SMC

Refrigerated Air Dryer

Series IDF/IDU E

Air flow capacity Increased up to the max. **40%**

Power consumption Decreased up to the max. **40%**

Refrigerant **HFC134a**
Coefficient of destruction for ozone is zero.

Improved corrosion resistance with the use of stainless steel, plate type heat exchanger
(Except IDF1E to 3E)

	Series	Air flow capacity m³/min (ANR) 50 Hz	Air flow capacity m³/min (ANR) 60 Hz	Applicable air compressor output (Guide) In case of screw type (kW)	Refrigerant	Rated inlet condition	Port size	Pages
Standard inlet air temperature IDF	IDF1E	0.10	0.12	0.75	HFC134a	Saturation: 35°C 0.7MPa	Rc3/8	P.2– P.4
	IDF2E	0.20	0.235	1.5				
	IDF3E	0.32	0.37	2.2				
	IDF4E	0.52	0.57	3.7			Rc1/2	
	IDF6E	0.75	0.82	5.5			Rc3/4	
	IDF8E	1.22	1.32	7.5				
	IDF11E	1.65	1.82	11				
High inlet air temperature IDU	IDU3E	0.32	0.37	2.2	HFC134a	Saturation: 55°C 0.7MPa	Rc3/8	P.5– P.7
	IDU4E	0.52	0.57	3.7			Rc1/2	
	IDU6E	0.75	0.82	5.5			Rc3/4	

Series IDF/IDU E
Selection Method

1 Reading correction factor

Obtain the correction factor Ⓐ to Ⓓ suitable for your operating condition from the graph at left.

IDF selection example

Condition		Data symbol	Correction factor Note)
Inlet air temperature	40°C	A	0.82
Ambient temperature	35°C	B	0.96
Outlet air pressure dew point	10°C	C	1
Inlet air pressure	0.5 MPa	D	0.88
Air flow rate	0.3 m³/min	—	—
Power supply frequency	50 Hz	—	—

Note) Values obtained from the table below.

IDU selection example

Condition		Data symbol	Correction factor Note)
Inlet air temperature	60°C	A	0.95
Ambient temperature	35°C	B	0.93
Outlet air pressure dew point	10°C	C	1
Inlet air pressure	0.5 MPa	D	0.88
Air flow rate	0.4 m³/min	—	—
Power supply frequency	60 Hz	—	—

Note) Values obtained from the table below.

2 Calculating corrected air flow capacity

Obtain the corrected air flow capacity from the following formula.

Corrected air flow capacity = Operating air flow capacity ÷ (Correction factor Ⓐ x Ⓑ x Ⓒ x Ⓓ)

Corrected air flow capacity = 0.3 m³/min ÷ (0.82 x 0.96 x 1 x 0.88) = 0.43 m³/min

Corrected air flow capacity = 0.4 m³/min ÷ (0.95 x 0.93 x 1 x 0.88) = 0.51 m³/min

3 Selecting a model

Select a model which corrected air flow capacity exceeds the air flow capacity from the specification table. (For air flow capacity, refer to the data below Ⓔ.)

According to the corrected air flow capacity of 0.43 m³/min, IDF4E will be selected which air flow capacity is 0.52 m³/min at 50 Hz.

According to the corrected air flow capacity of 0.51 m³/min, IDU4E will be selected which air flow capacity is 0.57 m³/min at 60 Hz.

4 Selecting the type of threads, options and international standards or not.

Refer to page 2 and 8.

Refer to page 5 and 8.

5 Model determination

Refer to page 2.

Refer to page 5.

6 Selecting accessories sold separately.

Refer to page 10.

Data Ⓐ Inlet air temperature

Series IDF

Inlet air temperature (°C)	Correction factor
25	1.73
30	1.3
35	1
40	0.82
45	0.68
50	0.57

Series IDU

Inlet air temperature (°C)	Correction factor
45	1.15
50	1.07
55	1
60	0.95
65	0.9
70	0.86
75	0.82
80	0.79

Data Ⓒ Outlet air pressure dew point

Series IDF, IDU

Outlet air pressure dew point (°C)	Correction factor
5	0.59
10	1
15	1.68

Data Ⓓ Inlet air pressure

Series IDF, IDU

Inlet air pressure (MPa)	Correction factor
0.2	0.62
0.3	0.72
0.4	0.81
0.5	0.88
0.6	0.95
0.7	1
0.8	1.06
0.9	1.11
1	1.16

Data Ⓑ Ambient temperature

Series IDF

Ambient temperature (°C)	Correction factor
25	1.14
30	1.04
32	1
35	0.96
40	0.9

Series IDU

Ambient temperature (°C)	Correction factor
25	1.2
30	1.04
32	1
35	0.93
40	0.84

Data Ⓔ Air flow capacity

Series IDF

Model		IDF1E	IDF2E	IDF3E	IDF4E	IDF6E	IDF8E	IDF11E
Inlet air pressure m³/min (ANR)	50 Hz	0.10	0.20	0.32	0.52	0.75	1.22	1.65
	60 Hz	0.12	0.235	0.37	0.57	0.82	1.32	1.82

Series IDU

Model		IDU3E	IDU4E	IDU6E
Inlet air pressure m³/min (ANR)	50 Hz	0.32	0.52	0.75
	60 Hz	0.37	0.57	0.82

Refrigerant HFC134a
Standard inlet air temperature
Series IDF□E
1E, 2E, 3E, 4E, 6E, 8E, 11E
(Inlet air temperature: 35°C, Outlet air pressure dew point: 10°C)

How to Order

IDF **8** E — **10** **[ ]** — **[ ]**

Size

Size	Air compressor
1	0.75 kW
2	1.5 kW
3	2.2 kW
4	3.7 kW
6	5.5 kW
8	7.5 kW
11	11 kW

Voltage

Symbol	Voltage	Applicable size						
		1	2	3	4	6	8	11
10	Single phase 100 VAC (50 Hz) 100 to 110 VAC (60 Hz)	●	●	●	●	●	●	●
20	Single phase 200 VAC (50 Hz) 200 to 220 VAC (60 Hz)	–	–	●	●	●	●	●

Thread type

Symbol	Thread
Nil	Rc
F Note)	G
N	NPT

Note) Hexagonal nipple (R threads) is included as an accessory for the thread symbol "F".

Nil
A
C
H
K
L
M
R
S
T

Table of options and available combinations (Size/Option)

Symbol Note 1) / Option specifications / Size	Nil	A	C	H	K	L	M	R	S	T
	None	For cool compressed air	With anti-corrosive treatment	For medium air pressure (Case for auto drain: Metal case)	For medium air pressure (Case for auto drain: Metal case with level gauge)	With heavy duty auto-drain	With motor operated auto drain	With circuit breaker	Power source terminal block connection (Voltage symbol 10 only) Note 2)	With terminal block for run & alarm signal
1	●	●	●	–	–	–	–	–	●	–
2	●	●	●	–	–	–	–	–	●	–
3	●	●	●	–	–	–	–	–	●	–
4	●	●	●	–	–	●	●	●	●	●
6	●	●	●	●	●	●	●	●	●	●
8	●	●	●	●	●	●	●	●	●	●
11	●	●	●	●	●	●	●	●	●	●

Note 1) Enter alphabetically when multiple options are combined.
However, the following combinations are not possible.
• R and S (Because S function is also included in R.)
• S and T (Because S function is also included in T.)
Note 2) Voltage symbol 20 (200 VAC) is the terminal block connection as standard. Option S cannot be chosen.
Voltage symbol 10 (100 VAC) is the power cable with plug as standard.
Note 3) Refer to page 8 for further information on options

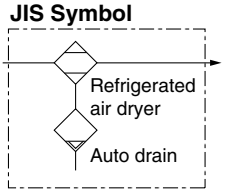
Series IDF E

Standard Specifications

Specifications \ Model			Standard inlet air temperature						
			IDF1E	IDF2E	IDF3E	IDF4E	IDF6E	IDF8E	IDF11E
Rated conditions Note 2)	Air flow capacity Note 1) m^3/min (ANR)	50 Hz	0.10	0.20	0.32	0.52	0.75	1.22	1.65
		60 Hz	0.12	0.235	0.37	0.57	0.82	1.32	1.82
	Inlet air pressure (MPa)		0.7						
	Inlet air temperature (°C)		35						
	Ambient temperature (°C)		32						
	Outlet air pressure dew point (°C)		10						
Operating ranges	Working fluid		Compressed air						
	Inlet air temperature (°C)		5 to 50						
	Inlet air pressure (MPa)		0.15 to 1.0						
	Ambient temperature (humidity) (°C)		2 to 40 (Relative humidity of 85% or less)						
Electrical specifications	Power supply voltage (frequency)		Single phase: 100 VAC (50 Hz), 100 to 110 VAC (60 Hz) Note 3) Single phase: 200 VAC (50 Hz), 200 to 220 VAC (60 Hz)						
	Power consumption (W)	50/60 Hz	180/202	180/202	180/202	180/202	180/202	208/236	385/440
	Operating current (A)	100 V	2.4/2.5	2.4/2.5	2.4/2.5	2.4/2.5	2.4/2.5	3.0/3.1	5.7/5.7
		50/60 Hz 200 V	—	—	1.2/1.3	1.2/1.3	1.2/1.3	1.5/1.5	3.4/3.0
Circuit breaker Note 4) (A)			10 (100 VAC), 5 (200 VAC)						
Condenser			Air-cooled type						
Refrigerant			HFC134a						
Auto drain			AD37	AD38			AD48		
Port size			3/8			1/2	3/4		
Weight (kg)			16	17	18	22	23	27	28
Coating color			Body panel: White 1 (Munsell 10Y8/0.5) Base: Gray 2 (Munsell 10Y5/0.5)						
Applicable air compressor output (Guide) In the case of a screw type (kW)			0.75	1.5	2.2	3.7	5.5	7.5	11

