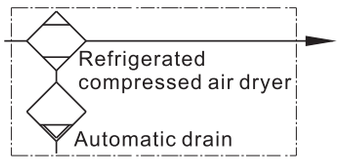
Preparation Unit——refrigerated compressed air dryers

RA,RF Series

Comparison of characteristics

AirTAC's air dryer	Other's air dryer
1 The body of the evaporator is made of stainless steel, which can avoid the secondary pollution of the purified air.	1 More than 80% of the evaporators are made of carbon steel, which may cause the secondary pollution of the purified air.
2 The heat exchange of the evaporator is realized by the patented technology of channel baffle with efficiency 100%.	2 The refrigerant cannot reach every corner of the evaporator and the heat exchange efficiency of 70%.
3 The strainer of the drain separator is made of stainless steel and 100% of the water is removed without the effect of the speed of the airflow.	3 The separating principle of baffle impaction is applied and only 70%~90% of the water is removed with the effect of the speed of the airflow.
4 A special re-heating process is designed to avoid condensed water dropping at the outlet and to prevent the corrosion of the circuit system.	4 More than 50% of the products are without re-heating system and drips may rust the circuit system due to the temperature difference.
5 A manual blowdown device is equipped at the front end of the auto drainer to effectively prevent any impurities from the drainer.	5 99% of the auto drainers are without a manual blowdown device, which cause blocking and leaking of the drainer and the service life being shortened.
6 A fan motor is equipped to cool the ambient temperature and effectively dissipating heat.	6 99% of the products are without an auxiliary heat dissipation device.

Symbol



Specification

Model		RAD003F 220□	RAD005F 220□	RAD010F 220□	RAD015F 220□	RAN020F 220□	RAN030F 220□	RAN050F 220□	RAN075F 220□	RAN100F 220□	RAN150F 380□
Air process capacity(Nm³/min)		Max 0.5	0.5~0.8	0.8~1.2	1.2~1.8	1.8~2.6	2.6~3.8	3.8~6.5	6.5~8.5	8.5~13	13~18
Operating pressure(MPa)		0.7									
Minimum inlet air pressure(MPa)		0.4									
Maximum inlet air pressure(MPa)		1.0									
Inlet air temperature(℃)		Max 65									
Ambient temperature (℃)		Max 40									
Outlet air dew point(℃)		-17~-23									
Outlet air pressure dew point (℃)		2~10									
Refrigerant		R134a				R22					
Power supply voltage		220V / 50Hz									380V/50Hz
Refrigerating capacity of the compressor (W)		460		820	1185	2330	3240	3635	5135	7095	9200
Current of the compressor (AMP)		1.01		2.09	2.30	3.50	4.50	5.20	8.00	10.70	4.80
Motor capacity of the compressor(W)		150		230	460	750	995	1115	1680	2330	2800
Capacity of the fan motor(W)		45		50	80		130	200	130/200		200×3
Current of the fan motor (AMP)		0.21		0.23	0.40		0.60	0.95	0.60/0.95		0.95×3
RPM of the fan motor(RPM)		1400		1380							
Air volume(m³/hr)		470		520	1100		2300	3200	2300/3200		3200×3
Dimension of the fan motor		Φ230		Φ250	Φ300		Φ350	Φ400	Φ350/Φ400		Φ400
Dimensions (mm)	Length	640	845	905	955	1055	1085	1115	1330	1385	1485
	Width	545	340	340	370	370	410	430	540	540	640
	Height	535	705	775	775	905	1045	1195	1590	1670	1550
Port size (male thread)		3/4" (with a 1/2" adapter)		3/4"	1"		1-1/2"		2"		3"
Weight(kg)		35	45	50	60	78	107	116	195	213	260
Air compressor KW(standard)		2.2KW	3.7KW	7.5KW	11KW	15KW	22KW	37KW	56KW	75KW	112KW

RA,RF Series

Ordering code

RA D 003 F 220 A

Series code

RA: Refrigerated compressed air dryer (standard type)
RF: Refrigeration compressed air dryer (low temperature type) ①

Frequency

A: 50Hz
B: 60Hz

Refrigerant category

Refrigerant category	Output of the applicable air compressor
D: Refrigerant R134a	3~15HP
N: Refrigerant R22	20~150HP

Voltage

200: AC200V
220: AC220V
240: AC240V
380: AC380V
415: AC415V

Output of the air compressor

003: 3HP
005: 5HP
010: 10HP
015: 15HP
020: 20HP
030: 30HP
050: 50HP
075: 75HP
100: 100HP
150: 150HP

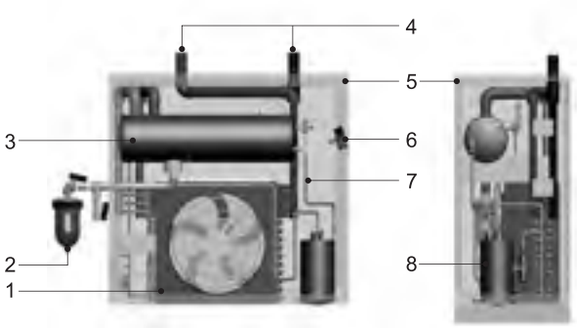
Type of cooling

F: Air-cooled

Note ①: The low temperature type is still in development.

