

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 R407C Refrigerant Applied
Powerful performance in Asia
with heavy duty specification



CRX10D



CRX50D

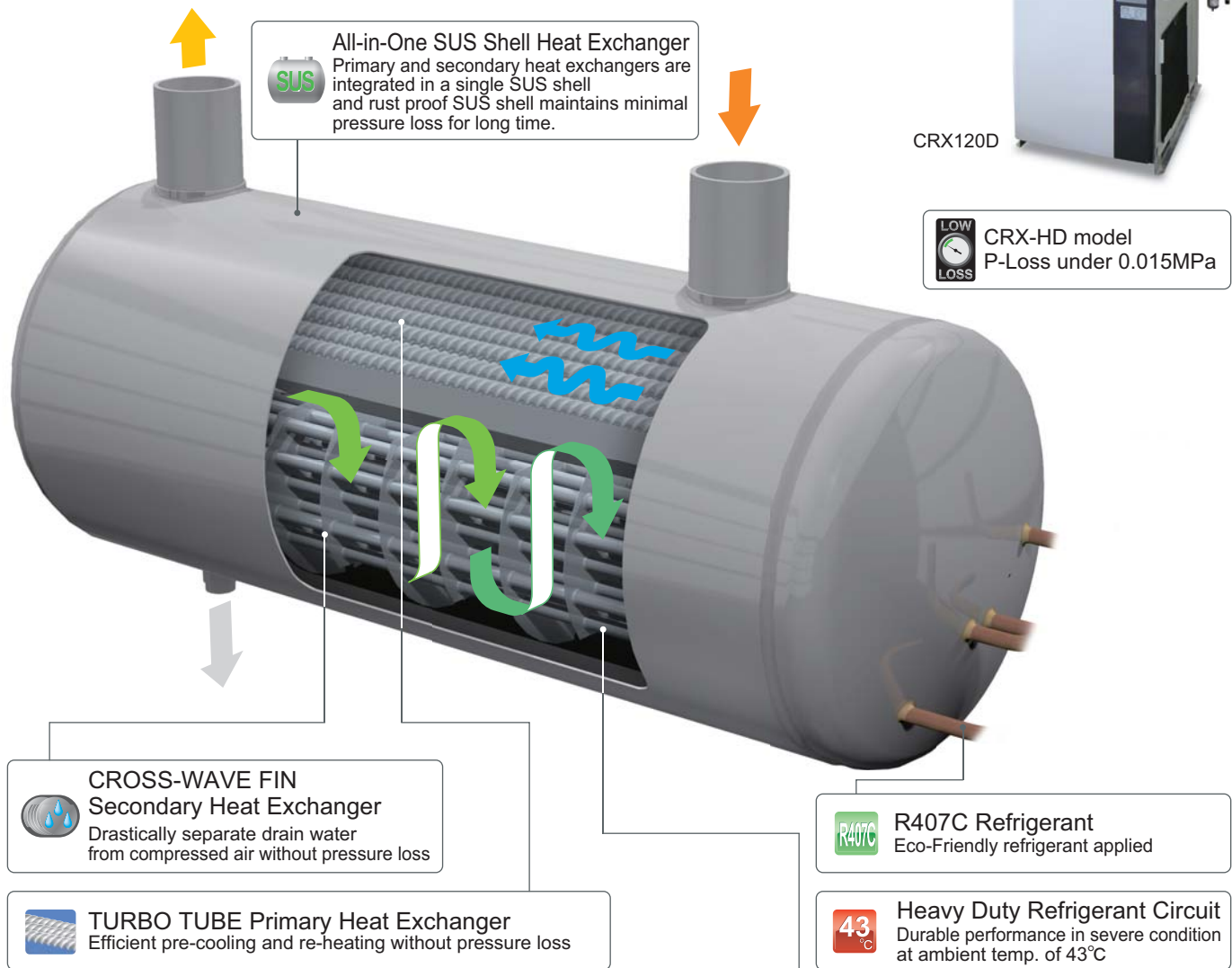


CRX120D

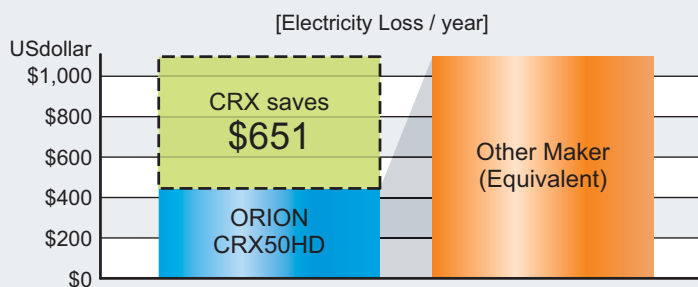
Best Match for Inverter Compressor & Oil-Free Compressor

ORION Refrigerated Air Dryer

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



CRX Pressure Loss Advantage



| | ORION CRX50HD | 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 |

NICKEL-PLATED Copper Pipe

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



Condenser Filter









Protection against dust and easy maintenance











※1:Please refer to detail on page 2

CRX Function Chart

High inlet air temperature model


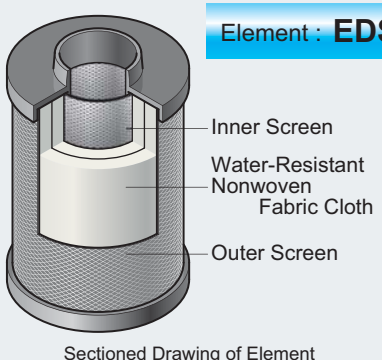
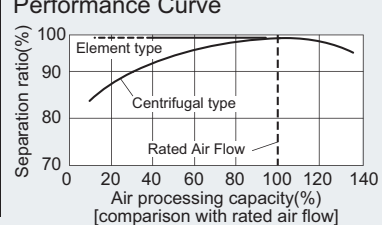

