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**ORION**<sup>®</sup>  
冷熱と真空でイノベーション  
Innovating with Thermal Control and Vacuum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

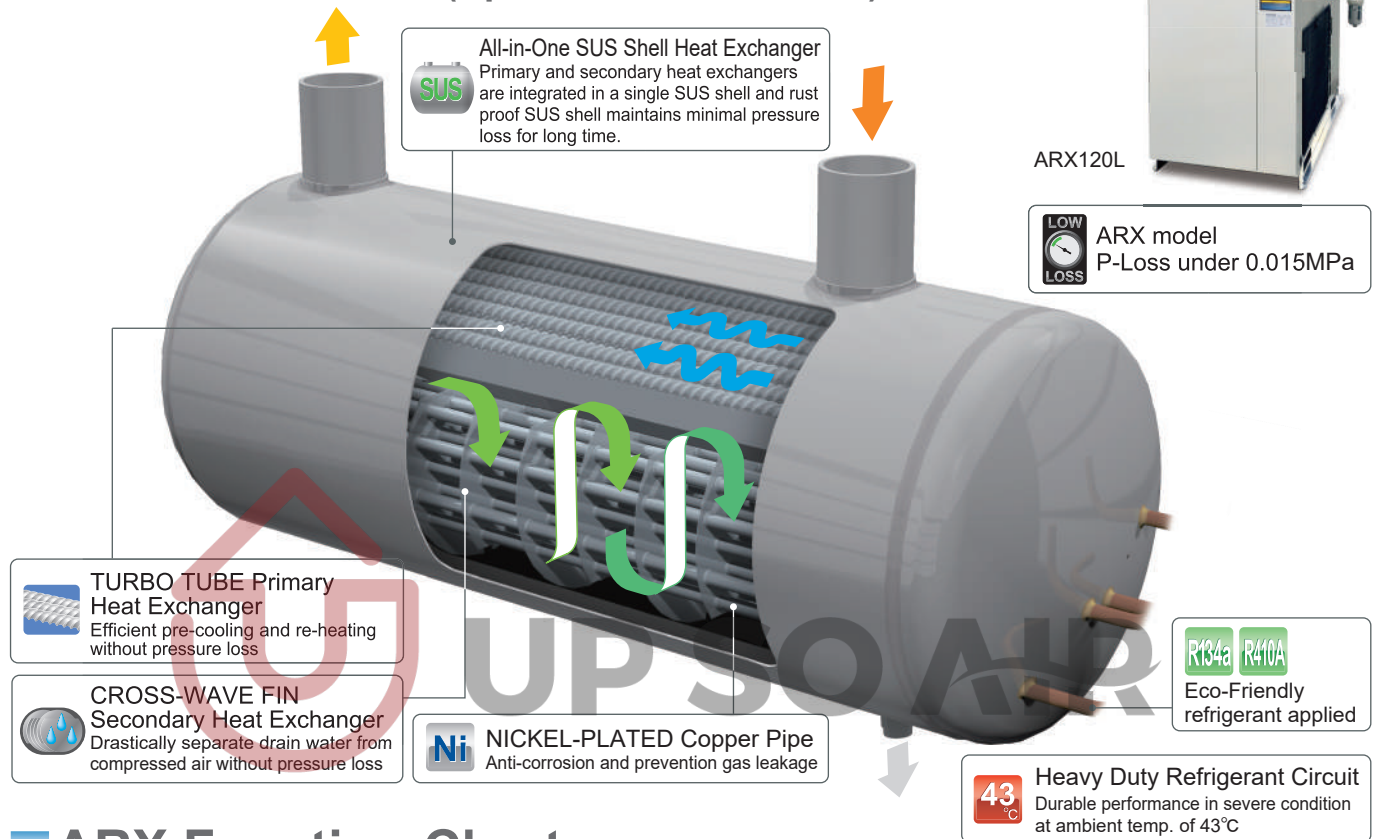
# Clean Air System

**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 (Up to ARX120HL / 180L)**


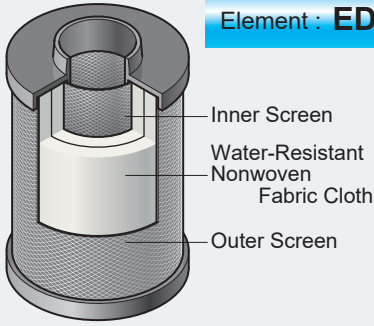
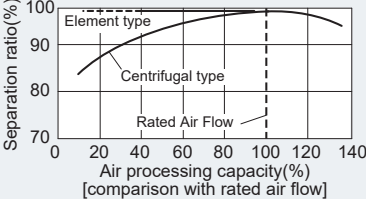

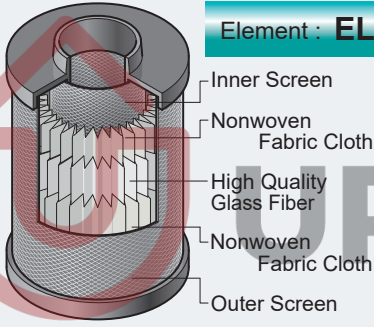
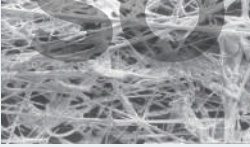

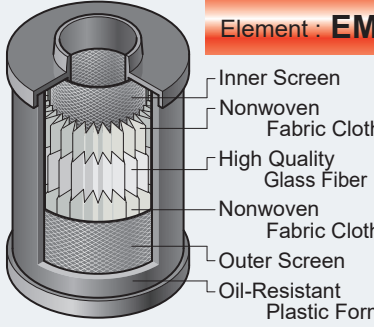
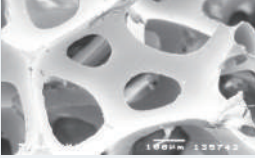
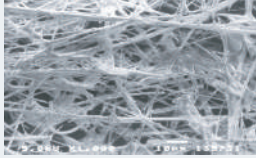

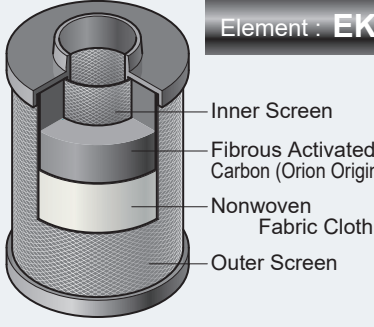



## ARX Function Chart

Function	Model : ARX																			
	Standard inlet air temperature model										High inlet air temperature model									
	5J	10J	20J	30J	50J	75J	100J	110L	120L	180L	3HJ	5HJ	10HJ	20HJ	30HJ	50HJ	75HJ	90HL	100HL	120HL
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																				
I/F (Remote ON/OFF, Operation Status, Alarm)	Option										Option									
Exhaust Duct																				
Float Operated Auto Drain Trap FD6 with Ball Valve																				
Float Operated Auto Drain Trap FD2 with Ball Valve																				
Float Operated Auto Drain Trap FD2																				
Disc Operated Auto Drain Trap AD-5 with Ball Valve																				

# ORION Clean Air Filter

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

Drain Filter DSF-AL		Location※1	Before ARX
	 <p>Element : <b>EDS</b></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><b>P-loss 0.005MPa</b></p> <p>Performance Curve</p> 	
Line Filter LSF-AL		Location※1	After ARX
	 <p>Element : <b>ELS</b></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 Precision different pressure gauge "DG-50(A)" installed (LSF400AL and bigger model)</p> <p><b>P-loss 0.005MPa (Initial)</b></p> <p>High Quality Glass Fiber</p> 	
Mist Filter MSF-AL		Location※1	After LSF-AL
	 <p>Element : <b>EMS</b></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 Precision different pressure gauge "DG-50(A)" installed (MSF400AL and bigger model)</p> <p><b>P-loss 0.01 ~ 0.02MPa</b></p> <p>Oil-Resistant Plastic Form      High Quality Glass Fiber</p>  	
Carbon Filter KSF-AL		Location※1	After MSF-AL
	 <p>Element : <b>EKS</b></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><b>P-loss 0.009MPa</b></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



