section (General Safety Precautions) on page 89, and use equipment appropriately as outlined therein.



※ When making model selections:
Always confirm the air compressor type, discharged air quantity, temperature, pressure, ambient temperature, power source frequency, and required dew point.

※ If there will be supersaturated water vapor flowing into the air dryer, we recommend the Super Drain Filter be employed before the dryer. In particular, when using a heatless air dryer, please install the Super Drain Filter before the dryer. (when compressed air temperature is the same as room temperature)

※ 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 compressor 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.

(Compressed Air Cooling System)

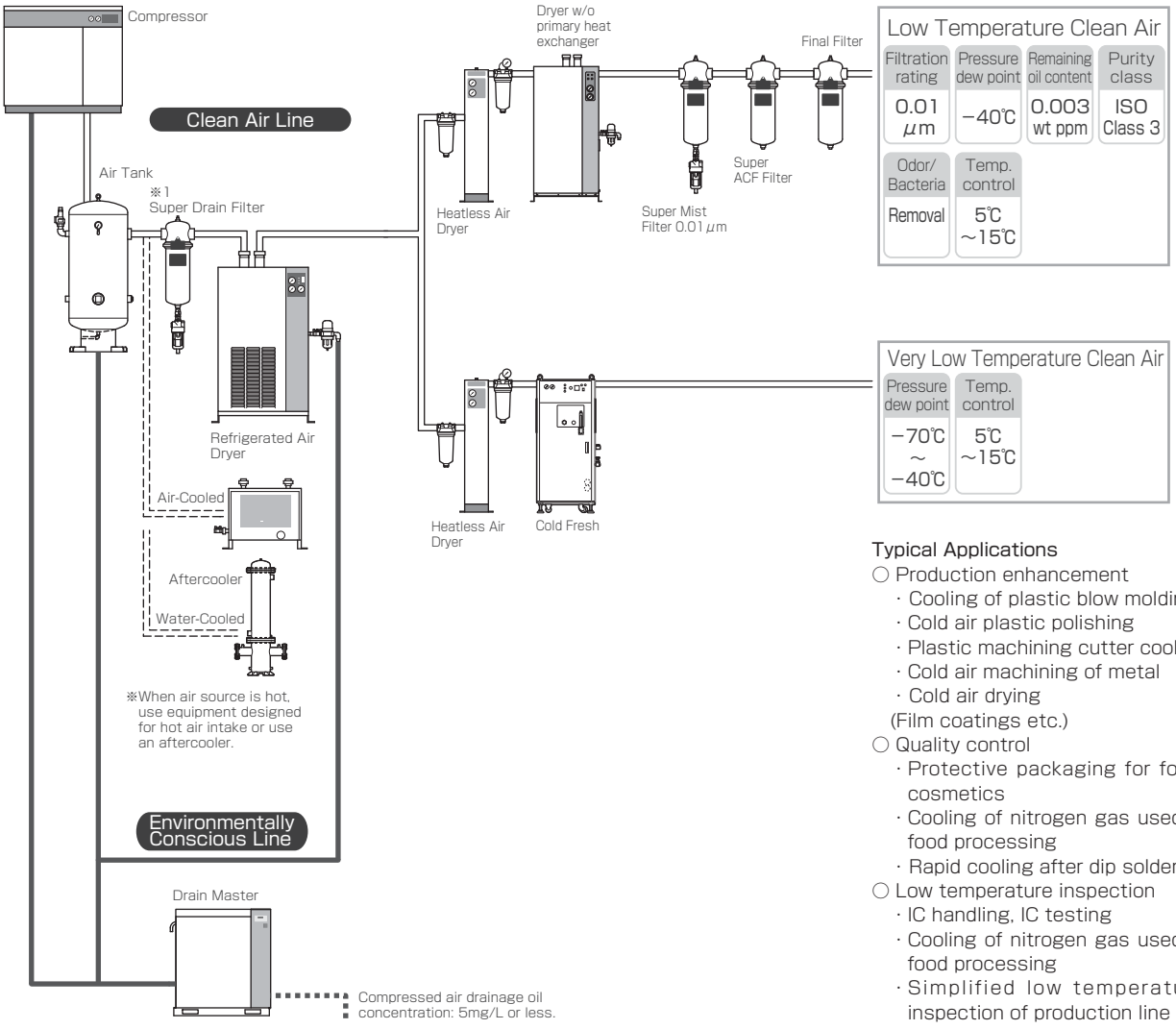
System Configuration Examples

ORION compressed air refrigerated systems offer a low-energy, clean air supply that meets your needs, featuring compressed air drain oil/water separation processing and temperature controlled air.

⚠ 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 In particular, when using an oil free compressor, where there may be more scaling in exhaust piping, the Super Drain Filter should be installed before the air dryer.



Typical Applications

○ Production enhancement
- · Cooling of plastic blow molding
- · Cold air plastic polishing
- · Plastic machining cutter cooling
- · Cold air machining of metal
- · Cold air drying

(Film coatings etc.)

○ Quality control
- · Protective packaging for food, cosmetics
- · Cooling of nitrogen gas used in food processing
- · Rapid cooling after dip soldering

○ Low temperature inspection
- · IC handling, IC testing
- · Cooling of nitrogen gas used in food processing
- · Simplified low temperature inspection of production line

※ When making model selections:
Always confirm the air compressor type, discharged air quantity, temperature, pressure, ambient temperature, power source frequency, and required dew point.

※ If compressed air flowing into the air dryer contains supersaturated water vapor, it is recommended that a super drain filter be installed before the dryer. In particular, when using a heatless air dryer, please install the Super Drain Filter before 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 compressor 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.

Regarding Revision of Standards

ISO 8573-1(2001)/JIS B 8392-1(2003)

1.Reason for revision

Compared with 1991, when ISO8573-1 was created, starting with the semiconductor industry, that and other markets now demand higher classes of purity of compressed air, and since the previous standard could not address the demands of these markets, the ISO standard changed in 2001, and in 2003, the JIS standard has also changed.

2.Details of the revision

1)Change of the name of the standard

Contaminants and Quality Classes → Contaminants and Purity Classes

2)Change in classes of solid particles

Class 0 (zero) has been added, and the former classes 1 and 2 have been subdivided into classes 1 through 5. Particle diameter, and the maximum number of particles allowed in 1 cubic meter have been defined.

Before revision			After revision						
Class	Max. particle size μm	Max. Concentration mg/m^3	Class	Max. number of particles allowed per 1m^3 Particle diameter d μm				Particle size μm	Concentration mg/m^3
				≦ 0.10	0.10 < d ≦ 0.5	0.5 < d ≦ 1.0	1.0 < d ≦ 5.0		
—	—	—	0	Requirements more stringent than Class 1 to be governed by consumer and supplier.				Not defined	Not defined
1	0.1	0.1	1	—	100	1	0		
			2	—	100000	1000	10		
			3	—	—	100000	500		
			4	—	—	—	1000		
2	1	1	5	—	—	—	20000		
3	5	5	6	Not defined				≦ 5	≦ 5
4	15	8	7	Not defined				≦ 40	≦ 10
5	40	10							

3)Changes to humidity and water content

Class 0 and water content class have been added, and pressure dewpoint have been newly classified for the sake of clarity.

Before revision		After revision		
Class	Minimum pressure dewpoint ℃		Class	Pressure dewpoint ℃
—	—	Humidity Class	0	Requirements more stringent than Class 1 to be governed by consumer and supplier.
1	− 70		1	≦ − 70
2	− 40		2	≦ − 40
3	− 20		3	≦ − 20
4	+ 3		4	≦ + 3
5	+ 7		5	≦ + 7
6	+ 10		6	≦ + 10
7	Not defined		−	−
		Moisture Content Class	Class	Water C_wg/m^3
			7	C_w ≦ 0.5
			8	0.5 < C_w ≦ 5
			9	5 < C_w ≦ 10

4)Changes to oil classes

Class 0 has been added, Class 5 has been eliminated and gross oil concentration figures have been clarified.

Before revision		After revision	
Class	Max. Concentration mg/m^3	Class	Gross oil concentration (liquid oil, aerosol, and vapor) mg/m^3
		0	Requirements more stringent than Class 1 to be governed by consumer and supplier.
1	0.01	1	≦ 0.01
2	0.1	2	≦ 0.1
3	1	3	≦ 1
4	5	4	≦ 5
5	25		

Standard Refrigerated Air Dryer (Refrigerated Compressed Air Drying Equipment)

RAX Light Duty Series

Registered Design

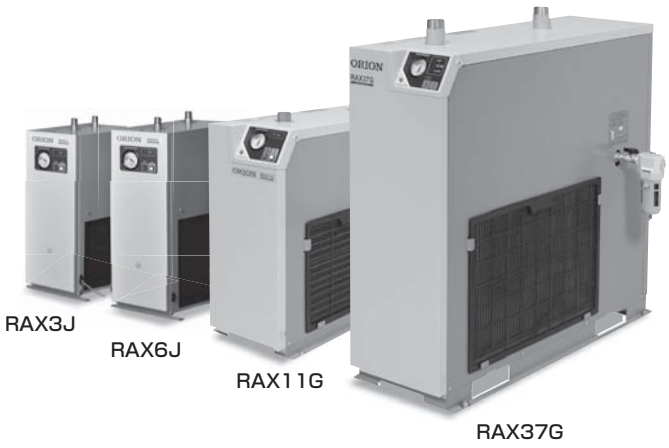
Air-Cooled Type RAX3J ～ 55G / Water-Cooled Type RAX55G-W

Standard inlet air temperature | Chinese Pressure Vessel Code Compliance Option | HFC R134a Refrigerant | HFC R407C Refrigerant

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

Inlet air temperature 5 ～ 50℃

Suitable air compressors
- Air-Cooled type 3 ～ 55kW
- Water-Cooled type 55kW



Features

1.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.

※ Please inquire regarding degreasing.

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

2.Preventive measure safety design (Safe and Secure) (RAX15G～55G(-W))

Warning alarm display generated before unit shutdown from high pressure cut.

3.Air intake filter standard equipment

Comes with condenser intake filter as standard equipment for easy maintenance.

Specifications

● Refrigerated Air Dryer Specifications

Item		Model	Air-Cooled									
		RAX	3J-A1	3J-A2	6J-A1	6J-A2	8J-A1	8J-A2	11G-A1	11G-A2	15G	22G
Air Processing Capacity(50/60Hz)		m^3/min	0.32/0.37		0.68/0.77		1.0/1.2		1.75/1.93		2.6/3.0	3.9/4.5
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 /2 ～ 40			
Compressed air pressure range (gauge pressure)		MPa	0.2 ～ 0.98									
Outside dimensions	Height	mm	480		510				600			630
	Depth	mm	450		540		600		660		780	870
	Width	mm	180				240					
Mass		kg	18		21		26		33		39	44
Auto Drain Trap	Model		FD2-NC		FD2							FD6
	Drain release port size		ϕ4 (Use nylon-based tubes of I.D. ϕ5.7～ϕ6.0 O.D. ϕ8.0)									
Air inlet/outlet connection			R1/2				R3/4		Rc3/4		R1	
Electrical Specifications	Power (50/60Hz)	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 220/200,220	Three phase 200/200,220	
	Power consumption (50/60Hz)	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	0.39/ 0.46,0.47	0.40/ 0.46,0.49	0.65/ 0.78,0.81	0.73/ 0.89,0.89
	Electric current (50/60Hz)	A	1.9/1.8	3.9/3.4	4.1/3.4	4.4/ 4.7,4.4	2.3/ 2.4,2.3	2.9/ 2.7,2.8	2.6/ 2.8,2.7	5.1/ 5.7,5.5	5.3/ 6.2,6.0	4.6/ 5.2,5.0
	Power capacity	kVA	0.3		0.4		0.6	0.5	0.7	0.6	1.3	1.5
	Breaker capacity	A	5		10	5	10	5	10		5	
Refrigerant			R-134a						R-407C			

※ Compressed air processing conditions: compressed air inlet pressure (gauge pressure): 0.69MPa, inlet air temperature for models RAX3J～37G: 35℃, models RAX55G, 55G-W: 40℃, outlet air dew point at atmospheric pressure: -17℃, dewpoint under pressure: 10℃, ambient temperature: 32℃. ※ Please contact us for guaranteed performance specifications. ※ Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32℃、75%.) ※ RAX55G-W cooling water flow rate is for 60Hz operation. ※ 1 In case power source fluctuation is within ±5%. 2 ～ 40℃ for ±10%. ● RAX15 ～ 55G-W come standard equipped with control terminals for remote operation (no-voltage switch.) ● Chinese pressure vessel code compliant model available upon request. Please inquire for further information. ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above.

Specifications

Item		Model	Air-Cooled		Water-Cooled
		RAX	37G	55G	55G-W
Air Processing Capacity(50/60Hz)		m^3/min	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 ～ 40		Compressed air / 2 ～ 45
Compressed air pressure range (gauge pressure)		MPa	0.2 ～ 0.98		
Cooling water	Water temp	℃	—		32
	Water flow rate	m^3/h	—		2.0
Outside dimensions	Height	mm	900	1100	
	Depth	mm	960	990	
	Width	mm	300	330	
Mass		kg	73	90	94
Auto Drain Trap	Model		FD6		
	Drain release port size		ϕ 4		
Air inlet/outlet connection			R11/2	R2	
Cooling water inlet/outlet connection			—		nlet Rc3/4 Outlet Rp3/4
Electrical Specifications	Power (50/60Hz)	V	Three phase200/200,220		
	Power consumption (50/60Hz)	kW	1.37/ 1.76,1.77	1.48/ 1.91,1.90	1.29/ 1.61,1.61
	Electric current (50/60Hz)	A	5.1/ 5.7,5.5	5.3/ 6.2,6.0	4.6/ 5.2,5.0
	Power capacity	kVA	2.9	3.1	2.7
	Breaker capacity	A	10		
Refrigerant			R-407C		

※ Compressed air processing conditions: compressed air inlet pressure (gauge pressure): 0.69MPa, inlet air temperature for models RAX3J～37G: 35℃, models RAX55G, 55G-W: 40℃, outlet air dew point at atmospheric pressure: -17℃, dewpoint under pressure: 10℃, ambient temperature: 32℃. ※ Please contact us for guaranteed performance specifications. ※ Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32℃、75%.) ※ RAX55G-W cooling water flow rate is for 60Hz operation. ※ 1 In case power source fluctuation is within ± 5%. 2 ～ 40℃ for ± 10%. ● RAX15 ～ 55G-W come standard equipped with control terminals for remote operation (no-voltage switch.) ● Chinese pressure vessel code compliant model available upon request. Please inquire for further information. ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above.

● External dimensions (A1/A2)

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
RAX11G	600	660		(627)	120		530	330
RAX15G		780		(658)			650	430
RAX22G	630	870		(689)			740	
RAX37G	900	960	300	(966)	165		825	447
RAX55G	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	
RAX11G	165	(129)	265	(301)	101	285	
RAX15G	190			(340)			
RAX22G	280	(145)		(370)	105		
RAX37G	338		325	(516)	197	345	
RAX55G	325		355	(701)	145	375	

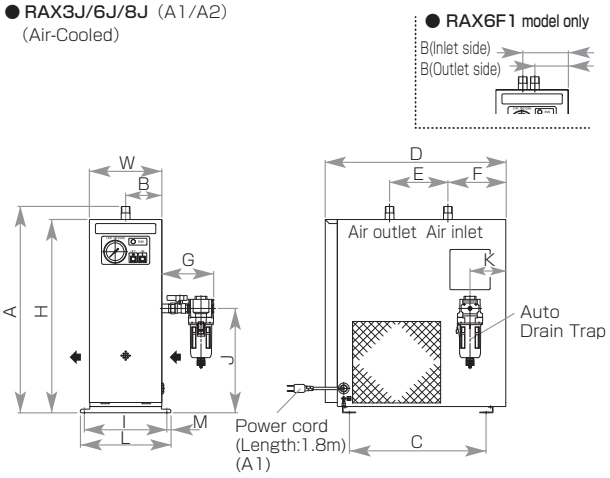
Model	H	D	W	A	B	C	E
RAX55G-W	1100	990	330	(1165)	165	855	500

Model	F	G	I	J	K	L	M
RAX55G-W	325	(145)	355	(701)	145	375	10

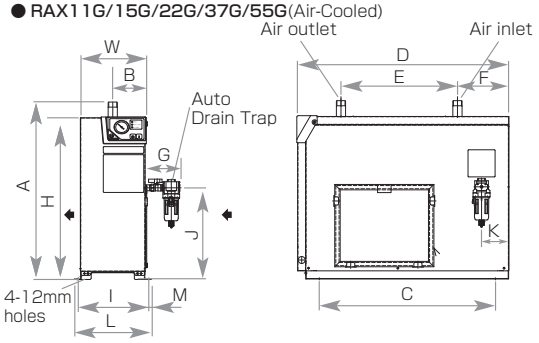
Model	a	b	c	d	e	f
RAX55G-W	(290)	(15)	(164)	(113)	(360)	(97)

Outside dimensions (Units:mm)

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

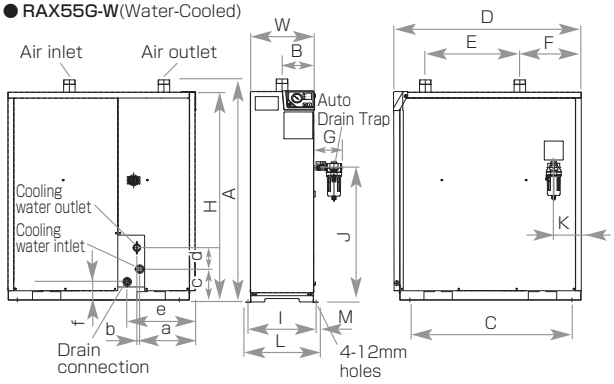


● **RAX11G/15G/22G/37G/55G**(Air-Cooled)



※RAX11G-A1 includes power cord. (Cord length outside unit: 1.8m)

● **RAX55G-W**(Water-Cooled)



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

RAX Heavy Duty Series

Air-Cooled RAX75F ～ 380F-E ／ Water-Cooled RAX75F-W ～ 450F-WE

Standard inlet air temperature

Chinese Pressure Vessel Code Compliance Option

HFC R407C
HFC Refrigerant

Air Processing Capacity
- Air-Cooled model 11/13 ～ 59/69m^3/min
- Water-Cooled model 12/14 ～ 83/98m^3/min

Air inlet temperature　5 ～ 60℃

Suitable air compressors
- Air-Cooled model 75 ～ 380kW
- Water-Cooled model 75 ～ 450kW

RAX75F

RAX300F-E

Features

RAX75F ～ 190F-W

1.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.
※ Please inquire regarding degreasing.
※ Optional stainless steel piping is also available for higher corrosion resistance.

2.Low pressure loss: less than 0.015MPa
Little clogging even after long periods of use, and a heat exchanger that has little pressure loss (pressure drop.)

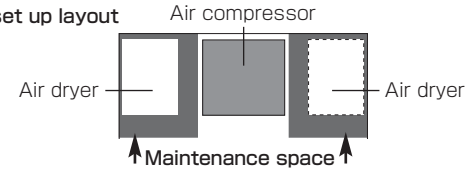
0.69MPa	0.008 ～ 0.015MPa ※
0.98MPa (Max. operable pressure)	0.006 ～ 0.013MPa ※

※ Figure is for flow rate at 50Hz.

3.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.

4.Easy maintenance and layout set up
(1) Design allows front access to main parts for maintenance and inspection.
(2) Air compressor can be set up on either the left or right side. Drain trap, exhaust direction (for air-cooled models) or water piping (for water-cooled models) can be to the left or right side on site.

■ Image of set up layout



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.

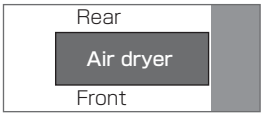
2.Low pressure loss: less than 0.01MPa.
(RAX240F, 240F-W)

0.69MPa	0.006 ～ 0.01MPa ※
0.98MPa (Max. operable pressure)	0.004 ～ 0.008MPa ※

※ Figure is for flow rate at 50Hz.

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.

Specifications

● RAX75F ～ 190F-W

Item		Model RAX	Air-Cooled					Water-Cooled				
			75F	90F	120F	150F	190F	75F-W	90F-W	120F-W	150F-W	190F-W
Air Processing Capacity(50/60Hz)		m^3/min	11/13	16/19	20/23	25/30	32/38	12/14	17/20	21/25	27/31	35/41
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									
Cooling water	Water temp	℃	—					32				
	Flow rate	m^3/h	—					1.7	2.8	2.9	3.0	3.2
Outside dimensions	Height	mm	1102	1276		1332		1102	1276		1332	
	Depth	mm	1120		1260	1290		1120		1260	1290	
	Width	mm	642	672		950		642	672		950	
Mass		kg	146	237	258	372	370	148	215	238	346	344
Auto Drain Trap	Model		AD5									
	Drain release port size		Rc1/2									
Air inlet/outlet connection			2B 50A union		21/2B 65A flange	3B 80A flange		2B 50A union		21/2B 65A flange	3B 80A flange	
Cooling water inlet/outlet connection		female	—					Rp3/4				
Electrical Specifications	Voltage (50/60Hz)	V	Three phase 200/200,220									
	Power consumption (50/60Hz)	kW	2.1/ 2.6,2.6	3.0/ 3.7,3.7	2.9/ 3.8,3.6	3.7/ 4.8,4.7	5.6/ 6.6,6.5	1.7/ 2.0,2.0	2.4/ 2.9,2.8	2.1/ 2.6,2.5	3.1/ 3.8,3.7	4.6/ 5.3,5.2
	Electric current (50/60Hz)	A	8.6/8.7,8.7	11.0/ 12.0,12.0	11.6/ 13.1,12.6	14.7/ 16.3,15.9	20.1/ 21.0,20.3	7.7/7.0,7.0	9.0/9.6,9.1	8.6/9.4,8.9	11.9/ 12.8,12.1	15.1/ 15.9,15.4
	Power capacity	kVA	4.2	6.4		7.4	9.4	3.5	5.0	5.2	6.8	7.8
	Breaker capacity	A	15	30			40	15	20		30	
Refrigerant			R-407C									

※ Air processing conditions: compressed air inlet pressure (gauge pressure): 0.69MPa, inlet air temperature: 40℃, outlet air dew point: -17℃, pressure dew point: 10℃, 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 60Hz operation. ● 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. ● RAX75F(F-W) ～ 190F(F-W) models equipped with suspension eyebolts. ● Chinese pressure vessel code compliant model available upon request. Please inquire for further information. ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above.

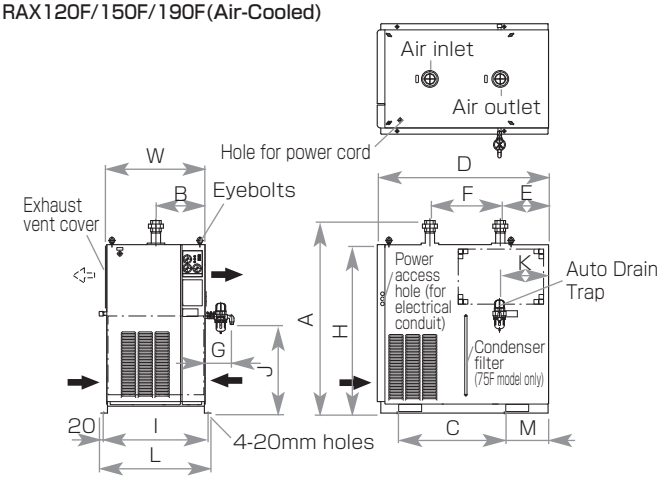
● RAX240F ～ 450F-WE

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(50/60Hz)		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			4B 100A flange	5B 125A flange		4B 100A flange	5B 125A flange		6B 150A flange
Cooling water inlet/outlet connection		female	—			Rp1	Rc11/2		
Electrical Specifications	Voltage (50/60Hz)	V	Three phase 200/200,220						
	Power consumption (50/60Hz)	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 (50/60Hz)	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
Refrigerant			R-407C						

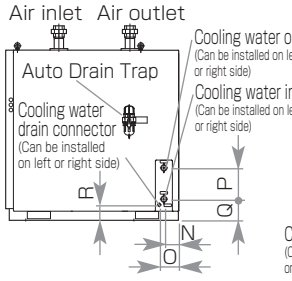
※ Air processing conditions: compressed air inlet pressure (gauge pressure): 0.69MPa, inlet air temperature: 40℃, outlet air dew point: -17℃, pressure dew point: 10℃ , ambient temperature: 32℃ . ※ Please contact us for guaranteed performance specifications. Heavy duty models have had performance specifications 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 60Hz operation. ● Standard equipped with remote control terminals (no-voltage), operation signal terminals (no-voltage), alarm signal terminals (no-voltage.) ● Remote operation and stop signals be 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. ● Air inlet/outlet connection companion flanges not included. ● Flange: JIS 10K FF. ● Chinese pressure vessel code compliant model available upon request. Please inquire for further information. ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above. ※ 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.

Outside dimensions (Units : mm)

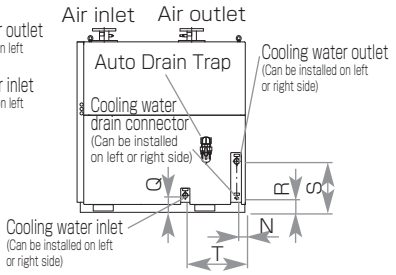
● RAX75F/90F(Air-Cooled)
● RAX120F/150F/190F(Air-Cooled)



● RAX75F-W(Water-Cooled)



●RAX90F-W/120F-W/150F-W(Water-Cooled)
● RAX190F-W(Water-Cooled)

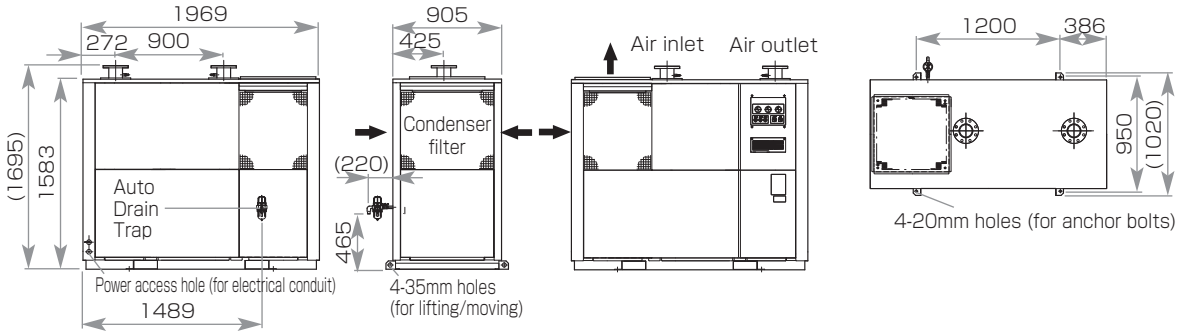


※ RAX75F/75F-W/90F/90F-W model air inlet/outlet connectors are union fittings.
※ RAX120F/120F -W and above equipped with flanges on air inlet and outlet.
※ RAX75F/90F/120F/150F/190F models air cooling exhaust can be on the left or right side.
※ RAX75F includes a condenser filter.

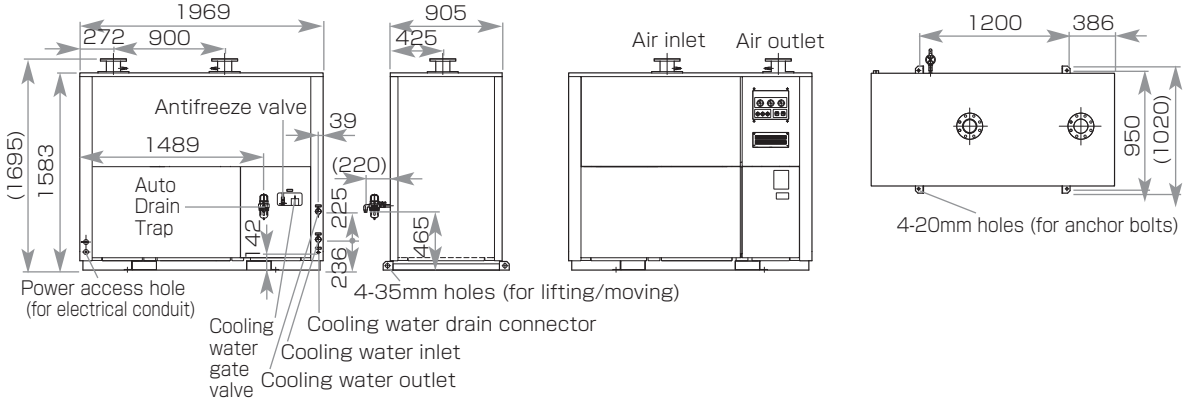
Model RAX	H	D	W	A	B	C	E	F	G	I
75F/F-W	1102	1120	642	(1256)	321	700	316	460	(180)	682
90F/F-W	1276	1120	672	(1411)	336	700	290	460	(180)	712
120F/F-W	1276	1260	672	(1375)	336	935	403	655	(180)	712
150F/F-W	1332	1290	950	(1432)	475	935	296	720	(180)	990
190F/F-W	1332	1290	950	(1432)	475	935	226	860	(180)	990

Model RAX	J	K	L	M	N	O	P	Q	R	S	T
75F/F-W	(580)	322	(722)	290	96	126	202	137	100	—	—
90F/F-W	(510)	780	(752)	130	70	—	—	127	107	382	310
120F/F-W	(425)	295	(752)	214	70	—	—	127	107	382	445
150F/F-W	(425)	260	(1030)	245	70	—	—	127	95	382	475
190F/F-W	(425)	260	(1030)	245	70	—	—	127	95	382	475

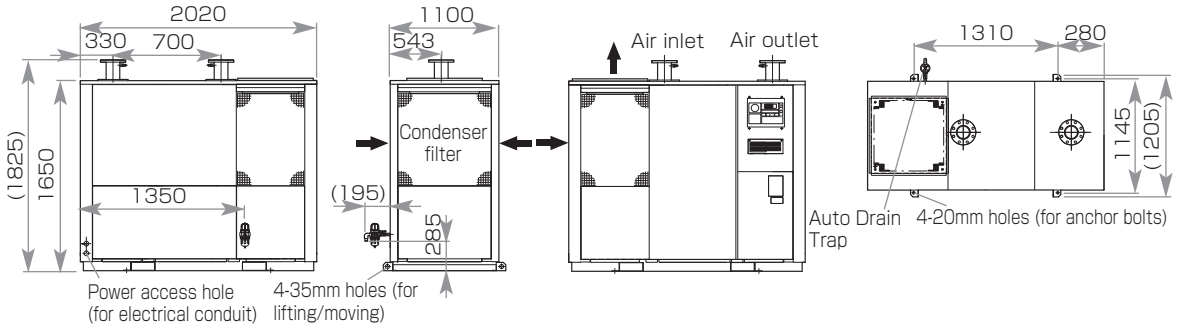
● RAX240F(Air-Cooled)



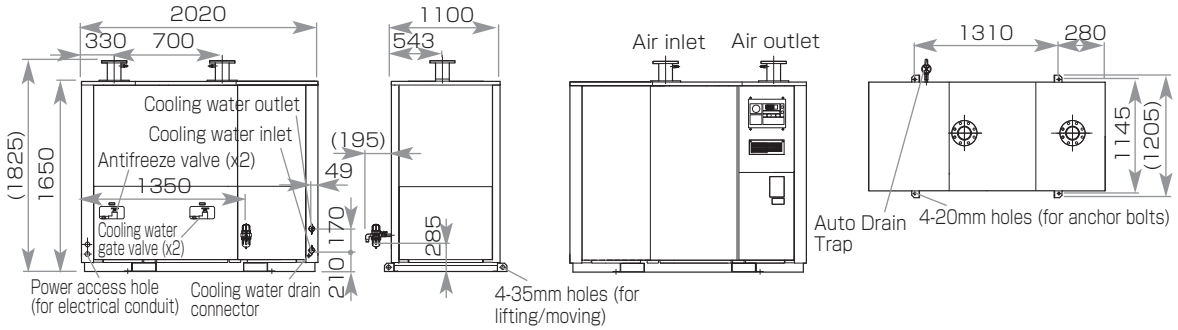
●RAX240F-W(Water-Cooled)



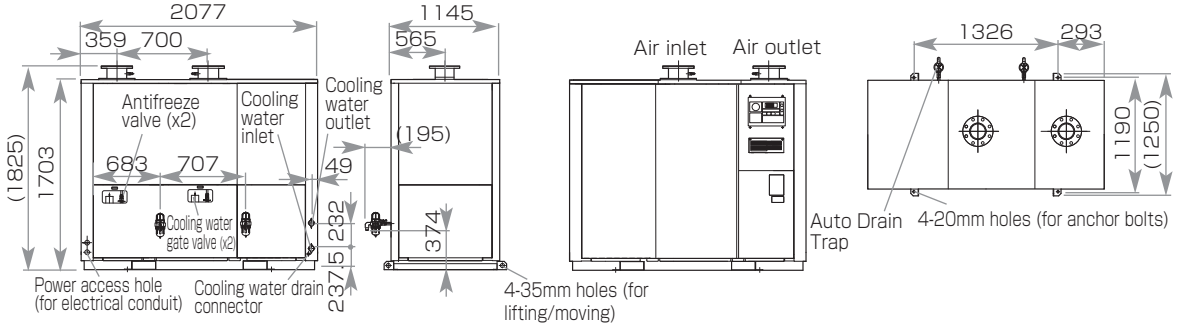
● RAX300F-E/380F-E(Air-Cooled / Energy saving model)



● RAX300F-WE/380F-WE(Water-Cooled / Energy saving model)



● RAX450F-WE(Water-Cooled / Energy saving model)



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

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

Registered Design

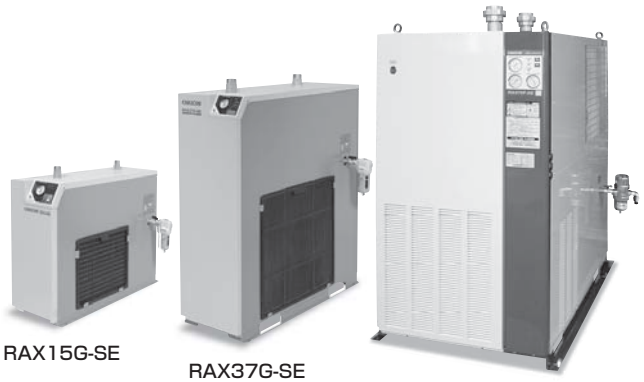
Air-Cooled RAX3-SE ～ 75F-SE
Air Processing Capacity
0.32/0.37 ～ 11/13m³/min
Can process high temperature compressed air 5 ～ 80℃
Compatible with air compressors from 3 ～ 75kW

High inlet air temperature

Chinese Pressure Vessel Code Compliance Option

HFC R134a HFC Refrigerant

HFC R407C HFC Refrigerant



Features

1.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.
※ Please inquire regarding degreasing.
※ Optional stainless steel piping is also available for higher corrosion resistance.

2.Low pressure loss: less than 0.015MPa (RAX75F-SE)
Little clogging even after long periods of use, and a heat exchanger that has little pressure loss (pressure drop.)

0.69MPa	0.008 ～ 0.015MPa ※
0.98MPa (Max. operable pressure)	0.006 ～ 0.013MPa ※

※ Figure is for flow rate at 50Hz.

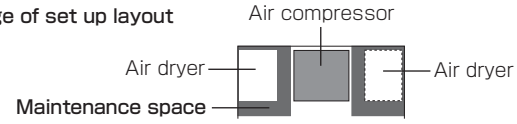
3.Preventive measure safety design (Safe and Secure) (RAX15G-SE～37G-SE)
Warning alarm display generated before unit shutdown from high pressure cut.

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 (RAX3J-SE ～ 55F-SE)
Comes with condenser intake filter as standard equipment for easy maintenance.

6.Easy maintenance and layout set up (RAX75F-SE)
(1) Design allows front access to main parts for maintenance and inspection.
(2) Air compressor can be set up on either the left or right side. Drain trap and exhaust direction can be to the left or right side on site.