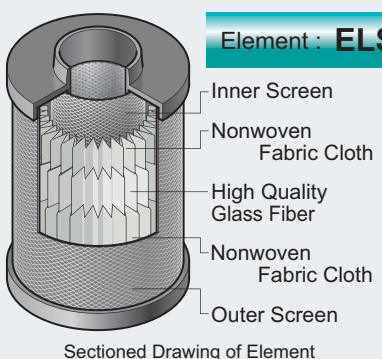


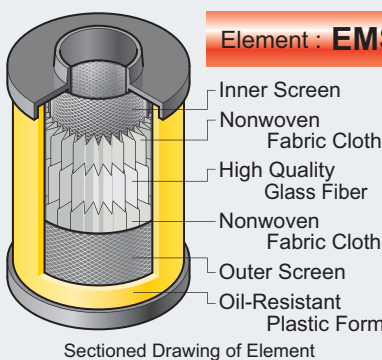



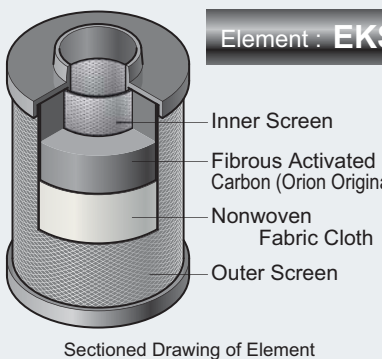
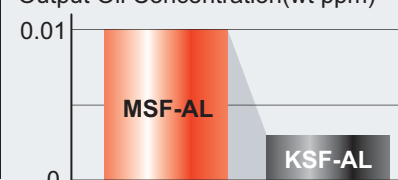
| Function | Model : CRX | | | | | | | | |
|---|-------------|-----|------|------|------|------|------|------|-------|
| | 3HD | 5HD | 10HD | 20HD | 30HD | 50HD | 75HD | 90HD | 100HD |
|  All-in-One SUS Shell Heat Exchanger | | ● | ● | ● | ● | ● | ● | ● | ● |
|  SUS Shell Heat Exchanger | ● | | | | | | | | |
|  TURBO TUBE Primary Heat Exchanger | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|  CROSS-WAVE FIN Secondary Heat Exchanger | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|  NICKEL-PLATED Copper Pipe | | | ● | ● | ● | ● | ● | ● | ● |
|  R407C 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 | ● | | | | | | | | |

