

No.1 Share in Japan

ORION[®]

ISO Quality Policy

Orion strives to offer products that delight its customers.

Clean Air System

Low Pressure Loss & Energy Saving
Eco-Friendly Refrigerant Applied
Powerful performance in Asia
with heavy duty specification



Best Match for Inverter Compressor & Oil-Free Compressor

ORION Refrigerated Air Dryer

Feature-Packed Air Dryer for Energy Saving and Stable Productivity,
ORION "CRX" series ^{※1}

SUS All-in-One SUS Shell Heat Exchanger
Primary and secondary heat exchangers are integrated in a single SUS shell and rust proof SUS shell maintains minimal pressure loss for long time.

ORION
AIR DRYER
CRX120D

CRX120D

LOW LOSS CRX-HD model
P-Loss under 0.015MPa

CROSS-WAVE FIN Secondary Heat Exchanger
Drastically separate drain water from compressed air without pressure loss

TURBO TUBE Primary Heat Exchanger
Efficient pre-cooling and re-heating without pressure loss

R407C R410A Eco-Friendly refrigerant applied

43°C Heavy Duty Refrigerant Circuit
Durable performance in severe condition at ambient temp. of 43°C

CRX Pressure Loss Advantage **SUS** **LOW LOSS**

[Electricity Loss / year]

Model	Pressure Loss (MPa)	Electricity Loss/year (\$)
ORION CRX50HJ	0.013	\$446
Other Maker (Equivalent)	0.032	\$1,097

	ORION CRX50HJ	Other Maker (Equivalent)	Difference
Pressure Loss	0.013MPa	0.032MPa	0.019MPa
Electricity Loss/year	\$446	\$1,097	\$651

Compressor	Air Pressure Source	Capacity	Electricity Charge	Running Hour
37Kw(50HP)	0.69MPa	7m³/min	US\$0.15/kWh	8000h

Ni **NICKEL-PLATED** Copper Pipe
Anti-corrosion and prevention gas leakage
NICKEL-PLATED Copper Pipe

Copper pipe not plated

Condenser Filter
Protection against dust and easy maintenance

※1:Please refer to detail on page 2

CRX Function Chart

High inlet air temperature model

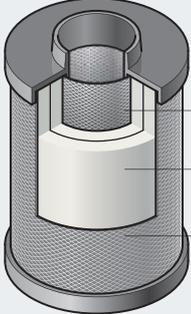
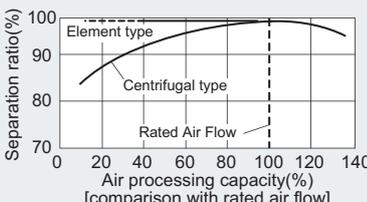
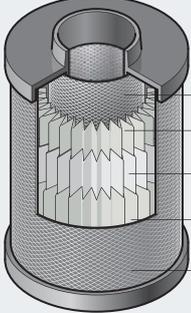
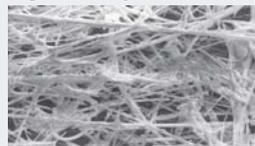
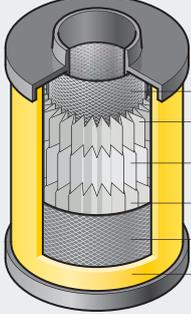
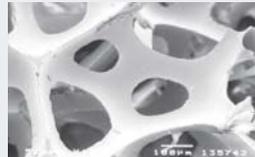
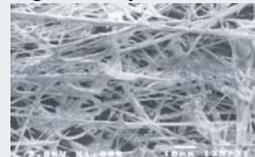
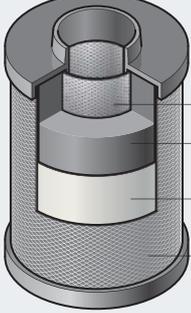
Function	Model : CRX								
	3HD	5HD	10HD	20HD	30HJ	50HJ	75HJ	90HD	100HD
 All-in-One SUS Shell Heat Exchanger SUS Shell Heat Exchanger		●	●	●	●	●	●	●	●
 TURBO TUBE Primary Heat Exchanger	●	●	●	●	●	●	●	●	●
 CROSS-WAVE FIN Secondary Heat Exchanger	●	●	●	●	●	●	●	●	●
 NICKEL-PLATED Copper Pipe			●	●	●	●	●	●	●
 R407C / R410A Refrigerant	●	●	●	●	●	●	●	●	●
 Heavy Duty Refrigerant Circuit	●	●	●	●	●	●	●	●	●
 Condenser Filter		●	●	●	●	●	●	●	●
Wide Adjusting Range CCV (capacity control valve)	●	●	●	●	●	●	●	●	●
Operation Lamp	●	●	●	●	●	●	●	●	●
Alarm Lamp								●	●
Condensing Pressure Gauge									
Evaporating Pressure Gauge		●	●	●	●	●	●	●	●
Air Pressure Gauge			●	●	●	●	●	●	●
Long Life Fan-Control Switch	●	●	●	●	●	●	●	●	●
One Touch Open Front Cabinet		●	●	●	●	●	●	●	●
3 Signal Output (remote, operation status, alarm)								●	●
Disk Operated Auto Drain Trap AD-5 with Ball Valve				●				●	●
Float Operated Auto Drain Trap FD-1D with Ball Valve		●	●						
Float Operated Auto Drain Trap FD-1D	●								
Float Operated Auto Drain Trap FD6 with Ball Valve					●	●	●		

