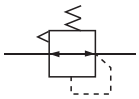
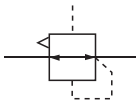
Precision Regulator
Series IR1000/2000/3000

Symbol

Basic type



Air operated type



Features

- Precise air pressure regulator for instrument applications.
- Three body sizes available.
- Pressure unaffected by supply pressure or demand changes.
- Bracket and pressure gauge can be mounted from 2 directions.
- Compact and lightweight.
- Superior relief flow characteristics.

How to Order

IR 2 0 0 0 – F 02

Precision regulator

Body size

1	IR1000
2	IR2000
3	IR3000

Adjustment type

0	Handle type
1	Air pilot (Note)

Note) The IR*1*0 type (Air operated) is only available for body sizes 2 and 3.

Regulating pressure range

For series IR1000/2000

0	0.005 to 0.2 MPa
1	0.01 to 0.4 MPa
2	0.01 to 0.8 MPa

Note) Air operated type is model IR2120 only.

For series IR3000

0	0.01 to 0.2 MPa
1	0.01 to 0.4 MPa
2	0.01 to 0.8 MPa

Note) Air operated type is model IR3120 only.

Thread type

F	G

Port size

Symbol	size	Application		
		IR1000	IR2000	IR3000
01	1/8	●		
02	1/4		●	●
03	3/8			●
04	1/2			●

Note) The IR*1*0 type (Air operated) is only available for body sizes 2 and 3.

Product Recommendation

Stocked items for fast delivery

IR1000-F01	IR2000-F02	IR2120-F02	IR3000-F04	IR3010-F04	IR3020-F04
IR1010-F01	IR2010-F02	IR3000-F02	IR3010-F02	IR3020-F02	IR3120-F03
IR1020-F01	IR2020-F02	IR3000-F03	IR3010-F03	IR3020-F03	IR3120-F04

Accessories and Related Products

(Accessories)
Series G - Pressure Gauges - www.smc.eu

(Related Products)
Series AR - Air Regulators - page 1084
Series ITV - Electro-pneumatic Regulators - page 1104
Series ISE - Digital Pressure Switches - page 1273
Series AC - Air Preparation Modular Units - page 1076
Series AC-A - Air Preparation Modular Units - page 1076

Specifications

Model	Basic type			Air operated type	
	IR10□0	IR20□0	IR30□0	IR2120	IR3120
Max. supply pressure	1.0 MPa				
Min. supply (1) pressure	Set pressure + 0.05 MPa		Set pressure + 0.1 MPa	Set pressure + 0.05 MPa	Set pressure + 0.1 MPa
Regulating pressure range	IR1000: 0.005 to 0.2 MPa IR1010: 0.01 to 0.4 MPa IR1020: 0.01 to 0.8 MPa	IR2000: 0.005 to 0.2 MPa IR2010: 0.01 to 0.4 MPa IR2020: 0.01 to 0.8 MPa	IR3000: 0.01 to 0.2 MPa IR3010: 0.01 to 0.4 MPa IR3020: 0.01 to 0.8 MPa	0.01 to 0.8 MPa	0.01 to 0.8 MPa
Input signal (2) pressure	—			0.01 to 0.8 MPa	0.01 to 0.8 MPa
Sensitivity	Within 0.2% of full span				
Repeatability	Within ±0.5% of full span				
Linearity (3)	—			Within ±1% of full span	
Air consumption (4) (At supply pressure of 1.0 MPa)	4.4 ℓ/min (ANR) or less	4.4 ℓ/min (ANR) or less	11.5 ℓ/min (ANR) or less	4.4 ℓ/min (ANR) or less	11.5 ℓ/min (ANR) or less
Port size	1/8	1/4	1/4, 3/8, 1/2	1/4	1/4, 3/8, 1/2
Pressure gauge port	1/8 (2 locations)				
Ambient and fluid temperature	–5 to 60°C (No freezing)				
Weight [kg]	0.14	0.30	0.64	0.35	0.71

Note 1) With the condition of no flow on the output side. Together with the set pressure, be sure to maintain a minimum differential pressure of 0.05 MPa for models IR1000 and IR2000, and 0.1 MPa for model IR3000.
Note 2) Applicable only to air operated types IR2120 and IR3120.
Note 3) Indicates the linearity of the output pressure with respect to the input signal pressure.
Note 4) Air is normally being discharged to the atmosphere from a bleed hole or an exhaust port.

Air Preparation

Accessory (Option)/Part No.

Description	Part no.								
	IR1000	IR1010	IR1020	IR2000	IR2010	IR2020/2120	IR3000	IR3010	IR3020/3120
Bracket	P36201023			P36202028			P362030-20		
Pressure gauge *	G33-2-01	G33-4-01	G33-10-01	G43-2-01	G43-4-01	G43-10-01	G43-2-01	G43-4-01	G43-10-01

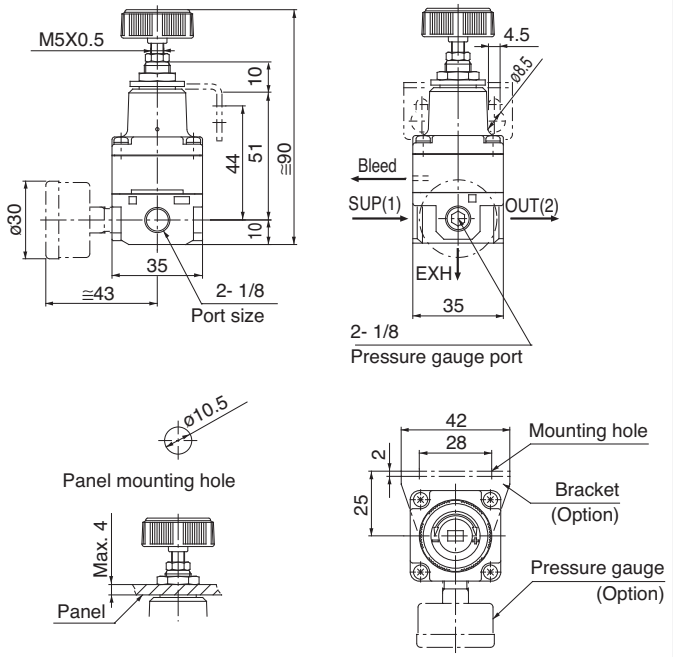
* Accuracy 3% (Full span)

Spares Kits

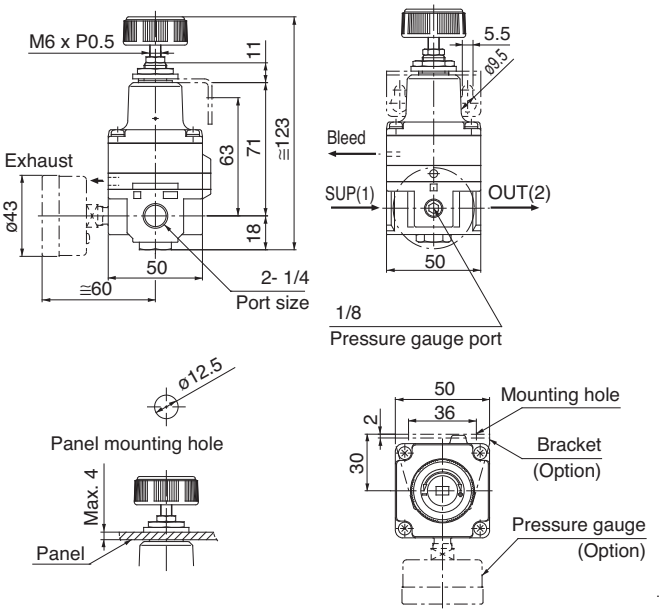
Applicable model	IR1000	IR2000	IR3000
Spares kit	KT-IR1000	KT-IR2000	KT-IR3000

Dimensions

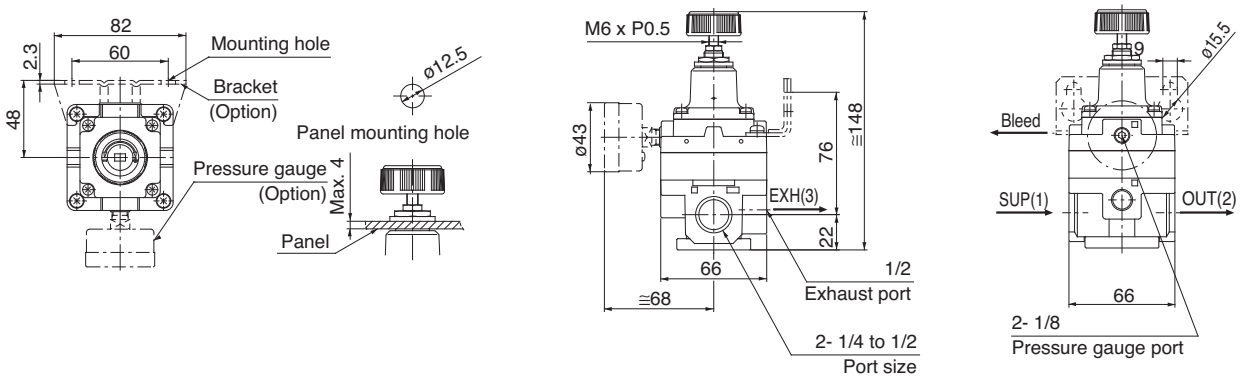
IR1000-01



IR2000-02



IR3000-0 2 3 4



Compact Electro-Pneumatic Regulator Series ITV0000/0090

RoHS

Features

- Realizes space-savings and reduction of weight.
- Built-in one touch fitting.
- Error indication LED display.
- Equivalent to IP65.
- High speed response time 0.1 sec.
- High stability.
- Can be manifold mounted.
- Vacuum variant available.

How to Order ITV0000

For single unit and single unit for manifold

ITV00 [1] [0] – [3] [ ] [N]

Pressure range

1	0.1 MPa
3	0.5 MPa
5	0.9 MPa
9	–100 kPa

Power supply voltage

0	24 VDC
1	12 to 15 VDC

Input signal

0	Current type 4 to 20 mA DC (Sink type)
1	Current type 0 to 20 mA DC (Sink type)
2	Voltage type 0 to 5 VDC
3	Voltage type 0 to 10 VDC

Base type

–	For single unit
M	For manifolds

Cable Assembly

N	Without cable connector
S	3m length with straight connector.
L	2m length with right angle connector.

How to Order ITV0000/0090 Manifold

IITV00 – [02]

Stations

02	2 stations
03	3 stations
⋮	⋮
10	10 stations

Note) A DIN rail with the length specified by the number of stations is attached to the manifold. For dimensions of the DIN rail, refer to the external dimensions.

Product Recommendation

Stocked items for fast delivery

ITV0010-0N	ITV0030-0N	ITV0030-3N	ITV0050-3N
ITV0010-0MN	ITV0030-0MN	ITV0050-0MN	ITV0090-3N
ITV0010-3MN	ITV0030-2N	ITV0050-0N	IITV00-02
ITV0010-3N	ITV0030-3MN	ITV0050-3MN	IITV00-04

Related Products

Series AC - Air Preparation - page 1076
Series PF2A - Digital Flow Switch for Air - page 1309
Series ZSE/ISE□0A - Digital Pressure Switch for Air - page 1273
Series KQ2 - Fittings - page 1184
Series TU - Tubing - page 1223

Standard Specifications

Model		ITV001□	ITV003□	ITV005□	ITV009□
Min. supply pressure		Set pressure +0.1 MPa			Set pressure –1 kPa
Max. supply pressure		0.2 MPa	1.0 MPa		–101 kPa
Regulating pressure range		0.001 to 0.1 MPa	0.001 to 0.5 MPa	0.001 to 0.9 MPa	–1 to –100 kPa
Power supply	Voltage	24 VDC ±10%, 12 to 15 VDC			
	Current consumption	Power supply voltage 24 VDC type: 0.12 A or less Power supply voltage 12 to 15 VDC type: 0.18 A or less			
Input signal	Voltage type	0 to 5 VDC, 0 to 10 VDC			
	Current type	4 to 20 mADC, 0 to 20 mADC (Sink type)			
Input impedance	Voltage type	Approximately 10 kΩ			
	Current type	Approximately 250 Ω			
Output signal	Analogue output	1 to 5 VDC (Output impedance: approximately 1 kΩ) Output accuracy: Within ±6% (Full span)			
Linearity		Within ±1% (Full span)			
Hysteresis		Within 0.5% (Full span)			
Repeatability		Within ±0.5% (Full span)			
Sensitivity		Within 0.2% (Full span)			
Temperature characteristics		Within ±0.12% (Full span)/°C			
Operating temperature range		0 to 50°C (With no condensation)			
Enclosure		IP65 equivalent *			
Connection type		Built-in One-touch fittings			
Connection size	For single unit	Metric size	1, 2, 3: ø4		
	Manifold	Metric size	1, 3: ø6, 2: ø4		
Weight (1)		100 g or less (without options)			

Note 1) Indicates the weight of a single unit.
For IITV00-n
Total weight [g] Stations (n) x 100 + 130 (Weight of end block A, B assembly) + Weight [g] of DIN rail

Note 2) Specifications other than the following are optional. Pressure range: 0.1 MPa, 0.5 MPa, 0.9 MPa, Power supply voltage: 24 VDC, Input signal: 0 to 10 VDC

Note 3) When there is a downstream flow consumption, pressure may become unstable depending on piping conditions.

* When using under the conditions equivalent to IP65, connect the fitting or tube to the breathing hole prior to use.

Option

Bracket

Flat bracket assembly
P39800022

L-bracket assembly
P39800023

Tighting torque when assembling is 0.3 N·m.

Cable connector (spare)

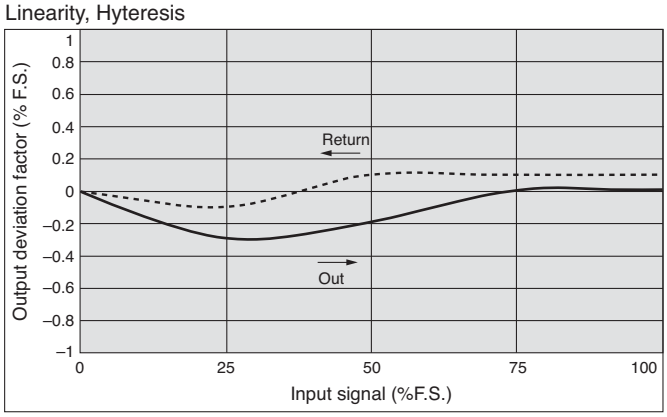
Straight type
M8-4DSX3MG4

Right angle type (spare)
P398000-S01-2

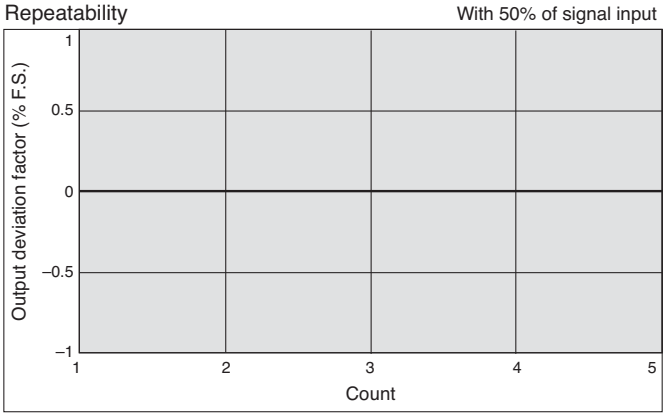
Fluiid Characteristics

Series ITV001□

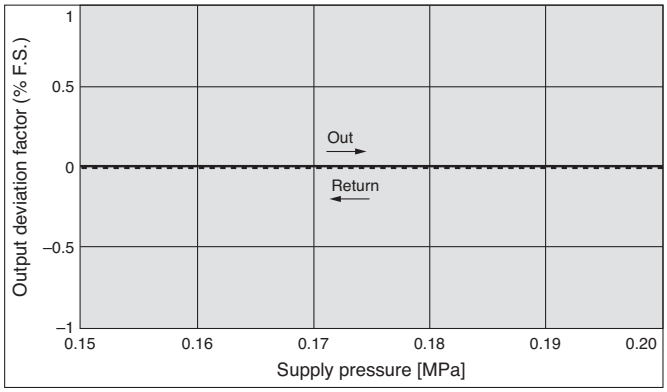
Linearity, Hyteresis



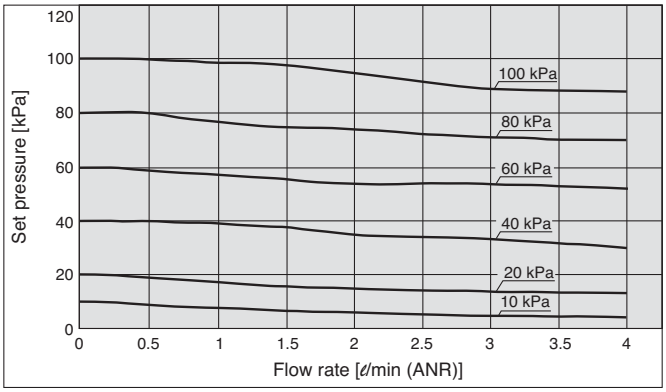
Repeatability — With 50% of signal input



Pressure Characteristics — Set pressure: 0.05 MPa

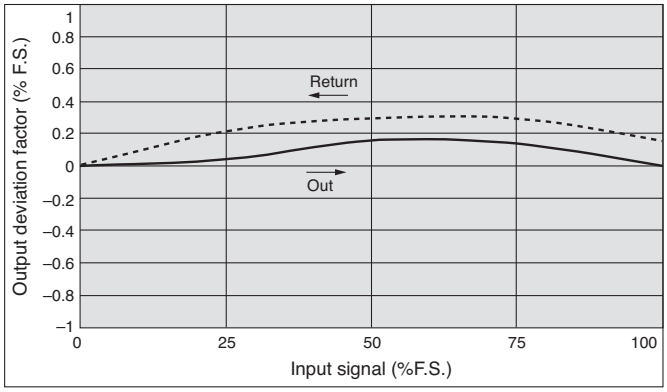


Flow Characteristics — Supply pressure: 0.2 MPa

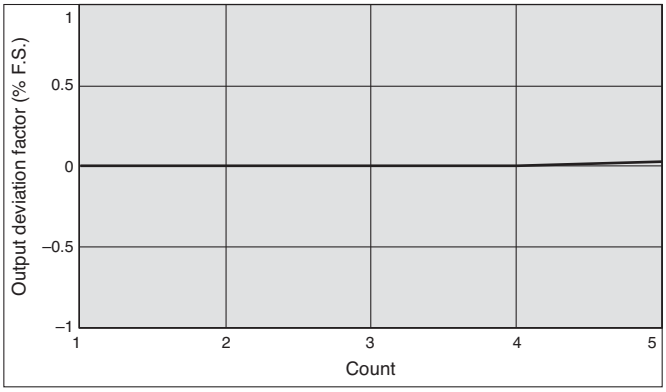


Series ITV003□

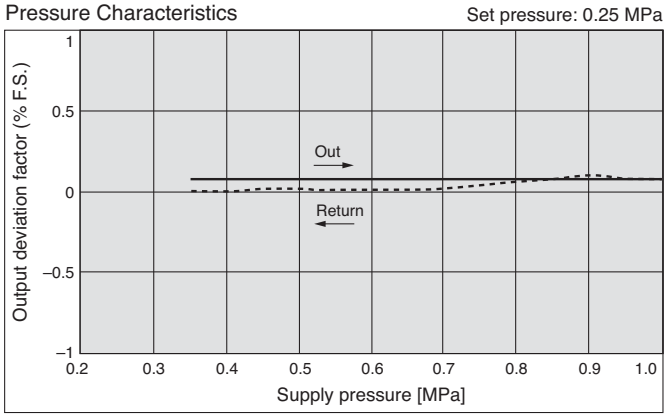
Linearity, Hyteresis



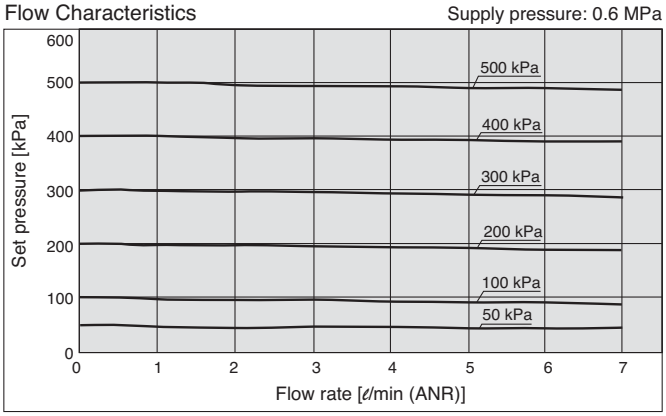
Repeatability — With 50% of signal input



Pressure Characteristics — Set pressure: 0.25 MPa



Flow Characteristics — Supply pressure: 0.6 MPa

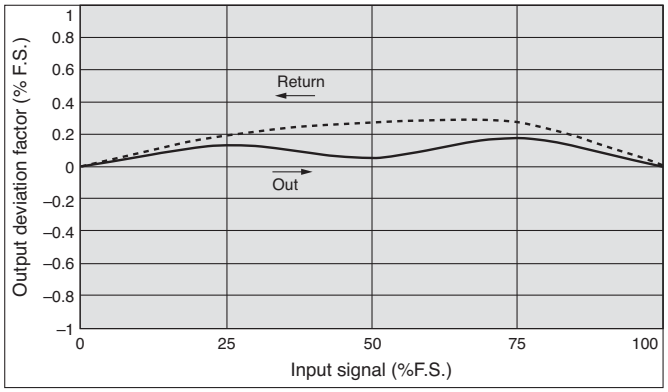


Air Preparation

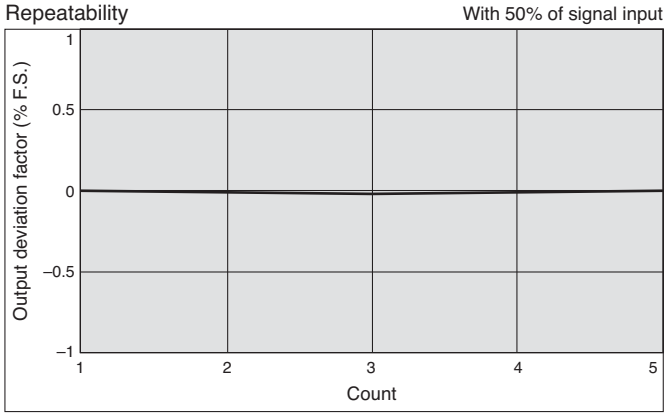
Flow Characteristics

Series ITV005□

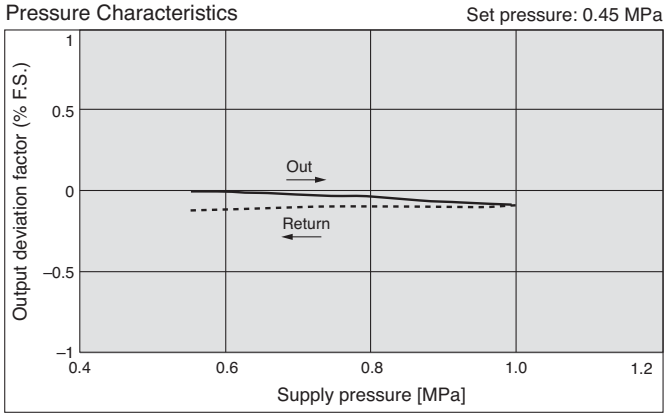
Linearity, Hyteresis



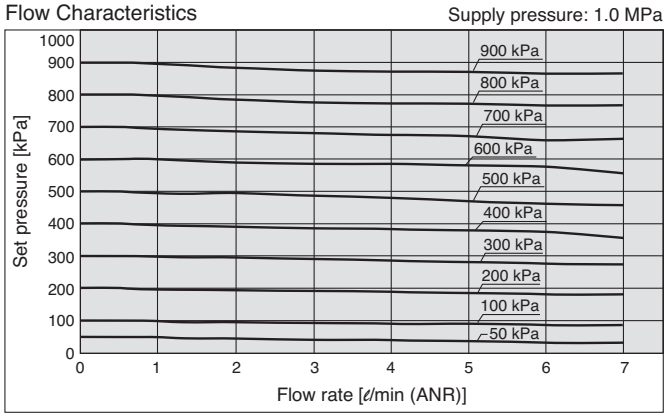
Repeatability — With 50% of signal input



Pressure Characteristics — Set pressure: 0.45 MPa

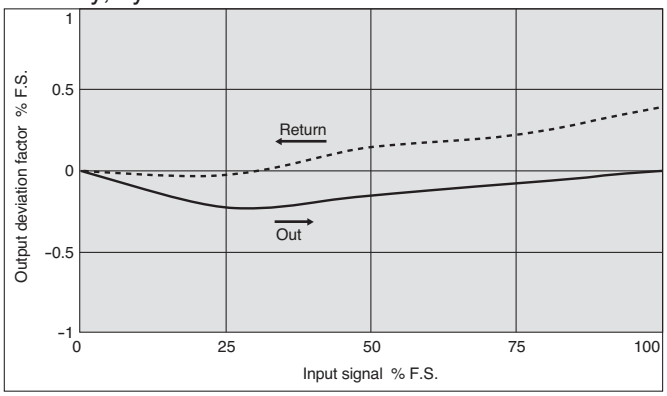


Flow Characteristics — Supply pressure: 1.0 MPa

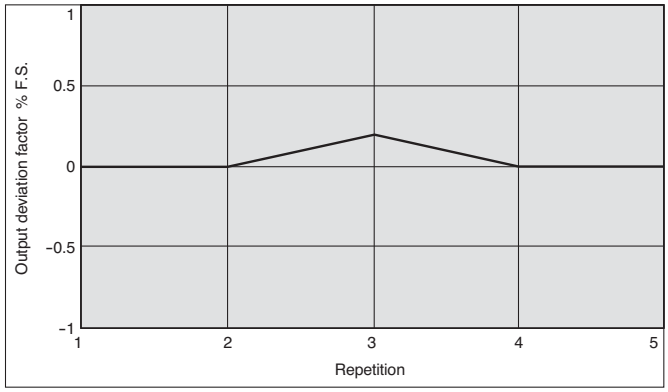


Series ITV009□

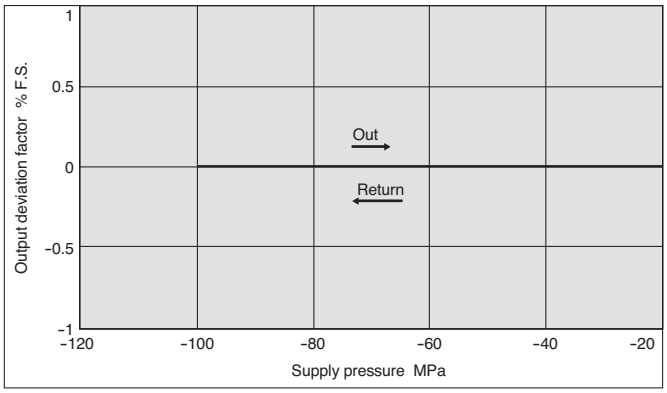
Linearity, hysteresis



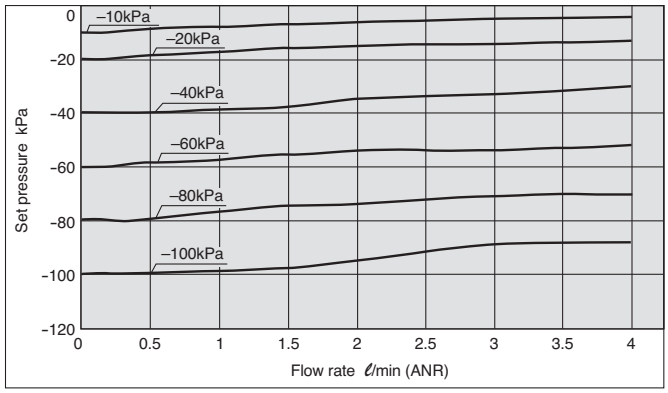
Repeatability — With 50% of signal input



Pressure characteristics



Flow characteristics



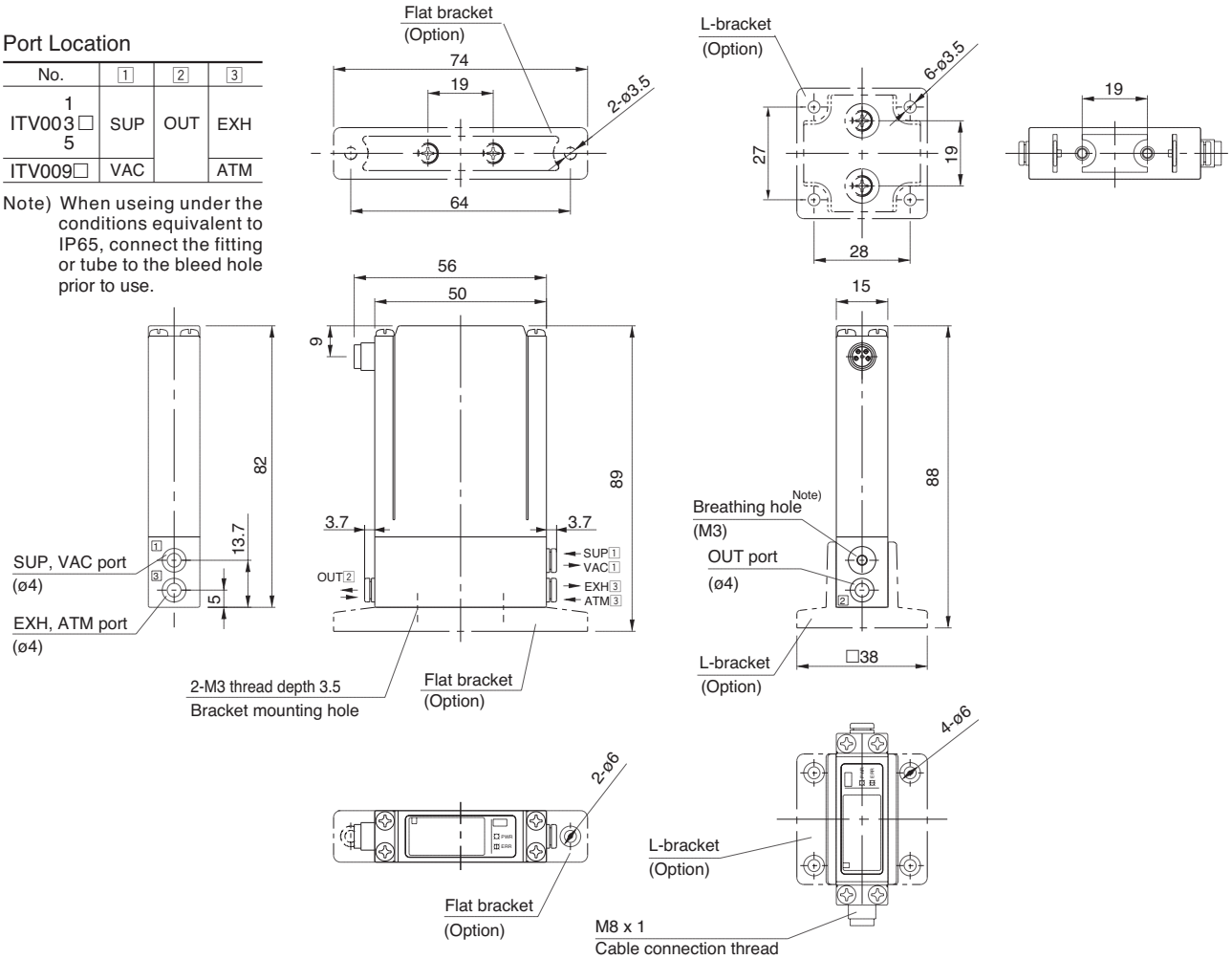
Air Preparation

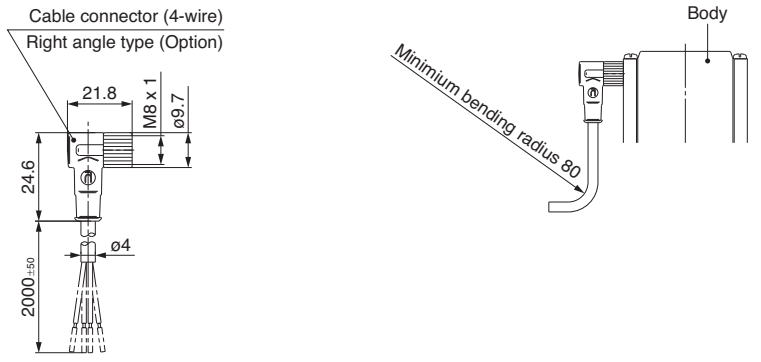
Dimensions For Single Unit

Port Location

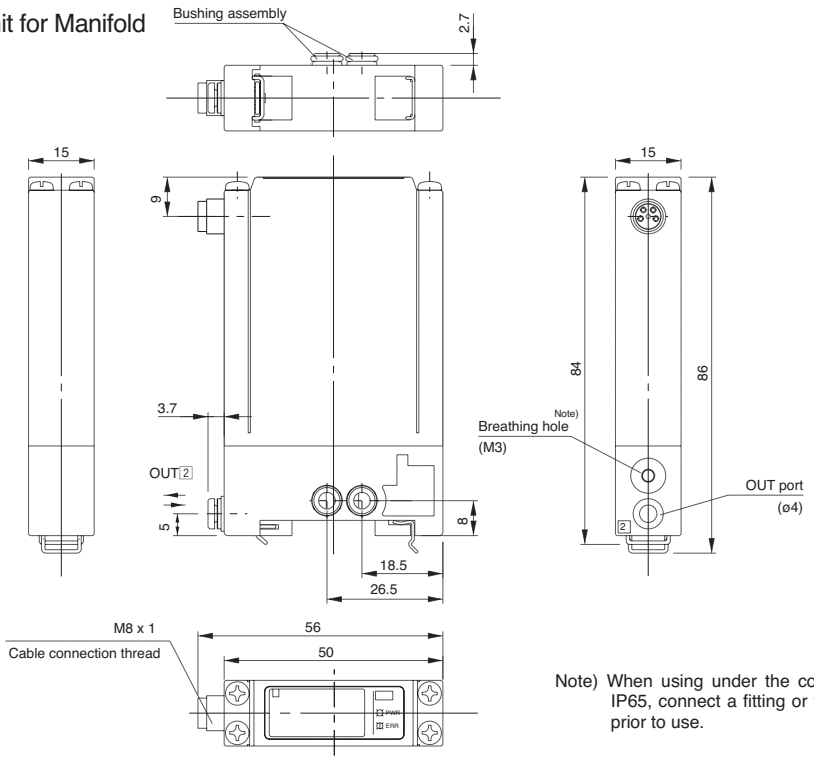
No.	1	2	3
ITV003□5	SUP	OUT	EXH
ITV009□	VAC		ATM

Note) When useing under the conditions equivalent to IP65, connect the fitting or tube to the bleed hole prior to use.



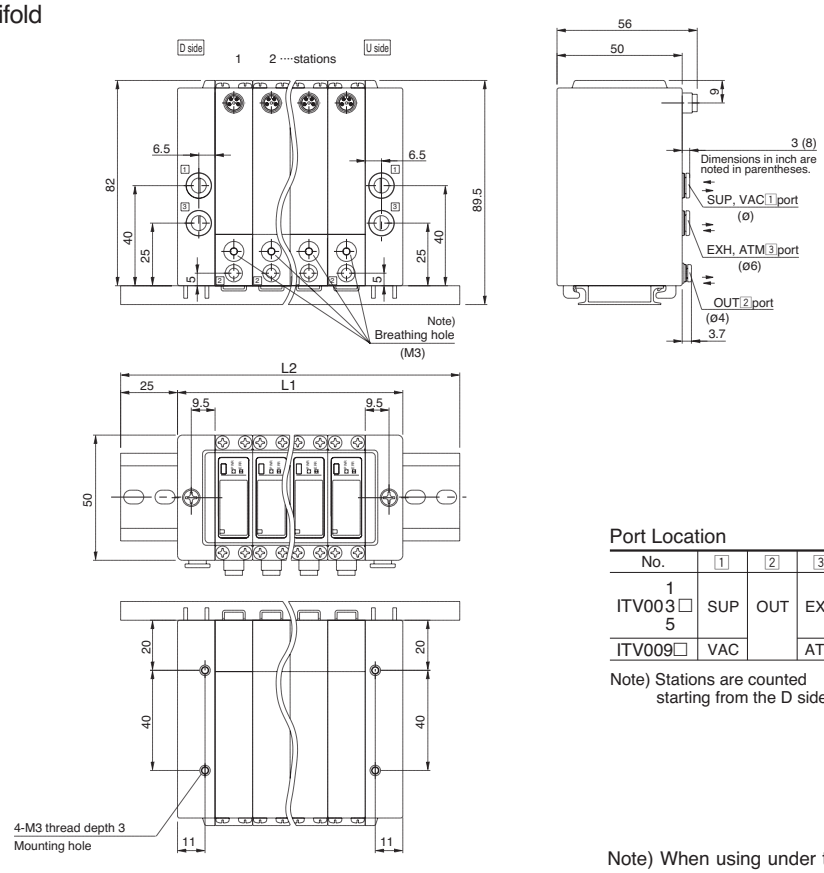


Dimensions for Single Unit for Manifold



Note) When using under the conditions equivalent to IP65, connect a fitting or tube to the bleed hole prior to use.

Dimensions for Manifold



Port Location

No.	1	2	3
ITV003□5	SUP	OUT	EXH
ITV009□	VAC		ATM

Note) Stations are counted starting from the D side.

Note) When using under the conditions equivalent to IP65, connect the fittings or tubing to the bleed hole prior to use.

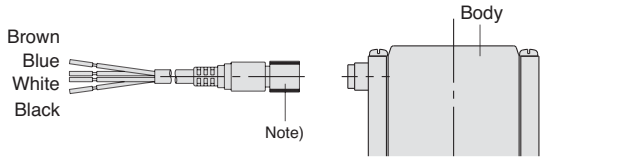
Note) For dimensions of the cable connector, refer to single unit .

[mm]

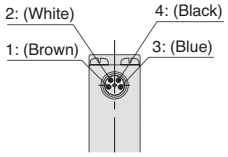
Manifold stations n	2	3	4	5	6	7	8	9	10
L1	60	75	90	105	120	135	150	165	180
L2	110.5	123	148	160.5	173	185.5	198	223	235.5

Precautions

Connect the cable to the connector on the body with the wiring arranged as shown below. Proceed carefully, as incorrect wiring can cause damage.
Further, use DC power with sufficient capacity and a low ripple.



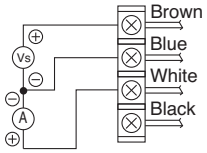
Terminal No.	1	2	3	4
Lead wire colour	Brown	White	Blue	Black
Wiring	Power	Signal	COM	Monitor



Note) A right angle type cable is also available. The entry direction for the right angle type connector is to downwards (SUP port side).
Never turn the connector as it is not designed to turn. Using force to turn the connector will damage the connector coupling.

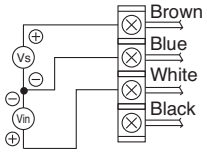
Wiring Diagrams

Current signal type



Vs: Power Supply 24 VDC ±10%
12 to 15 VDC
A : Input signals 4 to 20 mA DC
0 to 20 mA DC

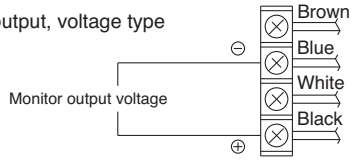
Voltage signal type



Vs : Power Supply 24 VDC ±10%
12 to 15 VDC
Vin: Input signals 0 to 5 VDC
0 to 10 VDC

Monitor output wiring diagram

Analogue output, voltage type



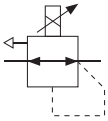
Electro-Pneumatic Regulator
Series ITV1000/2000/3000

RoHS

Features

- Compact and Lightweight.
- Low power consumotion, less than 4W.
- Low sensitivity, less than 0.2% (F.S.)
- Equivalent to IP65.
- Linearity: Within ±1% (F.S.)
- Low hysteresis, less than ±0.5% (F.S.)
- Fieldbus protocol compatibility:
  - CC-Link
  - DeviceNet
  - Profibus

Symbol



How to Order

ITV [3] [0] [1] [0] – [0] [1] [F] [2] [N] [ ]

Power supply voltage

0	24VDC
1	12 to 15 VDC

Thread type

F	G

Cable Assembly

N	Without cable connector
S	3m length straight connector
L	3m length right angle connector

Note) Order communication cable (other than RS232C) separately.

Model

1	1000
2	2000
3	3000

Pressure range

1	0.1 MPa
3	0.5 MPa
5	0.9 MPa

Monitor output

Symbol	Unit
–	Mpa
3	Bar Note)

Note) Option not available for communication models, as it does not have a pressure display.

Port size

1	1/8 (1000 model)
2	1/4 (1000, 2000, 3000 model)
3	3/8 (2000, 3000 model)
4	1/2 (3000 model)

Input signal

0	Current 4 to 20 mA (Sink type)
1	Current 0 to 20 mA (Sink type)
2	Voltage 0 to 5 VDC
3	Voltage 0 to 10 VDC
CC	CC Link
DN	DeviceNet ™
PR	Profibus DP
RC	RS232C Communication

Monitor output

–	None (for communication models)
1	Analogue output 1 to 5V DC
2	Switch output/NPN output
3	Switch output/PNP output
4	Analogue output 4 to 20mA DC (sink type)

Product Recommendation

Stocked items for fast delivery

ITV1010-01F1N	ITV1050-01F1N	ITV2030-01F2N	ITV2050-03F3N	ITV3030-01F4N
ITV1010-01F2N	ITV1050-01F2N	ITV2030-01F3N	ITV2050-31F2N	ITV3030-03F4N
ITV1010-03F2N	ITV1050-03F2N	ITV2030-03F3N	ITV2050-31F3N	ITV3030-31F4N
ITV1010-31F2N	ITV1050-31F1N	ITV2030-31F2N	ITV2050-33F2	ITV3030-33F4N
ITV1010-33F2N	ITV1050-31F2N	ITV2030-31F3N	ITV2050-33F3N	ITV3050-01F4N
ITV1030-01F2N	ITV1050-33F1N	ITV2030-33F2N	ITV2050-PRF2N	ITV3050-03F3N
ITV1030-03F2N	ITV1050-33F2N	ITV2030-33F3N	ITV2050-PRF3N	ITV3050-31F3N
ITV1030-31F1N	ITV1050-PRF2N	ITV2030-PRF2N	ITV3010-01F4N	ITV3050-31F4N
ITV1030-31F2N	ITV2010-01F2N	ITV2030-PRF3N	ITV3010-03F4N	ITV3050-33F3N
ITV1030-33F2N	ITV2010-01F3N	ITV2050-01F2N	ITV3010-31F4N	ITV3050-33F4N
ITV1030-PRF1N	ITV2010-31F3N	ITV2050-01F3N	ITV3010-33F4N	ITV3050-PRF3N

Related Products

Series AC - Air Preparation - page 1072
Series PF2A - Digital Flow Switch for Air- page 1309
Series ZSE/ISE□0A - Digital Pressure Switch for Air - page 1273
Series KQ2 - Fittings - page 1184
Series TU - Tubing - page 1223

Specifications

Model		ITV101□ Note 10)	ITV103□ Note 10)	ITV105□ Note 10)
		ITV201□	ITV203□	ITV205□
		ITV301□	ITV303□	ITV305□
Minimum supply pressure		Set pressure +0.1 MPa		
Maximum supply pressure		0.2 MPa	1.0 MPa	
Set pressure range Note 1)		0.005 to 0.1 MPa	0.005 to 0.5 MPa	0.005 to 0.9 MPa
Power supply	Voltage	24 VDC ±10%, 12 to 15 VDC		
	Current consumption	Power supply voltage 24 VDC type: 0.12 A or less Power supply voltage 12 to 15 VDC type: 0.18 A or less		
Input signal	Current type Note 2)	4 to 20 mA DC, 0 to 20 mA DC (Sink type)		
	Voltage type	0 to 5 VDC, 0 to 10 VDC		
	Preset input	4 points (Negative common), 16 points (no common polarity)		
Input impedance	Current type	250Ω or less Note 6)		
	Voltage type	Approx. 6.5 kΩ		
	Preset input	Power supply voltage 24 VDC type: Approx. 4.7 kΩ Power supply voltage 12 VDC type: Approx. 2.0 kΩ		
Output signal (monitor output) Note 3)	Analogue output	1 to 5 VDC (Output impedance: Approximately 1 kΩ) 4 to 20 mA DC (Sink type) (Load impedance: 250 Ω or less) Output accuracy within ±6% (Full span)		
	Switch output	NPN open collector output: Max. 30 V, 80 mA PNP open collector output: Max. 80 mA		
Linearity		Within ±1% (Full span)		
Hysteresis		Within 0.5% (Full span)		
Repeatability		Within ±0.5% (Full span)		
Sensitivity		Within 0.2% (Full span)		
Temperature characteristics		Within ±0.12% (Full span)/°C		
Output pressure display Note 4)	Accuracy	±2%F.S. ±1 digit or less		
	Minimum unit	MPa: 0.001, kgf/cm^2: 0.01, bar: 0.01, psi: 0.1 Note 5) , kPa: 1		
Ambient and fluid temperature		0 to 50°C (No condensation)		
Enclosure		IP65		
Weight Note 9)	ITV10□□	Approx. 250 g (without options)		
	ITV20□□	Approx. 350 g (without options)		
	ITV30□□	Approx. 645 g (without options)		

Note 1) Please refer to Figure 1 for the relationship between set pressure and input. Because the maximum set pressure differs for each pressure display.
Note 2) 2-wire type 4 to 20 mA DC is not available. Power supply voltage (24 VDC or 12 to 15 VDC) is required.
Note 3) Select either analogue output or switch output.
Further, when switch output is selected, select either NPN output or PNP output. When measuring ITV analogue output from 1 to 5VDC, if the load impedance is less than 100 kΩ, the analogue output monitor accuracy of within ±6% (full span) may not be available. The product with the accuracy of within ±6% is supplied upon your request. Output pressure remains unaffected.
Note 4) Adjustment of numerical values such as the zero/span adjustment or preset input type is set based on the minimum units for output pressure display (e.g. 0.01 to 0.50 MPa). Note that the unit cannot be changed.
Note 5) The minimum unit for 0.9 MPa (130 psi) types is 1 psi.
Note 6) Value for the state with no over current circuit included. If an allowance is provided for an over current circuit, the input impedance varies depending on the input current. This is 350Ω or less for an input current of 20 mA DC.
Note 7) The above characteristics are confined to the static state. When air is consumed on the output side, the pressure may fluctuate.
Note 8) For communication models, the maximum current consumption is 0.16 A or less.
Note 9) For communication models, add roughly 80 g to the weight (100 g for the PROFIBUS DP).
Note 10) The ITV1000 series is a Grease-free specification (Wetted parts).

Rated pressure

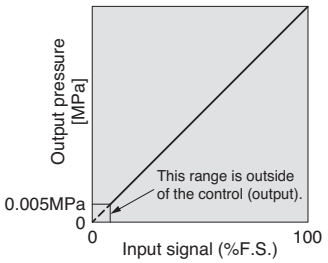


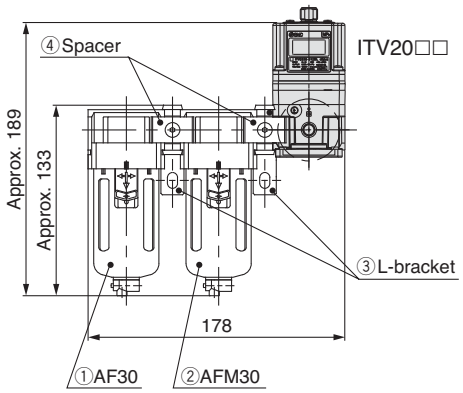
Figure 1. Input/output characteristics chart

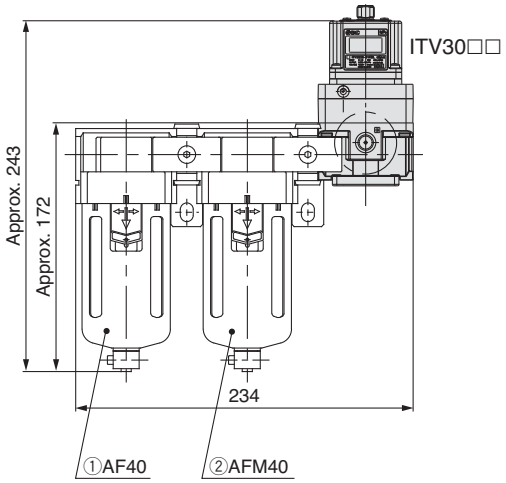
Communication Specifications (CC, DN, PR, RC)

Model	ITV□0□0-CC	ITV□0□0-DN	ITV□0□0-PR	ITV□0□0-RC
Protocol	CC-Link	DeviceNet™	PROFIBUS DP	RS-232C
Version Note 1)	Ver 1.10	Release2.0	DP-V0	—
Communication speed	156 k/625 k 2.5 M/5 M/10 M bps	125 k/250 k/500 k bps	9.6 k/19.2 k/45.45 k 93.75 k/187.5 k/500 k 1.5 M/3 M/6 M/12 M bps	9.6 kbps
Configulation file Note 2)	—	EDS	GSD	—
I/O occupation area (input/output data)	4 word/4 word, 32 bit/32 bit (per station, remote device station)	16 bit/16 bit	16 bit/16 bit	—
Communication data resolution	12 bit (4096 resolution)	12 bit (4096 resolution)	12 bit (4096 resolution)	10 bit (1024 resolution)
Fail safe	HOLD Note 3)/CLEAR (Switch setting)	HOLD/CLEAR (Switch setting)	CLEAR	HOLD
Electric insulation Note 4)	No	No	Yes	No
Terminating resistor	—		Built into the product (Switch setting)	—

Note 1) Note that version information is subject to change.
Note 2) Configulation files can be downloaded from the SMC's website: http://www.smcworld.com
Note 3) The output HOLD value when a CC-Link communications error occurs can be set based on the bit area data.
Note 4) The insulation between the electrical signal of the communication system and ITV power supply.

For more product options and details see our specific catalogues or on-line information.





Combinations

◎ Standard specifications ○ Combination possible ▭ Combination not possible

∗ ITV10□□ models are not applicable.

Specifications		Symbol	Applicable model	
			ITV20□□	ITV30□□
Standard specifications	Set pressure max. 0.1 MPa	1	◎	◎
	Set pressure max. 0.5 MPa	3	◎	◎
	Set pressure max. 0.9 MPa	5	◎	◎
	Connection G 1/4	F02	○	○
	Connection G 3/8	F03	○	○
	Connection G 1/2	F04		○
Accessories	Flat Bracket		○	○
	L-Bracket		○	○

Modular Products and Accessory Combinations

∗ ITV10□□ models are not applicable.

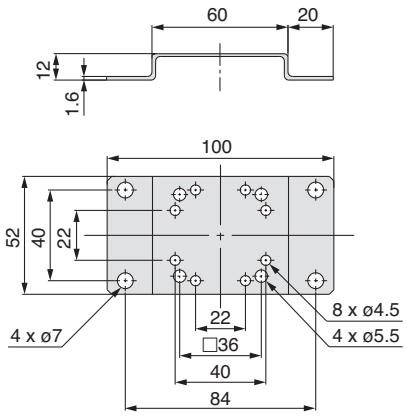
Applicable products and accessories	Applicable model	
	ITV20□□	ITV30□□
① Air filter	AF30	AF40
② Mist separator	AFM30	AFM40
③ L-bracket	B310L	B410L
④ Spacer	Y30	Y40
⑤ Spacer with L-bracket (③ + ④)	Y30L	Y40L
⑥ Spacer with T-bracket	—	Y40T

Accessories (Option)/Part No.