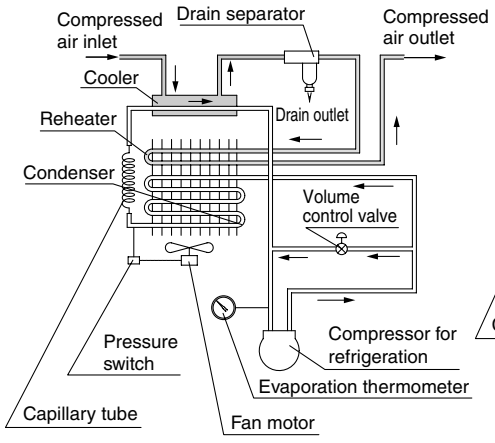
Note 1) The data for ℓ/min (ANR) is under the conditions of 20°C, 1 atmospheric pressure and relative humidity of 65%..
Note 2) Select air dryer according to the selection method (P. 1) and not the rated condition.
Note 3) When selecting a power supply voltage, refer to "How to Order" on page 2.
Note 4) Install a circuit breaker with a sensitivity of 30 mA or less.

JIS Symbol

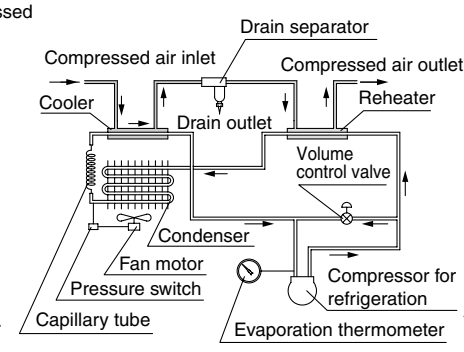


Operation Principle

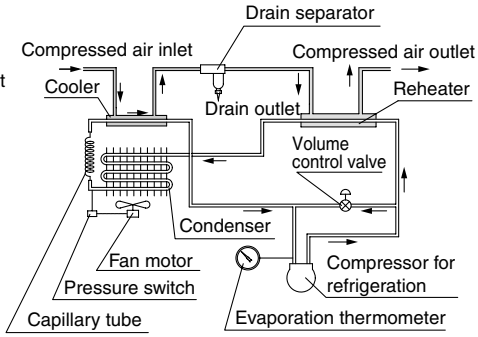
IDF1E



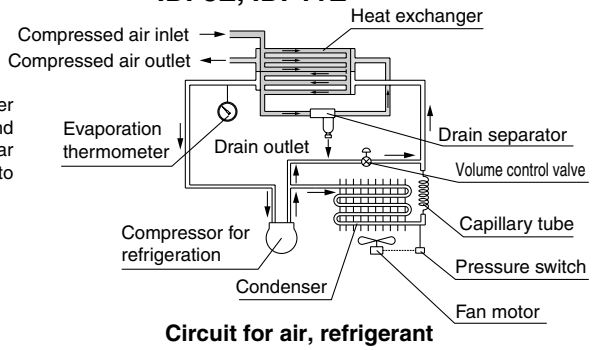
IDF2E



IDF3E



IDF4E, IDF6E
IDF8E, IDF11E

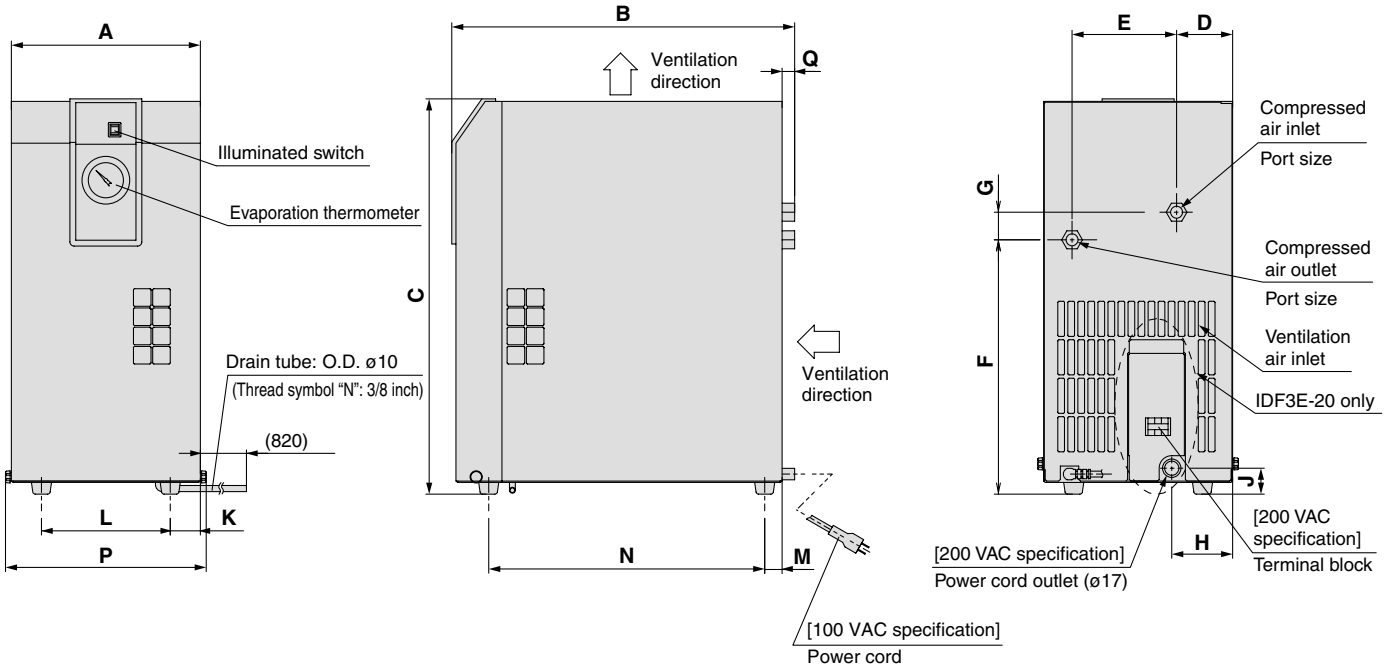


Humid, hot air coming into the air dryer will be cooled down by a cooler. Water condensed at this time will be removed from the air by a drain separator and drained out automatically. Air separated from the water will be heated to near ambient temperature by a reheater to obtain the dried air, which goes through to the outlet side.

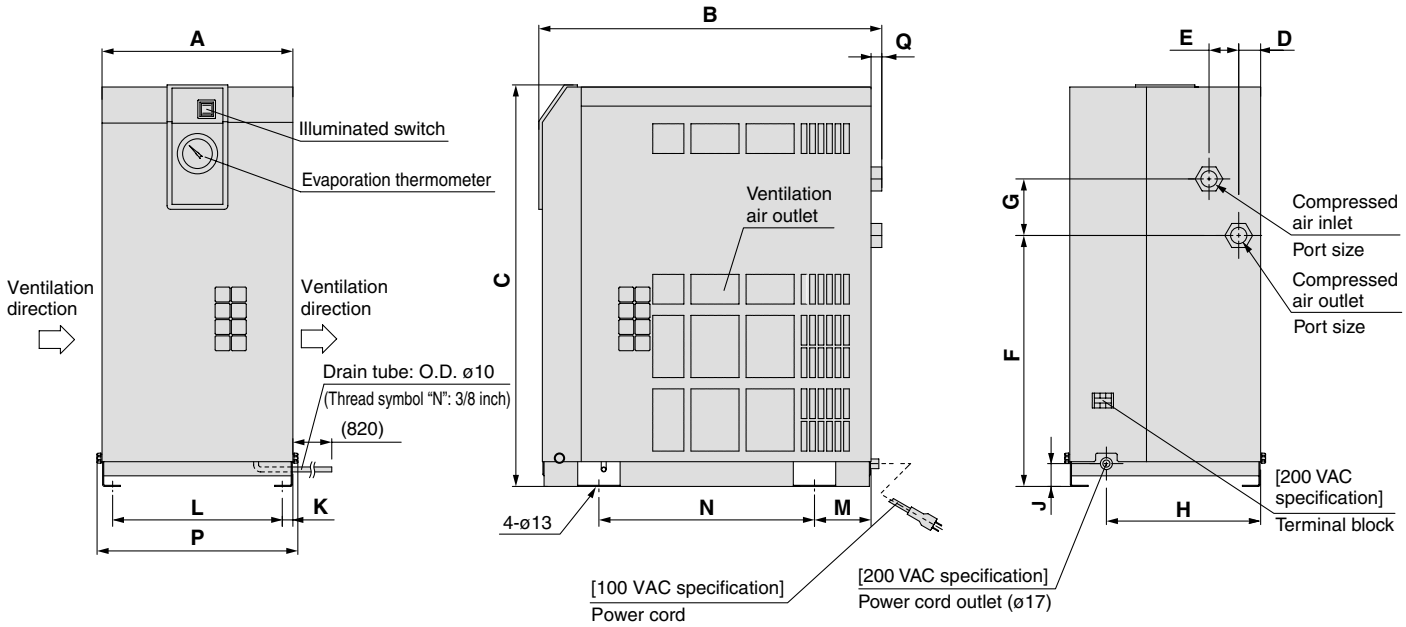
Circuit for air, refrigerant

Dimensions

IDF1E to 3E



IDF4E to IDF11E



(mm)