Standard inlet air temperature model

Function	Model : CRX								
	5D	10D	20D	30D	50J	75J	100J	110D	120D
 All-in-One SUS Shell Heat Exchanger SUS Shell Heat Exchanger		●	●	●	●	●	●	●	●
 TURBO TUBE Primary Heat Exchanger	●	●	●	●	●	●	●	●	●
 CROSS-WAVE FIN Secondary Heat Exchanger	●	●	●	●	●	●	●	●	●
 NICKEL-PLATED Copper Pipe			●	●	●	●	●	●	●
 R407C / R410A Refrigerant	●	●	●	●	●	●	●	●	●
 Heavy Duty Refrigerant Circuit	●	●	●	●	●	●	●	●	●
 Condenser Filter		●	●	●	●	●	●	●	●
Wide Adjusting Range CCV (capacity control valve)	●	●	●	●	●	●	●	●	●
Operation Lamp	●	●	●	●	●	●	●	●	●
Alarm Lamp								●	●
Condensing Pressure Gauge									
Evaporating Pressure Gauge		●	●	●	●	●	●	●	●
Air Pressure Gauge			●	●	●	●	●	●	●
Long Life Fan-Control Switch	●	●	●	●	●	●	●	●	●
One Touch Open Front Cabinet		●	●	●	●	●	●	●	●
3 Signal Output (remote, operation status, alarm)								●	●
Disk Operated Auto Drain Trap AD-5 with Ball Valve				●				●	●
Float Operated Auto Drain Trap FD-1D with Ball Valve		●	●						
Float Operated Auto Drain Trap FD-1D	●								
Float Operated Auto Drain Trap FD6 with Ball Valve					●	●	●		