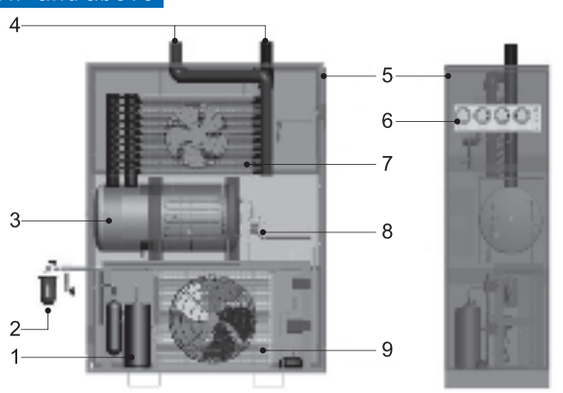
Construction principle

50HP or below



No.	Name
1	Condenser
2	Drainer
3	Evaporator
4	Heat exchange piping
5	Outer container
6	Refrigerant pressure gauge
7	Refrigerant piping
8	Compressor

75HP and above



No.	Name
1	Compressor
2	Drainer
3	Evaporator
4	Heat exchange piping
5	Outer container
6	Refrigerant pressure gauge
7	Cooler
8	Refrigerant piping
9	Condenser

Installation, operation and maintenance

Installation

1.Calculate the actual air process capacity of the air compressor and operating pressure to select the model.

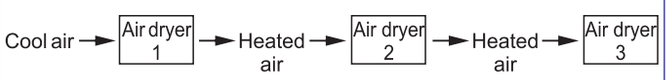
Actual air process capacity

=	Theoretical air process capacity	×	Corrected inlet air temperature (A)	×	Corrected inlet air pressure (B)	× Corrected ambient temperature (C)

Note:Refer to table 1 for value (A)
Refer to table 2 for value (B)
Refer to table 3 for value (C)

2. Installation requirement: Allow ample space around the air dryer and avoid locations where a dryer could draw in high temperature air that is discharged from other dryer.
3.Installation environment: Use the air dryer with an ambient temperature between 5ºC~40ºC.
4.Place the air dryer horizontally and avoid locations subjected to vibration.
5.Avoid locations that are confined space or contain corrosive gases
6.Do not allow the weight of the air piping to lie directly on the air dryer. Apply a bracket under the piping to prevent the bending moment resulting from the vibration of the piping.
7.Use the drain tube in a inclined angle to discharge drainage outside.
8.Install the air dryer with an independent grounded power supply and a suitable circuit applicable for the specific model.

Improper installation (heat cycle in a short distance) ×



Correct installation √

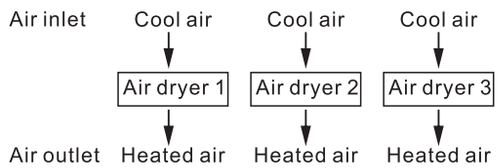


Table 1

Corrected inlet air temperature(A)	
Inlet air temperature	Corrected value
45ºC	0.85
50ºC	0.92
55ºC	0.94
60ºC	0.97
65ºC	1.00
70ºC	1.18
75ºC	1.24
80ºC	1.30

Table 2

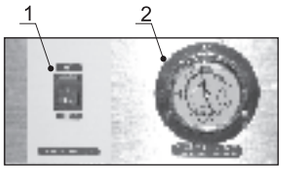
Corrected inlet air pressure (B)	
Inlet air pressure	Corrected value
0.4MPa	1.12
0.5MPa	1.05
0.6MPa	1.03
0.7MPa	1.00
0.8MPa	0.97
0.9MPa	0.94
1.0MPa	0.91

Table 3

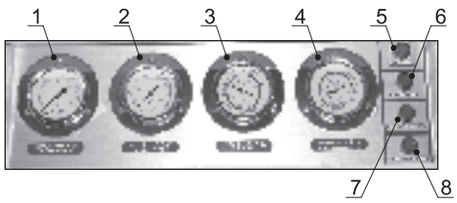
Corrected ambient temperature (C)		
Ambient temperature	Corrected value	
	Dew point 2ºC	Dew point 10ºC
25ºC	0.65	0.34
30ºC	0.78	0.46
35ºC	1.00	0.66
40ºC	1.22	0.86

Operation

1. Operating condition: Strictly according to the attached instruction. Avoid any overload.
2.Stop using the air dryer when the ambient temperature being lower than 5ºC to avoid ice blockage.
3.An interval of 3 minutes are required to re-start the air dryer. Otherwise any operation may be failed.
4.Strictly comply with the standard operating pressure range of the refrigerant evaporation thermometer;
R134a(0.19MPa~0.35MPa);R22(0.38MPa~0.6MPa)
5.Use the function keys on the operation panel proficiently and correctly.