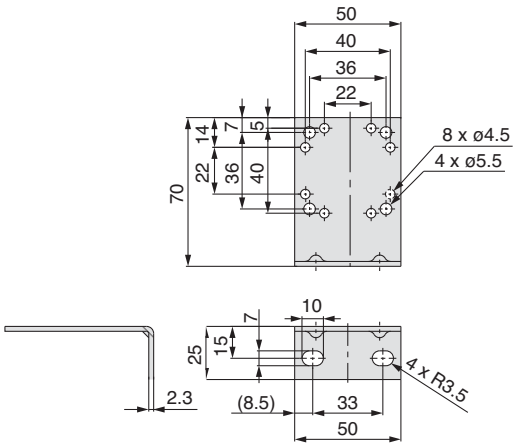
Description		Part No.		
		ITV10□□	ITV20□□	ITV30□□
Flat bracket assembly (including mounting screws)		KT-ITV-F1	KT-ITV-F2	
L-bracket assembly (including mounting screws)		KT-ITV-L1	KT-ITV-L2	
Power cable connector	Straight type 3 m	P398020-500-3 (P398020-504-3 for DeviceNet™)		
	Right angle type 3 m	P398020-501-3 (P398020-505-3 for DeviceNet™)		
Bus adapter (CC-Link model only)		EX9-ACY00-MJ		

Dimensions

Flat bracket



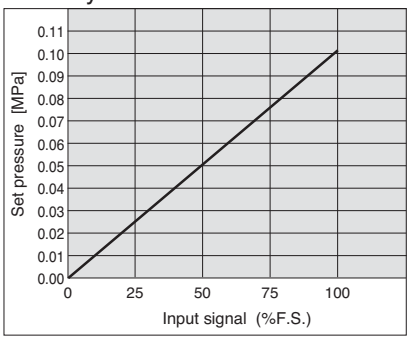
L-bracket



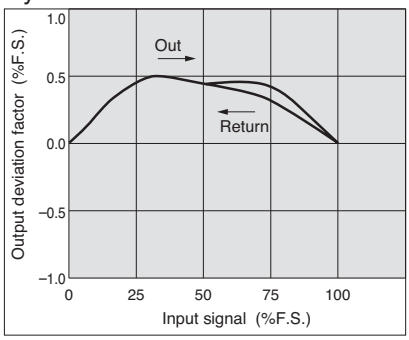
Flow Characteristics

Series ITV101□

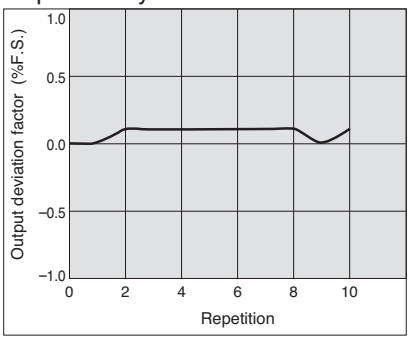
Linearity



Hysteresis

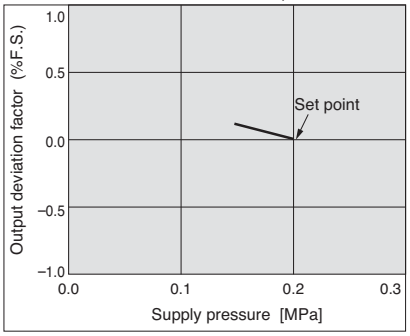


Repeatability



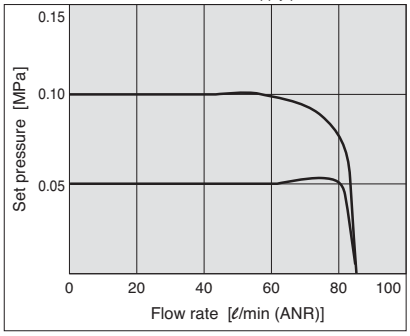
Pressure characteristics

Set pressure: 0.05 MPa



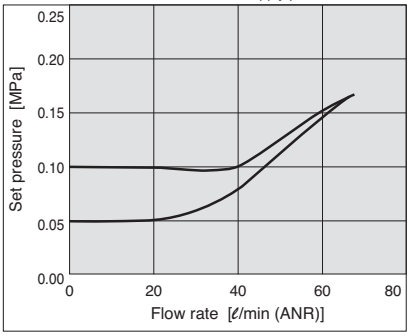
Flow characteristics

Supply pressure: 0.2 MPa



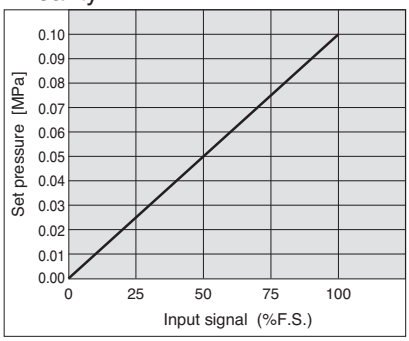
Relief flow characteristics

Supply pressure: 0.2 MPa

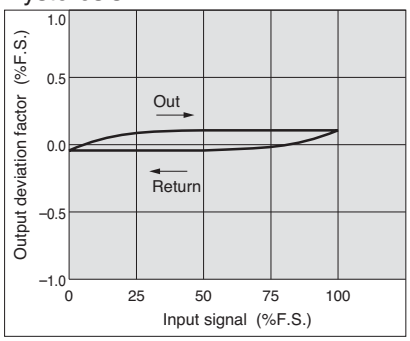


Series ITV201□

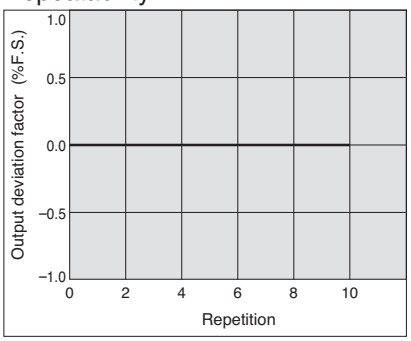
Linearity



Hysteresis

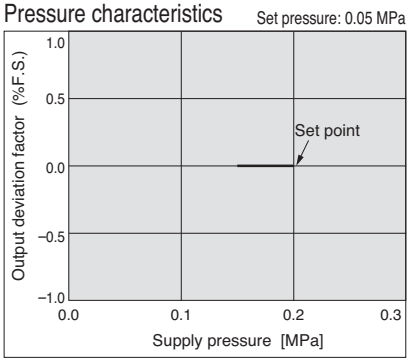


Repeatability



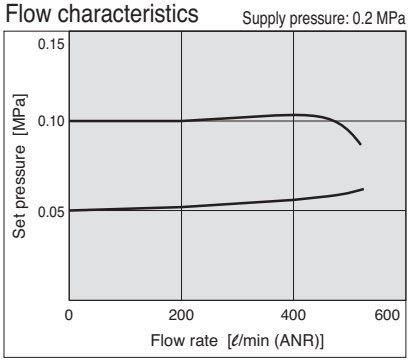
Pressure characteristics

Set pressure: 0.05 MPa



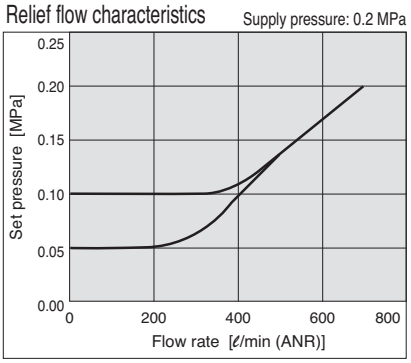
Flow characteristics

Supply pressure: 0.2 MPa



Relief flow characteristics

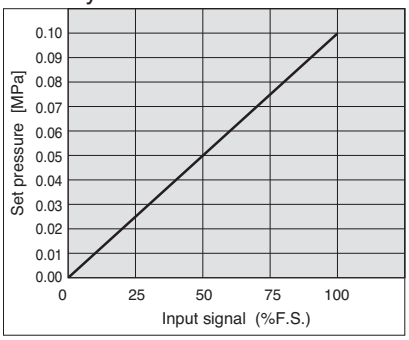
Supply pressure: 0.2 MPa



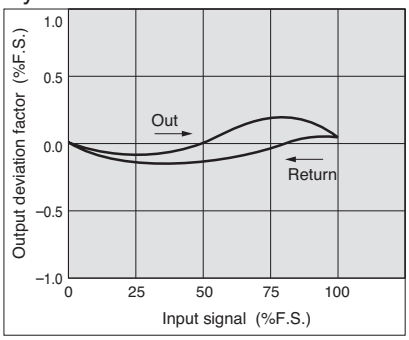
Flow Characteristics

Series ITV301□

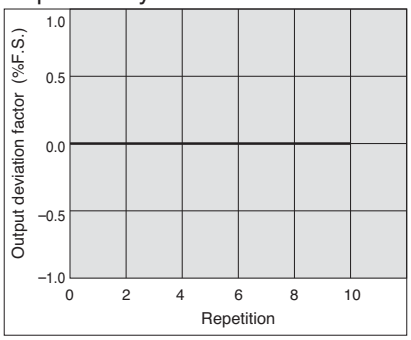
Linearity



Hysteresis

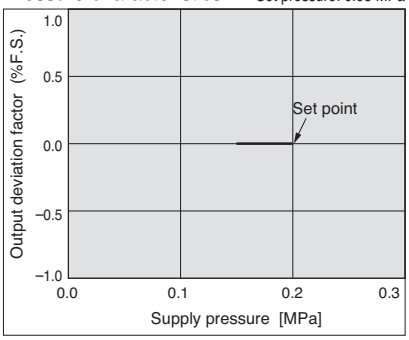


Repeatability



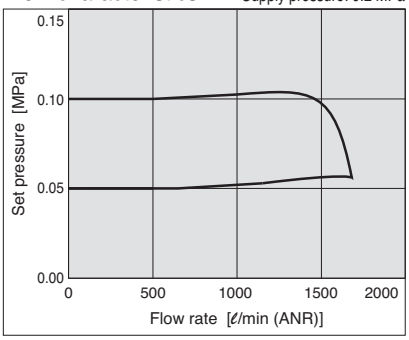
Pressure characteristics

Set pressure: 0.05 MPa



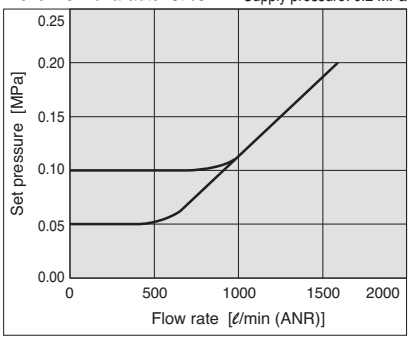
Flow characteristics

Supply pressure: 0.2 MPa



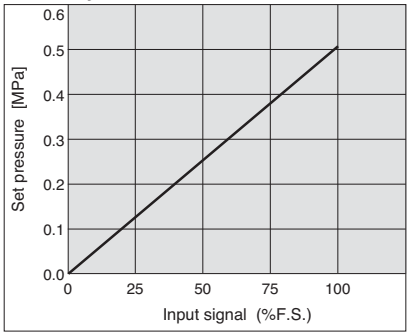
Relief flow characteristics

Supply pressure: 0.2 MPa

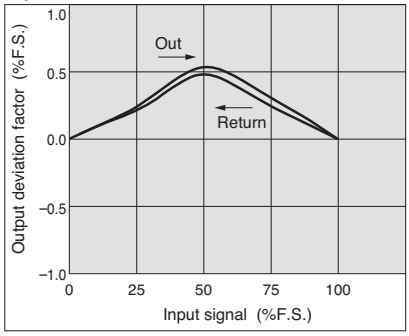


Series ITV103□

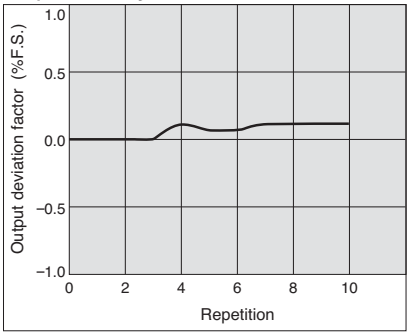
Linearity



Hysteresis

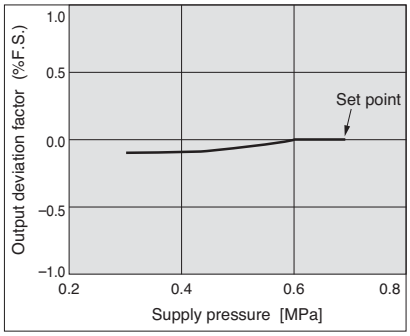


Repeatability



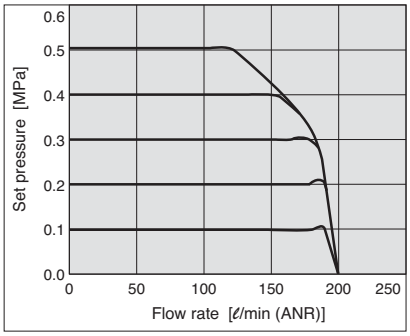
Pressure characteristics

Set pressure: 0.2 MPa



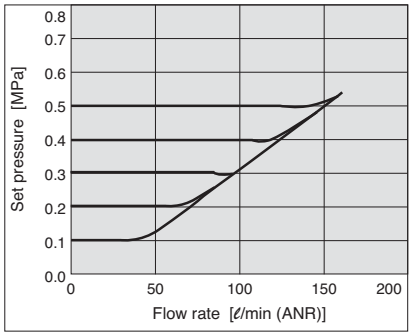
Flow characteristics

Supply pressure: 0.7 MPa



Relief flow characteristics

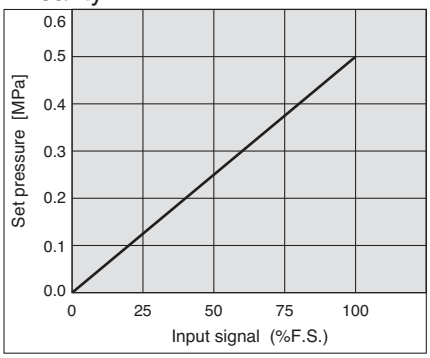
Supply pressure: 0.7 MPa



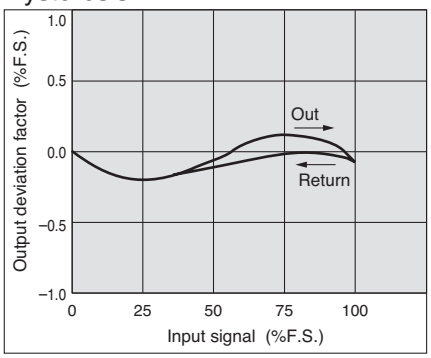
Flow Characteristics

Series ITV203□

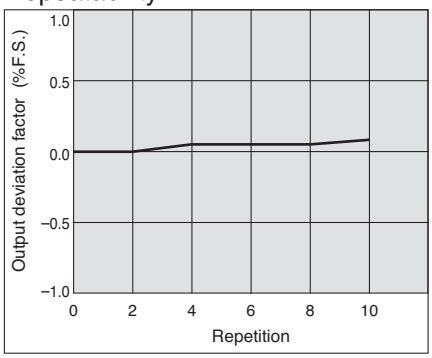
Linearity



Hysteresis

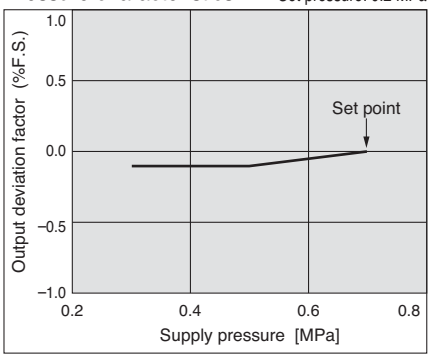


Repeatability



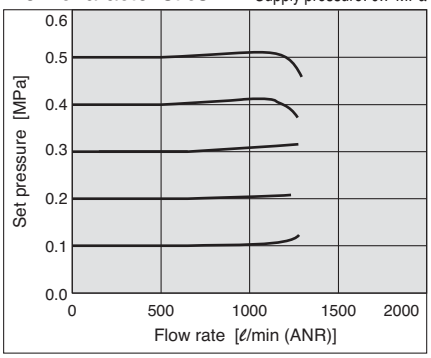
Pressure characteristics

Set pressure: 0.2 MPa



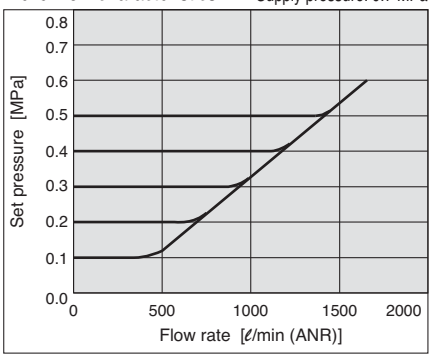
Flow characteristics

Supply pressure: 0.7 MPa



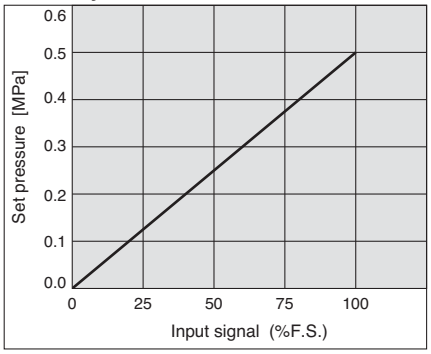
Relief flow characteristics

Supply pressure: 0.7 MPa

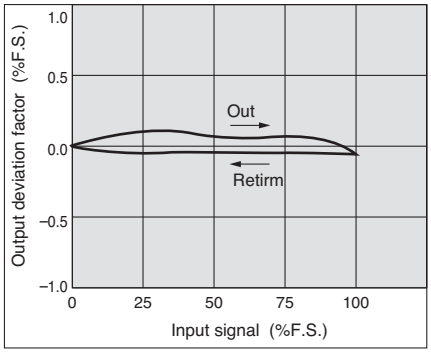


Series ITV303□

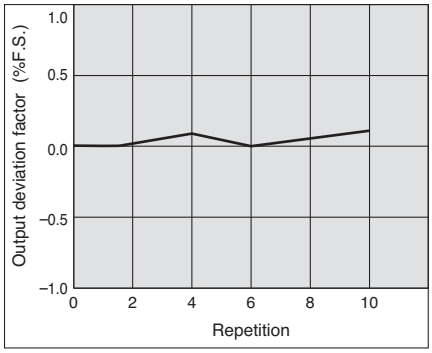
Linearity



Hysteresis

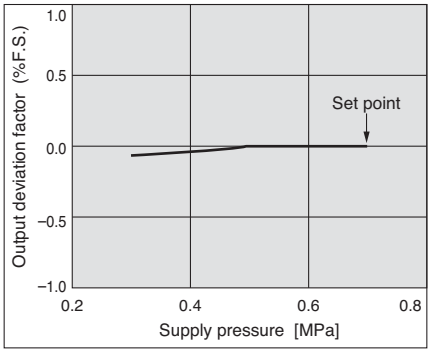


Repeatability



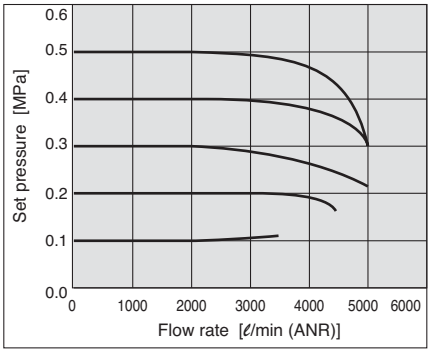
Pressure characteristics

Set pressure: 0.2 MPa



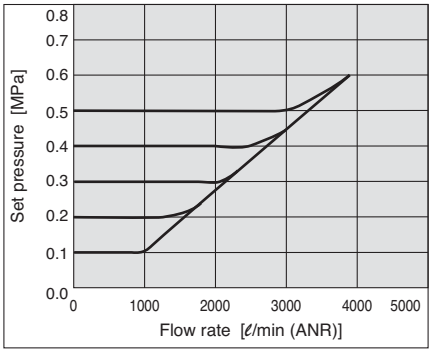
Flow characteristics

Supply pressure: 0.7 MPa



Relief flow characteristics

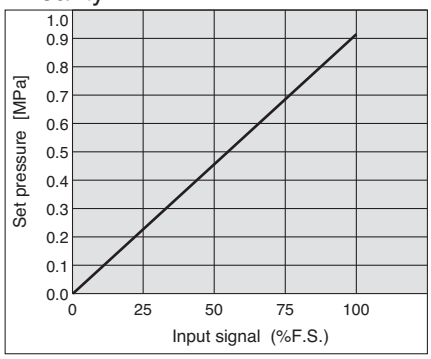
Supply pressure: 0.7 MPa



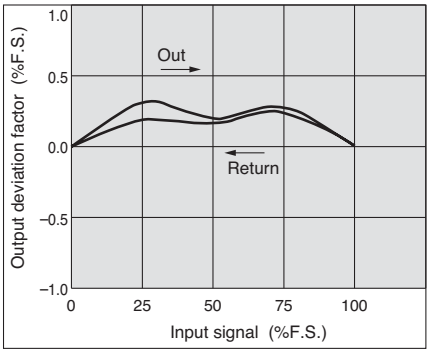
Flow Characteristics

Series ITV105□

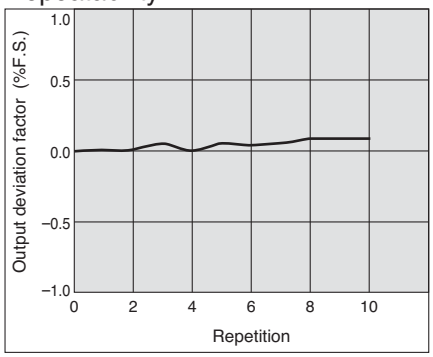
Linearity



Hysteresis

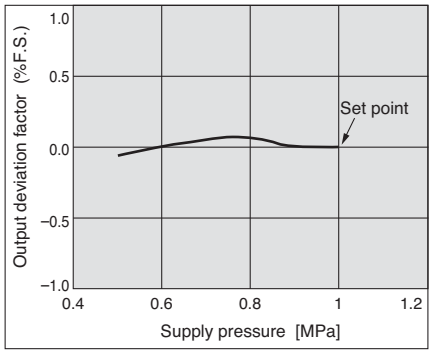


Repeatability



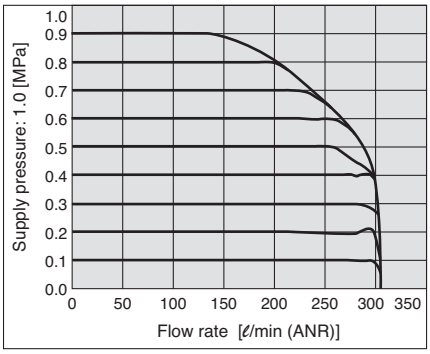
Pressure characteristics

Set pressure: 0.4 MPa



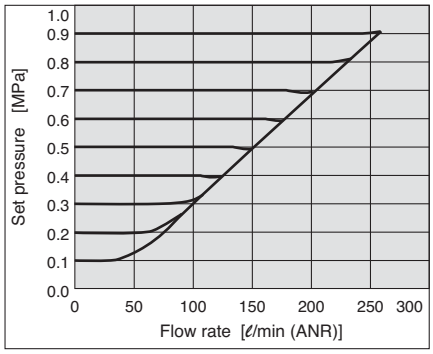
Flow characteristics

Supply pressure: 1.0 MPa



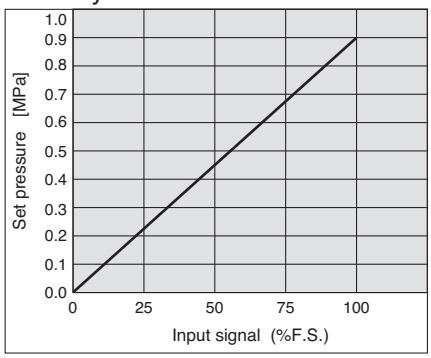
Relief flow characteristics

Supply pressure: 1.0 MPa

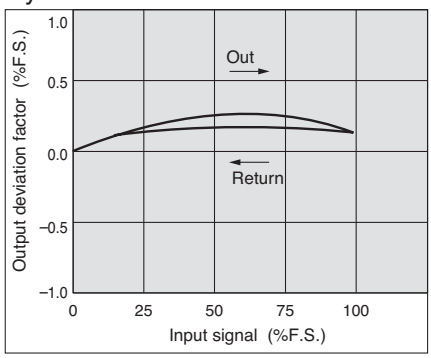


Series ITV205□

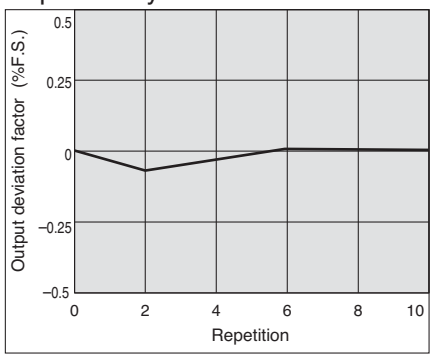
Linearity



Hysteresis

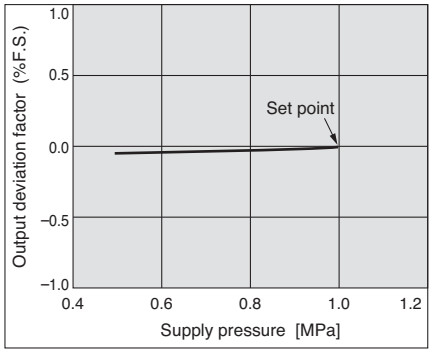


Repeatability



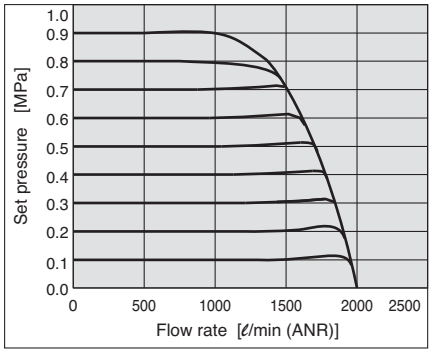
Pressure characteristics

Set pressure: 0.4 MPa



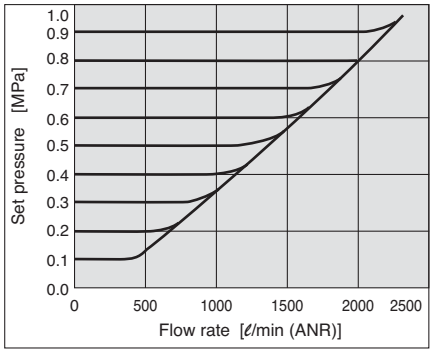
Flow characteristics

Supply pressure: 1.0 MPa



Relief flow characteristics

Supply pressure: 1.0 MPa

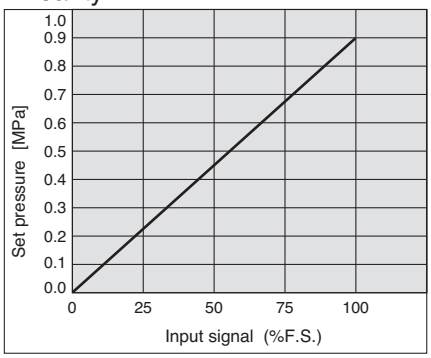


Air Preparation

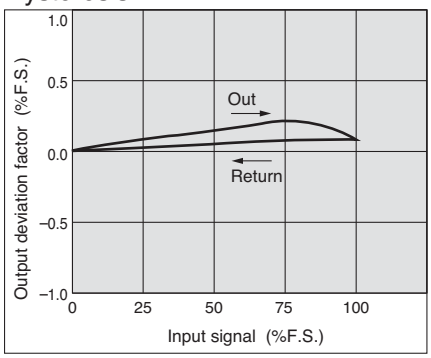
Flow Characteristics

Series ITV305□

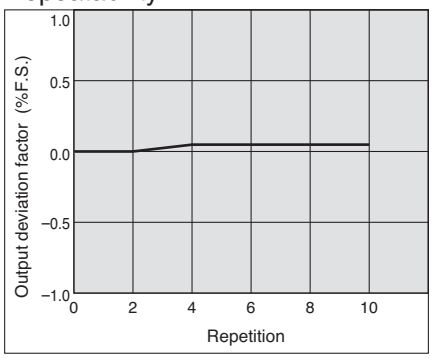
Linearity



Hysteresis

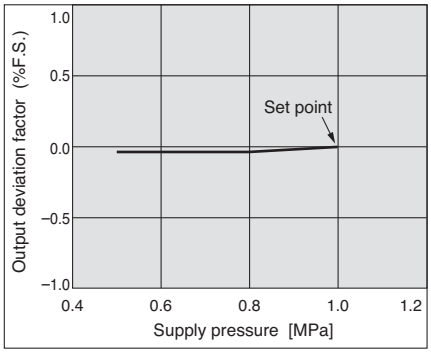


Repeatability



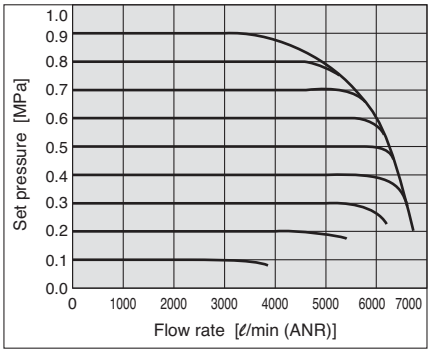
Pressure characteristics

Set pressure: 0.4 MPa



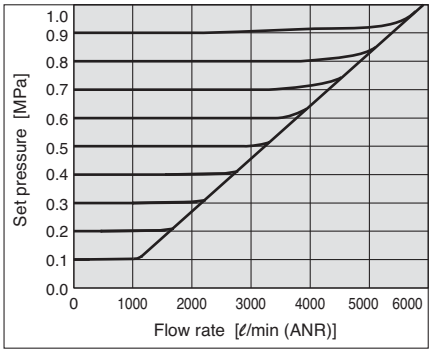
Flow characteristics

Supply pressure: 1.0 MPa



Relief flow characteristics

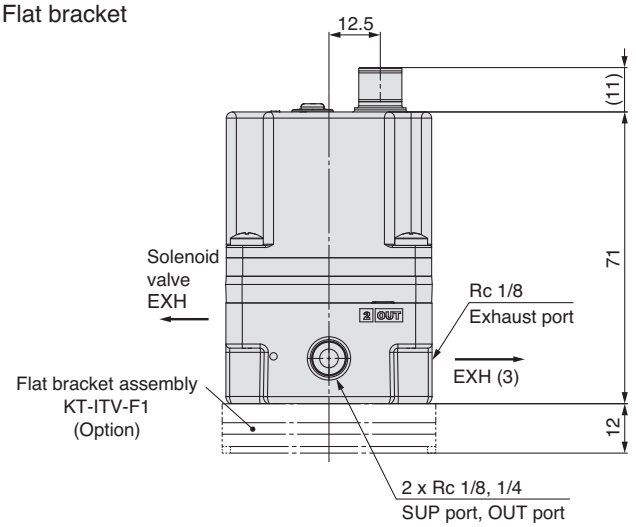
Supply pressure: 1.0 MPa

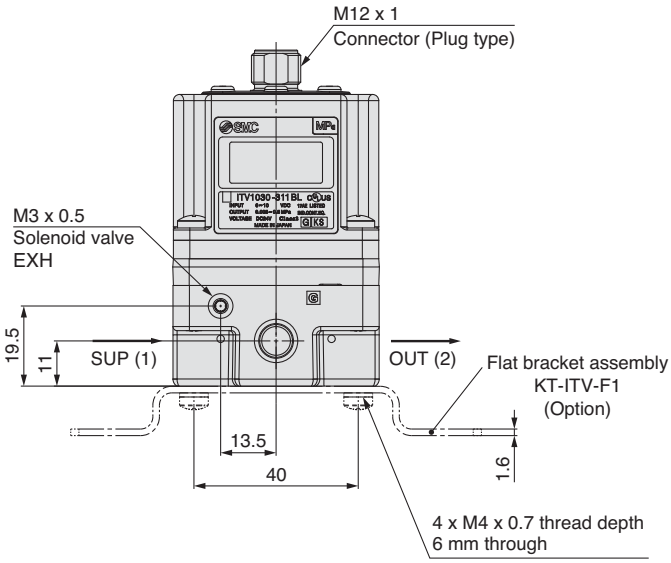


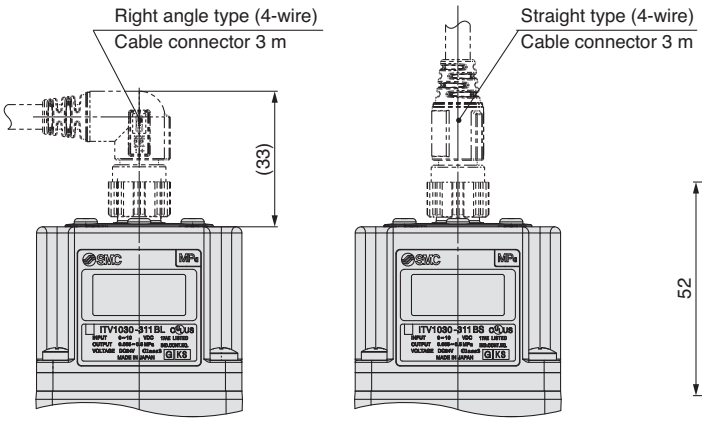
Dimensions

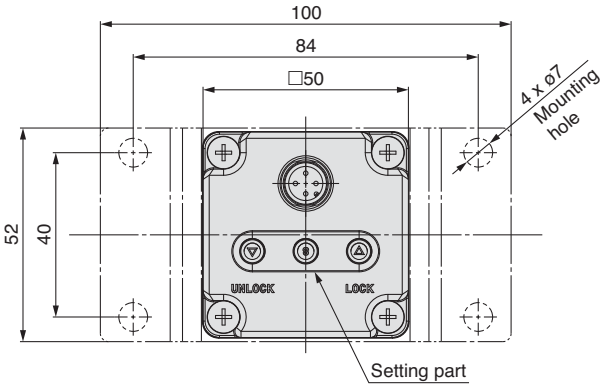
ITV10□□

Flat bracket



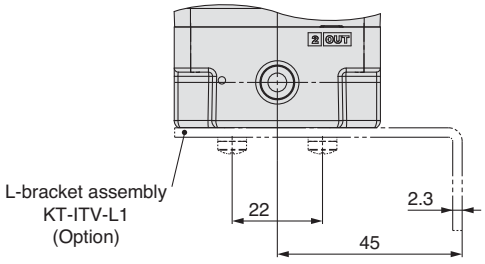


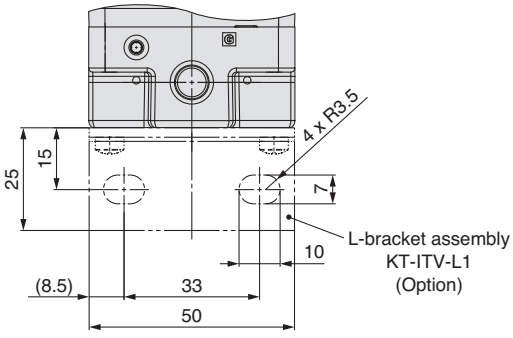




Note) Do not attempt to rotate, as the cable connector does not turn.

L-bracket

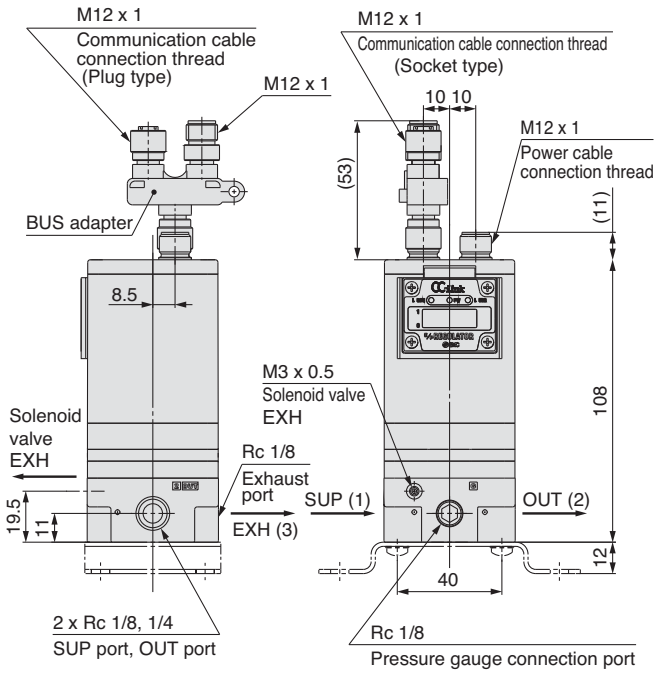




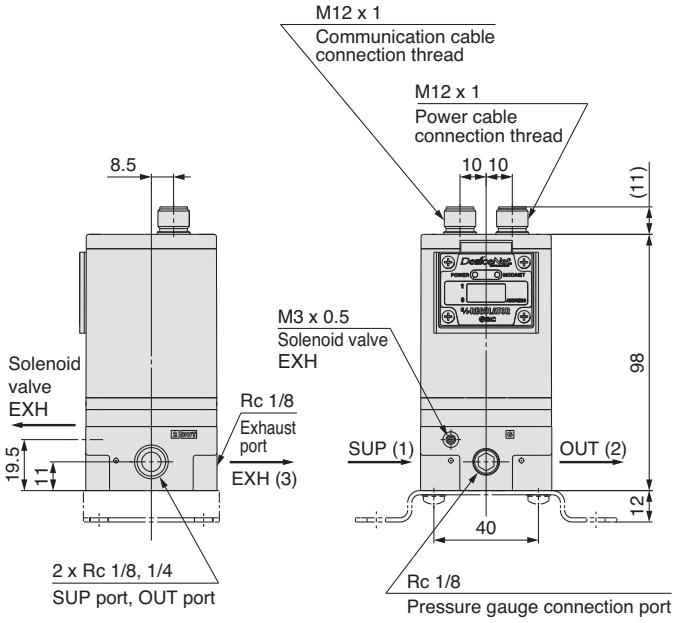
Dimensions

(CC-Link, DeviceNet™, PROFIBUS DP and RS-232C)

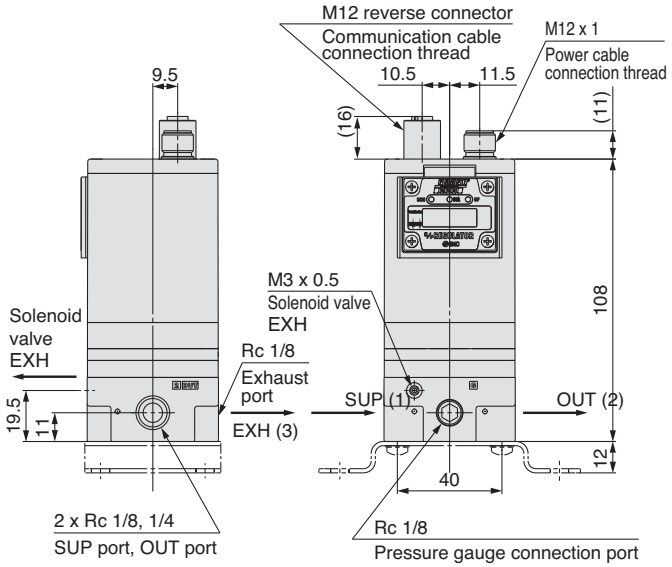
CC-Link/ITV10□0-CC



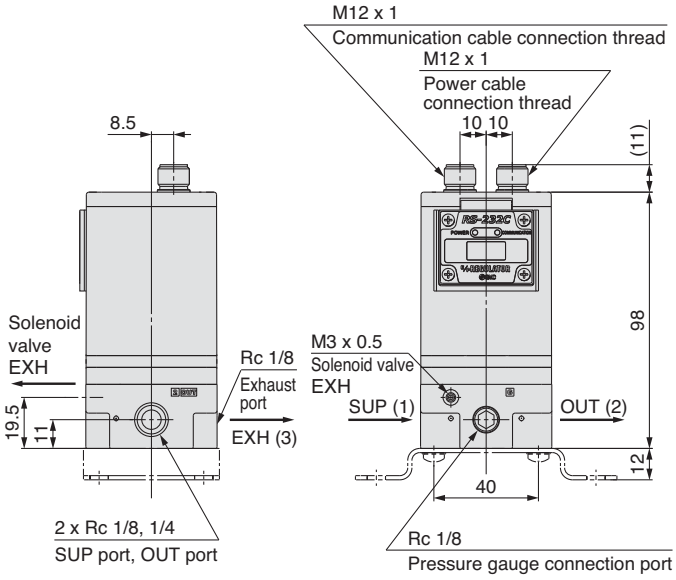
DeviceNet™/ITV10□0-DN



PROFIBUS DP/ITV10□0-PR

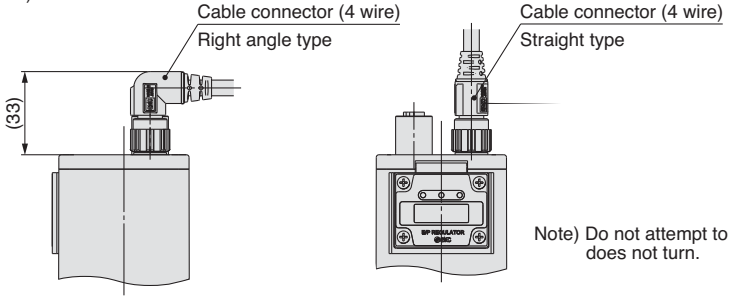


RS-232C/ITV10□0-RC



With power cable connector ∗ ITV10□0-CC DN PR RC common dimensions

Note) Communication cable (other than RS-232C) should be obtained separately.



Note) Do not attempt to rotate, as the cable connector does not turn.

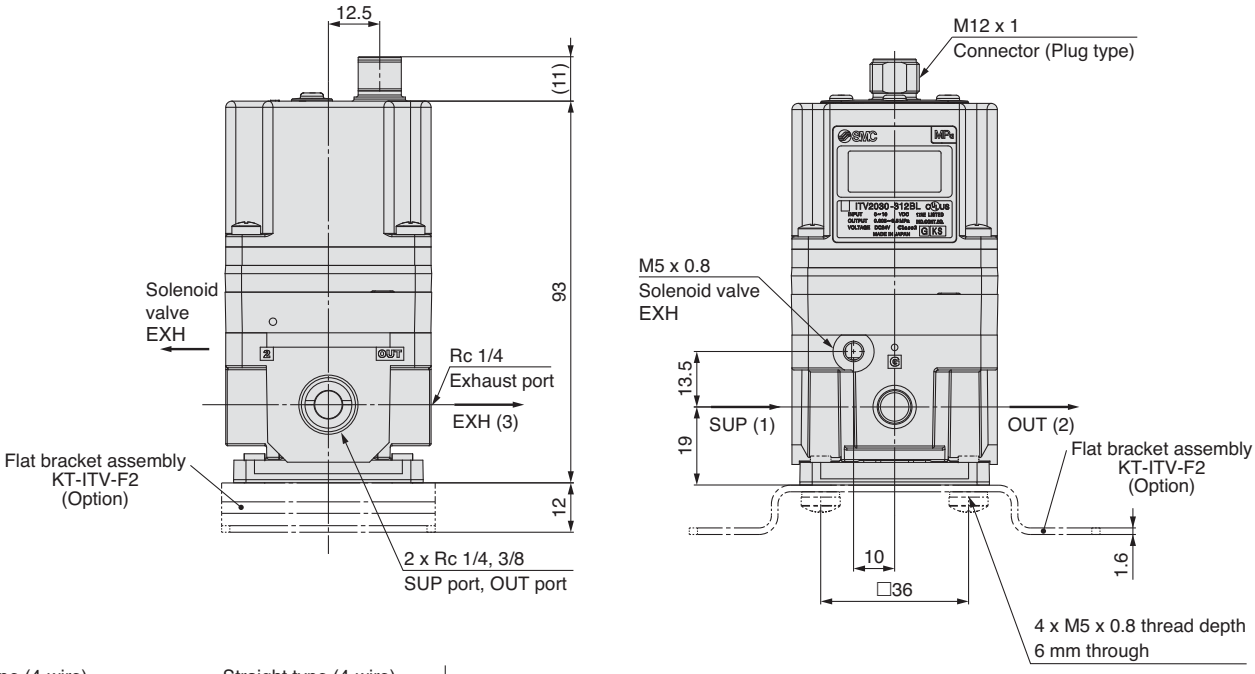
For more product options and details see our specific catalogues or on-line information.

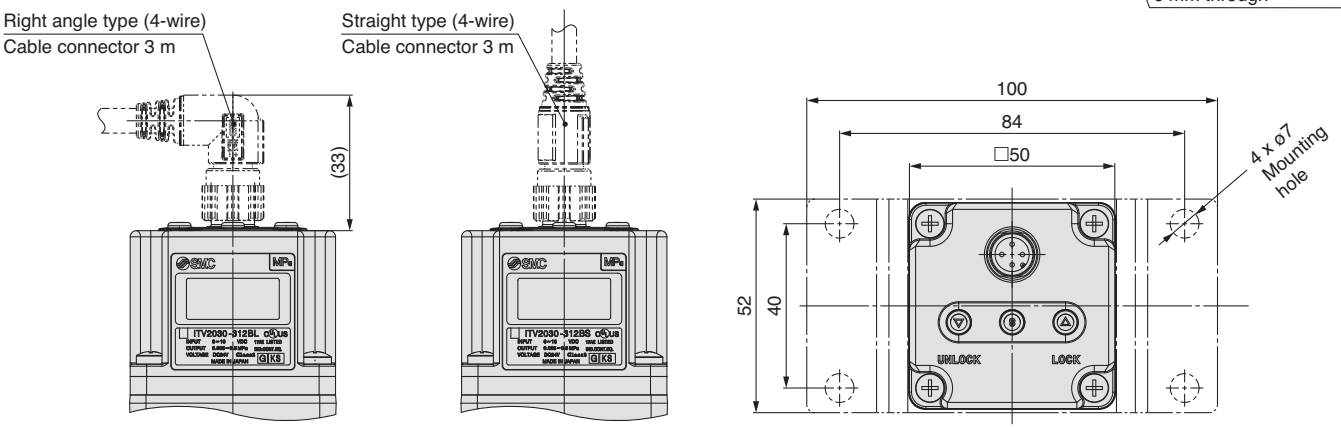
Air Preparation

Dimensions

ITV20□□

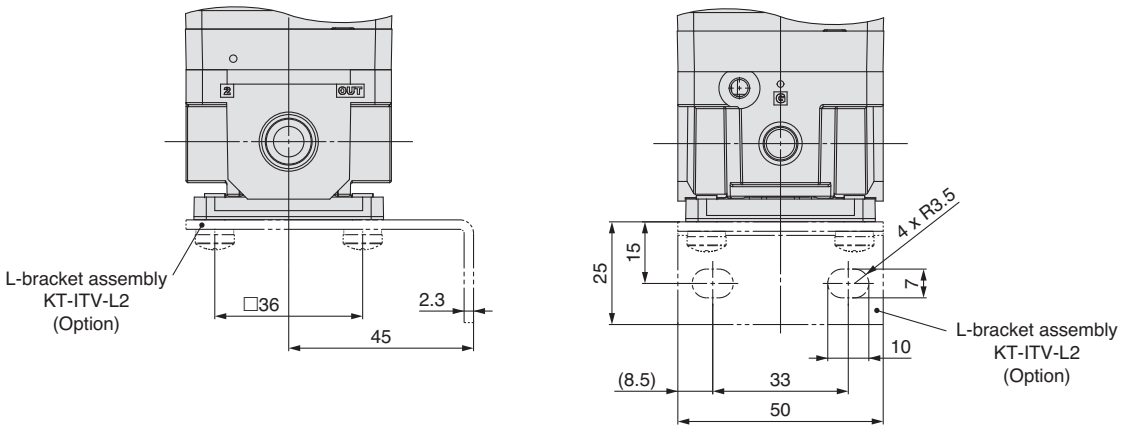
Flat bracket





Note) Do not attempt to rotate, as the cable connector does not turn.

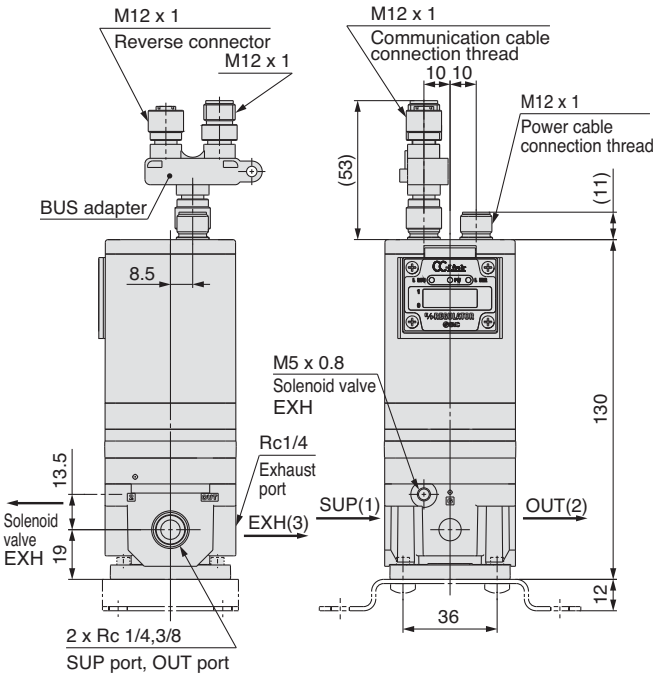
L-bracket



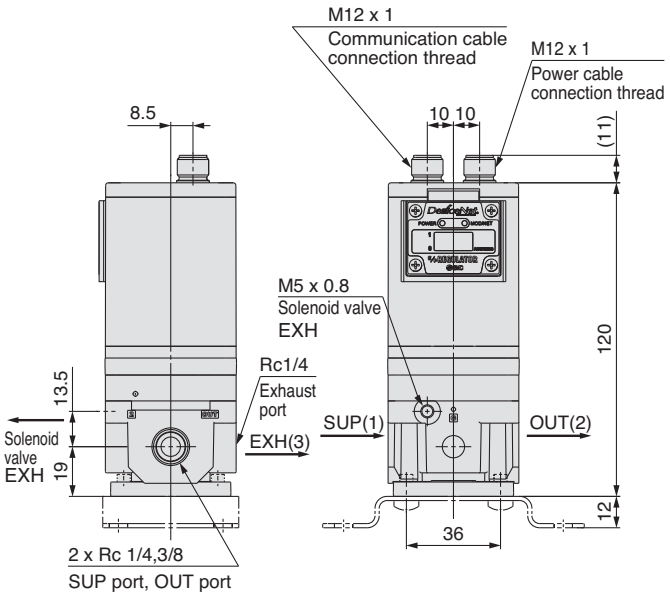
Dimensions

(CC-Link, DeviceNet™, PROFIBUS DP and RS-232C)

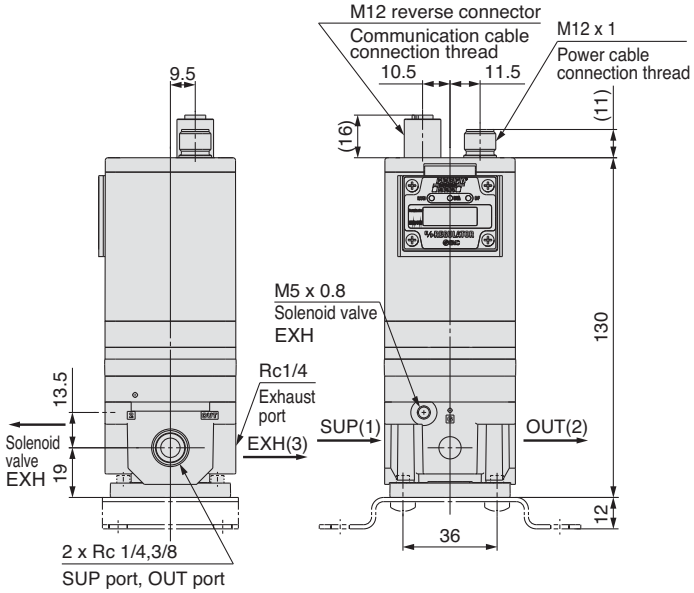
CC-Link/ITV20□0-CC



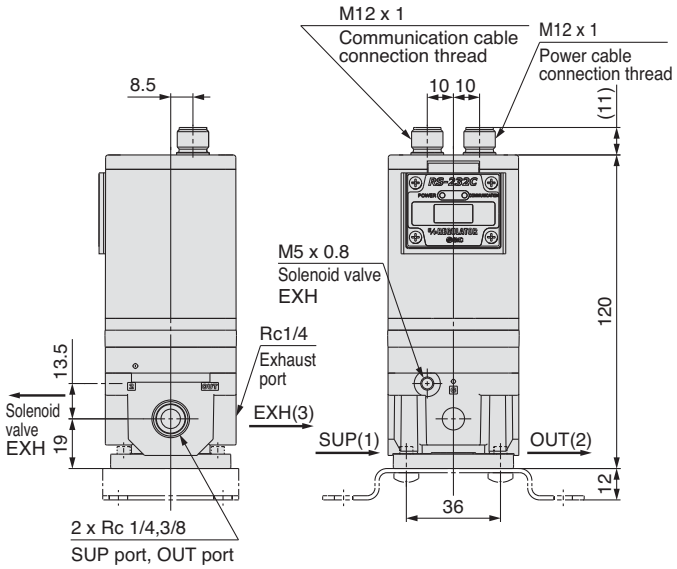
DeviceNet™/ITV20□0-DN



PROFIBUS DP/ITV20□0-PR

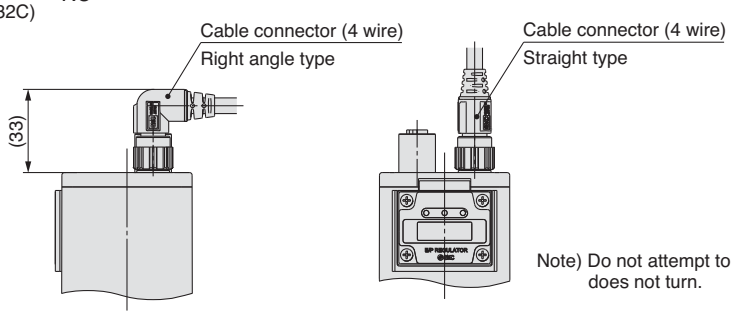


RS-232C/ITV20□0-RC



With power cable connector ∗ ITV20□0-CC/DN/PR/RC common dimensions

Note) Communication cable (other than RS-232C) should be obtained separately.