Standard inlet air temperature model

| Function | Model : CRX | | | | | | | | |
|---|-------------|-----|-----|-----|-----|-----|------|------|------|
| | 5D | 10D | 20D | 30D | 50D | 75D | 100D | 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 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 | ● | | | | | | | | |

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> <p>Inner Screen Water-Resistant Nonwoven Fabric Cloth Outer Screen</p> <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>  | |
| | | | |
| Line Filter LSF-AL | | Location※1 | After CRX |
|  |  <p>Element : ELS</p> <p>Inner Screen Nonwoven Fabric Cloth High Quality Glass Fiber Nonwoven Fabric Cloth Outer Screen</p> <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</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> <p>Inner Screen Nonwoven Fabric Cloth High Quality Glass Fiber Nonwoven Fabric Cloth Outer Screen Oil-Resistant Plastic Form</p> <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</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> <p>Inner Screen Fibrous Activated Carbon (Orion Original) Nonwoven Fabric Cloth Outer Screen</p> <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>  | |
| | | | |

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.

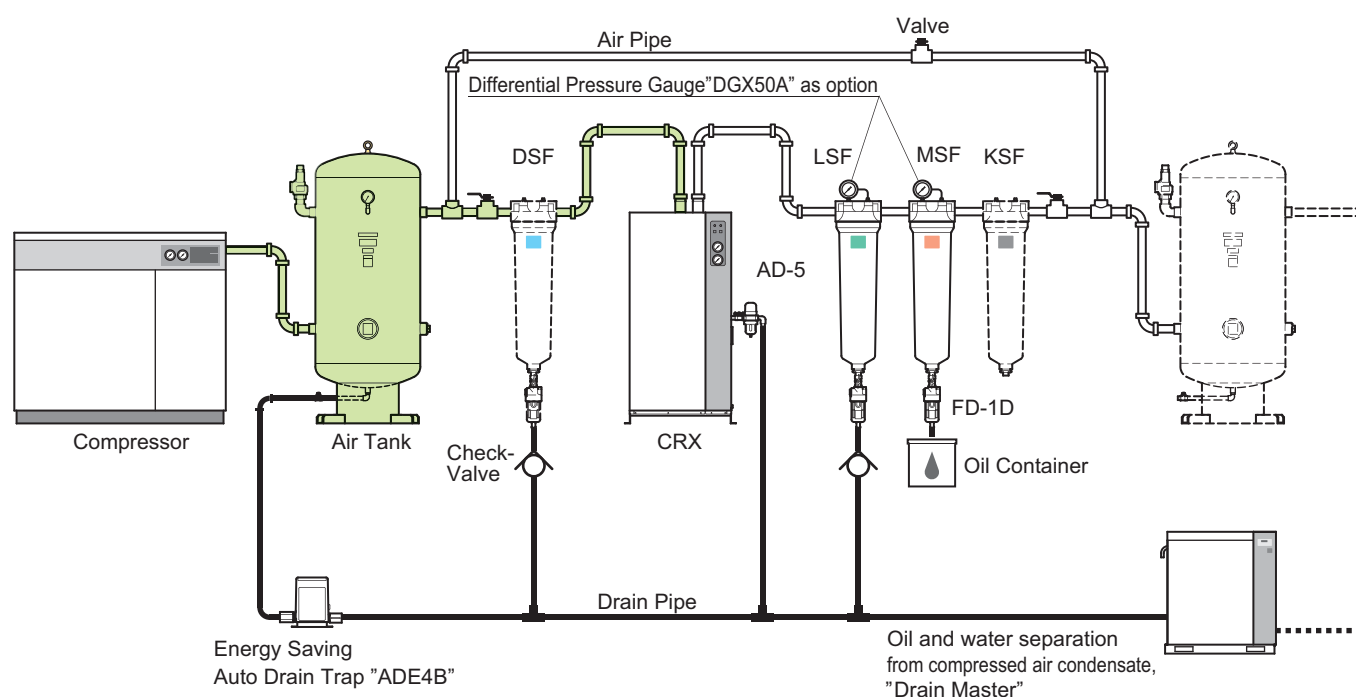
Safety Notes

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-HD Series / CRX-D Series



Refrigerated Air Dryer : High inlet air temp. model

| Descriptions | | Type | CRX | | | | | | | | | |
|--------------------------|--------|------|------------|------|------|------|-----------------|------|-----------------|-------------|-----------------|-----|
| | | | 3HD | 5HD | 10HD | 20HD | 30HD | 50HD | 75HD | 90HD | 100HD | |
| Air Processing Capacity | m³/min | | 0.32 | 0.7 | 1.2 | 3.1 | 4.6 | 7.6 | 8.8 | 10.7 | 14.9 | |