Model	Port size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
IDF1E	3/8	226	410	413	69	101	270	32	—	—	38	150	21	330	240	15
IDF2E					51	125	232	138					24	327		
IDF3E				473	67		304	33	73	31	36	154	21	330		
IDF4E	1/2	270	453	498	31	42	283	80	230	32	15	240	80	275	284	13
IDF6E	3/4		455													15
IDF8E			485	568			355							300		
IDF11E																

Refrigerant HFC134a
High inlet air temperature
Series IDU□E
3E, 4E, 6E
(Inlet air temperature: 55°C, Outlet air pressure dew point: 10°C)

How to Order

IDU **4** E — **10** **[ ]** — **[ ]**

Size

Size	Air compressor
3	2.2 kW
4	3.7 kW
6	5.5 kW

Voltage

Symbol	Voltage	Applicable size		
		3	4	6
10	Single phase 100 VAC (50 Hz) 100 to 110 VAC (60 Hz)	●	●	●
20	Single phase 200 VAC (50 Hz) 200 to 220 VAC (60 Hz)	●	●	●

Thread type

Symbol	Thread
Nil	Rc
F Note)	G
N	NPT

Note) Hexagonal nipple (R threads) is included as an accessory for the thread symbol "F".

Nil
C
H
K
L
M
R
S
T

Table of options and available combinations (Size/Option)

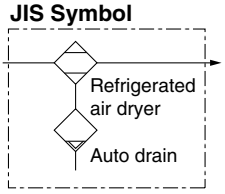
Symbol Note 1) / Option specifications / Size	Nil	C	H	K	L	M	R	S	T
	None	With anti-corrosive treatment	For medium air pressure (Case for auto drain: Metal case)	For medium air pressure (Case for auto drain: Metal case with level gauge)	With heavy duty auto-drain	With motor operated auto-drain	With circuit breaker	Power source terminal block connection (Voltage symbol 10 only) Note 2)	With terminal block for run & alarm signal
3	●	●	●	●	●	●	●	●	●
4	●	●	●	●	●	●	●	●	●
6	●	●	●	●	●	●	●	●	●

Note 1) Enter alphabetically when multiple options are combined.
However, the following combinations are not possible.
• R and S (Because S function is also included in R.)
• S and T (Because S function is also included in T.)

Note 2) Voltage symbol 20 (200 VAC) is the terminal block connection as standard. Option S cannot be chosen.
Voltage symbol 10 (100 VAC) is the power cable with plug as standard.

Note 3) Refer to page 8 for further information of options.

JIS Symbol



Standard Specifications

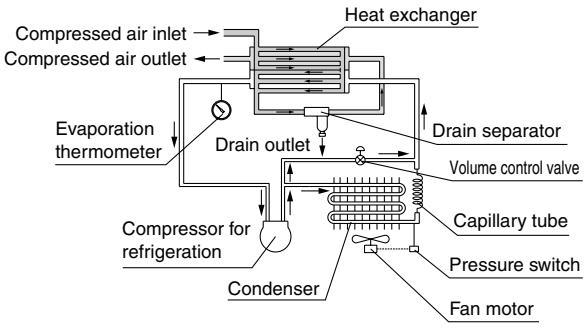
Specifications \ Model			High inlet air temperature		
			IDU3E	**IDU4E**	**IDU6E**
Rated conditions Note 2)	**Air flow capacity** Note 1) m^3/min (ANR)	**50 Hz**	0.32	0.52	0.75
		60 Hz	0.37	0.57	0.82
	Inlet air pressure (MPa)		0.7		
	Inlet air temperature (°C)		55		
	Ambient temperature (°C)		32		
	Outlet air pressure dew point (°C)		10		
Operating ranges	**Working fluid**		Compressed air		
	Inlet air pressure (°C)		5 to 80		
	Inlet air temperature (MPa)		0.15 to 1.0		
	Ambient temperature (humidity) (°C)		2 to 40 (Relative humidity of 85% or less)		
Electrical specifications	**Power supply voltage (frequency)**		Single phase: 100 VAC (50 Hz), 100 to 110 VAC (60 Hz) Note 3) Single phase: 200 VAC (50 Hz), 200 to 220 VAC (60 Hz)		
	Power consumption (W) 50/60 Hz		180/202	208/236	350/405
	Operating current (A) 50/60 Hz	**100 V**	2.4/2.5	3.0/3.1	5.5/5.6
		200 V	1.2/1.3	1.5/1.5	2.8/2.7
Circuit breaker Note 4) **(A)**			10 (100 VAC), 5 (200 VAC)		
Auto drain			AD48		
Refrigerant			HFC134a		
Port size			3/8	1/2	3/4
Weight (kg)			23	27	28
Coating color			Panel: White 1 (Munsell 10Y8/0.5) Base: Gray 2 (Munsell 10Y5/0.5)		
Applicable air compressor output (Guide) In the case of a screw type (kW)			2.2	3.7	5.5

Note 1) The data for l /min (ANR) is under the conditions of 20°C, 1 atmospheric pressure and relative humidity of 65%.
Note 2) Select air dryer according to the selection method (P. 1) and not the rated condition.
Note 3) When selecting a power supply voltage, refer to "How to Order" on page 5.
Note 4) Install a circuit breaker with a sensitivity of 30 mA or less.

Operation Principle

Humid, hot air coming into the air dryer will be cooled down by a cooler. Water condensed at this time will be removed from the air by a drain separator and drained out automatically. Air separated from the water will be heated to near ambient temperature by a reheater to obtain the dried air, which goes through to the outlet side.

IDU3E, IDU4E, IDU6E

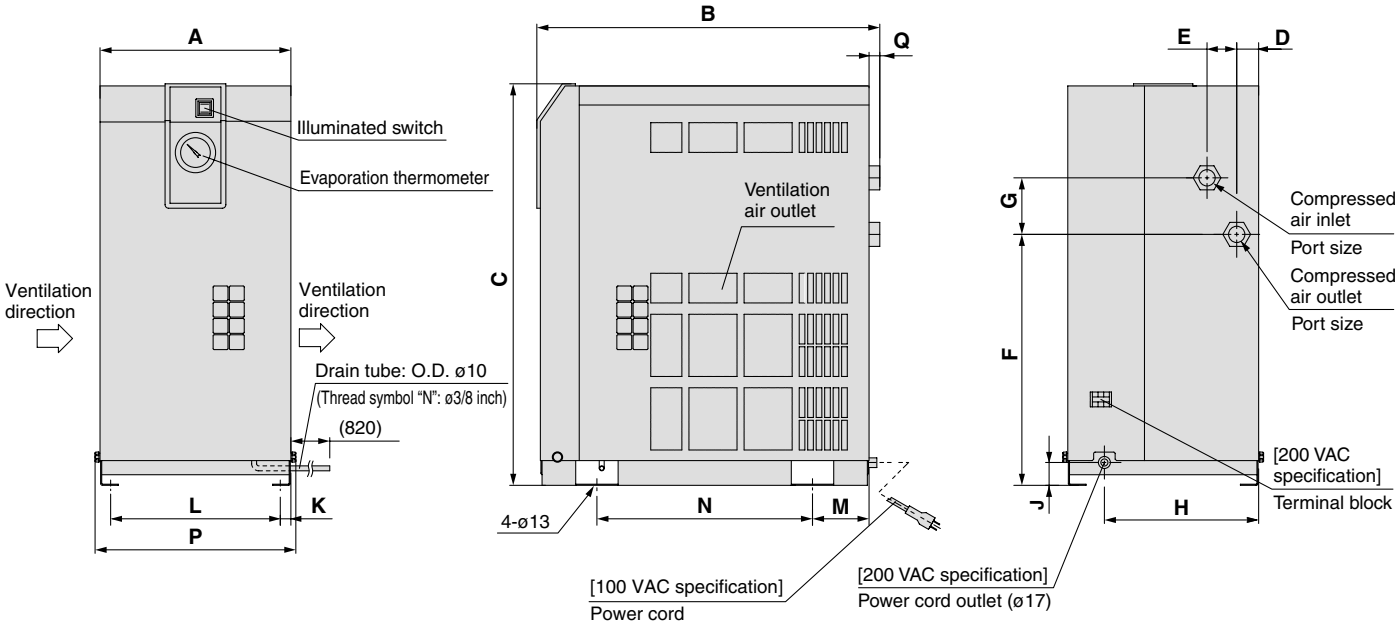


Circuit for air, refrigerant

Series IDU E

Dimensions

IDU3E to 6E



(mm)

Model	Port size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
IDU3E	3/8	270	455	498	31	42	283	80	230	32	15	240	80	275	284	15
IDU4E	1/2		483	568			355							300		13
IDU6E	3/4		485													15

Series IDF/IDU E

Option Specifications 1

Refer to pages 2 and 5 for "How to Order" of options.