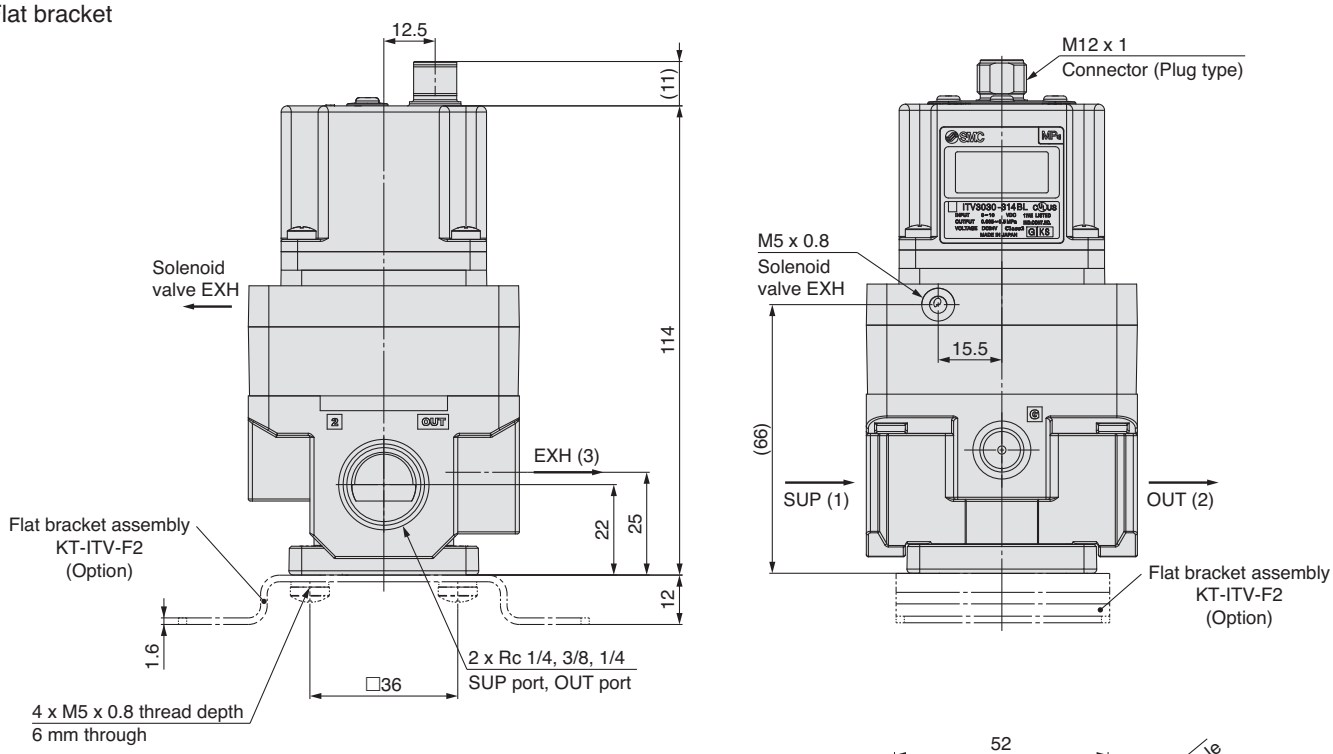
Note) Do not attempt to rotate, as the cable connector does not turn.

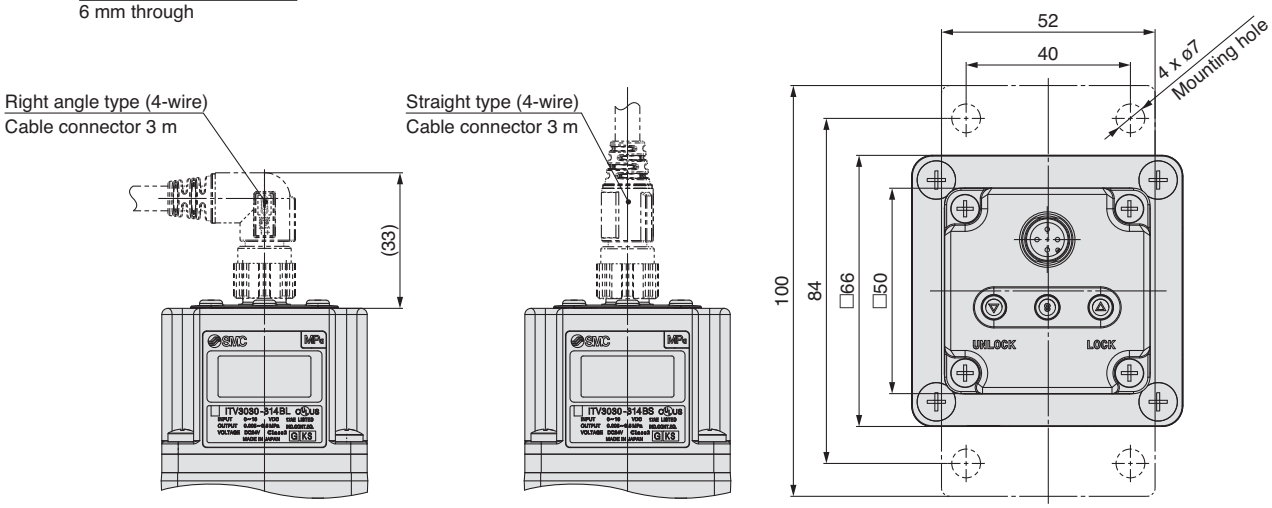
For more product options and details see our specific catalogues or on-line information.

Dimensions

ITV30□□

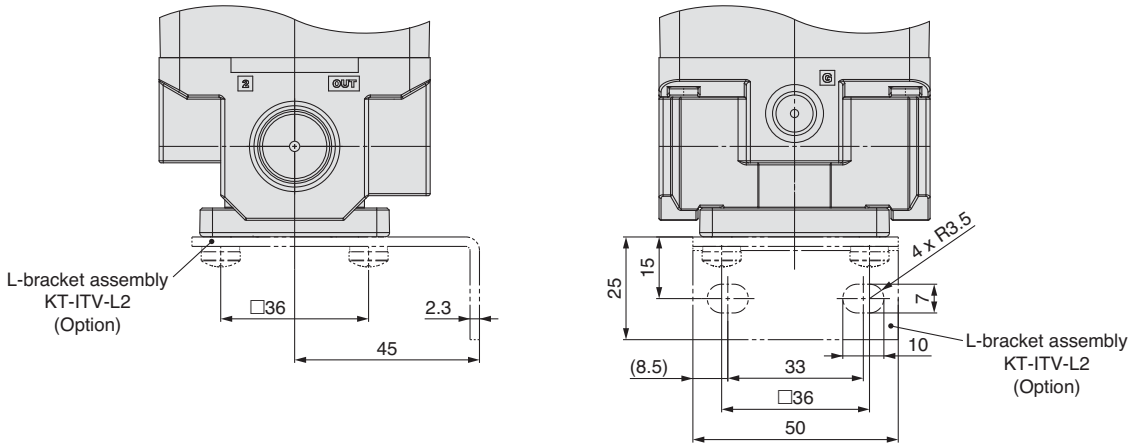
Flat bracket





Note) Do not attempt to rotate, as the cable connector does not turn.

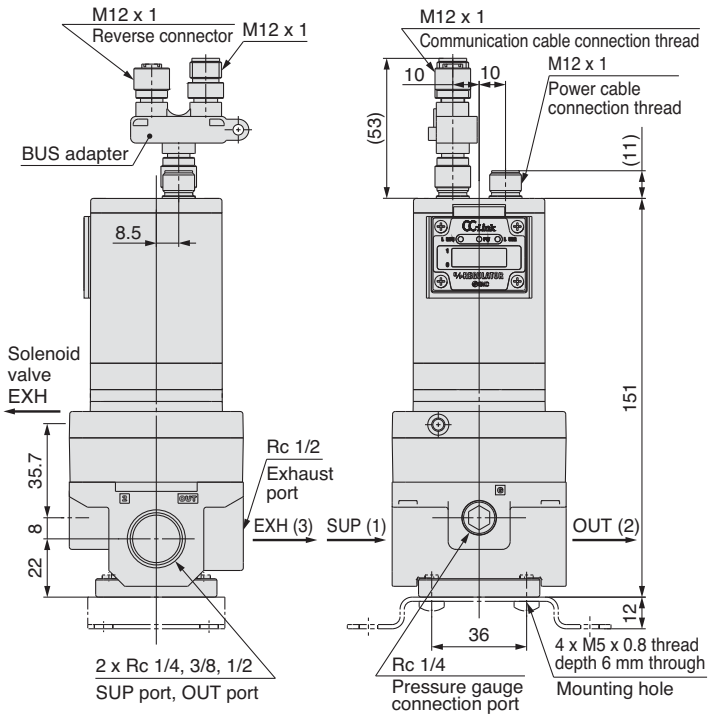
L-bracket



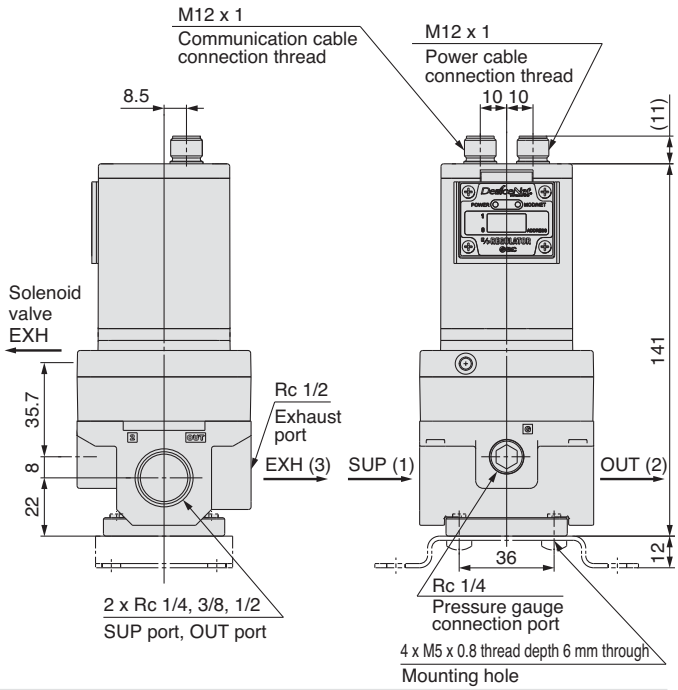
Dimensions

(CC-Link, DeviceNet™, PROFIBUS DP and RS-232C)

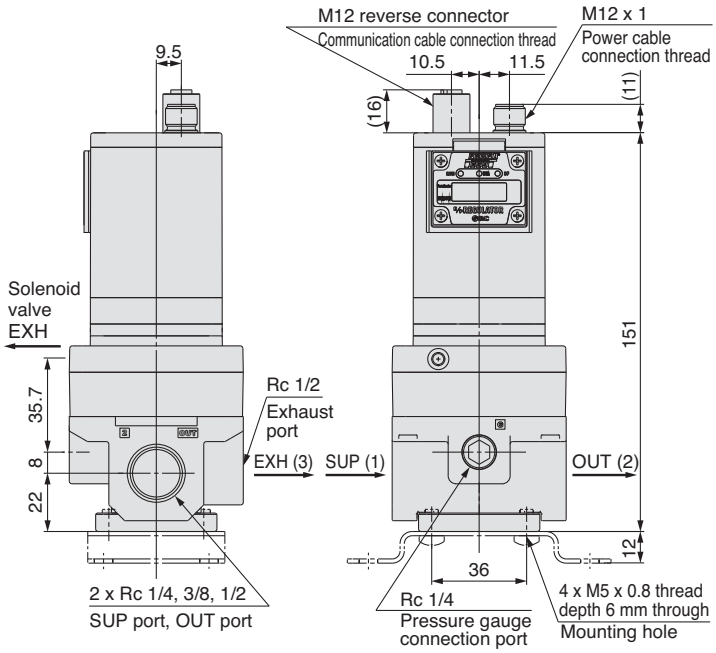
CC-Link/ITV30□-CC



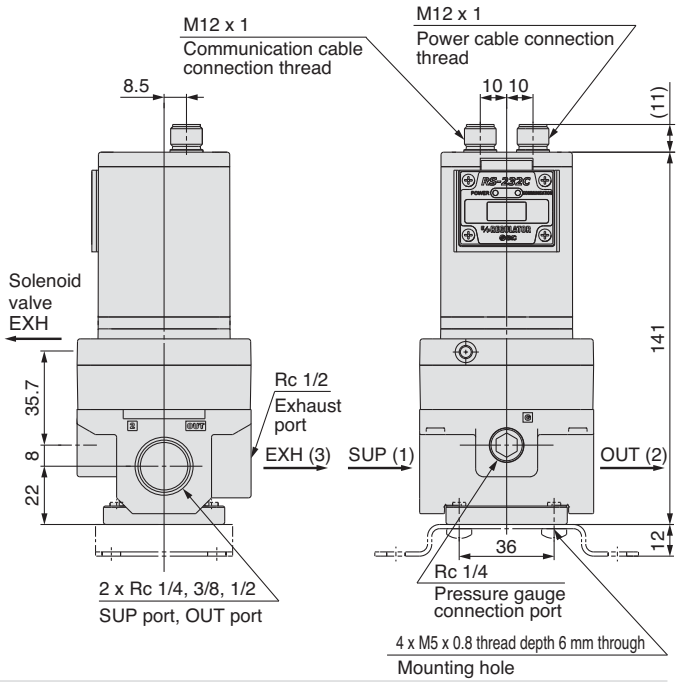
DeviceNet™/ITV30□-DN



PROFIBUS DP/ITV30□-PR



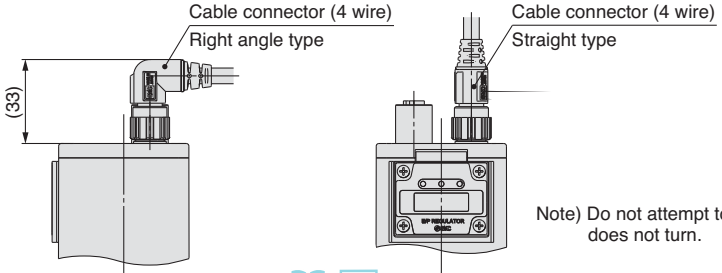
RS-232C/ITV30□-RC



With power cable connector

* ITV30□-CC / DN / PR / RC

common dimensions



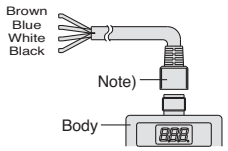
Note) Do not attempt to rotate, as the cable connector does not turn.

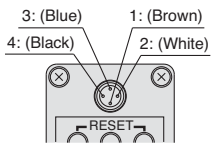
For more product options and details see our specific catalogues or on-line information.

Air Preparation

Precautions

Connect the cable to the connector on the body with the wiring arranged as shown below. Proceed carefully, as incorrect wiring can cause damage.
Further, use DC power with sufficient capacity and a low ripple.



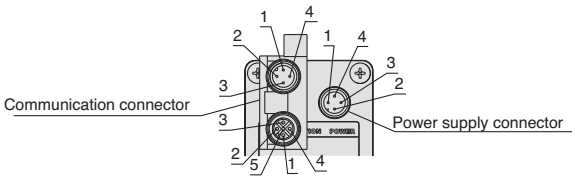


Current Signal Type
Voltage Signal Type

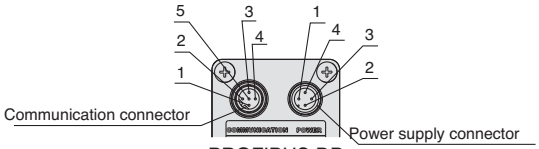
1	Brown	Power supply
2	White	Input signal
3	Blue	GND (COMMON)
4	Black	Monitor output

Preset Input Type

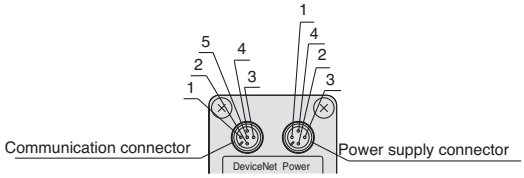
1	Brown	Power supply
2	White	Input signal 1
3	Blue	GND (COMMON)
4	Black	Input signal 2



CC-Link



PROFIBUS DP



DeviceNet™, RS-232C

IN/OUT communication connector				
Pin No.	CC-Link	DeviceNet™	PROFIBUS DP	RS-232C
1	SLD	DRAIN	NC	NC
2	DB	V+	RxD/TxD-N	TxD
3	DG	V–	NC	RxD
4	DA	CAN_H	RxD/TxD-P	GND
5	NC	CAN_L	NC	NC

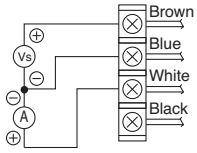
Power supply connector				
Pin No.	CC-Link	DeviceNet™	PROFIBUS DP	RS-232C
1	Vcc	Vcc	Vcc	Vcc
2	FG	No connection	NC	NC
3	GND	GND	GND	GND
4	NC	No connection	NC	FG

Note) The cable is also available in a right-angle type. A right-angle type connector is attached facing left (towards the SUP port). On communication models, the connector faces backwards (towards the EXH port). Do not attempt to rotate, as the connector does not turn.

■ Trademark Information
DeviceNet™ is a trademark of ODVA.

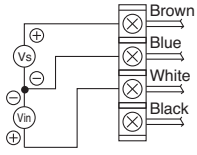
Wiring diagram

Current signal type



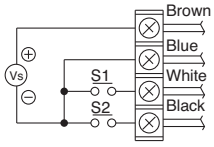
Vs : Power supply 24 VDC
12 to 15 VDC
A : Input signal 4 to 20 mADC
0 to 20 mADC

Voltage signal type



Vs : Power supply 24 VDC
12 to 15 VDC
Vin: Input signal 0 to 5 VDC
0 to 10 VDC

Preset input type



Vs : Power supply 24 VDC
12 to 15 VDC

One of the preset pressures P1 through P4 is selected by the ON/OFF combination of S1 and S2.

S1	OFF	ON	OFF	ON
S2	OFF	OFF	ON	ON
Preset pressure	P1	P2	P3	P4

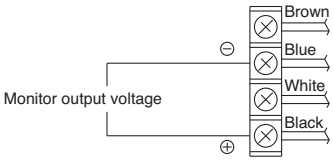
* For safety reasons, it is recommended that one of the preset pressures be set to 0 MPa.
* Preset pressures are set based on the minimum unit for output display.

MPa	kgf/cm²	bar	psi	kPa
0.01	0.01	0.01	0.1	1

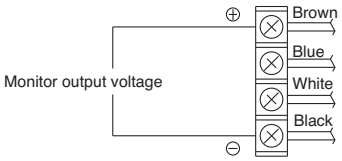
· Note that this is 1 psi for 130-psi types.

Monitor output wiring diagram

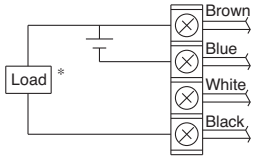
Analogue output: Voltage type



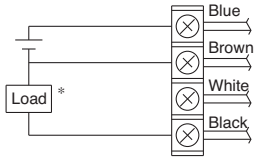
Analogue output: Current type (Sink type)



Switch output: NPN type



Switch output: PNP type



* When 30 mADC or more is applied, detecting device for overcurrent-starts activating and then emits an error signal. (Error number “5”)

Electronic Vacuum Regulator Series ITV2090/2091

RoHS

Features

- Stepless control of vacuum pressure proportional to an electrical signal.
- Current or voltage input types.
- Monitor output as standard.
- 12V and 24V power versions.
- Fieldbus protocol compatibility:
  - CC-Link
  - DeviceNet
  - Profibus

How to Order

ITV 209 [0] – [0] [1] [F] [2] [N] [5]

Pressure range

9	–1.3 to –80 kPa

Power supply voltage

0	24VDC
1	12 to 15 VDC

Note) Communication models are only available for 24VDC.

Input signal

0	Current 4 to 20 mA (Sink type)
1	Current 0 to 20 mA (Sink type)
2	Voltage 0 to 5 VDC
3	Voltage 0 to 10 VDC
CC	CC Link
DN	DeviceNet ™
PR	Profibus DP
RC	RS232C Communication

Monitor output

–	None (for communication models)
1	Analogue output 1 to 5V DC
2	Switch output/NPN output
3	Switch output/PNP output
4	Analogue output 4 to 20 mA DC (single type)

Thread type

F	G

Port size

2	1/4

Cable Assembly

N	Without cable connector
S	3m length straight connector
L	3m length right angle connector

Note) Order communication cable (Other than RS232C) separately.

Pressure display unit

5	kPa
–	None Note)

Note) For the communication models, only "Nil" available as it does not have a pressure display

Straight type

Right angle type

Product Recommendation

Stocked items for fast delivery

ITV2090-03F2N5 | ITV2090-31F2N5 | ITV2090-33F2N5

Related Products

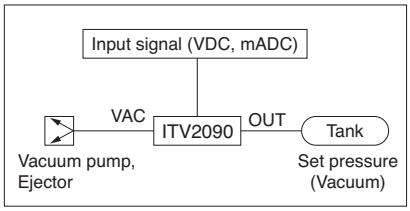
Series AC - Air Preparation - page 1072
Series PF2A - Digital Flow Switch for Air- page 1309
Series ZSE/ISE□0A - Digital Pressure Switch for Air - page 1273
Series KQ2 - Fittings - page 1184
Series TU - Tubing - page 1223

Specifications

Model		ITV2090	ITV2091
Power supply	Voltage	24 VDC ±10%	12 to 15 VDC
	Current consumption	Power supply voltage 24 VDC type: 0.12 A or less Note 6) Power supply voltage 12 to 15 VDC type: 0.18 A or less	
Minimum supply vacuum pressure Note 1)		Set pressure –13.3 kPa	
Maximum supply vacuum pressure		–101 kPa	
Set pressure range		–1.3 to –80 kPa	
Input signal	Current type Note 2)	4 to 20 mA, 0 to 20 mA (single type)	
	Voltage type	0 to 5 VDC, 0 to 10 VDC	
	Preset input	4 points (negative common); 16 points (no common polarity)	
Input impedance	Current type	250Ω or less Note 3)	
	Voltage type	Approximately 6.5 kΩ	
	Preset input	Power supply voltage 24VDC type: Approximately 4.7 kΩ Power supply voltage 12VDC type: Approximately 2.0 kΩ	
Output signal Note 4) (Monitor output)	Analogue output	1 to 5 VDC (Load impedance: Approximately 1 kΩ) 4 to 20 mA (Sink type) (Load impedance: 250 Ω or less) Output accuracy within 6% (Full span)	
	Switch output	NPN open collector output: Max. 30 V, 30 mA PNP open collector output: Max. 30 mA	
Linearity		Within ±1% (Full span)	
Hysteresis		Within 0.5% (Full span)	
Repeatability		Within ±0.5% (Full span)	
Sensitivity		Within 0.2% (Full span)	
Temperature characteristics		Within ±0.12% (Full span)/ºC	
Output pressure display	Accuracy	±2% F.S. ±1 digit or less	
	Units	kPa Note 5) Minimum display: 1	
Ambient and fluid temperature		0 to 50ºC (No condensation)	
Enclosure		Equivalent to IP65	
Weight Note 7)		350 g	

Note 1) The minimum supply vacuum pressure should be 13.3 kPa less than the maximum vacuum pressure setting value.
Note 2) 4 to 20 mA is not possible with the 2-wire type. Power supply voltage (24 VDC or 12 to 15 VDC) is required.
Note 3) Value for the state with no over current circuit included. If an allowance is provided for an over current circuit, the input impedance varies depending on the input power supply. This is 350 or less for an input current of 20 mA DC.
Note 4) When the analogue output figure of 1 to 5 VDC of ITV under the condition of the load impedance less than 100KΩ, the full span of the analogue output with ±6% or less may not be achieved. When ±6% or less (full span) is needed, please contact SMC. However there is no influence on the output pressure.
Note 5) Please contact SMC regarding indication with other units of pressure.
Note 6) For communication models, the maximum current consumption is 0.16 A or less.
Note 7) For communication models, add roughly 80 g to the weight (100 g for the PROFIBUS DP).

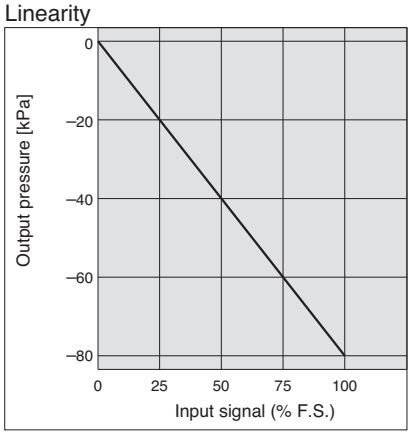
Piping/Wiring Diagram



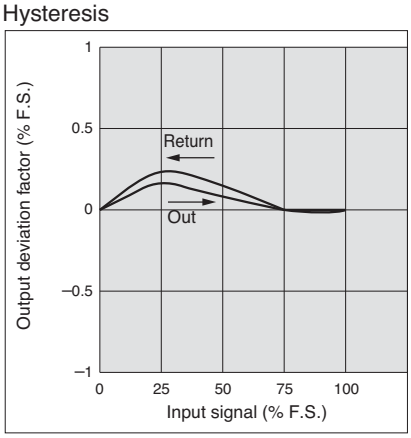
Flow Characteristics

Series ITV209□

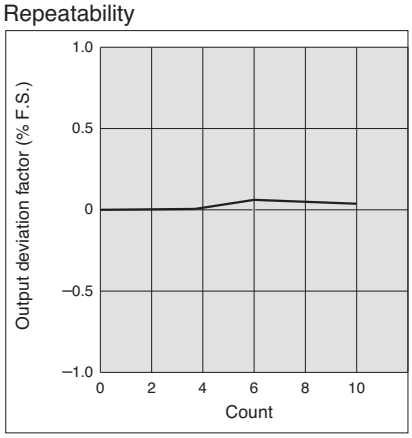
Linearity



Hysteresis

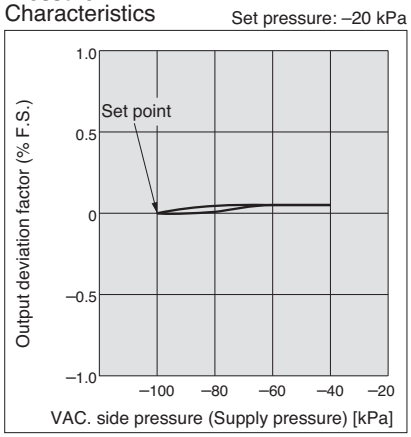


Repeatability



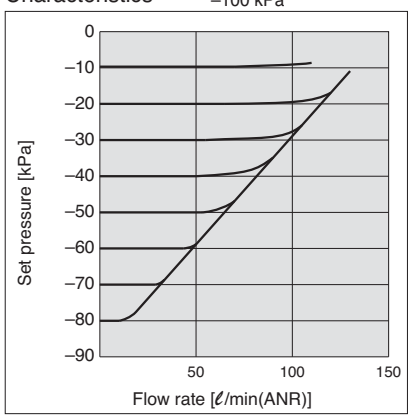
Pressure Characteristics

Set pressure: –20 kPa



Flow Characteristics

Supply vacuum pressure: –100 kPa



Flow characteristics measurement conditions

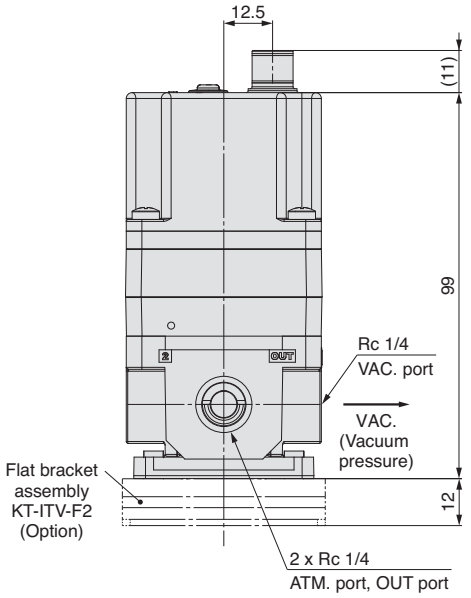
- Exhaust flow rate of the vacuum pump used for measurement: 500 ℓ/min (ANR)
- Inlet vacuum pressure: –100 kPa (When outlet flow rate is 0 ℓ/min (ANR))
- Maximum flow rate: 132 ℓ/min (ANR) (With inlet vacuum pressure at –39 kPa)

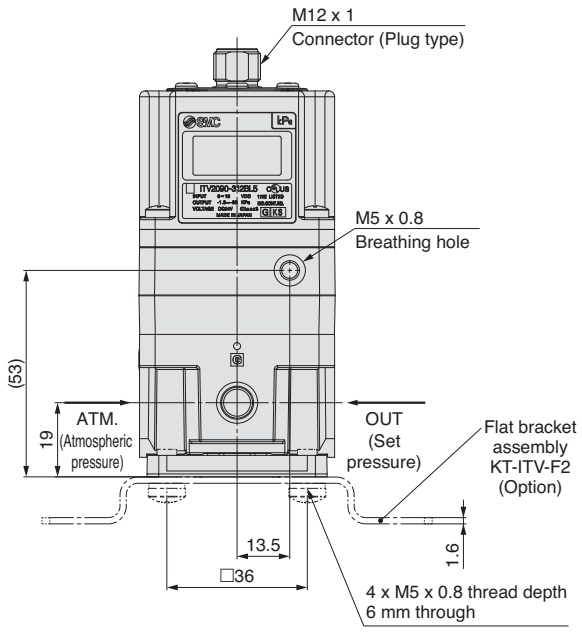
Dimensions

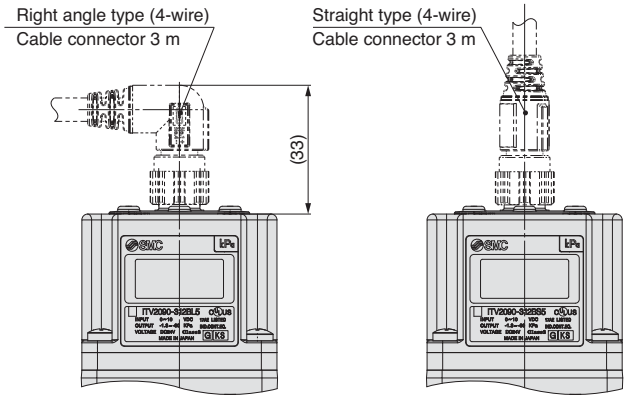
Note) Do not attempt to rotate the cable connector, as it does not turn.

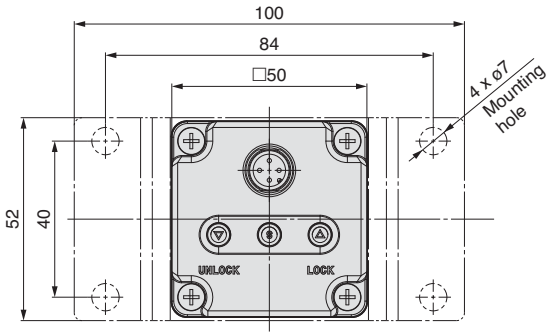
ITV209□

Flat bracket



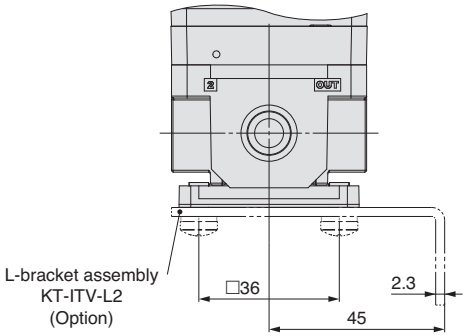


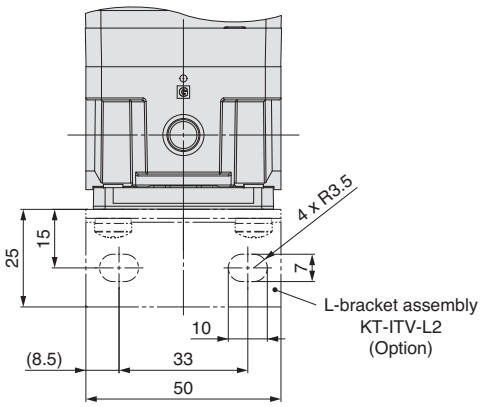




Note) Do not attempt to rotate the cable connector, as it does not turn.

L-bracket





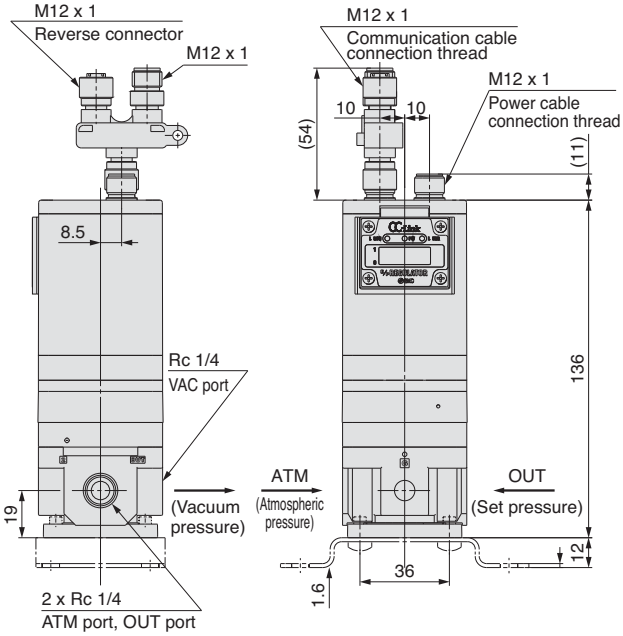
Air Preparation

For more product options and details see our specific catalogues or on-line information.

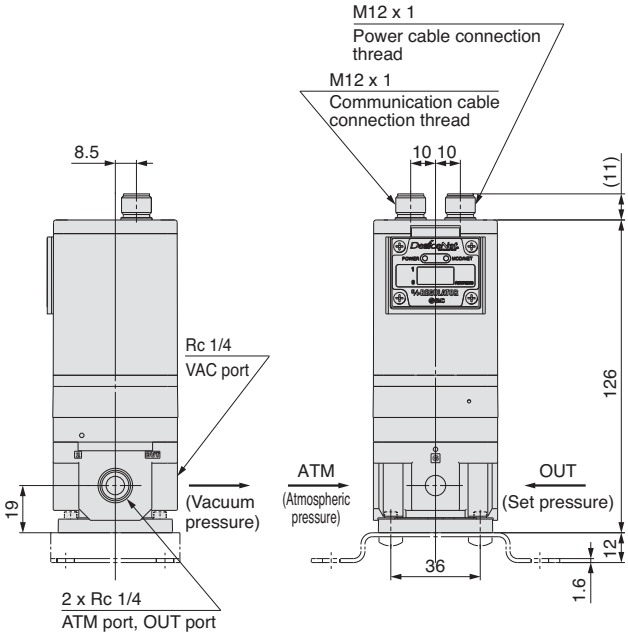
Dimensions

(CC-Link, DeviceNet™, PROFIBUS DP and RS-232C)

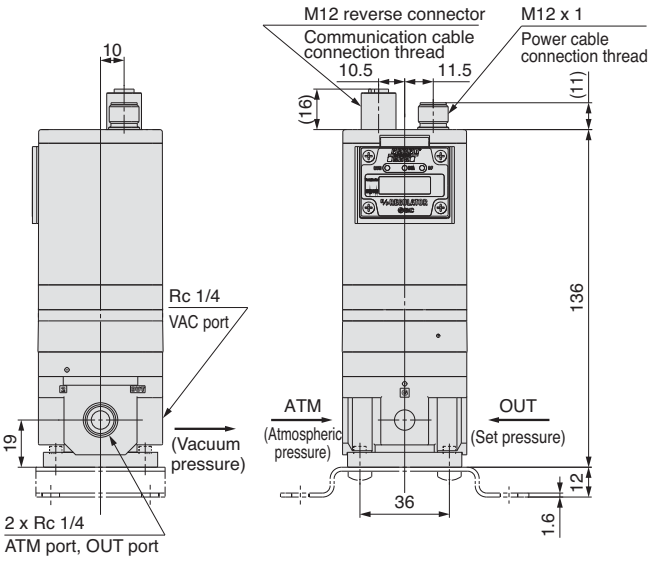
CC-Link/ITV2090-CC



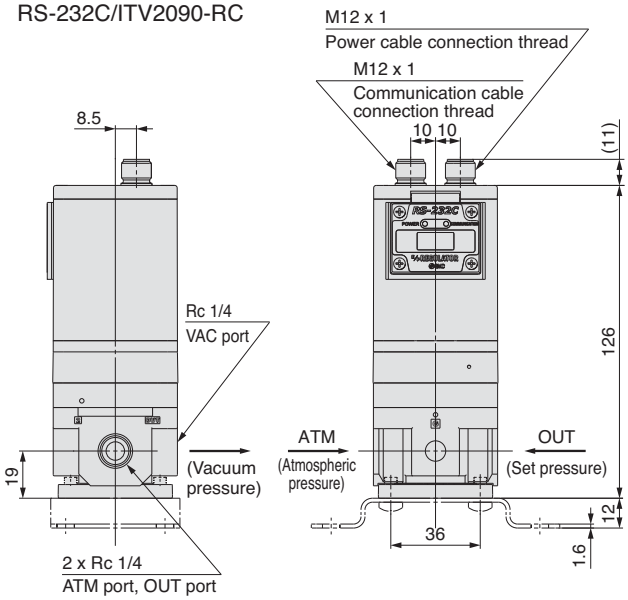
DeviceNet™/ITV2090-DN



PROFIBUS DP/ITV2090-PR

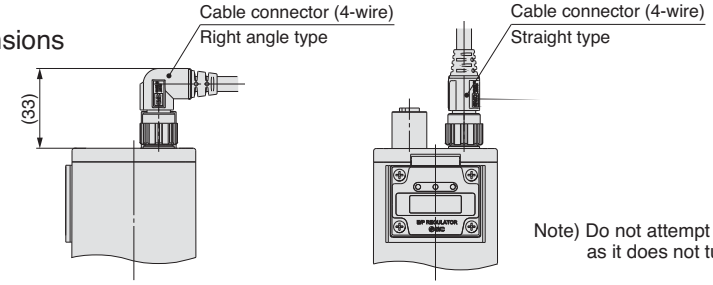


RS-232C/ITV2090-RC



With power cable connector

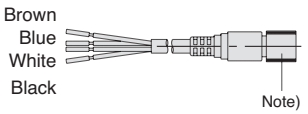
∗ ITV2090- CC / DN / PR / RC common dimensions

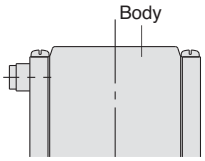


Note) Do not attempt to rotate the cable connector, as it does not turn.

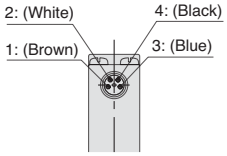
Precautions

Connect the cable to the connector on the body with the wiring arranged as shown below. Proceed carefully, as incorrect wiring can cause damage.
Further, use DC power with sufficient capacity and a low ripple.





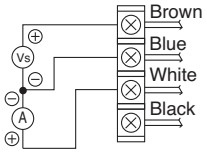
Terminal No.	1	2	3	4
Lead wire colour	Brown	White	Blue	Black
Wiring	Power	Signal	COM	Monitor



Note) A right angle type cable is also available. The entry direction for the right angle type connector is to downwards (SUP port side).
Never turn the connector as it is not designed to turn. Using force to turn the connector will damage the connector coupling.

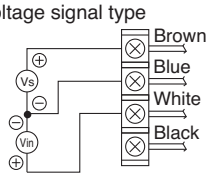
Wiring Diagrams

Current signal type



Vs: Power Supply 24 VDC ±10%
12 to 15 VDC
A : Input signals 4 to 20 mA DC
0 to 20 mA DC

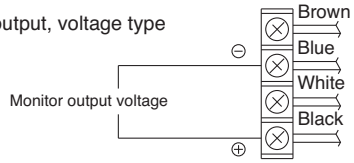
Voltage signal type



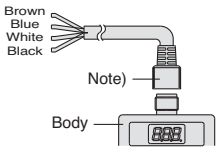
Vs : Power Supply 24 VDC ±10%
12 to 15 VDC
Vin: Input signals 0 to 5 VDC
0 to 10 VDC

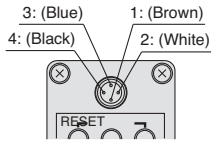
Monitor output wiring diagram

Analogue output, voltage type



Connect the cable to the connector on the body with the wiring arranged as shown below. Proceed carefully, as incorrect wiring can cause damage.
Further, use DC power with sufficient capacity and a low ripple.



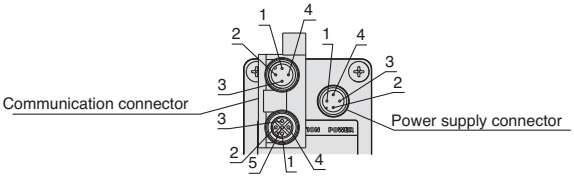


Current Signal Type
Voltage Signal Type

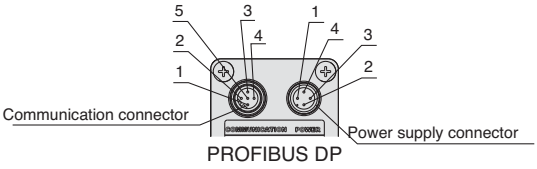
1	Brown	Power supply
2	White	Input signal
3	Blue	GND (COMMON)
4	Black	Monitor output

Preset Input Type

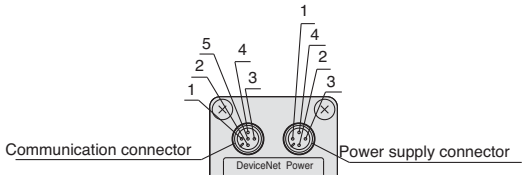
1	Brown	Power supply
2	White	Input signal 1
3	Blue	GND (COMMON)
4	Black	Input signal 2



CC-Link



PROFIBUS DP



DeviceNet™, RS-232C

IN/OUT communication connector

Pin No.	CC-Link	DeviceNet™	PROFIBUS DP	RS-232C
1	SLD	DRAIN	NC	NC
2	DB	V+	RxD/TxD-N	TxD
3	DG	V–	NC	RxD
4	DA	CAN_H	RxD/TxD-P	GND
5	NC	CAN_L	NC	NC

Power supply connector

Pin No.	CC-Link	DeviceNet™	PROFIBUS DP	RS-232C
1	Vcc	Vcc	Vcc	Vcc
2	FG	No connection	NC	NC
3	GND	GND	GND	GND
4	NC	No connection	NC	FG

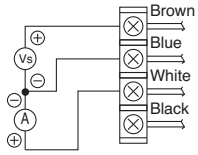
Note) The cable is also available in a right-angle type. A right-angle type connector is attached facing left (towards the SUP port). On communication models, the connector faces backwards (towards the EXH port). Do not attempt to rotate, as the connector does not turn.

■ Trademark Information
DeviceNet™ is a trademark of ODVA.

Precautions

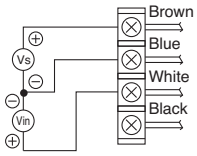
Wiring diagram

Current signal type



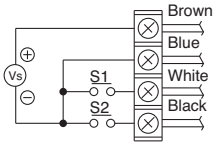
Vs : Power supply 24 VDC
12 to 15 VDC
A : Input signal 4 to 20mA DC
0 to 20mA DC

Voltage signal type



Vs : Power supply 24 VDC
12 to 15 VDC
Vin: Input signal 0 to 5 VDC
0 to 10 VDC

Preset input type



Vs : Power supply 24 VDC
12 to 15 VDC

One of the preset pressures P1 through P4 is selected by the ON/OFF combination of S1 and S2.

S1	OFF	ON	OFF	ON
S2	OFF	OFF	ON	ON
Preset pressure	P1	P2	P3	P4

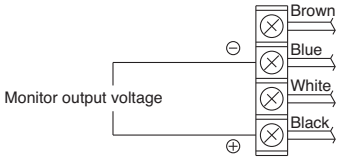
* For safety reasons, it is recommended that one of the preset pressures be set to 0 MPa.
* Preset pressures are set based on the minimum unit for output display.

MPa	kgf/cm²	bar	psi	kPa
0.01	0.01	0.01	0.1	1

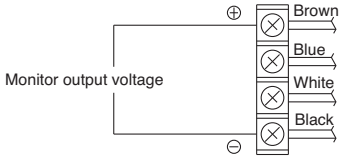
· Note that this is 1 psi for 130-psi types.

Monitor output wiring diagram

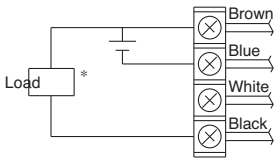
Analogue output: Voltage type



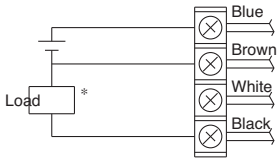
Analogue output: Current type (Sink type)



Switch output: NPN type



Switch output: PNP type



* When 30 mA DC or more is applied, detecting device for overcurrent-starts activating and then emits an error signal. (Error number “5”)

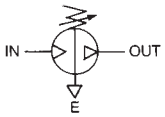
Booster Regulator / Air Tank Series VBA / VBAT

RoHS

Features

- Noise reduced.
- Built-in mesh filter at IN port.
- Boosted up to 2 MPa VBA10A, VBA11A.
- Pressure increase ratio of 2.

Symbol



How to Order VBA

VBA [40A] – [F] [04] [ ]

Body size

10A	1/4", Handle-operated type	Pressure increase ratio: Twice
20A	3/8", Handle-operated type	
40A	1/2", Handle-operated type	
22A	3/8", Air-operated type	
42A	1/2", Air-operated type	
43A	1/2", Max. operating pressure 1.6 MPa	
11A	1/4", Handle-operated type	Pressure increase ratio: 2 to 4 times

Thread type Note)

F	G

Note) Thread types apply to the IN, OUT, and EXH ports of the VBA1□A and to the IN, OUT, EXH, and gauge ports of the VBA2□A and VBA4□A. The gauge ports of the VBA1□A are Rc thread type regardless of the thread type indication.

Option

Symbol	Option
–	None
G	Pressure gauge
N	Silencer
S	High-noise reduction silencer
GN	Pressure gauge, Silencer
GS	Pressure gauge, High-noise reduction silencer

Port size

Symbol	Port size	Applicable series
02	1/4	VBA1□A
03	3/8	VBA2□A
04	1/2	VBA4□A

How to Order VBAT

VBAT [10] [A] [F] – [SV] – [Q]

Tank internal capacity

Symbol	Internal capacity
05	5 L
10	10 L
20	20 L
38	38 L

Material

Symbol	Material
A	Carbon steel (SS400)

Thread type

F	G

CE certified product (Self-declaration document attached)

Accessories

Symbol	Accessories	Applicable model
RV	Safety valve (Set pressure: 1 MPa) Drain valve	VBAT20A VBAT38A
SV	Safety valve (Set pressure: 2 MPa) Drain valve	VBAT05A VBAT10A

Product Recommendation

Stocked items for fast delivery

VBA10A-F02	VBA20A-F03	VBA42A-F04GN
VBA10A-F02GN	VBA20A-F03GN	VBA43A-F04
VBA11A-F02	VBA22A-F03GN	VBA43A-F04GS
VBA11A-F02GN	VBA40A-F04	

Accessories and Related Products

(Accessories)
Series G - Pressure Gauge - www.smc.eu
Series AN - Silencer- page 556

(Related Products)
Series TU - Tubing - page 1223
Series KQ2 - Fittings - page 1184
Series AF - Air Filter - page 1082
Series AM□ - Mist Separator - page 1171
Series AMC - Exhaust Cleaner - www.smc.eu

For more product options and details see our specific catalogues or on-line information.

Specifications VBA

Model	VBA10A-02	VBA20A-03	VBA40A-04	VBA22A-03	VBA42A-04	VBA43A-04	VBA11A-02
Fluid	Compressed air						
Pressure increase ratio	Twice						2 to 4 times
Pressure adjustment mechanism	Handle-operated with relief mechanism Note 1)			Air-operated		Handle-operated with relief mechanism Note 1)	
Max. flow rate Note 2) [L/min (ANR)]	230	1000	1900	1000	1900	1600	70
Set pressure range [MPa]	0.2 to 2.0	0.2 to 1.0		0.2 to 1.0		0.2 to 1.6	0.2 to 2.0
Supply pressure range [MPa]	0.1 to 1.0						
Proof pressure [MPa]	3	1.5				2.4	3
Port size (IN/OUT/EXH: 3 locations)	G1/4	G3/8	G1/2	G3/8	G1/2		G1/4
Pressure gauge port size (IN/OUT: 2 locations)	Rc1/8	G1/8					Rc1/8
Ambient and fluid temperature [°C]	2 to 50 (No freezing)						
Installation	Horizontal						
Lubrication	Grease (Non-lube)						
Weight [kg]	0.84	3.9	8.6	3.9	8.6	8.6	0.89

Note 1) If the OUT pressure is higher than the set pressure by the handle, excess pressure is exhausted from the back of the handle.
Note 2) Flow rate at IN= OUT= 0.5 MPa. The pressure varies depending on the operating conditions. Refer to “Flow-rate Characteristics”.

Accessories VBA

Pressure Gauge, Silencer (When thread type is G.)

Description		Model: VBA10A-02 / VBA10A-F02	VBA20A-03 / VBA20A-F03	VBA40A-04 / VBA40A-F04	VBA22A-03 / VBA22A-F03	VBA42A-04 / VBA42A-F04	VBA43A-04 / VBA43A-F04	VBA11A-02 / VBA11A-F02
Pressure gauge	G	G27-20-01	G36-10-01		KT-VBA22A-7	G36-10-01	G27-20-01	G27-20-01
Silencer	N	AN20-02	AN30-03	AN40-04	AN30-03	AN40-04	AN40-04	AN20-02
High-noise reduction silencer	S	ANA1-02	ANA1-03	ANA1-04	ANA1-03	ANA1-04	ANA1-04	ANA1-02

Note 1) In the case of options GN, two pressure gauges and one silencer are included in the same container as accessories.
Note 2) KT-VBA22A-7 is a pressure gauge with fitting. (Please order two units when using with IN and OUT.)

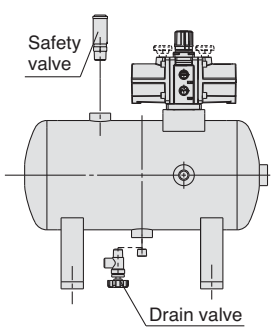
Specifications VBAT

Model	VBAT05A □-SV-Q	VBAT10A □-SV-Q	VBAT20A □-RV-Q	VBAT38A □-RV-Q
Fluid	Compressed air			
Tank capacity [L]	5	10	20	38
Max. operating pressure [MPa]	2.0		1.0	
IN port size	3/8	1/2	3/4	3/4
OUT port size	3/8	1/2	1/2	3/4
Ambient and fluid temperature [°C]	0 to 75			
Weight [kg]	6.6	10	14	21
Material	Carbon steel (SS400)			
Paint	Outside: Silver paint, Inside: Rustproof paint			

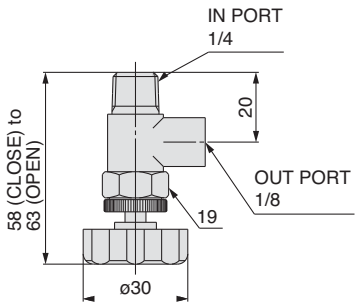
Note) The accessories and options are included in the same container.

Accessories VBAT

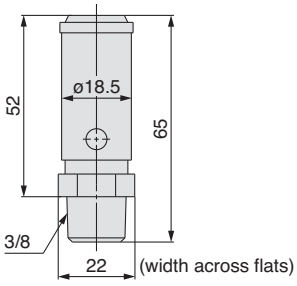
Model	VBAT05A□-SV-Q	VBAT10A□-SV-Q	VBAT20A□-RV-Q	VBAT38A□-RV-Q
Accessory kit	VBAT5A-Y-2	VBAT10A-Y-2	VBAT20A-Y-2	
Safety valve	VBAT-S (Set pressure: 2 MPa)		VBAT-R (Set pressure: 1 MPa)	
Drain valve	VBAT-V1			



Drain valve VBAT-V1



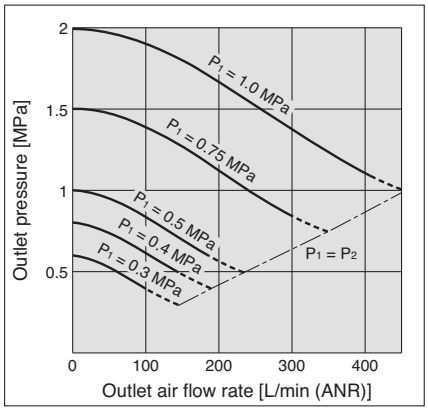
Safety valve VBAT-R, VBAT-S



Flow Characteristics

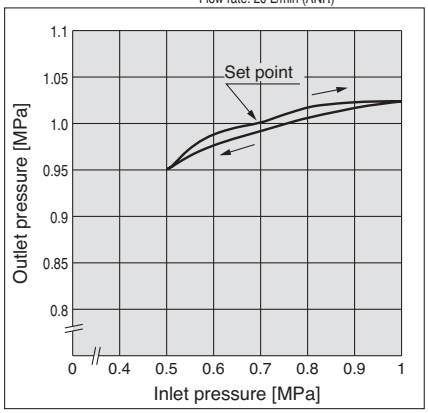
VBA10A

Flow-rate Characteristics

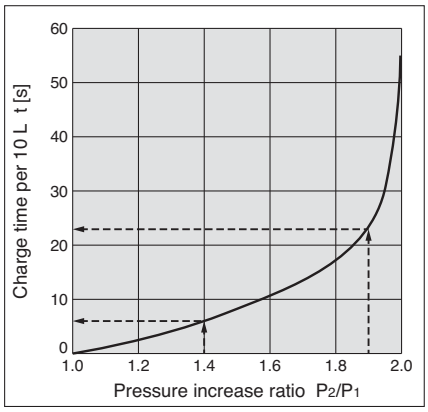


Pressure Characteristics

Inlet pressure: 0.7 MPa
Outlet pressure: 1.0 MPa
Flow rate: 20 L/min (ANR)
(Representative value)



Charge Characteristics



VBA10A

- The time required to charge pressure in the tank from 0.7 MPa to 0.95 MPa at 0.5 MPa supply pressure:

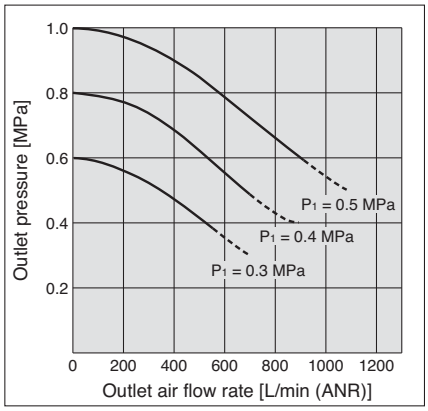
$\frac{P_2}{P_1} = \frac{0.7}{0.5} = 1.4$ $\frac{P_2}{P_1} = \frac{0.95}{0.5} = 1.9$

With the pressure increase ratio from 1.4 to 1.9, the charge time of 23 – 6 = 17 sec. (t) is given by the graph. Then, the charge time (T) for a 10 L tank:

$T = t \times \frac{V}{10} = 17 \times \frac{10}{10} = 17$ (s).