ORION Clean Air Filter

Advanced Technology Packed Clean Air Filter, ORION "AL-Filter" series

Drain Filter DSF-AL		Location*1	Before CRX
	 <p>Element : EDS</p> <ul style="list-style-type: none"> Inner Screen Water-Resistant Nonwoven Fabric Cloth Outer Screen <p>Sectioned Drawing of Element</p>	<p>Water droplet and solid particulate (5μm) removal No water drop in filtration performance Low pressure loss (0.005MPa or less) as pre-Filter Float operated auto drain trap installed</p> <p>LOW LOSS P-loss 0.005MPa</p>	<p>Performance Curve</p>  <p>Separation ratio(%)</p> <p>Element type</p> <p>Centrifugal type</p> <p>Rated Air Flow</p> <p>Air processing capacity(%) [comparison with rated air flow]</p>
Line Filter LSF-AL		Location*1	After CRX
	 <p>Element : ELS</p> <ul style="list-style-type: none"> Inner Screen Nonwoven Fabric Cloth High Quality Glass Fiber Nonwoven Fabric Cloth Outer Screen <p>Sectioned Drawing of Element</p>	<p>Solid particulate (1μm, 99.999%) removal High quality glass fiber element installed(ELS) Float operated auto drain trap installed Precision different pressure gauge "DGX50A" installed (LSF400AL and bigger model)</p> <p>LOW LOSS P-loss 0.005MPa (Initial)</p>	<p>High Quality Glass Fiber</p> 
Mist Filter MSF-AL		Location*1	After LSF-AL
	 <p>Element : EMS</p> <ul style="list-style-type: none"> Inner Screen Nonwoven Fabric Cloth High Quality Glass Fiber Nonwoven Fabric Cloth Outer Screen Oil-Resistant Plastic Form <p>Sectioned Drawing of Element</p>	<p>Oil mist (0.01wt ppm) and fine solid particulate (0.01μm, 99.999%) removal Newly developed element installed(EMS) Float operated auto drain trap installed Precision different pressure gauge "DGX50A" installed (MSF400AL and bigger model)</p> <p>LOW LOSS P-loss 0.01 ~ 0.02MPa</p>	<p>Oil-Resistant Plastic Form</p>  <p>High Quality Glass Fiber</p> 
Carbon Filter KSF-AL		Location*1	After MSF-AL
	 <p>Element : EKS</p> <ul style="list-style-type: none"> Inner Screen Fibrous Activated Carbon (Orion Original) Nonwoven Fabric Cloth Outer Screen <p>Sectioned Drawing of Element</p>	<p>Removes Odor (0.003wt ppm) . Newly developed element "Fibrous Activated Carbon" installed(EKS) Great reduction in amount of loose carbon as compared with previous filters</p> <p>LOW LOSS P-loss 0.009MPa</p>	<p>Output Oil Concentration(wt ppm)</p>  <p>0.01</p> <p>MSF-AL</p> <p>KSF-AL</p> <p>0</p>

All AL-Filter are alumite-treated on the inside surface.

*1 : Please refer to Basic System Example catalog on page 4

Basic System Examples

Air Quality Notes

Please install ORION genuine Clean Air Filter 'before and after CRX dryer' for the best performance.