■ Image of set up layout



Specifications

● SE Type

Item		Model	Air-Cooled Models										
		RAX	3J-SE-A1	3J-SE-A2	4J-SE-A1	4J-SE-A2	6J-SE-A1	6J-SE-A2	8G-SE-A1	8G-SE-A2	11G-SE	15G-SE	22G-SE
Air Processing Capacity(50/60Hz)		m³/min	0.32/0.37		0.47/0.53		0.68/0.77		1.30/1.40		1.75/1.93	2.2/2.6	3.9/4.5
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 /2 ～ 40				
Compressed air pressure range (gauge pressure)		MPa	0.2 ～ 0.98										0.29～0.98
Outside dimensions	Height	mm	510				600					630	900
	Depth	mm	540		600		660		780			870	960
	Width	mm	180		240								300
Mass		kg	180		240								300
Auto drain trap	Model		FD2-NC		FD2								FD6
	Drain release port size		φ4（Use nylon-based tubes of I.D. φ5.7～φ6.0 O.D. φ8.0）										
Air inlet/outlet connection			R1/2		R3/4				Rc3/4		R1		
Electrical Specifications	Voltage (50/60Hz)	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/ 200,220	Three phase a 200/200,220		
	Power consumption (50/60Hz)	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	0.41/ 0.50,0.52	0.42/ 0.50,0.53	0.68/ 0.78,0.80	0.74/ 0.93,0.93	1.41/ 1.81,1.81
	Electric current (50/60Hz)	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	4.5/ 5.0,4.7	2.4/ 2.5,2.4	3.0/ 2.8,2.8	2.5/ 2.8,2.6	5.1/ 5.7,5.4
	Power capacity	kVA	0.4		0.6	0.5	0.7	0.6	0.7		1.4		2.9
	Breaker capacity	A	10	5	10	5	10	5	10		5		10
Refrigerant			R-134a						R-407C				

※ Air processing conditions: compressed air inlet pressure (gauge pressure): 0.69MPa, inlet air temperature: 55℃ , outlet air dew point: -17℃ , pressure dew point: 10℃ , 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 conditions (atmospheric pressure, 32℃、75%.) ※1 In case power source fluctuation is within ±5%. 2～40℃ for ±10%. ● RAX15G-SE ～ 55F-SE comes standard equipped with remote control terminals (no-voltage.) ● RAX75F-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. ● Chinese pressure vessel code compliant model available upon special request. Please inquire for further information. ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above.

Specifications

● SE Type

Item		Model	Air-Cooled Models		
		RAX	3J-SE-A1	3J-SE-A2	4J-SE-A1
Air Processing Capacity(50/60Hz)		m^3/min	6.1/6.5	8.4/9.8	11/13
Inlet air temp. range / Outlet air dew point		℃	5～80 / Pressure dew point: 10		
Working fluid / Operable ambient temperature range		℃	Compressed air /2～40		
Compressed air pressure range (gauge pressure)		MPa	0.2～0.98MPa		0.29～0.98
Outside dimensions	Height	mm	1100		1276
	Depth	mm	990	1080	1260
	Width	mm	330	360	672
Mass		kg	90	105	253
Auto drain trap	Model		FD6	FD-5	AD-5
	Drain release port size		φ 4	Rc1/4	Rc1/2
Air inlet/outlet connection			R11/2	11/2B 40A union	2B 50A union
Electrical Specifications	Voltage (50/60Hz)	V	Three phase a 200/200,220		
	Power consumption (50/60Hz)	kW	1.39/ 1.75,1.85	2.07/ 2.60,2.60	2.7/ 3.5,3.4
	Electric current (50/60Hz)	A	4.9/ 5.8,5.7	8.6/ 8.9,8.9	10.6/ 11.9,11.4
	Power capacity	kVA	3.0	3.9	6.4
	Breaker capacity	A	10	15	30
Refrigerant			R-407C		

※ Air processing conditions: compressed air inlet pressure (gauge pressure): 0.69MPa, inlet air temperature: 55℃ , outlet air dew point: -17℃ , pressure dew point: 10℃ , 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 conditions (atmospheric pressure, 32℃、75%.) ※1 In case power source fluctuation is within ±5%. 2～40℃ for ±10%. ● RAX15G-SE ～ 55F-SE comes standard equipped with remote control terminals (no-voltage.) ● RAX75F-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. ● Chinese pressure vessel code compliant model available upon special request. Please inquire for further information. ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above.

● External dimensions (A1/A2)

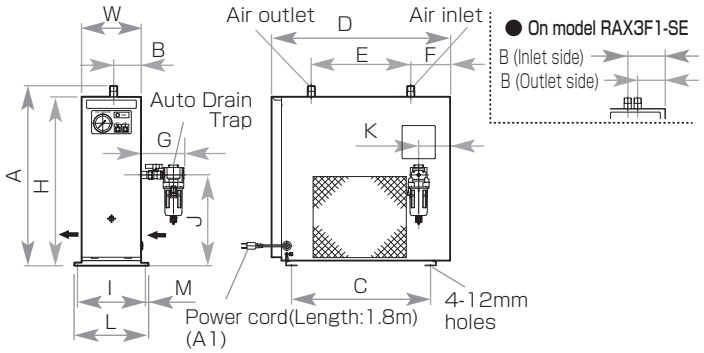
Model	H	D	W	A	B		C	E
					Inlet	Outlet		
RAX3J-SE	510	540	180	(542)	113	83	420	300
RAX4J-SE		600	240	(537)	140		480	335
RAX6J-SE	600	660		(627)			542	416
RAX8G-SE		780			120		650	430
RAX11G-SE				(658)				
RAX15G-SE	630	870		(689)			740	
RAX22G-SE	900	960	300	(966)	165		825	444
RAX37G-SE	1100	990	330	(1165)			855	500
RAX55F-SE		1080	360	(1216)	180		940	460

Model	F	G	I	J	K	L	M
RAX3J-SE	120	(130)	205	274	96	225	10
RAX4J-SE	138		265	280	78	285	
RAX6J-SE	84			370	105		
RAX8G-SE	190	(129)		340	101	285	
RAX11G-SE							
RAX15G-SE	280			(370)	105		
RAX22G-SE	341	(145)	325	(516)	197	345	
RAX37G-SE	325		355	(701)	145	375	
RAX55F-SE	415	(152)	383	729	870	(403)	

Outside dimensions (Units:mm)

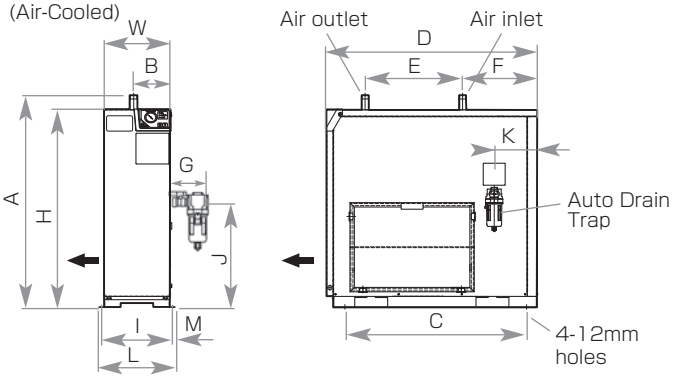
● RAX3J-SE/4J-SE/6J-SE (A1/A2)

(Air-Cooled)



● RAX8G-SE/11G-SE/15G-SE/22G-SE/37G-SE

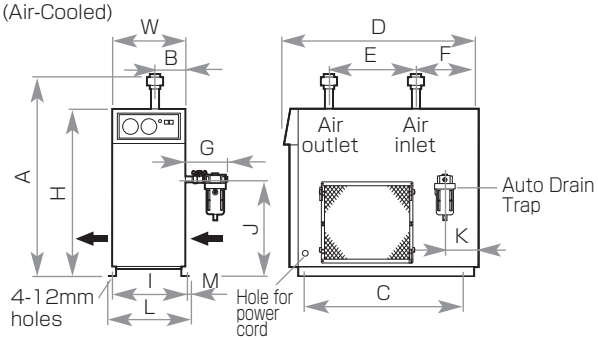
(Air-Cooled)



※ RAX8G-SE-A1 includes power cord. (Cord length outside unit: 1.8m)

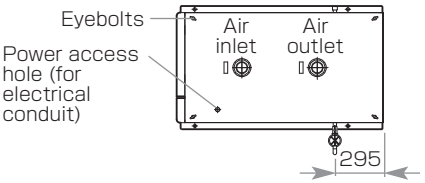
● RAX55F-SE

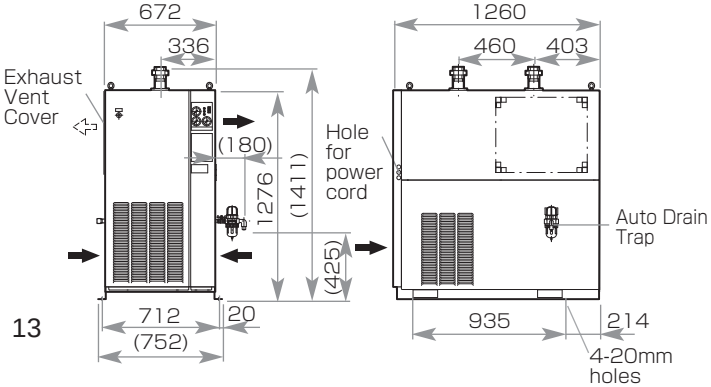
(Air-Cooled)



● RAX75F-SE

(Air-Cooled)





Medium Pressure 1.57MPa Air Dryer (Refrigerated compressed air dryer)

RAX-H Series "Medium Pressure Spec."

Air-Cooled models RAX3.7J-H ～ 15J-H
Working Air pressure 1.57MPa
Air processing capacity 0.36/0.42 ～ 1.3/1.5m^3/min
Can process high temperature compressed air 5 ～ 80℃
Compatible with air compressors from 3.7 ～ 15kW

1.57MPa High Pressure Compatible

HFC R134a HFC Refrigerant

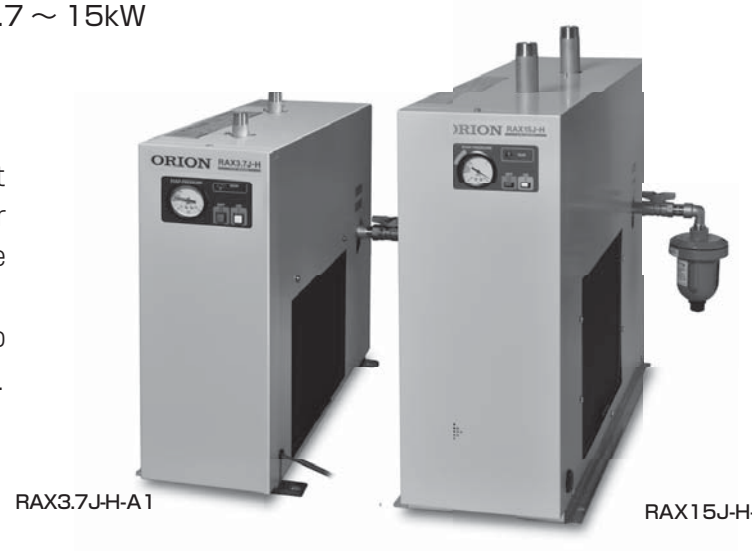
HFC R407C HFC Refrigerant

Features

1.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.

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



RAX3.7J-H-A1　　RAX15J-H-A2

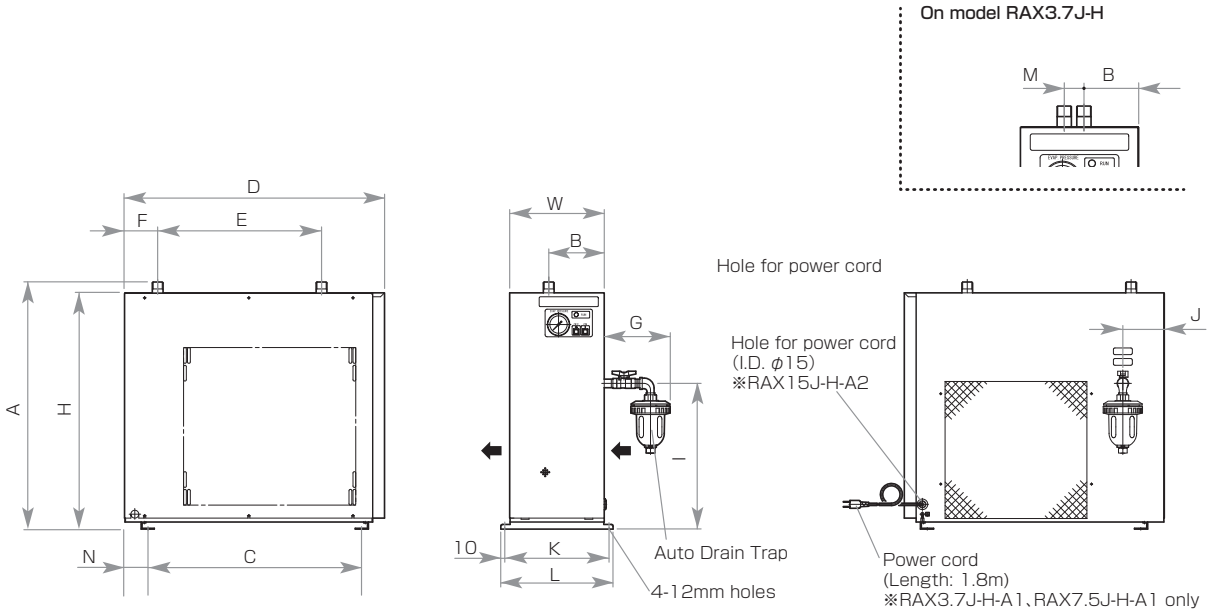
Specifications

Item		Model	Air-Cooled		
		RAX	3.7J-H-A1	7.5J-H-A1	15J-H-A2
Air Processing Capacity(50/60Hz)		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 (50/60Hz)	V	Single phase 100/100,110		Three phase 200/200,220
	Power consumption (50/60Hz)	kW	0.26/0.27,0.30	0.34/0.37,0.40	0.44,0.52/0.47,0.50
	Electric current (50/60Hz)	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
Refrigerant			R-134a		R-410A

※ Air processing conditions: compressed air inlet pressure (gauge pressure): 1.57MPa, 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%.) ※1 In case power source fluctuation is within ±5%. 2 ～ 40℃ for ±5%. ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above.

Outside dimensions (Units:mm)

●RAX3.7J-H/7.5J-H/15J-H
(Air-Cooled)



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

Standard air processing capacity:m^3/min (ANR)
Data listed is the ANR air processing capacity (operation at 60Hz.)
(ANR conditions are 20℃ , atmospheric pressure, relative humidity of 65%)

Model RAX	3.7J-H-A1	7.5J-H-A1	15J-H-A2
Air processing capacity	0.39	0.91	1.41

Air pressure correction coefficient
Air processing capacity depends on the pressure of the air.
This is the coefficient listed here.

Air pressure in 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

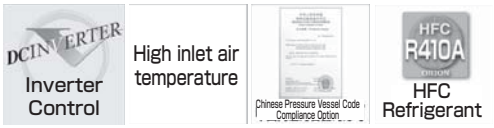
※ For temperature and frequency correction please use the coefficients listed under sections A and E on page 27 for RAX light duty models.

Refrigerated DC Inverter Air Dryer (Refrigerated compressed air drying equipment)

RAXE-SE Series "DC Inverter Control for High Temp. Inlet Applications" Registered Design

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

Works with 37/55kw compressors at high intake air temp. of 80℃
DC Inverter control for energy saving operation!



Features

1.Energy Saving
- First in the market DC inverter controlled compressor tackles fluctuating loads, achieving energy savings up to 65%.

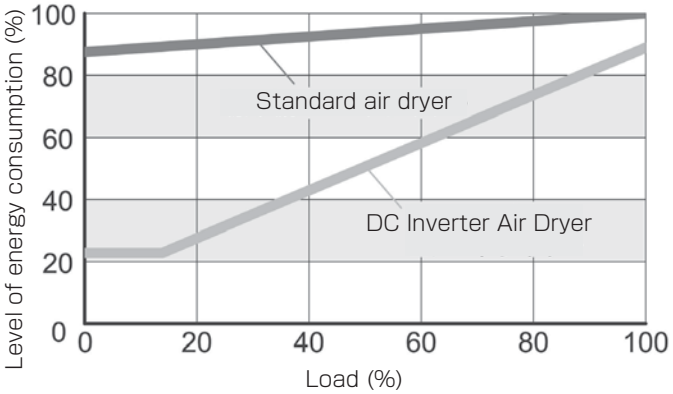
2.A safe design you can count on along with improved functionality.
- Designed for increased air compressor flow rate.
- Dew point auto switching in response to ambient temperature.
- Optimized automatic control along with monitoring of operating conditions.
- Designed to keep going even in summertime load conditions.
- Condenser exhaust heat vented out from top of dryer.
- Drain piping access from either the left side or rear of the dryer.
- Rust resistant heat exchanger

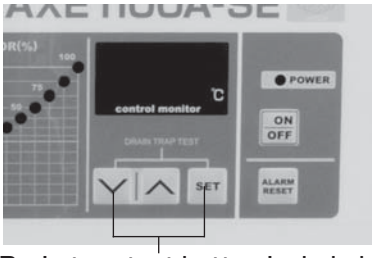
(Built with stainless steel shell and nickel plated copper piping)

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

3.Environmentally conscious
- RoHS Directive compliant
- Uses environmentally friendly R410A refrigerant

Comparison of energy savings by control method





Drain trap test button included (press simultaneously)

Drain trap can be inspected from the front and side.

Specifications

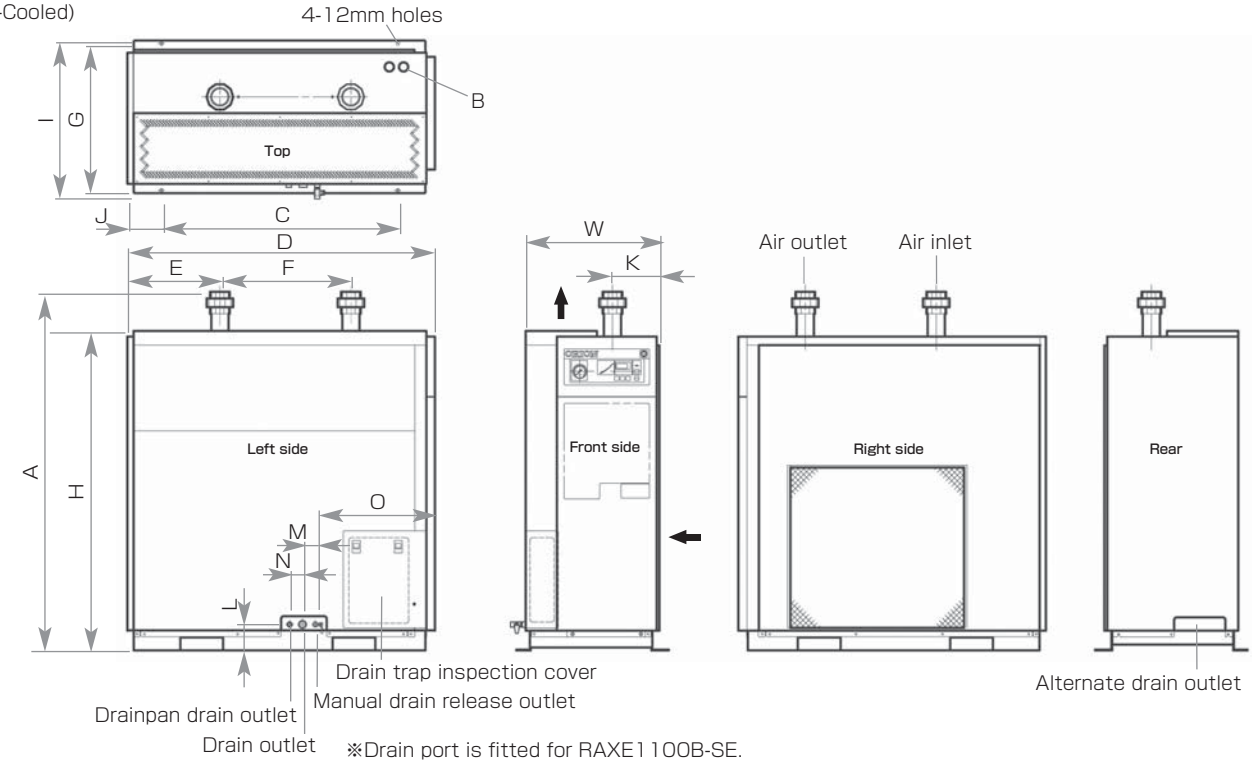
Item		Model RAXE	740B-SE	1100B-SE
Air Processing Capacity (50/60Hz)		m^3/min	7.4	10.6
Outlet air dew point		℃	Pressure dew point 10	
Inlet air temp. range		℃	5 ～ 80	
Pressure dew point switching range		℃	10 ～ 18 (Manual or automatic setting based on ambient temperature.)	
Working fluid / Operable ambient 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			Rc11/2 union coupling	Rc2 union coupling
Electrical Specifications	Power	V	Three phase 200 ± 10% · 50/60Hz、Three phase 220 ± 10% · 60Hz	
	Power consumption (50/60Hz)	kW	2.2	3.1
	Electric current (50/60Hz)	A	8.0	10.5
	Power capacity	kVA	3.4	4.8
	Breaker capacity	A	20	30
Refrigerant			R-410A	

※ Air processing conditions: compressed air inlet pressure (gauge pressure): 0.69MPa, inlet air temperature: 55℃, outlet air dew point: -17℃, pressure dew point: 10℃, 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. ● Chinese pressure vessel code compliant model available upon request. Please inquire for further information.

Outside dimensions (Units:mm)

● RAXE740B-SE
● RAXE1100B-SE

(Air-Cooled)



※Drain port is fitted for RAXE1100B-SE.

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)

Digital control · High Inlet Air Temperature Processing Air Dryer (Refrigerated compressed air drying equipment)

RAXD Series "Digital Control for High Temp. Inlet Applications"

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

Energy saving operation with a built-in digitally controlled compressor.

Digital Control | Standard inlet air temperature | Chinese Pressure Vessel Code Compliance Option | HFC Refrigerant

RAXD75A-SE

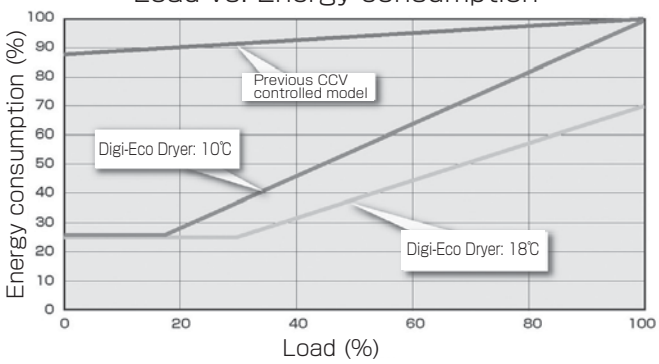
Features

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.

Load vs. Energy consumption



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

Specifications

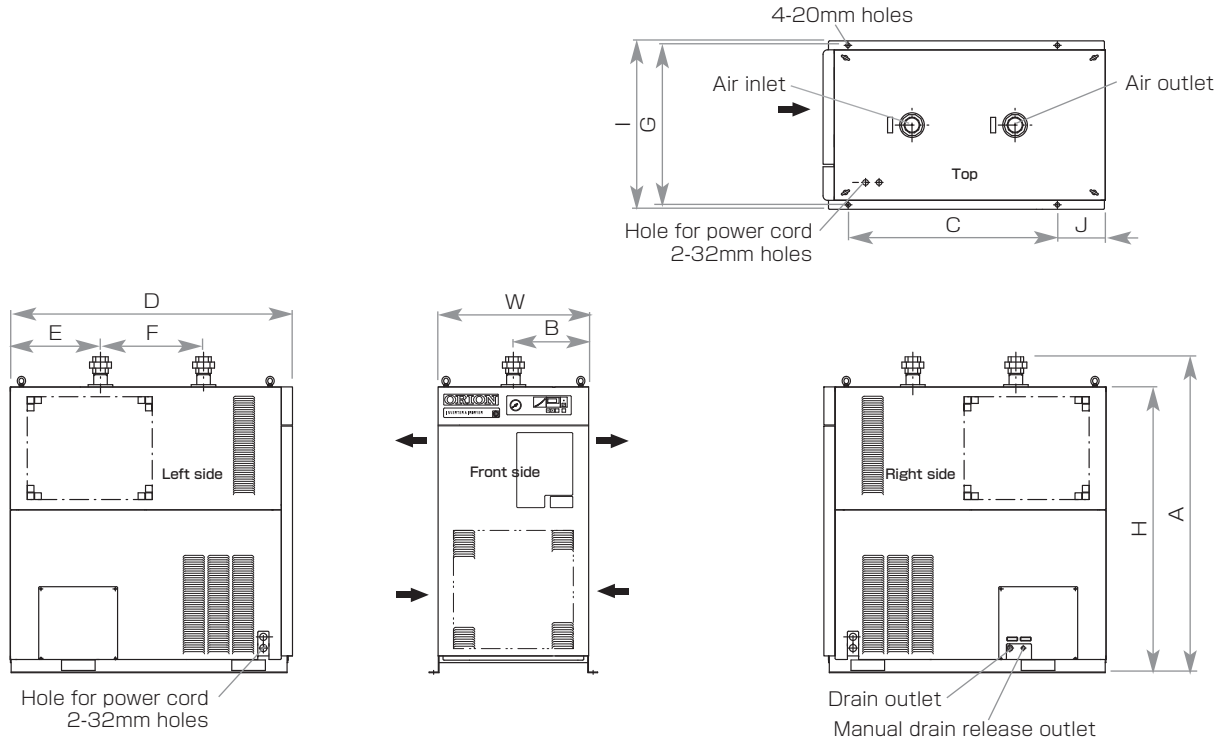
Item		Model RAXD	75A-SE		100A-SE	
Air Processing Capacity (50/60Hz)		m^3/min	12/13	13.9/15	17/19	19.7/22
Outlet air dew point		℃	Pressure dew point 10	Pressure dew point 15	Pressure dew point 10	Pressure dew point 15
Inlet air temp. range		℃	5 ～ 80			
Pressure dewpoint switching range		℃	10 ～ 18 (Manual 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			2B · 50A union coupling			
Electrical Specifications	Power	V	Three phase 200 ± 10% · 50/60HZ、Three phase 220 ± 10% · 60Hz			
	Power consumption (50/60Hz)	kW	2.7/3.5,3.4		5.4/6.0,5.9	
	Electric current (50/60Hz)	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	
Refrigerant			R-407C			

※ Air processing conditions: compressed air inlet pressure (gauge pressure): 0.69MPa, inlet air temperature: 55℃, outlet air dew point: -17℃, pressure dew point: 10℃, 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. ● Chinese pressure vessel code compliant model available upon requst. Please inquire for further information.

Outside dimensions (Units:mm)

● RAXD75A-SE,100A-SE

(Air-Cooled)



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

Inverter Controlled Compressed Air Dryer (Refrigerated compressed air drying equipment)

RAXE Series "Inverter Control"

Air-Cooled RAXE2300A ～ 9800A / Water-Cooled RAXE2300A-W ～ 29600A-W
Air Processing Capacity 23 ～ 296m³/min
Inlet air temperature 5 ～ 60℃

Suitable air compressors
RAXE2300A(A-W)120kW or lower
RAXE3800A(A-W)190kW or lower
RAXE4900A(A-W)240kW or lower
RAXE6000A(A-W)300kW or lower
RAXE7500A(A-W)380kW or lower
RAXE9800A(A-W)450kW or lower
RAXE14800B-W 680kW or lower
RAXE19600A-W 900kW or lower
RAXE29600A-W 1300kW or lower

RAXE3800A

RAXE4900A

Features

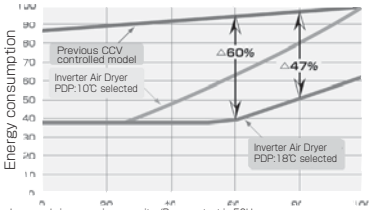
1.Dew point temperature energy saving mode switching

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 do not have during seasonal changes.(Auto switching based on outside temperature available on RAXE4900 models and above.)

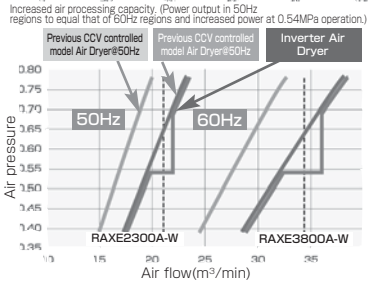
※ Dew point will fall below selected setting (10℃/18℃) if load (air flow · inlet air temperature etc.) is too low.

	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 50Hz regions to equal that of 60Hz regions and increased power at 0.54MPa operation.)



2.Max. 60% Energy savings possible (patent under application)

Orion's exclusively developed "Inverter Compressor Frequency PID Control" and "electronic expansion valve non-step PID control for optimized refrigeration cycle control" achieves impressive energy savings compared with our previous RAX series (CCV controlled) models even under normal operating conditions. Furthermore, maximum energy savings of up to 60% can be achieved at a pressure dewpoint setting of 18℃ .(Max. 53% for RAXE4900 models.)

3.Suitable for low pressure applications (0.54MPa standard)

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

4.Same capacity at 50Hz/60Hz.

Thanks to our inverter control, regions with 50Hz and 60Hz power can realize the same drying performance.

5.Continuous operation even at high loads.

Through Orion's distinctive control and protection systems, you can expect continuous operation even during unexpected periods of high load, thus avoiding overload related shutdowns to the greatest extent possible.

※ There are cases where, depending on the operating environment, the dewpoint temperature may rise.
※ "High load" can refer to high degrees of any of the following conditions: ambient temperature, inlet air temp., air pressure, air flow, etc.

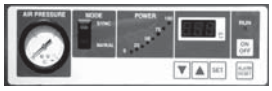
6.Function choices that best suite your operating environment

Orion offers dryers with a variety of user-selectable functions to match your current work environment and needs.

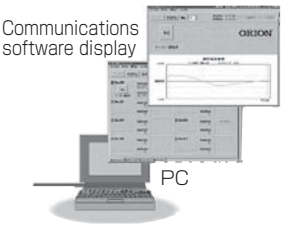
Function	Description
Blackout power-cutoff recovery setting	「No power-out recovery」、「Auto recovery」、「Remote switch priority」 selectable.
Local/Remote operation	「Local only」、「Remote only」、「Both local/remote」 selectable.
Alarm signal out	Under alarm condition, signal contacts「Open」、signal contacts「Closed」selectable.
Audible alarm	Under alarm condition, audible alarm「Enabled」,「Disabled」selectable.
Audible warning	Under warning condition, audible warning「Enabled」,「Disabled」selectable.
High dewpoint temp. alarm	Setting based on maximum dewpoint temperature (3 settings.)

7.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.
- If by some chance some trouble does occur, the nature of the trouble can be assessed at a glance by viewing the error code.



8.Energy saving drain trap standard equipment.
9.Equipped with external communication capabilities.
Dryer control and monitoring including the ability to check dewpoint conditions and settings, and change operating settings via PC.
10. Low heat output during energy saving operation.



Specifications

● RAXE2300A ～ 3800A-W / ● RAXE4900A・-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 (50/60Hz)		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			21/2B 65A Flange	3B 80A Flange	21/2B 65A Flange	3B 80A Flange	4B 100A Flange	4B 100A Flange
Cooling water inlet/outlet connection		female	—		Rp1		—	Rc1
Electrical Specifications	Power	V	Three phase 200 ± 10% · 50/60Hz、Three phase 220 ± 10% · 60Hz					
	Power consumption (50/60Hz)	kW	4.2	6.1	3.9	5.2	6.1	4.7
	Electric current (50/60Hz)	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		
Refrigerant			R-407C					

※ Air processing conditions: compressed air inlet pressure (gauge pressure): 0.69MPa, inlet air temperature 40℃, outlet air dew point : -17℃ at atmospheric (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) ● Chinese pressure vessel code compliant model available upon requst. ※ Please contact ORION regarding custom built models of specifications outside the rages listed above. ※ RAXE4900A 4900A-W are applied with JBA 2nd class pressure vessel regulation. ※ The model which applied with JBA 2nd class pressure vessel regulation is built to order. ※ Air pressure inlet/outlet connection companion flanges not included.

● RAXE6000A ～ 29600A-W (Built-to-order models)

Item		Model RAXE	Air-Cooled			Water-Cooled					
			6000A	7500A	9800A	6000A-W	7500A-W	9800A-W	14800B-W	19600A-W	29600A-W
Air Processing Capacity (50/60Hz)		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 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	930	720	840	890	1330	(2000)	(3000)
Air inlet/outlet connection			5B 125A Flange		6B 150A Flange	5B 125A Flange		6B 150A Flange	8B 200A Flange		10B 250A Flange
Cooling water inlet/outlet connection		female	—			Rc1-1/2				Rc2	
Electrical Specifications	Power	V	Three phase 200 ± 10% · 50/60Hz、Three phase 220 ± 10% · 60Hz								
	Power consumption (50/60Hz)	kW	7.2	9.7	11.8	5.8	7.7	9.8	14.8	19.6	29.6
	Electric current (50/60Hz)	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
Refrigerant			R-407C								

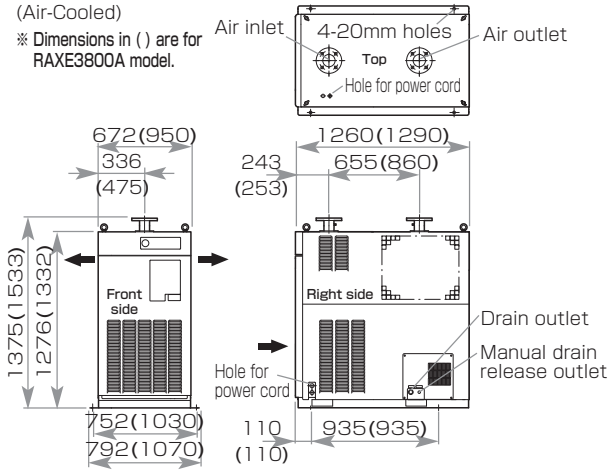
※ Air processing conditions: compressed air inlet pressure (gauge pressure): 0.69MPa, inlet air temperature 40℃, outlet air dew point : -17℃ at atmospheric (10℃ under pressure), ambient temperature 32℃ (Cooling water 32℃). ※ Please contact us for the guaranteed performance specifications. Heavy duty 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) ● Chinese pressure vessel code compliant model available upon requst. ※ Please contact ORION regarding custom built models of specifications outside the rages listed above. ※ RAXE6000A ～ 29600A-W are subject to JBA 2nd class pressure vessel regulation. ※ Models subject to JBA 2nd class pressure vessel regulation are built to order. ※ Air pressure inlet/outlet connection companion flanges not included.

Outside dimensions (Units:mm)

● RAXE2300A/3800A

(Air-Cooled)

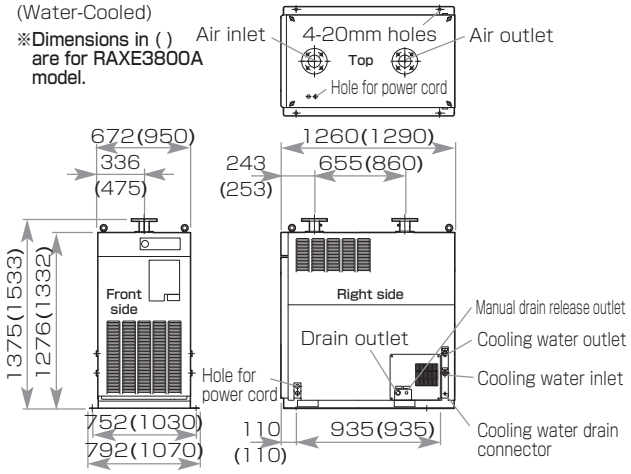
※ Dimensions in ( ) are for RAXE3800A model.