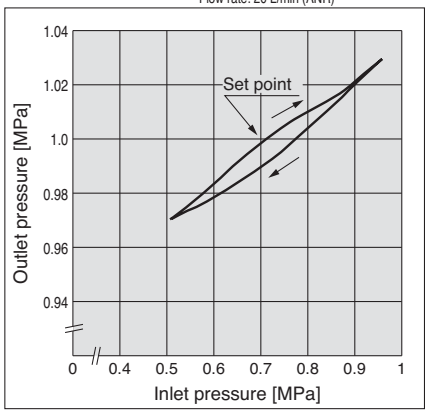
VBA20A, 22A

Flow-rate Characteristics

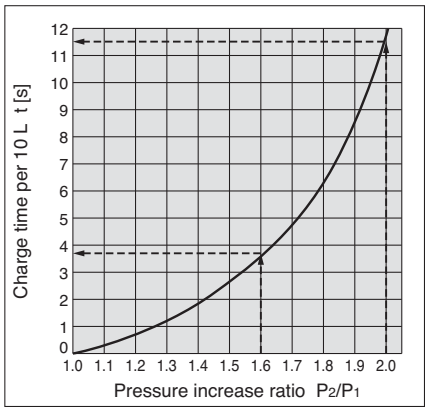


Pressure Characteristics

Inlet pressure: 0.7 MPa
Outlet pressure: 1.0 MPa
Flow rate: 20 L/min (ANR)
(Representative value)



Charge Characteristics



VBA20A, 22A

- The time required to charge pressure in the tank from 0.8 MPa to 1.0 MPa at 0.5 MPa supply pressure:

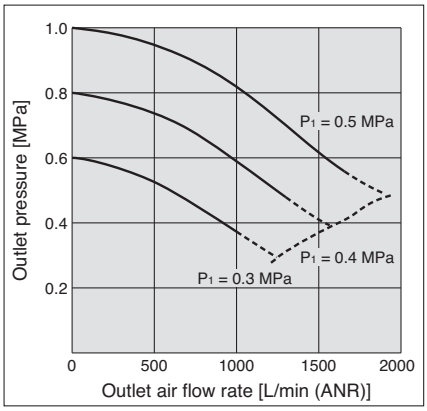
$\frac{P_2}{P_1} = \frac{0.8}{0.5} = 1.6$ $\frac{P_2}{P_1} = \frac{1.0}{0.5} = 2.0$

With the pressure increase ratio from 1.6 to 2.0, the charge time of 11.5 – 3.8 = 7.7 sec. (t) is given by the graph. Then, the charge time (T) for a 100 L tank:

$T = t \times \frac{V}{10} = 7.7 \times \frac{100}{10} = 77$ (s).

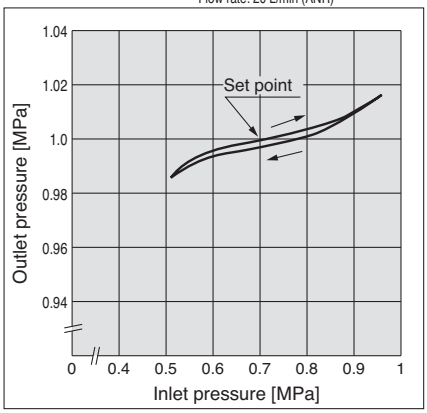
VBA40A, 42A

Flow-rate Characteristics

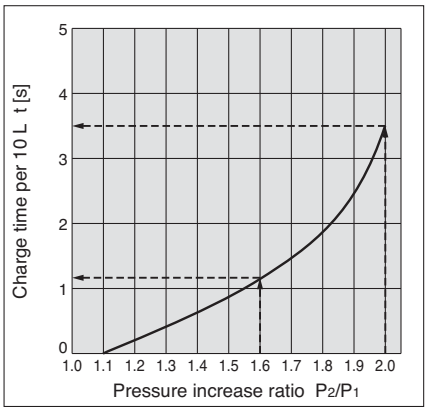


Pressure Characteristics

Inlet pressure: 0.7 MPa
Outlet pressure: 1.0 MPa
Flow rate: 20 L/min (ANR)
(Representative value)



Charge Characteristics



VBA40A, 42A

- The time required to charge pressure in the tank from 0.8 MPa to 1.0 MPa at 0.5 MPa supply pressure:

$\frac{P_2}{P_1} = \frac{0.8}{0.5} = 1.6$ $\frac{P_2}{P_1} = \frac{1.0}{0.5} = 2.0$

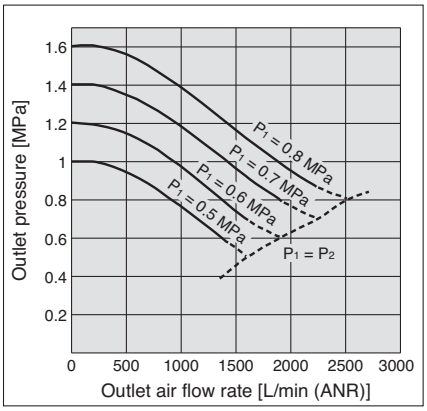
With the pressure increase ratio from 1.6 to 2.0, the charge time of 3.5 – 1.1 = 2.4 sec. (t) is given by the graph. Then, the charge time (T) for a 100 L tank:

$T = t \times \frac{V}{10} = 2.4 \times \frac{100}{10} = 24$ (s).

Flow Characteristics

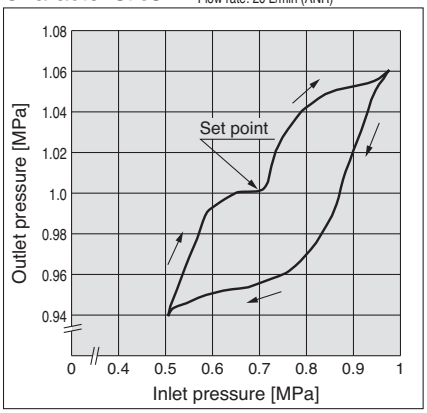
VBA43A

Flow-rate Characteristics

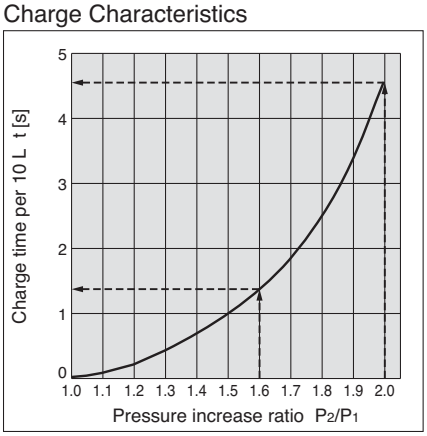


Pressure Characteristics

Inlet pressure: 0.7 MPa
Outlet pressure: 1.0 MPa
Flow rate: 20 L/min (ANR)
(Representative value)



Charge Characteristics



VBA43A

- The time required to charge pressure in the tank from 0.8 MPa to 1.0 MPa at 0.5 MPa supply pressure:

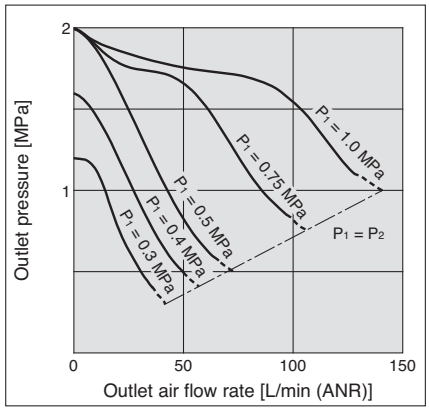
$\frac{P_2}{P_1} = \frac{0.8}{0.5} = 1.6$ $\frac{P_2}{P_1} = \frac{1.0}{0.5} = 2.0$

With the pressure increase ratio from 1.6 to 2.0, the charge time of 4.5 – 1.3 = 3.2 sec. (t) is given by the graph. Then, the charge time (T) for a 100 L tank:

$T = t \times \frac{V}{10} = 3.2 \times \frac{100}{10} = 32$ (s).

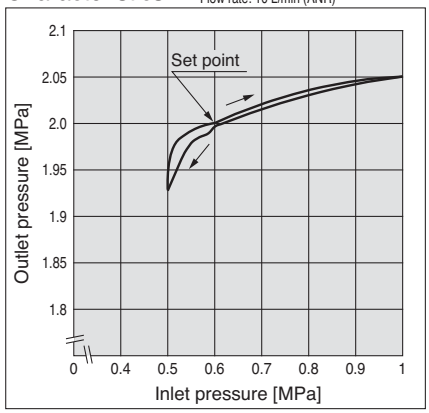
VBA11A

Flow-rate Characteristics

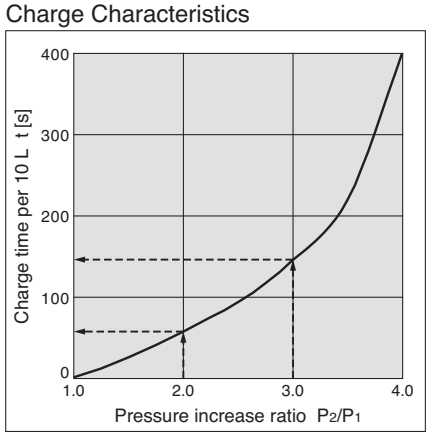


Pressure Characteristics

Inlet pressure: 0.6 MPa
Outlet pressure: 2.0 MPa
Flow rate: 10 L/min (ANR)
(Representative value)



Charge Characteristics



VBA11A

- The time required to charge pressure in the tank from 1.0 MPa to 1.5 MPa at 0.5 MPa supply pressure:

$\frac{P_2}{P_1} = \frac{1.0}{0.5} = 2.0$ $\frac{P_2}{P_1} = \frac{1.5}{0.5} = 3.0$

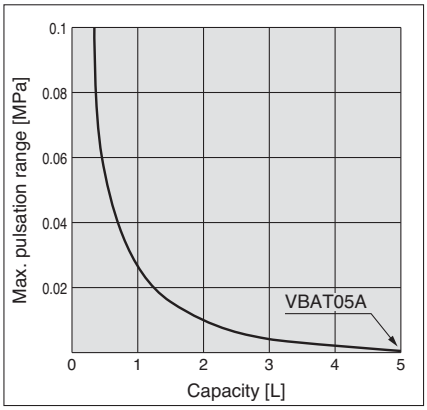
With the pressure increase ratio from 2.0 to 3.0, the charge time of 147 – 58 = 89 sec. (t) is given by the graph. Then, the charge time (T) for a 10 L tank:

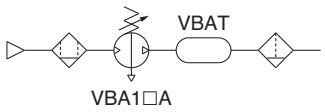
$T = t \times \frac{V}{10} = 89 \times \frac{10}{10} = 89$ (s).

Pulsation/Pulsation is decreased with a tank.

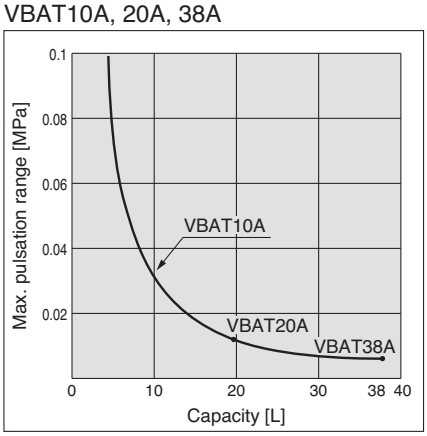
If the outlet capacity is undersized, pulsation may occur.

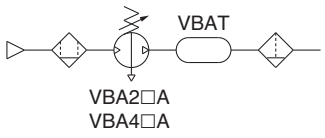
VBAT05A





VBAT10A, 20A, 38A



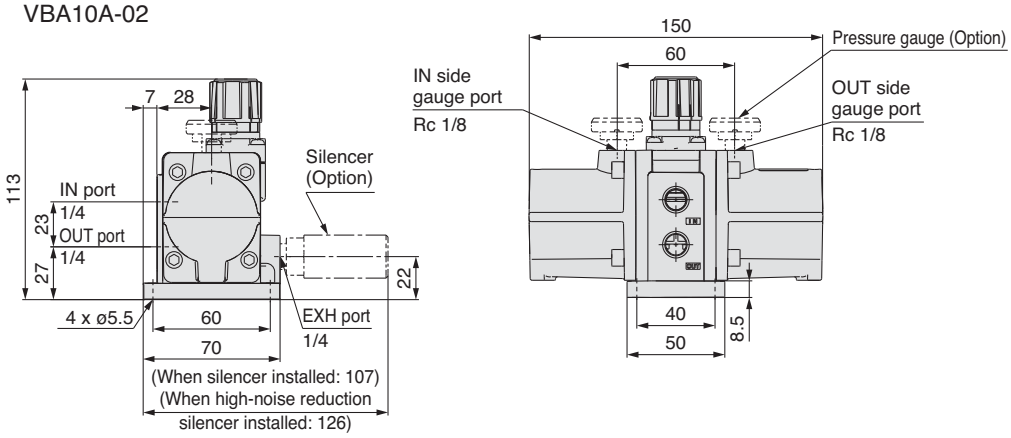


Conditions:
Inlet pressure: 0.5 MPa
Outlet set pressure: 1 MPa
Flow rate: Between 0 and max. flow rate

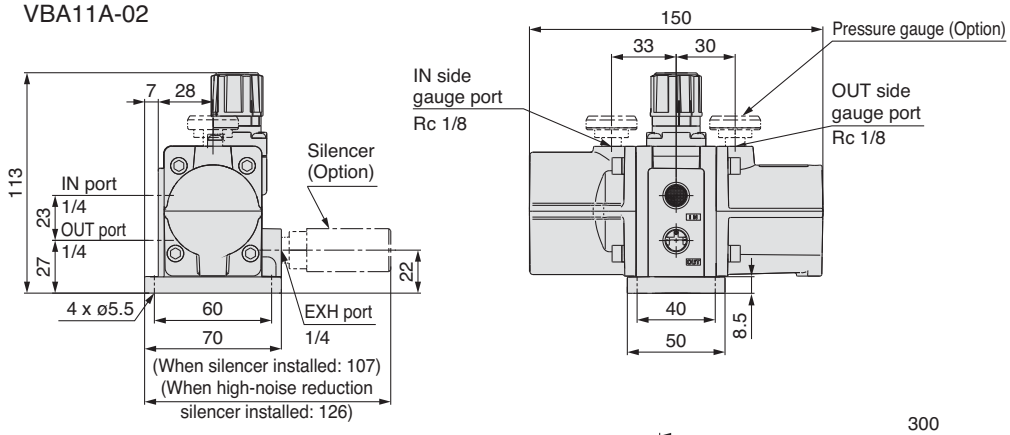
- Performance of air tank
  - Alleviates the pulsation generated on the outlet side.
  - When air consumption exceeds air supply during intermittent operation, required air will be accumulated in the tank for use. This does not apply for continuous operation.

Dimensions

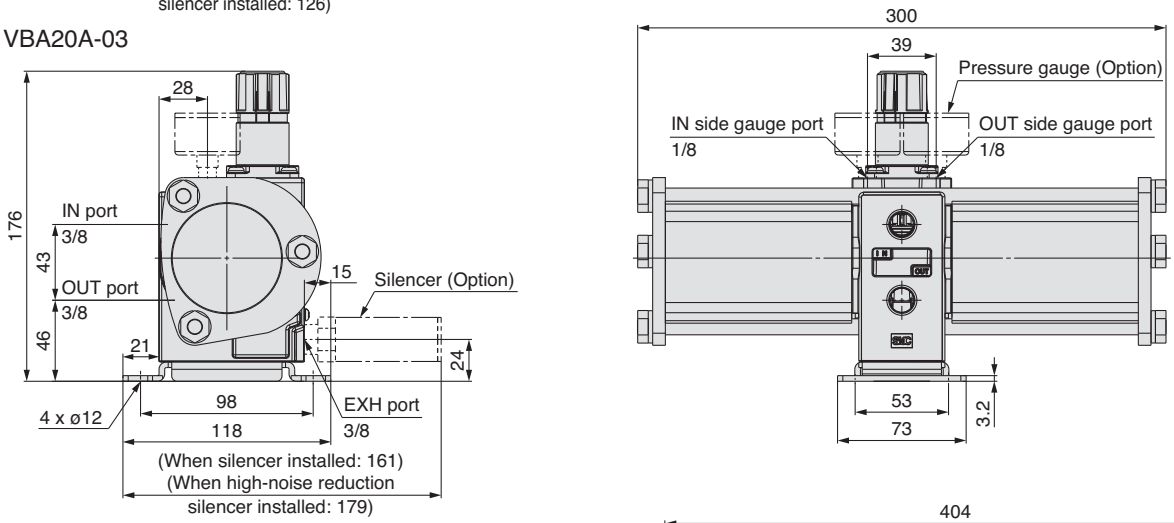
VBA10A-02



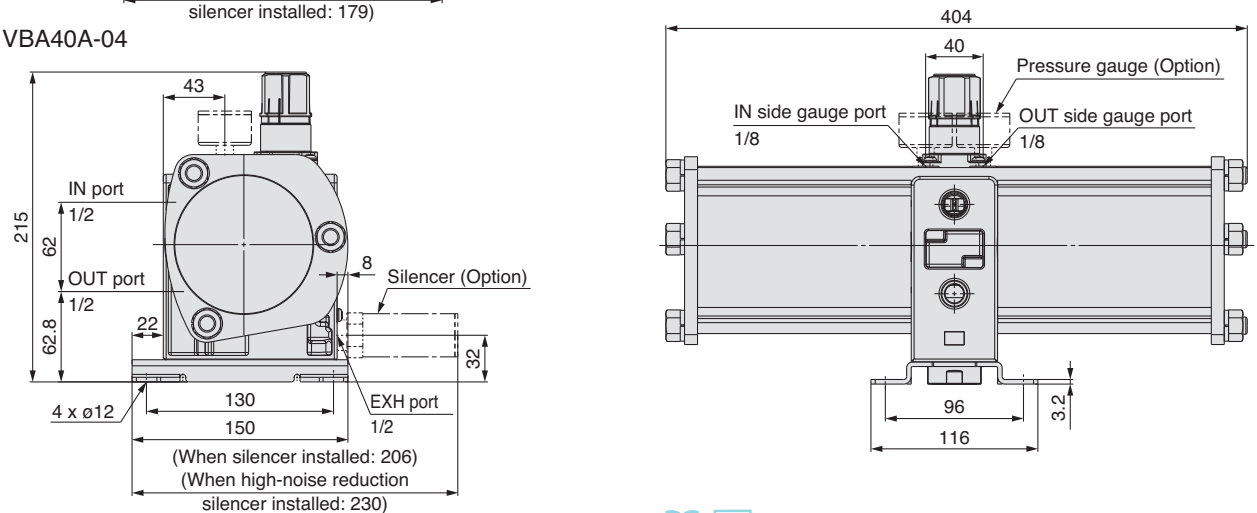
VBA11A-02



VBA20A-03



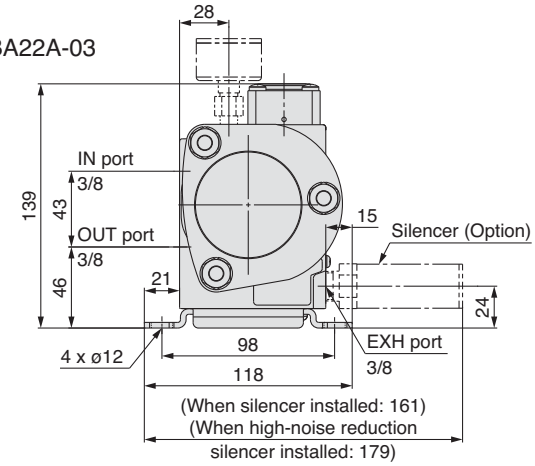
VBA40A-04

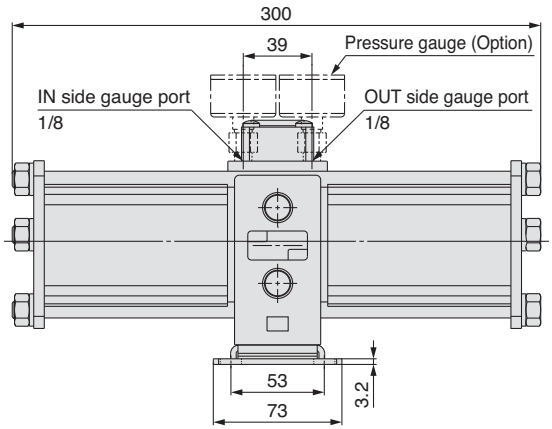


For more product options and details see our specific catalogues or on-line information.

Dimensions

VBA22A-03





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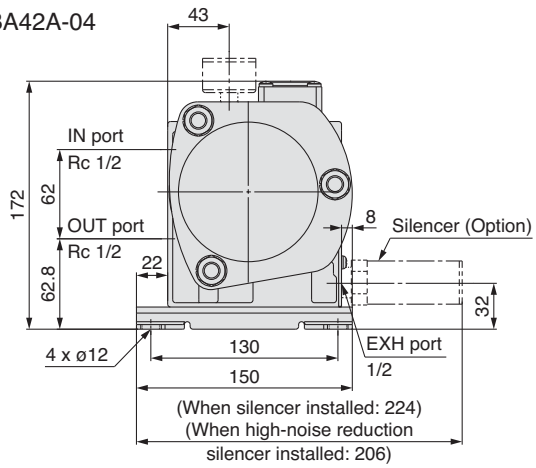

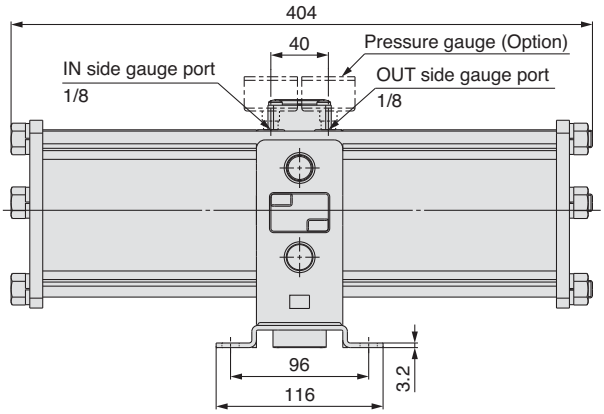

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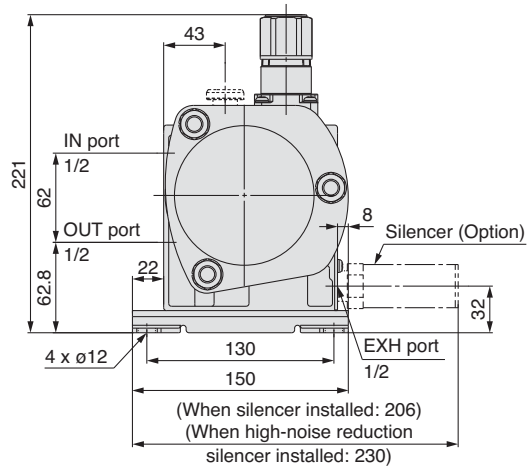
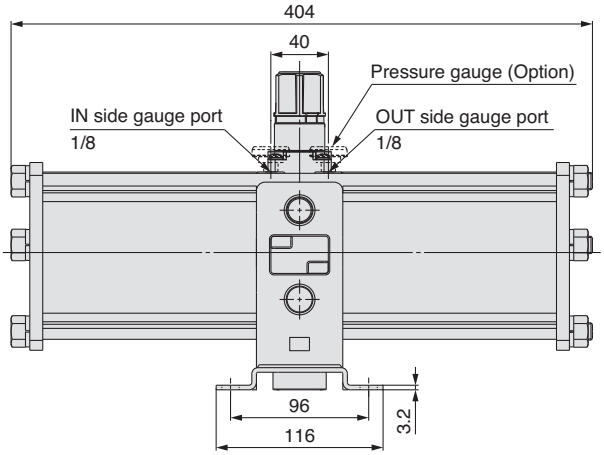


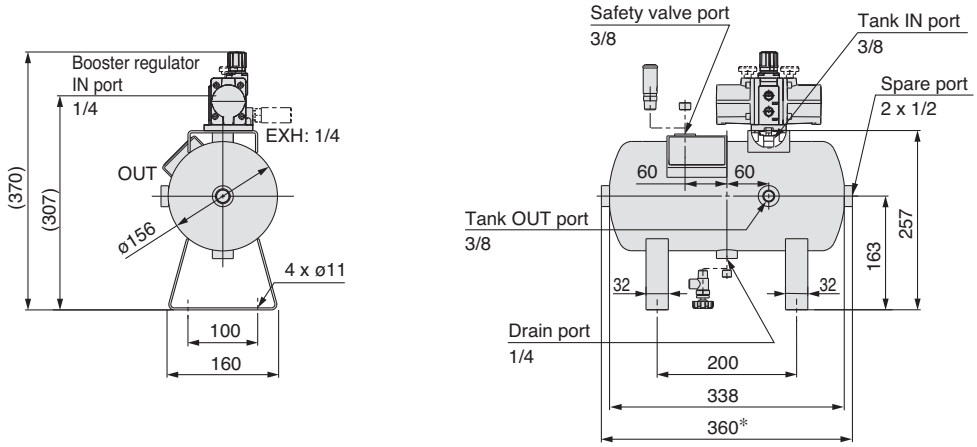


Dimensions

VBAT05A-Q

Material: Carbon steel

Connected to VBA10A, 11A

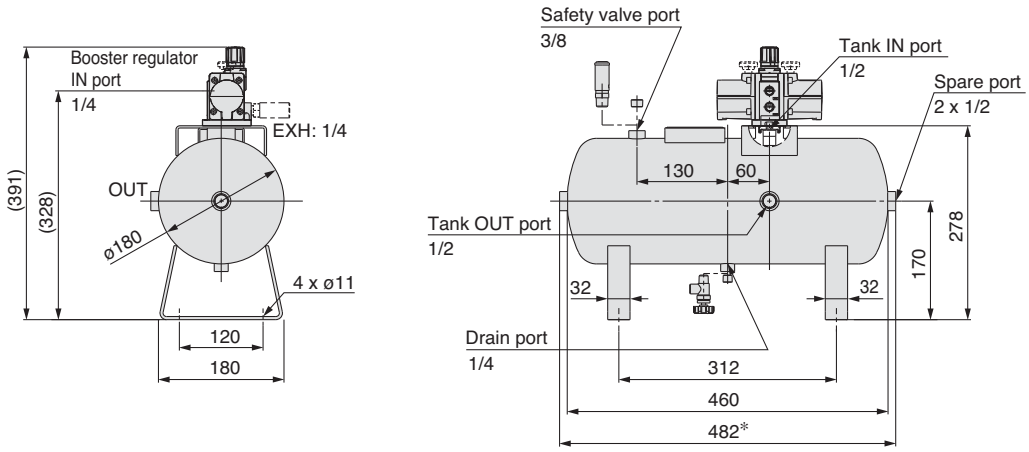


* The length may be longer than the specification if the plugs mounted on the tank are not fit to the end.
The length of G thread type is about 6 mm longer due to plug type differences.

VBAT10A-Q

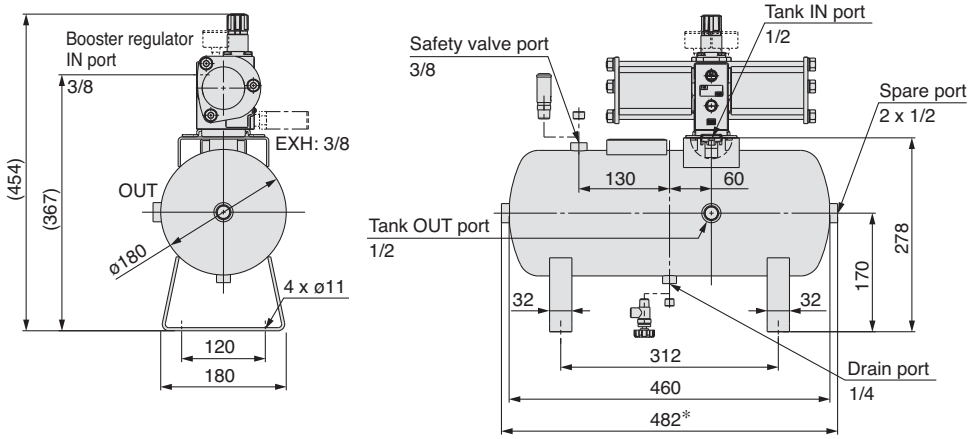
Material: Carbon steel

Connected to VBA10A, 11A

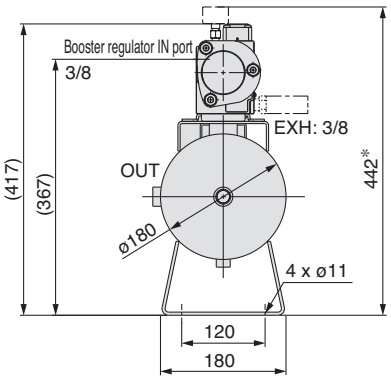


* The length may be longer than the specification if the plugs mounted on the tank are not fit to the end.
The length of G thread type is about 6 mm longer due to plug type differences.

Connected to VBA20A



Connected to VBA22A



* When option G (pressure gauge) is selected

* The length may be longer than the specification if the plugs mounted on the tank are not fit to the end.
The length of G thread type is about 6 mm longer due to plug type differences.

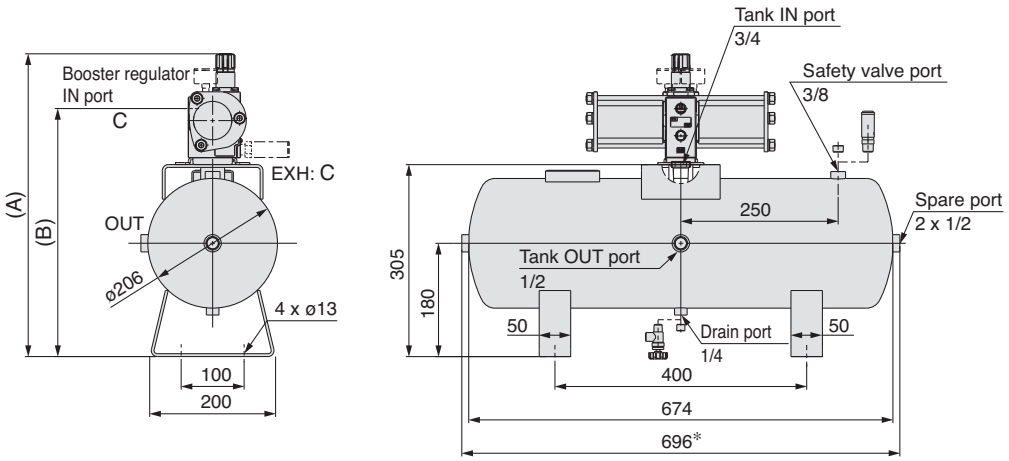
Specifications

Dimensions: CE Certified Product

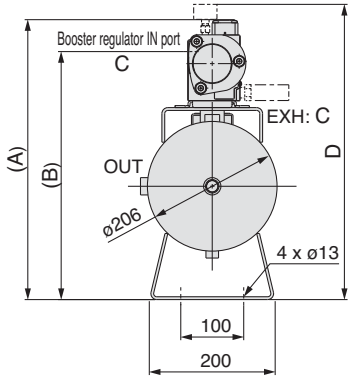
VBAT20A-Q

Material: Carbon steel

Connected to VBA20A, 40A



Connected to VBA22A, 42A



∗ The length may be longer than the specification if the plugs mounted on the tank are not fit to the end. The length of G thread type is about 6 mm longer due to plug type differences.

[mm]

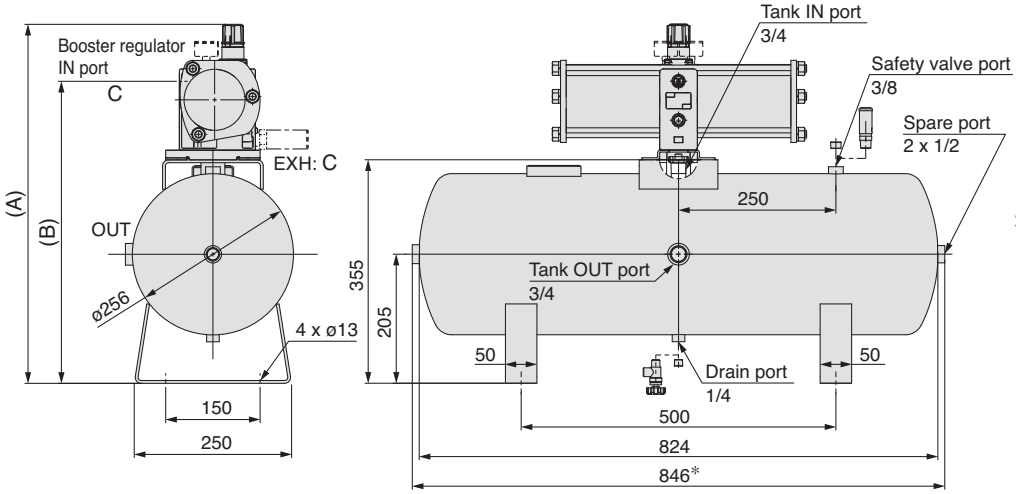
Booster regulator model	A	B	C	D Note)
VBA20A	481	394	3/8	—
VBA40A	520	429.8	1/2	—
VBA22A	444	394	3/8	469
VBA42A	477	429.8	1/2	493

Note) When option G (pressure gauge) is selected

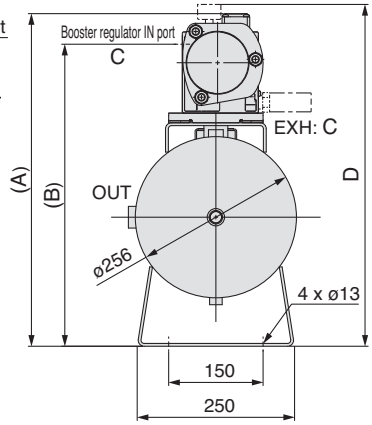
VBAT38A-Q

Material: Carbon steel

Connected to VBA20A, 40A



Connected to VBA22A, 42A



∗ The length may be longer than the specification if the plugs mounted on the tank are not fit to the end. The length of G thread type is about 6 mm longer due to plug type differences.

[mm]

Booster regulator model	A	B	C	D Note)
VBA20A	531	444	3/8	—
VBA40A	570	479.8	1/2	—
VBA22A	494	444	3/8	519
VBA42A	527	479.8	1/2	543

Note) When option G (pressure gauge) is selected

Refrigerated Air Dryer
Series IDFA□E, IDFA□F

Features

- Secondary heater introduction (IDFA□F).
- Easy maintenance.
- Space saving.
- High corrosion-resistant.
- Wide range of air dryer sizes.
- Montreal protocol compliant.

How to Order

IDFA [8] E – [23] – [ ]
Note 1)

Size

3	15
4	22
6	37
8	55
11	75

Voltage

Symbol	Voltage
23	Single-phase 230 VAC (50 Hz)

Options

–	None
A	Cool compressed air output
C	Anti.corrosive treatment
K	For 1.6 MPa application (Auto drain bowl type: metal bowl with level gauge)
L	With heavy duty auto drain (applicable to 1.6 MPa)
V	With timer-type solenois valve (applicable to 1.6 MPa)

Note) Refer to table below

● Options and Available Combinations (Size/Option)

Symbol (option) Note 1) \ Size	3	4	6	8	11	15	22	37	55	75
–	●	●	●	●	●	●	●	●	●	●
A	●	●	●	●	●	–	–	–	–	–
C	●	●	●	●	●	●	●	●	●	●
K	–	–	●	●	●	●	●	●	–	–
L	–	●	●	●	●	●	●	●	●	●
V	–	●	●	●	●	●	●	●	●	●

Note 1) Thread adapters to convert Rc thread to R thread are included with IDFA3E to IDFA15E.
Note 2) Enter alphabetically when multiple options are combined.
However, the following combination cannot be achieved. Combination of K,L and V cannot be achieved bacause on auto switch drain can only be attached to a single option.

IDFA [100] F – [40] – [ ]

Size

100
125
150

Voltage

Symbol	Voltage
40	Three-phase 400 VAC (50 Hz)

Option

Symbol Note)	Description
–	None
C	Anti-corrosive treatment for copper tube
K	Moderate pressure specification (1.6 MPa)
R	With a circuit breaker
V	With a timer controlled solenoid valve type auto drain.

Note) Enter alphabetically when multiple options are combined.

Product Recommendation

Stocked items for fast delivery

IDFA3E-23	IDFA6E-23-K	IDFA11E-23-K	IDFA37E-23	IDFA100F-40
IDFA3E-23-A	IDFA8E-23	IDFA15E-23	IDFA37E-23-K	IDFA125F-40
IDFA4E-23	IDFA8E-23-K	IDFA15E-23-K	IDFA55E-23-L	IDFA150F-40
IDFA6E-23	IDFA11E-23	IDFA22E-23-K	IDFA75E-23-L	

Related Products

Series AC - Air Preparation - page 1076
Series TU - Tubing - page 1223
Series KQ2 - Fittings - page 1184
Series PF2A - Digital Flow Swith for Air- page 1309
Series ZSE/ISE□0A - Digital Pressure Switch for Air - page 1273
Series VNB - 2 Port Air Operated Valves - page 1466
Series VXZ - Pilot Operated 2 Port Solenoid Valves - page 1451

For more product options and details see our specific catalogues or on-line information.

Specifications

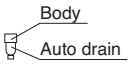
Specifications				Model	Standard temperature air inlet					
					IDFA3E	IDFA4E	IDFA6E	IDFA8E	IDFA11E	IDFA15E
Operating range	Fluid				Compressed air					
	Inlet air temperature			[°C]	5 to 50					
	Inlet air pressure			[MPa]	0.15 to 1.0					
	Ambient temperature (Humidity)			[°C]	2 to 40 (Relative humidity of 85% or less)					
Rated specifications Note 3)	Air flow capacity m^3/h	Note 1) Standard condition (ANR)		[3°C]	12	24	36	65	80	120
				[7°C]	15	31	46	83	101	152
				[10°C]	17	34	50	91	112	168
		Note 2) Compressor intake condition		[3°C]	13	25	37	68	83	125
				[7°C]	16	32	48	86	105	158
				[10°C]	18	35	52	95	116	175
	Inlet air pressure			[MPa]	0.7					
	Inlet air temperature			[°C]	35					
	Ambient temperature			[°C]	25					
Electric	Power supply voltage				Single-phase: 230 VAC [Voltage fluctuation ±10%] 50 Hz					
	Power consumption			[W]	180			208	385	470
	Operating current			[A]	1.2			1.4	2.7	3.0
Applicable circuit breaker capacity Note 4)				[A]	5					10
Condenser					Air-cooled					
Refrigerant					R134a (HFC)					
Auto drain					Float type (Normally closed)		Float type (Normally open)			
Port size					Rc 3/8	Rc 1/2	Rc 3/4			Rc 1
Accessory					Hexagon nipple					
Weight				[kg]	18	22	23	27	28	46
Coating colour					Body panel: White 1 Base: Grey 2					
Compliant standards					EC Directive (with CE marking)					

Note 1) Air flow capacity under the standard condition (ANR) [atmospheric pressure at 20°C, relative humidity at 65%]
Note 2) Air flow capacity converted by the compressor intake condition [atmospheric pressure at 32°C]
Note 3) Select air dryer according to the model selection method for the models beyond the rated specifications.
Note 4) Install a circuit breaker with a sensitivity of 30 mA.
Note 5) When a short-term interruption of the power supply (including momentary interruption) 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.

Replacement Parts

Model	IDFA3E	IDFA4E	IDFA6E	IDFA8E	IDFA11E	IDFA15E
Auto drain replacement parts no. Note 6)	AD38		AD48			

Note 6) The part number for the auto drain components without including the body part. Body part replacement is impossible.



Specifications

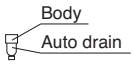
Specifications				Model	Standard temperature air inlet			
					IDFA22E	IDFA37E	IDFA55E	IDFA75E
Operating range	Fluid				Compressed air			
	Inlet air temperature			[°C]	5 to 50			
	Inlet air pressure			[MPa]	0.15 to 1.0			
	Ambient temperature (Humidity)			[°C]	2 to 40 (Relative humidity of 85% or less)			
Rated specifications Note 3)	Air flow capacity m³/h	Note 1) Standard condition (ANR)	Outlet air pressure dew point	[3°C]	182	273	390	660
			Outlet air pressure dew point	[7°C]	231	347	432	720
			Outlet air pressure dew point	[10°C]	254	382	510	822
		Note 2) Compressor intake condition	Outlet air pressure dew point	[3°C]	189	284	405	686
			Outlet air pressure dew point	[7°C]	240	361	449	748
			Outlet air pressure dew point	[10°C]	264	397	530	854
	Inlet air pressure			[MPa]	0.7			
	Inlet air temperature			[°C]	35			
	Ambient temperature			[°C]	25			
Electric	Power supply voltage				Single-phase: 230 VAC [Voltage fluctuation ±10%] 50 Hz			
	Power consumption			[W]	760		1130	1700
	Operating current			[A]	4.3		5.4	7.9
Applicable circuit breaker capacity Note 4)				[A]	10			20
Condenser					Air-cooled			
Refrigerant					R407C (HFC)			
Auto drain					Float type (Normally open)			
Port size					R 1	R 1 1/2	R 2	
Accessory					—			
Weight				[kg]	54	62	100	116
Coating colour					Body panel: White 1 Base: Gray 2			
Compliant standards					EC Directive (with CE marking)			

Note 1) Air flow capacity under the standard condition (ANR) [atmospheric pressure at 20°C, relative humidity at 65%]
Note 2) Air flow capacity converted by the compressor intake condition [atmospheric pressure at 32°C]
Note 3) Select air dryer according to the model selection method (page 2) for the models beyond the rated specifications.
Note 4) Install a circuit breaker with a sensitivity of 30 mA.
Note 5) When a short-term interruption of the power supply (including momentary interruption) 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.

Replacement Parts

Model	IDFA22E	IDFA37E	IDFA55E	IDFA75E
Auto drain replacement parts no. Note 6)	AD48			

Note 6) The part number for the auto drain components without including the body part. Body part replacement is impossible.



Specifications

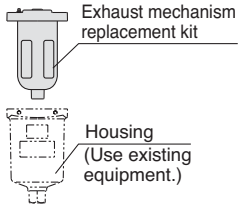
Specifications \ Model			IDFA100F-40	IDFA125F-40	IDFA150F-40
Operating range Note 3)	Fluid		Compressed air		
	Inlet air temperature [°C]		5 to 60		
	Inlet air pressure [MPa]		0.15 to 1.0 (0.15 to 1.6 for option K2)		
	Ambient temperature (humidity) [°C]		2 to 45 (Relative humidity 85% or less)		
Rated conditions	Air flow capacity m^3/h	Standard condition (ANR) Note 1)	860	1100	1340
		Compressor intake condition Note 2)	875	1119	1363
	Inlet air pressure [MPa]		0.7		
	Inlet air temperature [°C]		35		
	Ambient temperature [°C]		25		
	Outlet air pressure dew point [°C]		3		
Electric specifications	Power supply voltage		Three-phase 400 VAC		
	Power consumption [kW]		2.5	2.7	2.7
	Operating current [A]		4.5	5.3	5.9
Applicable circuit breaker capacity Note 4) [A]			15		
Heat discharge from condenser [kW]			7	8	10
Refrigerant			R407C (HFC)		
Auto drain			Float type (Normally open) The option V stands for a timer type solenoid valve.		
Port size			R2	R2 1/2	DIN flange 80
Weight [kg]			245	270	350
Coating colour			Body panel: White 1 Base: Grey 2		
Compliant standards			EC Directive compliant (with CE marking)		

Note 1) Air flow capacity under the standard condition (ANR) [atmospheric pressure 20°C, relative humidity 65%]
Note 2) Air flow capacity converted by the compressor intake condition [atmospheric pressure 32°C]
Note 3) The operation range does not guarantee the use with normal air flow capacity. When operating conditions are different from the rated specifications, please select a model in accordance with Model Selection.
Note 4) Install a circuit breaker with a sensitivity 30 mA.

Replacement Parts

Air dryer model	IDFA100F	IDFA125F	IDFA150F
Heavy duty auto drain replacement part no. Note 5)	ADH-E400		
Dustproof filter set for condenser	IDF-FL219		IDF-FL220

Note 5) Part number of only the exhaust mechanism replacement kit excluding the housing



Optional Accessories

	Features	Specifications	Applicable dryer
Dust-protecting filter set Note) 	Prevents a reduction in the performance of the air dryer, even in dusty atmospheres.	Max. ambient temperature 40°C	IDFA3E to 75E
Pre-filter 	Prevents dust to enter air dryer. Extended life of dryer.	Filtration rate 3μm	IDFA3E to 75E
Foundation bolt set 	For fixing the air dryer to the foundations. Easy to secure by striking the axle.	Stainless steeel	IDFA4E to 75E

Note) Standard for IDFA100F/125F/150F.

How to Order

Dust-protecting filter set

IDF — FL 209

Applicable dryer

Symbol	Applicable dryer
209	IDFA3E
202	IDFA4E
203	IDFA6E
204	IDFA8E
205	IDFA11E
206	IDFA15E
207	IDFA22E

Symbol	Applicable dryer
208	IDFA37E
213	IDFA55E
214	IDFA75E

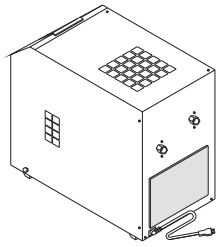
Foundation bolt set

IDF — AB 500

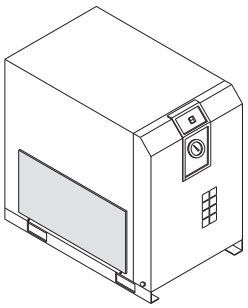
Applicable dryer

Symbol	Applicable dryer
500	IDFA4E to 75E
501	IDFA100F to 150F

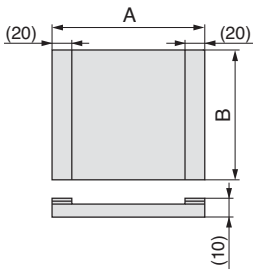
Dust-protecting Filter Set / Dimensions



(IDF-FL209)



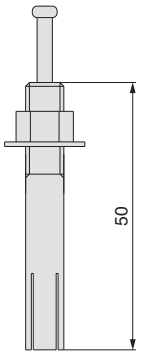
(IDF-FL202 to 208, 213, 214)



Dimensions [mm]

Part no.	Applicable dryer	A	B	Weight [g]
IDF-FL209	IDFA3E	220	240	35
IDF-FL202	IDFA4E	310	195	45
IDF-FL203	IDFA6E	375		55
IDF-FL204	IDFA8E	340	265	70
IDF-FL205	IDFA11E	375		75
IDF-FL206	IDFA15E	310	270	70
IDF-FL207	IDFA22E	420	315	100
IDF-FL208	IDFA37E	550	365	140
IDF-FL213	IDFA55E	720	400	175
IDF-FL214	IDFA75E	610	560	190

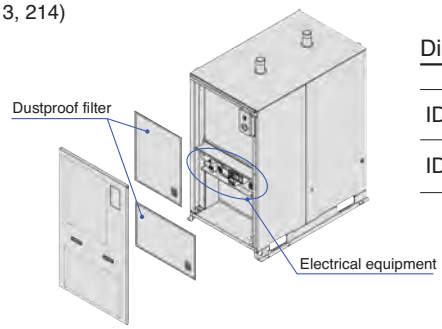
Foundation Bolt Set / Dimensions



Mounting hole diameter: ø10.5

Dimensions [mm]

Part no.	Applicable dryer	Nominal thread size	Material	Pcs. of 1 set
IDF-AB500	IDFA4E to 75E	M10	Stainless steel	4
IDF-AB501	IDFA100F to 150F	M10	Stainless steel	4



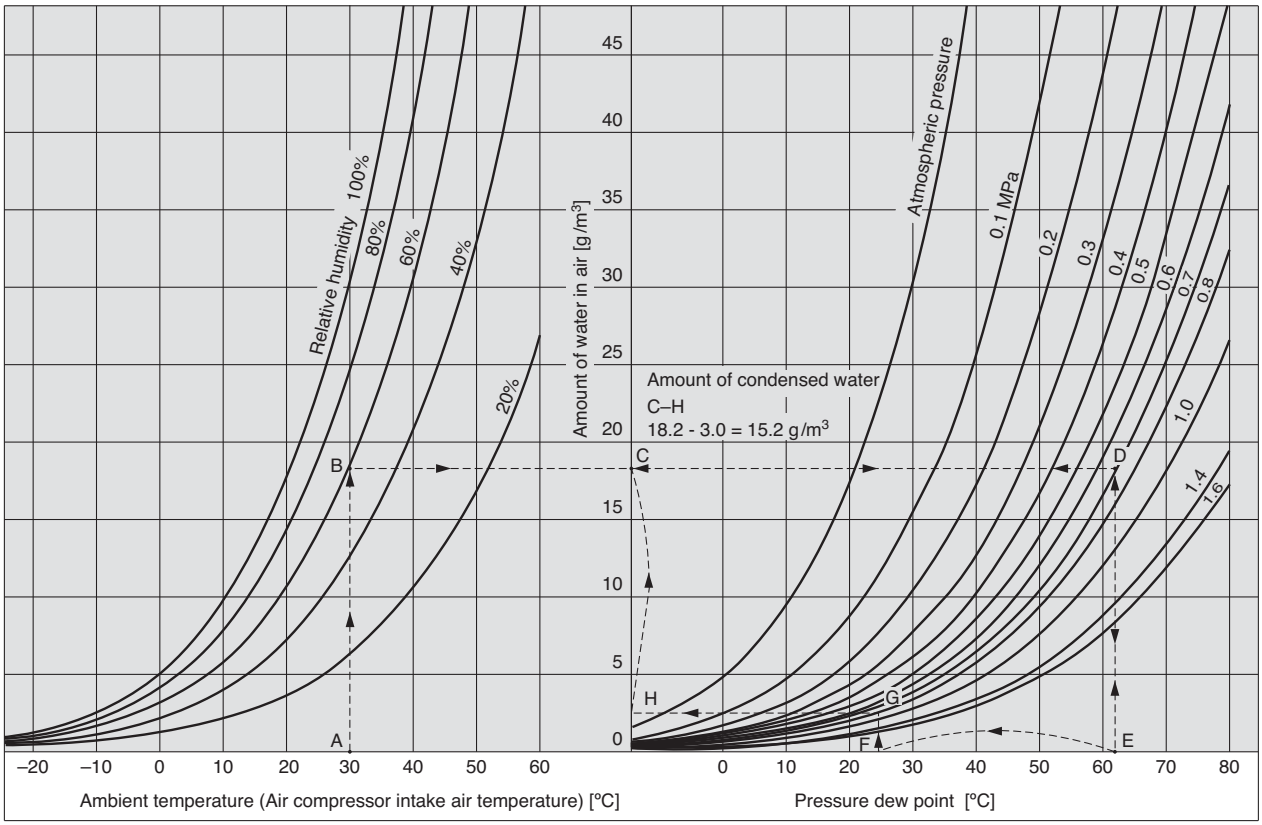
Dimensions [mm]

Part no.	Applicable dryer	A	B
IDF-FL219	IDFA100F	470	576
	IDFA125F	600	390
IDF-FL220	IDFA150F	600	600
		915	390

Air Preparation

Data

Condensed Water Calculation



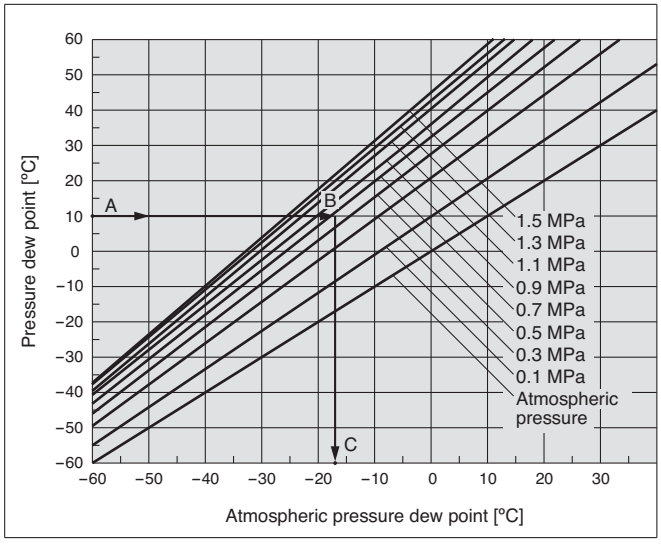
How to calculate the amount of condensed water

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

1. Trace the arrow mark from the point A at an ambient temperature 30°C to obtain the intersection B on the curved line for the relative humidity 60%.
2. Trace the arrow mark from the intersection B to obtain the intersection D on the pressure characteristic line for 0.7 MPa.
3. Trace the arrow mark from 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 30°C and a relative humidity 60%. The value for E is 62°C.
5. Trace the intersection E upward, and trace from the intersection D leftward to obtain the intersection C.
6. The intersection C is the amount of moisture included in the compressed air 1 m³ at 0.7 MPa and a pressure dew point 62°C. The amount of moisture is 18.2 g/m³.
7. Trace the arrow mark, starting from 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 moisture included in the compressed air 1 m³ at 0.7 MPa, and a pressure dew point 25°C. The amount of moisture is 3.0 g/m³.
10. Therefore, the amount of condensed water is as follows (per 1 m³):

The amount of moisture at the intersection C
– the amount of moisture at the intersection H
= the amount of condensed water
18.2 – 3.0 = 15.2 g/m³

Dew Point Conversion Chart



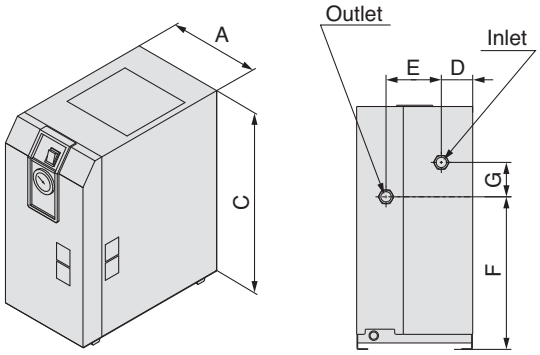
How to read the dew point conversion chart

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

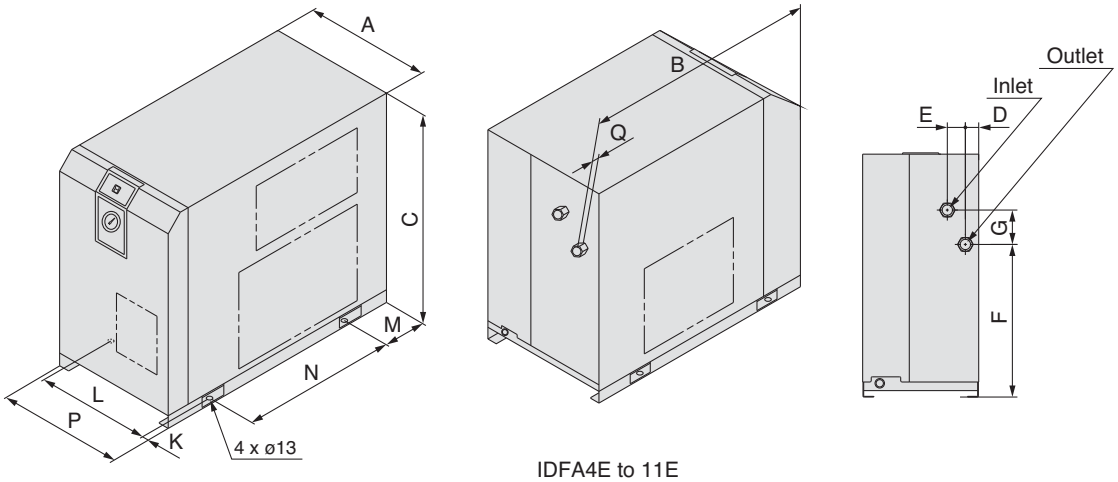
1. Trace the arrow mark → starting from the point A at a pressure dew point 10°C to obtain the intersection B on the pressure characteristic line for 0.7 MPa.
2. Trace the arrow mark → starting from the point B to obtain the intersection C at the dew point under atmospheric pressure.
3. The intersection C is the conversion value –17°C under atmospheric pressure dew point.

