Refrigerated Air Dryer

IDFB Series

For Use in North, Central and South America



Applicable for the high-temperature environments

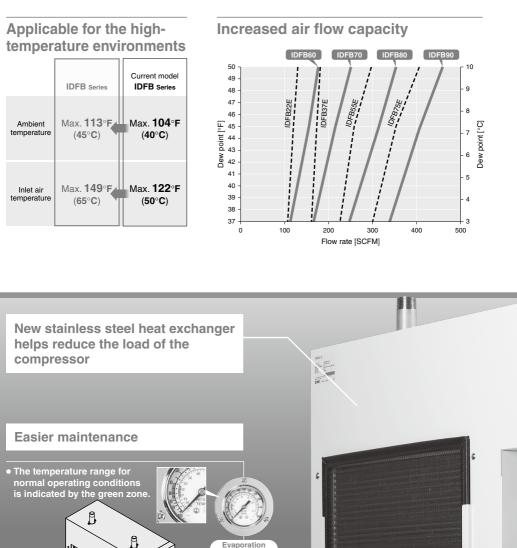
Ambient temperature : Max. 113°F (45°C) Inlet air temperature : Max. 149°F (65°C)

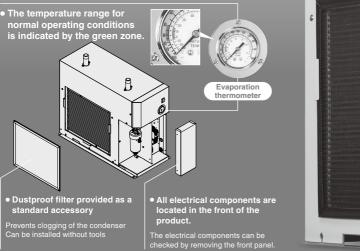
Air flow capacity * IDFB90-23, Dew point of 50°F (10°C)

459 SCFM (780 m³/h) (13% increase compared to the current model)

Power supply voltage









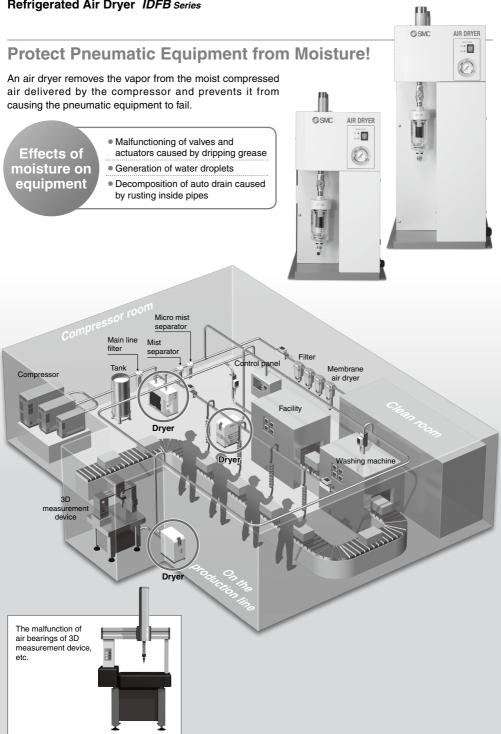
Series Variations

WWW

đ

ç

	Rated inlet	Rated	Air flow of	capacity [SCF	M (m³/h)]	Port size*1
Model	condition	ambient temperature	Dew point 37°F (2.8°C)	Dew point 45°F (7.2°C)	Dew point 50°F (10°C)	Port size ^{*1}
IDFB60			113 (192)	155 (264)	177 (300)	R1/ NPT1
IDFB70	100°F (37.8°C)	100°F	166 (282)	215 (366)	251 (426)	R1 1/2/ NPT1 1/2
IDFB80	100 psi (0.7 MPa)	(37.8°C)	247 (420)	314 (534)	353 (600)	R2/
IDFB90			335 (570)	406 (690)	459 (780)	NPT2
		_	* 1 Options			ng the products. ssories p. 180
	Longer II foreign n Non-slid Diaphrag Poppet ty Easie • One-to bowl is Release th body. The Transp • Allows conditi • Improv durabi constr	Ing part the catching in matter in the catching in matter in type er mainten buch mountin is possible with he lock by slidir or condensa- tion in the bow parent bowl g is you to visual the condensa- tion in the bow parent bowl g	ance gand remo thout using uguard and p guard i lily ate vi ental ayer	val of the any tools.	Shape f conden Condense matter are completed	Accessory)
	øs.	MC				175



IDFB Series Model Selection

Air dryers should be selected based on the corrected air flow capacity while taking operating environment and facility into account. Select the air dryer model in accordance with the following procedure.