## ORION Refrigerated Air Dryer ARX Series



### Standard inlet air temp. model

Descriptions		Type	ARX									
			5J	10J	20J	30J	50J	75J	100J	110L	120L	180L
Air Processing Capacity	m³/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		0.2~1.0									
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			1ph 220V 50Hz							3ph 380V 50Hz		
Power Consumption	kW		0.26	0.27	0.36	0.68	1.7			3.3	3.4	5.0
Refrigerant			R134a				R410A					

※ Rated condition: Compressed air inlet pressure (gauge pressure): 0.69MPa, Pressure dew point: 10°C, Inlet air temperature: 35°C, Ambient temperature: 30°C  
 ※ Air Processing Capacity is converted to the suction air condition (atmospheric, 32°C, 75%RH). ※ Refer to the specifications sheet for further details.

### High inlet air temp. model

Descriptions		Type	ARX									
			3HJ	5HJ	10HJ	20HJ	30HJ	50HJ	75HJ	90HL	100HL	120HL
Air Processing Capacity	m³/min		0.32	0.7	1.1	2.8	4.6	7.6	8.8	10.7	14.9	18.4
Inlet Air Temperature	℃		10~80									
Dew Point Temperature	℃		3~15									
Ambient Temperature	℃		2~43									
Operating Pressure	MPa		0.2~1.0									
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			1ph 220V 50Hz							3ph 380V 50Hz		
Power Consumption	kW		0.27	0.28	0.37	0.74	1.9	2.0		3.7	3.8	4.8
Refrigerant			R134a				R410A					

※ Rated condition: Compressed air inlet pressure (gauge pressure): 0.69MPa, Pressure dew point: 10°C, Inlet air temperature: 50°C, Ambient temperature: 35°C  
 ※ Air Processing Capacity is converted to the suction air condition (atmospheric, 32°C, 75%RH). ※ Refer to the specifications sheet for further details.

### Heavy Duty model

Descriptions \ Type		ARX							
		2300A	3100A-E	3500A-E	4500A-E	2900A-W	4100A-WE	5300A-WE	7400A-WE
		Air Cooled Models				Water Cooled Models			
Air Prossessing capacity	m³/min	23	31	35	45	29	41	53	74
Inlet Air Temperature	℃	10~60				10~60			
Dew Point Temperature	℃	3~15				3~15			
Ambient Temperature	℃	2~45				2~45			
Operation Pressure	MPa	0.29~1.0				0.29~1.0			
Dimensions	Height	mm 1500			1500	1500	1500	1500	1620
	Depth	mm 1500			1996	1000	1000	1199	1654
	Width	mm 802			850	802	802	850	877
Mass	kg	323	385	380	470	278	350	395	495
Pipe Connections	FLG	2·1/2B(65A)	3B(80A)		4B(100A)	2·1/2B(65A)	3B(80A)	4B(100A)	
Dual-Drive Eco System		—	○			—	○		
Power Source		3ph 380V 50Hz				3ph 380V 50Hz			
Power Consumption	kW	5.6	10		12	4.2	6.8	9.5	12.5
Recommended Pre-Filter (Option)		DSF2900A	DSF3500A		DSF5300A	DSF2900A	DSF4100A	DSF5300A	DSF8000A
Refrigerant		R407C				R407C			R410A

※ Rated condition: Compressed air inlet pressure (gauge pressure): 0.69MPa, Pressure dew point: 10°C, Inlet air temperature for air cooled model: 50°C, Ambient temperature for air cooled model: 35°C, Inlet air temperature for water cooled model: 45°C, Cooling water temperature for water cooled model: 32°C at specified water flow rate. ※ Air processing capacity figures are based on ANR and adjusted to atmospheric pressure, 32°C, 75% RH. ※ Refer to the specification sheet for further details. ※ Please install Drain Filter (DSF) before air dryer to guarantee its performance.  
 ※ Air connection flange: JIS 10K FF, No companion flange is attached.