| Inlet Air Temperature | ℃ | | 10~80 | | | | Rated Condition | | | | | |
| Dew Point Temperature | ℃ | | 3~10 | | | | Air Pressure | | | | | |
| Ambient Temperature | ℃ | | 2~43 | | | | Ambient Temp. | | Dew Ponit (PDP) | | Inlet Air Temp. | |
| Operating Pressure | MPa | | 0.39~0.98 | | | | 0.69MPa | | 35℃ | | 10℃ | 50℃ |
| Dimensions | Height | mm | 463 | 550 | 619 | | 930 | 999 | 1054 | | 1229 | |
| | Depth | mm | 540 | 574 | 817 | | 979 | | 1007 | 1029 | 1023 | |
| | Width | mm | 240 | 255 | | | 305 | | 380 | 470 | 592 | |
| Mass | kg | | 23 | 30 | 40 | 46 | 87 | 92 | 108 | 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 | 1.62 | 2.08 | 2.11 | 3.00 | 4.40 | |
| Refrigerant | | | R407C | | | | | | | | | |

Refrigerated Air Dryer : Standard inlet air temp. model

| Descriptions | | Type | CRX | | | | | | | | |
|--------------------------|--------|------------|------|------|------|-----------------|------|------|-------------|------|------|
| | | | 5D | 10D | 20D | 30D | 50D | 75D | 100D | 110D | 120D |
| Air Processing Capacity | m³/min | 0.54 | 1.0 | 2.6 | 4.0 | 6.4 | 9.0 | 12.0 | 13.0 | 19.0 | |
| Inlet Air Temperature | ℃ | 10~50 | | | | Rated Condition | | | | | |
| Dew Point Temperature | ℃ | 3~10 | | | | Air Pressure | | | | | |
| Ambient Temperature | ℃ | 2~43 | | | | 0.69MPa | | 30℃ | | 10℃ | |
| Operating Pressure | MPa | 0.39~0.98 | | | | 30℃ | | 10℃ | | 35℃ | |
| Dimensions | Height | mm | 463 | 550 | 619 | | 930 | 999 | 1054 | | 1229 |
| | Depth | mm | 540 | 574 | 817 | | 979 | | 1007 | 1029 | 1023 |
| | Width | mm | 240 | 255 | | | 305 | | 380 | 470 | 592 |
| Mass | kg | 23 | 30 | 40 | 46 | 87 | 92 | 108 | 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 | 1.60 | 1.85 | 1.95 | 2.60 | 4.20 | |
| Refrigerant | | R407C | | | | | | | | | |



