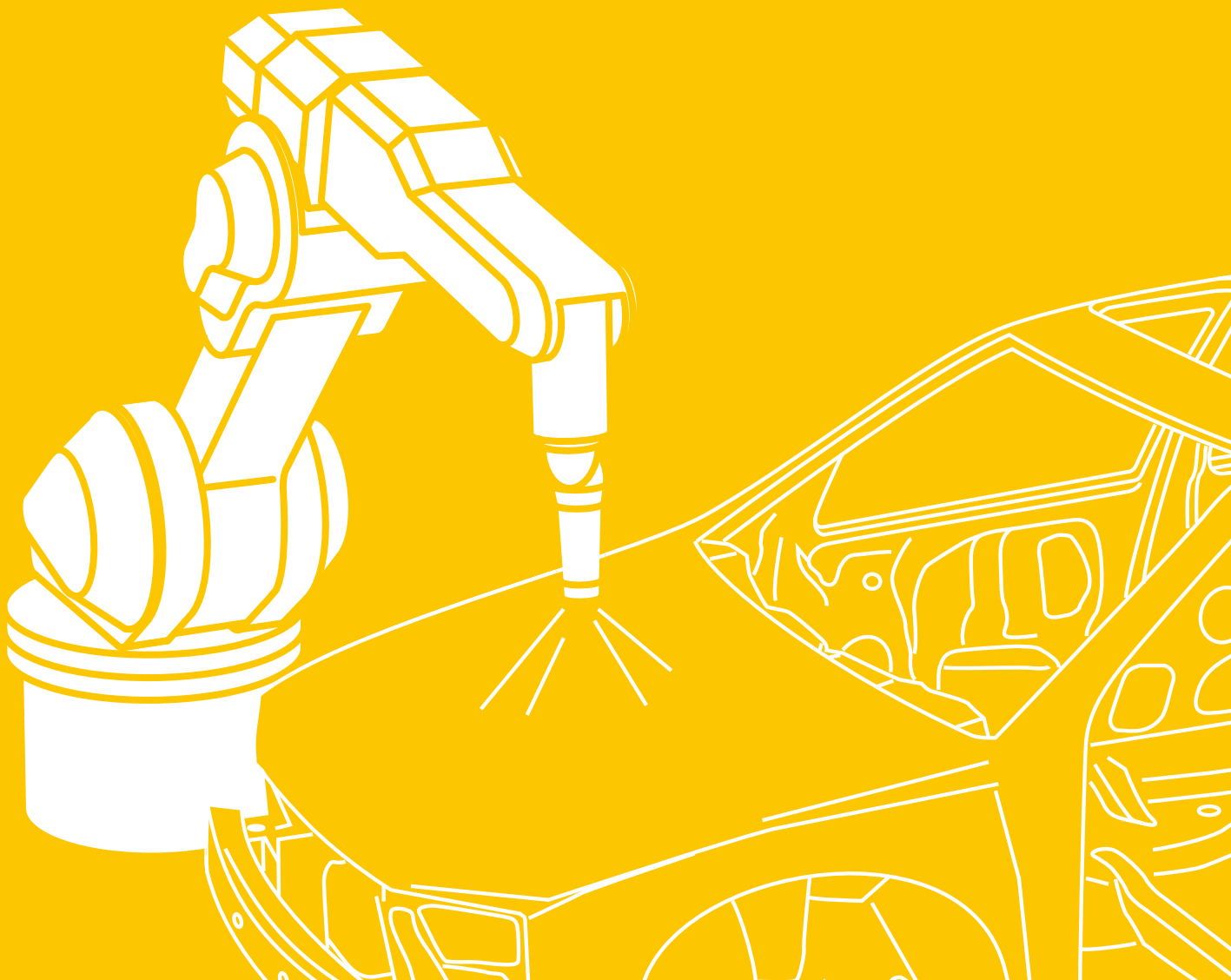


Catalog for Painting Processes



Products listed in the Catalog for Painting Processes

The products listed in this catalog which are to be used in the painting related facility, are carefully selected as our recommended equipment based on the past record.

Equipment for painting processes

- The quality of compressed air to be used for the painting facilities will have a big effect on the finishing quality of painting. The foreign materials contained within the compressed air such as water, oil, dust or carbon will become causes for sputters or/and mottles in painting, therefore it is necessary to eliminate these foreign materials by air preparation equipment such as dryer, air filter, mist separator, etc.
- Greases which are applied as lubricant or oils adhered to the parts will also become causes for sputters or/and mottles in painting, and for this reason, it is recommended all of the equipment in requisition are “specifications for painting.”
Although, ideally, the “specifications for painting” should be oil free, there are cases where lubricant is necessary in order to maintain the function of the products. We also employ the method of applying white vaseline after giving degreasing treatment to the parts.
- As for the directional control valves, we apply white vaseline to the main valve, whilst applying standard grease to the non fluid contact area such as pilot valve. Please note that exhaust air may contain the standard grease.
- If dry air (atmospheric pressure dew point: -23°C or less) is used, the life expectancy may be shortened because dry air will accelerate evaporation of grease inside.

Precautions on contents of this catalog

1. Although this catalog includes variations of each product series, sizes may vary from the standard products. For detailed information, please contact SMC.
2. Please refer to the **Web Catalog** or Best Pneumatics catalog for details and precautions for each piece of equipment.
3. If your interests are on the equipment other than those listed in this catalog, please contact SMC for more information.
4. As this catalog includes some “standard products” to which the specifications for painting are not applicable, please read through the precautions before use.

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Catalog for Painting Processes

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Stainless Steel 316 Insert Fittings	KFG2	Grease-free	p. 19
Check Valve for Paint Process	AK-DPO00057	Stainless steel	p. 22
Regulator for Paint Process	XT13-406-X201		p. 23
Fluoropolymer Tubing	TQ	2-layer soft fluoropolymer tubing (Standard product)	p. 24
	TLM/TILM	Fluoropolymer tubing (Standard product)	p. 26
	TH/TH-X78/TIH	FEP tubing (Fluoropolymer) (Standard product)	p. 28
	TL/TIL	High purity fluoropolymer tubing (Standard product)	p. 30
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Process Pumps	PA/PAP/PAX, PB, PAF		p. 33

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	VPA300/500/700-X250	White vaseline, Base mounted	p. 43
	VTA325-X250	White vaseline	p. 47
	VTA325-X250	White vaseline	p. 47
3-Port/Solenoid Valve	VP300/500/700-X250	White vaseline, Body ported	p. 49
	VP300/500/700-X250	White vaseline, Base mounted	p. 54
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	VQZ200/300-X3	White vaseline, Base mounted	p. 59
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	-X40 (AFF37B, 75B)	Degreasing wash, White vaseline	p. 83
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	-X34	With differential pressure gauge, White vaseline	p. 91
	-X40 (AM650, 850)	Degreasing wash, White vaseline	p. 91
Micro Mist Separator	AMD-V (AMD150C to 550C)	Degreasing wash, White vaseline	p. 99
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	-X40 (AMD650, 850)	Degreasing wash, White vaseline	p. 99
Micro Mist Separator with Pre-filter	AMH-V (AMH150C to 550C)	Degreasing wash, White vaseline	p. 107
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	-X40 (AMH650, 850)	Degreasing wash, White vaseline	p. 107
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Micro Mist Separator	AFD20-A to 40-A-X2009	Degreasing wash, White vaseline	p. 126
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	IZD10	Electrostatic sensor (Standard product)	p. 338
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Paint Process Equipment

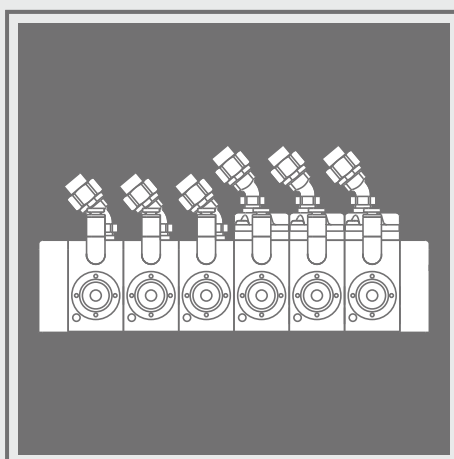
Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

Paint Process Equipment



Product name	Series	Page
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Check Valve for Paint Process	AK-DPO00057	p. 22
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2-Layer Soft Fluoropolymer Tubing	TQ	p. 24
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Fluoropolymer Tubing (PFA)/Inch Size	TILM	p. 27
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Soft Fluoropolymer Tubing/Metric Size	TD	p. 31
Soft Fluoropolymer Tubing/Inch Size	TID	p. 32
Process Pumps	PA/PAP/PAX, PB, PAF	p. 33

Valve for Water and Chemical Base Fluids (2/3-Port Air Operated Valve)

Applicable for 2 liquid paint (VCC12D)

- PTFE diaphragm structure = Sliding part eliminated
- Less paint adhesion

Mountable on a robot arm (space-saving, lightweight)

- 2 valves per station (30 mm pitch)
- 2/3 port valves mixed mounting
- Resin manifold block



- 2 port ... 6 valves
- 3 port ... 6 valves
- Fitting ... 19 pcs.

SUS316L Stainless steel fitting

VCK Series / $\varnothing 6$ to $\varnothing 12$



2 port valve

VCC12(D)



3 port valve

VCC13

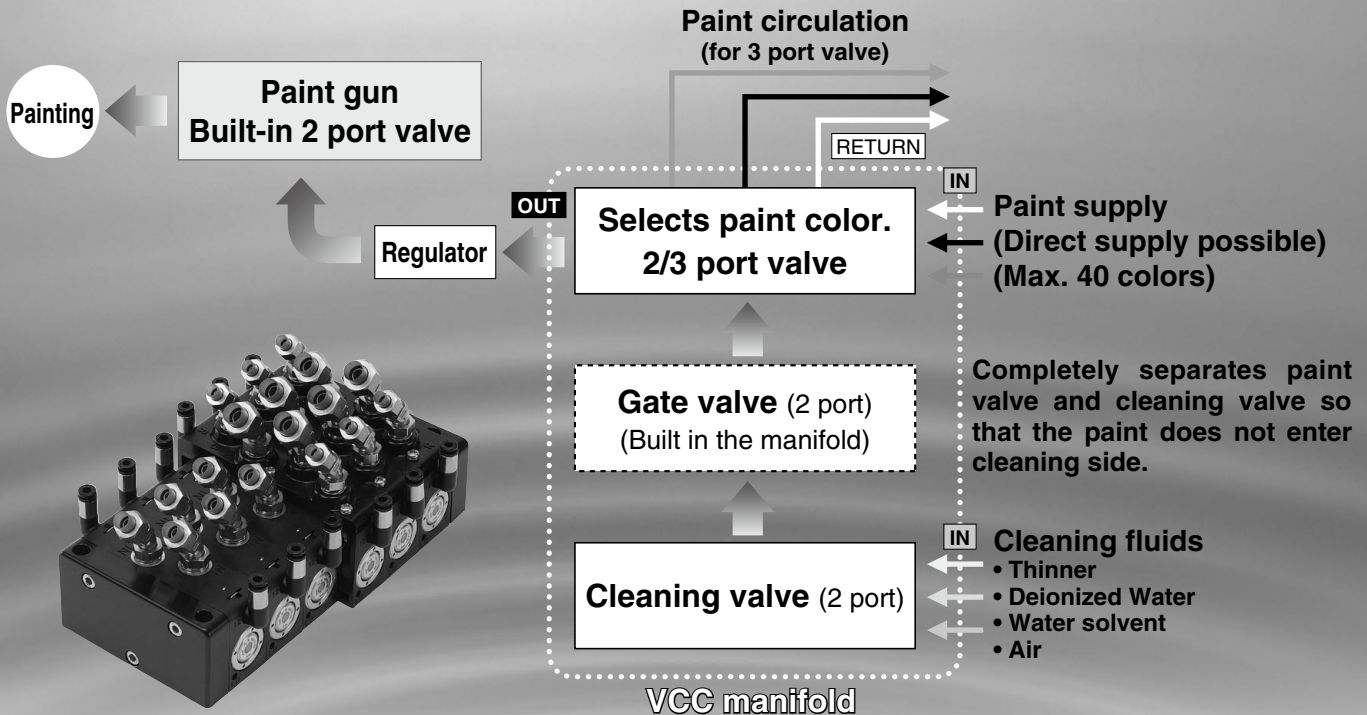


VCC Series

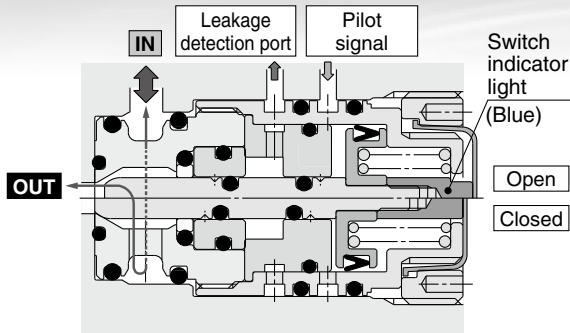
Paint Line System

(Application example)

Water/Chemical Base Paint, Deionized Water, Cleaning Solvent type



2 port valve (VCC12)

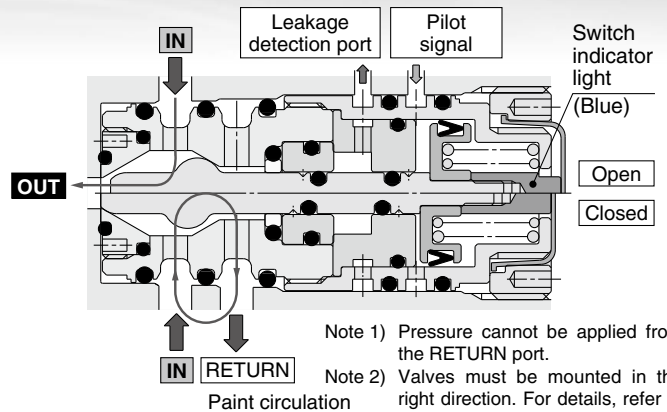


Note) Valves must be mounted in the right direction.
For details, refer to the **Web Catalog**.

Leakage detection port

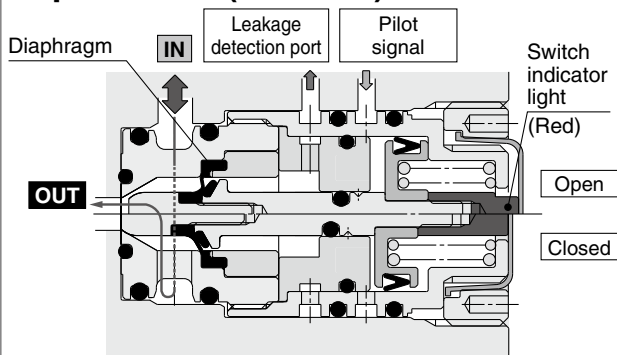
Paint leakage to the pilot piping can be checked visually. Even when leakage occurs, no backflow between the paint and pneumatics.

3 port valve (VCC13)



2 Liquid Paint type/PTFE Diaphragm

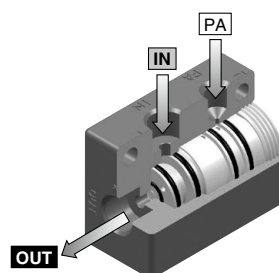
2 port valve (VCC12D)



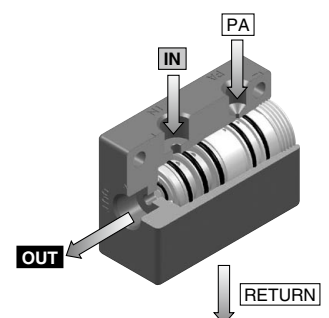
Note) Valves must be mounted in the right direction.
For details, refer to the **Web Catalog**.

Single Paint, Solvent, Ink Control type/Single Unit

2 port valve (VCC12(D))



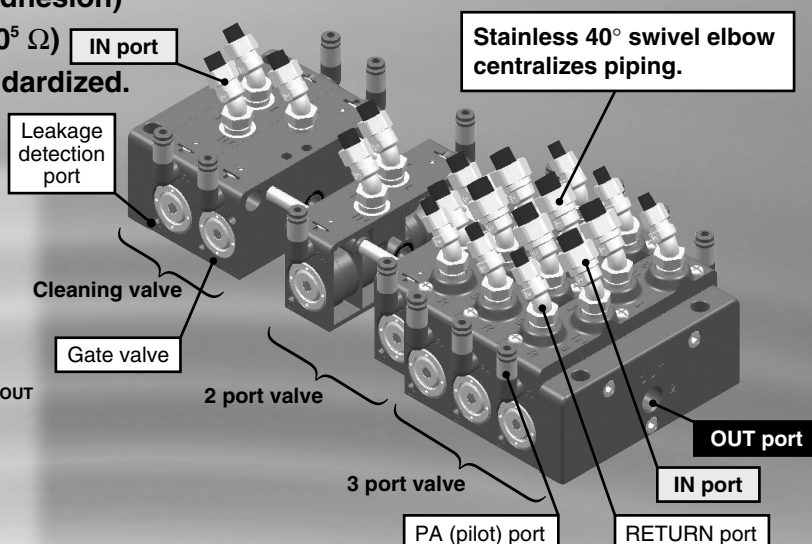
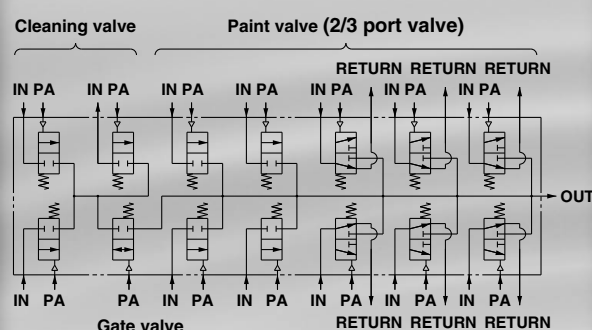
3 port valve (VCC13)



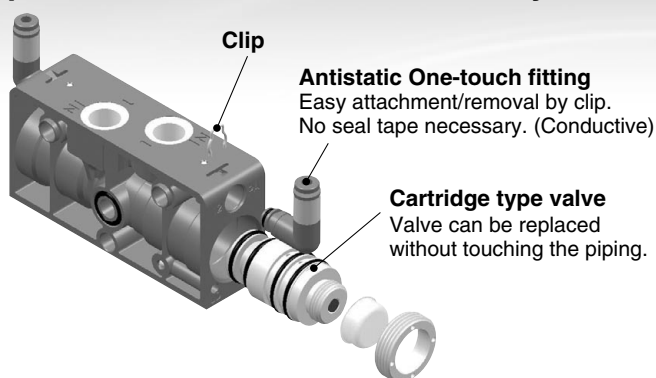
Manifold Valve

Separable Resin Manifold Block

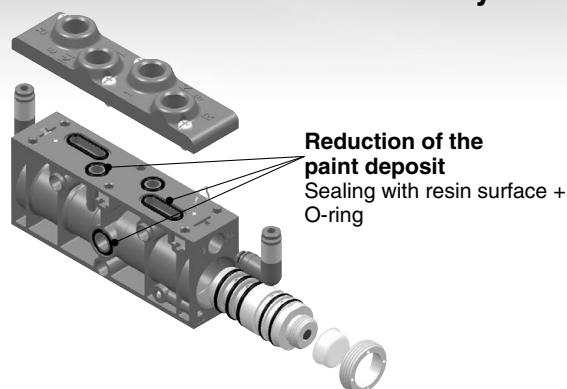
- Easy addition and reduction of stations
- Tough PPS (Polyphenylene Sulfide) resin is used.
- Fluororesin is contained. (Less fluid adhesion)
- Antistatic (Surface resistance 10^2 to $10^5 \Omega$)
- SUS316L Stainless steel fitting is standardized.



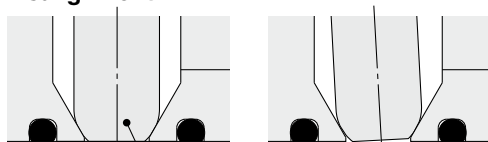
2 port valve manifold block assembly



3 port valve manifold block assembly



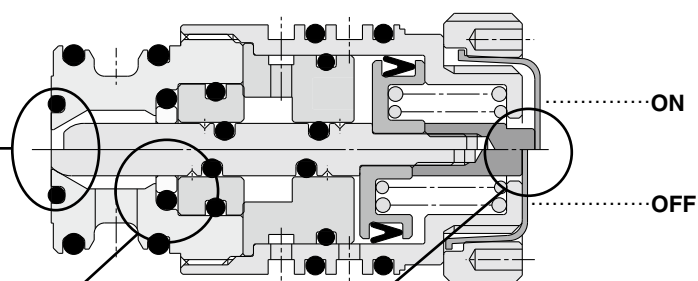
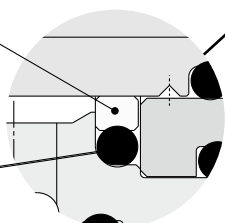
Less build-up of liquid → Better cleaning performance, reduce mixing of colors
Liquid build-up at valve is 0.01 cc or less.
Ensures stable sealing performance for misalignment.



Spherical surface + Tapered shape

Special fluororesin seal

O-ring back-up ensures sealing performance.



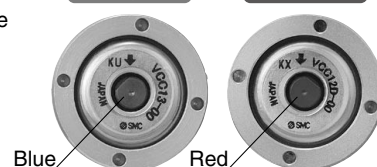
Indicator function

Operating condition can be checked visually, or by touching.

Indicator color
Blue ... VCC12, 13
Red ... VCC12D

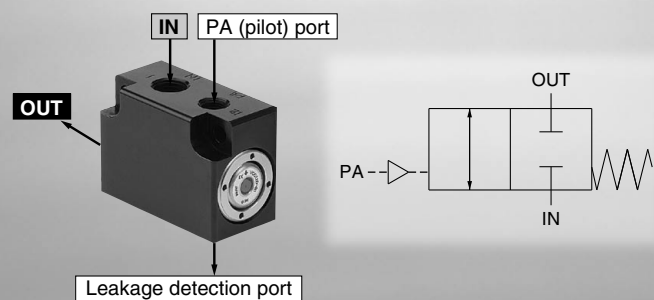
Standard (Sliding type)

Diaphragm type

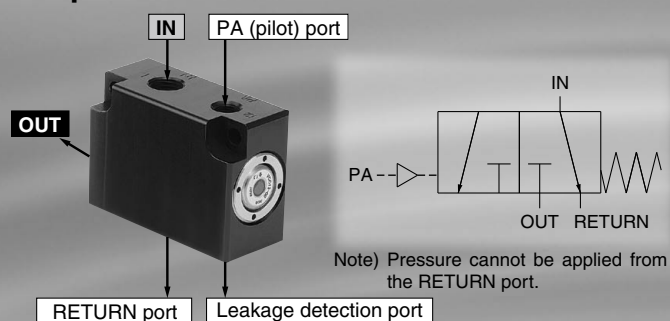


Single Unit

• 2 port valve



• 3 port valve



SUS316L Stainless Steel Fitting

VCKH



Male connector

VCKK



40° swivel elbow

VCKL



90° swivel elbow

- 40° swivel elbow is added in line-up.
- Seal tape is unnecessary. No chance of insulation. (Applicable for paint with high voltage)
- Attachment/removal in a narrow space is easy.

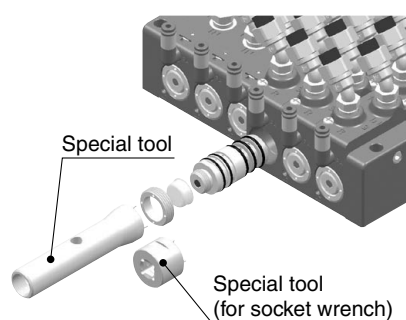
Type	Model	Port size	Applicable tubing O.D. x I.D.
Male connector	VCKH	G1/4	6 x 4
40° swivel elbow	VCKK		8 x 6
90° swivel elbow	VCKL		10 x 8
			10 x 7.5
			12 x 9

Special Tools

Disassembly and maintenance are possible.

Product design takes maintenance performance into consideration.

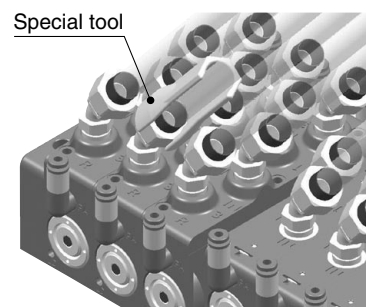
Attaching/Detaching valve



Disassembling/Cleaning valve element



Attaching/Detaching tubing



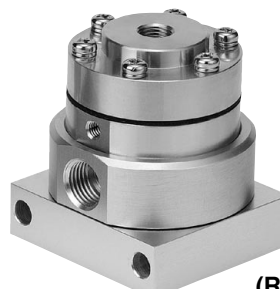
Related Products

Check Valve for Paint Process (AK-DPO00057)



(Refer to page 22.)

Regulator for Paint Process (XT13-406-X201)



(Refer to page 23.)

Valve for Water and Chemical Base Fluids (2/3-Port Air Operated Valve) **VCC Series**

Please refer to "Manifold Specification Sheet" in the **Web Catalog**.

How to Order

Valve

VCC1**2**-**00**

● **Passage number**

2	2 port valve
3	3 port valve Note 2)
2D	2 port/Diaphragm type (Applicable for 2 liquid paint)

Note 1) Valves must be mounted in the right direction. For details, refer to the **Web Catalog**.

Note 2) Pressure cannot be applied from a 3 port valve RETURN port.

● **Port size**

00	For manifold mounting
02	Rc1/4 (for single unit) Note)
02F	G1/4 (for single unit) Note)

Note) Part number for sub-base

For 2 port: VCC12-S-⁰²_{02F} [Rc1/4]

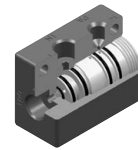
For 3 port: VCC13-S-⁰²_{02F} [Rc1/4]



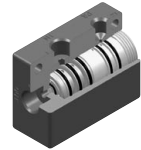
VCC12(D)-00



VCC13-00



VCC12(D)-02(F)



VCC13-02(F)

Manifold

Without gate valve

VV**M****CC1**-**06****06****C4**

● **Type (Passage number)**

2	2 port valve, Cleaning valve
3	3 port valve
M	2/3 port valves mixed mounting

● **Pilot port fitting size**

C4	ø4 One-touch fitting (Antistatic)
C6	ø6 One-touch fitting (Antistatic)

● **2 port valve mountable number**

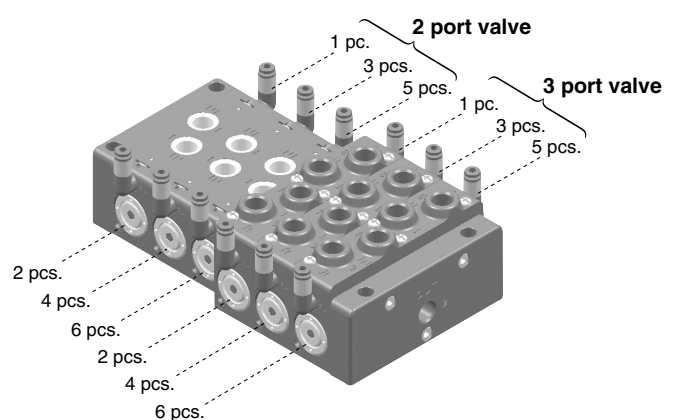
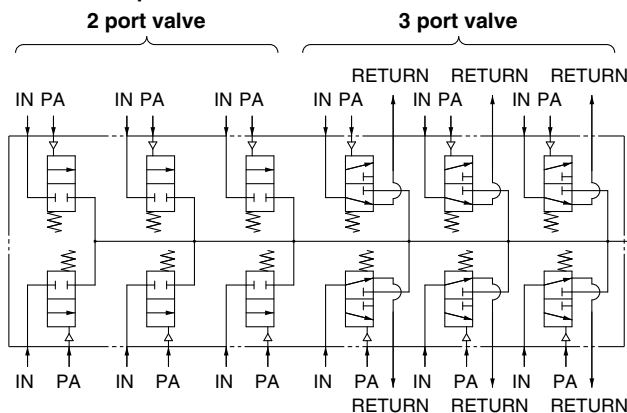
00	No 2 port valves used
02	2 pcs. (colors)
04	4 pcs. (colors)
⋮	⋮

● **3 port valve mountable number**

00	No 3 port valves used
02	2 pcs. (colors)
04	4 pcs. (colors)
⋮	⋮

Note) Maximum mountable valve number: 40 pcs. (in total of 2 port and 3 port valves)

Circuit example



How to Order

Manifold

With gate valve **VV M CC1-02 06 C4-G 04**

Passage number

2	2 port valve, Cleaning valve
M	2/3 port valves mixed mounting

2 port valve mountable number

00	No 2 port valves used
02	2 pcs. (colors)
04	4 pcs. (colors)
:	:

3 port valve mountable number

00	No 3 port valves used
02	2 pcs. (colors)
04	4 pcs. (colors)
:	:

Note) Maximum mountable valve number: 40 pcs. (in total of 2 port, 3 port and gate valves)

Gate valve and cleaning valve mountable number

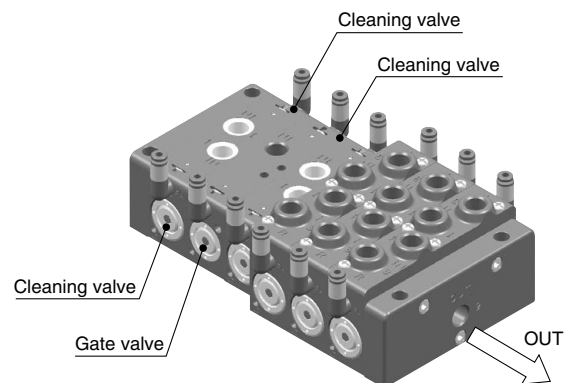
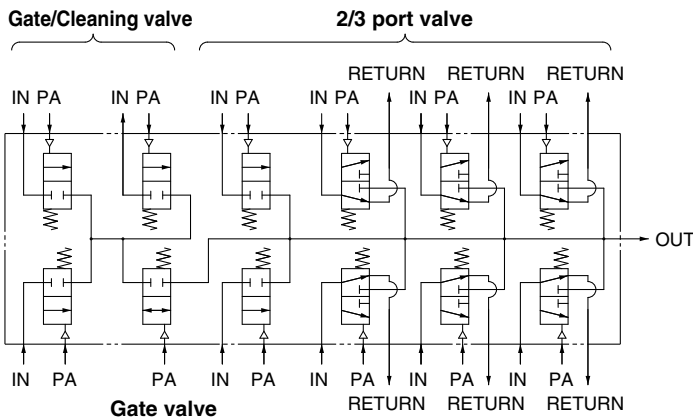
02	Cleaning valve (2 port valve): 1 pc. + Gate valve: 1 pc.
04	Cleaning valve (2 port valve): 3 pcs. + Gate valve: 1 pc.
06	Cleaning valve (2 port valve): 5 pcs. + Gate valve: 1 pc.

Pilot port fitting size

C4	ø4 One-touch fitting (Antistatic)
C6	ø6 One-touch fitting (Antistatic)

- * Valve for installation is not included in the manifold model.
- * Gate valve and cleaning valve (2 port valve) for installation are not included. They are ordered separately. (Gate valve is equivalent to 2 port valve.)
- * When cleaning valve number is an even number, use the blanking plug for 2 port valve.
- * The gate valve and cleaning valve can be ordered separately.
Model example: **VV2CC1-0000-G04**
When ordering the gate valve and cleaning valve only, only "2" is available for the passage number.

Circuit example



SUS316L Stainless steel fitting

VCK K 0604-02F

Shape

H	Male connector
K	40° swivel elbow
L	90° swivel elbow

Port size

02F	G1/4
------------	------

* G1/4 has special shape of bottom seal. For details, refer to the [Web Catalog](#).

Applicable tubing (O.D. x I.D.)

0604	6 x 4
0806	8 x 6
1075	10 x 7.5
1008	10 x 8
1209	12 x 9



VCKH
Male connector



VCKK
40° swivel elbow



VCKL
90° swivel elbow

Option

Blanking Plug Assembly

Type	Model	Description	Qty.
For 2 port valve	VVCC12-10A-1	Blanking plug (with O-ring)	1
		Hexagon socket head plug (R1/4)	1
For 3 port valve	VVCC13-10A-1	Blanking plug (with O-ring)	1
		Hexagon socket head plug (R1/4)	2



VCC Series

Specifications

Model	VCC12	VCC13	VCC12D
Passage number	2 port	3 port ^{Note 3)}	2 port (Diaphragm type)
Construction (Fluid contact material)	Poppet seal (PEEK resin + Stainless steel) + Special fluororesin sliding part		Poppet seal (PEEK resin + Stainless steel) + Special fluororesin diaphragm
Fluid	Water/Chemical base paint, Ink, Cleaning solvent (Water, Butyl acetate), Air		
Operating pressure range (MPa)	0 to 1.0 (Instantaneous pulsation pressure: 1.2)		0 to 0.7 (Instantaneous pulsation pressure: 0.9)
Withstand pressure (MPa)	2		1.5
Pilot pressure (MPa)	0.4 to 0.7		
Orifice diameter (mm)	ø3.8		
Flow rate characteristics Kv (Cv)	IN⇔OUT: 0.28(0.33)	IN⇒OUT: 0.28(0.33) IN⇒RETURN: 0.25(0.3)	IN⇔OUT: 0.28(0.33)
Fluid temperature (°C)	5 to 50		
Ambient temperature (°C)	5 to 50		
Lubrication	Not possible (Initial lubricant: White vaseline is used.)		
Mounting orientation	Unrestricted		
Valve leakage (cm ³ /min)	1 or less (3 port valve IN → RETURN: 20 or less) ^{Note 1)}		1 or less ^{Note 2)}

Note 1) Supply pressure: Valve leakage at 1.2 MPa (for air)

Note 2) Supply pressure: Valve leakage at 0.9 MPa (for air)

Note 3) Pressure cannot be applied from a 3 port valve RETURN port.

SUS316L Stainless Steel Fitting Specifications

Applicable tubing	Nylon/Fluoro tubing
Fluid	Water/Chemical base paint, Ink, Cleaning solvent (Water, Butyl acetate), Air
Max. operating pressure (at 20°C) (MPa)	1.0
Ambient and fluid temperature (°C)	0 to 60

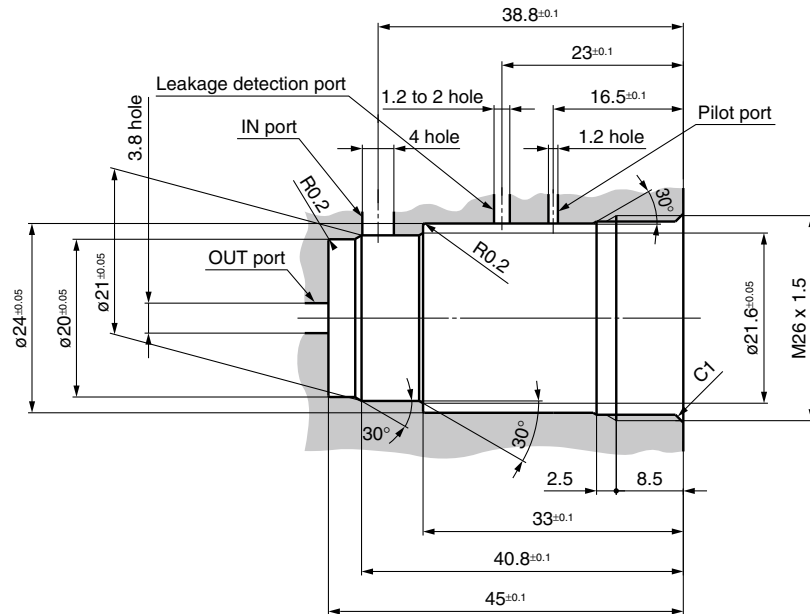
Weight

Valve	VCC12 (2 port)		37 g
	VCC13 (3 port)		48 g
Blanking plug assembly	For 2 port		29 g
	For 3 port		45 g
Manifold block * Valves are not attached.	For 2 port (2 stations, one-piece type)		150 g
	For 3 port (2 stations, one-piece type)		254 g
	For gate valve		300 g
End plate	For 2 port		409 g
	For 3 port		495 g
	For 2/3 port mixed mounting		452 g
Fittings	VCKH	ø6	24 g
		ø8	25 g
		ø10	33 g
		ø12	36 g
	VCKK	ø6	25 g
		ø8	26 g
		ø10	32 g
		ø12	37 g
	VCKL	ø6	29 g
		ø8	30 g
		ø10	37 g
		ø12	41 g

Dimensions

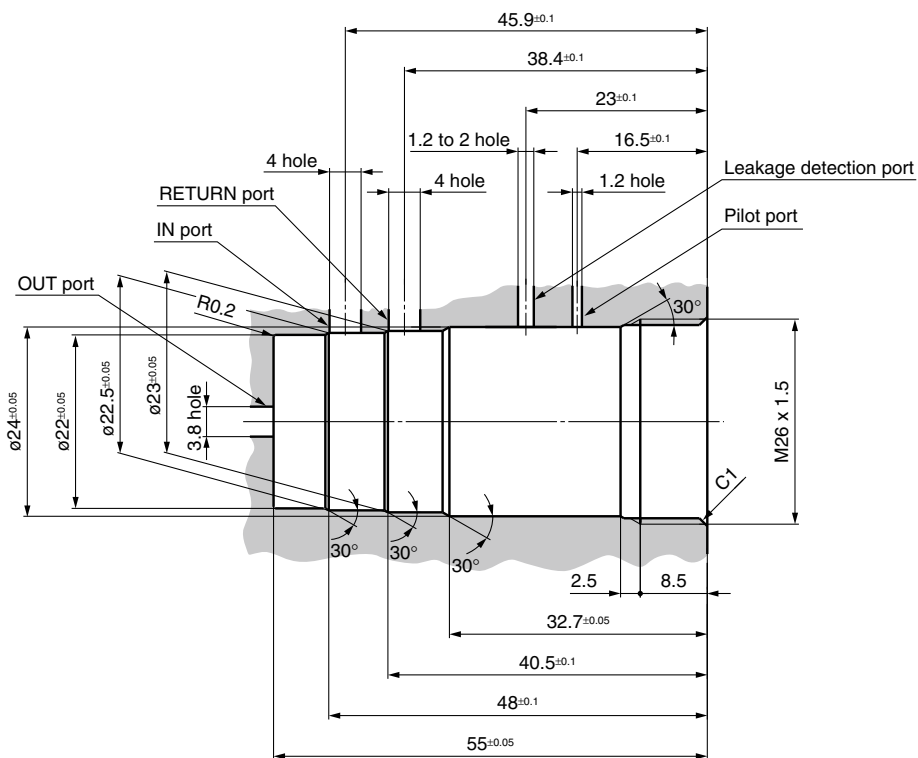
Mounting hole dimensions (When valve is built in to the device.)

VCC12(D)-00



* Recommended surface roughness of inner surface where the valve is inserted is Rz6.3.

VCC13-00



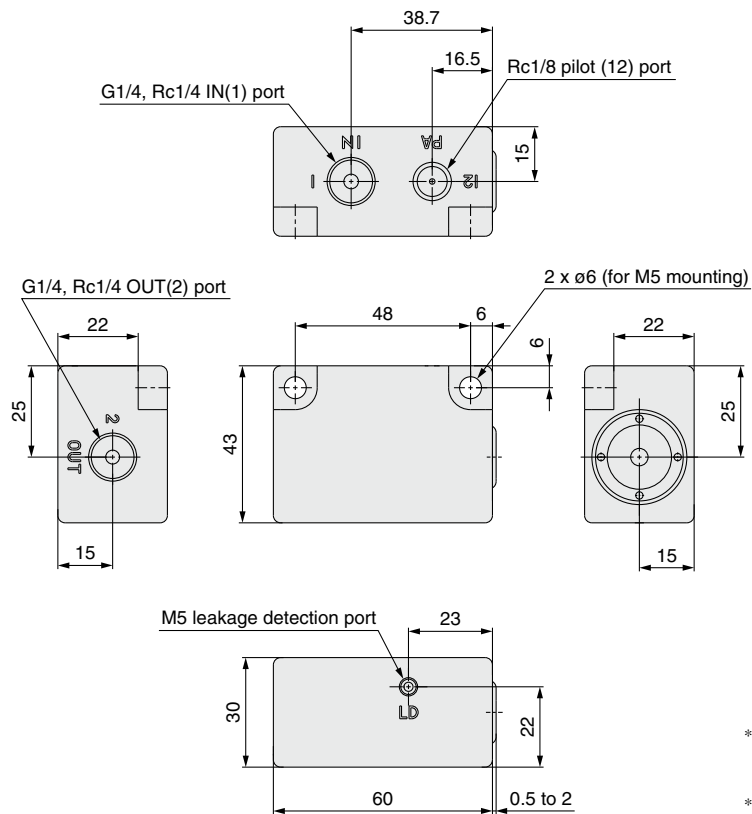
* Recommended surface roughness of inner surface where the valve is inserted is Rz6.3.

VCC Series

Dimensions

Single valve unit

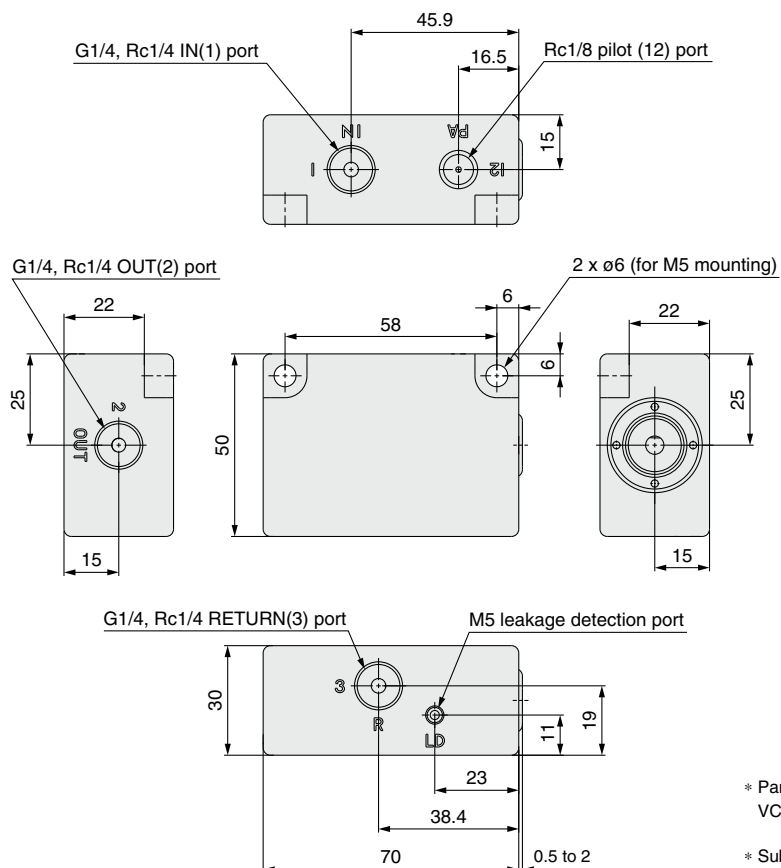
VCC12(D)-02(F)



* Part number for sub-base
VCC12-S-02 [Rc1/4]
02F [G1/4]

* Sub-base material is aluminum
+ hard anodized containing PTFE.

VCC13-02(F)



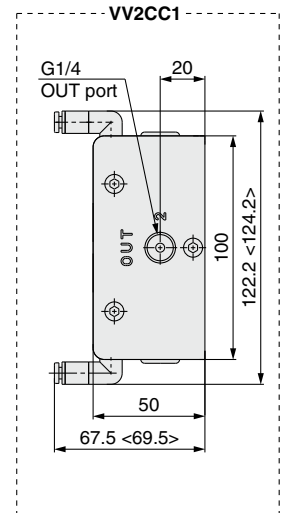
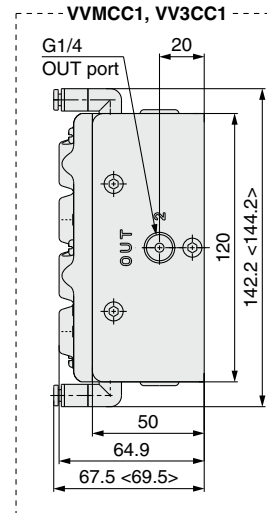
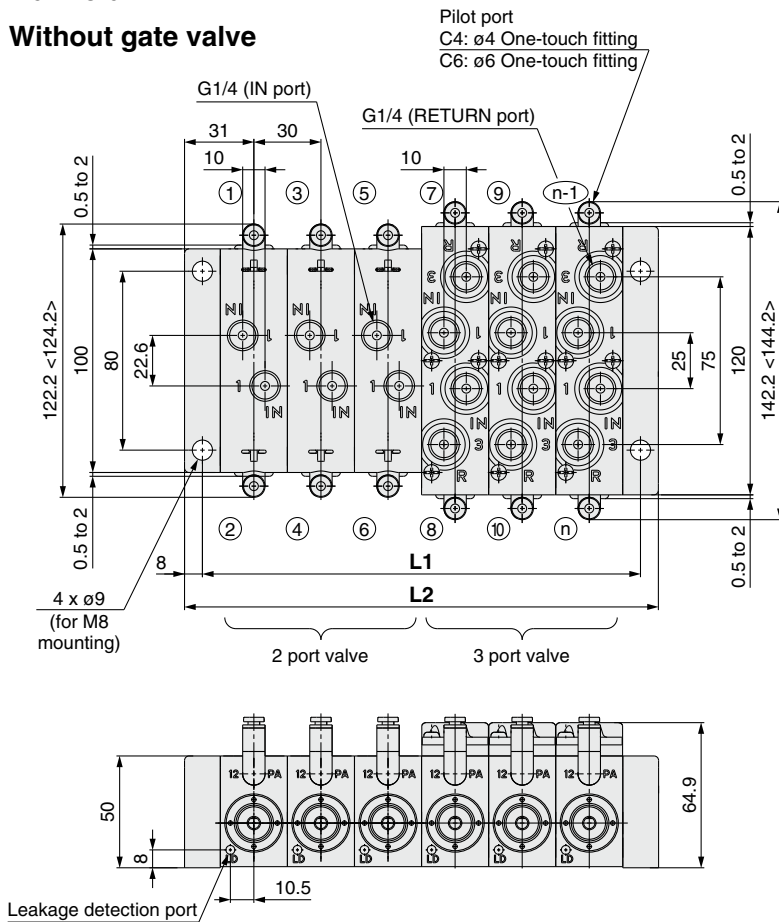
* Part number for sub-base
VCC13-S-02 [Rc1/4]
02F [G1/4]

* Sub-base material is aluminum
+ hard anodized containing PTFE.

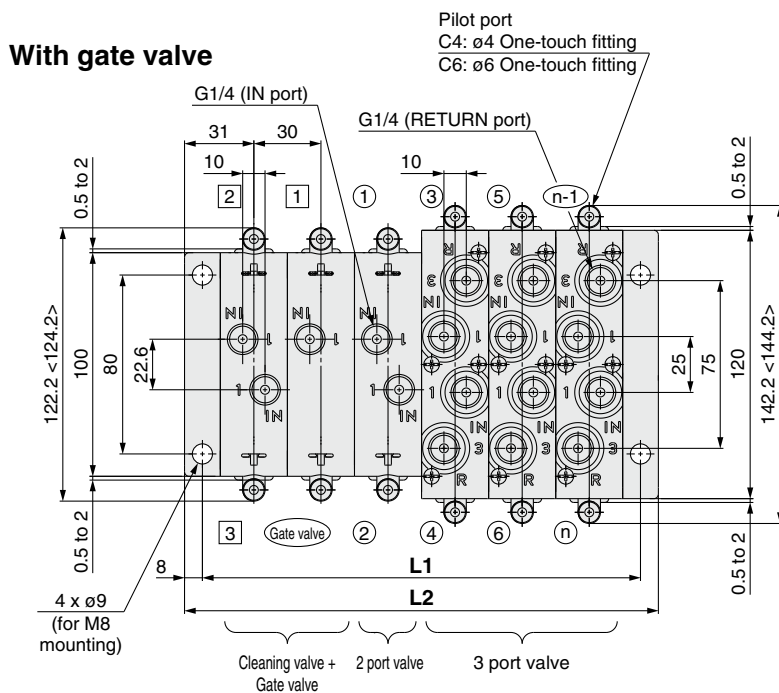
Dimensions

Manifold

Without gate valve



With gate valve



* Aluminum + hard anodized containing PTFE and POM are used for a part of the manifold material. For details, refer to the [Web Catalog](#).

< >: Pilot port is C6.

$$L1 = n / 2 \times 30 + 16 \quad L2 = n / 2 \times 30 + 32$$

* n = Number of valves (cleaning valve + gate valve + other valves)

n: Stations (mm)

n	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
L1	46	76	106	136	166	196	226	256	286	316	346	376	406	436	466	496	526	556	586	616
L2	62	92	122	152	182	212	242	272	302	332	362	392	422	452	482	512	542	572	602	632

SUS316L Stainless Steel Fittings

VCK Series

How to Order

VCK K 0604 - 02F

Shape

H	Male connector
K	40° swivel elbow
L	90° swivel elbow

Port size

02F G 1/4

* G1/4 has special shape of bottom seal. For details, refer to the [Web Catalog](#).

Applicable tubing (O.D. x I.D.)

0604	6 x 4
0806	8 x 6
1075	10 x 7.5
1008	10 x 8
1209	12 x 9



VCKH
Male connector



VCKK
40° swivel elbow

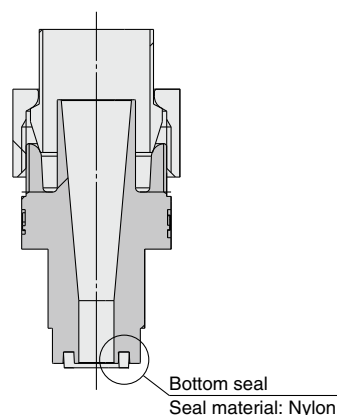
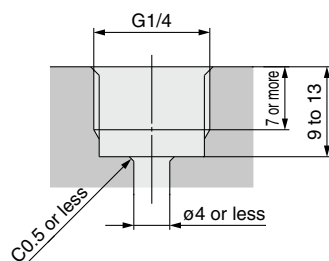


VCKL
90° swivel elbow

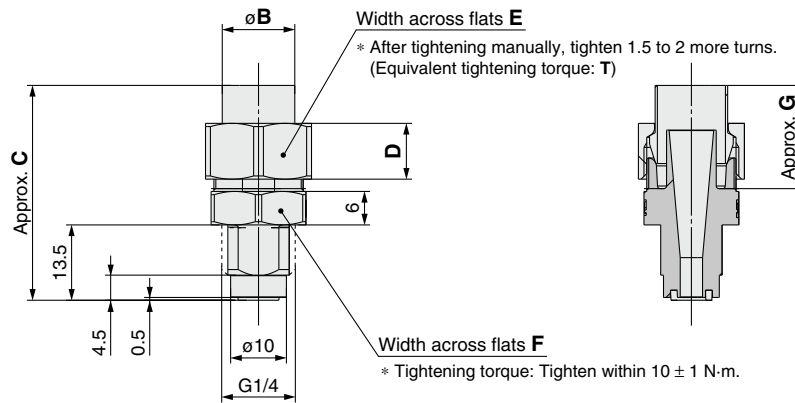
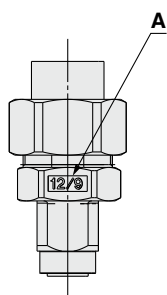
Dimensions

SUS316L Stainless steel fittings

Mounting female thread recommended dimensions



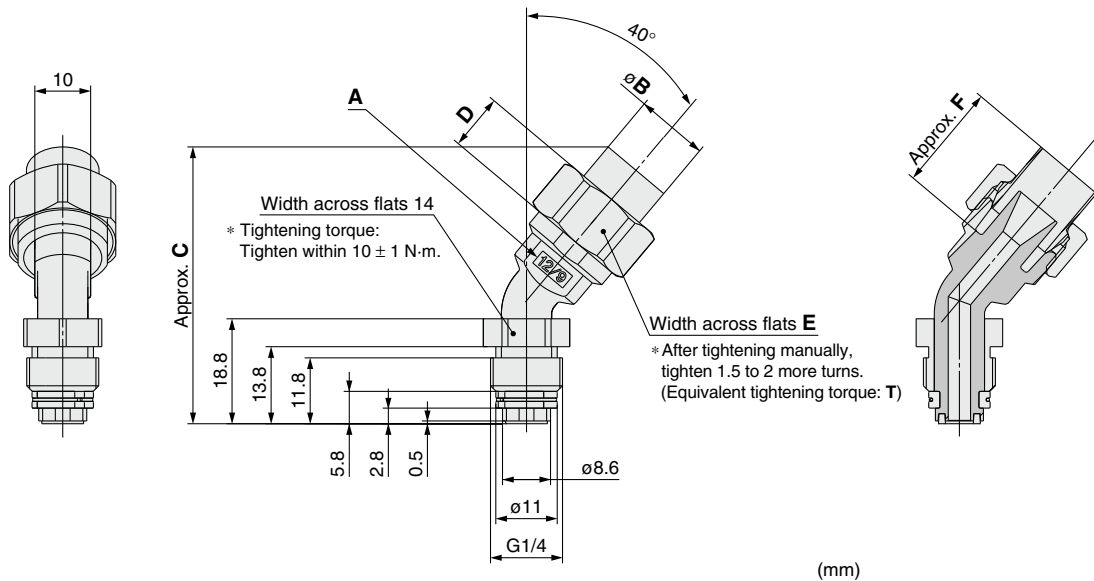
VCKH Male connector



Part no.	Indication of A	øB	C	D	E	F	G	T
VCKH1209-02F	12/9	13	38.5	10	19	17	18.5	9 to 12 N·m
VCKH1008-02F	10/8	11	38	9	17	17	18.5	6 to 9 N·m
VCKH1075-02F	10·75	11	38	9	17	17	18.5	6 to 9 N·m
VCKH0806-02F	8/6	9	36.5	8	14	14	16	4 to 9 N·m
VCKH0604-02F	6/4	7	36.5	8	12	14	15	3 to 8 N·m

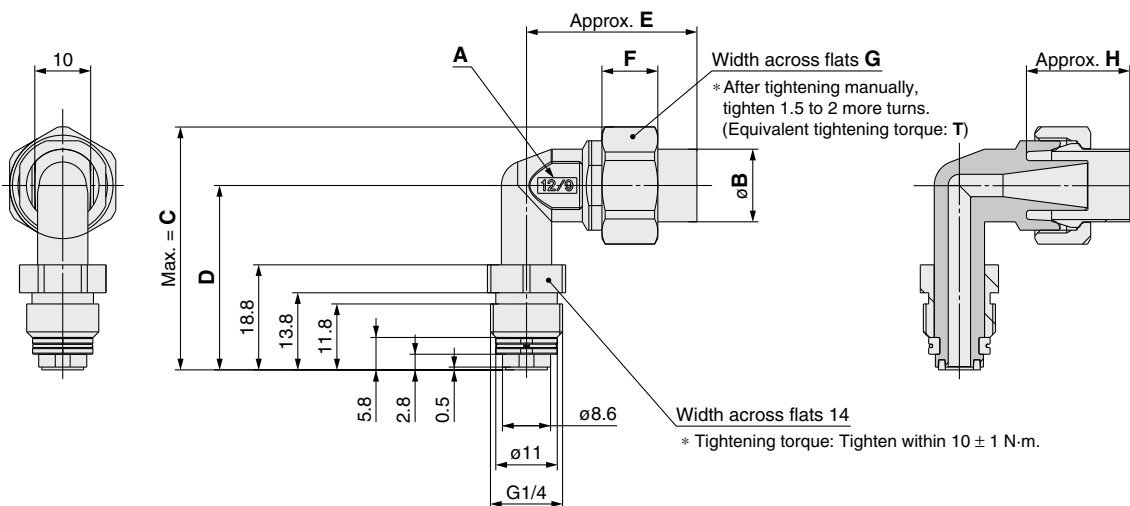
Dimensions

VCKK 40° swivel elbow



Part no.	Indication of A	øB	C	D	E	F	T
VCKK1209-02F	12/9	13	49.5	10	19	18.5	9 to 12 N·m
VCKK1008-02F	10/8	11	48.5	9	17	18.5	6 to 9 N·m
VCKK1075-02F	10·75	11	48.5	9	17	18.5	6 to 9 N·m
VCKK0806-02F	8/6	9	46	8	14	16	4 to 9 N·m
VCKK0604-02F	6/4	7	45.5	8	12	15	3 to 8 N·m

VCKL 90° swivel elbow



Part no.	Indication of A	øB	C	D	E	F	G	H	T
VCKL1209-02F	12/9	13	43.5	33	30.5	10	19	18.5	9 to 12 N·m
VCKL1008-02F	10/8	11	42.5	33	30	9	17	18.5	6 to 9 N·m
VCKL1075-02F	10·75	11	42.5	33	30	9	17	18.5	6 to 9 N·m
VCKL0806-02F	8/6	9	40	32	27.5	8	14	16	4 to 9 N·m
VCKL0604-02F	6/4	7	38.5	32	27.5	8	12	16	3 to 8 N·m

Stainless Steel 316 Insert Fittings

○ **Compact and light**

○ **Material: Stainless steel 316**

Rubber material is not used.
(Except swivel elbow)

○ **Fluid temperature**

–65 to 260°C

(Swivel elbow: –5 to 150°C)

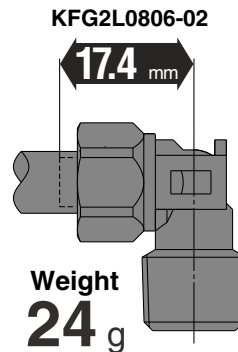
○ **Applicable tubing material**

FEP, PFA, Modified PTFE,
2-layer soft fluoropolymer, Nylon,
Soft nylon, Polyolefin,
Polyurethane*, Soft polyurethane*,
Hard polyurethane*,
Soft polyolefin*,
Antistatic soft nylon*,
Antistatic polyurethane*

Note) For tubes marked *,
check the appropriate size.

○ **Grease-free**

○ **Can be used with steam.**



Sleeveless

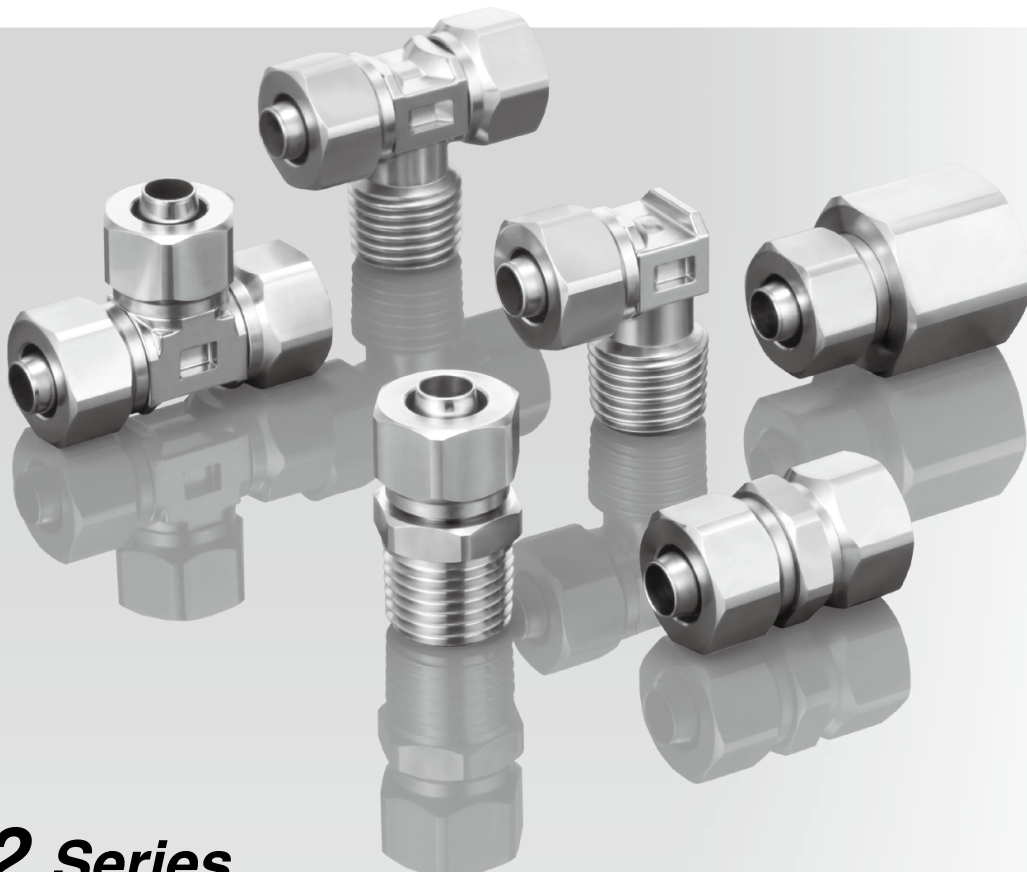
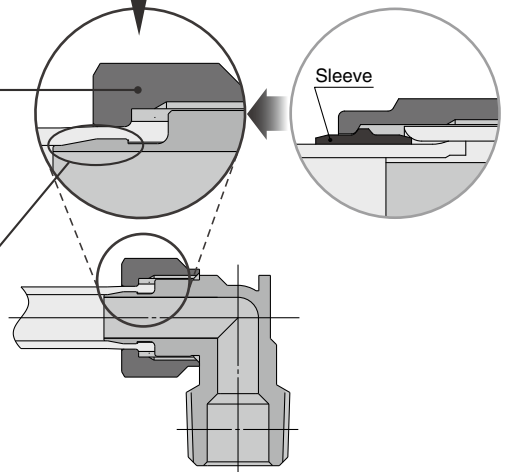
Sleeveless sealing structure makes replacement parts for maintenance unnecessary.

Superior tube mounting

Union nut
Light tightening torque
Comparison with current model
Approx. 60% down
* Comparison with KFG□0806

Barb

Sealing performance and holding of tube are secured by backup from the barb.



KFG2 Series

Stainless Steel 316 Insert Fittings *KFG2 Series*

Variations

Male Connector

KFG2H



Bulkhead Union

KFG2E



Male Elbow

KFG2L



Union Elbow

KFG2L



Male Branch Tee

KFG2T



Swivel Elbow

KFG2V



Straight Union

KFG2H



Female Connector

KFG2F



Union Tee

KFG2T



Union Nut

KFG2N



Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

Stainless Steel 316 Insert Fittings

Applicable Tubing: Metric Size, Connection Thread: R, Rc

KFG2 Series (Grease-free) RoHS



Applicable Tubing

Tubing material ^{Note)}	FEP, PFA, Modified PTFE, 2-layer soft fluoropolymer, Nylon, Soft nylon ^{Note)} , Polyurethane, Soft polyurethane, Polyolefin, Soft polyolefin, Antistatic soft nylon, Antistatic polyurethane, Hard polyurethane
Tubing size	ø4 x ø2.5, ø4 x ø3, ø6 x ø4, ø8 x ø6, ø10 x ø7.5, ø10 x ø8, ø12 x ø9, ø12 x ø10, ø16 x ø13

^{Note)} For soft nylon tubing, soft polyurethane tubing, hard polyurethane tubing, antistatic polyurethane tubing, water cannot be used.

Series	Tubing material	Tubing O.D. x I.D. (mm)								
		ø4 x ø2.5	ø4 x ø3	ø6 x ø4	ø8 x ø6	ø10 x ø7.5	ø10 x ø8	ø12 x ø9	ø12 x ø10	ø16 x ø13
TH	FEP	●	—	●	●	●	●	●	●	—
TL	Super PFA	—	●	●	●	—	●	—	●	—
TLM	PFA	●	●	●	●	●	●	●	●	●
TD	Modified PTFE	●	—	●	●	●	—	●	—	—
TQ	Special fluoropolymer	●	—	●	●	—	●	●	—	—
T	Nylon	●	●	●	●	●	—	●	—	●
TS	Soft nylon	●	—	●	●	●	—	●	—	—
TU	Polyurethane	●	—	●	—	—	—	—	—	—
TPH	Polyolefin	●	—	●	●	●	—	●	—	—
TUS	Soft polyurethane	●	—	●	—	—	—	—	—	—
TUH	Hard polyurethane (High pressure)	●	—	●	—	—	—	—	—	—
TPS	Soft polyolefin	●	—	●	—	—	—	—	—	—
TAS	Antistatic soft nylon	●	—	●	—	—	—	—	—	—
TAU	Antistatic polyurethane	●	—	●	—	—	—	—	—	—

Spare Parts

Description	Tubing O.D.	Part no.	Material
Bulkhead nut	ø4	KFG204-P01	Stainless steel 316
	ø6	KFG206-P01	
	ø8	KFG208-P01	
	ø10	KFG210-P01	
	ø12	KFG212-P01	
	ø16	KFG216-P01	

Specifications

Fluid	Air, Water, Steam ^{Note 2)} ^{Note 3)}
Operating pressure range ^{Note 1)}	–100 kPa to 1 MPa ^{Note 4)}
Proof pressure	3.0 MPa
Ambient and fluid temperature	–65 to 260°C (No freezing) ^{Note 4)} [Swivel elbow and with sealant types: –5 to 150°C]
Lubricant	Grease-free specification
Seal on the threads	Without sealant (With sealant type compatible) ^{Note 5)}

^{Note 1)} Avoid using in a vacuum holding application such as a leak tester, since there is leakage.

^{Note 2)} Consult with SMC regarding applicable tubing separately.

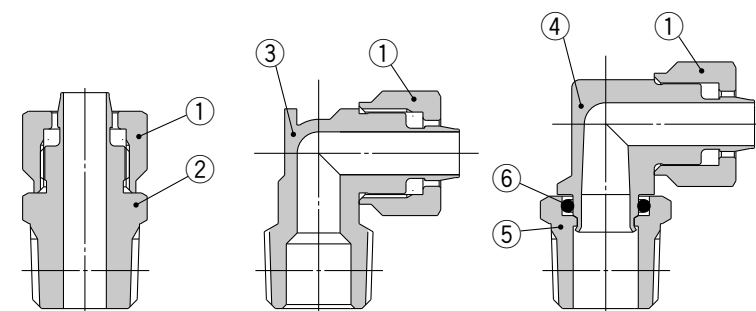
^{Note 3)} Using special FKM that is resistant even when steam is used.

^{Note 4)} Check the operating pressure range and operating temperature range of the tube.

^{Note 5)} With sealant: Suffix "S" to the end of part number.

^{Note 6)} Union nut is shipped together.

Construction



Male connector

Male elbow

Swivel elbow

Principal Parts Material

No.	Description	Material	Note
1	Union nut	Stainless steel 316	Fluoro coated
2	Male connector body	Stainless steel 316	
3	Male elbow body	Stainless steel 316	
4	Swivel elbow body	Stainless steel 316	
5	Stud	Stainless steel 316	
6	O-ring	Special FKM	Fluoro coated

Check Valve for Paint Process

AK-DPO00057

How to Order

AK – DPO00057

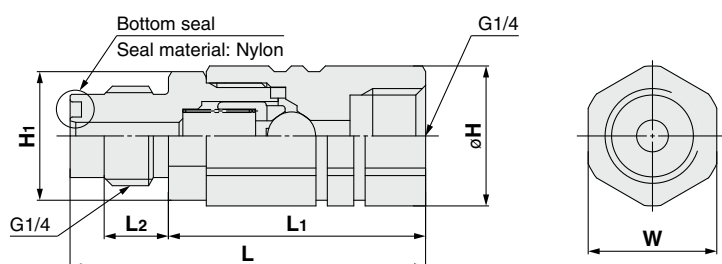
Specifications

Model	AK-DPO00057
Material	Stainless steel
Fluid	Chemical base paint, Water base paint, Water
Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.03 MPa
Ambient and fluid temperatures	5 to 60°C

* This product is a check valve for the color change valve.

Dimensions

AK-DPO00057



Model	øH	H1	L	L1	L2	W
AK-DPO00057	19	17	47	34	8.5	17

Regulator for Paint Process

XT13-406-X201

How to Order

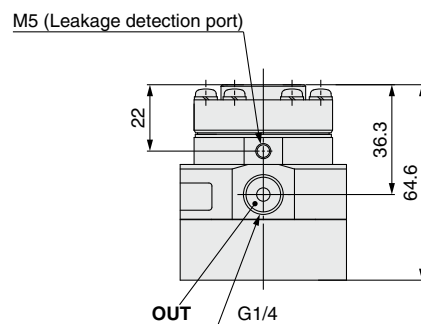
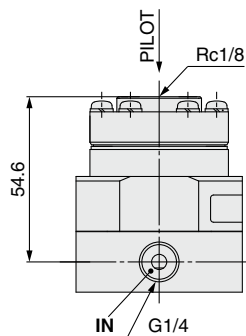
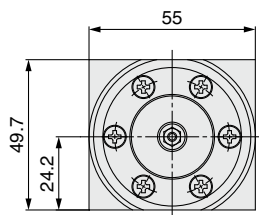
XT13-406-X201

Specifications

Proof pressure	1.0 MPa
Max. operating pressure	0.7 MPa
Set pressure range	0.025 to 0.5 MPa
Max. control pressure	0.7 MPa
Fluid	Paint, Thinner
Ambient and fluid temperatures	5 to 60°C
Pressure adjustment method	Pilot air operated type
Port size	(OUT) G1/4
	(IN) G1/4
	(Leakage detection port) M5

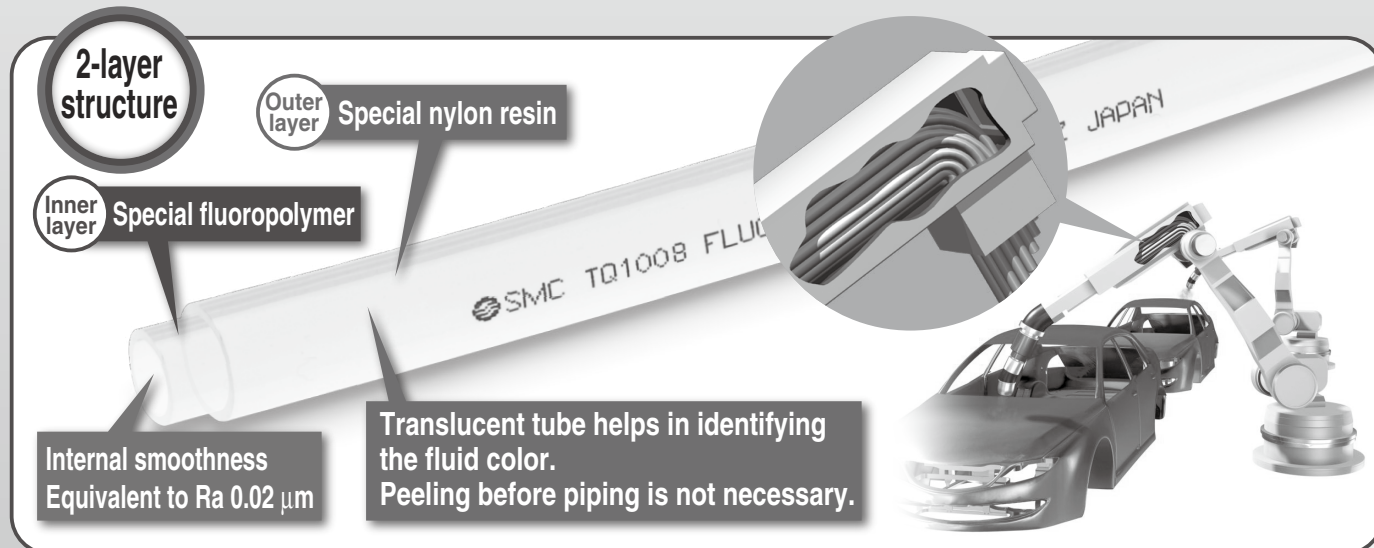
Dimensions

XT13-406-X201



2-Layer Soft Fluoropolymer Tubing RoHS

Carries fluid such as solvent with a soft and abrasion resistant tube.



Flexibility

Improved by up to **55%***¹

Minimum bending radius (Tube close bend radius)

TQ: **9 mm** ← TL: **20 mm**

(Fluoropolymer Tubing, Super PFA)

*1. Compared with SMC Fluoropolymer Tubing/TL (ø6 x ø4)

Wearing of outer layer tube

Reduced to **1/30**

TQ: **1 mg***² ← TL: **30 mg***²

(Fluoropolymer Tubing)

*2. Based on friction test of tubes

Light weight

Weight reduced by approximately **44%***³

*3. 2-Layer Soft Fluoropolymer Tubing (TQ): 26.5 g/m
Fluoropolymer Tubing (TL): 47 g/m (ø8 x ø6)

Applications

Automobile

Semiconductor

Food

Medical

Machine tools

Series Variations

Designation	TQ0425	TQ0604	TQ0806	TQ1008	TQ1209
O.D. (mm)	4	6	8	10	12
I.D. (mm)	2.5	4	6	8	9
20 m roll	●	●	●	●	●
100 m roll	●	●	●	●	●

TQ Series

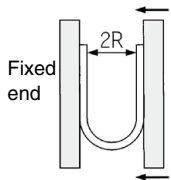
2-Layer Soft Fluoropolymer Tubing

TQ Series

RoHS



How to measure the minimum bending radius



Bend the tube into a U shape at a temperature of 20°C. Fix one end and bend the loop gradually at 100 mm/min. Measure 2R when the tube breaks or is crushed.

How to Order

TQ0425 - 20

Tubing designation

Length per roll

Symbol	Length
20	20 m
100	100 m

Applicable Fluid List

Fluid in the list below are chemically inert ^{Note 1)} to tubing material. Possible physical effects may occur such as penetration and swelling due to temperature, pressure and chemical density. To use tubing in a solvent environment, tests should be performed with the same environment to ensure no problem occurs with operating environment.

Chemical	Inner layer Special fluoropolymer	Outer layer Special nylon resin	Chemical	Inner layer Special fluoropolymer	Outer layer Special nylon resin
Hydrochloric acid	○	△	Citric acid	○	△
Sulfuric acid	○	△	Stearic acid	○	△
Nitric acid	○	×	Formic acid	○	△
Caustic soda	○	△	Ethyl acetate	○	○
Caustic potash	○	△	Butyl acetate	○	△
Ammonium hydroxide	○	○	Methyl alcohol	○	○
Hydrogen peroxide	○	△	Ethyl alcohol	○	○
Water	○	○	Butyl alcohol	○	○
Phenol	○	×	Isopropyl alcohol	○	○
Benzene	○	△	Cellosolve	△	△
Toluene	○	△	Hexane	○	△
Xylene	○	△	Cyclohexane	○	△
Carbon tetrachloride	○	×	Mineral oil ASTM No.3	○	○
Acetone	○	△	Naphtha	○	○
Methyl ethyl ketone	○	△			

Note 1) "Chemically inert" means – not to cause any chemical reaction.

Note 2) Criteria: ○ Applicable, △ Not recommended, × Inapplicable

Note 3) Applicable Fluid List shows the reference value based on test results performed under specific conditions. Application for products is not guaranteed.

Note 4) Applicable Fluid List is for tube materials. For use in environments containing solvents, please contact SMC.

Specifications

Designation		TQ0425	TQ0604	TQ0806	TQ1008	TQ1209
O.D. (mm)		4	6	8	10	12
I.D. (mm)		2.5	4	6	8	9
Roll	20 m	●	●	●	●	●
	100 m	●	●	●	●	●
Color ^{Note 1)}		Translucent (Material color)				
Fluid ^{Note 2)}		Air, Water, Inert gas, Solvent				
Applicable fittings ^{Note 3,7)}		Insert fittings KF, KFG2, VCK series Miniature fittings M, MS series (Hose nipple type) Fluoropolymer fittings LQ1, LQ3 series ^{Note 6)}				
Max. operating pressure ^{Note 4)} (MPa)	20°C	2.0	1.9	1.5	1.1	1.2
Min. bending radius (tube close bend radius) ^{Note 5)} (mm)		4	9	26	42	37
Fluid temperature (fixed usage)		Air, Inert gas: -20 to 100°C, Water, Solvent: 0 to 70°C (No freezing)				
Material		Inner layer: Special fluoropolymer, Outer layer: Special nylon resin				

Note 1) There may be plasticizer (white powder) deposits on the external surface of the tube. Please be careful when the tube is used in clean rooms. Otherwise, the clean level may decrease.

Note 2) When solvent is used, make sure to test in the same environment as the actual operating environment, and confirm that no problem will occur in the operating conditions. The standard value of the Applicable Fluid List below is the reference value based on the test result performed under specific conditions.

The product can be physically affected by temperature, pressure, chemical density, etc, causing permeation or swelling, and this may cause some problems.

Note 3) Perform periodic maintenance inspections. If leakage continues to occur after tightening, replace the tube with a new one. (For details, refer to "Maintenance" of the specific product precautions in the **Web Catalog**.) When the tube rotates, perform a test to make sure no problem occur in the actual operating conditions. When the product is used with motion for a long time, or at a high temperature, the tubes may have leakage due to deterioration of the materials.

Note 4) Observe the lesser value of the maximum operating pressure between the tubing and fitting. The surge pressure must not exceed the maximum operating pressure. If the surge pressure exceeds the maximum operating pressure, it will result in damage to tubes and fittings. Furthermore, abnormal temperature rise caused by adiabatic compression may result in the tube bursting.

Note 5) Minimum bend radius (tube close bend radius) is not guaranteed. The value of 2R in the left figure is measured with a bent or flattened tube.

Note 6) For the installation of fluoropolymer fitting LQ1 and LQ3, please contact SMC.

Note 7) A fitting that seals the outer diameter of the tube such as One-touch fitting is not applicable since it is in contact with the wetted part of the external layer nylon material.

Max. Operating Pressure

Temperature (°C)	TQ0425	TQ0604	TQ0806	TQ1008	TQ1209
-20 to 20	2.0	1.9	1.5	1.1	1.2
30	1.7	1.6	1.2	0.9	1.0
40	1.4	1.4	1.0	0.8	0.9
50	1.2	1.1	0.8	0.6	0.8
60	1.1	1.0	0.7	0.5	0.7
70	1.0	0.9	0.6	0.4	0.6
80	0.9	0.8	0.5	0.4	0.5
90	0.8	0.7	0.4	0.3	0.4
100	0.7	0.6	0.4	0.3	0.3

Unit: MPa

Fluoropolymer Tubing (PFA)

Metric Size

TLM Series

RoHS

Series

Size			Metric size												
Model			TLM0201	TLM0302	TLM0425	TLM0403	TLM0604	TLM0806	TLM1075	TLM1008	TLM1209	TLM1210	TLM1613	TLM1916	TLM2522
Tubing size			ø2 x ø1	ø3 x ø2	ø4 x ø2.5	ø4 x ø3	ø6 x ø4	ø8 x ø6	ø10 x ø7.5	ø10 x ø8	ø12 x ø9	ø12 x ø10	ø16 x ø13	ø19 x ø16	ø25 x ø22
O.D. (mm)			2	3	4	4	6	8	10	10	12	12	16	19	25
I.D. (mm)			1	2	2.5	3	4	6	7.5	8	9	10	13	16	22
Length per roll	Color	Symbol													
Roll	10 m	Translucent	N												
		Translucent	N	●	●	●	●	●	●	●	●	●	●	●	●
	20 m	Red (Translucent)	R	●	●	●	●	●	●	●	●	●	●	●	●
		Blue (Translucent)	BU	●	●	●	●	●	●	●	●	●	●	●	●
		Black (Opaque)	B	●	●	●	●	●	●	●	●	●	●	●	●
		50 m	Translucent	N	●	●	●	●	●	●	●	●	●	●	●
	100 m	Translucent	N	●	●	●	●	●	●	●	●	●	●	●	●
		2 m	Translucent	N	●	●	●	●	●	●	●	●	●	●	●
Straight	2 m	Translucent	N	●	●	●	●	●	●	●	●	●	●	●	●

Inch O.D. size

5/32"

Inch O.D. size

5/16"

O.D. 3.2 mm is available in ø 1/8 inch (3.18 mm) tubing.

For details, refer to the table "Series" in the [Web Catalog](#).

Inch O.D. size
5/32"

Inch O.D. size
5/16"

O.D. 3.2 mm is available in ø 1/8 inch (3.18 mm) tubing.
For details, refer to the table "Series" in the [Web Catalog](#).

Specifications

Fluid Note 1) 2) 3) and applicable fittings Note 1) 2) 3)		Fluid: For details, refer to “Applicable Fluid List” in the Web Catalog . Fittings: Fluoropolymer fittings LQ series													
		Fluid: Air, Water, Inert gas							Fittings: One-touch fittings KQ2, KQG2, KQB2, Clean One-touch fittings KP, KP□ Insert fittings KF, KFG2, Miniature fittings M, MS (Hose nipple type)						
Max. operating pressure (MPa)		Refer to the max. operating pressure curve.													
Min. bending radius (mm) Note 4)	Recommended radius	10	20	20	35	35	60	95	100	100	130	160	220	400	
	Tube close bend radius	7	15	15	20	20	40	60	65	65	110	130	160	290	
Max. operating temperature		260°C													
Material		PFA (Tetrafluoroethylene perfluoroalkoxy vinyl ether copolymer)													

Note 1) Fluid varies depending on the applicable fittings.

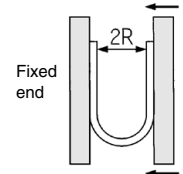
Note 2) When using a liquid fluid, the surge pressure must not exceed the maximum operating pressure. If the surge pressure exceeds the maximum operating pressure, it will result in damage to fittings and tubes. Furthermore, abnormal temperature rise caused by adiabatic compression may result in the tube bursting.

Note 3) Do not use this product in a manner in which the tube is not fixed. Observe the lesser value of the maximum operating pressure between the tubing and fitting. A material change over a long duration or due to high-temperature may cause leakage. Perform periodic maintenance and replace with a new product immediately when abnormalities are detected. (For details, refer to "Maintenance" of the tubing precautions in the [Web Catalog](#).) For details of other precautions, refer to "Fittings & Tubing Precautions" in the [Web Catalog](#). For details on using the fluoropolymer fittings, refer to the precautions in the [Web Catalog](#).

Note 4) Minimum bending radius is measured as shown left as representative values.

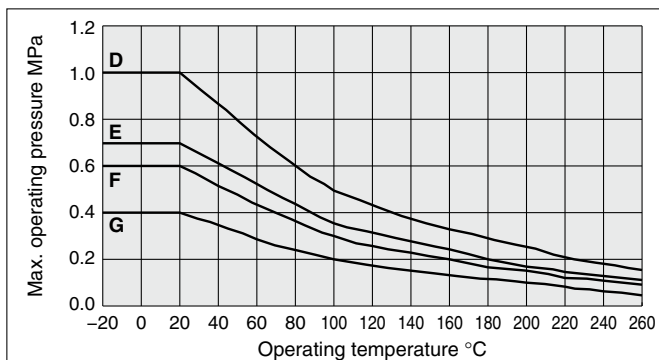
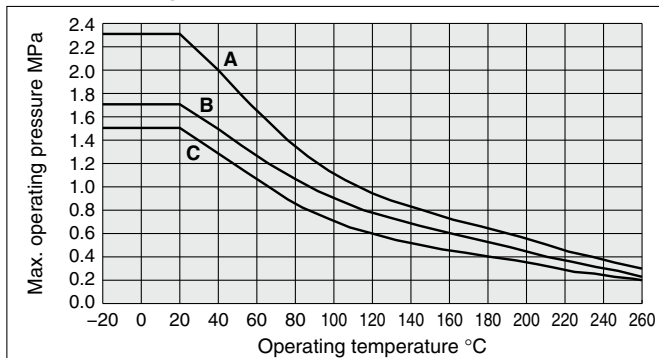
- Use a tube above the recommended minimum bending radius.
- The tube may be bent if used under the recommended minimum bending radius. Therefore, refer to the tube close bend radius and make sure that the tube is not bent or flattened.
- Please note that the tube close bend radius is not warranted because of the value when 2R is measured by the method in the right figure if the tube is bent or flattened, etc.
- The minimum bending radius shown above does not apply to the straight pipe (2 m).

How to measure the minimum bending radius



At a temperature of 20°C, bend the tubing into a U shape. Fix one end and gradually move the other end closer. Measure 2R at the point where the outside diameter's rate of change is 5%.

