

Clean Air System

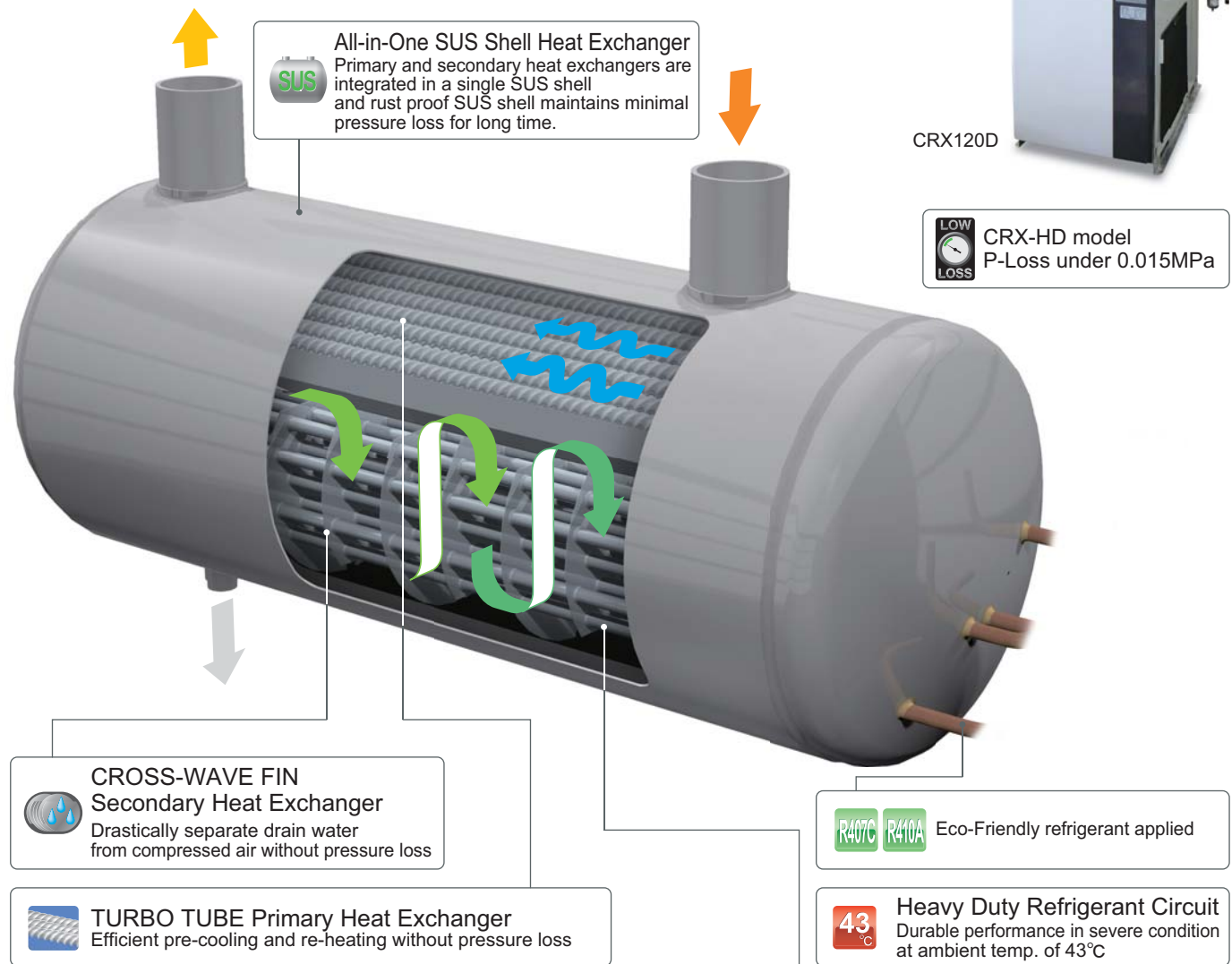
Low Pressure Loss & Energy Saving
Eco-Friendly Refrigerant Applied
Powerful performance in Asia
with heavy duty specification



