

No.1 Share in Japan

ORION[®]

ISO Quality Policy

Orion strives to offer products that delight its customers.

オリオンクリーンエアシステム
冷凍式圧縮空気除湿装置

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

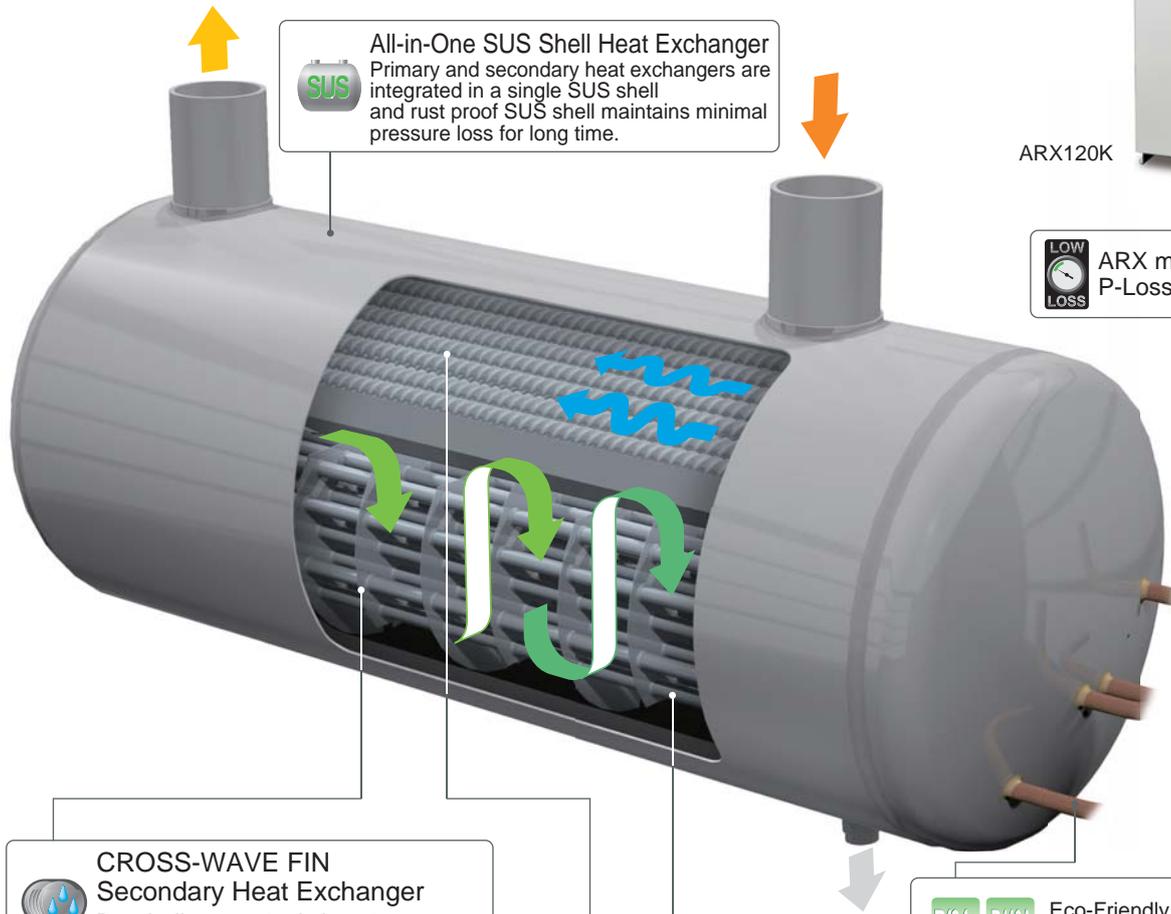
ORION Refrigerated Air Dryer

Feature-Packed Air Dryer for Energy Saving and Stable Productivity,
ORION ARX series



ARX120K

LOW LOSS ARX model
P-Loss under 0.015MPa



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.