Max. Operating Pressure



Group	Model	Max. operating pressure (MPa)			
		20°C	100°C	200°C	260°C
A	TLM0201	2.3	1.1	0.55	0.3
B	TLM0425	1.7	0.9	0.45	0.23
C	TLM0302	1.5	0.7	0.35	0.2
	TLM0604				
D	TLM0403	1	0.5	0.25	0.15
	TLM0806				
	TLM1075				
	TLM1209				
E	TLM1008	0.7	0.35	0.17	0.11
	TLM1613				
F	TLM1210	0.6	0.3	0.15	0.1
	TLM1916				
G	TLM2522	0.4	0.2	0.1	0.05

How to Order

Metric size

TLM0425 N - 20

Tubing designation

Color indication

Symbol	Color
N	Translucent (Material color)
R	Red (Translucent)
BU	Blue (Translucent)
B	Black (Opaque)

Length per roll

Symbol	Type	Length
10	Roll	10 m
20		20 m
50		50 m
100		100 m
2S	Straight	2 m

Note) Refer to the table "Series" above, as the tubing length differs depending on each size.

Fluoropolymer Tubing (PFA)

Inch Size

TILM Series

RoHS

Series

Size			Inch size								
Model			TILM01	TILMB01	TILM05	TILM07	TILM11	TILM13	TILM19	TILM25	TILM32
Tubing size			1/8" x 0.086"	1/8" x 1/16"	3/16" x 1/8"	1/4" x 5/32"	3/8" x 1/4"	1/2" x 3/8"	3/4" x 5/8"	1" x 7/8"	1 1/4" x 1 1/10"
O.D.	inch		1/8"	1/8"	3/16"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"
	mm		3.18		4.75	6.35	9.53	12.7	19.05	25.4	31.75
I.D.	inch		0.086"	1/16"	1/8"	5/32"	1/4"	3/8"	5/8"	7/8"	1 1/10"
	mm		2.18	1.58	3.15	3.95	6.33	9.5	15.85	22.2	27.95
Length per roll		Color	Symbol								
Roll	10 m	Translucent	N					●	●		
		Translucent	N	●	●	●	●	●	●	●	●
	20 m	Red (Translucent)	R	●	●	●	●	●	●	●	●
		Blue (Translucent)	BU	●	●	●	●	●	●	●	●
		Black (Opaque)	B	●	●	●	●	●	●	●	●
	50 m	Translucent	N	●	●	●	●	●	●	●	●
		100 m	Translucent	N	●	●	●	●	●	●	●
	16 m (50 ft)	Translucent	N	●	●	●	●	●	●	●	●
	33 m (100 ft)	Translucent	N	●	●	●	●	●	●	●	●
Straight	2 m	Translucent	N	●		●	●	●	●	●	●
			Metric O.D. size			O.D. 5/32" is available in ø4 metric tubing, and O.D. 5/16" is available in ø8 metric tubing. For details, refer to the table "Series" in the Web Catalog .					
			3.2								

FEP Tubing (Fluoropolymer)/Metric Size

TH Series

TH-X78 Green (Translucent)

RoHS



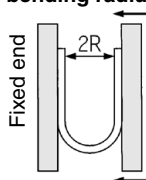
Operating Temperature: Max. 200°C

It varies depending on the operating pressure. Refer to the graph for the maximum operating pressure.

Compatible with the Food Sanitation Law

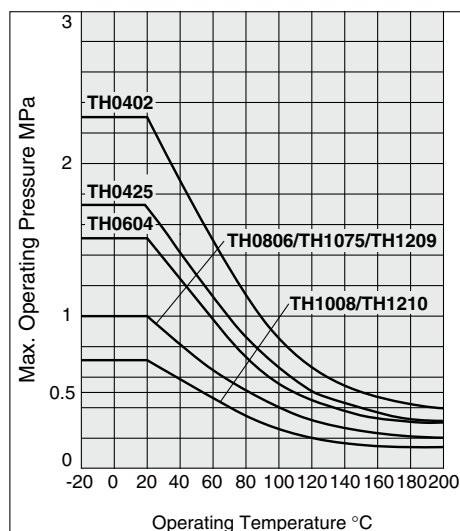
- Compatible with the test conforming to the Food Sanitation Law based on the 370th notice given by the Ministry of Health and Welfare in 1959.
- Complies with FDA (Food and Drug Administration) §177-1550 dissolution test.

How to measure the minimum bending radius.



At a temperature of 20°C, bend the tubing into a U shape. Fix one end and gradually move the other end closer. Measure 2R at the point where the outside diameter's rate of change is 5%.

Max. Operating Pressure



Note) The maximum operating pressure varies dependant on the I.D. bore size even if the O.D. is the same.

Series

● 20 m roll □ 100 m roll

Model	Metric size							
	TH0402	TH0425	TH0604	TH0806	TH1075	TH1008	TH1209	TH1210
Tubing O.D. (mm)	4	4	6	8	10	10	12	12
Tubing I.D. (mm)	2	2.5	4	6	7.5	8	9	10

Color	Symbol	TH0402	TH0425	TH0604	TH0806	TH1075	TH1008	TH1209	TH1210
Translucent	N	●	●	●	●	●	●	●	●
Red (Translucent)	R	●	●	●	●	●	●	●	●
Blue (Translucent)	BU	●	●	●	●	●	●	●	●
Black (Opaque)	B	●	●	●	●	●	●	●	●
Green (Translucent)	G			●	●		●		

Specifications

Fluid	Air, Water ^{Note 1)} , Inert gas							
Applicable fittings ^{Note 2)}	One-touch fittings, Insert fittings Fluoropolymer fittings: LQ series ^{Note 3)} Miniature fittings: M, MS series (Hose nipple type)							
Max. operating pressure (MPa)	20°C	2.3	1.7	1.5	1	0.7	1	0.7
	100°C	0.85	0.6	0.55	0.4	0.25	0.4	0.25
	200°C	0.4	0.3	0.3	0.2	0.1	0.2	0.1
Refer to the max. operating pressure curve.								
Min. bending radius (mm) ^{Note 4)}	Recommended radius	15	20	35	60	95	100	130
	Tube close bend radius	10	15	20	40	60	65	110
Operating temperature	Air, Inert gas: -20 to 200°C Water: 0 to 100°C (No freezing)							
Material	FEP (Fluorinated Ethylene Propylene Resin)							

Note 1) When using a fluid in liquid form, the surge pressure must not exceed the maximum operating pressure. A surge pressure higher than the maximum operating pressure can cause breakage of the fittings, or rupture of the tubing. Furthermore, an abnormal temperature increase due to adiabatic compression can also result in ruptured tubing.

Note 2) Do not use in locations where the FEP tubing will move.

Be sure to operate under the maximum operating pressure conditions using the lower maximum operating specification of either the tubing or fittings.

After long term use or under high temperatures, some fittings leakage may occur due to material deterioration with age. Perform periodic inspections, and if any leakage is detected, replace with a new product immediately. When the insert and miniature fittings are used over extended periods of time, it may cause leakage due to the material deterioration of age. In such a case, give an additional tightening to the tube connection part. If leakage still occurs after giving an additional tightening, replace the fitting with a new product. For details of other precautions, refer to "Fittings & Tubing Precautions" in the **Web Catalog**. For details on using the fluoropolymer fittings, refer to the precautions in the **Web Catalog**. Select the size after confirming O.D. and I.D.

Note 3) TH0402, TH0425, TH1075 and TH1209 are not available because of different internal diameters.

Note 4) The minimum bending radius is the representative value measured as shown in the left figure.

- Use a tube above the recommended minimum bending radius.
- The tubing may be bent if used under the recommended minimum bending radius. Therefore, refer to the tube close bend radius and make sure that the tubing is not bent or flattened.
- Please note that the tube close bend radius is not warranted because of the value when 2R is measured by the method in the left figure if the tubing is bent or flattened, etc.

How to Order

Metric size

TH0604 G - 20 - X78

Indication of tubing model

Color indication

Symbol	Color
N	Translucent (Material color)
R	Red (Translucent)
BU	Blue (Translucent)
B	Black (Opaque)
G	Green (Translucent)*

* Only -X78 is applicable.

Length per roll

Symbol	Roll size
20	20 m roll
100 ^{Note)}	100 m roll

Note) 100 m roll is available with translucent (color indication: N) only.

Made to Order

Symbol	Specifications
Nil	None
X78*	Green (Translucent)

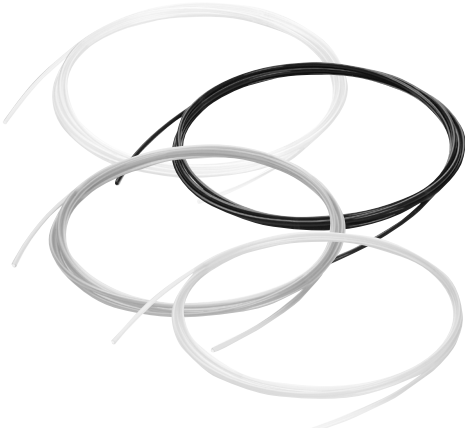
* As for the color symbol, only G is applicable.

FEP Tubing (Fluoropolymer)

Inch Size

TIH Series

RoHS



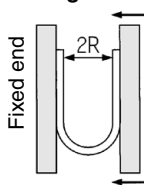
Operating Temperature: Max. 200°C

It varies depending on the operating pressure. Refer to the graph for the maximum operating pressure.

Compatible with the Food Sanitation Law

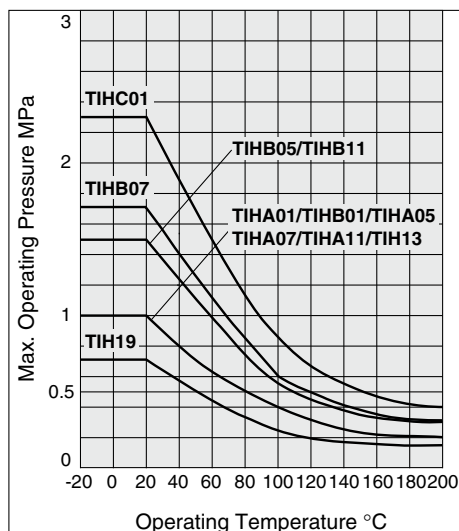
- Compatible with the test conforming to the Food Sanitation Law based on the 370th notice given by the Ministry of Health and Welfare in 1959.
- Complies with FDA (Food and Drug Administration) §177-1550 dissolution test.

How to measure the minimum bending radius.



At a temperature of 20°C, bend the tubing into a U shape. Fix one end and gradually move the other end closer. Measure 2R at the point where the outside diameter's rate of change is 5%.

Max. Operating Pressure



Note) The maximum operating pressure varies dependent on the I.D. bore size even if the O.D. is the same.

Series

● -16 m (50 ft) roll □ -33 m (100 ft) roll

		Inch size										
Model		TIHA01	TIHB01	TIHC01	TIHA05	TIHB05	TIHA07	TIHB07	TIHA11	TIHB11	TIH13	TIH19
Tubing O.D.	inch	1/8"			3/16"		1/4"		3/8"		1/2"	3/4"
	mm	3.18			4.75		6.35		9.53		12.7	19.05
Tubing I.D.	inch	0.093"	0.086"	0.065"	0.137"	0.124" (1/8")	0.18"	0.156" (5/32")	0.275"	0.25" (1/4")	0.374" (3/8")	0.624" (5/8")
	mm	2.36	2.18	1.65	3.48	3.15	4.57	3.95	6.99	6.33	9.5	15.85

Color	Symbol	TIHA01	TIHB01	TIHC01	TIHA05	TIHB05	TIHA07	TIHB07	TIHA11	TIHB11	TIH13	TIH19
Translucent	N	●	●	●	●	●	●	●	●	●	●	●
Red (Translucent)	R	●	●	●	●	●	●	●	●	●	●	●
Blue (Translucent)	BU	●	●	●	●	●	●	●	●	●	●	●
Black (Opaque)	B	●	●	●	●	●	●	●	●	●	●	●

Specifications

Fluid		Air, Water ^{Note 1)} , Inert gas										
Applicable fittings ^{Note 2)}		One-touch fittings, Insert fittings, Fluoropolymer fittings: LQ series ^{Note 3)}										
Max. operating pressure (MPa)	20°C	1	2.3	1	1.5	1	1.7	1	1.5	1	0.7	
	100°C	0.4	0.85	0.4	0.55	0.4	0.6	0.4	0.55	0.4	0.25	
	200°C	0.2	0.4	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.1	
	Refer to the max. operating pressure curve.											
Min. bending radius (mm) ^{Note 4)}	Recommended radius	25	20	10	35	25	55	35	85	60	95	220
	Tube close bend radius	20	12	7	25	20	35	20	55	30	60	160
Operating temperature		Air, Inert gas: -20 to 200°C Water: 0 to 100°C (No freezing)										
Material		FEP (Fluorinated Ethylene Propylene Resin)										

Note 1) When using a fluid in liquid form, the surge pressure must not exceed the maximum operating pressure. A surge pressure higher than the maximum operating pressure can cause breakage of the fittings, or rupture of the tubing. Furthermore, an abnormal temperature increase due to adiabatic compression can also result in ruptured tubing.

Note 2) Do not use in locations where the FEP tubing will move.

Be sure to operate under the maximum operating pressure conditions using the lower maximum operating specification of either the tubing or fittings.

After long term use or under high temperatures, some fittings leakage may occur due to material deterioration with age. Perform periodic inspections, and if any leakage is detected, replace with a new product immediately.

When the insert and miniature fittings are used over extended periods of time, it may cause leakage due to the material deterioration of age. In such a case, give an additional tightening to the tube connection part. If leakage still occurs after giving an additional tightening, replace the fitting with a new product. For details of other precautions, refer to "Fittings & Tubing Precautions" in the **Web Catalog**. For details on using the fluoropolymer fittings, refer to the precautions in the **Web Catalog**. Select the size after confirming O.D. and I.D.

Note 3) TIHA01, TIHC01, TIHA05, TIHA07 and TIHA11 are not available because of different internal diameters.

Note 4) The minimum bending radius is the representative value measured as shown in the left figure.

• Use a tube above the recommended minimum bending radius.

• The tubing may be bent if used under the recommended minimum bending radius. Therefore, refer to the tube close bend radius and make sure that the tubing is not bent or flattened.

• Please note that the tube close bend radius is not warranted because of the value when 2R is measured by the method in the left figure if the tubing is bent or flattened, etc.

How to Order

Inch size

TIHA01 N - 16

Indication of tubing model

Color indication

Symbol	Color
N	Translucent (Material color)
R	Red (Translucent)
BU	Blue (Translucent)
B	Black (Opaque)

Length per roll

Symbol	Roll size
16	16 m (50 ft) roll
33 ^{Note)}	33 m (100 ft) roll

Note) 33 m (100 ft) roll is available with translucent (color indication: N) only.

High Purity Fluoropolymer Tubing

TL/TIL Series

Material: Super PFA

Series and Specifications

		Metric sizes (TL series)						Inch sizes (TIL series)							
Tubing model		TL0403	TL0604	TL0806	TL1008	TL1210	TL1916	TIL01	TILB01	TIL05	TIL07	TIL11	TIL13	TIL19	TIL25
Nominal diameter		—	—	—	—	—	—	1/8"	1/8"	3/16"	1/4"	3/8"	1/2"	3/4"	1"
Tubing size		ø4 x ø3	ø6 x ø4	ø8 x ø6	ø10 x ø8	ø12 x ø10	ø19 x ø16	1/8" x 0.086"	1/8" x 1/16"	3/16" x 1/8"	1/4" x 5/32"	3/8" x 1/4"	1/2" x 3/8"	3/4" x 5/8"	1" x 7/8"
O.D. (mm)	Basic diameter	4	6	8	10	12	19	3.18	3.18	4.75	6.35	9.53	12.7	19.05	25.4
	Tolerance	±0.1				+0.2 -0.1		±0.1					+0.2 -0.1		
Thickness (mm)	Basic diameter	0.5	1				1.5	0.5	0.8	0.8	1.2	1.6			
	Tolerance	±0.05	±0.1				±0.15	±0.05	±0.08	±0.08	±0.12	±0.15			
Bundle	10 m	—	—	—	●	●	●	—	—	—	—	●	●	—	—
	20 m	●	●	●	●	●	●	●	—	●	●	●	●	●	●
	50 m	●	●	●	●	●	●	●	—	●	●	●	●	●	●
	100 m	●	●	●	●	●	●	●	—	●	●	●	●	●	—
	16 m (50 ft)	—	—	—	—	—	—	●	●	●	●	●	●	●	●
	33 m (100 ft)	—	—	—	—	—	—	●	●	●	●	●	●	●	●
Straight pipe	2 m	●	●	●	●	●	●	●	—	●	●	●	●	●	●
Color		Translucent (color of material)													
Applicable fluid		For details, refer to “Applicable Fluid List” in the Web Catalog .													
Applicable fittings		Fluoropolymer Fittings LQ series													
Max. operating pressure (MPa)	20°C	1.0	1.0	1.0	0.9	0.7	0.6	1.0	1.0	1.0	1.0	1.0	1.0	0.7	0.5
	100°C	0.45	0.64	0.43	0.33	0.27	0.24	0.59	0.92	0.62	0.73	0.62	0.43	0.26	0.19
	200°C	0.21	0.29	0.20	0.15	0.12	0.11	0.27	0.42	0.28	0.34	0.28	0.20	0.12	0.09
	260°C	0.09	0.12	0.08	0.06	0.05	0.05	0.11	0.17	0.12	0.14	0.12	0.08	0.05	0.04
Burst pressure (MPa at 20°C)		4.9	6.9	4.7	3.6	2.9	2.6	6.4	9.9	6.7	7.9	6.7	4.6	2.8	2.0
Min. bending radius (mm)	Recommended radius	35	35	60	100	130	220	20	10	25	35	60	95	220	400
	Tube close bend radius	20	20	40	65	110	160	12	6	20	20	30	60	160	290
Max. operating temperature (Fixed use)		260°C													
Material		Super PFA													

Note 1) When using the product at a temperature other than those shown in the table above, use it at a maximum operating pressure or less that is calculated from the following formula.

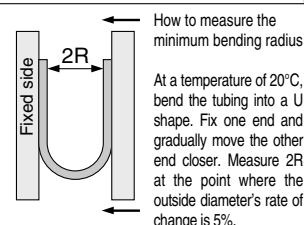
(Max. operating pressure) = 1/4 x (burst pressure drop coefficient) x (burst pressure at 20°C)

Note 2) When using a fluid in liquid form, the surge pressure must be no more than the maximum operating pressure. A surge pressure higher than the maximum operating pressure can cause breakage of the fitting or bursting of the tubing. Furthermore, abnormal temperature rise caused by adiabatic compression may result in the tube bursting.

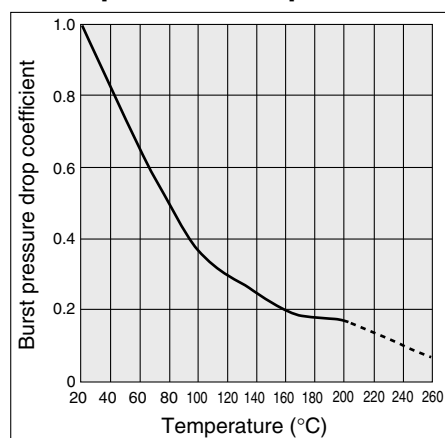
Note 3) Do not use this product in a manner in which the tube is not fixed. Observe the lesser value of the maximum operating pressure between the tubing and fitting. A material change over a long duration or due to high-temperature may cause leakage. Perform periodic maintenance and replace with a new product immediately when abnormalities are detected. (For details, refer to "Maintenance" of the tubing precautions in the **Web Catalog**.) For details of other precautions, refer to "Fittings & Tubing Precautions" in the **Web Catalog**.

Note 4) Minimum bending radius is measured as shown left as representative values. • Use a tube above the recommended minimum bending radius. • The tube may be bent if used under the recommended minimum bending radius. Therefore, refer to the tube close bend radius and make sure that the tube is not bent or flattened. • Please note that the tube close bend radius is not warranted because of the value when 2R is measured by the method in the right figure if the tube is bent or flattened, etc. • The minimum bending radius shown above does not apply to the straight pipe (2 m).

Note 5) As for other commercial items, there are some cases it is not able to connect due to tolerance of dimensions.



Burst pressure drop curve



Eluting fluorine ion amount ^{Note 6)} (μg/g)

Type	Fluorine ion
Eluting amount	0.1 or less

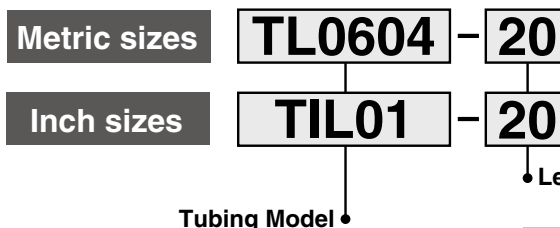
A 15 g piece of fluororesin tubing is cut off, washed in DI water (puer water) and immersed in 15 mL of 25% methyl alcohol extract at room temperature for 24 hours. Then the extract is diluted with DI water (puer water) to be subjected to a quantitative analysis of fluorine ions.

Eluting metal ion amount ^{Note 6)} (ng/cm²)

Type	Al	Fe	Ni	Na	Ca
Eluting amount	4.5	0.3	0.2	7.1	1.3

The interior of the fluororesin tubing is washed with super deionized water. Approximately 20 g of super high purity hydrofluoric acid (48%) is measured and injected into the tubing. The interior wall of the tubing is immersed at normal temperature for one week with both ends of the tubing plugged. Then the extract was diluted with super deionized water to be subjected to a quantitative analysis on Al, Fe, Ni, Na and Ca by the stripping method.

How to Order



Length Applicable to both metric and inch size

Symbol	Type	Length
10	Roll	10 m
20		20 m
50		50 m
100		100 m
2S	Straight	2 m

Length Applicable to inch size only

Symbol	Type	Length
16	Roll	16 m (50 ft)
33		33 m (100 ft)

Please refer to the "Series and Specifications" above, as the tubing length differs depending on each size.

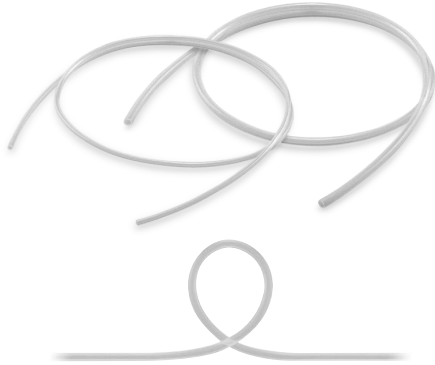
Note 6) Figures shown in tables are representative values, not guaranteed values.

Soft Fluoropolymer Tubing

Metric Size

TD Series

RoHS



Flexibility: Improved by approx. 20%

* SMC comparison (Fluoropolymer tubing, TL/TIL series)

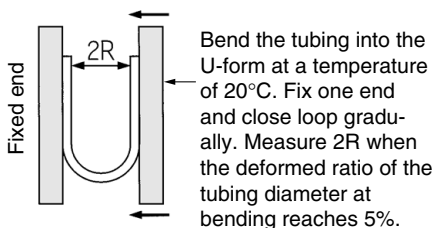
Compatible with the Food Sanitation Law

- Compatible with the test conforming to the Food Sanitation Law based on the 370th notice given by the Ministry of Health and Welfare in 1959.
- Complies with FDA (Food and Drug Administration) §177-1550 dissolution test.

Operating Temperature: Max. 260°C

It varies depending on the operating pressure. Refer to the graph for the maximum operating pressure.

How to measure the minimum bending radius



Model/Specifications

Size		Metric size				
Model		TD0425	TD0604	TD0806	TD1075	TD1209
Tubing O.D. (mm)		4	6	8	10	12
Tubing I.D. (mm)		2.5	4	6	7.5	9
Roll	10 m	●	●	●	●	●
	20 m	●	●	●	●	●
Color		Translucent (material color)				
Applicable fluid		For details, refer to "Applicable Fluid List" in the Web Catalog .				
Fluid ^{Note 1)}		Air, Water ^{Note 1)} , Inert gas				
Applicable fittings ^{Note 2)}		Insert Fittings KF series Stainless Steel 316 Insert Fittings KFG2 series Miniature fittings M, MS series (Hose nipple type) Fluoropolymer fitting LQ series				
Max. operating pressure (MPa)	20°C	1.6	1.4	0.9	0.9	0.9
	100°C	0.9	0.7	0.5	0.5	0.5
	200°C	0.45	0.35	0.25	0.25	0.25
	260°C	0.23	0.2	0.15	0.15	0.15
Min. bending radius (mm) ^{Note 3)}	Recommended radius	15	25	45	55	75
	Tube close bend radius	8	16	31	35	41
Max. operating temperature (fixed usage)		260°C				
Material		Modified PTFE (Polytetrafluoroethylene resin)				

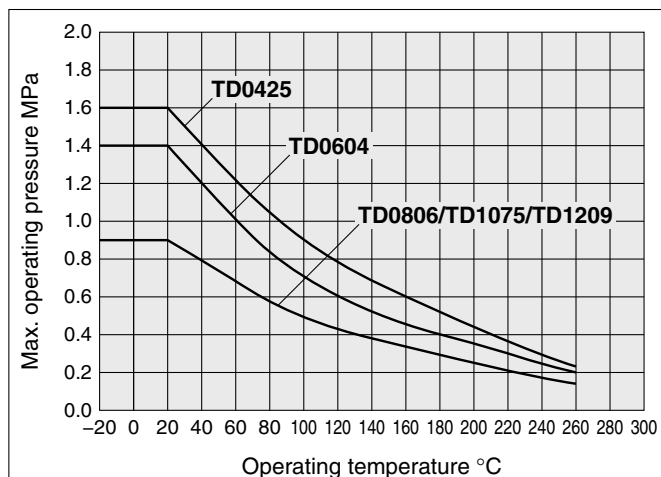
Note 1) When using a liquid fluid, the surge pressure must be under the maximum operating pressure. If the surge pressure exceeds the maximum operating pressure, it will result in damage to fittings and tubing. Furthermore, abnormal temperature rise caused by adiabatic compression may result in the tubing bursting.

Note 2) Do not use this product in a manner in which the tubing is not fixed. Observe the lesser value of the maximum operating pressure between the tubing and fittings. A material change over a long duration or due to high-temperature may cause leakage. Perform periodic maintenance and replace with a new product immediately when abnormalities are detected. (For details, refer to "Maintenance" of the tubing precautions in the [Web Catalog](#).) For details of other precautions, refer to "Fittings & Tubing Precautions" in the [Web Catalog](#). For details on using the fluoropolymer fittings, refer to the precautions in the [Web Catalog](#).

Note 3) The minimum bending radius is the representative value measured as shown in the left figure.

- Use a tube above the recommended minimum bending radius.
- The tubing may be bent if used under the recommended minimum bending radius. Therefore, refer to the tube close bend radius and make sure that the tubing is not bent or flattened.
- Please note that the tube close bend radius is not warranted because of the value when 2R is measured by the method in the left figure if the tubing is bent or flattened, etc.

Maximum Operating Pressure



How to Order

Metric size

TD0425 - 10

• Length per roll

Symbol	Length
10	10 m roll
20	20 m roll

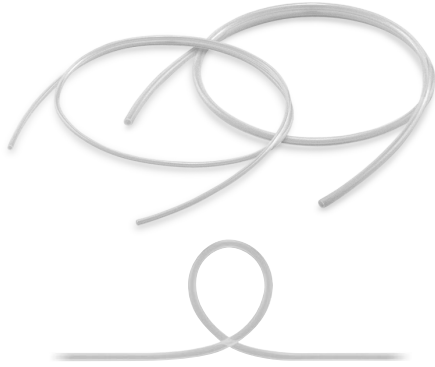
• Tubing model

Soft Fluoropolymer Tubing

Inch Size

TID Series

RoHS



Flexibility: Improved by approx. 20%

* SMC comparison (Fluoropolymer tubing, TL/TIL series)

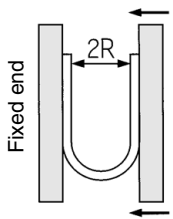
Compatible with the Food Sanitation Law

- Compatible with the test conforming to the Food Sanitation Law based on the 370th notice given by the Ministry of Health and Welfare in 1959.
- Complies with FDA (Food and Drug Administration) §177-1550 dissolution test.

Operating Temperature: Max. 260°C

It varies depending on the operating pressure. Refer to the graph for the maximum operating pressure.

How to measure the minimum bending radius



Bend the tubing into the U-form at a temperature of 20°C. Fix one end and close loop gradually. Measure 2R when the deformed ratio of the tubing diameter at bending reaches 5%.

Model/Specifications

Size		Inch size				
Model		TID01	TID05	TID07	TID11	TID13
Tubing O.D.	inch	1/8"	3/16"	1/4"	3/8"	1/2"
	mm	3.18	4.75	6.35	9.53	12.7
Tubing I.D.	inch	0.086"	0.124" (1/8")	0.156" (5/32")	0.25" (1/4")	0.374" (3/8")
	mm	2.18	3.15	3.95	6.33	9.5
Roll	8 m (25 ft)	●	●	●	●	●
	16 m (50 ft)	●	●	●	●	●
Color		Translucent (material color)				
Applicable fluid		For details, refer to "Applicable Fluid List" in the Web Catalog .				
Fluid ^{Note 1)}		Air, Water ^{Note 1)} , Inert gas				
Applicable fittings ^{Note 2)}		Fluoropolymer fitting LQ series Stainless steel 316 insert fittings KFG2 series				
Max. operating pressure (MPa)	20°C	1.4	1.4	1.6	1.4	0.9
	100°C	0.7	0.7	0.9	0.7	0.5
	200°C	0.35	0.35	0.45	0.35	0.25
	260°C	0.2	0.2	0.23	0.2	0.15
Min. bending radius (mm) ^{Note 3)}	Recommended radius	15	20	25	40	75
	Tube close bend radius	9	10	15	23	42
Max. operating temperature (fixed usage)		260°C				
Material		Modified PTFE (Polytetrafluoroethylene resin)				

Note 1) When using a liquid fluid, the surge pressure must be under the maximum operating pressure. If the surge pressure exceeds the maximum operating pressure, it will result in damage to fittings and tubing. Furthermore, abnormal temperature rise caused by adiabatic compression may result in the tubing bursting.

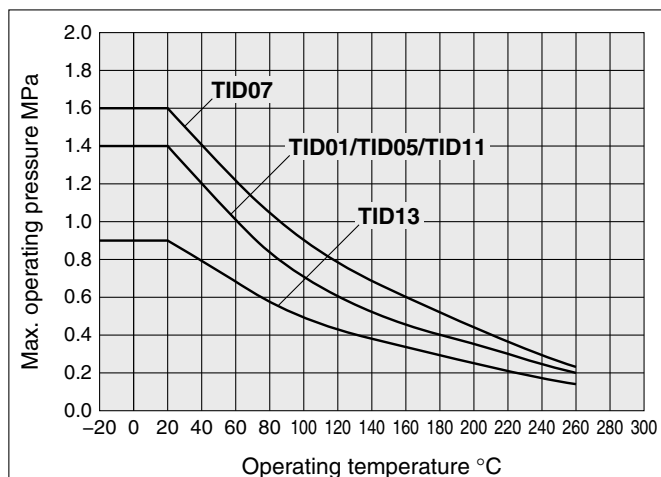
Note 2) Do not use this product in a matter in which the tubing is not fixed.

Observe the lesser value of the maximum operating pressure between the tubing and fittings. A material change over a long duration or due to high-temperature may cause leakage. Perform periodic maintenance and replace with a new product immediately when abnormalities are detected. (For details, refer to "Maintenance" of the tubing precautions in the [Web Catalog](#).) For details of other precautions, refer to "Fittings & Tubing Precautions" in the [Web Catalog](#). For details on using the fluoropolymer fittings, refer to the precautions in the [Web Catalog](#).

Note 3) The minimum bending radius is the representative value measured as shown in the left figure.

- Use a tube above the recommended minimum bending radius.
- The tubing may be bent if used under the recommended minimum bending radius. Therefore, refer to the tube close bend radius and make sure that the tubing is not bent or flattened.
- Please note that the tube close bend radius is not warranted because of the value when 2R is measured by the method in the left figure if the tubing is bent or flattened, etc.

Maximum Operating Pressure



How to Order

Inch size

TID01 - 8

• Length per roll

Symbol	Length
8	8 m (25 ft) roll
16	16 m (50 ft) roll

• Tubing model

Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

Process Pumps

Process Pump/Double Acting Pump *PA/PAP/PAX*



Series	Model	Action	Discharge rate (L/min)	Wetted part material
PA3000	PA3□□0	Automatically operated type	1 to 20	ADC12 (Aluminum) SCS14 (Stainless steel) PTFE, PFA
	PA3□13	Air operated type	0.1 to 12	
PA5000	PA5□□0	Automatically operated type	5 to 45	ADC12 (Aluminum) SCS14 (Stainless steel) PTFE, PFA
	PA5□13	Air operated type	1 to 24	
PAP3000	PAP3310	Automatically operated type	1 to 13	New PFA (Fluororesin) PTFE
	PAP3313	Air operated type	0.1 to 9	
PAX1000	PAX1□12	Automatically operated type, Built-in pulsation attenuator	0.5 to 10	ADC12 (Aluminum) SCS14 (Stainless steel), PTFE

Process Pump/Single Acting Pump *PB*



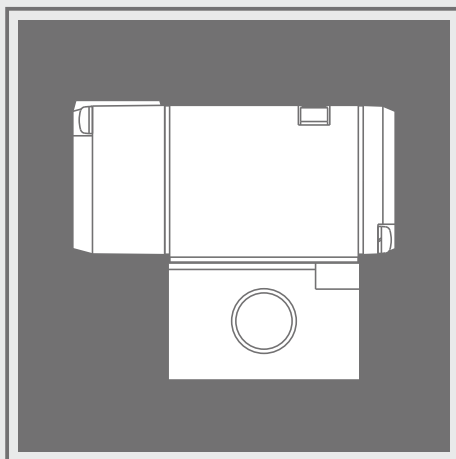
Series	Model	Action	Discharge rate (mL/min)	Wetted part material
PB1000A	PB1011A	Built-in solenoid valve	8 to 2000	Polypropylene Stainless steel 316, PTFE, FKM
	PB1013A	Air operated type	8 to 1000	
	PB1313A	Air operated type	8 to 1000	New PFA (Fluororesin) PTFE

Non-Metallic Pump/Double Acting Pump *PAF*



Series	Model	Action	Discharge rate (L/min)	Wetted part material
PAF3000	PAF3410	Automatically operated type	1 to 20	New PFA (Fluororesin) PTFE
	PAF3413	Air operated type	1 to 15	
PAF5000	PAF5410	Automatically operated type	5 to 45	
	PAF5413	Air operated type	5 to 38	

Directional Control Valves



Product name	Series	Page
2-Port/Air Operated Process Valve	VNB-X250	p. 35
3-Port/Air Operated Valve (Body Ported)	VPA300/500/700-X250	p. 39
3-Port/Air Operated Valve (Base Mounted)	VPA300/500/700-X250	p. 43
3-Port/Air Operated Valve	VTA325-X250	p. 47
3-Port/Solenoid Valve (Body Ported)	VP300/500/700-X250	p. 49
3-Port/Solenoid Valve (Base Mounted)	VP300/500/700-X250	p. 54
3-Port/Solenoid Valve	VQZ200/300-X3	p. 59
5-Port/Air Operated Valve	VFSA2101-X4	p. 63
5-Port/Solenoid Valve (Plug-in Type)	S0700-X13	p. 64
5-Port/Solenoid Valve (Plug Lead Type)	S0705-X14	p. 64
5-Port/Solenoid Valve (Plug-in Type)	SS0750-X97	p. 65
5-Port/Solenoid Valve (Plug Lead Type)	SS0755-X64	p. 68
2/3-Port Mechanical Valve	VM100-X90	p. 73
2/3-Port Mechanical Valve	VM200-X90	p. 74
Shuttle Valve	VR1210-X12/1220-X9	p. 75
Shuttle Valve with One-touch Fittings	VR1210F/1220F-X207	p. 76
Finger Valve	VHK-X16	p. 78
Conforming to OSHA Standard: Pressure Relief 3-Port Valve with Locking Holes	VHS20/30/40/50-X510	p. 79

2-Port/Air Operated Process Valve

VNB-X250

(White Vaseline Specification)

How to Order

Seal material	
A	NBR seal
B	FKM seal
C	EPR seal

Refer to the **Web Catalog** for details of availability.

Body material option	
NII	Standard
S*	Stainless steel body
L*	Aluminum body

* Threaded port only

Pilot system option	
NII	Standard
V	Vacuum pilot type

Note) Symbol V is for vacuum pilot valve specification, for both main pressure and pilot pressure, valve size 2 to 7.

Thread type

	NII	Rc
F	F	G
N	NPT	
T	NPTF	

Bracket (Valve size: 1 to 4 only)

NII	None
B Note)	With bracket

Note) Only valve sizes 1, 2, 3 and 4.
Shipped after assembled at our factory.
Bracket part no.
Valve size 1: VN1-A16 (with thread)
Valve size 2 to 4: VN□-16
2 to 4

Air operated

VNB 2 0 1 A □ □ - □ □ 15A - □ □ - X250

White vaseline

Symbol (Pilot system: Standard)

Valve type		
N.C.	N.O.	C.O.
Normally closed	Normally open	Double acting
VNB□01	VNB□02	VNB□03
12 (P1)	10 (P2)	12 (P1)
1	1	1
2	2	2
10 (P2)		

Note) Flow direction should be from port 1(A) to port 2(B) for vacuum applications.

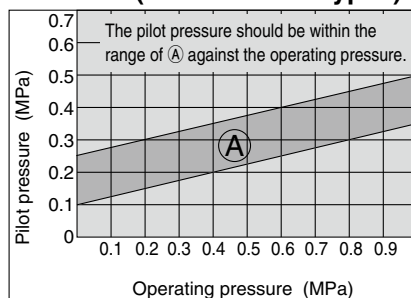
Symbol (Vacuum pilot type)

Valve type	
N.C.	N.O.
Normally closed	Normally open
VNB□01□V	VNB□02□V
10 (P2)	12 (P1)
1	1
2	2

Symbol	Orifice dia. (mm)	Symbol				Symbol	Port size Rc
		1	2	3	4		
		N.C. 0.5 MPa	N.O. 1 MPa	C.O. 1 MPa	N.C. 1 MPa		
1	ø7	—	●	●	●	6A	1/8
		—	●	●	●	8A	1/4
		—	●	●	●	10A	3/8
2	ø11	—	—	—	●	10A	3/8
		—	—	—	●	15A	1/2
		—	—	—	●	20A	3/4
3	ø14	—	—	—	●	25A	1
		—	—	—	●	32A	1 1/4
4	ø16	—	—	—	●	40A	1 1/2
		—	—	—	●	50A	2
5	ø22	—	—	—	●		
		—	—	—	●		
6	ø28	—	—	—	●		
		—	—	—	●		
7	ø33	—	—	—	●		
		—	—	—	●		

Note) The valve type symbols for vacuum pilot type are 1 (N.C.) and 2 (N.O.) only.

Graph (4) VNB□0²□ Pilot Pressure (N.O. and C.O. types)





Model

Model	Port size Rc	Orifice dia. ø [mm]	Flow rate characteristics						Weight [kg]
			Measured by air			Measured by water			Air operated
			C [dm³/(bar·sec)]	b	Cv	Kv	Conversion Cv		
VNB10□□-6A-X250	1/8	7	3.3	0.29	0.8	0.9	1.0	0.3	
VNB10□□-8A-X250	1/4		4.6	0.17	1.0	1.0	1.2		
VNB10□□-10A-X250	3/8		4.7	0.18	1.1	1.1	1.3		
VNB204□-10A-X250		11	9.6	0.40	2.6	2.5	2.9	0.6	
VNB20□□-10A-X250		15	17	0.32	4.0	3.9	4.5		
VNB204□-15A-X250	1/2	11	9.6	0.40	2.6	2.7	3.1		
VNB20□□-15A-X250	3/4	15	19	0.24	4.8	5.0	5.8	0.9	
VNB304□-20A-X250		14	18	0.42	5.4	5.0	5.8		
VNB30□□-20A-X250		20	35	0.13	7.4	9.6	11		

Model	Port size Rc	Orifice dia. ø [mm]	Flow rate characteristics			Weight [kg]	
			Measured by air		Measured by water		Air operated
			Effective area [mm ²]	Kv	Conversion Cv		
VNB404□-25A-X250	1	16	130	6.1	7.0	1.4	
VNB40□□-25A-X250		25	220	10.4	12		
VNB504□-32A-X250	1¼	22	210	9.8	11	2.5	
VNB50□□-32A-X250		32	320	15.6	18		
VNB604□-40A-X250	1½	28	330	16.4	19	4.1	
VNB60□□-40A-X250		40	500	24.2	28		
VNB704□-50A-X250	2	33	520	25.1	29	6.3	
VNB70□□-50A-X250		50	770	37.2	43		

Specifications

Fluid		Water, Oil, Air, Vacuum, etc.
Fluid temperature		VNB□0□□ _B -5 to 99°C (Water, Oil, etc.) Note 1)
Ambient temperature		-5 to 60°C
Proof pressure		1.5 MPa
Applicable pressure range	VNB□01□	Low vacuum to 0.5 MPa Note 4)
	VNB□0□□	Low vacuum to 1 MPa Note 4)
	VNB□0□□V	-101 kPa to Atmospheric pressure
External pilot air	Pressure	VNB□0□□ ₁ 0.25 to 0.7 MPa
		VNB□0□□ ₂ Refer to "Graph (4)" on page 35. Note 3)
		VNB□0□□V -101 to -47.9 kPa
	Lubrication	Not required (Use turbine oil Class 1 ISO VG32, if lubricated. Note 2))
Temperature		-5 to 60°C Note 1)
Mounting orientation		Unrestricted

Note 1) No freezing

Note 2) Lubrication is not allowed in the case of seal material EPR.

Note 3) Adjust the operating pressure range from 0.125 MPa to 0.275 MPa for low vacuum.

Note 4) The pressure differential between Port 1(A) and 2(B) must not exceed the maximum operating pressure.

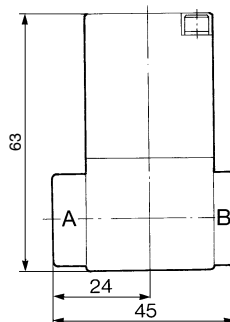
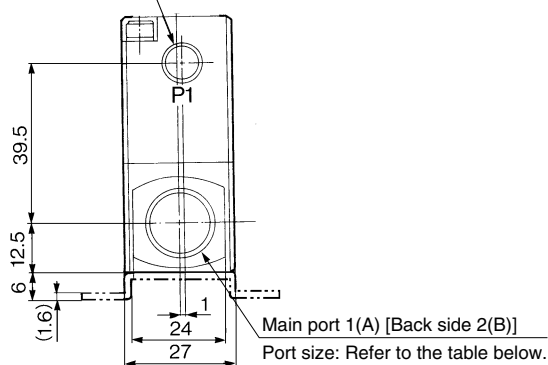
VNB-X250

Port size: 6A, 8A, 10A/Dimensions

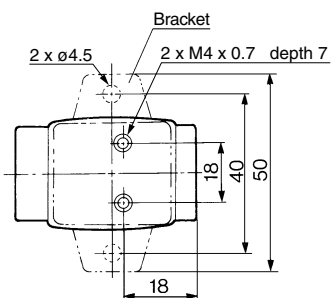
Standard

Pilot port 12(P1)

2 x 1/8 [Back side 10(P2)]

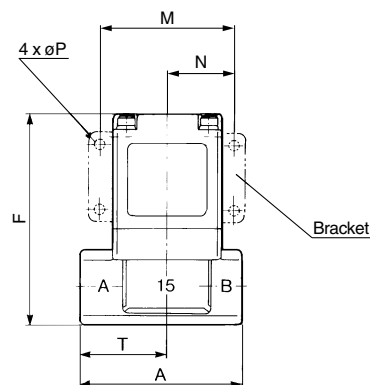
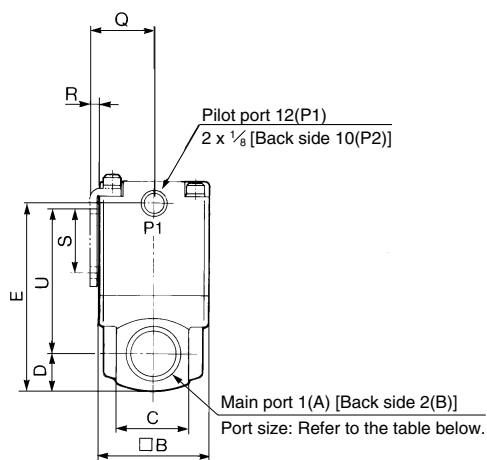


Model	Main port 1(A), 2(B)
VNB10□□-6A-X250	1/8
VNB10□□-8A-X250	1/4
VNB10□□-10A-X250	3/8



Port size: 10A, 15A, 20A, 25A/Dimensions

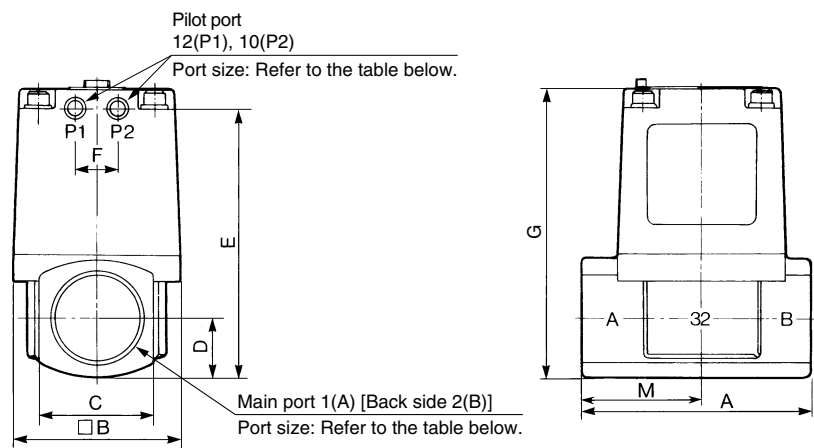
Standard/Vacuum pilot



Model	Main port 1(A), 2(B)	A	B	C	D	E	F	M	N	P	Q	R	S	T	U
VNB20□□(V)-10A-X250	3/8	63	42	28	14	72.5	80.5	52	26	4.5	24.3	2.3	25	34	55
VNB20□□(V)-15A-X250	1/2														
VNB30□□(V)-20A-X250	3/4	80	50	35	17.5	84	92	62	31	5.5	28.3	2.3	30	43	60.5
VNB40□□(V)-25A-X250	1	90	60	40	20	100	108	72	36	6.5	33.3	2.3	35	49	73

Port size: 32A, 40A, 50A/Dimensions

Standard/Vacuum pilot



Model	Main port 1(A), 2(B)	Pilot port 12(P1), 10(P2)	A	B	C	D	E	F	G	M
VNB50□□□(V)-32A-X250	1 1/4	1/8	105	77	53	26.5	120.5	20	129.5	55
VNB60□□□(V)-40A-X250	1 1/2	1/4	120	96	60	30	137	24	147	63
VNB70□□□(V)-50A-X250	2	1/4	140	113	74	37	160	24	170	74

Paint Process Equipment

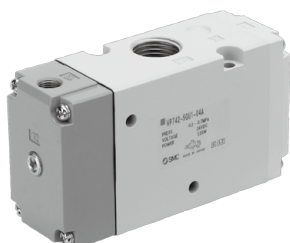
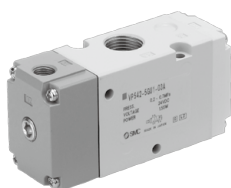
Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

3-Port/Air Operated Valve Body Ported/Single Unit **VPA300/500/700-X250** (White Vaseline Specification)



How to Order

VPA 3 4 2 - 1 - 01 A - X250

Series

3	VPA300
5	VPA500
7	VPA700

Valve option

Nil	Standard
V	For vacuum

Port size

Symbol	Port size	VPA300	VPA500	VPA700
01	1/8	○	—	—
02	1/4	○	○	—
03	3/8	—	○	○
04	1/2	—	—	○

White vaseline

Bracket

Nil	Without bracket
F	With bracket

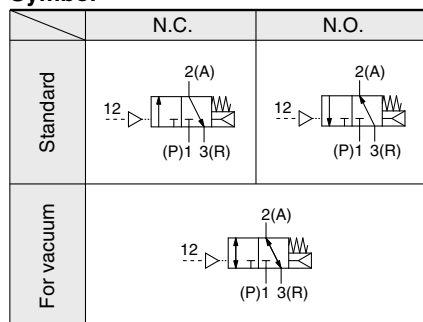
Type of actuation

A	N.C. (Normally closed)
B	N.O. (Normally open)

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Symbol



Specifications

Fluid	Air	
Type of actuation	N.C. or N.O. (Convertible)	
Operating pressure range (MPa)	Standard	0.2 to 1.0
	For vacuum	–100 kPa to 0.2
Pilot pressure (MPa)	0.2 to 1.0 (Equivalent to the operating pressure or more)	
Ambient and fluid temperatures (°C)	–10 to 50 (No freezing)	
Lubrication	Not required	
Mounting orientation	Unrestricted	
Impact/Vibration resistance (m/s ²) Note)	300/50	

Note) Impact resistance: No malfunction to axis and right angle directions of main valve, each one time when pilot signal ON and OFF. (Values at the initial period)

Vibration resistance: No malfunction from test with 45 to 2000 Hz one sweep, to axis and right angle directions of main valve, each one time when pilot signal ON and OFF. (Values at the initial period)

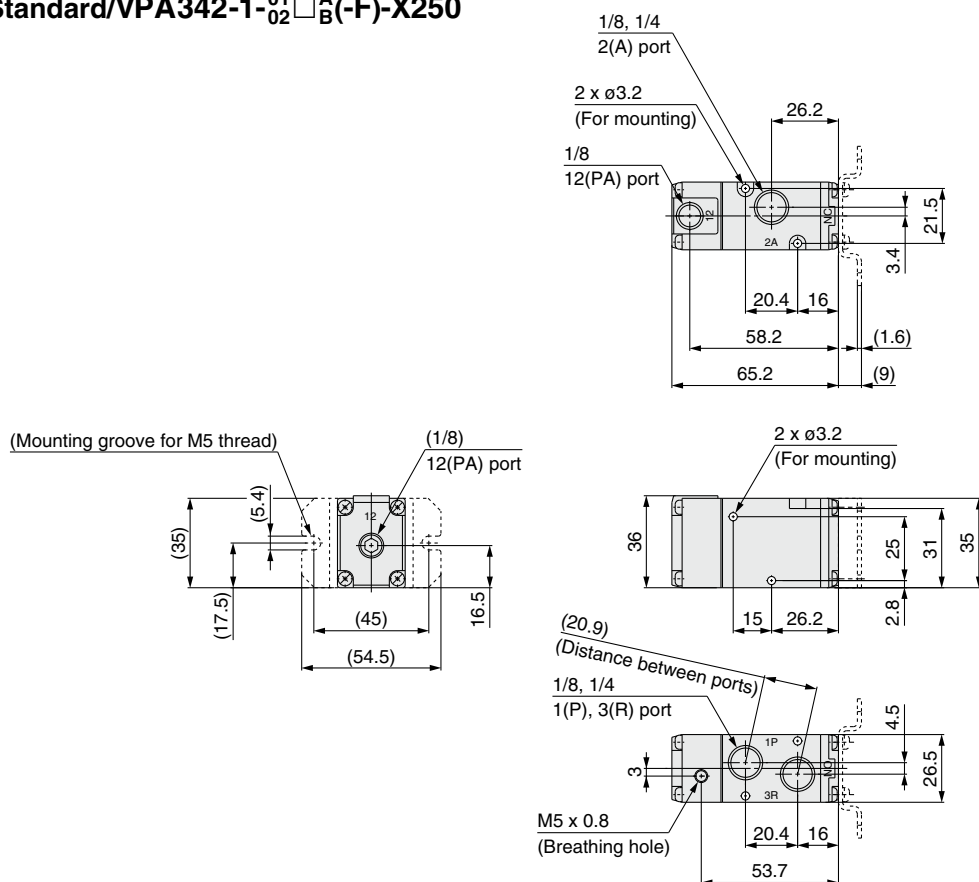
Flow Rate Characteristics/Weight

Model	Port size	1↔2 (P↔A)			2↔3 (A↔R)			Weight (g) Note)
		C [dm ³ /(s·bar)]	b	Cv	C [dm ³ /(s·bar)]	b	Cv	
VPA342-X250	1/8	3.5	0.26	0.8	3.6	0.26	0.9	118
	1/4	4.2	0.22	1.0	4.2	0.23	1.0	114
VPA542-X250	1/4	7.9	0.21	1.8	7.2	0.27	1.8	237
	3/8	8.9	0.16	2.2	8.9	0.20	2.1	229
VPA742-X250	3/8	11.9	0.21	2.7	11.8	0.20	2.7	501
	1/2	15.1	0.21	3.6	15.3	0.22	3.7	484

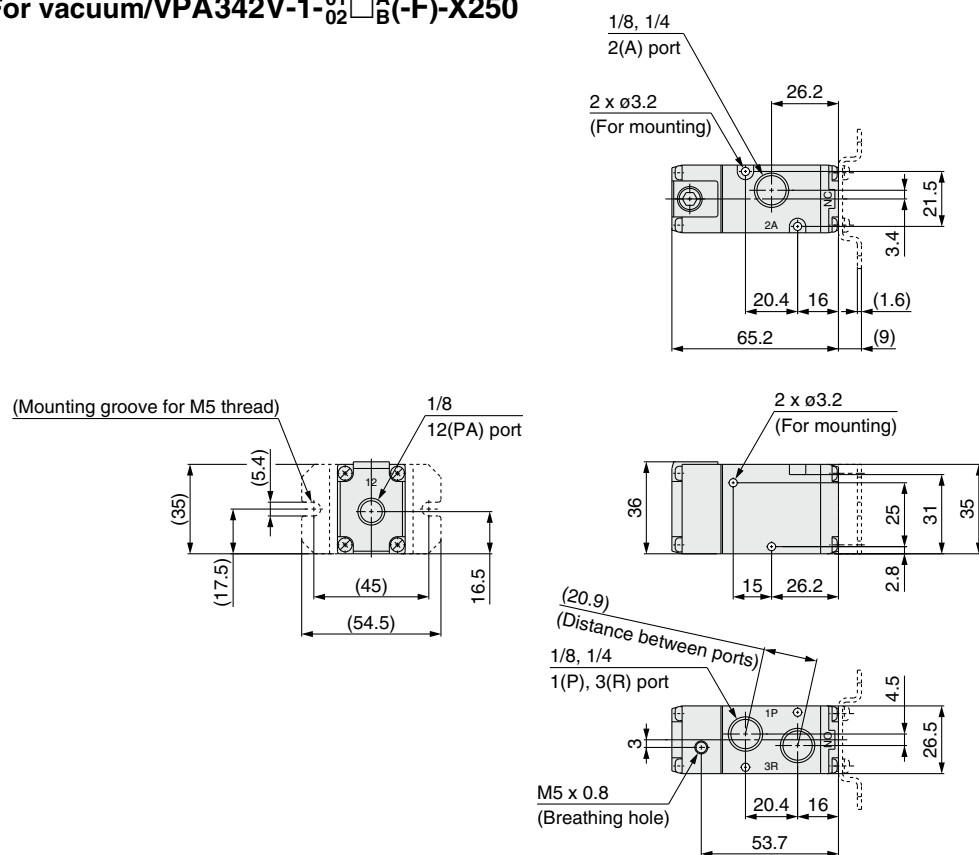
Note) Values without brackets

VPA300 Series/Body Ported/Dimensions

Standard/VPA342-1-⁰¹/₀₂ □^A/_B(-F)-X250



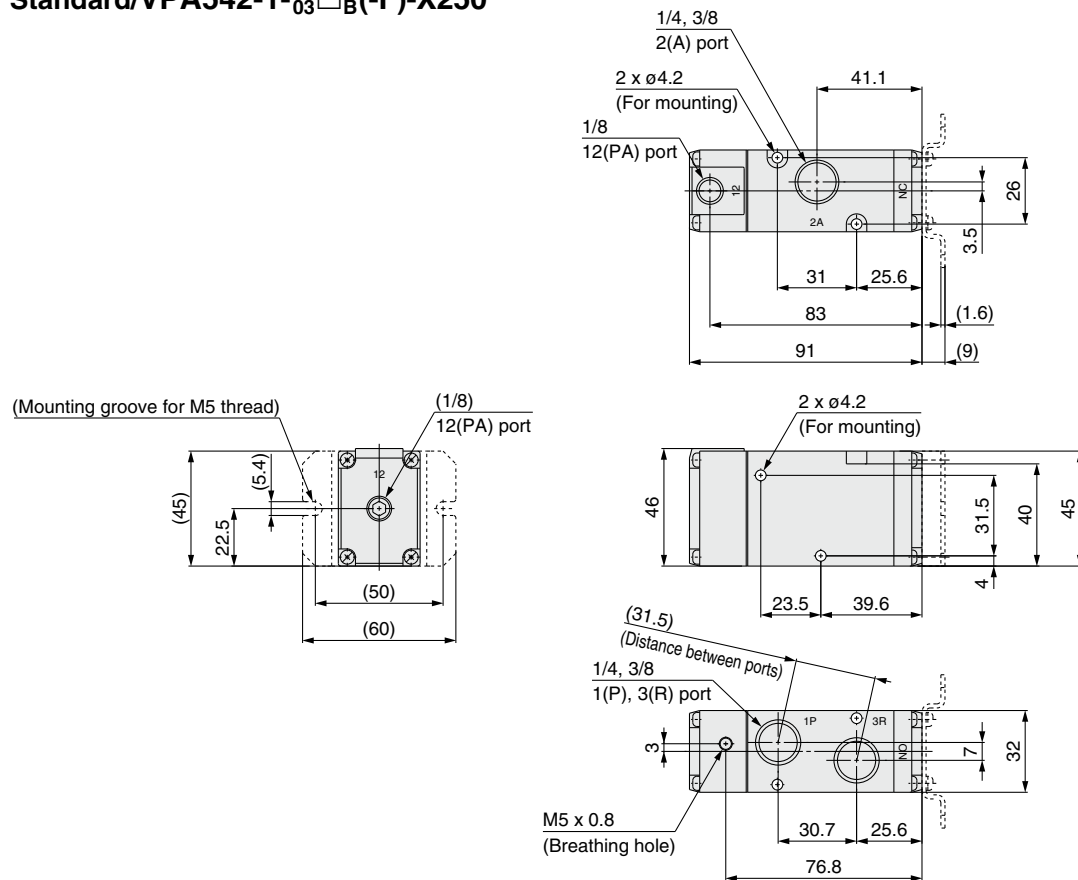
For vacuum/VPA342V-1-⁰¹/₀₂ □^A/_B(-F)-X250



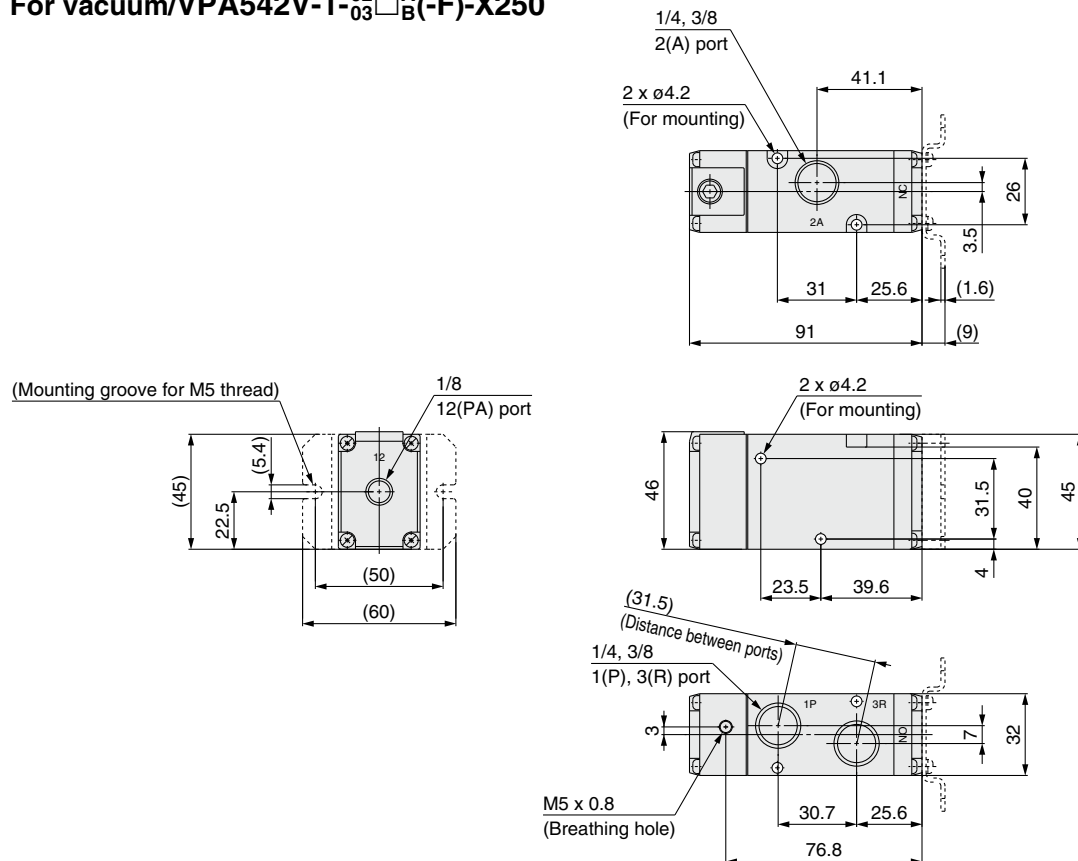
VPA300/500/700-X250

VPA500 Series/Body Ported/Dimensions

Standard/VPA542-1- $\frac{02}{03}$ □ $\frac{A}{B}$ (-F)-X250

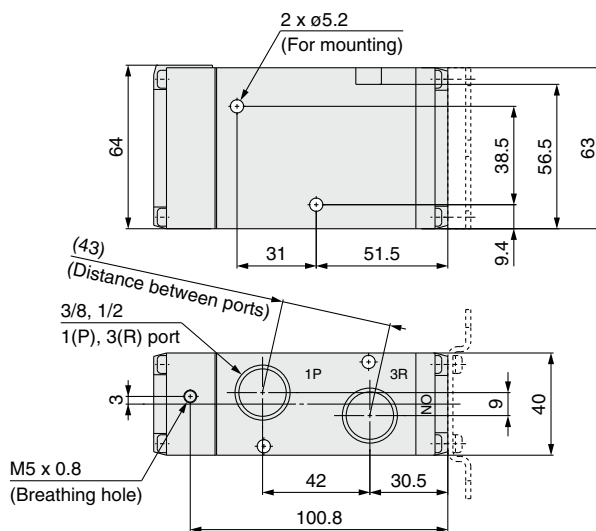
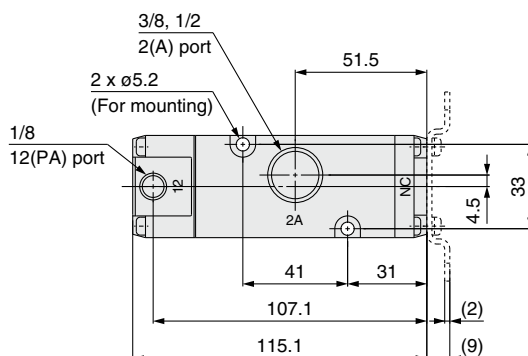
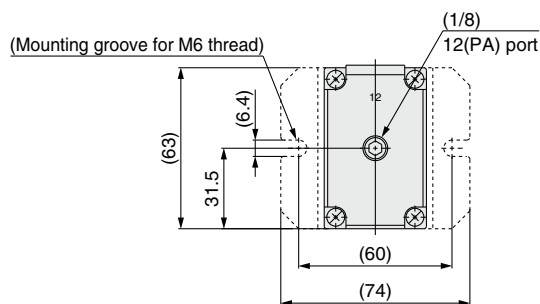


For vacuum/VPA542V-1- $\frac{02}{03}$ □ $\frac{A}{B}$ (-F)-X250

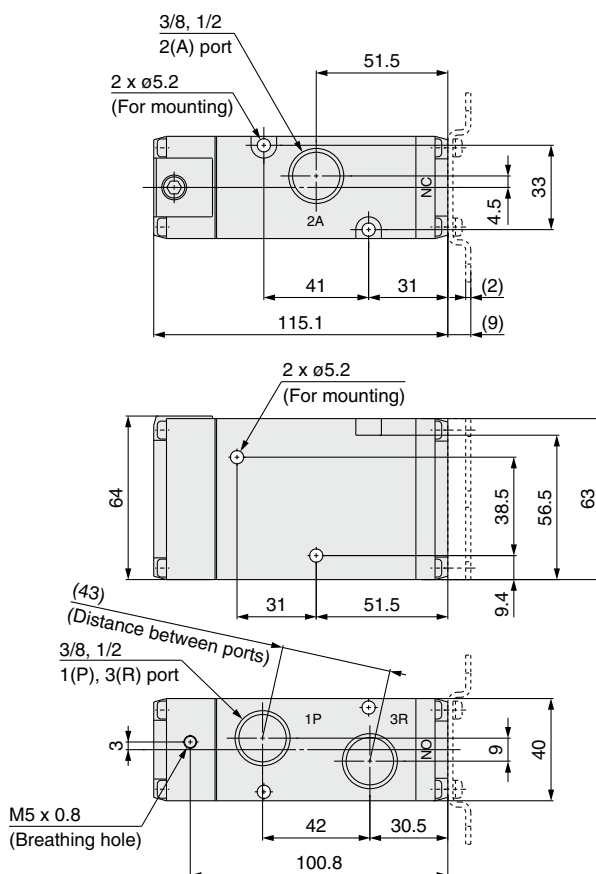
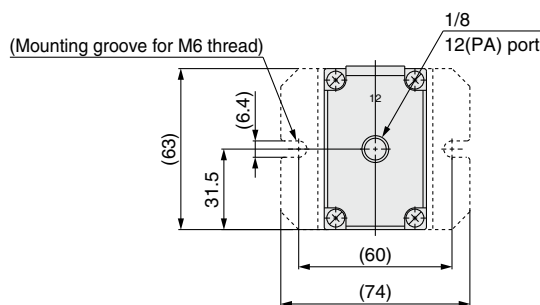


VPA700 Series/Body Ported/Dimensions

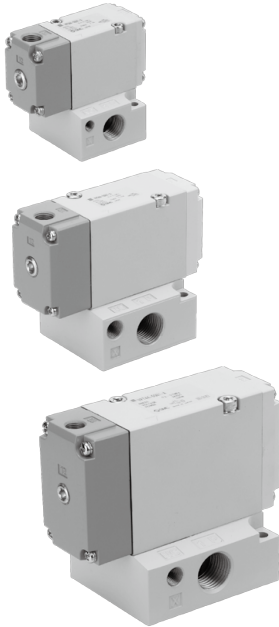
Standard/VPA742-1-⁰³₀₄□^A_B(-F)-X250



For vacuum/VPA742V-1-⁰³₀₄□^A_B(-F)-X250



3-Port/Air Operated Valve Base Mounted/Single Unit **VPA300/500/700-X250** (White Vaseline Specification)



How to Order

VPA 3 4 4 - 1 - 01 A - X250

Series

3	VPA300
5	VPA500
7	VPA700

Valve option

Nil	Standard
V	For vacuum

Port size (Sub-plate)

Symbol	Port size	VPA300	VPA500	VPA700
Nil		Without sub-plate*		
01	1/8	○	—	—
02	1/4	○	○	—
03	3/8	—	○	○
04	1/2	—	—	○

* With a gasket and two mounting bolts

• White vaseline

Type of actuation

A	N.C. (Normally closed)
B	N.O. (Normally open)

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Symbol

	N.C.	N.O.
Standard		
For vacuum		

Specifications

Fluid	Air	
Type of actuation	N.C. or N.O. (Convertible)	
Operating pressure range (MPa)	Standard	0.2 to 1.0
	For vacuum	~100 kPa to 0.2
Pilot pressure (MPa)	0.2 to 1.0 (Equivalent to the operating pressure or more)	
Ambient and fluid temperatures (°C)	-10 to 50 (No freezing)	
Lubrication	Not required	
Mounting orientation	Unrestricted	
Impact/Vibration resistance (m/s²)^{Note}	300/50	

Note) Impact resistance: No malfunction to axis and right angle directions of main valve, each one time when pilot signal ON and OFF. (Values at the initial period)

Vibration resistance: No malfunction from test with 45 to 2000 Hz one sweep, to axis and right angle directions of main valve, each one time when pilot signal ON and OFF. (Values at the initial period)

Flow Rate Characteristics/Weight

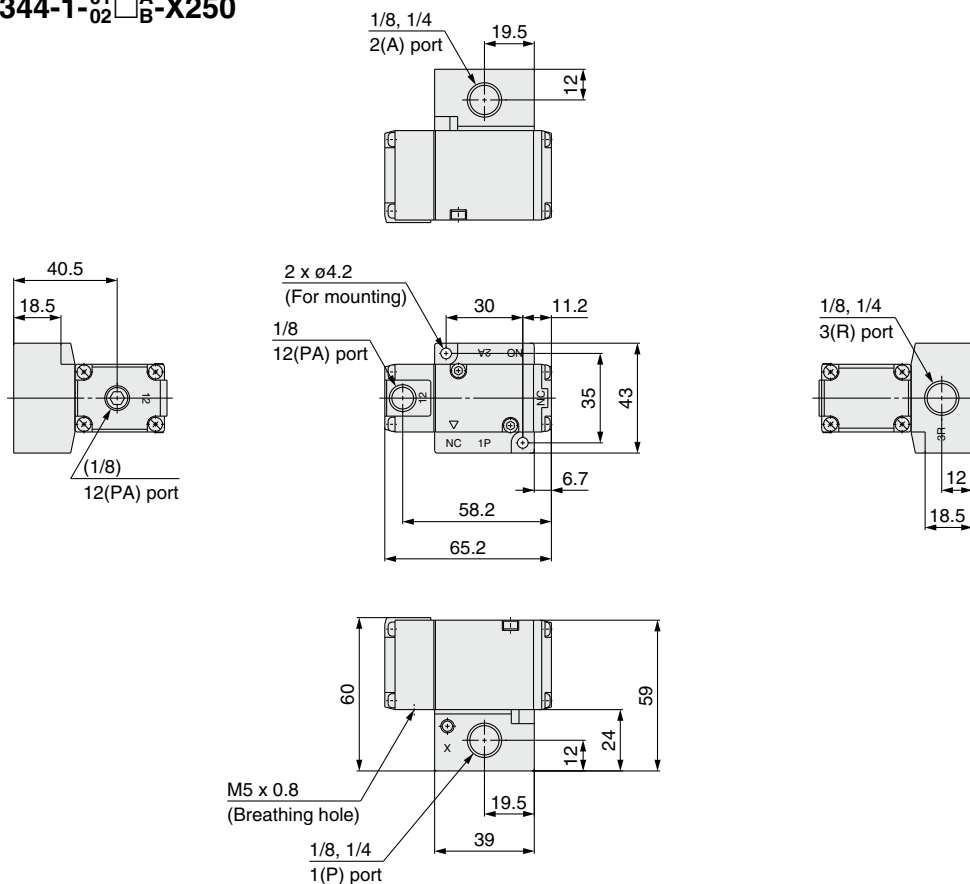
Model	Port size	1↔2 (P↔A)			2↔3 (A↔R)			Weight (g) ^{Note}
		C [dm ³ /(s·bar)]	b	Cv	C [dm ³ /(s·bar)]	b	Cv	
VPA344-X250	1/8	3.6	0.22	0.8	3.5	0.24	0.8	185 (118)
	1/4	3.9	0.22	0.9	3.8	0.14	0.9	180 (118)
VPA544-X250	1/4	7.5	0.16	1.7	7.3	0.20	1.7	358 (233)
	3/8	8.8	0.07	2.0	8.8	0.13	2.0	350 (233)
VPA744-X250	3/8	12.9	0.10	2.9	13.3	0.24	3.1	693 (476)
	1/2	14.7	0.05	3.3	15.0	0.17	3.4	675 (476)

Note) (): Values without sub-plate

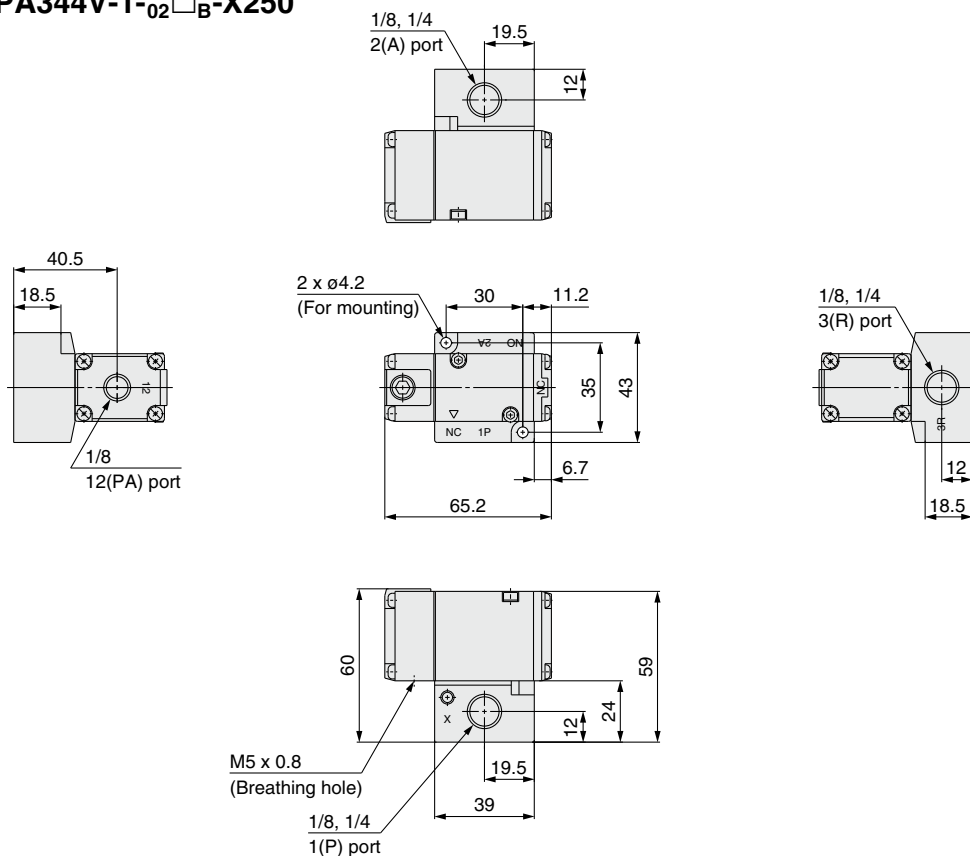
Air Operated Valve Base Mounted/Single Unit **VPA300/500/700-X250**

VPA300 Series/Base Mounted/Dimensions

Standard/VPA344-1-⁰¹/₀₂□^A/_B-X250

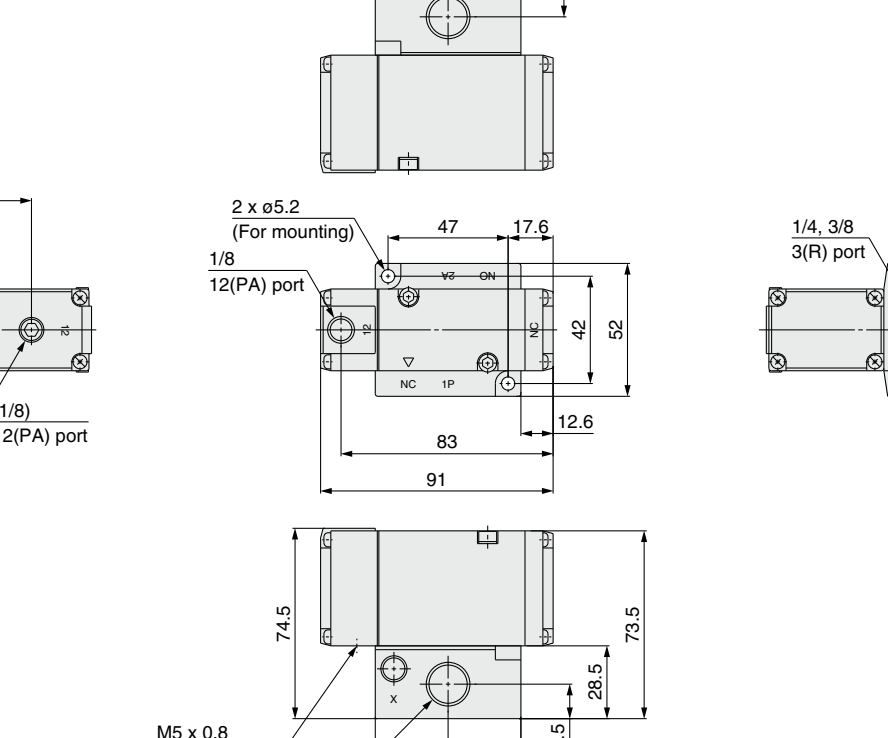


For vacuum/VPA344V-1-⁰¹/₀₂□^A/_B-X250



VPA500 Series/Base Mounted/Dimensions

PA544-1-02 **A**
03 **B**-X250



Technical drawing of the PA544-1-02 3/4" (A) 12(PA) port solenoid valve, showing three views: front, side, and top.

Front View Dimensions:

- Overall width: 51
- Port diameter: 1/8
- Port type: 12(PA) port
- Mounting hole diameter: 2 x $\phi 5.2$ (For mounting)
- Mounting hole spacing: 47
- Mounting hole offset: 17.6
- Overall height: 52
- Port offset: 12.6
- Overall width (including mounting holes): 91

Side View Dimensions:

- Overall height: 74.5
- Port diameter: 1/4, 3/8
- Port type: 1(P) port
- Mounting hole diameter: M5 x 0.8 (Breathing hole)
- Mounting hole spacing: 57
- Mounting hole offset: 28.5
- Overall width: 73.5
- Port offset: 28.5
- Port offset (from center): 13.5

Top View Dimensions:

- Overall width: 51
- Port diameter: 1/4, 3/8
- Port type: 3(R) port
- Mounting hole diameter: 2 x $\phi 5.2$ (For mounting)
- Mounting hole spacing: 47
- Mounting hole offset: 17.6
- Overall height: 52
- Port offset: 12.6
- Overall width (including mounting holes): 91

Technical drawing of the VPA544V-1-02AB-X250 valve, showing four views and dimensions in millimeters.

Front View: Shows the 1/4, 3/8 2(A) port and the 1/8 12(PA) port. Dimensions: 28.5 (port diameter), 13.5 (port offset), 51 (total width), 23 (port offset).

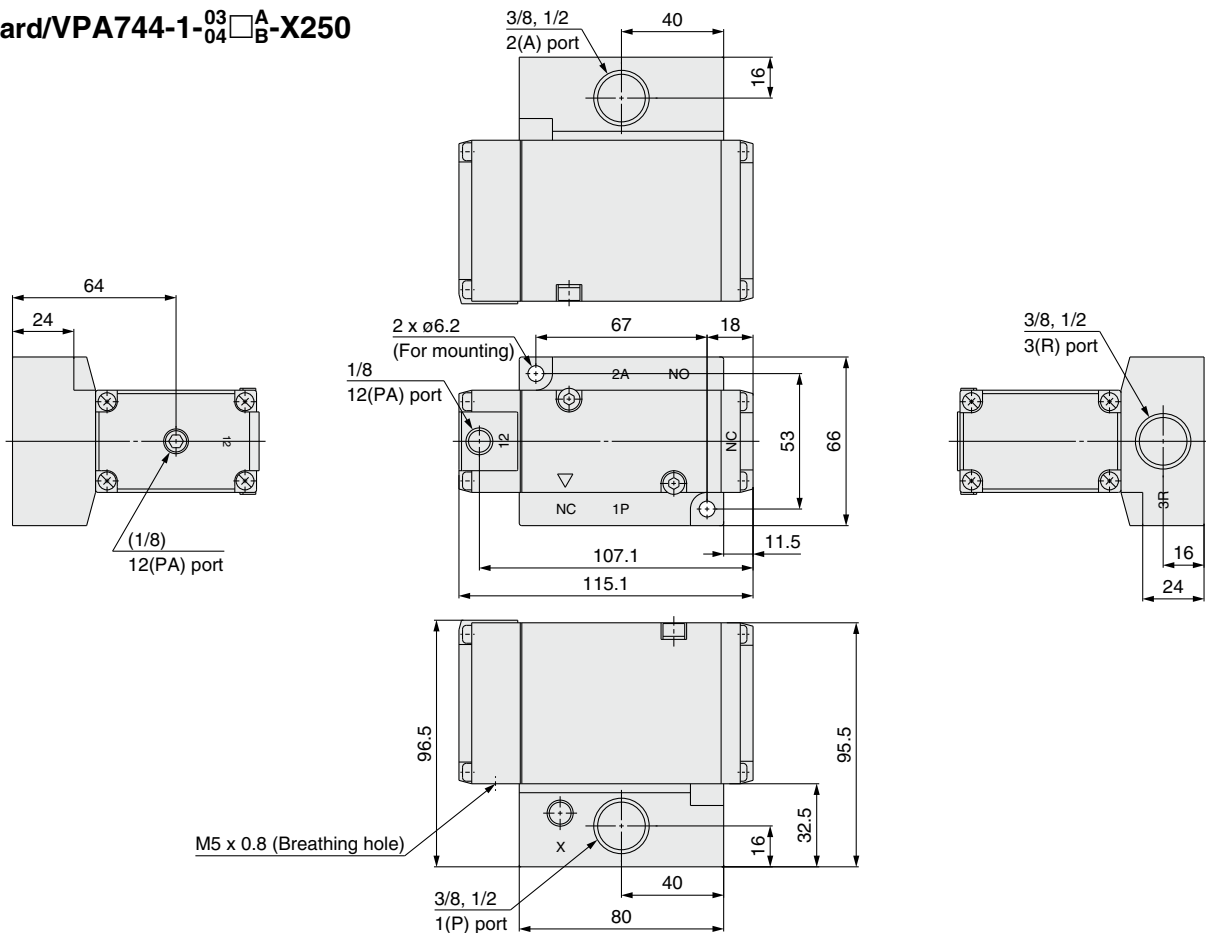
Side View: Shows the 2 x ø5.2 (For mounting) holes and the 1/4, 3/8 3(R) port. Dimensions: 47 (mounting hole offset), 17.6 (port offset), 52 (total height), 42 (port offset), 12.6 (port offset), 91 (total width).

Top View: Shows the M5 x 0.8 (Breathing hole) and the 1/4, 3/8 1(P) port. Dimensions: 74.5 (total height), 73.5 (port offset), 28.5 (port diameter), 13.5 (port offset), 57 (total width), 28.5 (port offset).

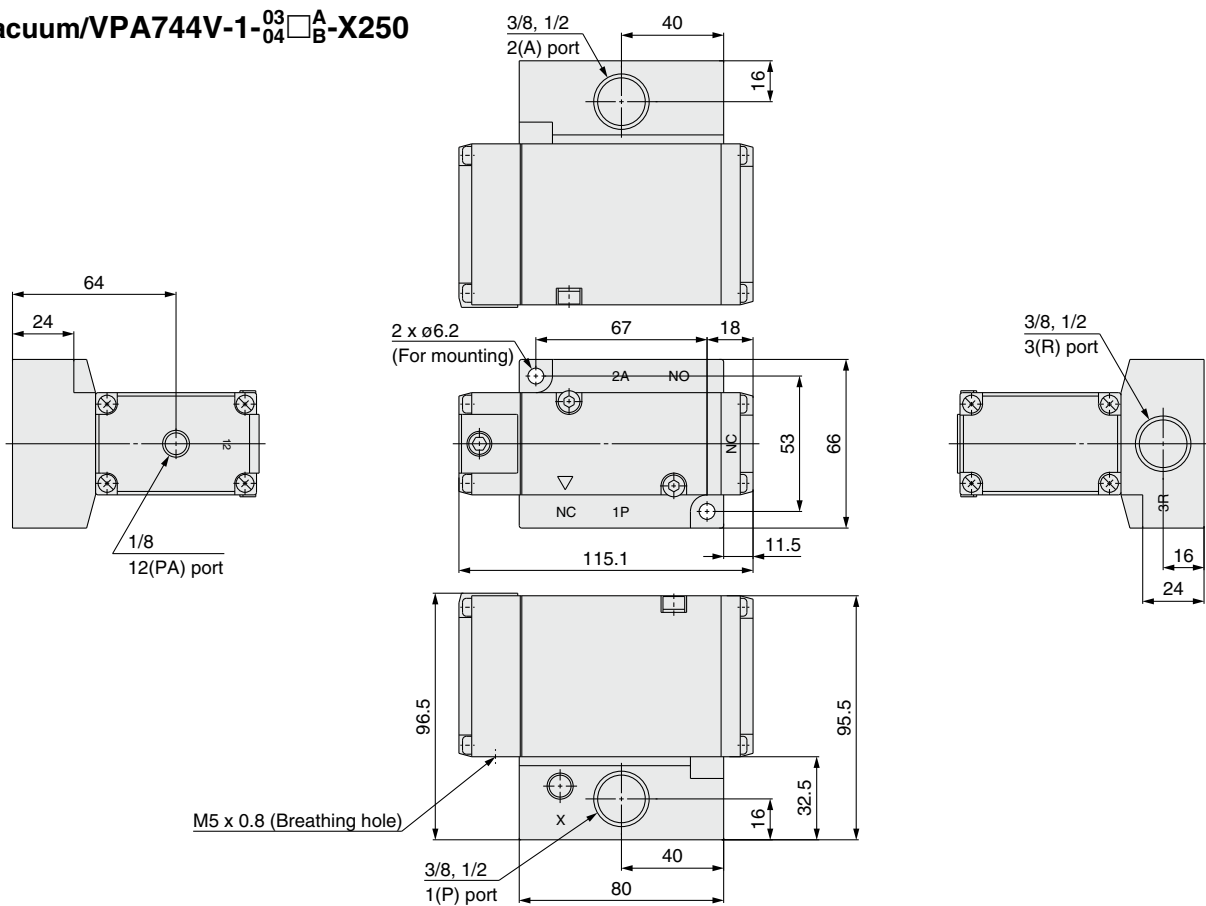
End View: Shows the 1/4, 3/8 3(R) port. Dimensions: 13.5 (port offset), 23 (port offset).