● RAXE2300A-W/3800A-W

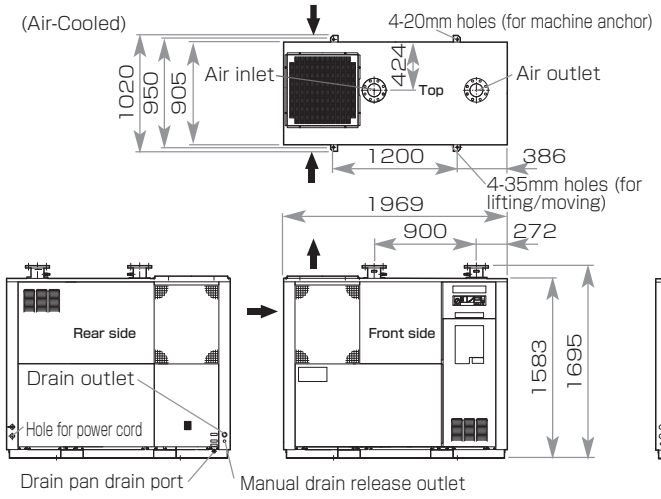
(Water-Cooled)

※Dimensions in ( ) are for RAXE3800A model.



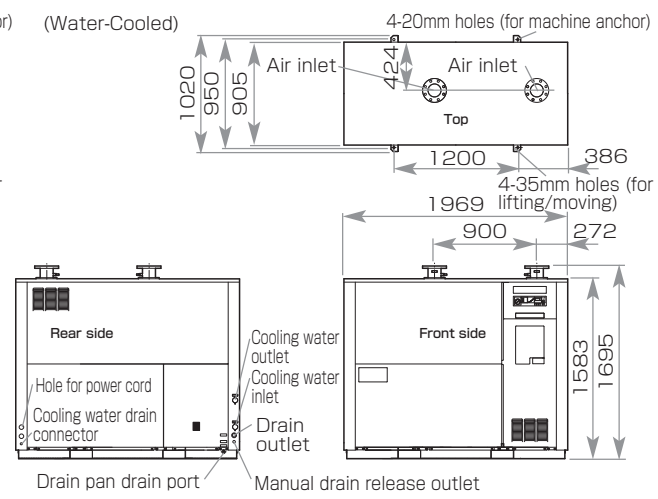
● RAXE4900A

(Air-Cooled)



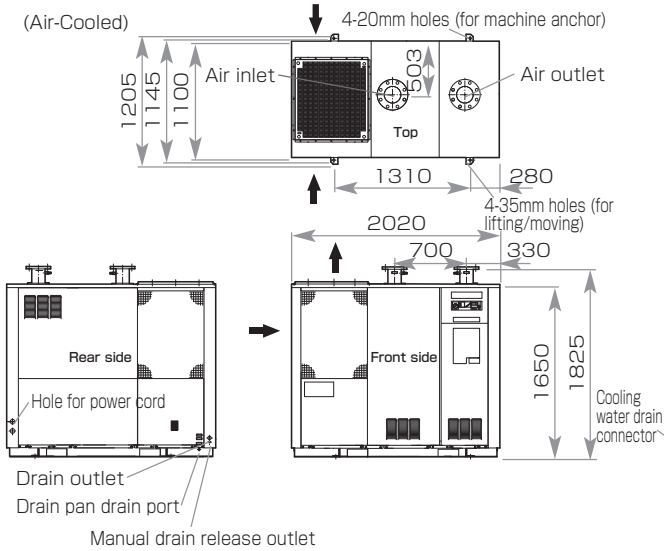
● RAXE4900A-W

(Water-Cooled)



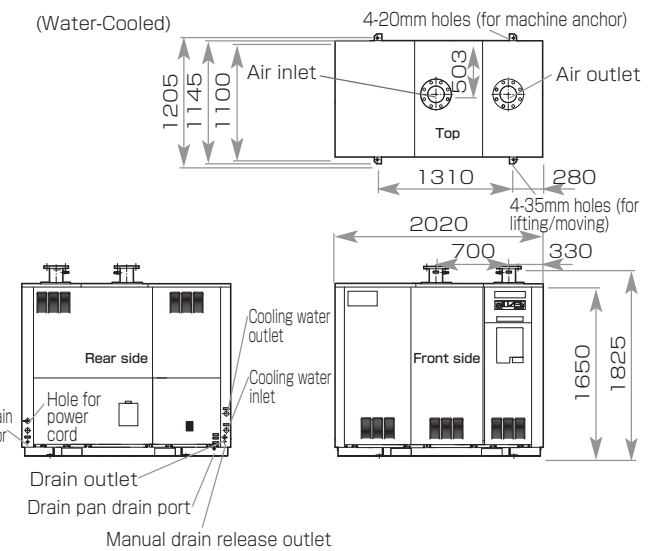
● RAXE6000A

(Air-Cooled)



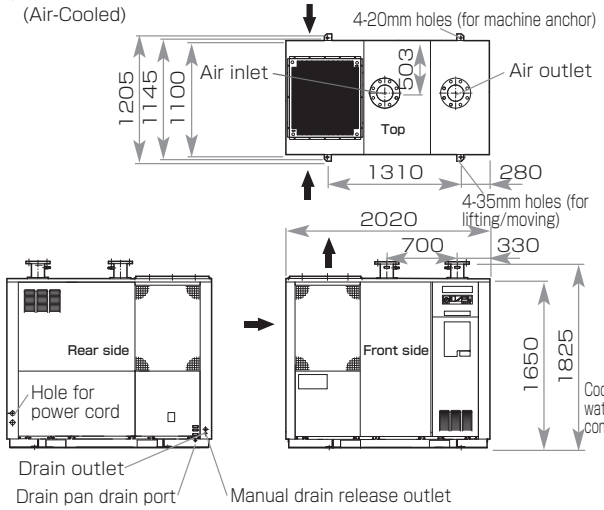
● RAXE6000A-W

(Water-Cooled)

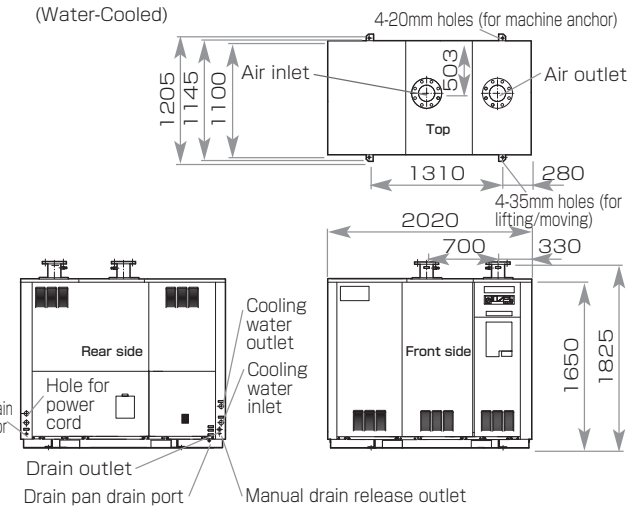


Outside dimensions (Units:mm)

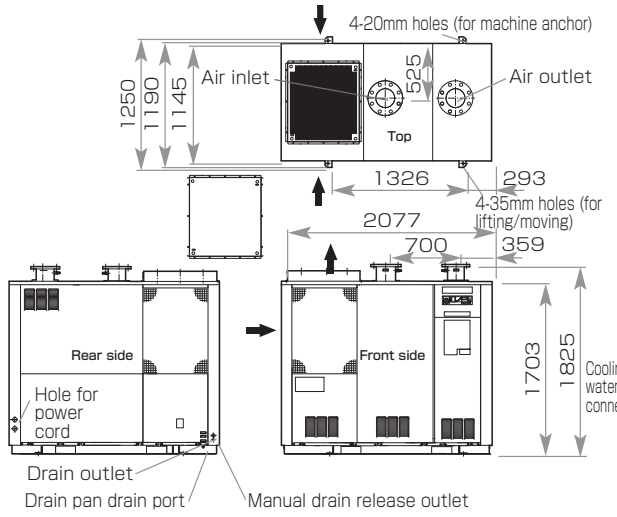
● RAXE7500A
(Air-Cooled)



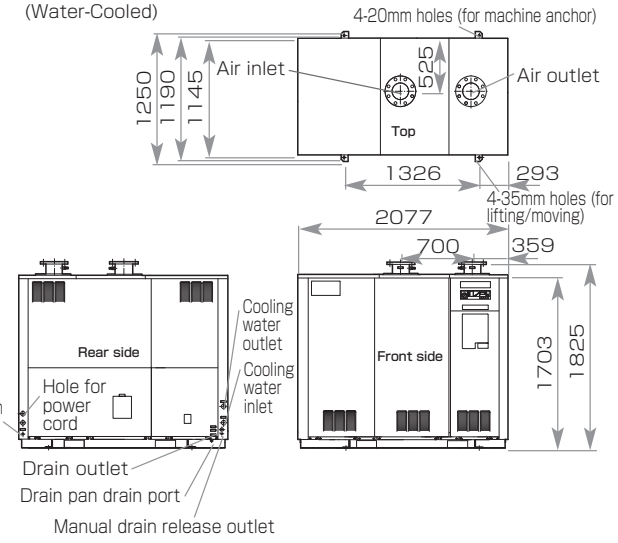
● RAXE7500A-W
(Water-Cooled)



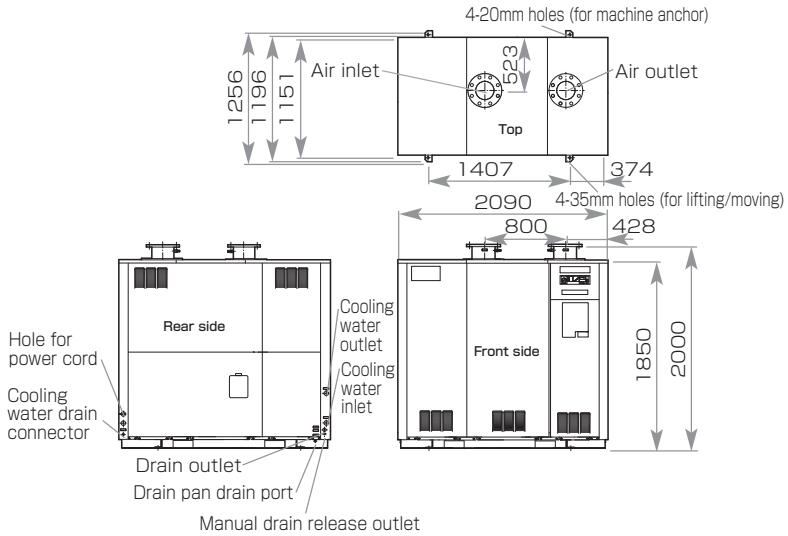
● RAXE9800A
(Air-Cooled)



● RAXE9800A-W
(Water-Cooled)

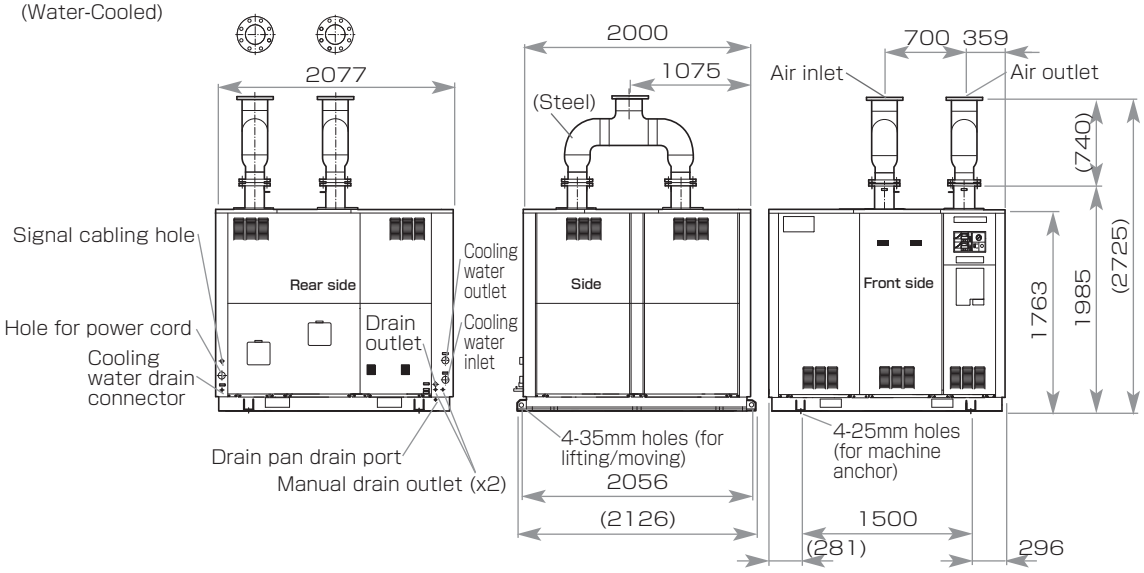


● RAXE14800B-W
(WateSr-Cooled)

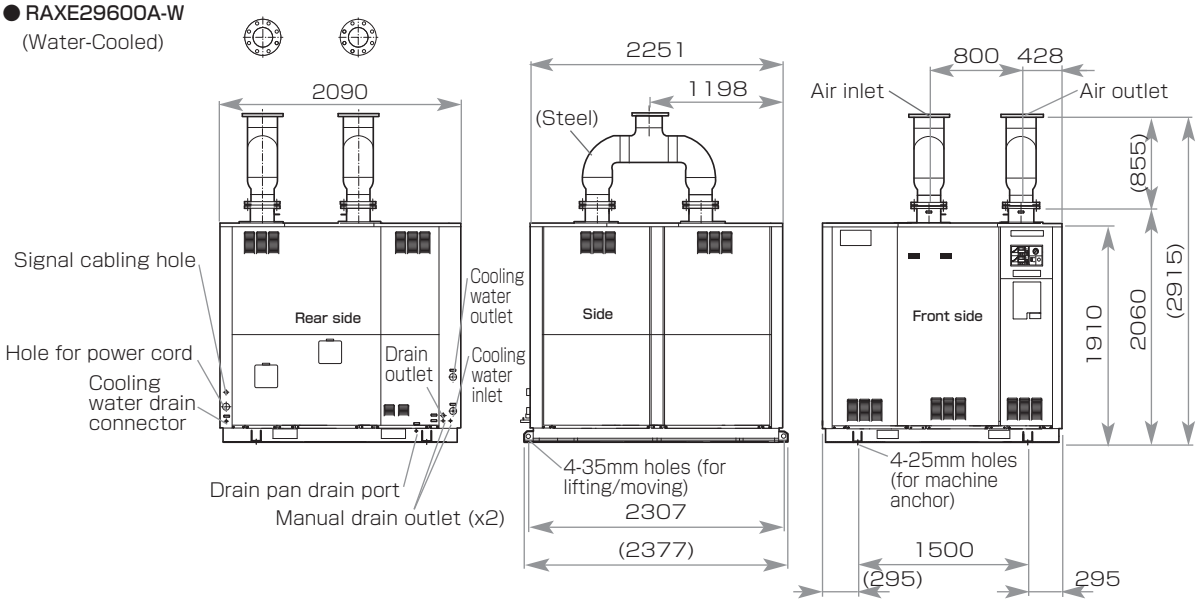


Outside dimensions (Units:mm)

● RAXE19600A-W
(Water-Cooled)

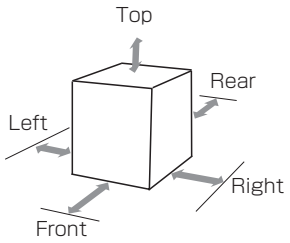


● RAXE29600A-W
(Water-Cooled)



RAX, RAXE, RAXD 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 6J-A1/A2 8J-A1/A2 11G 15G 22G 37G 55G 55G-W	60cm	60cm	60cm	60cm		
RAX	75F 90F 120F 150F 190F	100cm	100cm	100cm	100cm		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.)
	240F 300F-E 380F-E	60cm	60cm	60cm	60cm	200cm	When space is lacking, the right side can be placed against a wall and exhaust vented out the top.
RAX	75F-W 90F-W 120F-W 150F-W 190F-W	100cm	100cm	100cm	100cm		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.)
	240F-W 300F-WE 380F-WE 450F-WE	60cm	60cm	60cm	60cm		When space is lacking, the right side can be placed against a wall.
RAX	3J-SE-A1/A2 4J-SE-A1/A2 6J-SE-A1/A2 8G-SE 11G-SE 15G-SE 22G-SE 37G-SE 55F-SE	60cm	60cm	60cm	60cm		
	75F-SE	100cm	100cm	100cm	100cm		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.)
RAX	3.7J-H-A1 7.5J-H-A1 15J-H-A2	60cm	60cm	60cm	60cm		
RAXE	740B-SE 1100B-SE	100cm	100cm	50cm	50cm	200cm	When space is lacking, the rear side can be placed against a wall and exhaust vented out the top.
RAXD	75A-SE 100A-SE	100cm	100cm	100cm	100cm		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.)
RAXE	2300A 3800A	100cm	100cm	100cm	100cm		
	4900A 6000A 7500A 9800A	60cm	60cm	60cm	60cm	200cm	When space is lacking, the right side can be placed against a wall and exhaust vented out the top.
	2300A-W 3800A-W	100cm	100cm	100cm	100cm		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.)
	4900A-W 6000A-W 7500A-W 9800A-W 14800B-W 19600A-W 29600A-W	60cm	60cm	60cm	60cm		When space is lacking, the right side can be placed against a wall.

Model Selection and Determining Maximum Air Processing Capacity

For RAX-SE and RAX Series

※ 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 tables A ~ C regarding temperature coefficients, table D regarding pressure coefficients, and table E regarding power frequency coefficients.

Temperature conditions

● **For high inlet temperature capable air dryers**
RAX3J-SE~75F-SE(Air-Cooled), refer to chart:

A

Air pressure requirements

Refer to table D for coefficients affecting all models. **D**

Temperature conditions

● **Heavy duty air dryer**
RAX75F~380F-E(Air-Cooled), RAX75F-W~450F-WE(Water-Cooled), refer to chart:

B

Air pressure requirements

Refer to table D for coefficients affecting all models. **D**

② Compute the corrected air processing capacity by combining the temperature coefficient from tables A ~ C, the air pressure coefficient from table E, and the power frequency coefficient from table F.

Adjusted air processing capacity
= air processing capacity ÷ (A~C × D × E)

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

Finding maximum air processing capacity

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

Temperature conditions

● **Heavy duty air dryer**
RAX3J~37G(Air-Cooled), refer to chart:

C

RAX55G(Air-Cooled), RAX55G-W(Water-Cooled), refer to chart:

B

Air pressure requirements

Refer to table D for coefficients affecting all models. **D**

② Gather air processing capacity coefficient from table F, air temperature coefficient from table B, air pressure coefficient from table D, and power frequency coefficient from table E in order to compute the corrected air processing capacity value.
B × D × E × F

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

Model Selection Example

(For models RAX75F〔Air-Cooled〕~ 450F-WE〔Water-Cooled〕)
Making a model selection based on the following criteria:

Inlet air temperature	45℃	Ambient temperature	35℃	Desired capacity	10m³ (ANR)
Pressure dew point	10℃	Air pressure	0.49MPa	Power frequency	60Hz

① From these requirements, the temperature coefficient is 0.79, the air pressure coefficient is 0.87, and the power frequency coefficient is 1.00.

② From section 1,
$10 \div (0.79 \times 0.87 \times 1.00) = 14.55 m^3/min(ANR)$

③ For a dryer that has an air processing capacity of $14.55 m^3$/min(ANR) refer to Table F. Appropriate models that exceed 14.55 are RAX90F〔Air-Cooled〕or RAX90F-W〔Water-Cooled.〕

Note : If a dew point temperature of 10℃ is insufficient, please consult ORION or your ORION dealer.

Note : If air pressure is below 0.29 MPa, please consult ORION or your ORION dealer.

Model Selection Example

The following shows how to compute the maximum processing capacity of the RAX90F.

Inlet air temperature	35℃	Ambient temperature	30℃	Power frequency	60Hz
Pressure dew point	10℃	Air pressure	0.69MPa		

① From these requirements, the temperature coefficient is 1.24, the air pressure coefficient is 1.00, and the power frequency coefficient is 1.00, and the standard air processing capacity of the RAX90F is $17.5 m^3$/min.

② From section 1,
$1.24 \times 1.00 \times 1.00 \times 17.5 = 21.7 m^3/min(ANR)$

③ Therefore, the maximum processing capacity of the RAX90F is $21.7 m^3$/min (ANR).

Note : Model selection of heavy duty models of RAX90F(-W) and above models, may differ based on the requirements specification or method of application; please contact Orion or your Orion dealer with your questions.

※ Only the RAX-G model has standard air processing capacity at 50Hz and 60Hz, therefore the frequency coefficient is not used.

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

■ For high inlet temperature dryers RAX3J-SE～6J-SE、55/75F-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

※ Please contact ORION if the inlet air temperature will exceed 65℃ and the dew point will be outside the above specifications.

■ For high inlet temperature dryers RAX8G-SE～37G-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

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

■ Heavy duty air dryer models RAX75F～380F-E (Air-Cooled) /RAX75F-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

※ For water cooled models, select 32℃ for ambient temperature. Maximum cooling water temperature is 34℃ .Note: Maximum inlet temperature for RAX55G and 55G-W is 50℃ . (Other models are 60℃ .)
※ Please contact ORION if the dew point will be outside the above specifications.

■ RAX55G、55G-W

Ambient temperature℃ \ Inlet air temperature ℃	30	35	40	45	50	55	60
Dew point temperature ℃	10	10	10	10	10	10	10
25	1.30	1.21	1.08	0.86	0.70	0.58	0.49
30	1.25	1.14	1.02	0.82	0.66	0.55	0.46
32	1.23	1.12	1.00	0.80	0.65	0.54	0.45
35	1.11	1.01	0.90	0.72	0.59	0.49	0.41
40	0.89	0.81	0.72	0.58	0.47	0.39	0.32

Ⓒ Temperature correction coefficients: Processing capacity varies depending on temperature as shown in this table.

■ For high inlet temperature dryers 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	—	—	0.78	0.65	0.43
40	—	—	—	0.55	0.37

※ The maximum air temperature correction coefficient for model RAX6J is 1.10.
※ The maximum air temperature correction coefficient for model RAX8J is 1.15.
※ Please contact ORION if the dew point will be outside the above specifications.

■ RAX11G～37G

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

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

Air pressure in MPa		0.20	0.29	0.39	0.49	0.59	0.69	0.78	0.88	0.93	0.98
Pressure coefficient	(J/F models)	0.67	0.73	0.80	0.87	0.93	1.00	1.07	1.13	1.16	1.20
	(G models)	0.65	0.75	0.83	0.89	0.94	1.00	1.01	1.02	—	1.03

Ⓔ Power frequency correction coefficients

Power frequency	50Hz	60Hz
Coefficient	0.85	1.00

Ⓕ Standard air processing capacity: m^3/min(ANR) ※ (ANR is 20℃ at atmospheric pressure, relative humidity of 65%.)

Processing capacities listed here are for 60Hz operation at ANR.

■ For high inlet temperature dryers RAX3F1-SE～6F1-SE、55/75F-SE(Air-Cooled)

Model \ RAX	3J-SE	4J-SE	6J-SE	55F-SE	75F-SE
Air processing capacity	0.35	0.5	0.72	9.2	12.3

■ For high inlet temperature dryers RAX8G-SE～37G-SE

Model	RAX	8G-SE	11G-SE	15G-SE	22G-SE	37G-SE
Air processing capacity	50Hz	1.22	1.65	2.1	3.7	5.7
	60Hz	1.32	1.82	2.4	4.2	6.1

■ Heavy duty air dryer models RAX75F～380F-E(Air-Cooled)/RAX75F-W～450F-WE(Water-Cooled)

Model \ RAX	75F	90F	120F	150F	190F	240F	300F-E	380F-E
Air processing capacity	12.3	17.5	22	28	36	43	52	65

Model \ RAX	75F-W	90F-W	120F-W	150F-W	190F-W	240F-W	300F-WE	380F-WE	450F-WE
Air processing capacity	13	18.3	24	30	39	47	57	71	93

■ Light duty air dryer models RAX3F1～8F1 (Air-Cooled)

Model \ RAX	3J	6J	8J
Air processing capacity	0.35	0.72	1.1

■ Light duty air dryer models RAX11G～55G

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

※ 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.

Model Selection and Determining Maximum Air Processing Capacity

For RAXE/RAXD Series Models

※ 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**

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

③ Choose a dryer from Table D 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.

Air pressure requirements

Refer to table B for coefficients affecting all models.

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

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	27m³/min (ANR)
Pressure dew point	10℃	Air pressure	0.49MPa	Power frequency	60Hz

① From these requirements, the temperature coefficient is 1.20, the air pressure coefficient is 0.87, and the power frequency coefficient is 1.00.

② From section 1,
$27 \div (1.20 \times 0.87 \times 1.00) = 25.86 m^3/min(ANR)$

③ For a dryer that has an air processing capacity of 25.86m³/min(ANR) refer to Table D. 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	60Hz
Pressure dew point	10℃	Air pressure	0.69MPa		

① From these requirements, the temperature coefficient is 1.20, the air pressure coefficient is 1.00, and the power frequency coefficient is 1.00, and the standard air processing capacity of the RAXE4900A is 46.1m³/min.

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

③ Therefore, the maximum processing capacity of the RAXE4900A is 55.3m³/min (ANR).

Note: If a dew point temperature of 10℃ is insufficient, please consult ORION or your ORION dealer.
Note: If air pressure of 0.29MPa 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 Series Models

A **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.

RAXE Series Models

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

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

Ambient temperature℃	Inlet air temperature ℃	35		40		45		50		55		60	
	Dewpoint 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℃.

B 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

C Power frequency correction coefficients

Power frequency	50Hz	60Hz
Coefficient	1.00	

■ RAXE740A-SE/1100A-SE(Air-Cooled)/RAXE6000A ～ 9800A(Air-Cooled)/RAXE6000A-W ～ 29600A-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

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

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

■ RAXE740B-SE/1100B-SE(Air-Cooled)

Model	RAXE	740A-SE	1100A-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 ～ 29600A-W(Water-Cooled)

式	RAXE	6000A	7500A	9800A	6000A-W	7500A-W	9800A-W	14800B-W	19600A-W	29600A-W
Air processing capacity		51.7	64.9	77.1	56.4	70.5	92.1	139.1	184.2	278.5

RAXD Series Models

A 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

B 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

C Power frequency correction coefficients

Power frequency		50Hz	60Hz
Coefficient	75A-SE	0.92	1.00
	100A-SE	0.90	1.00

D Standard air processing capacity: m^3/min(ANR)(ANR is 20℃ at atmospheric pressure, relative humidity of 65%.)

Processing capacities listed here are for 60Hz operation at ANR.

■ RAXD75A-SE/100A-SE(Air-Cooled)

Model	RAXD75A-SE	RAXD100A-SE
Air processing capacity	12.3	17.9

※ 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.

CFC-Free · Low Purge Heatless Air Dryer (Adsorption technology compressed air drying equipment)

QSQ Light Duty / Medium Duty Series "Super Pack" Patented

QSQ010A ～ 270B-E (Light Duty · Medium Duty Series)
Inlet air flow capacity 0.100 ～ 2.700m^3/min (−20℃)
Outlet air flow capacity 0.086 ～ 2.3m^3/min (−20℃)
Regeneration air purge 0.014 ～ 0.4m^3/min (−20℃)

Features

☐ Comes with energy saving dew point sensor as standard equipment (Medium Duty Series models)
☐ All models equipped with indicator lamps.
☐ Compact · Light weight · Easy maintenance

Energy saving dew point sensor

Control Panel Detail

● Light Duty Model

Controller functions

● Medium Duty models

Energy saving dew point controller functions

Specifications

Item		Model QSQ	Small Series						Medium Series							
			010A		020A		035A		080B-E		120B-E		180B-E		270B-E	
Capacity	Pressure dew point	℃	−20	−40	−20	−40	−20	−40	−20	−40	−20	−40	−20	−40	−20	−40
	Inlet air capacity	m^3/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	m^3/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	m^3/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 ～ 0.98													
	Ambient Temp.	℃	2 ～ 40													
	Inlet air condition	℃ /%	5 ～ 50/Less than saturated humidity (no water droplets)													
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		Rc 3/8						Rc 3/4						Rc 1	
	Purge air outlet		—						Rc 1/2							
Power Source (50/60Hz)		V	Single phase100/200/220/230													
Accessory (Filter)	Incoming	MSF	75B						150B				200B		250B	
	Outgoing	LSF														

※ 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) 0.69MPa. 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.

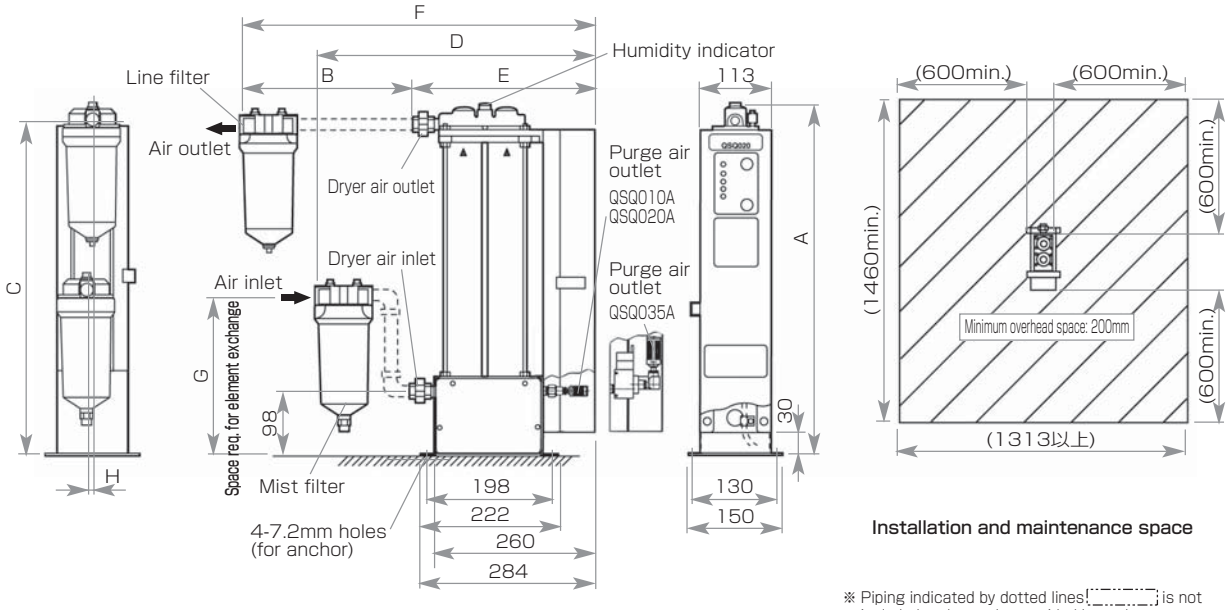
When the dryer is connected directly to the air compressor

※ 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. ※ In case the compressor emits water mist, always install a Super Filter (for water droplet removal) (sold separately.) ※ Always use an air tank and install it before the dryer. ※ When installing a Super Filter (for water droplet removal) make piping as short as possible to help avoid further condensation. ※ Refer to pages 2 ～ 4 regarding system configuration. Please consult your ORION dealer for further details.

Outside dimensions (Units: mm)

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

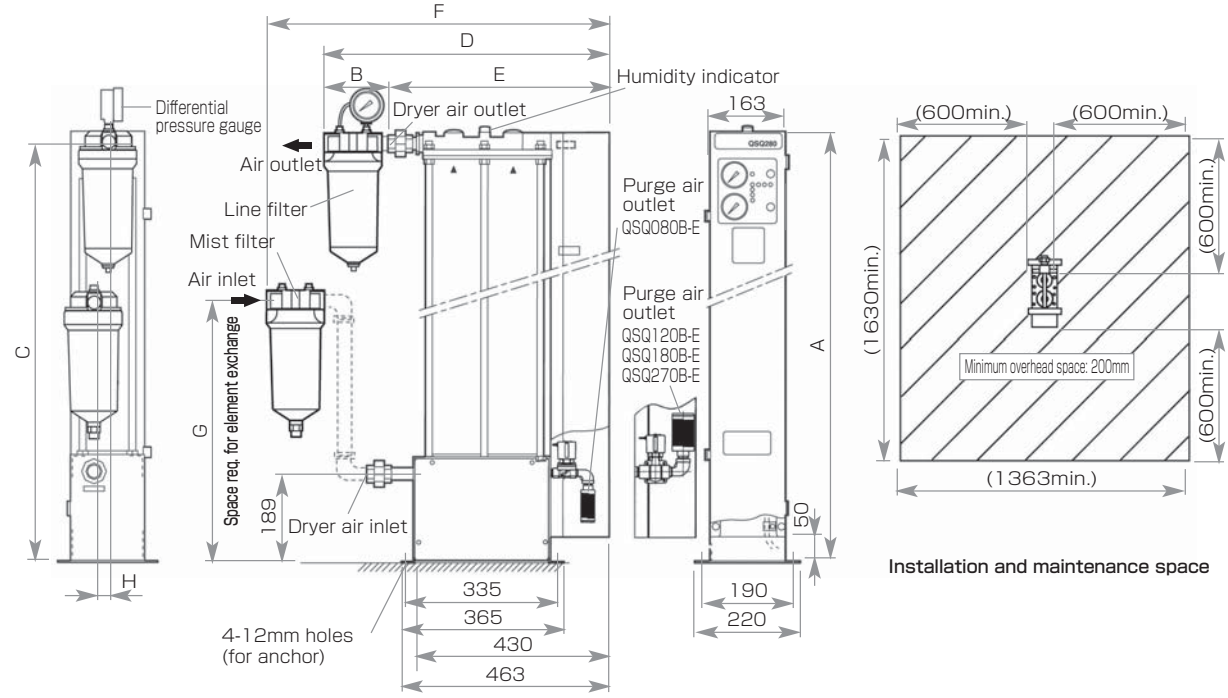
● QSQ010A/020A/035A(Super Pack light duty model)



Installation and maintenance space

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

● QSQ080B-E/120B-E/180B-E-/270B-E(Super Pack Medium Duty model)



Installation and maintenance space

Model	Light Duty Series			Medium Duty Series			
QSQ	010A	020A	035A	080B-E	120B-E	180B-E	270B-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			

CFC-Free · Low Purge Heatless Air Dryer (Adsorption technology compressed air drying equipment)

QSQ heavy Duty Series "Super Pack"

Patented

QSQ420C-E ～ 2500C-E (Heavy Duty Series)
Inlet air flow capacity 4.20 ～ 25.00m^3/min (−40℃)
Outlet air flow capacity 3.60 ～ 21.50m^3/min (−40℃)
Regeneration air purge 0.60 ～ 3.50m^3/min (−40℃)

Heavy Duty Series
Energy saving
dew point sensor
included
QSQ1000C-E

Features

☐ Comes with energy saving dew point sensor as standard equipment (Medium and Heavy Duty Series models)
☐ All models equipped with indicator lamps.
☐ Compact · Light weight · Easy maintenance

Energy saving dew point sensor

Control Panel Detail

● Heavy Duty Models

Energy saving dew point controller functions

Running cost comparison

Regenerative air flow (purge) was 20% of the inlet flow rate on previous models. The QSQ series has reduced this to just 14%. Even assuming max. load conditions, converting compressor electricity costs yields the following:

Item		Purge rate	Purge air cost	Energy savings
Previous models (No energy savings) QAX-370A		20%	¥311,000	— (0%)
QSQ420C-E with EDC	Under max. load	14%	¥218,000	¥93,000 (30% reduction)
	With energy saving control	3.5%※	Minimum ¥54,000	¥257,000 (Max. 80% reduction)

Conditions: 1. Processing air flow: 3.7m^3/min (22kW compressor equiv.)
2. Req. dew point temp.: PDP −20℃ (ADP −40℃)
3. Operating pressure: 0.69MPa
4. Purge air flow: fixed
5. Compressed air cost (electricity cost): ¥2/m^3
6. Running time: 3,500 h/year

Specifications

Item			Model QSQ	Heavy Series											
				420C-E		700C-E		1000C-E		1400C-E		2000C-E		2500C-E	
Capacity	Pressure dew point		℃	−40	−60	−40	−60	−40	−60	−40	−60	−40	−60	−40	−60
	Inlet air capacity		m^3/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		m^3/min	3.60	2.34	6.00	3.90	8.60	5.60	12.00	7.80	17.20	11.20	21.50	14.00
	Purge air flow		m^3/min	0.60		1.00		1.40		2.00		2.80		3.50	
Range	Allowable Medium			Compressed air											
	Max. air pressure (G)		MPa	0.39 ～ 0.98											
	Ambient Temp.		℃	2 ～ 40											
	Inlet air condition		℃ /%	5 ～ 50/ Less than saturated humidity (no water droplets)											
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						Rc 2				Rc2 1/2	
	Purge air outlet			Rc 1											
Power Source (50/60 Hz)			V	Single phase 100/200/220/230											
Accessory (Filter)	Incoming		MSF	700-G2		1000-G2				2000-G2				2700B-G2	
	Outgoing		LSF												

※ 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) 0.69MPa. 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. ※ Indicated regeneration air flow for dew points of (PDP) −50℃ are only when a refrigerated dryer is installed before the unit. If there is no refrigerated dryer installed, regeneration air flow will differ and we encourage you to consult with your dealer.