Dimensions

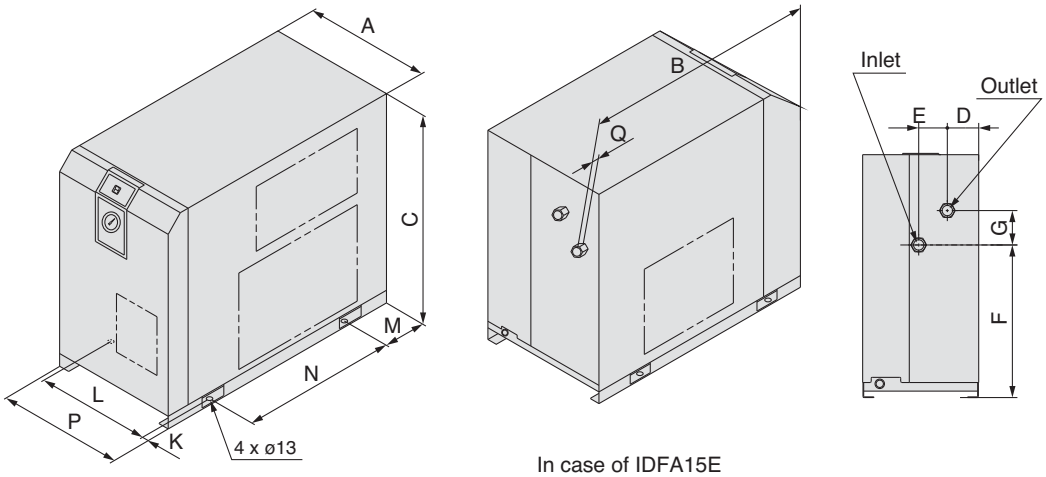
IDFA3E to 15E



In case of IDFA3E



IDFA4E to 11E



In case of IDFA15E

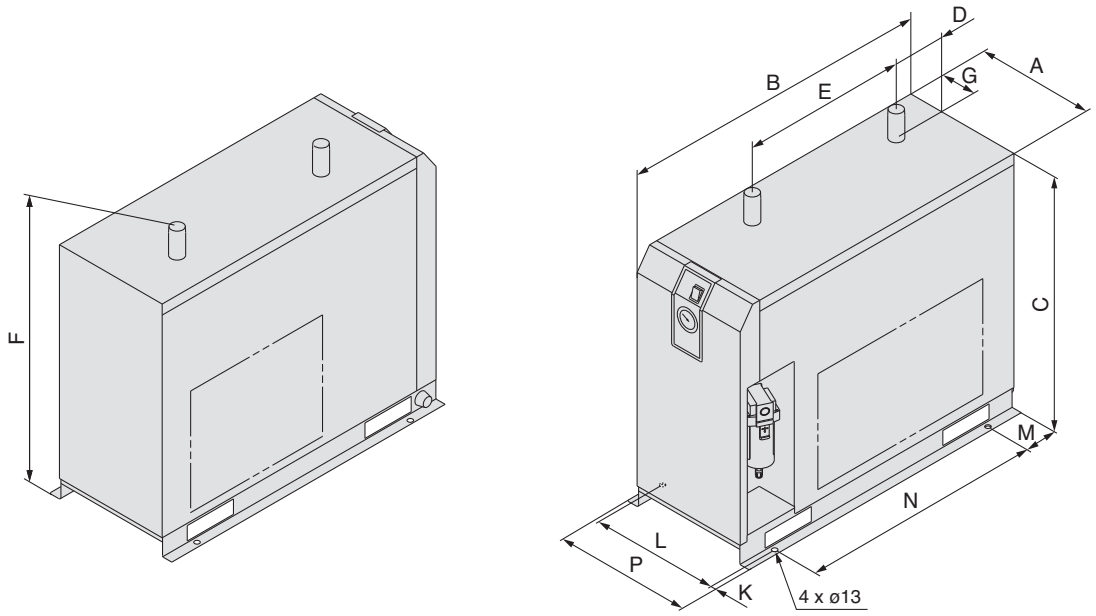
Dimensions [mm]

Model	Port size	A	B	C	D	E	F	G	K*	L*	M*	N*	P	Q
IDFA3E	Rc 3/8	226	410	473	67	125	304	33	36	154	21	330		15
IDFA4E	Rc 1/2		453	498			283					275		13
IDFA6E			455											
IDFA8E	Rc 3/4	270			31	42		80	15	240	80		—	15
IDFA11E			485	568			355					300		
IDFA15E	Rc 1	300	603	578	41	54	396	87		284	101	380	314	16

* Meaning the foot dimensions for the IDFA3E.

Dimensions

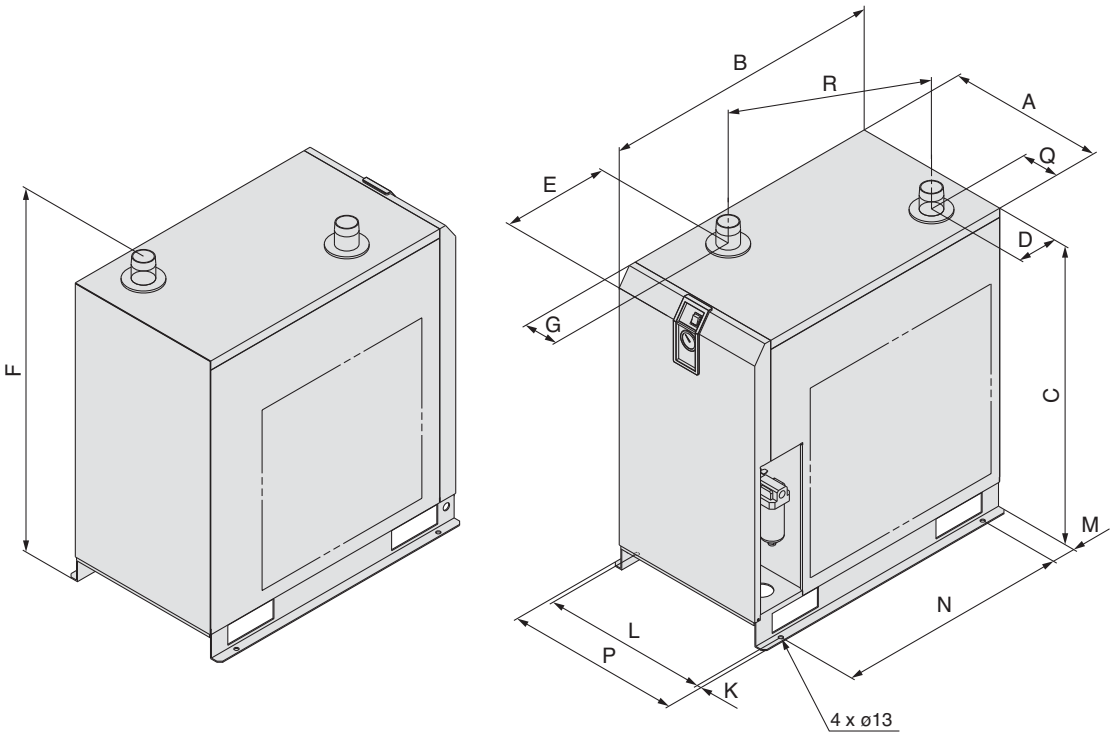
IDFA22E, IDFA37E



Dimensions [mm]

Model	Port size	A	B	C	D	E	F	G	K	L	M	N	P	Q
IDFA22E	R 1	290	775	623	134	405	698	93	13	25	85	600	340	—
IDFA37E	R 1 1/2		855									680		

IDFA55E, IDFA75E

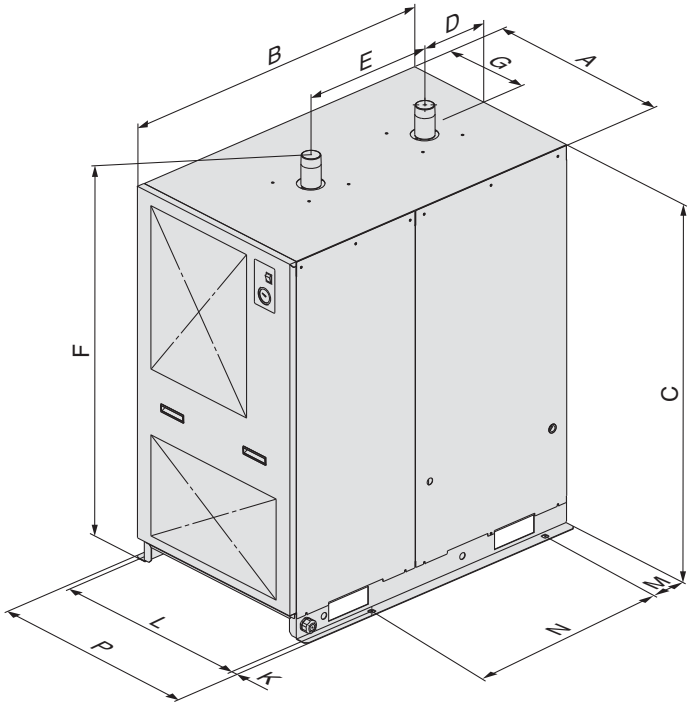


Dimensions [mm]

Model	Port size	A	B	C	D	E	F	G	K	L	M	N	P	Q	R
IDFA55E	R 2	470	855	800	(128)	(273)	(868)	(110)	13	500	75	700	526	(110)	519
IDFA75E				900			(968)								

Dimensions IDFA100F/125F/150F

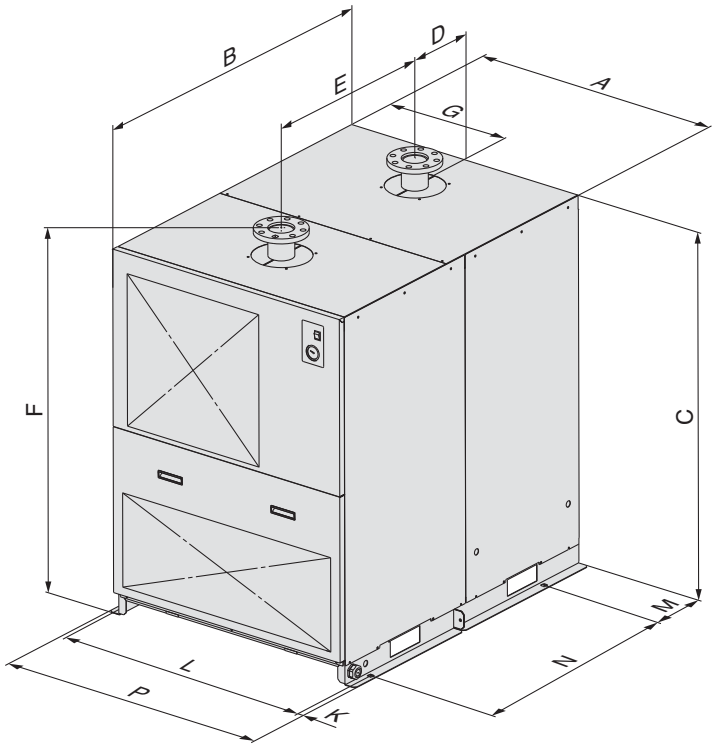
IDFA100F/125F



Dimensions [mm]

Model	Port size	A	B	C	D	E	F	G	K	L	M	N	P
IDFA100F	R2	670	1130	1276	267	460	1375	335	20	712	107	700	752
IDFA125F	R2 1/2	700				655		350			78	935	

IDFA150F



Dimensions [mm]

Model	Port size	A	B	C	D	E	F	G	K	L	M	N	P
IDFA150F	DIN flange 80	950	1300	1332	268	720	1432	475	20	990	217	935	1030

Air Preparation

Membrane Air Dryer
Series IDG

RoHS

Features

- Energy saving design.
- Compatible with low dew points: -15°C, -20°C, -40°C, -60°C.
- Power supply is not required.
- Non-fluorocarbon.
- Dew point indicator visually confirms air drying.

IDG1

IDG10

IDG30

How to Order

IDG 10 □ □ – F 03 □ – □

Size

1	30
3	50
5	60
10	75
20	100

Option

Symbol	Contents	Size									
		1	3	5	10	20	30	50	60	75	100
—	None (Standard)	●	●	●	●	●	●	●	●	●	●
P	With fitting for purge air discharge	●	●	●	●	●	●	●	●	●	●
R	Flow direction (Right → Left)	—	●	●	●	●	●	●	●	●	●
S	With dew point indicator	—	●	●	Standard equipment						

Note) In the case of two or more options, indicate them alphabetically.

Accesory

Symbol	Type
—	None (Standard)
B	With bracket (except IDG1)

Port size

Symbol	Bore	Size									
		1	3	5	10	20	30	50	60	75	100
01	1/8	—	●	●	—	—	—	—	—	—	—
02	1/4	●	●	●	●	●	●	●	—	—	—
03	3/8	—	—	—	●	●	●	●	●	●	●
04	1/2	—	—	—	—	—	—	—	●	●	●

Thread type

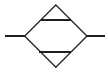
F	G

Symbol	Sizes
—	1, 3, 5, 10, 20, 60 (Standard, H), 75 (Standard, H), 100 (Standard, H)
A	30, 50, 60 (L, S), 75 (L, S), 100 (L, S)

Standard dew point and air flow rate

Symbol	Dew Point	Flow rate by size outlet ir flow rate [ℓ/min (ANR)]									
		1	3	5	10	20	30	50	60	75	100
—	-20°C standard	10	25	50	100	200	300	500	600	750	1000
H	-15°C high dewpoint	—	25	50	100	200	300	500	600	750	1000
L	-40°C low dewpoint	—	—	—	—	—	75	110	170	240	300
S	-60°C super low dewpoint	—	—	—	—	—	—	—	50	100	150

Symbol



Product Recommendation

Stocked items for fast delivery

IDG1-F02	IDG5H-F02-S	IDG30LA-F03
IDG1-F02-P	IDG10-F02	IDG50A-F03
IDG3-F02-S	IDG10-F03	IDG50LA-F03
IDG5-F01	IDG10-F03-R	IDG60-F04
IDG5-F01-S	IDG10H-F02	IDG75-F04
IDG5-F02	IDG20-F02	IDG100-F04
IDG5-F02-S	IDG20-F03	
IDG5H-F02	IDG30A-F03	

Related Products

Series AC - Air Preparation - page 1076
Series TU - Tubing - page 1223
Series KQ2 - Fittings - page 1184
Series PF2A - Digital Flow Switch for Air - page 1309
Series IS10 - Pressure Switch for Air - page 1093
Series ZSE/ISE□0A - Digital Pressure Switch for Air - page 1273

Also Available

The IDG can be combined with SMC standard modular filters and regulators. For details on how to order complete assemblies, please contact SMC.

Bracket Assembly (Accessory) Part No.

Part no.	Applicable model
BM59	IDG3, 5
BM61	IDG10
BM63	IDG20
BM64	IDG30A/50A
BM65	IDG60/75/100

∗ With cap bolts and spring washers

Note) For replacement elements and dew point indicators, please contact SMC.

Specifications

Standard Specifications/Single Style (Standard Dew Point –20°C)

Model		Standard dew point – 20°C									
		IDG1	IDG3	IDG5	IDG10	IDG20	IDG30A	IDG50A	IDG60	IDG75	IDG100
Range of operating conditions	Fluid	Compressed air									
	Inlet air pressure [MPa]	0.3 to 0.85					0.3 to 1.0				
	Inlet air temperature [°C] Note 1)	–5 to 55					–5 to 50				
	Ambient temperature [°C]	–5 to 55					–5 to 50				
Standard performance	Outlet air atmospheric pressure dew point [°C]	–20									
Standard performance conditions	Inlet air flow rate [ℓ/min] (ANR) Note 2)	12.5	31	62	125	250	360	586	725	900	1190
	Outlet air flow rate [ℓ/min] (ANR)	10	25	50	100	200	300	500	600	750	1000
	Purge air flow rate [ℓ/min] (ANR) Note 3)	2.5	6	12	25	50	60	86	125	150	190
	Inlet air pressure MPa	0.7									
	Inlet air temperature [°C]	25									
	Inlet air saturation temperature [°C]	25									
	Ambient temperature [°C]	25									
Dew point indicator purge air flow rate		—			1ℓ/min (ANR) {inlet air pressure at 0.7MPa}						
Port size (nominal size B)		1/4	1/8, 1/4		1/4, 3/8				3/8, 1/2	1/2	
Weight [kg] (with bracket)		0.11	0.25 (0.31)		0.43 (0.51)	0.66 (0.76)	0.78 (0.91)	0.81 (0.94)	1.50 (1.65)	1.50 (1.65)	1.55 (1.70)

Note 1) With no freezing.
Note 2) ANR indicates the flow rate converted to the value for 20C at atmospheric pressure.
Note 3) Includes dew point indicator purge air flow rate of 1 ℓ/min (ANR) (inlet air pressure at 0.7MPa) (except IDG1, IDG3 and IDG5).

Standard Specifications/Single Style (Standard Dew Point –15°C)

Model		Standard dew point –15 °C								
		IDG3H	IDG5H	IDG10H	IDG20H	IDG30HA	IDG50HA	IDG60H	IDG75H	IDG100H
Range of operating conditions	Fluid	Compressed air								
	Inlet air pressure [MPa]	0.3 to 0.85				0.3 to 1.0				
	Inlet air temperature [°C] Note 1)	–5 to 55				–5 to 50				
	Ambient temperature [°C]	–5 to 55				–5 to 50				
Standard performance	Outlet air atmospheric pressure dew point [°C]	–15								
Standard performance conditions	Inlet air flow rate [ℓ/min] (ANR) Note 2)	28	56	111	222	329	550	665	830	1110
	Outlet air flow rate [ℓ/min] (ANR)	25	50	100	200	300	500	600	750	1000
	Purge air flow rate [ℓ/min] (ANR) Note 3)	3	6	11	22	29	50	65	80	110
	Inlet air pressure [MPa]	0.7								
	Inlet air temperature [°C]	25								
	Inlet air saturation temperature [°C]	25								
	Ambient temperature [°C]	25								
Dew point indicator purge air flow rate		—		1 ℓ/min (ANR) {inlet air pressure at 0.7MPa}						
Port size (nominal size B)		1/8, 1/4		1/4, 3/8				3/8, 1/2	1/2	
Weight [kg] (with bracket)		0.25 (0.31)		0.43 (0.51)	0.66 (0.76)	0.78 (0.91)	0.81 (0.94)	1.50 (1.65)	1.50 (1.65)	1.55 (1.70)

Note 1) With no freezing.
Note 2) ANR indicates the flow rate converted to the value for 20C at atmospheric pressure.
Note 3) Includes dew point indicator purge air flow rate of 1ℓ/min (ANR) (inlet air pressure at 0.7MPa) (except IDG3H and IDG5H).

Specifications

Standard Specifications/Single Style (Standard Dew Point –40°C)

Model		Standard dew point –40°C				
		IDG30LA	IDG50LA	IDG60LA	IDG75LA	IDG100LA
Range of operating conditions	Fluid	Compressed air				
	Inlet air pressure [MPa]	0.3 to 1.0				
	Inlet air temperature [°C] Note1)	–5 to 50				
	Ambient temperature [°C] Note1)	–5 to 50				
Standard performance	Outlet air atmospheric pressure dew point [°C]	–40				
Standard performance conditions	Inlet air flow rate [ℓ/min] (ANR) Note 2)	93	135	224	308	400
	Outlet air flow rate [ℓ/min] (ANR)	75	110	170	240	300
	Purge air flow rate [ℓ/min] (ANR) Note 3)	18	25	54	68	100
	Inlet air pressure [MPa]	0.7				
	Inlet air temperature [°C]	25				
	Inlet air saturation temperature [°C]	25				
	Ambient temperature [°C]	25				
Dew point indicator purge air flow rate		1 ℓ/min (ANR) {inlet air pressure at 0.7MPa}				
Port size (nominal size B)		1/4, 3/8		3/8, 1/2		
Weight [kg] (with bracket)		0.78 (0.91)	0.81 (0.94)	1.56 (1.71)	1.69 (1.84)	1.82 (1.97)

Note 1) When using the product in the temperature range between –5°C and 5°C, prevent water droplets from entering the inlet port. (No freezing of the fluid)
Note 2) ANR indicates the flow rate converted to the value for 20C at atmospheric pressure.
Note 3) Includes dew point indicator purge air flow rate of 1ℓ/min (ANR) (inlet air pressure at 0.7MPa).

Standard Specifications/Single Style (Standard Dew Point –60°C)

Model		Standard dew point –60°C		
		IDG60SA	IDG75SA	IDG100SA
Range of operating conditions	Fluid	Compressed air		
	Inlet air pressure [MPa]	0.3 to 1.0		
	Inlet air temperature [°C] Note1)	–5 to 50		
	Ambient temperature [°C] Note1)	–5 to 50		
Standard performance	Outlet air atmospheric pressure dew point [°C]	–60		
Standard performance conditions	Inlet air flow rate [ℓ/min] (ANR) Note 2)	75	140	230
	Outlet air flow rate [ℓ/min] (ANR)	50	100	150
	Purge air flow rate [ℓ/min] (ANR) Note 3)	27	54	85
	Inlet air pressure [MPa]	0.7		
	Inlet air temperature [°C]	25		
	Inlet air saturation temperature [°C]	25		
	Ambient temperature [°C]	25		
Dew point indicator purge air flow rate		1 ℓ/min (ANR) {inlet air pressure at 0.7MPa}		
Port size (nominal size B)		3/8, 1/2		
Weight [kg] (with bracket)		1.56 (1.71)	1.69 (1.84)	1.82 (1.97)

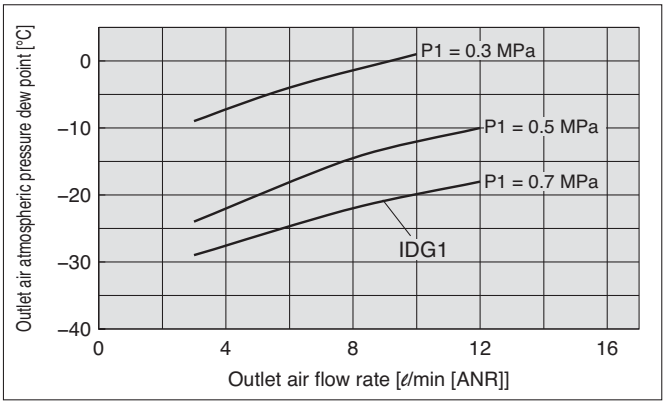
Note 1) When using the product in the temperature range between –5°C and 5°C, prevent water droplets from entering the inlet port. (No freezing of the fluid)
Note 2) ANR indicates the flow rate converted to the value for 20C at atmospheric pressure.
Note 3) Includes dew point indicator purge air flow rate of 1ℓ/min (ANR) (inlet air pressure at 0.7MPa).

Performance Charts

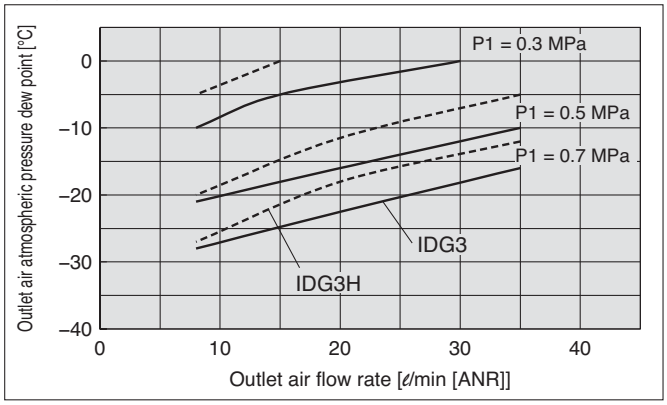
Conditions: Inlet air temperature 25°C (saturated air), Ambient temperature 25°C, P1: Inlet air pressure, Tube for purge air discharge (Option: P): None
Note: Correcting outlet air flow rate is required depending on inlet air temperature. For model with fitting for purge air discharge (Option: P), the outlet air atmospheric pressure dew point may become higher depending on the tube length for purge air discharge. For other models, if the tube length is 5 m or less, a rise of the outlet air at the atmospheric pressure dew point will be 1°C or less.

Standard dew point···–20°C [Symbol: Nil], –15°C [Symbol: H]

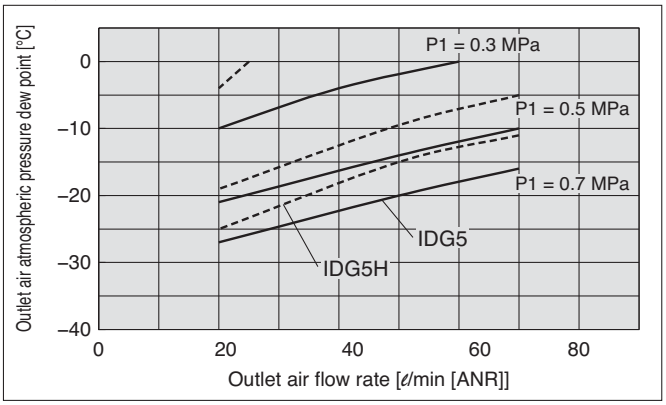
IDG1



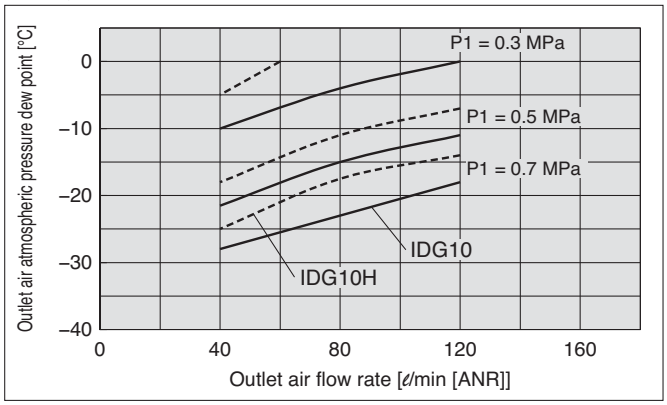
IDG3, 3H



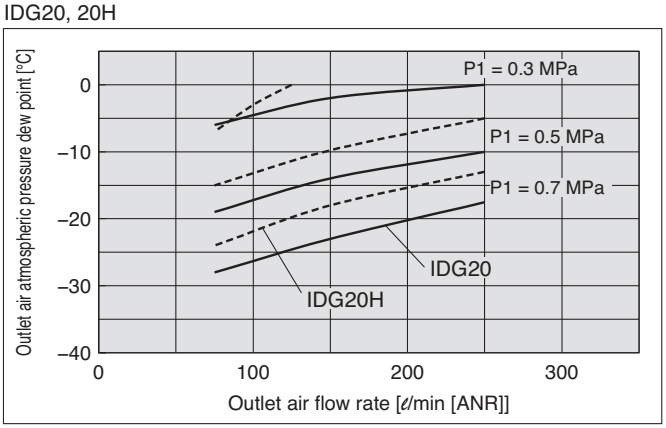
IDG5, 5H



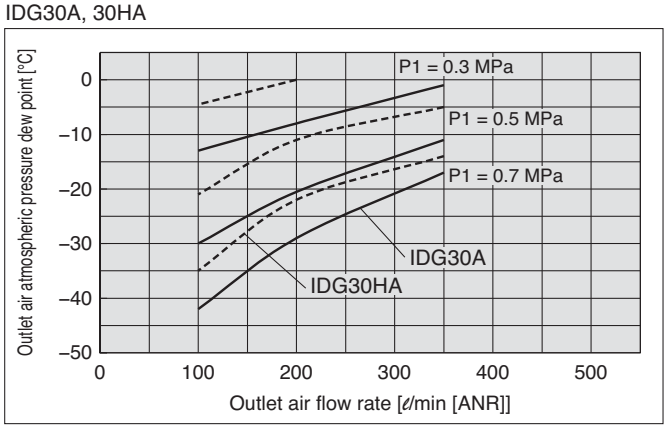
IDG10, 10H



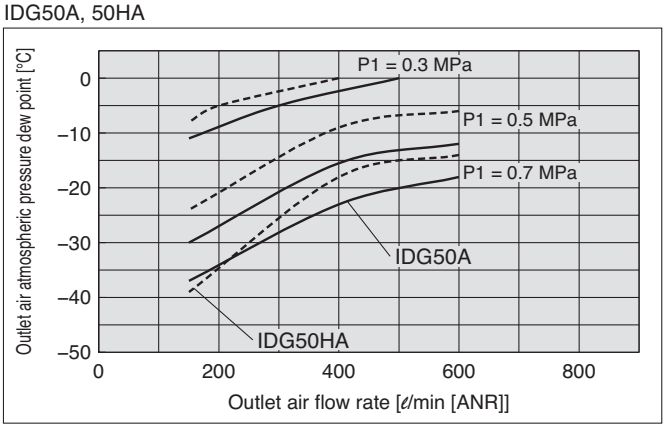
IDG20, 20H



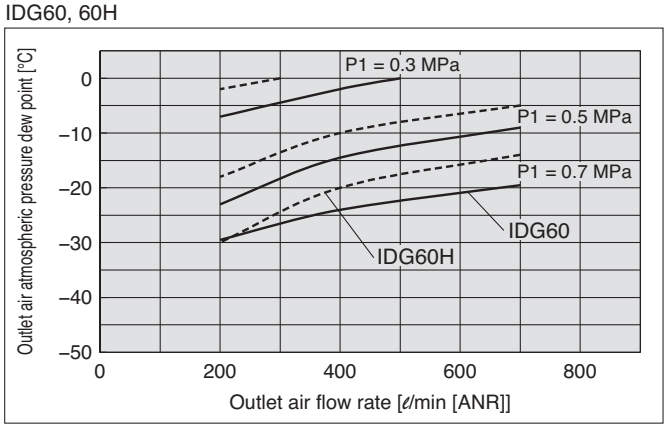
IDG30A, 30HA



IDG50A, 50HA



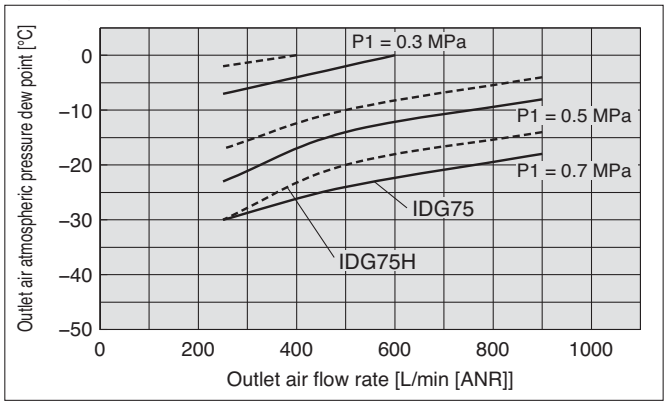
IDG60, 60H



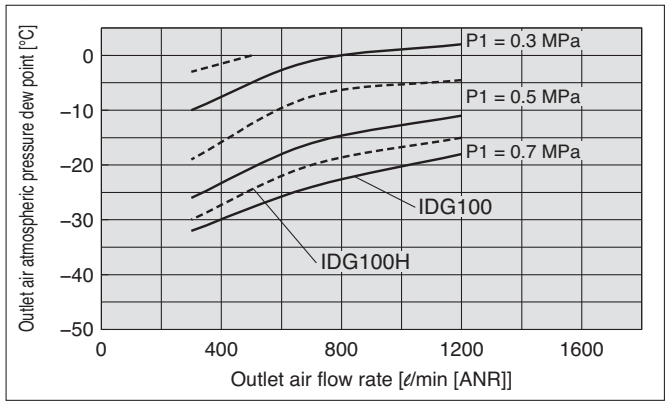
For more product options and details see our specific catalogues or on-line information.

Performance Charts

IDG75, 75H

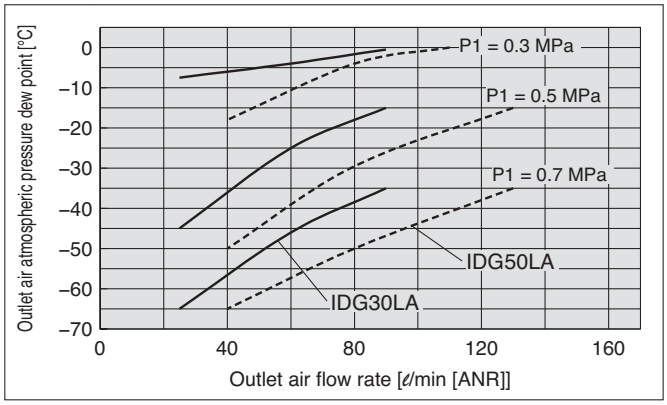


IDG100, 100H

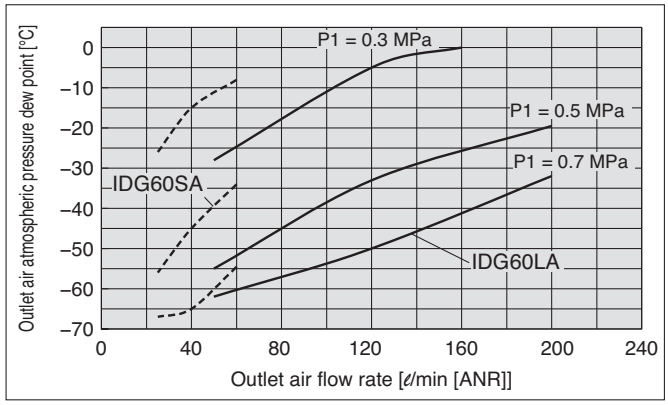


Standard dew point···–40°C [Symbol: L], –60°C [Symbol: S]

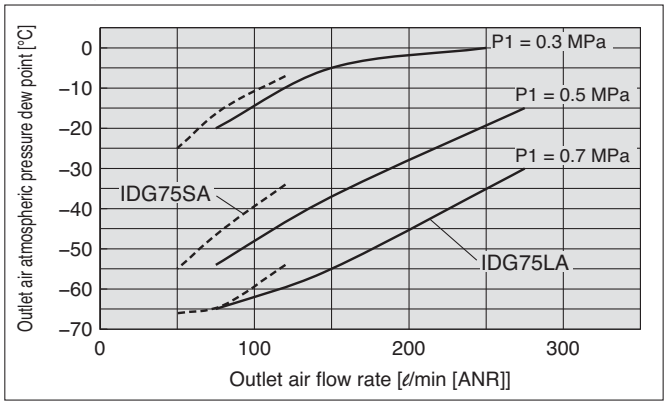
IDG30LA, 50LA



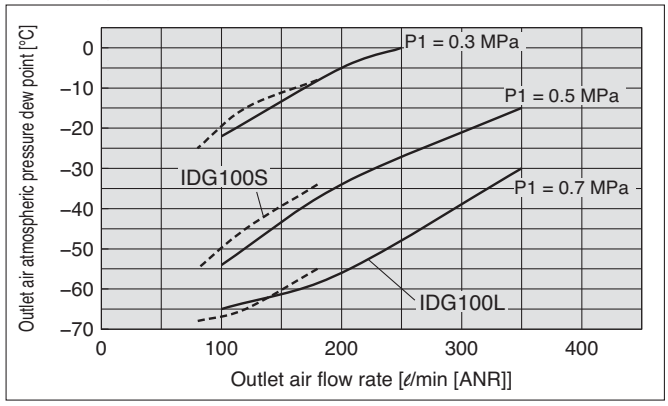
IDG60LA, 60SA



IDG75LA, 75SA



IDG100LA, 100SA

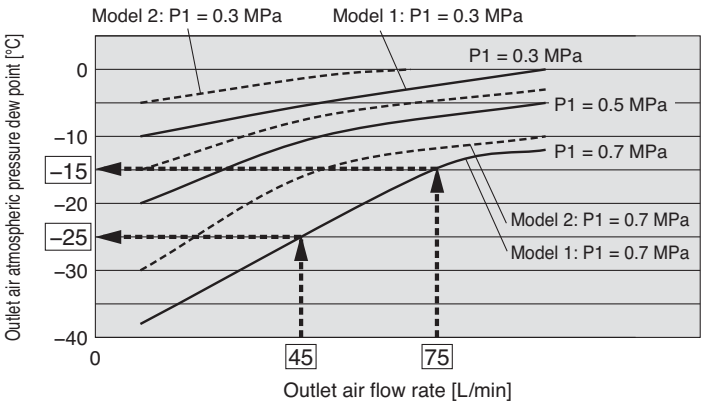


How to read the Performance Chart and to select the model

Solid lines and dashed lines beginning at the top indicate the performance at 25°C of inlet air temperature and P1 = 0.3 MPa, 0.5 MPa, and 0.7 MPa of inlet air pressure, respectively.

· In the case of 25°C of inlet air temperature and 45 [L/min] of outlet air flow rate
Model 1: The atmosphere pressure dew point at P1 = 0.7 MPa: –25°C.

· In the case of 40°C of inlet air temperature and 45 [L/min] of outlet air flow rate
Example) Outlet air flow rate correction factor: 0.6
(The correction factor differs depending on the model.
Corrected outlet air flow rate: 45 ÷ 0.6 = 75 [L/min]
Model 1: Performing corresponding to –15°C of outlet atmosphere pressure dew point at P1 = 0.7 MPa.

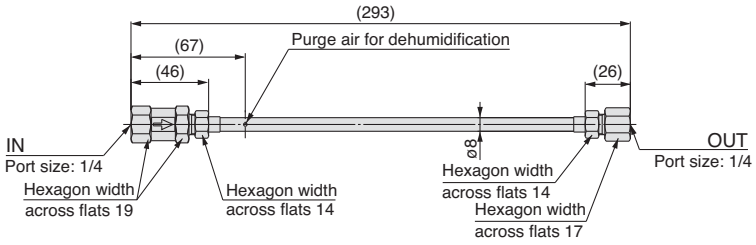


Replacement Parts

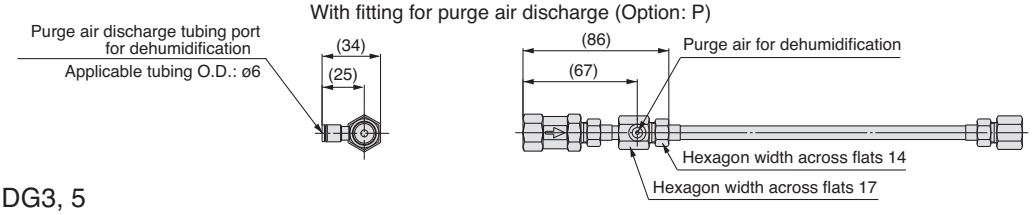
Description	Part no.																
	IDG1	IDG3	IDG3H	IDG5	IDG5H	IDG10	IDG10H	IDG20	IDG20H	IDG30□A	IDG50□A	IDG60 IDG60H	IDG60LA IDG60SA	IDG75 IDG75H	IDG75LA IDG75SA	IDG100 IDG100H	IDG100LA IDG100SA
Membrane module kit	–	IDG-EL3	IDG-EL3H	IDG-EL5	IDG-EL5H	IDG-EL10	IDG-EL10H	IDG-EL20	IDG-EL20H	IDG-EL30A	IDG-EL50A	IDG-EL60	IDG-EL60LA	IDG-EL75	IDG-EL75LA	IDG-EL100	IDG-EL100LA
		With Orifice (1 pc.), O-ring (3 pcs.), Gasket (1 pc.)				With Orifice (1 pc.), Silencer (1 pc.), O-ring (4 pcs.)				With Nozzle (1 pc.), Adapter (1 pc.), O-ring (1 pc.)		With O-ring (1 pc.)					
Dew point indicator kit	–	IDG-DP01 (Option: S)				IDG-DP01				IDG-DP01							
		With O-ring (1 pc.)															
	–	IDG-DP01-X001 (Option: PS)				IDG-DP01-X001 (Option: P)				IDG-DP01-X001 (Option: P)							
		With O-ring (1 pc.)															

Dimensions

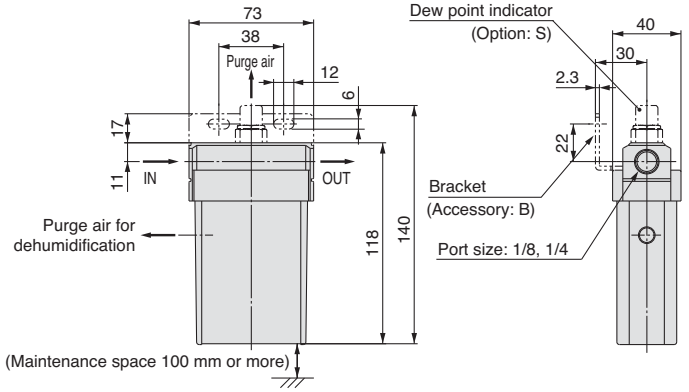
IDG1



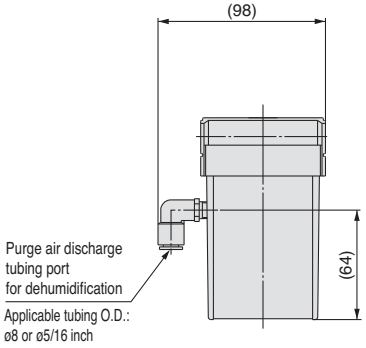
With fitting for purge air discharge (Option: P)



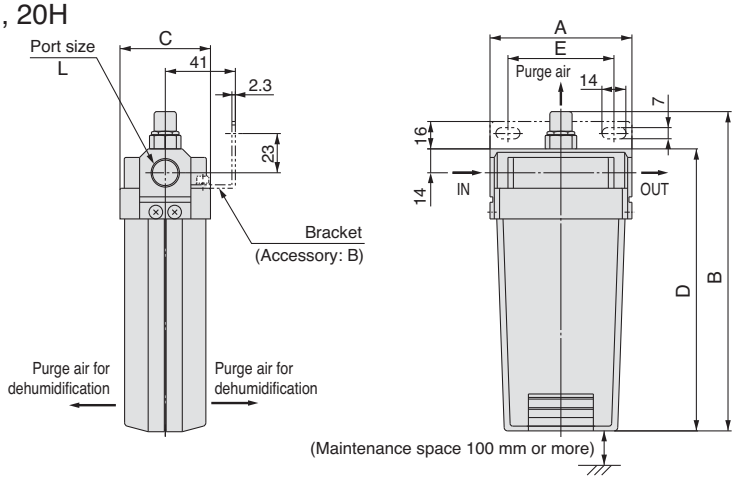
IDG3, 5
IDG3H, 5H



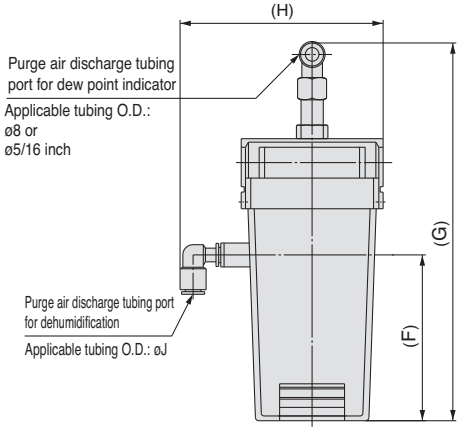
With fitting for purge air discharge (Option: P)



IDG10, 20
IDG10H, 20H



With fitting for purge air discharge (Option: P)

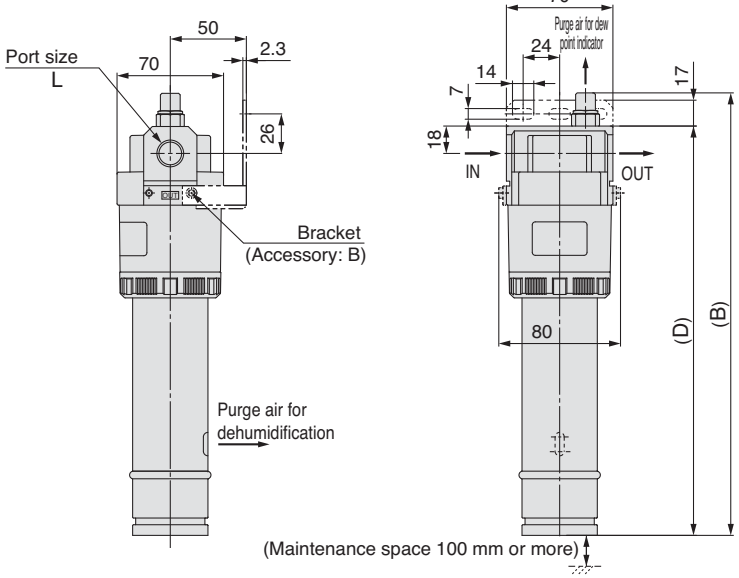


Model	Port size L	A	B	C	D	E	Option: P			
							F	G	H	J
IDG10, 10H	1/4, 3/8	83	187	53	165	62	97	224	119	8
IDG20, 20H		113	212	54	190	82	114	249	147	10

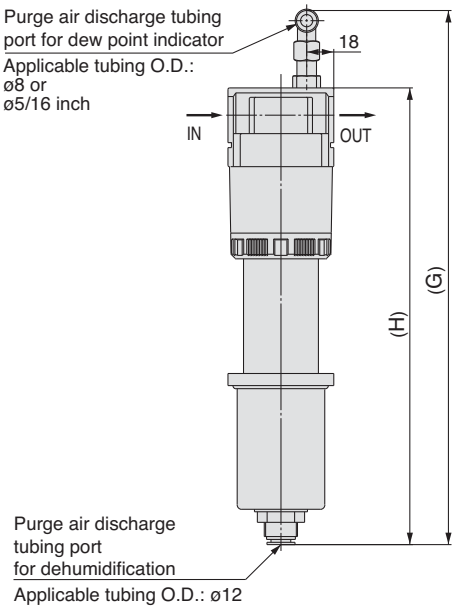
For more product options and details see our specific catalogues or on-line information.

Dimensions

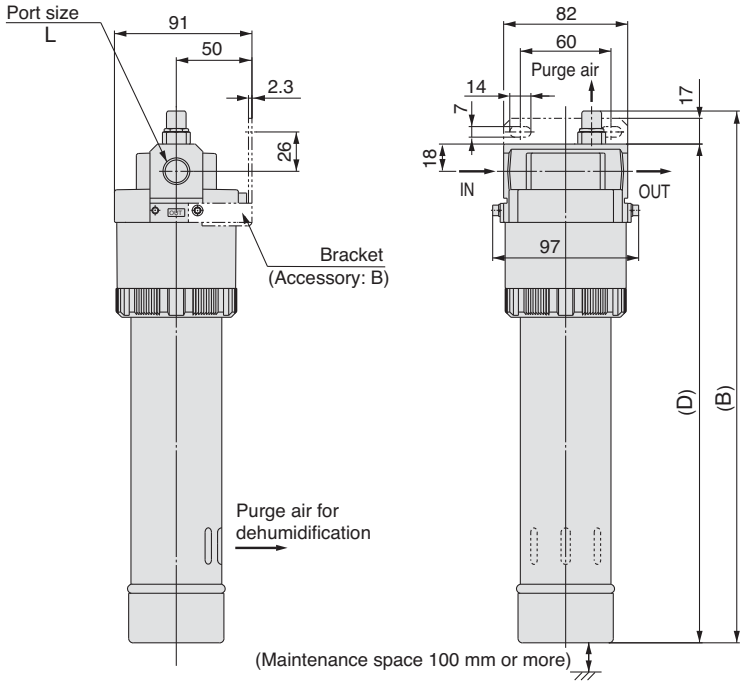
IDG30□A
IDG50□A



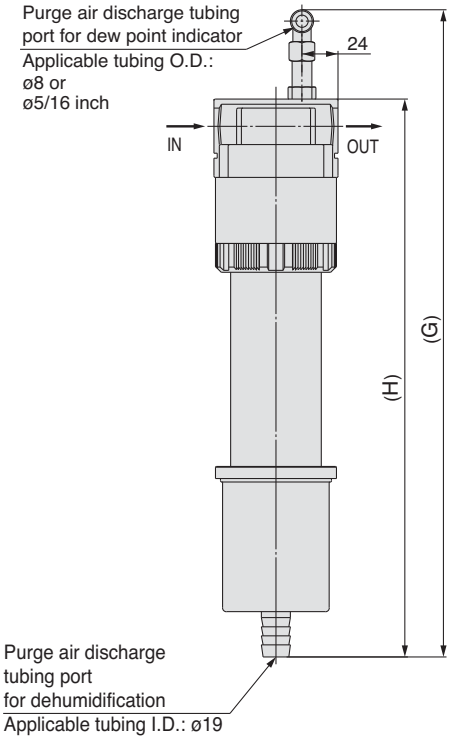
With fitting for
purge air discharge
(Option: P)



IDG60□, 75□, 100□
IDG60□A, 75□A, 100□A

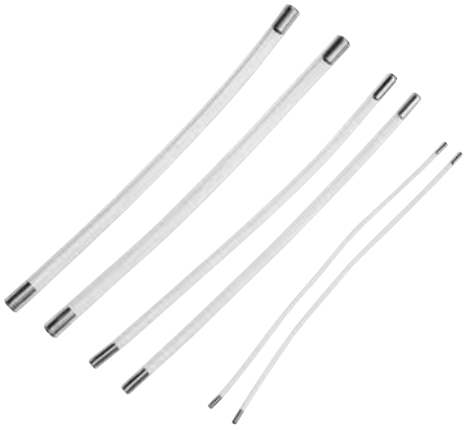


With fitting for
purge air discharge
(Option: P)



Model	Port size L	B	D	Option: P	
				G	H
IDG30□A	1/4, 3/8	291	269	361	302
IDG50□A		330	308	400	341
IDG60□	3/8, 1/2	352	330	428	369
IDG75□, 100□	1/2				
IDG60□A	3/8, 1/2	348	326	426	367
IDG75□A		418	396	495	436
IDG100□A		483	461	560	501

Moisture Control Tube
Series IDK



Features

- Advanced fluoropolymer that eliminates water condensation.
- Vapour diffusing process ejects water to the outside.