A Option symbol

Cool compressed air output — IDF all models

There is no heating of cooled, dehumidified air as it leaves the air dryer. The air flow with this option is smaller than that of the standard dryer. (The external dimensions are identical with the standard product.)

Model		IDF1E	IDF2E	IDF3E	IDF4E
Air flow capacity (m^3/min (ANR))	50 Hz	0.085	0.12	0.18	0.26
	60 Hz	0.1	0.14	0.21	0.29

Model		IDF6E	IDF8E	IDF11E
Air flow capacity (m^3/min (ANR))	50 Hz	0.32	0.5	0.65
	60 Hz	0.375	0.55	0.75

Conditions: Inlet air pressure: 0.7 MPa, Inlet air temperature: 85°C (Saturation)
Outlet air temperature: 10°C

C Option symbol

Anti-corrosive treatment — IDF, IDU all models

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.
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.

H Option symbol

For medium air pressure — IDF6E to 11E, IDU3E to 6E

The auto drain is changed from the standard one to one with a medium pressure specification.
A metal case is used for the auto drain.
(The external dimensions are identical to the standard product.)
Maximum operating pressure: 1.6 MPa
Auto drain assembly no.: IDF-S0085
(Auto drain (AD48-2-X2114), thermal insulator, and one-touch fitting are included.)

K Option symbol

For medium air pressure — IDF6E to 11E, IDU3E to 6E

The auto drain is changed from the standard one to one with a medium pressure specification.
A metal case with a level gauge which can confirm the water level is used for the auto drain.
(The external dimensions are identical to the standard product.)
Maximum operating pressure: 1.6 MPa
Auto drain assembly no.: IDF-S0086
(Auto drain (AD48-2-X2110, thermal insulator, and one-touch fitting are included.)

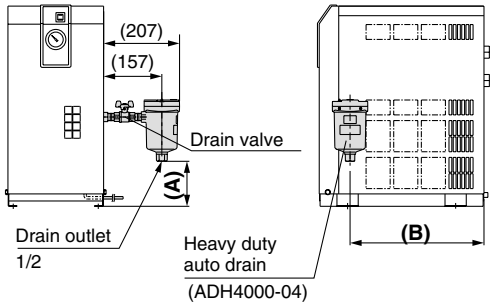
L Option symbol

With heavy duty auto drain — IDF4E to 11E, IDU3E to 6E

The float type auto drain used in the standard air dryer is replaced with a heavy duty auto drain (ADH4000-04) which enables the drainage to discharge more efficiently.

Model	A	B
IDF4E	55	348
IDF6E, IDU3E	67	
IDF8E, IDF11E	139	378
IDU4E, IDU6E		

IDF4E, 6E, 8E, 11E
IDU3E, 4E, 6E



Note) The heavy duty auto drain and the drain valve are both enclosed in the same shipping package as the main body of the air dryer. The customer is required to mount the parts to the air dryer.

M Option symbol

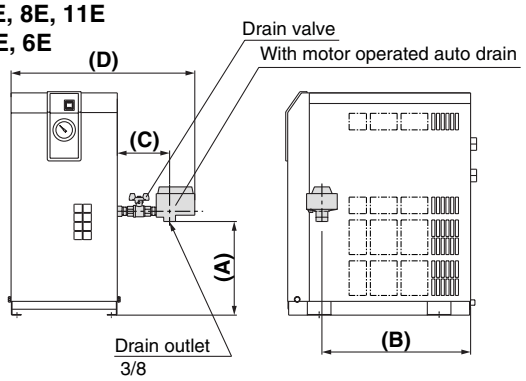
With motor operated auto drain

The float type auto drain used in the standard air dryer is replaced with a motor type auto drain (ADM200) which enables the drainage to discharge more efficiently.

Operating air pressure	Air discharge without drainage
0.3 MPa	6 ℓ (ANR) per cycle
0.5 MPa	10 ℓ (ANR) per cycle
0.7 MPa	14 ℓ (ANR) per cycle

∗ Operation cycle: 1 cycle per min. Operation time: 2 sec./min.

IDF4E, 6E, 8E, 11E
IDU3E, 4E, 6E



∗ The motor operated auto drain is enclosed in the same shipping package as the main body of the air dryer. The customer is required to mount the auto drain to the air dryer.

Rc thread

Model	A	B	C	D
IDF4E	154	348	133	467
IDF6E, IDU3E	166			
IDF8E, IDU11E	238	378		
IDU4E, IDU6E				

PF thread

Model	A	B	C	D
IDF4E	154	348	129	463
IDF6E, IDU3E	166			
IDF8E, IDU11E	238	378		
IDU4E, IDU6E				

NPT thread

Model	A	B	C	D
IDF4E	154	348	142	476
IDF6E, IDU3E	166			
IDF8E, IDU11E	238	378		
IDU4E, IDU6E				

Replacement parts: Auto drain assembly Note)

Voltage \ Thread		Rc thread	PF thread	NPT thread
Single phase	100 VAC (50 Hz) 100 to 110 VAC (60 Hz)	IDF-S0087	IDF-S0088	IDF-S0089
Single phase	200 VAC (50 Hz) 200 to 220 VAC (60 Hz)	IDF-S0090	IDF-S0091	IDF-S0092

Note) Includes wire with connector on the end.

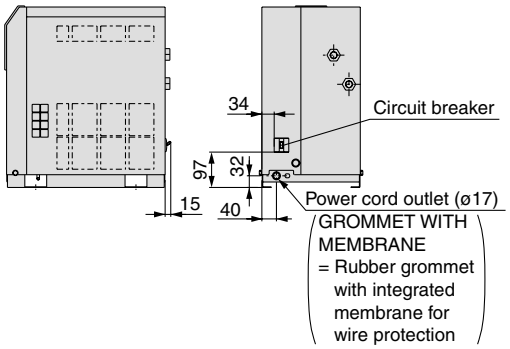
Series IDF/IDU E
Option Specifications 2

Refer to pages 2 and 5 for "How to Order" of options.

R Option symbol
With circuit breaker
IDF4E to 11E, IDU3E to 6E

A circuit breaker with cover is attached to the side of the air dryer. This saves additional electrical wiring at the time of installation.

IDF4E to 11E
IDU3E to 6E

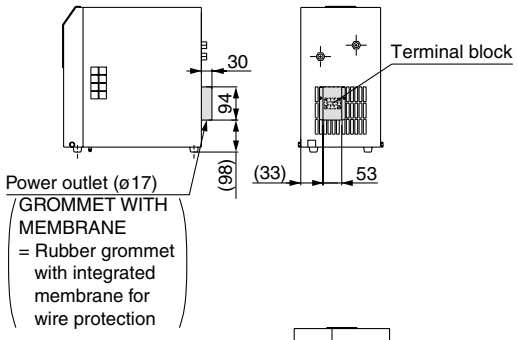


	Model	Breaker capacity	Sensitivity current
Type 100 V	**IDF4E-10, IDF6E-10 IDF8E-10, IDF11E-10**	10 A	30 mA
	IDU3E-10, IDU4E-10 IDU6E-10		
Type 200 V	**IDF4E-20, IDF6E-20 IDF8E-20, IDF11E-20**	5 A	
	IDU3E-20, IDU4E-20 IDU6E-20		

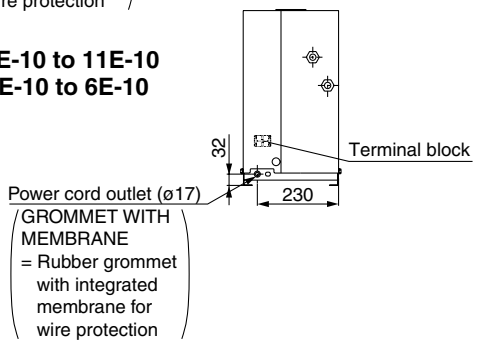
S Option symbol
With power cord connection
IDF1E-10 to 11E-10, IDU3E-10 to IDU6E-10

The option allows the connection of a power cord to a terminal block.

IDF1E-10 to 3E-10



IDF4E-10 to 11E-10
IDU3E-10 to 6E-10

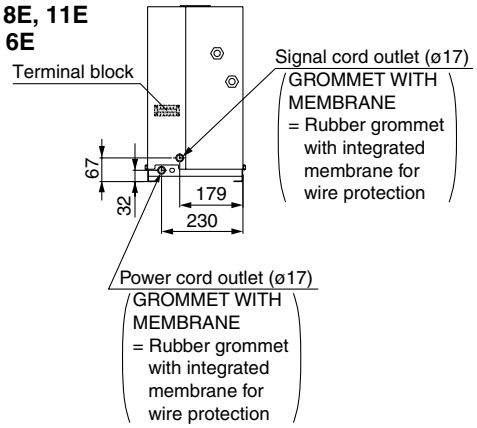


T Option symbol
With terminal block for power supply, run & alarm signal and remote operation
IDF4E to 11E, IDU3E to 11E

Besides terminals for the power supply, terminals for the operating signal and the emergency stop signal are also available. (No-voltage contact)
Also, in the case of remote control, operate it from the power supply side while the air dryer switch remains ON.