When the dryer is connected directly to the air compressor

※ 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. ※ In case the compressor emits water mist, always install a Super Filter (for water droplet removal) (sold separately.) ※ Always use an air tank and install it before the dryer. ※ When installing a Super Filter (for water droplet removal) make piping as short as possible to help avoid further condensation. ※ Refer to pages 2 ～ 4 regarding system configuration. Please consult your ORION dealer for further details.

Energy Saving Control Unit

EDC60A

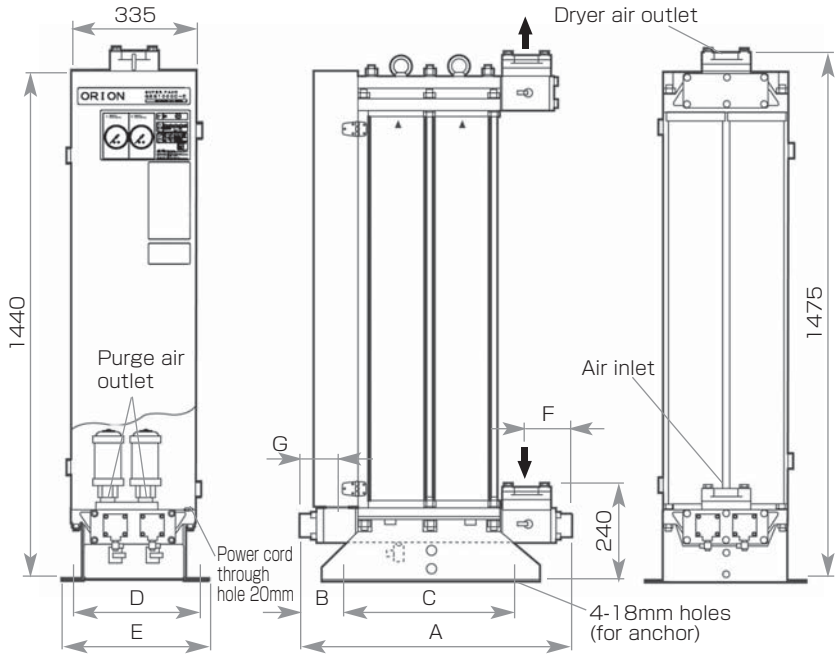
Dew point display	−80 ～ 20℃
Alarm output	No-voltage, normally open contact (switch rating: 250V@2A)
Analog output	DC1 ～ 5V (Dew point −80 ～ 20℃)
Dew point measurement accuracy (Fluid/air temperature 20℃)	± 3℃ (Dew point −60 ～ 20℃)
Responsiveness (90%) [Fluid/air temperature 20℃]	Dew point 10℃→−40℃ : 240s
Can be used with existing QSP and QSQ dryers.	

Voltage (50/60Hz)	Single phase AC100 ～ 230V
Power consumption	10W
Electric current (at AC100V)	100mA
Outside dimensions (H × D × W)	89.5 × 202.5 × 226.5 mm
Unit piping connection	φ 4mm (one touch fitting)
Unit mass	3.0kg

Outside dimensions (Units: mm)

● QSQ420C-E/700C-E/1000C-E
QSQ1400C-E/2000C-E/2500C-E
(Super Pack Heavy Duty model)

※ Diagram shows Super Pack model
※ Please install the included filter.
※ Dryer bases for QSQ420C-E, 700C-E and 1000C-E ～ 2500C-E models are different.
※ Ensure there is a maintenance space of 600mm to the front and 600mm to both sides of the dryer.
※ Install on a level surface.



Model QSQ	Heavy Duty Series					
	420C-E	700C-E	1000C-E	1400C-E	2000C-E	2500C-E
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 38 and 39 for installation dimension.

Heatless Air Dryer with Built-in Digital Dew Point Monitor (Adsorption technology compressed air drying equipment)

QSQ-EDC Series "Eco Pack®"

Patented

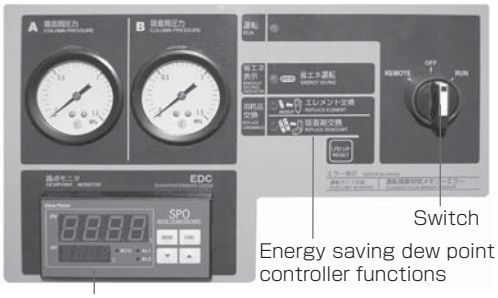
QSQ420C-EDC ～ 2500C-EDC
Inlet air flow capacity 4.20 ～ 25.00m³/min
Outlet air flow capacity 3.60 ～ 21.50m³/min
Regeneration air purge 0.60 ～ 3.50m³/min

Heavy Duty Series
Built-in digital
dew point monitor
QSQ420C-EDC

Features

- ☐ Greatly reduced energy requirements thanks to our energy saving dew point sensor.
- ☐ Built-in digital dew point monitor to help you achieve even further energy savings.
- ☐ Dew point setting from −60 to 0℃ (PDP) means more energy saving control. [Dew point display precision: −60℃～ +20℃±3℃]
- ☐ Includes digital dew point monitor.
- ☐ Dew point warning output [includes 2 sets of nonvoltage contacts, standby sequence], and analog output [DC 1 ～ 5V (−80 ～ +20℃)] as standard equipped.
- ☐ Remote monitoring of compressed air quality and dew point.

Control Panel Detail



Digital dew point monitor

Dew point display	−80 ～ 20℃
Alarm output	No-voltage, normally-open contact (switch rating: 250V2A)
Analog output	DC1 ～ 5V (Dew point −80 ～ 20℃)
Dew point measurement accuracy (Fluid/air temperature 20℃)	±3℃ (Dew point −60 ～ 20℃)

Specifications

Item		Model QSQ	Heavy Duty Series											
			420C-EDC		700C-EDC		1000C-EDC		1400C-EDC		2000C-EDC		2500C-EDC	
Capacity	Pressure dew point	℃	−40	−60	−40	−60	−40	−60	−40	−60	−40	−60	−40	−60
	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	2.34	6.00	3.90	8.60	5.60	12.00	7.80	17.20	11.20	21.50	14.00
	Purge air flow	m³/min	0.60		1.00		1.40		2.00		2.80		3.50	
Range	Allowable Medium		Compressed air											
	Max. air pressure (G)	MPa	0.39 ～ 0.98											
	Ambient Temp.	℃	2 ～ 40											
	Inlet air condition	℃ /%	5 ～ 50/ Less than saturated humidity (no water droplets)											
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		Rc 11/2						Rc 2				Rc2 1/2	
	Purge air outlet		Rc 1											
Power Source (50/60 Hz)		V	Single phase 100/200/220/230											
Accessory (Filter)	Incoming	MSF	700-G2		1000-G2				2000-G2				2700B-G2	
	Outgoing	LSF												

※ 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) 0.69MPa. 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. ※ Indicated regeneration air flow for dew point of (PDP) −50℃ is only when a refrigerated dryer is installed before the unit. If there is no refrigerated dryer installed, regeneration air flow will differ and we encourage you to consult with your dealer.

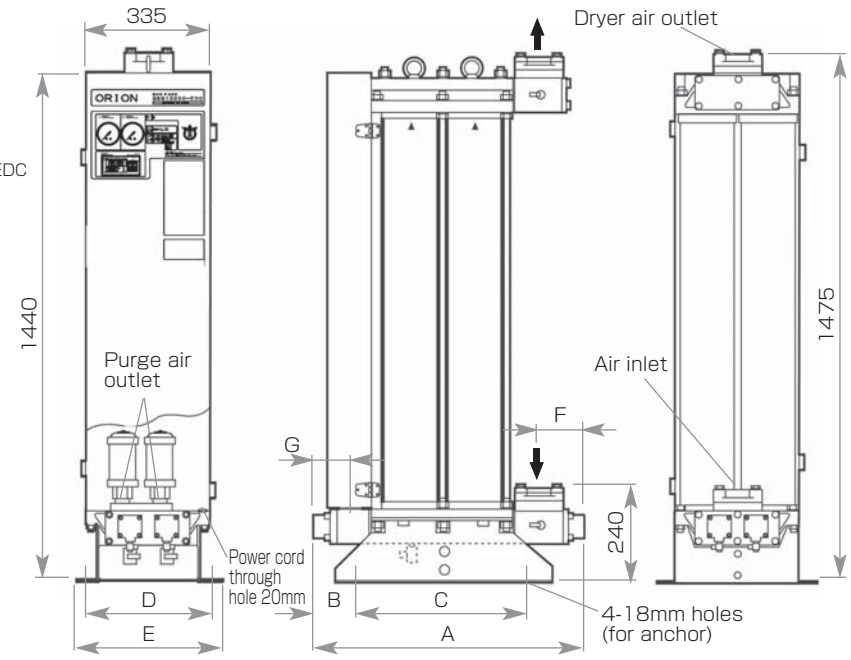
When the dryer is connected directly to the air compressor

※ 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. ※ In case the compressor emits water mist, always install a Super Filter (for water droplet removal) (sold separately.) ※ Always use an air tank and install it before the dryer. ※ When installing a Super Filter (for water droplet removal) make piping as short as possible to help avoid further condensation. ※ Refer to pages 2 ～ 4 regarding system configuration. Please consult your ORION dealer for further details.

Outside dimensions (Units: mm)

● **QSQ420C-EDC/700C-EDC/1000C-EDC**
QSQ1400C-EDC/2000C-EDC/2500C-EDC
(Eco-Pack)

※ Diagram shows Eco Pack model
※ Please install the included filter.
※ Dryer bases for QSQ420C-EDC, 700C-EDC and 1000C-EDC ~2500C-EDC models are different.
※ Ensure there is a maintenance space of 600mm to the front and 600mm to both sides of the dryer.
※ Install on a level surface.



Model QSQ	Eco Pack Series					
	420C-EDC	700C-EDC	1000C-EDC	1400C-EDC	2000C-EDC	2500C-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 38 and 39 for installation dimension.

Heatless Air Dryer with Built-in Digital Dew Point Monitor (Adsorption technology compressed air drying equipment)

QSQ-EDC Series "Eco Pack®"

Patented

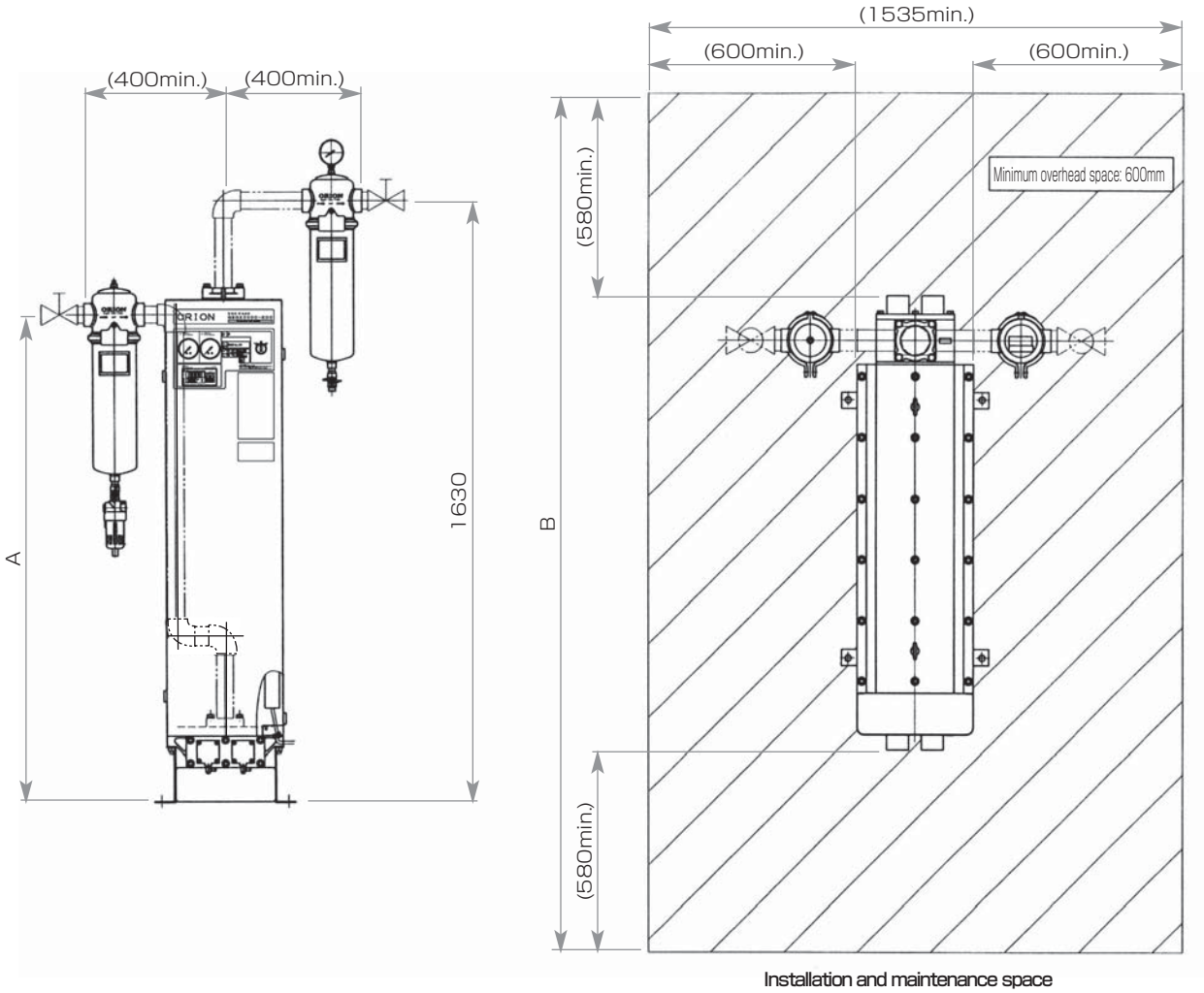
Outside dimensions (Units: mm)

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

● QSQ420C-E/700C-E/1000C-E
QSQ1400C-E/2000C-E
(Super Pack Heavy Duty model)

● QSQ420C-EDC/700C-EDC/1000C-EDC
QSQ1400C-EDC/2000C-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.
※ When running dryers in parallel, arrange piping so that the back pressure from piping in each feed is the same.
※ Set up dryer such that set up and maintenance space is like the hatched area in the diagram below.

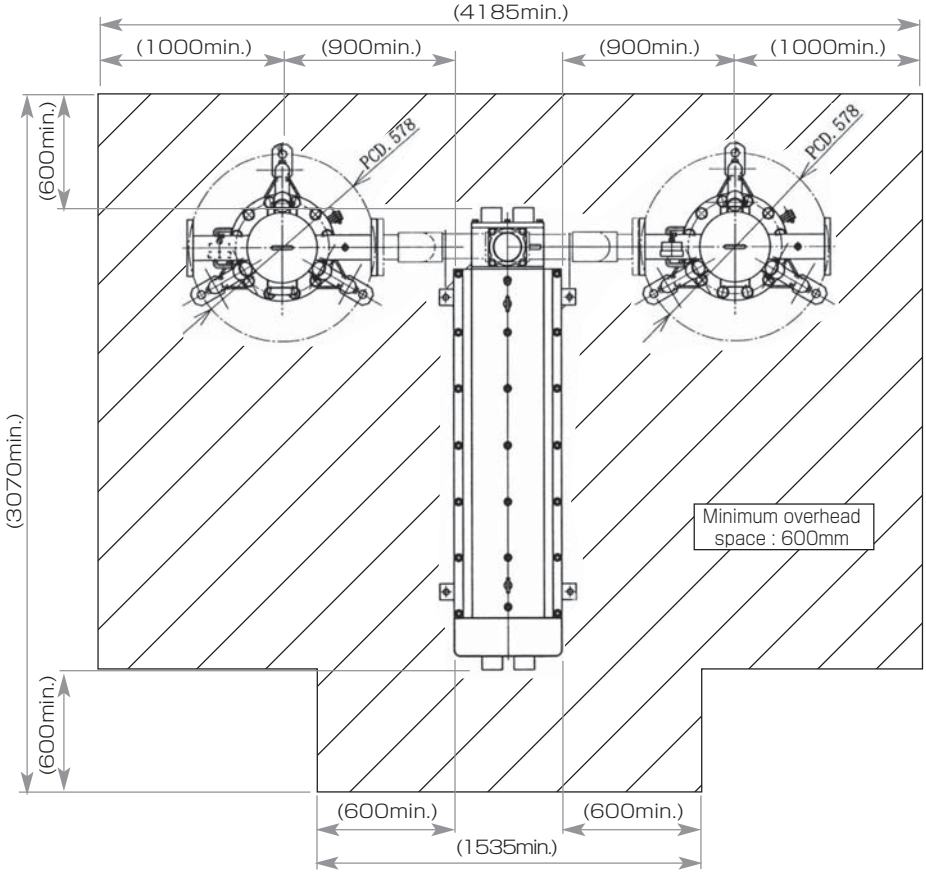


Installation and maintenance space

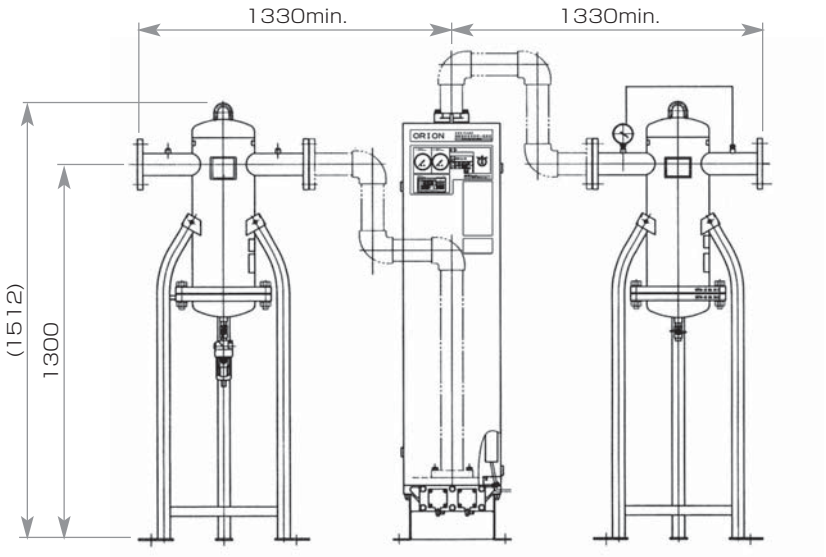
Model	Super Pack Heavy Duty model				
QSQ	420C-E	700C-E	1000C-E	1400C-E	2000C-E
Model	Eco-Pack®				
QSQ	420C-EDC	700C-EDC	1000C-EDC	1400C-EDC	2000C-EDC
A	710	920	920	1400	1400
B	(1749 min.)	(1923 min.)	(2097 min.)	(2271 min.)	(2456 min.)

● QSQ2500C-E
(Super Pack Heavy Duty model)
● QSQ2500C-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.
※ Set up dryer such that set up and maintenance spaceis like the hatched area in the diagram below.



Installation and maintenance space



Model selection

QSQ Series ※ 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		Inlet Pressure (MPa)													
		0.39		0.49		0.59		0.69		0.78		0.88		0.98	
QSQ		Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
Light Duty	010A	0.06	0.04	0.07	0.06	0.08	0.07	0.09	0.08	0.11	0.10	0.12	0.11	0.13	0.12
	020A	0.12	0.09	0.14	0.12	0.17	0.14	0.19	0.16	0.21	0.18	0.24	0.21	0.26	0.23
	035A	0.21	0.16	0.25	0.20	0.29	0.24	0.33	0.28	0.37	0.32	0.41	0.36	0.46	0.41
Medium duty	080B-E	0.47	0.36	0.56	0.45	0.66	0.55	0.75	0.64	0.85	0.74	0.94	0.83	1.04	0.93
	120B-E	0.70	0.54	0.85	0.69	0.99	0.83	1.13	0.97	1.28	1.12	1.41	1.25	1.56	1.40
	180B-E	1.05	0.80	1.27	1.02	1.49	1.24	1.69	1.44	1.91	1.66	2.11	1.86	2.33	2.08
	270B-E	1.59	1.21	1.91	1.53	2.22	1.85	2.54	2.16	2.86	2.48	3.17	2.80	3.49	3.11
Heavy duty	420C-E (EDC)	2.45	1.88	2.96	2.39	3.48	2.91	3.95	3.38	4.46	3.89	4.94	4.37	5.45	4.88
	700C-E (EDC)	4.09	3.15	4.94	4.00	5.80	4.86	6.59	5.65	7.45	6.51	8.24	7.30	9.09	8.15
	1000C-E (EDC)	5.80	4.50	7.10	5.80	8.30	7.00	9.40	8.10	10.60	9.30	11.80	10.50	13.00	11.70
	1400C-E (EDC)	8.20	6.30	9.90	8.00	11.60	9.70	13.20	11.30	14.90	13.00	16.50	14.60	18.20	16.30
	2000C-E (EDC)	11.70	9.10	14.10	11.50	16.50	13.90	18.80	16.20	21.20	18.60	23.50	20.90	25.90	23.30
	2500C-E (EDC)	14.60	11.30	17.60	14.30	20.70	17.40	23.50	20.20	26.60	23.30	29.40	26.10	32.40	29.10

※ 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 0.69MPa, 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	0.49MPa
Air flow	3m^3/min	Pressure dewpoint	−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.

Using the coefficients gotten in 1 above:

② $3 \times \frac{1}{(0.88 \times 1)} = 3.41 m^3 min$

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 0.49MPa is model QSQ700C-E.

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

B Inlet air temperature correction coefficient

Inlet air temperature	35℃ and below	40℃ and below	45℃ and below	50℃ and below
Light/Medium Duty	1.0	0.77	0.61	0.48
Heavy Duty	1.0	0.88	0.78	0.64

※ 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 0.69MPa.)
※ Use 1.0 as the coefficient if a refrigerated air dryer is installed.

C Outlet air dewpoint correction coefficient

Correction coefficient \ Dewpoint (PDP)	−20℃	−30℃	−40℃	−50℃	−60℃
Light/Medium Duty	1.0	0.9	0.85	—	—
Heavy Duty	1.0	1.0	1.0	0.85	0.7

※ These sections are different in the ratio of quantity of regenerative air purge. Please consult with your dealer for details.

■ Regeneration air purge chart (flow rates converted to ANR)

※ Regenerative air purge is not based on pressure and is consistent. Units: m^3/min (14%)

Model QSQ	010A	020A	035A	080B-E	120B-E	180B-E	270B-E	420C-E (EDC)	700C-E (EDC)	1000C-E (EDC)	1400C-E (EDC)	2000C-E (EDC)	2500C-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.

Clean Air Supply Package with Low Dew Points (CFC-free high quality air supply equipment)

QAP Series "Clean Air Package"

Built to Order

QAP010 ～ 700

Inlet air flow 0.10 ～ 7.0m³/min
Inlet air temperature 55℃ (QAP010 ～ 120)
Outlet air flow 0.086 ～ 6.0m³/min
Inlet air temperature 50℃ (QAP180 ～ 700)

QAP120　　QAP035

Features

By just connecting to a compressor, you can get a high quality air supply removed of water, oil mist, and other contaminants.

☐ Compact, single package series

High air quality air supply in a compact single package design that only requires connection to a compressor.

☐ Environmentally conscious

A heatless air dryer that removes water vapor at a pressure dew point of −20℃ (−40℃ at atmospheric pressure) or lower without the use of CFCs. Designed with the environment in mind.

☐ High quality air supply

A high quality air supply suitable for many demanding applications such as semiconductor, pharmaceutical, and medical supply manufacturing. Choose the level of air quality that matches your needs.

☐ All-in-one design for easy maintenance

All clean air equipment in a single package means maintenance is also centralized. Remote management is also possible which makes maintenance tasks even easier.

Specifications

Item		Model QAP	010	020	035	080	120	180	280	420	700
Inlet air flow		m³/min	0.10	0.20	0.35	0.80	1.20	1.80	2.80	4.20	7.00
Inlet air pressure		MPa	0.69								
Inlet air temperature		℃	55					50			
Outlet air flow		m³/min	0.086	0.172	0.30	0.68	1.03	1.54	2.30	3.60	6.00
Outlet air dew point (PDP)		℃	− 20							− 40	
Outside dimensions	Height	mm	1091			1256		1227	1577	1556	
	Depth	mm	845			1024		1050		1443	1617
	Width	mm	286			527		606		648	
Mass		kg	57	58.5	60	125	130	145	165	210	280
Air tank			SUS 23L × 1			SUS 39L × 2		Optional (external tank)			
Power specifications	Power Source		Single phase 200V 50/60Hz					Three phase 200V 50/60Hz			
	Power consumption (50/60Hz)	W	36/36			84/99		126/166			

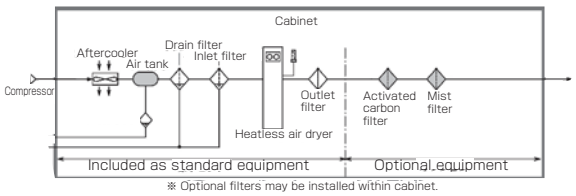
※ For the above specifications, the ambient temperature is 32 ℃. ※ Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32℃, 75%.) ※ This equipment is built-to-order. ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above.

System Configuration

Built in equipment　Comes standard equipped　Optional equipment

Aftercooler	Air tank ※ 1	Drain filter	Inlet filter (Mist filter)	Heatless Air dryer	Outlet filter (Line filter)	KSF Filter (ACF Filter)	MSF Filter (Mist filter)	System Features	Typical Applications
						—	—	● Basic System ● Change to non-CFC from refrigerated dryer	● Standard factory use ● For the promotion of non-CFC systems
						—		● Simple single connection to compressor ● Non-CFC	● Instrumentation, painting/coating ● Powder transport, precision manufacturing
								● Suitable for clean room use ● Dew point below −60℃ ※ 2	● Semiconductor ● Medical supply ● Food production
								● Industries that need to avoid oil contamination ● Non-CFC	● Ultra precision manufacturing ● Purge air source

All-in-one package design, built to the user's specifications.



※ Optional filters may be installed within cabinet.

※ 1 Air tank is optional equipment on QAP180 and higher models. ※ 2 Change of orifice is necessary.

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

Super Filter "DSF Series"

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

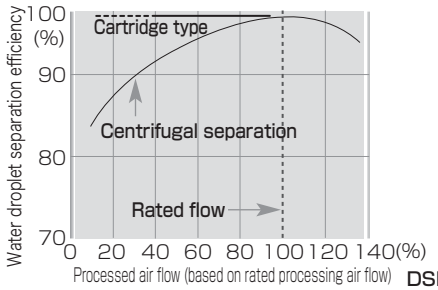
Features

- ☐ Stainless steel vessel (400 and above)
- ☐ High efficiency means consistent filtration efficiency.
  No drop in filtration performance due to flow rate fluctuations thanks to our element filtration design.
- ☐ Low pressure loss
  (0.005MPa or less.)
- ☐ Increased pressure range
  (75B ～ 250B)
- ☐ Tie-rod filter stacking system
  (75B ～ 250B)

Brackets sold separately.

Tie rod set sold separately.
※See page 49.

■ Performance Curve



DSF1300

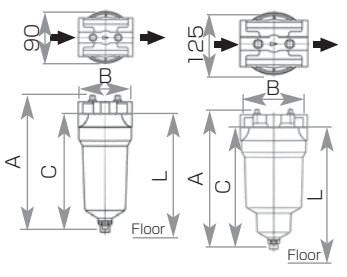
Specifications

Item			Model DSF	75B	150B	200B	250B	400-1	700-1	1000-1	1300-1	2700C	3200C	4000C	5000B	6000B	7700B	10300B	12900B	15500B	20700B	31800B
Air processing capacity ※ 1			m³/min	0.35	1.2	1.8	2.7	3.9	6.6	10.6	13.8	27.6	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	0.05 ～ 1.57 ※ 3				0.05 ～ 0.98				0.20 ～ 0.98							0.29 ～ 0.98			
	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				Rc 1/4										
	Piping connection size		B · A	Rc 3/8	Rc 3/4		Rc1	Rc1	Rc1 1/2		Rc 2	2 1/2 · 65	3 · 80		4 · 100		5 · 125	6 · 150		8 · 200		10 · 250
	Drain port size			Rc1/4, Outside diameter φ 16				φ 4				Rc 3/8							Rc 1/2			
	Mass		kg	1.0		2.0	2.1	3.0	3.3	3.7	4.3	26	28		73		95	155	190	250	310	380
Auto Drain Traps				NH-503MR (built-in)				FD2				FD-10-A							AD-5			
Element	Model		EDS	75	150	200	250	400	700	1000	1300	2000										
	No. of filter elements used		qty.	1								2			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. ※ 3 When models 75B or 150B are used without an auto drain, the maximum operable pressure is 2.94MPa. (Special order configuration.) ※ 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. ※ Models subject to JBA 2nd class pressure vessel regulation are built to order. ※ Legs on the DSF2700C, 3200C and 4000C are optional.

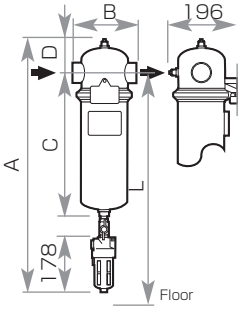
Outside dimensions (Units: mm)

● DSF75B
● DSF150B

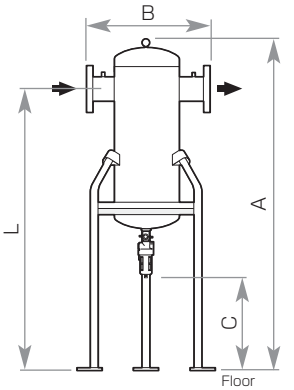


● DSF200B
● DSF250B

● DSF400-1/700-1
● DSF1000-1/1300-1



● DSF2700C/3200C/4000C
※ When mounted on optional legs.
● DSF5000B/6000B/7700B
● DSF10300B/12900B
● DSF15500B/20700B/31800B



DSF	A	B	C	D	L
75B	(237)	92	204.5	—	300min.
150B					
200B	290.5	130	252.5		370min.
250B					400min.
400-1	(528)	160	—	83.5	550min.
700-1	(610)	170	—	91	710min.
1000-1	(718)		—		920min.
1300-1	(811)	173	—	97.5	1080min.
2700C	(1511)	590	(531)	—	1300
3200C			(371)		
4000C					
5000B	1735	640	548		1500
6000B					
7700B	1757	680	530		
10300B	1992	790	660		1700
12900B	2102	970	717		1800
15500B	2142	1010	667		
20700B	2252	1060	757		1900
31800B	2391	1100	817		2000

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

■ Pressure correction coefficient (inlet pressure)

Pressure (MPa)	0.2	0.29	0.39	0.49	0.59	0.69	0.78	0.88	0.98	1.08	1.18	1.27	1.37	1.47	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

Solid Particulate Removal Super Filter (Compressed air purification equipment)

Super Filter "LSF Series"

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

Features

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

Brackets sold separately.

Tie rod set sold separately.
※See page 49.

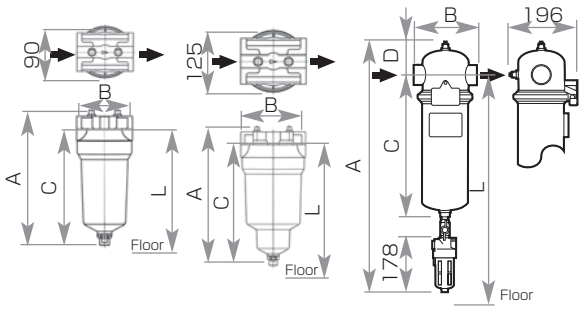
Specifications

Item			Model LSF	75B	150B	200B	250B	400-1	700-1	1000-1	1300-1	2000-1	2700C1	3200C1	4000C1	5000B1	6000B1	7700B1	10300B	12900B	15500B	20700B	31800B
Air processing capacity ※ 1			m³/min	0.35	1.2	1.8	2.7	3.9	6.6	10.6	13.8	20	27.6	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	0.05 ～ 1.57 ※ 3				0.05 ～ 0.98											0.20 ～ 0.98				
	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	Pressureloss	MPa	MAX 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					Rc 1/4										
	Piping connection size		B · A	Rc 3/8	Rc 3/4		Rc1	Rc1	Rc1 1/2		Rc 2		2 1/2 · 65	3 · 80	4 · 100	5 · 125	6 · 150		8 · 200		10 · 250		
	Drain port size			Rc1/4, Outside diameter φ 16				φ 4											Rc 3/8				
	Mass		kg	1.0		2.0	2.1	3.0	3.3	3.7	4.3	6.0	26	28	73	95	155	190	250	310	380		
Auto Drain Traps				NH-503MR (Built-in)				FD2											FD-10-A				
Element elements used	Model		ELS	75	150	200	250	400	700	1000	1300	2000	1300	2000									
	No. of filter		qty.	1									2	3	4	6	7	9	12	18			

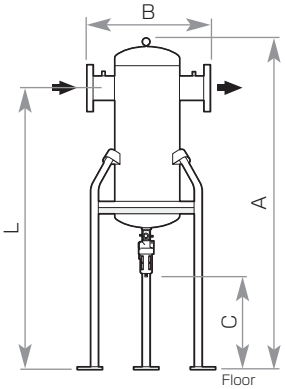
※ 1 Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32℃, 75% humidity.) Processed air conditions: Inlet air pressure: 0.69MPa, inlet air temp: 32℃, intel dew point at atmospheric pressure: -17℃ (PDP10℃) inlet oil concentration: 3wt ppm. ※ 2 Replace filter 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 2.94MPa. (Special order configuration.) ※ Auto drain trap: float operated type. (internal or separate) Note: Load placed on air inlet/outlet flanges should be no more than 120kg. Please ensure adequate support for the piping that leads to the filter. (LSF2700C ～ 31800B) ※ Models LSF12900B ～ 31800B are built-to-order models. ※ Models LSF5000B ～ 31800B are subject to JBA 2nd class pressure vessel regulation. ※ Models subjet to JBA 2nd class pressure vessel regulation are built to order. ※ Legs on the LSF2700C, 3200C and 4000C are optional.