VPA700 Series/Base Mounted/Dimensions

Standard/VPA744-1-⁰³₀₄□^A_B-X250



For vacuum/VPA744V-1-⁰³₀₄□^A_B-X250



3-Port/Air Operated Valve

VTA325-X250

(White Vaseline Specification)

How to Order

VTA325-02- -X250

• White vaseline

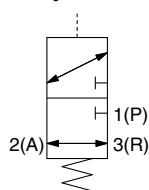
• Port size

Symbol	Port size
02	1/4
03	3/8

• Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Symbol



Specifications

Valve type		2-position 3-port air operated valve
Valve		Universal porting type
Fluid		Air
Operating pressure range	Pilot	0.1 to 1.0 MPa
	Main	0 to 1.0 MPa
Ambient and fluid temperatures		5 to 50°C

Flow Rate Characteristics

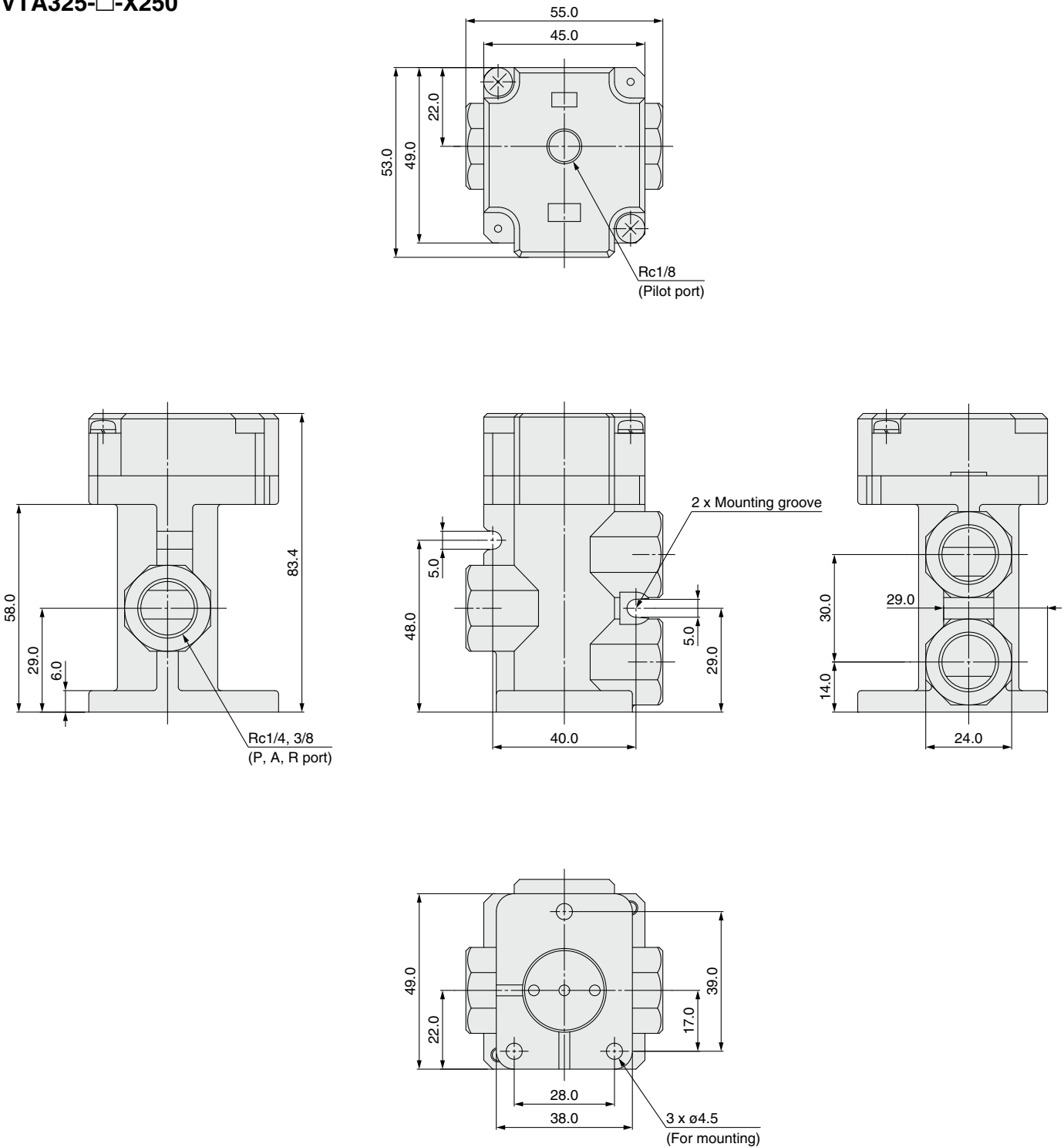
Part no.	Port size	Passage	1→2 (P→A)	2→3 (A→R)	3→2 (R→A)	2→1 (A→P)
		Flow rate characteristics				
VTA325-02-X250	1/4"	C [dm³/(s·bar)]	5.5	5.9	5.5	5.7
		b	0.37	0.35	0.33	0.32
		Cv	1.4	1.5	1.4	1.4
VTA325-03-X250	3/8"	C [dm³/(s·bar)]	5.5	6.1	5.7	6.6
		b	0.37	0.37	0.34	0.25
		Cv	1.4	1.6	1.4	1.5

6 Valve Functions Available by Changing of Piping Port

	3-port N.C.	3-port N.O.	2-port N.C.	2-port N.O.	Selector	Divider
Pilot OFF						
Pilot ON						

Dimensions

VTA325-□-X250



Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

3-Port/Solenoid Valve Body Ported/Single Unit **VP300/500/700-X250** (White Vaseline Specification)

How to Order



Note) Only DIN and conduit terminal types are available for AC mode.
Refer to the electrical entry for details.

Body ported **VP 3 4 2** **5 G** **1-01** **A** **-X250**

Series

3	VP300
5	VP500
7	VP700

Pilot type

Nil	Internal pilot
R	External pilot

Pressure specification

Nil	Standard (0.7 MPa)
K	High-pressure type (1.0 MPa)

Coil specification

Nil	Standard
T	With power saving circuit (DC only)

Note) Be sure to select the power saving circuit type when it is continuously energized for a long time.

* T type is only available for DC mode. When T is selected, only Z type of light/surge voltage suppressor is available.

(Note that when the electrical entry of DIN terminal type without connector is selected, only DOS and YOS are available.)

Rated voltage

DC

5	24 VDC
6	12 VDC

AC (50/60 Hz)

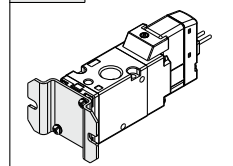
1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]
7	240 VAC
B	24 VAC

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Bracket

Nil	Without bracket
F	With bracket



Type of actuation

A	N.C. (Normally closed)
B	N.O. (Normally open)

Port size

Symbol	Port size	VP300	VP500	VP700
01	1/8	○	—	—
02	1/4	○	○	—
03	3/8	—	○	○
04	1/2	—	—	○

Manual override

White vaseline

Electrical entry

Grommet	L-type plug connector	M-type plug connector	DIN terminal	DIN (EN175301-803) terminal	Conduit terminal
G: Lead wire length 300 mm H: Lead wire length 600 mm	L: With lead wire (length 300 mm) LN: Without lead wire	M: With lead wire (length 300 mm) MN: Without lead wire	D: With connector DO: Without connector	Y: With connector YO: Without connector	T: Conduit terminal
G: Lead wire length 300 mm H: Lead wire length 600 mm DC Without light/surge voltage suppressor	LO: Without connector	MO: Without connector			
CE compliant	DC	DC	DC	DC	DC
	AC	AC	AC	AC	AC

Nil: Non-locking push type	D: Push-turn locking slotted type	E: Push-turn locking lever type

Light/surge voltage suppressor

	DC	AC
Nil	Without light/surge voltage suppressor	○
S	With surge voltage suppressor	○
Z	With light/surge voltage suppressor	○
R	With surge voltage suppressor (Non-polar)	○
U	With light/surge voltage suppressor (Non-polar)	○

Note) There is no S option for AC mode, since a rectifier prevents surge voltage generation.

* In the DIN terminal type, since a light is installed in the connector, DOZ, DOU, YOZ, YOU are not available.

Symbol

Pilot type	N.C.	N.O.
Internal pilot		
External pilot		

* LN and MN types are with 2 sockets.

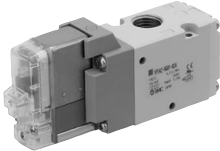
* Refer to the **Web Catalog** for details when different length of lead wire for L/M-type plug connector is required.

* Refer to the **Web Catalog** for details on the DIN (EN175301-803) terminal.

Note) With the same specifications as the DC type, all lead wire entries for the 24 VAC type are CE marking compliant.

Solenoid Valve Body Ported/Single Unit **VP300/500/700-X250**

Low power consumption 1.5 W (DC)
Possible to use as either a selector or divider valve
Possible to change from N.C. to N.O.
Possible to use in vacuum applications
Up to -100 kPa



External Pilot

Use external pilot type in the following cases:

- For vacuum or for low pressure 0.2 MPa or less
- Please consult with SMC for use in a vacuum hold application.
- When having P port downsized in diameter
- When using A port as the atmospheric releasing port, e.g. air blower

Specifications

Fluid		Air
Type of actuation		N.C. or N.O. (Convertible)
Internal pilot	Standard	0.2 to 0.7
	High-pressure type	0.2 to 1.0
External pilot	Standard	-100 kPa to 0.7
	High-pressure type	-100 kPa to 1.0
	Pilot pressure range	Same as operating pressure (Min. 0.2 MPa)
Ambient and fluid temperatures (°C)		-10 to 50 (No freezing)
Max. operating frequency (Hz)		5
Manual override		Non-locking push type Push-turn locking slotted type Push-turn locking lever type
Pilot exhaust type		Individual exhaust
Lubrication		Not required
Mounting orientation		Unrestricted
Impact/Vibration resistance (m/s ²) Note)		300/50
Enclosure		Dust-tight (IP65 for D, Y, T)

Note) Impact resistance: No malfunction occurred when it was tested in the axial direction and at right angles to the main valve and armature in both energized and de-energized states. Each condition was tested once. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at right angles to the main valve and armature. (Values at the initial period)

Solenoid Specifications

Electrical entry		Grommet (G), (H) L-type plug connector (L) M-type plug connector (M)	DIN terminal (D) DIN (EN175301-803) terminal (Y) Conduit terminal (T)
		G, H, L, M	D, Y, T
Coil rated voltage (V)	DC	24, 12	
	AC (50/60 Hz)	24, 100, 110, 200, 220, 240	
Allowable voltage fluctuation		±10% of rated voltage*	
Power consumption (W)	DC	Standard	1.5 (With light: 1.55)
	DC	With power saving circuit	0.55 Note) (With light only)
Apparent power (VA)*	AC	24 V	1.5 (With light: 1.55)
		100 V	1.5 (With light: 1.75)
		110 V	1.55 (With light: 1.65)
		[115 V]	1.55 (With light: 1.7)
		200 V	
		220 V	
		[230 V]	
Surge voltage suppressor		Diode (Non-polar type: Varistor)	
		LED (Neon bulb is used for AC mode of D, Y, T.)	

* The 110 VAC and 115 VAC are interchangeable. The 220 VAC and 230 VAC are interchangeable as well.

* The allowable voltage fluctuation is -15% to +5% of the rated voltage for the 115 VAC or 230 VAC.

* Since voltage drops due to the internal circuit in S, Z, T types (with power saving circuit), the allowable voltage fluctuation should be within the following range.

24 VDC: -7% to +10%

12 VDC: -4% to +10%

Flow Rate Characteristics/Weight

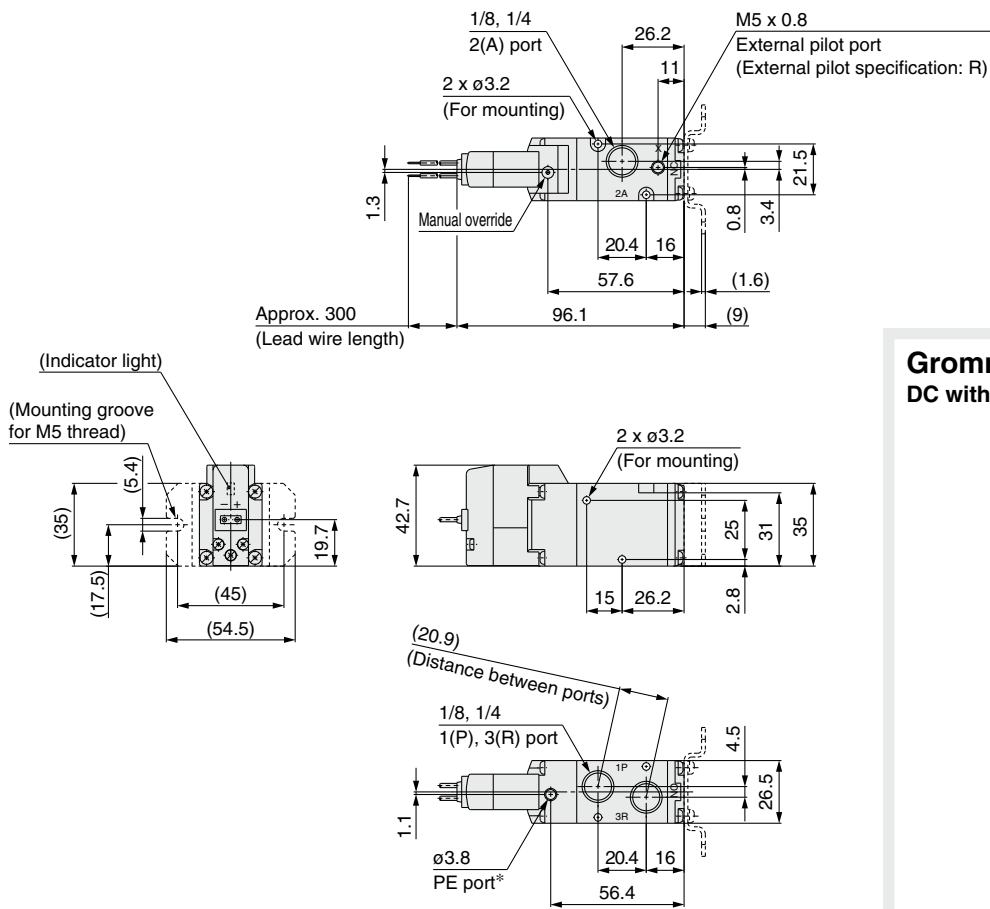
Model	Port size	1 ↔ 2 (P ↔ A)			2 ↔ 3 (A ↔ R)			Weight (g) Note)	
		C [dm ³ /(s·bar)]	b	Cv	C [dm ³ /(s·bar)]	b	Cv	Grommet	DIN terminal
VP342-X250	1/8	3.5	0.26	0.8	3.6	0.26	0.9	149	185
	1/4	4.2	0.22	1.0	4.2	0.23	1.0	145	181
VP542-X250	1/4	7.9	0.21	1.8	7.2	0.27	1.8	249	285
	3/8	8.9	0.16	2.2	8.9	0.20	2.1	241	277
VP742-X250	3/8	11.9	0.21	2.7	11.8	0.20	2.7	484	520
	1/2	15.1	0.21	3.6	15.3	0.22	3.7	467	503

Note) Values without bracket

VP300/500/700-X250

VP300 Series/Body Ported/Dimensions

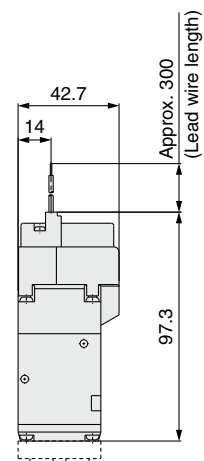
Grommet (G)



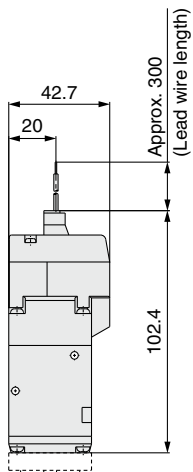
* Refer to the **Web Catalog** for details when piping to PE port is required.

Grommet (G)

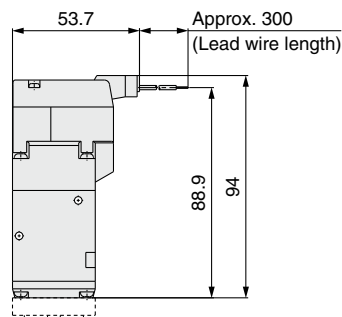
DC without light/surge voltage suppressor



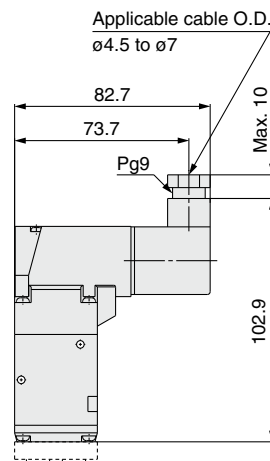
L-type plug connector (L)



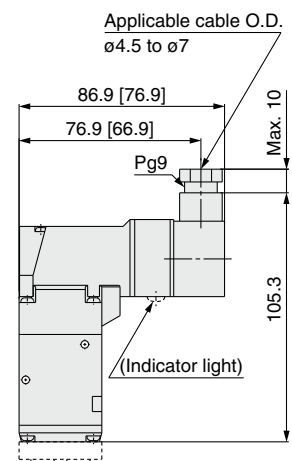
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)



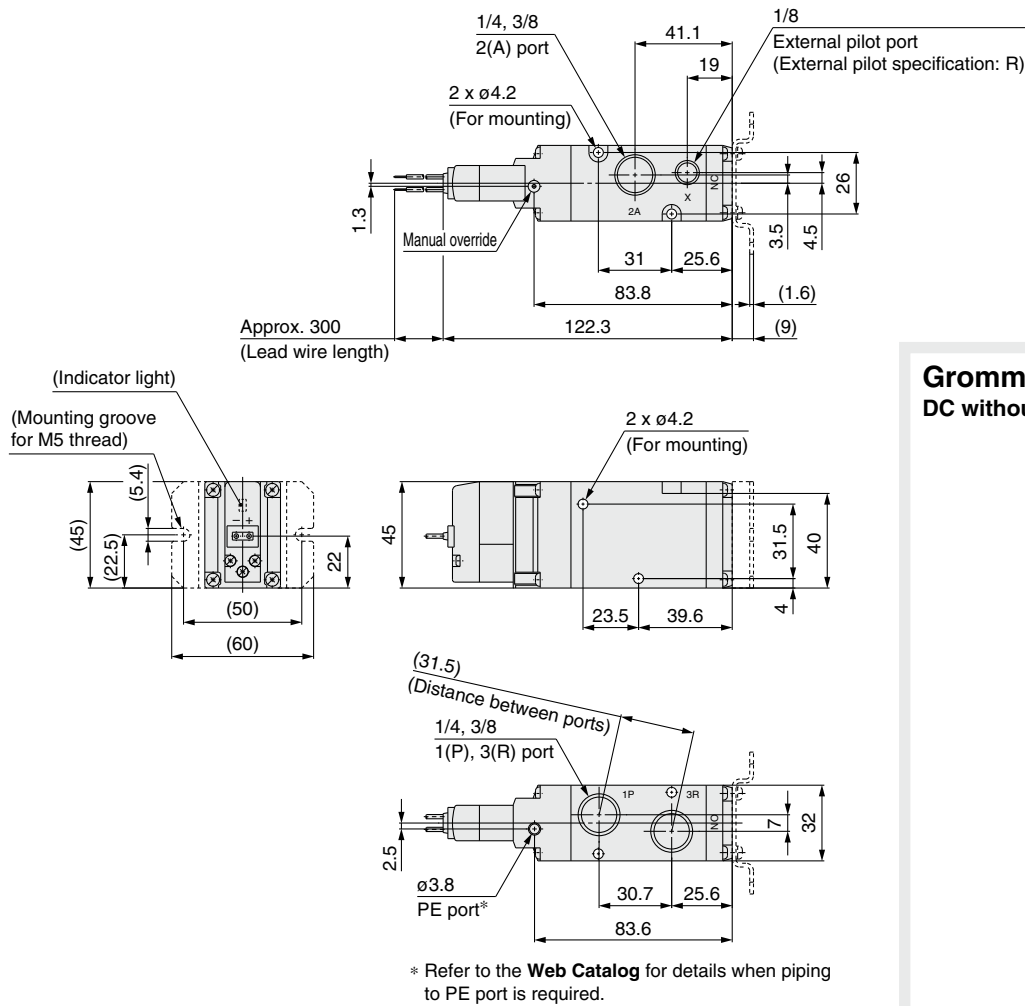
[]: Without indicator light

Unless otherwise indicated, dimensions are the same as Grommet (G).

Solenoid Valve Body Ported/Single Unit **VP300/500/700-X250**

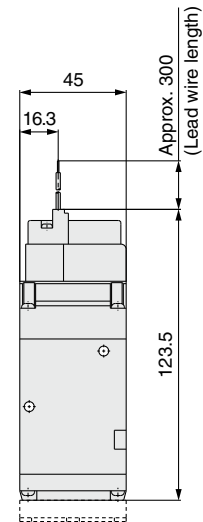
VP500 Series/Body Ported/Dimensions

Grommet (G)

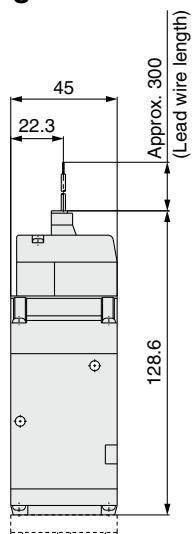


Grommet (G)

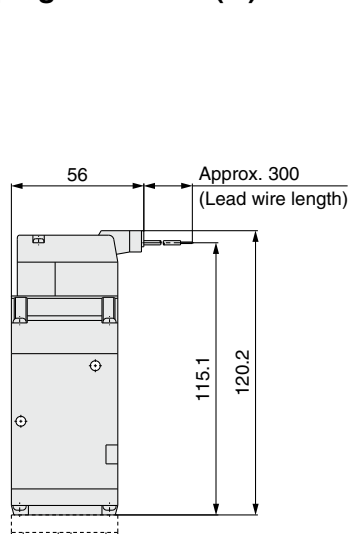
DC without light/surge voltage suppressor



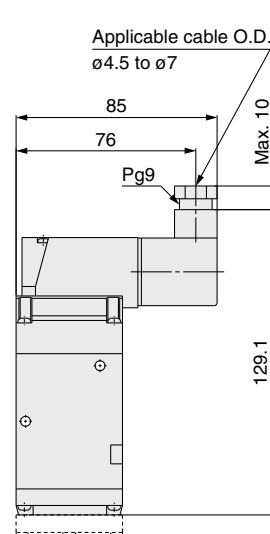
L-type plug connector (L)



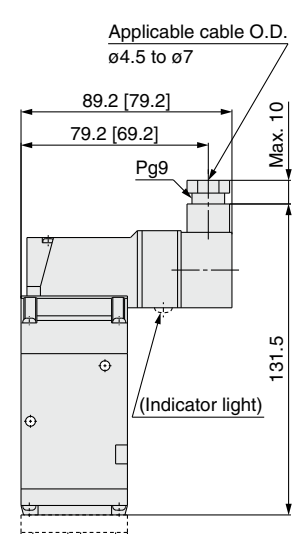
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)



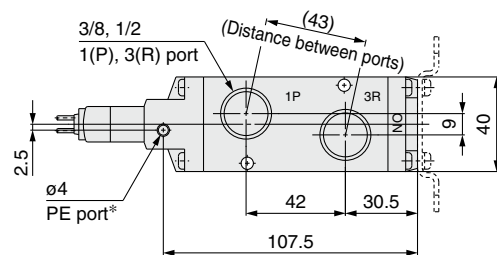
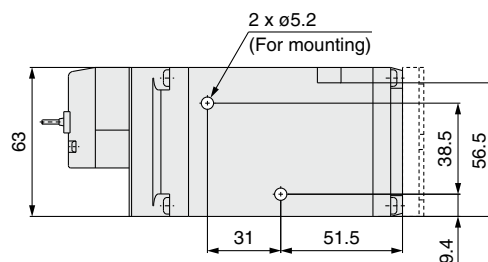
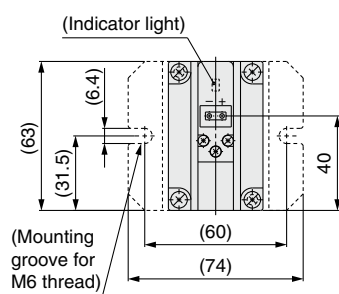
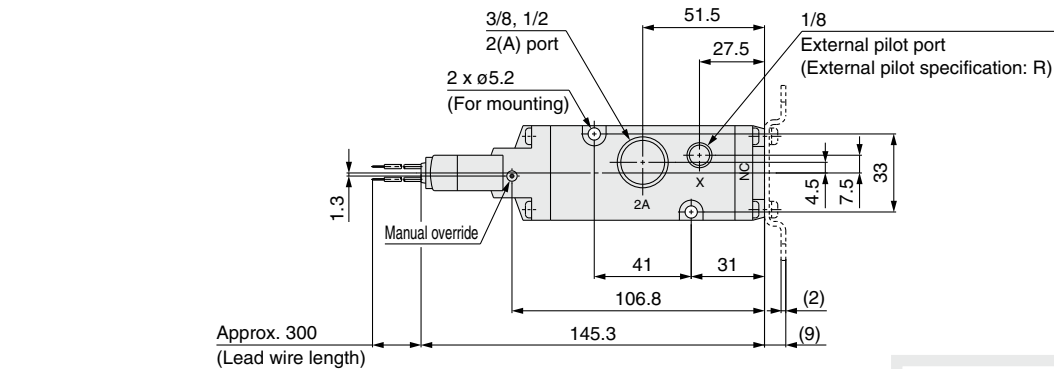
[]: Without indicator light

Unless otherwise indicated, dimensions are the same as Grommet (G).

VP300/500/700-X250

VP700 Series/Body Ported/Dimensions

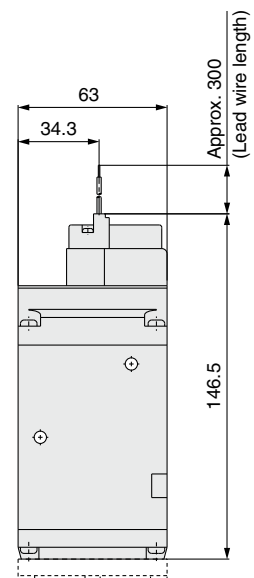
Grommet (G)



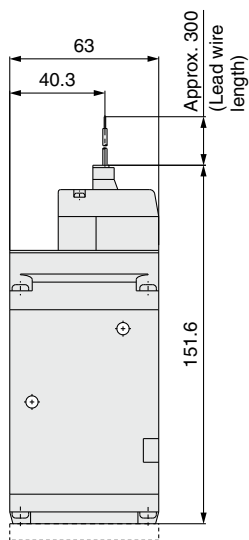
* Refer to the **Web Catalog** for details when piping to PE port is required.

Grommet (G)

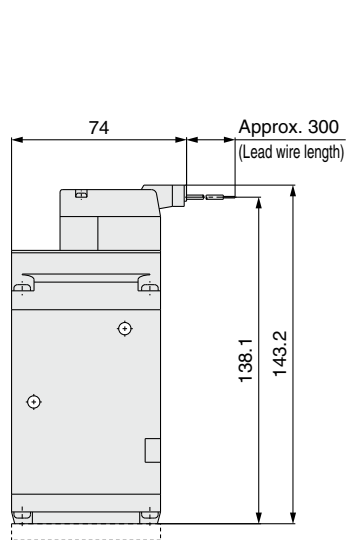
DC without light/surge voltage suppressor



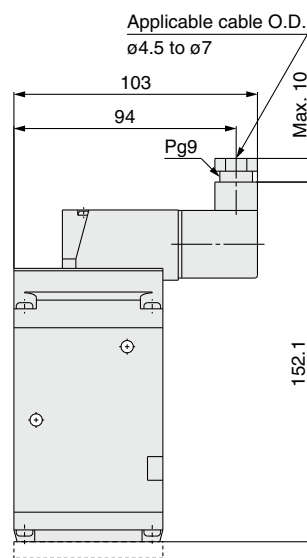
L-type plug connector (L)



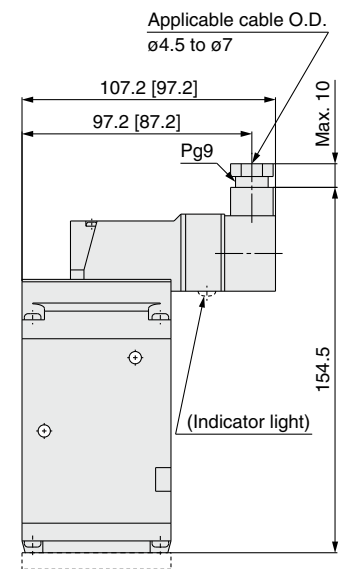
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)



[]: Without indicator light

Unless otherwise indicated, dimensions are the same as Grommet (G).

3-Port/Solenoid Valve Base Mounted/Single Unit VP300/500/700-X250 (White Vaseline Specification)

How to Order



Note) Only DIN and conduit terminal types are available for AC mode.
Refer to the electrical entry for details.

Base mounted

VP 3 4 4 - 5 G 1 - A - X250

Series

3	VP300
5	VP500
7	VP700

Pilot type

Nil	Internal pilot
R	External pilot

Pressure specification

Nil	Standard (0.7 MPa)
K	High-pressure type (1.0 MPa)

Coil specification

Nil	Standard
T	With power saving circuit (DC only)

Note) Be sure to select the power saving circuit type when it is continuously energized for a long time.

* T type is only available for DC mode. When T is selected, only Z type of light/surge voltage suppressor is available.

(Note that when the electrical entry of DIN terminal type without connector is selected, only DOS and YOS are available.)

Rated voltage

DC	
5	24 VDC
6	12 VDC
AC (50/60 Hz)	
1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]
7	240 VAC
B	24 VAC

Type of actuation

A	N.C. (Normally closed)
B	N.O. (Normally open)

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

White vaseline

Port size (Sub-plate)

Symbol	Port size	VP300	VP500	VP700
Nil		Without sub-plate*		
01	1/8	○	—	—
02	1/4	○	○	—
03	3/8	—	○	○
04	1/2	—	—	○

* With a gasket and two mounting bolts.

Manual override

Nil: Non-locking push type	D: Push-turn locking slotted type	E: Push-turn locking lever type

Electrical entry

Grommet	L-type plug connector	M-type plug connector	DIN terminal	DIN (EN175301-803) terminal	Conduit terminal
G: Lead wire length 300 mm H: Lead wire length 600 mm	L: With lead wire (length 300 mm) LN: Without lead wire	M: With lead wire (length 300 mm) MN: Without lead wire	D: With connector DO: Without connector	Y: With connector YO: Without connector	T: Conduit terminal
G: Lead wire length 300 mm H: Lead wire length 600 mm DC Without light/surge voltage suppressor	LO: Without connector	MO: Without connector			
CE-compliant	DC	CE	CE	CE	CE
	AC	—	—	—	—

Light/surge voltage suppressor

		DC	AC
Nil	Without light/surge voltage suppressor	○	○
S	With surge voltage suppressor	○	— (Note)
Z	With light/surge voltage suppressor	○	○
R	With surge voltage suppressor (Non-polar)	○	—
U	With light/surge voltage suppressor (Non-polar)	○	—

Note) There is no S option for AC mode, since a rectifier prevents surge voltage generation.

* In the DIN terminal type, since a light is installed in the connector, DOZ, DOU, YOZ, YOU are not available.

Symbol

Pilot type	N.C.	N.O.
Internal pilot		
External pilot		

* LN and MN types are with 2 sockets.

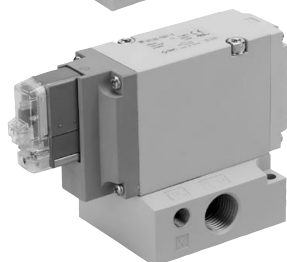
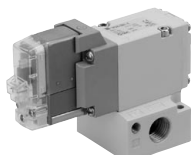
* Refer to the **Web Catalog** for details when different length of lead wire for L/M-type plug connector is required.

* Refer to the **Web Catalog** for details on the DIN (EN175301-803) terminal.

Note) With the same specifications as the DC type, all lead wire entries for the 24 VAC type are CE marking compliant.

VP300/500/700-X250

Low power consumption 1.5 W (DC)
Possible to use as either a selector or divider valve
Possible to change from N.C. to N.O.
Possible to use in vacuum applications
Up to -100 kPa



External Pilot

Use external pilot type in the following cases:

- For vacuum or for low pressure 0.2 MPa or less
- Please consult with SMC for use in a vacuum hold application.
- When having P port downsized in diameter
- When using A port as the atmospheric releasing port, e.g. air blower
- If manifold, external pilot piping can be centralized in manifold base.

Specifications

Fluid		Air
Type of actuation		N.C. or N.O. (Convertible)
Internal pilot	Standard	0.2 to 0.7
	High-pressure type	0.2 to 1.0
External pilot	Standard	-100 kPa to 0.7
	High-pressure type	-100 kPa to 1.0
	Pilot pressure range	Same as operating pressure (Min. 0.2 MPa)
Ambient and fluid temperatures (°C)		-10 to 50 (No freezing)
Max. operating frequency (Hz)		5
Manual override		Non-locking push type Push-turn locking slotted type Push-turn locking lever type
Pilot exhaust type		Individual exhaust
Lubrication		Not required
Mounting orientation		Unrestricted
Impact/Vibration resistance (m/s ²) ^{Note)}		300/50
Enclosure		Dust-tight (IP65 for D, Y, T)

Note) Impact resistance: No malfunction occurred when it was tested in the axial direction and at right angles to the main valve and armature in both energized and de-energized states. Each condition was tested once. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at right angles to the main valve and armature. (Values at the initial period)

Solenoid Specifications

Electrical entry		Grommet (G), (H) L-type plug connector (L) M-type plug connector (M)	DIN terminal (D) DIN (EN175301-803) terminal (Y) Conduit terminal (T)
		G, H, L, M	D, Y, T
Coil rated voltage (V)	DC	24, 12	
	AC (50/60 Hz)	24, 100, 110, 200, 220, 240	
Allowable voltage fluctuation		±10% of rated voltage*	
Power consumption (W)	DC	Standard	1.5 (With light: 1.55)
	DC	With power saving circuit	0.55 ^{Note)} (With light only)
Apparent power (VA)*	AC	24 V	1.5 (With light: 1.55)
		100 V	1.5 (With light: 1.75)
		110 V	1.55 (With light: 1.65)
		[115 V]	1.55 (With light: 1.7)
		200 V	
		220 V	
		[230 V]	
Surge voltage suppressor		Diode (Non-polar type: Varistor)	
		LED (Neon bulb is used for AC mode of D, Y, T.)	

* The 110 VAC and 115 VAC are interchangeable. The 220 VAC and 230 VAC are interchangeable as well.

* The allowable voltage fluctuation is -15% to +5% of the rated voltage for the 115 VAC or 230 VAC.

* Since voltage drops due to the internal circuit in S, Z, T types (with power saving circuit), the allowable voltage fluctuation should be within the following range.

24 VDC: -7% to +10%

12 VDC: -4% to +10%

Flow Rate Characteristics/Weight

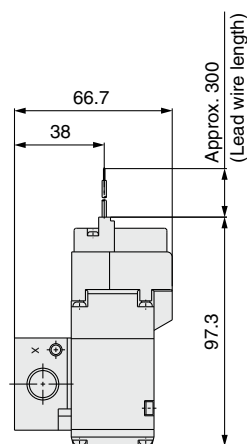
Model	Port size	1 ↔ 2 (P ↔ A)			2 ↔ 3 (A ↔ R)			Weight (g) ^{Note)}	
		C [dm ³ /(s·bar)]	b	Cv	C [dm ³ /(s·bar)]	b	Cv	Grommet	DIN terminal
VP344-X250	1/8	3.6	0.22	0.8	3.5	0.24	0.8	216 (149)	252 (185)
	1/4	3.9	0.22	0.9	3.8	0.14	0.9	211 (149)	247 (185)
VP544-X250	1/4	7.5	0.16	1.7	7.3	0.20	1.7	370 (245)	406 (281)
	3/8	8.8	0.07	2.0	8.8	0.13	2.0	362 (245)	398 (281)
VP744-X250	3/8	12.9	0.10	2.9	13.3	0.24	3.1	676 (459)	712 (495)
	1/2	14.7	0.05	3.3	15.0	0.17	3.4	658 (459)	694 (495)

Note) (): Values without sub-plate

Grommet (G)

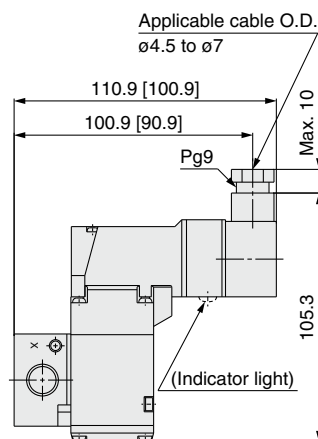


DC without light/surge voltage suppressor



* Refer to the **Web Catalog** for details when piping to PE port is required.

Conduit terminal (T)

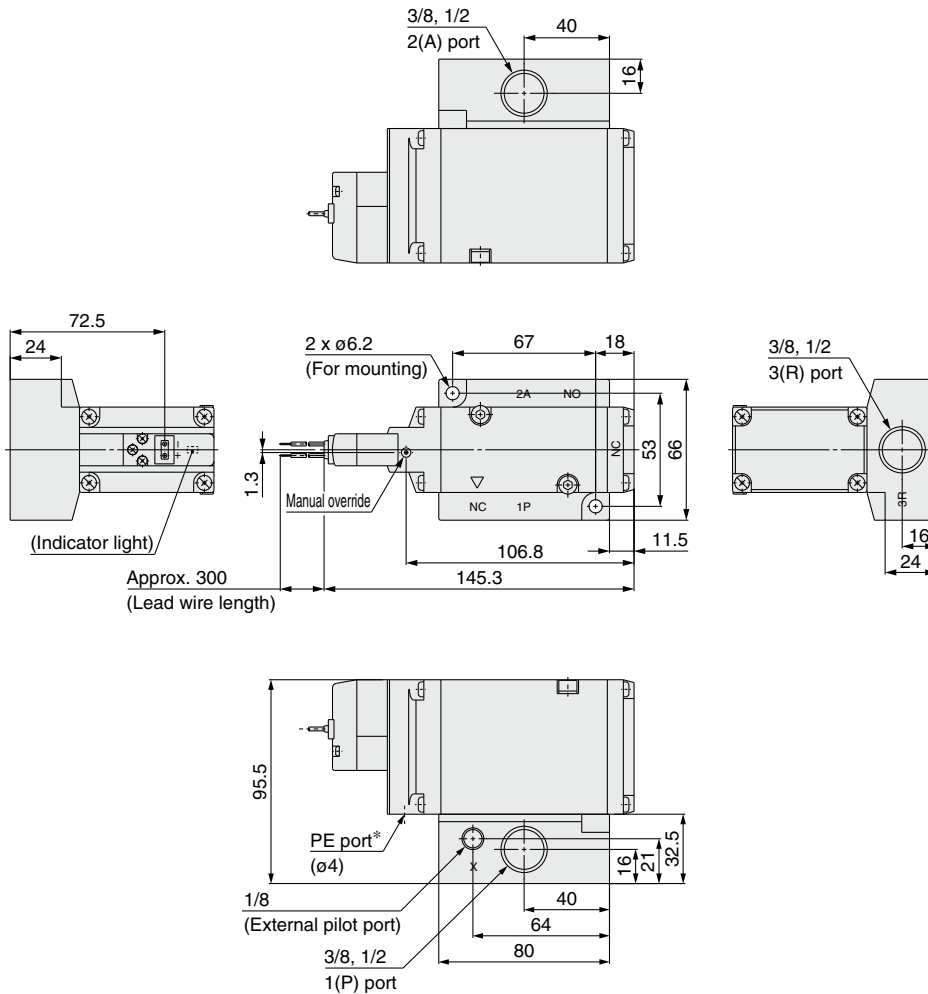


[]: Without indicator light

Unless otherwise indicated, dimensions are the same as Grommet (G).

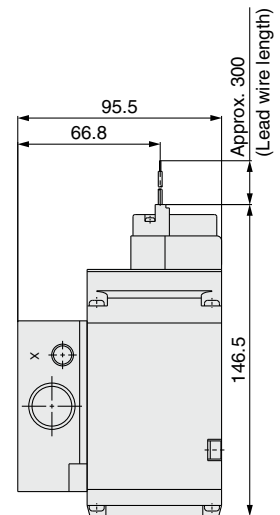
VP700 Series/Base Mounted/Dimensions

Grommet (G)

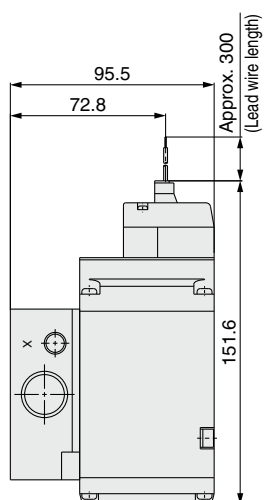


* Refer to the **Web Catalog** for details when piping to PE port is required.

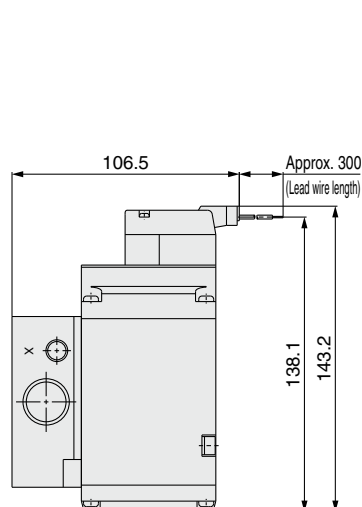
Grommet (G) DC without light/surge voltage suppressor



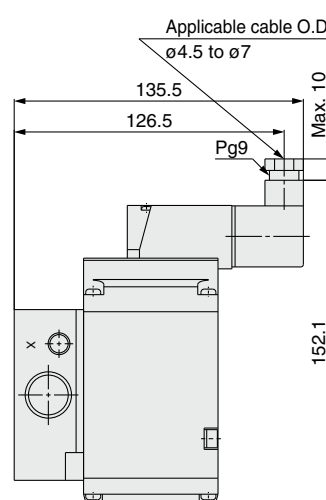
L-type plug connector (L)



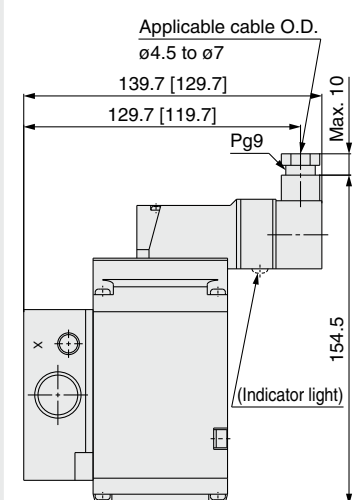
M-type plug connector (M)



DIN terminal (D, Y)



Conduit terminal (T)



[] : Without indicator light

Unless otherwise indicated, dimensions are the same as Grommet (G).

Base Mounted
Plug Lead Unit

3-Port/Solenoid Valve

VQZ200/300-X3

(White Vaseline Specification)

Single Unit

Note) AC-type models that are CE-compliant have DIN terminals only.



How to Order: Valves

VQZ **2** **1** **5** **5** **M** **1** **-** **-** **-** **X3**

Series

2	VQZ200 body width 15 mm
3	VQZ300 body width 18 mm

Type of actuation

	N.C.	2(A)	(R)3	1(P)	
1					Metal seal
2					Metal seal
3					Rubber seal
4					Rubber seal

Body type

5	Body mounted
---	--------------

Function

Symbol	Specifications	DC	AC
Nil	Standard	(0.35 W)	Note 3)
B Note 1)	High speed response type	(0.9 W)	—
K Note 1)	High pressure type (Metal seal type only)	(0.9 W)	—
R Note 1, 2)	External pilot type		
BR Note 1, 2)	High speed response/External pilot type	(0.9 W)	—
KR Note 1, 2)	High pressure/External pilot type (Metal seal type only)	(0.9 W)	—

Note 1) Option

Note 2) For details on external pilot type, refer to the **Web Catalog**.

Note 3) For details on AC specification power consumption, refer to the **Web Catalog**.

Coil voltage

1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	110 VAC [115 VAC] (50/60 Hz)
4	220 VAC [230 VAC] (50/60 Hz)
5	24 VDC
6	12 VDC

IP65 compliant

Nil	—
W Note)	Compliant

Note) VQZ200/300 DIN terminal rubber seal only (except external pilot). For details on IP65 enclosure, refer to the **Web Catalog**.

White vaseline

CE-compliant

Nil	—
Q	CE-compliant

Note) AC-type models that are CE-compliant have DIN terminals only.

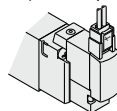
Port size

Symbol	Port size	VQZ200	VQZ300
Nil	Without sub-plate		
01	Rc 1/8		—
02	Rc 1/4		
03	Rc 3/8	—	

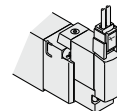
Note) For details on optional thread type, refer to the **Web Catalog**.

Manual override

Nil: Non-locking push type (Tool required)



B: Locking type (Tool required)



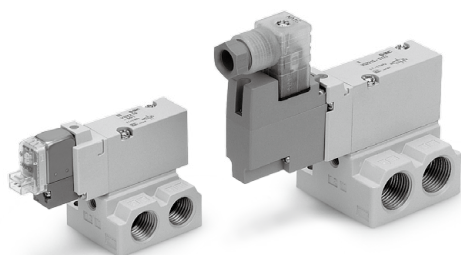
Electrical entry

	G: Grommet (DC specification)	L: L-type plug connector with lead wire	LO: L-type plug connector without connector	M: M-type plug connector with lead wire	MO: M-type plug connector without connector
	With light/surge voltage suppressor	With light/surge voltage suppressor	With light/surge voltage suppressor	With light/surge voltage suppressor	With light/surge voltage suppressor
CE-compliant	AC —	—	—	—	—
	DC ●	●	●	●	●
	Y: DIN terminal	YO: DIN terminal without connector	YZ: DIN terminal	YOS: DIN terminal without connector (DC specification)	YS: DIN terminal (DC specification)
	With light/surge voltage suppressor	With surge voltage suppressor	With surge voltage suppressor	With surge voltage suppressor	With surge voltage suppressor
CE-compliant	AC ●	●	●	—	—
	DC ●	●	●	●	●

Note 1) Standard lead wire length: 300 mm

Note 2) For AC voltage valves there is no S option. It is already built-in to the rectifier circuit.

Specifications



Valve construction	Metal seal	Rubber seal
Fluid	Air	
Max. operating pressure (MPa)	0.7 (High pressure type: 1.0)	0.7
Min. operating pressure (MPa)	0.1	0.15
Ambient and fluid temperatures (°C)	-10 to 50 (No freezing)	
Max. operating frequency (Hz)	20	5
Pilot exhaust method	Individual exhaust	
Lubrication	Not required	
Manual override	Push type, Locking type (Tool required)	
Mounting orientation	Free	
Impact/Vibration resistance (m/s ²) ^{Note 1)}	150/30	
Enclosure*	Dustproof (DIN terminal: IP65 ^{Note 2)})	

* Based on IEC60529

Note 1) Impact resistance: No malfunction occurred when it was tested in the axial direction and at right angles to the main valve and armature in both energized and de-energized states. Each condition was tested once. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed in both energized and de-energized states in the axial direction and at right angles to the main valve and armature. (Values at the initial period)

Note 2) When IP65 compliant DIN terminals are selected: VQZ₂□5□-□Y□□W1-□-□-□X3

Options

High speed response type
High pressure type (Metal seal type only)
External pilot type*

* For details on external pilot type, refer to the **Web Catalog**.

Solenoid Specifications

Electrical entry			Grommet (G)		M-type plug connector (M)	
			L-type plug connector (L)		DIN terminal (Y)	
			G, L, M		Y	
Coil rated voltage (V)	DC		24, 12			
	AC 50/60 Hz		100, 110, 200, 220*			
Allowable voltage fluctuation			±10% of rated voltage*			
Power consumption (W)	DC	Standard	0.35 [(With light: 0.4 (DIN terminal with light: 0.45))]			
		High speed response, high pressure	0.9 [(With light: 0.95 (DIN terminal with light: 1.0))]			
Apparent power (VA)	AC	100 V	0.78 (With light: 0.81)		0.78 (With light: 0.87)	
		110 V [115 V]	0.86 (With light: 0.89) [0.94 (With light: 0.97)]		0.86 (With light: 0.87) [0.94 (With light: 1.07)]	
		200 V	1.18 (With light: 1.22)		1.15 (With light: 1.30)	
		220 V [230 V]	1.30 (With light: 1.34) [1.42 (With light: 1.46)]		1.27 (With light: 1.46) [1.39 (With light: 1.60)]	
Surge voltage suppressor			Varistor			
Indicator light			LED (Neon light when AC with DIN terminal)			

* The 110 VAC and 115 VAC are interchangeable. The 220 VAC and 230 VAC are interchangeable as well.

* The allowable voltage fluctuation is -15% to +5% of the rated voltage for the 115 VAC or 230 VAC.

Flow Rate Characteristics

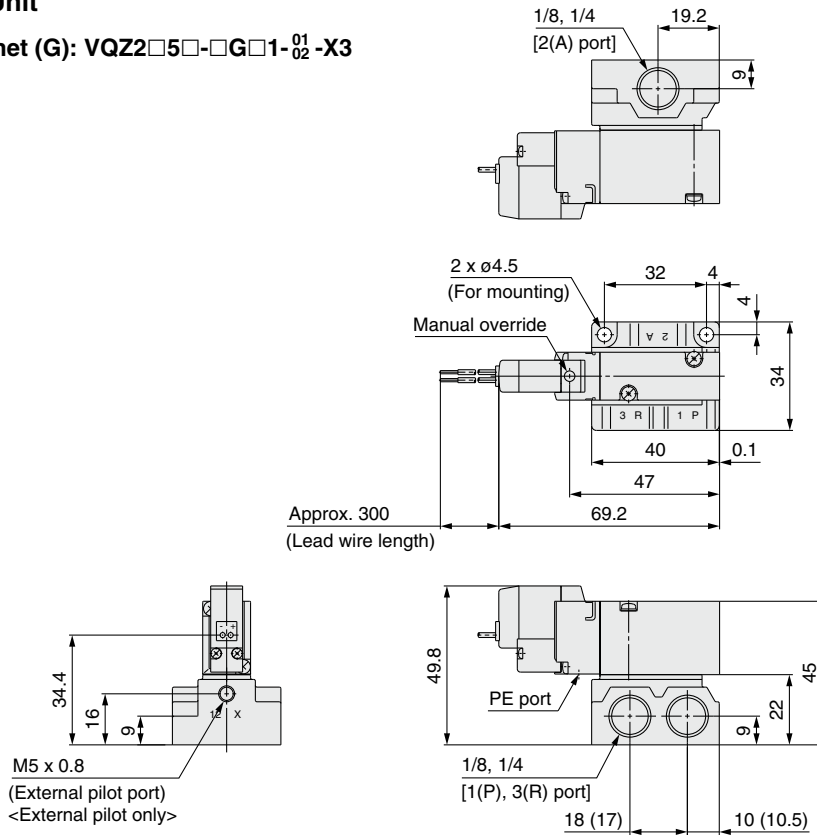
Series	Valve construction	Model		Flow rate characteristics						Response time (ms) ^{Note 1)}				Note 2) Weight (g)
				1→2 (P→A)			2→3 (A→R)			Standard: 0.35 W	High speed response: 0.9 W	High pressure: 0.9 W	AC	
				C [dm³/(s•bar)]	b	Cv	C [dm³/(s•bar)]	b	Cv					
VQZ200-X3	N.C. valve	Metal seal	VQZ215	1.7	0.17	0.38	2.0	0.20	0.45	22 or less	14 or less	18 or less	34 or less	52
		Rubber seal	VQZ235	2.3	0.46	0.65	3.0	0.40	0.80	22 or less	15 or less	—	36 or less	
	N.O. valve	Metal seal	VQZ225	1.7	0.18	0.38	1.8	0.21	0.39	22 or less	14 or less	18 or less	34 or less	
		Rubber seal	VQZ245	2.5	0.43	0.67	3.0	0.30	0.74	22 or less	15 or less	—	36 or less	
VQZ300-X3	N.C. valve	Metal seal	VQZ315	3.0	0.21	0.70	3.2	0.27	0.80	22 or less	17 or less	22 or less	34 or less	78
		Rubber seal	VQZ335	4.5	0.42	1.3	4.1	0.36	1.0	33 or less	25 or less	—	57 or less	
	N.O. valve	Metal seal	VQZ325	2.9	0.21	0.72	2.9	0.16	0.69	22 or less	17 or less	22 or less	34 or less	
		Rubber seal	VQZ345	4.4	0.45	1.2	4.5	0.38	1.2	33 or less	25 or less	—	57 or less	

VQZ200/300-X3

Dimensions: VQZ200

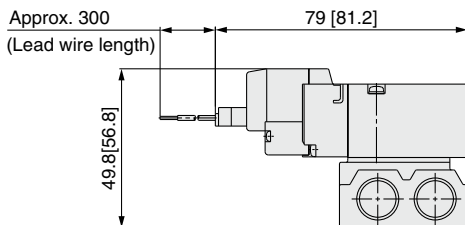
Single Unit

Grommet (G): VQZ2□5□-□G□1-⁰¹/₀₂-X3



(): VQZ215-□G□1-01-X3

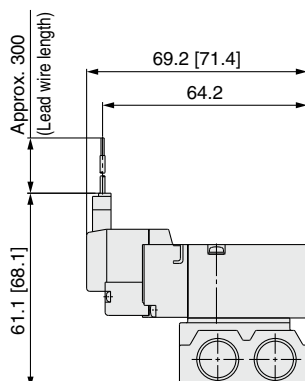
L-type plug connector (L): VQZ2□5□-□L□1-⁰¹/₀₂-X3



Unless otherwise indicated, dimensions are the same as Grommet (G).

[]: AC

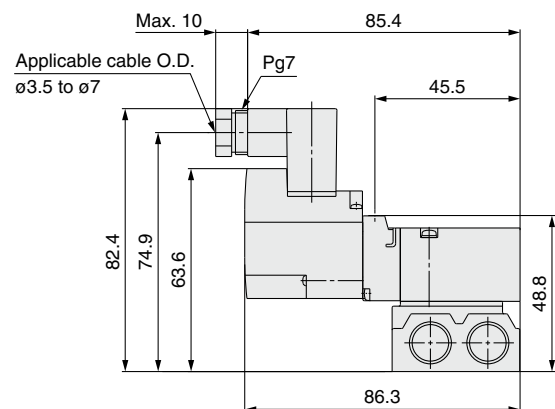
M-type plug connector (M): VQZ2□5□-□M□1-⁰¹/₀₂-X3



Unless otherwise indicated, dimensions are the same as Grommet (G).

[]: AC

DIN terminal (Y): VQZ2□5□-□Y□1-⁰¹/₀₂-X3



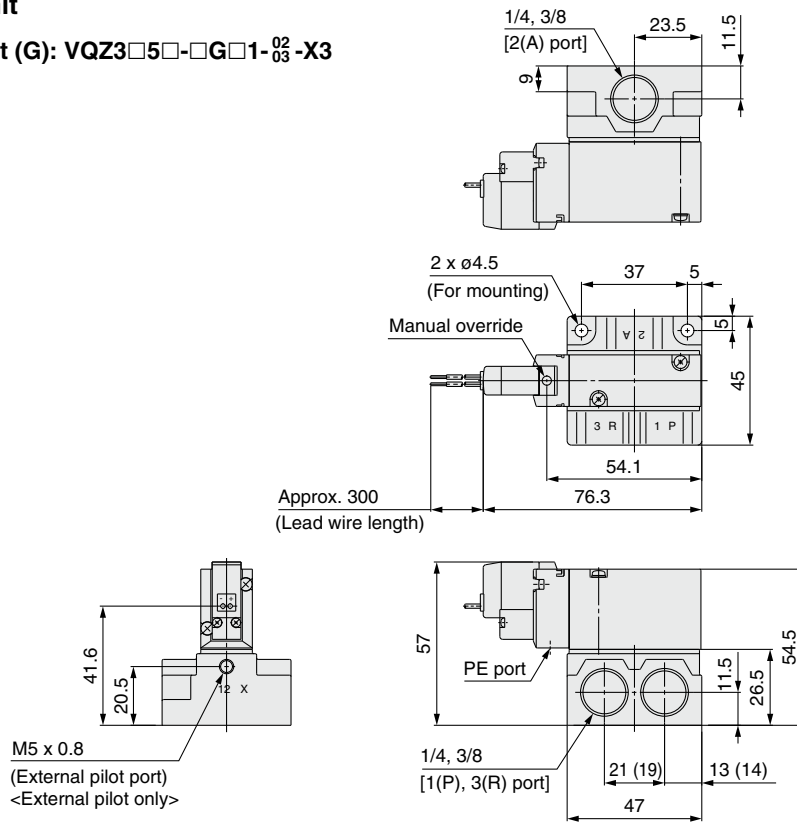
Unless otherwise indicated, dimensions are the same as Grommet (G).

[]: AC

Dimensions: VQZ300

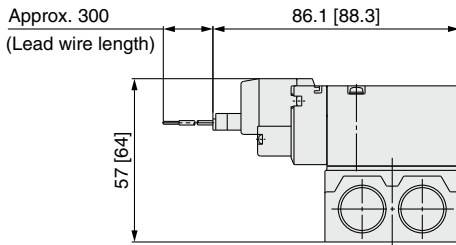
Single Unit

Grommet (G): VQZ3□5□-□G□1- $\frac{02}{03}$ -X3



(): VQZ315-□G□1-02-X3

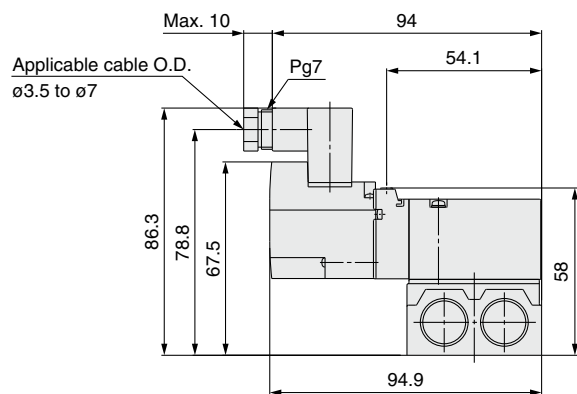
L-type plug connector (L): VQZ3□5□-□L□1- $\frac{02}{03}$ -X3



Unless otherwise indicated, dimensions are the same as Grommet (G).

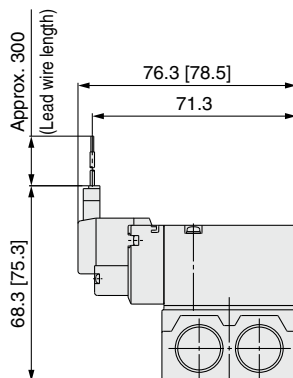
[]: AC

DIN terminal (Y): VQZ3□5□-□Y□1- $\frac{02}{03}$ -X3



Unless otherwise indicated, dimensions are the same as Grommet (G).

M-type plug connector (M): VQZ3□5□-□M□1- $\frac{02}{03}$ -X3



Unless otherwise indicated, dimensions are the same as Grommet (G).

[]: AC

5-Port/Air Operated Valve

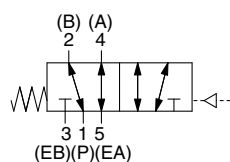
VFSA2101-X4

(White Vaseline Specification)

Specifications

Symbol

2-position single



Fluid	Air, Inert gas
Operating pressure range	0.1 to 1.0 MPa
Pilot air pressure Note 1)	0.1 to 1.0 MPa
Ambient and fluid temperatures Note 2)	-10 to 60°C
Lubrication	Not required
Manual override	Non-locking push type direct manual override
Impact/Vibration resistance Note 3)	150/50 m/s ²

Note 1) Pilot air pressure: Single type only $P_1 \geq P$ (P = Supply pressure, P_1 = Pilot pressure)

Note 2) Use dry air at low temperatures.

Note 3) Impact resistance: No malfunction from test using drop impact tester, to axis and right angle directions of main valve, each one time when ON and OFF. (Values at the initial period)

Vibration resistance: No malfunction from test with 8.3 to 2000 Hz 1 sweep, to axis and right angle directions of main valve, each one time when ON and OFF. (Values at the initial period)

How to Order

VFSA 2 1 0 1 - 02 - X4

Air operated valve

Type of actuation

1	2-position single
---	-------------------

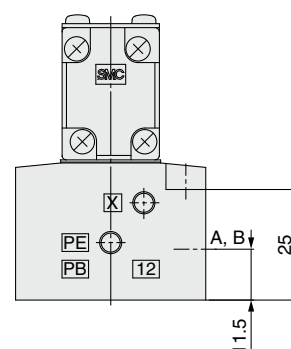
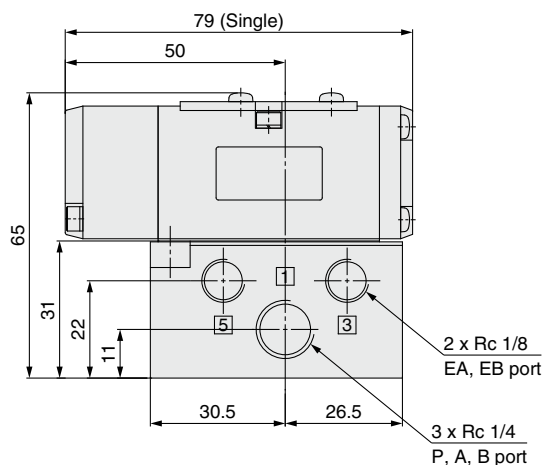
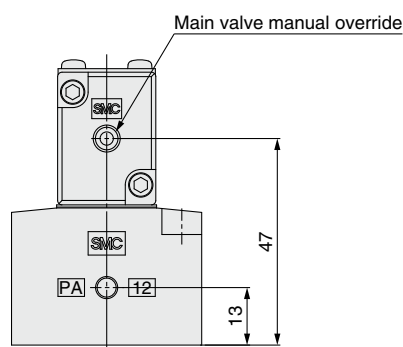
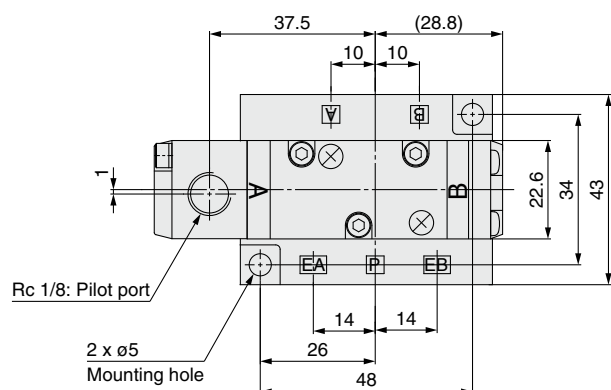
Port size

02	Rc 1/4
----	--------

White vaseline

Dimensions

VFSA2101-02-X4



5-Port/Solenoid Valve

S0700-X13 (Plug-in Type) (White Vaseline Specification)

S0705-X14 (Plug Lead Type) (White Vaseline Specification)

Valve Specifications

Model

Type		Type of actuation	Model	Flow rate characteristics						Note 2) Response time (ms)	Weight (g)
				1 → 4/2 (P → A/B)			4/2 → 5/3 (A/B → R1/R2)				
				C [dm³/(s·bar)]	b	Cv	C [dm³/(s·bar)]	b	Cv		
Plug-in type	2-position	Single	S0710	0.39	0.39	0.11	0.37	0.39	0.10	18 or less	30
		Double	S0720	0.39	0.39	0.11	0.37	0.39	0.10	10 or less	38
	4-pos.	Dual 3-port valve	S07B0 C	0.34	0.34	0.09	0.33	0.33	0.08	18 or less	38
Plug lead type	2-position	Single	S0715	0.39	0.39	0.11	0.37	0.39	0.10	12 or less	28
		Double	S0725	0.39	0.39	0.11	0.37	0.39	0.10	10 or less	36
	4-pos.	Dual 3-port valve	S07B5 C	0.34	0.34	0.09	0.33	0.33	0.08	12 or less	36

Note 1) Values for cylinder port fitting port size C6.

Note 2) Based on JIS B 8419-2010 (Supply pressure: 0.5 MPa, with indicator light and surge voltage suppressor, clean air. This will change depending on pressure and air quality.)
The value when ON for the double type.

Specifications

		S0700-X13 Note 4)	S0705-X14 Note 4)
Valve specifications	Valve construction	Rubber seal	
	Fluid	Air	
	Max. operating pressure	1.0 MPa	
	Min. operating pressure	0.2 MPa	
	Ambient and fluid temperatures	-10 to 50°C Note 1)	
	Max. operating cycle	5 Hz	
	Pilot valve exhaust method	Plug-in type Common exhaust Note 2)	Plug lead type Individual exhaust
	Pilot valve manual override	Push type	
	Lubrication	Not required	
	Impact/Vibration resistance Note 3)	30/100 m/s²	
Electrical specifications	Enclosure	IP40	
	Coil rated voltage	24 VDC	
	Allowable voltage fluctuation	±10% of the rated voltage	
	Coil insulation type	Class B or equivalent	
Power consumption (Current)		24 VDC	
		DC 0.35 W (15 mA)	DC 0.5 W (21 mA)

Note 1) Use dry air to prevent condensation when operating at low temperatures.

Note 2) Valves with the external pilot specifications have a pilot EXH with individual exhaust specifications.

Note 3) Impact resistance: No malfunction occurred when it was tested with a drop tester in the axial direction and at right angles to the main valve and armature in both energized and de-energized states. Each condition was tested once.

Vibration resistance: No malfunction occurred in a one-sweep test between 8.3 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at right angles to the main valve and armature.

Note 4) Please contact SMC for long-term continuous energization.

Symbol

Model	Type of actuation	Symbol
S0710 S0715	2-position single	
S0720 S0725	2-position double	
S0735	3-position closed center	
S07A0 S07A5	4-position dual 3-port N.C. + N.C. (Exhaust center)	
S07B0 S07B5	4-position dual 3-port N.O. + N.O. (Pressure center)	
S07C0 S07C5	4-position dual 3-port N.C. + N.O.	

Plug-in Type

Stacking Base EX260 (For Output) Serial Transmission System S0700 Series (White Vaseline Specification)

How to Order: Manifold

SS0750-08C4SNA N-B-X97

1

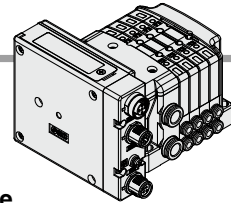
2

3

4

5

White vaseline



1 Stations

In the case of the 32-output SI unit

Symbol	Stations	Note
01	1 station	Double wiring ^{Note 1)}
⋮	⋮	
16	16 stations	
01	1 station	Specified layout ^{Note 2)} (Up to 32 solenoids available)
⋮	⋮	
24	24 stations	

In the case of the 16-output SI unit

Symbol	Stations	Note
01	1 station	Double wiring ^{Note 1)}
⋮	⋮	
08	8 stations	
01	1 station	Specified layout ^{Note 2)} (Up to 16 solenoids available)
⋮	⋮	
16	16 stations	

Note 1) Double wiring: single, double, 3-position and 4-position solenoid valves can be used on all manifold stations. Up to 24 stations due to the structure of the manifold. Please note the maximum number of stations is 24 for single wiring, too.

Note 2) Specified layout: Indicate the wiring specifications with the manifold specification sheet. (Note that double, 3-position and 4-position valves cannot be used where single solenoid wiring has been specified.)

Note 3) This also includes the number of blanking plate assembly.

2 Cylinder port size

Symbol	Port size	
C3	With ø3.2 One-touch fitting	Metric
C4	With ø4 One-touch fitting	

3 Kit type

Symbol	Protocol	Number of outputs	Communication connector
SQA	DeviceNet™	32	M12
SQB		16	
SNA	PROFIBUS DP	32	M12
SNB		16	
SNC		32	
SND		16	
SVA	CC-Link	32	M12
SVB		16	
SDA	EtherCAT	32	M12
SDB		16	
SFA	PROFINET	32	M12
SFB		16	
SEA	EtherNet/IP™	32	M12
SEB		16	

Note 1) The maximum number of stations is determined by the total number of solenoids. For mixed single and double wirings, enter -K to the order code options.

Note 2) For details on SI unit part numbers, refer to the Web Catalog.

Type of actuation	Single	Double, Dual 3-port
Number of solenoids	1	2

4 SI unit output polarity

Nil	Positive common
N	Negative common

5 Option

Symbol	Specifications
Nil	None
B ^{Note 2)}	With back pressure check valve (All stations)
D	With DIN rail (Rail length: Standard)
D0	Without DIN rail (with bracket)
D ^{Note 3)}	With DIN rail, Designated length (□: Station)
K ^{Note 4)}	Special wiring specifications (Except double wiring)
N	With name plate
R ^{Note 5)}	External pilot
S	Built-in silencer

Note 1) When two or more options are specified, indicate them alphabetically. Example) -BKN

Note 2) When installing a back pressure check valve on the required station, enter the part number and specify the station position on the manifold specification sheet.

Note 3) The available number of stations is larger than the number of manifold stations.

Note 4) Indicate the wiring specifications for mixed single and double wirings.

Note 5) For details, refer to the **Web Catalog**.

* When the SD0 (Without SI unit) is specified, -D, -D□ cannot be selected.

Refer to the Web Catalog and the Operation Manual for the details of the EX260 Integrated-type (For Output) Serial Transmission System. Please download the Operation Manual via our website: <http://www.smcworld.com>

How to Order: Valves

S07 1 0 K-5-X13

Type of actuation

Symbol	Specifications
1	2-position single
2	2-position double
A	4-position dual 3-port (N.C. + N.C.) [Exhaust center]
B	4-position dual 3-port (N.O. + N.O.) [Pressure center]
C	4-position dual 3-port (N.C. + N.O.)

Note) For symbol, refer to page 64.

Base mounted plug-in

White vaseline

Note) Max. operating pressure: 1.0 MPa
Please contact SMC for long-term continuous energization.

Voltage: 24 VDC

Function

Symbol	Specifications
Nil	Standard
R	External pilot ^{Note)}

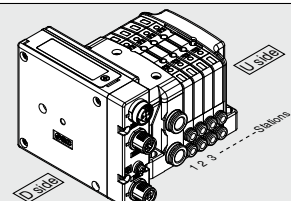
Note) Not compatible with dual 3-port valves.

How to Order Manifold Assembly

Example Serial transmission kit

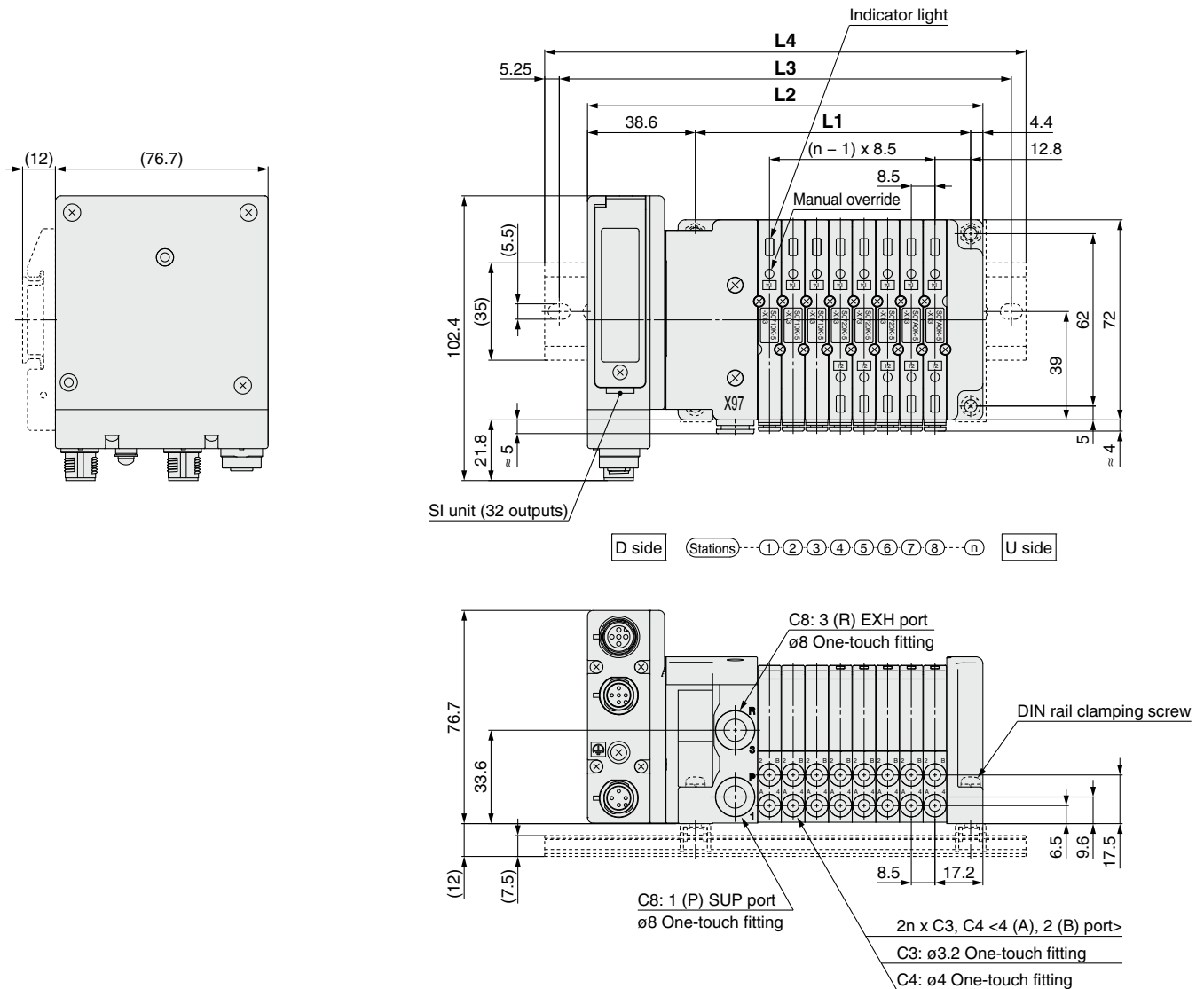
Specify the part numbers for valves and options together beneath the manifold base part number.

SS0750-04C4SNA-N-X97 ... 1 set-Manifold base part no.
* S0720K-5-X13 ... 4 sets-Valve part no. (Stations 1 to 4)
Prefix the asterisk to the part numbers of the solenoid valve, etc.
Write sequentially from the 1st station on the D side. When part numbers written collectively are complicated, specify on the manifold specification sheet.



Dimensions

SS0750-□□□□S□^A_C□-□-X97



Dimensions

Formula $L1 = 8.5n + 31$, $L2 = 8.5n + 74$ n : Station (Maximum 24 stations)

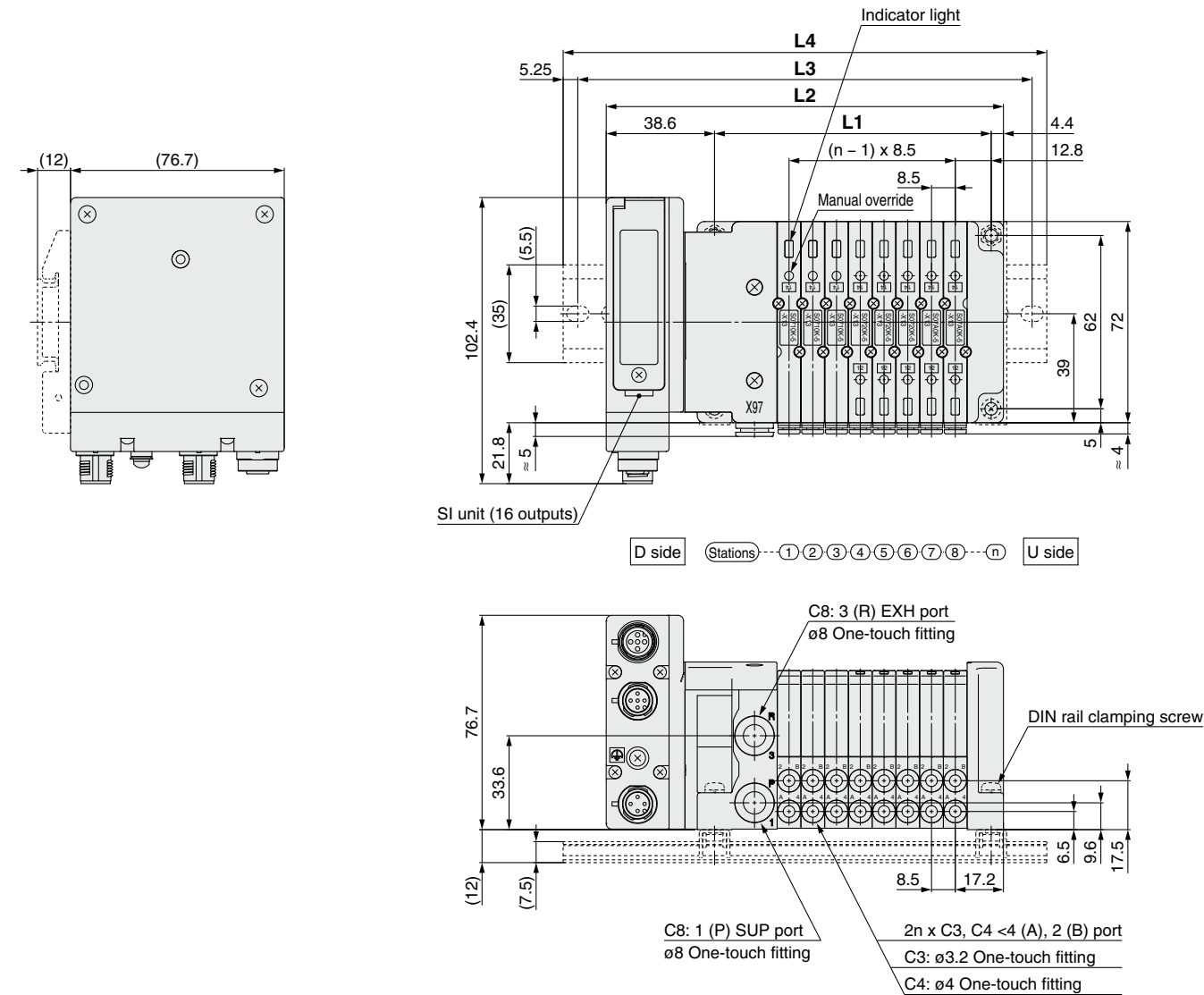
$L \backslash n$	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	39.5	48	56.5	65	73.5	82	90.5	99	107.5	116	124.5	133	141.5	150	158.5	167
L2	82.5	91	99.5	108	116.5	125	133.5	142	150.5	159	167.5	176	184.5	193	201.5	210
L3	112.5	112.5	125	137.5	137.5	150	162.5	162.5	175	187.5	187.5	200	212.5	212.5	225	237.5
L4	123	123	135.5	148	148	160.5	173	173	185.5	198	198	210.5	223	223	235.5	248

$L \backslash n$	17	18	19	20	21	22	23	24
L1	175.5	184	192.5	201	209.5	218	226.5	235
L2	218.5	227	235.5	244	252.5	261	269.5	278
L3	250	250	262.5	275	275	287.5	300	300
L4	260.5	260.5	273	285.5	285.5	298	310.5	310.5

S0700 Series

Dimensions

SS0750-□□□□S□^B□-(D)-X97



Dimensions

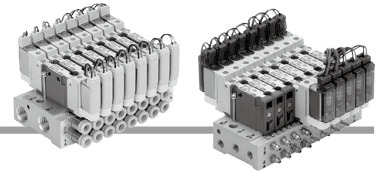
Formula L1 = 8.5n + 31, L2 = 8.5n + 74 n: Station (Maximum 16 stations)

L \ n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L1	39.5	48	56.5	65	73.5	82	90.5	99	107.5	116	124.5	133	141.5	150	158.5	167
L2	82.5	91	99.5	108	116.5	125	133.5	142	150.5	159	167.5	176	184.5	193	201.5	210
L3	112.5	112.5	125	137.5	137.5	150	162.5	162.5	175	187.5	187.5	200	212.5	212.5	225	237.5
L4	123	123	135.5	148	148	160.5	173	173	185.5	198	198	210.5	223	223	235.5	248

Plug Lead Type

Base Mounted Manifold Bar Base Individual Wiring: C Kit S0700 Series (White Vaseline Specification) C € RoHS

How to Order: Manifold



SS0755-08 C4 C - X64

Base mounted

Stations

Symbol	Stations
02	2 stations
⋮	⋮
20	20 stations

Cylinder port size

Symbol	Port size	Manifold pitch
M5	M5 thread	Metric
C2	With ø2 One-touch fitting	
C3	With ø3.2 One-touch fitting	
C4	With ø4 One-touch fitting	
CM	Mixed sizes and with port plug ^{Note)}	
N1	With ø1/8" One-touch fitting	Inch
N3	With ø5/32" One-touch fitting	
NM	Mixed sizes and with port plug ^{Note)}	
M3	M3 thread	Metric
V2	ø2 Barb fitting	
V3	ø3.2 Barb fitting	
V4	ø4 Barb fitting	
VM	Mixed sizes and with port plug ^{Note)}	

Note) Specify "Mixed sizes and with port plug" on the manifold specification sheet.

Option

Symbol	Type
Nil	None
R ^{Note)}	External pilot

Note) For details, refer to the **Web Catalog**.

* For manifold optional parts, refer to the **Web Catalog**.

Connector individual wiring

P, R port thread type

Symbol	Manifold pitch	
	8.5	7.5
Nil	Rc	M5
F	G	
N	NPT	
T	NPTF	

How to Order: Valves

S07 1 5 K-5 G-X14

Type of actuation

Symbol	Specifications
1	2-position single
2	2-position double
A	4-position dual 3-port (N.C. + N.C.) [Exhaust center]
B	4-position dual 3-port (N.O. + N.O.) [Pressure center]
C	4-position dual 3-port (N.C. + N.O.)

Note) For symbol, refer to page 64.

Base mounted manifold

Function

Symbol	Type
Nil	Standard
R	External pilot ^{Note)}

Note) Not compatible with dual 3-port valves.

White vaseline

Note) Max. operating pressure:
1.0 MPa
Please contact SMC for
long-term continuous
energization.

Electrical entry

Symbol	Specifications
G	Grommet
M	Plug connector, with lead wire (With light/surge voltage suppressor)
MO	Plug connector, without lead wire (With light/surge voltage suppressor)

Voltage

Symbol	Type
5	24 VDC
6	12 VDC

How to Order Manifold Assembly

Specify the part numbers for valves and options together beneath the manifold base part number.

<Example>

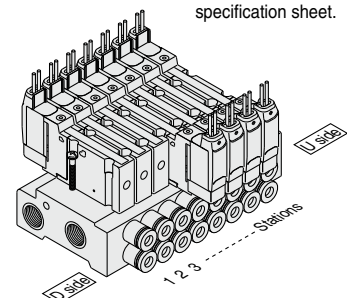
Connector kit

SS0755-07C4C-X64...1 set-Manifold base part no.