	IDFB Selection Example						
Read the correction factors.	Conditio	on	Data symbol	Correction factor*1			
	Inlet air temperature	110°F	A	0.78			
Read the correction factors \textcircled{A} to \textcircled{C} suitable to the operating conditions.	Ambient temperature	110°F	в	0.78			
	Inlet air pressure	90 psi	C	0.93			
	Air flow rate	130 SCFM	—	_			
	Outlet air pressure dew point	37°F	—	-			
	*1 Values obtained from the table below						
2 Calculate the corrected air flow capacity. Obtain the corrected air flow capacity from the following formula. Corrected air flow capacity = Air flow rate + (Correction factor (A) x (B) x (C))	Corrected air flow o = 130 SCFM ÷ (0.78 = 230 SCFM						
3 Select the model. Select the model with air flow capacity exceeding the calculated corrected air flow from data ⁽ⁱ⁾ of the table below.	The model which exceeds the correct air flow capacity of 230 SCFM is IDFB80.						

Data A: Inlet Air Temperature

°F	80	90	100	110	120	130	140	149
°C	27	32	37.8	43	49	54	60	65
IDFB60/IDFB70	1.33	1.21	1.00	0.78	0.61	0.48	0.38	0.28
IDFB80/IDFB90	1.38	1.38	1.00	0.83	0.63	0.50	0.45	0.37

Data B: Ambient Temperature

°F	80	90	100	110	113
°C	27	32	37.8	43	45
IDFB60/IDFB70	1.16	1.11	1.00	0.78	0.71
IDFB80/IDFB90	1.40	1.22	1.00	0.88	0.83

Data C: Inlet Air Pressure

psi	50	60	70	80	90	100	120	140	145 to 232
MPa	0.35	0.41	0.48	0.55	0.62	0.69	0.83	0.97	1.00 to 1.60
IDFB60/IDFB70	0.71	0.77	0.82	0.87	0.93	1.00	1.09	1.20	1.22
IDFB80/IDFB90	0.77	0.82	0.86	0.90	0.94	1.00	1.07	1.16	1.18

Data D: Air Flow Capacity

Mo	dal	Air	Air flow capacity SCFM (m ³ /h (ANR))							
IVIO	uei	IDFB60	IDFB70	IDFB80	IDFB90					
Outlet	37°F (2.8°C)	113 (192)	166 (282)	247 (420)	335 (570)					
air pressure	45°F (7.2°C)	155 (264)	215 (366)	314 (534)	406 (690)					
dew point	50°F (10°C)	177 (300)	251 (426)	353 (600)	459 (780)					

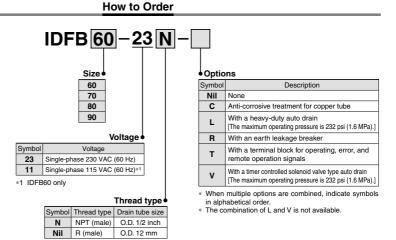
The outlet air pressure dew point varies depending on the operating conditions. Particularly when the outlet air pressure dew point is 37°F or 45°F, though this depends on the operating conditions, freeze protection functions may be activated, resulting in the dew point rising and becoming unstable. If a stable low dew point is required, consider an IDG series membrane air dryer.

* Refer to page 181 for options.

* Refer to page 180 for optional accessories.