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

R134a R410A Eco-Friendly refrigerant applied

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

ARX Pressure Loss Advantage

[Electricity Loss / year]

| | ORION ARX50HJ | 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

ARX Function Chart

High inlet air temperature model

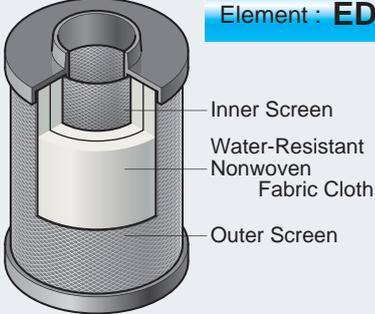
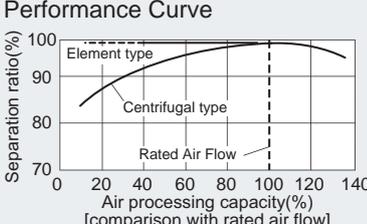
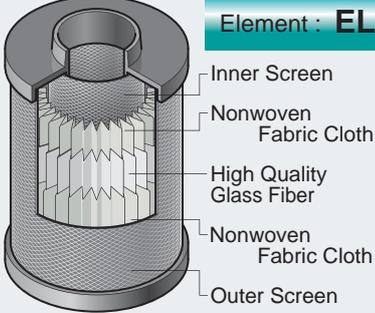
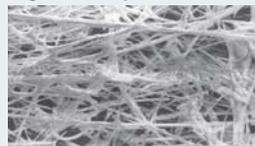
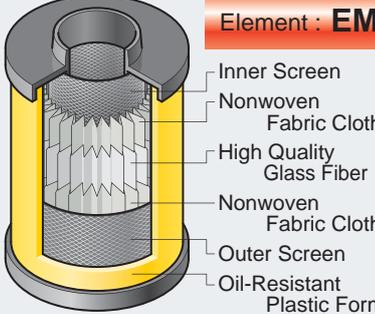
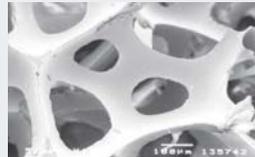
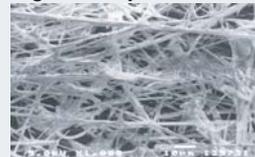
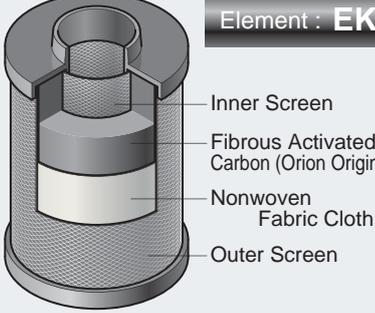
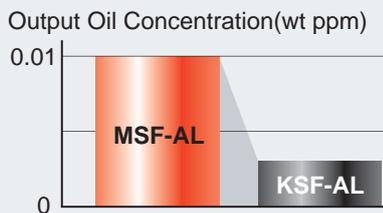
| Function | Model : ARX | | | | | | | | | |
|---|-------------|-----|------|------|------|------|------|------|-------|--------|
| | 3HJ | 5HJ | 10HJ | 20HJ | 30HJ | 50HJ | 75HJ | 90HK | 100HK | 120HK |
|  All-in-One SUS Shell Heat Exchanger SUS Shell Heat Exchanger | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|  TURBO TUBE Primary Heat Exchanger | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|  CROSS-WAVE FIN Secondary Heat Exchanger | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|  NICKEL-PLATED Copper Pipe | | | ● | ● | ● | ● | ● | ● | ● | ● |
|  R134a / R410A Refrigerant | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|  Heavy Duty Refrigerant Circuit | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|  Condenser Filter | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Wide Adjusting Range CCV (capacity control valve) | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Operation Lamp | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Alarm Lamp | | | | | | | | ● | ● | ● |
| Evaporating Pressure Gauge | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Air Pressure Gauge | | | ● | ● | ● | ● | ● | ● | ● | ● |
| Long Life Fan-Control Switch | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| One Touch Open Front Cabinet | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 3 Signal Outputs (remote, operation status, alarm) | | | | | | | | ● | ● | ● |
| Exhaust Duct | | | | | | | | | | Option |
| Float Operated Auto Drain Trap FD6 with Ball Valve | | | | | ● | ● | ● | ● | ● | ● |
| Float Operated Auto Drain Trap FD2 with Ball Valve | | ● | ● | ● | | | | | ● | |
| Float Operated Auto Drain Trap FD2 | ● | | | | | | | | | |
| Float Operated Auto Drain Trap AD-5 | | | | | | | | | | ● |