## ORION Clean Air Filter



### AL Small-size Air Filter

Descriptions			Type DSF/LSF/MSF/KSF	※1 75-AL	150-AL	200-AL	250-AL	400-AL	700-AL	1000-AL	※4 1300-AL1	※4 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	
Casing Material				Aluminum Die Casting (All AL-Filter are alumite-treated on the inside surface. )									
Operating Range	Fluid			Compressed Air									
	Inlet Air Pressure		MPa	0.05~1.0 (DSF / LSF / MSF 1300AL1, 2000AL1 : 0.1~1.0)									
	Inlet Air Temperature		℃	5~60									
	Ambient Temperature		℃	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 "Compressed air - Part 2 : Test methods for oil aerosol content" , not including oil-vapor.

### SUS Large-size Air Filter

Descriptions		Type	2900A	3500A	4100A	5300A	6100A	8000A	
		DSF/LSF/MSF/KSF							
Air processing capacity		0.69 MPa m³/min	29	35	41	53	61	80	
Body and housing			Stainless steel						
Operating Ranges	Fluid		Compressed Air						
	Operating Ranges		MPa 0.1~1.0 (DSF: 0.2~1.0, KSF:0.05~1.0)						
	Inlet Air Temperature		°C 5~60					5~60	
	Ambient Temperature		°C 2~60					2~60	
Performance	Filtration		DSF : 5µm (Liquid water separation efficiency: 99%) LSF : 1µm (Filtration efficiency: 99.999%) MSF : 0.01µm (Filtration efficiency: 99.999%) KSF : Adsorption by activated carbon fiber						
	Outlet Oil Concentration		wt ppm MSF : 0.01 KSF : 0.003 ※ Subject to inlet air conditions of the system piping.						
When to replace filter element			One year or pressure loss 0.02 MPa for DSF, 0.035 MPa for LSF/MSF, whichever comes first.						
Air Connection (FLG)			2 1/2B (65A), JIS 10K FF		3B (80A), JIS 10K FF		4B (100A), JIS 10K FF		
Mass			kg 26	28		DSF/LSF/MSF : 48 KSF : 46 DSF / LSF / MSF / KSF : 95			
Accessories	Filter Element	Type	EDS/ELS EMS/EKS	1300	2000		2000		
		Quantity		2	2		3	4	
	Auto Drain Trap			FD-10-A (DSF) FD2 (LSF/MSF)		None with KSF			
	Pressure Differential Gauge			DG-50A (Comes standard only with the MSF. Available as an option on other models.)					
	Other			-					Stand

※Air processing capacity is converted to the suction air condition(at atmospheric pressure, 32deg.C and 75%). ※Special-order models available with an air pressure specification of 1.0 MPa. ※Oil concentration is measured in conformity with ISO8573-2 "Compressed air - Part 2 : Test methods for oil aerosol content" , not including oil-vapor. ※Air connection flange : JIS 10K FF, No companion flange is attached. ※ Refer to the specification sheet for further details.