Specifications Clean Air Filter

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





| Descriptions | | | Type | 75-AL ^{※1} | 150-AL | 200-AL | 250-AL | 400-AL | 700-AL | 1000-AL | 1300-AL | 2000-AL | |
|----------------------------|-----------------------------|------|--------------------|---|--------|--------|--------|--------|---------|---------|---------|---------|--|
| | | | DSF/LSF/MSF/KSF | | | | | | | | | | |
| Air Processing Capacity ※2 | 0.69MPa | | m³/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 <div>Whichever comes first.</div> | | | | | | | | | |
| Dimensions | Pipe Connections | | | Rc3/8 | Rc1/2 | Rc3/4 | Rc1 | | Rc1 1/2 | | Rc2 | | |
| | Different Pressure | | | Rc1/4 | | | | | | | | | |
| | Gauge Connection | | | | | | | | | | | | |
| | 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/MFS DSF | NH-503MR built-in | | | | | | | | FD-1D | |
| | Differential Pressure gauge | | | 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

| | | Float operated | | Disc operated | Timer operated |
|---|-------------------|---|---|---|--|
| | | FD-1D | FD10-A | AD-5 | ADE4B |
| Item | |  |  |  |  |
| Maximum drain flow capacity ^{※1} | | 7 cm³/ cycle | 80 cm³/ cycle | 450 L / h | 0.32L/cycle (at 0.69MPa) |
| Operable pressure range | MPa | 0.05 ~ 0.98 | 0.20 ~ 0.98 | 0.29 ~ 0.98 | 0.25 ~ 0.98 |
| Operable temperature range | °C | 2 ~ 60 | | | 2 ~ 40 (Should not be operated in freezing conditions) |
| Processed fluid | | Compressed air drain | | | |
| Drain release method | | Float operated | | Disc operated | Solenoid valve, timer/temperature control |
| Power specifications | Power Source | - | | | Single phase 200V 50/60Hz |
| | Power consumption | - | | | 19/16 |
| Connections | Inlet | Rc 1/2 | | 1/2 | Rc 1/2 |
| | Drain outlet | Rc 1/4 | Rc 3/8 | Rc 1/2 | Rc 1/2 |
| Mass | kg | 0.4 | 1 | 1.7 | 1.2 |
| Outside dimensions | | Outside diameter: 62 × length: 159 | Outside diameter: 96 × length: 193 | Outside diameter: 86 × length: 198 | 150 (H) × 117 × 100 |

※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)

※Piping (inlet and outlet) for the ADE4B should have an inside diameter of at least 12mm.

※Please consult your Orion dealer for further details.

Differential Pressure Gauge



Model Selection For CRX Series

Model Selection

- 1 Temperature conditions
Table A : CRX5HD~100HD Table C : Air Pressure Coefficient
Table B : CRX10D~120D
- 2 Calculate the necessary air capacity for the model selection.
Air capacity required =
Intake air volume ÷ (A, B or 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 | 6m³/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 (CRX3HD~100HD)

| 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 | 1.29 | 0.62 | 0.80 | 0.92 | 0.55 | 0.71 | 0.82 | 0.48 | 0.63 | 0.79 |
| | 35 | 0.73 | 1.00 | 1.21 | 0.59 | 0.70 | 0.86 | 0.47 | 0.64 | 0.74 | 0.41 | 0.57 | 0.71 |
| | 40 | 0.55 | 0.75 | 0.91 | 0.44 | 0.56 | 0.66 | 0.37 | 0.52 | 0.58 | 0.33 | 0.42 | 0.51 |

B: Inlet Air Temperature Coefficient (CRX5D~120D)

| 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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Orion Machinery Co., Ltd. has been certified by CBPVI (Center of Boiler and Pressure Vessel Inspection and Research of state Bureau of Quality and Technical Supervision of the P.R. China) since 1998 as an authorized pressure vessel factory.

- This catalogue was issued as of Jan. 2010.
- All specifications and information are subject to change without notice.