Standard inlet air temperature model

| Function | Model : ARX | | | | | | | | | |
|---|-------------|-----|-----|-----|-----|-----|------|------|------|--------|
| | 5J | 10J | 20J | 30J | 50J | 75J | 100J | 110K | 120K | 180K |
|  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 | | | ● | ● | ● | ● | ● | ● | ● | ● |
|  R134a / R410A Refrigerant | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|  Heavy Duty Refrigerant Circuit | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
|  Condenser Filter | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Wide Adjusting Range CCV (capacity control valve) | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Operation Lamp | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Alarm Lamp | | | | | | | | ● | ● | ● |
| Evaporating Pressure Gauge | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Air Pressure Gauge | | | ● | ● | ● | ● | ● | ● | ● | ● |
| Long Life Fan-Control Switch | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| One Touch Open Front Cabinet | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| 3 Signal Outputs (remote, operation status, alarm) | | | | | | | | ● | ● | ● |
| Exhaust Duct | | | | | | | | | | Option |
| Float Operated Auto Drain Trap FD6 with Ball Valve | | | | | ● | ● | ● | ● | ● | ● |
| Float Operated Auto Drain Trap FD2 with Ball Valve | | ● | ● | ● | | | | | | |
| Float Operated Auto Drain Trap FD2 | ● | | | | | | | | | |
| Float Operated Auto Drain Trap AD-5 | | | | | | | | | | ● |

ORION Clean Air Filter

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

| Drain Filter DSF-AL | | Location*1 | Before ARX |
|---|---|-----------------------------|---|
|  |  <p>Sectioned Drawing of Element</p> | <p>Element : EDS</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>Performance Curve</p>  |
| | | | <p>LOW LOSS P-loss 0.005MPa</p> |
| Line Filter LSF-AL | | Location*1 | After ARX |
|  |  <p>Sectioned Drawing of Element</p> | <p>Element : ELS</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 "DG-50(A)" installed (LSF400AL and bigger model)</p> |
| | | | <p>High Quality Glass Fiber</p>  |
| | | | <p>LOW LOSS P-loss 0.005MPa (Initial)</p> |
| Mist Filter MSF-AL | | Location*1 | After LSF-AL |
|  |  <p>Sectioned Drawing of Element</p> | <p>Element : EMS</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 "DG-50(A)" installed (MSF400AL and bigger model)</p> |
| | | | <p>Oil-Resistant Plastic Form High Quality Glass Fiber</p>   |
| | | | <p>LOW LOSS P-loss 0.01 ~ 0.02MPa</p> |
| Carbon Filter KSF-AL | | Location*1 | After MSF-AL |
|  |  <p>Sectioned Drawing of Element</p> | <p>Element : EKS</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>Output Oil Concentration (wt ppm)</p>  |
| | | | <p>LOW LOSS P-loss 0.009MPa</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 Filters 'before and after ARX dryer' for the best performance.