* S0715K-5G-X14...3 sets-Valve part no. (Stations 1 to 3)
* S0725K-5G-X14...2 sets-Valve part no. (Stations 4 to 5)
* S07A5K-5G-X14...2 sets-Valve part no. (Stations 6 to 7)

Prefix the asterisk to the part numbers of the solenoid valve, etc.

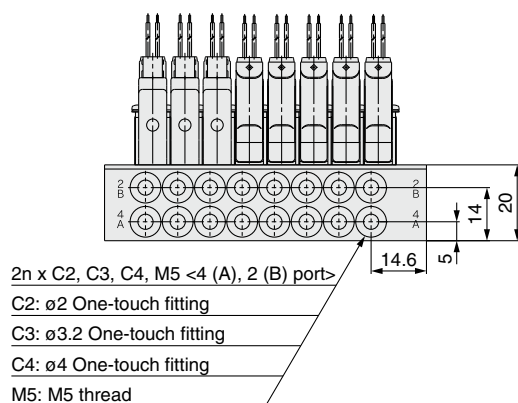
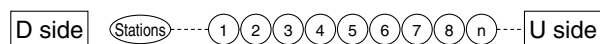
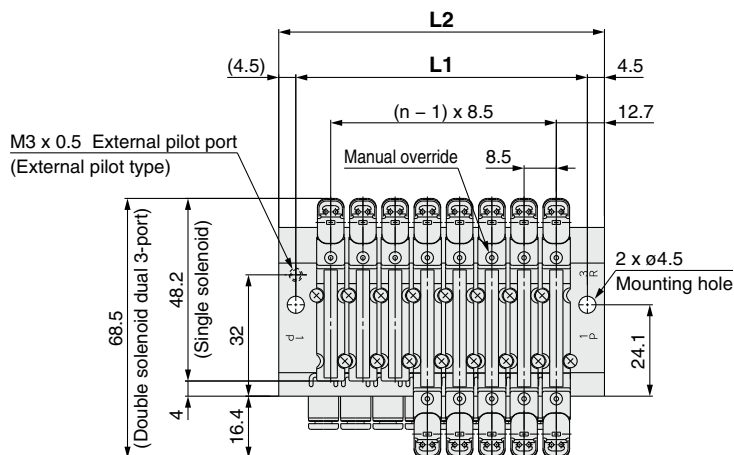
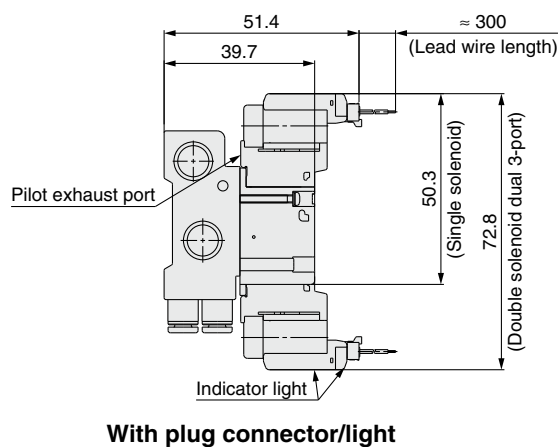
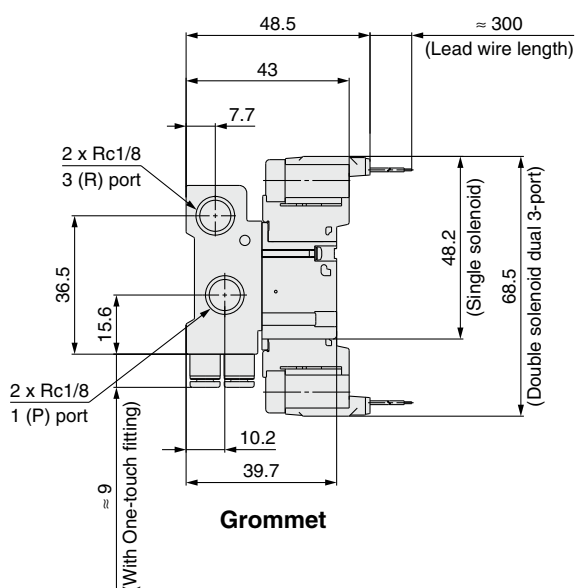
Write sequentially from the 1st station on the D side. When part numbers written collectively are complicated, specify on the manifold specification sheet.



S0700 Series

Dimensions

**SS0755-☐ ^{M5}
C☐ -X64
N☐**



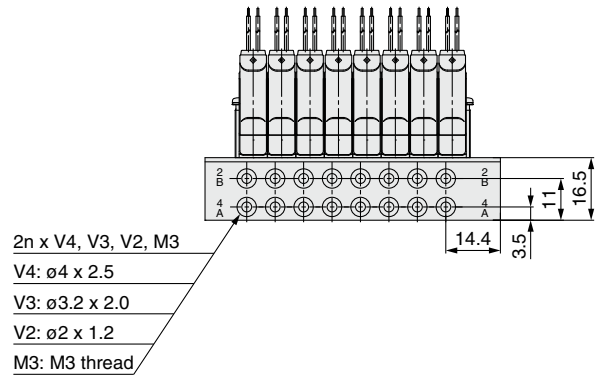
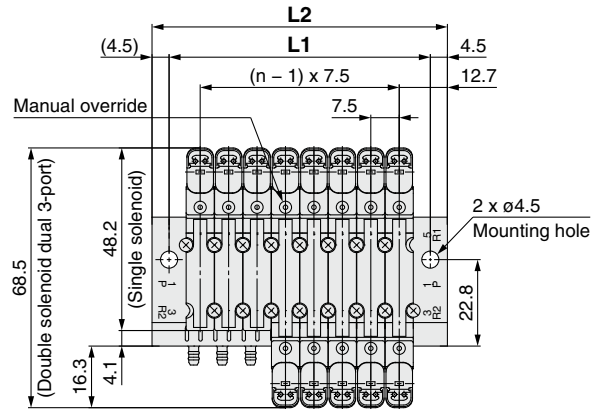
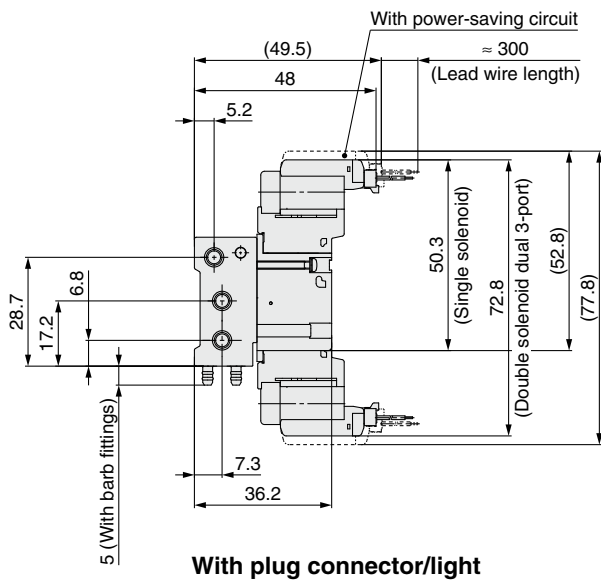
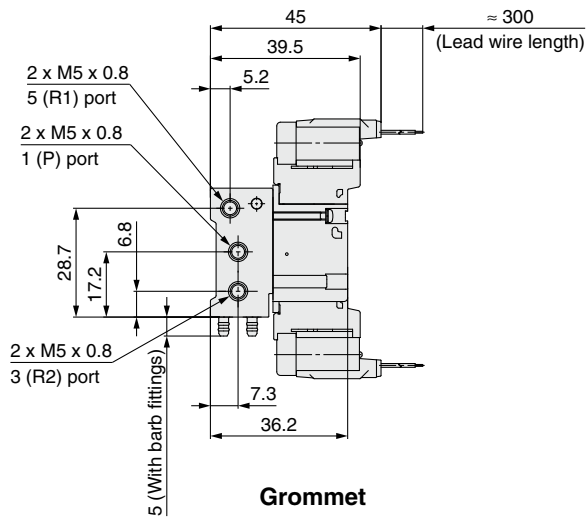
Dimensions

Formula $L1 = 8.5n + 8.9$, $L2 = 8.5n + 17.9$ n: Station (Maximum 20 stations)

L	n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1		25.9	34.4	42.9	51.4	59.9	68.4	76.9	85.4	93.9	102.4	110.9	119.4	127.9	136.4	144.9	153.4	161.9	170.4	178.9
L2		34.9	43.4	51.9	60.4	68.9	77.4	85.9	94.4	102.9	111.4	119.9	128.4	136.9	145.4	153.9	162.4	170.9	179.4	187.9

Dimensions

SS0755-□^{M3}_{V□}-X64



Dimensions

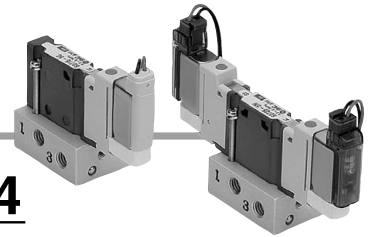
Formula $L1 = 7.5n + 8.9$, $L2 = 7.5n + 17.9$ n: Station (Maximum 20 stations)

n	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1	23.9	31.4	38.9	46.4	53.9	61.4	68.9	76.4	83.9	91.4	98.9	106.4	113.9	121.4	128.9	136.4	143.9	151.4	158.9
L2	32.9	40.4	47.9	55.4	62.9	70.4	77.9	85.4	92.9	100.4	107.9	115.4	122.9	130.4	137.9	145.4	152.9	160.4	167.9

Plug Lead Type

Base Mounted Single Unit

S0700-X14 Series (White Vaseline Specification)  



How to Order: Valves

S07 1 5 □ - 5 G - M5 - X14

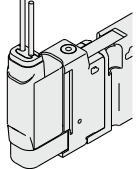
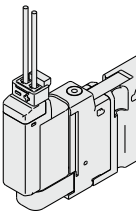
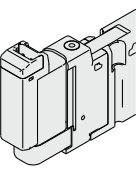
• White vaseline

Note) Max. operating pressure:
1.0 MPa
Please contact SMC for
long-term continuous
energization.

• With/Without sub-plate

Symbol	Type
Nil	Without sub-plate
M5	With sub-plate

• Electrical entry

Symbol	Specifications	Configuration
G	Grommet	
M	M-type plug connector, with lead wire (With light/surge voltage suppressor)	
MO	M-type plug connector, without lead wire (With light/surge voltage suppressor)	

• Type of actuation

Symbol	Specifications
1	2-position single
2	2-position double
3	3-position closed center
A	4-position dual 3-port (N.C. + N.C.) [Exhaust center]
B	4-position dual 3-port (N.O. + N.O.) [Pressure center]
C	4-position dual 3-port (N.C. + N.O.)

Note) For symbol, refer to page 64.

• Base mounted

• Function

Symbol	Type
Nil	Standard
R	External pilot Note)

Note) Not compatible with
dual 3-port valves.

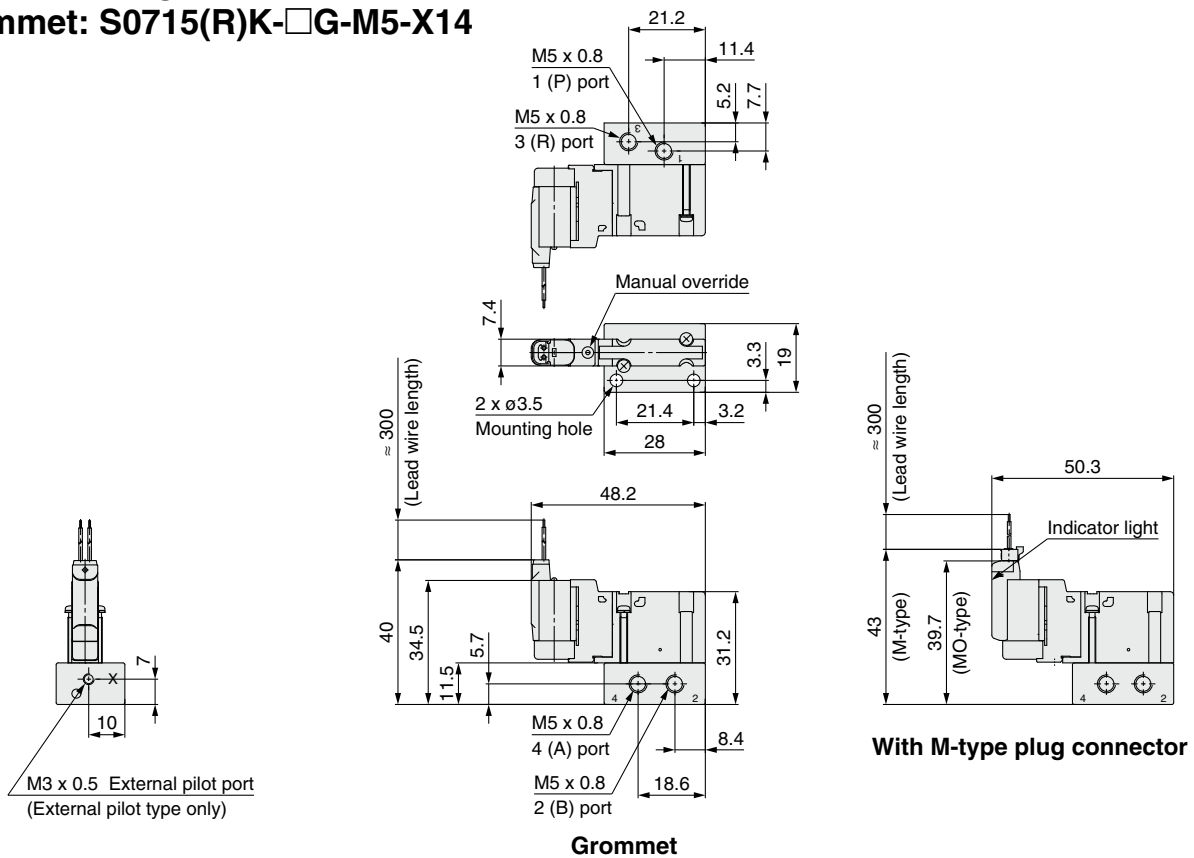
• Voltage

Symbol	Type
5	24 VDC
6	12 VDC

Dimensions

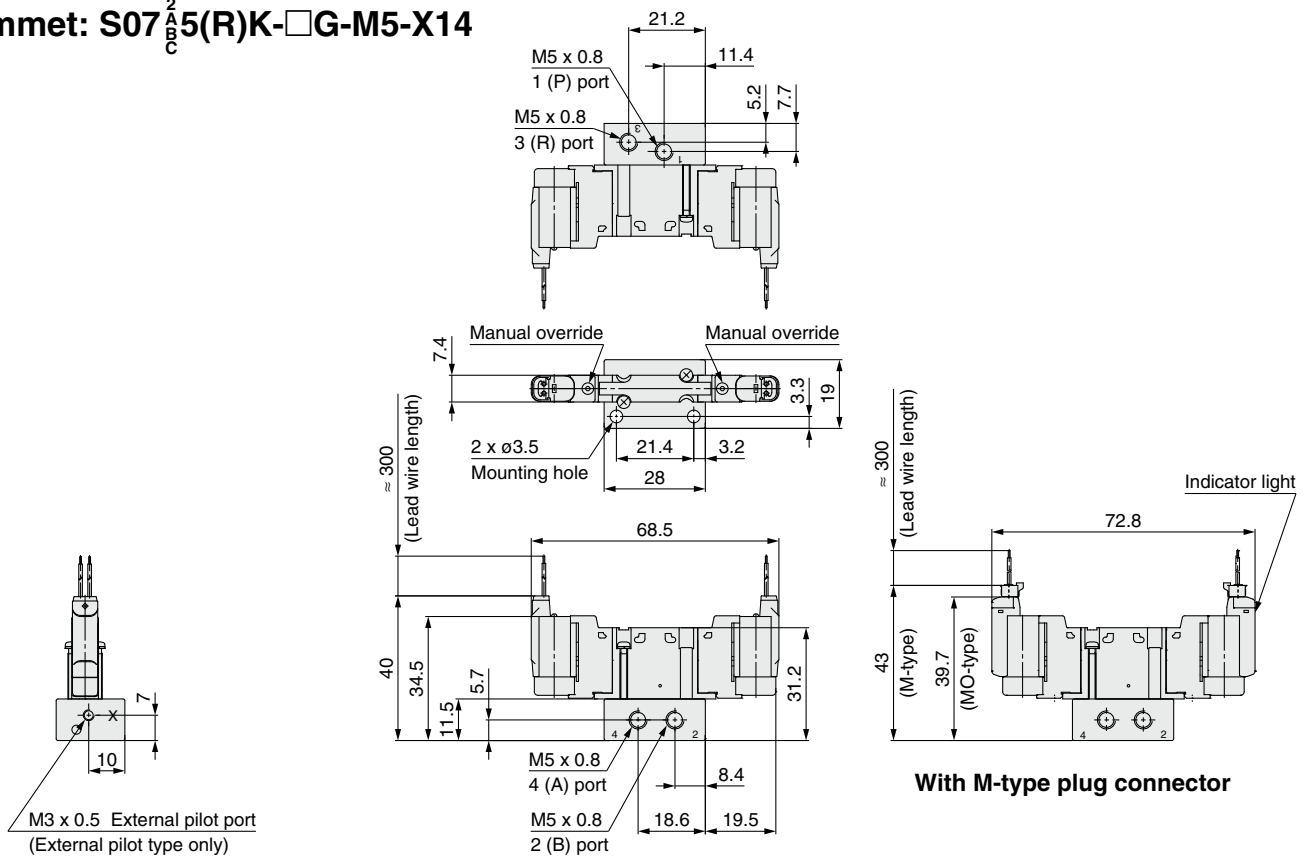
2-Position Single

Grommet: S0715(R)K-□G-M5-X14



2-Position Double/4-Position Dual 3-Port

Grommet: S0715(R)K-□G-M5-X14



Grommet



2/3-Port Mechanical Valve

VM100-X90

(White Vaseline Specification)

RoHS

How to Order

VM1 **3** **1** **□** - **01** - **01** **□** **□** **A** - **□** - **X90**

Number of ports

2	2
3	3
5	5 (Twist selector 3 position only)

Piping direction and the height of plunger

0	Side ported	Long
1		Short
2	Bottom ported	Long
3		Short

Body option

Nil	Side mounting
U	With bottom mounting thread

Note) U: Applicable only to side ported type

Port size

01	R1/8	Side ported only
N01	NPT1/8	
F01	G1/8	
M5	M5 x 0.8	Bottom ported only

White vaseline

Bracket option

Nil	None
B	With bracket

Note) Applicable only to side ported, side mounting type.
However, not applicable to twist selector (3 position).
Bracket is shipped together, but not assembled.

Suffix for indicator

Nil	None
Z	With miniature indicator

Note) Applicable only to bottom ported type

Suffix for actuator*

S	Hard steel roller	
R	Red	Color of push button, selector
B	Black	
G	Green	
Y	Yellow	

* Refer to the table in the **Web Catalog** for combinations of actuator type and suffix.

Actuator type*

		Side ported		Bottom ported	
		Long	Short	Long	Short
Actuator type	Height of plunger	0	1	2	3
00	Basic	○	○	○	○
01	Roller lever	×	○	×	○
02	One way roller lever	×	○	×	○
05	Straight plunger	○	×	○	×
06	Roller plunger	○	×	○	×
07	Cross roller plunger	○	×	○	×
08	Toggle lever	○	×	○	×
30	Push button (Mushroom)	○	×	○	×
32	Push button (Extended)	○	×	○	×
33	Push button (Flush)	○	×	○	×
34	Twist selector (2 position)	○	×	○	×
36	Key selector (2 position)	○	×	○	×
35	Twist selector (3 position)	×	○	×	○

Combination possible: ○ Combination impossible: ×

2/3-Port Mechanical Valve

VM200-X90

(White Vaseline Specification)

RoHS

Specifications

Fluid	Air	
Operating pressure range	0 to 1 MPa	
Ambient and fluid temperatures	-5 to 60°C (No freezing)	
Flow rate characteristics	1 (P) ⇒ 2 (A)	2 (A) ⇒ 3 (R)
	C[dm ³ /(s·bar)]	
	b	
	Cv	
Lubrication Note 1)	Not required	
Port size	1/4	
Weight (Basic)	90 g	
Bracket part number Note 2)	VM2-B	

Note 1) Use turbine oil Class 1 ISO VG32, if lubricated.

Note 2) The bracket can only be used for side mounting.

How to Order

VM2 3 0 - 02 - 34 B A - X90

Number of ports

2	2
3	3
5	5 (Twist selector 3 position only)

Body option

Nil	Side mounting
U	With bottom mounting thread

Port size

02	R1/4
N02	NPT1/4
F02	G1/4

Actuator type*

00	Basic
01	Roller lever
02	One way roller lever
05	Straight plunger
06	Roller plunger
07	Cross roller plunger
08	Toggle lever
30	Push button (Mushroom)
32	Push button (Extended)
33	Push button (Flush)
34	Twist selector (2 position)
36	Key selector (2 position)
35	Twist selector (3 position)
40	Foot pedal

Suffix for actuator*

S	Hard steel roller
R	Red
B	Black
G	Green
Y	Yellow

Color of push button, selector

Bracket option

Nil	None
B	With bracket

Note) Applicable only to side mounting type.
However, not applicable to twist selector (3 position).
Bracket is shipped together, but not assembled.

White vaseline

* Refer to the table in the **Web Catalog** for combinations of actuator type and suffix.

Shuttle Valve

VR1210-X12/1220-X9

(White Vaseline Specification)

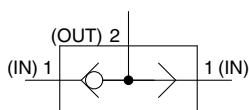
RoHS

Relay valves for controlling the pneumatic signal lines

This valve is also called “OR valve”. As the air is supplied to either IN side, it is output from the OUT side. When the air pressure levels are different, the air with higher pressure flows to the OUT side.



Symbol



Model/Specifications

Model	VR1210-01-X12	VR1220-02-X9
Max. operating pressure	1.0 MPa	
Min. operating pressure	0.05 MPa	
Ambient and fluid temperatures	-5 to 60°C (No freezing)	
Flow rate characteristics	C [dm ³ /(s·bar)]	1.3
	b	0.2
Port size	1/8	1/4
Weight	24 g	45 g

How to Order

VR12 1 0 - 01 - X12

Made to order

Symbol	Specifications	Applicable model
X12	White vaseline	VR1210
X9		VR1220

Port size	Applicable model
01 1/8	VR 1210
02 1/4	VR 1220

Thread type

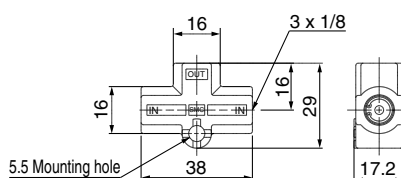
Nil	Rc
N	NPT
F	G

Body size

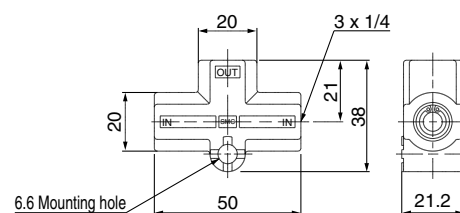
1	1/8 standard
2	1/4 standard

Dimensions

VR1210-X12



VR1220-X9



Shuttle Valve with One-touch Fittings

VR1210F/1220F-X207

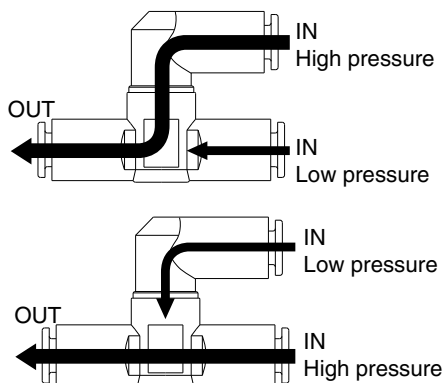
(White Vaseline Specification)

RoHS

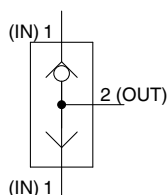
Relay valves for controlling the pneumatic signal lines



When the difference in input air pressure between two IN sides is 0.05 MPa or more, the air with higher pressure constantly flows to the OUT side.



Symbol



Model

Model	Applicable tubing O.D.									
	Metric size					Inch size				
	3.2	4	6	8	10	1/8"	5/32"	1/4"	5/16"	3/8"
VR1210F	●	●	●	●		●	●	●	●	
VR1220F			●	●	●			●	●	●

Specifications

Proof pressure	1.5 MPa
Max. operating pressure	1.0 MPa
Min. operating pressure	0.05 MPa
Ambient and fluid temperatures	-5 to 60°C (No freezing)
Applicable tubing material ^{Note 1)}	Nylon, Soft nylon, Polyurethane

Note 1) Use caution about the maximum operating pressure when soft nylon or polyurethane tubing is used. (For details, refer to the **Web Catalog**.)

Note 2) Brass components are all electroless nickel plated as standard. (Copper-free and fluorine-free)

Flow rate characteristics

Model		VR1210F-X207				VR1220F-X207		
Applicable tubing O.D.	Metric size	ø3.2	ø4	ø6	ø8	ø6	ø8	ø10
	Inch size	ø1/8"	ø5/32"	ø1/4"	ø5/16"	ø1/4"	ø5/16"	ø3/8"
Flow rate characteristics	C [dm³/(s·bar)]	0.5	0.7	1.3	1.5	1.4	2.1	3.1
	b	0.25	0.25	0.25	0.25	0.25	0.25	0.25

How to Order

VR 12 **1** 0 F - **06** - X207

White vaseline

Body size

1	1/8 standard
2	1/4 standard

Shuttle valve

With One-touch fittings

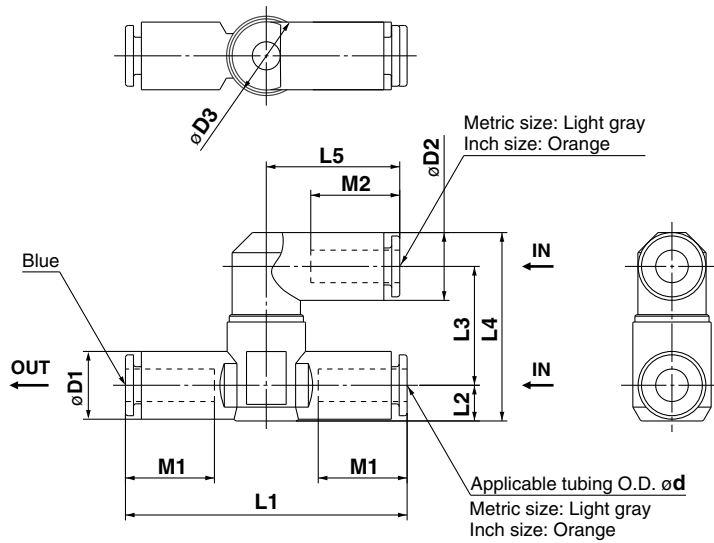
Applicable tubing O.D.

Metric size		Inch size	
23	ø3.2*	01	ø1/8"
04	ø4	03	ø5/32"
06	ø6	07	ø1/4"
08	ø8	09	ø5/16"
10	ø10	11	ø3/8"

* For ø3.2, use ø1/8" tubing.

VR1210F/1220F-X207

Dimensions



Metric Size

Model	d	D1	D2	D3	L1	L2	L3	L4	L5	M1	M2	Weight (g)
VR1210F-23-X207	3.2	11.4	8.4	14.8	52	6.2	19.4	29.8	17.5	12.7	12.9	21.4
VR1210F-04-X207	4	11	10.4		53	6	20.3	31.5	21.9	16.5	15.8	15.6
VR1210F-06-X207	6	12.8	12.8		53.2	6.8	22.5	35.6	25.2	16.8	16.8	23.0
VR1210F-08-X207	8	15.2	15.2		60.4	8.1		38.2	28.2	18.7	18.7	24.0
VR1220F-06-X207	6	12.8	12.8	19.8	59	7.4	23.9	37.7	25.2	16.8	16.8	27.2
VR1220F-08-X207	8	15.2	15.2		65	8.2		39.7	28.2	18.7	18.7	31.9
VR1220F-10-X207	10	18.5	18.5		71.6	9.8	25.8	44.8	31	20.8	20.8	43.2

Inch Size

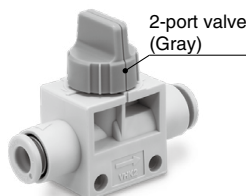
Model	d	D1	D2	D3	L1	L2	L3	L4	L5	M1	M2	Weight (g)
VR1210F-01-X207	1/8"	11.4	8.4	14.8	52	6.2	19.4	29.8	17.5	12.7	12.9	21.4
VR1210F-03-X207	5/32"	11	10.4		53	6	20.3	31.5	21.9	16.5	15.8	15.6
VR1210F-07-X207	1/4"	13.2	13.2		54.4	7.1	22.5	36.2	25.6	16.8	16.8	23.5
VR1210F-09-X207	5/16"	15.2	15.2		60.4	8.1		38.2	28.2	18.7	18.7	24.0
VR1220F-07-X207	1/4"	13.2	13.2	19.8	59	7.4	23.9	37.9	25.6	16.8	16.8	31.4
VR1220F-09-X207	5/16"	15.2	15.2		65	8.2		39.7	28.2	18.7	18.7	31.9
VR1220F-11-X207	3/8"	17.9	18.5		69.8	9.5	25.8	44.5	31	20.8	20.8	53.0

Finger Valve

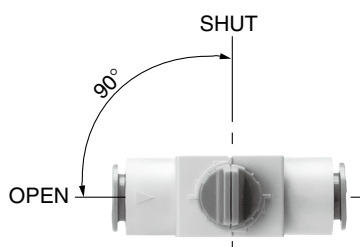
VHK-X16

(White Vaseline Specification)

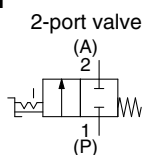
RoHS



The valve direction clearly indicates whether the valve is open or closed.
(SHUT-OPEN: Counterclockwise)



Symbol



Specifications

Valve	2-port valve
Fluid	Air
Proof pressure	1.5 MPa
Max. operating pressure ^{Note 1)}	1.0 MPa
Operating vacuum pressure*	-100 kPa
Ambient and fluid temperatures	0 to 60°C
Applicable tubing material ^{Note 2)}	Nylon, Soft nylon, Polyurethane
Accessory (Option)	Bracket

Note 1) Please note that when the valve is used at micro pressures of 0.1 MPa or less, valve leakage may be more than the standard value (5 cm³/min).

Note 2) Use caution about the maximum operating pressure when soft nylon or polyurethane tubing is used. (For details, refer to the [Web Catalog](#).)

* Use VHK2 (2-port valve) for vacuum application.

How to Order

VHK 2 - 06F - 06F - X16

Valve model
2 2-port valve

1(P) port size

04F	ø4
06F	ø6
08F	ø8

2(A) port size

04F	ø4
06F	ø6
08F	ø8

White vaseline

Bracket

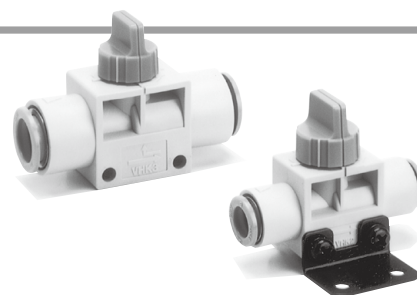
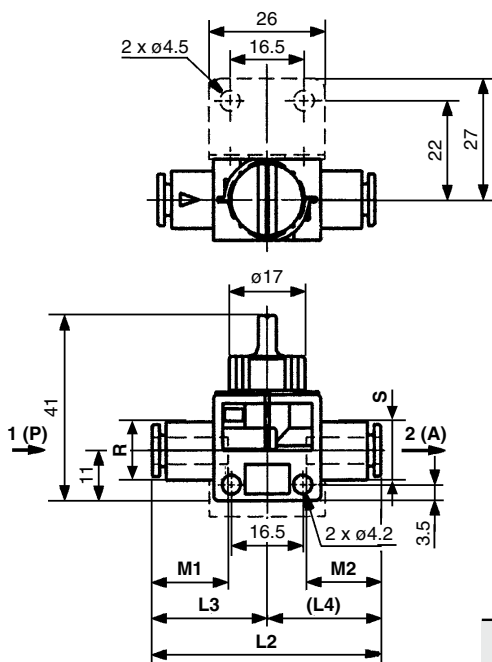
Nil	None
L	With L-bracket

* Bracket and screws are attached.

Knob color

Nil (Standard)	2-port valve	Gray
R (Option)	2-port valve	Red

Dimensions



Model	Tubing O.D.		L2	L3	L4	M1	M2	R	S
	1 (P)	2 (A)							
VHK2-04F-04F-X16	ø4	ø4	47.6	23.8	23.8	15.8	15.8	ø10.4	ø10.4
VHK2-06F-04F-X16	ø6	ø4	48	24.3	23.7	16.8	15.8	ø12.8	ø10.4
VHK2-06F-06F-X16	ø6	ø6	48.6	24.3	24.3	16.8	16.8	ø12.8	ø12.8
VHK2-08F-06F-X16	ø8	ø6	50.5	26.2	24.3	18.7	16.8	ø15.2	ø12.8
VHK2-08F-08F-X16	ø8	ø8	52.4	26.2	26.2	18.7	18.7	ø15.2	ø15.2

Conforming to OSHA Standard

Pressure Relief 3-Port Valve with Locking Holes

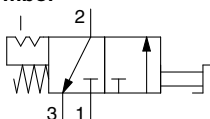
VHS20/30/40/50-X510

(White Vaseline Specification)

How to Order



Symbol



OSHA standard (Occupational Safety and Health Administration Department of Labor)

For safety control, OSHA rule requires energy sources for certain equipment be turned off or disconnected and that the device either be locked or labelled with a warning tag.

VHS 40 - 04 A - BS - X510

Pressure relief 3-port valve

Body size

Symbol	Thread type
20	Nil Rc
30	N NPT
40	F G
50	

Thread type

Port size

Symbol	Port size	Body size			
		20	30	40	50
01	1/8	●	—	—	—
02	1/4	●	●	●	—
03	3/8	—	●	●	—
04	1/2	—	—	●	—
06	3/4	—	—	●	●
10	1	—	—	—	●

Knob/Bonnet material

Symbol	Material
A	Flame-resistant PBT
B	Aluminum

White vaseline

Semi-standard specifications

Symbol	Description
Nil	—
K	Knob color: Black
R	Flow direction: Right → Left
Z (Note)	psi as unit displayed on label

Note) Only for the NPT thread. This product is for overseas use only according to the New Measurement Act. (The SI unit type is provided for use in Japan.)

Options

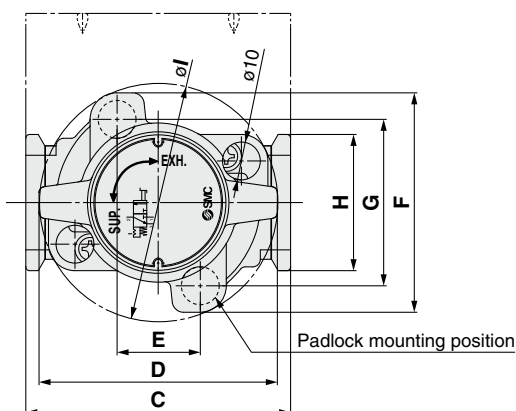
Symbol	Description
Nil	—
B	With bracket
S	Built-in silencer (EXH port)

Specifications

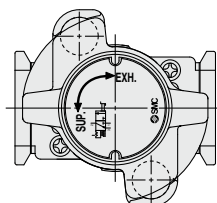
Model		VHS20-X510	VHS30-X510	VHS40-X510	VHS40-06-X510	VHS50-X510
Fluid		Air				
Ambient and fluid temperatures		-5 to 60°C (No freezing)				
Proof pressure		1.5 MPa				
Operating pressure range		0.1 to 1.0 MPa				
Knob switching angle		90°				
Paint color (Standard)		Knob: Red Body: Red				
Weight	A (Knob, bonnet: Flame-resistant PBT)	76 g	127 g	247 g	293 g	532 g
	B (Knob, bonnet: Aluminum)	92 g	156 g	301 g	349 g	630 g

Dimensions

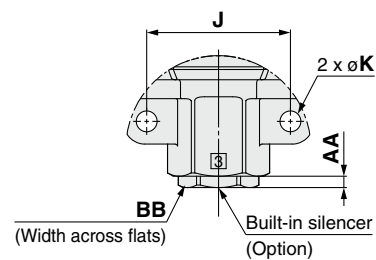
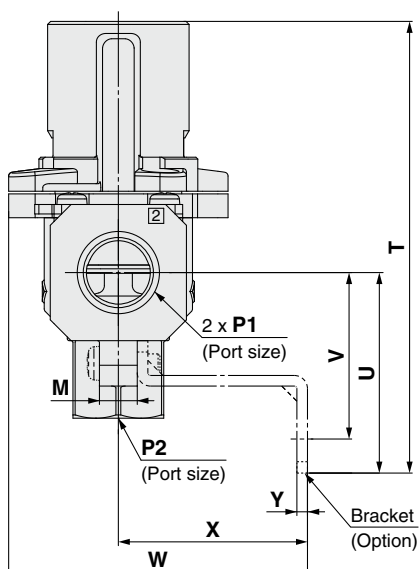
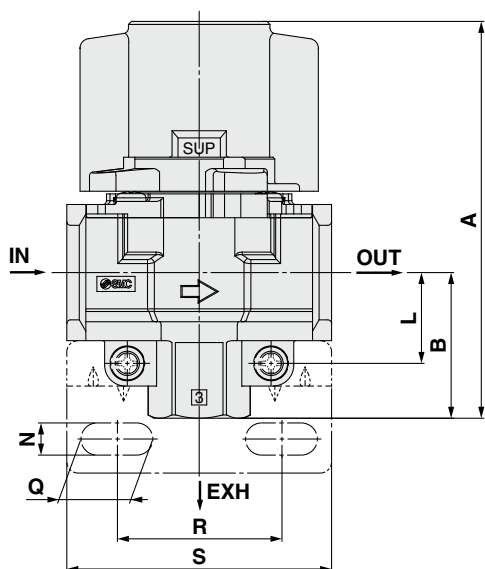
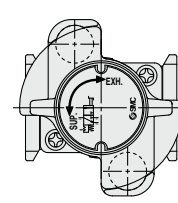
VHS40/50-X510



VHS30-X510



VHS20-X510

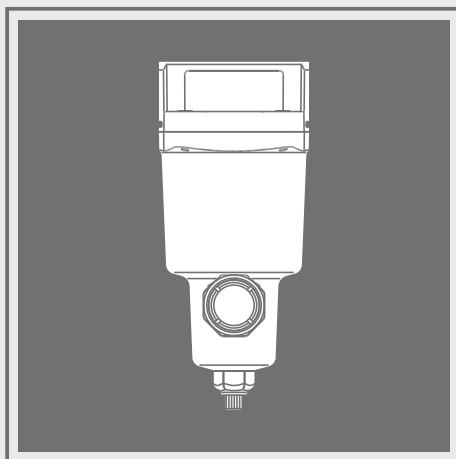


Dimensions (mm)

Model	Standard specifications															
	P1	P2	A	B	C	D	E	F		G	H	I	J	K	L	M
								A type	B type							
VHS20-X510	1/8, 1/4	1/8	66.4	22.3	40	37.5	14	46.6	47.2	33.6	28	43	24	4.5	14.8	9
VHS30-X510	1/4, 3/8	1/4	80.3	29.4	53	49	19	52		38	30	49	30	4.5	19	9
VHS40-X510	1/4, 3/8, 1/2	3/8	104.9	38.5	70	63	22	58		44	36	63	38	5.5	24	10
VHS40-06-X510	3/4	1/2	110.4	42	75	63	22	58		44	44	63	43	5.5	26	10
VHS50-X510	3/4, 1	1/2	134.3	53	90	76	26	76		61	53	81	50	6.5	31	12

Model	Optional specifications											
	With bracket										Built-in silencer	
	N	Q	R	S	T	U	V	W	X	Y	AA	BB
VHS20-X510	5.4	8.4	27	40	75.4	31.3	25.3	53.3	30	2.3	3	12
VHS30-X510	6.5	10	36.5	53	90.9	40	33	67	41	2.3	3	14
VHS40-X510	8.5	19	43.5	70	119.4	53	44	79	50	2.8	3	19
VHS40-06-X510	8.5	19	43.5	70	123.4	55	46	79	50	2.8	4	22
VHS50-X510	11	27.5	49.5	90	152.3	71	60	108	70	3.2	4	22

Air Preparation Equipment



Product name	Series	Page
Main Line Filter	AFF	p. 83
Mist Separator	AM	p. 91
Micro Mist Separator	AMD	p. 99
Micro Mist Separator with Pre-filter	AMH	p. 107
Super Mist Separator	AME	p. 116
Air Filter	AF10-A to 60-A-X2009	p. 122
Mist Separator	AFM20-A to 40-A-X2009	p. 126
Micro Mist Separator	AFD20-A to 40-A-X2009	p. 126
Thermo-dryer	IDH □	p. 130
Heatless Air Dryer	ID	p. 134
Refrigerated Air Dryer	IDF □ E (1E to 15E1)	p. 138
Refrigerated Air Dryer	IDF □ E (22E to 75E)	p. 142
Refrigerated Air Dryer	IDF100F/125F/150F	p. 145
Refrigerated Air Dryer	IDF □ D (190D, 240D, 370D)	p. 150
Refrigerated Air Dryer	IDU □ E (3E to 15E1)	p. 153
Refrigerated Air Dryer	IDU □ E (22E to 75E)	p. 156
Refrigerated Air Dryer	IDFA □ E / IDFB □ E	p. 166
Membrane Air Dryer	IDG □ A	p. 167
Membrane Air Dryer	IDG	p. 168

Main Line Filter

RoHS

AFF Series (Degreasing Wash, White Vaseline Specification)

Refer to page 121 for related products (spacers).

Can remove impurities such as oil, water and foreign matter in compressed air and can improve the function of a dryer in the downstream, extend the replacement period of precision filter element, and prevent trouble with the equipment.

Modular connection is possible with AFF2C to 22C.

(For details, refer to page 121.)



Model

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 1/2	1 1/2, 2
Weight (kg)	0.38	0.55	0.9	1.4	2.1	4.2	10.5

Note) Max. flow capacity at 0.7 MPa.

Max. flow capacity varies depending on the operating pressure.

Refer to "Flow Rate Characteristics" and "Maximum Flow Capacity Line" on page 86.

Specifications

Fluid	Compressed air
Max. operating pressure	1.0 MPa
Min. operating pressure ^{Note)}	0.05 MPa
Proof pressure	1.5 MPa
Ambient and fluid temperatures	5 to 60°C
Filtration rating	3 μm (Filtration efficiency: 99%)
Element replacement period	2 years or when pressure drop reached 0.1 MPa

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

Accessory Part No./For AFF2C to 22C, AFF37B/75B

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

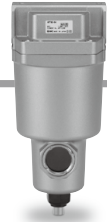
Symbol



(Drain cock specifications)



(Auto drain specifications)



How to Order

AFF2C to 22C

AFF 22 C - 10 - - - V -

Size

2
4
8
11
22

Thread type

Symbol	Type
Nil	Rc
F	G
N	NPT

Port size

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

Accessory

Symbol	Description
Nil	—
B	Bracket*1

*1 Bracket is shipped together with the product, but not assembled.

Made to order

Symbol	Description
Nil	None
X34	With differential pressure gauge (GD40-2-01), White vaseline

*7 For -X34, refer to page 115.

Degreasing wash*6, White vaseline

*6 Only body/housing is degreasing washed.

Option*3

- Multiple options can be selected.
- Refer to the table on the lower left for the available combinations.
- Indicate symbols in alphabetical order.

Symbol	Description
Nil	—
F	Rubber material: FKM
H	For medium air pressure (1.6 MPa)
J	Drain guide 1/4 female threaded*5
R	IN-OUT reversal direction
T	With element service indicator

*5 Without a valve function

Auto drain*2, 3

Symbol	Description
Nil	Without auto drain (With drain cock*4)
C	N.C. (Normally closed) Drain port is closed when pressure is not applied.
D	N.O. (Normally open) Drain port is open when pressure is not applied.

*2 Refer to the left table for proper use of the auto drain.
(Only one auto drain specification can be selected.)

*3 Refer to the table on the left for the available combinations of the auto drain specifications and options.

*4 When the option J is selected, the auto drain and drain cock are not available.

Auto Drain Specifications/Option Combinations

◎: All types of auto drain specifications are available.
(including drain guide, "J" specification)

△: N.C. auto drain ("C" specification) is not available.

▼: Both N.C. and N.O. auto drain ("C", "D" specification) are not available.

	Nil	F	H	R	T	V
Nil	◎	◎	△	◎	Note	◎
F	◎	◎	▼	◎		▼
H	△	▼	◎	△		▼
R	◎	◎	△	Note	◎	
T	Note			Note	◎	
V	◎	▼	▼	◎	◎	

Note: Only one drain exhaust method can be selected.

■: Not available

How to Order

AFF37B/75B



AFF 37 B - 10 - - X40

Size

37
75

Thread type

Symbol	Type
Nil	Rc
F	G
N	NPT

Port size

Symbol	Port size	Applicable size	
		37	75
10	1	●	—
14	1 1/2	●	●
20	2	—	●

Accessory

Symbol	Description
Nil	—
B	Bracket*1

*1 Bracket is shipped together with the product, but not assembled.

Made to order

Symbol	Description
Nil	None
X34	With differential pressure gauge (GD40-2-01), White vaseline
X40	Degreasing wash*6, White vaseline

*6 Only body/housing is degreasing washed.

*7 For -X34, refer to page 115.

Option*2

- Multiple options can be selected.
- Refer to the table below for the available combinations.
- Indicate symbols in alphabetical order.

Symbol	Description
Nil	—
J	Drain guide 1/4 female threaded*5
R	IN-OUT reversal direction
T	With element service indicator

*5 Without a valve function

Auto drain*2

Symbol	Description
Nil	Without auto drain (With drain cock*3)
D	N.O. (Normally open) Drain port is open when pressure is not applied.

*2 Refer to the table below for the available combinations of the auto drain specifications and options.

*3 When the option J is selected, the auto drain and drain cock are not available.

*4 Body size 75B is equipped with a ball valve (Rc3/8). Mount a piping adapter IDF-AP609 (Refer to the **Web Catalog** for details.) to the ball valve if NPT3/8 female threaded is required.

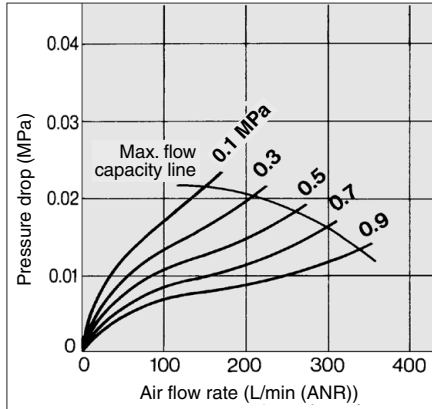
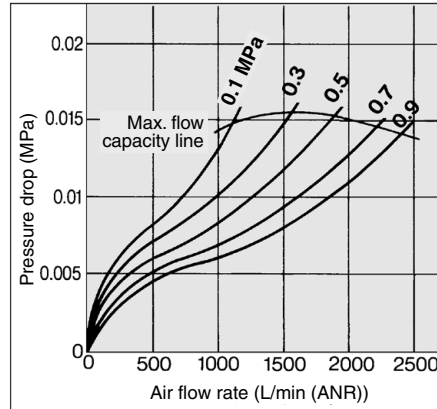
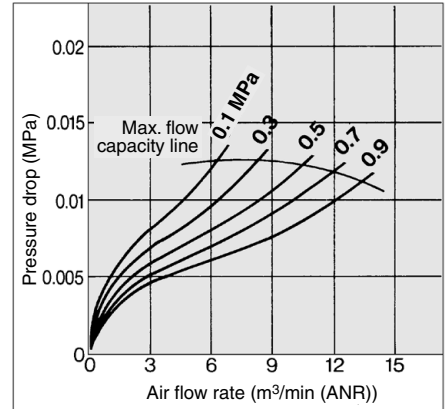
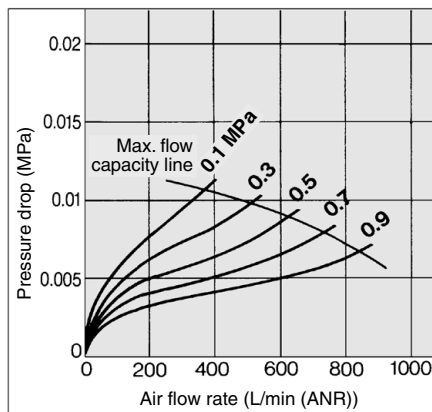
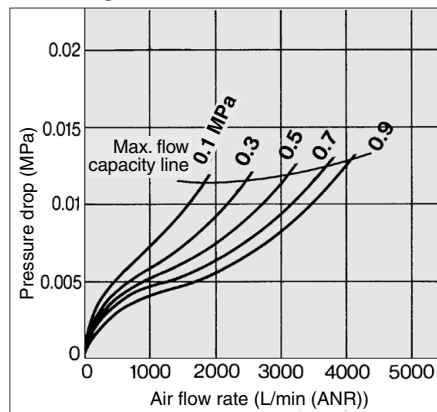
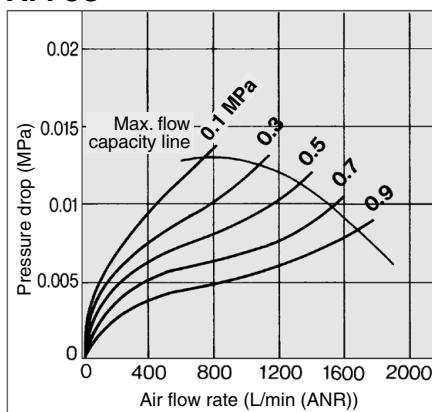
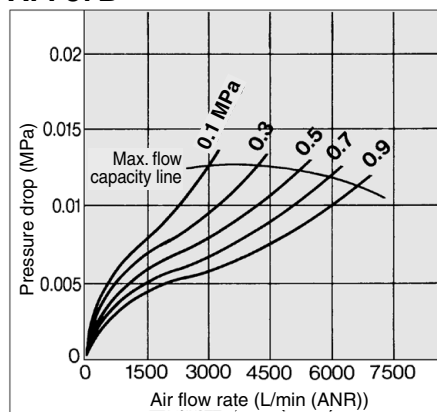
Auto Drain Specifications/Option Combinations

○: Available □: Not available

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

Flow Rate Characteristics (Representative values) /Select the model under the max. flow capacity line. (Element oil saturation)

Note) Compressed air over max. flow capacity line in the table below may not meet the specifications of the product.

AFF2C**AFF11C****AFF75B****AFF4C****AFF22C****AFF8C****AFF37B**

Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

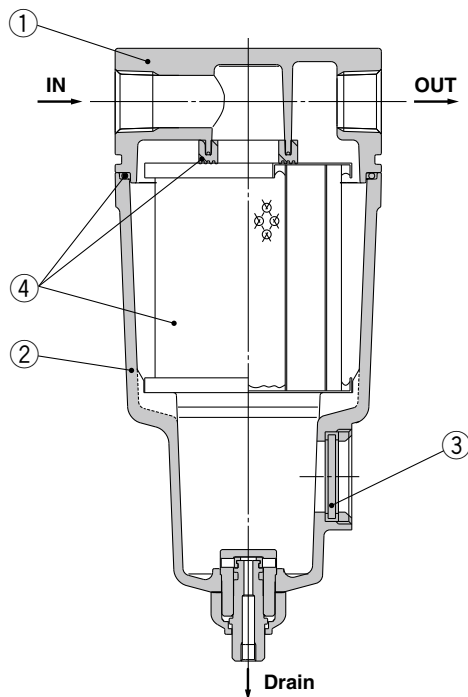
Pressure Control Equipment

Pneumatic Auxiliary Equipment

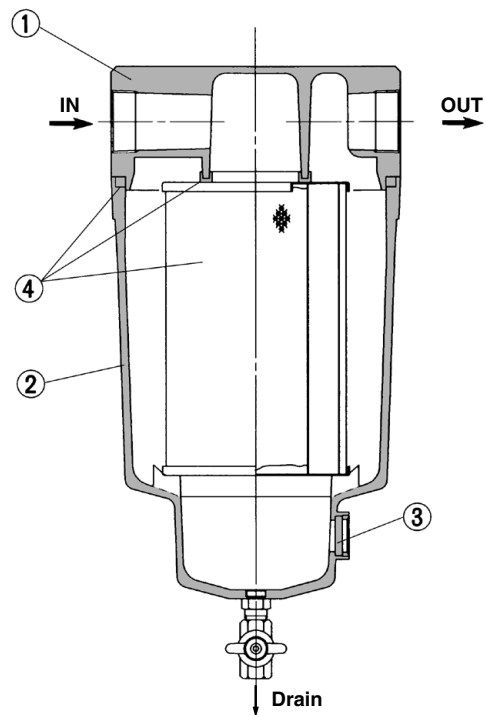
AFF Series

Construction

AFF2C to 22C, AFF37B



AFF75B



Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Inner/outer surface coating
2	Housing (Case)	Aluminum alloy	
3	Sight glass	Tempered glass	—

Note) The figure shows the drain cock specification.

Note) Sight glass is indicated in the figure for easy understanding of component parts. However, it differs from the actual construction. Please refer to pages 88 through to 90 for details.

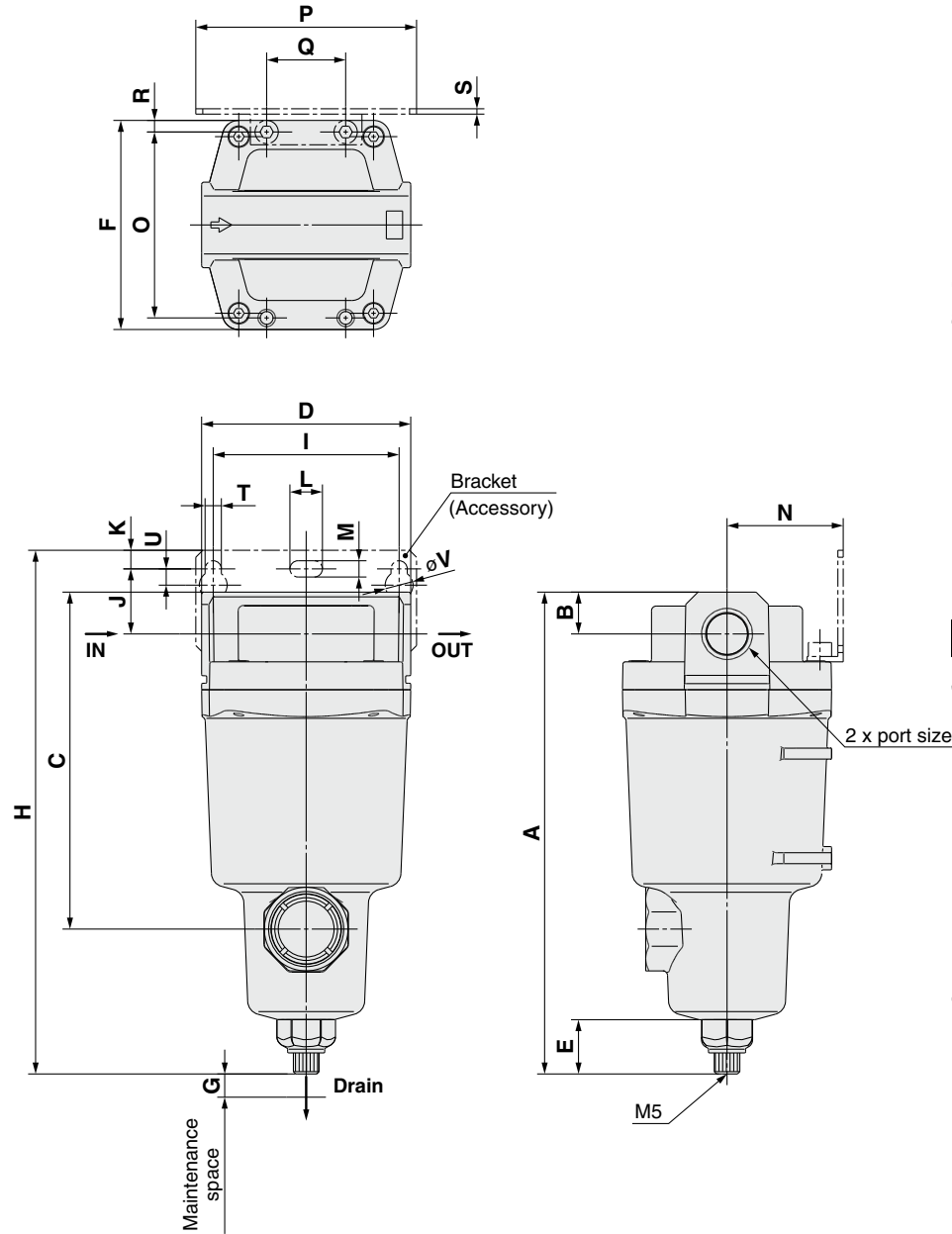
Replacement Parts

No.	Description	Material	Applicable model	Model						
				AFF2C	AFF4C	AFF8C	AFF11C	AFF22C	AFF37B	AFF75B
4	Element assembly	Cotton paper, others	Except option F	AFF-EL2B	AFF-EL4B	AFF-EL8B	AFF-EL11B	AFF-EL22B	AFF-EL37B	AFF-EL75B
			For option F	AFF-EL2B-F	AFF-EL4B-F	AFF-EL8B-F	AFF-EL11B-F	AFF-EL22B-F	—	—

- Element assembly: With gasket (1 pc.) and O-ring (1 pc.)
- Refer to the **Web Catalog** for replacement of auto drain.

Dimensions

AFF2C to 22C

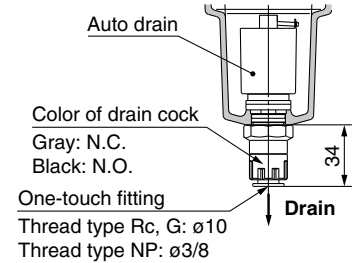


Note) The figure shows the drain cock specification.

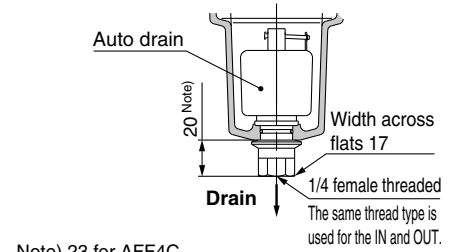
Auto drain

C: With auto drain (N.C.)

D: With auto drain (N.O.)

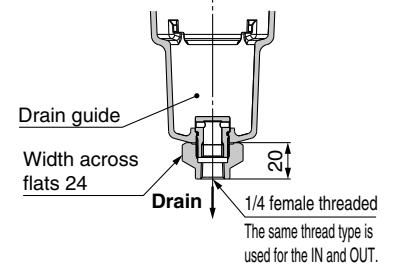


Combination of D: With auto drain (N.O.) and H: For medium air pressure

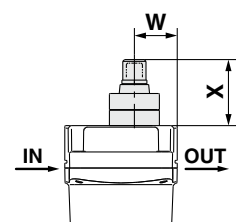


Option

J: Drain guide 1/4 female threaded



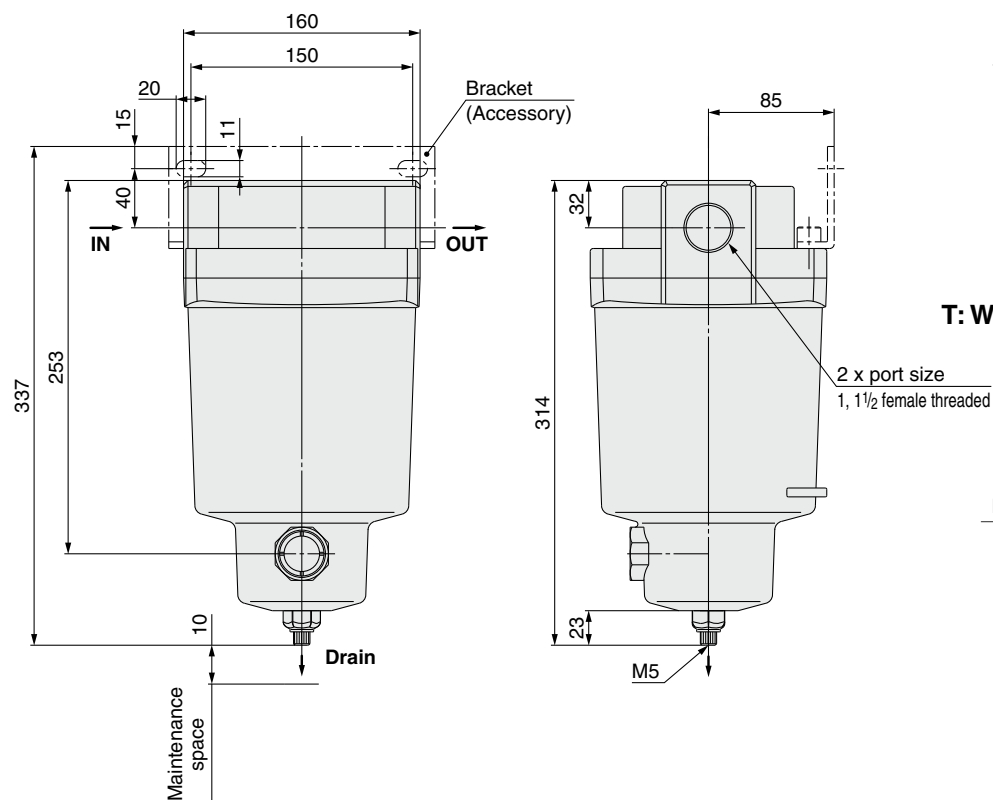
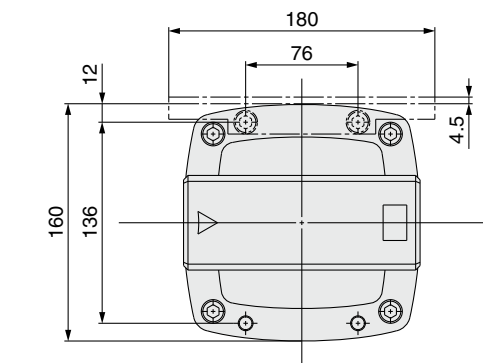
T: With element service indicator



(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	161	10	99	63	23	63	10	176	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	175	14	113	76	23	76	10	193	66	24	8	6	6	12	6	10	40	66	80	28	5	2	27	37	36	41	
AFF8C	3/8, 1/2	207	18	145	90	23	90	10	225	80	28	8	7	7	14	7	12	50	80	95	34	5	2.3	32	37	42	41	
AFF11C	1/2, 3/4	228	20	166	106	23	106	10	249	90	31	10	9	9	18	9	15	55	88	111	50	9	3.2	37	37	43	41	
AFF22C	3/4, 1	262	24	200	122	23	122	15	281	100	33	10	9	9	18	9	15	65	102	126	60	10	3.2	39	37	51	41	

Dimensions

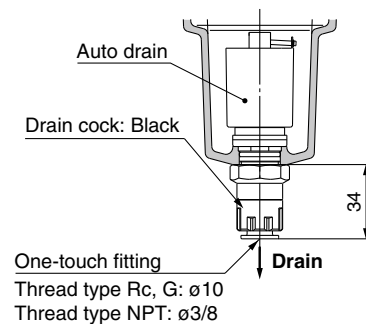
AFF37B



Note) The figure shows the drain cock specification.

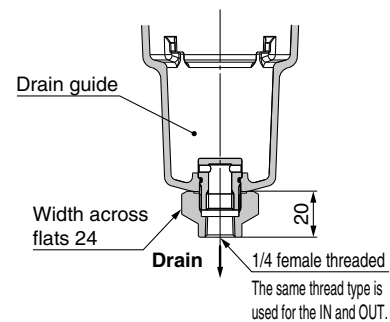
Auto drain

D: With auto drain (N.O.)

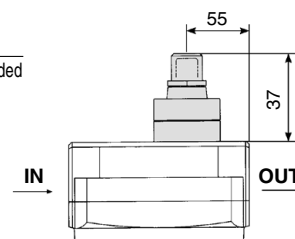


Option

J: Drain guide 1/4 female threaded

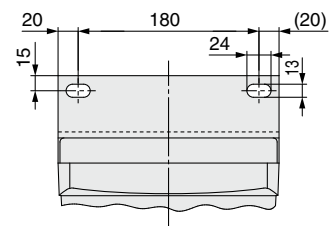
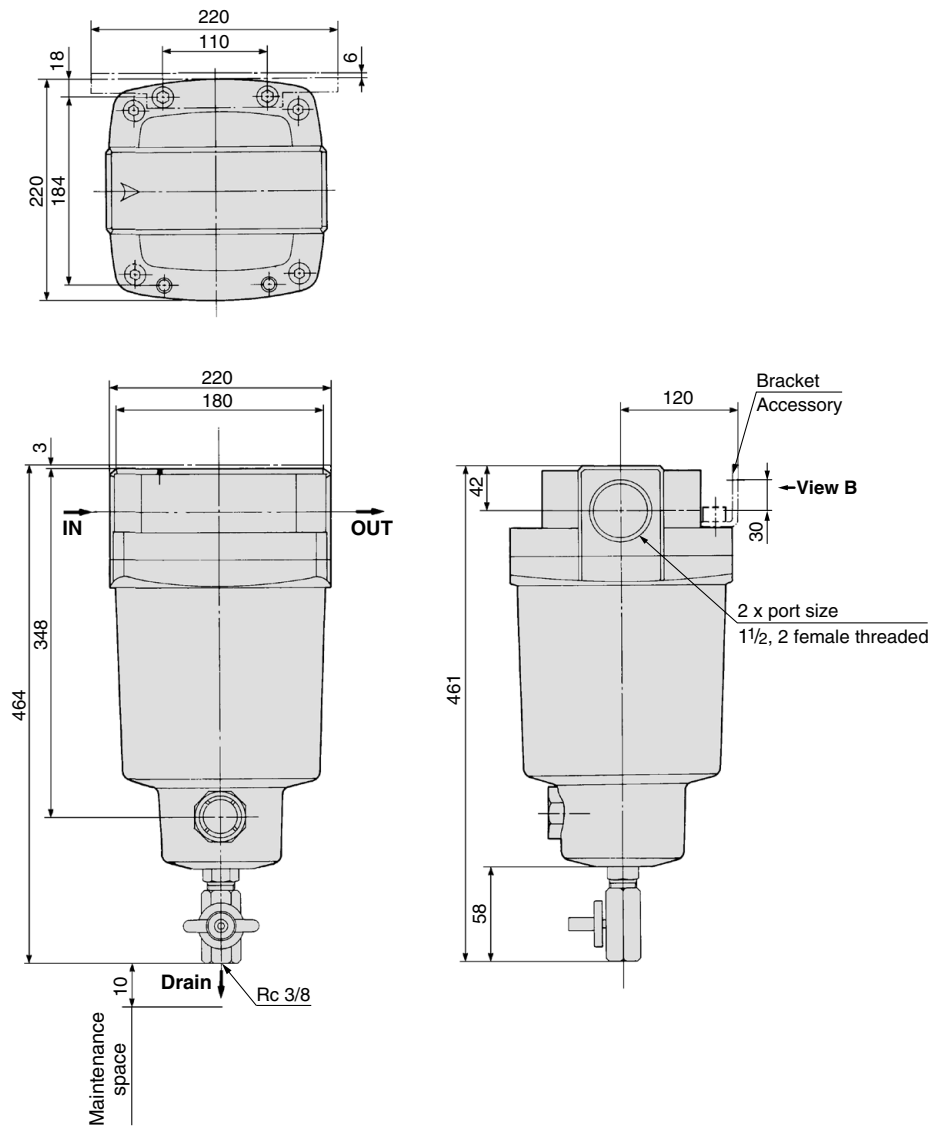


T: With element service indicator



Dimensions

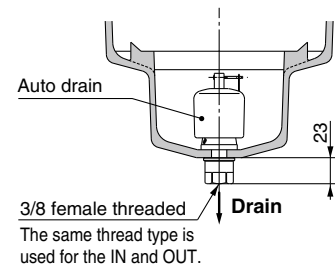
AFF75B



Drawing of view B

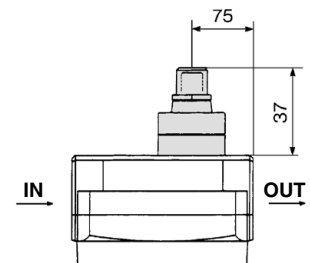
Auto drain

D: With auto drain (N.O.)



Option

T: With element service indicator



Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

Mist Separator

RoHS

AM Series (Degreasing Wash, White Vaseline Specification)

Refer to page 121 for related products (spacers).

Can remove oil mist in compressed air and separate and remove particles such as rust or carbon of more than 0.3 μm .

Modular connection is possible with AM150C to 550C.
(For details, refer to page 121.)

Model

Model	AM150C	AM250C	AM350C	AM450C	AM550C	AM650	AM850
Rated flow (L/min (ANR)) ^{Note)}	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
Weight (kg)	0.38	0.55	0.9	1.4	2.1	4.2	10.5

Note) Maximum flow capacity at 0.7 MPa.

Maximum flow capacity varies depending on the operating pressure.

Refer to "Flow Rate Characteristics" and "Max. Flow Capacity Line" on page 94.



Specifications

Fluid	Compressed air
Max. operating pressure	1.0 MPa
Min. operating pressure ^{*1}	0.05 MPa
Proof pressure	1.5 MPa
Ambient and fluid temperatures	5 to 60°C
Nominal filtration rating	0.3 μm (Filtration efficiency: 99.9%)
Oil mist density at outlet	Max. 1 mg/m ³ (ANR) ($\approx$ 0.8 ppm) ^{*2}
Element replacement period	2 years or when pressure drop reached 0.1 MPa

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

*2 When the inlet oil mist density is 30 mg/m³ (ANR).

Accessory Part No.

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

Symbol



(Drain cock specifications)



(Auto drain specifications)



How to Order

AM150C to 550C

AM **550** C - **10** - **V** -

Size

150
250
350
450
550

Thread type

Symbol	Type
Nil	Rc
F	G
N	NPT

Port size

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

Accessory

Symbol	Description
Nil	—
B	Bracket*1

*1 Bracket is shipped together with the product, but not assembled.

Made to order

Symbol	Description
Nil	None
X34	With differential pressure gauge (GD40-2-01), White vaseline

*7 For -X34, refer to page 115.

Degreasing wash*6, White vaseline

*6 Only body/housing is degreasing washed.

Option*3

- Multiple options can be selected.
- Refer to the table on the lower left for the available combinations.
- Indicate symbols in alphabetical order.

Symbol	Description
Nil	—
F	Rubber material: FKM
H	For medium air pressure (1.6 MPa)
J	Drain guide 1/4 female threaded*5
R	IN-OUT reversal direction
T	With element service indicator

*5 Without a valve function

Auto drain*2, 3

Symbol	Description
Nil	Without auto drain (With drain cock*4)
C	N.C. (Normally closed) Drain port is closed when pressure is not applied.
D	N.O. (Normally open) Drain port is open when pressure is not applied.

*2 Refer to the **Web Catalog** for proper use of the auto drain. (Only one auto drain specification can be selected.)

*3 Refer to the table on the left for the available combinations of the auto drain specifications and options.

*4 When the option J is selected, the auto drain and drain cock are not available.

Auto Drain Specifications/Option Combinations

○: All types of auto drain specifications are available.

(including drain guide, "J" specification)

△: N.C. auto drain ("C" specification) is not available.

▼: Both N.C. and N.O. auto drain ("C", "D" specification) are not available.

	Nil	F	H	R	T	V
Nil	○	○	△	○	Note	○
F	○	○	▼	○		▼
H	△	▼	○	△		▼
R	○	○	△	Note	○	○
T	Note			Note	○	○
V	○	▼	▼	○	○	

Note: Only one drain exhaust method can be selected.

■: Not available

Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

How to Order

AM650/850



AM 650 - 10 - - - X40

Size

650
850

Thread type

Symbol	Type
Nil	Rc
F	G
N	NPT

Port size

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

Accessory

Symbol	Description
Nil	—
B	Bracket*1

*1 Bracket is shipped together with the product, but not assembled.

Made to order

Symbol	Description
Nil	None
X34	With differential pressure gauge (GD40-2-01), White vaseline
X40	Degreasing wash*6, White vaseline

*6 Only body/housing is degreasing washed.

*7 For -X34, refer to page 115.

Option*3

- Multiple options can be selected.
- Refer to the table below for the available combinations.
- Indicate symbols in alphabetical order.

Symbol	Description
Nil	—
J	Drain guide 1/4 female threaded*5
R	IN-OUT reversal direction
T	With element service indicator

*5 Without a valve function

Auto drain*2

Symbol	Description
Nil	Without auto drain (With drain cock*3, 4)
D	N.O. (Normally open) Drain port is open when pressure is not applied.

*2 Refer to the table below for the available combinations of the auto drain specifications and options.

*3 When the option J is selected, the auto drain and drain cock are not available.

*4 Body size 850 is equipped with a ball valve (Rc3/8). Mount a piping adapter IDF-AP609 (Refer to the **Web Catalog** for details.) to the ball valve if NPT3/8 female threaded is required.

Auto Drain Specifications/Option Combinations

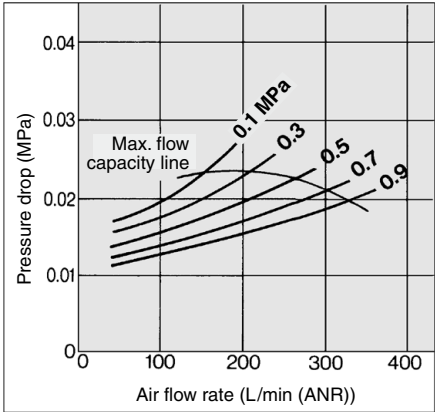
○: Available □: Not available

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

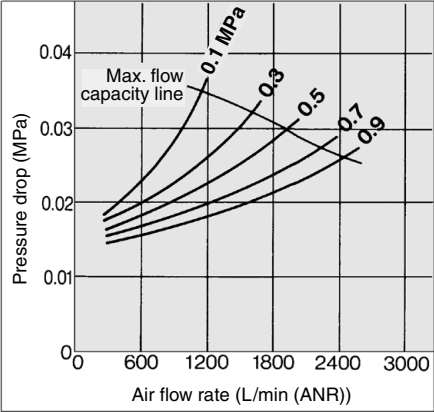
Flow Rate Characteristics (Representative values) /Select the model under the max. flow capacity line. (Element oil saturation)

Note) Compressed air over max. flow capacity line in the table below may not meet the specifications of the product.

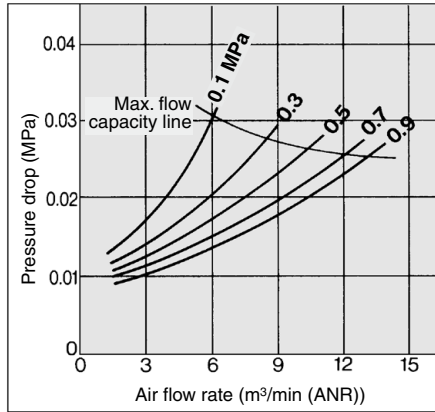
AM150C



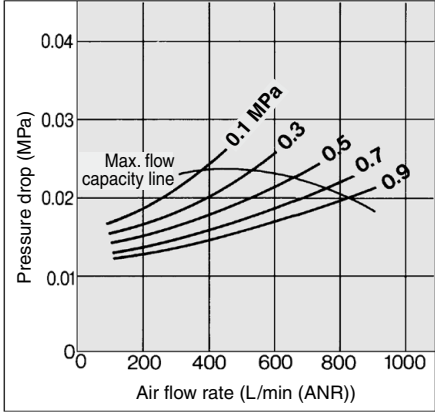
AM450C



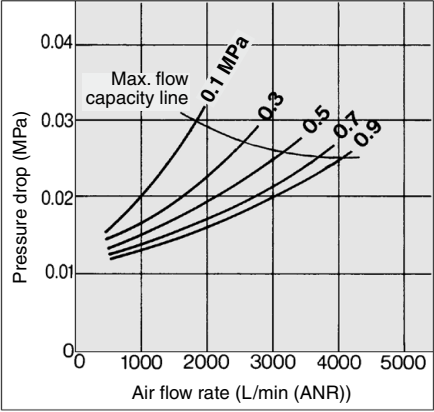
AM850



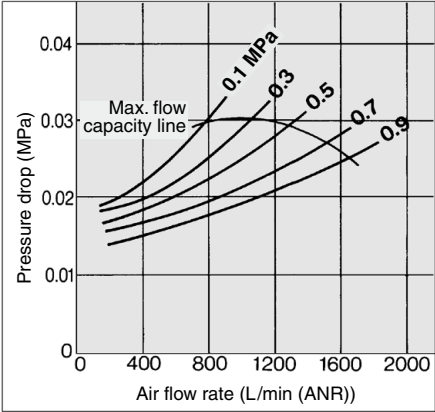
AM250C



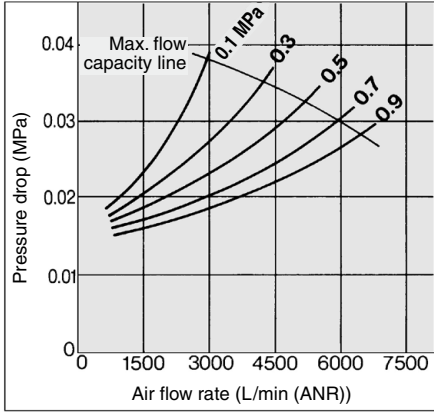
AM550C



AM350C



AM650



Paint Process Equipment

Directional Control Valves

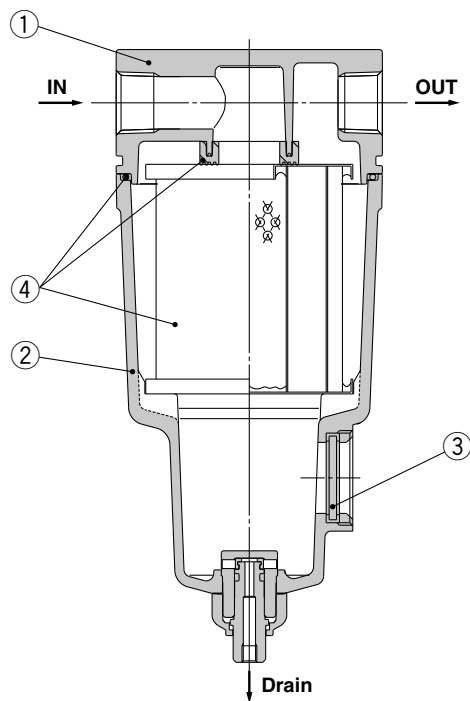
Air Preparation Equipment

Pressure Control Equipment

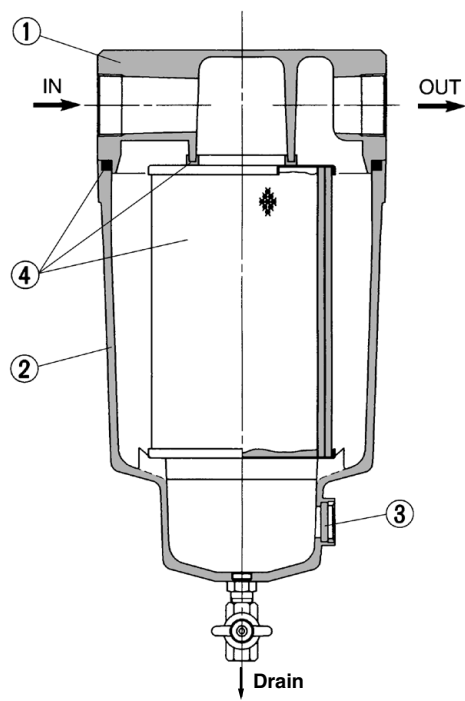
Pneumatic Auxiliary Equipment

Construction

AM150C to 550C, AM650



AM850



Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Inner/outer surface coating
2	Housing (Case)	Aluminum alloy	
3	Sight glass	Tempered glass	—

Note) The figure shows the drain cock specification.

Note) Sight glass is indicated in the figure for easy understanding of component parts. However, it differs from the actual construction. Refer to dimensions on pages 96 through to 98 for details.

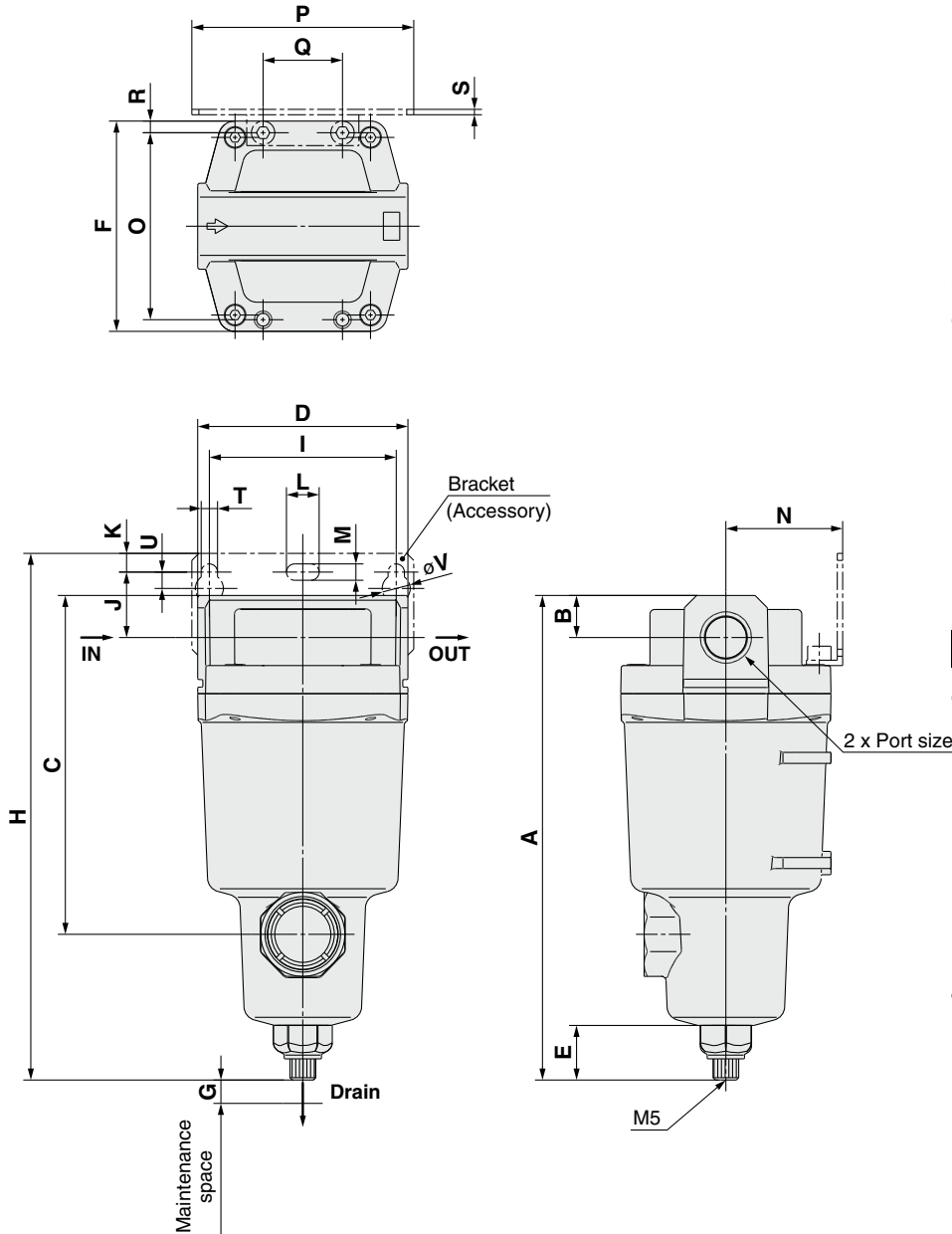
Replacement Parts

No.	Description	Material	Applicable model	Model						
				AM150C	AM250C	AM350C	AM450C	AM550C	AM650	AM850
4	Element assembly	Glass fiber, others	Except option F	AM-EL150	AM-EL250	AM-EL350	AM-EL450	AM-EL550	AM-EL650	AM-EL850
			For option F	AM-EL150-F	AM-EL250-F	AM-EL350-F	AM-EL450-F	AM-EL550-F	—	—

- Element assembly: With gasket (1 pc.) and O-ring (1 pc.)
- Refer to the **Web Catalog** for replacement of auto drain.

Dimensions

AM150C to 550C

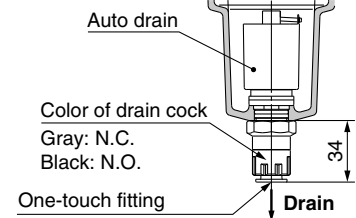


Note) The figure shows the drain cock specification.