Refrigerated Air Dryer IDFB60/70/80/90 Series

Max. inlet air temperature: 149°F (65°C), Max. ambient temperature: 113°F (45°C)



Replacement Parts

Auto drain Dustproof filter ß ß Auto drain AD402-04D-A P A Dustproof filter Element Auto Drain Replacement Part Nos. Dustproof Filter Replacement Part Nos. Description Qty. Dimension [inch (mm)] Applicable model Part no. Qtv Part no. Bowl O-ring Element AD402P-040S 1 H14.6 x W17.3 IDF-S0530 1 For IDEB60 (H370 x W440) Bowl O-ring KA00463 1 Bowl assembly*1 AD52-A 1 H24.2 x W17.3 IDF-S0531 1 For IDFB70 (H614 x W440) *1 A bowl O-ring is included. A One-touch fitting for connecting the drain tube is H24.2 x W21.9 For IDFB80, Bowl assembly IDF-S0535 1 not included. (H614 x W556) IDFB90





Standard Specifications

_			Model	IDFB60	IDFB60	IDFB70	IDFB80	IDFB90	
Spe	cifications			-11	-23	-23	-23	-23	
ອ_	Fluid			Compressed air					
e*ati	Inlet air tem	perature	[°F (°C)]	41 to 149 (5 to 65)					
Operating range ^{* 1}	Inlet air pre	ssure	[psi (MPa)]		22 to 1	50 (0.15 to	1.0)*8		
0 -					3 (2 to 45)	(Relative hu	midity: 85%	or less)	
	Air flow capacity*2 [SCFM (m ³ /h)]					166 (282)	247 (420)	335 (570)	
ns ^{*3}					(264)	215 (366)	314 (534)	406 (690)	
Rated conditions*3		Outlet air pressure dew point	50°F (10°C)	177 ((300)	251 (426)	353 (600)	459 (780)	
b 2	Inlet air pre	ssure	[psi (MPa)]			100 (0.7)			
v	Inlet air tem		[°F (°C)]			100 (37.8)			
ate	Ambient ter	mperature	[°F (°C)]			100 (37.8)			
œ	Power supply voltage (Frequency) ^{*4}			Single-phase 115 VAC Single-phase 230 VAC (60 Hz) (60 Hz)					
	timum air flo			Air flow ca	pacity calc	ulated with	the correct	ion factors	
ec.	Power cons Current cor	sumption*5	[W]		00	1870 2490 3630			
			[A]	10.0	4.8	8.2	10.9	15.9	
capa		y current 30 mA)*	6 [A]	15	10	15	20	30	
	oling method			Air-cooled refrigeration					
Ref	rigerant					HFC) GWF			
	rigerant char	ge	[oz (g)]	(390	±0.4 ±10)	(530 ±10)	22.2 ±0.4 (630 ±10)	(780 ±10)	
Aut	o drain					Ain. operating p			
Por	t size		Symbol N	NP		NPT1 1/2		PT2	
1 01			Symbol Nil	R	1	R1 1/2	R	12	
Dra	in tube O.D.		Symbol N			1/2 inch			
			Symbol Nil	100	(10)	12 mm	000 (05)	0.40 (4.40)	
Wei	gnt		[lbs (kg)]	108		150 (68)	209 (95)	243 (110)	
Acc	Accessories			Drain tube (Length: 3.5 m) (O.D.: 1/2 inch [Thread symbol: N], 12 mm [Thread symbol: Nil]) Drain tube holder, Operation manual				symbol: Nil])	
Cor	npliant stand	lards				UL, CSA			
		anaa daaa nat							

 *1 The operating range does not guarantee use with normal air flow capacity.
 *2 Air flow capacity under the standard condition (ANR) [atmospheric pressure 68°F (20°C), relative humidity 65%]

*3 When the operating conditions are different from the rated values, select a model in accordance with Model Selection (page 177) or calculate the air flow capacity suitable to the operating conditions based on the Correction of Air Flow Capacity.