Contact specification: Max. rated voltage 220 V 3 A
Min. operating current 10 mA

IDF4E, 6E, 8E, 11E
IDU3E, 4E, 6E



Accessory (Option)

Description	Features	Specifications	Applicable dryer	Dimensions
Separately installed transformer 	Power supply and voltage for those other than the standard.	Max. ambient temperature 40°C (Relative humidity 85% or less)	IDF1E-10 to IDF8E-10 IDU3E-10, IDU4E-10	P. 11
Base integrated with a transformer 	A dedicated base for integrating the separately installed transformer and the air dryer.	—		P. 12
Dust-protecting filter set 	Prevents a decline in the performance of an air dryer, even in a dusty atmosphere.	Max. ambient temperature 40°C	IDF1E to 11E IDU3E to 6E	P. 12
Bypass piping set 	Easy bypass piping (connect this set to the air dryer), allowing substantial reduction in the installation time.	Max. operating pressure 1.0 MPa Max. operating temperature 60°C		P. 13

How to Order

Separately installed transformer

IDF — TR 500 — 2

Capacity

Symbol	Capacity	Applicable dryer
500	500 VA	IDF1E-10 to IDF8E-10 IDU3E-10, IDU4E-10

Source voltage

Symbol	Inlet voltage	Outlet voltage	Model	
1	110 VAC (50 Hz), 110 to 120V (60 Hz)	100 VAC (50 Hz) 100 to 110 VAC (60 Hz)	Single phase	Single turn
2	200, 220, 230, 240 VAC (50 Hz), 200 to 260V (60 Hz)			
3	380, 400, 415 VAC (50 Hz), 380 to 420V (60 Hz)			Com-pound
4	420, 440, 480 VAC (50 Hz), 420 to 520V (60 Hz)			

Please refer to page 11 for dimensions.

Base integrated with a transformer

IDF — TB 403

Size order

Symbol	Applicable dryer
403	IDF4E to 8E, IDU3E to 4E

Please refer to page 12 for dimensions.

Dust-protecting filter set

IDF — FL 201

Applicable dryer

Symbol	Applicable dryer
200 Note 1)	IDF1E, 2E
201 Note 1)	IDF3E
202	IDF4E
203	IDF6E, IDU3E
204	IDF8E, IDU4E
205	IDF11E, IDU6E

Note 1) In the case of option S, model no. will be differed. Consult with us separately.

Please refer to page 12 for dimensions.

Bypass piping set (Rc thread)

IDF — BP 302

Applicable dryer

Symbol	Applicable dryer
300	IDF1E
301	IDF2E
302	IDF3E
303	IDF4E
304	IDF6E to 11E

IDU — BP 305

Applicable dryer

Symbol	Applicable dryer
305	IDU3E
306	IDU4E
307	IDU6E

Please refer to page 13 for dimensions.

Bypass piping set (NPT thread)

IDF — BP 308

Applicable dryer

Symbol	Applicable dryer
308	IDF1E
309	IDF2E
310	IDF3E
311	IDF4E
312	IDF6E to 11E

IDU — BP 313

Applicable dryer

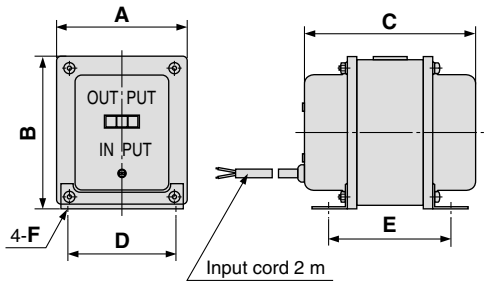
Symbol	Applicable dryer
313	IDU3E
314	IDU4E
315	IDU6E

Please refer to page 13 for dimensions.

Accessory (Option)

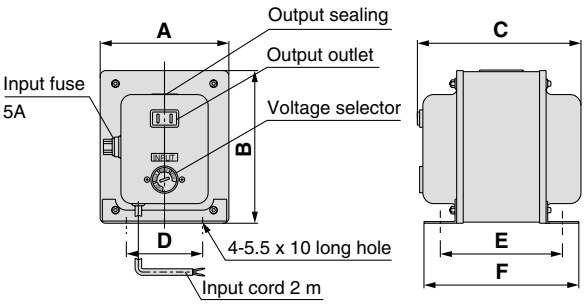
Separately Installed Transformer/Dimensions

IDF-TR500-1



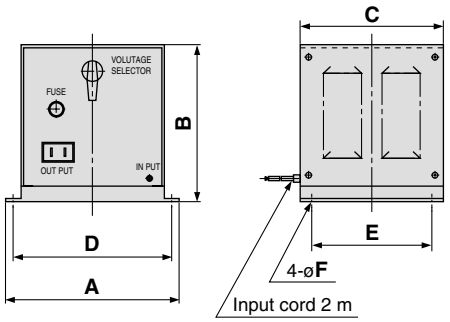
Transformer part no.	Applicable dryer	Capacity	Model	Inlet voltage	Outlet voltage	A	B	C	D	E	F	Weight (kg)
IDF-TR500-1	IDF1E-10 to 8E-10 IDU3E-10, 4E-10	500 VA	Single phase Single turn	110 VAC (50 Hz) 110 to 120 VAC (60 Hz)	100 VAC (50 Hz) 100 to 110 VAC (60 Hz)	78	94	100	64	75	4.2 x 7 (Long hole)	1.5

IDF-TR500-2



Transformer part no.	Applicable dryer	Capacity	Model	Inlet voltage	Outlet voltage	A	B	C	D	E	F	Weight (kg)
IDF-TR500-2	IDF1E-10 to 8E-10 IDU3E-10, 4E-10	500 VA	Single phase Single turn	200, 220 230, 240 VAC (50 Hz) 200 to 260 VAC (60 Hz)	100 VAC (50 Hz) 100 to 110 VAC (60 Hz)	118	140	150	70	112	142	6

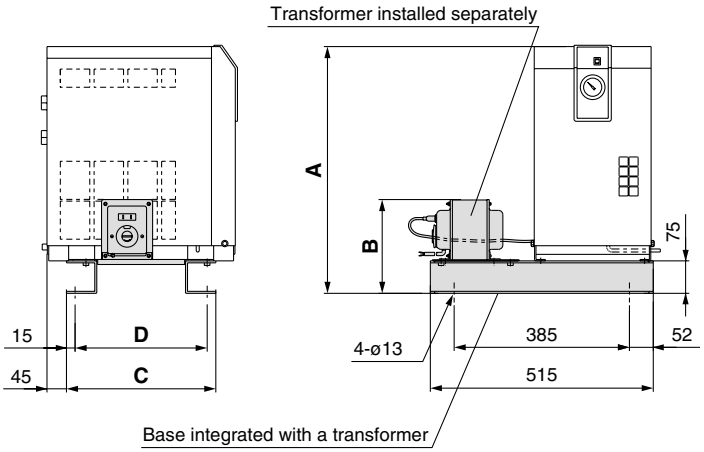
IDF-TR500-3, 4



Transformer part no.	Applicable dryer	Capacity	Model	Inlet voltage	Outlet voltage	A	B	C	D	E	F	Weight (kg)
IDF-TR500-3	IDF1E-10 to 8E-10 IDU3E-10, 4E-10	500 VA	Single phase Single turn	380, 400, 415 VAC (50 Hz) 380 to 420 VAC (60 Hz)	100 VAC (50 Hz) 110 VAC (60 Hz)	230	207	190	210	160	9	15
IDF-TR500-4				420, 440, 480 VAC (50 Hz) 420 to 520 VAC (60 Hz)								22

Base Integrated with a Transformer/Dimensions

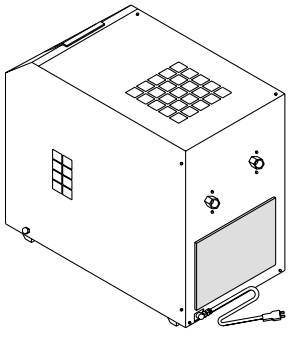
IDF4E to 8E
IDU3E, 4E



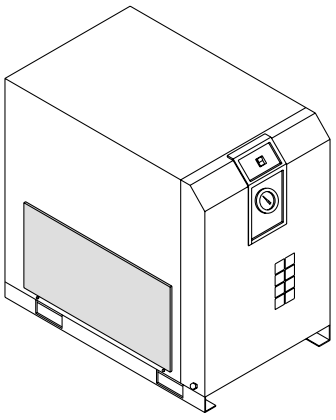
Base integrated		Applicable dryer	Applicable transformer	Dimension				Total weight (kg)
Part no.	Weight (kg)	Model	Model	A	B	C	D	
IDF-TB403	6	IDF4E-10	IDF-TR500-1	573	171	345	315	30
			IDF-TR500-2		217			40
			IDF-TR500-3		284			43
			IDF-TR500-4					50
		IDF6E-10 IDU3E-10	IDF-TR500-1		171			31
			IDF-TR500-2		217			35
			IDF-TR500-3		284			44
			IDF-TR500-4					51
		IDF8E-10 IDU4E-10	IDF-TR500-1	643	171	370	340	35
			IDF-TR500-2		217			39
			IDF-TR500-3		284			48
			IDF-TR500-4					55

Note) Weight including the air dryer and the transformer.