1:Power switch
Pull the switch upward (ON) to connect the power with the green light being turned on
Pull the switch downward (OFF) to disconnect the power with the green light being turned off
2:Low-pressure gauge of the refrigerant: indicating the saturation pressure value of the refrigerant in the evaporator.



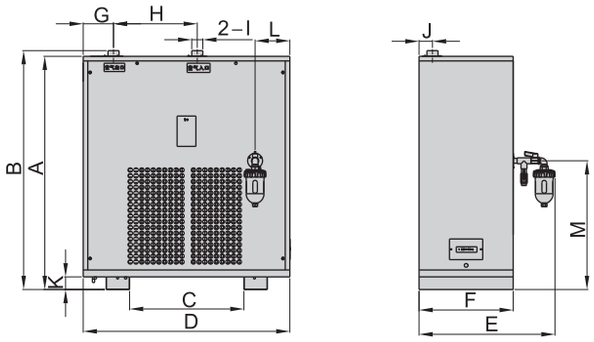
1: Air inlet pressure: indicating the air pressure at the inlet of the air dryer.
2:Air outlet pressure: indicating the air pressure at the outlet of the air dryer.
3:High pressure: indicating the condensing pressure of the refrigerant.
4:Evaporating temperature: indicating the saturation pressure value of the refrigerant in the evaporator.
5:Start button (START): push the button and the air dryer starts operation.
6:Stop button (STOP): push the button and the air dryer stops operation.
7:High pressure indicator light: the high pressure controller in the air dryer is tripped when the light turns on. Re-start the air dryer after inspection.
8:Overload indicator light: indicating the current overload of the compressor and the overload relay being tripped. Re-start the air dryer after the malfunction being resolved.

Maintenance

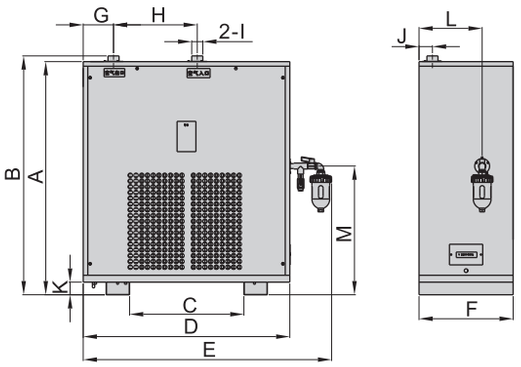
1.Periodic inspection:
Examine the auto drainer and open the manual valve in the front end to extend the service life of the auto drain.
2.Periodic maintenance:
Clean the dust and foreign material on the cooler with a pneumatic gun to avoid any impact on the heat dissipation.
3.Caution:
Turn off the power and release the air pressure before maintenance to avoid any dangerous situation.

Dimensions (mm)

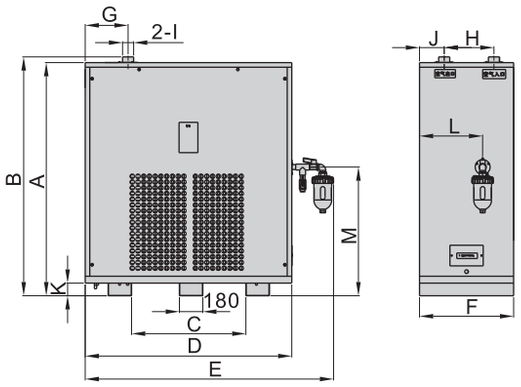
RAD003F



RAD005F~RAN100F



RAN150F



Model\symbol	A	B	C	D	E	F	G	H	I	J	K	L	M
RAD003F	510	535	485	640	545	340	130	220	3/4" ①	100	40	170	280
RAD005F	680	705	490	640	845	340	54	250	3/4" ①	45	60	108	332
RAD010F	750	775	482	700	905	340	49	307	3/4"	47	60	74	375
RAD015F	750	775	490	750	955	370	179	350	1"	62	60	240	427
RAN020F	880	905	480	870	1055	370	219	350	1"	50	60	223	444
RAN030F	1020	1045	500	900	1085	410	128	365	1-1/2"	50	60	280	560
RAN050F	1170	1195	480	930	1115	430	107	360	1-1/2"	374	60	305	732
RAN075F	1550	1590	500	1145	1330	540	255	415	2"	355	60	185	568
RAN100F	1630	1670	495	1200	1385	540	300	465	2"	195	60	195	628
RAN150F	1510	1550	980	1300	1485	640	270	250	3"	215	60	175	578

Note ①: A 3/4" to 1/2" adapter is included.