- *4 Do not use this product with continuous voltage fluctuations.
- *5 These values are reference values under rated conditions and are not guaranteed. Do not use these values for the thermal relay set values, etc.
- *6 Products other than Option R are not equipped with an earth leakage breaker. Purchase an appropriate earth leakage breaker separately. Use an earth leakage breaker with a leak current sensitivity of 30 mA.

*7 This is the value specified by IPCC4 AR4. The value specified by the Revised Fluorocarbons Recovery and Destruction Law (Japanese law) is R410A GWP: 2090.

*8 The maximum operating pressure is 1.0 MPa as standard, but it is possible to achieve 232 psi (1.6 MPa) when selecting Option L or Option V.

Correction of Air Flow Capacity

ļ	nlet air ter	let air temperature [°C] Ambient temperature [°C]														
ſ	°F	80	90	100	110	120	130	140	149		°F	80	90	100	110	113
ſ	°C	27	32	37.8	43	49	54	60	65		°C	27	32	37.8	43	45
[IDFB60/IDFB70	1.33	1.21	1.00	0.78	0.61	0.48	0.38	0.28]	IDFB60/IDFB70	1.16	1.11	1.00	0.78	0.71
ĺ	IDFB80/IDFB90	1.38	1.38	1.00	0.83	0.63	0.50	0.45	0.37]	IDFB80/IDFB90	1.40	1.22	1.00	0.88	0.83

Inlet air pressure [MPa]

psi	50	60	70	80	90	100	120	140	145 to 232
MPa	0.35	0.41	0.48	0.55	0.62	0.69	0.83	0.97	1.00 to 1.60
IDFB60/IDFB70	0.71	0.77	0.82	0.87	0.93	1.00	1.09	1.20	1.22
IDFB80/IDFB90	0.77	0.82	0.86	0.90	0.94	1.00	1.07	1.16	1.18

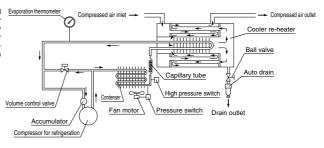
Calculation example: The air flow capacity when the dew point of the IDFB60 is set to 50°F under the following conditions is calculated. [Operating conditions: Inlet air temperature: 100°F, Ambient temperature: 90°F, Inlet air pressure: 90 psi] 177 SCFM x 1.00 x 1.11 x 0.93 = 183 SCFM

Symbol	_
	i.
Refrigerated	í
air dryer	İ.
Auto drain	į.

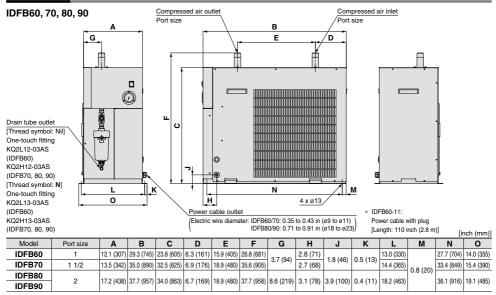
IDFB Series

Construction (Air/Refrigerant Circuit)

Humid, hot air coming into the air dryer will be cooled down by a cooler re-heater (heat exchanger). Water condensed at this time will be removed from the air by an auto drain and drained out automatically. Air separated from the water will be heated by a cooler reheater (heat exchanger) to obtain the dried air, which goes through to the outlet side.

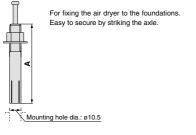


Dimensions



Optional Accessories

[Foundation bolt set]



Stainless steel

Male thread A side D C Thread type and port size Part no. С Male thread A side Female thread B side 1 97 IDF-AP604 NPT1 Rc1 (50) [inch (mm)] 2.17 IDF-AP606 NPT1 1/2 Bc1 1/2 Number of (55) Δ 1 set 2 56 IDF-AP607 NPT2 Rc2 1.97 (50) 4 (65)

[Piping adapter] E (Width across flats)

For converting the thread type of an IN/OUT fitting for air dryers.