How to Order

IDK 02 – 100

02: Moisture control tube O.D.
100: Moisture control tube effective length

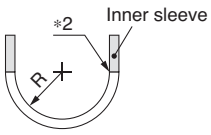
Symbol	O.D.
02	2 mm
04	4 mm
06	6 mm

Symbol	Effective length
100	100 mm
200	200 mm

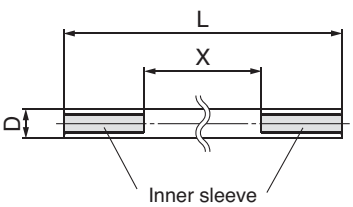
Specifications

Model	IDK02	IDK04	IDK06
Fluid	Compressed air		
Max. operating pressure	0.7 MPa		
Operating temperature [°C]	0 to 40 (No freezing)		
Operating environment *1	Indoors, where product is not exposed to water (0 to 40°C, Relative humidity 0 to 75%RH)		
Min. bending radius *2 [mm]	10	20	40
O.D. [mm]	2	4	6
I.D. [mm]	1.2	2.5	4
Quantity of moisture control tubes	2 pcs.		
Accessories	Inner sleeve 4 pcs. (already mounted into tube)		
Colour	Transparent [Colour will change to brown over time but the functions are not affected.]		
Applicable fittings	KQ2		
Material	Fluoropolymer		

Note 1) Use the moisture control tube in a line with a refrigerated air dryer and a mist separator installed in the upstream compressed air line. The condensation prevention performance may be lowered depending on the quality of the supply compressed air (oil, dew point).
Note 2) The inner sleeve is already mounted and cannot be removed. If the inner sleeve comes off, re-insert the sleeve before mounting the fitting.
Note 3) Do not cut the tube.
*1 Use the product in an operating environment where humidity is as low as possible.
*2 The value at which the moisture control tube is bent or flattened at 20°C. Be careful not to bend or flatten the tube and the inner sleeve even if the value is more than the minimum bending radius.



Dimensions



Unit: [mm]

Model	O.D. x I.D. D	Nominal effective length X	Full length L
IDK02-100	2 x 1.2	100	120
IDK02-200		200	220
IDK04-100	4 x 2.5	100	140
IDK04-200		200	240
IDK06-100	6 x 4	100	140
IDK06-200		200	240

Note) Dimensions at 40% relative humidity. Dimensions may change if the relative humidity changes.

Product Recommendation

Stocked items for fast delivery

IDK02-100	IDK04-100	IDK06-100
IDK02-200	IDK04-200	IDK06-200

Related Products

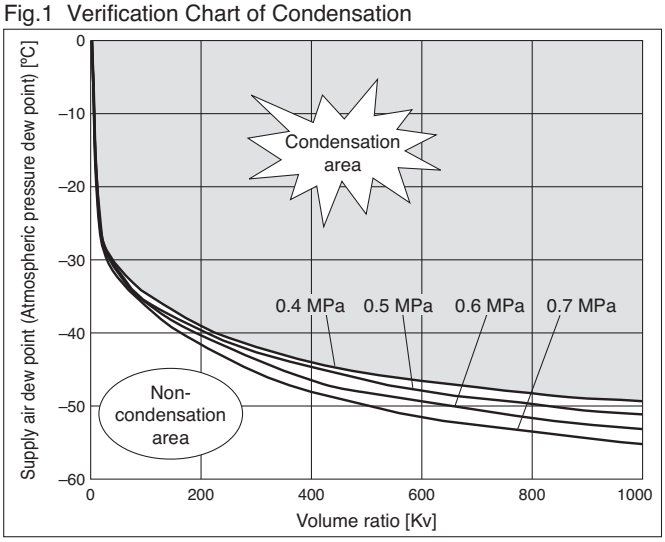
Series MXQ - Air Slide Table - page 713
Series CXS/J - Dual Rod Cylinder - page 784
Series MH□ - Air Grippers - page 954
Series CRB - Rotary Actuators - page 918
Series MSQ□ - Rotary Actuators - page 932
Series CQ2 - Compact Cylinder - page 653
Series CY - Rodless Cylinder - page 756
Series CU - Free Mount Cylinder - page 628
Series RSQ - Stopper Cylinder - page 795
Series C85 - ISO Cylinder - page 604

Selection Procedure

1 Check the presence of condensation.

(1) The presence of condensation can be verified by the dew point and the Kv value (the volume ratio of tube and actuator) of the supply air.

Fig.1 Verification Chart of Condensation



Calculation method of volume ratio (Kv value)

Calculate the piping volume Vt and the actuator volume Vc and substitute them into equation ① below.

$$Kv = \frac{Vt}{Vc} \cdots ①$$

Kv : Volume ratio
Vt : Piping volume [mm³]
Vc : Actuator volume [mm³]

$$Vt = \frac{\pi d^2 l}{4}$$

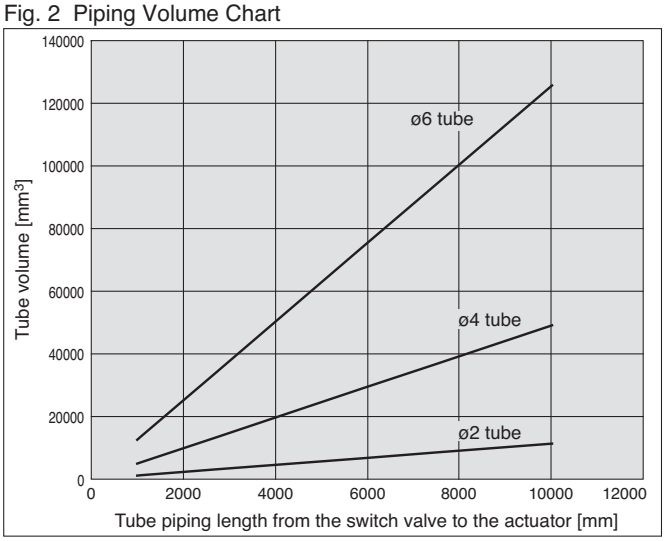
Vt : Piping volume (mm³) [can be selected from piping volume chart in Fig. 2.]
d : Tube I.D. [mm]
l : Tube piping length [mm]

* Tube length means the length from the switch valve (e.g. solenoid valve) to the actuator.

$$Vc = \frac{\pi D^2 s}{4}$$

Vc : Actuator volume [mm³]
D : Bore size [mm]
s : Stroke [mm]

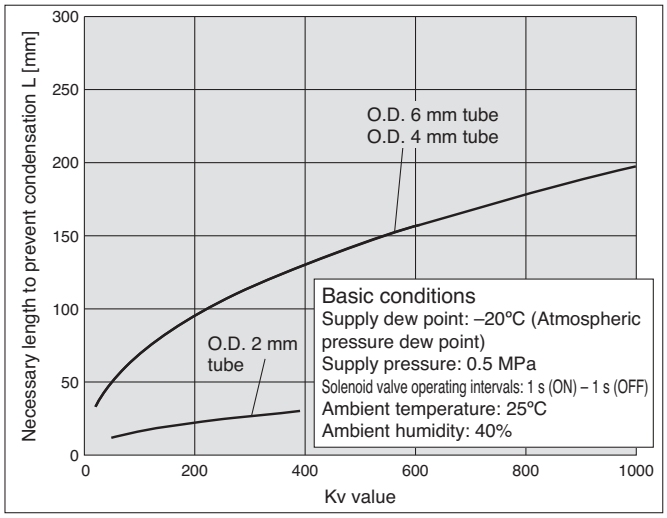
Fig. 2 Piping Volume Chart



2 Select the length of moisture control tube for the condensation area.

(1) Find L, the necessary length corresponding to the Kv value, from the length selection chart at basic conditions.

Fig. 3 Length Selection Chart at Basic Conditions



(2) If your operating conditions are different from these basic conditions, apply a correction factor.

Necessary effective length = Basic condition length L x Correction factor C1 x C2 x C3

Correction Factor C1 for Supply Air Dew Point

Supply air dew point [°C]	Correction factor C1
–10	2
–20	1
–30	0.5
–40	0.25

Correction Factor C2 for Ambient Air Relative Humidity

Relative humidity \ Temperature	Correction factor C2		
	10°C	25°C	40°C
20%	0.2	0.4	0.6
40%	0.5	1.0	1.3
60%	1.0	1.7	2.8
75%	2.1	4.0	5.9

Correction Factor C3 for Supply Pressure

Supply pressure [MPa]	Correction factor C3
0.3	0.4
0.4	0.7
0.5	1
0.6	1.25
0.7	1.6

Circuit conditions

- Actuator : CUJB4-6D
  Bore size D: 4 mm
  Stroke s: 6 mm
- Tube size : O.D. 6 mm x I.D. (d) 4 mm
- Tube piping length l : 5 m
- Supply air pressure : 0.3 MPa
- Supply air dew point : –20°C (Atmospheric pressure dew point)
- Ambient environment: Temperature 25°C, Humidity 60%

1 Check the presence of condensation.

Check the presence of condensation.

(1) Calculation method of volume ratio (Kv value)

$$Vt = \frac{\pi d^2 l}{4} = \frac{\pi \times 4^2 \times 5000}{4} = 62800 \text{ mm}^3$$

$$Vc = \frac{\pi D^2 s}{4} = \frac{\pi \times 4^2 \times 6}{4} = 75 \text{ mm}^3$$

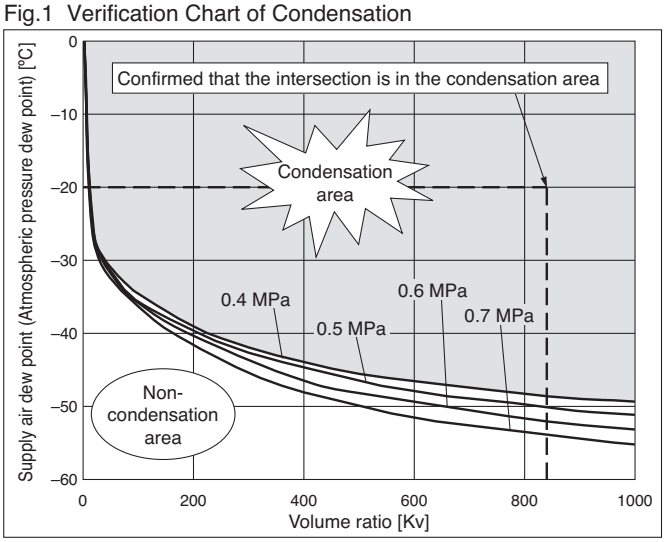
$$Kv = \frac{Vt}{Vc} = 837$$

Note) For dual piston cylinder, the volume ratio will be 1/2 of the volume ratio calculated above.

Verify the presence of condensation.

(2) Refer to the verification chart of condensation.
Check whether the volume ratio (Kv) and the supply air dew point intersect in the condensation area.
With the conditions above, they intersect in the condensation area, meaning condensation will occur.

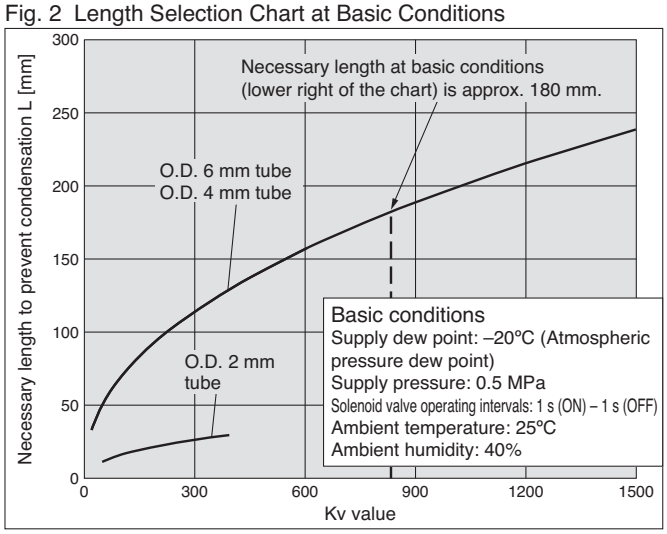
Fig.1 Verification Chart of Condensation



2 Select the length of moisture control tube.

(1) Find the necessary length L from the length selection chart at basic conditions and Kv value.

Fig. 2 Length Selection Chart at Basic Conditions



(2) If your operating conditions are different from these basic conditions, apply a correction factor.
Necessary effective length = Basic condition length L x Correction factor C1 x C2 x C3

In the example circuit, the conditions which are different from the basic conditions are:
Supply dew point: –20°C (Atmospheric pressure dew point)
Supply pressure: 0.3 MPa
Ambient environment: 25°C, 60%

∗ Basic conditions
Supply dew point: –20°C (Atmospheric pressure dew point)
Supply pressure: 0.5 MPa
Ambient environment: 25°C, 40%

(a) Find the correction factors.
- Supply air dew point correction factor C1 = 1
- Ambient air dew point correction factor C2 = 1.7
- Supply pressure correction factor C3 = 0.4

(b) Find the necessary effective length after correction.

⇩

Necessary effective length = 180 x 1 x 1.7 x 0.4 120 mm

Therefore, the moisture control tube IDK06-200 with effective length 20 cm should be used.

Correction Factor C1 for Supply Air Dew Point

Supply air dew point [°C]	Correction factor C1
–10	2
–20	1
–30	0.5
–40	0.25

Correction Factor C2 for Ambient Air Relative Humidity

Relative humidity \ Temperature	Correction factor C2		
	10°C	25°C	40°C
20%	0.2	0.4	0.6
40%	0.5	1.0	1.3
60%	1.0	1.7	2.8
80%	2.1	4.0	5.9

Correction Factor C3 for Supply Pressure

Supply pressure [MPa]	Correction factor C3
0.3	0.4
0.4	0.7
0.5	1
0.6	1.25
0.7	1.6

Chemical Thermo-con
Series HED

Features

- Allows direct control of chemical temperature.
- PFA wetted material.
- Compact / Lightweight.
- Operating temperature range: 10°C TO 60°C
- Temperature stability: ±0.1°C

How to Order

Temperature controller + Heat exchanger

HED **007** – **W** **2** **B** **13**

Chemical Thermo-con

Cooling capacity

003	300 W
005	500 W
007	750 W

Radiating method

W	Water-cooled

Power supply

2	Single-phase: 180 to 242 VAC 50/60 Hz

Communication

A	RS-485
B	RS-232C

Tube size

13	1/2" x 3/8"
19	3/4" x 5/8"

Heat exchanger

HED **007** – **H** **W** **13**

Cooling capacity

003	300 W
005	500 W
007	750 W

Heat exchanger

Radiating method

W	Water-cooled

Tube size

13	1/2" x 3/8"
19	3/4" x 5/8"

Note) The tube size should be specified when ordering.

Temperature controller

HED **007** – **C** **2** **B**

Cooling capacity

003	300 W
005	500 W
007	750 W

Temperature controller

Power supply

2	Single-phase: 180 to 242 VAC 50/60 Hz

Communication

A	RS-485
B	RS-232C

Related Products

Series PF2D - Digital Flow Switch for Chemicals - www.smc.eu
Series PF3W - Digital Flow Switch for Water - page 1317
Series VX - Direct Operated 2 Port Solenoid Valve - page 1457
Series LV - 2 Port Air Operated PFA Valves - www.smc.eu
Series LQ - Fluoropolymer Fittings - www.smc.eu
Series TL - PFA Tubing - www.smc.eu

Main Specifications

Heat Exchanger Specifications

Heat exchanger model		HED003-HW13	HED003-HW19	HED005-HW13	HED005-HW19	HED007-HW13	HED007-HW19
Cooling capacity (Water) Note 1)		300 W		500 W		750 W	
Heating capacity (Water) Note 1)		600 W		1000 W		1800 W	
Cooling/Heating method		Peltier element (Thermoelectric device, Thermo-module)					
Radiating method		Water-cooled					
Operating temperature range		10.0 to 60.0°C (depending on the type of circulating fluid)					
Circulating fluid	Applicable fluid Note 2)	Pure water, Hydrofluoric acid, Ammonia hydrogen peroxide solution, etc.					
	Wetted material	PFA					
	Operating pressure Note 3)	0 (atmospheric pressure) to 0.35 MPa (0 to 50.75 PSI)					
	Tube size (PFA tube)	1/2" x 3/8"	3/4" x 5/8"	1/2" x 3/8"	3/4" x 5/8"	1/2" x 3/8"	3/4" x 5/8"
Facility water	Temperature	10 to 35°C (no condensation)					
	Wetted material	FEP, Stainless steel 304, Stainless steel 316					
	Max. operating pressure	0.5 MPa (72.5 PSI)					
	Tube size	IN/OUT: FEP tube 3/8" x 1/4"					
	Flow rate	5 to 10 ℓ/min (1.3 to 2.6 g/m)					
Ambient		Temperature: 10 to 35°C, Humidity: 35 to 80%RH (no condensation)					
Dimensions Note 4)		W130 mm x D263 mm x H170 mm (W5.12" x D10.4" x H6.69")		W150 mm x D294 mm x H222 mm (W5.91" x D11.6" x H8.74")		W150 mm x D294 mm x H222 mm (W5.91" x D11.6" x H8.74")	
Weight		Approx. 8 kg (17.6 lb)		Approx. 14 kg (30.8 lb)		Approx. 15 kg (33 lb)	
Applied temperature controller		HED003-C2A HED003-C2B		HED005-C2A HED005-C2B		HED007-C2A HED007-C2B	

Note 1) The conditions are as follows.
Circulating fluid: Water (Circulating flow rate 15 ℓ/min, Set temperature 25°C); Facility water temperature: 25°C; Facility water flow rate: 5 ℓ/min; Ambient temperature: 25°C
Note 2) For the compatibility between the circulating fluid and materials, please contact SMC.
Note that the Chemical Thermo-con is not designed explosion proof so it is not suitable for flammable fluids.
Note 3) Install the heat exchanger in the discharge side of a circulating pump. Do not use at location where a negative pressure is applied.
The circulating fluid pump should be prepared by the customer.
Note 4) The outline dimensions do not included protruding parts such as foot flange and tube.

Temperature Controller Specifications

Temperature controller model		HED003-C2A	HED003-C2B	HED005-C2A	HED005-C2B	HED007-C2A	HED007-C2B
Communication		RS-485	RS-232C	RS-485	RS-232C	RS-485	RS-232C
Control method		Cooling/Heating automatic shift PID control					
Operating temp. range		10.0 to 60.0°C (no condensation)					
Temperature stability Note 1)		Within 0.1°C (with stable load)					
Temperature sensor		Resistance thermometer Pt100 , 3-wires, class A, 2 mA (for both internal control sensor and external sensor) Note 4)					
Main functions		Auto-tuning, Sensor fine adjustment, Offset, Learning control, External sensor control, Set value memory, Upper/lower temperature limit alarm, Output shutdown alarm, Remote ON/OFF, Leakage detection					
Ambient		Temperature: 10 to 35°C, Humidity: 35 to 80%RH (no condensation)					
Power supply spec.	Power supply	Single-phase: 180 to 242 VAC 50/60 Hz					
	Rated current	3A		5A		14A	
Dimensions Note 2)		W100 mm x D320 mm x H215 mm (W3.94" x D12.6" x H8.46")		W140 mm x D350 mm x H215 mm (W5.51" x D13.8" x H8.46")		W165 mm x D447 mm x H215 mm (W6.50" x D17.6" x H8.46")	
Mass		Approx. 6 kg (13.2 lb)		Approx. 8 kg (17.6 lb)		Approx. 13 kg (28.6 lb)	
Applied heat exchanger Note 3)		HED003-HW13 HED003-HW19		HED005-HW13 HED005-HW19		HED007-HW13 HED007-HW19	

Note 1) This value is for a stable load with no disturbance and cannot be achieved in determined operating conditions.
Note 2) The outline dimensions do not included protruding parts such as the foot flange, screw and connector.
Note 3) The temperature controller should be connected with a specific series of heat exchanger. If connected with a different series of heat exchanger, it may not operate normally. (The HED003 and HED005 series use the same connector, so be careful for incorrect wiring.)
Note 4) The external sensor should be prepared by the customer.

Maintenance

Please prepare back-up equipment as necessary to minimize the downtime.

1) Heat exchanger
The heat exchanger will not be repaired in principle. Only the return to SMC for an investigation within warranty will be accepted. The return unit has to be completely decontaminated with appropriate method such as use of neutralizing agent before return to SMC.

2) Temperature controller
The temperature controller maintenance is only performed at SMC's site. On the other hand, following parts have a limited life and need to be replaced before th life ends.

Parts Life Expectation

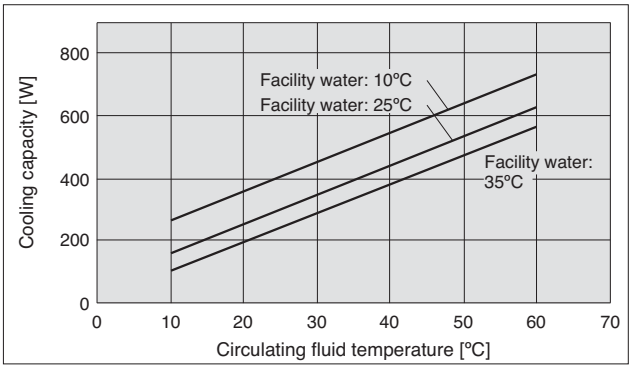
Description	Expected life	Possible failure
Fan	5 to 10 years	Lack of fan cooling because of the bearing life time. It will activate the overheat protection of DC power supply and generate an alarm.
DC power supply	5 to 10 years	End life of electrolytic condenser. It will generate DC power supply alarm.
Display panel	50,000 hours (approx. 5 years)	End life of LCD display backlight.

Cooling Capacity

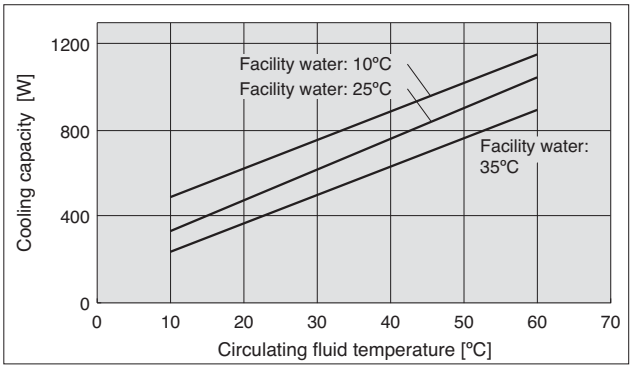
<Conditions> Circulating fluid: Water; Circulating fluid flow rate: 15 ℓ/min; Facility water flow rate: 5 ℓ/min

The values shown on the performance chart are representative and not guaranteed. Allow a safety margin when choosing the product.

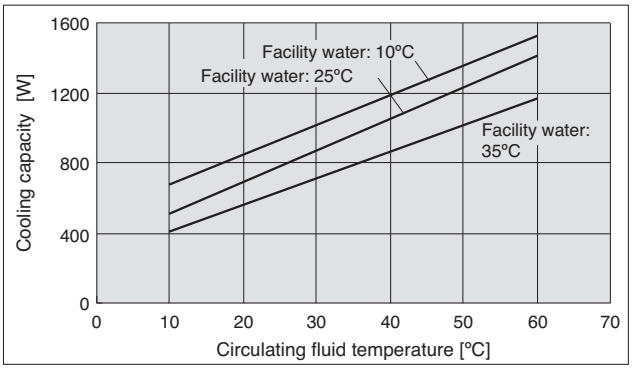
HED003



HED005

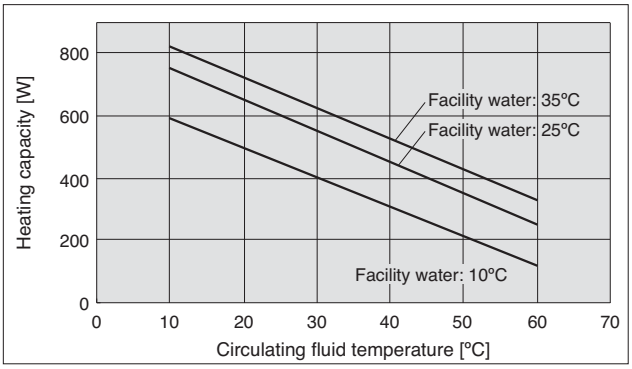


HED007

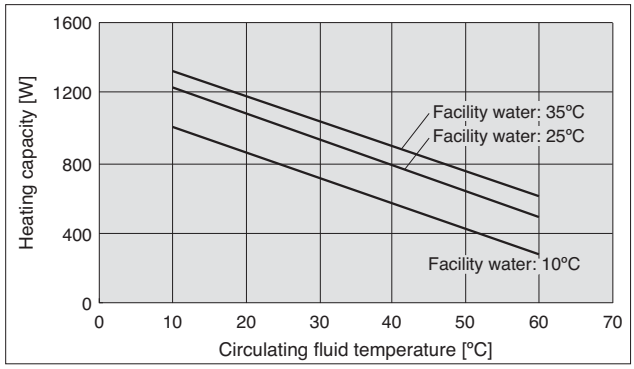


Heating Capacity <Conditions> Circulating fluid: Water; Circulating fluid flow rate: 15 ℓ/min; Facility water flow rate: 5 ℓ/min

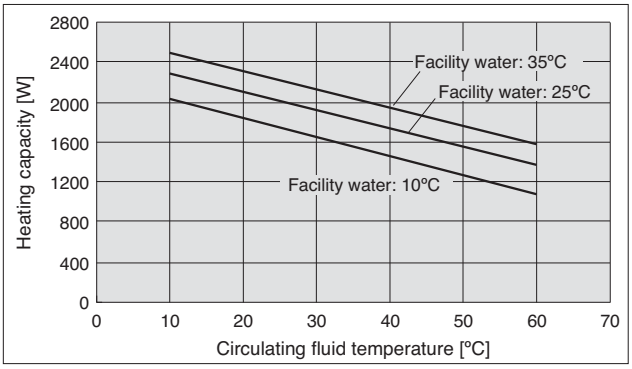
HED003



HED005

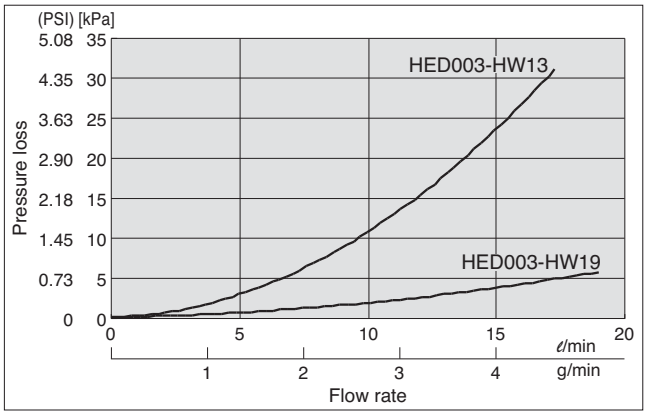


HED007

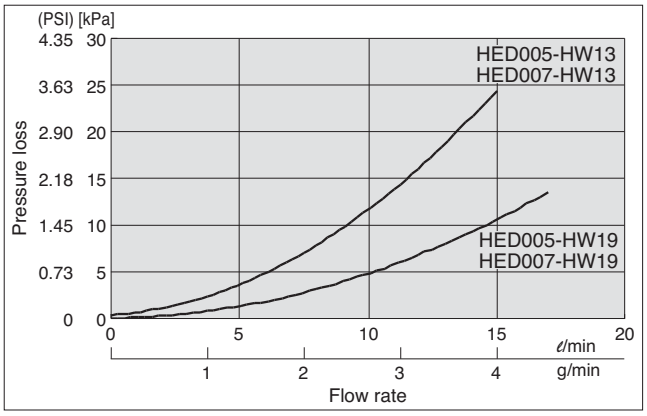


Pressure Loss in Circulating Fluid Circuit <Condition> Water

HED003

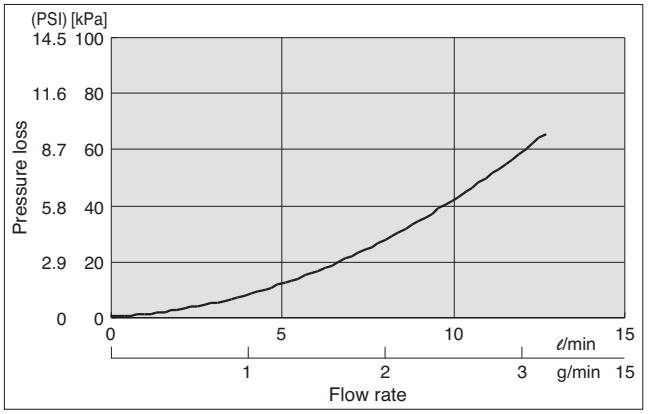


HED005, HED007

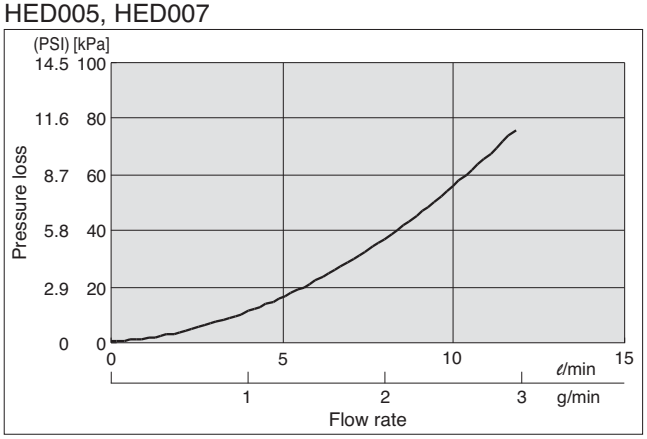


Pressure Loss in Facility Water Circuit <Condition> Water

HED003

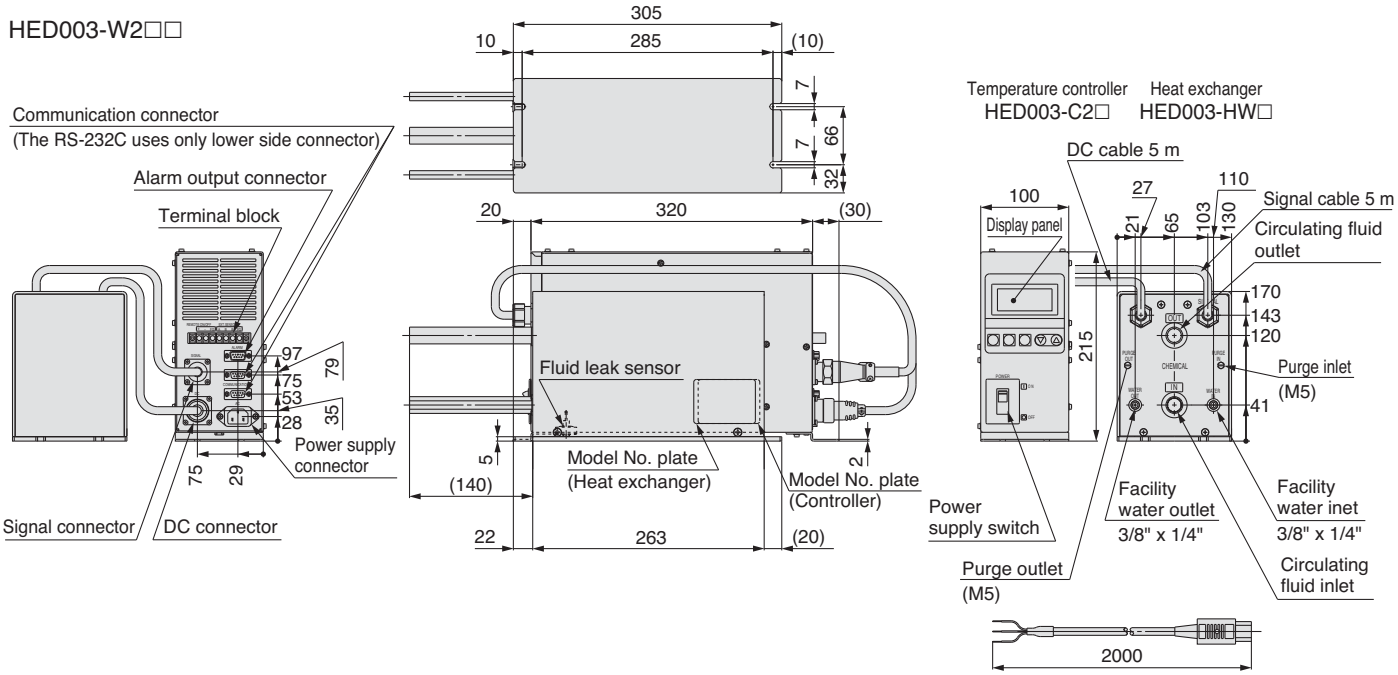


HED005, HED007



Dimensions

HED003-W2□□



Circulating Fluid Tube Size

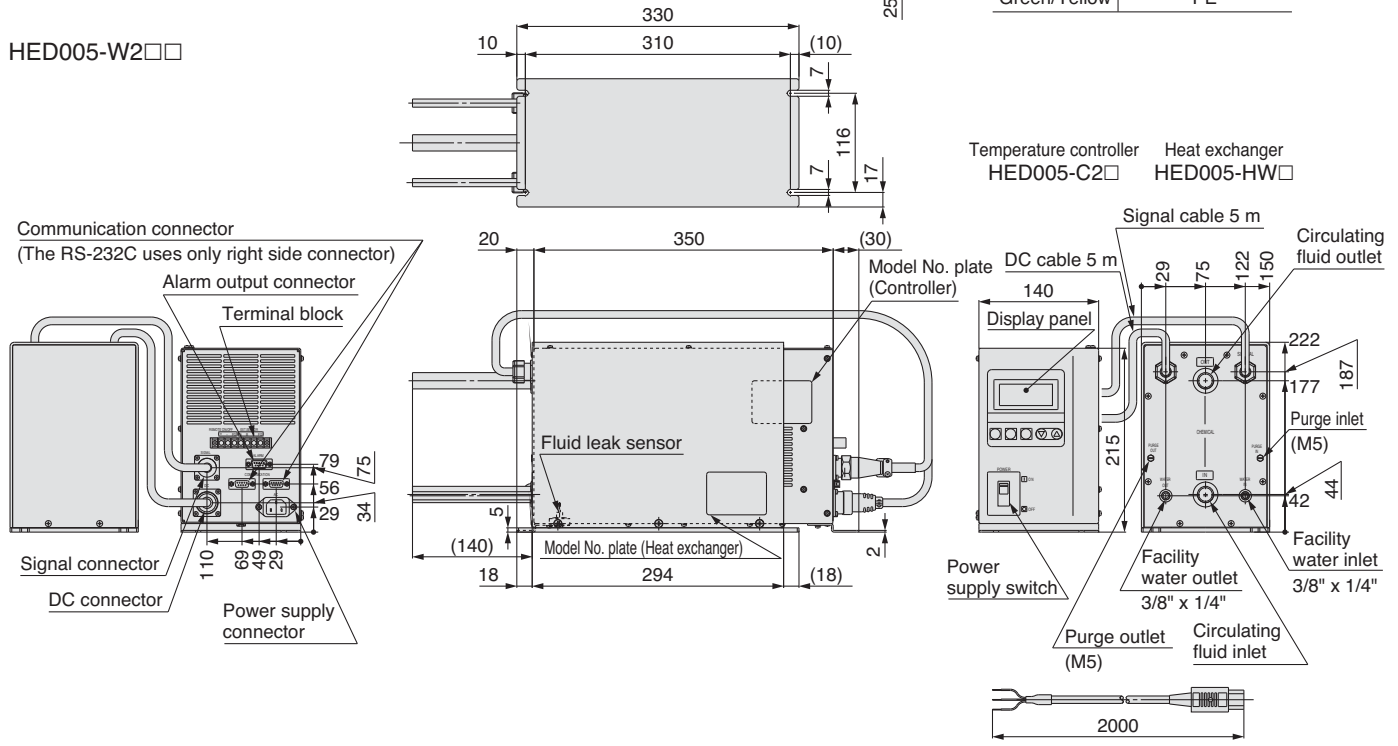
Heat exchanger model	Circulating fluid tube size
HED003-HW13	1/2" x 3/8"
HED003-HW19	3/4" x 5/8"

Power Supply Cable (Accessory)

Connector: IEC60320 C13 or equivalent
Cable: 14AWG, O.D. ø8.4

Wire colour	Content
Black 1	180 to 242 VAC
Black 2	180 to 242 VAC
Green/Yellow	PE

HED005-W2□□



Circulating Fluid Tube Size

Heat exchanger model	Circulating fluid tube size
HED005-HW13	1/2" x 3/8"
HED005-HW19	3/4" x 5/8"

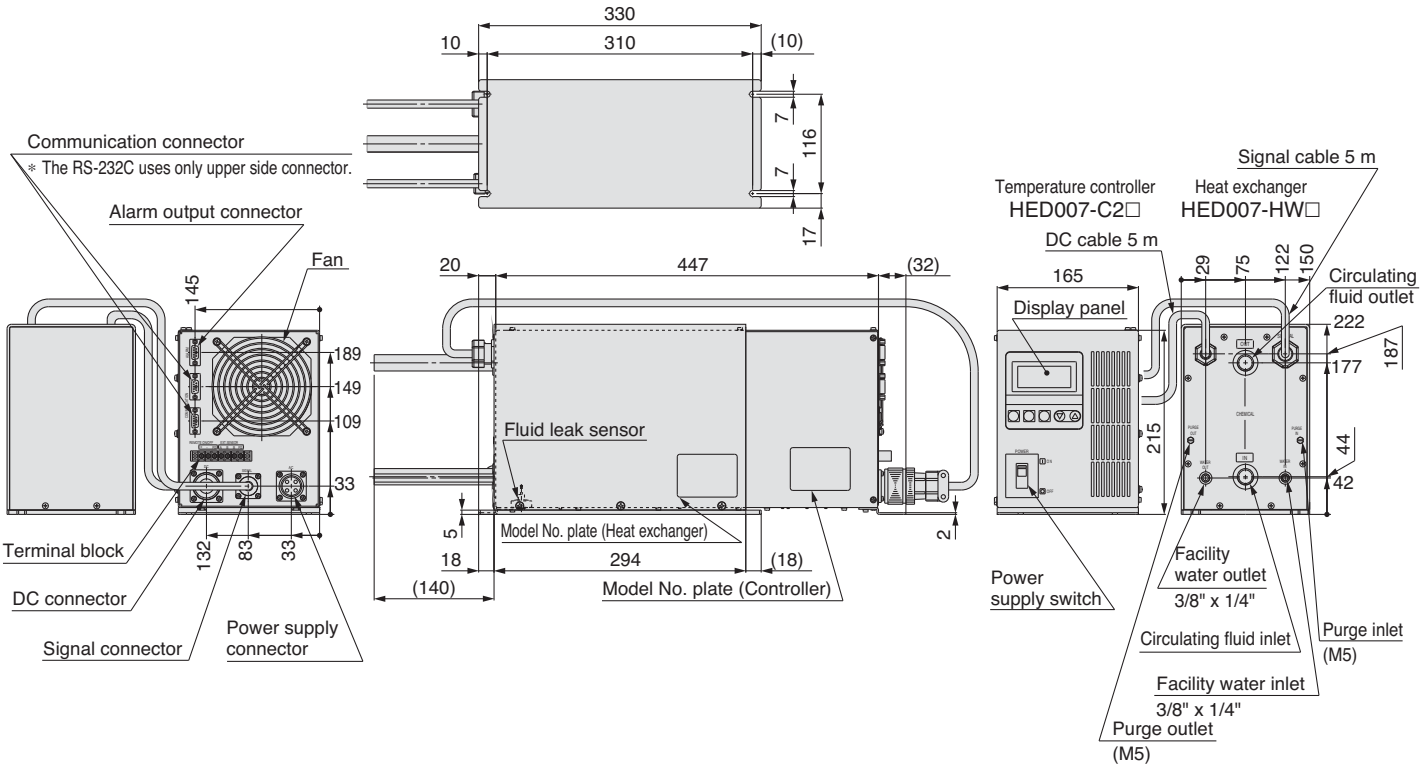
Power Supply Cable (Accessory)

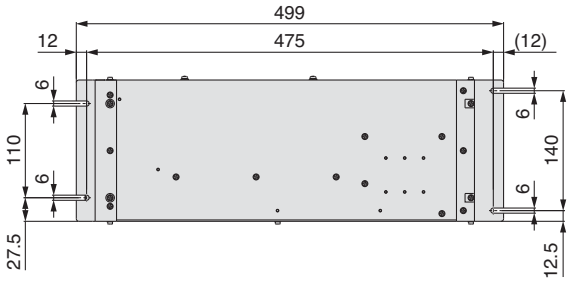
Connector: IEC60320 C13 or equivalent
Cable: 14AWG, O.D. ø8.4

Wire colour	Content
Black 1	180 to 242 VAC
Black 2	180 to 242 VAC
Green/Yellow	PE

Dimensions

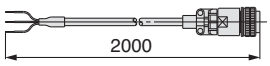
HED007-W2□□





Circulating Fluid Tube Size

Heat exchanger model	Circulating fluid tube size
HED007-HW13	1/2" x 3/8"
HED007-HW19	3/4" x 5/8"



Power Supply Cable (Accessory)

Connector: DDK CE05-6A18-10SD-D-BSS
Cable: 12AWG, O.D. ø11.8

Wire colour	Content
Black 1	180 to 242 VAC
Black 2	180 to 242 VAC
Green/Yellow	PE

Thermo-Chiller
Series HRS

Features

- Space-saving product as it is compact and lightweight.
- Increase/decrease of the circulating fluid using two electronic expansion valves.
- Temperature range setting: 5 to 40°C
- Temperature stability: ±0.1°C

How to order

Single-phase 200 to 230 VAC **HRS** **018** – **A** **□** – **20** – **□**

Cooling capacity

012	Cooling capacity 1100/1300 W (50/60 Hz)
018	Cooling capacity 1700/1900 W (50/60 Hz)
024	Cooling capacity 2100/2400 W (50/60 Hz)
050	Cooling capacity 4700/5100 W (50/60 Hz)

Note) UL standards: Applicable to 60 Hz only

Cooling method

A	Air-cooled refrigeration
W	Water-cooled refrigeration

Thread type

F	G (with PT-G conversion fitting set)

Power supply Note)

Symbol	Power supply
20	Single-phase 200 to 230 VAC (50/60 Hz)

Note) UL standards: Applicable to 60 Hz only

Option

Symbol	Option
–	None
B	With earth leakage breaker
J	With automatic water supply function
M	Applicable to DI water (deionized water) piping
T	High-lift pump Note 1)
G	High-temperature environment specifications Note 2)

When multiple options are combined, indicate symbols in alphabetical order.

Note 1) The cooling capacity reduces about 300 W from the value in the catalog. For HRS050, high-lift pump is available as standard.

Note 2) Air-cooled 200 V types, HRS012/018/024 only.

Product Recommendation

HRS012-AF-20	HRS018-AF-20	HRS024-AF-20
HRS012-WF-20	HRS018-WF-20	HRS024-WF-20

Series PF3W - Digital Flow Switch for Water - page 1317
Series ZSE/ISE80 - Digital Pressure Switch for Fluids - page 1290
Series VNB - 2 Port Air Operated Valves - page 1466
Series VXZ - Pilot Operated 2 Port Solenoid Valves - page 1451

Specifications ∗ There are different values from standard specifications.

Model			HRS012-A□-20	HRS012-W□-20	HRS018-A□-20	HRS018-W□-20	HRS024-A□-20	HRS024-W□-20	HRS050-A□-20	HRS050-W□-20
Cooling method			Air-cooled refrigeration	Water-cooled refrigeration	Air-cooled refrigeration	Water-cooled refrigeration	Air-cooled refrigeration	Water-cooled refrigeration	Air-cooled refrigeration	Water-cooled refrigeration
Refrigerant			R407C (HFC)						R410A (HFC)	
Control method			PID control							
Ambient temperature/humidity Note 2)			Temperature: 5 to 40°C, High-temperature environment specifications (option): 5 to 45°C, Humidity: 30 to 70%							
Circulating fluid system	Circulating fluid Note 3)		Clear water, 15% ethylene glycol aqueous solution Note 5)							
	Temperature range setting Note 2)	[°C]	5 to 40							
	Cooling capacity Note 4) (50/60 Hz)	[W]	1100/1300		1700/1900		2100/2400		4700/5100	
	Heating capacity Note 4) (50/60 Hz)	[W]	530/650						1100/1400	1000/1300
	Temperature stability Note 6)	[°C]	±0.1							
	Pump: Rated flow Note 7) Note 8) (50/60 Hz)	[L/min]	7 (0.13 MPa)/7 (0.18 MPa)						23 (0.24 MPa)/28 (0.32 MPa)	
	Pump: Maximum flow rate (50/60 Hz)	[L/min]	27/29						31/42	
	Pump: Maximum high-lift (50/60 Hz)	[m]	14/19						50	
	Pump: Output	[W]	200						550	
	Tank capacity	[L]	Approx. 5							
	Port size		Rc1/2							
	Wetted parts material		Stainless steel, Copper (Heat exchanger brazing), Bronze, Alumina ceramic, Carbon, PP, PE, POM, FKM, EPDM, PVC							
	Temperature range	[°C]	—	5 to 40	—	5 to 40	—	5 to 40	—	5 to 40
Facility water system Note 1)	Pressure range	[MPa]	—	0.3 to 0.5	—	0.3 to 0.5	—	0.3 to 0.5	—	0.3 to 0.5
	Required flow rate Note 12) (50/60 Hz)	[L/min]	—	8	—	12	—	14	—	16
	Inlet-outlet pressure differential of facility water	[MPa]	—	0.3 or more	—	0.3 or more	—	0.3 or more	—	0.3 or more
	Port size		Rc3/8							
	Wetted parts material		Stainless steel, Copper (Heat exchanger brazing), Bronze, Synthetic rubber							
	Power supply		Single-phase 200 to 230 VAC (50/60 Hz) Allowable voltage range ±10%							
Electrical system	Circuit protector	[A]	10						20	
	Applicable earth leakage breaker capacity Note 9)	[A]	10						20	
	Rated operating current	[A]	4.6/5.1		4.7/5.2		5.1/5.9		8/11	7.6/10
	Rated power consumption Note 4) (50/60 Hz)	[kVA]	0.9/1.0		0.9/1.0		1.0/1.2		1.7/2.2	1.55/2.0
Noise level Note 10) (50/60 Hz)		[dB]	60/61						65/68	
Accessories			Fitting (for drain outlet) 1 pc. Note 13), Input/output signal connector 1 pc., Power supply connector 1 pc. Note 13), Operation manual (for installation/operation) 1, Quick manual (with a clear case) 1 Note 13), Alarm code list sticker 1, Ferritic core (for communication) 1 pc. Power supply cable should be ordered the option (sold separately) or prepared by the customer.							
Weight Note 11)		[kg]	43						69	67

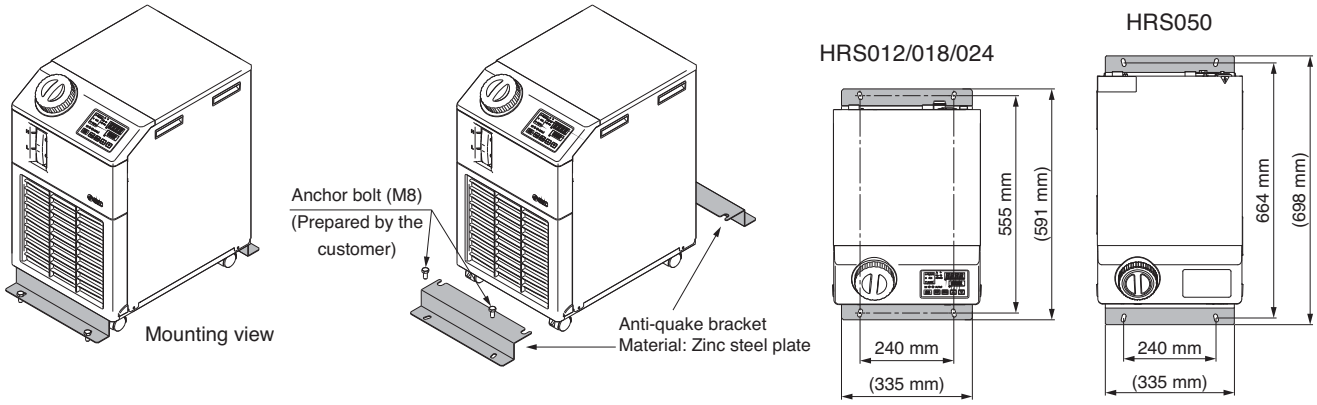
Note 1) For water-cooled refrigeration
Note 2) It should have no condensation.
Note 3) If clear water is used, use water that conforms to Water Quality Standards of the Japan Refrigeration and Air Conditioning Industrial Association (JRA GL-02-1994 cooling water system - circulating type - make-up water).
Note 4) ① Ambient temperature: 25°C, ② Circulating fluid temperature: 20°C, ③ Rated circulating fluid flow rate, ④ Circulating fluid: Clear water, ⑤ Facility water temperature: 25°C Refer to the cooling capacity graph on page 3 for details.
Note 5) Use a 15% ethylene glycol aqueous solution if operating in a place where the circulating fluid temperature is 10°C or less.
Note 6) Outlet temperature when the circulating fluid flow is rated flow, and the circulating fluid outlet and return port are directly connected. Installation environment and the power supply are within specification range and stable.
Note 7) The capacity at the Thermo-chiller outlet when the circulating fluid temperature is 20°C.
Note 8) Required min. flow rate for cooling capacity or maintaining the temperature stability. The specification of the cooling capacity and the temperature stability may not be satisfied if the flow rate is lower than the rated flow. (In such a case, use a by-pass piping set (sold separately).)
Note 9) Purchase an earth leakage breaker with current sensitivity of 30 mA separately. (A product with an optional earth leakage breaker (option B) is also available.)
Note 10) Front: 1 m, height: 1 m, stable with no load, Other conditions → Note 4)
Note 11) Weight in the dry state without circulating fluids
Note 12) Required flow rate when a load for the cooling capacity is applied at a circulating fluid temperature of 20°C, and rated circulating fluid flow rate and facility water temperature of 25°C.
Note 13) It is not provided for HRS050.

Accessories

① Anti-quake Bracket

Bracket for earthquakes Prepare the anchor bolts (M8) which are suited to the floor material by the customer.
(Anti-quake bracket thickness: 1.6 mm)

Part No. (for single unit)	Symbol
HRS-TK001	HRS012-□□-□ HRS018-□□-□ HRS024-□□-□
HRS-TK002	HRS050-□□-□



② Piping Conversion Fitting (For Air-Cooled Refrigeration)

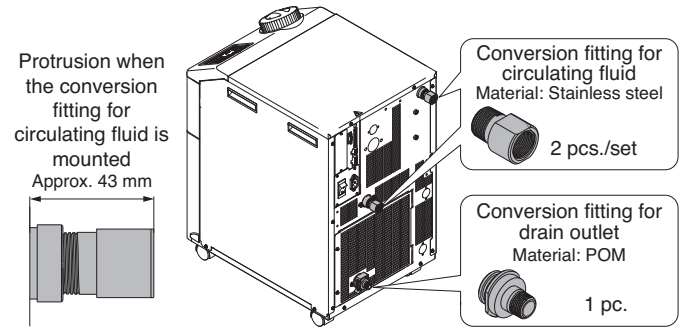
■Conversion fitting for circulating fluid + Conversion fitting for drain outlet

HRS012-A□-□, HRS018-A□-□, HRS024-A□-□

This fitting changes the port size for circulating fluid from Rc1/2 to G1/2 or NPT1/2, and for drain from Rc 3/8 to G3/8 or NPT3/8.
It is not necessary to purchase this when pipe thread type F or N is selected in "How to Order" since it is included in the product.

Part No.		Applicable model
HRS-EP001	G thread conversion fitting set	HRS012-A-□ HRS018-A-□ HRS024-A-□
HRS-EP002	NPT thread conversion fitting set	

When the options, with automatic water supply function "-J", or high-lift pump "-T" are selected, purchase ④ piping conversion fitting (for option), too.