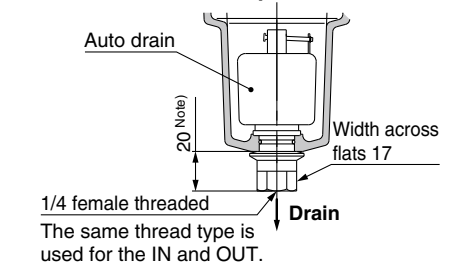
Auto drain

C: With auto drain (N.C.)

D: With auto drain (N.O.)



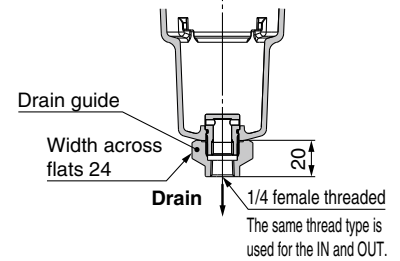
Combination of D: With auto drain (N.O.) and H: For medium air pressure



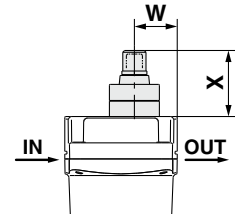
Note) 23 for AM250C

Option

J: Drain guide 1/4 female threaded



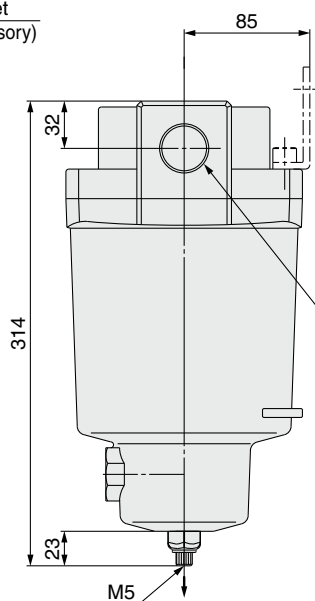
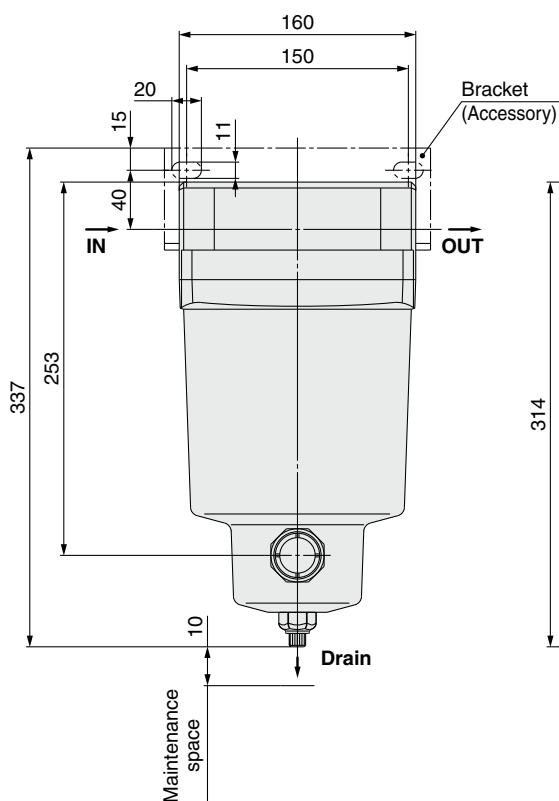
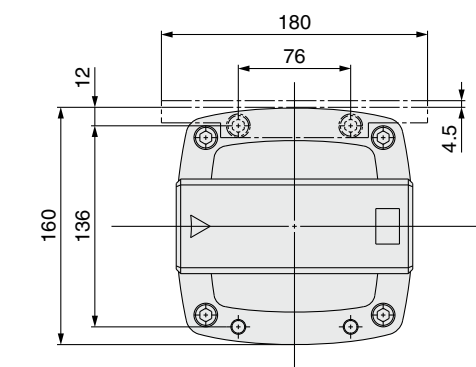
T: With element service indicator



(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	161	10	99	63	23	63	10	176	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	175	14	113	76	23	76	10	193	66	24	8	6	6	12	6	10	40	66	80	28	5	2	27	37	36	41	
AM350C	3/8, 1/2	207	18	145	90	23	90	10	225	80	28	8	7	7	14	7	12	50	80	95	34	5	2.3	32	37	42	41	
AM450C	1/2, 3/4	228	20	166	106	23	106	10	249	90	31	10	9	9	18	9	15	55	88	111	50	9	3.2	37	37	43	41	
AM550C	3/4, 1	262	24	200	122	23	122	15	281	100	33	10	9	9	18	9	15	65	102	126	60	10	3.2	39	37	51	41	

Dimensions

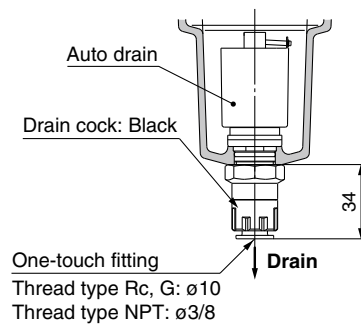
AM650



Note) The figure shows the drain cock specification.

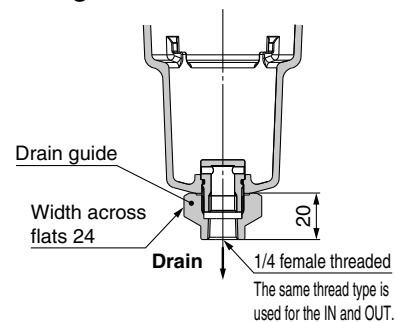
Auto drain

D: With auto drain (N.O.)

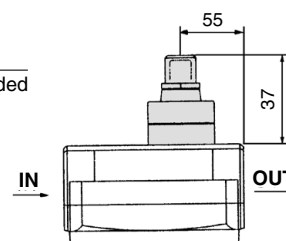


Option

J: Drain guide 1/4 female threaded

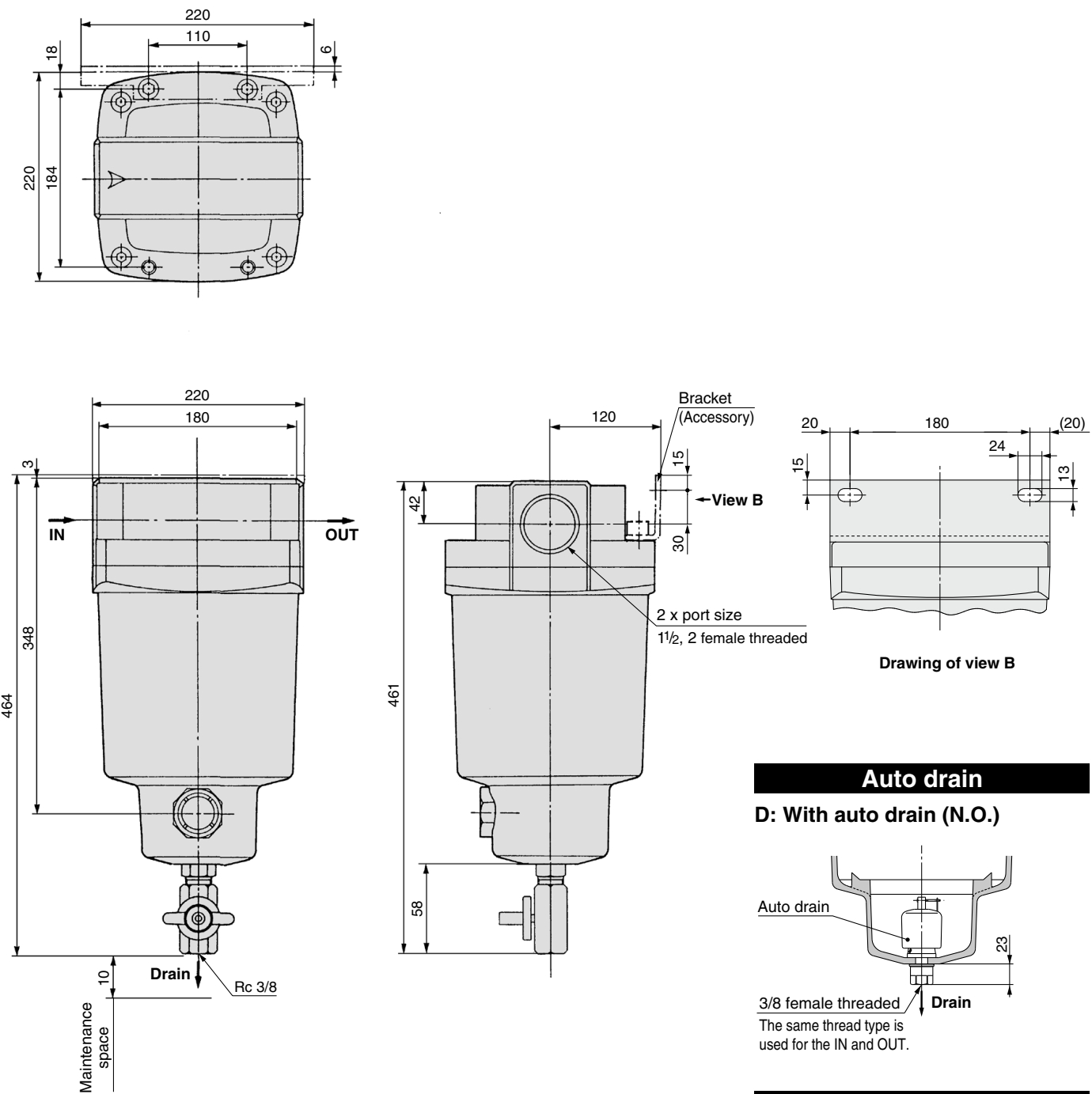


T: With element service indicator



Dimensions

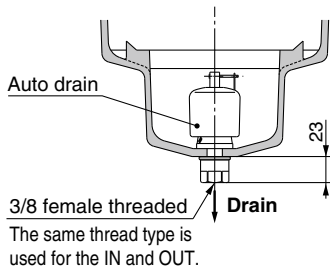
AM850



Note) The figure shows the drain cock specification.

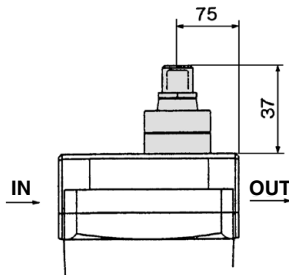
Auto drain

D: With auto drain (N.O.)



Option

T: With element service indicator



Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

Micro Mist Separator

RoHS

AMD Series (Degreasing Wash, White Vaseline Specification)

Refer to page 121 for related products (spacers).

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.
(For details, refer to page 121.)



Symbol



(Drain cock specifications)



(Auto drain specifications)

Model

Model	AMD150C	AMD250C	AMD350C	AMD450C	AMD550C	AMD650	AMD850
Rated flow (L/min (ANR)) ^{Note)}	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
Weight (kg)	0.38	0.55	0.9	1.4	2.1	4.2	10.5

Note) Max. flow capacity at 0.7 MPa.

Max. flow capacity varies depending on the operating pressure.

Refer to "Flow Rate Characteristics" and "Maximum Flow Capacity Line" on page 102.

Specifications

Fluid	Compressed air
Max. operating pressure	1.0 MPa
Min. operating pressure ^{Note 1)}	0.05 MPa
Proof pressure	1.5 MPa
Ambient and fluid temperatures	5 to 60°C
Filtration rating	0.01 μm (Filtration efficiency: 99.9%)
Oil mist density at outlet	Max. 0.1 mg/m^3 (ANR) ^{Note 2)} (Before saturated with oil, less than 0.01 mg/m^3 (ANR) $\approx$ 0.008 ppm)
Element replacement period	2 years or when pressure drop reached 0.1 MPa

Note 1) With auto drain: 0.1 MPa (N.O. type) or 0.15 MPa (N.C. type)

Note 2) When the inlet oil mist density is 30 mg/m^3 (ANR).

Accessory Part No.

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



How to Order

AMD150C to 550C

AMD **550** C - **10** - **V** -

Size

150
250
350
450
550

Thread type

Symbol	Type
Nil	Rc
F	G
N	NPT

Port size

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

Accessory

Symbol	Description
Nil	—
B	Bracket*1

*1 Bracket is shipped together with the product, but not assembled.

Made to order

Symbol	Description
Nil	None
X34	With differential pressure gauge (GD40-2-01), White vaseline

*7 For -X34, refer to page 115.

Degreasing wash*6, White vaseline

*6 Only body/housing is degreasing washed.

Option*3

- Multiple options can be selected.
- Refer to the table on the lower left for the available combinations.
- Indicate symbols in alphabetical order.

Symbol	Description
Nil	—
F	Rubber material: FKM
H	For medium air pressure (1.6 MPa)
J	Drain guide 1/4 female threaded*5
R	IN-OUT reversal direction
T	With element service indicator

*5 Without a valve function

Auto drain*2, 3

Symbol	Description
Nil	Without auto drain (With drain cock*4)
C	N.C. (Normally closed) Drain port is closed when pressure is not applied.
D	N.O. (Normally open) Drain port is open when pressure is not applied.

*2 Refer to the **Web Catalog** for proper use of the auto drain. (Only one auto drain specification can be selected.)

*3 Refer to the table on the left for the available combinations of the auto drain specifications and options.

*4 When the option J is selected, the auto drain and drain cock are not available.

Auto Drain Specifications/Option Combinations

◎: All types of auto drain specifications are available.

(including drain guide, "J" specification)

△: N.C. auto drain ("C" specification) is not available.

▼: Both N.C. and N.O. auto drain ("C", "D" specification) are not available.

	Nil	F	H	R	T	V
Nil	◎	◎	△	◎	Note	◎
F	◎	◎	▼	◎		▼
H	△	▼	△			▼
R	◎	◎	△	Note	◎	
T	Note			Note	◎	
V	◎	▼	▼	◎	◎	

Note: Only one drain exhaust method can be selected.

■: Not available

Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

How to Order

AMD650/850

AMD **650** - **10** - **X40**

Size

650
850

Thread type

Symbol	Type
Nil	Rc
F	G
N	NPT

Port size

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

Accessory

Symbol	Description
Nil	—
B	Bracket*1

*1 Bracket is shipped together with the product, but not assembled.

• **Degreasing wash*6, White vaseline**
*6 Only body/housing is degreasing washed.

• **Option*3**
· Multiple options can be selected.
· Refer to the table below for the available combinations.
· Indicate symbols in alphabetical order.

Symbol	Description
Nil	—
J	Drain guide 1/4 female threaded*5
R	IN-OUT reversal direction
T	With element service indicator

*5 Without a valve function

• **Auto drain*2**

Symbol	Description
Nil	Without auto drain (With drain cock*3, 4)
D	N.O. (Normally open) Drain port is open when pressure is not applied.

*2 Refer to the table below for the available combinations of the auto drain specifications and options.

*3 When the option J is selected, the auto drain and drain cock are not available.

*4 Body size 850 is equipped with a ball valve (Rc3/8). Mount a piping adapter IDF-AP609 (Refer to the **Web Catalog** for details.) to the ball valve if NPT3/8 female threaded is required.

Auto Drain Specifications/Option Combinations

○: Available □: Not available

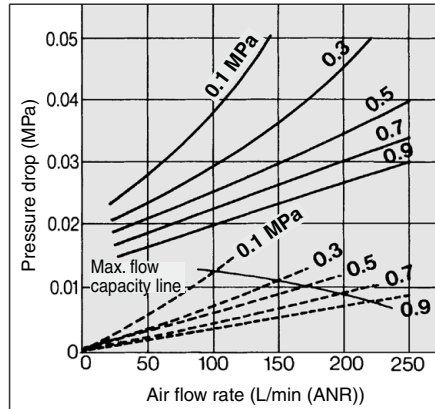
Auto drain specifications/Option			Auto drain specifications				Option		Applicable model	
			D	J	R	T	J	R	AMD650	AMD850
Auto drain specifications	N.O. auto drain	D	○	□	○	○	○	○	○	○
	Drain guide 1/4	J	□	○	○	○	○	○	○	○
	IN-OUT reversal direction	R	○	○	○	○	○	○	○	○
	With element service indicator	T	○	○	○	○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



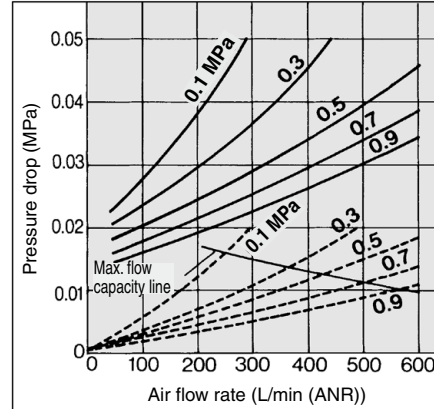
Flow Rate Characteristics (Representative values)/Select the model under the max. flow capacity line. (— Element oil saturation - - - - Initial condition)

Note) Compressed air over max. flow line in the table below may not meet the specifications of the product.

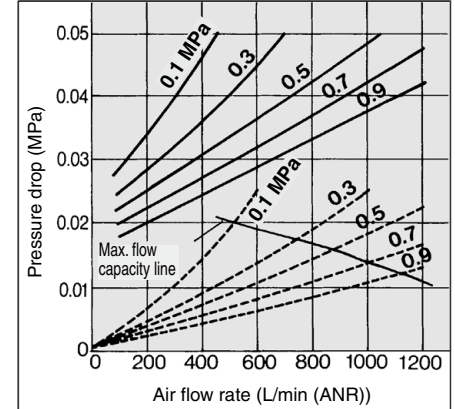
AMD150C



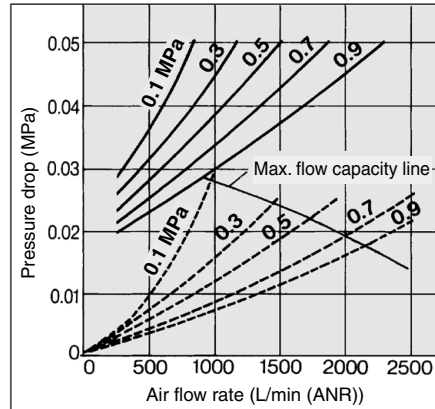
AMD250C



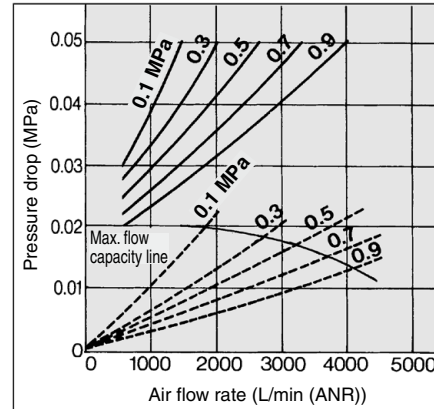
AMD350C



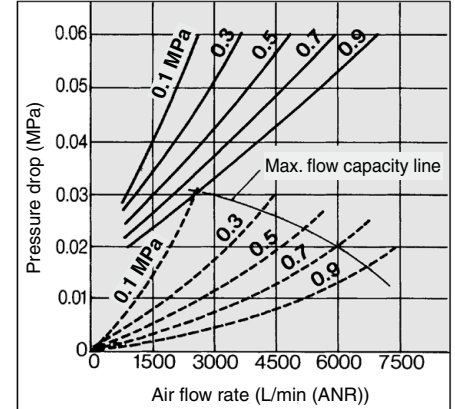
AMD450C



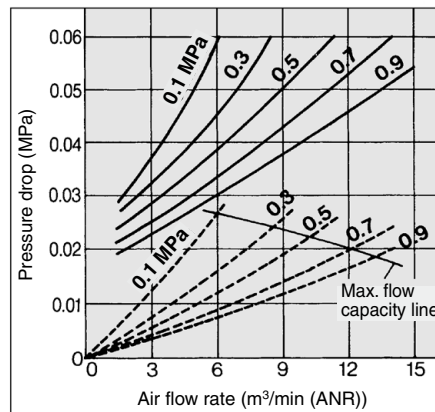
AMD550C



AMD650



AMD850



Paint Process Equipment

Directional Control Valves

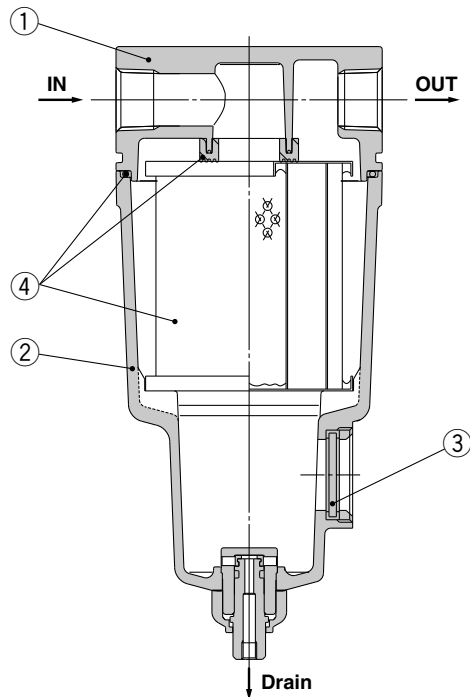
Air Preparation Equipment

Pressure Control Equipment

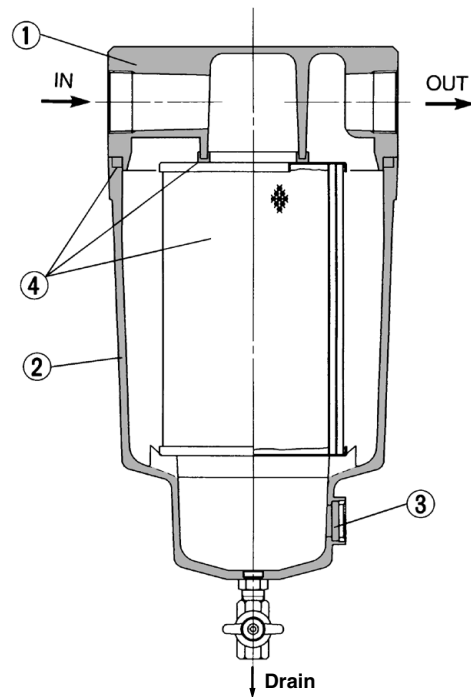
Pneumatic Auxiliary Equipment

Construction

AMD150C to 550C, AMD650



AMD850



Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Inner/outer surface coating
2	Housing (Case)	Aluminum alloy	
3	Sight glass	Tempered glass	—

Note) The figure shows the drain cock specification.

Note) Sight glass is indicated in the figure for easy understanding of component parts. However, it differs from the actual construction. Refer to dimensions on pages 104 through to 106 for details.

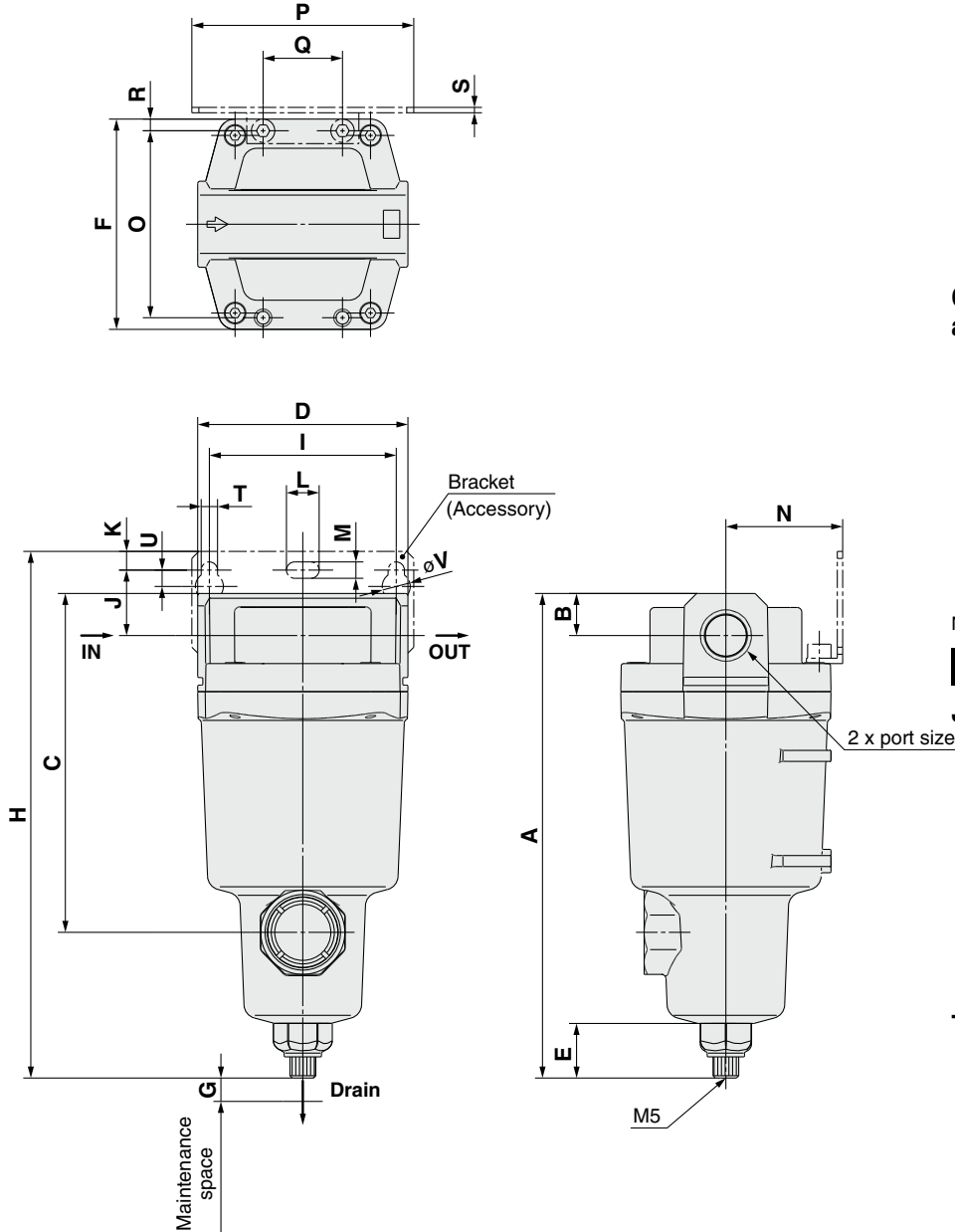
Replacement Parts

No.	Description	Material	Applicable model	Model						
				AMD150C	AMD250C	AMD350C	AMD450C	AMD550C	AMD650	AMD850
4	Element assembly	Glass fiber, others	Except option F	AMD-EL150	AMD-EL250	AMD-EL350	AMD-EL450	AMD-EL550	AMD-EL650	AMD-EL850
			For option F	AMD-EL150-F	AMD-EL250-F	AMD-EL350-F	AMD-EL450-F	AMD-EL550-F	—	—

- Element assembly: With gasket (1 pc.) and O-ring (1 pc.)
- Refer to the **Web Catalog** for replacement of auto drain.

Dimensions

AMD150C to 550C

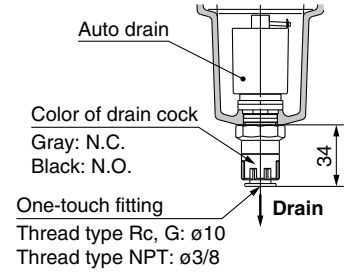


Note) The figure shows the drain cock specification.

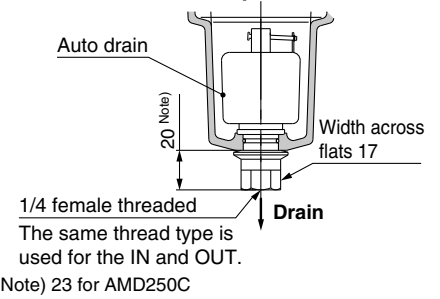
Auto drain

C: With auto drain (N.C.)

D: With auto drain (N.O.)

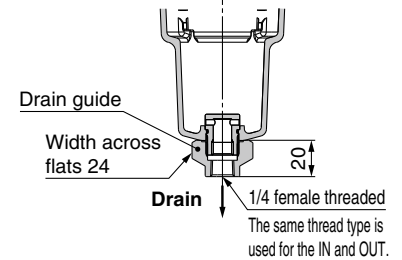


Combination of D: With auto drain (N.O.) and H: For medium air pressure

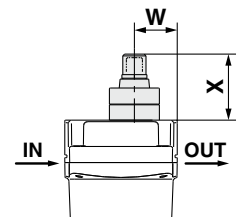


Option

J: Drain guide 1/4 female threaded



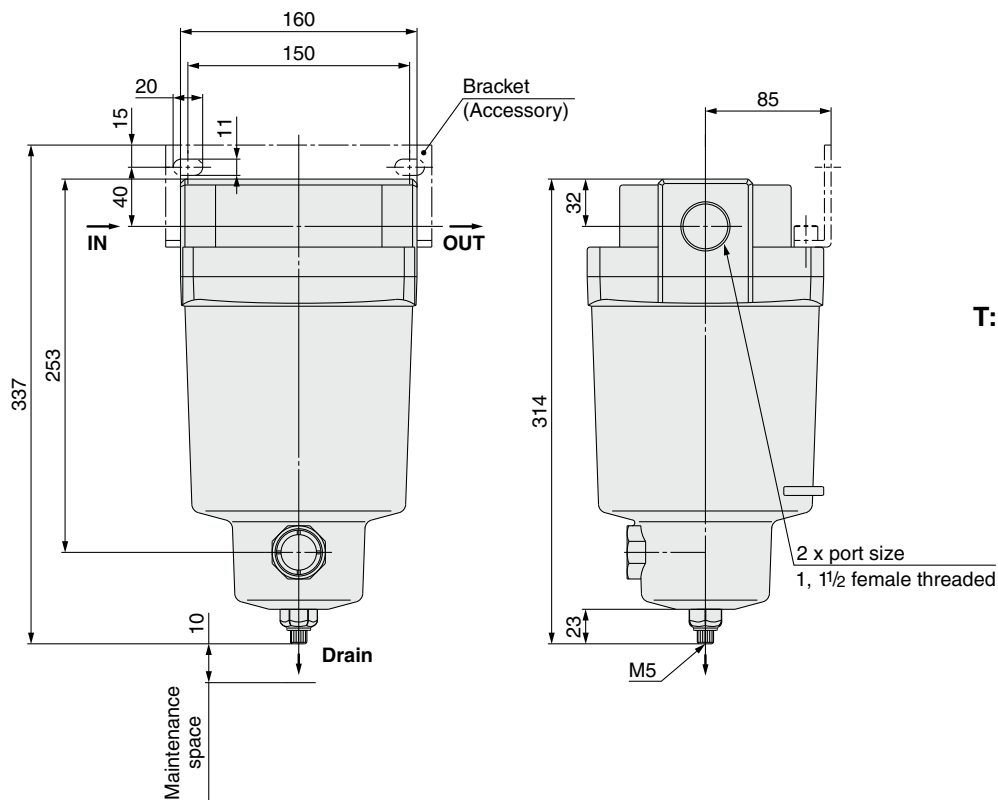
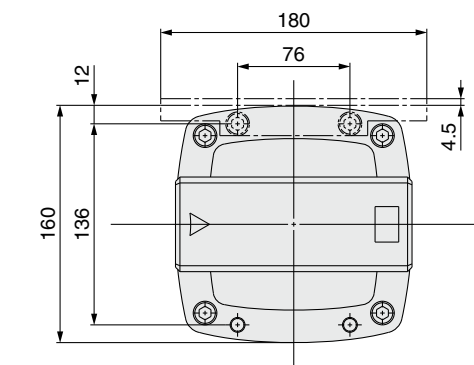
T: With element service indicator



(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	161	10	99	63	23	63	10	176	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	175	14	113	76	23	76	10	193	66	24	8	6	6	12	6	10	40	66	80	28	5	2	27	37	36	41
AMD350C	3/8, 1/2	207	18	145	90	23	90	10	225	80	28	8	7	7	14	7	12	50	80	95	34	5	2.3	32	37	42	41
AMD450C	1/2, 3/4	228	20	166	106	23	106	10	249	90	31	10	9	9	18	9	15	55	88	111	50	9	3.2	37	37	43	41
AMD550C	3/4, 1	262	24	200	122	23	122	15	281	100	33	10	9	9	18	9	15	65	102	126	60	10	3.2	39	37	51	41

Dimensions

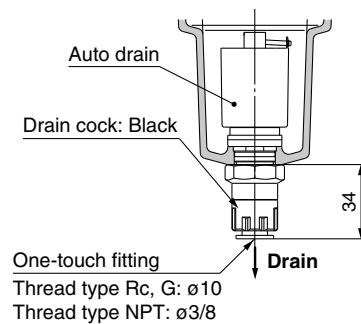
AMD650



Note) The figure shows the drain cock specification.

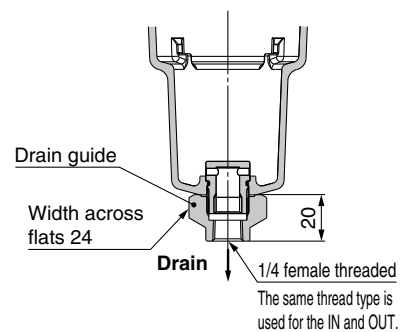
Auto drain

D: With auto drain (N.O.)

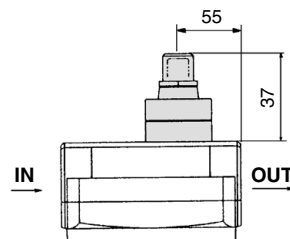


Option

J: Drain guide 1/4 female threaded

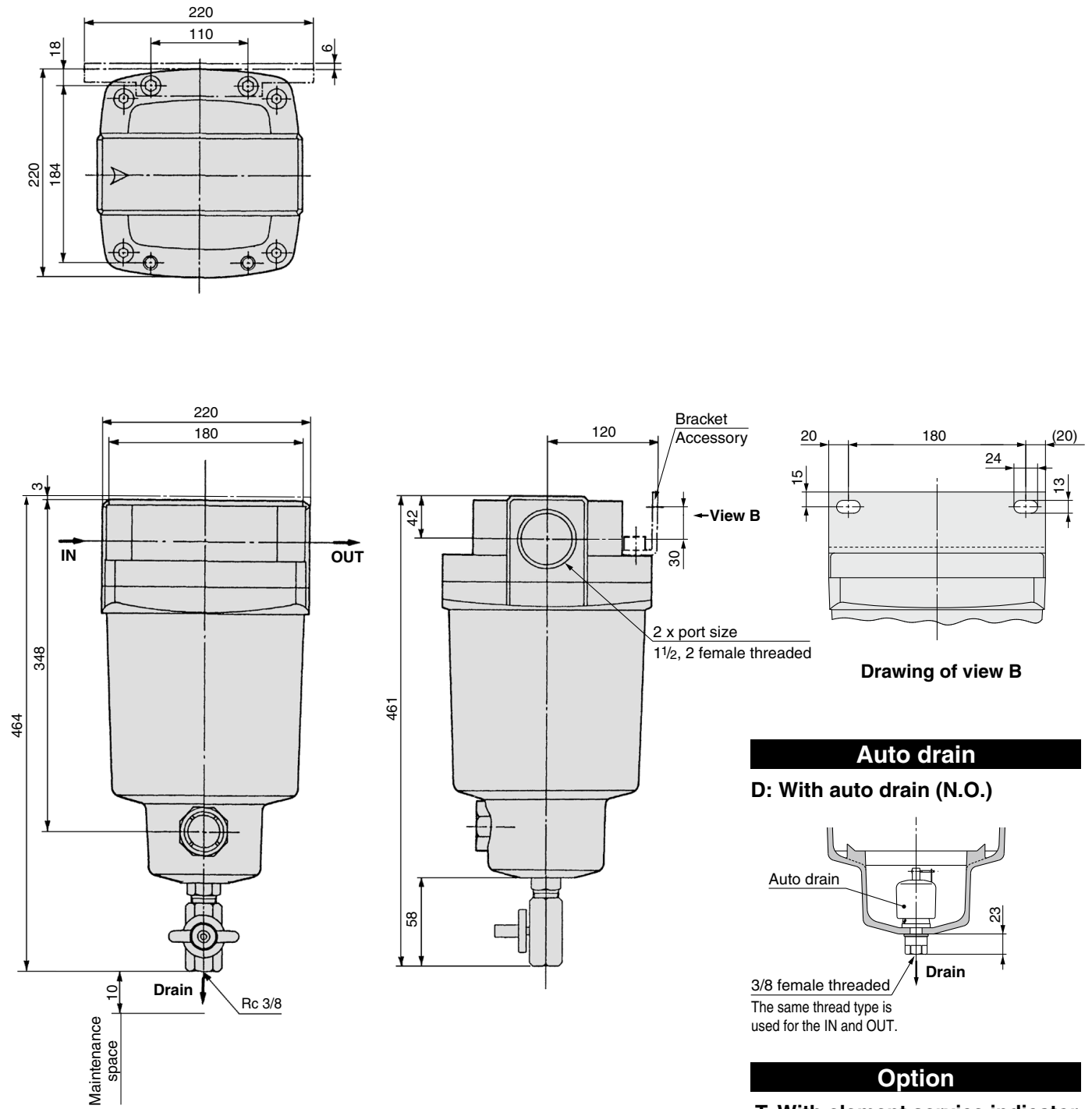


T: With element service indicator



Dimensions

AMD850



Note) The figure shows the drain cock specification.

Micro Mist Separator with Pre-filter

RoHS

AMH Series (Degreasing Wash, White Vaseline Specification)

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.

The AM series and AMD series have been integrated to achieve a reduction in installation space and in piping labor.

Modular connection is possible with AMH150C to 550C.
(For details, refer to page 121.)



Symbol



(Drain cock specifications)



(Auto drain specifications)

Model

Model	AMH150C	AMH250C	AMH350C	AMH450C	AMH550C	AMH650	AMH850
Rated flow (L/min (ANR)) ^{Note)}	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
Weight (kg)	0.38	0.55	0.9	1.4	2.1	4.2	10.5

Note) Max. flow capacity at 0.7 MPa.

Max. flow capacity varies depending on the operating pressure.

Refer to "Flow Rate Characteristics" (page 110) and "Maximum Flow Capacity Line" below.

Specifications

Fluid	Compressed air
Max. operating pressure	1.0 MPa
Min. operating pressure ^{*1}	0.05 MPa
Proof pressure	1.5 MPa
Ambient and fluid temperatures	5 to 60°C
Nominal filtration density	0.01 μm (Filtration efficiency: 99.9%)
Oil mist density at outlet	Max. 0.1 mg/m^3 (ANR) ^{*2} (Before saturated with oil, less than 0.01 mg/m^3 (ANR) $\approx$ 0.008 ppm)
Element replacement period	2 years or when pressure drop reached 0.1 MPa

^{*1} With auto drain: 0.1 MPa (N.O. type) or 0.15 MPa (N.C. type)

^{*2} When the inlet oil mist density is 30 mg/m^3 (ANR).

Accessory Part No.

Applicable model	AMH150C	AMH250C	AMH350C	AMH450C	AMH550C	AMH650	AMH850
Bracket assembly (with 2 mounting screws)	AM-BM101	AM-BM102	AM-BM103	AM-BM104	AM-BM105	BM56	BM57

Model Selection

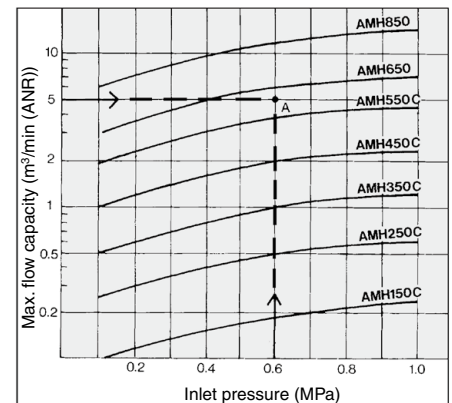
Select a model in accordance with the following procedure taking the inlet pressure and the max. flow capacity into consideration.

(Example) Inlet pressure: 0.6 MPa
Max. flow capacity: 5 m^3/min (ANR)

1. Obtain the intersecting point A of inlet pressure and max. flow capacity in the graph.
2. The AMH650 is obtained when the max. flow capacity line is above the intersecting point A in the graph.

Note) Make sure to select a model that has the max. flow capacity line above the obtained intersecting point. With a model that has the max. flow capacity line below the obtained intersecting point, the flow rate will be exceeded, thus leading to a problem such as being unable to satisfy the specifications.

Maximum Flow Capacity Line





How to Order

AMH150C to 550C

AMH **550** C - **10** - **V** -

Size

150
250
350
450
550

Thread type

Symbol	Type
Nil	Rc
F	G
N	NPT

Port size

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

Accessory

Symbol	Description
Nil	—
B	Bracket*1

*1 Bracket is shipped together with the product, but not assembled.

Made to order

Symbol	Description
Nil	None
X34	With differential pressure gauge (GD40-2-01), White vaseline

*7 For -X34, refer to page 115.

Degreasing wash*6, White vaseline

*6 Only body/housing is degreasing washed.

Option*3

- Multiple options can be selected.
- Refer to the table on the lower left for the available combinations.
- Indicate symbols in alphabetical order.

Symbol	Description
Nil	—
F	Rubber material: FKM
H	For medium air pressure (1.6 MPa)
J	Drain guide 1/4 female threaded*5
R	IN-OUT reversal direction
T	With element service indicator

*5 Without a valve function

Auto drain*2, 3

Symbol	Description
Nil	Without auto drain (With drain cock*4)
C	N.C. (Normally closed) Drain port is closed when pressure is not applied.
D	N.O. (Normally open) Drain port is open when pressure is not applied.

*2 Refer to the **Web Catalog** for proper use of the auto drain. (Only one auto drain specification can be selected.)

*3 Refer to the table on the left for the available combinations of the auto drain specifications and options.

*4 When the option J is selected, the auto drain and drain cock are not available.

Drain Exhaust Specifications/Option Combinations

○: All types of drain exhaust specifications are available. (including drain guide, "J" specification)

△: N.C. auto drain ("C" specification) is not available.

▼: Both N.C. and N.O. auto drain ("C", "D" specification) are not available.

	Nil	F	H	R	T	V
Nil	○	○	△	○	Note	○
F	○	○	▼	○		▼
H	△	▼	○	△		▼
R	○	○	△	Note	○	○
T	Note			Note	○	○
V	○	▼	▼	○	○	○

Note: Only one drain exhaust method can be selected.

■: Not available

How to Order

AMH650/850

AMH **650** - **10** - **X40**

Size

650
850

Thread type

Symbol	Type
Nil	Rc
F	G
N	NPT

Port size

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

Accessory

Symbol	Description
Nil	—
B	Bracket*1

*1 Bracket is shipped together with the product, but not assembled.

• Degreasing wash, White vaseline

Option*3

- Multiple options can be selected.
- Refer to the table below for the available combinations.
- Indicate symbols in alphabetical order.

Symbol	Description
Nil	—
J	Drain guide 1/4 female threaded*5
R	IN-OUT reversal direction
T	With element service indicator

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

Auto drain*2

Symbol	Description
Nil	Without auto drain (With drain cock*3, 4)
D	N.O. (Normally open) Drain port is open when pressure is not applied.

*2 Refer to the following table for the available combinations of the auto drain specifications and options.

*3 When the option J is selected, the auto drain and drain cock are not available.

*4 Body size 850 is equipped with a ball valve (Rc3/8). Mount a piping adapter IDF-AP609 (Refer to the **Web Catalog** for details.) to the ball valve if NPT3/8 female threaded is required.

Auto Drain Specifications/Option Combinations

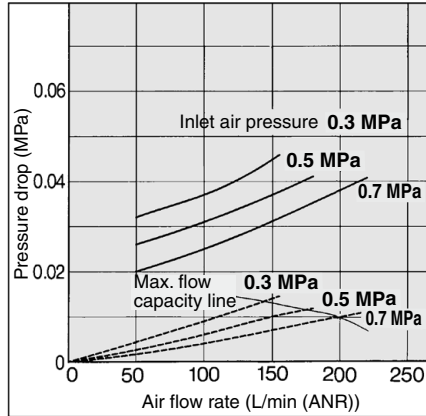
◎: Available □: Not available

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

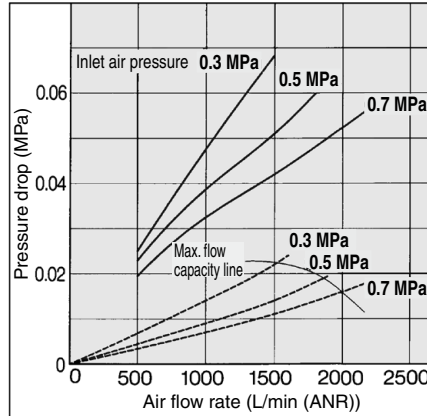
Flow Rate Characteristics (Representative values)/Select the model under the max. flow capacity line. (— Element oil saturation ---- Initial condition)

Note) Compressed air over max. flow capacity line in the table below may not meet the specifications of the product.

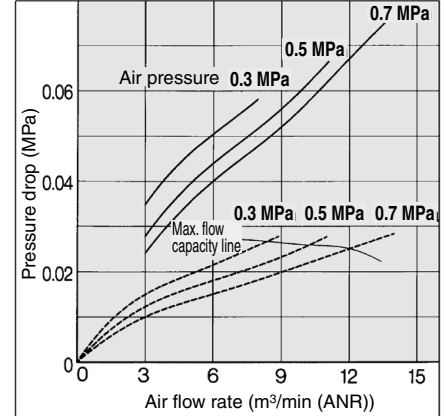
AMH150C



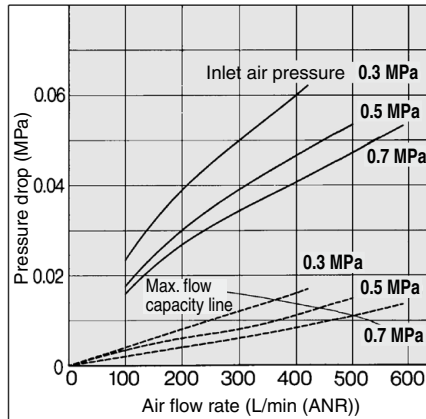
AMH450C



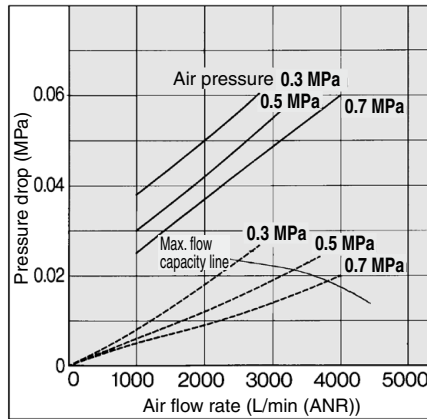
AMH850



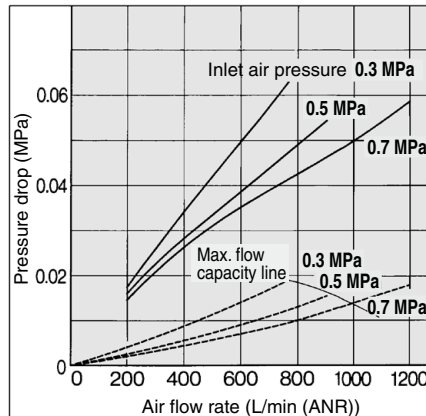
AMH250C



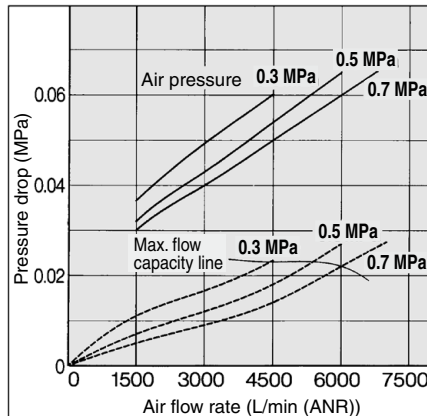
AMH550C



AMH350C



AMH650



Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

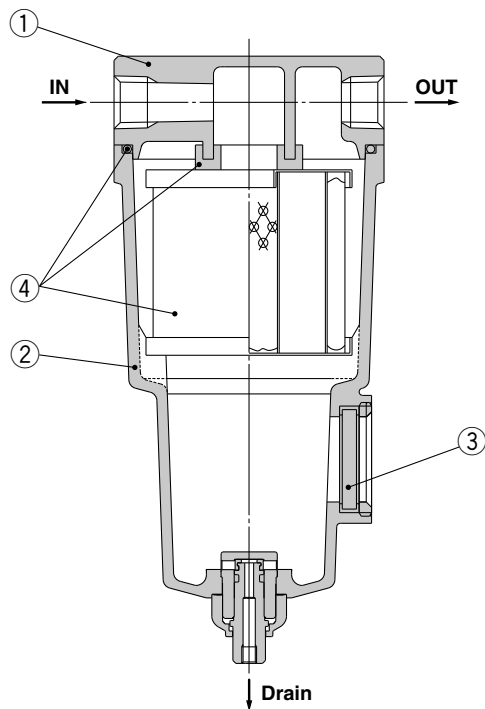
Pressure Control Equipment

Pneumatic Auxiliary Equipment

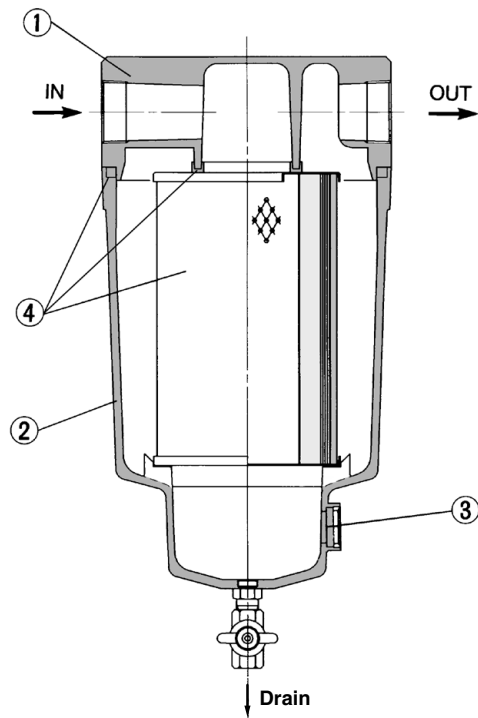
AMH Series

Construction

AMH150C to 550C, AMH650



AMH850



Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Inner/outer surface coating
2	Housing (Case)	Aluminum alloy	
3	Sight glass	Tempered glass	—

Note) The figure shows the drain cock specification.

Note) Sight glass is indicated in the figure for easy understanding of component parts. However, it differs from the actual construction. Refer to dimensions on pages 112 through to 114 for details.

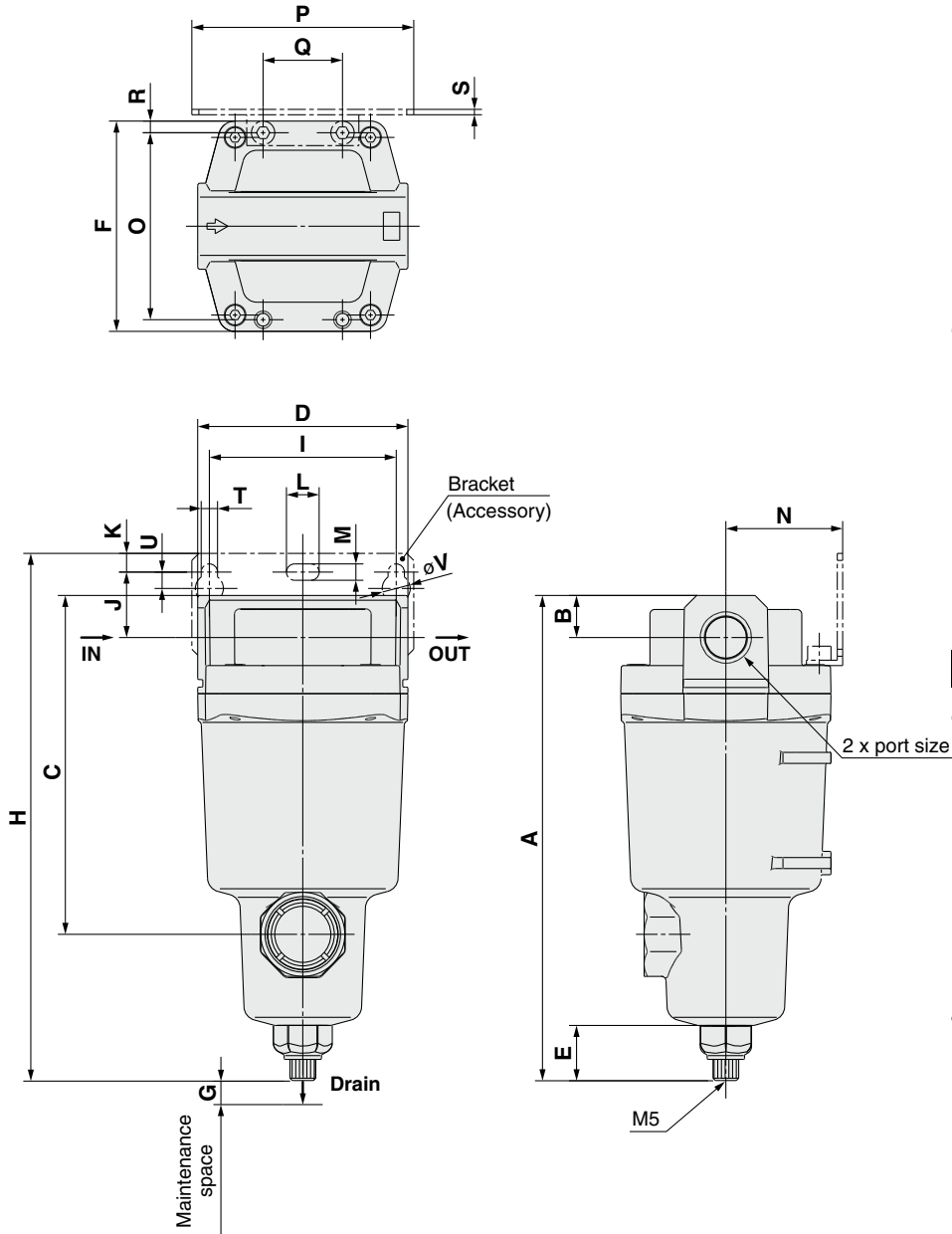
Replacement Parts

No.	Description	Material	Applicable model	Model						
				AMH150C	AMH250C	AMH350C	AMH450C	AMH550C	AMH650	AMH850
4	Element assembly	Glass fiber, others	Except option F	AMH-EL150	AMH-EL250	AMH-EL350	AMH-EL450	AMH-EL550	AMH-EL650	AMH-EL850
			For option F	AMH-EL150-F	AMH-EL250-F	AMH-EL350-F	AMH-EL450-F	AMH-EL550-F	—	—

- Element assembly: With gasket (1 pc.) and O-ring (1 pc.)
- Refer to the **Web Catalog** for replacement of auto drain.

Dimensions

AMH150C to 550C

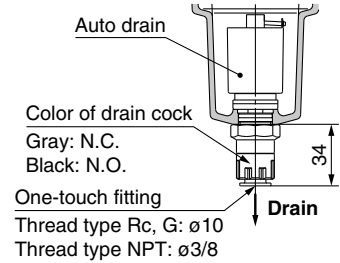


Note) The figure shows the drain cock specification.

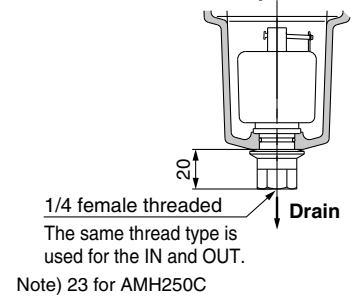
Auto drain

C: With auto drain (N.C.)

D: With auto drain (N.O.)

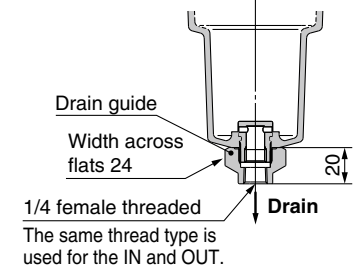


Combination of D: With auto drain (N.O.) and H: For medium air pressure

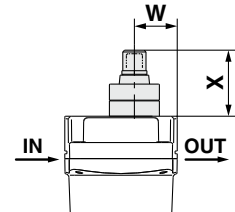


Option

J: Drain guide 1/4 female threaded



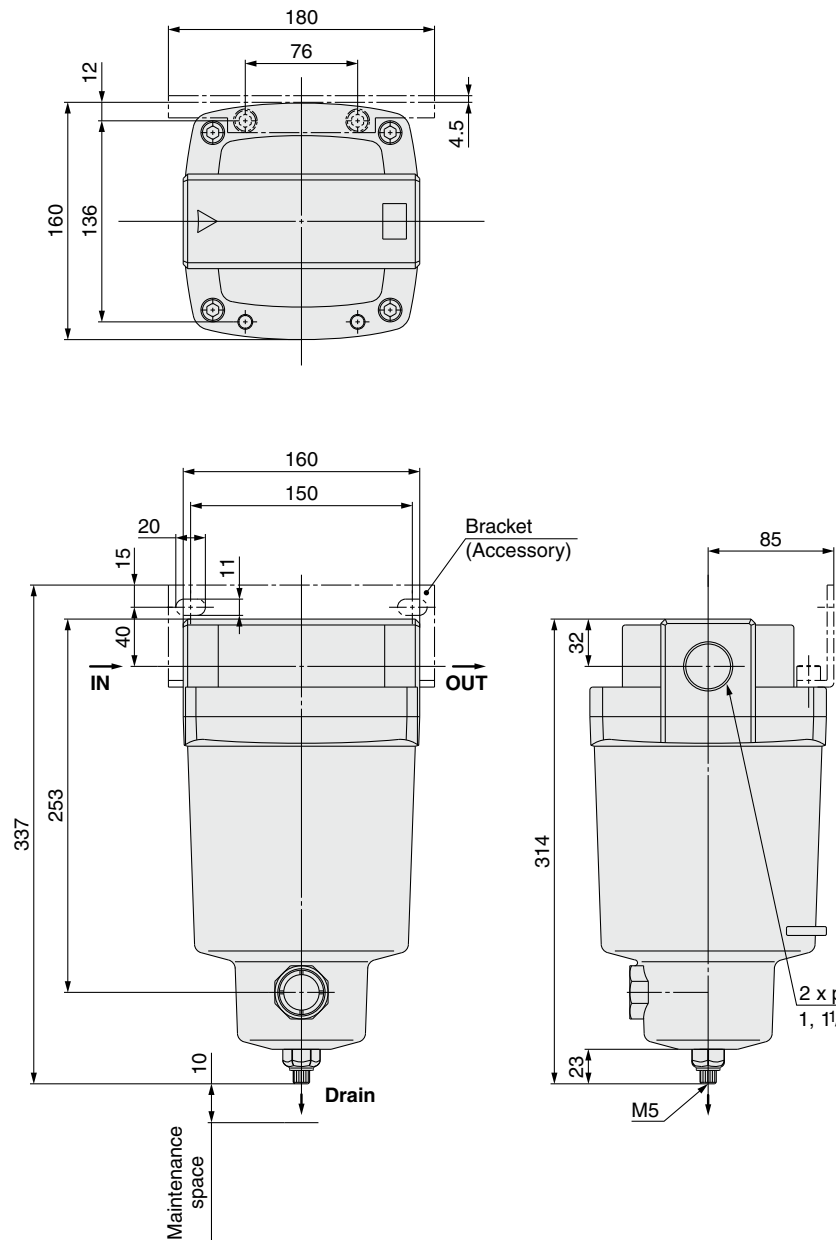
T: With element service indicator



(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	
AMH150C	1/8, 1/4	158	10	99	63	23	63	10	173	56	20	5	6	6	12	6	10	35	54	70	26	4.5	1.6	24	37	32	41	
AMH250C	1/4, 3/8	172	14	113	76	23	76	10	190	66	24	8	6	6	12	6	10	40	66	80	28	5	2	27	37	36	41	
AMH350C	3/8, 1/2	204	18	145	90	23	90	10	222	80	28	8	7	7	14	7	12	50	80	95	34	5	2.3	32	37	42	41	
AMH450C	1/2, 3/4	225	20	166	106	23	106	10	246	90	31	10	9	9	18	9	15	55	88	111	50	9	3.2	37	37	43	41	
AMH550C	3/4, 1	259	24	200	122	23	122	15	278	100	33	10	9	9	18	9	15	65	102	126	60	10	3.2	39	37	51	41	

Dimensions

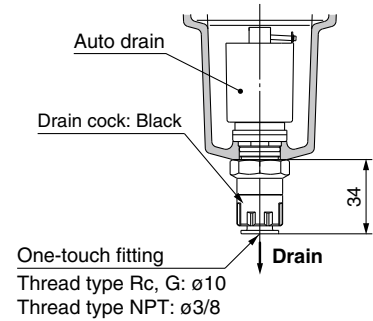
AMH650



Note) The figure shows the drain cock specification.

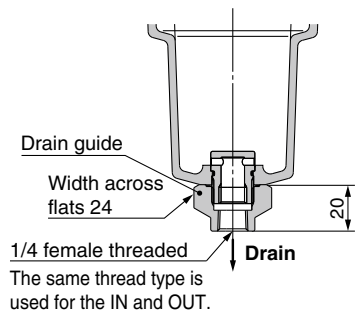
Auto drain

D: With auto drain (N.O.)

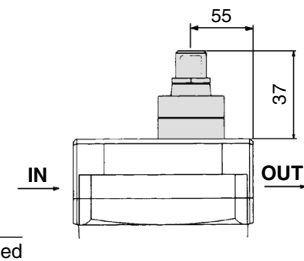


Option

J: Drain guide 1/4 female threaded

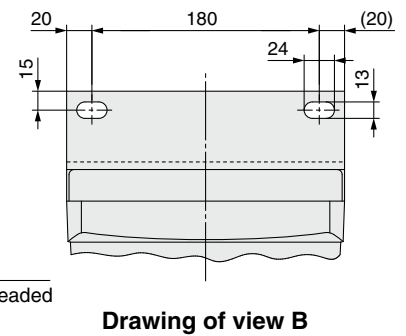
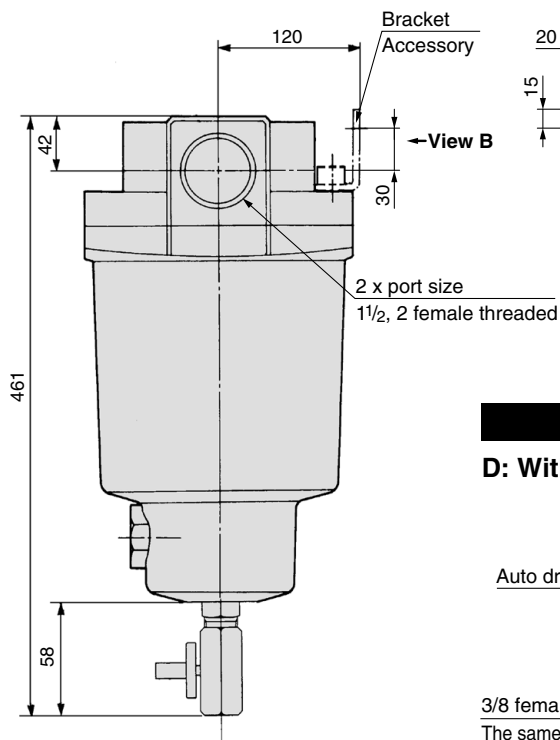
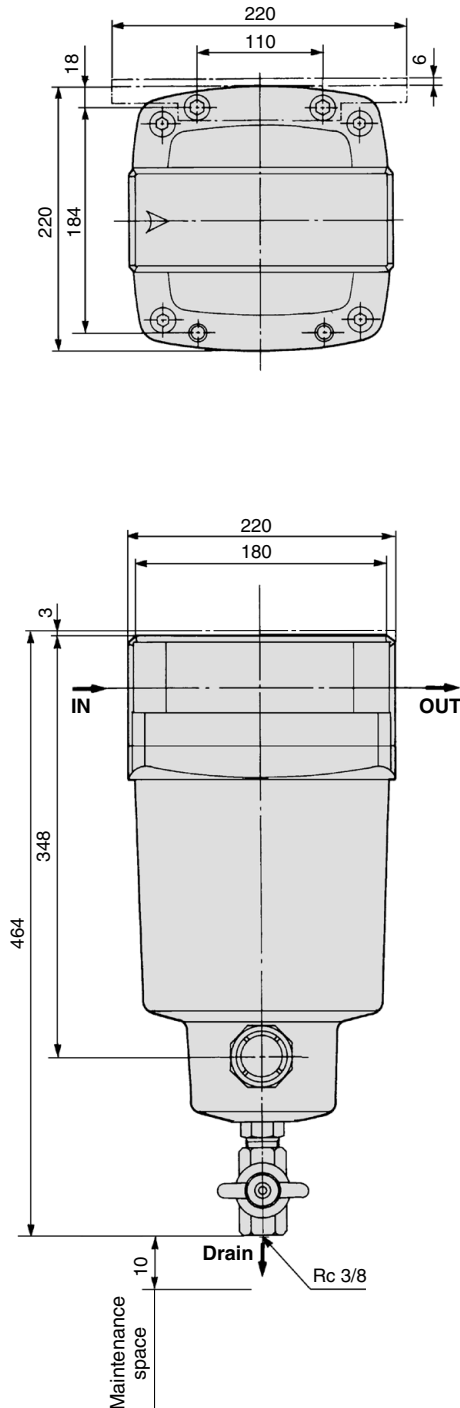


T: With element service indicator



Dimensions

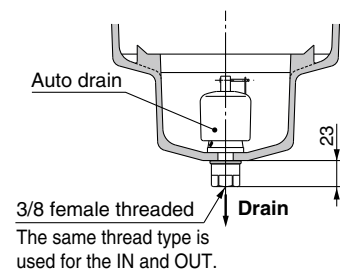
AMH850



Drawing of view B

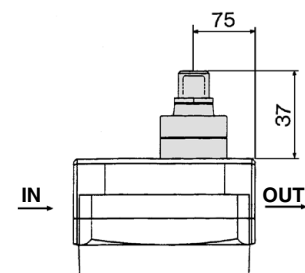
Auto drain

D: With auto drain (N.O.)



Option

T: With element service indicator



Compressed Air Cleaning Filter Series

Made to Order



Please contact SMC for detailed dimensions, specifications, and lead times.

With Differential Pressure Gauge (GD40-2-01-X21), White Vaseline

A differential pressure gauge that keeps track of the filter life is installed on the filter itself. This facilitates piping and achieves a compact design. The grease has been changed to white vaseline.

Applicable Models

- AFF2C to 22C, 37B, 75B
- AM150C to 550C, 650, 850
- AMD150C to 550C, 650, 850
- AMH150C to 550C, 650, 850

How to Order

Standard model no.*

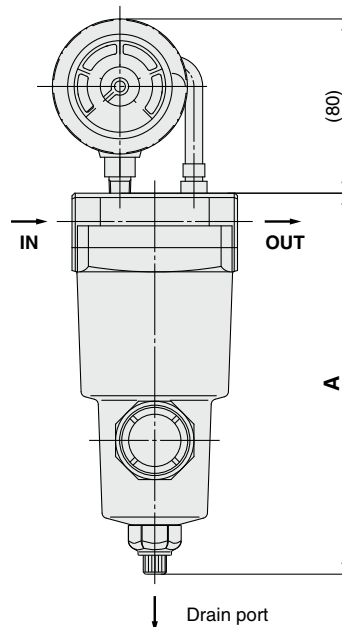
-X34

* Refer to How to Order of the standard specifications for the applicable models.

Differential Pressure Gauge (GD40-2-01-X21) Specifications

Model	GD40-2-01
Fluid	Compressed air
Max. operating pressure	1 MPa
Proof pressure	1.5 MPa
Ambient and fluid temperatures	5 to 60
Port size	High pressure: R 1/8, Low pressure: Rc 1/8
Scale range	0 to 0.2 MPa
Accuracy	±3% F.S. (Full span)
Weight (g)	300

Dimensions



(mm)		
AFF series	AM, AMD, AMH series	A
Size	Size	
2C	150C	161
4C	250C	175
8C	350C	207
11C	450C	228
22C	550C	262
37B	650	314
75B	850	461

Super Mist Separator

RoHS

AME Series (Degreasing Wash, White Vaseline Specification)

Refer to page 121 for related products (spacers).

Can separate and adsorb aerosol state fine oil particles in compressed air and change the oil lubricating compressed air to oilless air or equivalent.

Use this product for filtration of compressed air requiring higher clean air for painting lines, compressed air for clean rooms and/or equipment where oils must be avoided.

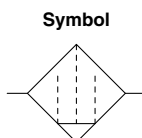
Indicates the replacement time of the filter element by a color change.

(A red color spot indicates the replacement time.)

Caution

Be sure to use either the AM, AMD, or AMH series as a pre-filter.

Modular connection is possible with AME150C to 550C.
(For details, refer to page 121.)



Model

Model	AME150C	AME250C	AME350C	AME450C	AME550C	AME650	AME850
Rated flow (L/min (ANR)) Note)	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
Weight (kg)	0.3	0.48	0.8	1.3	2.0	4.2	10.5

Note) Max. flow capacity at 0.7 MPa.

Max. flow capacity varies depending on the operating pressure.

Refer to "Flow Rate Characteristics" and "Maximum Flow Capacity Line" on page 118.

Specifications

Fluid	Compressed air
Max. operating pressure	1.0 MPa
Min. operating pressure	0.05 MPa
Proof pressure	1.5 MPa
Ambient and fluid temperatures	5 to 60°C
Filtration rating	0.01 μm (Filtration efficiency: 99.9%)
Cleanliness at outlet	Less than 100 particles of 0.3 μm or larger per cubic foot [Less than 35 particles per 10 liters (ANR)]
Oil mist density at outlet	Max. 0.01 mg/m ³ (ANR) (≈0.008 ppm)
Element replacement period	1. Replace the element when a red color spot occurred on the surface. 2. Even if a red color spot does not appear on the surface, the replacement interval for the element is when the pressure drop reaches 0.1 MPa or after two years of operation, whichever comes first.

Accessory Part No.

Applicable model	AME150C	AME250C	AME350C	AME450C	AME550C	AME650	AME850
Bracket assembly (with 2 mounting screws)	AM-BM101	AM-BM102	AM-BM103	AM-BM104	AM-BM105	BM56	BM57

Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

How to Order

AME150C to 550C

AME **550** C - **10** - **V**

Size

150
250
350
450
550

Thread type

Symbol	Type
Nil	Rc
F	G
N	NPT

Accessory

Symbol	Description
Nil	—
B	Bracket*1

*1 Bracket is shipped together with the product, but not assembled.

Port size

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



How to Order

AME650/850

AME **650** - **10** - **X40**

Size

650
850

Thread type

Symbol	Type
Nil	Rc
F	G
N	NPT

Option

Symbol	Description
Nil	—
R	IN-OUT reversal direction

Port size

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

Accessory

Symbol	Description
Nil	—
B	Bracket*2

*2 Bracket is shipped together with the product, but not assembled.

Degreasing wash*3, White vaseline

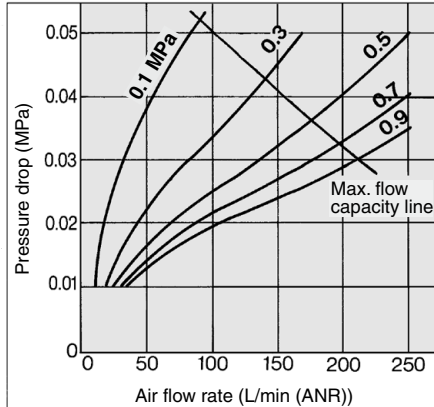
*3 Only body/housing is degreasing washed.



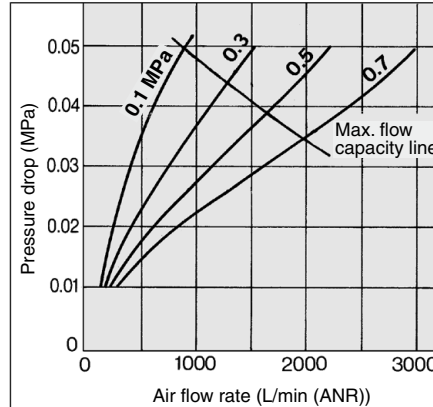
Flow Rate Characteristics (Representative values) /Select the model under the max. flow capacity line. (Element initial condition)

Note) Compressed air over max. flow capacity line in the table below may not meet the specifications of the product.

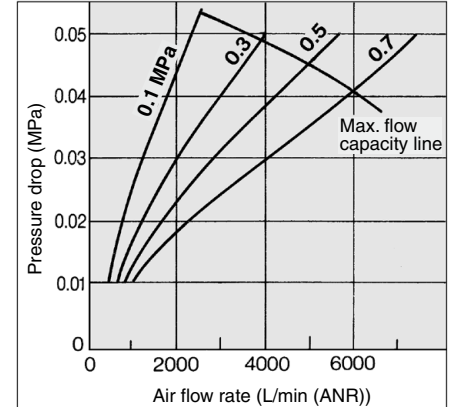
AME150C



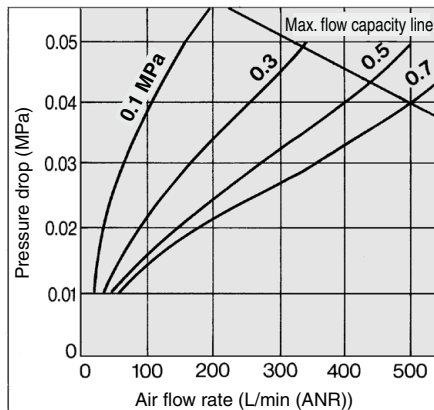
AME450C



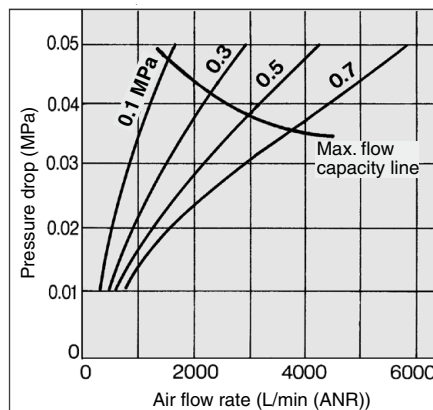
AME650



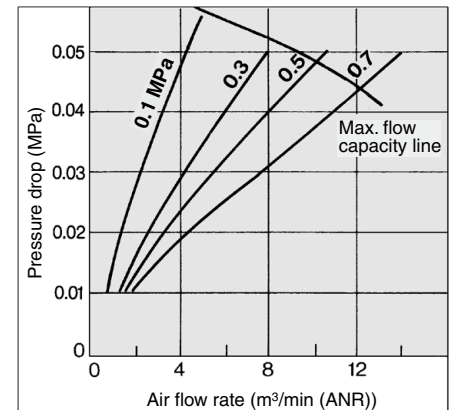
AME250C



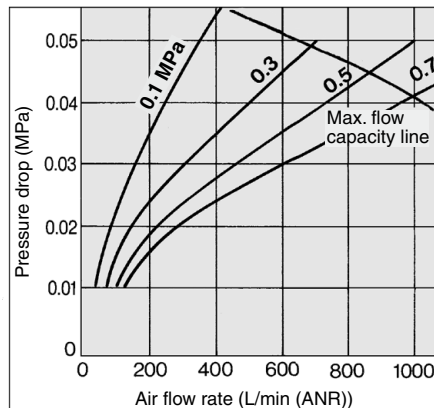
AME550C



AME850



AME350C



Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

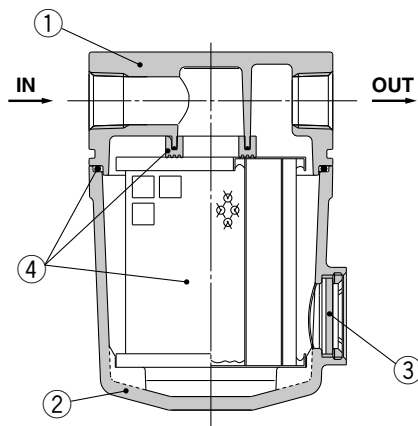
Pressure Control Equipment

Pneumatic Auxiliary Equipment

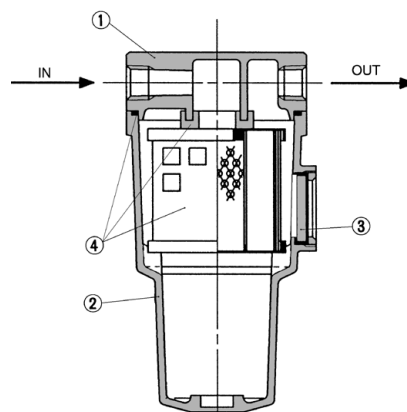
AME Series

Construction

AME150C to 550C



AME650/850



Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	Inner/outer surface coating
2	Housing (Case)	Aluminum alloy	
3	Sight glass	Tempered glass	—

Note) Sight glass is indicated in the figure for easy understanding of component parts. However, it differs from the actual construction. Refer to dimensions on pages 119 and 120 for details.

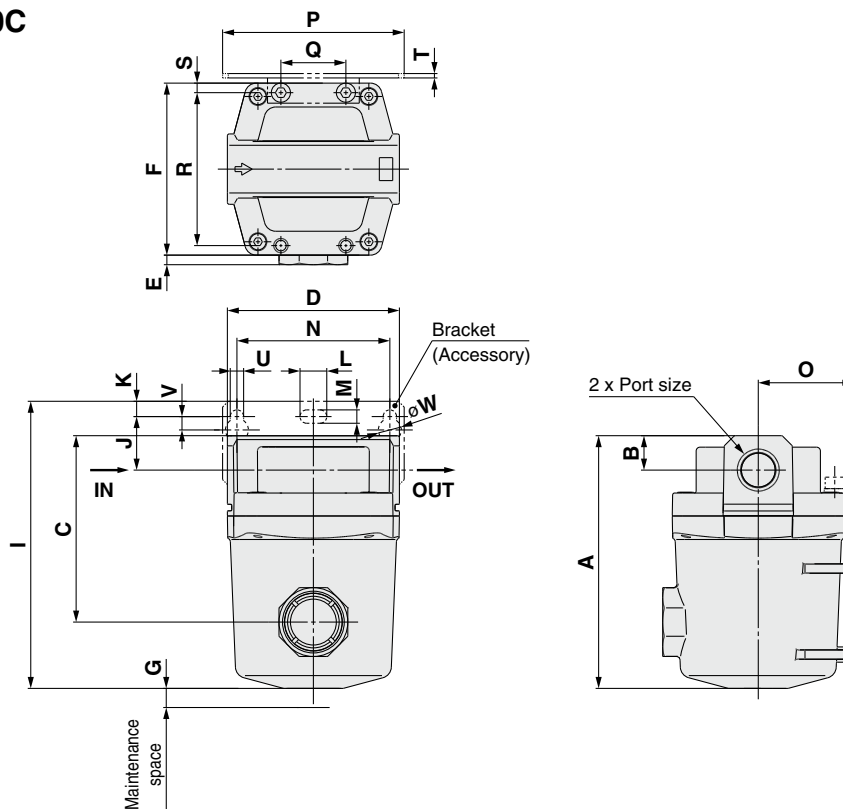
Replacement Parts

No.	Description	Material	Applicable model	Model						
				AME150C	AME250C	AME350C	AME450C	AME550C	AME650	AME850
4	Element assembly	Glass fiber, others	Except option F	AME-EL150	AME-EL250	AME-EL350	AME-EL450	AME-EL550	AME-EL650	AME-EL850
			For option F	AME-EL150-F	AME-EL250-F	AME-EL350-F	AME-EL450-F	AME-EL550-F	—	—

• Element assembly: With gasket (1 pc.) and O-ring (1 pc.)

Dimensions

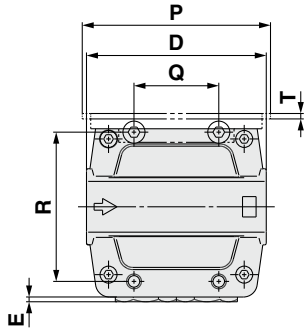
AME150C to 350C



Model	Port size	A	B	C	D	E	F	G	Bracket related dimensions														
									I	N	J	K	U	V	L	M	W	O	P	Q	R	S	T
AME150C	1/8, 1/4	83	10	54	63	7.5	63	10	99	56	20	5	6	6	12	6	10	35	70	26	54	4.5	1.6
AME250C	1/4, 3/8	103	14	73	76	5	76	10	121	66	24	8	6	6	12	6	10	40	80	28	66	5	2
AME350C	3/8, 1/2	132	18	98	90	5	90	10	150	80	28	8	7	7	14	7	12	50	95	34	80	5	2.3

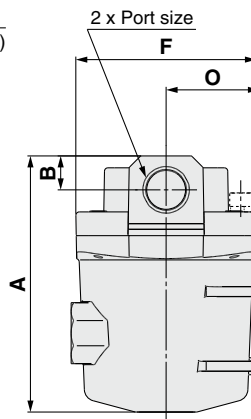
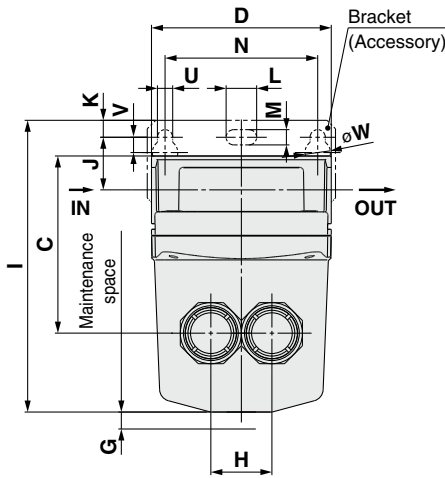
Dimensions

AME450C/550C

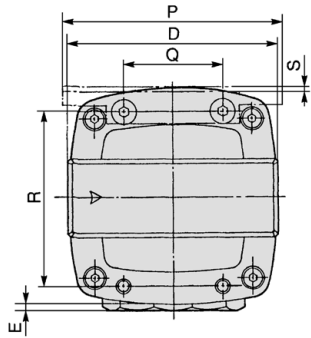


(mm)								
Model	Port size	A	B	C	D	E	F	H
AME450C	1/2, 3/4	151	20	105	106	3	106	10
AME550C	3/4, 1	187	24	130	122	3	122	15

Model	Bracket related dimensions												
	I	N	J	K	U	V	L	M	W	O	P	Q	R
AME450C	172	90	31	10	9	9	18	9	15	55	111	50	88
AME550C	206	100	33	10	9	9	18	9	15	65	126	60	102

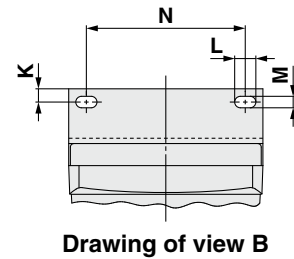
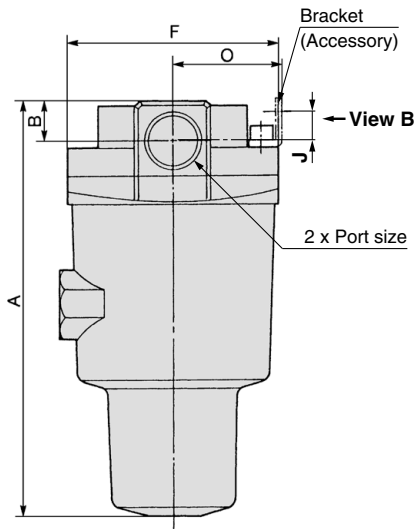
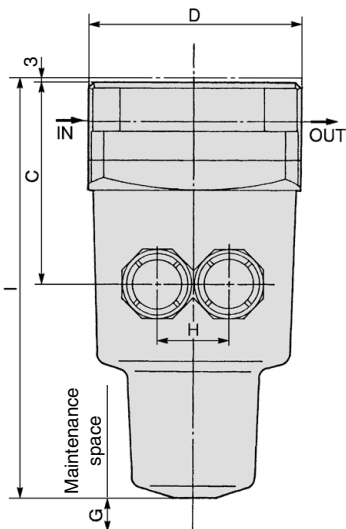


AME650/850



(mm)								
Model	Port size	A	B	C	D	E	F	H
AME650	1, 1 1/2	291	32	167	160	—	160	10
AME850	1 1/2, 2	403	42	235	220	—	220	10

Model	Bracket related dimensions										
	I	J	K	L	M	N	O	P	Q	R	S
AME650	314	40	15	20	11	150	85	180	76	136	4.5
AME850	406	30	15	24	13	180	120	220	110	184	6



Related Products (White Vaseline Specification)

Spacer for Modular Connection

Use a spacer listed below when connecting modular type AFF2C to 22C, AM□150C to 550C. The spacer must be ordered separately.