Brass

[inch (mm)]

Number of

1 set

2

Female thread B side

D Е Material

1.06 1 81

(27) (46)

1.22 2.13

(31) (54)

1.18 2.76

(30) (70)

Part no.	Nominal thread size	Material	N

M10

IDF-AB500

180

01.00	
SMC	

IDFB Series Options

Option symbol

Anti-corrosive treatment for copper tube

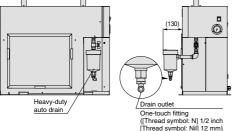
This minimizes the corrosion of the copper and copper alloy parts when the air dryer is used in an atmosphere containing hydrogen sulfide or sulfurous acid gas. (Corrosion cannot be completely prevented.) Special epoxy coating: Copper tube and copper alloy parts. The coating is not applied on the heat exchanger or around electrical parts, where operation may be affected by the coating.

* Failure due to corrosion is not covered under warranty.

Option symbol With a heavy-duty auto drain (applicable to moderate pressure)

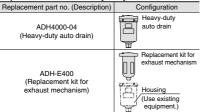
The float type auto drain used in the standard air dryer is replaced with a heavy-duty auto drain (ADH4000-04) which enables the condensate to discharge more efficiently. The product can be used for moderate pressure with this option. Max. operating pressure: 232 psi (1.6 MPa)





The heavy-duty auto drain and piping materials (nipple, elbow) are shipped together with the main body of the air dryer. Customers are required to mount the parts to the air dryer.

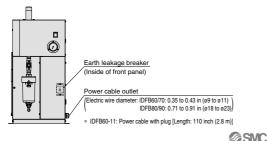
Replacement Parts: Heavy-Duty Auto Drain



Option symbol

With an earth leakage breaker

The air dryer is equipped with an earth leakage breaker, reducing the electrical wiring required during installation.



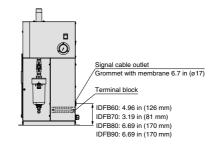


Option symbol

With a terminal block for operating, error, and remote operation signals

In addition to power supply connection, terminal blocks for operating, error, and remote operation signals are available.

- · The operating and error signals are no-voltage contact style.
- Operating signal...During operation: contact "close", During stop: contact "open"
- Error signal...During error: contact "close", During stop: contact "open" Contact capacity...Rated load voltage: 240 VAC or less/24 VDC or less Max. load current: 5 A (Resistance load)/2 A (Induction load) Min. applicable load: 20 VDC, 3 mA
- Power supply voltage is applied to the remote operation contact. The external switch is to be prepared by customers. Position holding switch (alternate type switch) or automatic return switch (momentary switch) can be used.



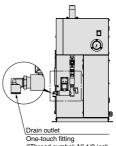
Option symbol With a timer controlled solenoid valve type auto drain (applicable to moderate pressure)

Drainage is discharged by controlling a solenoid valve with a timer. A strainer for solenoid valve protection and a stop valve are also included.

Maximum operating pressure: 232 psi (1.6 MPa)

Replacement Parts

Part no.	Note	
IDF-S0534	200 VAC to 230 VAC	
IDF-S1966	115 VAC	



([Thread symbol: N] 1/2 inch [Thread symbol: Nil] 12 mm)



IDFB Series Specific Product Precautions 1

Be sure to read this before handling the products. For safety instructions and air preparation equipment precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smcworld.com

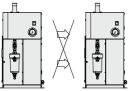
Installation

\land Caution

- Avoid locations where the air dryer will be in direct contact with wind or rain. (Avoid locations where relative humidity is 85% or more.)
- Avoid locations where water, water vapor, salt water, or oil may splash on the product.
- · Avoid locations where dust or other particles are present.
- Avoid locations where flammable or explosive gases are present.
- Avoid locations where corrosive gases, solvents, or combustible gases are present.
- · Avoid locations which receive direct sunlight or radiated heat.
- Avoid locations where the ambient temperature exceeds the limits as mentioned below.
- During operation: 36°F (2°C) to 113°F (45°C)