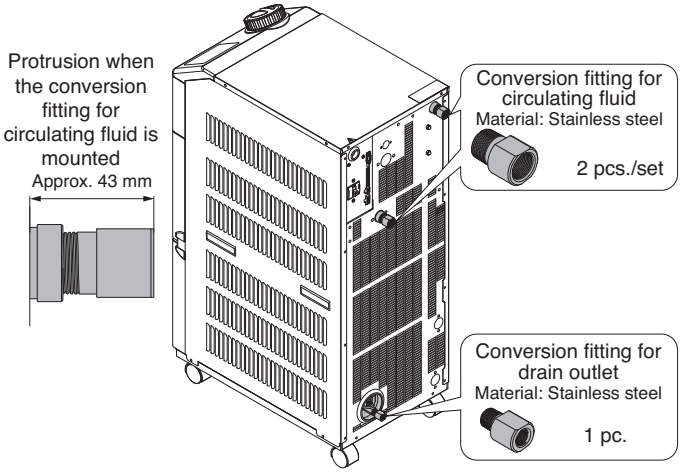


HRS050-A□-□

This fitting changes the port size for circulating fluid from Rc1/2 to G1/2 or NPT1/2, and for drain from Rc 1/4 to G1/4 or NPT1/4.
It is not necessary to purchase this when pipe thread type F or N is selected in "How to Order" since it is included in the product.

Part No.		Applicable model
HRS-EP009	G thread conversion fitting set	HRS050-A-□
HRS-EP010	NPT thread conversion fitting set	

When the option, with automatic water supply function "-J", is selected, purchase ④ piping conversion fitting (for option), too.



Accessories

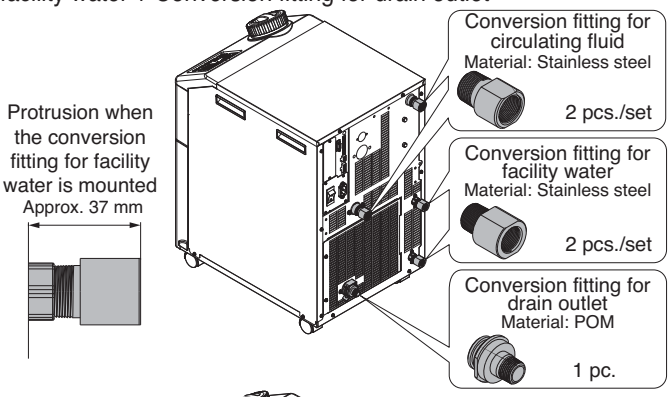
③ Piping Conversion Fitting (For Water-Cooled Refrigeration)

■Conversion fitting for circulating fluid + Conversion fitting for facility water + Conversion fitting for drain outlet
HRS012-W□-□, HRS018-W□-□, HRS024-W□-□

This fitting changes the port size for circulating fluid from Rc1/2 to G1/2 or NPT1/2, for facility water from Rc3/8 to G3/8 or NPT3/8, and for drain from Rc3/8 to G3/8 or NPT3/8.
It is not necessary to purchase this when pipe thread type F or N is selected in "How to Order" since it is included in the product.

Part No.		Applicable model
HRS-EP003	G thread conversion fitting set	HRS012-W-□ HRS018-W-□ HRS024-W-□
HRS-EP004	NPT thread conversion fitting set	

When the options, with automatic water supply function "-J", or high-lift pump "-T" are selected, purchase ④ piping conversion fitting (for option), too.

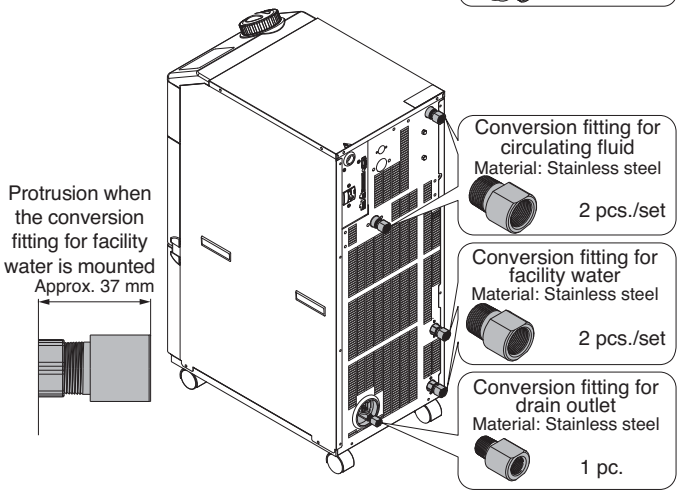


HRS050-W□-□

This fitting changes the port size for circulating fluid from Rc1/2 to G1/2 or NPT1/2, for facility water from Rc3/8 to G3/8 or NPT3/8, and for drain from Rc 1/4 to G1/4 or NPT1/4.
It is not necessary to purchase this when pipe thread type F or N is selected in "How to Order" since it is included in the product.

Part No.		Applicable model
HRS-EP011	G thread conversion fitting set	HRS050-W-□
HRS-EP012	NPT thread conversion fitting set	

When the option, with automatic water supply function "-J", is selected, purchase ④ piping conversion fitting (for option), too.

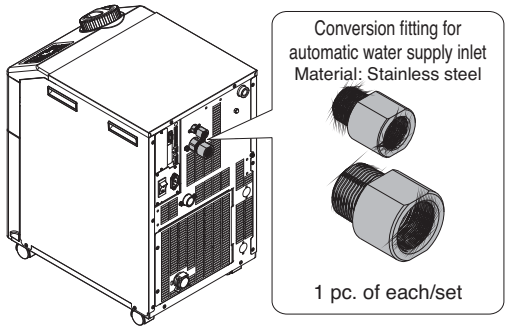


④ Piping Conversion Fitting (For Option)

■Conversion fitting for automatic water supply inlet

This fitting changes the port size for option-J "With Automatic Water Supply Function" from Rc3/8, Rc3/4 to G3/8, G3/4 or NPT3/8, NPT3/4.
It is not necessary to purchase this when pipe thread type F or N is selected in "How to Order" since it is included in the product.

Part No.		Applicable model
HRS-EP005	G thread conversion fitting set	HRS012-□-□-J HRS018-□-□-J HRS024-□-□-J HRS050-□-□-J
HRS-EP006	NPT thread conversion fitting set	

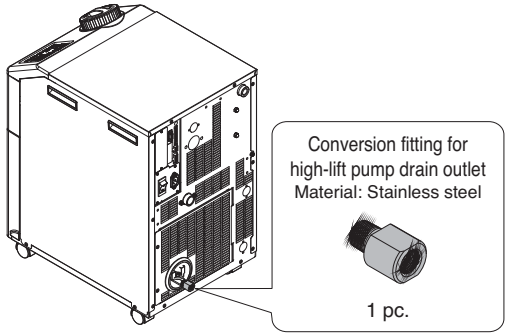


■Conversion fitting for drain outlet

This fitting changes the port size for drain outlet for option-T "High-lift Pump" from Rc1/4 to G1/4 or NPT1/4.
It is not necessary to purchase this when pipe thread type F or N is selected in "How to Order" since it is included in the product.

Part No.		Applicable model
HRS-EP007	G thread conversion fitting	HRS012-□-20-T HRS018-□-20-T HRS024-□-20-T HRS050-□-20 Note 1)
HRS-EP008	NPT thread conversion fitting	

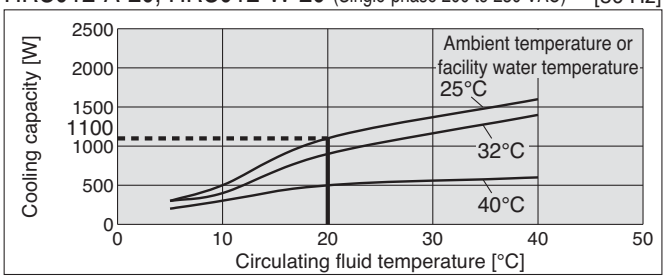
Note 1) It is not necessary to purchase this when you purchase HRS-EP009 to 012 since it is included in the product.



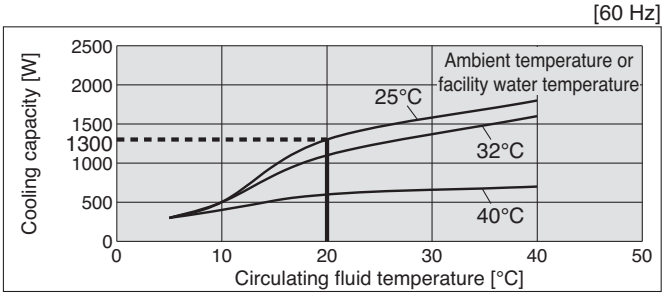
Air Preparation

Cooling Capacity

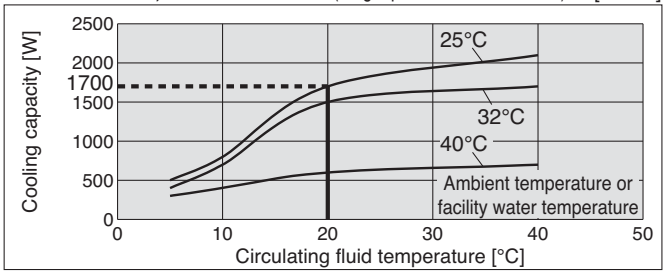
HRS012-A-20, HRS012-W-20 (Single-phase 200 to 230 VAC) [50 Hz]



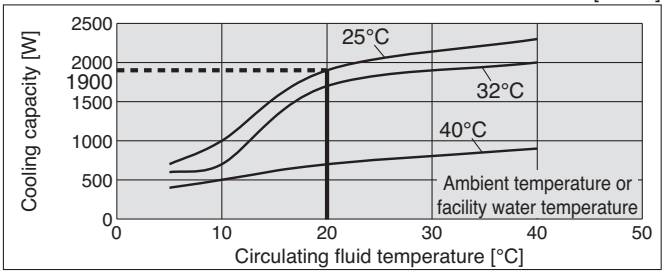
[60 Hz]



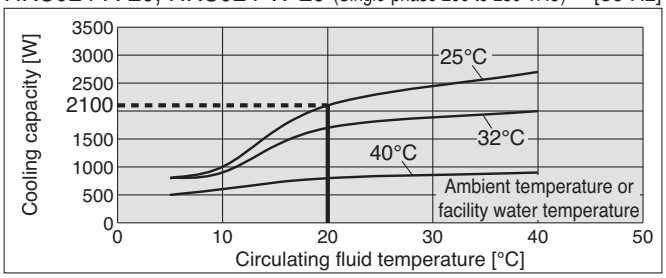
HRS018-A-20, HRS018-W-20 (Single-phase 200 to 230 VAC) [50 Hz]



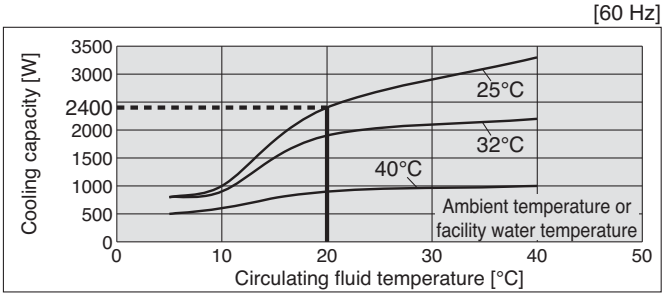
[60 Hz]



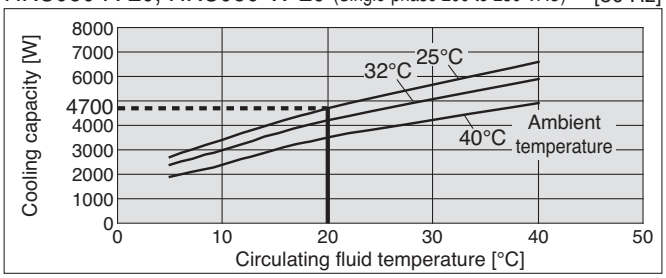
HRS024-A-20, HRS024-W-20 (Single-phase 200 to 230 VAC) [50 Hz]



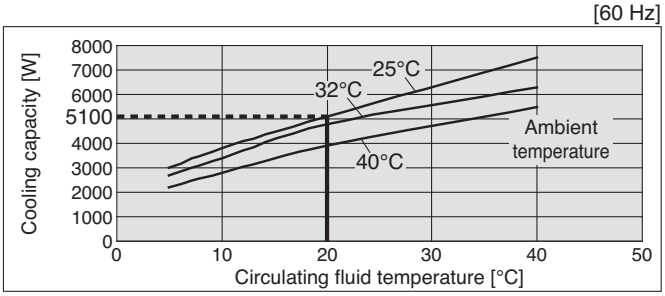
[60 Hz]



HRS050-A-20, HRS050-W-20 (Single-phase 200 to 230 VAC) [50 Hz]

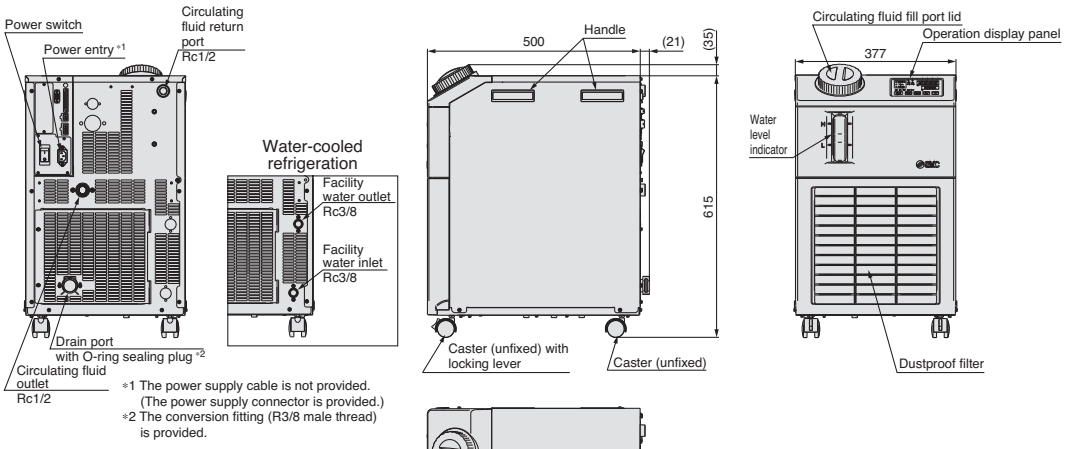


[60 Hz]

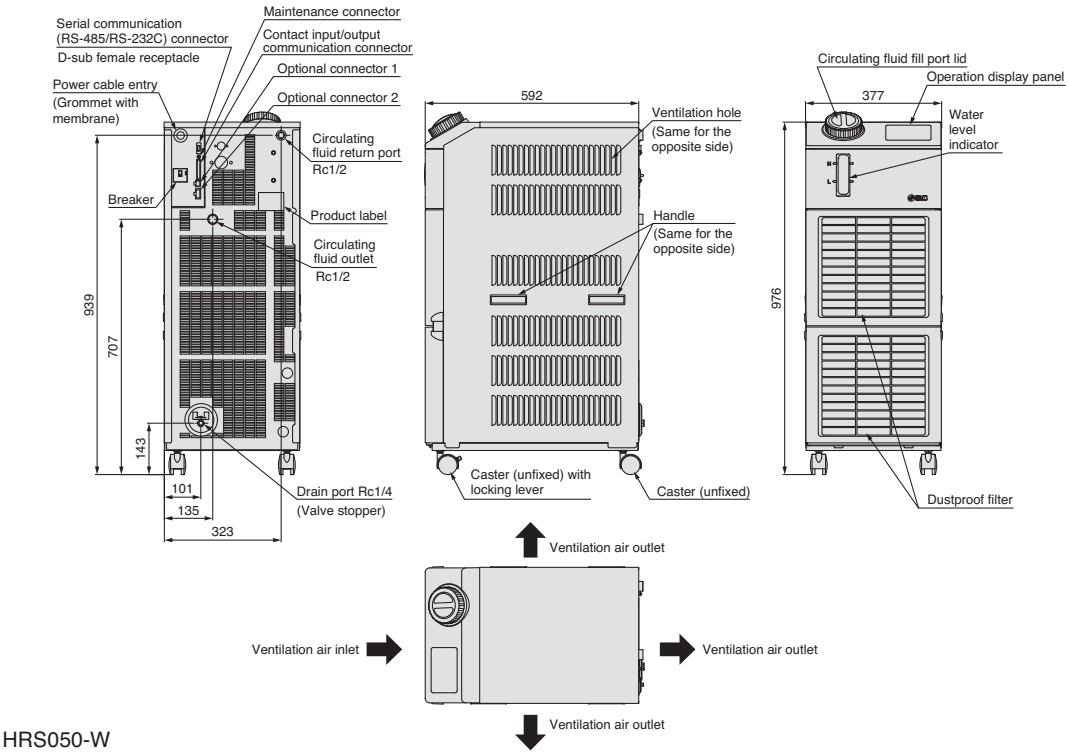


Dimensions

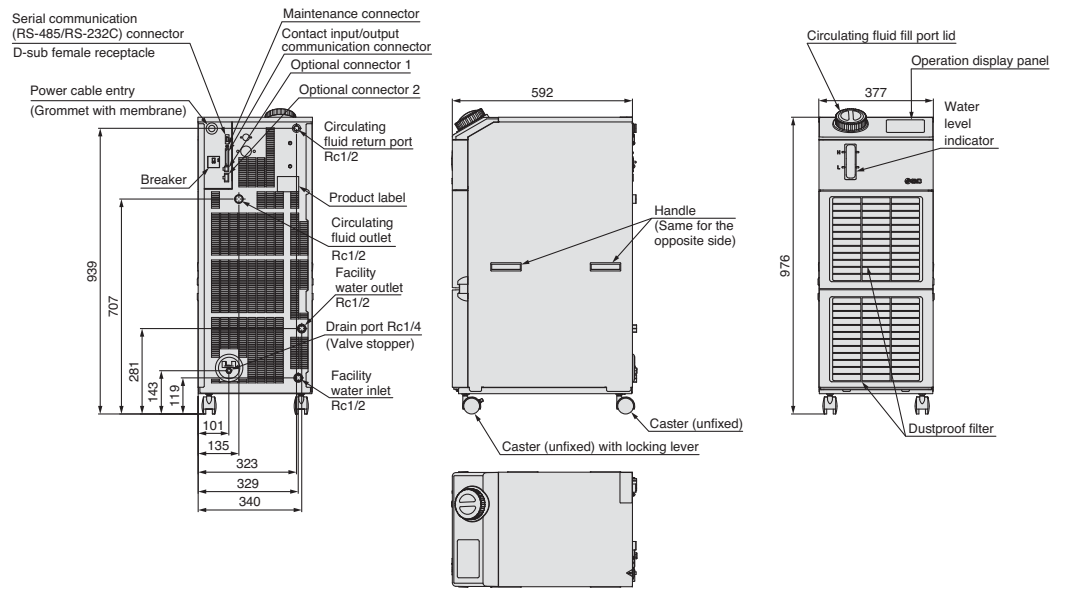
HRS012/018/024



HRS050-A



HRS050-W



For more product options and details see our specific catalogues or on-line information.

Thermo - dryer
Series IDH

Features

- Dehumidification function (dryer).
- Pressure regulation funtion (regulator).
- Cleaning function (filter).
- Temperature control function (heater).

How to Order

IDHA 6 – 23 □

Size

Size	Rated air flow capacity
4	400 ℓ/min [ANR]
6	600 ℓ/min [ANR]

Combination of built-in products

Symbol	Regulator	Filter (AMH)	Filter (AME)
–	●	●	●
A	●	●	–
B	●	–	–

Note) Filter AMH: Micro mist separator with pre-filter.
Filter AME: Super mist separator

Voltage

Symbol	Voltage
23	Single-phase 230 VAC (50/60 Hz)

Note) Other voltages available:100 VAC, 200 VAC

Related Products

Series AMH - Micro Mist Separator with Pre-filter - www.smc.eu
Series AME - Super Mist Separator - www.smc.eu
Series AC - Air Preparation - page 1076
Series TU - Tubing - page 1223
Series KQ2 - Fittings - page 1184
Series PF2A - Digital Flow Swith for Air- page 1309
Series ZSE/ISE□0A - Digital Pressure Switch for Air - page 1273
Series VNB - 2 Port Air Operated Valves - page 1466
Series VXZ - Pilot Operated 2 Port Solenoid Valves - page 1451

Standard Specifications

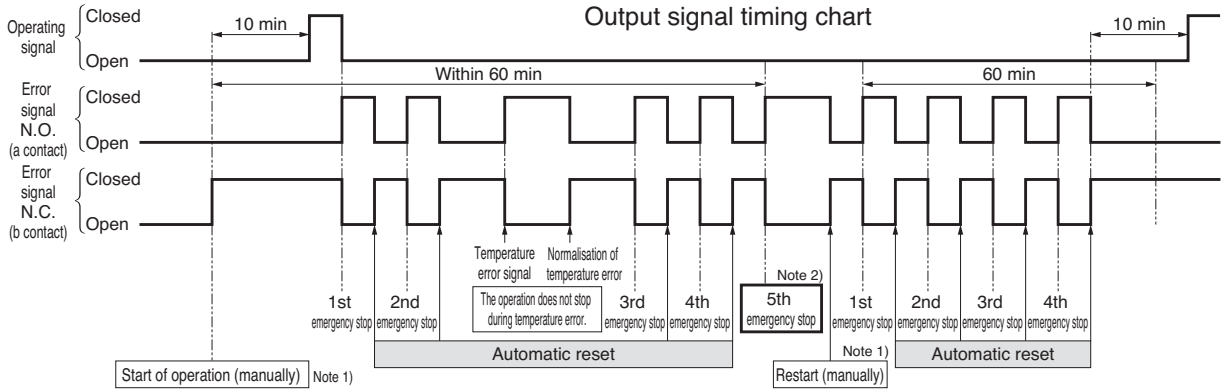
Specifications \ Model		IDHA4-23□	IDHA6-23□
Operating range Note1) 2)	Fluid	Compressed air	
	Air flow capacity	100 to 500 ℓ/min [ANR]	200 to 800 ℓ/min [ANR]
	Inlet air temperature	5 to 40°C	
	Inlet air pressure	0.3 to 1.0 MPa	
	Ambient temperature	15 to 35°C (Relative humidity 85% or less)	
	Outlet air temperature adjustment range	15 to 30°C	
	Outlet air set pressure range	0.15 to 0.85 MPa (The inlet air pressure should be at least 0.15 MPa higher than the outlet air pressure.)	
Rated conditions	Air flow capacity	400 ℓ/min [ANR]	600 ℓ/min [ANR]
	Inlet air pressure	0.7 MPa	
	Inlet air temperature	35°C	
	Ambient temperature	30°C	
	Outlet air set temperature	30°C	
Rated performance Note 3)	Outlet air pressure dew point	10°C	
	Outlet air temperature stability	±0.1°C	
	Outlet air temperature display accuracy	±0.5°C (including accuracy of the sensor)	
Electric specifications	Power supply Note 4)	Single–phase 230 VAC (50/60 Hz)	Single–phase 230 VAC (50/60 Hz)
	Operating current	2.1 A	4.8 A
	Earth leakage breaker capacity	5 A	10 A
	Compressor input	180/200 W 50/60 Hz	385/440 W 50/60 Hz
	Heater input	220 W	420 W
Built-in filter specifications Note 5)	Nominal filtration rating	0.01 µm (99.9% filtration efficiency)	
	Cleanliness of the filter outlet side	Particles of 0.3 µm or more: 3.5 particles/ℓ [ANR] or less	
Temperature control method		Heater operation, PID control	
Refrigerant type/Refrigerant charge		R134a/0.14 kg	R134a/0.26 kg
Noise level (reference value) Note 6)		52 dB(A)	55 dB(A)
Weight		26 kg	37 kg
Applicable drain tube O.D.		10 mm	
Coating colour		Body panel: White 1 Base: Grey 2	
Applicable directive		Low Voltage Directive: 2006/95/EC EMC Directive: 2004/108/EC	

Note 1) ANR is the value at 20°C, atmospheric pressure, and relative humidity of 65%.
Note 2) The upper limit of the settable outlet air temperature varies depending on the conditions even within the operating range. Be sure to read the selection document before selecting the models.
Note 3) Performance when the operation of each part is stable without fluctuations in operating conditions and power supply
Note 4) Keep the voltage within -5 to +10% of the rated voltage. If there is voltage fluctuation, the outlet air temperature stability may decrease. So if highly accurate temperature adjustment is required, please use a stable power supply to make the voltage fluctuation smaller.
Note 5) The specification changes depending on the cleanliness of the inlet side air. It may take time until the cleanliness of the filter outlet side air stabilises immediately after start of operation. The filter performance only applies to the built-in type filter.
Note 6) 1 m in front of the product, 1 m in height, without load, stable conditions

Specifications

Output Signal

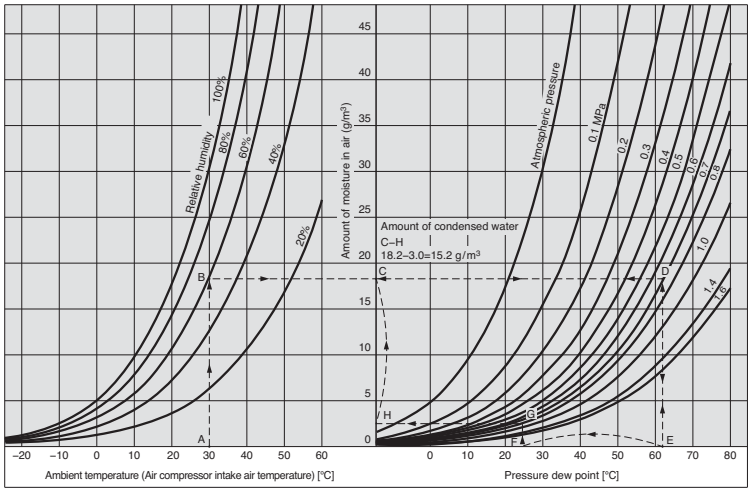
Description	Terminal no.	Description of operation	Contact capacity	Minimum load
Operating signal N.O. (a contact)	1-2	Close after 10 minutes of operation	Resistance load 2 A, Induction load 80 VA, Lamp load 100 W	5 VDC 2 mA
Error signal N.C. (b contact)	3-4	Open at an emergency stop or set temperature error		
Error signal N.O. (a contact)	4-5	Close at an emergency stop or set temperature error		



Note 1) The operation can be started or restarted (manually) by the operation stop switch mounted on the thermo-dryer or a remote switch prepared by the user.
Note 2) When emergency stop is generated 5 times in an hour or the heater protection equipment (thermo-stat) is operated, the emergency stop status will be held. At this time, the dryer can be restarted by reset operation using the switch stated in Note 1.

Flow Characteristics

Condensed Water Calculation



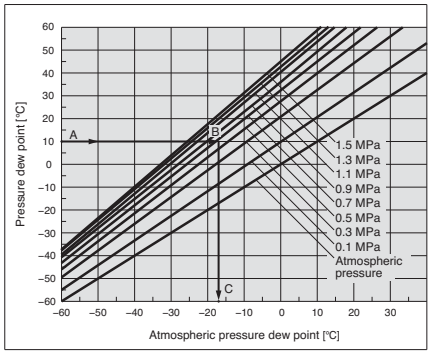
How to calculate the amount of condensed water

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

1. Trace the arrow mark from the point A at an ambient temperature 30°C to obtain the intersection B on the curved line for the relative humidity 60%.
2. Trace the arrow mark from the intersection B to obtain the intersection D on the pressure characteristic line for 0.7 MPa.
3. Trace the arrow mark from 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 30°C and a relative humidity 60%. The value for E is 62°C.
5. Trace the intersection E upward, and trace from the intersection D leftward to obtain the intersection C.
6. The intersection C is the amount of moisture included in the compressed air 1 m³ at 0.7 MPa and a pressure dew point 62°C. The amount of moisture is 18.2 g/m³.
7. Trace the arrow mark, starting from 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 moisture included in the compressed air 1 m³ at 0.7 MPa, and a pressure dew point 25°C. The amount of moisture is 3.0 g/m³.
10. Therefore, the amount of condensed water is as follows (per 1 m³):

The amount of moisture at the intersection C
– the amount of moisture at the intersection H
= the amount of condensed water
18.2 – 3.0 = 15.2 g/m³

Dew Point Conversion Chart



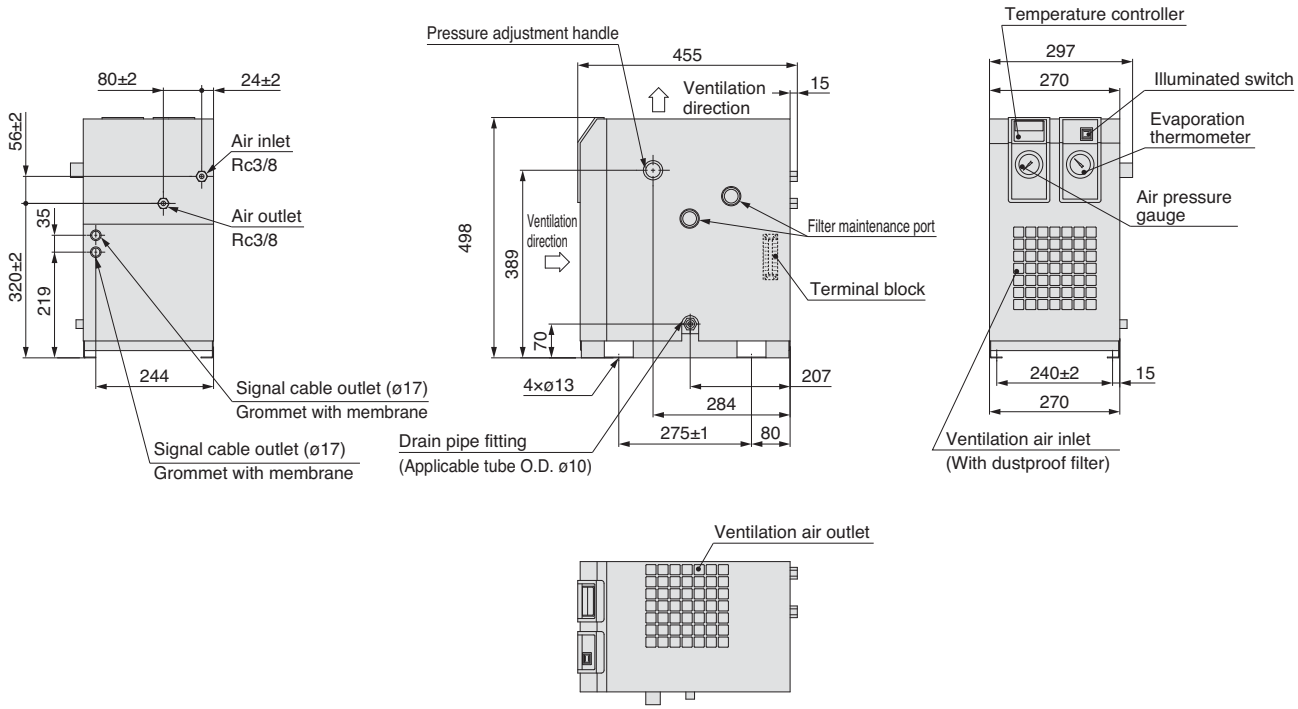
How to read the dew point conversion chart

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

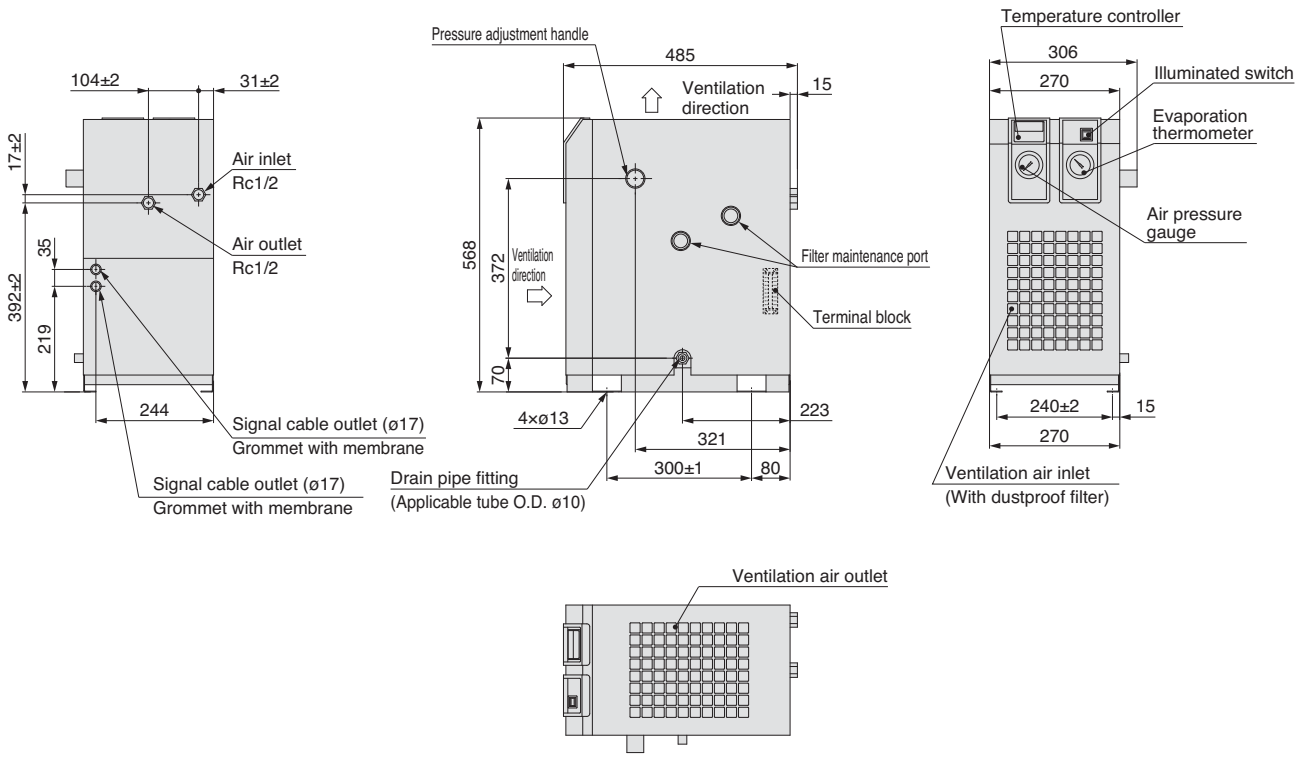
1. Trace the arrow mark → starting from the point A at a pressure dew point 10°C to obtain the intersection B on the pressure characteristic line for 0.7 MPa.
2. Trace the arrow mark → starting from the point B to obtain the intersection C at the dew point under atmospheric pressure.
3. The intersection C is the conversion value –17°C under atmospheric pressure dew point.

Specifications

IDHA4

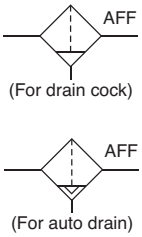


IDHA6



Main Line Filter
Series AFF

Symbol



Features

- Main Line Filter.
- Nominal filtration rating: 3μm
- Filtration efficiency: 99%
- Can remove impurities such as oil, water and foreign matter in compressed air and cam improve the function of a dryer in the downstream, extend the life of precision filter, and prevent trouble with the equipment.

How to Order

AFF2C to 22C **AFF** [22C] – [F] [10] [ ] [ ] – [ ]

Body size

Symbol	Applicable compressor output (guide)
2C	2.2 kW
4C	3.7 kW
8C	7.5 kW
11C	11 kW
22C	22 kW

Thread type

F	G*1

*1 Conforms to ISO1179-1.

Port size

Symbol	Size	Applicable body size				
		2C	4C	8C	11C	22C
01	1/8	●				
02	1/4	●	●			
03	3/8		●	●		
04	1/2			●	●	
06	3/4				●	●
10	1					●

Accessory

Symbol	Description
–	–
B	Bracket *2

*2 Bracket is included, (but not assembled).

Option *3

Symbol	Description
–	–
F	Rubber material: Fluororubber
H	For medium air pressure (1.6 MPa)
J	Drain guide 1/4 female threaded *4
R	IN-OUT reversal direction
U	With differential pressure switch (30 V) *5
T	With element service indicator
V	Degreasing wash,*6 white vaseline

*4 Drain piping and piping for a stop valve such as ball valve are required.
*5 Differential pressure gauge is included, (but not assembled).
*6 Only body/housing is degreasing washed.

Auto drain *3

Symbol	Description
–	Drain cock (Without auto-drain)
C	N.C. auto drain
D	N.O. auto drain

*3 Refer to the table in left for the combination between the auto drain specification and option. (Only one draining specification is selectable).

Auto Drain Specifications/Option Combinations

◎: All draining specifications are available (including drain guide, J type).
△: N.C. auto drain (C type) is not available.
▼: N.C. auto drain (C type) and N.O. auto drain (D type) are not available.

	–	F	H	R	U	T	V
–		◎	△	◎	Note		◎
F	◎		▼	◎			▼
H	△	▼		△			▼
R	◎	◎	△		Note		◎
U	Note			Note			
T							◎
V	◎	▼	▼	◎		◎	

Note) one of them selectable ■: Not available

Product Recommendation

Stocked items for fast delivery

AFF2C-F01	AFF4C-F02D	AFF8C-F03D	AFF8C-F04D-T	AFF11C-F06D-T
AFF2C-F01D	AFF4C-F02D-H	AFF8C-F03D-H	AFF11C-F04D	AFF22C-F06D
AFF2C-F02	AFF4C-F02D-T	AFF8C-F03D-T	AFF11C-F04D-T	AFF22C-F10D
AFF2C-F02D-H	AFF4C-F03D	AFF8C-F04D	AFF11C-F06D	AFF22C-F10D-H
AFF2C-F02D-T	AFF4C-F03D-H	AFF8C-F04D-H	AFF11C-F06D-H	AFF22C-F10D-T

Related Products

Series AM - Mist Separator - page 1171
Series AD402/600 - Auto Drain Valve - www.smc.eu
Series ADH4000 - Heavy Duty Auto Drain Valve - www.smc.eu
Series GD40-2-01 - Differential Pressure Gauge - www.smc.eu
Series AC - Air Preparation Modular Units - page 1076

How to Order

AFF37B/75B

AFF [37B] – [ ] [10] [ ] [ ] – [ ]

Body size

Symbol	Applicable compressor output (guide)
37B	37 kW
75B	75 kW

Thread type

Symbol	Type
F	G

Port size

Symbol	Size	Applicable body size 37B	Applicable body size 75B
10	1	●	—
14	1 1/2	●	●
20	2	—	●

Accessory

Symbol	Description
—	—
B	Bracket *1

*1 Bracket is included, (but not assembled).

Auto drain *2

Symbol	Description
—	Drain cock (Without auto drain) *3
D	N.O. auto drain

*2 Refer to "Auto Drain Specifications/Option Combinations".
*3 Body size 75B is equipped with a ball valve (Rc3/8 female threaded).

Option *2

Symbol	Description
—	—
J	Drain guide 1/4 female threaded *4
R	IN-OUT reversal direction
T	With element service indicator

*4 Drain piping and piping for a stop valve such as ball valve are required.

Product Recommendation

Stocked items for fast delivery

AFF37B-F10D	AFF37B-F14D	AFF75B-F14D	AFF75B-F20D
AFF37B-F10D-T	AFF37B-F14D-T	AFF75B-F14D-T	AFF75B-F20D-T

Related Products

Series AM - Air Cleaning Filters - page 1171
Series AD402/600 - Auto Drain Valve - page xxx
Series ADH4000 - Heavy Duty Auto Drain Valve - page xxx
Series GD40-2-01 - Differential Pressure Gauge - page xxx
Series AC - Air Preparation Modular Units - page 1076

Air Preparation

Auto Drain Specifications/Option Combinations

◎: Available ▢: Not available

Auto drain specifications/Option			Auto drain specifications	Option			Applicable model	
			D	J	R	T	AFF37B	AFF75B
Auto drain specifications	N.O. auto drain	D			◎	◎	◎	◎
Option	Drain guide 1/4	J			◎	◎	◎	
	IN-OUT reversal direction	R	◎	◎		◎	◎	◎
	With element service indicator	T	◎	◎	◎		◎	◎

Specifications

Fluid	Compressed air
Max. operating pressure	1.0 MPa
Min. operating pressure*	0.05 MPa
Proof pressure	1.5 MPa
Ambient and fluid temperature	5 to 60°C
Nominal filtration rating	3 μm (Filtration efficiency: 99%)
Element life	2 years or when pressure drop reached 0.1 MPa

* With auto drain: 0.1 MPa (N.O. type) or 0.15 MPa (N.C. type)

Model	AFF2C	AFF4C	AFF8C	AFF11C	AFF22C	AFF37B	AFF75B
Rated flow Note) [ℓ/min (ANR)]	300	750	1500	2200	3700	6000	12000
Port size	1/8, 1/4	1/4, 3/8	3/8, 1/2	1/2, 3/4	3/4, 1	1 1/2	1 1/2, 2
Mass [kg]	0.38	0.55	0.9	1.4	2.1	4.2	10.5

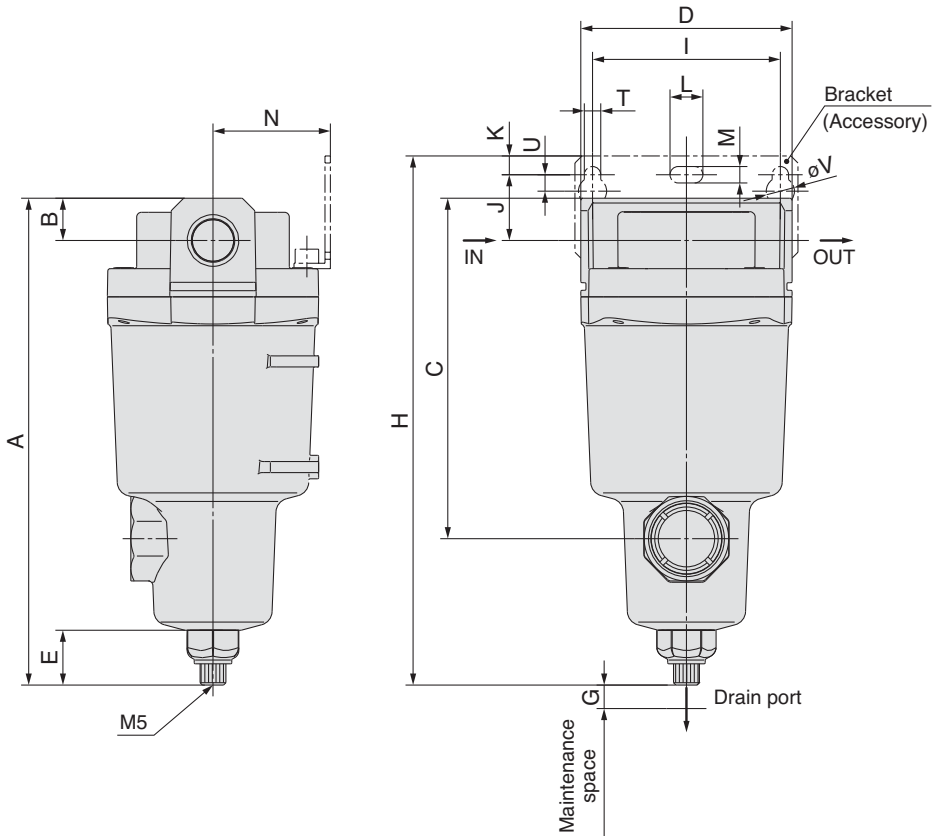
Note) Max. flow at 0.7 MPa.
Max. flow varies depending on the operating pressure.

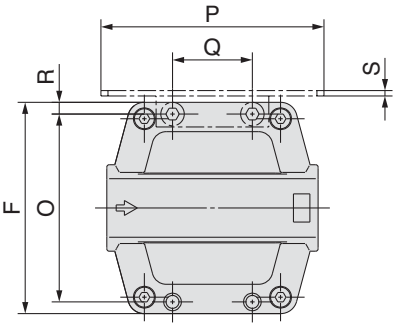
Accessory

Applicable model	AFF2C	AFF4C	AFF8C	AFF11C	AFF22C	AFF37B	AFF75B
Bracket assembly (with 2 mounting screws)	AM-BM101	AM-BM102	AM-BM103	AM-BM104	AM-BM105	BM56	BM57

Dimensions

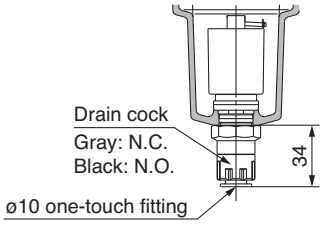
AFF2C to 22C



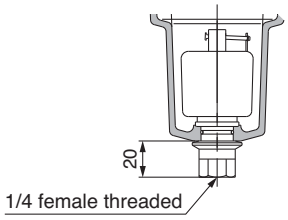


Auto drain

C: With auto drain (N.C.)
D: With auto drain (N.O.)

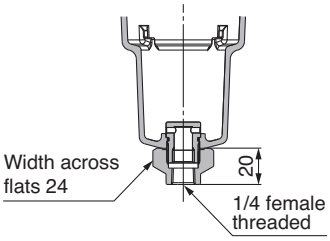


Combination of D: With auto drain (N.O.) and H: For medium air pressure

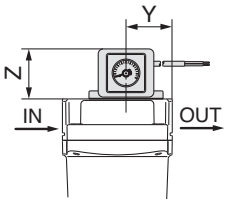


Option

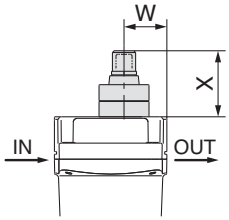
J: Drain guide 1/4 female threaded



U: With differential pressure switch (with indicator)



T: With element service indicator



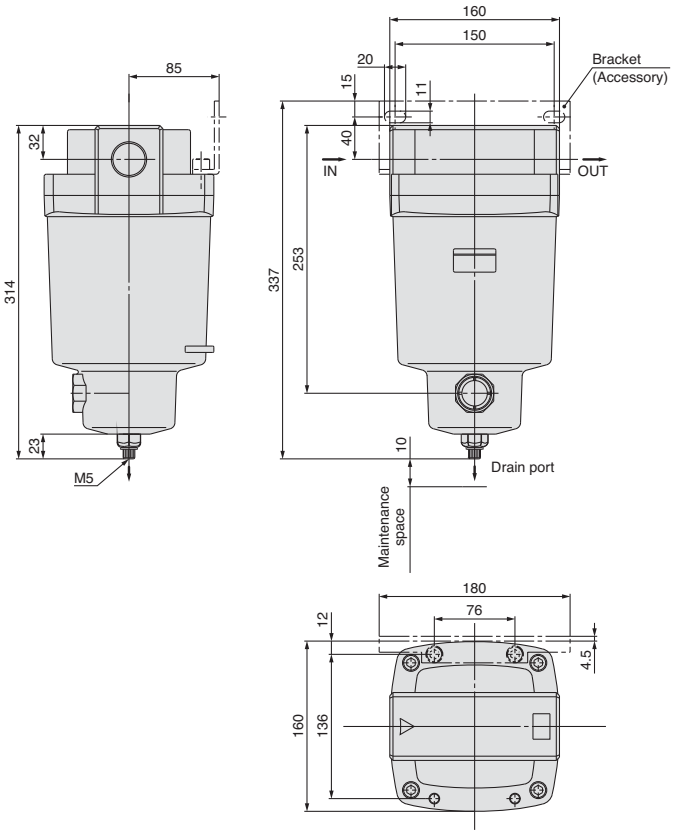
[mm]

Model	Port size	A	B	C	D	E	F	G	Bracket related dimensions																Element service indicator related dimensions		Differential pressure switch related dimensions	
									H	I	J	K	T	U	L	M	V	N	O	P	Q	R	S	W	X	Y	Z
AFF2C	1/8, 1/4	158	10	99	63	20	63	10	173	56	20	5	6	6	12	6	10	35	54	70	26	4.5	1.6	24	37	32	41
AFF4C	1/4, 3/8	172	14	113	76	20	76	10	190	66	24	8	6	6	12	6	10	40	66	80	28	5	2	27	37	36	41
AFF8C	3/8, 1/2	204	18	145	90	20	90	10	222	80	28	8	7	7	14	7	12	50	80	95	34	5	2.3	32	37	42	41
AFF11C	1/2, 3/4	225	20	166	106	20	106	10	246	90	31	10	9	9	18	9	15	55	88	111	50	9	3.2	37	37	43	41
AFF22C	3/4, 1	259	24	200	122	20	122	15	278	100	33	10	9	9	18	9	15	65	102	126	60	10	3.2	39	37	51	41

For more product options and details see our specific catalogues or on-line information.

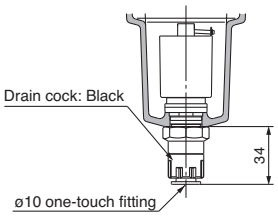
Dimensions

AFF37B



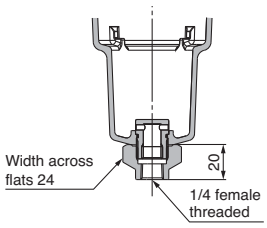
Auto drain

D: With auto drain (N.O.)

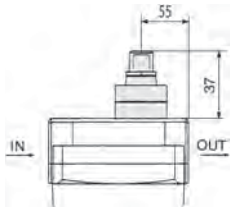


Option

J: Drain guide 1/4 female threaded

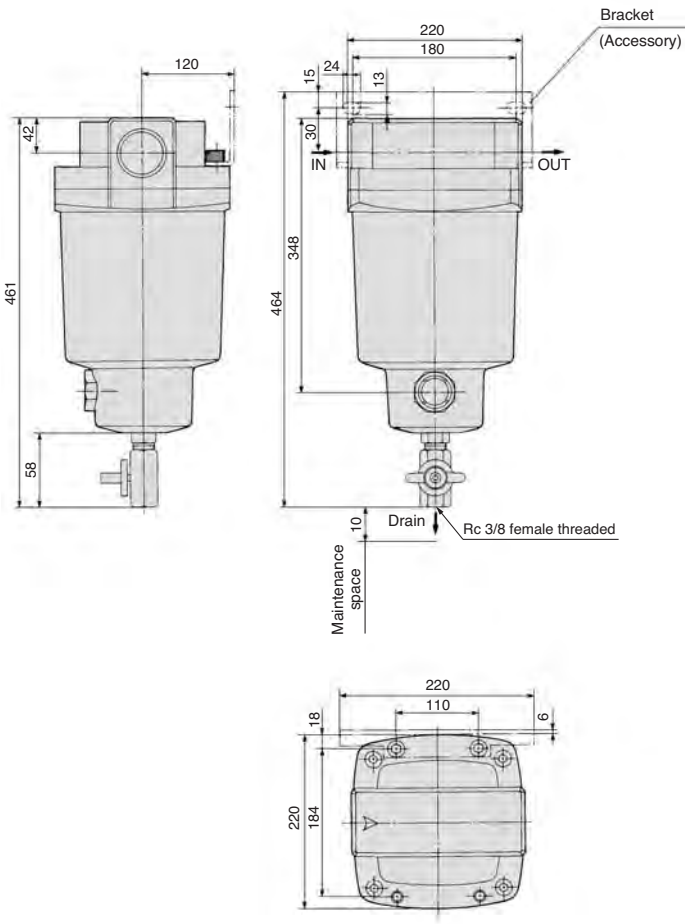


T: With element service indicator



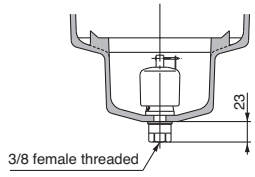
Dimensions

AFF75B



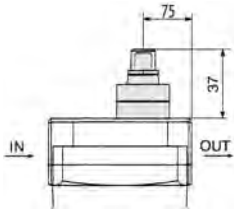
Auto drain

D: With auto drain (N.O.)
for AFF75B



Option

T: With element service indicator



Mist Separator
Series AM

Symbol

(For drain cock)

(For auto drain)

Features

- Can remove oil mist in compressed air and remove particles such as rust or carbon of more than 0.3 μm.
- Modular connection is possible with AM150C to 550C.

How to Order

AM150C to 550C **AM** [550C] – [F] [10] [ ] [ ] – [ ]

Body size

Symbol	Applicable compressor output (guide)
150C	2.2 kW
250C	3.7 kW
350C	7.5 kW
450C	11 kW
550C	22 kW

Thread type

F	G*1

*1 Conforms to ISO1179-1.

Port size

Symbol	Size	Applicable body size				
		150C	250C	350C	450C	550C
01	1/8	●				
02	1/4	●	●			
03	3/8		●	●		
04	1/2			●	●	
06	3/4				●	●
10	1					●

Accessory

Symbol	Description
–	–
B	Bracket *2

*2 Bracket is included, (but not assembled).

Option *3

Symbol	Description
–	–
F	Rubber material: Fluororubber
H	For medium air pressure (1.6 MPa)
J	Drain guide 1/4 female threaded *4
R	IN-OUT reversal direction
U	With differential pressure switch (30 VDC) *5
T	Element service indicator
V	Degreasing wash,*6 white vaseline

*4 Drain piping and piping for a stop valve such as ball valve are required.
*5 Differential pressure gauge is included, (but not assembled).
*6 Only body/housing is degreasing washed.

Auto drain *3

Symbol	Description
–	Drain cock (Without auto drain)
C	N.C. auto drain
D	N.O. auto drain

*3 Refer to the table in left for the combination between the draining specification and option. (Only one draining specification is selectable).

Auto Drain Specifications/Option Combinations

◎ : All draining specifications are available (including drain guide, J type).
△ : N.C. auto drain (C type) is not available.
▼ : N.C. auto drain (C type) and N.O. auto drain (D type) are not available.