(Note: Spacer with bracket cannot be used.)

Caution

- Modular connection
- Mount the bracket on one side when connecting 2 sets.
- Mount the brackets on both sides when connecting 3 sets or more.
- As a guideline for the number of brackets, one bracket should be mounted for every 2 products.



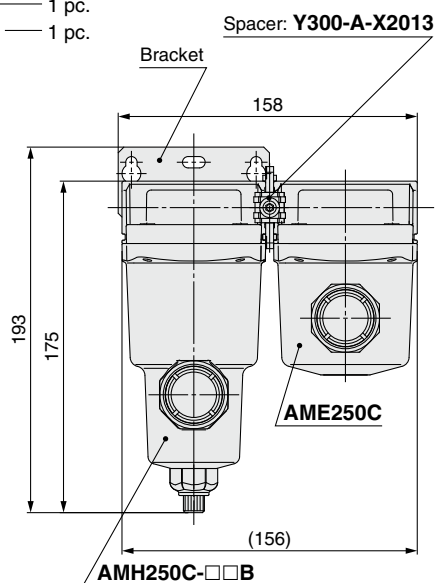
Combination examples of modular type products

Arrangement example

AMH250C-□□B — 1 pc.

AME250C — 1 pc.

Y300-A-X2013 — 1 pc.



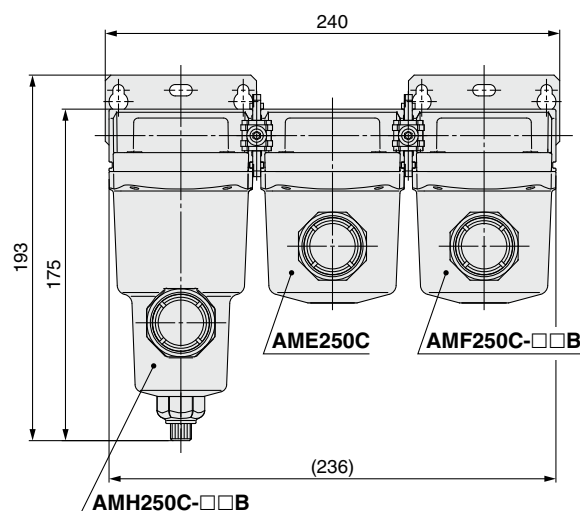
Arrangement example

AMH250C-□□B — 1 pc.

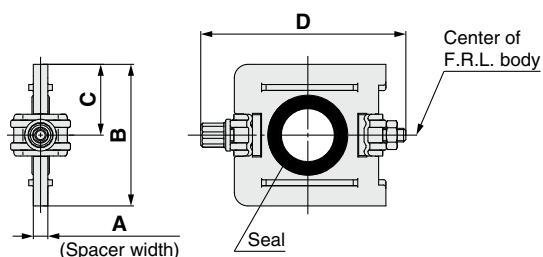
AME250C — 1 pc.

AMF250C-□□B — 1 pc.

Y300-A-X2013 — 2 pcs.



Part No./Dimensions



Spacer part no.	A	B	C	D	Applicable series
Y200-A-X2013	3.2	31.2	15.6	44.9	AFF2C, AM□150C
Y300-A-X2013	4.2	43.4	21.7	57.9	AFF4C, AM□250C
Y400-A-X2013	5.2	53	26.5	68.5	AFF8C, AM□350C
Y500-A-X2013	5.2	57	28.5	75.6	AFF11C, AM□450C
Y600-A-X2013	6.2	67.6	33.8	92.5	AFF22C, AM□550C

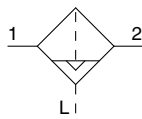
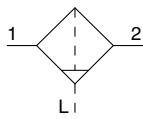
Air Filter

AF10-A to AF60-A-X2009 (Degreasing Wash, White Vaseline Specification)

Symbol

Air Filter

Air Filter with Auto Drain



Refer to page 203 for accessories (spacers/brackets).

How to Order

AF **30** - **03** **BD** - **A** - **X2009**

1

2

3

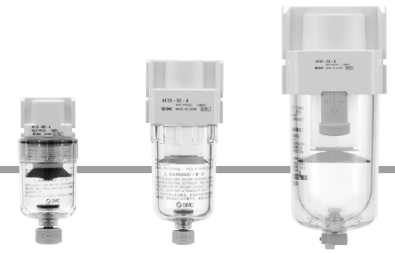
4

5

Degreasing wash*, White vaseline

* The degreasing wash is only applicable to the metal parts.

· Option/Semi-standard: Select one each for a to f.
· Option/Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.
Example) AF30-03BD-R-A-X2009



		Symbol	Description	1								
				Body size								
				10	20	30	40	50	60			
2	Pipe thread type	Nil	Metric thread (M5)	●	—	—	—	—	—			
			Rc	—	●	●	●	●	●			
+												
3	Port size	M5	M5 x 0.8	●	—	—	—	—	—			
		01	1/8	—	●	—	—	—	—			
		02	1/4	—	●	●	●	—	—			
		03	3/8	—	—	●	●	—	—			
		04	1/2	—	—	—	●	—	—			
		06	3/4	—	—	—	●	●	—			
		10	1	—	—	—	—	●	●			
+												
4	Option	a	Mounting	Nil	Without mounting option		●	●	●	●	●	●
				B	With bracket		—	●	●	●	●	●
	+											
	b	Float type auto drain	Nil	Without auto drain	●	●	●	●	●	●	●	
			C	N.C. (Normally closed) Drain port is closed when pressure is not applied.	●	●	●	●	●	●	●	
			D	N.O. (Normally open) Drain port is open when pressure is not applied.	—	—	●	●	●	●	●	
+												
5	Semi-standard	c	Bowl	Nil	Polycarbonate bowl		●	●	●	●	●	●
				6	Nylon bowl		●	●	●	●	●	●
				C	With bowl guard		—	●	—	—	—	—
				6C	With bowl guard (Nylon bowl)		—	●	—	—	—	—
		+										
	d	Drain port	Nil	With drain cock	●	●	●	●	●	●	●	
	+											
	e	Flow direction	Nil	Flow direction: Left to right	●	●	●	●	●	●	●	
			R	Flow direction: Right to left	●	●	●	●	●	●	●	
	+											
f	Pressure unit	Nil	Name plate and caution plate for bowl in SI units: MPa	●	●	●	●	●	●	●		

Standard Specifications

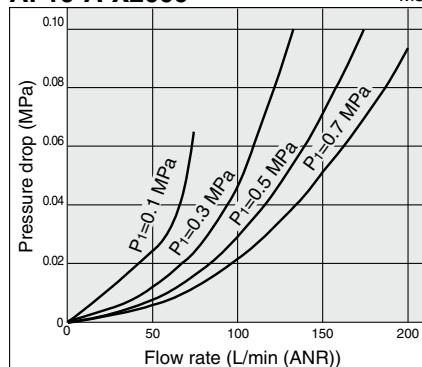
Model	AF10-A	AF20-A	AF30-A	AF40-A	AF40-06-A	AF50-A	AF60-A
Port size	M5 x 0.8	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2	3/4	3/4, 1	1
Fluid	Air						
Ambient and fluid temperatures	-5 to 60°C (No freezing)						
Proof pressure	1.5 MPa						
Maximum operating pressure	1.0 MPa						
Nominal filtration rating	5 μm						
Drain capacity (cm³)	2.5	8	25	45			
Bowl material	Polycarbonate						
Bowl guard	—	Semi-standard (Steel)	Standard (Polycarbonate)				
Weight (kg)	0.06	0.08	0.18	0.36	0.41	0.87	1.00

AF10-A to AF60-A-X2009

Flow Rate Characteristics (Representative values)

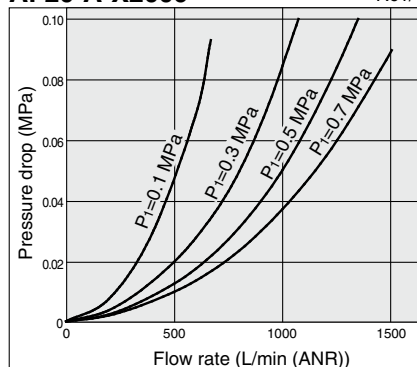
AF10-A-X2009

M5



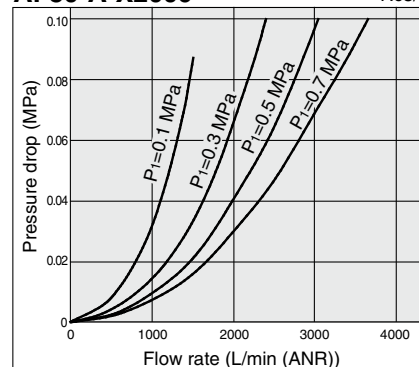
AF20-A-X2009

Rc1/4



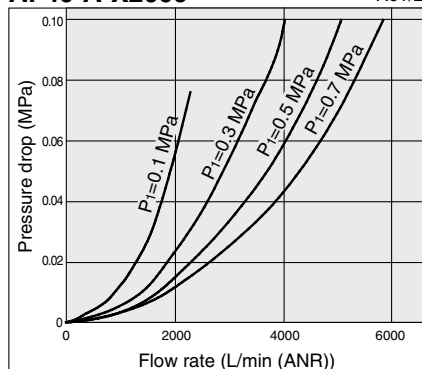
AF30-A-X2009

Rc3/8



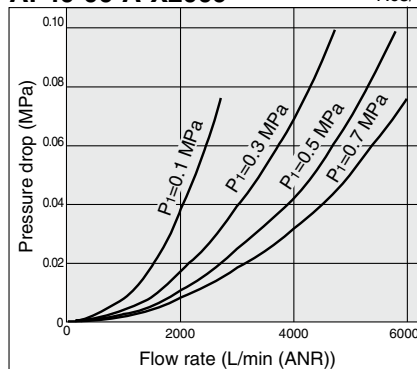
AF40-A-X2009

Rc1/2



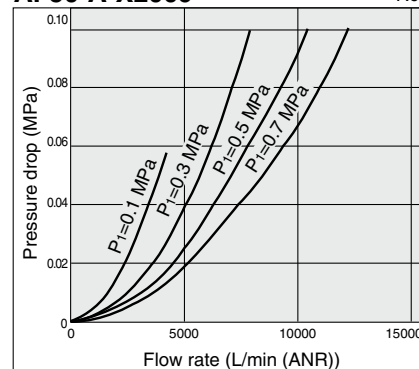
AF40-06-A-X2009

Rc3/4



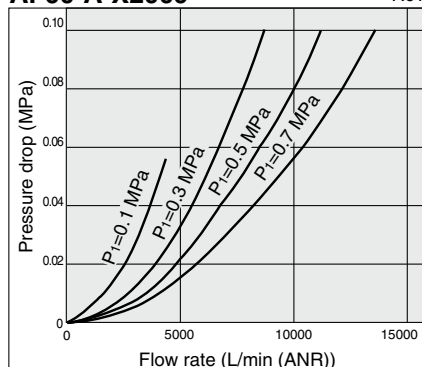
AF50-A-X2009

Rc1



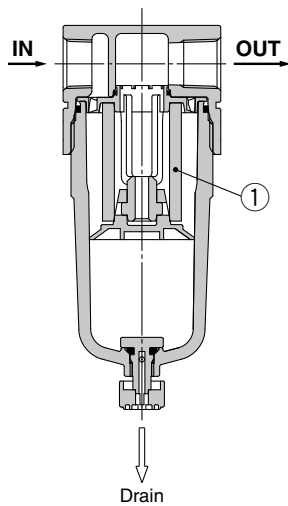
AF60-A-X2009

Rc1

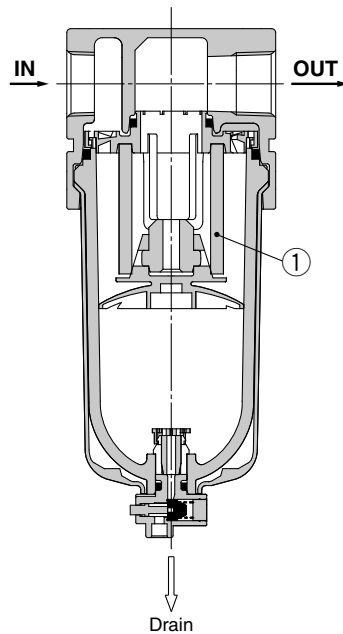


Construction

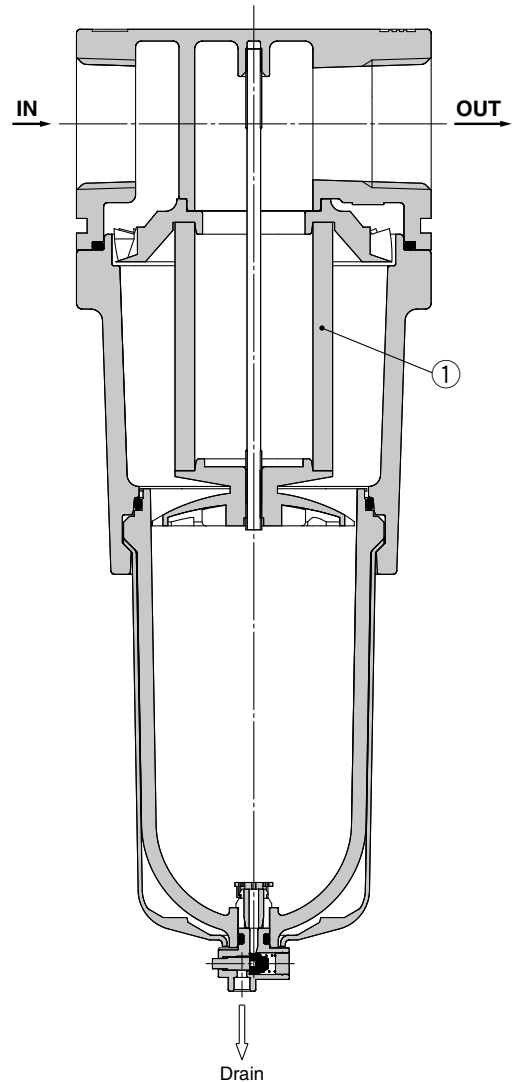
**AF10-A-X2009
AF20-A-X2009**



AF30-A-X2009 to AF40-06-A-X2009



**AF50-A-X2009
AF60-A-X2009**



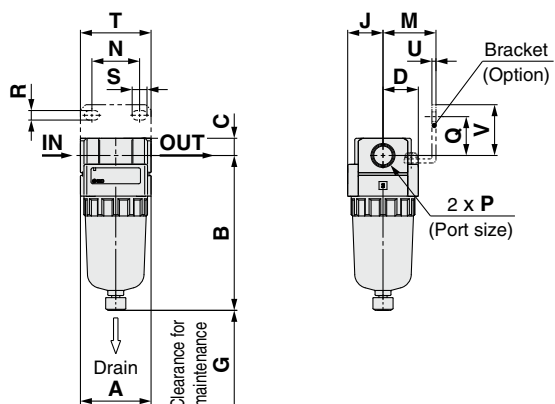
Replacement Parts

No.	Description	Material	Part no.					
			AF10-A-X2009	AF20-A-X2009	AF30-A-X2009	AF40-A-X2009	AF40-06-A-X2009	AF50-A-X2009
1	Filter element	Non-woven fabric	AF10P-060S	AF20P-060S	AF30P-060S	AF40P-060S		AF50P-060S
								AF60P-060S

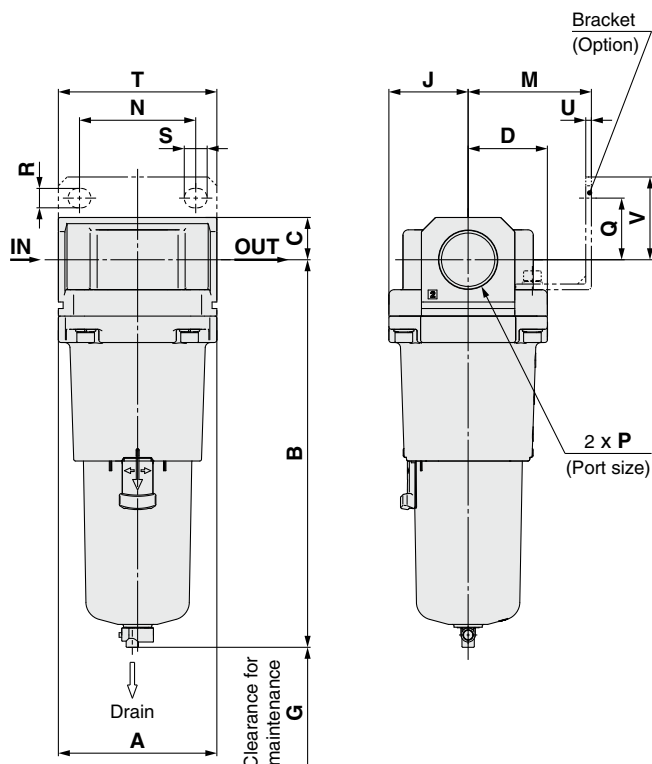
AF10-A to AF60-A-X2009

Dimensions

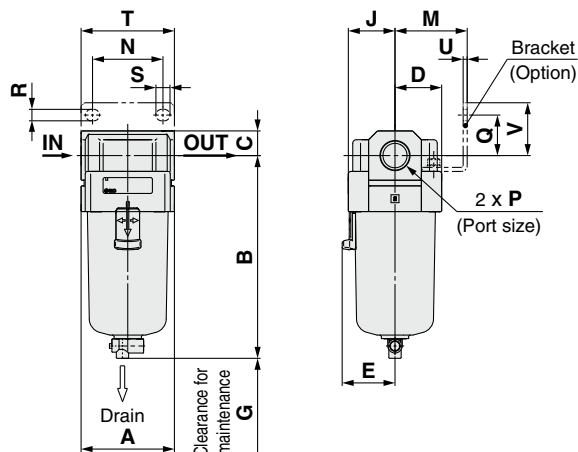
AF10-A-X2009 AF20-A-X2009



AF50-A-X2009 AF60-A-X2009



AF30-A-X2009 to AF40-06-A-X2009



Applicable model	AF10-A-X2009/AF20-A-X2009	AF30-A-X2009 to AF60-A-X2009
Optional/Semi-standard specifications	With auto drain (N.C.)	With auto drain (N.O./N.C.)
Dimensions		

Model	Standard specifications								Optional specifications								
									Bracket mount								With auto drain
	P	A	B	C	D	E	G	J	M	N	Q	R	S	T	U	V	B
AF10-A-X2009	M5 x 0.8	25	59.9	7	12.5	—	25	12.5	—	—	—	—	—	—	—	—	77.9
AF20-A-X2009	1/8, 1/4	40	87.6	9.8	20	—	25	20	30	27	22	5.4	8.4	40	2.3	28	104.9
AF30-A-X2009	1/4, 3/8	53	115.1	14	26.7	30	35	26.7	41	35	23	6.5	13	53	2.3	30	156.8
AF40-A-X2009	1/4, 3/8, 1/2	70	147.1	18	35.5	38.4	40	35.5	50	52	26	8.5	12.5	70	2.3	35	186.9
AF40-06-A-X2009	3/4	75	149.1	20	35.5	38.4	40	35.5	50	52	25	8.5	12.5	70	2.3	34	188.9
AF50-A-X2009	3/4, 1	90	220.1	24	45	—	30	45	70	66	35	11	13	90	3.2	47	259.9
AF60-A-X2009	1	95	234.1	24	47.5	—	30	47.5	70	66	35	11	13	90	3.2	47	273.9

Mist Separator

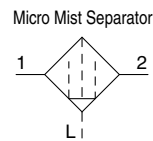
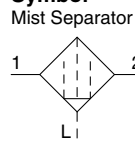
AFM20-A to AFM40-A-X2009 (Degreasing Wash, White Vaseline Specification)

Micro Mist Separator

AFD20-A to AFD40-A-X2009 (Degreasing Wash, White Vaseline Specification)

- AFM Series Nominal filtration rating: 0.3 μm
- AFD Series Nominal filtration rating: 0.01 μm

Symbol



Refer to page 203 for accessories (spacers/brackets).



How to Order

AFM **30** - **03** **BD** - **A** - **X2009**

AFD **30** - **03** **BD** - **A** - **X2009**

① ② ③ ④ ⑤

Degreasing wash*, White vaseline

* The degreasing wash is only applicable to the metal parts.

- Option/Semi-standard: Select one each for a to f.
- Option/Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.
Example) AFM30-03BD-R-A-X2009

	Symbol	Description	①		
			Body size		
			20	30	40
②	Pipe thread type	Nil Rc	●	●	●
③	Port size	01 1/8	●	—	—
		02 1/4	●	●	●
		03 3/8	—	●	●
		04 1/2	—	—	●
		06 3/4	—	—	●
④	a Mounting	Nil Without mounting option	●	●	●
		B With bracket	●	●	●
	b Float type auto drain	Nil Without auto drain	●	●	●
		C N.C. (Normally closed) Drain port is closed when pressure is not applied.	●	●	●
		D N.O. (Normally open) Drain port is open when pressure is not applied.	—	●	●
⑤	c Bowl	Nil Polycarbonate bowl	●	●	●
		6 Nylon bowl	●	●	●
		C With bowl guard	●	—	—
		6C With bowl guard (Nylon bowl)	●	—	—
	d Drain port	Nil With drain cock	●	●	●
	e Flow direction	Nil Flow direction: Left to right	●	●	●
		R Flow direction: Right to left	●	●	●
	f Pressure unit	Nil Name plate and caution plate for bowl in SI units: MPa	●	●	●

Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

AFM20-A to AFM40-A-X2009

AFD20-A to AFD40-A-X2009

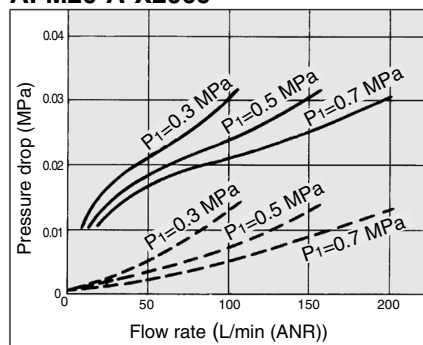
Standard Specifications

Model		AFM20-A-X2009 AFD20-A-X2009	AFM30-A-X2009 AFD30-A-X2009	AFM40-A-X2009 AFD40-A-X2009	AFM40-06-A-X2009 AFD40-06-A-X2009
Port size		1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2	3/4
Fluid		Air			
Ambient and fluid temperatures		-5 to 60°C (No freezing)			
Proof pressure		1.5 MPa			
Maximum operating pressure		1.0 MPa			
Minimum operating pressure		0.05 MPa			
Nominal filtration rating	AFM20-A-X2009 to AFM40-06-A-X2009	0.3 μm (99.9% filtered particle size)			
	AFD20-A-X2009 to AFD40-06-A-X2009	0.01 μm (99.9% filtered particle size)			
Outlet side oil mist concentration	AFM20-A-X2009 to AFM40-06-A-X2009	Max. 1.0 mg/m³ (ANR) (≈0.8 ppm)			
	AFD20-A-X2009 to AFD40-06-A-X2009	Max. 0.1 mg/m³ (ANR) (Before saturated with oil 0.01 mg/m³ (ANR) or less ≈0.008 ppm)			
Rated flow {L/min (ANR)}	AFM20-A-X2009 to AFM40-06-A-X2009	200	450	1100	
	AFD20-A-X2009 to AFD40-06-A-X2009	120	240	600	
Drain capacity (cm³)		8	25	45	
Bowl material		Polycarbonate			
Bowl guard		Semi-standard (Steel)	Standard (Polycarbonate)		
Weight (kg)		0.09	0.19	0.38	0.43

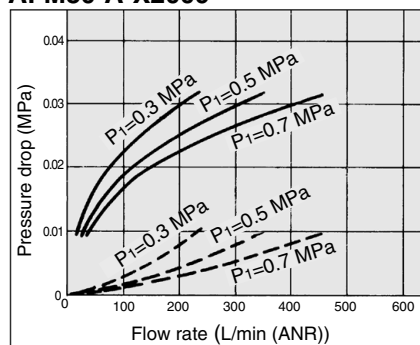
Flow Rate Characteristics (Representative values)

— When saturated with oil
- - - Initial state

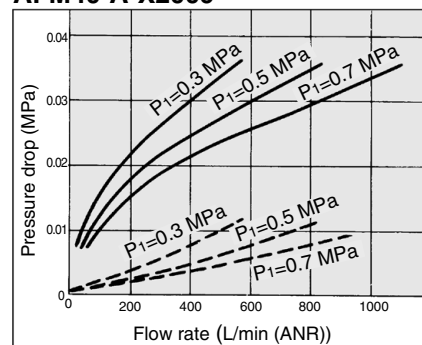
AFM20-A-X2009



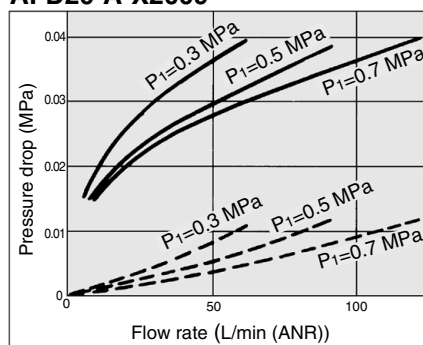
AFM30-A-X2009



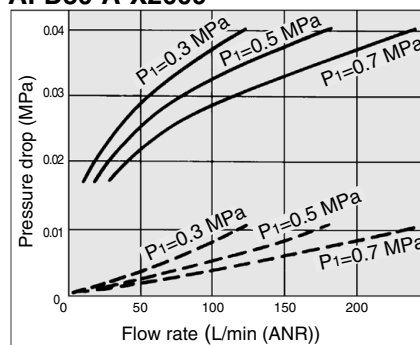
AFM40-A-X2009



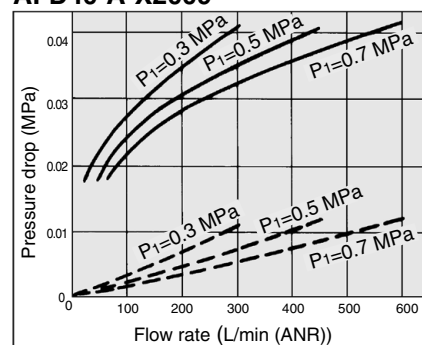
AFD20-A-X2009



AFD30-A-X2009



AFD40-A-X2009

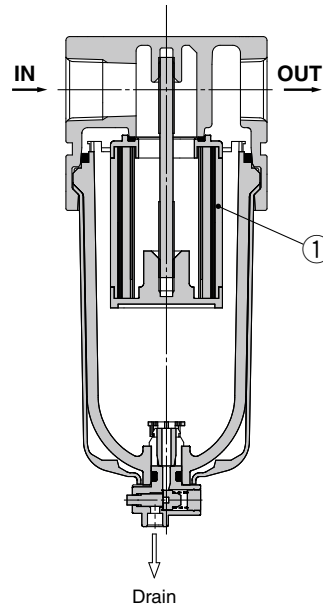
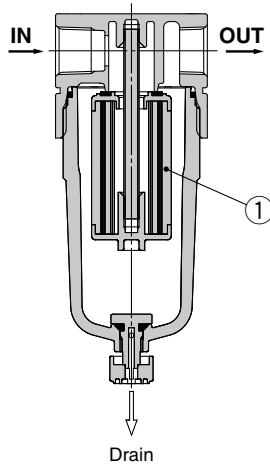


Mist Separator **AFM20-A to AFM40-A-X2009**
 Micro Mist Separator **AFD20-A to AFD40-A-X2009**

Construction

AFM20-A-X2009
AFD20-A-X2009

AFM30-A-X2009 to AFM40-06-A-X2009
AFD30-A-X2009 to AFD40-06-A-X2009



Replacement Parts

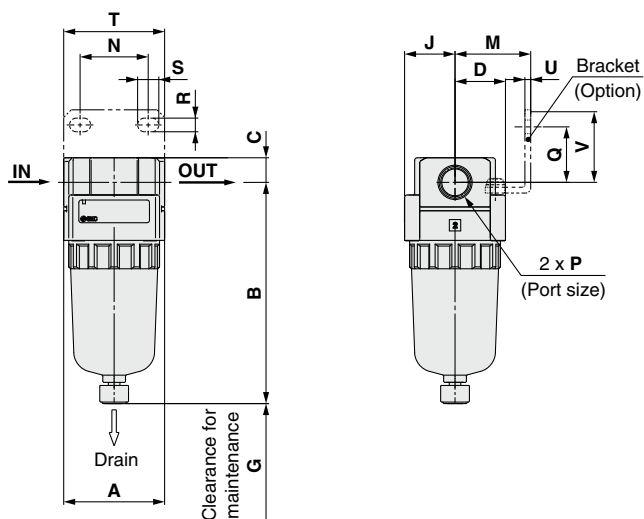
No.	Description		Material	Part no.			
				AFM20-A-X2009 AFD20-A-X2009	AFM30-A-X2009 AFD30-A-X2009	AFM40-A-X2009 AFD40-A-X2009	AFM40-06-A-X2009 AFD40-06-A-X2009
1	Element assembly	AFM20-A to 40-A	—	AFM20P-060AS	AFM30P-060AS	AFM40P-060AS	
		AFD20-A to 40-A	—	AFD20P-060AS	AFD30P-060AS	AFD40P-060AS	

AFM20-A to AFM40-A-X2009

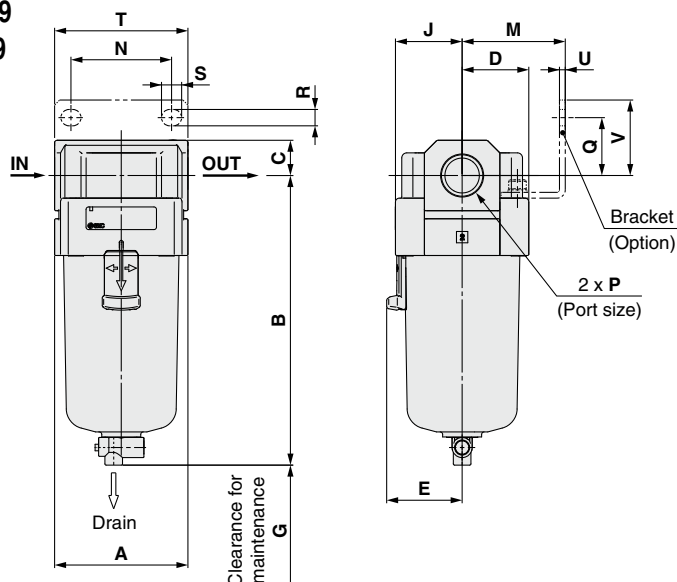
AFD20-A to AFD40-A-X2009

Dimensions

AFM20-A-X2009
AFD20-A-X2009



AFM30-A-X2009 to AFM40-06-A-X2009
AFD30-A-X2009 to AFD40-06-A-X2009



Applicable model	AFM20-X2009/AFD20-X2009	AFM30-X2009 to AFM40-06-A-X2009/AFD30-X2009 to AFD40-06-A-X2009
Optional/Semi-standard specifications	With auto drain (N.C.)	With auto drain (N.O./N.C.)
Dimensions		

Model	Standard specifications								Optional specifications								
									Bracket mount								With auto drain
	P	A	B	C	D	E	G	J	M	N	Q	R	S	T	U	V	B
AFM20-A-X2009/AFD20-A-X2009	1/8, 1/4	40	87.6	9.8	20	—	40	20	30	27	22	5.4	8.4	40	2.3	28	104.9
AFM30-A-X2009/AFD30-X2009	1/4, 3/8	53	115.1	14	26.7	30	50	26.7	41	35	23	6.5	13	53	2.3	30	156.8
AFM40-A-X2009/AFD40-A-X2009	1/4, 3/8, 1/2	70	147.1	18	35.5	38.4	75	35.5	50	52	26	8.5	12.5	70	2.3	35	186.9
AFM40-06-A-X2009/AFD40-06-A-X2009	3/4	75	149.1	20	35.5	38.4	75	35.5	50	52	25	8.5	12.5	70	2.3	34	188.9

Thermo-dryer



With air temperature adjustment function

Stable supply of temperature and pressure controlled dry clean air!

Possible to supply compressed air with the same conditions and quality regardless of the season.

Air flow capacity (L/min[ANR])

IDH□4: 100 to 500

IDH□6: 200 to 800



All-in-One

Temperature control
(Heater)

Outlet air temperature adjustment range:

15 to 30°C

Outlet air temperature stability:

±0.1°C^{*1}

Pressure regulation
(Regulator)

Outlet air set pressure range:

0.15 to 0.85 MPa

Dehumidification
(Dryer)

Outlet air pressure dew point:

10°C

Cleaning
(Filter)

Built-in filter specifications^{*2}

Nominal filtration rating:
0.01 μm

Outlet oil mist concentration:
MAX. 0.01 mg/m³ [ANR]
(≈0.008 ppm)

Outlet cleanliness:
**Particles of 0.3 μm or more:
3.5 particles/L [ANR] or less**

^{*1} Performance when the operation of each part is stable without fluctuations in operating conditions and power supply.
^{*2} Performance of the built-in filter, which depends on the inlet air conditions.

Power supply available all over the world Single-phase 100 VAC, 200 VAC, 230 VAC (50/60 Hz)

Model	Air flow capacity (L/min [ANR])	Outlet air temperature adjustment range (°C)	Outlet air set pressure range (MPa)	Outlet air temperature stability (°C)	Filter nominal filtration rating	Temperature control method	Port size
IDH□4	100 to 500	15 to 30	0.15 to 0.85	±0.1	0.01 μm (99.9% filtration efficiency)	Heater operation PID control	Rc3/8
IDH□6	200 to 800						Rc1/2

IDH□ Series



Refrigerant R134a (HFC)

IDH□ Series



How to Order

For use in Japan

IDH 6-10□-□

For use in Europe and Southeast Asia

IDHA 6-23□-□

Size

Size	Rated air flow capacity	Air compressor size
4	400 L/min [ANR]	3.7 kW
6	600 L/min [ANR]	5.5 kW

Option

Nil	None (Standard)
E	Auto drain normally closed

Voltage

Symbol	Voltage	Specification
10	Single-phase 100 VAC (50/60Hz)	For use in Japan
20	Single-phase 200 VAC (50/60Hz)	
23	Single-phase 230 VAC (50/60Hz)	For use in Europe and Southeast Asia

Combination of built-in products

Symbol	Regulator	Filter① (AMH)	Filter② (AME)
Nil	●	●	●
A	●	●	—
B	●	—	—

Optional Specifications

E Option symbol

Auto drain normally closed

The auto drain which exhausts dehumidified drainage and the auto drain on the built-in filter are changed to the "normally closed" specification. Recommended for small flow rate (100 to 150 L/min).

Description	Filter details
Filter① (AMH)	Micro mist separator with pre-filter · Nominal filtration rating: 0.01 μm (99.9% filtration efficiency) · Outlet oil mist concentration: MAX. 0.1 mg/m ³ [ANR] (≈0.08 ppm)
Filter② (AME)	Super mist separator · Nominal filtration rating: 0.01 μm (99.9% filtration efficiency) · Outlet oil mist concentration: MAX. 0.01 mg/m ³ [ANR] (≈0.008 ppm) · Outlet oil mist concentration: Particles of 0.3 μm or more: 3.5 particles/L [ANR] or less

Construction (Pneumatic/Refrigerant Circuit)

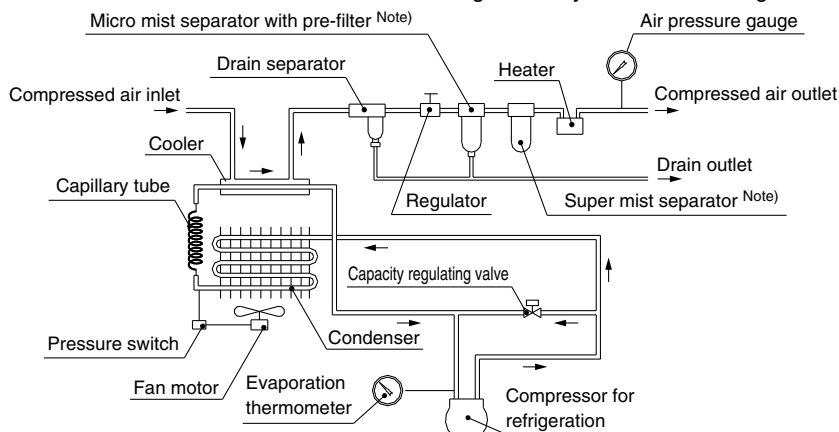
Pneumatic circuit

Hot and humid air entering this product is cooled down by the cooler. The moisture condensed at this time is separated by the drain separator and exhausted automatically. The pressure of the dry air is adjusted by the regulator, and oil mist and solid particles are separated by the micro mist separator with pre-filter and super mist separator. ^{Note)} The temperature of the dry and high purity air ^{Note)} is adjusted by the heater and supplied to the outlet side.

Note) The type without filter is not applicable.

Refrigerant circuit

The HFC gas contained in the refrigerant circuit is compressed by the compressor, and cooled and liquefied by the condenser. When passing through the capillary tube, the HFC gas is regulated and its temperature decreases. While passing through the cooler part, it evaporates rapidly, taking the heat from the compressed air, and is sucked in by the compressor. The capacity regulating valve opens when the compressed air has been cooled sufficiently, and prevents condensed water from being frozen by excessive cooling.



Standard Specifications

Specifications		Model	IDH4-10	IDH4-20	IDHA4-23	IDH6-10	IDH6-20	IDHA6-23
Note 3) Operating range	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						
Rated conditions	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.)						
	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						
Note 4) Rated performance	Outlet air pressure dew point	10°C						
	Outlet air temperature stability	±0.1°C (This may vary depending on the conditions.)						
	Outlet air temperature display accuracy	±0.5°C (including accuracy of the sensor)						
Electric specifications	Power supply	Single-phase 100 VAC (50/60 Hz)	Single-phase 200 VAC (50/60 Hz)	Single-phase 230 VAC (50/60 Hz)	Single-phase 100 VAC (50/60 Hz)	Single-phase 200 VAC (50/60 Hz)	Single-phase 230 VAC (50/60 Hz)	
	Operating current	4.2 A	2.1 A	2.1 A	9.4 A	4.8 A	4.8 A	
	Earth leakage breaker capacity	10 A	5 A	5 A	15 A	10 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	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)		52 dB(A)				55 dB(A)		
Weight		26 kg				37 kg		
Applicable drain tube O.D.		10 mm						
Coating color		Body panel: White 1 Base: Gray 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) About 10 minutes are required until the temperature becomes stable after setting the temperature.

Note 3) 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 4) Performance when the operation of each part is stable without fluctuations in operating conditions and power supply
If the air flow capacity is beyond its specified range or if the air flows intermittently, the outlet air temperature range or temperature stability may not be satisfied. (If this happens, install a purge line and flow the compressed air continuously.)

Note 5) 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.

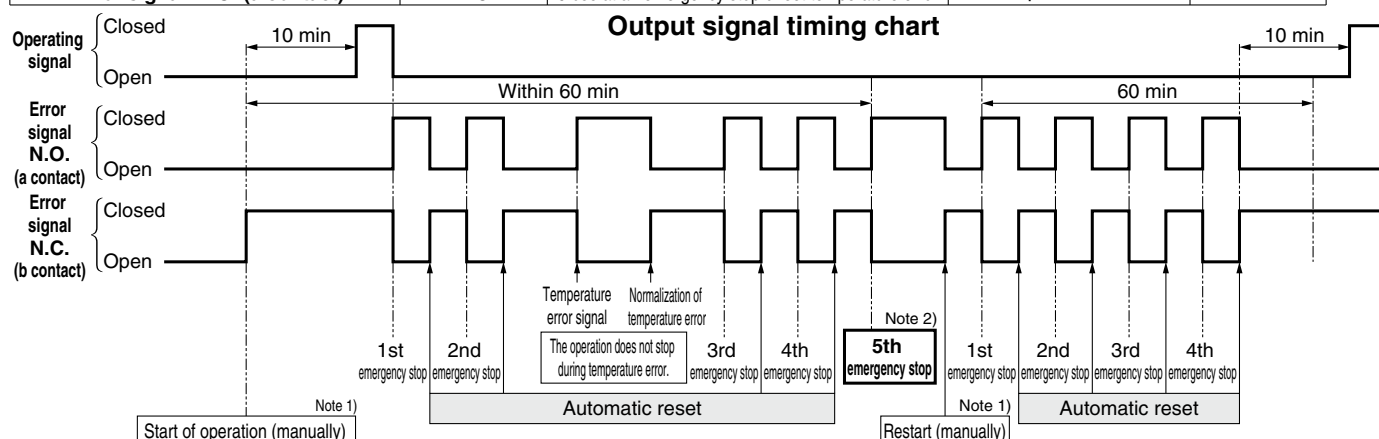
Note 6) The specification changes depending on the cleanliness of the inlet side air. It may take time until the cleanliness of the filter outlet side air stabilizes immediately after start of operation. The filter performance only applies to the built-in type filter.

Note 7) 1 m in front of the product, 1 m in height, without load, stable conditions

Output Signal

Specifications

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		

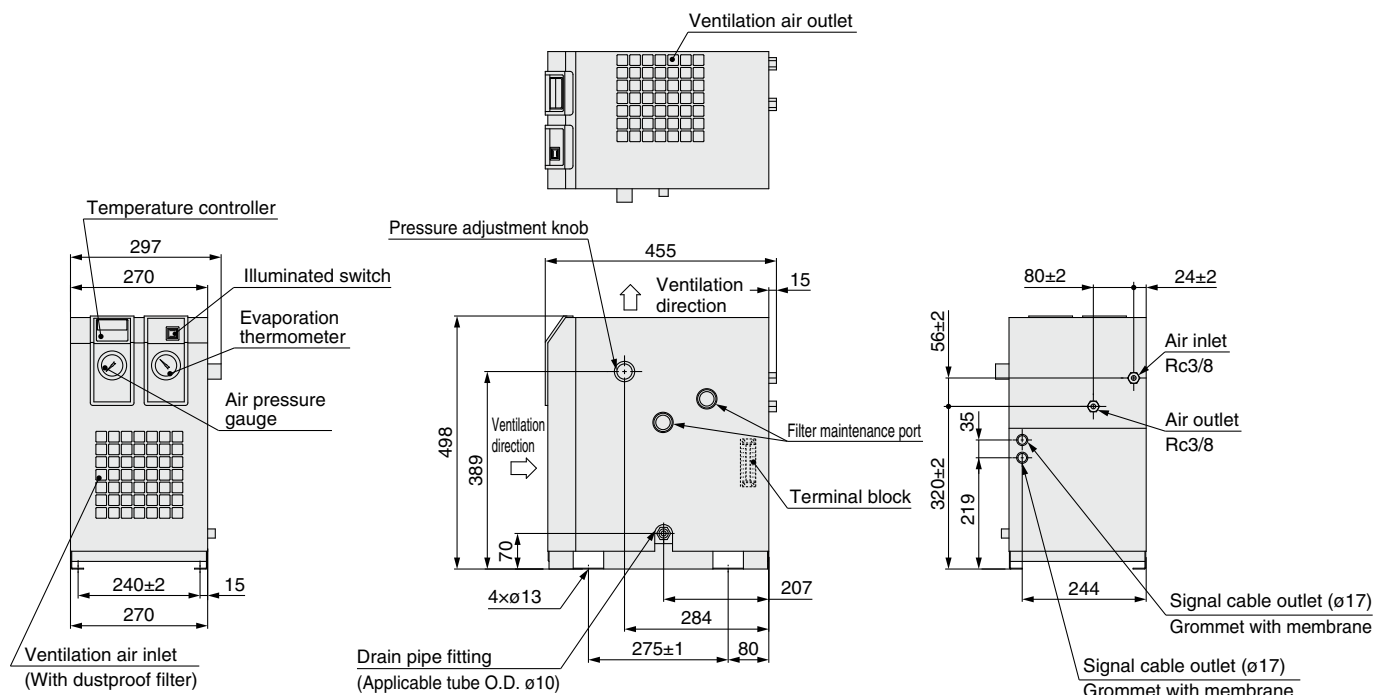


Note 1) The operation can be started or restarted (manually) by the operation stop switch mounted on the thermo-dryer or a remote switch prepared by the user.

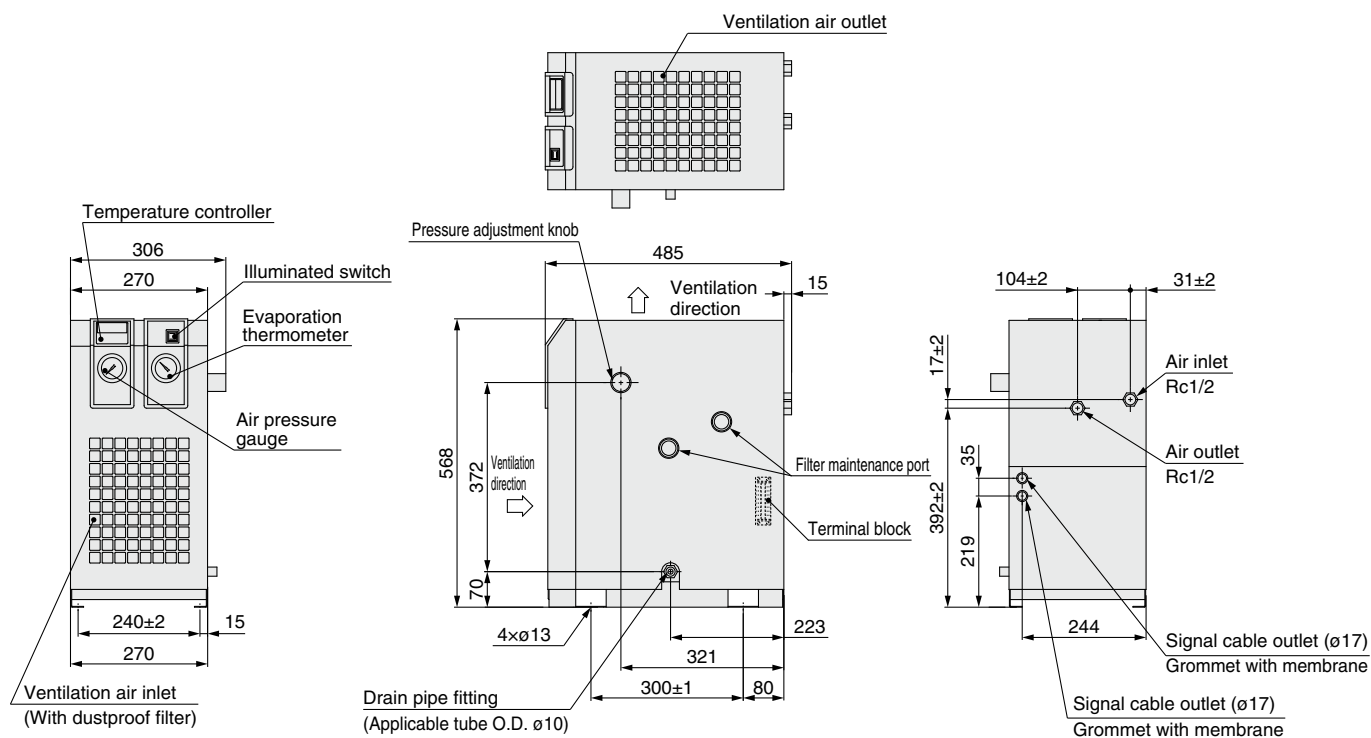
Note 2) When emergency stop is generated 5 times in an hour or the heater protection equipment (thermo-stat) is operated, the emergency stop status will be held. At this time, the dryer can be restarted by reset operation using the switch stated in Note 1.

Dimensions

IDH□4



IDH□6



Heatless Air Dryer *ID Series*

Heatless ID series is best when dry air with a low dew point is needed.

Supply dry air with a low dew point below -30°C .

Compact and lightweight without heater and electric control board.

Possible to check the outlet dew point with the indicator.

(Self-regenerative type allows for easy maintenance.)



Symbol



Model

Model	ID20□	ID30□	ID40□	ID60□
Outlet air flow rate (L/min (ANR))	80	155	330	780
Recycled air flow rate ^{Note)} (L/min (ANR))	20	37	85	195
Inlet air flow rate (L/min (ANR))	100	192	415	975
Port size (Nominal size B)	1/4	1/2	1/2	3/4
Weight (kg)	7	8.5	18.5	25

Note) Inlet air pressure: In the case of 0.7 MPa

Specifications

Model	ID20	ID30	ID40	ID60
Fluid	Compressed air			
Operating pressure (MPa)	0.3 to 1.0		0.3 to 0.9	
Inlet air temperature (°C)	5 to 50			
Ambient temperature (°C)	2 to 50			
Power supply voltage	Refer to How to Order.			
Power consumption	30 W			
Installation features	Indoor			

Note) Inlet air pressure: 0.7 MPa, Inlet air temperature: 35°C , Outlet air dew point (atmospheric pressure): -30°C

Semi-standard (Option Z) Specifications

Model	ID20□	ID30□	ID40□	ID60□
Outlet air atmospheric pressure dew point	-50°C ^{Note)}			

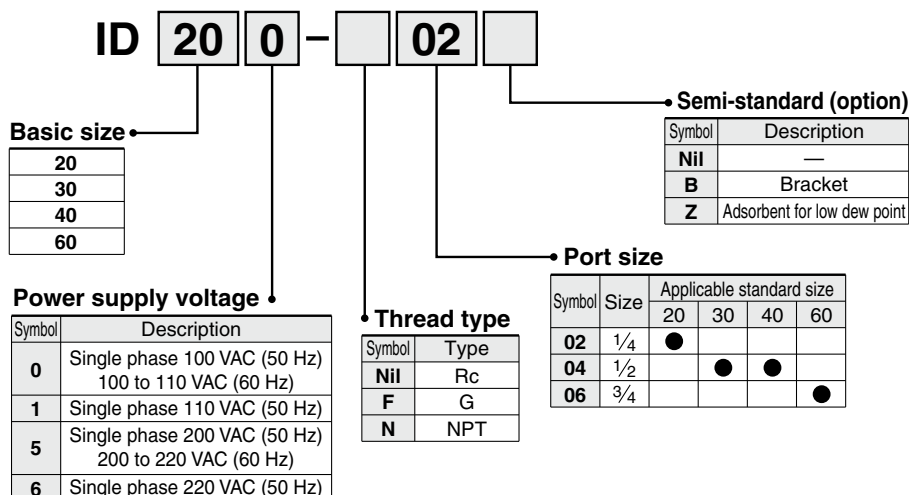
Note) When the refrigerated air dryer is installed on the inlet side. (Inlet air pressure: 0.7 MPa, Inlet air temperature: 20°C)

Accessory (Option)/Replacement Parts

Applicable model	ID20□	ID30□	ID40□	ID60□
Bracket	6604113	6604113	660651	660651
Adsorbent set ^{Note)}	ID-200S	ID-300S	ID-400S	ID-600S
Adsorbent set (for low dew point) ^{Note)}	ID-200Z	ID-300Z	ID-400Z	ID-600Z
Indicator set	ID-DPM8			

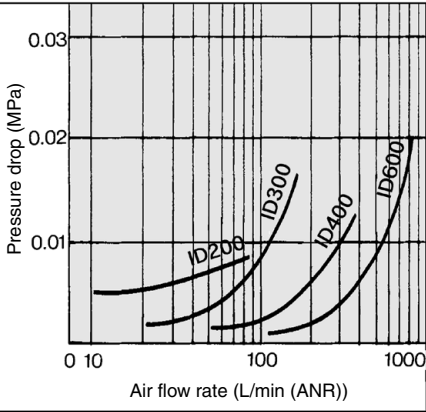
Note) Adsorbent and adsorption tube filter for one air dryer (two adsorption tubes), set of O-rings

How to Order

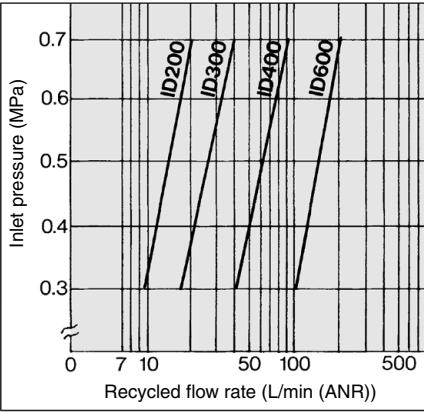


Flow Rate

Inlet pressure: 0.7 MPa

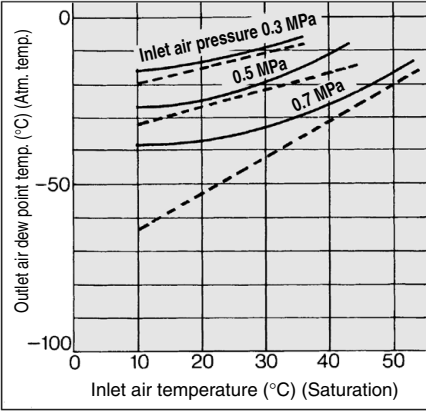


Recycled Flow Rate



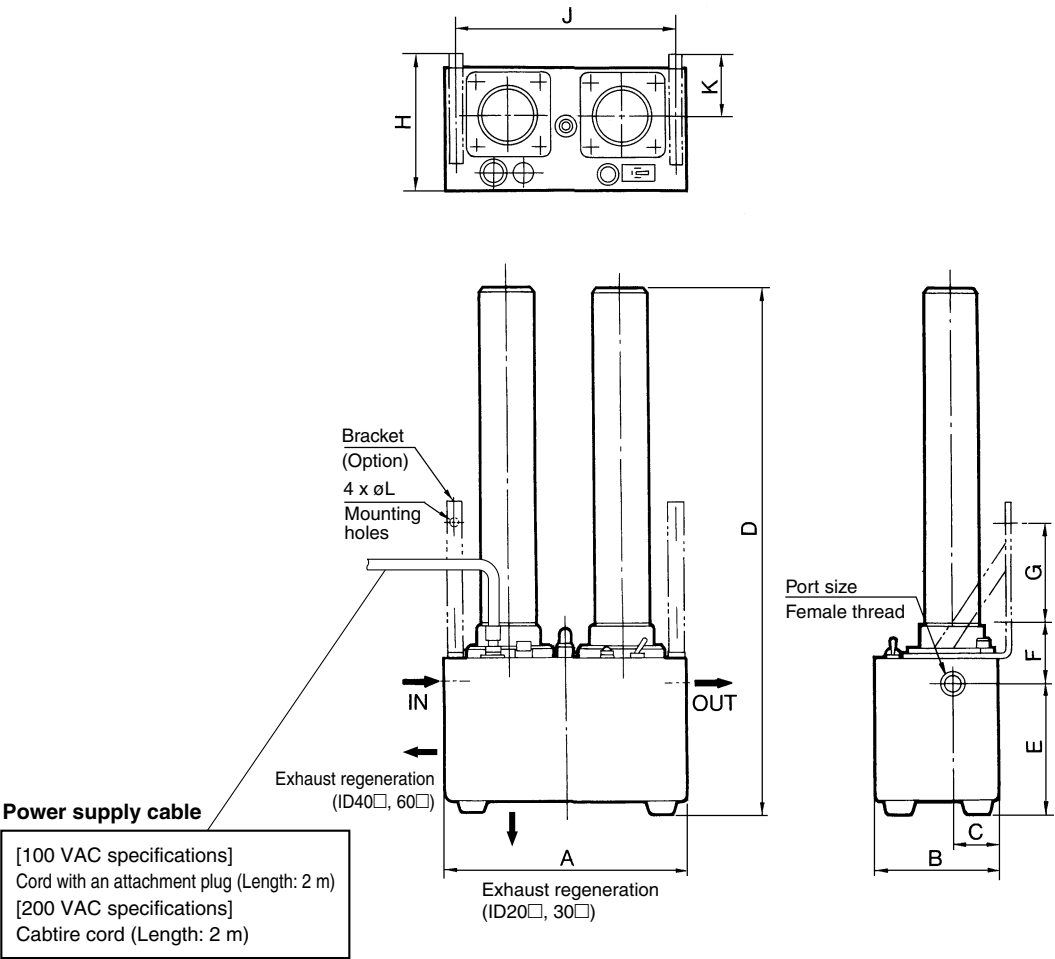
Dew Point

Condition: Air flow/Rating



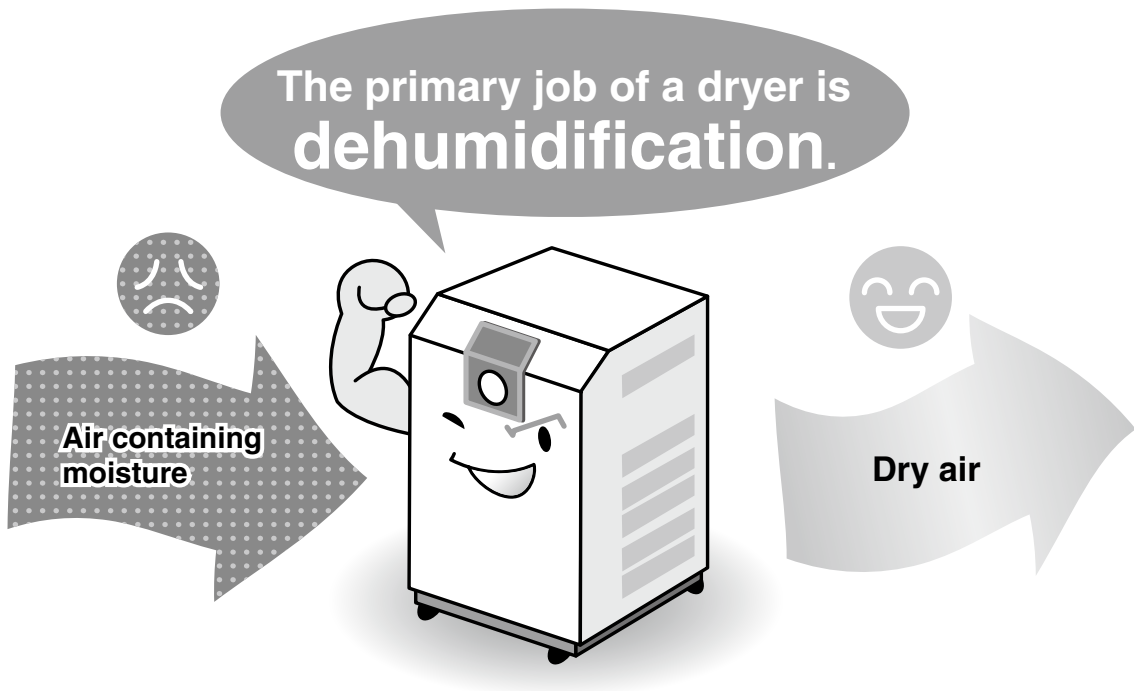
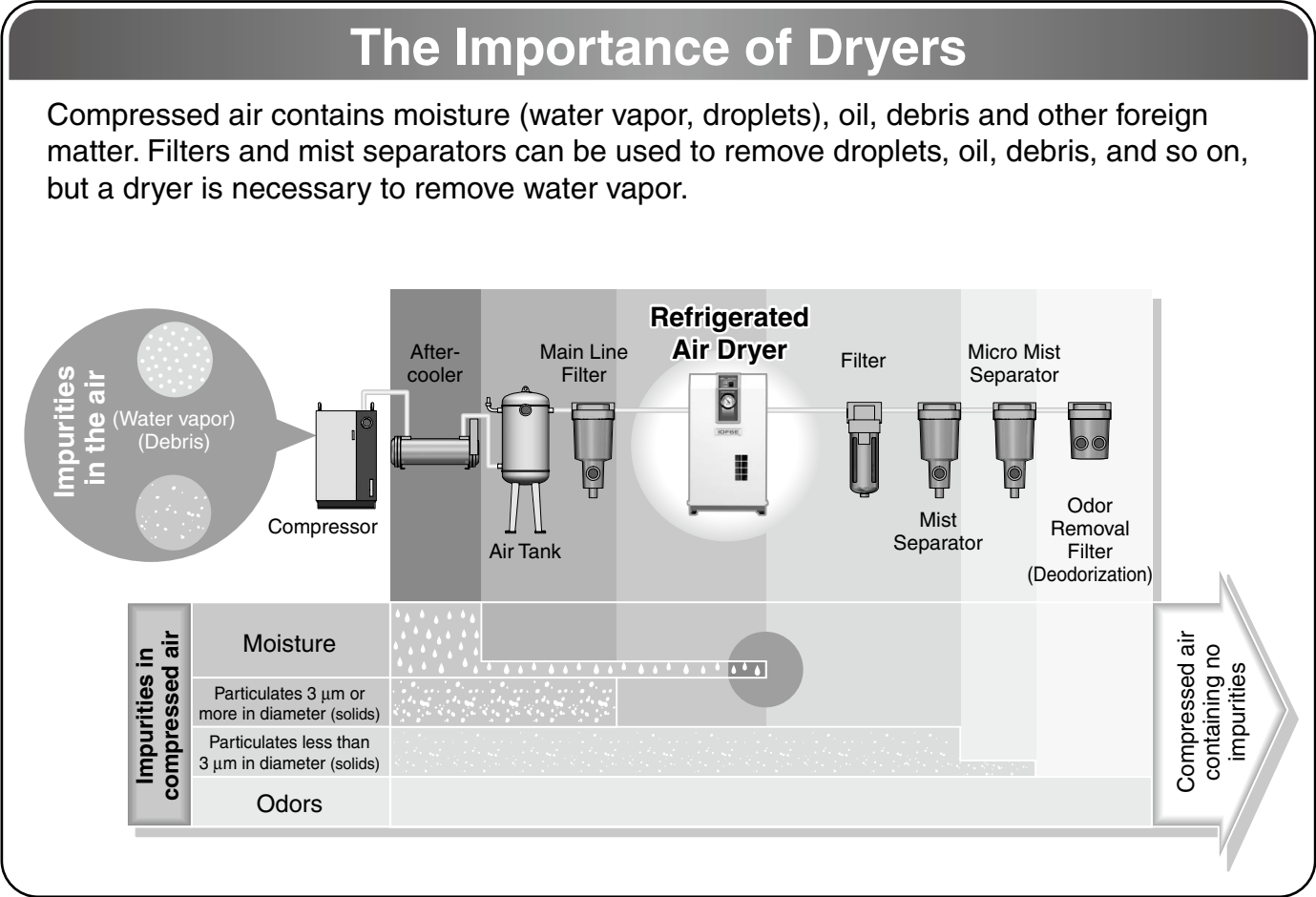
— ID□□□-□□ series
Adsorbent/Silica alumina gel
- - - ID□□□-□□□Z series
Adsorbent/Permutite

Dimensions



Model	Port size Nominal size (B)	A	B	C	D	E	Mounting dimension					
							F	G	H	J	K	øL
ID20□	1/4	240	120	45	520	128.5	59.5	95	134.5	222	59.5	9
ID30□	1/2	240	120	45	615	128.5	59.5	95	134.5	222	59.5	9
ID40□	1/2	320	170	75	850	243.5	66.5	95	183	302	88	9
ID60□	3/4	320	170	75	961	243.5	66.5	95	183	302	88	9

Refrigerated Air Dryers



IDF/IDU Series

SMC Air Preparation Equipment

Quick Reference Guide to Air Preparation Equipment

- * Shows standard combinations. The suffix numbers of the model indicate port size, power supply, etc. Refer to pages described to each equipment for details.
- * The symbol "—" in the table indicates that no such equipment exists.
- * The figures for air flow capacity corresponding to air compressor output are provided for reference only.
- * Combine equipment as necessary. (Refer to the **Web Catalog** for details.)

● For Screw Compressors (When an aftercooler is installed, Refrigerated air dryer inlet temperature: 35°C or 40°C, Membrane air dryer inlet temperature: 25°C)

Air compressor			Main line		Sub line		Local line					
Output (kW)	Air flow capacity (m ³ /min) ^{Note 1)}		Aftercooler ^{Note 2)}		Refrigerated air dryer ^{Note 3)}		Mist separator	Micro mist separator with pre-filter	Micro mist separator	Membrane air dryer ^{Note 5)}	Super mist separator	Odor removal filter
	Suction condition (32°C, 75%)	ANR conversion (20°C, 75%)	Air-cooled	Water-cooled	50 Hz	60 Hz						
1.5	0.16	0.15	HAA7-06	HAW2-04	IDF2E		AM150C-02	AMH150C-02	AMD150C-02	IDG20-02	AME150C-02	AMF150C-02
2.2	0.245	0.23	HAA7-06	HAW2-04	IDF3E	IDF2E	AM150C-02	AMH250C-02	AMD250C-02	IDG20-02	AME250C-02	AMF250C-02
3.7	0.44	0.41	HAA7-06	HAW7-06	IDF4E		AM250C-03	AMH250C-03	AMD250C-03	IDG50A-03	AME250C-03	AMF250C-03
5.5	0.72	0.68	HAA7-06	HAW7-06	IDF6E		AM250C-03	AMH350C-03	AMD350C-03	IDG60-03	AME350C-03	AMF350C-03
7.5	1.2	1.1	HAA15-10	HAW22-14	IDF8E		AM350C-04	AMH350C-04	AMD350C-04	IDG100-04	AME350C-04	AMF350C-04
11	1.8	1.7	HAA15-10	HAW22-14	IDF15E1	IDF11E	AM450C-06	AMH450C-06	AMD450C-06	—	AME450C-06	AMF450C-06
15	2.6	2.4	HAA22-14	HAW22-14	IDF15E1		AM550C-10	AMH550C-10	AMD550C-10	—	AME550C-10	AMF550C-10
22	4	3.8	HAA37-14	HAW37-14	IDF22E		AM650-14	AMH650-14	AMD650-14	—	AME650-14	AMF650-14
37	6.6	6.2	—	HAW55-20	IDF55E	IDF37E	AM650-14	AMH650-14	AMD650-14	—	AME650-14	AMF650-14
55	9.5	8.9	—	HAW75-20	IDF75E	IDF55E	AM850-20	AMH850-20	AMD850-20	—	AME850-20	AMF850-20
75	13	12.2	—	HAW110-30	IDF100F	IDF75E	AM850-20	AMH850-20	AMD850-20	—	AME850-20	AMF850-20
110	19	17.9	—	HAW110-30	IDF125F	IDF100F	—	—	AMD900-30	—	—	—
150	28.5	26.8	—	—	IDF190D	IDF150F	—	—	AMD900-30	—	—	—
220	45	42.3	—	—	IDF240D		—	—	AMD1000-40	—	—	—

● For Screw Compressors (When an aftercooler is not installed, Refrigerated air dryer inlet temperature: ambient temperature +15°C, Membrane air dryer inlet temperature: 25°C)

Air compressor			Sub line		Local line					
Output (kW)	Air flow capacity (m ³ /min) ^{Note 1)}		Air-cooled aftercooler integrated type refrigerated air dryer ^{Note 4)}		Mist separator	Micro mist separator with pre-filter	Micro mist separator	Membrane air dryer ^{Note 5)}	Super mist separator	Odor removal filter
	Suction condition (32°C, 75%)	ANR conversion (20°C, 75%)	50 Hz	60 Hz						
1.5	0.16	0.15	IDU3E		AM150C-02	AMH150C-02	AMD150C-02	IDG20-02	AME150C-02	AMF150C-02
2.2	0.245	0.23	IDU3E		AM150C-02	AMH250C-02	AMD250C-02	IDG20-02	AME250C-02	AMF250C-02
3.7	0.44	0.41	IDU4E		AM250C-03	AMH250C-03	AMD250C-03	IDG50A-03	AME250C-03	AMF250C-03
5.5	0.72	0.68	IDU6E		AM250C-03	AMH350C-03	AMD350C-03	IDG60-03	AME350C-03	AMF350C-03
7.5	1.2	1.1	IDU8E		AM350C-04	AMH350C-04	AMD350C-04	IDG100-04	AME350C-04	AMF350C-04
11	1.8	1.7	IDU15E1	IDU11E	AM450C-06	AMH450C-06	AMD450C-06	—	AME450C-06	AMF450C-06
15	2.6	2.4	IDU15E1		AM550C-10	AMH550C-10	AMD550C-10	—	AME550C-10	AMF550C-10
22	4	3.8	IDU22E		AM650-14	AMH650-14	AMD650-14	—	AME650-14	AMF650-14
37	6.6	6.2	IDU55E	IDU37E	AM650-14	AMH650-14	AMD650-14	—	AME650-14	AMF650-14
55	9.5	8.9	IDU75E	IDU55E	AM850-20	AMH850-20	AMD850-20	—	AME850-20	AMF850-20
75	13	12.2	—	IDU75E	AM850-20	AMH850-20	AMD850-20	—	AME850-20	AMF850-20
110	19	17.9	—	—	—	—	AMD900-30	—	—	—
150	28.5	26.8	—	—	—	—	AMD900-30	—	—	—
220	45	42.3	—	—	—	—	AMD1000-40	—	—	—

● For Reciprocating Compressors (Aftercooler inlet: 180°C or 70°C, Refrigerated air dryer inlet temperature: 35°C or 40°C, Membrane air dryer inlet temperature: 25°C)

Air compressor			Main line			Sub line			Local line					
Output (kW)	Air flow capacity (m³/min) ^{Note 1)}		Air tank	Aftercooler ^{Note 2)}		Main line filter	Refrigerated air dryer ^{Note 3)}		Mist separator	Micro mist separator with pre-filter	Micro mist separator	Membrane air dryer ^{Note 5)}	Super mist separator	Odor removal filter
	Suction condition (32°C, 75%)	ANR conversion (20°C, 75%)		Air-cooled	Water-cooled		50 Hz	60 Hz						
0.75	0.1	0.09	AT6C-04	HAA7-06	HAW2-04	AFF2C-02	IDF1E		AM150C-02	AMH150C-02	AMD150C-02	IDG10-02	AME150C-02	AMF150C-02
1.5	0.2	0.19	AT6C-04	HAA7-06	HAW2-04	AFF2C-02	IDF2E		AM150C-02	AMH150C-02	AMD150C-02	IDG20-02	AME150C-02	AMF150C-02
2.2	0.3	0.28	AT6C-04	HAA7-06	HAW2-04	AFF2C-02	IDF3E		AM150C-02	AMH250C-02	AMD250C-02	IDG30A-02	AME250C-02	AMF250C-02
3.7	0.5	0.47	AT6C-04	HAA7-06	HAW7-06	AFF4C-03	IDF4E		AM250C-03	AMH250C-03	AMD250C-03	IDG50A-03	AME250C-03	AMF250C-03
5.5	0.7	0.66	AT6C-04	HAA7-06	HAW7-06	AFF4C-03	IDF6E		AM250C-03	AMH350C-03	AMD350C-03	IDG60-03	AME350C-03	AMF350C-03
7.5	1.0	0.9	AT11C-06	HAA7-06	HAW7-06	AFF8C-04	IDF8E		AM350C-04	AMH350C-04	AMD350C-04	IDG75-04	AME350C-04	AMF350C-04
11	1.5	1.4	AT11C-06	HAA15-10	HAW22-14	AFF8C-04	IDF11E		AM350C-04	AMH450C-04	AMD450C-04	—	AME450C-04	AMF450C-04
15	2.0	1.9	AT22C-14	HAA15-10	HAW22-14	AFF11C-06	IDF15E1		AM450C-06	AMH450C-06	AMD450C-06	—	AME450C-06	AMF450C-06
22	3.0	2.8	AT22C-14	HAA22-14	HAW37-14	AFF22C-10	IDF15E1		AM550C-10	AMH550C-10	AMD550C-10	—	AME550C-10	AMF550C-10
27	3.5	3.3	AT37C-14	HAA22-14	HAW37-14	AFF22C-10	IDF22E		AM550C-10	AMH550C-10	AMD550C-10	—	AME550C-10	AMF550C-10
37	5.0	4.7	AT37C-14	HAA37-14	HAW55-20	AFF37B-14	IDF37E		AM650-14	AMH650-14	AMD650-14	—	AME650-14	AMF650-14
55	7.5	7.1	AT55C-20	—	HAW75-20	AFF75A-20	IDF55E		AM850-20	AMH850-20	AMD850-20	—	AME850-20	AMF850-20
75	10.0	9.4	AT75C-20	—	HAW110-30	AFF75B-20	IDF75E	IDF55E	AM850-20	AMH850-20	AMD850-20	—	AME850-20	AMF850-20
110	15.0	14.1	AT125C-30	—	—	AFF125A-30	IDF100F		—	—	AMD900-30	—	—	—
150	20.0	18.8	AT150C-40	—	—	AFF125A-30	IDF125F	IDF100F	—	—	AMD900-30	—	—	—
220	30.0	28.2	AT220C-40	—	—	AFF220A-40	IDF190D	IDF150F	—	—	AMD1000-40	—	—	—

Note 1) Air flow capacity conditions
 Note 2) Air-cooled aftercooler
 Water-cooled aftercooler
 Note 3) IDF series
 Note 4) IDU series
 Note 5) IDG series

Inlet air temperature.....35°C saturation (IDF1E to 37E),
 40°C saturation (IDF55E to 75E, IDF120D to 240D)
 Ambient temperature.....32°C
 Inlet air temperature.....55°C saturation (IDU3E to 75E)
 Ambient temperature.....32°C
 Inlet air temperature.....25°C
 Ambient temperature.....25°C

Refrigerant R134a (HFC) Standard Inlet Air Temperature

IDF□E Series

1E, 2E, 3E, 4E, 6E, 8E, 11E, 15E1

(Inlet air temperature: 35°C, Outlet air pressure dew point: 10°C)

How to Order

IDF **8E** — **10** — Nil

Size ●

Symbol	Air compressor size *1
1E	0.75 kW
2E	1.5 kW
3E	2.2 kW
4E	3.7 kW
6E	5.5 kW
8E	7.5 kW
11E	11 kW
15E1	15 kW

*1 Note that the above values are for reference only. Check the actual compressor capacity.

Voltage ●

Symbol	Voltage	Applicable size							
		1E	2E	3E	4E	6E	8E	11E	15E1
10	Single-phase 100 VAC (50Hz)	●	●	●	●	●	●	●	●
	100/110 VAC (60Hz)								
20	Single-phase 200 VAC (50Hz)	—	—	●	●	●	●	●	●
	200/220 VAC (60Hz)								

Options ●

Symbol *1	Nil	A	C	G	K	L	M	R	S	T
Description	None	Cool compressed air output	Anti-corrosive treatment for copper tube	With Chinese labels and a Chinese operation manual	Moderate pressure specification *2 (Auto drain bowl: Metal bowl with level gauge)	With a heavy-duty auto drain (applicable to moderate pressure)	With a motor type auto drain	With an earth leakage breaker	Power supply terminal block connection (Voltage symbol 10 only) *3	With a terminal block for power supply, operating, and error signals *4
Size										
1E	●	●	●	●	—	—	—	—	●	—
2E	●	●	●	●	—	—	—	—	●	—
3E	●	●	●	●	—	—	—	—	●	—
4E	●	●	●	●	—	●	●	●	●	●
6E	●	●	●	●	●	●	●	●	●	●
8E	●	●	●	●	●	●	●	●	●	●
11E	●	●	●	●	●	●	●	●	●	●
15E1	●	●	●	●	●	●	●	●	●	●

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

However, the following combinations are not possible.

· R and S (Because S function is also included in R.)

· S and T (Because S function is also included in T.)

· The combination of K, L and M is not possible because an auto drain can only be attached to a single option.

*2 The maximum operating pressure is 1.6 MPa.

*3 Voltage symbol 20 (200 VAC) is the terminal block connection as standard. The Option S cannot be chosen.

Voltage symbol 10 (100 VAC) is the power cable with plug as standard.

*4 To users who are considering switching from the previous air dryer:

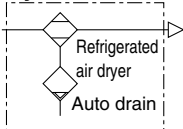
When switching from the previous air dryer and remote operation are required, select the Made to Order (IDF□E-□-X256) product.

* Refer to pages 159 to 163 for further information on options.

Standard Specifications



Symbol



Specifications		Model	Standard inlet air temperature								
			IDF1E	IDF2E	IDF3E	IDF4E	IDF6E	IDF8E	IDF11E	IDF15E1	
Operating range ^{*3}	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 85% or less)								
Rated conditions ^{*4}	Air flow capacity [m³/min]	Standard condition (ANR) ^{*1}	50 Hz	0.10	0.20	0.32	0.52	0.75	1.22	1.65	2.8
			60 Hz	0.12	0.235	0.37	0.57	0.82	1.32	1.82	3.1
		Compressor intake condition ^{*2}	50 Hz	0.11	0.21	0.34	0.55	0.8	1.3	1.75	3.0
			60 Hz	0.13	0.25	0.39	0.61	0.87	1.4	1.93	3.3
	Inlet air pressure [MPa]		0.7								
	Inlet air temperature [°C]		35								
	Ambient temperature [°C]		32								
	Outlet air pressure dew point [°C]		10								
Electric specifications ^{*4}	Power supply voltage (Frequency) ^{*5}		Single-phase: 100 VAC (50 Hz), 100/110 VAC (60 Hz) ^{*5} Single-phase: 200 VAC (50 Hz), 200/220 VAC (60 Hz)								
	Power consumption 50/60 Hz ^{*6} [W]	Single-phase 100 V	180/202	180/202	180/202	180/202	180/202	208/236	385/440	420/480	
		Single-phase 200 V	—	—	—	—	—	—	—	—	
	Operating current 50/60 Hz ^{*6} [A]	Single-phase 100 V	2.4/2.5	2.4/2.5	2.4/2.5	2.4/2.5	2.4/2.5	3.0/3.1	5.7/5.7	4.3/4.6	
		Single-phase 200 V	—	—	1.2/1.3	1.2/1.3	1.2/1.3	1.5/1.5	3.4/3.0	3.4/3.1	
	Applicable earth leakage breaker capacity ^{*7} [A] (Sensitivity of leak current of 30 mA)		10 (100 VAC), 5 (200 VAC)								10 (100 VAC) 10 (200 VAC)
	Condenser		Air-cooled								
	Refrigerant		R134a (HFC)								
Auto drain		Float type (Normally closed)	Float type (Normally open)								
Port size		Rc3/8			Rc1/2		Rc3/4		Rc1		
Weight [kg]		16	17	18	22	23	27	28	46		
Coating color		Body panel: White 1 Base: Gray 2									
Applicable air compressor output (Reference) For screw type [kW]		0.75	1.5	2.2	3.7	5.5	7.5	11	15		

*1 Air flow capacity under the standard condition (ANR) [20°C, Atmospheric pressure, and 65% Relative humidity]

*2 Air flow capacity converted by the compressor intake condition [32°C, Atmospheric pressure, and 75% Relative humidity]

*3 The operation range does not guarantee the use with normal air flow capacity.

*4 Select the model in accordance with Model Selection in the **Web Catalog** for models beyond the rated specifications.

*5 When selecting a power supply voltage, refer to the How to Order on page 138.

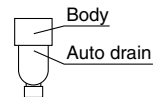
*6 These values are reference values under rated conditions, and are not guaranteed. Do not use these values for the thermal set values, etc.

*7 Product other than the Option R is not equipped with an earth leakage breaker. Purchase an appropriate earth leakage breaker separately.

Replacement Parts

Model	IDF1E	IDF2E	IDF3E	IDF4E	IDF6E	IDF8E	IDF11E	IDF15E1
Auto drain replacement parts no. ^{*8}	AD37	AD38				AD48		

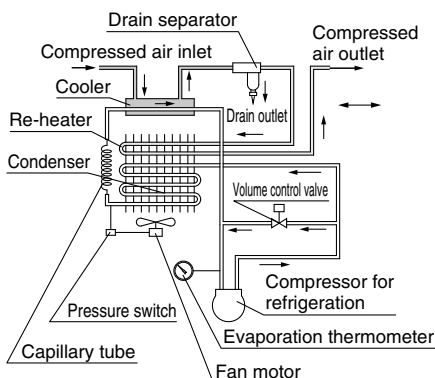
*8 The part number for the auto drain components only excluding the body part.
Body part replacement is not possible.