During storage: 32°F (0°C) to 122°F (50°C) (when there is no drain water inside of the piping)

- · Avoid locations where temperature substantially changes
- Avoid locations where strong magnetic noise occurs. (Avoid locations where strong electric fields, strong magnetic fields, or surge voltages occur.)
- Avoid locations where static electricity occurs or conditions which make the product discharge static electricity.
- · Avoid locations where high frequencies occur.
- · Avoid locations where damage is likely to occur due to lightning.
- Avoid installation on machines used for transporting, such as vehicles, ships, etc.
- · Avoid locations at altitudes of 6562 feet (2000 meters) or higher.
- · Avoid locations where strong impacts or vibrations occur
- Avoid conditions where a massive force strong enough to deform the product is applied or the weight from a heavy object is applied.
- Avoid locations with insufficient space for maintenance.
- · Avoid locations where the ventilation grille is obstructed.
- Avoid locations where the air dryer will draw in high-temperature air discharged from an air compressor or other dryer.



Confirm that the exhaust air does not flow into the neighboring equipment.

- Avoid pneumatic circuits where rapid pressure fluctuations or flow speed changes are generated.
- When installing in locations where the dripping of condensation is a problem Depending on the operating conditions, the product and its downstream pipes could drip water due to condensation formed by supercooling. If this is a problem, install a drain receiver below this product or the condensation points and empty it regularly.

Alternatively, wind additional insulation around the condensation points.

Drain Tube

▲ Caution

- A tube with an outside diameter of 0.47 in (12 mm) is attached as a drain tube. Use this tube to discharge condensate to a drain tank, etc.
- Do not use the drain tube in an upward direction. Do not bend or crush the drain tube. If it is unavoidable that the tube goes upward, make sure it only goes as far as the position of the auto drain outlet. The drain tube to be prepared should have an O.D. of 0.47 in (12 mm), an I.D. of 0.31 in (8 mm) or more, and be 16.4 ft (5 m) or less in length. Otherwise, the auto drain will not operate correctly, which may cause air to be blown constantly or moisture not to be exhausted.

Power Supply

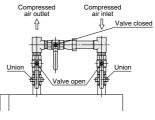
A Caution

- . Connect the power supply to the terminal block.
- Install an earth leakage breaker*1 suitable to each model for the power supply.
- Maintain a voltage range within $\pm 10\%$ of the rated voltage. (Do not use this product with continuous voltage fluctuations.)
- *1 Select an earth leakage breaker with a leak current sensitivity of 30 mA.
 - Regarding the rated current, refer to the Applicable Earth Leakage Breaker Capacity.
- When a short-term interruption of the power supply (including momentary interruptions) occurs in this equipment, the restarting of normal operations may require some time or may be impossible due to the operation of protective devices even after the supply of power returns.

Air Piping

• Be careful to avoid any errors in connecting the air piping at the

- Be careful to avoid any errors in connecting the air piping at the compressed air inlet (IN) and outlet (OUT).
 Flush the piping sufficiently in order to avoid any foreign matter
- Fush the piping sufficiently in order to avoid any foreign matter such as dust, sealant tape, liquid gasket, etc., before connecting piping. Foreign matter in the piping can cause cooling failure or drainage failure.
- Inlet and outlet compressed air connections should be made removable by using a union, etc.
- Provide bypass piping to make it possible to do maintenance without stopping the air compressor.
- When tightening the inlet/outlet air piping, firmly hold the port on the air dryer with a pipe wrench, etc.
- Use pipes and fittings that can endure the operating pressure and temperature. Connect them firmly to prevent air leakage.
- Do not allow the load of the piping to lie directly on the air dryer. When mounting any part, such as an air filter, on the fitting at the compressed air inlet or outlet port, support the part to prevent excessive force from being applied to the product.
- · Be careful not to let the vibrations of the air compressor transmit.
- If a metallic flexible tubing is used for the inlet/outlet air piping, abnormal noise might be generated in the piping. In such cases, please use steel tubing instead.
- If the temperature of the compressed air on the inlet side is over 149°F (65°C), place an aftercooler after the air compressor. Or, lower the temperature of the place where the air compressor is installed to below 149°F (65°C).
- If the air supply generates high pressure fluctuations (pulsations), take appropriate countermeasures, such as installing an air tank.
- If rapid pressure fluctuations or flow changes occur, install a filter on the dryer outlet to prevent condensate from splashing.
- Variations in operating conditions may cause condensation to form on the surface of the outlet piping. Apply thermal insulation around the piping to prevent condensation from forming.