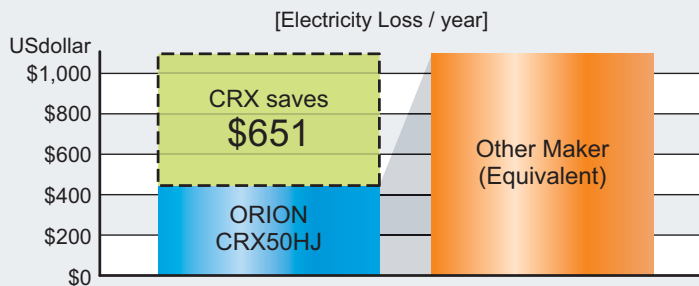
Best Match for Inverter Compressor & Oil-Free Compressor

ORION Refrigerated Air Dryer

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



CRX Pressure Loss Advantage



	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



Condenser Filter
Protection against dust and easy maintenance



※1: Please refer to detail on page 2

CRX Function Chart

High inlet air temperature model

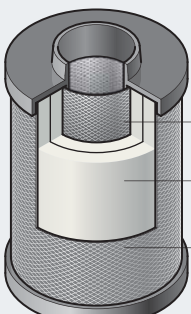
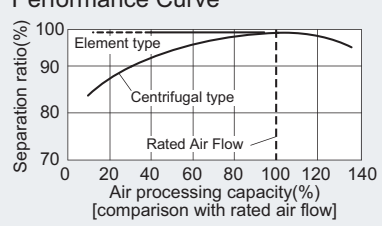
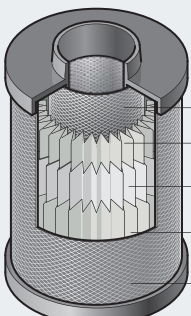
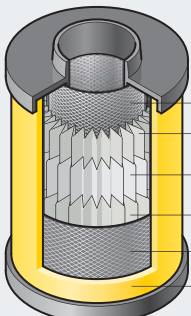
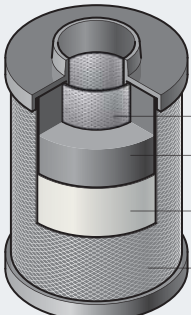
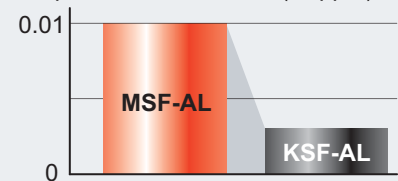
Function	Model : CRX								
	3HD	5HD	10HD	20HD	30HJ	50HJ	75HJ	90HD	100HD
 All-in-One SUS Shell Heat Exchanger		●	●	●	●	●	●	●	●
 SUS Shell Heat Exchanger	●								
 TURBO TUBE Primary Heat Exchanger	●	●	●	●	●	●	●	●	●
 CROSS-WAVE FIN Secondary Heat Exchanger	●	●	●	●	●	●	●	●	●
 NICKEL-PLATED Copper Pipe			●	●	●	●	●	●	●
 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
	 Element : EDS Inner Screen Water-Resistant Nonwoven Fabric Cloth Outer Screen Sectioned Drawing of Element	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-loss 0.005MPa Performance Curve 	
Line Filter LSF-AL		Location※1	After CRX
	 Element : ELS Inner Screen Nonwoven Fabric Cloth High Quality Glass Fiber Nonwoven Fabric Cloth Outer Screen Sectioned Drawing of Element	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-loss 0.005MPa (Initial) High Quality Glass Fiber 	
Mist Filter MSF-AL		Location※1	After LSF-AL
	 Element : EMS Inner Screen Nonwoven Fabric Cloth High Quality Glass Fiber Nonwoven Fabric Cloth Outer Screen Oil-Resistant Plastic Form Sectioned Drawing of Element	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-loss 0.01 ~ 0.02MPa Oil-Resistant Plastic Form High Quality Glass Fiber  	
Carbon Filter KSF-AL		Location※1	After MSF-AL
	 Element : EKS Inner Screen Fibrous Activated Carbon (Orion Original) Nonwoven Fabric Cloth Outer Screen Sectioned Drawing of Element	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-loss 0.009MPa Output Oil Concentration(wt ppm) 	

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.