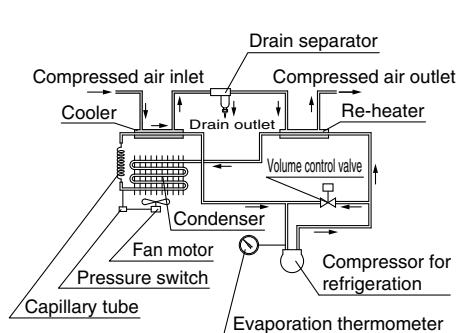
Construction (Air/Refrigerant Circuit)

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

IDF1E

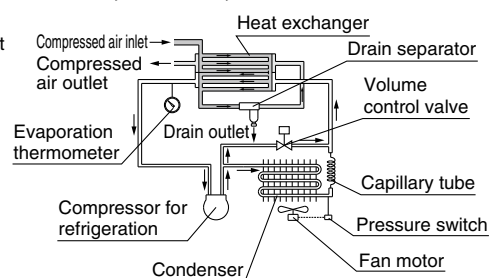


IDF2E, IDF3E



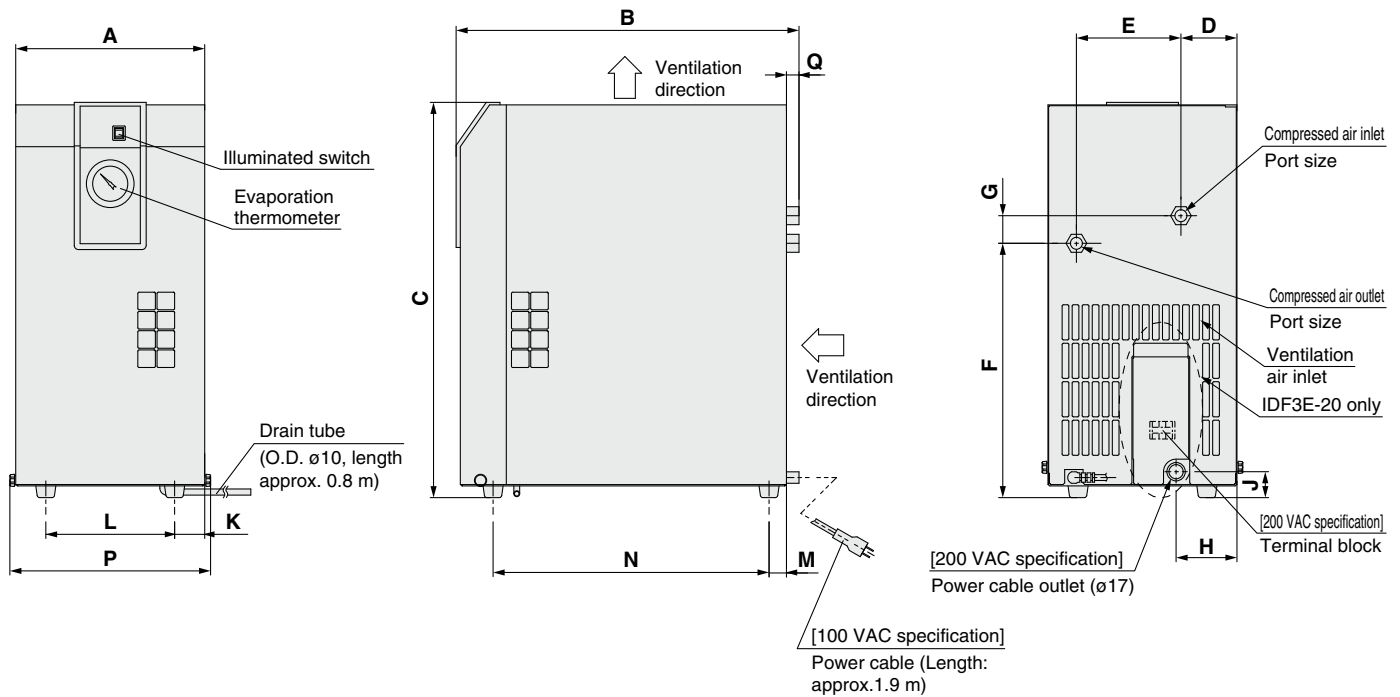
IDF4E, IDF6E

IDF8E, IDF11E, IDF15E1

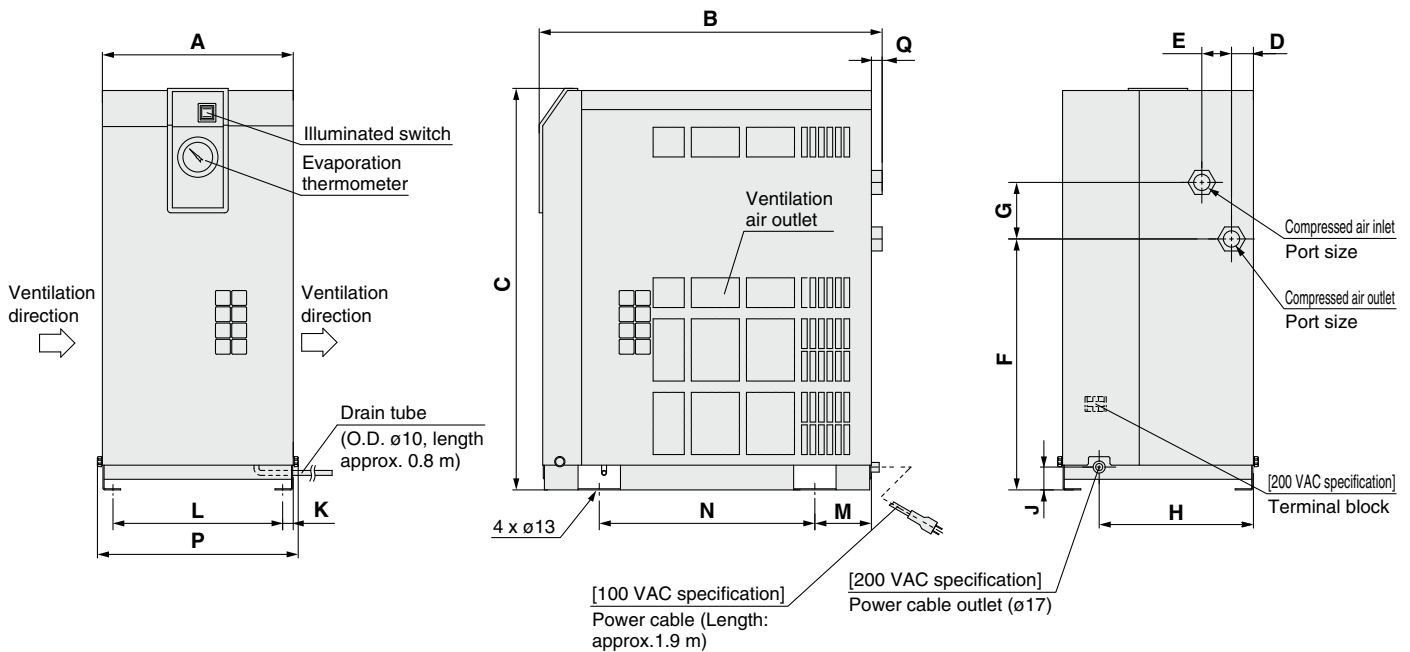


Dimensions

IDF1E to 3E



IDF4E to 11E

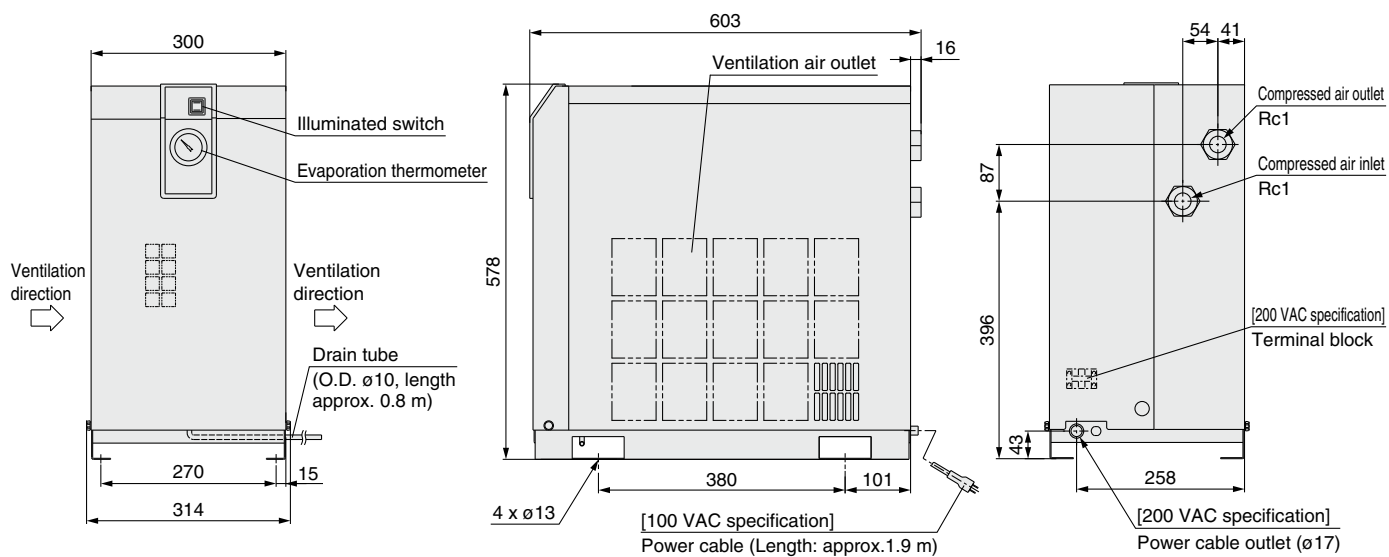


Dimensions

Dimensions																[mm]
Model	Port size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
IDF1E	Rc3/8	226	410	413	69	101	270	32	—	—	38	150	21	330	240	15
IDF2E				51	125	232	138	24					327			
IDF3E				473	67	304	33	73	31	36	154	21	330			
IDF4E	Rc1/2	270	453	498	31	42	283	80	230	32	15	240	80	275	284	13
IDF6E	Rc3/4		455	568		355	300							15		
IDF8E																
IDF11E																

Dimensions

IDF15E1



Refrigerant R407C (HFC) Standard Inlet Air Temperature

IDF□E Series

22E, 37E, 55E, 75E

(Inlet air temperature: 35°C (22E, 37E), 40°C (55E, 75E),
Outlet air pressure dew point: 10°C)

How to Order

IDF **55E** — **30** — Nil

Size •

Symbol	Air compressor size *1
22E	22 kW
37E	37 kW
55E	55 kW
75E	75 kW

*1 Note that the above values are for reference only. Check the actual compressor capacity.

Voltage •

Symbol	Voltage	Applicable size			
		22E	37E	55E	75E
20	Single-phase 200 VAC (50 Hz)	●	●	—	—
	200/220 VAC (60 Hz)				
30	Three-phase 200 VAC (50 Hz)	●	●	●	●
	200/220 VAC (60 Hz)				

Options •

Symbol *1	Nil	A	C	G	K	L	M	R	T
Description	None	Cool compressed air output	Anti-corrosive treatment for copper tube	With Chinese labels and a Chinese operation manual	Moderate pressure specification *2 (Auto drain bowl: Metal bowl with level gauge)	With a heavy-duty auto drain (applicable to moderate pressure)	With a motor type auto drain	With an earth leakage breaker	With a terminal block for power supply, operating, and error signals *4
Size									
22E	●	●	●	●	●	●	●	●	●
37E	●	●	●	●	●	●	●	●	●
55E	●	●	●	●	— *3	●	●	●	●
75E	●	●	●	●	— *3	●	●	●	●

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

However, the following combinations are not possible.

· The combination of K, L and M is not possible because an auto drain can only be attached to a single option.

*2 The maximum operating pressure is 1.6 MPa.

*3 Select the Option L for the 55E and 75E which need moderate pressure.

*4 To users who are considering switching from the previous air dryer:

When switching from the previous air dryer and remote operation are required, select the Made to Order (IDF□E-□-X256) product.

* Refer to pages 159 to 163 for further information on options.

Paint Process Equipment

Directional Control Valves

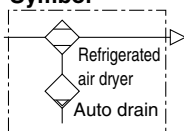
Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment



Symbol



Standard Specifications

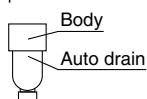
Specifications			Model	Standard inlet air temperature			
				IDF22E	IDF37E	IDF55E	IDF75E
Operating range ^{*3}	Fluid			Compressed air			
	Inlet air temperature [°C]			5 to 50			
	Inlet air pressure [MPa]			0.15 to 1.0			
	Ambient temperature (Humidity) [°C]			2 to 40 (Relative humidity 85% or less)			
Rated conditions ^{*4}	Air flow capacity [m³/min]	Standard condition (ANR) ^{*1}	50 Hz	3.9	5.7	8.4	11.0
			60 Hz	4.3	6.1	9.8	12.4
		Compressor intake condition ^{*2}	50 Hz	4.1	6.1	8.9	11.7
			60 Hz	4.6	6.5	10.4	13.2
	Inlet air pressure [MPa]			0.7			
	Inlet air temperature [°C]			35		40	
	Ambient temperature [°C]			32			
	Outlet air pressure dew point [°C]			10			
	Power supply voltage (Frequency) ^{*5}			Single-phase/Three-phase: 200 VAC (50 Hz) ^{*5} Single-phase/Three-phase: 200/220 VAC (60 Hz)		Three-phase: 200 VAC (50 Hz) Three-phase: 200/220 VAC (60 Hz)	
Electric specifications	Power consumption [W] 50/60 Hz ^{*6}	Single-phase 200 V	810/940	810/940	—	—	
		Three-phase 200 V	850/1070	850/1070	1450/1890	2000/2500	
	Operating current [A] 50/60 Hz ^{*6}	Single-phase 200 V	4.3/4.7	4.3/4.7	—	—	
		Three-phase 200 V	3.3/3.5	3.3/3.5	6.0/6.6	7.2/8.0	
Applicable earth leakage breaker capacity ^{*7} (Sensitivity of leak current of 30 mA) [A]			10 (200 VAC)			15 (200 VAC)	
Condenser			Air-cooled				
Refrigerant			R407C (HFC)				
Auto drain			Float type (Normally open)				
Port size			R1	R1 1/2	R2		
Weight [kg]			54	62	100	116	
Coating color			Body panel: White 1 Base: Gray 2				
Applicable air compressor output (Reference) For screw type [kW]			22	37	55	75	

- *1 Air flow capacity under the standard condition (ANR) [20°C, Atmospheric pressure, and 65% Relative humidity]
 *2 Air flow capacity converted by the compressor intake condition [32°C, Atmospheric pressure, and 75% Relative humidity]
 *3 The operation range does not guarantee the use with normal air flow capacity.
 *4 Select the model in accordance with Model Selection in the **Web Catalog** for models beyond the rated specifications.
 *5 When selecting a power supply voltage, refer to the How to Order on page 142.
 *6 These values are reference values under rated conditions, and are not guaranteed. Do not use these values for the thermal set values, etc.
 *7 Product other than the Option R is not equipped with an earth leakage breaker. Purchase an appropriate earth leakage breaker separately.

Replacement Parts

Model	IDF22E	IDF37E	IDF55E	IDF75E
Auto drain replacement parts no. ^{*8}	AD48			

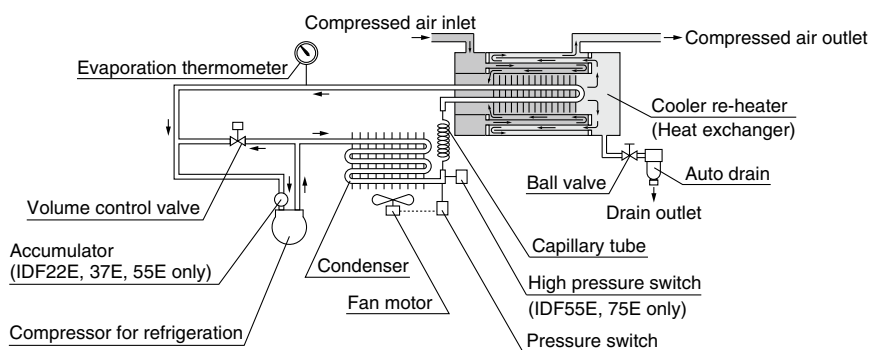
*8 The part number for the auto drain components only excluding the body part. Body part replacement is not possible.



Construction (Air/Refrigerant Circuit)

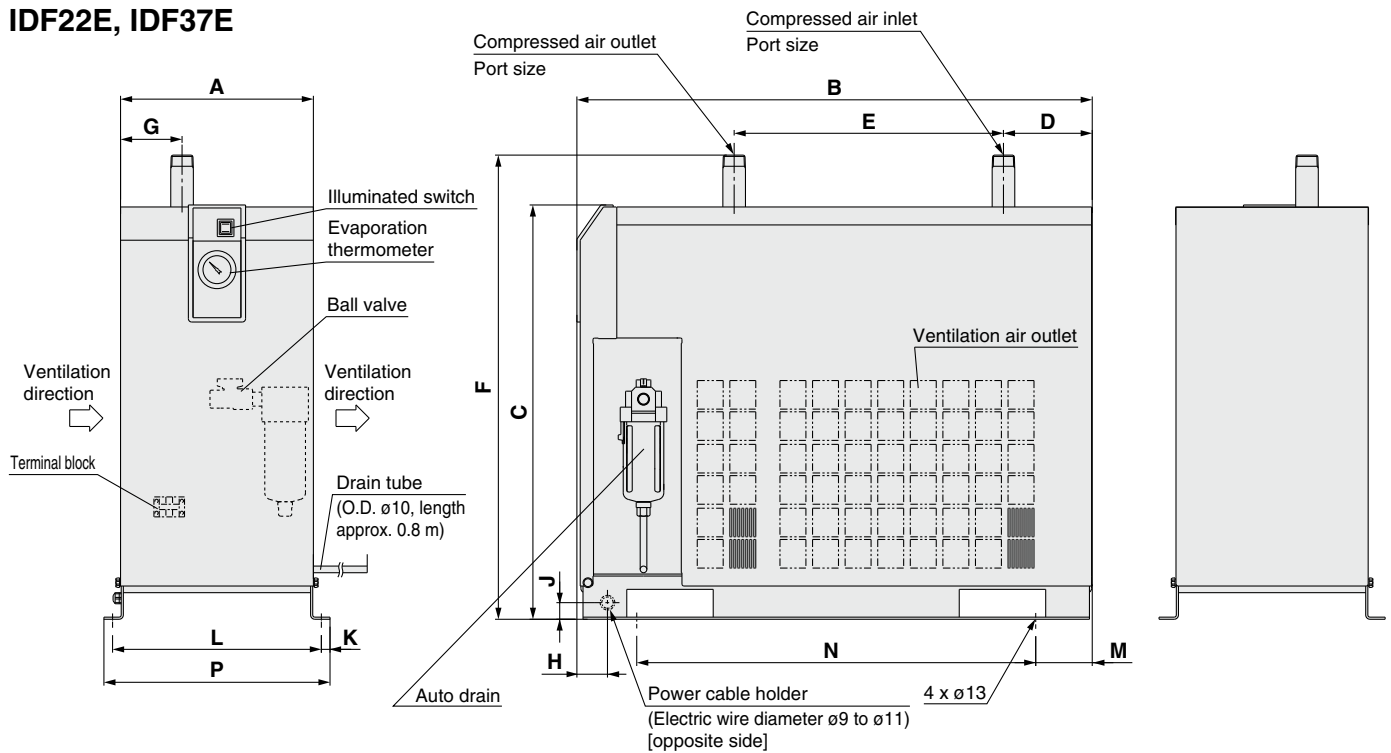
Humid, hot air coming into the air dryer will be cooled down by a cooler re-heater (heat exchanger). Water condensed at this time will be removed from the air by an auto drain and drained out automatically. Air separated from the water will be heated by a cooler re-heater (heat exchanger) to obtain the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

IDF22E, IDF37E, IDF55E, IDF75E

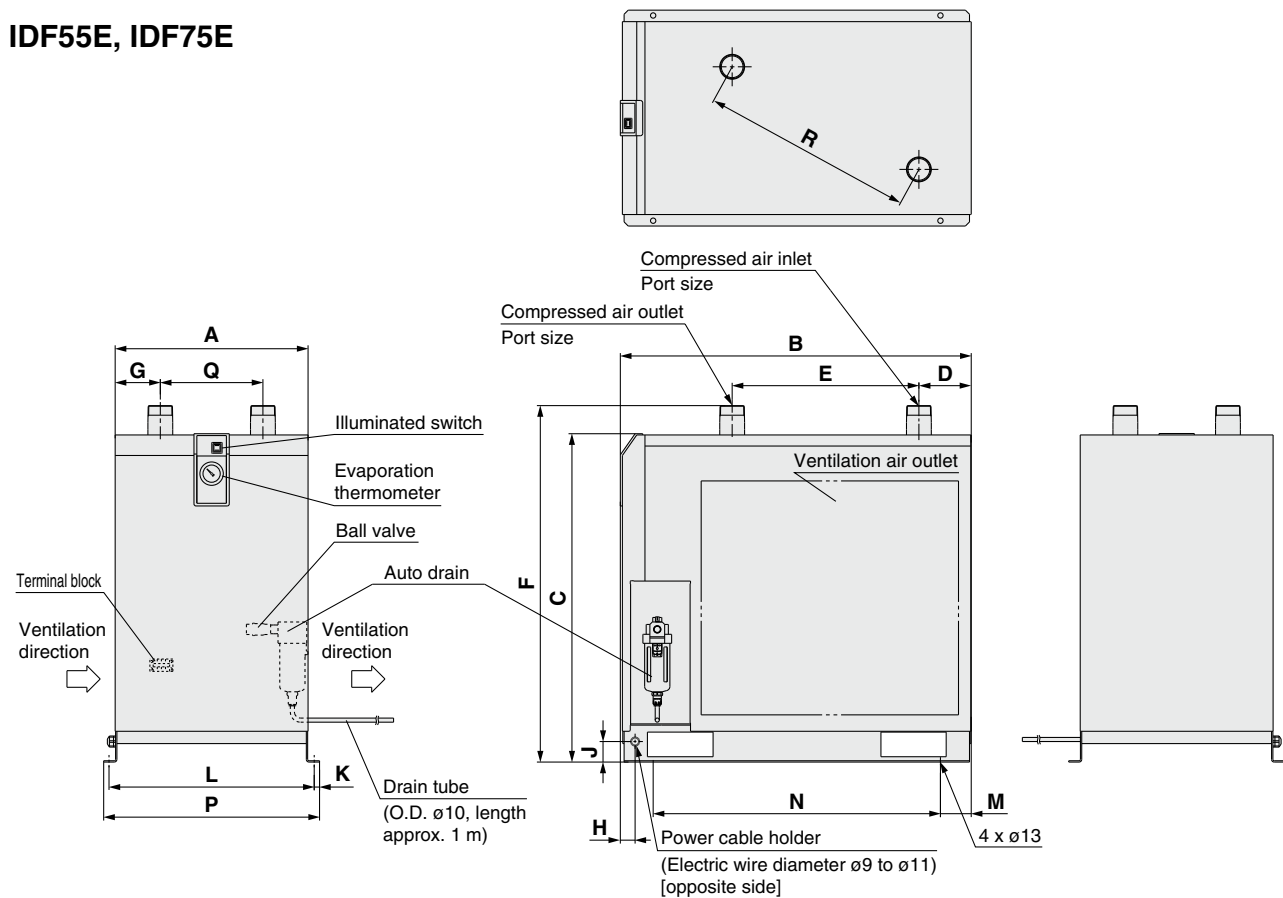


Dimensions

IDF22E, IDF37E



IDF55E, IDF75E



Dimensions

Model	Port size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
IDF22E	R1	290	775	623	134	405	698	93	46	25	13	314	85	600	340	—	—
IDF37E	R1 1/2		855											680			
IDF55E	R2	470	855	800	128	455	868	110	36	50	13	500	75	700	526	250	519
IDF75E				900			968										

[mm]

Refrigerant R407C (HFC)

IDF100F/125F/150F Series

Applicable Compressor Size: 100 kW, 125 kW, 150 kW
(Max. inlet air temperature: 60°C, Max. ambient temperature: 45°C)

How to Order

Air-cooled

IDF **100** F - 30 -

Nil	Nil
C	1
K	2
P	3
R	
V	

Size	Air compressor size *1
100	100 kW
125	125 kW
150	150 kW

*1 Note that the above values are for reference only. Check the actual compressor capacity.

Symbol	Voltage
30	Three-phase 200 VAC (50 Hz) 200/220 VAC (60 Hz)

Voltage

Options

Symbol *1	Description
Nil	None
C	Anti-corrosive treatment for copper tube
K	Moderate pressure specification (Up to 1.6 MPa)
P	With a metal name plate
R	With an earth leakage breaker
V	With a timer controlled solenoid valve type auto drain

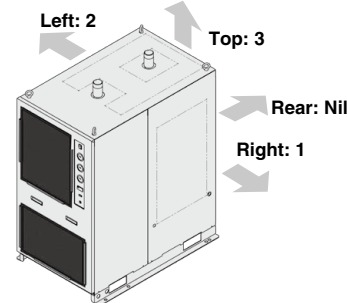
*1 When multiple options are combined, indicate symbols in alphabetical order.

* A terminal block for remote operation, stop, operating, and error signals is included as standard equipment.

Heat exhausting direction

Symbol	Description
Nil	Heat exhaust from the rear
1	Heat exhaust from the right *1
2	Heat exhaust from the left *1
3	Heat exhaust from the top *1

*1 The combination of 1, 2 and 3 is not available. (Heat exhausting face can be specified on one side only.)



Water-cooled

IDF **100** F - 30 -

Nil	W
C	4
K	5
P	
R	
V	

Size	Air compressor size *1
100	100 kW
125	125 kW
150	150 kW

*1 Note that the above values are for reference only. Check the actual compressor capacity.

Symbol	Voltage
30	Three-phase 200 VAC (50 Hz) 200/220 VAC (60 Hz)

Voltage

Option

Symbol *1	Description
Nil	None
C	Anti-corrosive treatment for copper tube
K	Moderate pressure specification (Up to 1.6 MPa)
P	With a metal name plate
R	With an earth leakage breaker
V	With a timer controlled solenoid valve type auto drain

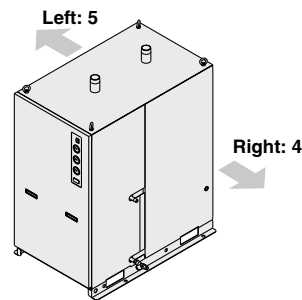
*1 Enter alphabetically when multiple options are combined.

* A terminal block for remote operation, stop, operating, and error signals is included as standard equipment.

Piping direction

Symbol	Description
4	Facility water piping direction: Right *1
5	Facility water piping direction: Left *1

*1 The combination of 4 and 5 is not available. (Piping direction can be specified on one side only.)



Cooling method

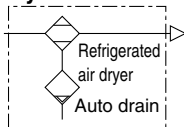
Symbol	Cooling method
W	Water-cooled condenser



Standard Specifications: Air-cooled Type



Symbol



Specifications			Model	IDF100F-30	IDF125F-30	IDF150F-30
Operating range※3	Fluid			Compressed air		
	Inlet air temperature [°C]			5 to 60		
	Inlet air pressure [MPa]			0.15 to 1.0		
	Ambient temperature (Humidity) [°C]			2 to 45 (Relative humidity 85% or less)		
Rated conditions※4	Air flow capacity [m³/min]	Standard condition (ANR) ※1	50 Hz	16	20.1	25
			60 Hz	18.8	23.7	30
		Compressor intake condition ※2	50 Hz	17	21	27
			60 Hz	20	25	32
	Inlet air pressure [MPa]			0.7		
	Inlet air temperature [°C]			40		
	Ambient temperature [°C]			32		
	Outlet air pressure dew point [°C]			10		
	Exhaust heat from condenser (50/60 Hz) [kW]			8.0/9.0	10.0/11.5	12.0/15.0
	Air dryer outlet air temperature [°C]			37		
Power supply voltage (Frequency)			Three-phase 200 VAC (50 Hz), 200/220 VAC (60 Hz)			
Electric specifications	Power consumption [kW] 50/60 Hz ※5			2.9/3.5	4.0/4.7	4.0/4.8
	Operating current ※5 [A] 50/60 Hz			10.5/11.5	15.4/15.6	15.7/16.0
Applicable earth leakage capacity ※6 (Sensitivity of leak current of 30 mA) [A]			30			
Refrigerant			R407C (HFC)			
Auto drain			Heavy-duty auto drain (Normally open)			
Port size			R2	JIS Flange 65A 10K	JIS Flange 80A 10K	
Weight [kg]			245	270	350	
Coating color			Body panel: White 1 Base: Gray 2			
Applicable air compressor output (Reference) For screw type [kW]			100	125	150	

*1 Air flow capacity under the standard condition (ANR) [20°C, Atmospheric pressure, and 65% Relative humidity]

*2 Air flow capacity converted by the compressor intake condition [32°C, Atmospheric pressure, and 75% Relative humidity]

*3 The operation range does not guarantee the use with normal air flow capacity.

*4 Select the model in accordance with Model Selection in the **Web Catalog** for models beyond the rated specifications.

*5 These values are reference values under rated conditions, and are not guaranteed. Do not use these values for the thermal set values, etc.

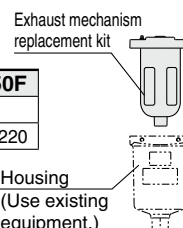
*6 Product other than the Option R is not equipped with an earth leakage breaker. Purchase an appropriate earth leakage breaker separately.

Replacement Parts

Air dryer model	IDF100F	IDF125F	IDF150F
Heavy-duty auto drain replacement part no. ^{*7}	ADH-E400		
Dustproof filter set for condenser	IDF-FL219	IDF-FL220	

*7 Part number of only the exhaust mechanism replacement kit excluding the housing

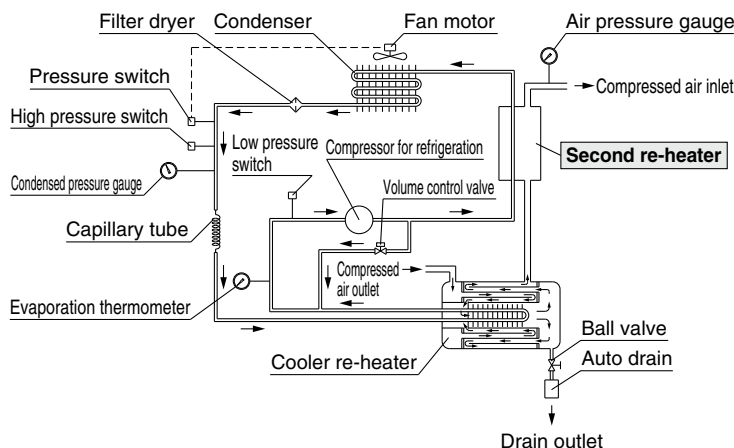
* A terminal block for remote operation, stop, operating, and error signal is included as standard equipment.



Construction (Air/Refrigerant Circuit)

Hot and humid air entering the air dryer is cooled down by the cooler re-heater (heat exchanger). The moisture which is condensed and separated is automatically exhausted by the auto drain. The air which has had its moisture removed is heated in two stages by the re-heater (heat exchanger) in the cooler re-heater and by the second re-heater, and is supplied to the outlet side as warm and dry air.

IDF100F, IDF125F, IDF150F



Second re-heater

Compressed air from which drainage has been exhausted exchanges heat with refrigerant which has been compressed by the compressor for refrigeration, to give the following effects:

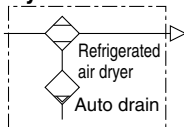
1. The outlet air temperature increases, preventing condensation of the piping on the outlet side.
2. The amount of heat exhausted from the condenser is reduced.
3. Energy saving operation of the air dryer is achieved by reducing the amount of heat exhausted from the condenser.

IDF100F/125F/150F Series

Standard Specifications: Water-cooled Type



Symbol



Specifications			Model	IDF100F-30-W	IDF125F-30-W	IDF150F-30-W
Operating range ^{*3}	Fluid		Compressed air			
	Inlet air temperature [°C]		5 to 60			
	Inlet air pressure [MPa]		0.15 to 1.0			
	Ambient temperature (Humidity) [°C]		2 to 45 (Relative humidity 85% or less)			
Rated conditions	Air flow capacity [m³/min]	Standard condition (ANR) ^{*1}	50 Hz	16	20.1	25
			60 Hz	18.8	23.7	30
		Compressor intake condition ^{*2}	50 Hz	17	21	27
			60 Hz	20	25	32
		Inlet air pressure [MPa]		0.7		
	Inlet air temperature [°C]		40			
	Ambient temperature [°C]		32			
	Outlet air pressure dew point [°C]		10			
	Air dryer outlet air temperature [°C]		37			
	Facility water flow rate ^{*4} (50/60 Hz) [m³/h]		1.29/1.56	1.74/1.98	2.16/2.52	
	Facility water inlet temperature [°C]		32			
	Facility water pressure drop ^{*5} (50/60 Hz) [MPa]		0.07/0.1			
	Cooling tower capacity ^{*6} [kW(RT)]		9 (2)	11.5 (2.5)	14.5 (3.2)	
	Recommended chiller model ^{*6} (made by SMC)		HRS100-A-20	HRS150-A-20		
Electric specifications	Power supply voltage (Frequency)		Three-phase 200 VAC (50 Hz), 200/220 VAC (60 Hz)			
	Power consumption [kW] 50/60 Hz ^{*7}		2.4/2.8	2.4/2.8	2.8/3.3	
	Operating current [A] 50/60 Hz ^{*7}		8.5/9.0	8.5/9.0	10.2/11.5	
	Facility water pressure range [MPa]		0.2 to 0.98			
Required facility water flow rate (50/60 Hz) [m³/h]		1.29/1.56	1.74/1.98	2.16/2.52		
Facility water inlet temperature range [°C]		5 to 40				
Facility water port size		R1/2		R3/4		
Facility water amount adjusting equipment		Pressure type water regulating valve				
Condenser		Plate type				
Applicable earth leakage capacity ^{*8} (Sensitivity of leak current of 30 mA) [A]		20			30	
Refrigerant		R407C (HFC)				
Auto drain		Heavy-duty auto drain (Normally open)				
Port size		R2	JIS Flange 65A 10K	JIS Flange 80A 10K		
Weight [kg]		226	250	322		
Coating color		Body panel: White 1 Base: Gray 2				
Applicable air compressor output (Reference) For screw type [kW]		100	125	150		

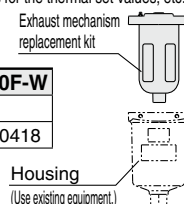
- *1 Air flow capacity under the standard condition (ANR) [20°C, Atmospheric pressure, and 65% Relative humidity]
 *2 Air flow capacity converted by the compressor intake condition [32°C, Atmospheric pressure, and 75% Relative humidity]
 *3 The operation range does not guarantee the use with normal air flow capacity. Select the model in accordance with Model Selection in the **Web Catalog** for models beyond the rated specifications.
 *4 The facility water flow rate that satisfies the rated conditions with a facility water inlet temperature of 32°C and an output temperature of 37°C ($\Delta t = 5^\circ\text{C}$)
 *5 These values are obtained under rated conditions with a rated facility water flow rate and a facility water inlet pressure of 0.2 MPa.
 *6 These values are obtained under rated conditions (1 RT = 4.535 kW).
 *7 These values are reference values under rated conditions, and are not guaranteed. Do not use these values for the thermal set values, etc.
 *8 Product other than the Option R is not equipped with an earth leakage breaker.
 Purchase an appropriate earth leakage breaker separately.

Replacement Parts

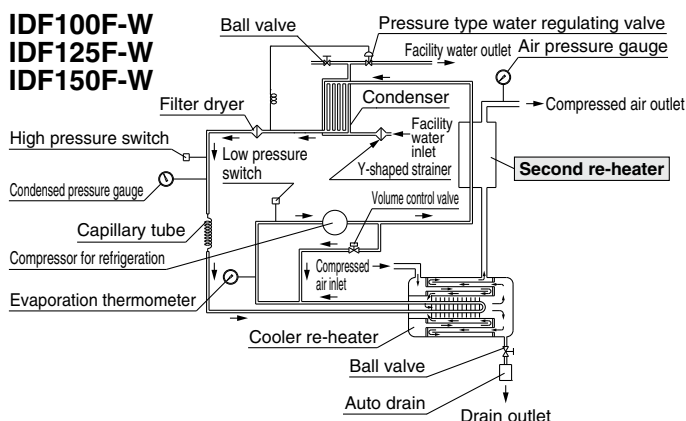
Air dryer model	IDF100F-W	IDF125F-W	IDF150F-W
Heavy-duty auto drain replacement part no. ^{*9}	ADH-E400		
Facility water piping strainer	IDF-S0406	IDF-S0418	

*9 Part number of only the exhaust mechanism replacement kit excluding the housing

* A terminal block for remote operation, stop, operating, and error signal is included as standard equipment.



Construction (Air/Refrigerant Circuit)



Hot and humid air entering the air dryer is cooled down by the cooler re-heater (heat exchanger). The moisture which is condensed and separated is automatically exhausted by the auto drain. The air which has had its moisture removed is heated in two stages by the re-heater (heat exchanger) in the cooler re-heater and by the second re-heater, and is supplied to the outlet side as warm and dry air.

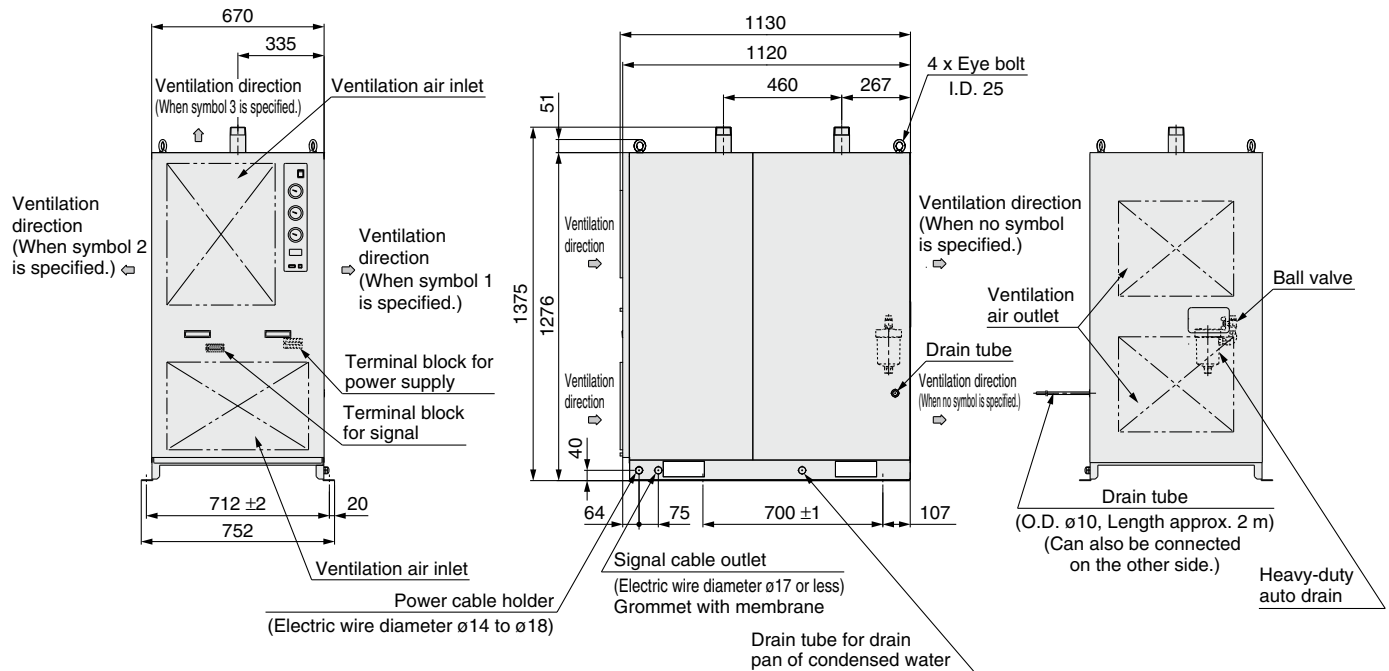
Second re-heater

Compressed air from which drainage has been exhausted exchanges heat with refrigerant which has been compressed by the compressor for refrigeration, to give the following effects:

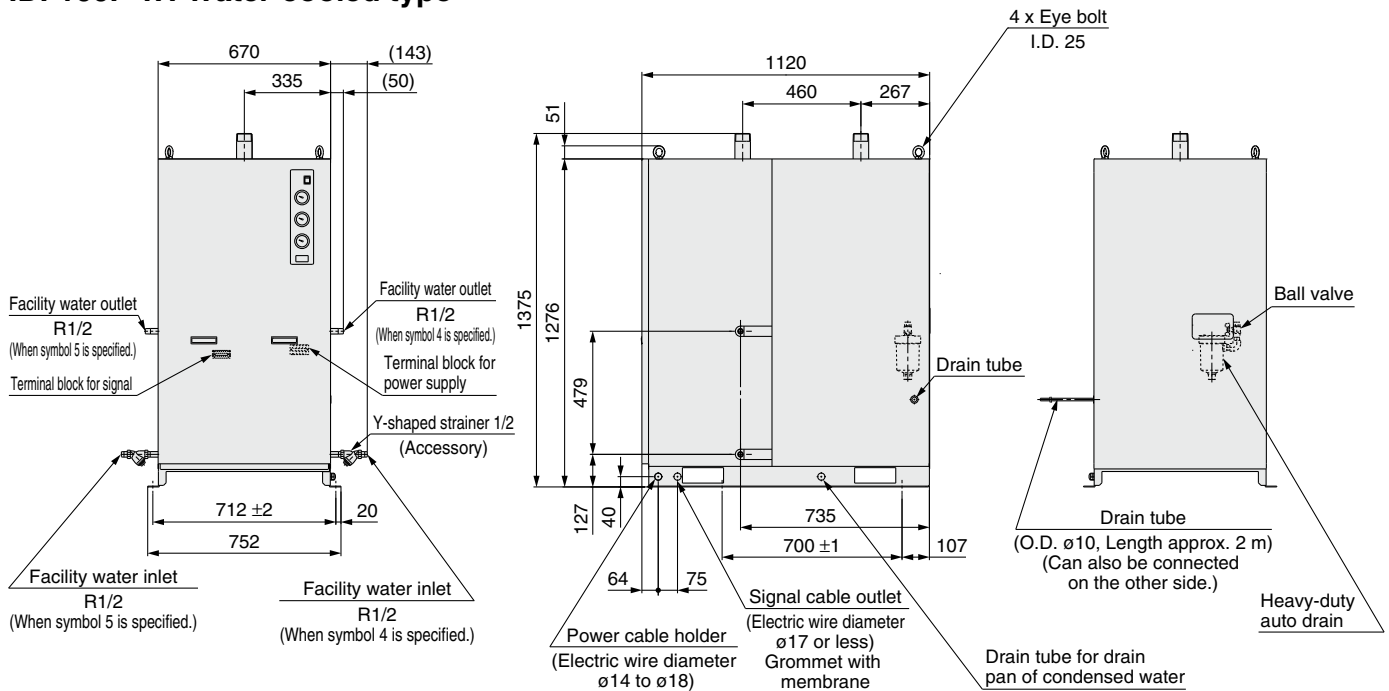
1. The outlet air temperature increases, preventing condensation of the piping on the outlet side.
2. The amount of heat exhausted from the condenser is reduced.
3. Energy saving operation of the air dryer is achieved by reducing the amount of heat exhausted from the condenser.

Dimensions

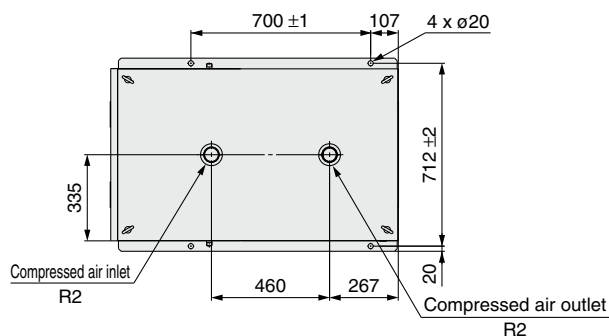
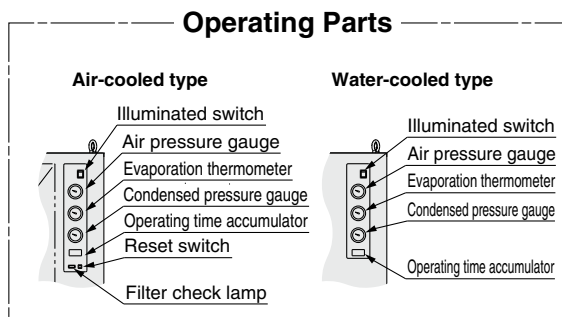
IDF100F: Air-cooled type



IDF100F-W: Water-cooled type



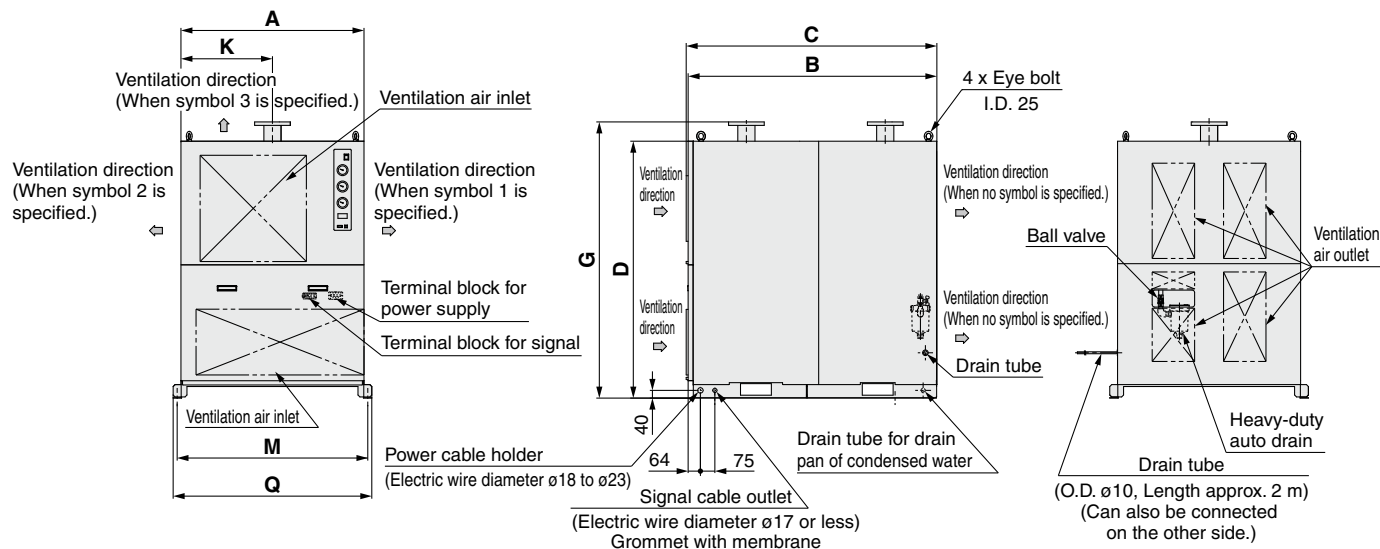
Top view (Air-cooled/Water-cooled)



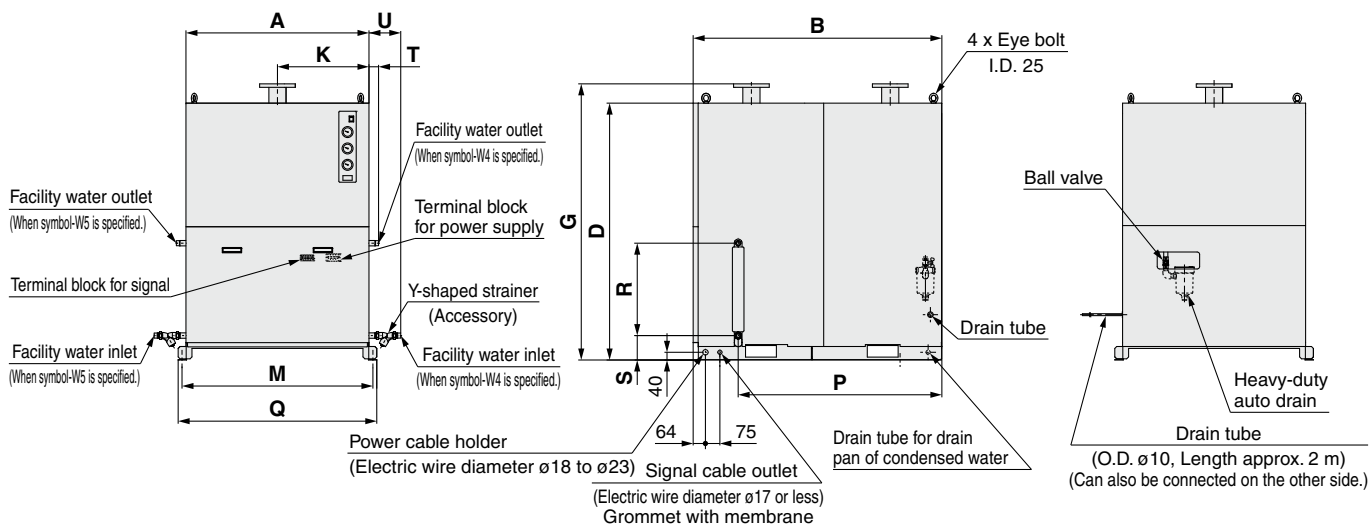
IDF100F/125F/150F Series

Dimensions

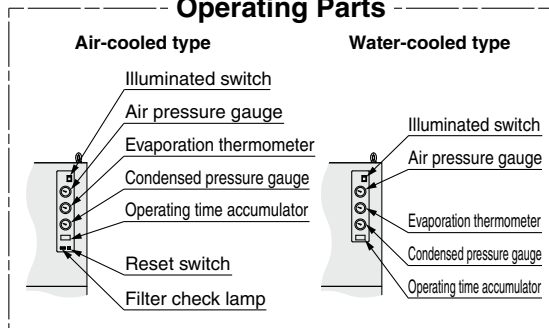
IDF125F/150F: Air-cooled type



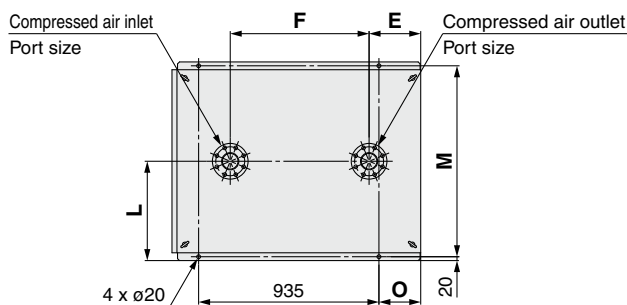
IDF125F-W/150F-W: Water-cooled type



Operating Parts



Top view (Air-cooled/Water-cooled)



Dimensions

Model	Port size	A	B	C	D	E	F	G	K	L	M	O	P	Q	R	S	T	U	Facility water inlet/outlet
IDF125F	JIS Flange	700	1120	1130	1276	267	655	1375	350	376	712	78	—	752	—	—	—	—	—
IDF125F-W	65A 10K			1120									885		479	127	36	129	R1/2
IDF150F	JIS Flange	950	1290	1300	1332	268	720	1432	475	515	990	217	—	1030	—	—	—	—	—
IDF150F-W	80A 10K			1290									1056		479	127	50	165	R3/4

Refrigerant R407C (HFC)

Standard Inlet Air Temperature

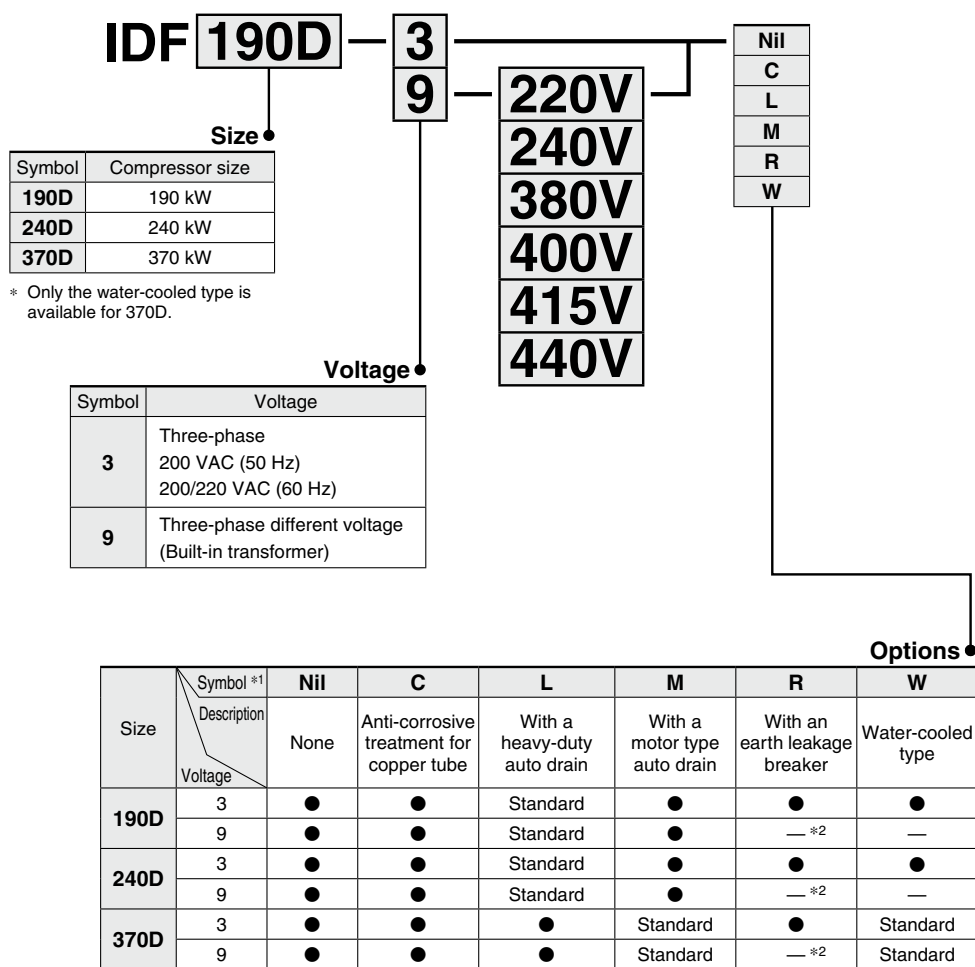
IDF □ D Series

190D, 240D, 370D

(Inlet air temperature: 40°C (190D, 240D), 35°C (370D),
Outlet air pressure dew point: 10°C)

How to Order

Refrigerant R407C
IDF190D to IDF370D



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

*2 Purchase an appropriate earth leakage breaker suitable for the inlet voltage separately.

* Refer to pages 159 to 162, and 164 for further information on options.

* The standard type (Nil) is equipped with a terminal block for remote operation, stop, operating, and error signals.

Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

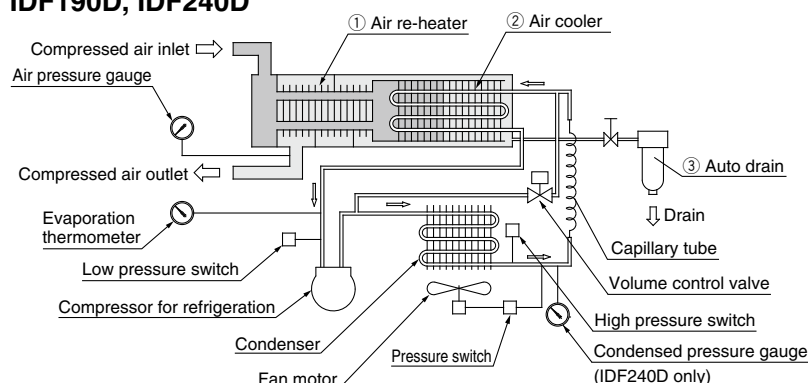
Standard Specifications

Specifications		Model	Standard inlet air temperature			
			IDF190D	IDF240D	IDF370D	
Operating range *3	Fluid		Compressed air			
	Inlet air temperature [°C]		5 to 50			
	Inlet air pressure [MPa]		0.15 to 0.97			
	Ambient temperature (Humidity) [°C]		2 to 40 (Relative humidity 85% or less)		2 to 43 (Relative humidity 85% or less)	
Rated conditions *4	Air flow capacity [m³/min]	Standard condition	50 Hz	32	43	54
		(ANR) *1	60 Hz	38	50	65
		Compressor intake	50 Hz	34	46	57
		condition *2	60 Hz	40	53	69
	Inlet air pressure [MPa]		0.7			
	Inlet air temperature [°C]		40		35	
	Ambient temperature [°C]		32		—	
	Outlet air pressure dew point [°C]		10			
Electric specifications	Power supply voltage (Frequency) *5		Three-phase: 200 VAC (50 Hz), 200/220 VAC (60 Hz)		Three-phase: 200 VAC (50/60 Hz)	
	Power consumption 50/60 Hz *6 [kW]	Three-phase 200 V	4.9	6.3	11.6	
			5.9	7.6	11.6	
	Operating current 50/60 Hz *6 [A]	Three-phase 200 V	19.5	26.1	36.5	
20.1			26.4	36.5		
Applicable earth leakage capacity *7 (Sensitivity of leak current of 30 mA) [A]		50				
Condenser		Air-cooled		Water-cooled		
Air re-heater/Air cooler		Class 2 pressure vessel				
Refrigerant		R407C (HFC)				
Auto drain		ADH4000-04		ADM200-042-8		
Port size *8		80 (3B) Flange	100 (4B) Flange	150 (6B) Flange		
Weight [kg]		450	660	1100		
Coating color		Body panel: White Base: Black		Operating panel: Sky blue Other panel (except base): White		
Applicable air compressor output (Reference) For screw type [kW]		190	240	370		

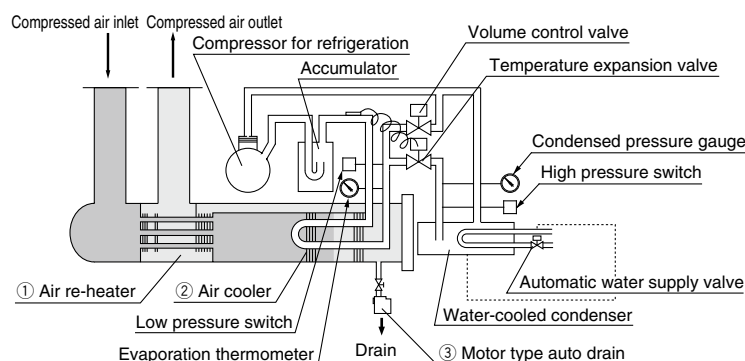
- *1 Air flow capacity under the standard condition (ANR) [20°C, Atmospheric pressure, and 65% Relative humidity]
 *2 Air flow capacity converted by the compressor intake condition [32°C, Atmospheric pressure, and 75% Relative humidity]
 *3 The operation range does not guarantee the use with normal air flow capacity.
 *4 Select the model in accordance with Model Selection in the **Web Catalog** for models beyond the rated specifications.
 *5 When selecting a power supply voltage, refer to the How to Order on page 150.
 *6 These values are reference values under rated conditions, and are not guaranteed. Do not use these values for the thermal set values, etc.
 *7 Product other than the Option R is not equipped with an earth leakage breaker. Purchase an appropriate earth leakage breaker separately.
 *8 JIS 10K FF is used as a flange.

Construction (Air/Refrigerant Circuit)

IDF190D, IDF240D



IDF370D



Water-cooled Condenser (IDF370D)

Condenser	Shell and tube type
Cooling water flow rate ^{*1}	6 m³/h
Cooling tower performance ^{*2}	10 RT
Water flow regulator	Pressure type automatic water supply valve
Port size for water side	1 1/4 union

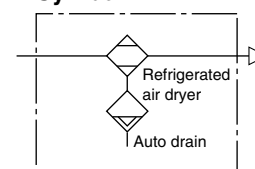
*1 Value with rated load when cooling water inlet temperature is 32°C.

*2 Calculated at 1 RT = 4.535 kW

Motor Type Auto Drain

Model	Operating cycle
IDF370D	4 times per minute for 8 seconds every one minute
Power supply	200 VAC 50/60 Hz
Power consumption	4 W

Symbol

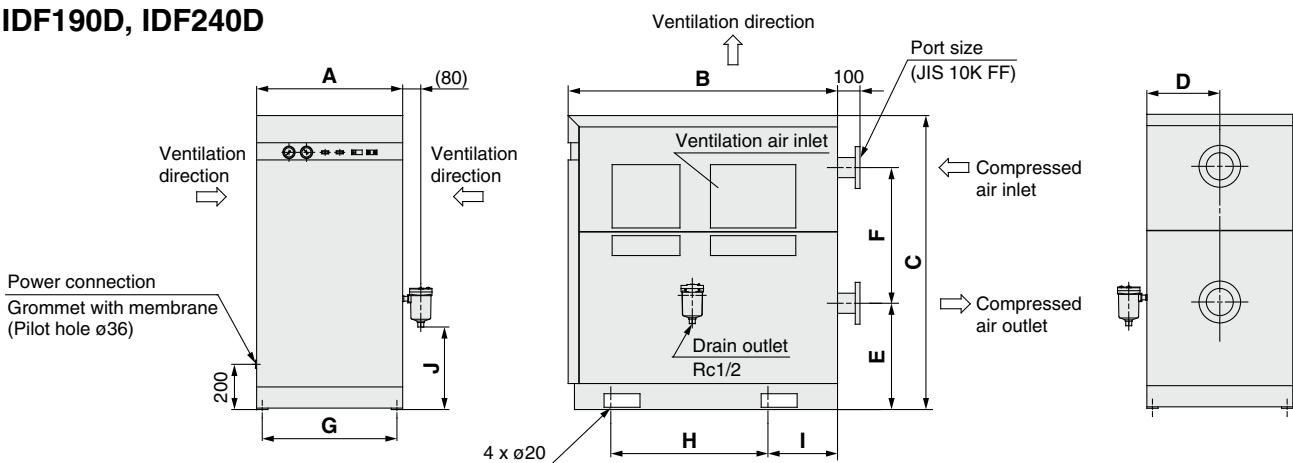


High temperature humid air from the air compressor passes through the air re-heater ① and is pre-cooled by dehumidified cool air. Then, it is cooled to the specified temperature by the air cooler ② using the evaporation heat of refrigerant.

At this time, the oil mist and moisture generated by condensation are automatically exhausted by the auto drain ③. The cooled and dehumidified air goes back to the air re-heater ① and heat is exchanged with hot air that flows into the air re-heater. It is supplied as dry warm air without "sweating" in the piping system.

Dimensions

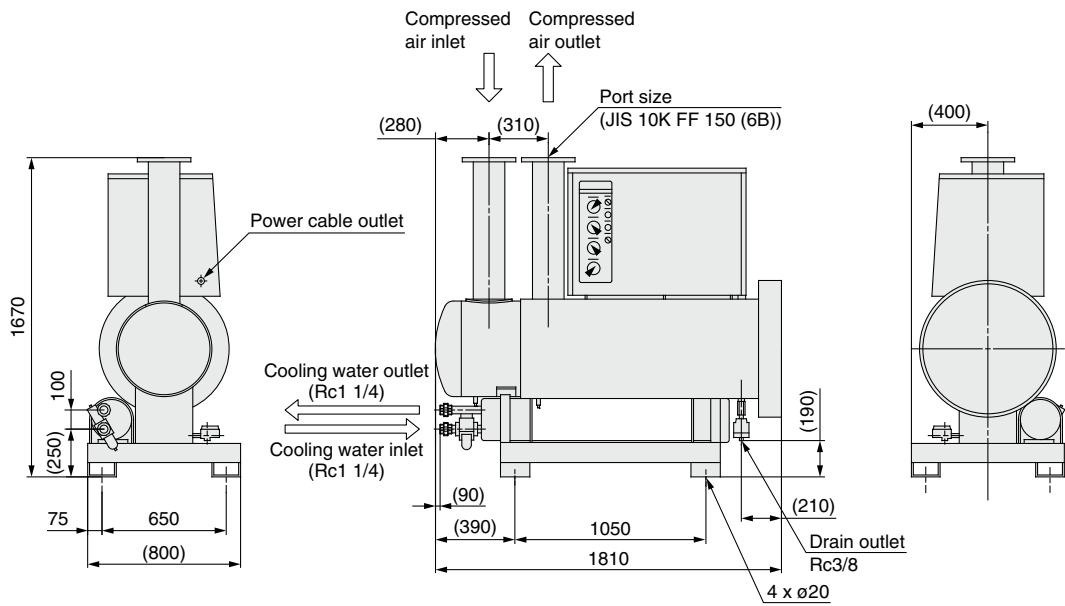
IDF190D, IDF240D



[mm]											
Model	Inlet and outlet port	A	B	C	D	E	F	G	H	I	J
IDF190D	JIS 10K FF 80 (3B) Flange	750	1510	1320	375	480	600	700	800	355	427
IDF240D	JIS 10K FF 100 (4B) Flange	770	1550	1640	385	703	730	700	800	355	592

* The auto drain is enclosed in the same shipping package as the main body. Customers are required to mount the auto drain to the air dryer.

IDF370D



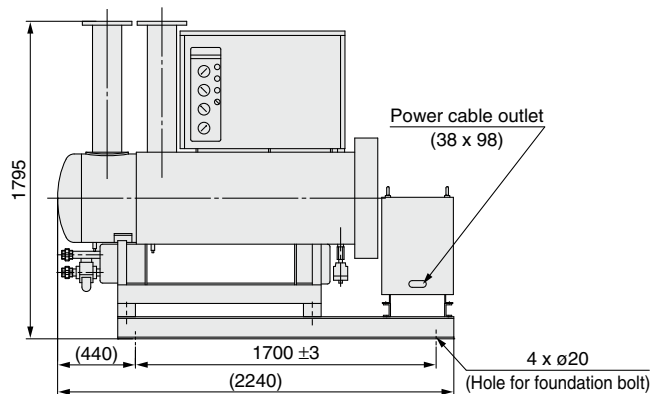
Power Transformer Integrated Type

IDF370D

The power transformer marked with the voltage symbol "9" is integrated into the refrigerated air dryer.

IDF190D to 240D

The power transformer marked with the voltage symbol "9" is built into the main body, and the outside dimensions are the same as those with the voltage symbol "3."



Refrigerant R134a (HFC) High Inlet Air Temperature **IDU□E Series**

3E, 4E, 6E, 8E, 11E, 15E1

(Inlet air temperature: 55°C, Outlet air pressure dew point: 10°C)

How to Order

IDU 4E — 10 —

Size ●

Symbol	Air compressor size *1
3E	2.2 kW
4E	3.7 kW
6E	5.5 kW
8E	7.5 kW
11E	11 kW
15E1	15 kW

*1 Note that the above values are for reference only. Check the actual compressor capacity.

Voltage ●

Symbol	Voltage	Applicable size					
		3E	4E	6E	8E	11E	15E1
10	Single-phase 100 VAC (50 Hz)	●	●	●	●	●	●
	100/110 VAC (60 Hz)						
20	Single-phase 200 VAC (50 Hz)	●	●	●	●	●	●
	200/220 VAC (60 Hz)						
23	Single-phase 230 VAC (50 Hz)	●	●	●	●	●	●

Nil
C
G
K
L
M
R
S
T
V

Options ●

Symbol *1	Nil	C	G	K	L	M	R	S	T	V
Description	None	Anti-corrosive treatment for copper tube	With Chinese labels and a Chinese operation manual	Moderate pressure specification *2 (Auto drain bowl: Metal bowl with level gauge)	With a heavy-duty auto drain (applicable to moderate pressure)	With a motor type auto drain (Voltage symbol 10, 20 only)	With an earth leakage breaker	Power supply terminal block connection (Voltage symbol 10 only) *3	With a terminal block for power supply, operating, and error signals	With a timer controlled solenoid valve type auto drain (Voltage symbol 23 only) (applicable to moderate pressure)
Size										
3E	●	●	●	●	●	●	●	●	●	●
4E	●	●	●	●	●	●	●	●	●*4	●
6E	●	●	●	●	●	●	●	●	●*4	●
8E	●	●	●	●	●	●	●	●	●*4	●
11E	●	●	●	●	●	●	●	●	●*4	●
15E1	●	●	●	●	●	●	●	●	●*4	●

*1 When multiple options are combined, indicate symbols in alphabetical order. However, the following combinations are not possible.

- R and S (Because S function is also included in R.)
- S and T (Because S function is also included in T.)
- The combination of K, L, M and V is not possible because an auto drain can only be attached to a single option.

*2 The maximum operating pressure is 1.6 MPa.

*3 Voltage symbol 20 (200 VAC) and 23 (230 VAC) are the terminal block connection as standard. The Option S cannot be chosen. Voltage symbol 10 (100 VAC) is the power cable with plug as standard.

*4 To users who are considering switching from the previous air dryer:

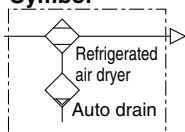
When switching from the previous air dryer and remote operation are required, select the Made to Order (IDU□E-□-X256) product.

* Refer to pages 159 to 163 for further information on options.

Standard Specifications



Symbol



Specifications			Model	High inlet air temperature					
				IDU3E	IDU4E	IDU6E	IDU8E	IDU11E	IDU15E1
Operating range ^{*3}	Fluid		Compressed air						
	Inlet air temperature [°C]		5 to 80						
	Inlet air pressure [MPa]		0.15 to 1.0						
	Ambient temperature (Humidity) [°C]		2 to 40 (Relative humidity 85% or less)						
Rated conditions ^{*4}	Air flow capacity [m³/min]	Standard condition (ANR) ^{*1}	50 Hz	0.32	0.52	0.75	1.1	1.5	2.6
			60 Hz	0.37	0.57	0.82	1.2	1.7	2.8
		Compressor intake condition ^{*2}	50 Hz	0.34	0.55	0.8	1.2	1.6	2.8
			60 Hz	0.39	0.61	0.87	1.3	1.8	3.0
	Inlet air pressure [MPa]		0.7						
	Inlet air temperature [°C]		55						
	Ambient temperature [°C]		32						
	Outlet air pressure dew point [°C]		10						
	Power supply voltage (Frequency) ^{*5}		Single-phase: 100 VAC (50 Hz), 100/110 VAC (60 Hz) ^{*5} Single-phase: 200 VAC (50 Hz), 200/220 VAC (60 Hz) Single-phase: 230 VAC ±10% (50 Hz)						
Electric specifications	Power consumption [W] 50/60 Hz ^{*6}	Single-phase 100 V	180/202	208/236	385/440	250/290 ^{*7}	425/470 ^{*7}	460/530 ^{*7}	
		Single-phase 200 V							
		Single-phase 230 V (50 Hz)							
	Operating current [A] 50/60 Hz ^{*6}	100 V	2.4/2.5	3.0/3.1	5.7/5.7	3.4/3.5	5.7/6.0	4.6/4.9	
		200 V	1.2/1.3	1.5/1.5	3.4/3.0	1.7/1.7	3.5/3.2	3.6/3.4	
	230 V (50 Hz)	1.5	1.6	2.9	1.7	3.0	3.2		
Applicable earth leakage breaker capacity ^{*8} (Sensitivity of leak current of 30 mA) [A]			10 (100 VAC), 5 (200 VAC, 230 VAC)						10 (100 VAC) 10 (200 VAC)
Refrigerant			R134a (HFC)						
Auto drain			Float type (Normally open)						
Port size			Rc3/8	Rc1/2	Rc3/4			Rc1	
Weight [kg]			23	27	28	44	47	71	
Coating color			Body panel: White 1 Base: Gray 2						
Applicable air compressor output (Reference) For screw type [kW]			2.2	3.7	5.5	7.5	11	15	

^{*1} Air flow capacity under the standard condition (ANR) [20°C, Atmospheric pressure, and 65% Relative humidity]

^{*2} Air flow capacity converted by the compressor intake condition [32°C, Atmospheric pressure, and 75% Relative humidity]

^{*3} The operation range does not guarantee the use with normal air flow capacity.

^{*4} Select the model in accordance with Model Selection in the **Web Catalog** for models beyond the rated specifications.

^{*5} When selecting a power supply voltage, refer to the How to Order on page 153.

^{*6} These values are reference values under rated conditions, and are not guaranteed. Do not use these values for the thermal set values, etc.

^{*7} For the IDU8E or larger models, cooling with the aftercooler helps save energy.

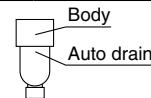
^{*8} Product other than the Option R is not equipped with an earth leakage breaker. Purchase an appropriate earth leakage breaker separately.

Replacement Parts

Model	IDU3E	IDU4E	IDU6E	IDU8E	IDU11E	IDU15E1
Auto drain replacement parts no. ^{*9}	AD48					

^{*9} The part number for the auto drain components only excluding the body part.

Body part replacement is not possible.

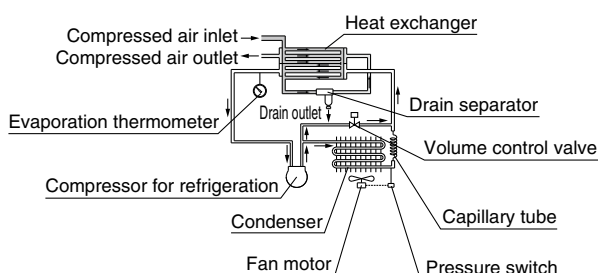


Construction (Air/Refrigerant Circuit)

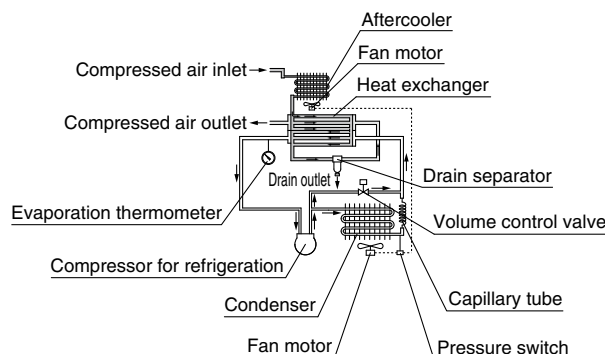
Humid, hot air coming into the air dryer will be cooled down by a heat exchanger. Water condensed at this time will be removed from the air by a drain separator and drained out automatically. Air separated from the water will be heated by a heat exchanger to obtain the dried air, which goes through to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

For models IDU8E to 15E1, the humid and hot air introduced to the air dryer will be cooled down by the aftercooler before being cooled down by the heat exchanger.

IDU3E, IDU4E, IDU6E

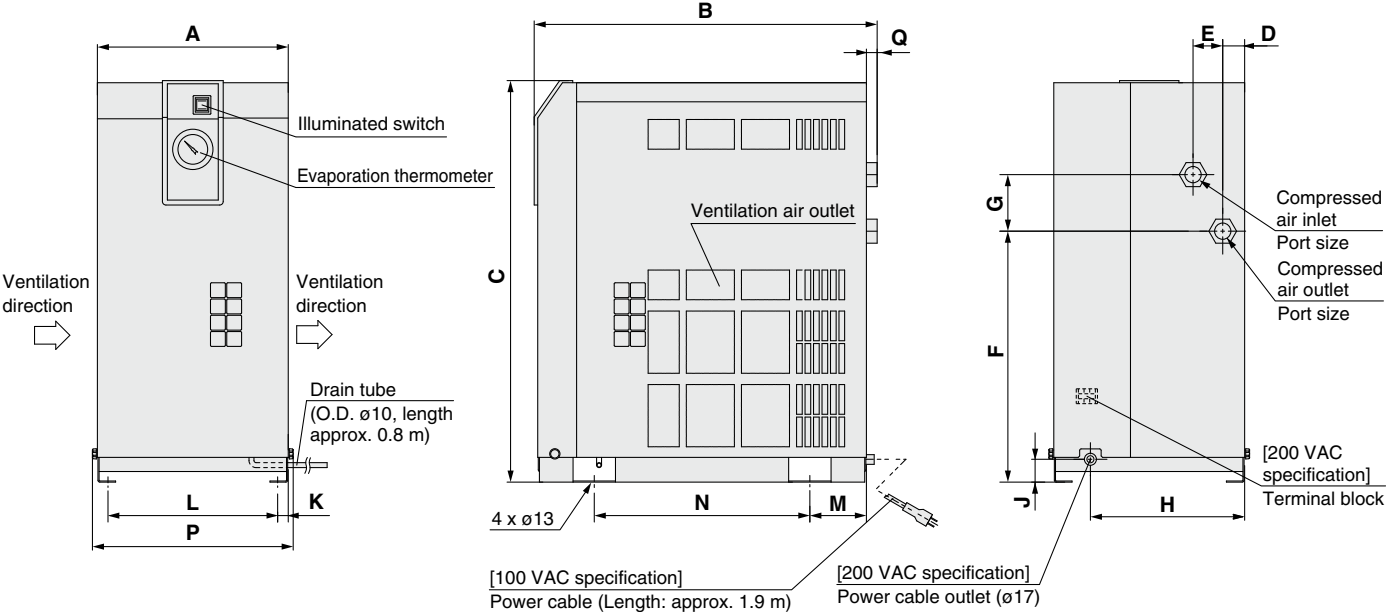


IDU8E, IDU11E, IDU15E1



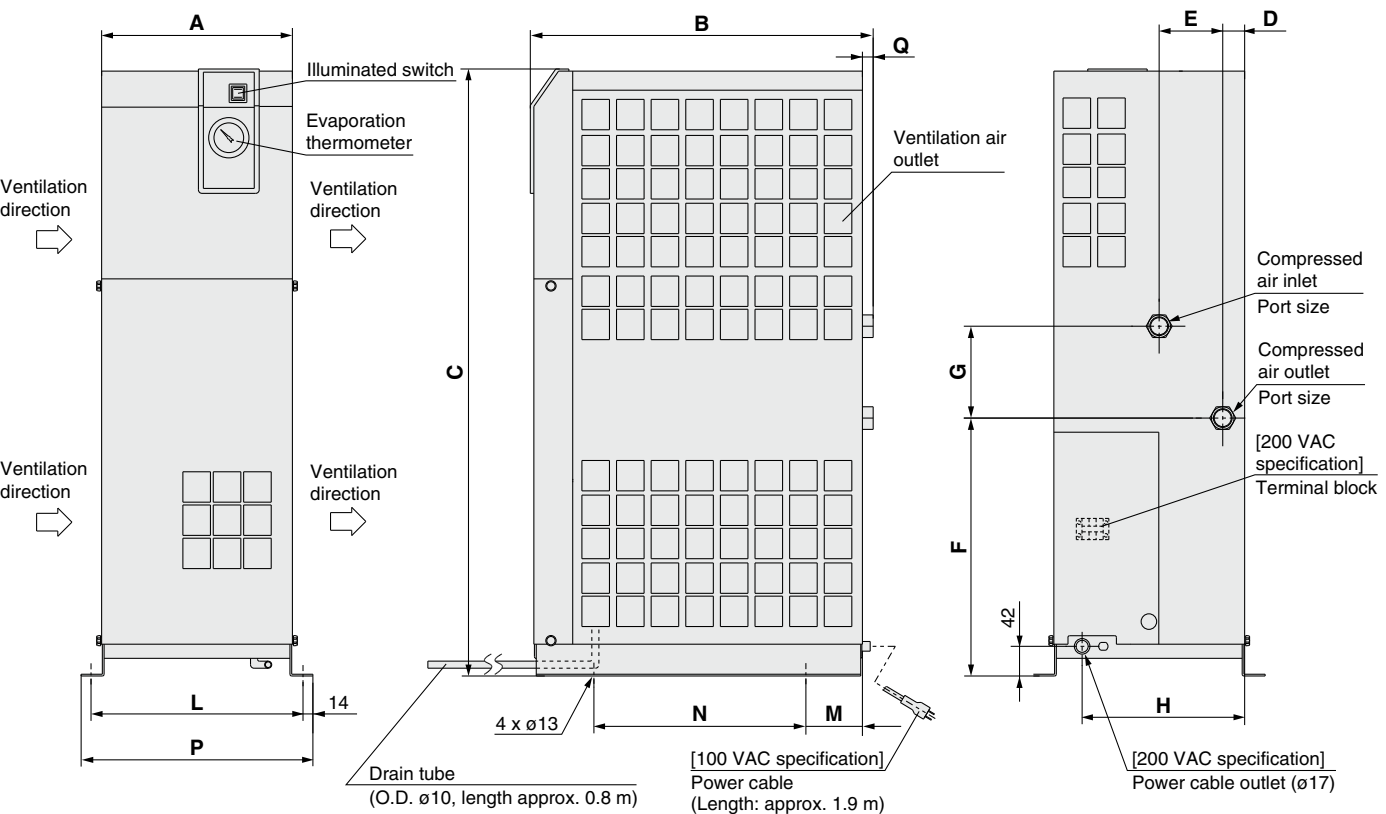
Dimensions

IDU3E to IDU6E



Dimensions																[mm]
Model	Port size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
IDU3E	Rc3/8	270	455	498	31	42	283	80	230	32	15	240	80	275	284	15
IDU4E	Rc1/2		483	568			355							300		13
IDU6E	Rc3/4		485													15

IDU8E to IDU15E1



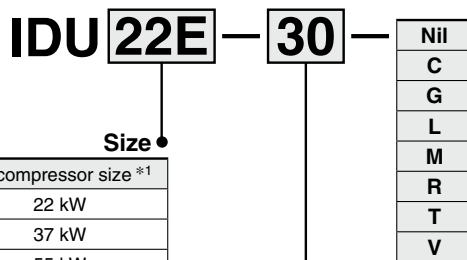
Dimensions [mm]															
Model	Port size	A	B	C	D	E	F	G	H	L	M	N	P	Q	
IDU8E	Rc3/4	270	485	859	31	90	365	130	230	300	80	300	328	15	
IDU11E				909											
IDU15E1	Rc1	300	620	960	79	54	425	93	258	330	66	470	358	16	

Refrigerant R407C (HFC) High Inlet Air Temperature **IDU□E Series**

22E, 37E, 55E, 75E

(Inlet air temperature: 55°C, Outlet air pressure dew point: 10°C)

How to Order



*1 Note that the above values are for reference only. Check the actual compressor capacity.

Symbol *1	Nil	C	G	L	M	R	T	V
Description	None	Anti-corrosive treatment for copper tube	With Chinese labels and a Chinese operation manual	With a heavy-duty auto drain (applicable to moderate pressure *2)	With a motor type auto drain (Voltage symbol 30 only)	With an earth leakage breaker	With a terminal block for power supply, operating, and error signals *3	With a timer controlled solenoid valve type auto drain (Voltage symbol 23 only) (applicable to moderate pressure *2)
Size								
22E	●	●	●	●	●	●	●	●
37E	●	●	●	●	●	●	●	●
55E	●	●	●	●	●	●	●	●
75E	●	●	●	●	●	●	●	●

*1 When multiple options are combined, indicate symbols in alphabetical order. However, the following combinations are not possible.

· The combination of L, M and V is not possible because an auto drain can only be attached to a single option.

*2 The maximum operating pressure is 1.6 MPa.

*3 To users who are considering switching from the previous air dryer:

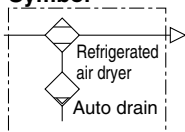
When switching from the previous air dryer and remote operation are required, select the Made to Order (IDU□E-X256) product.

* Refer to pages 159 to 163 for further information on options.

Standard Specifications



Symbol



Specifications		Model	High inlet air temperature				
			IDU22E	IDU37E	IDU55E	IDU75E	
Operating range ^{*3}	Fluid		Compressed air				
	Inlet air temperature [°C]		5 to 80				
	Inlet air pressure [MPa]		0.15 to 1.0				
	Ambient temperature (Humidity) [°C]		2 to 40 (Relative humidity 85% or less)				
Rated conditions ^{*4}	Air flow capacity [m³/min]	Standard condition (ANR) ^{*1}	50 Hz	3.9	5.7	8.4	11.0
			60 Hz	4.3	6.1	9.8	12.5
		Compressor intake condition ^{*2}	50 Hz	4.1	6.1	8.9	11.7
			60 Hz	4.6	6.5	10.4	13.3
	Inlet air pressure [MPa]		0.7				
	Inlet air temperature [°C]		55				
	Ambient temperature [°C]		32				
	Outlet air pressure dew point [°C]		10				
Power supply voltage (Frequency)			Single-phase: 230 VAC ±10% (50 Hz) Three-phase: 200 VAC (50 Hz) Three-phase: 200/220 VAC (60 Hz)				
Electric specifications	Power consumption 50/60 Hz ^{*5} [W]	Three-phase 200 V		1100/1450		1570/2050	2200/2850
		Single-phase 230 V (50 Hz)		960		1570	2300
	Operating current 50/60 Hz ^{*5} [A]	Three-phase 200 V		4.2/4.8		6.7/7.3	8.2/9.3
		Single-phase 230 V (50 Hz)		4.3		6.9	10.7
	Applicable earth leakage breaker capacity ^{*6} (Sensitivity of leak current of 30 mA) [A]	Three-phase 200 V		10		15	
		Single-phase 230 V (50 Hz)		10		20	
Refrigerant			R407C (HFC)				
Auto drain			Float type (Normally open)				
Port size			R1	R1 1/2	R2		
Weight [kg]			90	130	160	166	
Coating color			Body panel: White 1 Base: Gray 2				
Applicable air compressor output (Reference) For screw type [kW]			22	37	55	75	

^{*1} Air flow capacity under the standard condition (ANR) [20°C, Atmospheric pressure, and 65% Relative humidity]

^{*2} Air flow capacity converted by the compressor intake condition [32°C, Atmospheric pressure, and 75% Relative humidity]

^{*3} The operation range does not guarantee the use with normal air flow capacity.

^{*4} Select the model in accordance with Model Selection in the **Web Catalog** for models beyond the rated specifications.

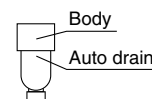
^{*5} These values are reference values under rated conditions, and are not guaranteed. Do not use these values for the thermal set values, etc.

^{*6} Product other than the Option R is not equipped with an earth leakage breaker. Purchase an appropriate earth leakage breaker separately.

Replacement Parts

Model	IDU22E	IDU37E	IDU55E	IDU75E
Auto drain replacement parts no. ^{*7}	AD48			

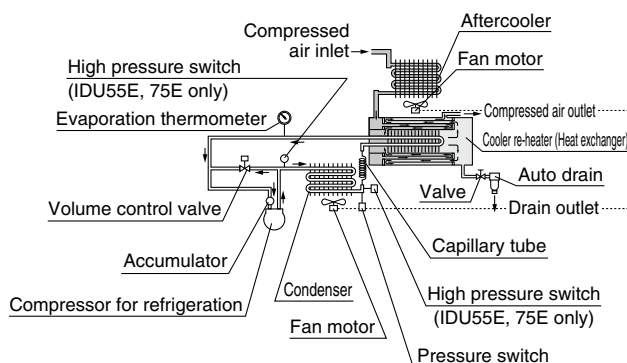
^{*7} The part number for the auto drain components only excluding the body part.
Body part replacement is not possible.



Construction (Air/Refrigerant Circuit)

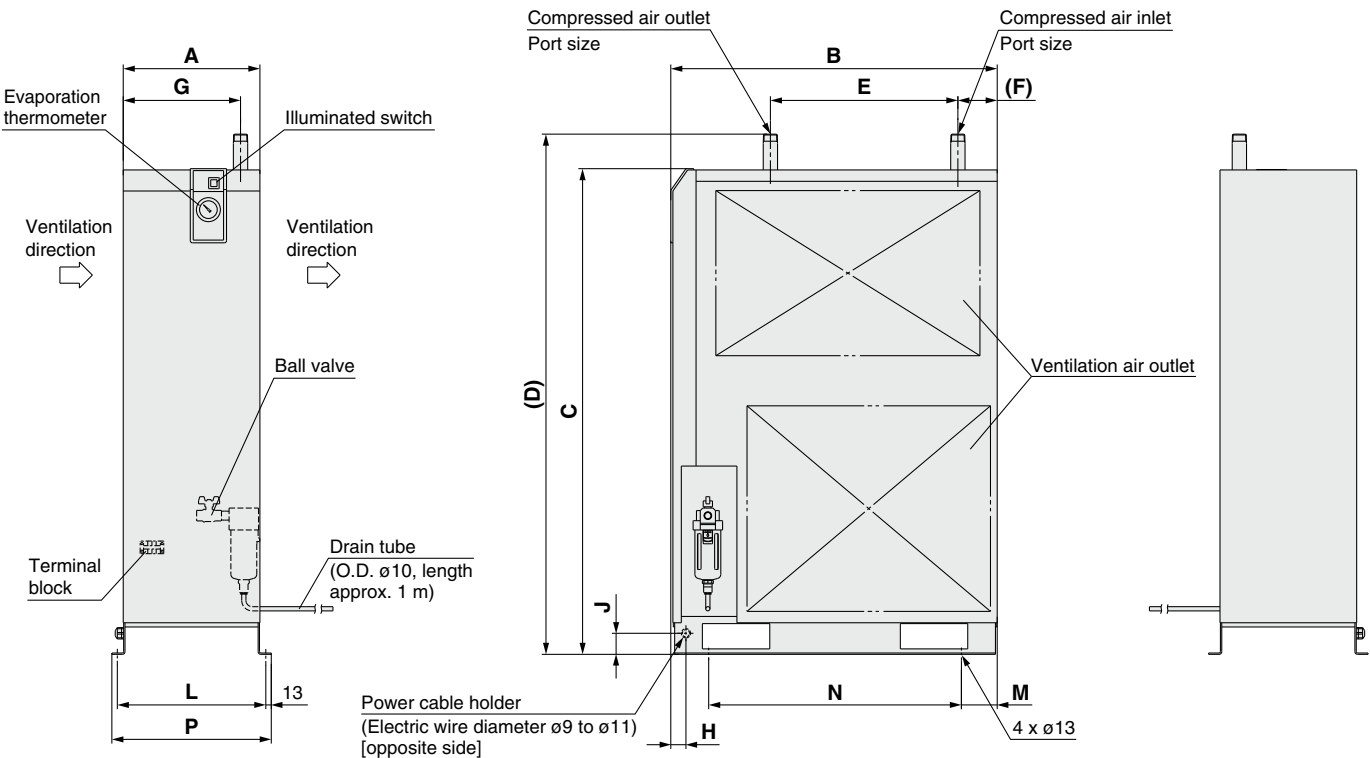
Humid, hot air coming into the air dryer will be cooled down by a heat exchanger. Water condensed at this time will be removed from the air by a drain separator and drained out automatically. Air separated from the water will be heated by a heat exchanger to obtain the dried air, which goes through to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

IDU22E, IDU37E, IDU55E, IDU75E



Dimensions

IDU22E to 75E



Dimensions

[mm]

Model	Port size	A	B	C	D	E	F	G	H	J	L	M	N	P
IDU22E	R1	325	775	1153	1235	445	93	279	46	50	353	85	600	379
IDU37E	R1 1/2	360		1258	1350	550	64	290			388		680	414
IDU55E			855	1345	1440	530	53	360	30	70	500	75	700	526
IDU75E	R2	470		1480	1575									

IDF/IDU Series Options 1

Refer to “How to Order” on pages 138, 142, 145, 150, 153, 156 for optional models.