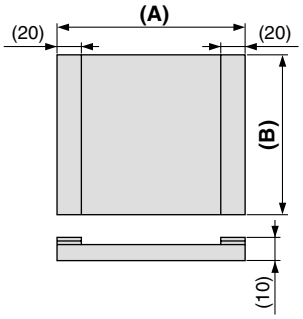
Dust-protecting Filter Set/Dimensions



(IDF-FL200, 201)



(IDF-FL202, 203, 204, 205)



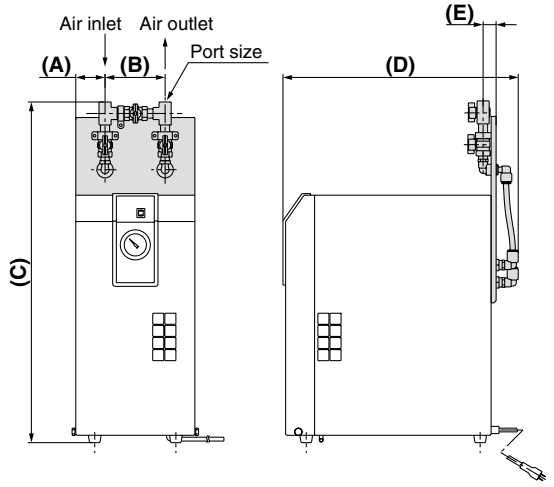
Part no.	Applicable dryer	A	B	Weight (g)
IDF-FL200	IDF1E, 2E	220	150	20
IDF-FL201	IDF3E		200	30
IDF-FL202	IDF4E	310	195	45
IDF-FL203	IDF6E, IDU3E	375		55
IDF-FL204	IDF8E, IDU4E	340	265	70
IDF-FL205	IDF11E, IDU6E	375		75

Accessory (Option)

Bypass Piping Set/Dimensions

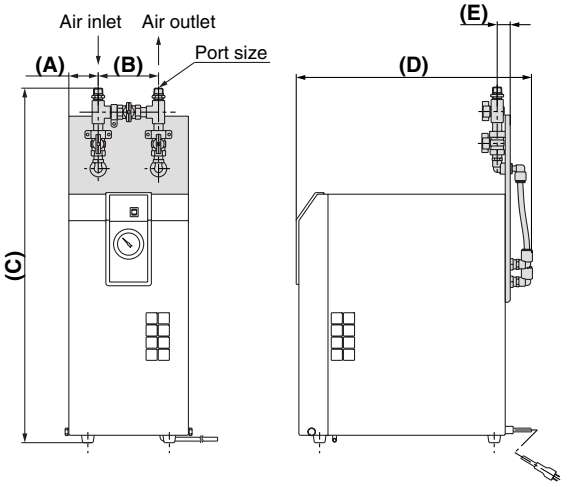
IDF1E, 2E, 3E

For Rc



Part no.	Applicable dryer	Port size Rc	A	B	C	D	E	Weight (kg)
IDF-BP300	IDF1E	3/8	56	114	549	440	5	1.5
IDF-BP301	IDF2E				628	443		1.6
IDF-BP302	IDF3E				642	445		

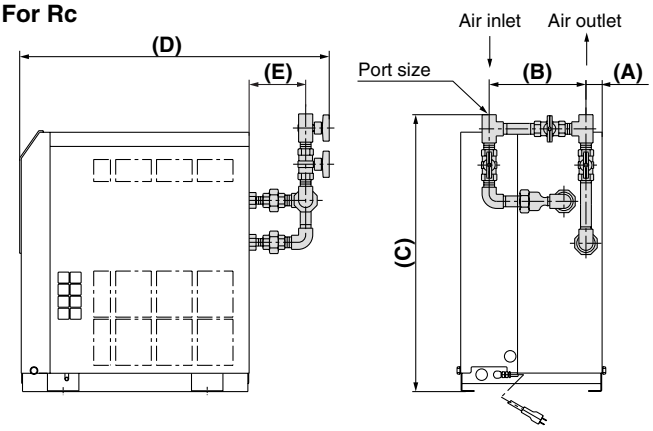
For NPT



Part no.	Applicable dryer	Port size NPT	A	B	C	D	E	Weight (kg)
IDF-BP308	IDF1E	3/8	56	114	573	444	12	1.6
IDF-BP309	IDF2E				652	447		1.7
IDF-BP310	IDF3E				666	450		

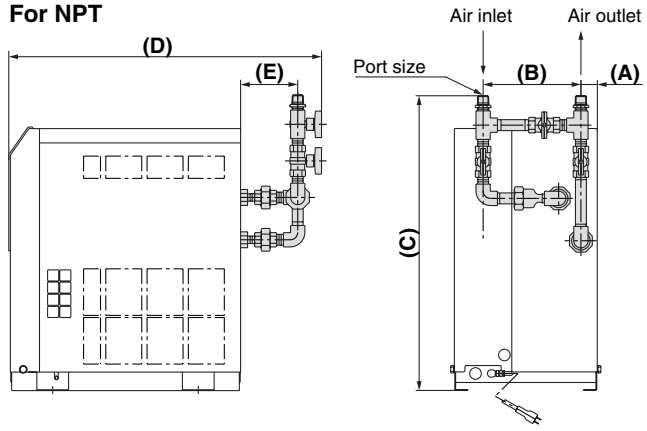
IDF4E, 6E, 8E, 11E
IDU3E, 4E, 6E

For Rc



Part no.		Applicable dryer	Port size Rc	A	B	C	D	E	Weight (kg)
IDF	**IDF-BP303**	IDF4E	1/2	31	175	531	595	110	2.3
	IDF-BP304	IDF6E	3/4		187	555	617	129	3.3
		IDF8E				627	647		
		IDF11E							
IDU	**IDU-BP305**	IDU3E	3/8		202	506	572	100	1.6
	IDU-BP306	IDU4E	1/2		175	603	625	110	2.3
	IDU-BP307	IDU6E	3/4		187	627	647	129	3.3