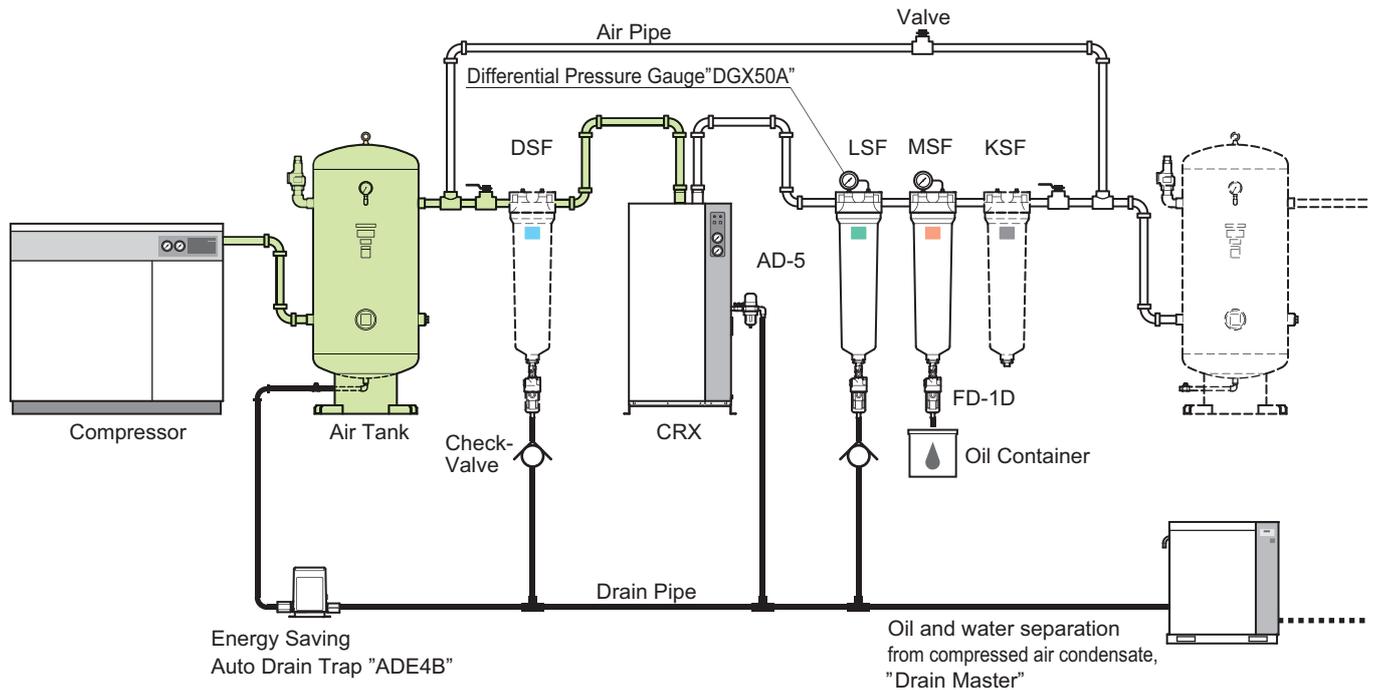
Safety Notes

Before operating equipment, please read the operating manual carefully, and only use as indicated.

For installation of 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 equipment for purposes other than intended.

Doing so can lead to accidents or equipment breakdown.



System	Applications
★ ☆ DSF CRX LSF MSF KSF	General Painting, Precision Machinery Industry, etc
☆ DSF CRX LSF MSF	Standard Pneumatic
CRX LSF MSF	Standard Pneumatic
▲ LSF CRX MSF	▲ Not recommended

- 1) Please consult with your dealer or ORION directly for further information when compressed air is supplied for medical, food, or clean room use.
- 2) Please set up above ☆ system when Oil-Free compressor is installed.
- 3) Please set up above ★ system when intake air of an air compressor includes large amount of oil droplets.
- 4) ▲ LSF-AL is not recommended to be installed before CRX dryers because it will increase differential pressure and drain water will be accumulated in the differential pressure gauge.
- 5) Please refer to "Compressed Clean Air catalog" (D-AG02 ) for details of "DRAIN MASTER" series.
- 6) SUS pipe and SUS air tank are recommended when Oil-Free compressor is installed (as indicated in Green).
CRX Heat-Exchanger is made of SUS .
- 7) Please install a check valve on exhaust pipe of filter.
- 8) Please consult with your dealer or ORION directly when you are not certain of air tank location (before or after CRX).

Specifications Refrigerated Air Dryer

CRX Series



Refrigerated Air Dryer : High inlet air temp. model

Descriptions	Type	CRX									
		3HD	5HD	10HD	20HD	30HJ	50HJ	75HJ	90HD	100HD	
Air Processing Capacity	m ³ /min	0.32	0.7	1.2	3.1	4.6	7.6	8.8	10.7	14.9	
Inlet Air Temperature	°C	10~80									
Dew Point Temperature	°C	3~10									
Ambient Temperature	°C	2~43									
Operating Pressure	MPa	0.2~0.98									
Dimensions	Height	mm	463	550	619	900	990	1050	1054	1229	
	Depth	mm	540	574	817	960	980	1010	1029	1023	
	Width	mm	240	255		300		380	470	592	
Mass	kg	23	30	40	46	83	94	106	145	185	
Pipe Connections	B	R1/2	R3/4	R1		R1 1/2		R2			
Power Source (50Hz)	V	1ph220±10%							3ph380V±10%		
Power Consumption (50Hz)	kW	0.48	0.44	0.46	0.97	1.9	2.0		3.00	4.40	
Refrigerant		R407C				R410A			R407C		