Outside dimensions (Units: mm)

● LSF75B ● LSF150B ● LSF200B ● LSF250B ● LSF400-1/700-1/1000-1 ● LSF1300-1/2000-1



● LSF2700C1/3200C1/4000C1
※ When mounted on optional legs.
● LSF5000B1/6000B1/7700B1
● LSF10300B/12900B
● LSF15500B/20700B/31800B



LSF	A	B	C	D	L
75B	(237)	92	204.5	—	300min.
150B					
200B	290.5	130	252.5		370min.
250B					400min.
400-1	(528)	160	209	83.5	550min.
700-1	(610)	170	283.5	91	710min.
1000-1	(718)		391.5		920min.
1300-1	(811)	173	478	97.5	1080min.
2000-1	(968)		635		1400min.
2700C1	(1511)	590	—	—	1300
3200C1			—		
4000C1					
5000B1	1735	640	—		1500
6000B1					
7700B1	1757	680	—		
10300B	1992	790	660		1700
12900B	2102	970	717		1800
15500B	2142	1010	667		
20700B	2252	1060	757		1900
31800B	2391	1100	817		2000

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

■ Pressure correction coefficient (inlet pressure)

Pressure (MPa)	0.2	0.29	0.39	0.49	0.59	0.69	0.78	0.88	0.98	1.08	1.18	1.27	1.37	1.47	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

Oil Mist Removal Super Filter (Compressed air purification equipment)

Super Filter "MSF Series"

MSF75B ～ 31800B
Removes oil mist of 0.01 μm and up
(Output concentration: 0.01wt ppm)
Air processing capacity: 0.35 ～ 318.9m³/min
Inlet air temperature 5 ～ 60℃

MSF700-1 MSF1300-1 MSF10300B

Features

- ☐ First in its class to come standard equipped with a stainless steel vessel (models 400 and above.)
- ☐ Standard equipped with clamp joint (models 400 ～ 2000)
  Now equipped with band clamps for easier housing removal (compared with earlier flange-type models.)
- ☐ With our newly developed element, pressure loss under standard pressures has been reduced to 0.02MPa (A 33% improvement over our previous models.)
- ☐ Filter element replacement lamp (models 400 and above.)
  Lets you know when the filter element needs replacing.
- ☐ Increased pressure range (75B ～ 250B)
- ☐ Tie-rod filter stacking system (75B ～ 250B)

Brackets sold separately.

Tie rod set sold separately.
※See page 49.

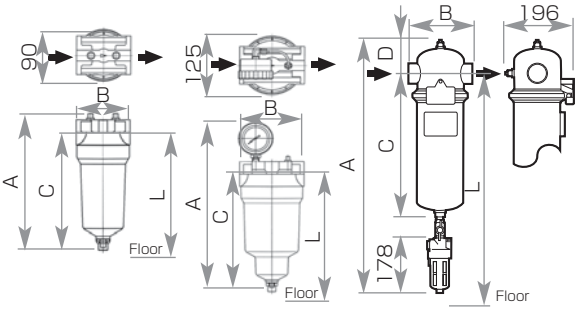
Specifications

Item \ Model MSF			75B	150B	200B	250B	400-1	700-1	1000-1	1300-1	2000-1	2700C1	3200C1	4000C1	5000B1	6000B1	7700B1	10300B	12900B	15500B	20700B	31800B
Air processing capacity ※1		m^3/min	0.35	1.2	1.8	2.7	3.9	6.6	10.6	13.8	20.0	27.6	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	0.05 ～ 1.57 ※3				0.05 ～ 0.98											0.20 ～ 0.98				
	Inlet air temperature / Ambient temperature range	℃	5 ～ 60/2 ～ 60																			
Performance specifications	Degree of filtration / Output oil concentration	μm	0.01 μm /0.01wt ppm																			
	Collection efficiency / Pressure loss	% /MPa	99.999 / Initial: 0.01 · Typical: 0.02																			
	When to replace element ※2 Pressure loss	MPa	MAX 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					Rc 1/4										
	Piping connection size	B · A	Rc 3/8	Rc 3/4		Rc1	Rc1	Rc1 1/2		Rc 2		2 1/2 · 65	3 · 80	4 · 100		5 · 125	6 · 150	8 · 200		10 · 250		
	Drain port size		Rc1/4, Outside diameter: φ16				φ4											Rc 3/8				
	Mass	kg	1.0		2.5	2.6	3.0	3.3	3.7	4.3	6.0	26	28	73		95	155	190	250	310	380	
Auto Drain Traps			NH-503MR (Built-in)				FD2											FD-10-A				
Element	Model	EMS	75	150	200	250	400	700	1000	1300	2000	1300	2000									
	No. of filter elements used	qty.	1									2	3			4	6	7	9	12	18	

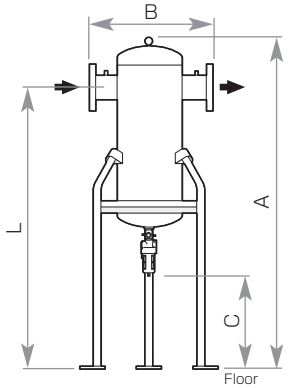
※1 Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32℃, 75% humidity.) Processed air conditions: Inlet air pressure: 0.69MPa, inlet air temp: 32℃, inlet dew point at atmospheric pressure: −17℃ (PDP: 10℃), inlet oil concentration: 3wt ppm. ※2 Replace 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 2.94MPa. (Special order configuration.) ※ 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 120kg. Please ensure adequate support for the piping that leads to the filter. (MSF2700C ～ 31800B) ※ Models MSF5000B ～ 31800B are subject to JBA 2nd class pressure vessel regulation. ※ Models subject to JBA 2nd class pressure vessel regulation are built to order. ※ Legs on the MSF2700C, 3200C and 4000C are optional.

Outside dimensions (Units: mm)

● MSF75B ● MSF150B ● MSF200B ● MSF250B ● MSF400-1/700-1/1000-1 ● MSF1300-1/2000-1



● MSF2700C1/3200C1/4000C1
※ When mounted on optional legs.
● MSF5000B1/6000B1/7700B1
● MSF10300B/12900B
● MSF15500B/20700B/31800B



MSF	A	B	C	D	L
75B	(237)	92	204.5	—	300min.
150B					
200B	(364)	130	252.5		370min.
250B					400min.
400-1	(528)	160	209	83.5	550min.
700-1	(610)	170	283.5	91	710min.
1000-1	(718)		391.5		920min.
1300-1	(811)	173	478	97.5	1080min.
2000-1	(968)		635		1400min.
2700C1	(1511)	590	—	—	1300
3200C1			—		
4000C1					
5000B1	1735	640	—		1500
6000B1					
7700B1	1757	680	—		
10300B	1992	790	660		1700
12900B	2102	970	717		1800
15500B	2142	1010	667		
20700B	2252	1060	757		1900
31800B	2391	1100	817		2000

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

■ Pressure correction coefficient (inlet pressure)

Pressure (MPa)	0.2	0.29	0.39	0.49	0.59	0.69	0.78	0.88	0.98	1.08	1.18	1.27	1.37	1.47	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

Odor Removal Super Filter (Compressed air purification equipment)

Super Filter "KSF Series"

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

Features

☐ 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.

☐ 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.

☐ Increased pressure range
(150B ～ 250B)

☐ Tie-rod filter stacking system
(150B ～ 250B)

Brackets sold separately.

Tie rod set sold separately.
※See page 49.

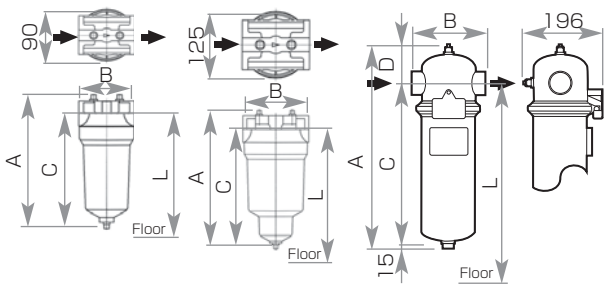
Specifications

Item			Model KSF	150B	200B	250B	400	700	1000	1300	2000	2700C	3200C	4000C	5000B	6000B	7700B	10300B	12900B	15500B	20700B	31800B
Air processing capacity			※ 1 m^3/min	1.2	1.8	2.7	3.9	6.6	10.6	13.8	20.0	27.6	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	0.05 ～ 1.57 ※ 2			0.05 ～ 0.98															
	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		wtppm/MPa	0.003 / 0.009																		
	When to replace element	Period of use		1 year																		
Main dimensions	Differential pressure gauge connection size			Rc 1/4			High pressure side: Rp 1／4 Low pressure side: M5					Rc 1/4										
	Piping connection size		B · A	Rc 3/4		Rc1	Rc1	Rc1 1/2		Rc 2		2 1/2 · 65	3 · 80		4 · 100		5 · 125	6 · 150		8 · 200		10 · 250
	Mass		kg	1.0	2.0	2.1	3.0	3.3	3.7	4.3	6.0	57	61		73		95	155	190	250	310	380
Element	Model		EKS	150	200	250	400	700	1000	1300	2000	1300	2000									
	No. of filter elements used		qty.	1								2			3		4	6	7	9	12	18

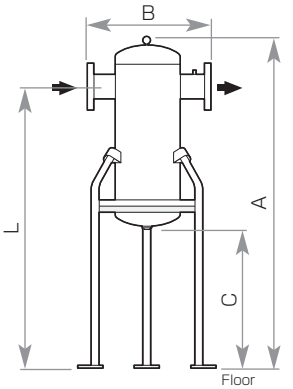
※ 1 Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32℃, 75% humidity.) Processed air conditions: Inlet air pressure: 0.69MPa, inlet air temp: 32℃, inlet dew point at atmospheric pressure: −17℃ (PDP: 10℃), inlet oil concentration: 0.01wt ppm. ※ 2 Model 150B can be configured to handle pressures of 2.94MPa. (This is a special order item.) ※ 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 120kg. 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. ※ Models subject to JBA 2nd class pressure vessel Regulation 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.

Outside dimensions (Units: mm)

● KSF150B　● KSF200B　● KSF250B　● KSF400/700/1000　● KSF1300/2000



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



KSF	A	B	C	D	L
150B	232	92	199.5	—	300min.
200B	281.5	130	243.5		370min.
250B					400min.
400	307.5	160	209	83.5	550min.
700	389.5	170	283.5	91	710min.
1000	497.5		391.5		920min.
1300	590.5	173	478	97.5	1080min.
2000	747.5		635		1400min.
2700C	(1511)	590	(741)	—	1300
3200C			(584)		
4000C					
5000B	1735	640	757		1500
6000B					
7700B	1757	680	731		
10300B	1992	790	899		1700
12900B	2102	970	956		1800
15500B	2142	1010	906		
20700B	2252	1060	996		1900
31800B	2391	1100	1056		2000

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

■ Pressure correction coefficient (inlet pressure)

Pressure (MPa)	0.2	0.29	0.39	0.49	0.59	0.69	0.78	0.88	0.98	1.08	1.18	1.27	1.37	1.47	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

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

Final Filter "OFF/OFH Series"

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 ～ 1.06m^3/min

Features

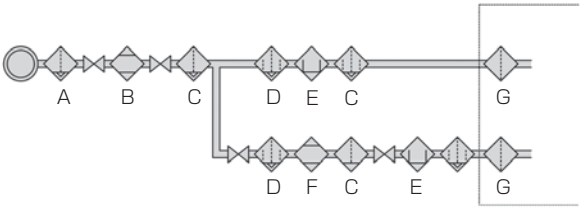
☐ Ultra filtration to 0.5 μ m
☐ Casing constructed of polished stainless steel, filter elements are made of PTFE membrane or fiberglass.
☐ Comes standard with outlet particle flow measurement port.

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					

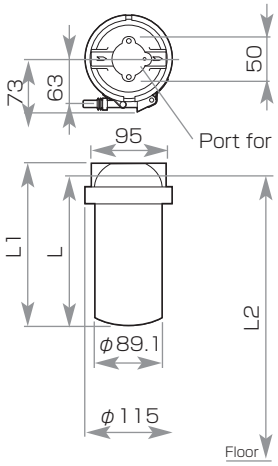
※ 1 Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32℃, 75% humidity.) ※ 2 Purity class in ( ) indicates the amount of particulate contained in 1ft3 of air. Please see page 2 regarding F.S.209D. ※ Conditions of air to be processed should be as follows: Inlet air pressure: 0.69MPa, inlet air temp: 32 ℃, inlet dew point at atmospheric pressure: −17 ℃, inlet oil concentration: 0.05wt 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.

Outside dimensions (Units: mm)



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

Making the right model choice

Choose a model that allows plenty of leeway in capacity.

Air processing capacity ≧ Desired capacity / Pressure correction coefficient

■ Pressure correction coefficient (inlet pressure)

Pressure (MPa)	0.2	0.29	0.39	0.49	0.59	0.69	0.78	0.88	0.93
Pressure correction coefficient	0.38	0.49	0.62	0.75	0.87	1.0	1.06	1.12	1.15

Membrane Type Final Filter "OPF Series"

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


OPF200　OPF500

Features

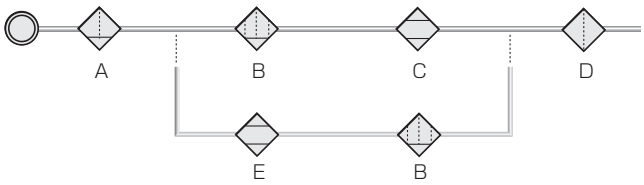
☐ Very fine particle filtration
☐ Compact and lightweight
☐ Easy maintenance
　Easy to replace filter cartridge

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 2 regarding F.S.209D. ※ Conditions of air to be processed should be as follows: Inlet air pressure: 0.69MPa, inlet air temp: 32℃, inlet dew point at atmospheric pressure: −17℃, inlet oil concentration: 0.05wt 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.

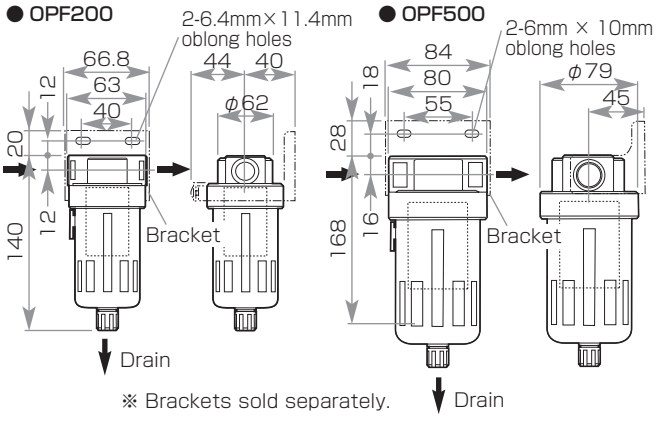
Clean air system flow



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.

Outside dimensions (Units: mm)



※ Brackets sold separately.

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	0.29	0.39	0.49	0.59	0.69	0.78	0.88	0.98
Pressure correction coefficient	0.38	0.49	0.62	0.75	0.87	1.0	1.06	1.12	1.17

1.57MPa Medium Pressure Clean Air Filter (Medium pressure compressed air purification equipment.)

Medium Pressure Spec. Filter "DFH/LFH/MFH/KFH Series"

DFH/LFH/MFH/KFH600 ～ 600 ～ 2900
Working Air pressure: 1.57MPa
Air processing capacity: 5.7 ～ 29.0m^3/min
Inlet air temperature　5 ～ 60℃

1.57MPa High pressure compatible

MFH600　MFH2900

Features

☐ 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.

☐ Our tie-rod filter stacking system saves piping space. (Tie-rods sold separately.)

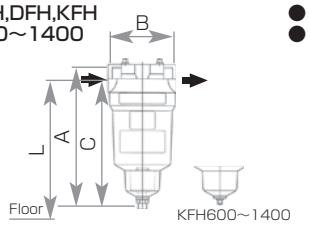
Specifications

Item			Model	Water droplet / particulate removal: DFH, Particulate removal: LFH, Oil mist removal: MFH, 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% · 0.01wt ppm　KFH: oil vapor · - · 0.003wt ppm				
	Initial pressure loss	MPa	DFH: 0.005MPa, LFH: 0.005MPa, MFH: 0.01MPa, KFH: 0.009MPa				
	When to replace element	MPa	1 year or when differential pressure reaches 0.07MPa (0.02 for DFH model), whichever comes first				
Main dimensions	Piping connection size		Rc1	Rc11/2	Rc11/2	Rc2	Rc2
	Differential pressure gauge connection size		Rc 1/4				
	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	700	1000	1300	2000
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				

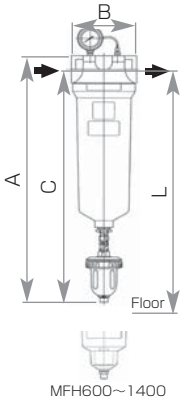
※ 1 Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32℃, 75% humidity.) ※ 2 Processing air conditions: pressure: 1.57MPa, temperature: 32℃, oil concentration: 3 wt ppm (for L and M models), 0.01 wt ppm (for K models). ※ 3 Used in our Super Filter line of filters. ※ 4 Internal type is model NH-503MR, external type is model NH-503SR-15A. ※ 5 Model DGX-50B. ※ 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.

Outside dimensions (Units: mm)

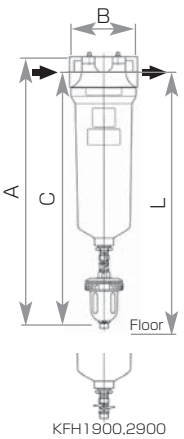
● LFH,DFH,KFH
● 600～1400



● MFH600～1400
● MFH1900,2900



● LFH,DFH,KFH
● 1900,2900



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

Making the right model choice

Choose a model that allows plenty of leeway in capacity.

Air processing capacity ≧ Desired capacity / Pressure correction coefficient

■ Pressure correction coefficient (inlet pressure)

Pressure (MPa)	0.98	1.08	1.18	1.27	1.37	1.47	1.57
Pressure correction coefficient	0.80	0.84	0.87	0.91	0.94	0.97	1.0

Choosing the Right Filter

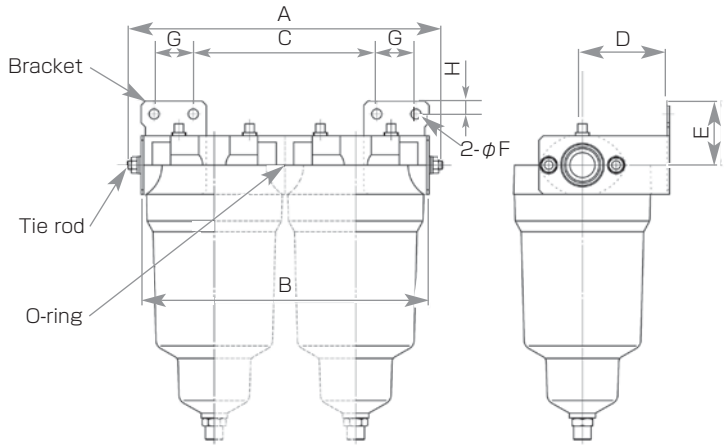
Please make your system line filter choice based on the chart below.

Performance Specification Chart

Particulate size / Remaining oil content	0.01 μm	1 μm	5 μm
0.01mg/m³ (0.01wtppm)	Super Mist Filter MSF Series 		
0.1mg/m³ (0.08wtppm)			
1mg/m³ (0.83wtppm)			
5mg/m³ (4.2wtppm)			
25mg/m³ (20.8wtppm)			
—		Super Line Filter LSF Series	Super Drain Filter DSF Series

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

Light duty filter tie rod connection and bracket (75B ～ 250B)



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.

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

(Units: mm)

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

Membrane Type Air Dryer

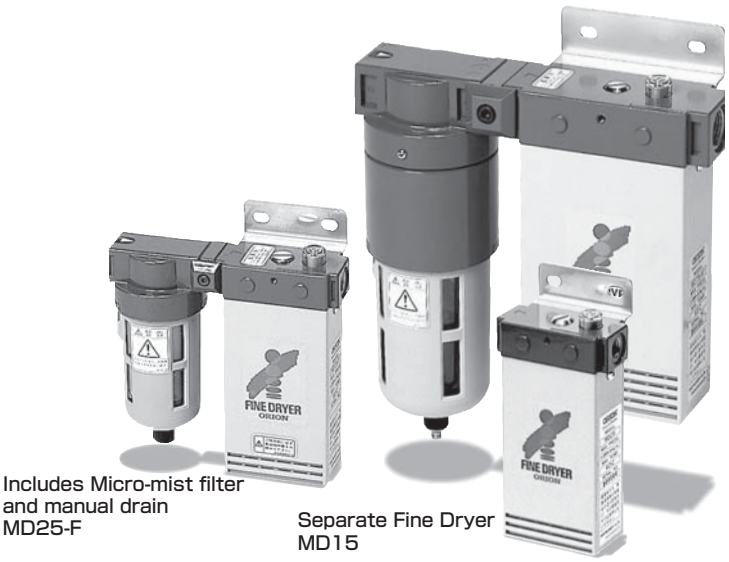
Patented

MD15 ～ 75/MD15-F ～ 75-F/MD15-AF ～ 75-AF

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

Features

- ☐ No power source required
- ☐ Confirm drying conditions with the dewpoint indicator. (Patented)
- ☐ No vibration, No heat output, Easy maintenance
- ☐ No drain output
  Removed water moisture is vented off as water vapor so there's no drain.
- ☐ 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.



and Auto drain trap
Includes Micro-mist filter
MD75-AF

Includes Micro-mist filter
and manual drain
MD25-F

Separate Fine Dryer
MD15

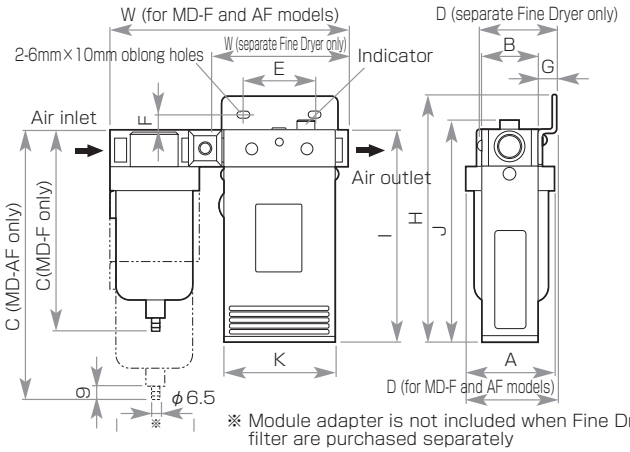
Specifications

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. ※ When using the separate Fine Dryer, be sure that water droplets and oil is removed from air entering the dryer. ※ 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.

Outside dimensions (Units: mm)



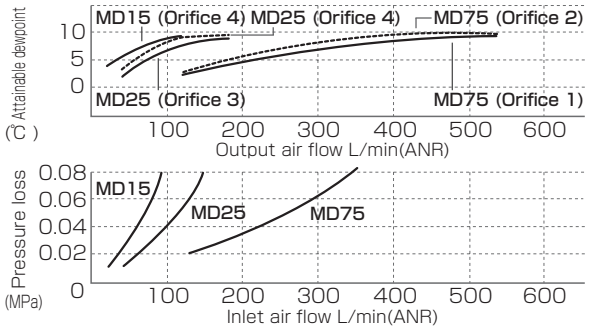
※ Module adapter is not included when Fine Dryer or Micro-mist filter are purchased separately

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

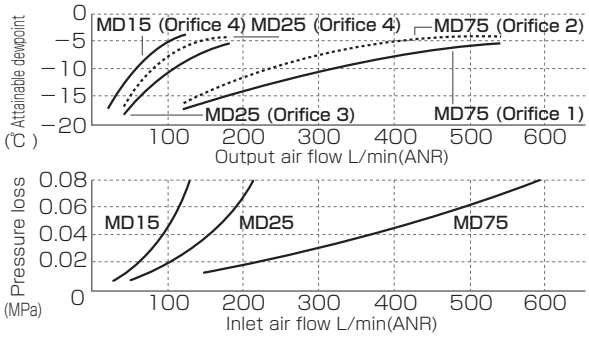
Model	E	F	G	I	J	K
MD15/25 MD15-F/25-F MD15-AF/25AF	46	13	12	150	161	72
MD75 MD75-F MD75-AF	66	15	17	190	200	100

Operating conditions and outlet air dewpoint comparisons

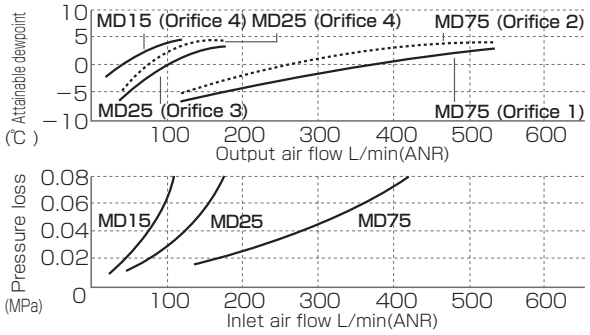
■ Inlet air: 0.2MPa (28℃ saturated)



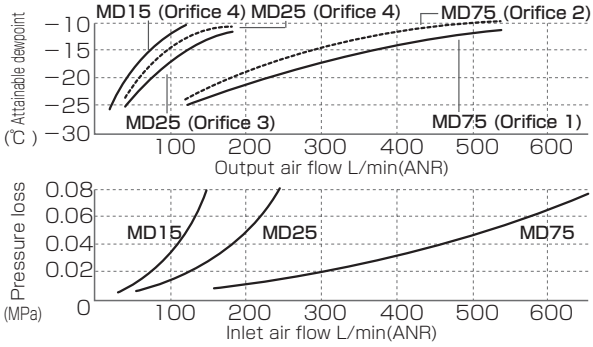
■ Inlet air: 0.5MPa (28℃ saturated)



■ Inlet air: 0.3MPa (28℃ saturated)



■ Inlet air: 0.69MPa (28℃ saturated)

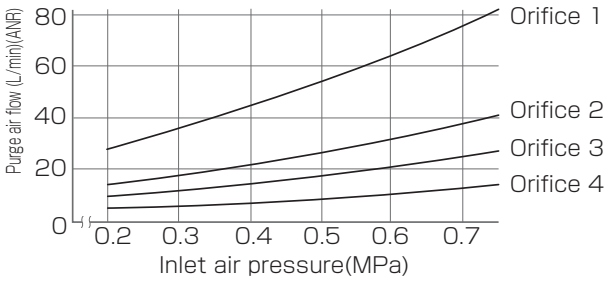


Inlet air pressure and refrigeration air flow

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



Cold Fresh® for a Continuous Supply of Sub-Freezing Compressed Air (Compressed air cooling control equipment)

Compressed Air Cooling Equipment / Cold Fresh® "APX" Patented

APX-8A-250/15A-500/30A-1200

Adjustable output temperature range: −30 ～ 0℃

Output temperature precision: ±1℃

Inlet air temperature: 5 ～ 50℃

Inlet air dew point: −17℃ (at atmospheric pressure)

Features

☐ Outlet compressed air pressure · flow rate control functions
(Regulator and flow rate gauge built-in)

☐ Original energy saving air mixing temperature control (Patented.)
0℃ to −30℃ temperature control.

☐ Primary and backup refrigeration switching system

☐ Comes standard equipped with casters.

☐ Compact, space saving design
Heatless air dryer, line filter, and mist filter all in one compact unit. (APX-15A-500)

☐ Uses environmentally friendly R404A (HFC) refrigerant.

APX-8A-250　APX-15A-500　APX-30A-1200

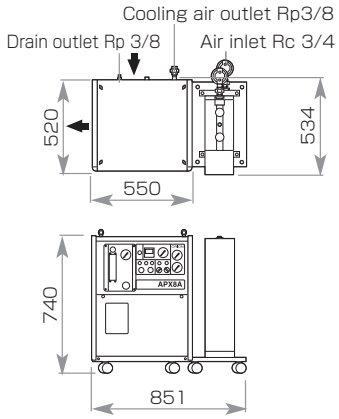
Specifications

Item			Model APX-	8A-250	15A-500	30A-1200
Output air temperature range ※ 1			℃	−30 ～ 0		
Adjustable range of output air flow ※ 2			L/min	40 ～ 400	200 ～ 800	300 ～ 1500
Adjustable range of output air pressure			MPa	0.05 ～ 0.85	0.10 ～ 0.49	0.05 ～ 0.85
Typical cold air discharge rate (Air temperature: −30℃) ※ 3			L/min	250	500	1200
Inlet air conditions	Required inlet air flow (when equipped with heatless air dryer)		L/min	190 ～ 550	260 ～ 1040	800 ～ 2050
Inlet air conditions	Air pressure		MPa	0.49 ～ 0.98	0.49 ～ 0.85	0.59 ～ 0.98
Inlet air conditions	Air temperature range		℃	5 ～ 50	10 ～ 40	5 ～ 50
Inlet air conditions	Air dew point ※ 4		℃	Below saturation (no water droplets)		
Ambient temperature and humidity range			℃	5 ～ 40 (humidity: 75% or less)	10 ～ 35 (humidity: 75% or less)	5 ～ 40 (humidity: 75% or less)
Outside dimensions		Height	mm	740	1510	1552
Outside dimensions		Depth	mm	520	510	700
Outside dimensions		Width	mm	851	650	1001
Mass			kg	Approx. 110	Approx. 180	Approx. 210
Compressed air inlet connections			B	Rc3/4	Rp1/2	Rc1
Cooled air outlet connections				Rp3/8	Rp3/8	Rp3/4
Power specifications	Voltage (50/60Hz) ※ 5		V	Three phase 200/200,220		
Power specifications	Power consumption (50/60Hz)		kW	1.24/1.31,1.63	2.40/2.42,3.25	2.6/3.0,3.2
Power specifications	Electric current (50/60Hz)		A	4.4/4.1,5.4	5.8/5.6,6.7	10.0/9.8,11.8
Power specifications	Power capacity		kVA	2.1	3.0	4.2
Power specifications	Breaker capacity		A	10	15	30
Equipment specifics	Heatless air dryer ※ 6			Orion QSQ080B-E (external)	Orion QSQ120B-E (built-in)	Orion QSQ270B-E (external)
Equipment specifics	Compressor		kW	0.75	1.5	3.0
Equipment specifics	Refrigerant			R404A		
Equipment specifics	Temperature control method			Automatic air mixing control valve		
Equipment specifics	Other			Built-in flow rate gauge and regulat		

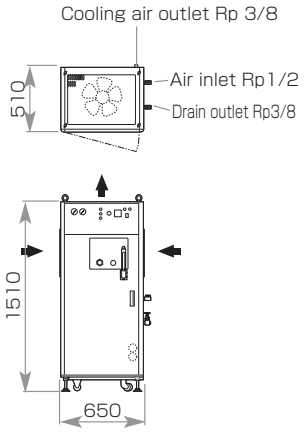
※ 1 Output air temperature range will change based on outlet air flow rate and inlet air conditions. Air temperature is measured via the built-in outlet air sensor. ※ 2 When using a model that includes a heatless air drying unit, select an orifice that suites your air pressure conditions. ※ 3 Ambient temperature: 25℃, inlet air temperature: 40℃, outlet air pressure: 0.2MPa, source power frequency: 60Hz. ※ 4 Condition of air previously dehumidified with a refrigerated dryer. ※ 5 Voltage fluctuation should be no greater than ± 10% of the rated voltage. ※ 6 Does not include piping necessary for supplementary filter installation. ※ Does not include piping to be installed between a supplementary filters and the Cold Fresh. ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above. ※ Air flow rates listed are calculated based on normal air conditions (atmospheric pressure, 0℃, dry air conditions.)

Outside dimensions (Units: mm)

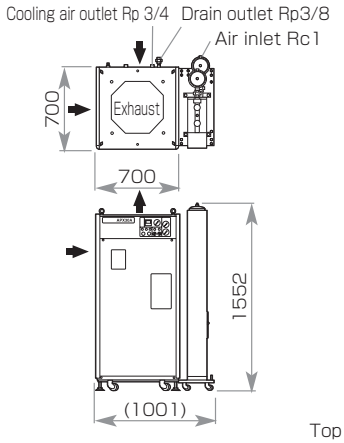
● APX-8A-250



● APX-15A-500



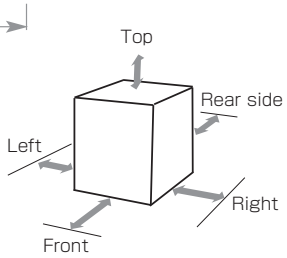
● APX-30A-1200



■ Installation Space

When installing this equipment, make sure there is enough surrounding space to allow for sufficient ventilation and maintenance.

Model		Front	Right	Left	Rear side	Top	Additional notes
APX-	8A-250	100cm	100cm	200cm	100cm	100cm	Exhaust blows out left side.
	15A-500			100cm		200cm	Exhaust blows out the top.
	30A-1200						



Typical applications

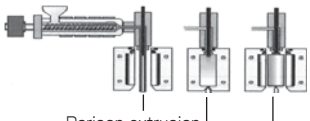
1. Improved productivity
- Cooling of resin blown castings
- Cold air resin polishing
- Machining cutter cooling
- Cold air machining of metal
- Cold air drying (Film coatings, etc.)

2. Quality control
- Protective packaging for food, cosmetics
- Cooling of nitrogen gas used in food processing
- Rapid cooling after dip soldering

3. Low temperature inspection
- Low temperature inspection of automotive components
- Simplified low temperature inspection of production line

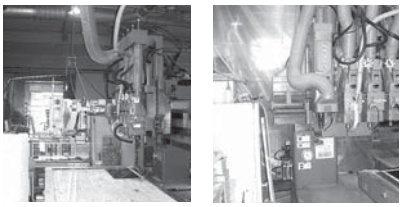
Typical applications

Cooling of resin blown castings



Cold air blowing

Machining cutter cooling



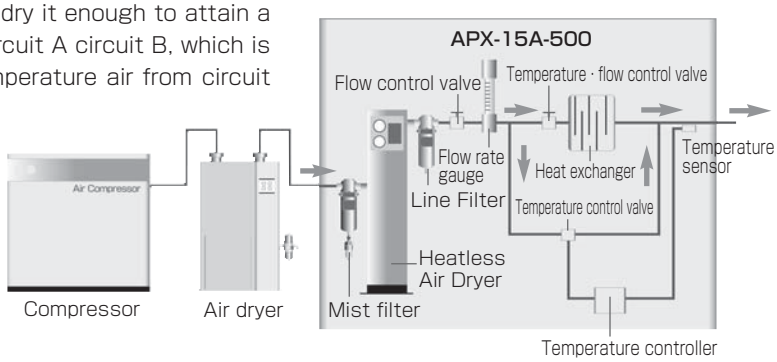
Secondary production using acrylic resin

Cold air resin polishing

Source of cold air used in polishing systems for molded/cast items.

Working principles of air mixing temperature control

- Compressed air is run through a heatless dryer to dry it enough to attain a low dewpoint. This air is split between a cooling circuit A circuit B, which is not cooled. Cold air from circuit A and normal temperature air from circuit B are regulated and mixed in order to achieve the desired set temperature.
- Temperature control is achieved by regulating the flow of air in the bypass circuit via a temperature control valve (proportional control valve.)
  The proportional control valve is operated via signals from the temperature controller circuit.



Nano Thermo® with Peltier temperature control for high accuracy and energy savings (Compressed air temperature control equipment)

Compressed air cooling equipment - Nano Thermo® "ACU"

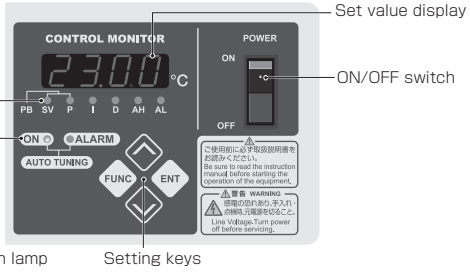
ACU100-MD / ACU300-MD / ACU600-MD / ACU1000B / ACU2000B

The response of electronic cooling combined with Orion's original high accuracy controller gives high accuracy temperature control. Provides high resistance to thermal warping in precision machining and measurement equipment, helping you get the most performance from your equipment.

ACU100-MD

ACU2000B

Control panel



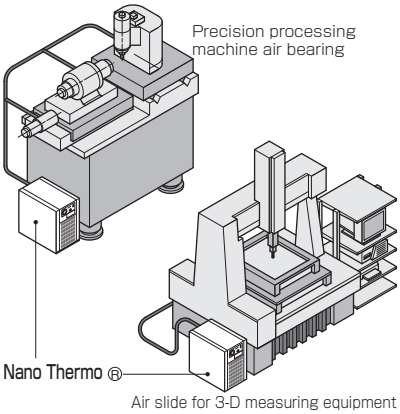
Control accuracy: ±0.01℃ / Temperature control range: 15.00 ～ 40.00℃ / Air processing capacity: 30 ～ 2,100L/min

Main Features

- Air temperature control of ±0.01℃.
- ACU100-MD, ACU300-MD, and ACU600-MD include dehumidification and filtration functions as well as pressure adjustment capability.
- Space saving compact design.