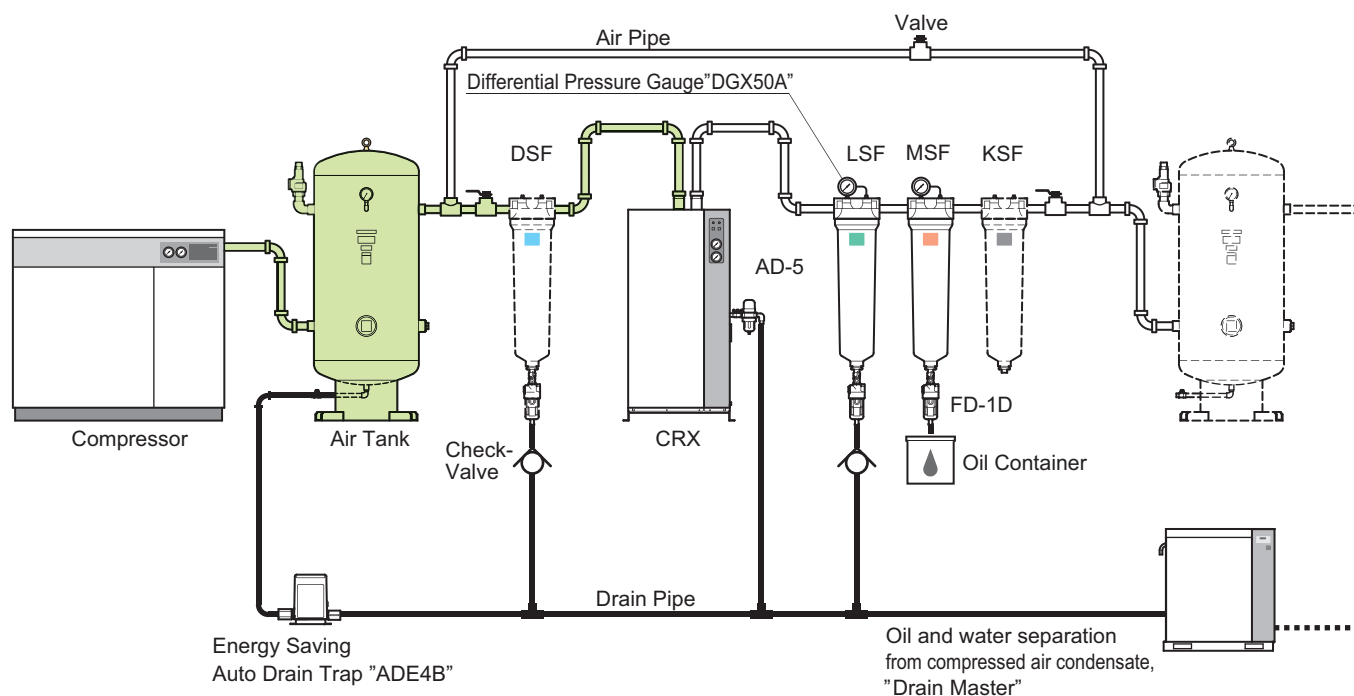
Safety Notes

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	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 Air PressureAmbient Temp.Dew Ponit (PDP)Inlet Air Temp.					
Dew Point Temperature	℃	3~10									
Ambient Temperature	℃	2~43									
Operating Pressure	MPa	0.2~0.98				0.69MPa	35℃	10℃	50℃		
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	m³/min	0.59	1.1	2.8	4.4	7.0	9.9	13.2	14.3	20.9	
	Ambient 30°C		0.54	1.0	2.6	4.0	6.4	9.0	12.0	13.0	19.0	
Inlet Air Temperature		°C	10~50			Rated Condition						
Dew Point Temperature		°C	3~10									
Ambient Temperature		°C	2~43			Air Pressure		Ambient Temp.		Dew Ponit (PDP)		
Operating Pressure		MPa	0.2~0.98			0.69MPa		25°C 30°C		10°C 35°C		
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		



Specifications Clean Air Filter

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

Descriptions			Type	※1	75-AL	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		℃	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									
Filter Element Replacement	Usual			1 year									
	Pressure Loss		MPa	DSF : 0.02 / LSF ・ MSF : 0.035								Which ever 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/MFS 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. φ16, 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 cm³/ cycle	30 cm³/ cycle	80 cm³/ cycle	450 L / h
Operable pressure range		MPa	0.05 ~ 0.98	0.1 ~ 1.0	0.20 ~ 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	φ4mm	Rc 3/8	Rc 1/2
Mass		kg	0.4	0.45	1
Outside dimensions		mm	Outside diameter: 62 × length: 159	Outside □ 80 × length: 201	Outside diameter: 96 × length: 193

Differential Pressure Gauge



※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.

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	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 (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.