Refrigerated Air Dryer : Standard inlet air temp. model

Descriptions	Type	CRX									
		5D	10D	20D	30D	50J	75J	100J	110D	120D	
Air Processing Capacity ※1	Ambient 25°C	m ³ /min	0.59	1.1	2.8	4.4	7.0	9.9	13.2	14.3	20.9
	Ambient 30°C	m ³ /min	0.54	1.0	2.6	4.0	6.4	9.0	12.0	13.0	19.0
Inlet Air Temperature	°C	10~50									
Dew Point Temperature	°C	3~10									
Ambient Temperature	°C	2~43									
Operating Pressure	MPa	0.2~0.98									
Dimensions	Height	mm	463	550	619	900	990	1050	1054	1229	
	Depth	mm	540	574	817	960	980	1010	1029	1023	
	Width	mm	240	255		300		380	470	592	
Mass	kg	23	30	40	46	83	94	106	145	185	
Pipe Connections	B	R1/2	R3/4	R1		R1 1/2		R2			
Power Source (50Hz)	V	1ph220±10%							3ph380V±10%		
Power Consumption (50Hz)	kW	0.45	0.43	0.45	0.90	1.7		2.60	4.20		
Refrigerant		R407C				R410A			R407C		

LSF400-AL MSF400-AL



Specifications Clean Air Filter

DSF-AL / LSF-AL / MSF-AL / KSF-AL Series

Descriptions	Type		※1									
	DSF/LSF/MSF/KSF		75-AL	150-AL	200-AL	250-AL	400-AL	700-AL	1000-AL	1300-AL	2000-AL	
Air Processing Capacity ※2	0.69MPa	m ³ /min	0.35	1.2	1.8	2.7	3.9	6.6	10.6	13.8	20.0	
	0.75MPa		0.38	1.3	2.0	2.9	4.2	7.2	11.5	15.0	21.7	
	0.85MPa		0.42	1.5	2.2	3.3	4.7	8.0	12.9	16.8	24.3	
Casing Material			Aluminum Die Casting (All AL-Filter are alumite-treated on the inside surface.)									
Operating Range	Fluid		Compressed Air									
	Inlet Air Pressure	MPa	0.05~0.98									
	Inlet Air Temperature	°C	5~60									
	Ambient Temperature	°C	2~60									
Performance ※3	Filtration		DSF : 5µm and Water Separation Efficiency 99% / LSF : 1µm (Filtration Efficiency 99.999%) MSF : 0.01µm (Filtration Efficiency 99.999%) / KSF : Adsorption									
	Outlet Oil Contamination	wt ppm	MSF : 0.01 / KSF : 0.003									
	Pressure Loss	MPa	DSF : Initial 0.005 / LSF : Initial 0.005 / MSF : Initial : 0.01 • Usual 0.02 / KSF : 0.009									
Filter Element Replacement	Usual		1 year									
	Pressure Loss	MPa	DSF : 0.02 / LSF • MSF : 0.035 Whichever comes first.									
Connections	Pipe Connections		Rc3/8	Rc1/2	Rc3/4	Rc1	Rc1 1/2	Rc2				
	Different Pressure Gauge Connection		Rc1/4									
Mass		kg	1.0	2.0	2.1	2.6	5.0	6.0	6.5	9.0		
Accessories	Filter Element	Type	EDS/ELS EMS/EKS	75	150	200	250	400	700	1000	1300	2000
		Q'ty		1 each								
	Auto Drain Trap※4	LSF/MSF DSF	NH-503MR built-in							FD-1D		
	Differential Pressure Gauge		Option				DGX-50A(LSF • MSF Equipped) / DSF • KSF Option					

※1. KSF available from 150 to 2000B. ※2. Air Processing Capacity is converted to the suction air condition (atmospheric, 32°C, 75%RH and Air Pressure 0.69MPa).

※3. All Performance are tested at standard Air Processing Capacity (0.69MPa), Inlet oil contamination 3 wt ppm(LSF/MSF), 0.01wt ppm(KSF)

※4. Float Type only, NH-503MR/FD-1D Drain Port Rc1/4, O.D φ 16, Drain Port Rc3/8.