Typical applications

- Precision processing machinery
- Precision easurement machinery
- Semiconductor and FPD production equipment
- Analysis equipment
- Precision painting/ coating machinery
- Localized precision temperature control
- Temperature control for work-pieces and measured-objects



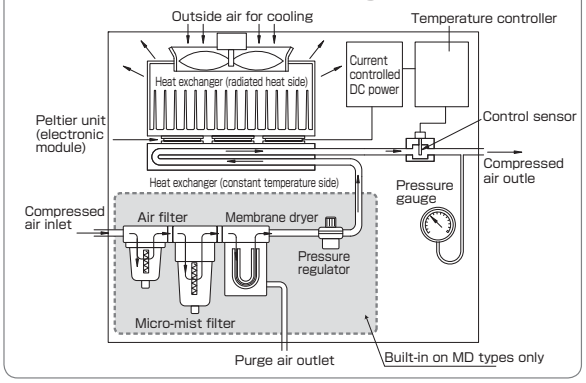
Air slide for 3-D measuring equipment

Specifications

Model			ACU100-MD	ACU300-MD	ACU600-MD	ACU1000B	ACU2000B
Operating fluid			Compressed air				
Operating ranges	Operating pressure range (gauge pressure)	MPa	0.2 ～ 0.85			0.2 ～ 0.83	
	Outlet pressure control range (gauge pressure)	MPa	0.05 ～ 0.83			—	
	Inlet air temperature	℃	5 ～ 40			15 ～ 35	15 ～ 30
	Output temperature setting range	℃	16 ～ 30			15 ～ 35	15 ～ 40
	Outlet air flow	L/min	30 ～ 130	50 ～ 390 ※ 2	130 ～ 600 ※ 2	130 ～ 1000 ※ 2	330 ～ 2100
	Ambient temperature	℃	18 ～ 25				
	Inlet air water vapor content	℃	Below saturation			Under pressure, 10℃ or lower	
Basic performance specifications	Outlet air dew point (at atmospheric pressure)	℃	−17 or lower ※ 3			—	—
	Outlet air degree of filtration	μ m/%	0.01/99			—	—
	Outlet air temperature control accuracy ※ 1	℃	Set value ±0.01				
	Condition: Outlet temperature setting	℃	23				
	Condition: Inlet air temperature	℃	5 ～ 40			15 ～ 28	
	Condition: Inlet air pressure (gauge pressure)	MPa	0.7				
	Condition: Inlet air flow	L/min	125	375	750	1000	2100
	Condition: Outlet air flow	L/min	100	300	600	1000	2100
	Condition: Purge air flow	L/min	25	75	150	0	0
	Condition: Ambient temperature	℃	25				
Power specifications	Power source	V (Hz)	Single phase 100 ± 10% (50/60)				Single phase 200 ± 10% (50/60)
	Maximum operating current	A	4	5			
	Power supply capacity	KVA	0.4	0.5			1
	Breaker capacity	A	10				
Temperature control method			Peltier constant current control (PID control)				
Heat radiation method			Air cooled				
Dehumidification method			Hollow fiber membrane			—	—
Inlet/outlet piping connection size			Rc1/4	Rc3/8	Rc1/2		Rc3/4
External surfaces			Custom coating: N5.5 / N8.0				
Equipment specifics			Built-in air filter, micro-mist filter, membrane dryer, regulator, and flow switch			Built-in flow switch	
Mass		kg	28	36	38	35	45
Outside dimensions (H × D × W)		mm	490 × 500 × 240	510 × 550 × 320			530 × 600 × 320

※ 1. The outlet air flow rate, inlet air temperature, and ambient temperature are stable, with no sudden fluctuations. (Inlet air temperature gradient: within 1℃ /10 min) ※2 When the inlet air pressure is 0.25 MPa or under, the maximum flow rate will be as follows due to the unit's internal pressure loss. ACU300-MD: 270L/min, ACU600-MD: 520L/min, ACU1000B: 870L/min ※3 When the inlet air temperature is 28℃. ※ Air flow rates are based on compressor intake conditions: (atmospheric pressure, 20℃, 65%). ※ ACU1000B/2000B models do not have built-in compressed air dehumidification, so compressed air being supplied to these units must be first run through an air dryer.

Nano Thermo schematic diagram



High accuracy temperature control

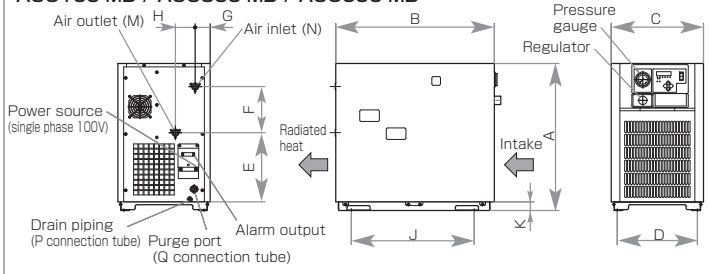
The response of electronic cooling combined with Orion's original high accuracy controller gives high accuracy temperature control.

Low vibration, low noise

Unlike chillers with built-in compressors, thermoelectric cooling from the Peltier unit is achieved with exceedingly small amounts of vibration, thus minimizing the effects of vibration and noise on positioning accuracy of micromachining applications.

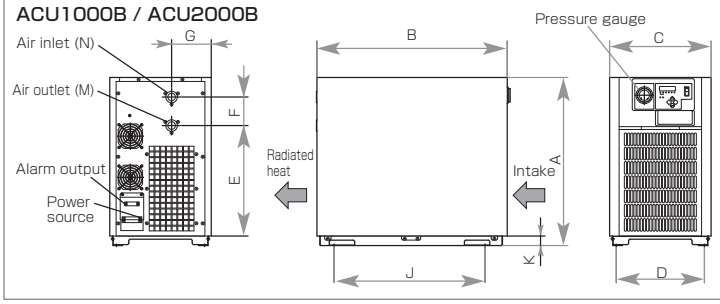
External dimensions (Units: mm)

ACU100-MD / ACU300-MD / ACU600-MD



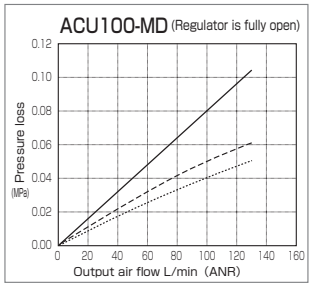
Item \ Model	ACU100-MD	ACU300-MD	ACU600-MD
A	490	510	
B	500	550	
C	240	320	
D	198	278	
E	215	240	198
F	200	160	242
G	65	52	95.8
H	27	68.5	34.2
J	376	426	
K	30	30	
M	Rc1/4	Rc3/8	Rc1/2
N	Rc1/4	Rc3/8	Rc1/2
P	ϕ 8mm	ϕ 8mm	
Q	ϕ 6mm	ϕ 10mm	ϕ 16mm

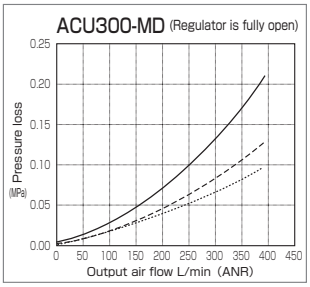
ACU1000B / ACU2000B

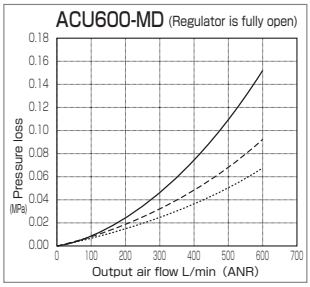


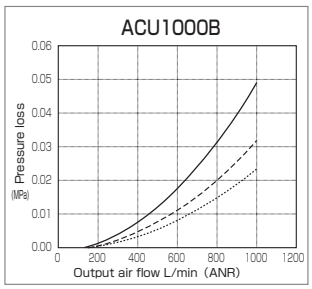
Item \ Model	ACU1000B	ACU2000B
A	510	530
B	550	600
C	320	320
D	278	278
E	240	348.4
F	160	90
G	130	125
J	426	476
K	30	30
M	Rc1/2	Rc3/4
N	Rc1/2	Rc3/4

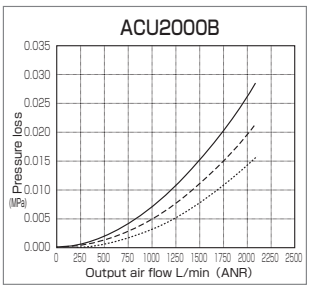
Pressure loss curve











Inlet air pressure

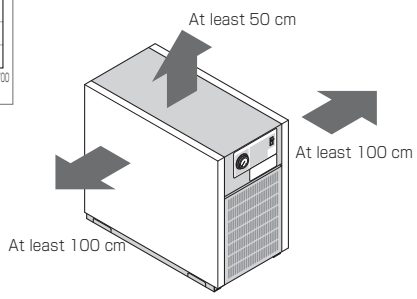
——— 0.3MPa

- - - - - - - - - - - - 0.5MPa

..... 0.7MPa

■ Installation space requirements

When installing this equipment, make sure there is enough surrounding space to allow for sufficient ventilation and maintenance.



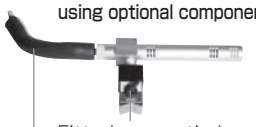
Just Add Compressed Air and Get Super Low Temperatures in the −40℃ Range (Very low temperature vortex cooler)

Compressed Air Cooling Equipment - Spiral Cooler "KSC"

KSC200A/450A/750A
Compressed air (dry air)
Air consumption: 100 ～ 1050L/min
Operable pressure range　0.2 ～ 0.7MPa


KSC-750A

■ Sample of installation using optional components



Features

☐ No power source required

☐ Adjustable cold air output flow rate
Cold air temperature as well as flow rate can be adjusted to provide optimum conditions for the job at hand and the specific item to be cooled.

☐ Long lifespan

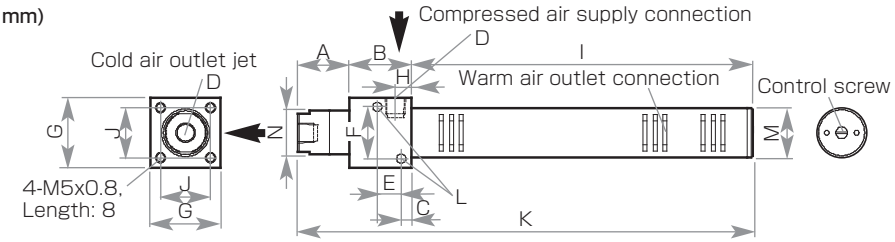
Specifications

Item \ Model KSC		200A	450A	750A
Processed fluid		Compressed air (dry air)		
Operable pressure range	MPa	0.2 ～ 0.7		
Air consumption	L/min	100 ～ 279	225 ～ 600	375 ～ 1050
Max. temperature drop ※	℃	41.5	43	45
Min. cold air temperature ※	℃	−26.5	−28	−35
Mass	g	250	450	850

※ Value when inlet air temperature is 15℃, pressure is 0.49MPa.
※ Inlet air dewpoint is less than temperature of cold air flow.
※ Air consumption value is based on ANR (20℃, 65%).

Outside dimensions (Units: mm)

● KSC200A
● KSC450A
● KSC750A

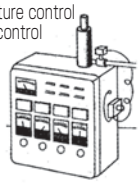


Model	A	B	C	D	E	F	G
KSC200A	26	31	5	Rc1/8	12	26	35
KSC450A	31	38	5	Rc1/4	18	33	40
KSC750A	45	49	6	Rc3/8	25	40	50
Model	H	I	J	K	L	M	N
KSC200A	8	171	25	228	ϕ 4.5	ϕ 25	ϕ 22
KSC450A	11	246	30	315	ϕ 5.5	ϕ 30	ϕ 28
KSC750A	15	249	38	343	ϕ 5.5	ϕ 38	ϕ 38

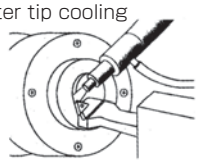
Typical applications

■ Rapid cooling of solder
■ Cooling for plastics production
■ Control box cooling
■ Anti-fogging for tracking/security cameras
■ Stitching machine needle cooling
■ Spot welder cooling
■ Cooling for added strength wire cutting
■ Resin cast cooling

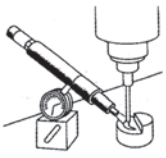
Constant temperature control for solenoid valve control boards



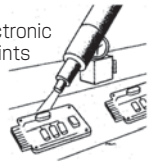
Metal tooling cutter tip cooling



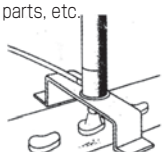
Milling · Tapping · Reaming cutter cooling



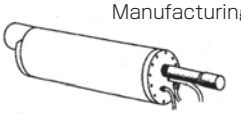
Rapid cooling of electronic component solder joints



Cooling for casted plastic parts, etc.



Manufacturing camera cooling



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

Expansion Separation Dryer "AE7"

Patented

AE7

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

Auto drain trap included
AE7

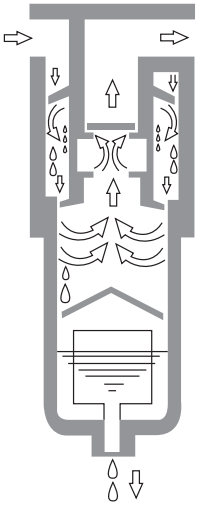
Features

☐Get dry air simply by adding the Separate Dryer to your existing air line. (Patented)
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.

☐ 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.

☐ Maintenance free!
No filter medium means no clogging. Automated drainage via auto drain trap.

Drying Process (Patented)



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. Water collected in the bowl is released via a float.

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.

Specifications / Outside dimensions (Units: mm)

Item			Model	AE7
Performance specifications	Air processing capacity		L/min	740 (at 0.49MPa)
	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 0.69MPa is 2.5℃. ※ Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32℃, 75%.) ※ Please contact us for further details.

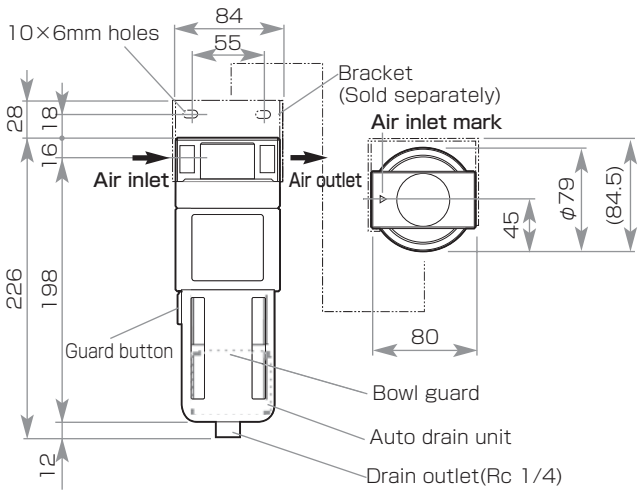
Useful air flow capacity

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

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



Automatic water and oil purge energy saving auto drain trap (Automatic drain release equipment)

Drain Trap "Solenoid Type" "Timer Type"

Patented

ADE4B

Features

- ☐ Variable drain release interval via adjustable timer
- ☐ Drain interval automatically changes due to ambient temperature for energy saving operation.
- ☐ Clogging due to sludge, etc. greatly reduced thanks to the wide mouth on the orifice of our solenoid valve.
- ☐ Special anti-freeze function that automatically shortens the time between drains during cold conditions.

ADE300

Features

- ☐ Equipped with electrostatic liquid surface sensor
- ☐ No clogging due to grime and foreign matter thanks to the wide mouth on the orifice of our solenoid valve.
- ☐ Remote operation capabilities (Equipped with operation and monitor signal lines.)

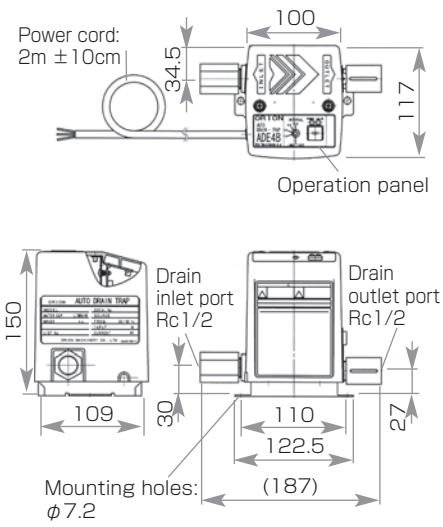
Specifications

Item		Model ADE	Timer operated	Solenoid valve operated
			4B	300
Maximum drain flow capacity		L/h	0.32L/cycle (at 0.69MPa)	440 (at 0.69MPa)
Drain holding capacity		L	—	0.3
Operable pressure range		MPa	0.25 ～ 0.98	
Operable temperature range		℃	2 ～ 40 (Should not be operated in freezing conditions)	
Processed fluid			Compressed air drain	
Drain release method			Solenoid valve, timer · temperature control	Solenoid valve, water level detection
Power specifications	Power Source		Single phase 200V 50/60Hz	
	Power consumption	W	19/16	6/5
Connections	Drain inlet		Rc1/2	
	Drain outlet		Rc1/2	
	Sludge drain port		—	G1/2
Outside dimensions (H x D x W)		mm	150 × 117 × 100	208 × (171) × 191
Mass		kg	1.2	(5)

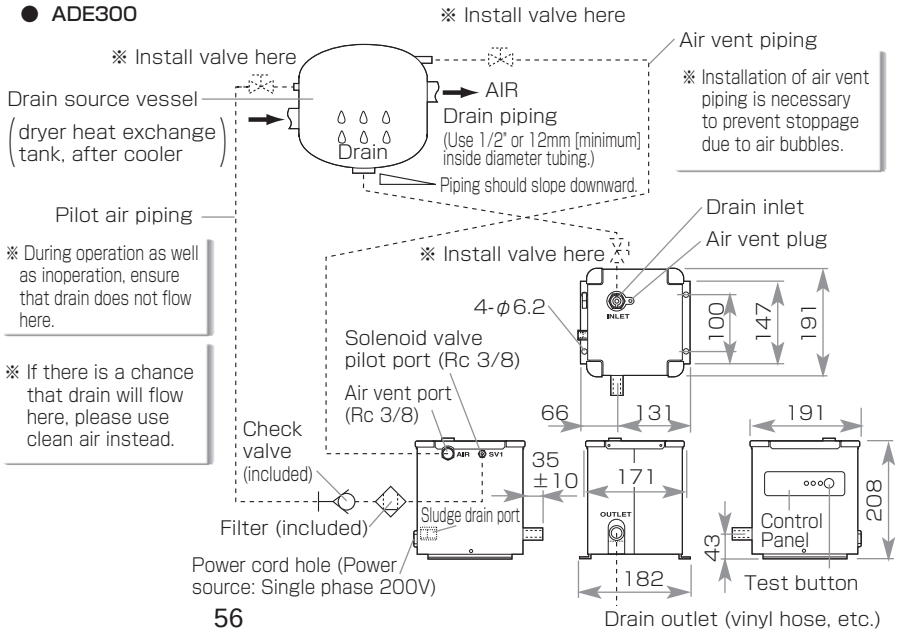
1. Indoor specifications (Operable in environment where it would not be exposed to water splash.) 2. Comes with manual drain (test button.) 3. ADE300 is equipped with external signal terminals: Normally-open contacts (closed during operation.) Warning signal will be activated when the drain does not open over a period over 2 minutes. Normally-open contacts (closed during operation) rated for loads of AC300V, 3A. 4. The ADE300 is equipped with an auto-cleaning function (drain is automatically released once every 6 hours.) 5. The ADE300 can be used as a substitute for the AD-5 (max. output: 450L/h.) 6. To prevent drain from freezing in very cold climates, an antifreeze heater may be necessary. 7. 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. 8. Piping (inlet and outlet) for the ADE4B should have an inside diameter of at least 12mm. ※ Please consult your Orion dealer for further details.

Outside dimensions (Units: mm)

● ADE4B



● ADE300



Drain Trap "Float Type, Disk Type, Motor Valve Type"

Patented

ADE-2-B/3-B
FD-1D/2/2-NC/5/6-G3/10-A
AD-5-G1

Features

- ☐ Water level detecting automatic drain release Motor valve operated (ADE-2-B · 3-B)
- ☐ Timed drain cycle release via adjustable timer (ADE-3-B)
- ☐ Drains without air loss
  Float operated (FD-1D · 5 · 10-A)
- ☐ Adjustable timed drain release
  Disc operated (AD-5)

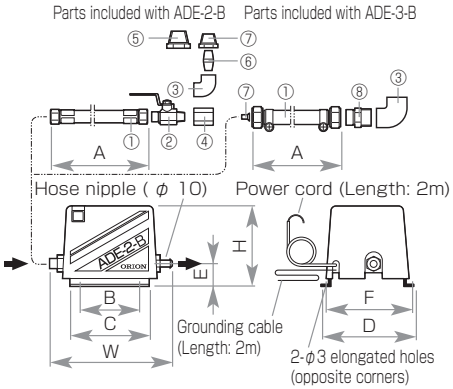
Specifications

Item			Model	Motor valve operated		Float operated					Disc operated
				ADE-2-B	ADE-3-B	FD-1D-G3	FD2-G3/ FD2-NC-G3	FD-5-G3	FD6-G3	FD-10-A	AD-5-G1
Performance specifications	Maximum drain flow capacity ※	Drain (water only)	cm^3/cycle	390		7	10	10	30	80	450L/h
		Air only	L/cycle	16		—					approx. 0.3
	Drain release cycle time		min.	60 (fixed)	2, 5, 10, 20, 30 (adjustable)	—					
	Minimum drain release time		sec.	3.6/3.0		—					
Compressed air pressure range (gauge pressure)			MPa	0.05 ～ 1.47	0.05 ～ 0.98	0.1 ～ 1.0/ 0.15 ～ 1.0		0.05 ～ 0.98	0.1 ～ 1.0	0.20 ～ 0.98	0.29 ～ 0.98
Operable temperature range			℃	2 ～ 40		2 ～ 60					
Processed fluid				Compressed air							
Drain release method				Motor valve timer, Water level detection control		Float operated					Disc operated
Power specifications	Power Source			Single phase 200V 50/60V		—					
	Power consumption		W	5 or lower		—					
Connections	Inlet			Includes 1/2, 3/8, 1/4 fittings	Rc1/2						
	Drain outlet			ϕ 10 hose nipple		Rc1/4	ϕ 4	Rc1/4	ϕ 4	Rc3/8	Rc1/2
Mass			kg	1.0		0.4	0.3	0.5	0.45	1.0	1.7
Outside dimensions (H x D x W)			mm	105 × 126 × 170	105 × 126 × 175	Outside diameter: 62 × length: 159	□63 × length: 178	Outside diameter: 80 × length: 173.5	□80 × length: 201	Outside diameter: 96 × length: 193	Outside diameter: 86 × length: 1988

※ 1 Drain conditions: Air pressure (gauge pressure): 0.69MPa. ※ Adjustable timer is preset to 20 minutes. (Motor valve type) 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.

Outside dimensions (Units: mm)

● ADE-2-B/3-B

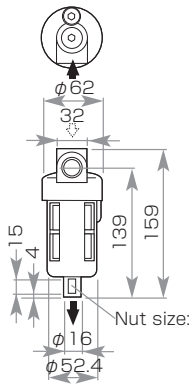


■ Parts included with the ADE		ADE-2-B	ADE-3-B
①	Drain hose set	1/4B	1/2 1300L
②	Ball valve	1/4 400L	—
③	Elbow	1/4B	1/2B
④	Socket	1/4B	—
⑤	Bushing	1/2B × 1/4B	—
⑥	Barrel nipple	1/4B	—
⑦	Bushing	3/8B × 1/4B	ϕ 6 × ϕ 3
⑧	Connection nipple	—	R1/2 × G1/2

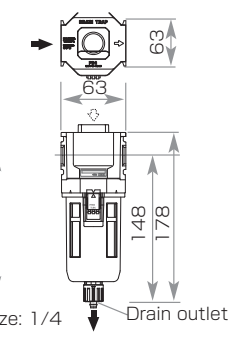
■ ADE Dimensions

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

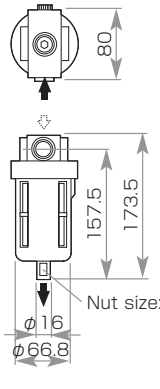
● FD-1D



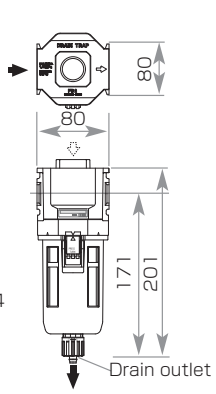
● FD2/NC



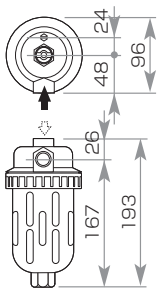
● FD-5



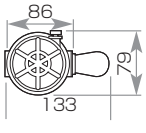
● FD-6



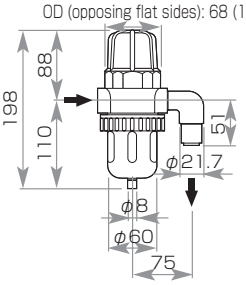
● FD-10-A



● AD-5



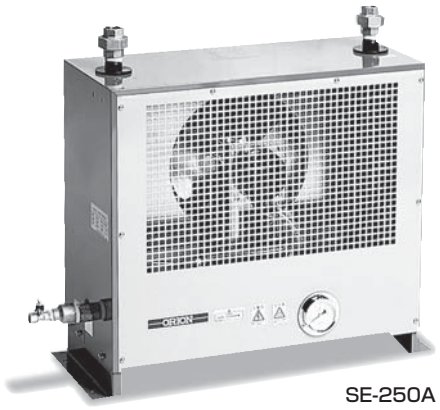
OD (opposing flat sides): 68 (12 sided)



The Optimum Aftercooler for Supplementary Cooling of Compressed Air (Compressed air cooling equipment)

Air-Cooled Aftercooler "SE"

Air-Cooled model SE-250A/750
Air processing capacity: 1.7/6.9m^3/min
Maximum inlet temperature: 80℃
Suitable compressor: 13/37kW



SE-250A

Features

☐ Wide pitch condenser for easy maintenance

☐ Corrugated fins

Efficient heat transfer and a low profile heat exchanger along with a high cooling surface area that demonstrates unsurpassed cooling power

☐ Special fin design for consistent ventilation

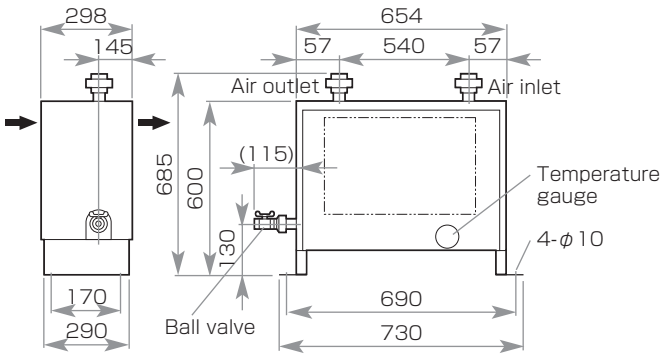
Specifications

Item		Model SE-	250A	750
Air processing capacity		m^3/min	1.7	6.9
Air inlet conditions	Maximum inlet air temperature	℃	80	
	Pressure (gauge pressure)	MPa	0.69	
	Ambient temperature	℃	32	
Outlet air temperature		℃	40	
Maximum operating pressure (gauge pressure)		MPa	0.98	
Outside dimensions	Height	mm	685	790
	Depth	mm	298	350
	Width	mm	730	1170
Mass		kg	28	60
Power specifications	Voltage (50/60Hz)	V	Single phase 100	Three phase 200
	Power consumption (50/60Hz)	W	63/76	300/270
	Electric current (50/60Hz)	A	0.7/0.8	1.08/0.98
Cooling output		W	25	85 × 2
Air inlet/outlet connection			1B・25A union fitting	2B・50A union fitting
Drain port size			Rc1/2	R1/2

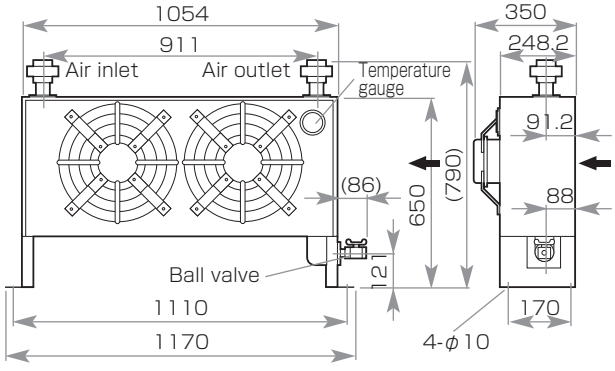
※ Please contact us for guaranteed performance specifications. ※ Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32℃, 75%.) ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above.

Outside dimensions (Units:mm)

● SE-250A



● SE-750



Aftercooler for heatless dryers (Compressed air cooling equipment)

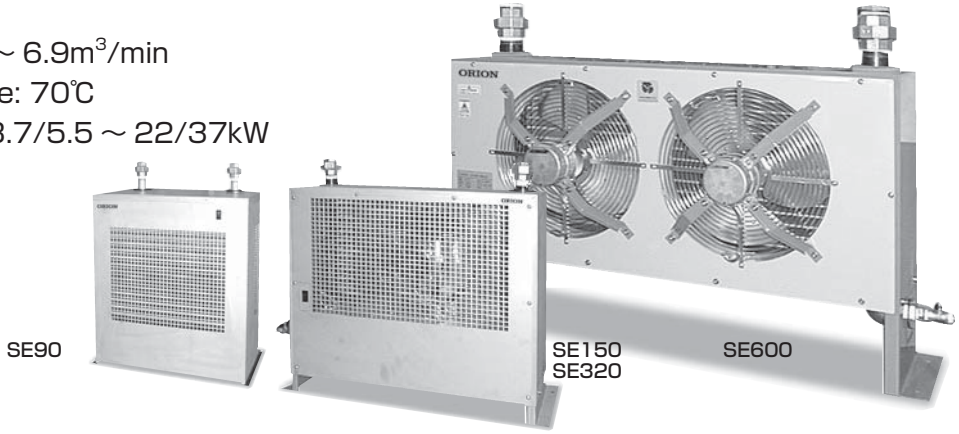
Air-Cooled Aftercooler "SE"

Built to order

Air-Cooled SE90/150/320/600
Air processing capacity: 1.0 ~ 6.9m^3/min
Maximum inlet air temperature: 70℃
Suitable screw compressor: 3.7/5.5 ~ 22/37kW

Features

☐ Wide pitched condenser, easy to maintain



Specifications

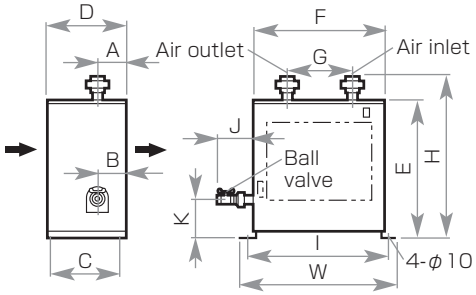
Item		Model SE	90	150	320	600
Air processing capacity		m^3/min	1.0	1.7	3.7	6.9
Air inlet conditions	Maximum inlet air temperature	℃	70			
	Pressure (gauge pressure)	MPa	0.69			
	Ambient temperature	℃	32			
Outlet air temperature		℃	Ambient temperature +10℃			
Maximum operating pressure (gauge pressure)		MPa	0.98			
Outside dimensions	Height	mm	648	685	666	773
	Depth	mm	300	298	333	350
	Width	mm	440	730	770	1170
Mass		kg	19	28	34	60
Power specifications	Voltage (50/60Hz)	V	Single phase 200	Single phase 100	Single phase 200	Three phase 200
	Power consumption (50/60Hz)	W	30/40	65/64	150/180	220/270
	Electric current (50/60Hz)	A	0.15/0.20	0.8/0.7	0.90/0.95	1.08/1.05
Cooling output		W	25	25	85	85 × 2
Air inlet/outlet connection			1/2B union fitting	1B union fitting	11/2B union fitting	2B 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 40)			

Air processing capacity ≧ Useful air flow capacity / 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

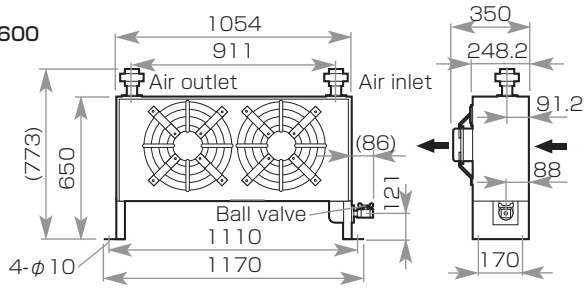
※ Processing air capacity is calculated based on compressor intake conditions (atmospheric pressure, 32℃, 75%.) ※ Please contact us for guaranteed performance specifications. ※ When using as an aftercooler for the QSQ dryer, always install a Super Drain Filter to the outlet of the cooler. ※ A separate 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℃.

Outside dimensions (Units: mm)

● SE90
● SE150
● SE320



● SE600



Model	H	D	W	A	B	C	E	F	G	I	J	K
SE90	(648)	300	440	206	206	194	545	396	290	420	(90)	150
SE150	(685)	298	730	145	145	170	600	654	540	690	(115)	130
SE320	(666)	333	770	142	142	270	568	694	430	730	(140)	130

The ideal aftercooler for initial cooling of compressed air when ambient temperatures are high. (Compressed air cooling equipment)

Water-Cooled Aftercooler "TH"

Built to order

Water-Cooled TH-1010WG-B2V ～ 7020WG-B2V
Air processing capacity: 1.7 ～ 393m^3/min
Typical cooling water flow rate: 0.9 ～ 184.8m^3/h
Compatible with air compressors from 13 ～ 1500kW

TH-2010WG-B$_2$V　TH-3012WG-B$_2$V

Features

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

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			25A socket	40A socket	10K-50A flange	10K-80A flange	10K-100A flange	
Cooling water inlet/outlet connection			15A socket		20A socket	32A socket	50A socket	
Outside dimensions	Column diameter	mm	ϕ 114		ϕ 165	ϕ 216	ϕ 318	
	Height	mm	1370	1570	1395	1538	1710	1910
Mass		kg	approx. 45	approx. 50	approx. 90	approx. 130	approx. 230	approx. 250

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			10K-125A flange	10K-150A flange		10K-200A flange	10K-250A flange	10K-300A flange
Cooling water inlet/outlet connection			65A socket	5K-80A flange	5K-100A flange		5K-125A flange	5K-200A flange
Outside dimensions	Column diameter	mm	ϕ 406			ϕ 508		ϕ 712
	Height	mm	2286		2486	2636	2936	3280
Mass		kg	approx. 540		approx. 600	approx. 820	approx. 860	approx. 1700

※ Maximum working pressure: 0.97MPa. Conditions of compressed air at inlet: pressure: 0.69MPa, temperature: 80℃. ※ External antirust coating. ※ 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.

The Optimum Aftercooler for Supplementary Cooling of Compressed Air (Compressed air cooling equipment)

Water-Cooled Aftercooler "THP"

Built to order

Water-Cooled THP2300A,3800A,4900A
Air processing capacity: 23～49m^3/min
Maximum inlet temperature: 80℃
Compatible with air compressors from 120～240kW

Features

☐ This series built as the perfect match for our Inverter Dryers.
☐ Space saving package design
☐ Comes standard with built-in temperature gauge.

System Innovations

Innovative 20 ㎥ /mincapable air system

☐ Dryer requirements without a water-cooled aftercooler:
For compressor discharge air temperatures of 55℃ (40℃ ambient temperature) RAXE6000A or 4900A-W models would be indicated.

☐ Dryer requirements WITH a water-cooled aftercooler:
Cool air to 40℃ with an aftercooler and get by with models RAXE2300A or 2300A-W.