SMC



IDFB Series Specific Product Precautions 2

Be sure to read this before handling the products. For safety instructions and air preparation equipment precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smcworld.com

Protection Circuit

\land Caution

When the air dryer is operated in the following cases, the protection circuit will activate, the light will turn off and the air dryer will come to stop.

- The compressed air temperature is too high.
- The compressed air flow rate is too high.
- The ambient temperature is too high. (113°F (45°C) or higher)
- \bullet The fluctuation of the power supply voltage is beyond $\pm 10\%$ of the rated voltage.
- The air dryer is drawing in high temperature air exhausted from an air compressor or other dryer.
- The ventilation grille is obstructed by a wall or clogged with dust.

Transportation and Installation

\land Warning

Be sure to follow the instructions below for transporting the product.

- The product is filled with refrigerant. Transport it (by land, sea or air) in accordance with laws and regulations specified.
- When carrying the product, be careful not to let it drop or fall over, and use a forklift.
- Do not lift the product by holding the panel, fittings or piping.
- Never lay the product down for transportation. This may lead to damage to the product.

• The product is heavy and has potential dangers in transportation. Be sure to follow the instructions above.

 Be sure to use a forklift for transporting the product. Weight of each model with packaging: IDFB60: 126 lbs (57 kg), IDFB70: 172 lbs (78 kg), IDFB80: 234 lbs (106 kg), IDFB90: 269 lbs (122 kg)

Compressor Air Delivery

A Caution

Since the auto drain is designed in such a way that the valve remains open unless the air pressure rises to 14.5 psi (0.1 MPa) or higher, air will blow out from the drain outlet at the time of air compressor start up until the pressure increases. Therefore, if an air compressor has a small air delivery, the pressure may not be sufficient.

Auto Drain

▲ Caution

The auto drain may not function properly, depending on the quality of the compressed air. Check the operation once a day.

Cleaning of Ventilation Area

\land Caution

If the dustproof filter becomes clogged with dust or debris, a decline in cooling performance can result.

In order to avoid deforming or damaging the dustproof filter, clean it with a long-haired brush or air gun once a month.

Time Delay for Restarting

\land Caution

Allow at least three minutes before restarting the air dryer. Otherwise, the protection circuit will activate, the light will turn off and the air dryer will not start up.

Modifying the Standard Specifications

\land Caution

Do not modify the standard product using any of the optional specifications once the product has been supplied to a customer. Check the specifications carefully before selecting an air dryer. In addition, do not disassemble or modify the product. Products which have been disassembled and/or modified cannot be guaranteed.

Refrigerant with GWP Reference

	Global Warming Potential (GWP)		
Defrigerent	Regulation (EU)	Fluorocarbon Emissions Control Act (Japan)	
Refrigerant	2024/573,	GWP value labeled on	GWP value to be used for reporting
	AIM Act 40 CFR Part 84	products	the calculated amount of leakage
R134a	1430	1430	1300
R404A	3922	3920	3940
R407C	1774	1770	1620
R410A	2088	2090	1920
R448A	1386	1390	1270
R454C	146	145	146

This product is hermetically sealed and contains fluorinated greenhouse gases (HFC). When this product is sold on the market in the EU after January 1, 2017, it needs to be compliant with the quota system of the F-Gas Regulation in the EU.

* See specification table for refrigerant used in the product.