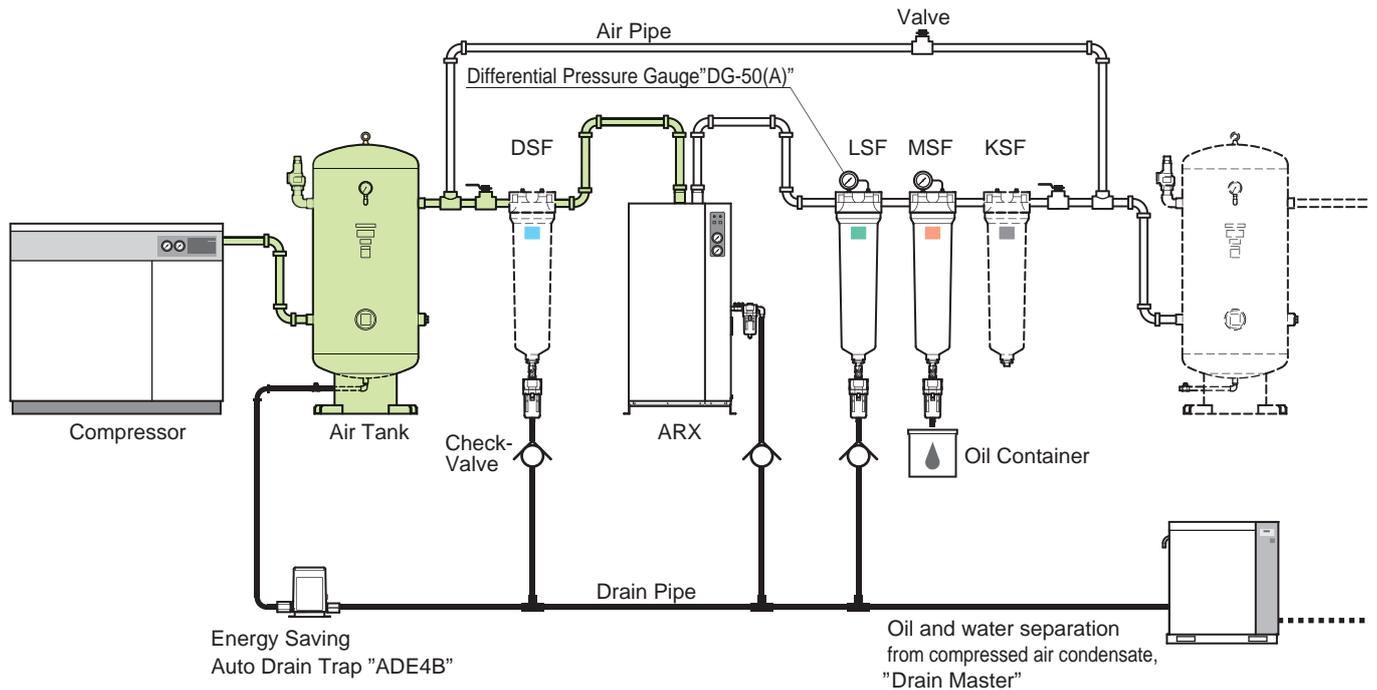
Safety Notes

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 ARX LSF MSF KSF | General Painting, Precision Machinery Industry, etc |
| ☆ DSF ARX LSF MSF | Standard Pneumatic |
| ARX LSF MSF | Standard Pneumatic |
| ▲ LSF ARX 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 ARX 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).
ARX 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 ARX).

Specifications Refrigerated Air Dryer

ARX Series



Refrigerated Air Dryer : High inlet air temp. model

| Descriptions | Type | ARX | | | | | | | | | | |
|--------------------------|---------------------|------------|------|------|------|-----------------|---------------|-----------------|-----------------|-------|--------|------|
| | | 3HJ | 5HJ | 10HJ | 20HJ | 30HJ | 50HJ | 75HJ | 90HK | 100HK | 120HK | |
| Air Processing Capacity | m ³ /min | 0.32 | 0.7 | 1.1 | 2.8 | 4.6 | 7.6 | 8.8 | 10.7 | 14.9 | 18.4 | |
| Inlet Air Temperature | °C | 10~80 | | | | | | | | | | |
| Dew Point Temperature | °C | 3~15 | | | | | | | | | | |
| Ambient Temperature | °C | 2~43 | | | | | | | | | | |
| Operating Pressure | MPa | 0.2~0.98 | | | | | | | | | | |
| | | | | | | Rated Condition | | | | | | |
| | | | | | | Air Pressure | Ambient Temp. | Dew Point (PDP) | Inlet Air Temp. | | | |
| | | | | | | 0.69MPa | 35°C | 10°C | 50°C | | | |
| Dimensions | Height | mm | 480 | 510 | 610 | | 900 | 990 | 1050 | 1054 | 1229 | 1275 |
| | Depth | mm | 450 | 600 | 820 | | 960 | 980 | 1010 | 1022 | 1023 | 1291 |
| | Width | mm | 180 | 240 | 240 | | 300 | | 380 | 470 | 592 | 702 |
| Mass | kg | 18 | 26 | 35 | 44 | 83 | 94 | 106 | 140 | 167 | 233 | |
| Pipe Connections | B | R1/2 | R3/4 | R1 | | R1 1/2 | | R2 | | | R2 1/2 | |
| Power Source (50Hz) | V | 1ph220±10% | | | | | | 3ph380V±10% | | | | |
| Power Consumption (50Hz) | kW | 0.27 | 0.28 | 0.37 | 0.74 | 1.9 | 2.0 | | 3.7 | 3.8 | 4.8 | |
| Refrigerant | | R134a | | | | | R410A | | | | | |