☐ Innovative Merits

● Allows dryer choices of 3 classes down for air-cooled models and 2 classes down for water-cooled dryers.
(Lower startup costs by employing the THP2300A and RAXE2300A)

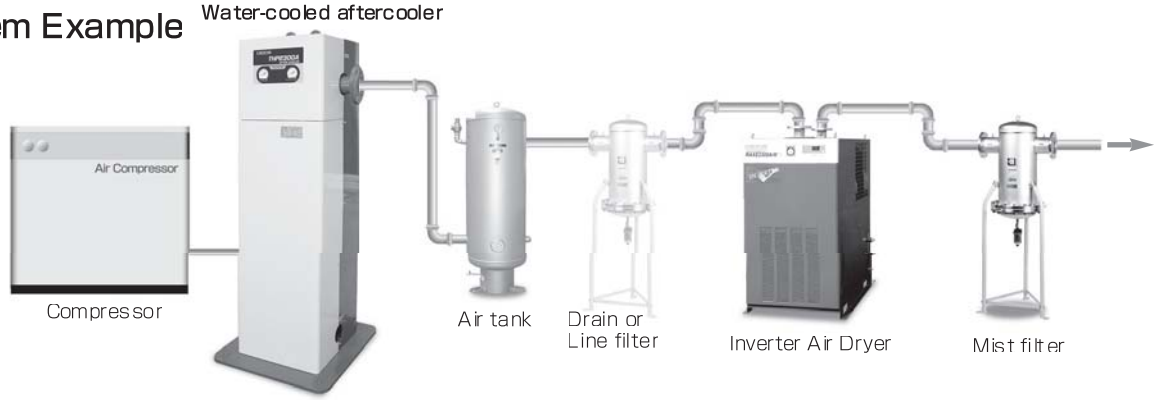
● Savings in running costs of 3.0kWh for air-cooled models and 0.8kWh for water-cooled models.

Specifications

Item \ Model THP			2300A	3800A	4900A
Air processing capacity		m^3/min	23	38	49
Inlet air pressure		MPa	0.69		
Inlet air temperature		℃	60		
Cooling water flow rate		℃ · m^3/h	32 · 4.8	32 · 7.8	32 · 10.2
Outlet air temperature		℃	40 or below		
Maximum inlet air temperature		℃	80		
Compressed air pressure range (gauge pressure)		MPa	0.25～0.98		
Max. operable cooling water pressure		MPa	0.49		
Outside dimensions	Height	mm	1500	1700	1800
	Depth	mm	410		
	Width	mm	400		
Mass		kg	200	220	320
Air inlet/outlet connection			JIS 10K		
			20A flange	80A flange	100A flange
Cooling water inlet/outlet connection			Rc1 1/2		Rc2

※ Air processing capacity calculated based on conditions of air entering air compressor. (atmospheric pressure, 32℃, 75%) ※ Includes Auto Drain Trap (FD-10A)

System Example



Stainless Steel Air Tank, Offers Better Response to Pressure Fluctuations (Compressed air tank) (Subject to JBA 2nd class pressure vessel regulation)

Stainless Steel Air Tank "OAT"

Built to order

OAT60-S ～ 1000-S
Volume: 65 ～ 1090L
Compatible with air compressors from 6 ～ 37kW

OAT100-S　　OAT400-S

Features

☐ Tank built with SUS304 grade stainless steel
Coated tank (metallic silver)

☐ Perfect for industries that shun rust in their environment, such as food, medical, semiconductor industries, etc.

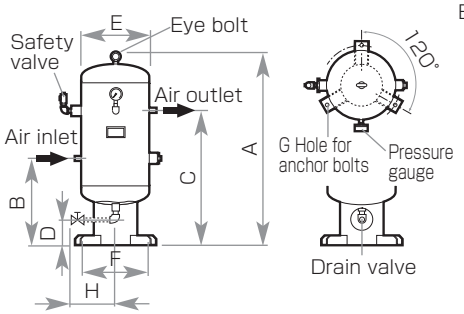
Specifications

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	1090L
Maximum working pressure	MPa	1.08					0.98				
Maximum inlet air temperature	℃	80									
Safety valve release pressure	MPa	1.19					1.08				
Connections Inlet and outlet		1/2B		1B			1 1/2B				2 1/2B
Pressure gauge		1/4B × ϕ 60 × 1.6MPa					3/8B × ϕ 75 × 1.6MPa				
Drain valve		1/2B									
Safety valve		1/2B		1B			11/2B				2B
Air valve		1/2B		1B			Optional equipment				
Cleaning access hole		—					100A				
Mass	kg	45	50	60	100	140	200	250	280	360	550

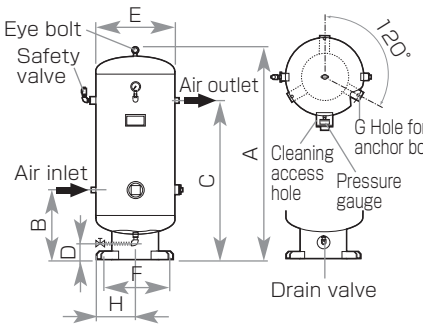
※ Optional auto drain trap. ※ Please contact us for guaranteed performance specifications. ※ Pressures listed are gauge pressures. ※ 2000L model also available by special order. ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above. ※ The material of the tank leg is the steel sheet of SS400.

Outside dimensions (Units: mm)

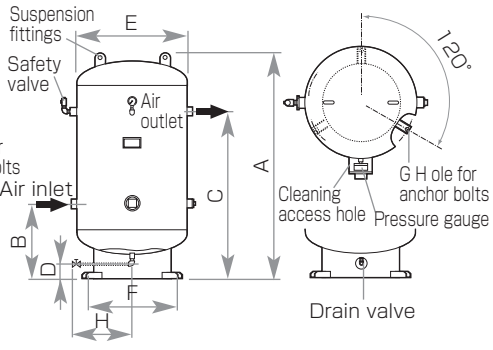
● OAT60-S～250-S



● OAT300-S～750-S



● OAT1000-S



Model	A	B	C	D	E	F	G	H
OAT60-S	1000	448	698	150	ϕ 350	ϕ 400	3- ϕ 15	320
OAT80-S	1210		908					
OAT100-S	1410	498	1058					
OAT150-S	1612	510	1250		ϕ 400	ϕ 520		
OAT250-S	1661	529	1279		ϕ 500			
OAT300-S	1663	550	1250		ϕ 600	ϕ 600	3- ϕ 20	
OAT400-S	1963		1550					
OAT500-S	2377		1950					
OAT750-S	2157	580	1700		ϕ 750	ϕ 800		510
OAT1000-S	1935	657	1457		ϕ 950	ϕ 920		

Offers Better Response to Pressure Fluctuations (Compressed air tank) (Subject to JBA 2nd class pressure vessel regulation)

Air Tank "MST"

MST39A-100 ～ 3000C-90
Volume: 39 ～ 3000L
Compatible with air compressors from 6 ～ 75kW

The optimum solution for the following air systems:

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

MST230A-100

MST600C-100

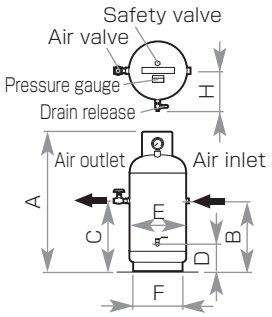
Specifications

Item \ Model	MST	39A-100	95C-100	160C-100	230A-100	400C-100	600C-100	800C-90	1000C-90	1200C-90	1500C-90	2000C1-90	3000C-90
Volume	L	39	97	162	227	395	595	799	987	1200	1498	1980	3000
Maximum working pressure	MPa	0.98						0.88					
Maximum inlet air temperature	℃	75											
Safety valve release pressure	MPa	1.08						0.98					
Connections Inlet and outlet		1/2B		1B		1 1/2B	2 1/2B						3B
Pressure gauge		1/4B × 50	1/4B × 60			3/8B × 75							
Drain valve		1/4B				1/2B							
Safety valve		1/4B		3/8B		1/2B		1B					
Air valve		1/2B		1B		Optional equipment							
Mass	kg	24	50	75	116	230	305	365	445	480	570	731	1155

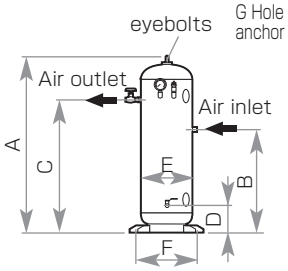
※ Optional auto drain trap. ※ Please contact us for guaranteed performance specifications. ※ Models MST-1500B-90 and above require special shipping requirements (and additional shipping fees.) ※ Please contact ORION regarding custom built models of specifications outside the ranges listed above.

Outside dimensions (Units: mm)

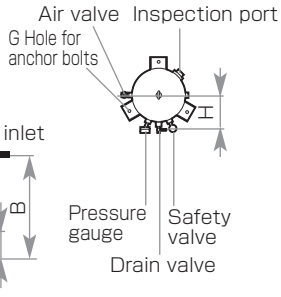
● MST39A-100

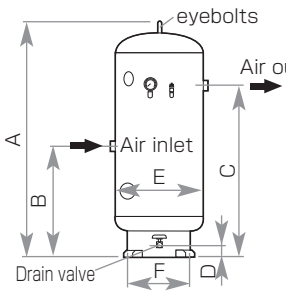


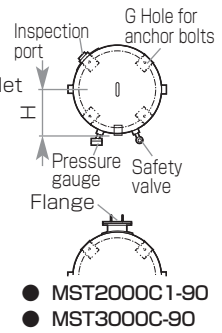
● MST95C-100/160C-100/230A-100



● MST400C-100/600C-100/800C-90/1000C-90
● MST1200C-90/1500C-90/2000C1-90/3000C-90







● MST2000C1-90
● MST3000C-90

Model	A	B	C	D	E	F	G	H
MST39A-100	770	382	382	149	ϕ 304	ϕ 267.4	—	207
MST95C-100	1190	700	900	183	ϕ 350	ϕ 460	3- ϕ 15	240
MST160C-100	1450		1100	187	ϕ 406	ϕ 550		268
MST230A-100	1531	800	1200	195	ϕ 470	ϕ 610		300
MST400C-100	1380		1000	120	ϕ 718	ϕ 630	4- ϕ 20	370
MST600C-100	1900	900	1400					
MST800C-90	1783		1300	125	ϕ 868	ϕ 775		
MST1000C-90	2106	1000	1600					
MST1200C-90	2070		1500	120	ϕ 968	ϕ 900		470
MST1500C-90	2490		1800					
MST2000C1-90	2951		2000	125	ϕ 1018			
MST3000C-90	2766			160	ϕ 1324	ϕ 1200		630

Easy temperature and humidity monitoring

Dew Point Monitor "MG"

MG40/MG40A-P

Humidity display:

0.1 ～ 99.9%. 1/10% resolution (MG40)

0.1 ～ 40.0%. 1/10% resolution (MG40A-P)

Dew point display:

−60.0 ～ +40.0℃, 1/10 resolution.

Temperature display:

−20.0 ～ +80.0℃ 1/10 resolution.

Features

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)

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)			−60.0 ～ +40.0℃, 1/10 resolution. ※1, 2 (Displays "L" below −60℃ and "H" over +40℃.)	
	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	—	φ 4 (one-touch fitting)
	Mass		kg	2.7	2.9
	External signal connections	Analog output		Dew point: 0 ～ 5V DC (−60 ～+40℃)	
				Humidity: 0 ～ 5V DC (0 ～ 100%)	Humidity: 0 ～ 2.5V DC (0 ～ 50%)
				Temperature: 0 ～ 5V DC (−20 ～+80℃)	
		Alarm output		Dew point (upper limit) / humidity (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.

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.

Dedicated refrigerated air dryer dew point monitor for monitoring dew point and temperature.

Dew point monitor "MGR"

MGR20

Dew point display: −30.0 ～+20.0℃ 1/10 resolution.

Temperature display: −20.0 ～+80.0℃ 1/10 resolution.

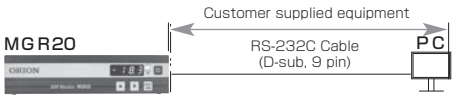
MGR20

Features

- ☐ Measurement and digital display of dew point (at atmospheric pressure) and temperature of your refrigerated dryer output.
- ☐ Comes equipped with analog outputs (one set of terminals.)
- ☐ Low profile and compact. (Just 62% of the size of our MG40A-P model.)
- ☐ Up to 8 monitors can be connected and operated via PC. (Interface function optional)

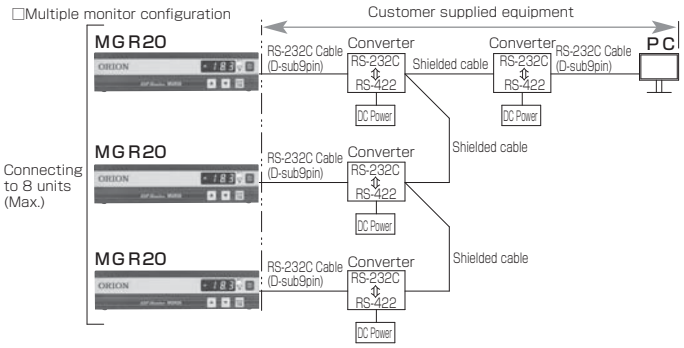
■PC Interface Model

☐Single monitor configuration



■Software screenshot * Software included in optional interface kit.

☐Multiple monitor configuration



Note 1: For use with a PC, please request the optional Interface Kit.
Interface Kit includes PC software and serial interface.
Customer supplies required wiring between the MGR20 monitor and PC.

Specifications

Item			Model	MGR20
Main unit specifications	Dew point display: 4 digit LED display (1 digit for sign)			30.0 ～ +20.0℃, 1/10 resolution. ※ 1 (The following will be displayed for out-of-range conditions: Below −30℃ : "L", above +20℃ : "H", sensor disconnect or short: "----")
	Temperature display: 4 digit LED display (1 digit for sign)			−20.0 ～ +80.0℃, 1/10 resolution. ※ 1, 2 (The following will be displayed for out-of-range conditions: Below −20℃ : "L", above +80℃ : "H", sensor disconnect or short: "----")
	Operable ambient temperature range		℃	2 ～ 40
	Operable ambient humidity range		% RH	0 ～ 85 (no exposure to condensation)
	Storage temperature range		℃	2 ～ 55℃ /45 ～ 85%
	Power Source		V	AC200 ±10%
	Power consumption		W	20
	Outside dimensions	Height	mm	57
		Depth	mm	205
		Width	mm	242
	Piping connection size		mm	φ 4 (one-touch fitting) ※ 3
	Mass		kg	2.9
	External signal connections	Analog output		Dew point: 0 ～ 5V DC (−30 ～+20℃) ※ 4, Temperature: 0 ～ 5V DC (−20 ～+80℃)
Sensor specifications	Fluids that can be measured			Compressed air (free of water droplets, oil, and dirt, or air that has been processed through a filter.)
	Operable pressure range		MPa	0.2 ～ 0.98
	Temperature gauge range		℃	2 ～ 50
	Temperature gauge accuracy		℃	±1
	Calculated dew point range		℃	−30 ～+20 ※ 5,6
	Calculated dew point precision		℃	±5 ※ 7
	Sampling flow rate		L/min	3 ～ 5 By set orifice purge ※ 8

※ 1 Pressing the display switch alternates display between dew point and humidity. ※ Dew point temperature display is set for atmospheric pressure (ADP.) ※ 2 Dew points to be measured should be below atmospheric pressure. If the sensor tip becomes wet due to condensation from being cooler than ambient temperature it may affect the sensor connection and output. ※ 3 Please use piping that has low water absorption properties. Fluoropolymer tubing: PTFE, PFA, etc., metallic piping: copper, stainless steel, etc, and nylon tubing etc., have high water absorption properties and so are not recommended for use with this equipment. ※ 4 When shipped, the analog output changes according to the the dew point/temperature select switch. (Changeable via user setting.) ※ 5 In sub-freezing temperatures (as measured by the temperature gauge) dew point measurements will not indicated the actual dew point. Numbers are for reference use only. ※ 6 Displayed dew point value is computed internally and assumes the following conditions: a temperature range of 0 ～ 50℃ and a humidity range of 0.1 ～ 40.0%RH. A display of "----" indicates conditions outside these ranges or that the sensor is not properly connected or is shorted. ※ 7 Number listed is the highest precision capable by the device. Dew point precision can be affected by the age of the sensor. Regular calibration is required. (Yearly calibration is recommended.) ※ 8 Sampled air will be discharged from the main unit. ※ Dew point temperature display is set for atmospheric pressure (ADP.)

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

Digital Differential Pressure Gauge "DGE70"

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

Specifications

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

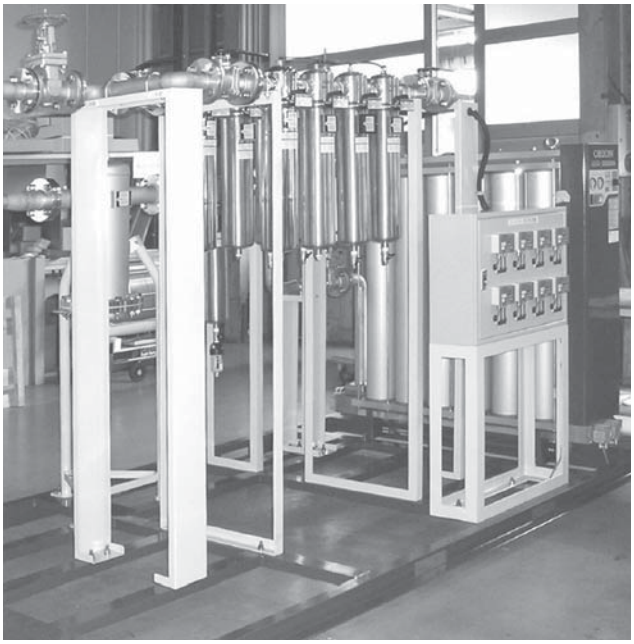
Specifications

Item ＼ Model		DGE70
Pressure range	MPa	0 ～ 1
Greatest permissible pressure	MPa	2
Measured differential pressure range (Δ P)		−1 ～ 1MPa (Δ P = P1 − P2)
Power Source		12 ～ 24VDC ± 10%　60mADC
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		490g (main unit)

※ 1　Optional : Analog 1 ～ 5V (DC) /4 ～ 20mA

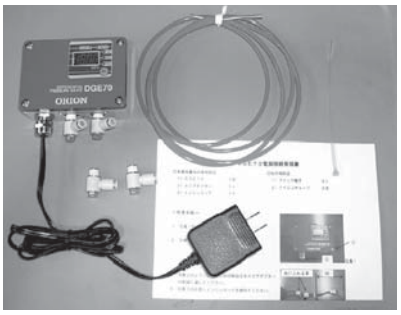
Sample Applications

Instrument panel with multiple differential pressure gauges installed



Digital Differential Pressure Gauge Set

Contents of digital differential pressure gau



Item	Part Detail	Qty
Digital differential pressure gauge	DGE70	1
AC adaptor	AC100V → DC24V (included)	1
Nylon tubing	Nylon, L2000	2
One-touch fitting	KQ2V04-01S (Universal elbow)	4
Nylon cable ties	Heat resistant type	1
Wiring Installation Guide	A4 Sheet	1

Optimum filter element pressure management (differential pressure gauge)

Differential Pressure Gauge "DG / DGX" Element Life Indicator

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


DG-50

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)	DGX-50 (B)
Maximum operating pressure (gauge pressure)		MPa	1.0	1.6	1.0	1.6
Differential pressure display range (gauge pressure)		MPa	0 ～ 0.15			
Connection			R1/4			
Outside dimensions (outside diameter x depth)		mm	ϕ 70 × 43			
Mass		kg	0.5			
Included parts	Nylon tubing		O.D.: ϕ 4mm × L1000mm			
	Straight coupler		R1/4 × ϕ 4mm (for tubing)			
	Elbow coupler		R1/4 × ϕ 4 (for tubing)		M5 × ϕ 4 (for tubing)	R1/4 × ϕ 4 (for tubing)
Applicable model	LSF- MSF- KSF- DSF-		2700C1,3200C1,4000C1, 5000B1,6000B1,7700B1, 10300B,12900B,15500B, 20700B,31800B	75B 150B 200B 250B ※ 75B not on KSF models.	400-1,700-1,1000-1 1300-1,2000-1	—
	LFH MFH KFH DFH		—	—	—	600,900,1400,1900,2900

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

Element Life Indicator

Indicator Lamp That Tells When Filter Element Needs Replacing
Super Filter
Comes standard on models MSF400-1 and above
(Does not work with models 250B and below.)
Available as optional equipment on models
LSF/KSF/DSF400-1 models 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 around 8,000 hours.

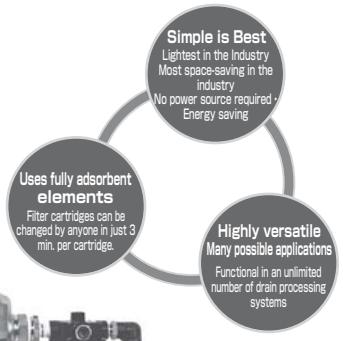
Element Life Indicator

Pico-Drain® Oil and Water Separation from Compressed Air Condensate (Filter Type Condensate Processing Equipment)

Filter Type Drain Processing Equipment - Pico-Drain® "ODF5"

ODF5-W1/ODF5-W2

A New Concept in Ecological Friendliness (No Electricity Required, Lightweight, Space Saving, Energy Saving)
Concentration After Processing: 5mg or less (of hexane extracts)
Works with Screw or Reciprocal Compressors up to 22kW



Features

☐ No Electricity Required! And therefore Light Weight, Space Saving, Energy Saving.

Thanks to our non-electric design, the main unit weighs in at only 10kg. (ODF5-W1 model)
Can be wall mounted, thus requiring zero floor space.
Running cost is just ¥6.3/L.

☐ 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.

☐ 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 compressor (estimate)		kW	22kW 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 0.98MPa 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)			φ 12 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

Note: Filter life depends on type of compressor oil used as well as specifics of drain being processed. Do not use to process oil collected from oil mist removal filters – please process such oil separately. ※ 1 When used with the optional Anti-freeze Unit Assembly (two 50W specialized heaters), the allowable ambient operating temperature range is: −5～40℃ . ※ 2 Based on an average drain oil concentration of 125mg/L (ideal figure.) The capacity when used with a reciprocal 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. Do not use the Pico-Drain filters 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 5m, and should not have vertically rising segments.

ODF5-W1

1. Inlet piping should be φ12 tubing, have a maximum length of 10m, and have less than 2m 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 is possible.

ODF5-W2

1. Inlet piping should be φ12 tubing, have a maximum length of 10m, and have less than 0.5m 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 5mg/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.

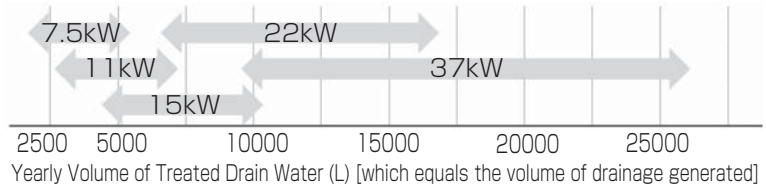
Working Principles (ODF5-W2)

Drain water is discharged via the pressure from attached drain trap (AD5) when the drain trap is activated.

Estimated Drain Water Volumes by Compressors

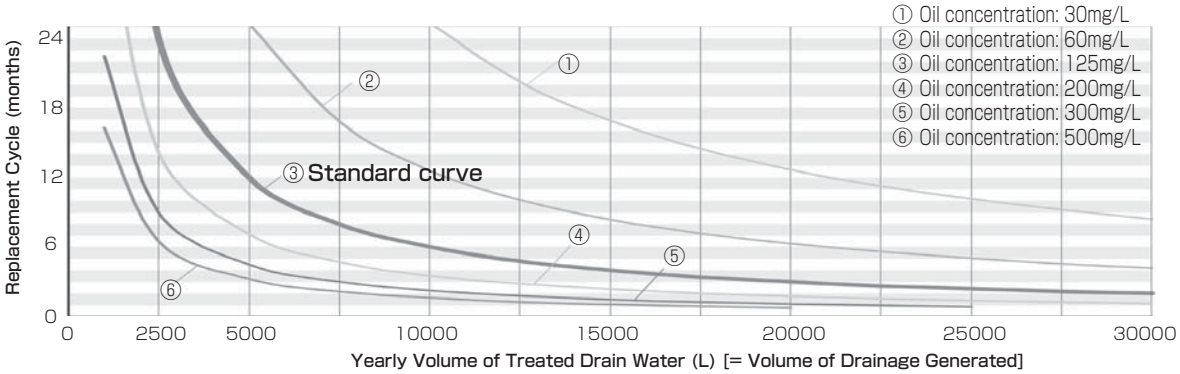
※ The values for the arrows below are calculated based on the conditions listed to the right of the chart.
The volume of drainage to be processed per year (that is, the amount of drain generated per year) can change depending on the operating conditions of the compressor, load rates, and operating environment (temperature and humidity.)

Range of Drainage Volume Based on Compressor Output



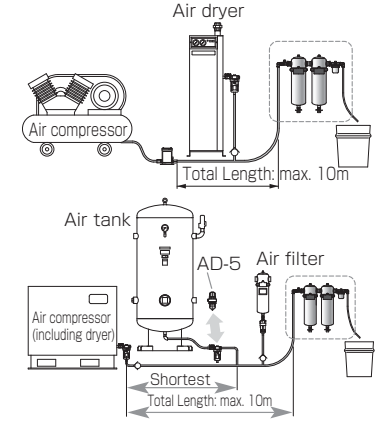
○ Compressor operating conditions:
10 hours/day, 20 days/month (left side of arrow) ～ 20 hours/day, 30 days/month (right side of arrow)
○ Relative compressor load: 60%
○ Intake conditions: 30℃ 60%RH
○ Conditions after having passed through a dryer:
Air pressure: 0.69MPa, dew point: 10℃ .

Filter Element Replacement Estimates



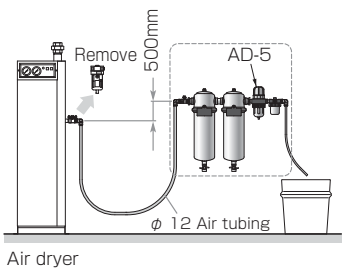
Sample Applications

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)



Optional Equipment

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

Self Standing Assembly

Oil and Water Separation from Compressed Air Condensate (Compressed air drain processing equipment)

Drain Processing Equipment - 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 5mg/L (hexane content)

Applicable compressors: Screw type, 37kW and below.

Features

☐ 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

☐ 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.

☐ 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 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 125mg / L.(Theoretical) ※ 2 These are recommended models.) Please consult your dealer for further information.

Installation Notes

1. Do not use the Pico-Drain filters 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 10m or shorter, and if using a tubing, use Φ12 nylon tubing.
5. Output piping should be 1/4B or larger and 5m in length or shorter.
6. When implementing common drain piping, make sure pipes for each drain trap are fitted with their own check valve.

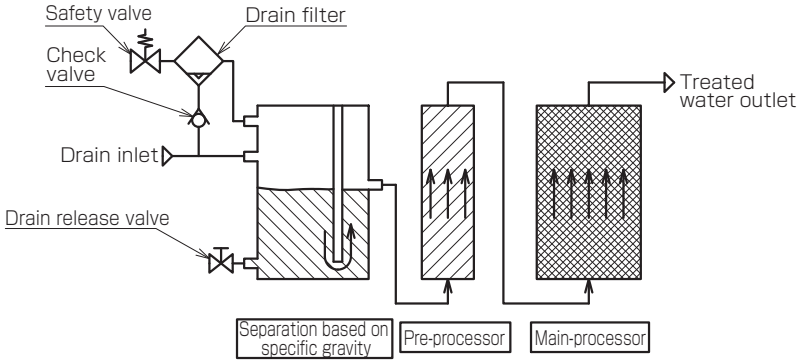
Construction and Working Principles

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

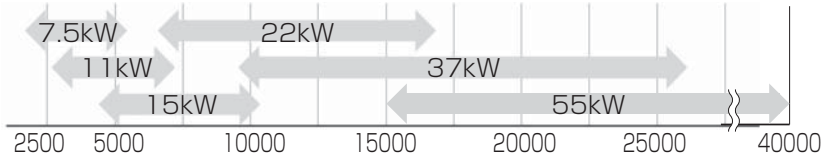
Drain water is discharged via pressure from the drain trap (solenoid type or disc type) which is installed before this filter.



Estimated Drain Water Volumes by Compressors

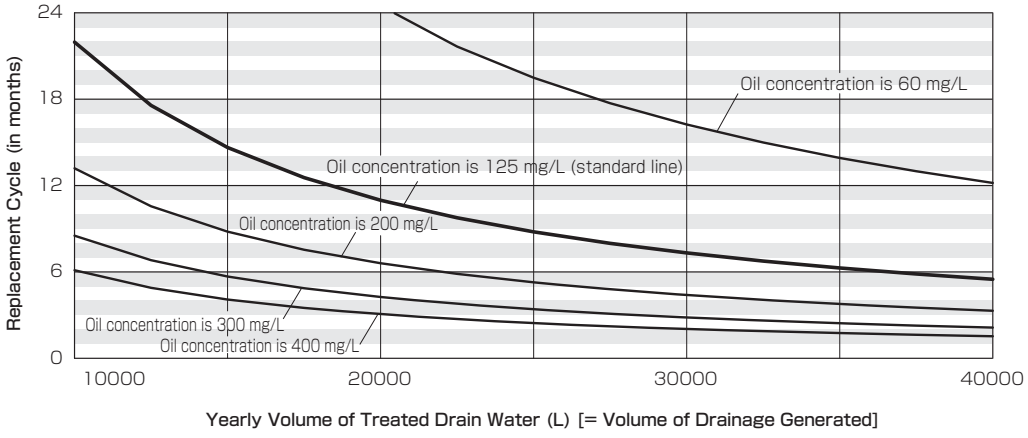
※ The arrows in the following diagram are estimates based on calculations using the conditions noted below. The yearly quantity of treated drain water (= yearly drain output) will differ depending on the working conditions of the compressor, load factor, and the surrounding environment (temperature and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

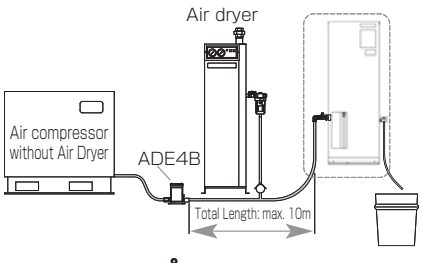
Range of Drainage Volume Based on Compressor Output

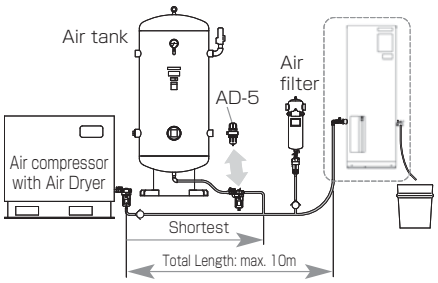


○ Compressor operating conditions:
10 Hr/day, 20 days/month (left side of arrow)
～ 20 Hr/day, 30 days/month (right side of arrow)
○ Relative compressor load: 60%
○ Intake conditions: 30℃ 60%RH
○ Conditions after having passed through a dryer: Air pressure: 0.69 MPa, dew point: 10℃.

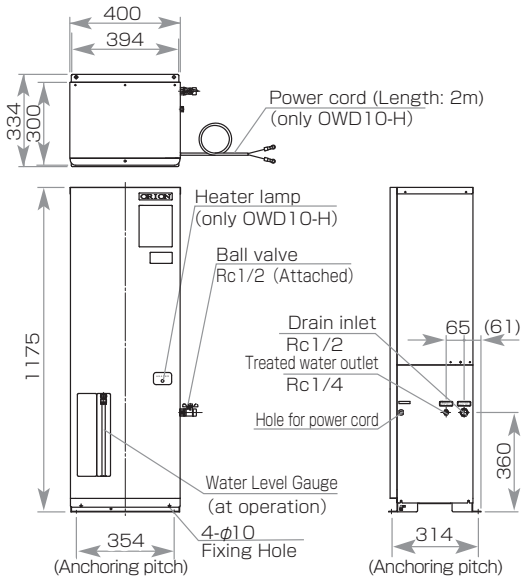
Adsorption tank replacement estimate







※ One drain trap should be replaced for discharge use.



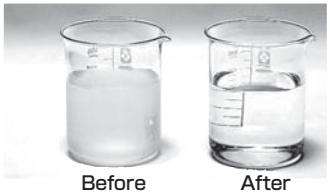
Oil and Water Separation from Compressed Air Condensate -- Drain Master® (Compressed air condensate processing equipment)

Drain Processing Equipment - Drain Master® "OWC / OWM" Patented

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 5mg/L (hexane content)
Applicable compressors: Screw type, 720kW and below.

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



Before processing. After processing.

OWC75
Medium duty

OWM30
Heavy Duty

Features

OWC75 · 150
OWC75-H · 150-H (Built to cold-climate specifications)

1. High efficiency filter material
   Compatible with screw and reciprocal compressors. Separates out mineral oils, synthetic oil emulsions, yielding clean water. (Hexane concentration less than 5mg/L)
2. New separation technology
   (OWC75 · 150 · 75-H · 150-H)
   - Static removal → Bubbles bring up contaminants → Contaminants collected.
   - Can also treat condensate from medium duty compressors.
3. Energy saving operation (OWC75 · 150 · 75-H · 150-H)
   75-81% reduction compared with previous models.
4. Easy filter replacement
   - Cartridge type for easy on-site filter replacement. (OWC Series)
5. Comes standard with throughput monitor and alarm display functions.
   (OWC Series)
   - Digital monitor of total drain throughput so you know when filter replacement will be required.
   - Multiple alarm indicators.
6. Cold climate rated models available
   (OWC75-H · 150-H)
   Can operate in temperatures as low as −10℃ without drainage freeze.

※ OWM Series models are available by special order.

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.

Specifications

● OWC75・150 (Middle), OWC75-H・150-H (For cold district area)

Item \ Model OWC				75	75-H	150	150-H
Average processing capacity			L/h	8		16	
Total throughput ※ 1			L	29,000		58,000	
Concentration after processing			mg/L	5 or less (of hexane extracts)			
Applicable 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 1.57MPa 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 compressor oil as well as drain configuration. ※ 1 Total processing capacity is simulated based on yearly average concentration 150mg/L also max. 300mg/L. ※ Please contact ORION the detail of applicable 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.

Specifications

● OWM30・60・90・160 (Large)

Item \ Model OWM			30	60	90	160
Average processing capacity		L/h	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 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 peration: 1230)	880 (during peration: 2150)	1270 (during peration: 3060)	1770 (during peration: 4250)
Drain inlet		B	Rc3/4	Rc1		Rp1
Treated water outlet						

Note) Filter life depends on type of compressor oil as well as drain configuration. ※ 1 Total processing capacity is simulated based on yearly average concentration 150mg/L also max. 300mg/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 compressor to be used. ※ Please contact ORION regarding custom built models of specifications outside the range listed above.

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
   Drainage that is to be disposed of must have an oil (hexane extracts content) concentration level of less than 5mg/L.
3. Concentration
   On average, drainage from screw type compressors have an oil concentration of 30 to 50mg/L.

Advantages of our separators (Calculations based on our medium-duty OWC models.)

Vastly reduced drainage treatment costs.
Comparison of costs to treat 100L/day of drainage using the Drain Master or having the drainage managed by a 3rd party industrial waste company:

3rd party waste treatment	￥25/L x 100L/day x 20 days/month x 12 months = ￥600,000/year
Drain Master running costs	￥2.7/L x 100L/day x 20 days/month x 12 months = ￥64,800/year
Cost savings	￥535,200/year

※ 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 ￥2.7/L (OWC model, oil concentration of 150mg/L.)

Maximum drainage volume (L/h)

Please calculate your maximum drainage requirements using the formulas below:

$$\text{Compressor discharge volume } (m^3/min) \times 60 \times \{(\text{water content of air at inlet}) (g/m^3) - (\text{water content of dried air}) (g/m^3)\} \times \frac{1}{1000}$$

Conditions

- Compressor discharge air flow: adjusted for atmospheric pressure
- Air moisture content at inlet: Installation in place with summer season conditions (air temperature: 30℃, relative humidity: 70%, therefore moisture content is 21.2g/㎥.)
- Moisture content of dried air: At a pressure of 0.69MPa, dewpoint of 10℃, saturated content is 1.37g/㎥.
- Spring and autumn drainage requirements are approximately 1/2 of winter requirements and 1/3 of summer requirements.