	–	F	H	R	U	T	V
–		◎	△	◎	Note		◎
F	◎		▼	◎			▼
H	△	▼		△			▼
R	◎	◎	△		Note		◎
U	Note			Note			
T							◎
V	◎	▼	▼	◎		◎	

Note) one of them selectable ■ : Not available

Product Recommendation

Stocked items for fast delivery

AM150C-F02D-H	AM350C-F03D-H	AM350C-F04-J	AM450C-F06D-H	AM550C-F10D-T
AM150C-F02-T	AM350C-F03-T	AM350C-F04-T	AM450C-F06D-T	AM550C-F10-T
AM250C-F02-D	AM350C-F04	AM450C-F04	AM550C-F06	
AM250C-F02-D-H	AM350C-F04C	AM450C-F04D	AM550C-F06D	
AM250C-F03	AM350C-F04D	AM450C-F06	AM550C-F10	
AM250C-F03C	AM350C-F04D-H	AM450C-F06C	AM550C-F10D	
AM250C-F03D-H	AM350C-F04D-T	AM450C-F06D	AM550C-F10D-H	

Related Products

Series AFF - Main Line Filters - page 1167
Series AD402/600 - Auto Drain Valve - www.smc.eu
Series ADH4000 - Heavy Duty Auto Drain Valve - www.smc.eu
Series GD40-2-01 - Differential Pressure Gauge - www.smc.eu
Series AC - Air Preparation Modular Units - page 1076

For more product options and details see our specific catalogues or on-line information.

How to order

AM650/850 **AM** [650] – [F] [10] [ ] [ ] – [ ]

Body size

Symbol	Applicable compressor output (guide)
650	37 kW
850	75 kW

Thread type

F	G

Port size

Symbol	Size	Applicable body size 650	Applicable body size 850
10	1	●	—
14	1 1/2	●	●
20	2	—	●

Accessory

Symbol	Description
—	—
B	Bracket *1

*1 Bracket is included, (but not assembled).

Auto drain *2

Symbol	Description
—	Drain cock (Without auto drain) *3
D	N.O. auto drain

*2 Refer to "Auto Drain Specifications/Option Combinations".
*3 Body size 850 is equipped with a ball valve (Rc3/8 female threaded).

Option *2

Symbol	Description
—	—
J	Drain guide 1/4 female threaded *4
R	IN-OUT reversal direction
T	With element service indicator

*4 Drain piping and piping for a stop valve such as ball valve are required.

Product Recommendation

Stocked items for fast delivery

AM650-F10D-T | AM650-F14-T | EAM650-F10D | EAM650-F14 | EAM850-F20D

Related Products

Series AFF - Main Line Filters - page 1167
Series AD402/600 - Auto Drain Valve - www.smc.eu
Series ADH4000 - Heavy Duty Auto Drain Valve - www.smc.eu
Series GD40-2-01 - Differential Pressure Gauge - www.smc.eu
Series AC - Air Preparation Modular Units - page 1076

Auto Drain Specifications/Option Combinations

◎: Available ▩: Not available

Auto drain specifications/Option			Auto drain specifications	Option			Applicable model	
			D	J	R	T	AM650	AM850
Auto drain specifications	N.O. auto drain	D	▩	▩	◎	◎	◎	◎
Option	Drain guide 1/4	J	▩	▩	◎	◎	◎	▩
	IN-OUT reversal direction	R	◎	◎	▩	◎	◎	◎
	With element service indicator	T	◎	◎	◎	▩	◎	◎

Specifications

Fluid	Compressed air
Max. operating pressure	1.0 MPa
Min. operating pressure*	0.05 MPa
Proof pressure	1.5 MPa
Ambient and fluid temperature	5 to 60°C
Nominal filtration rating	0.3 μm (Filtration efficiency: 99.9%)
Oil mist density at outlet	Max. 1.0 mg/m³ (ANR) (≈ 0.8 ppm)*
Element life	2 years or when pressure drop reached 0.1 MPa

* With auto drain: 0.1 MPa (N.O. type) or 0.15 MPa (N.C. type)
* Oil mist density at 30 mg/m³ (ANR) blown out by compressor.

Model	AM150C	AM250C	AM350C	AM450C	AM550C	AM650	AM850
Note) Rated flow [ℓ/min (ANR)]	300	750	1500	2200	3700	6000	12000
Port size	1/8, 1/4	1/4, 3/8	3/8, 1/2	1/2, 3/4	3/4, 1	1, 1 1/2	1 1/2, 2
Mass [kg]	0.38	0.55	0.9	1.4	2.1	4.2	10.5

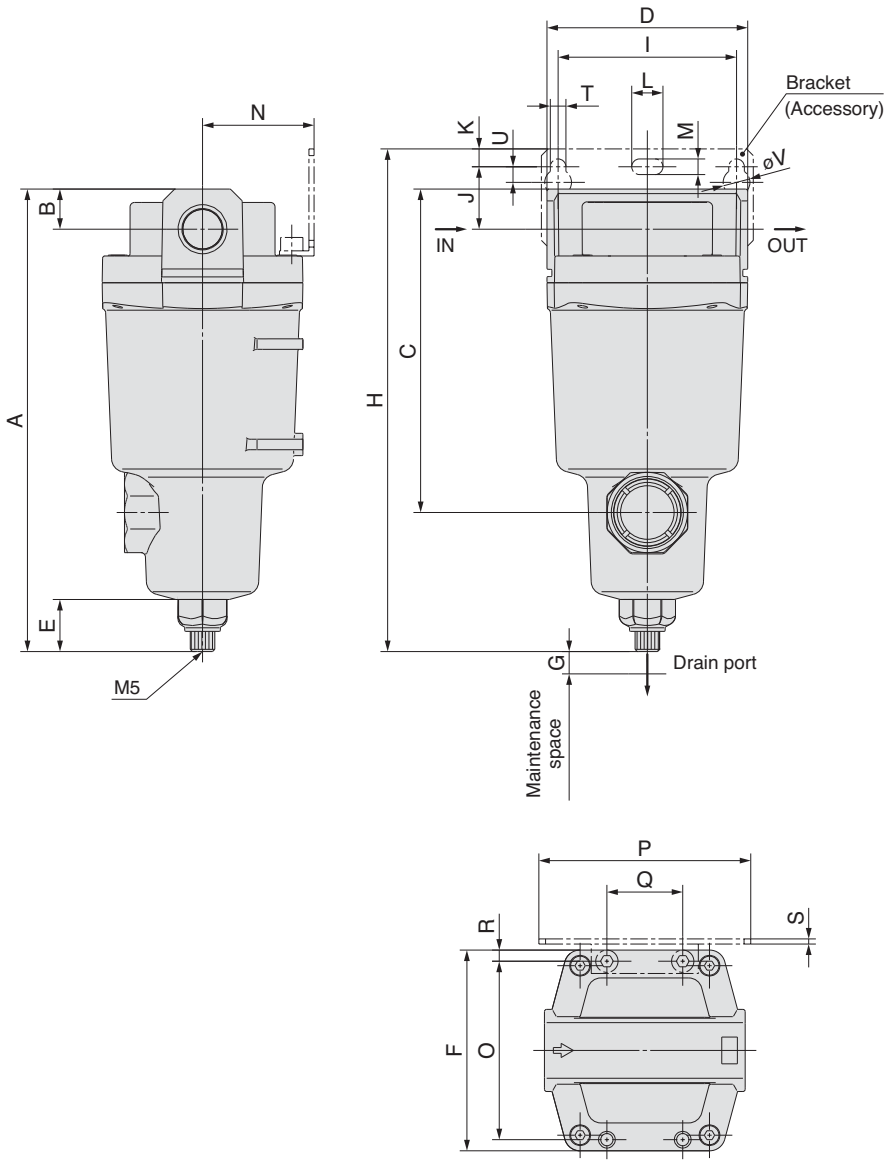
Note) Max. flow at 0.7 MPa.
Max. flow varies depending on the operating pressure.
Note) Refer to "Made to Order" for high flow type of AM850 or more.

Accessory

Applicable model	AM150C	AM250C	AM350C	AM450C	AM550C	AM650	AM850
Bracket assembly (with 2 mounting screws)	AM-BM101	AM-BM102	AM-BM103	AM-BM104	AM-BM105	BM56	BM57

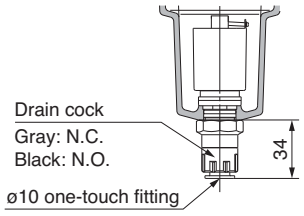
Dimensions

AM150C to 550C

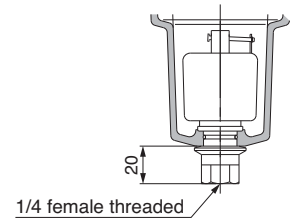


Auto drain

C: With auto drain (N.C.)
D: With auto drain (N.O.)

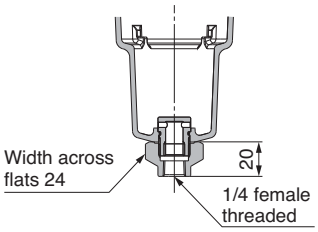


Combination of D: With auto drain (N.O.) and H: For medium air pressure

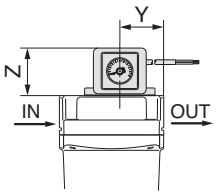


Option

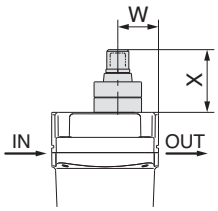
J: Drain guide 1/4 female threaded



U: With differential pressure switch (with indicator)



T: With element service indicator

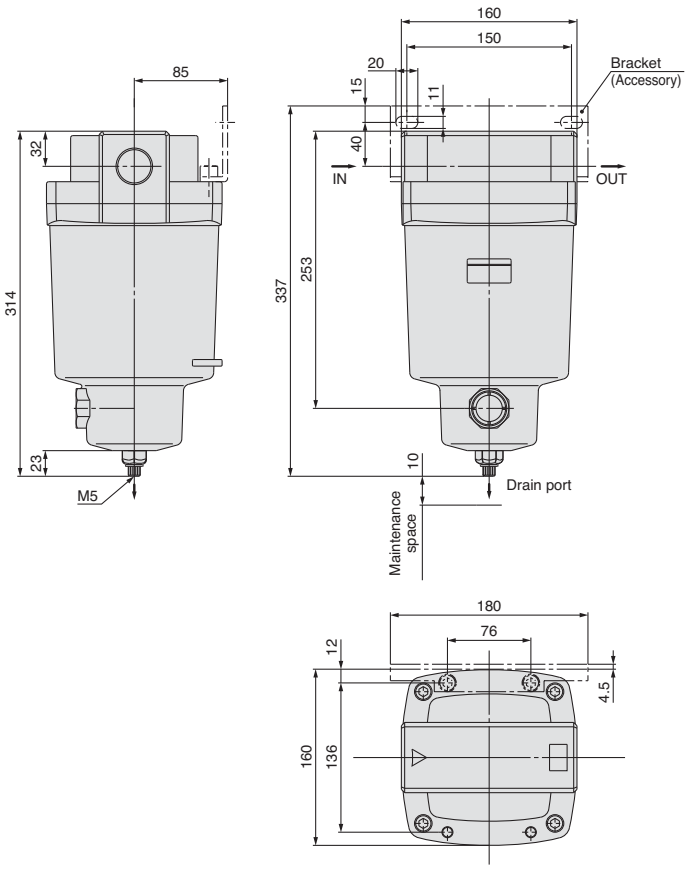


[mm]

Model	Port size	A	B	C	D	E	F	G	Bracket related dimensions																Element service indicator related dimensions		Differential pressure switch related dimensions	
									H	I	J	K	T	U	L	M	V	N	O	P	Q	R	S	W	X	Y	Z
AM150C	1/8, 1/4	158	10	99	63	20	63	10	173	56	20	5	6	6	12	6	10	35	54	70	26	4.5	1.6	24	37	32	41
AM250C	1/4, 3/8	172	14	113	76	20	76	10	190	66	24	8	6	6	12	6	10	40	66	80	28	5	2	27	37	36	41
AM350C	3/8, 1/2	204	18	145	90	20	90	10	222	80	28	8	7	7	14	7	12	50	80	95	34	5	2.3	32	37	42	41
AM450C	1/2, 3/4	225	20	166	106	20	106	10	246	90	31	10	9	9	18	9	15	55	88	111	50	9	3.2	37	37	43	41
AM550C	3/4, 1	259	24	200	122	20	122	15	278	100	33	10	9	9	18	9	15	65	102	126	60	10	3.2	39	37	51	41

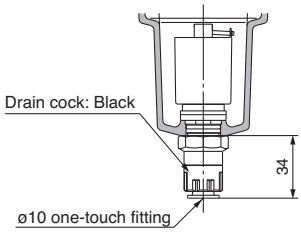
Dimensions

AM650



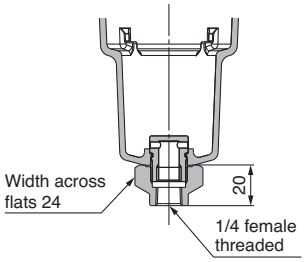
Auto drain

D: With auto drain (N.O.)

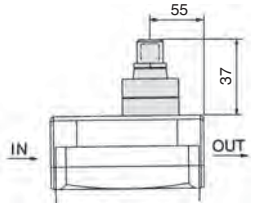


Option

J: Drain guide 1/4 female threaded

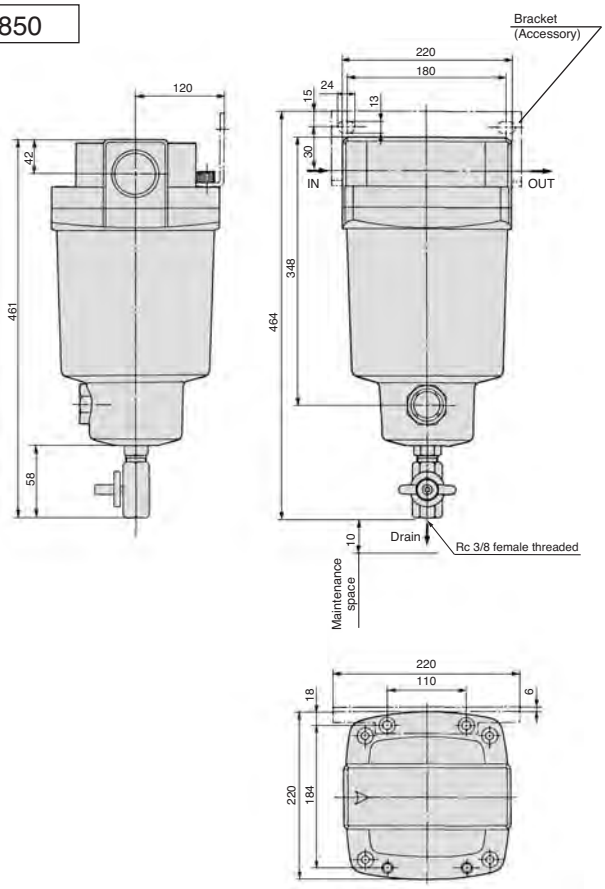


T: With element service indicator



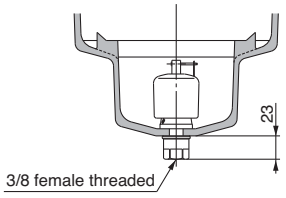
Dimensions

AM850



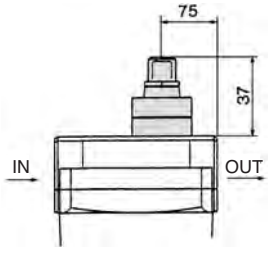
Auto drain

D: With auto drain (N.O.)
for AM850



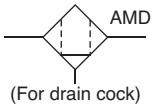
Option

T: With element service indicator

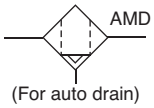


Micro Mist Separator
Series AMD

Symbol



(For drain cock)



(For auto drain)

Features

- Can separate and remove aerosol state oil mist in compressed air and remove particles such as carbon or dust of more than 0.01 μm.
- Use this product as a pre-filter for compressed air for precision instruments or clean room requiring higher clean air.
- Modular connection is possible with AMD150C to 550C.

How to Order

AMD150C to 550C **AMD** [550C] – [F] [10] [ ] [ ] – [ ]

Body size

150C
250C
350C
450C
550C

Thread type

F	G*1

*1 Conforms to ISO1179-1.

Port size

Symbol	Size	Applicable body size				
		150C	250C	350C	450C	550C
01	1/8	●				
02	1/4	●	●			
03	3/8		●	●		
04	1/2			●	●	
06	3/4				●	●
10	1					●

Option *3

Symbol	Description
–	–
F	Rubber material: Fluororubber
H	For medium air pressure (1.6 MPa)
J	Drain guide 1/4 female thread *4
R	IN-OUT reversal direction
U	With differential pressure switch (30 VDC) *5
T	With element service indicator
V	Degreasing wash,*6 white vaseline

*4 Drain piping and piping for a stop valve such as ball valve are required.
*5 Differential pressure gauge is included, (but not assembled).
*6 Only body/housing is degreasing washed.

Accessory

Symbol	Description
–	–
B	Bracket *2

*2 Bracket is included, (but not assembled).

Auto drain *3

Symbol	Description
–	Drain cock (Without auto drain)
C	N.C. auto drain
D	N.O. auto drain

*3 Refer to the table in left for the combination between the draining specification and option. (Only one draining specification is selectable).

Auto Drain Specifications/Option Combinations

◎: All draining specifications are available (including drain guide, J type).
△: N.C. auto drain (C type) is not available.
▼: N.C. auto drain (C type) and N.O. auto drain (D type) are not available.

	–	F	H	R	U	T	V
–		◎	△	◎	Note		◎
F	◎		▼	◎			▼
H	△	▼		△			▼
R	◎	◎	△		Note		◎
U	Note			Note			
T							◎
V	◎	▼	▼	◎		◎	

Note) one of them selectable ■: Not available

Air Preparation

How to Order

AMD650/850 **AMD** **650** – **F** **10** □ □ – □

Body size
650
850

Thread type
F	G

Port size
Symbol	Size	Applicable body size 650	850
10	1	●	—
14	1 1/2	●	●
20	2	—	●

Accessory
Symbol	Description
—	—
B	Bracket *1

*1 Bracket is included, (but not assembled).

Auto drain *2
Symbol	Description
—	Drain cock (Without auto drain) *3
D	N.O. auto drain

*2 Refer to "Auto Drain Specifications/Option Combinations".
*3 Body size 850 is equipped with a ball valve (Rc3/8 female threaded).

Option *2
Symbol	Description
—	—
J	Drain guide 1/4 female threaded*4
R	IN-OUT reversal direction
T	With element service indicator

*4 Drain piping and piping for a stop valve such as ball valve are required.

Auto Drain Specifications/ Option Combinations

◎: Available □: Not available

Auto drain specifications/Option			Auto drain specifications	Option			Applicable model	
			D	J	R	T	AMD650	AMD850
Auto drain specifications	N.O. auto drain	D			◎	◎	◎	◎
Option	Drain guide 1/4	J			◎	◎	◎	
	IN-OUT reversal direction	R	◎	◎		◎	◎	◎
	With element service indicator	T	◎	◎	◎		◎	◎

Product Recommendation

Stocked items for fast delivery

AMD150C-F02D-H	AMD250C-F02D-T	AMD450C-F04D	AMD550C-F10
AMD250C-F02	AMD350C-F03D-T	AMD450C-F06	AMD550C-F10D-H
AMD250C-F02D	AMD350C-F04	AMD450C-F06D	AMD550C-F10D-T
AMD250C-F03	AMD350C-F04D	AMD450C-F06D-H	AMD650C-F14D
AMD250C-F03D	AMD350C-F04D-H	AMD450C-F06D-T	AMD650C-F14D-T
AMD250C-F03D-H	AMD350C-F04D-T	AMD550C-F06-T	EAMD850C-F20D

Related Products

Series AFF - Main Line Filters - page 1167
Series AD402/600 - Auto Drain Valve - www.smc.eu
Series ADH4000 - Heavy Duty Auto Drain Valve - www.smc.eu
Series GD40-2-01 - Differential Pressure Gauge - www.smc.eu
Series AC - Air Preparation Modular Units - page 1076

Air Preparation

Specifications

Fluid	Compressed air
Max. operating pressure	1.0 MPa
Min. operating pressure*	0.05 MPa
Proof pressure	1.5 MPa
Ambient and fluid temperature	5 to 60°C
Nominal filtration rating	0.01 μm (Filtration efficiency: 99.9%)
Oil mist density at outlet	Max. 0.1 mg/m³ (ANR)* (Before saturated with oil, less than 0.01 mg/m³ (ANR) 0.008 ppm)
Element life	2 years or when pressure drop reached 0.1 MPa

* With auto drain: 0.1 MPa (N.O. type) or 0.15 MPa (N.C. type)
* Oil mist density at 30 mg/m³ (ANR) blown out by compressor.

Model	AMD150C	AMD250C	AMD350C	AMD450C	AMD550C	AMD650	AMD850
Rated flow Note) [ℓ/min (ANR)]	200	500	1000	2000	3700	6000	12000
Port size	1/8, 1/4	1/4, 3/8	3/8, 1/2	1/2, 3/4	3/4, 1	1, 1 1/2	1 1/2, 2
Mass (kg)	0.38	0.55	0.9	1.4	2.1	4.2	10.5

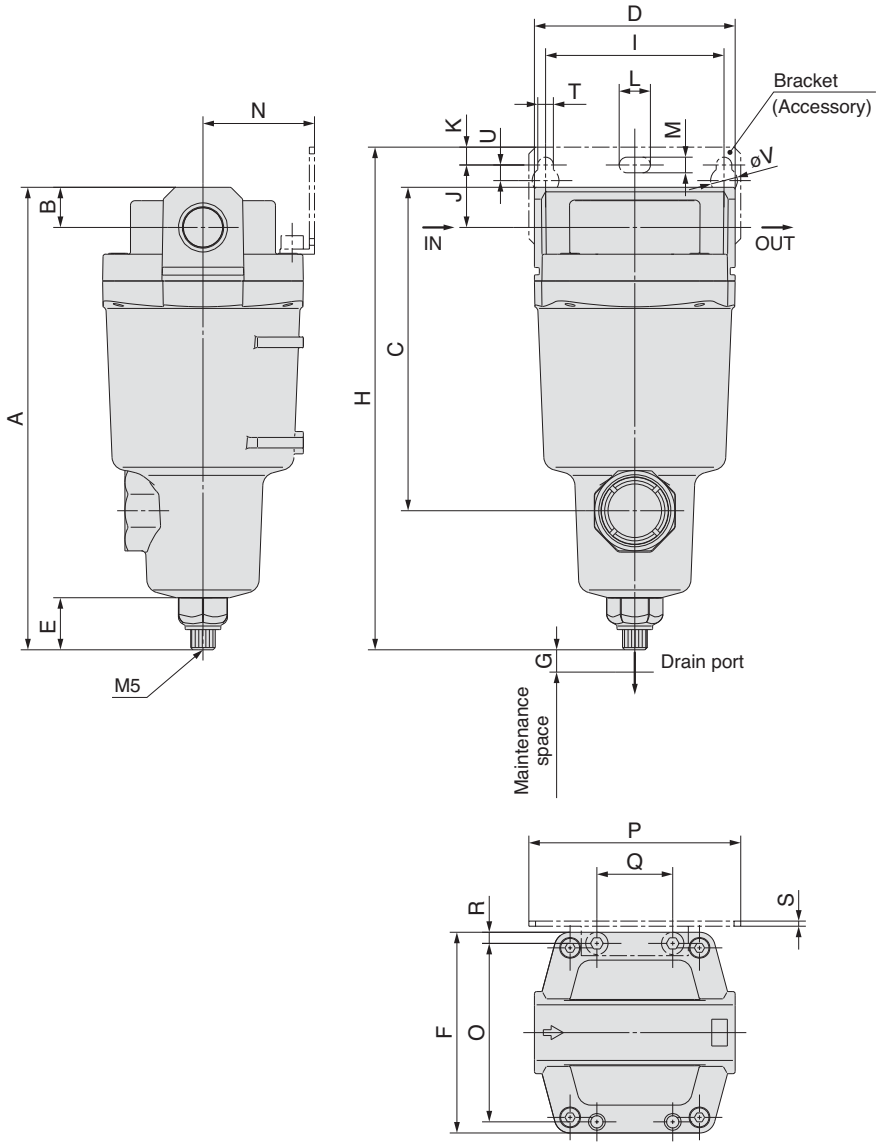
Note) Max. flow at 0.7 MPa. Max. flow varies depending on the operating pressure.

Accessory

Applicable model	AMD150C	AMD250C	AMD350C	AMD450C	AMD550C	AMD650	AMD850
Bracket assembly (with 2 mounting screws)	AM-BM101	AM-BM102	AM-BM103	AM-BM104	AM-BM105	BM56	BM57

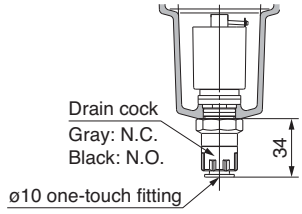
Dimensions

AMD150C to 550C

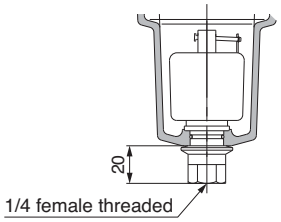


Auto drain

C: With auto drain (N.C.)
D: With auto drain (N.O.)

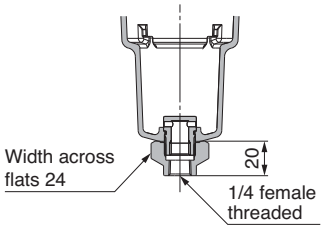


Combination of D: With auto drain (N.O.) and H: For medium air pressure

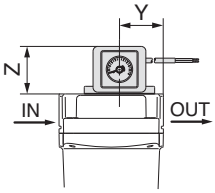


Option

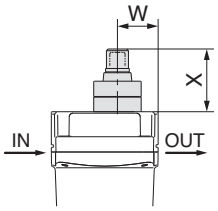
J: Drain guide 1/4 female threaded



U: With differential pressure switch (with indicator)



T: With element service indicator



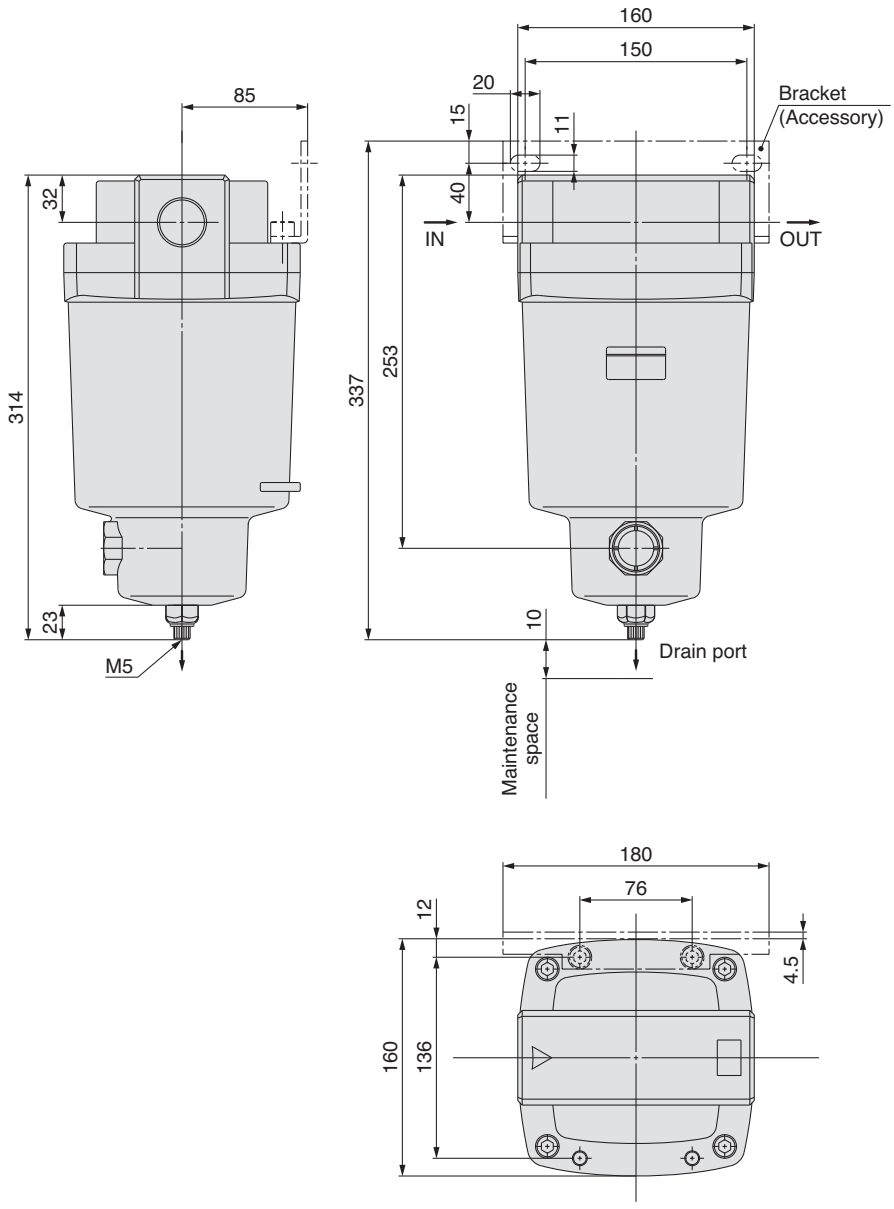
[mm]

Model	Port size	A	B	C	D	E	F	G	Bracket related dimensions																Element service indicator related dimensions		Differential pressure switch related dimensions	
									H	I	J	K	T	U	L	M	V	N	O	P	Q	R	S	W	X	Y	Z
AMD150C	1/8, 1/4	158	10	99	63	20	63	10	173	56	20	5	6	6	12	6	10	35	54	70	26	4.5	1.6	24	37	32	41
AMD250C	1/4, 3/8	172	14	113	76	20	76	10	190	66	24	8	6	6	12	6	10	40	66	80	28	5	2	27	37	36	41
AMD350C	3/8, 1/2	204	18	145	90	20	90	10	222	80	28	8	7	7	14	7	12	50	80	95	34	5	2.3	32	37	42	41
AMD450C	1/2, 3/4	225	20	166	106	20	106	10	246	90	31	10	9	9	18	9	15	55	88	111	50	9	3.2	37	37	43	41
AMD550C	3/4, 1	259	24	200	122	20	122	15	278	100	33	10	9	9	18	9	15	65	102	126	60	10	3.2	39	37	51	41

Air Preparation

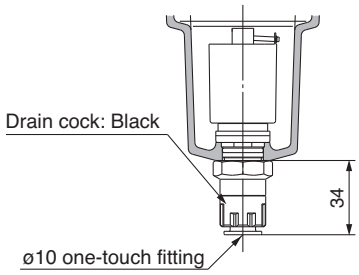
Dimensions

AMD650



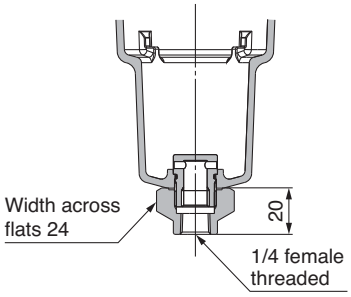
Auto drain

D: With auto drain (N.O.)

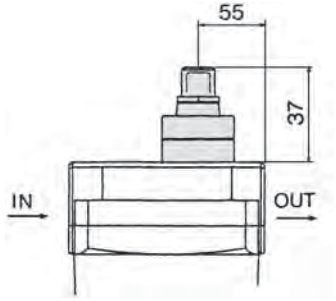


Option

J: Drain guide 1/4 female threaded

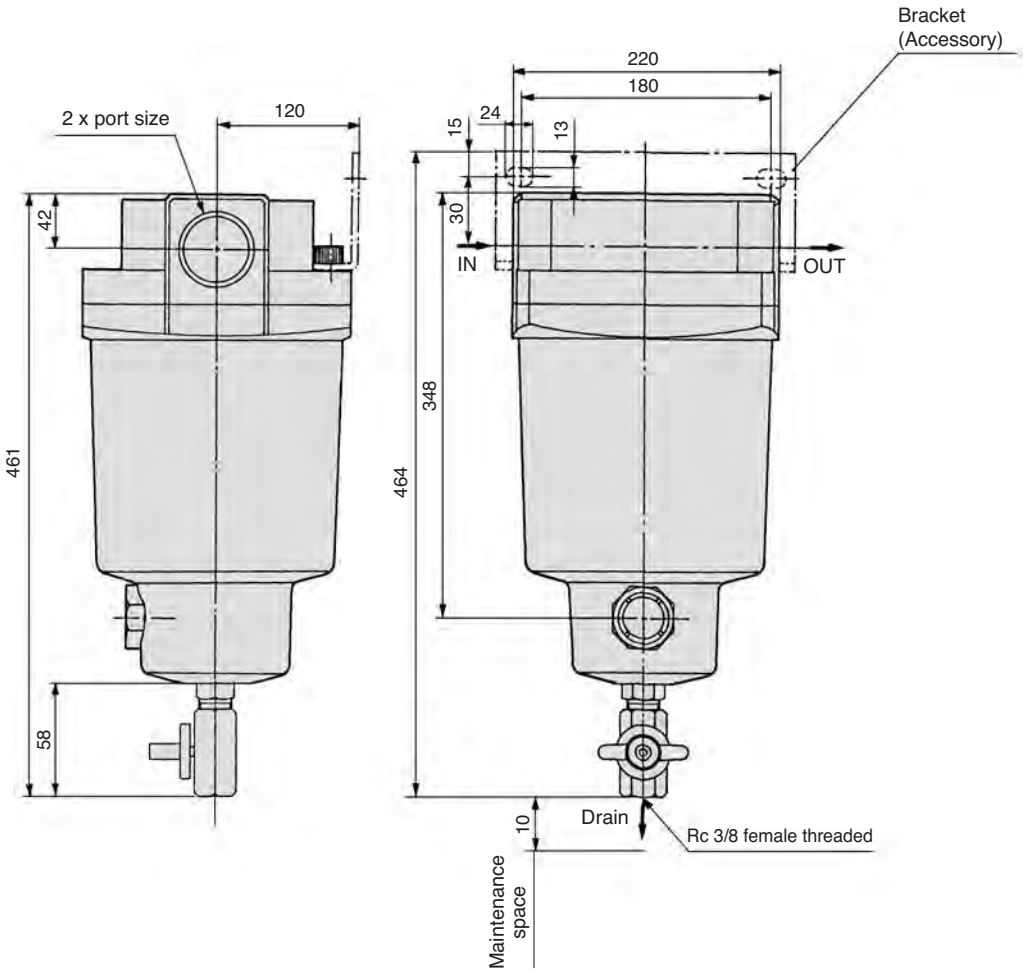


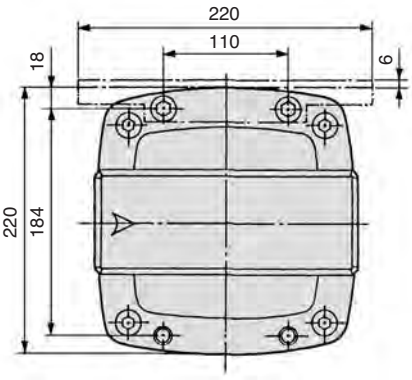
T: With element service indicator



Dimensions

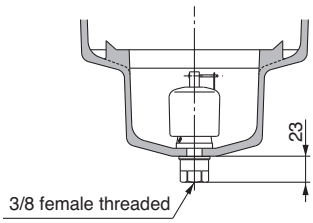
AMD850





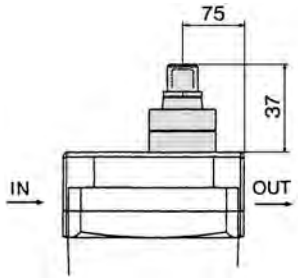
Auto drain

D: With auto drain (N.O.)
for AMD850



Option

T: With element service indicator



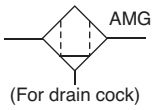
Air Preparation

Water Separator
Series AMG

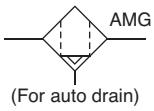
Features

- Can remove water droplets in compressed air. Use this product in cases where “water must be avoided, but not so dry as when an air dryer is used”.
- Through the adoption of an element that is exclusively used for removing water droplets and the ample housing interior space, a 99%* water removal rate** has been achieved.
- Modular connection is possible with AMG150C to 550C.

Symbol



(For drain cock)



(For auto drain)

How to Order

AMG150C to 550C **AMG** [550C] – [F] [10] [ ] [ ] – [ ]

Body size

150C
250C
350C
450C
550C

Thread type

F	G*1

*1 Conforms to ISO1179-1.

Port size

Symbol	Size	Applicable body size				
		150C	250C	350C	450C	550C
01	1/8	●				
02	1/4	●	●			
03	3/8		●	●		
04	1/2			●	●	
06	3/4				●	●
10	1					●

Option *3

Symbol	Description
–	–
F	Rubber material: Fluororubber
H	For medium air pressure (1.6 MPa)
J	Drain guide 1/4 female threaded *4
R	IN-OUT reversal direction
V	Degreasing wash,*5 white vaseline

*4 Drain piping and piping for a stop valve such as ball valve are required.
*5 Only body/housing is degreasing washed.

Auto drain *3

Symbol	Description
–	Drain cock (Without auto drain)
C	N.C. auto drain
D	N.O. auto drain

*3 Refer to the table below for the combination between the draining specification and option. (Only one draining specification is selectable).

Accessory

Symbol	Description
–	–
B	Bracket *2

*2 Bracket is included, (but not assembled).

Auto Drain Specifications/Option Combinations

◎: All draining specifications are available (including drain guide, J type).
△: N.C. auto drain (C type) is not available.
▼: N.C. auto drain (C type) and N.O. auto drain (D type) are not available.

	–	F	H	R	V
–		◎	△	◎	◎
F	◎		▼	◎	▼
H	△	▼		△	▼
R	◎	◎	△		◎
V	◎	▼	▼	◎	

: Not available

⚠Caution

Water separator can remove water droplets, but it cannot remove moisture.

* Condition of inlet air
  - Pressure: 0.7 MPa
  - Temperature: 25°C
  - Relative humidity: 100%
  - Liquid water content (Water droplet content): 15 g/m³ (ANR)
  - Compressed air flow: Rated flow of each model

** Water removal rate (%) =
$$\frac{\text{Removed water (Water droplet) (g)}}{\text{Inflowed water (Water droplet) (g)}} \times 100$$

How to Order

AMG650/850 **AMG** **650** – □ **10** □ □ – □

Body size

650
850

Thread type

F	G

Port size

Symbol	Size	Applicable body size	
		650	850
10	1	●	—
14	1 1/2	●	●
20	2	—	●

Accessory

Symbol	Description
—	—
B	Bracket *1

*1 Bracket is included, (but not assembled).

Option *2

Symbol	Description
—	—
J	Drain guide 1/4 female threaded *4
R	IN-OUT reversal direction

*4 Drain piping and piping for a stop valve such as ball valve are required.

Note) Element service indicator (symbol: T) is not available as an option because water deposits inside the indicator could lead to malfunctions.

Auto drain *2

Symbol	Description
—	Drain cock (Without auto drain) *3
D	N.O. auto drain

*2 Refer to "Auto Drain Specifications/Option Combinations".

*3 Body size 850 is equipped with a ball valve (Rc3/8 female threaded).

Auto Drain Specifications/Option Combinations

◎: Available ▨: Not available

Auto drain specifications/Option			Auto drain specifications	Option		Applicable model	
			D	J	R	AMG650	AMG850
Auto drain specifications	N.O. auto drain	D	▨	▨	◎	◎	◎
Option	Drain guide 1/4	J	▨	▨	◎	◎	▨
	IN-OUT reversal direction	R	◎	◎	▨	◎	◎

Product Recommendation

Stocked items for fast delivery

AMG150C-F01C	AMG250C-F03C	AMG350C-F04D	AMG550C-F10D
AMG150C-F01D	AMG250C-F03D	AMG450C-F04D	AMG650C-F10D
AMG150C-F02C	AMG350C-F03	AMG450C-F06C	AMG650C-F14D
AMG150C-F02D	AMG350C-F03D	AMG450C-F06D	AMG850C-F20D
AMG250C-F02D	AMG350C-F04C	AMG550C-F06D	AMG850C-F14D

Related Products

Series AFF - Main Line Filters - page 1167
Series AD402/600 - Auto Drain Valve - www.smc.eu
Series ADH4000 - Heavy Duty Auto Drain Valve - www.smc.eu
Series GD40-2-01 - Differential Pressure Gauge - www.smc.eu
Series AC - Air Preparation Modular Units - page 1076

Specifications

Fluid	Compressed air
Max. operating pressure	1.0 MPa
Min. operating pressure*	0.05 MPa
Proof pressure	1.5 MPa
Ambient and fluid temperature	5 to 60°C
Water removal rate	99%
Element life	2 years or when pressure drop reached 0.1 MPa

* With auto drain: 0.1 MPa (N.O. type) or 0.15 MPa (N.C. type)

Model	AMG150C	AMG250C	AMG350C	AMG450C	AMG550C	AMG650	AMG850
Note) Rated flow [ℓ/min (ANR)]	300	750	1500	2200	3700	6000	12000
Port size	1/8, 1/4	1/4, 3/8	3/8, 1/2	1/2, 3/4	3/4, 1	1, 1 1/2	1 1/2, 2
Mass [kg]	0.38	0.55	0.9	1.4	2.1	4.2	10.5

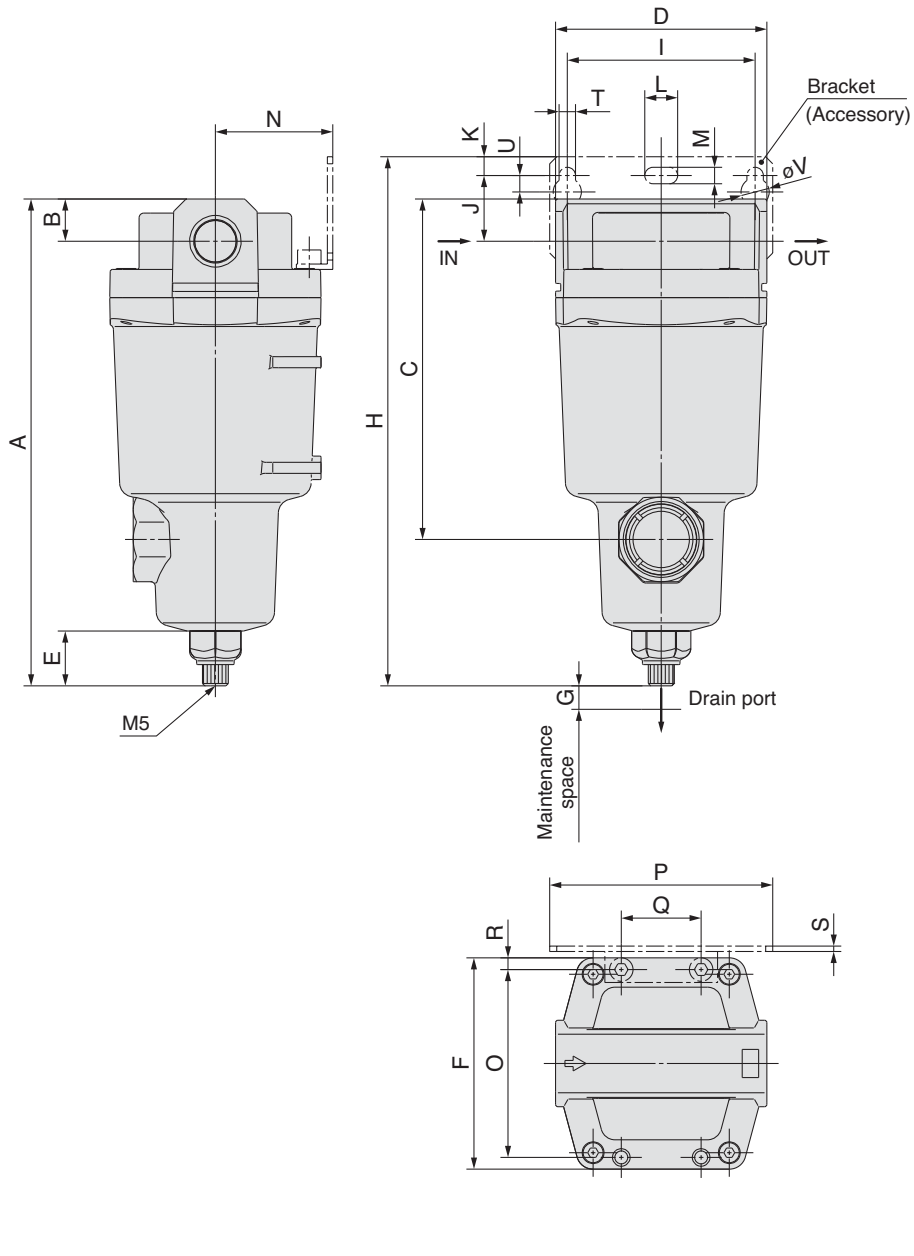
Note) Max. flow at 0.7 MPa.
Max. flow varies depending on the operating pressure. Refer to "Flow Characteristics" and "Maximum Air flow".

Accessory

Applicable model	AMG150C	AMG250C	AMG350C	AMG450C	AMG550C	AMG650	AMG850
Bracket assembly (with 2 mounting screws)	AM-BM101	AM-BM102	AM-BM103	AM-BM104	AM-BM105	BM56	BM57

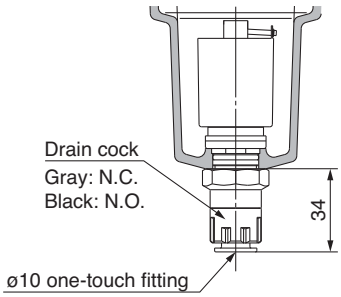
Dimensions

AMG150C to 550C

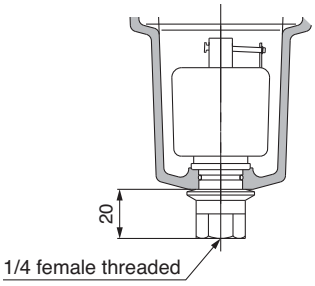


Auto drain

C: With auto drain (N.C.)
D: With auto drain (N.O.)

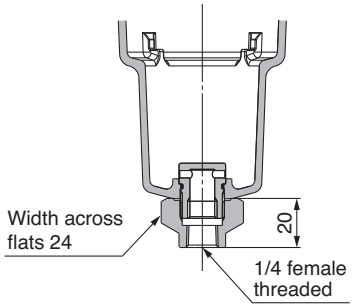


Combination of D: With auto drain (N.O.) and H: For medium air pressure



Option

J: Drain guide 1/4 female threaded

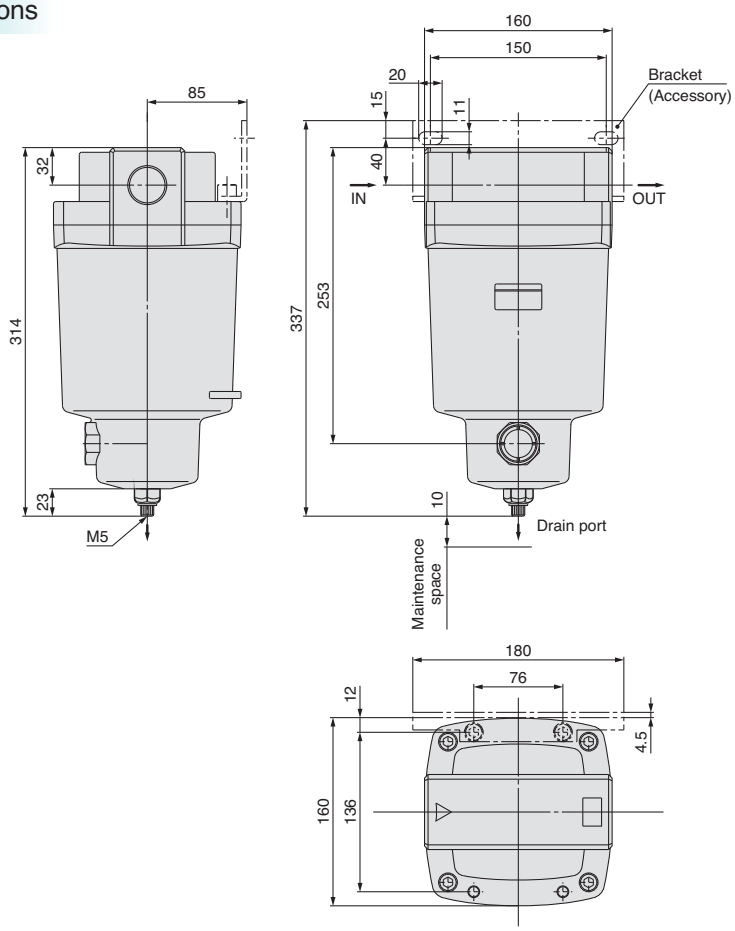


[mm]

Model	Port size	A	B	C	D	E	F	G	Bracket related dimensions														
									H	I	J	K	T	U	L	M	V	N	O	P	Q	R	S
AMG150C	1/8, 1/4	158	10	99	63	20	63	10	173	56	20	5	6	6	12	6	10	35	54	70	26	4.5	1.6
AMG250C	1/4, 3/8	172	14	113	76	20	76	10	190	66	24	8	6	6	12	6	10	40	66	80	28	5	2
AMG350C	3/8, 1/2	204	18	145	90	20	90	10	222	80	28	8	7	7	14	7	12	50	80	95	34	5	2.3
AMG450C	1/2, 3/4	225	20	166	106	20	106	10	246	90	31	10	9	9	18	9	15	55	88	111	50	9	3.2
AMG550C	3/4, 1	259	24	200	122	20	122	15	278	100	33	10	9	9	18	9	15	65	102	126	60	10	3.2

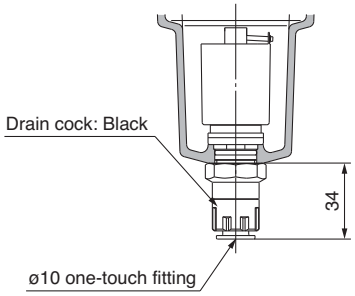
Dimensions

AMG650



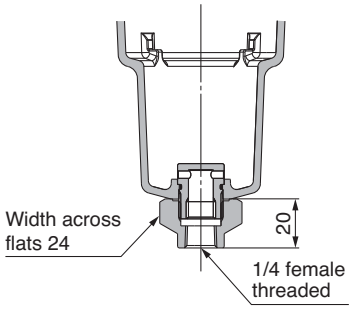
Auto drain

D: With auto drain (N.O.)



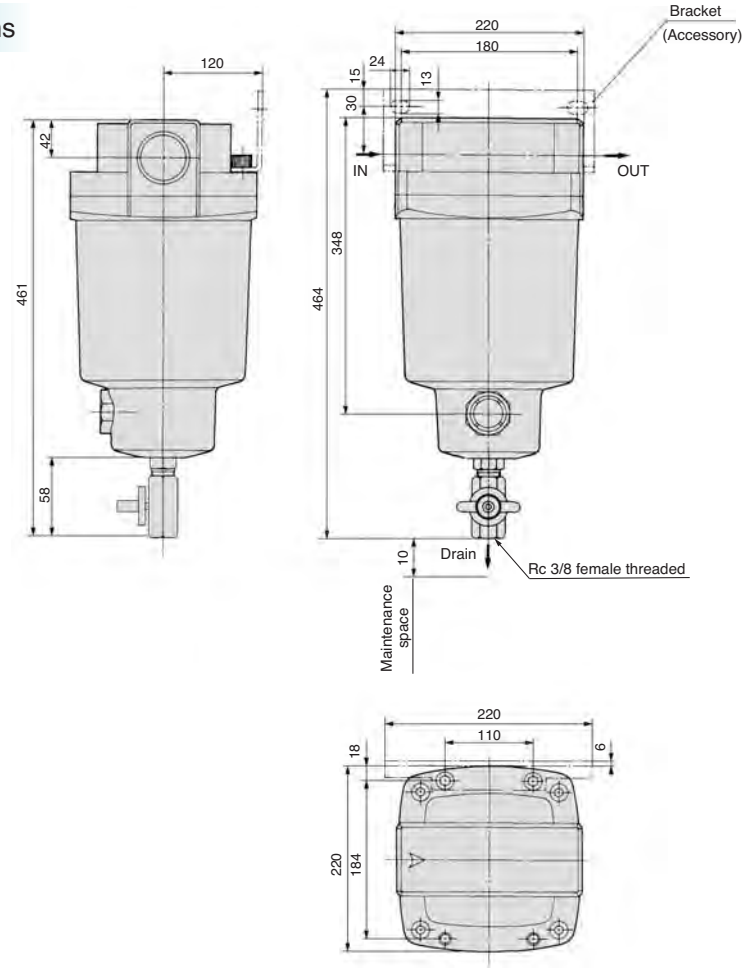
Option

J: Drain guide 1/4 female threaded



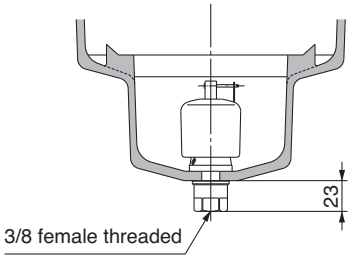
Dimensions

AMG850



Auto drain

D: With auto drain (N.O.)
for AMG850



For more product options and details see our specific catalogues or on-line information.