Auto Drain Trap

Item	Float operated				Disc operated
	FD-1D	FD6	FD10-A	AD-5	
Maximum drain flow capacity ※1	7 cm ³ / cycle	30 cm ³ / cycle	80 cm ³ / cycle	450 L / h	
Operable pressure range	MPa	0.05 ~ 0.98	0.1 ~ 1.0	0.20 ~ 0.98	0.29 ~ 0.98
Operable temperature range	°C	2 ~ 60			
Processed fluid	Compressed air drain				
Drain release method	Float operated			Disc operated	
Connections	Inlet	Rc 1/2			1/2
	Drain outlet	Rc 1/4	φ 4mm	Rc 3/8	Rc 1/2
Mass	kg	0.4	0.45	1	1.7
Outside dimensions	mm	Outside diameter: 62 × length: 159	Outside □ 80 × length: 201	Outside diameter: 96 × length: 193	Outside diameter: 86 × length: 198

※1. Drain conditions: Air pressure (gauge pressure): 0.69MPa.

※Indoor specifications (Operable in environment where it would not be exposed to water splash.)

※When setting up drain piping, to prevent back pressure from other traps, be sure to install a check valve. Also install drain traps at each drain port. (Please refer to detail on page 4)

※Please consult your Orion dealer for further details.

Differential Pressure Gauge



Model Selection For CRX Series

Model Selection

1 Temperature conditions
 Table A : CRX-HD/HJ Models
 Table B : CRX-D/J Models
 Table C : Air Pressure Coefficient

2 Calculate the necessary air capacity for the model selection.
Air capacity required =
Intake air volume ÷ (A or B × C)

3 Please select the suitable model from the specification which has bigger Air Processing Capacity (P5) than the air capacity required.

Model selection Example

Inlet Air Temp.	60°C	Ambient Temp.	35°C	Air Flow	6m ³ /min
PDP	10°C	Air Pressure	0.59MPa	Frequency	50Hz

1 From charts, Inlet temp. coefficient → **0.70**
 Air Pressure coefficient → **0.93**

2 Air capacity required for Orion Dryer,
6÷(0.70×0.93)=9.2m³/min

3 The suitable model to process 9.2m³/min is CRX90HD, as its capacity exceeds the required value.

A: Inlet Air Temperature Coefficient (CRX-HD / HJ Models)

Inlet air temperature (°C)	50			60			70			80			
Outlet dew point (°C)	5	10	15	5	10	15	5	10	15	5	10	15	
Ambient temperature (°C)	30	0.78	1.06	1.27	0.62	0.80	0.92	0.53	0.68	0.82	0.48	0.63	0.79
	35	0.73	1.00	1.21	0.57	0.70	0.86	0.47	0.60	0.74	0.41	0.57	0.71
	40	0.55	0.75	0.91	0.44	0.56	0.66	0.37	0.46	0.55	0.33	0.42	0.51

B: Inlet Air Temperature Coefficient (CRX-D / J Models)

Inlet air temperature (°C)	35			40			45			50			
Outlet dew point (°C)	5	10	15	5	10	15	5	10	15	5	10	15	
Ambient temperature (°C)	25	0.87	1.10	1.31	0.72	0.86	1.05	0.60	0.72	0.86	0.55	0.69	0.76
	30	0.80	1.00	1.20	0.66	0.79	0.96	0.55	0.66	0.79	0.50	0.63	0.70
	35	0.78	0.94	1.15	0.63	0.74	0.92	0.51	0.62	0.74	0.46	0.57	0.65
	40	0.73	0.88	1.08	0.58	0.65	0.86	0.47	0.56	0.68	0.40	0.51	0.58

C: Air Pressure Coefficient

Air Pressure MPa	0.20	0.29	0.39	0.49	0.59	0.69	0.78	0.88	0.93	0.98
Coefficient	0.67	0.73	0.80	0.87	0.93	1.00	1.07	1.13	1.16	1.20

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- This catalog contains product specifications as of November 2012.
- Images in this catalog are printed images and actual product colors may differ from the colors herein.
- Product mechanisms, specifications, etc. listed in this catalog are subject to change without notice.