Refrigerated Air Dryer : Standard inlet air temp. model

| Descriptions | Type | ARX | | | | | | | | | | |
|--------------------------|---------------------|------------|------|------|------|-----------------|---------------|-----------------|-----------------|------|--------|------|
| | | 5J | 10J | 20J | 30J | 50J | 75J | 100J | 110K | 120K | 180K | |
| Air Processing Capacity | m ³ /min | 0.54 | 1.0 | 2.3 | 4.0 | 6.4 | 9.0 | 12.0 | 13.0 | 19.0 | 26.0 | |
| Inlet Air Temperature | °C | 10~50 | | | | | | | | | | |
| Dew Point Temperature | °C | 3~15 | | | | | | | | | | |
| Ambient Temperature | °C | 2~43 | | | | | | | | | | |
| Operating Pressure | MPa | 0.2~0.98 | | | | | | | | | | |
| | | | | | | Rated Condition | | | | | | |
| | | | | | | Air Pressure | Ambient Temp. | Dew Point (PDP) | Inlet Air Temp. | | | |
| | | | | | | 0.69MPa | 30°C | 10°C | 35°C | | | |
| Dimensions | Height | mm | 480 | 510 | 610 | | 900 | 990 | 1050 | 1054 | 1229 | 1275 |
| | Depth | mm | 450 | 600 | 820 | | 960 | 980 | 1010 | 1022 | 1023 | 1291 |
| | Width | mm | 180 | 240 | 240 | | 300 | | 380 | 470 | 592 | 702 |
| Mass | kg | 18 | 26 | 35 | 44 | 83 | 94 | 106 | 140 | 167 | 233 | |
| Pipe Connections | B | R1/2 | R3/4 | R1 | | R1 1/2 | | R2 | | | R2 1/2 | |
| Power Source (50Hz) | V | 1ph220±10% | | | | | | 3ph380V±10% | | | | |
| Power Consumption (50Hz) | kW | 0.26 | 0.27 | 0.36 | 0.68 | 1.7 | | 3.3 | 3.4 | 5.0 | | |
| Refrigerant | | R134a | | | | | R410A | | | | | |

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-AL1 | 2000-AL1 | |
| 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 (DSF / LSF / MSF 1300AL1, 2000AL1 : 0.1~0.98) | | | | | | | | | |
| | 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 | | | | | | | | | |
| When to replace filter element | | | One year or pressure loss 0.02 MPa for DSF, 0.035 MPa for LSF/MSF, 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 | LSF/MFS DSF | NH-503MR built-in, none with KSF | | | | | | | FD2, none with KSF | | |
| | Differential Pressure Gauge | | Option | | | | DG-50(A)(LSF • MSF Equipped) / DSF • KSF Option | | | | | |

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

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

※4. Model name of KSF is "KSF1300-AL" and "KSF2000-AL".

※5. Oil concentration is measured in conformity with ISO8573-2 "Test method of oil concentration", not including oil-vapor.

Auto Drain Trap

| Item | Float operated | | | Disc operated |
|--------------------------------|----------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| | FD2-G3 | FD6-G1 | FD-10-A | AD-5-G7 |
| Maximum drain flow capacity ※1 | 10 cm³/ cycle | 30 cm³/ cycle | 80 cm³/ cycle | 450 L / h |
| Operable pressure range | MPa 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 | | |
| | Drain outlet | ID ϕ 5.7 ~ 6.0 OD ϕ 8 | Rc 3/8 | Rc 1/2 |
| Mass | kg 0.3 | 0.45 | 1 | 1.7 |
| Outside dimensions | mm | Outside diameter: 63 x length: 178 | Outside diameter: 80 x length: 201 | Outside diameter: 96 x length: 193 |

※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 ARX Series

Model Selection

1 Temperature conditions
 Table A : ARX-HJ/HK Models
 Table B : ARX-J/K 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 ARX90HK, as its capacity exceeds the required value.

A: Inlet Air Temperature Coefficient (ARX-HJ/HK 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 |

※Please ask to your dealer about coefficient at dew point 3°C

B: Inlet Air Temperature Coefficient (ARX-J/K 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 |

※Please ask to your dealer about coefficient at dew point 3°C

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 |

ISO Certification

Orion Machinery Asia Co., Ltd is an ISO Certified, Quality Management company.



For inquiries, please contact the following representative:

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Important:

- This catalog contains product specifications as of Jun., 2016.
- 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.
- Designed by Orion Machinery Japan. Assembled in Thailand.