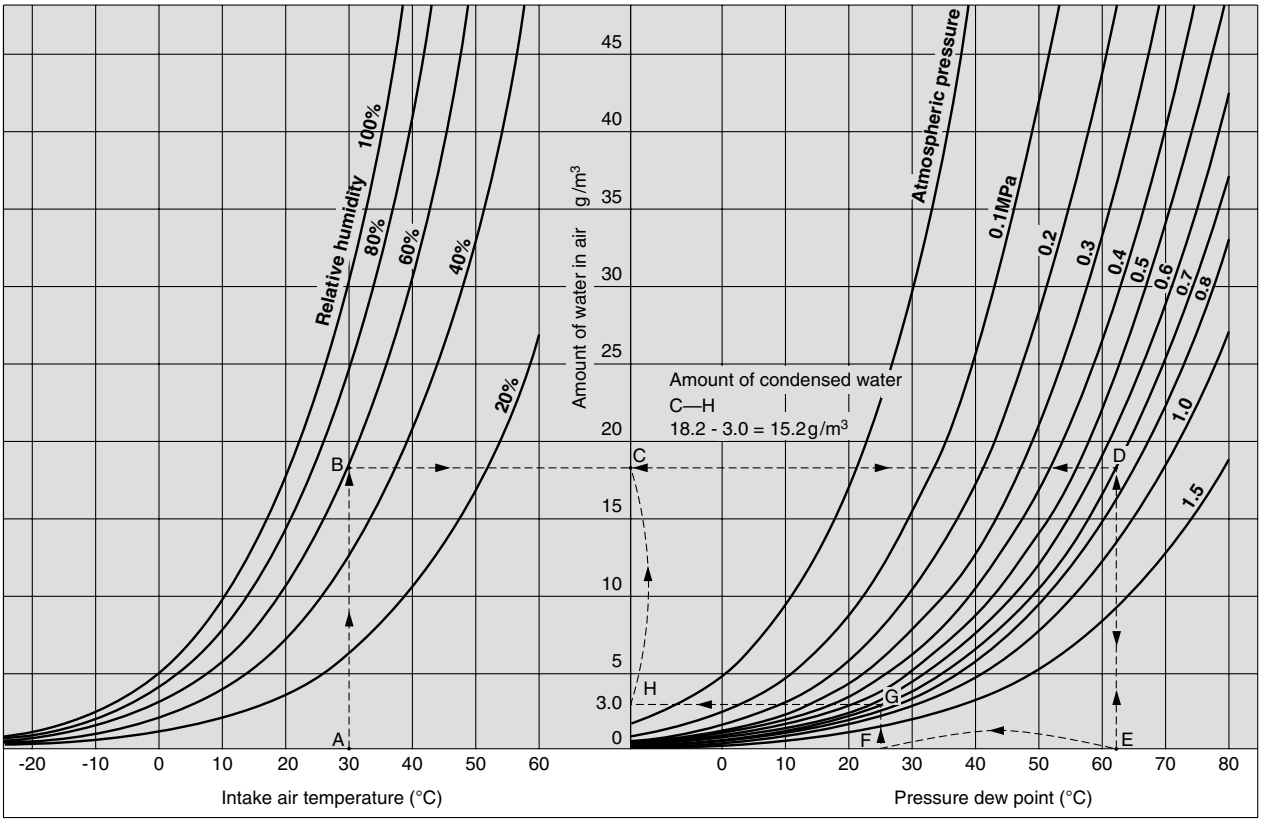
For NPT



Part no.		Applicable dryer	Port size NPT	A	B	C	D	E	Weight (kg)
IDF	**IDF-BP311**	IDF4E	1/2	31	175	560	595	110	2.4
	IDF-BP312	IDF6E	3/4		182	587	617	129	3.4
		IDF8E				659	647		
		IDF11E							
IDU	**IDU-BP313**	IDU3E	3/8		192	530	572	100	1.7
	IDU-BP314	IDU4E	1/2		175	632	625	110	2.4
	IDU-BP315	IDU6E	3/4		187	659	647	129	3.4

Technical Data

Condensed Water Calculation



<How to calculate the amount of condensed water>

Example) To obtain the amount of condensed water when the inlet air of a compressor is pressurized to 0.7 MPa then cooled down to 25°C. Given an ambient temperature of 30°C and a relative humidity of 60%.

① Trace the arrow mark, from point A of ambient temperature 30°C to obtain the intersection B on the curved line for the relative humidity of 60%.

② Trace the arrow mark, from the intersection B to obtain the intersection D on the curved line for the 0.7 MPa pressure characterisitics.

③ Trace the intersection D to obtain the intersection E.

④ The intersection E is the dew point under pressure 0.7 MPa with an ambient temperature of 30°C and a relative humidity of 60%. The value for E is at 62°C.

⑤ Trace the intersection E upward, and C leftward to obtain the intersection D.

⑥ The intersection C is the amount of water included in the compressed air (1 m³ at 0.7 MPa) with a pressure dew point of 62°C. The amount of water is 18.2 g/m³.

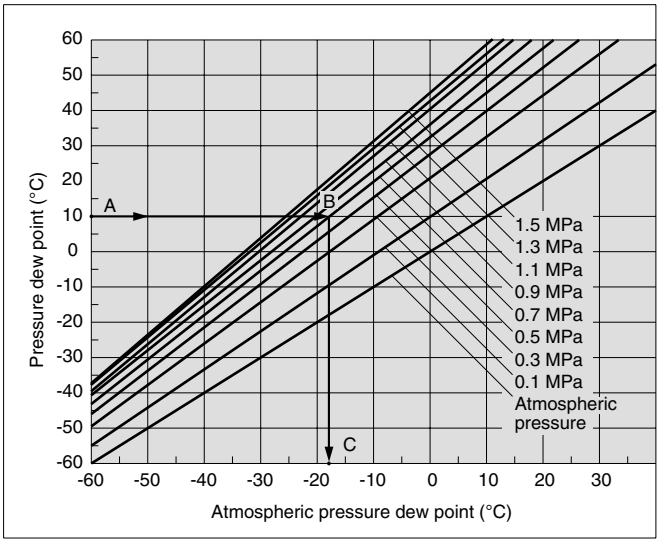
⑦ Trace the arrow mark, starting with F for cooling temperature 25°C (pressure dew point 25°C) to obtain the intersection G on the pressure characteristic line for 0.7 MPa.

⑧ From the intersection G, trace the arrow mark to obtain the intersection H on the vertical axis.

⑨ The intersection H is the amount of water included in the compressed air 1 m³ at 0.7 MPa, pressure dew point of 25°C. The amount of water is 3.0 g/m³.

⑩ Therefore, the amount of condensed water is as following. (per 1 m³)
The amount of water at the intersection C
– the amount of water at the intersection H
= the amount of condensed water
18.2 – 3.0 = 15.2 g/m³

Dew Point Conversion Chart



<How to read the dew point conversion chart>

Example) To obrain the atmospheric dew point at a pressure dew point of 10°C, and a pressure of 0.7 MPa.

① Trace the arrow mark →, starting from point A at a pressure dew point of 10°C to obtain the intersection B on the pressure characteristic line for 0.7 MPa.

② Trace the arrow mark →, starting from point B to obtain the intersection C at the dew point under atmospheric pressure.

③ The intersection C is the conversion value –17°C under atmospheric pressure dew point.

Series IDF/IDU E
Safety Instructions

The following safety instructions are intended to prevent a hazardous situation and/or equipment damage. The instructions indicate the level of potential hazard by a label of **"Caution", "Warning" or "Danger"**. To ensure safety, please observe ISO 4414 Note 1), JIS B 8370 Note 2) and all other safety practices.

⚠ Caution : Operator error could result in injury or equipment damage.

⚠ Warning : Operator error could result in serious injury or loss of life.

⚠ Danger : In extreme conditions, there is a possible result of serious injury or loss of life.

Note 1) ISO 4414: Pneumatic fluid power – General rules relating to systems
Note 2) JIS B 8370: General Rules for Pneumatic Equipment

⚠ Warning

1. The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.

Since the products specified here are used in various operating conditions, their compatibility with the specific system must be based on specifications or after analysis and/or tests to meet your specific requirements. The expected performance and safety assurance will be the responsibility of the person who has determined the compatibility of the system. This person should continuously review the suitability of all items specified, referring to the latest catalog information with a view to giving due consideration to any possibility of equipment failure when configuring a system.

2. Only trained personnel should operate pneumatic machinery and equipment.

The fluid can be dangerous if handled incorrectly. Assembly, handling or maintenance of systems should be performed by trained and experienced operators.

3. Do not service machinery/equipment or attempt to remove components until the safety is confirmed.

1. Inspection and maintenance of machinery/equipment should only be performed after safety lockout control positions have been confirmed.
2. When equipment is to be removed, confirm the safety precautions as mentioned above. Cut the supply pressure for this equipment and exhaust all residual compressed air in the system.
3. Before machinery/equipment is restarted, exercise caution to prevent quick extension of a cylinder piston rod, etc. (Gradually bleed air into the system to create back pressure.)

4. Contact SMC if the product will be used in any of the following conditions:

1. Conditions and environments beyond the given specifications, or if product is used outdoors.
2. Installation on equipment in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverages, recreation equipment, emergency stop circuits, press applications, or safety equipment.
3. An application which has the possibility of having a negative effect on people, property, or animals, and or which requires special safety analysis.

Series IDF/IDU E
Air Preparation Equipment/Precautions1

Be sure to read before handling.

Cautions on Design

Employ a safe design, so that the following type of unexpected conditions will not occur.

⚠ Warning

1. Design a system that prevents high temperature compressed air from flowing into the outlet side of the cooling equipment.

If the flow of the coolant water in a water cooled aftercooler is stopped or if the fan motor of an air cooled aftercooler is stopped, the high temperature compressed air will flow to the outlet side of the cooling equipment, causing the equipment on the outlet side (such as the AFF, AM, AD, or IDF series) to become damaged or malfunction.

2. Design a system in which interruptions in the supply of compressed air are taken into consideration.

There are cases in which compressed air cannot flow due to the freezing of the refrigeration air dryer or a malfunction (heatless dryer) in the switching valve.

⚠ Caution

1. Design a system which prevents back pressure and back flow.

The generation of back pressure and back flow could lead to equipment damage. Therefore, take appropriate safety measures and follow proper installation methods, to prevent such occurrences.

Selection

⚠ Warning

1. To select the equipment, thoroughly verify the purpose, specification requirements, and the operating conditions (such as pressure, flow rate, temperature, environment, and power supply), and make your selection based on the latest catalog, making sure not to exceed the specification range. If something is not understood, please contact SMC before making a selection.

2. Do not use this product for caisson shielding, breathing, medical use, medicine that is injected by humans, or for blowing air on food products.

The air purifier has been designed exclusively for industrial compressed air and it should not be used for any other purpose. Due to unavoidable circumstances, if it must be used for other purposes, please take the necessary safety precautions and contact SMC beforehand.

3. Do not use this product on board a vehicle or a vessel.

This product must not be installed and used on board a conveyance such as a vehicle or a vessel, as it may become damaged due to vibration. If it must be used in such a manner due to unavoidable circumstances, please contact SMC beforehand.

Selection

⚠ Caution

1.Do not introduce an airflow that is greater than the rated flow rate.

If the rated flow rate is exceeded even momentarily, it could cause drainage or oil to splash to the outlet side or lead to equipment damage.

2. Do not use with low air pressure (blower).

Cleaning equipment, which operates at a specific minimum operating pressure in accordance with the equipment to be used, is designed to be used exclusively with compressed air. Using it below the minimum operating pressure could lower its performance or cause a malfunction. If it must be used under such conditions due to unavoidable circumstances, please contact SMC beforehand.