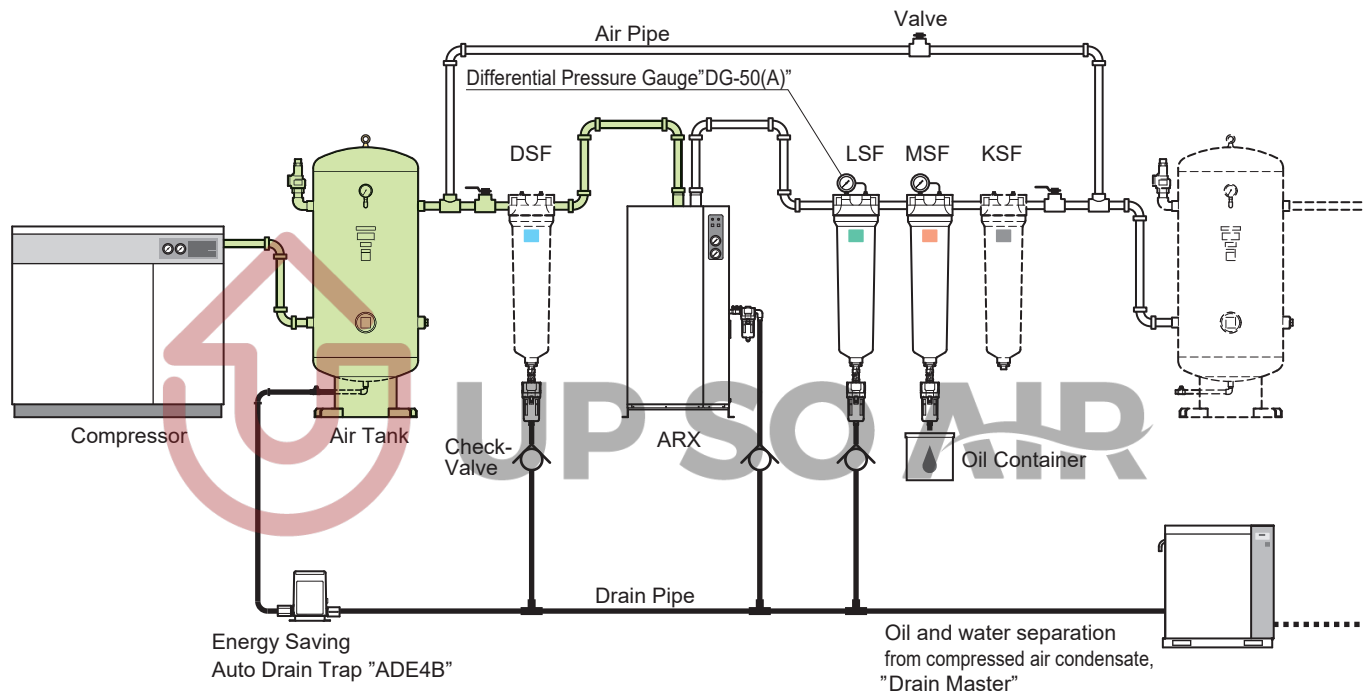
## Basic System Examples

### 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
★ ☆ <b>DSF</b> <b>ARX</b> <b>LSF</b> <b>MSF</b> <b>KSF</b>	General Painting, Precision Machinery Industry, etc
☆ <b>DSF</b> <b>ARX</b> <b>LSF</b> <b>MSF</b>	Standard Pneumatic
<b>ARX</b> <b>LSF</b> <b>MSF</b>	Standard Pneumatic
▲ <b>LSF</b> <b>ARX</b> <b>MSF</b>	▲ Not recommended

- 1) In case no Drain Filter (DSF) before large ARX air dryer (Heavy duty model) does not cover its warranty.
- 2) Please consult with your dealer or ORION directly for further information when compressed air is supplied for medical, food, or clean room use.
- 3) Please set up above ☆ system when Oil-Free compressor is installed.
- 4) Please set up above ★ system when intake air of an air compressor includes large amount of oil droplets.
- 5) ▲ 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.
- 6) Please refer to "Compressed Clean Air catalog" (D-AG02 ) for details of "DRAIN MASTER" series.
- 7) 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 
- 8) Please install a check valve on exhaust pipe of filter.
- 9) Please consult with your dealer or ORION directly when you are not certain of air tank location (before or after ARX).