Pump-up Unit ☐ Patented ☐

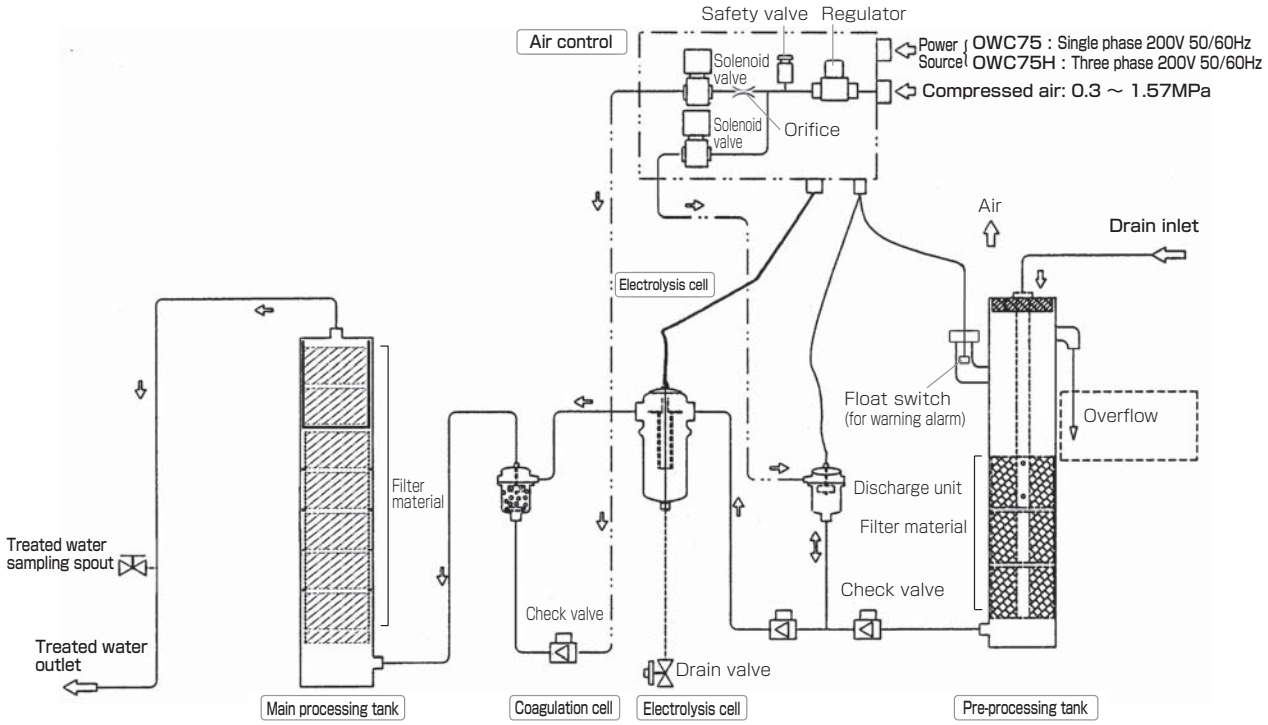
For pumping drainage up from a drain pit or sump.

- Power requirement: 200V
- Pumping capacity: 2 ～ 36L/h (variable speed)


DPA4

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 5mg/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

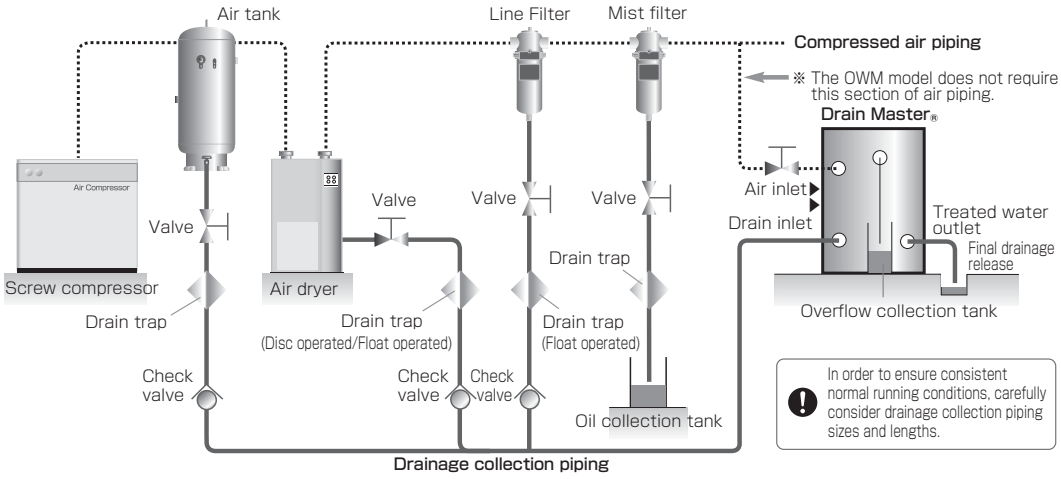
Treated drain water should be checked at regular intervals to ensure concentration levels fall within standard levels. If concentration levels of treated water go above limits for effluent standards, regulations under the Water Pollution Control Law may be applied. Effluent standards differ according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

⚠ Proper handling of used filter material

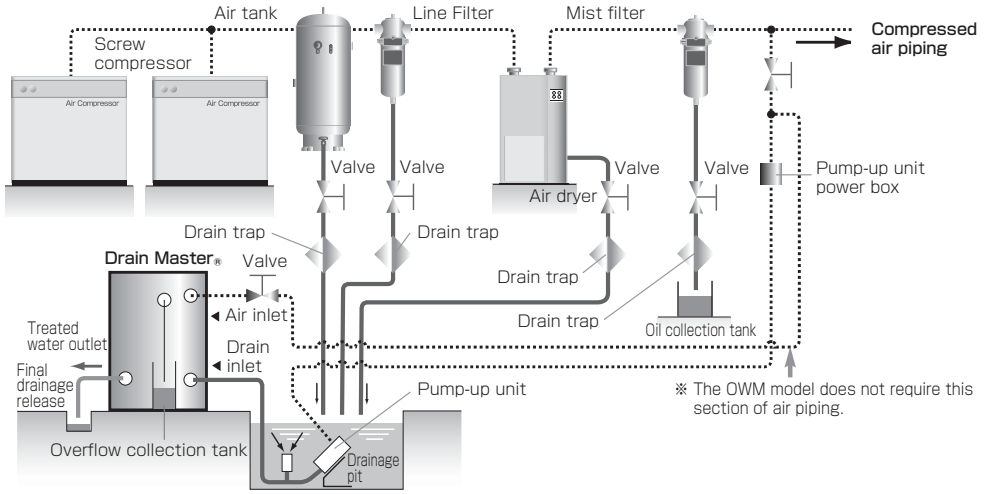
Used filter material is considered industrial waste and should be disposed of according to the advice of a qualified waste disposal professional.

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)



DRAIN MASTER Peripheral Equipment

Drain Processing System Related Equipment "OWT / OWH / OWL / OWSK"

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 OWT350

・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.

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

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 highconcentration, difficult to separate drainage.

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

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

Treated Effluent Inspection Tank OWSK7

・All stainless steel construction

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

● Outside dimension:(H×D×W):240×240×250
● Mass: 5kg (dry)
● Storage capacity: 7L

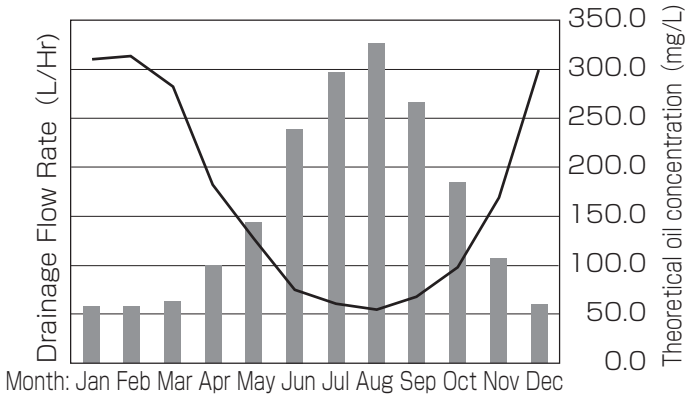
Other maintenance related products are available. Please consult your dealer for details.

DRAIN MASTER Peripheral Equipment

System Recommendations According to Drain Properties

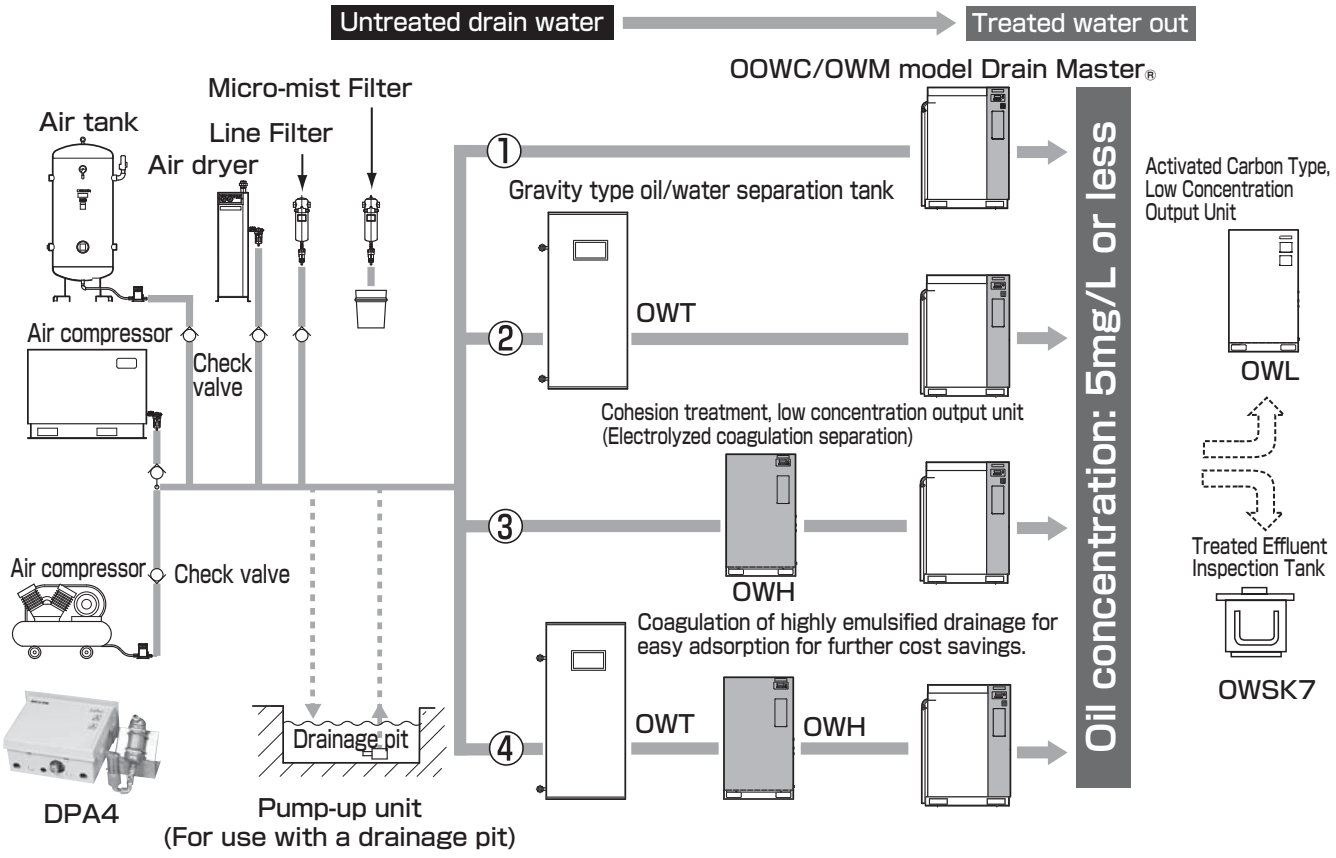
		Gravity Separation Suitability		
		Good	Average	Poor
Average oil concentration throughout the year	Low	①	①	③
	Average	① ②	① ② ③	③ ④
	High	②	② ④	④

Amount of Drainage Per Month



■ 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.



Optional equipment

For ORION Refrigerated Air Dryers

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	4th digit	5th digit	6th digit
0 · Standard	0 · Standard	0 · Standard	0 · Standard	0 · Standard	0 · Standard
1 · Different voltage 380V	1 · Remote switch included	1 · Rated for outdoor use		1 · Anchor bolt A	1 · English documentation
2 · Different voltage 400V	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 440V	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 · Does not include reheater	4 · Anti-rust treated A · Export Packing	4 · Anchor bolt D	4 · Photo
5 · Includes breaker · Different voltage 380V	5 · Custom lamp, switch color · Remote switch Included	5 · Rated for outdoor use · Custom cabinet color		5 · Anchor bolt E	5 · English documentation · Includes test results chart
6 · Includes breaker · Different voltage 400V	6 · Custom lamp, switch color · Includes external signal	6 · Does not include reheater · Custom cabinet color		6 · Anchor bolt F	6 · Includes test manual · Includes test results chart
7 · Includes breaker · Different voltage 440V	7 · Custom lamp, switch color · Includes external signal · Remote switch Included	7 · Rated for outdoor use · 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

(Notes)
1. Delivery times for refrigeration compressors of non-standard voltages may take at least 3 months from the time of order.
2. RAX3J ～ 55F(55F-W,55F-SE) models have external transformers; in other models, the transformers are internal.
3. Please consult with your dealer regarding special painting/coating requirements.
4. Installation photos are available by special request if needed.
5. Please advise if photos of completed equipment are required.
6. All items for export are made to order.
7. When specifying colors via Mansell numbers, a color sample is necessary.
8. ORION can manufacture and supply items outside the above specifications on a special order basis -- please consult with your dealer.
9. Anti-rust properties are not guaranteed in anti-rust treated items.
10. Chinese Pressure Vessel Code compliance available upon special request.
11. Inspection test manuals and result forms are produced according to ORION's specifications.

List of Anchor Bolt Options for ORION Refrigerated Dryers

Model ＼ Type	L Type	Hole-in	Chemical
RAX3J,RAX6J · 8J,11G ～ 55G,55G-W	M10 × L200 4pcs.	M10 × L80 4pcs.	M10 × L100 4pcs.
RAX3J-SE ～ 55F-SE(Incl. RAX8G-SE ～ 37G-SE)			
RAX3.7J-H ～ 15J-H			
RAXE740B-SE,100B-SE			
RAX75F（F-W）～ 450F-WE	M16 × L200 4pcs.	M16 × L120 4pcs.	M16 × L160 4pcs.
RAX75F-SE			
RAXE2300A（A-W）			
RAXE3800A（A-W）～ 14800B-W			
RAXE75A-SE,100A-SE			
RAXE19600A-W	M20 × L250 4pcs.	M20 × L150 4pcs.	M20 × L200 4pcs.
RAXE29600A-W			

Table of standard equipment used with our refrigerated air dryers (including lamps, switches, contacts.)

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

<table>
<tr><th rowspan="2">High temp. (inlet air)</th><th rowspan="2">Standard (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>
<tr><th>Power</th><th>Operation</th><th>Warning</th><th>Alarm</th><th>Operation</th><th>Stop</th><th>Remote/Local Switch</th><th>Remote operation</th><th>Operation signal</th><th>Warning signal</th><th>Alarm signal</th></tr>
<tr><td>RAX3J</td><td></td><td>RAX3J-SE</td><td rowspan="15">△</td><td rowspan="2">○
(Green)</td><td rowspan="2">×</td><td rowspan="2">△</td><td>○
(White)</td><td>○
(Red)</td><td rowspan="3">△</td><td rowspan="3">△</td><td rowspan="3">△</td><td rowspan="2">×</td><td rowspan="3">△</td><td rowspan="14">Built-in but with change in external dimensions</td></tr>
<tr><td></td><td></td><td>RAX4J-SE</td><td rowspan="14">○
(Green)</td><td rowspan="3">○
(White)</td><td rowspan="14">○
(Red)</td></tr>
<tr><td>RAX6J</td><td></td><td>RAX6J-SE</td></tr>
<tr><td>RAX8J</td><td></td><td></td><td rowspan="2">△
Note 1:</td></tr>
<tr><td></td><td></td><td>RAX8G-SE-A1</td><td rowspan="2">△
Note 1:</td><td rowspan="2">○
(No.)</td><td rowspan="2">○
(No.)</td><td rowspan="2">○
(White)</td><td rowspan="2">○
(White)</td><td rowspan="2">△</td><td rowspan="2">○
(Alternate)</td><td rowspan="2">○</td><td rowspan="2">○</td></tr>
<tr><td></td><td></td><td>RAX8G-SE-A2</td></tr>
<tr><td>RAX11G-A1</td><td></td><td></td><td rowspan="2">△
(Yellow)</td><td rowspan="2">△
(Red)</td></tr>
<tr><td>RAX11G-A2</td><td></td><td></td></tr>
<tr><td></td><td></td><td>RAX11G-SE</td><td rowspan="3">△</td><td rowspan="3">○
(Alternate)</td></tr>
<tr><td>RAX15G</td><td></td><td>RAX15G-SE</td><td rowspan="3">○
(Yellow)</td><td rowspan="3">○
(Red)</td><td rowspan="3">○
(Green)</td></tr>
<tr><td>RAX22G</td><td></td><td>RAX22G-SE</td></tr>
<tr><td>RAX37G</td><td></td><td>RAX37G-SE</td></tr>
<tr><td>RAX55G</td><td>RAX55G-W</td><td></td><td rowspan="2">△</td><td rowspan="2">○
(White)</td><td rowspan="2">○
(Red)</td><td rowspan="2">△</td><td rowspan="2">△</td><td rowspan="2">○
(Momentary)</td><td rowspan="2">×</td><td rowspan="2">External (extended base)</td></tr>
<tr><td></td><td></td><td>RAX55F-SE</td></tr>
<tr><td>RAX75F</td><td>RAX75F-W</td><td>RAX75F-SE</td><td rowspan="6">○
(White)</td><td rowspan="8">×</td><td rowspan="6">○
(Red)</td><td rowspan="6">○
(Green)</td><td rowspan="8">○
(Red)</td><td rowspan="6">○</td><td rowspan="6">○</td><td rowspan="6">○</td><td rowspan="13">Built-in, maintaining standard dimensions</td></tr>
<tr><td>RAX90F</td><td>RAX90F-W</td><td></td></tr>
<tr><td>RAX120F</td><td>RAX120F-W</td><td></td></tr>
<tr><td>RAX150F</td><td>RAX150F-W</td><td></td></tr>
<tr><td>RAX190F</td><td>RAX190F-W</td><td></td></tr>
<tr><td>RAX240F</td><td>RAX240F-W</td><td></td></tr>
<tr><td>RAX300F-E</td><td>RAX300F-WE</td><td></td><td rowspan="2">△
Note 1:</td><td rowspan="2">○
(Green)</td></tr>
<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="7">○
(No.)</td><td rowspan="7">○
(No.)</td><td rowspan="7">○
(White)</td><td rowspan="7">○
(White)</td><td rowspan="6">△</td><td rowspan="7">○
(Alternate)</td><td rowspan="7">○</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="8">△
Note 1:</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>RAXE14800B-W</td><td></td><td rowspan="3">○</td></tr>
<tr><td></td><td>RAXE19600A-W</td><td></td></tr>
<tr><td></td><td>RAXE29600A-W</td><td></td></tr>
</table>

Note 1: RAX □□□ F-E/F-WE and RAXE/ □□□ A/A-W Series models do not have power lamps but require power before running.

Details regarding refrigerated air dryer optional equipment

Optional Item	Description
Different voltage	· The designated voltage is met by adding a transformer(380V · 400V · 440V) to the existing power supply.
Electric Leakage Breaker	· Leakage breaker sensitivity is 30mA (for outside use is 100mA)
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	· Simple type (has overhead cover)
Custom colors	· Please specify a melamine type, Munsell No., or JPMA (Japan Paint Manufacturers Association) No.
English Specifications	· Name plate, English Operation Manual
Photograph	· Photo of finished equipment
Anti-rust treatment A	· Condenser · Exposed copper pipes · Secondary heat exchanger
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)

Optional equipment

For Super Filter

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 ———

MSF400-1 + [1st digit] [2st digit] [3st digit] [4st digit] [5st digit] [6st digit]

1st digit	2st digit	3st digit	4st digit	5st digit	6st 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 · Meets Chinese Pressure Vessel Code	3 · Anchor bolt C	3 · Photo
		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 · Rated for outdoor use · Anti-rust treated	5 · Export packaging · Meets Chinese Pressure Vessel Code	5 · Anchor bolt E	5 · Test manual included · Photo
		6 · Custom color · Anti-rust treated	6 · English documentation · Includes Inspection Certificate	6 · Anchor bolt F	6 · Test results chart included · Photo
		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		

Notes: 1. Part numbers for optional equipment are 6 digits.
2. Please consult with your dealer regarding options not listed in the above chart.
3. When specifying colors via Mansell numbers, a color sample is necessary.

Super Filter and Clean Air Filter Differential Pressure Gauge Compatibility Chart

Filter Model	Differential Pressure Gauge Model	D.P. Gauge Part Number
DSF · LSF · MSF · KSF2700C1 ～ 31800B	DG-50（A）	03A30984010
LSF · MSF · DSF75B ～ 250B KSF150B ～ 250B	DG-50（B）	03A30985010
LSF · MSF · KSF · 400-1 ～ 2000-1 DSF400-1 ～ 1300-1	DG-50（D）	0A000338000

Super Filter Anchor Bolt Compatibility Chart

Model ＼ Type	L Type	Hole-in	Chemical
DSF · LSF · MSF · KSF 2700C1 ～ 31800B	M16 × L200　3pcs.	M16 × L120　3pcs.	M16 × L150　3pcs.

Optional equipment

For Super Filter ／ Drain Master

Model Numbers and Details for Super Filter and Clean Air Filter Optional Parts

Optional Item	Description	Compatible Model
Included differential pressure gauge	· Differential pressure gauge is included (customer installation required)	· LSF · KSF · DSF (all models) · MSF (all models with the exception of MSF200B and 250B)
Outdoor operation specification	· Rated for outdoor use	· DSF · LSF · MSF · KSF2700C ～ 31800B
Custom colors (We don't coat to custom user-specified thicknesses.)	· Baked on melamine resin coating · Specified Munsell No. or JPMA (Japan Paint Manufacturers Association) No.	· DSF · LSF · MSF · KSF2700C ～ 31800B、and models allow painting of equipment legs only.
Degreasing and cleaning	· Alcohol wipe-down of body and inside-housing · Flange gasket: Teflon	· All models
Packaging for export	· Packaged in plywood (plywood sided)	· DSF · LSF · MSF · KSF2700C ～ 31800B
Inspection Certificate included	· Body and housing inspection	· All models (with the exception of 75B ～ 250B and medium pressure type)
Meets Chinese Pressure Vessel Code	· Required paperwork and English documents, etc.	· DSF · LSF · MSF · KSF2700C ～
English Specifications	· Machine plate, English Operation Manual	· All models
Anchor bolts A	· SS grade stainless steel L-type	· DSF · LSF · MSF · KSF2700C ～ 31800B
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	· All models
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	· DSF · LSF · KSF400 ～ 31800B

Drain Master Special Order Items

Model	Special Order Item Description
OWM Series	· Built to cold-climate specifications

Chart of 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							

＊ No mounting holes

● 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				

Optional equipment

For Heatless Air Dryer

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 ——— Product number ———

QSQ420C-E + [1st digit] [2nd digit] [3rd digit] [4th digit] [5th digit] [6th digit]

1st digit	2st digit	3st digit	4st digit	5st digit	6st digit
Orifice	Remote, Externa Signal Outputs	Photograph, English documentation, Export Packing	Submitted documentation	Anchor bolts	Different voltage
0 · Standard	0 · Standard	0 · Standard (none included)	0 · Standard (none included)	0 · Standard (none included)	0 · Standard
1 · 20% (For low dew points)	1 · Remote switch included	1 · Finished equipment	1 · Includes test results chart	1 · Anchor bolts A	1 · 110V
	2 · Includes external signal	2 · English documentation	2 · Includes test manual	2 · Anchor bolts B	2 · 120V
		3 · Export Packing · English documentation	3 · Mil sheet	3 · Anchor bolts C	3 · 210V
	4 · Remote switch included · Includes external signal	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 · 380V
				6 · Anchor bolts F	6 · 400V
					7 · 440V

Details regarding heatless air dryer optional equipment

Optional Item	Description
Orifice	· 20% of the standard processing air flow
Remote, External Signal Outputs	· External output signals are "Running indicator out" and "Warning out" · For models QSQ120B-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
QSQ010A ～ 035A	—	M6 × L60 4pcs.	—
QSQ080B-E ～ 270B-E	M10 × L160 4pcs.	M10 × L80 4pcs.	M10 × L120 4pcs.
QSQ420C-E ～ 2500C-E（EDC）	M16 × L200 4pcs.	M16 × L120 4pcs.	M16 × L160 4pcs.

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) A pressure dew point of 10℃ at 0.69MPa converted to dew point at atmospheric pressure yields a value of -17.3℃
(Example 2) A pressure dew point of -20℃ at 0.69MPa converted to dew point at atmospheric pressure yields a value of -41.5℃ .

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 0.69MPa, how much water will be removed when the temperature is dropped to 10℃ by an air dryer?

From the Saturated Moisture Content Chart (at atmospheric pressure):

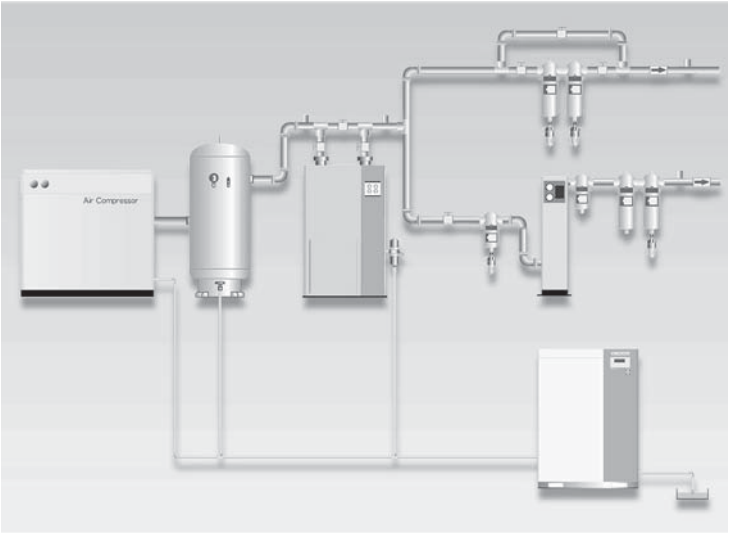
The moisture content at 30℃ is 30.3g/ m^3.

From the Dewpoint Conversion Chart:

Air conditions are 0.69MPa at 10℃ , so converting to atmospheric pressure yields -17℃ .

From the Saturated Moisture Content Chart:

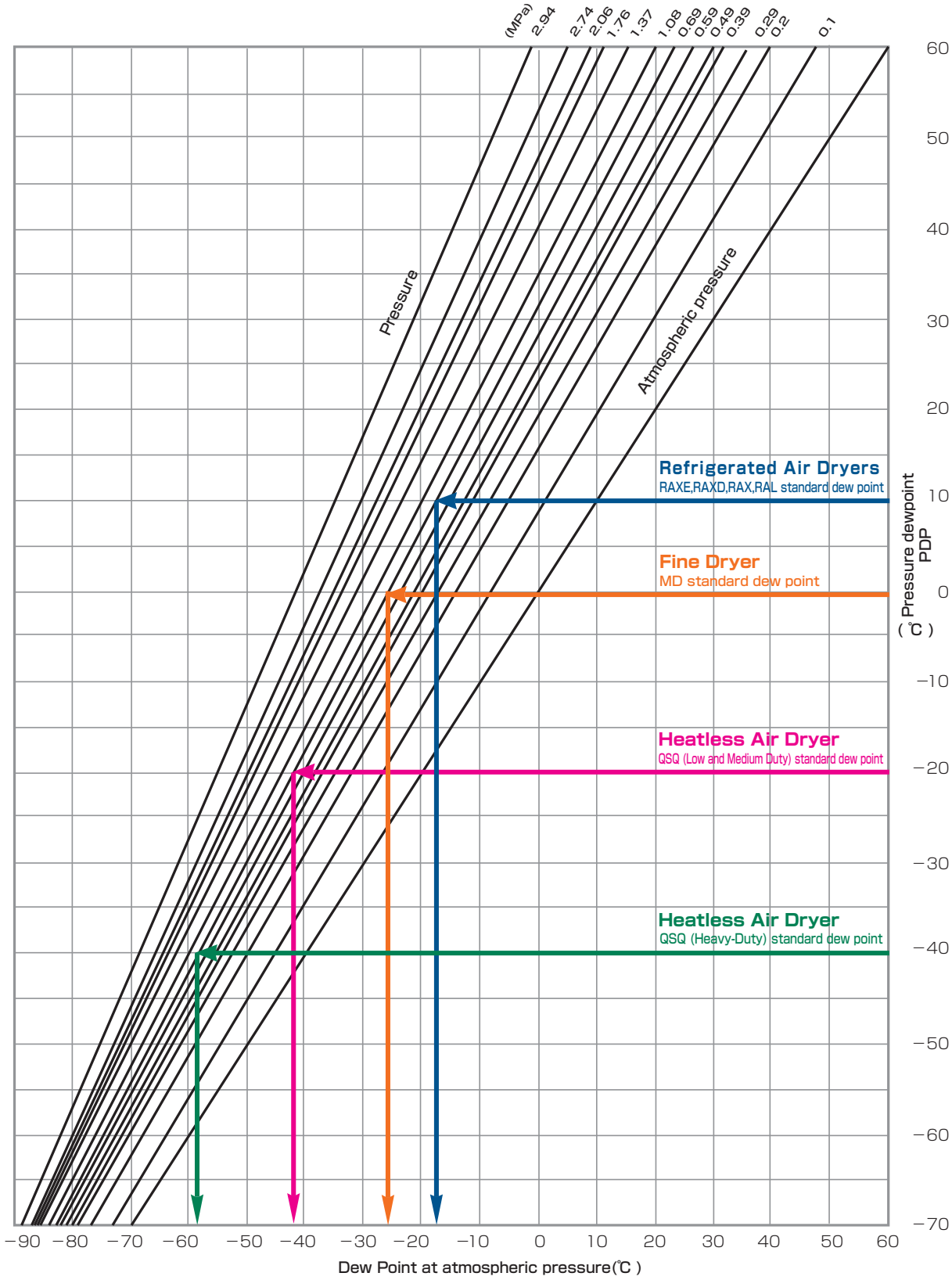
Moisture content at -17℃ is 1.37g/m^3 therefore 30.3-1.37=28.93g/m^3 so 38.93g of water will be removed from each 1m^3 of air.



Saturated Moisture Content Chart (at atmospheric pressure):

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

Dew Point Conversion Chart



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

Using Underground Water

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℃)	80 or less	30 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.

⚠ Always Follow These Safety Guidelines

Important Information Regarding Operation And Installation Of This Equipment

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.

Safety Symbols

△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.

■ General Safety Precautions

⚠ WARNINGS

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

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.

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.

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.

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.

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.

■ Notes regarding usage

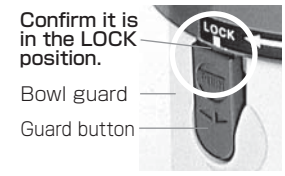
⚠ WARNINGS

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

Heatless Air Dryer Fine Dryer
Separate Dryer Membrane Type Final Filter

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.

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 coming off or injury.



Heatless Air Dryer Refrigerated Air Dryer
Filter Cold Fresh

When operating valves, keep pressure changes at 0.098MPa or less.
Sudden pressure changes can lead to damage of internal components.

Heatless Air Dryer Cold Fresh

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

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.

Cold Fresh

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

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.

Filter Auto Drain Trap

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.

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.

⚠ CAUTIONS

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

 Drain Master  Pico-Drain

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.

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.

 Fine Dryer  Membrane Type Filter

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.)

■ General Safety Precautions Regarding Installation

⚠ WARNINGS

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

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.

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.

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

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.

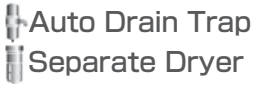
For proper installation, ask your dealer or a qualified specialist.
Improper installation by the end user may lead to water leakage, electric shock, and fire.

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.)

■ Precautions Regarding Installation

⚠ WARNINGS

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



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.

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 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.

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 0.4MPa.) Failure to maintain this pressure can result not only in the machine to discontinue functioning, but can also cause damage to it.

⚠ CAUTIONS

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

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.

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 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.

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

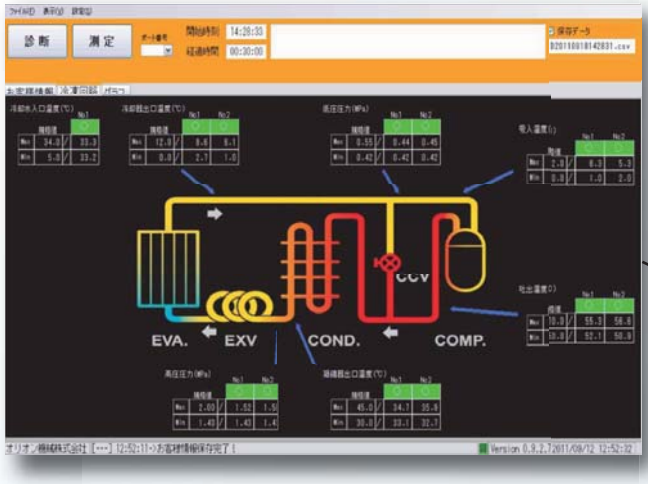
If NOx (nitrogen oxide), SOx (sulfur oxide), CO_2 (carbon dioxide), or other corrosion promoting compounds are present within the workplace, the air dryer and compressor should be installed in a place such that they are not affected by such substances. In particular, when these corrosive substances are 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.

To avoid sudden and unexpected machine trouble, we recommend regular use of the "ORION AIR DRYER DIAGNOSIS INSPECTION" system!

Computer diagnosis of operating specifications for reliable troubleshooting!



《パソコンによるデータ通信画面イメージ》

Merits of performing regular inspections:

- ○ Lower running costs!
- ○ PC diagnosis helps maintain stable air dryer specs!
- ○ Service contact information at your fingertips!

If regular inspections are NOT performed:

- ● Drop in cooling capacity.
- ● Increased power consumption, etc.

Overall increased risk, including possible production line down time!

ORION Air Dryer Diagnosis Inspection Procedure

Cleaning and Maintenace
①Installation confirmation
②Drain trap disassembly and cleaning
③Condenser Cleaning (air cooled models only)

Drain water analysis
Simple drain water analysis can help avoid corrosion causing gas leaks.

Individual Inspections
①Insulation resistance measurement
②Gas leakage check
③Electrical current measurement
④Refrigerant piping temperature measurement
⑤Refrigerant pressure measurement
⑥Check for noises not coming from the motor

Operating Data Measurements
Dew point monitor based measurements, drain trap operation confirmation, and operating performance evaluation with PC cnnectivity all add up to improved reliability.

Diagnosis Report
Submit report of diagnostic findings.

✓Preventive Maintenance

✓Stable operating parameters

✓Mantenance Record Management

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.

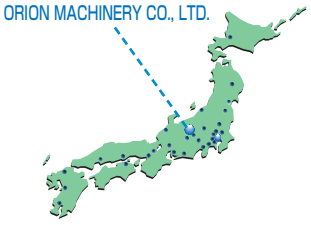
Regarding After Service

- For information regarding repair of equipment that has been in operation, please consult with 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 become 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 with your dealer or contact ORION directly.

ORION is continuing to develop a complete and trustworthy nationwide network of expedient sales and service -- everywhere, anytime.



Authorized for Boiler and Pressure Vessel export to the People's Republic of China.

ASR American Systems REGISTRAR ANAB ACCREDITED ISO 9001 Certification No. 1854

ASR American Systems REGISTRAR ANAB ACCREDITED ISO 14001 Certification No. 1670

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.

Please feel free to contact the following representative:—

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