Mounting

⚠ Caution

1. Verify the installation position.

Because the installation position differs by model, verify it in this catalog or in the instruction manual. If the installed equipment is slanted, it could lead to improper drainage and could cause the auto drain to malfunction, or damage the equipment.

2. Provide maintenance space.

Install and mount the equipment making sure to provide sufficient space for performing maintenance and inspection. Refer to the instruction manual of the respective equipment for details on the maintenance space.

Piping

⚠ Caution

1. Preparation before connecting the piping

Use an air blower to thoroughly flush the piping, or wash the piping to remove any cut chips, oil, or debris from inside the piping before connecting them.

2. Wrapping of sealing tape

When attaching pipes or fittings, use caution to prevent cut chips or sealing material on the threaded portion of the pipe, from entering the piping.
If sealing tape is used, leave about 1.5 to 2 threads uncovered.

3. Take measures to prevent drainage from accumulating in the piping.

Design the piping so that a drain relief is provided at the bottom of a riser pipe, or a slight taper is provided along the flow to prevent the drainage from accumulating.

4. Verifying the IN and OUT sides

When attaching the piping, make sure to avoid interchanging the water and air sides as well as the IN and the OUT sides.

Series IDF/IDU E
Air Preparation Equipment/Precautions 2

Be sure to read before handling.

Air Supply

⚠ Warning

1. Do not operate with anything other than compressed air.

The cleaning equipment has been designed to be used only with compressed air. To use fluids instead of compressed air, please contact SMC beforehand.

2. Do not use compressed air that contains chemicals, organic solvents, salt, or corrosive gases.

Do not use compressed air that contains chemicals, organic solvents, or corrosive gases because they could damage the equipment or cause it to operate improperly.

3. Operating pressure range

The operating pressure range is established according to the equipment. Using the equipment out of the specified range could cause the equipment to be damaged, malfunction, or operate improperly.

Operating Environment

⚠ Warning

1. Do not operate under the conditions listed below due to a risk of malfunction.

1. In locations having corrosive gases, organic solvents, and chemical solutions, or in locations in which these elements are likely to adhere to the equipment.
2. In locations in which salt water, water, or water vapor could come in contact with the equipment.
3. In locations that are exposed to direct sunlight. (Shield the equipment from sunlight to prevent its plastic material from ultraviolet ray degradation or overheating.)
4. In locations that have a heat source and poor ventilation. (Shield the equipment from heat sources to protect it from softening degradation due to radiated heat.)
5. In locations that are exposed to shocks and vibrations. (Check the specifications on each series.)
6. In locations with high humidity or a large amount of dust. (Please contact SMC beforehand.)

2. Adhere to the specified fluid temperature and ambient temperature ranges.

The fluid temperature and the ambient temperature are established according to the equipment. Using the equipment outside of the specified range could cause it to become damaged, malfunction, or operate improperly.

Maintenance

⚠ Warning

1. If an abnormal condition occurs, turn off the power supply and stop the flow of compressed air.

If an abnormal condition occurs, such as smoke, a foul smell, or noise, immediately turn OFF the power supply and stop the flow of compressed air because there is a possible risk of electric shocks or fire.

2. Set the pressure of the compressed air to zero before an inspection.

Before disassembling the equipment on the compressed air side for inspecting the auto drain or for replacing the filter element, make sure that the pressure is set to zero.

⚠ Caution

1. Do not place a heavy object on top or use the equipment as a step stool.

Failure to observe this precaution could cause the equipment to become deformed or damaged, or loss of balance could cause a fall or injury.

2. Discharge the drainage on a regular basis.

If drainage remains accumulated in the equipment or in the piping, it could cause the equipment to operate improperly, or the drainage could splash to the outlet side, leading to unforeseen accidents. Therefore, make sure to check the drainage volume and the operation of the auto drain on a daily basis.

Series IDF/IDU E / Specific Product Precautions 1
Air Preparation Equipment

Refer to pages 15 to 17 for safety instructions and cleaning equipment precautions.

Installation Location

⚠ Caution

- Avoid locations, where the air dryer will be in direct contact with wind and rain. (Places where relative humidity is greater than 85%)
- Avoid exposure to direct sunlight.
- Avoid dusty or corrosive environments. If it is used in these environments, select option C (with anti-corrosive treatment).
- Avoid locations of poor ventilation and high temperature.
- Allow ample space around the air dryer.
- Avoid locations where a dryer could draw in high temperature air that is discharged from an air compressor or other dryer.
- Avoid locations subjected to vibration.
- Avoid possible locations where the drain can freeze.
- Use the air dryer with an ambient temperature lower than 40°C.
- Avoid installation on moving objects, such as trucks, ships, etc.

Drain Tube

⚠ Caution

- A polyurethane tube with a 10 mm outer diameter is attached as a drain tube for the IDF1E to 11E, IDU3E and 6E. Use this tube to discharge drainage.
- Do not use the drain tube in an upward direction. Do not bend or crush the drain tube. (Operation of the auto drain will stop water vapor from discharging through the air outlet.)

Power Supply

⚠ Caution

<100 VAC>

- Insert the power supply plug to an exclusive 100 VAC power outlet.
- Install a circuit breaker (10 A)* for the power supply.
- The voltage fluctuation should be maintained within ±10% of the rated voltage.
- Be sure to ground the power supply prior to use.
- Multiple-branch wiring is dangerous since it causes over-heating.
- Do not extend the power supply cord length using an extension cord. A voltage drop may cause the air dryer to stop operating.

  * Select a circuit breaker having a sensitivity current of 30 mA and a rated current of 10 A.

<200 VAC>

- Connect the power supply to the terminal block.
- Install a suitable circuit breaker applicable for the specific model.
- The voltage fluctuation should be maintained within ±10% of the rated voltage.

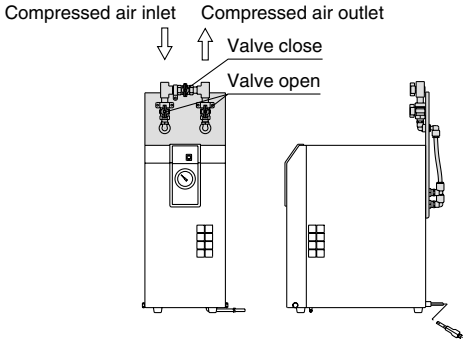
When the voltage used is different than specified for a standard product, use a separately installed transformer. (page 10)

Air Piping

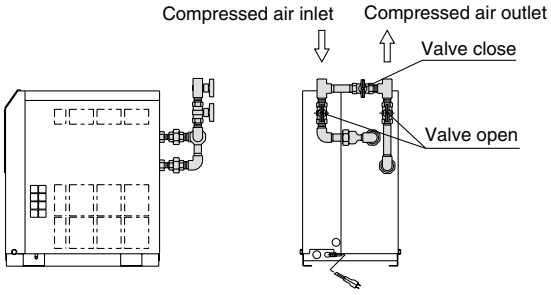
⚠ Caution

- Be careful to avoid an error in connecting the air piping at the compressed air inlet (IN) and outlet (OUT).
- Install bypass piping since it is needed for maintenance.

IDF1E to 3E



IDF4E to 11E
IDU3E to 6E



- When tightening piping at the air inlet/outlet tube, the hexagonal parts of the port should be held firmly with a spanner or adjustable angle wrench.
- Variations in operating conditions may cause condensation to form at the surface of the outlet piping. Apply thermal insulation around the piping to prevent condensation from forming.
- Vibration resulting from the compressor should not be transmitted through air piping to the air dryer.
- Do not allow the weight of the piping to lie directly on the air dryer.

Series IDF/IDU E / Specific Product Precautions 2
Air Preparation Equipment

Refer to pages 15 to 17 for safety instructions and cleaning equipment precautions.

Protection Circuit

⚠ Caution

When the air dryer is operated under the following stated conditions, a protection circuit is activated, the light turns off and operation stops.

- When the compressed air temperature is too high.
- When the compressed air flow rate is too high.
- When the ambient temperature is too high. (40°C or higher)
- When the fluctuation of the power supply is beyond the rated voltage ±10%.
- When the dryer is drawing in high temperature air that is discharged from an air compressor or other dryer.
- The ventilation port is obstructed by a wall or clogged with dust.

Compressor Air Delivery

⚠ Caution

Use an air compressor with an air delivery of 100 ℓ/min or larger with IDF2E to 11E series and IDU3E to 6E series.

Since the auto-drain of the IDF2E to 11E series is designed in such a way that the valve remains open unless the air pressure rises to 0.15 MPa or higher, air will blow out from the drain discharge port at the time of air compressor starts up until the pressure increases. Therefore, if an air compressor has a small air delivery, the pressure may not be sufficient.

Auto Drain

⚠ Caution

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

Cleaning of Ventilation Area

⚠ Caution

Remove dust from the ventilation area once a month using a vacuum cleaner or an air blow nozzle.

Time Delay for Restarting

⚠ Caution

Allow at least three minutes before restarting the dryer. If the air dryer is restarted within three minutes after being stopped, the protection circuit will be activated, operating light turns off and the dryer will not be activated.

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