## Model Selection

### 1. For Air Dryer

1	<b>Temperature conditions</b>
	Table A : High Inlet Air Temp. Models
	Table B : Standard Air Temp. Models
	Table C : Water Cooled Models
	Table D : Air Cooled Models
	Table E : Air Pressure Coefficient

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 → <b>0.70</b> Air Pressure coefficient → <b>0.93</b>
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2	Calculate the necessary air capacity for the model selection. <b>Air capacity required =</b> <b>Intake air volume / ( A or B or C or D × E )</b>
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2	Air capacity required for dryer. <b>6 / (0.70×0.93)=9.2m³/min</b>
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3	Please select the suitable model from the specification which has bigger Air Processing Capacity (P3) than the air capacity required.
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3	The suitable model to process 9.2m³/min is ARX90HL, as its capacity exceeds the required value.
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#### A: Inlet Air Temperature Coefficient ( High Inlet Air Temp. 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 ( Standard Inlet Air Temp. 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: Inlet Air Temperature Coefficient ( Heavy Duty / Water cooled Models )

Inlet air temperature (°C)	40			45			50			55			60		
Outlet dew point (°C)	5	10	15	5	10	15	5	10	15	5	10	15	5	10	15
Coefficient	0.88	1.14	1.14	0.77	1.00	1.14	0.66	0.91	1.10	0.59	0.83	0.98	0.54	0.75	0.89

#### D: Inlet Air Temperature Coefficient ( Heavy Duty / Air Cooled Models )

Inlet air temperature (°C)		40			45			50			55			60		
Outlet dew point (°C)		5	10	15	5	10	15	5	10	15	5	10	15	5	10	15
Ambient temperature (°C)	30	0.85	1.15	1.37	0.83	1.12	1.35	0.78	1.06	1.27	0.67	0.88	1.04	0.62	0.80	0.92
	32	0.82	1.12	1.34	0.80	1.09	1.31	0.76	1.03	1.24	0.64	0.85	1.01	0.60	0.75	0.89
	35	0.79	1.09	1.30	0.77	1.06	1.28	0.73	1.00	1.21	0.62	0.81	0.98	0.57	0.70	0.86
	40	0.60	0.81	0.98	0.58	0.80	0.96	0.55	0.75	0.91	0.47	0.62	0.75	0.44	0.56	0.66

#### E: Air Pressure Coefficient

Air Pressure (MPa)	0.20	0.29	0.39	0.49	0.59	0.69	0.78	0.88	0.93	1.0
Coefficient	0.67	0.73	0.80	0.87	0.93	1.00	1.07	1.13	1.16	1.20

\*Please ask to ORION dealer about coefficient at dew point 3°C \*The coefficient is only for reference, please ask ORION dealer about its guaranteed performance.

### 2. For Air Filter

Calculate the necessary air capacity for the model selection.

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





#### Pressure Correction Coefficient ( inlet pressure )

Pressure (MPa)	0.20	0.29	0.39	0.49	0.59	0.69	0.78	0.88	1.0
Pressure Correction Coefficient	0.38	0.49	0.62	0.75	0.87	1.00	1.06	1.12	1.17



## Accessories

### Auto Drain Trap

		Float operated			Disc operated
		FD2-G3	FD6-G1	FD-10-A	AD-5-G7
Item					
Maximum drain flow capacity ※1		10 cm <sup>3</sup> / cycle	30 cm <sup>3</sup> / cycle	80 cm <sup>3</sup> / cycle	450 L / h
Operable pressure range		MPa 0.1 ~ 1.0		0.20 ~ 1.0	0.29 ~ 1.0
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	ID $\phi$ 5.7 ~ 6.0 OD $\phi$ 8		Rc 3/8	Rc 1/2
Mass	kg	0.3	0.45	1	1.7
Outside dimensions		mm Outside diameter: 63 × length: 178	mm Outside diameter: 80 × length: 201	mm Outside diameter: 96 × length: 193	mm 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 5)

※Refer to the specification sheet for further details.

### Differential Pressure Gauge



### Various Accessories Available



ORION MACHINERY ASIA CO., LTD.

### ORION MACHINERY ASIA PRODUCTS



For inquiries, please contact the following representative:



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#### Important:

This catalog contains product specifications as of July, 2021.

- 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.