A	Option symbol									
	Cool compressed air output									
										IDF1E to 75E

Cool outlet air (10°C) can be supplied.

The air flow with this option is smaller than that of the standard air dryer. (Refer to the table below.)

If the air dryer is used out of the scope of the rated specifications or conditions, select a model according to the **Web Catalog** and apply the air flow capacity shown in the tables below to the data ⑤.

*1 Perform thermal insulation treatment for pipings and equipment installed after the dryer to prevent the formation of condensation.

*2 The Option A cannot be used for the IDF100F to 370D and the IDU series due to the construction of the heat exchanger unit.

Air Flow Capacity

Model		IDF1E	IDF2E	IDF3E	IDF4E	IDF6E	IDF8E	IDF11E	IDF15E1	IDF22E	IDF37E	IDF55E	IDF75E
Air flow capacity [m³/min (ANR)]	50 Hz	0.085	0.12	0.18	0.26	0.32	0.5	0.65	1.2	1.7	2.6	3.85	5.35
	60 Hz	0.1	0.14	0.21	0.29	0.375	0.55	0.75	1.3	1.9	3.05	4.5	6.2

(Rated conditions): Inlet air pressure: 0.7 MPa, Inlet air temperature: 35°C (IDF1E to 37E), 40°C (IDF55E, 75E), Outlet air temperature: 10°C

C	Option symbol									
	Anti-corrosive treatment for copper tube									
										IDF, IDU all models

This minimizes the corrosion of the copper and copper alloy parts when the air dryer is used in an atmosphere containing hydrogen sulfide or sulfurous acid gas. (Corrosion cannot be completely prevented.)

Special epoxy coating: Copper tube and copper alloy parts. The coating is not applied on the heat exchanger or around electrical parts, where operation may be affected by the coating.

* Corrosion is not covered under warranty.

G	Option symbol									
	With Chinese labels and a Chinese operation manual									
										IDF1E to 75E, IDU3E to 75E

In addition, Chinese labels are put on the external panels.

A Chinese operation manual is also included.

K	Option symbol									
	Moderate pressure specification (Auto drain bowl: Metal bowl with level gauge)									
										IDF6E to 37E, IDU3E to 15E1

The maximum operating pressure is 1.6 MPa.

The auto drain is changed from the standard to the moderate pressure specification.

A metal bowl with a level gauge which can confirm the water level is used for the auto drain.

Specifications

1. Maximum operating pressure: 1.6 MPa
2. Dimensions ... same as standard products

Replacement Parts

Model	Auto drain replacement parts no.	Note
IDF6E to 37E IDU3E to 15E1	IDF-S0086	Assembly of Auto drain: AD48-8-X2110, One-touch fitting: KQ2H10-02AS, and Insulator

IDF/IDU Series Options 2

Refer to "How to Order" on pages 138, 142, 145, 150, 153, 156 for optional models.

K

Option symbol

Moderate pressure specification

IDF100F to 150F

The maximum operating pressure is 1.6 MPa.

The internal drain piping is changed from the nylon tube to the metal.

Specifications

1. Maximum operating pressure: 1.6 MPa
2. Dimensions ... same as standard products

L

Option symbol

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

IDF4E to 75E, IDF370D,
IDU3E to 15E1, IDU22E to 75E

Drainage including dust can also be exhausted.

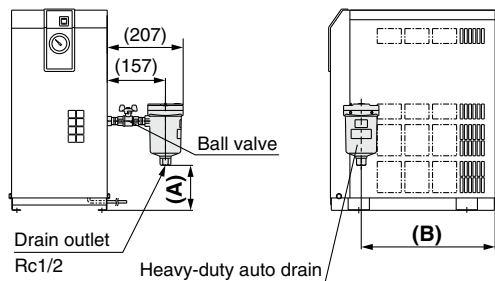
The float type auto drain used in the standard air dryer is replaced with a heavy-duty auto drain (ADH4000-04).

* The IDF100F to 150F, 190D, 240D standard types are equipped with a heavy-duty auto drain.

Max. operating pressure: 1.6 MPa

IDF4E to 15E1

IDU3E to 15E1



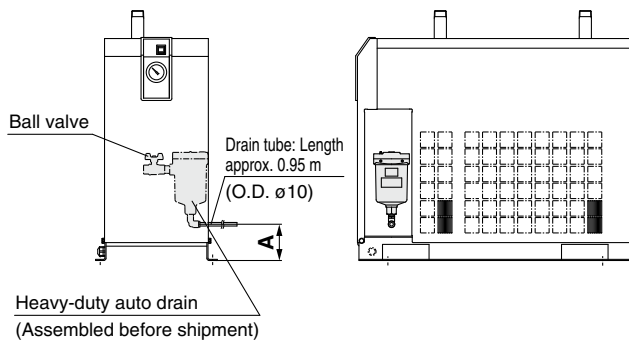
- * The heavy-duty auto drain and the ball valve are both enclosed in the same shipping package as the main body of the air dryer. Customers are required to mount the parts to the air dryer.
- * Customers will need to supply the fitting (KQ2L10-04AS) and tubing (TU1065BU) for the drain piping.

Dimensions

[mm]

Model	A	B
IDF4E	55	348
IDF6E, IDU3E	67	
IDF8E, IDF11E	139	378
IDU4E, IDU6E		
IDU8E, IDU11E	149	
IDF15E1	47	494
IDU15E1		533

IDF22E to 75E, IDU22E to 75E



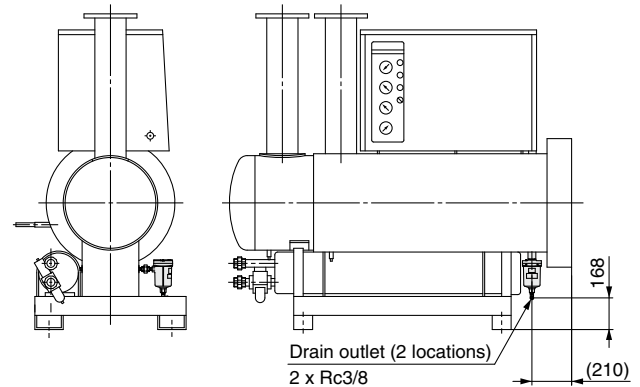
Dimensions

[mm]

Model	A
IDF22E, 37E IDU22E, 37E	Approx. 100
IDF55E, 75E IDU55E	Approx. 120
IDU75E	Approx. 250

Max. operating pressure: 0.97 MPa

IDF370D



Replacement Parts: Heavy-Duty Auto Drain

Model	Part no. (Description)	Configuration
IDF4E to 15E1 IDU3E to 15E1 IDF370D	ADH4000-04 (Heavy-duty auto drain)	Heavy-duty auto drain
IDF22E to 75E IDU22E to 75E	ADH-E400 (Exhaust mechanism replacement kit)	Exhaust mechanism replacement kit Housing (Use existing equipment.)

Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

IDF/IDU Series Options 3

Refer to “How to Order” on pages 138, 142, 145, 150, 153, 156 for optional models.

M Option symbol With a motor type auto drain

IDF4E to 75E, 190D, 240D
IDF3E to 75E

The float type auto drain used in the standard air dryer is replaced with a motor type auto drain (ADM200).

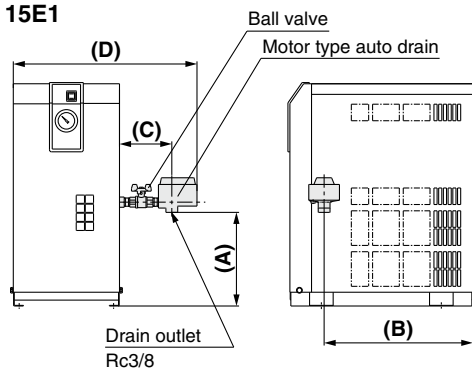
* The IDF370D standard type is equipped with a motor type auto drain.

Air Discharge

Operating air pressure	Air discharge without drainage
0.3 MPa	0.006 m ³ per cycle (ANR)
0.5 MPa	0.010 m ³ per cycle (ANR)
0.7 MPa	0.014 m ³ per cycle (ANR)

* The motor type auto drain actuates once (for 2 seconds) per minute.

IDF4E to 15E1 IDU3E to 15E1



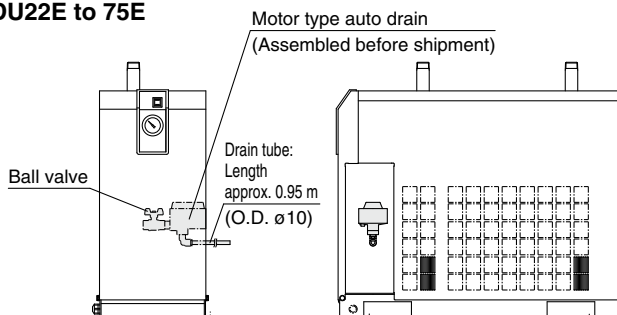
Dimensions [mm]

Model	A	B	C	D
IDF4E	154	348	133	474
IDF6E, IDU3E	166			
IDF8E, 11E	238	378		
IDU4E, 6E				
IDU8E, 11E	248			
IDF15E1	149	494	146	510
IDU15E1	150	533	137	530

* The motor type auto drain and the ball valve are both enclosed in the same shipping package as the main body of the air dryer. Customers are required to mount the auto drain to the air dryer.

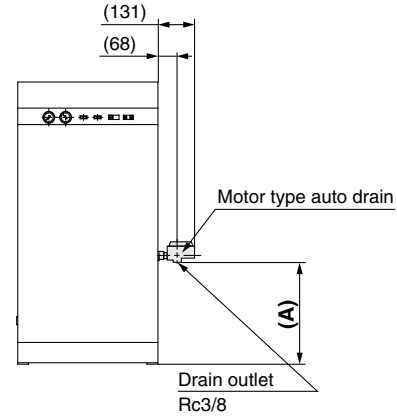
* Customers will need to supply the fitting (KQ2L10-03AS) and tubing (TU1065BU) for the drain piping.

IDF22E to 75E IDU22E to 75E



* When a longer drain tube than the one attached is necessary, remove and replace it with a tube prepared by customers.
(After connection with a fitting, the drain may not flow due to a drop in pressure caused by the fitting.)

IDF190D, 240D



Dimensions [mm]

Model	A
IDF190D	526
IDF240D	565

* The motor type auto drain is enclosed in the same shipping package as the main body of the air dryer. Customers are required to mount the auto drain to the air dryer.

Replacement Parts: Motor Type Auto Drain Assembly *1

Model	Part no.	Note
IDF4E to 15E1-10 IDU3E to 15E1-10	IDF-S0087	Assembly of Motor type auto drain: ADM200-041, Plug housing assembly: 173090-2, Receptacle: 173707-1, Rubber plug: 172888-2
IDF4E to 37E-20 IDF22E to 75E-30 IDU3E to 15E1-20 IDU22E, 37E-30	IDF-S0090	Assembly of Motor type auto drain: ADM200-042, Plug housing assembly: 173090-2, Receptacle: 173707-1, Rubber plug: 172888-2
IDU55E, 75E	IDF-S0510	Assembly of Motor type auto drain: ADM200-042-4, Plug housing assembly: 173090-2, Receptacle: 173707-1, Rubber plug: 172888-2
IDF190D, 240D	IDF-S0511	Assembly of Motor type auto drain: ADM200-042-8, Plug housing assembly: 173090-2, Receptacle: 173707-1, Rubber plug: 172888-2

*1 Including electric wire with connector on the end

P Option symbol With a metal name plate IDF100F to 150F

The label identifying the model and specifications of the product is changed to a metal plate which has better endurance.

IDF/IDU Series Options 4

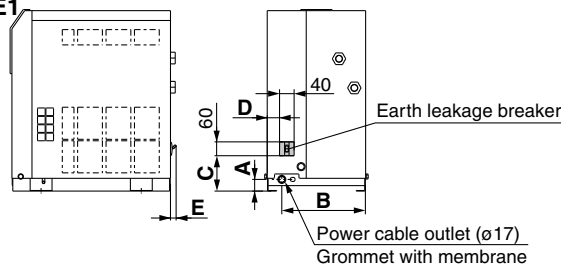
Refer to “How to Order” on pages 138, 142, 145, 150, 153, 156 for optional models.

R Option symbol With an earth leakage breaker

Except IDF1E, 2E, 3E

The air dryer is equipped with an earth leakage breaker, reducing the electrical wiring required during installation.
(The IDF370D does not include the electrical leakage detection function.)

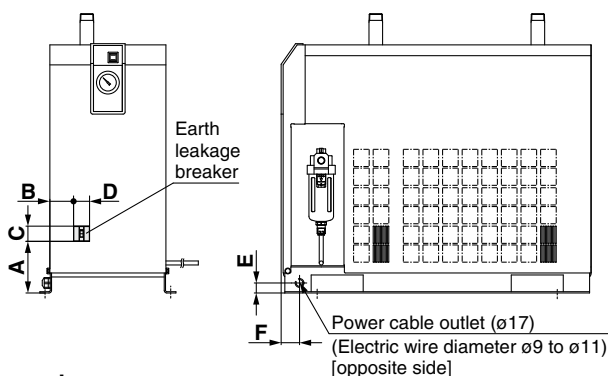
IDF4E to 15E1 IDU3E to 15E1



Dimensions

Model	A	B	C	D	E
IDF4E, 6E, 8E, 11E	32	230	97	34	15
IDF15E1	43	258	102	82	—
IDU3E, 4E, 6E	32	230	97	34	15
IDU8E	42		100	37	—
IDU11E	43		102	82	

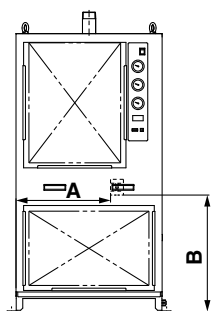
IDF22E to 75E IDU22E to 75E



Dimensions

Model	A	B	C	D	E	F
IDF22E-20	125	59	60	40	25	46
IDF37E-20		39		60		
IDF22E-30					148	81
IDF37E-30		133		73		
IDF55E-30	151	74	60	60	50	46
IDF75E-30	146	122				
IDU22E-30	148	55			70	36
IDU37E-30	166	73				

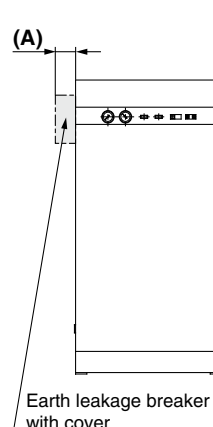
IDF100F to 150F



Dimensions

Model	A	B
IDF100F	434	535
IDF125F	448	
IDF150F	628	537

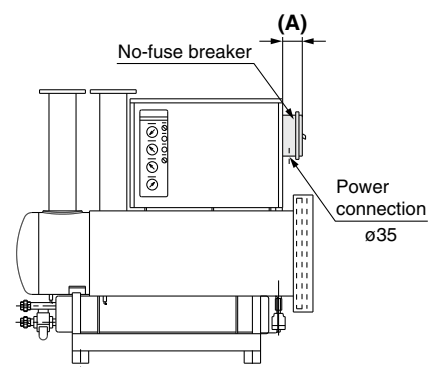
IDF190D, 240D



Dimensions

Model	A
IDF190D	95
IDF240D	
IDF370D	156

IDF370D



Breaker Capacity and Sensitivity of Leak Current

Breaker Capacity and Sensitivity of Leak Current			
Voltage	Model	Breaker capacity	Sensitivity of leak current
100 V type	IDF4E-10, IDF6E-10	10 A	30 mA
	IDF8E-10, IDF11E-10, IDF15E1-10		
	IDU3E-10, IDU4E-10, IDU6E-10		
	IDU8E-10, IDU11E-10, IDU15E1-10		
200 V type	IDF4E-20, IDF6E-20	5 A	
	IDF8E-20, IDF11E-20		
	IDU3E-20, IDU4E-20		
	IDU6E-20, IDU8E-20, IDU11E-20		
	IDF15E1-20, IDF22E-20, IDF37E-20	10 A	
	IDU15E1-20		
	IDF22E-30, IDF37E-30		
	IDF55E-30		
	IDU22E-30, IDU37E-30, IDU55E-30	15 A	
	IDF75E-30, IDU75E-30		
	IDF100F		30 A
	IDF125F		
IDF150F			
IDF190D	50 A		
IDF240D			
IDF370D			
			—

IDF/IDU Series Options 5

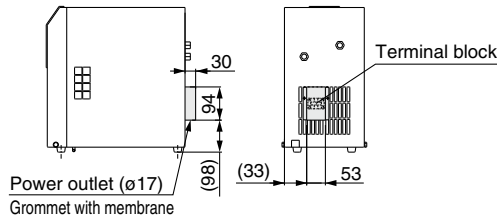
Refer to "How to Order" on pages 138, 142, 145, 150, 153, 156 for optional models.

S Option symbol

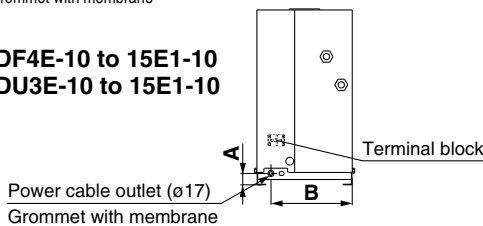
Power supply terminal block connection IDF1E-10 to 15E1-10,
IDU3E-10 to 15E1-10

The option allows the connection of a power cable to a terminal block. This option is supplied with the 200 V model as a standard accessory.

IDF1E-10 to 3E-10



IDF4E-10 to 15E1-10 IDU3E-10 to 15E1-10



Dimensions [mm]

Model	A	B
IDF4E, 6E, 8E, 11E	32	230
IDF15E1	43	258
IDU3E, 4E, 6E	32	230
IDU8E, 11E	42	230
IDU15E1	43	258

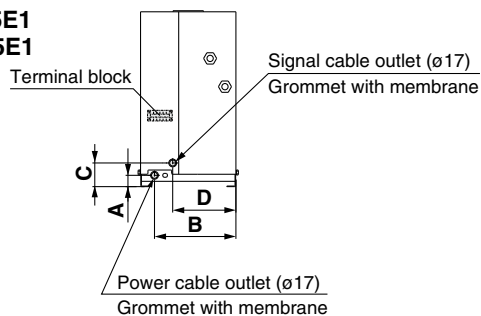
T Option symbol

With a terminal block for power supply, operating, and error signals IDF4E to 15E1,
IDU3E to 15E1

In addition to power supply connection, entry of operating and error signals is available. (No-voltage contact)

Additionally, when using the remote operation, select the Made to Order (IDF8E to 15E1-□-X256, IDU8E to 15E1-□-X256) products.

IDF4E to 15E1 IDU3E to 15E1



Contact capacity: Operating signal ... 220 VAC, 6 A
Error signal ... 250 VAC, 7 A

Minimum current value: 24 V, 5 mA (AC/DC) for operating and error signals

* Be sure to confirm the electric circuits with the drawings or Operation Manual before using the operating and error signals.

Dimensions [mm]

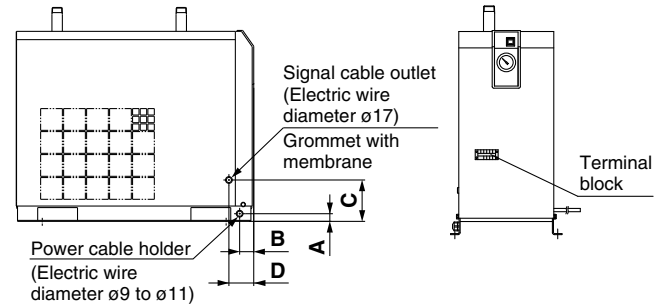
Model	A	B	C	D
IDF4E, 6E, 8E, 11E	32	230	67	179
IDF15E1	43	258	77	158
IDU3E, 4E, 6E	32	230	67	179
IDU8E, 11E	42	230	77	136
IDU15E1	43	258	77	158

T Option symbol

With a terminal block for power supply, operating, and error signals IDF22E to 75E,
IDU22E to 75E

In addition to power supply connection, entry of operating and error signals is available. (No-voltage contact) Additionally, when using the remote operation, select the Made to Order (IDF22E to 75E-□-X256, IDU22E to 75E-□-X256) products.

IDF22E to 75E, IDU22E to 75E



Contact capacity: Operating signal ... 220 VAC, 6 A
Error signal ... 250 VAC, 7 A

Minimum current value: 20 V, 5 mA (AC/DC) for operating and error signals

Dimensions [mm]

Model	A	B	C	D
IDF22E, 37E	25	46	135	81
IDF55E, 75E	50	36	207	
IDU22E, 37E	50	46	166	
IDU55E		36	230	
IDU75E	70	36	242	

V Option symbol

With a timer controlled solenoid valve type auto drain (applicable to moderate pressure) IDU3E to 75E-23
IDF100F to 150F

Drainage is discharged by controlling a solenoid valve with a timer. A strainer for solenoid valve protection and a stop valve are also included. (The external dimensions are the same as the standard product.)

Maximum operating pressure: 1.6 MPa (IDF100F to 150F: 1.0 MPa)

* The timer controlled solenoid valve actuates once (for 0.5 seconds) every 30 seconds.

Replacement Parts

Model	Part no.	Note
IDU3E to 37E-23	IDF-S0198	230 VAC
IDU55E, 75E-23	IDF-S0302	
IDF100F to 150F	IDF-S0405	200 VAC

IDF/IDU Series Options 6

Refer to “How to Order” on pages 138, 142, 145, 150, 153, 156 for optional models.

W

Option symbol

Water-cooled type

IDF100F to 150F, 190D, 240D

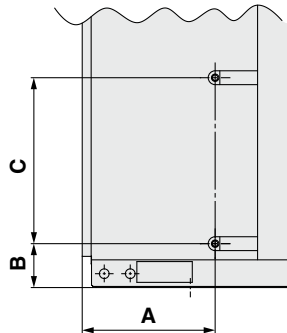
It can be used in a high temperature environment without decreasing air flow capacity. It can also be used in an enclosed environment without increasing the ambient temperature. This option is supplied with the IDF370D as a standard accessory.

Model	IDF100F	IDF125F	IDF150F	IDF190D	IDF240D
Condenser	Plate system			Shell and coil system	
Cooling water flow rate [m³/h] *1 50/60 Hz	1.29/1.56	1.74/1.98	2.16/2.52	4.8/4.8	5.4/5.4
Cooling tower performance [RT] *2	2	2.4	3	7.5	7.5
Water flow regulator	Pressure type automatic water supply valve				
Port size for water side	R1/2	R3/4		R1	

*1 Value with rated load when cooling water inlet temperature is 32°C.

*2 Calculated at 1 RT = 3300 kcal/h

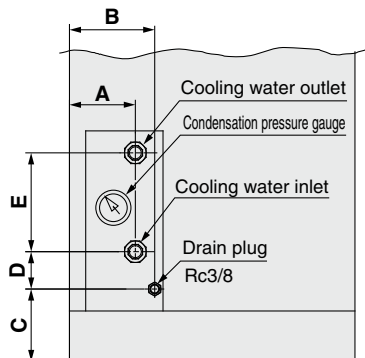
IDF100F to 150F



Dimensions [mm]

Model	A	B	C
IDF100F	384	127	479
IDF125F, 150F	234		

IDF190D, 240D



Dimensions [mm]

Model	A	B	C	D	E
IDF190D, 240D	180	250	160	48	273

Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

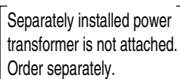
Pressure Control Equipment

Pneumatic Auxiliary Equipment

IDF/IDU Series

Optional Accessories

Specifications

Description	Features	Specifications	Applicable air dryer
Separately installed power transformer *1, 2 	Power supply and voltage for those other than the standard.	Max. ambient temperature 40°C (Relative humidity 85% or less)	IDF1E-10 to IDF15E1-10, IDF22E-20/30 IDF37E-20/30, IDF55E-30, IDF75E-30 IDU3E-10 to 15E1-10, IDU22E to 75E-30 IDF100F to 150F, IDF190D to 370D-3
Dedicated base for separately installed power transformer *2  Separately installed power transformer is not attached. Order separately.	For integrating the separately installed power transformer and the air dryer.	—	IDF4E to 15E1-10 IDF22E-20/30, IDF37E-20/30 IDF55E-30, IDF75E-30 IDU3E to 15E1-10
Dust-protecting filter set *3 	For preventing a decline in the performance of air dryers, even in a dusty atmosphere.	Max. ambient temperature 40°C	IDF1E to 75E IDF190D to 240D IDU3E to 75E
Bypass piping set 	Easy bypass piping (connect this set to the air dryer), allowing substantial reduction in the installation time.	Max. operating pressure *4 1.0 MPa Max. operating temperature IDF: 60°C IDU: 80°C	IDF1E to 75E IDU3E to 75E
Foundation bolt set 	For fixing the air dryer to the foundations. Easy to secure by striking the axle.	Stainless steel	IDF4E to 75E IDU3E to 75E IDF100F to 150F
Piping adapter 	For converting the thread type of an IN/OUT fitting for air dryers.	Brass	IDF1E to 75E IDU3E to 75E IDF100F to 150F
Mounting base adapter	For ensuring conversion to the former models' (IDF22C and 37C) air piping.	—	IDF22E, 37E
Conversion piping set	[When bypass piping is already in place] For ensuring conversion to the former models' (IDF6D to 15C) air piping.	Max. operating pressure *4 1.0 MPa Max. operating temperature 60°C	IDF6E to 15E1
Conversion bypass piping set	[When there is no bypass piping] For ensuring conversion to the former models' (IDF6D to 15C) air piping.	Max. operating pressure *4 1.0 MPa Max. operating temperature 60°C	IDF6E to 15E1

*1 When using a power transformer for the IDF1E to 15E1 and IDU3E to 15E1, select the air dryer of 100 V.

*2 When using a power transformer for the IDF190D and 240D, built-in transformer type is also available. (Refer to the How to Order on page 150.)

*3 This filter set is supplied with the IDF100F to 150F as a standard accessory.

*4 Not applicable to the moderate pressure specification. Prepare a bypass, conversion or conversion bypass piping set suitable for the specification.

Air Dryers Compliant to Overseas Standards

Refrigerated Air Dryer IDFA□E Series

For Use in Europe, Asia and Oceania



EC Directive compliant (with CE marking)

Power supply voltage:
Single-phase 230 VAC (50 Hz)

Refrigerant: R134a (HFC)
R407C (HFC)

Zero ozone depletion potential

Improved corrosion
resistance with the
stainless steel heat
exchanger

[IDFA4E to 75E, 100F to 150F]



Model	Air flow capacity (m³/h) [ANR]			Refrigerant	Rated inlet condition	Port size
	Outlet air pressure dew point ^{Note)}					
	3°C	7°C	10°C			
IDFA3E	12	15	17	R134a (HFC)	35°C, 0.7 MPa	Rc 3/8
IDFA4E	24	31	34			Rc 1/2
IDFA6E	36	46	50			Rc 3/4
IDFA8E	65	83	91			
IDFA11E	80	101	112			R407C (HFC)
IDFA15E1	120	152	168	R 1		
IDFA22E	182	231	254	R 1 1/2		
IDFA37E	273	347	382			
IDFA55E	390	432	510	R 2		
IDFA75F	660	720	822			

Note) Air flow capacity for each dew point is indicated.

Refrigerated Air Dryer IDFB□E Series

For Use in North, Central & South America



UL certified

Power supply voltage:
Single-phase 115 VAC (60 Hz)
230 VAC (60 Hz)
Three-phase 460 VAC (60 Hz)

Refrigerant: R134a (HFC)
R407C (HFC)

Zero ozone depletion potential

Improved corrosion
resistance with the
stainless steel heat
exchanger

[IDFB4E to 75E]



Model	Air flow capacity SCFM (m³/h) [ANR]			Refrigerant	Rated inlet condition	Port size
	Outlet air pressure dew point ^{Note)}					
	37°F (2.8°C)	45°F (7.2°C)	50°F (10°C)			
IDFB3E	10 (17)	11 (19)	12 (20)	R134a (HFC)	100°F (37.8°C) 100 psi (0.7 MPa)	NPT 3/8
IDFB4E	15 (25)	16 (27)	17 (28)			NPT 1/2
IDFB6E	25 (43)	26 (45)	28 (47)			NPT 3/4
IDFB8E	41 (70)	43 (74)	45 (77)			
IDFB11E	59 (100)	62 (106)	65 (110)			NPT 1
IDFB15E	71 (120)	80 (136)	86 (147)			
IDFB22E	107 (182)	120 (205)	130 (221)			NPT 1 1/2
IDFB37E	161 (273)	173 (294)	181 (308)			
IDFB55E	226 (384)	258 (438)	297 (504)	R407C (HFC)		NPT 2
IDFB75E	300 (510)	353 (600)	406 (690)			

Note) Air flow capacity for each dew point is indicated.

* Refer to the separate catalog for dryer models conforming with foreign standards (CE and UL).

Membrane Air Dryer Single Unit Type

RoHS



IDG□A Series

Standard dew point -20°C , -15°C , -40°C , -60°C

How to Order



IDG **30** **□** A - **□** **03** **□** - **□**

Size ●

30
50
60
75
100

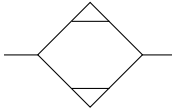
Standard dew point temperature/Outlet air flow rate ●

Symbol	Standard dew point ($^{\circ}\text{C}$)	Flow rate by size, Outlet air flow rate (L/min [ANR])					
		30	50	60	75	100	
Nil	-20	300	500	Select from IDG Series (page 168)			
H	-15	300	500				
L	-40	75	110	170	240	300	
S	-60	—	—	50	100	150	

Thread type ●

Symbol	Type
Nil	Rc
N	NPT
F	G

Symbol



Bracket Assembly (Accessory)/Part No.

Part no.	Applicable model
BM64	IDG30□A, IDG50□A
BM65	IDG60□A, IDG75□A, IDG100□A

* With hexagon socket head cap screws (2 pcs.) and spring washers (2 pcs.)

Semi-standard

Symbol	Specifications
Nil	None (Standard)
P	With fitting for purge air discharge
R	Flow direction (Right → Left)

Note) In the case of more than one symbol, indicate them alphabetically.

Accessory

Symbol	Specifications
Nil	None (Standard)
B	With bracket

Note) When symbol: B is indicated, a bracket assembly with a part number shown to the left below is included as an accessory.

Port size

Symbol	Port size	Size				
		30	50	60	75	100
02	1/4	●	●	—	—	—
03	3/8	●	●	●	●	●
04	1/2	—	—	●	●	●



Membrane Air Dryer

Single Unit Type

IDG Series

RoHS

How to Order

IDG 10 - 02 -

Size

1
3
5
10
20
60
75
100

Standard dew point temperature/Outlet air flow rate

Symbol	Standard dew point (°C)	Flow rate by size, Outlet air flow rate (L/min [ANR])							
		1	3	5	10	20	60	75	100
Nil	-20	10	25	50	100	200	600	750	1000
H	-15	—	25	50	100	200	600	750	1000
L	-40	—	—	—	—	—	—	—	—
S	-60	—	—	—	—	—	—	—	—

Select from
IDG□A Series (page 167)

Accessory

Symbol	Specifications
Nil	None (Standard)
B	With bracket (Except IDG1)

Note) When symbol: B is indicated, a bracket assembly with a part number shown to the left below is included as an accessory.

Port size/Applicable tubing O.D.

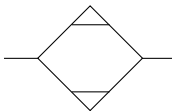
Symbol	Port size	Piping type	Size							
			1	3	5	10	20	60	75	100
01	1/8	Thread	—	●	●	—	—	—	—	—
02	1/4		●	●	●	●	●	—	—	—
03	3/8		—	—	—	●	●	—	—	—
04	1/2		—	—	—	—	—	●	●	●
06	ø6	One-touch fitting	●	—	—	—	—	—	—	—

Thread type/One-touch fitting

Symbol	Type
Nil	Rc
N	NPT
F	G
C Note)	ø6 One-touch fitting

Note) Size 1 only

Symbol



Bracket Assembly (Accessory)/Part No.

Part no.	Applicable model
BM59	IDG3, 5
BM61	IDG10
BM63	IDG20
BM65	IDG60, 75, 100

* With hexagon socket head cap screws (2 pcs.) and spring washers (2 pcs.)

Semi-standard

Symbol	Specifications	Size							
		1	3	5	10	20	60	75	100
Nil	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 more than one symbol, indicate them alphabetically.

Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

Standard Specifications/Single Unit Type (Standard dew point -20°C, -15°C)

Standard dew point----20°C

Model		IDG1	IDG3	IDG5	IDG10	IDG20	IDG30A	IDG50A	IDG60	IDG75	IDG100
Range of operating conditions	Fluid Note 1)	Compressed air									
	Inlet air pressure (MPa)	0.3 to 0.85					0.3 to 1.0				
	Inlet air temperature (°C)	−5 to 55 (No freezing)					−5 to 50 (No freezing)				
	Ambient temperature (°C)	−5 to 55 (No freezing)					−5 to 50 (No freezing)				
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		—			1 L/min [ANR] (Inlet air pressure at 0.7 MPa)						
Port size		1/4	—	1/8, 1/4		1/4, 3/8			3/8, 1/2		1/2
Applicable tubing O.D.		—	ø6	—		—	—	—	—	—	—
Weight (kg) (With bracket)		0.11	0.05	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) Prevent water droplets from entering the inlet port.

Note 2) "ANR" indicates the flow rate converted to the value at 20°C, under the atmospheric pressure and the state of relative humidity 65%.

Note 3) Includes 1 L/min [ANR] of purge air flow (Inlet air pressure at 0.7 MPa) for the dew point indicator (except IDG1, 3, 5).

Standard dew point----15°C/Type H

Model		IDG3H	IDG5H	IDG10H	IDG20H	IDG30HA	IDG50HA	IDG60H	IDG75H	IDG100H
Range of operating conditions	Fluid Note 1)	Compressed air								
	Inlet air pressure (MPa)	0.3 to 0.85				0.3 to 1.0				
	Inlet air temperature (°C)	-5 to 55 (No freezing)				-5 to 50 (No freezing)				
	Ambient temperature (°C)	-5 to 55 (No freezing)				-5 to 50 (No freezing)				
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 0.7 MPa)						
Port size		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) Prevent water droplets from entering the inlet port.

Note 2) "ANR" indicates the flow rate converted to the value at 20°C, under the atmospheric pressure and the state of relative humidity 65%.

Note 3) Includes 1 L/min [ANR] of purge air flow (Inlet air pressure at 0.7 MPa) for the dew point indicator (except IDG3H, 5H).

Standard Specifications/Single Unit Type (Standard dew point -40°C, -60°C)

Standard dew point---40°C/Type L

Model		IDG30LA	IDG50LA	IDG60LA	IDG75LA	IDG100LA
Range of operating conditions	Fluid Note 1)	Compressed air				
	Inlet air pressure (MPa)	0.3 to 1.0				
	Inlet air temperature (°C)	-5 to 50 (No freezing)				
	Ambient temperature (°C)	-5 to 50 (No freezing)				
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 0.7 MPa)				
Port size		1/4, 3/8		3/8, 1/2		
Weight (kg)		0.78	0.81	1.56	1.69	1.82
(With bracket)		(0.91)	(0.94)	(1.71)	(1.84)	(1.97)

Note 1) Prevent water droplets from entering the inlet port.

Note 2) "ANR" indicates the flow rate converted to the value at 20°C, under the atmospheric pressure and the state of relative humidity 65%.

Note 3) Includes 1 L/min [ANR] of purge air flow (Inlet air pressure at 0.7 MPa) for the dew point indicator.

Standard dew point---60°C/Type S

Model		IDG60SA	IDG75SA	IDG100SA
Range of operating conditions	Fluid Note 1)	Compressed air		
	Inlet air pressure (MPa)	0.3 to 1.0		
	Inlet air temperature (°C)	-5 to 50 (No freezing)		
	Ambient temperature (°C)	-5 to 50 (No freezing)		
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)	25	40	80
	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 0.7 MPa)		
Port size		3/8, 1/2		
Weight (kg)		1.56	1.69	1.82
(With bracket)		(1.71)	(1.84)	(1.97)

Note 1) Prevent water droplets from entering the inlet port.

Note 2) "ANR" indicates the flow rate converted to the value at 20°C, under the atmospheric pressure and the state of relative humidity 65%.

Note 3) Includes 1 L/min [ANR] of purge air flow (Inlet air pressure at 0.7 MPa) for the dew point indicator.

Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

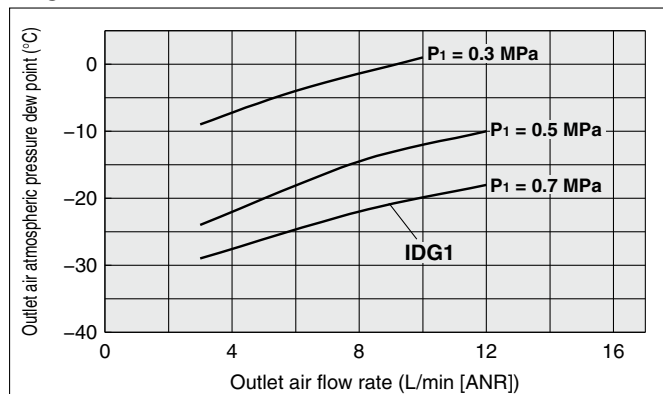
Pneumatic Auxiliary Equipment

Conditions: Inlet air temperature 25°C (saturated air), Ambient temperature 25°C, P₁: Inlet air pressure, Tube for purge air discharge (semi-standard: P): None
 Note: Correcting outlet air flow rate is required depending on inlet air temperature. Refer to the **Web Catalog** for details. For model with fitting for purge air discharge (semi-standard: P), the outlet air atmospheric pressure dew point may become higher depending on the tube length for purge air discharge. For other models, when the tube length is 5 meters or less, a rise of the outlet air atmospheric pressure dew point will be 1°C or less.

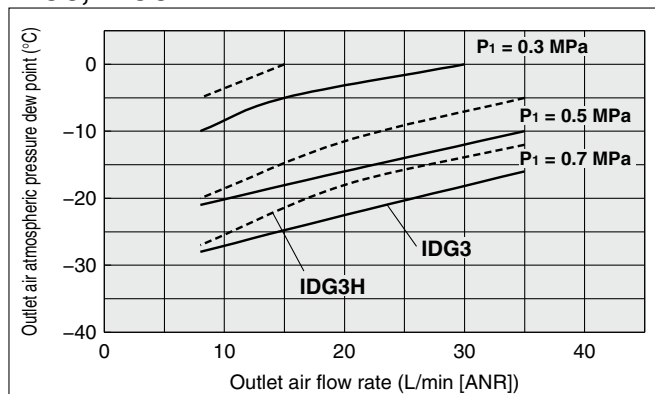
Performance Chart

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

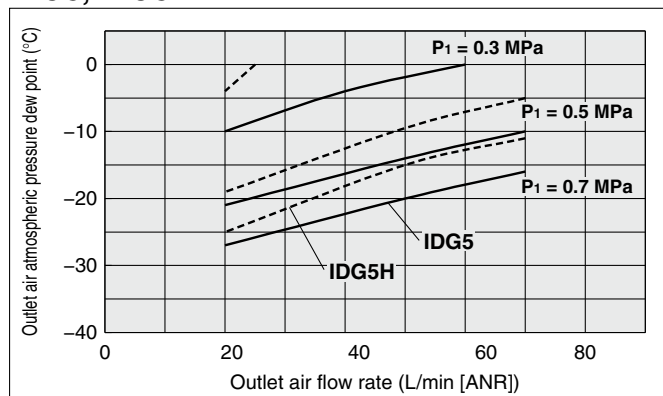
IDG1



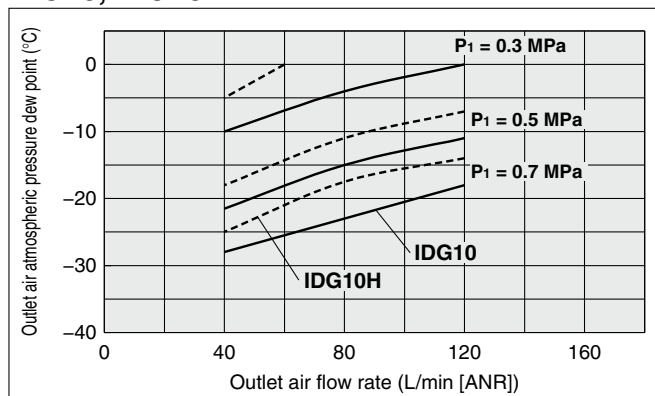
IDG3, IDG3H



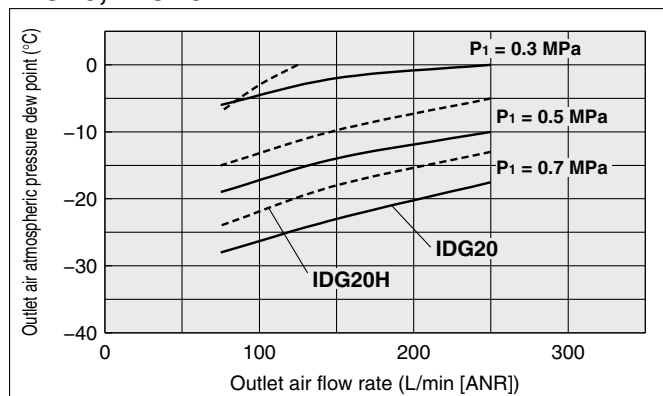
IDG5, IDG5H



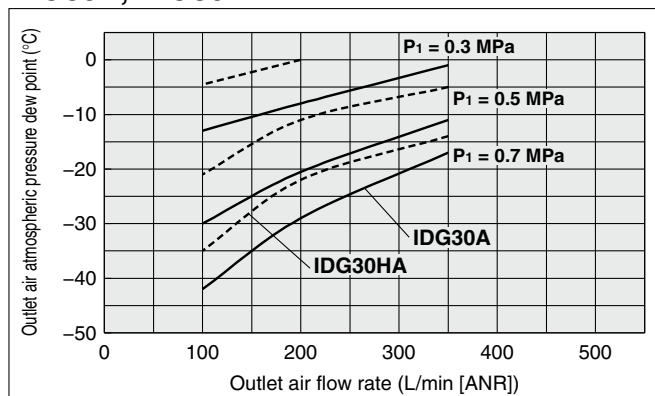
IDG10, IDG10H



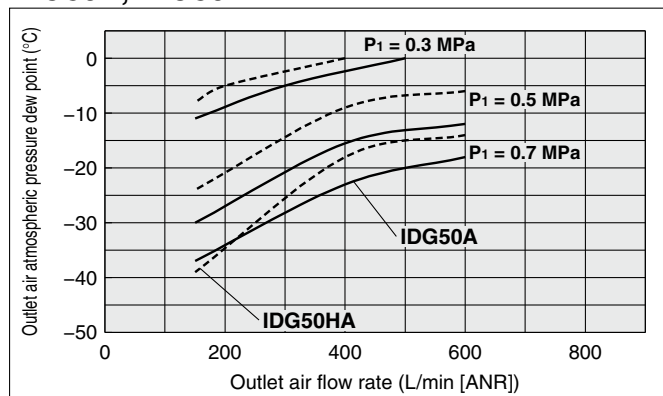
IDG20, IDG20H



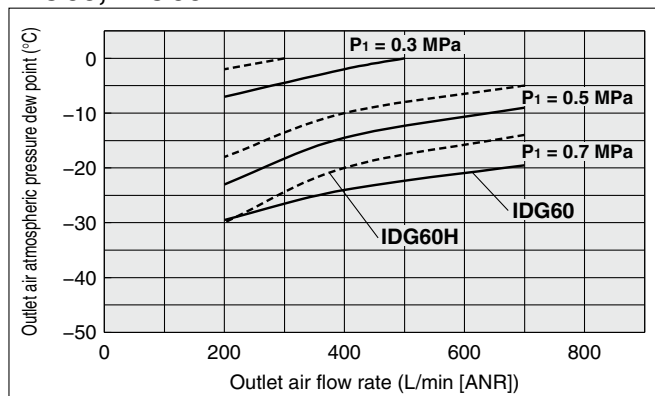
IDG30A, IDG30HA



IDG50A, IDG50HA

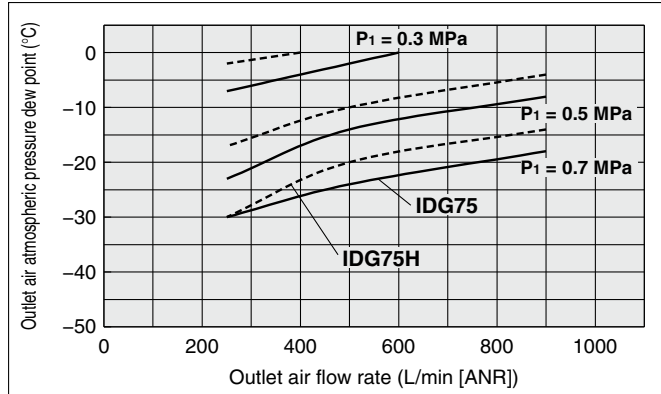


IDG60, IDG60H

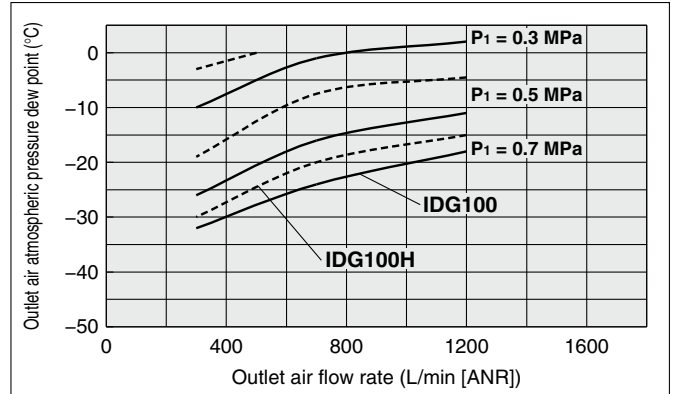


Performance Chart

IDG75, IDG75H

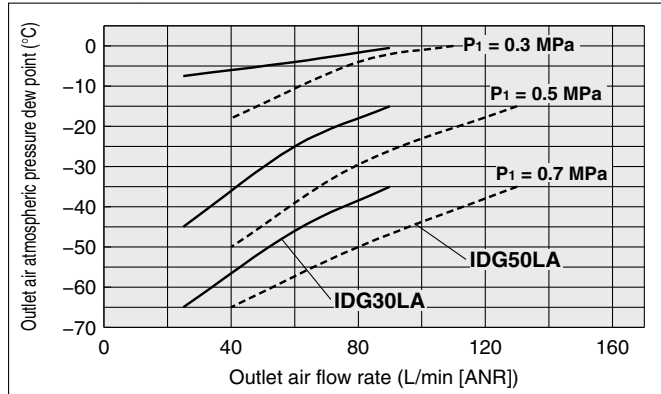


IDG100, IDG100H

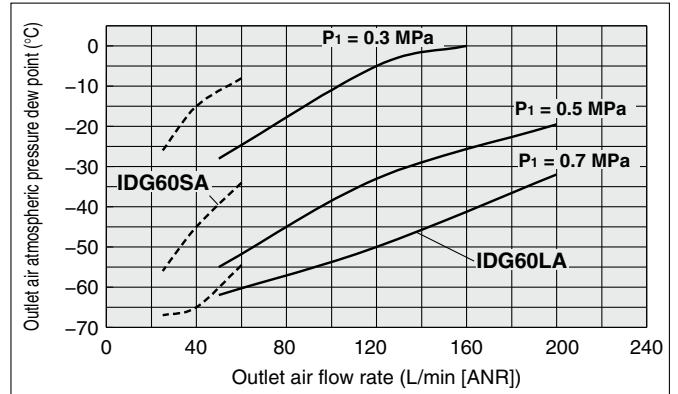


Standard dew point: ---40°C [Symbol: L], -60°C [Symbol: S]

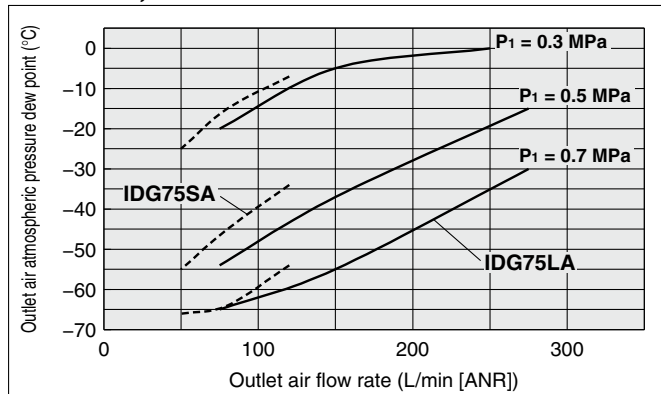
IDG30LA, IDG50LA



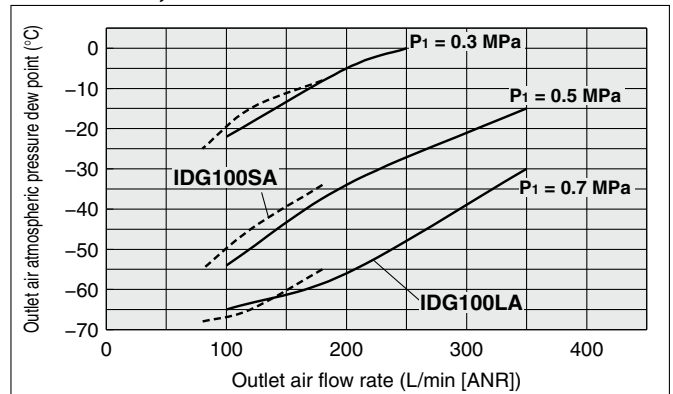
IDG60LA, IDG60SA



IDG75LA, IDG75SA



IDG100LA, IDG100SA



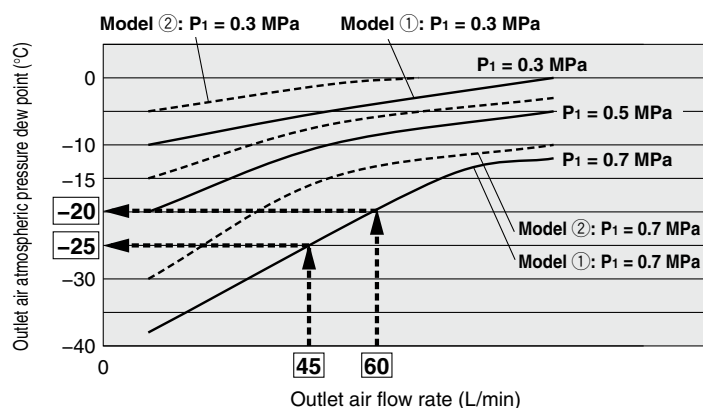
How to read the Performance Chart and select the model

Solid lines and dashed lines beginning at the top indicate the performance of inlet air temperature at 25°C and inlet air pressure $P_1 = 0.3 \text{ MPa}$, 0.5 MPa , 0.7 MPa respectively.

- For the inlet air temperature at 25°C and outlet air flow rate at 45 (L/min)
Model ①: The outlet air atmospheric pressure dew point at $P_1 = 0.7 \text{ MPa}$: -25 (°C).

- For the inlet air temperature at 45°C and outlet air flow rate at 45 (L/min)
Example) Outlet air flow rate correction factor: 0.75
(The correction factor differs depending on the model. Refer to the **Web Catalog** for details.)

Corrected outlet air flow rate: $45 \div 0.75 = 60 \text{ (L/min)}$.
Model ①: Performing corresponding to the outlet air atmospheric pressure dew point -20 (°C) at $P_1 = 0.7 \text{ MPa}$.

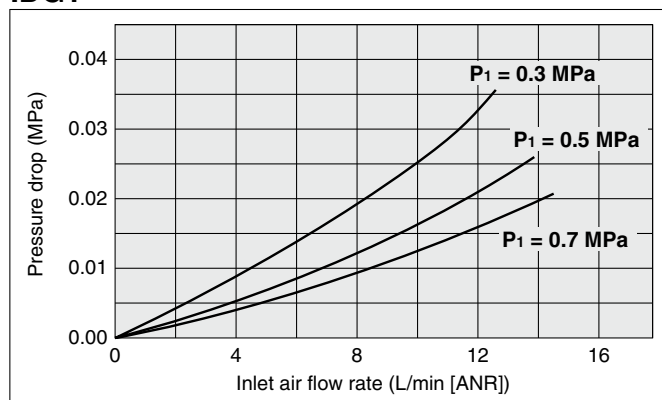


Single Unit Type/Flow Rate Characteristics

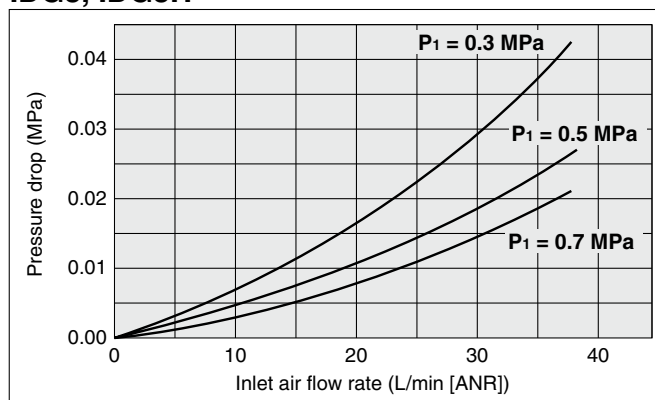
Conditions: Inlet air temperature 25°C, P₁: Inlet air pressure

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

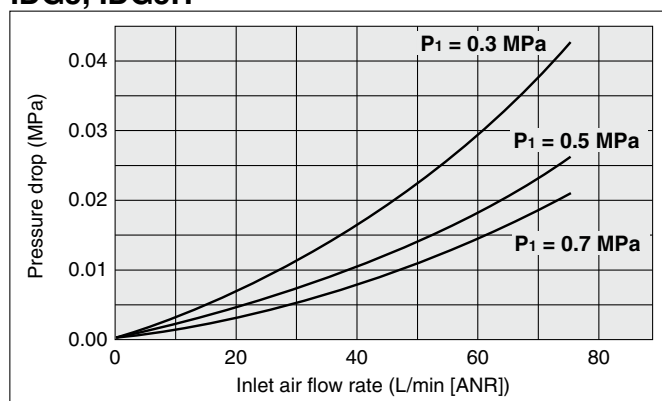
IDG1



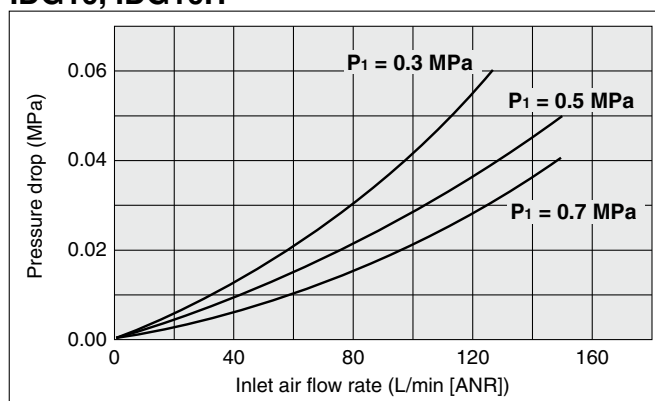
IDG3, IDG3H



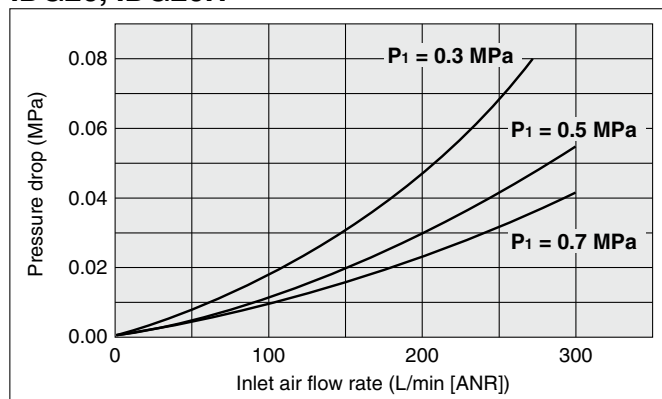
IDG5, IDG5H



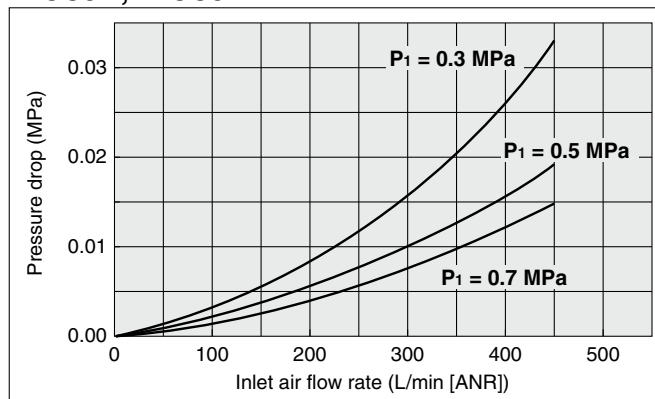
IDG10, IDG10H



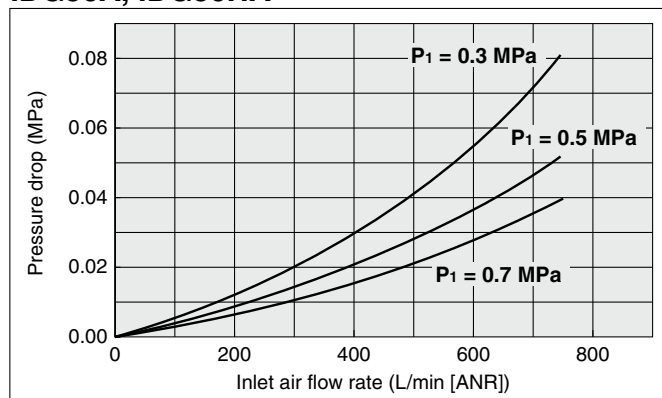
IDG20, IDG20H



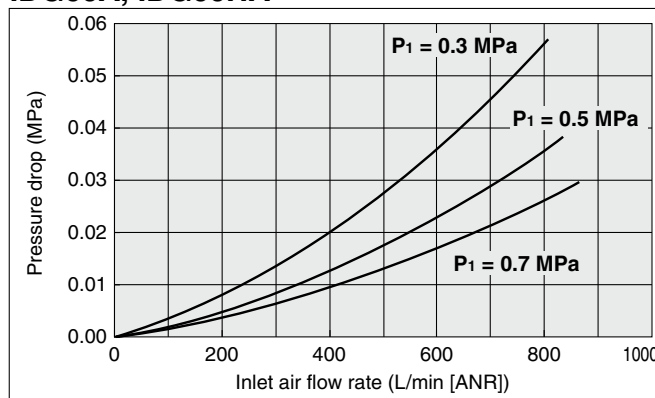
IDG30A, IDG30HA



IDG50A, IDG50HA



IDG60A, IDG60HA

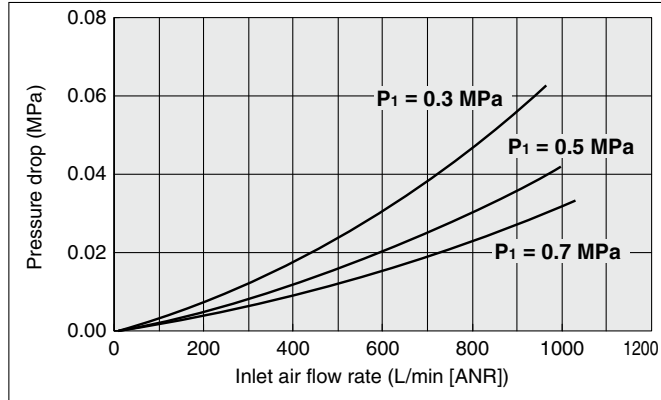


Single Unit Type/Flow Rate Characteristics

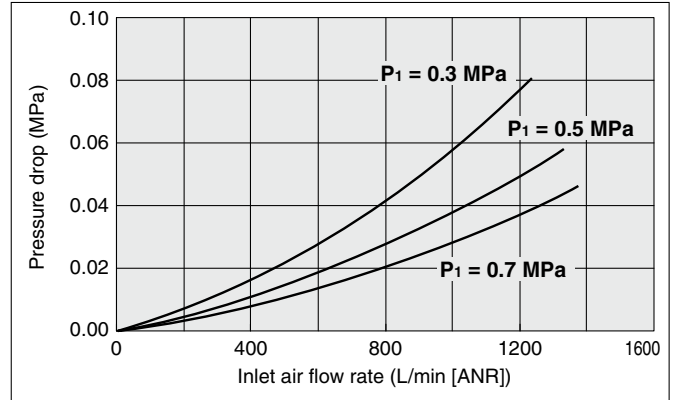
Conditions: Inlet air temperature 25°C, P₁: Inlet air pressure

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

IDG75, IDG75H

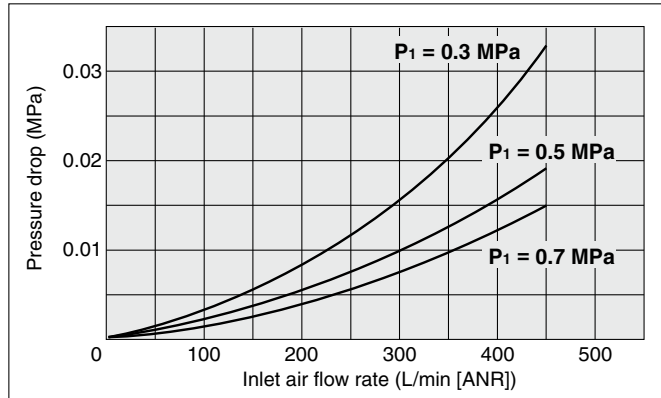


IDG100, IDG100H

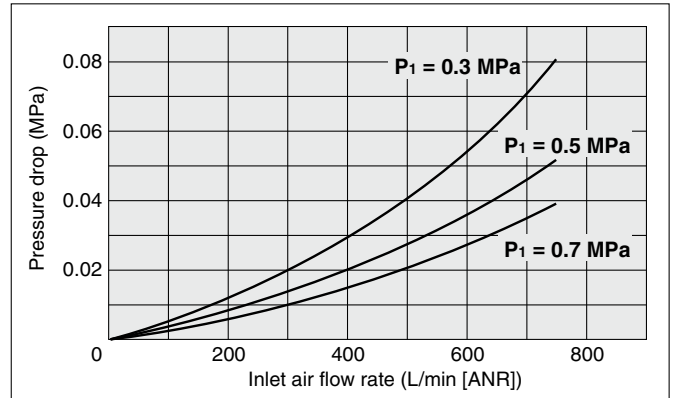


Standard dew point---40°C [Symbol: L], -60°C [Symbol: S]

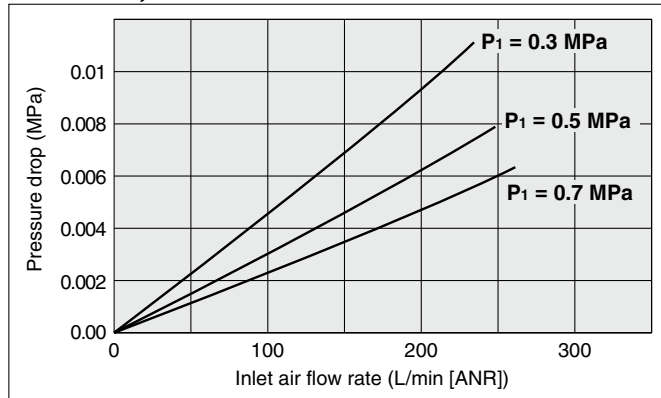
IDG30LA



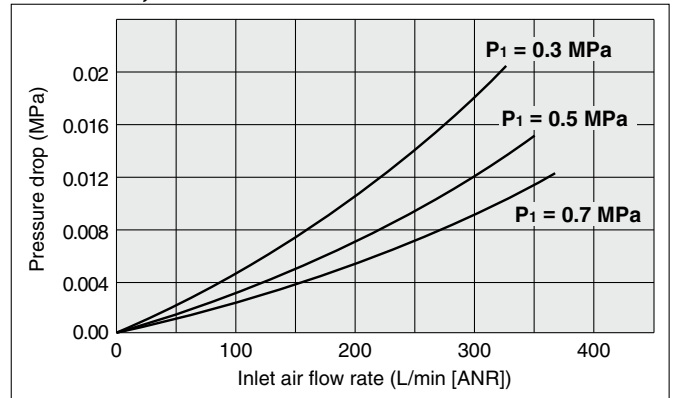
IDG50LA



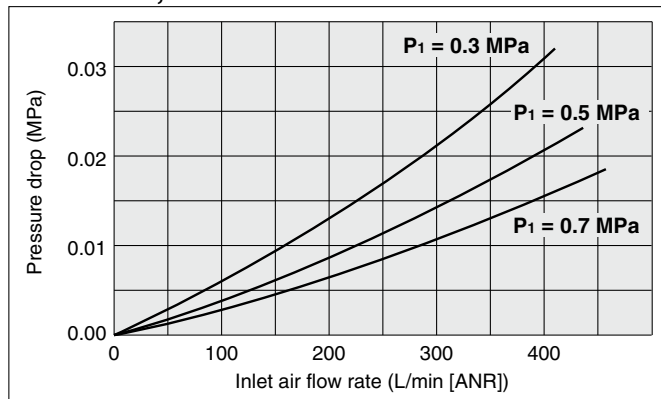
IDG60LA, IDG60SA



IDG75LA, IDG75SA



IDG100LA, IDG100SA



With fitting for purge air discharge (Semi-standard: P)

As the tube length for purge air discharge becomes longer, the outlet air atmospheric pressure dew point becomes higher. Refer to the table below.

Tube length	IDG30A	IDG30LA
0 m	-20	-40
1 m	-19	-39
3 m	-17	-38
5 m	-16	

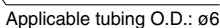
■Conditions

Inlet air temperature : 25°C (Saturated)
Ambient temperature : 25°C
Inlet air pressure : 0.7 MPa
Outlet air flow rate : Flow gained under conditions of the standard performance. (Refer to pages 169 and 170.)
Tube size : O.D. ø12 x I.D. ø9

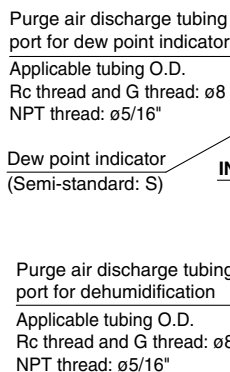
IDG1



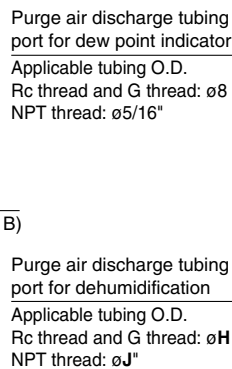
With fitting for purge air discharge (Semi-standard: P)



**With fitting for purge air discharge
(Semi-standard: P)**



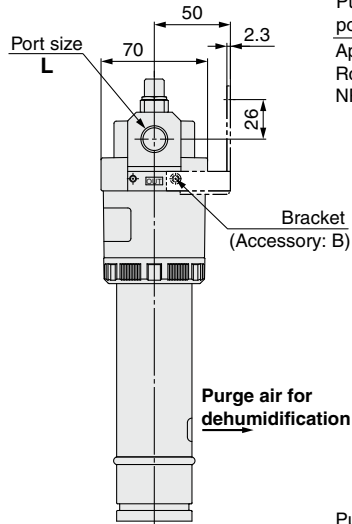
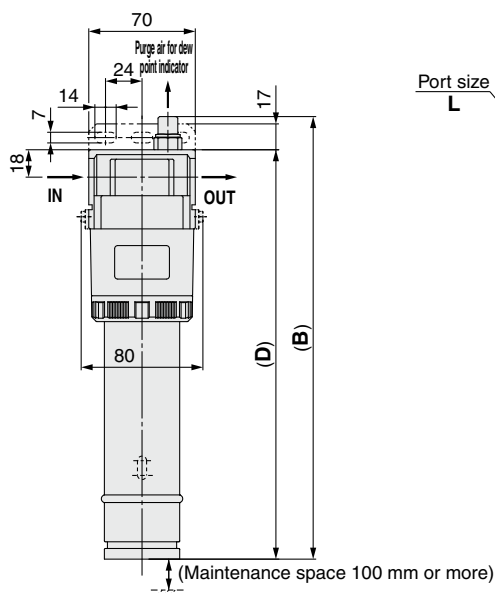
**With fitting for purge air discharge
(Semi-standard: P)**



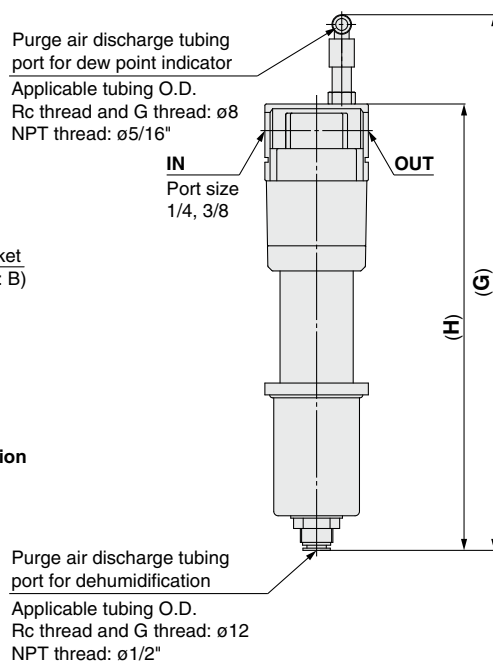
175

Dimensions/Single Unit Type

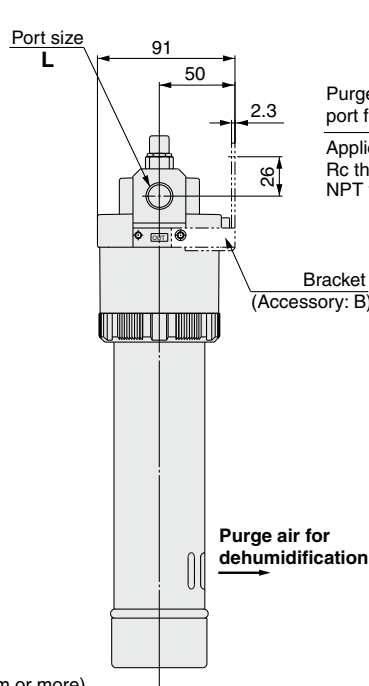
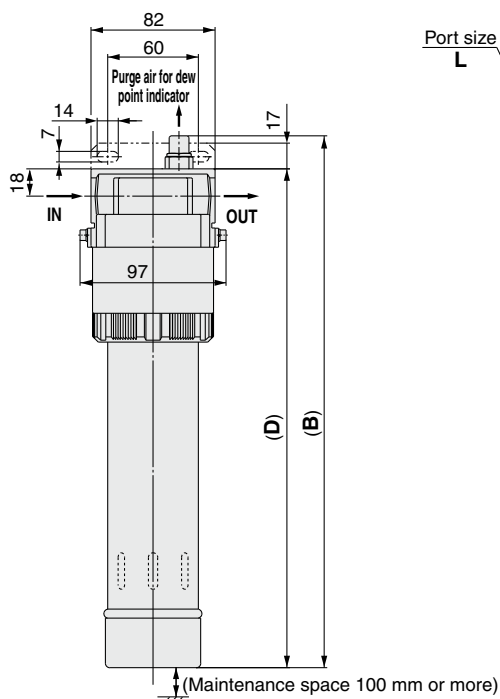
IDG30 ☐ **A**
IDG50 ☐ **A**



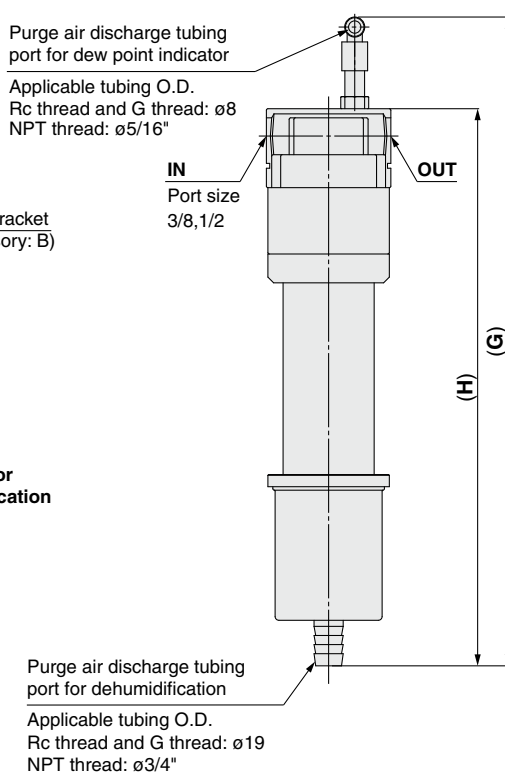
**With fitting for purge air discharge
(Semi-standard: P)**



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

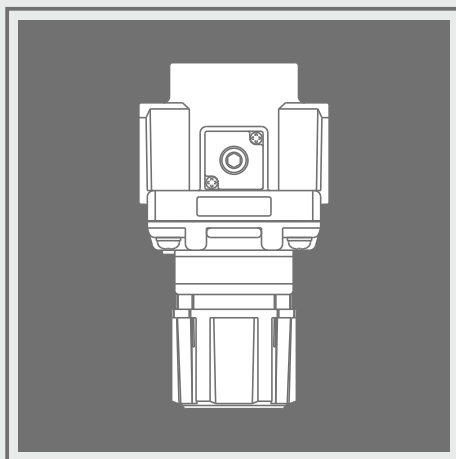


**With fitting for purge air discharge
(Semi-standard: P)**



Model	Port size L	B	D	Semi-standard: P	
				G	H
IDG30□A	1/4, 3/8	291	269	362	302
IDG50□A		330	308	401	341
IDG60□	3/8, 1/2	352	330	429	369
IDG75□, 100□	1/2				
IDG60□A	3/8, 1/2	348	326	427	367
IDG75□A		418	396	496	436
IDG100□A		483	461	561	501

Pressure Control Equipment



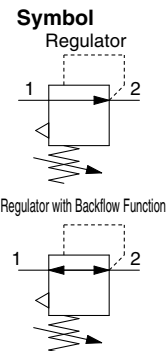
Product name	Series	Page
Regulator	AR20-B to 60-B-X2009	p. 179
Regulator with Backflow Function	AR20K-B to 60K-B-X2009	p. 179
Regulator with Built-in Pressure Gauge	ARG20/30/40-X2009	p. 184
Regulator with Built-in Pressure Gauge with Backflow Function	ARG20K/30K/40K-X2009	p. 187
Manifold Regulator	ARM2500/3000-X247	p. 190
Compact Manifold Regulator	ARM11A	p. 193
Filter Regulator	AW20-B to 60-B-X2009	p. 199
Filter Regulator with Backflow Function	AW20K-B to 60K-B-X2009	p. 199
Precision Regulator	IR1000/2000/3000-X142/X1105	p. 204
Electro-Pneumatic Regulator	ITV2000/3000-X600/X600-G	p. 215
Booster Regulator	VBA	p. 222
Air Tank	VBAT	p. 227

Regulator

AR20-B to AR60-B-X2009 (Degreasing Wash, White Vaseline Specification)

Regulator with Backflow Function

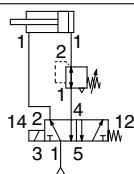
AR20K-B to AR60K-B-X2009 (Degreasing Wash, White Vaseline Specification)



- With the backflow function, it incorporates a mechanism to exhaust the air pressure in the outlet side reliably and quickly.

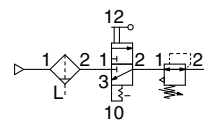
Example 1)

When the pressure in the rear and the front of the cylinder differs:



Example 2)

When the air supply is cut off and releasing the inlet pressure to the atmosphere, the residual pressure release of the outlet side can be ensured for a safety purpose.



Refer to page 203 for accessories (spacers/brackets).

How to Order

AR 30 K - 03 BG - B - X2009

1

2

3

4

5

6

Degreasing wash, White vaseline

- Option/Semi-standard: Select one each for **a** to **g**.
 - Option/Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.
- Example) AR30K-03BG-1NR-B-X2009

		Symbol	Description	1								
				Body size								
				20	25	30	40	50	60			
2	With backflow function	Nil	Without backflow function	●	●	●	●	●	●			
		K	With backflow function	●	●	●	●	●	●			
+												
3	Pipe thread type	Nil	Rc	●	●	●	●	●	●			
+												
4	Port size	01	1/8	●	—	—	—	—	—			
		02	1/4	●	●	●	●	—	—			
		03	3/8	—	●	●	●	—	—			
		04	1/2	—	—	—	●	—	—			
		06	3/4	—	—	—	●	●	—			
		10	1	—	—	—	—	●	●			
+												
5	Option	a	Mounting	Nil	Without mounting option		●	●	●	●	●	●
				B	With bracket		●	●	●	●	●	●
				H	With set nut (for panel mount)		●	●	●	●	—	—
	+											
	b	Pressure gauge	Nil	Without pressure gauge	●	●	●	●	●	●	●	
			G	Round type pressure gauge (with limit indicator)	●	●	●	●	●	●	●	

		Symbol	Description	1												
				Body size												
				20	25	30	40	50	60							
6	Semi-standard	c	Set pressure	Nil	0.05 to 0.85 MPa setting					●	●	●	●	●	●	
				1	0.02 to 0.2 MPa setting					●	●	●	●	●	●	
					+											
		d	Exhaust mechanism	Nil	Relieving type					●	●	●	●	●	●	
				N	Non-relieving type					●	●	●	●	●	●	
					+											
		e	Flow direction	Nil	Flow direction: Left to right					●	●	●	●	●	●	
				R	Flow direction: Right to left					●	●	●	●	●	●	
					+											
		f	Knob	Nil	Downward					●	●	●	●	●	●	
					+											
		g	Pressure unit	Nil	Name plate and pressure gauge in SI units: MPa					●	●	●	●	●	●	

Standard Specifications

Model	AR20(K)-B-X2009	AR25(K)-B-X2009	AR30(K)-B-X2009	AR40(K)-B-X2009	AR40(K)-06-B-X2009	AR50(K)-B-X2009	AR60(K)-B-X2009
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8	1/4, 3/8, 1/2	3/4	3/4, 1	1
Pressure gauge port size	1/8						
Fluid	Air						
Ambient and fluid temperatures	-5 to 60°C (with no freezing)						
Proof pressure	1.5 MPa						
Maximum operating pressure	1.0 MPa						
Set pressure range	0.05 to 0.85 MPa						
Construction	Relieving type						
Weight (kg)	0.16	0.21	0.29	0.44	0.47	1.17	1.22

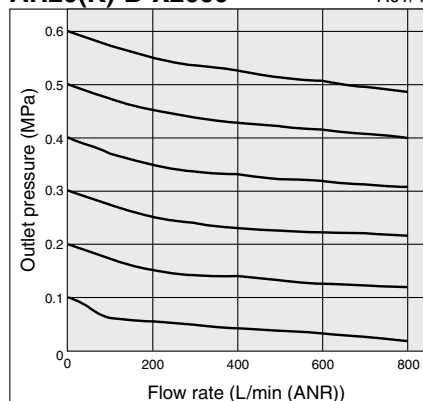
AR20-B to AR60-B-X2009

AR20K-B to AR60K-B-X2009

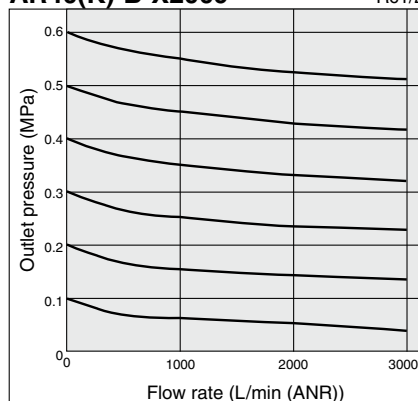
Flow Rate Characteristics (Representative values)

Condition: Inlet pressure of 0.7 MPa

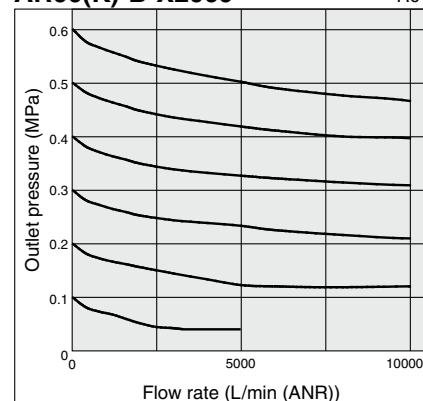
AR20(K)-B-X2009 Rc1/4



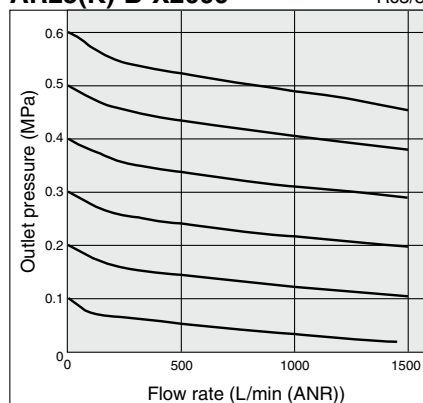
AR40(K)-B-X2009 Rc1/2



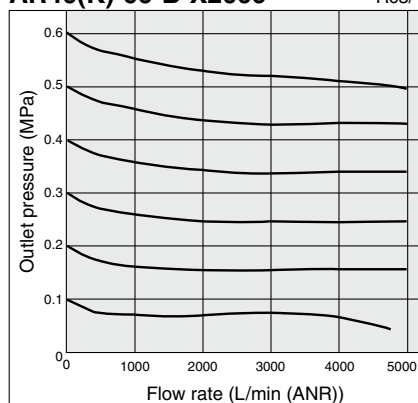
AR60(K)-B-X2009 Rc1



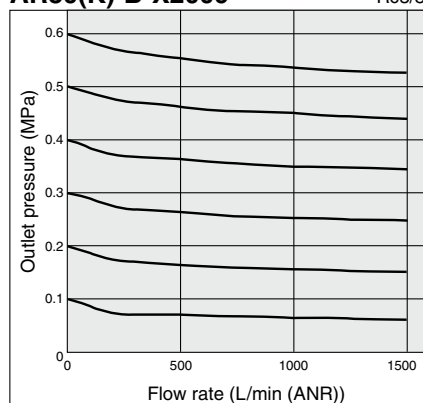
AR25(K)-B-X2009 Rc3/8



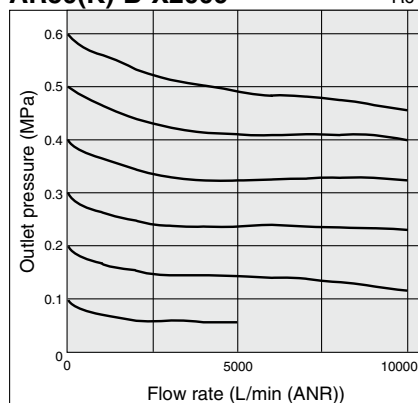
AR40(K)-06-B-X2009 Rc3/4



AR30(K)-B-X2009 Rc3/8



AR50(K)-B-X2009 Rc1



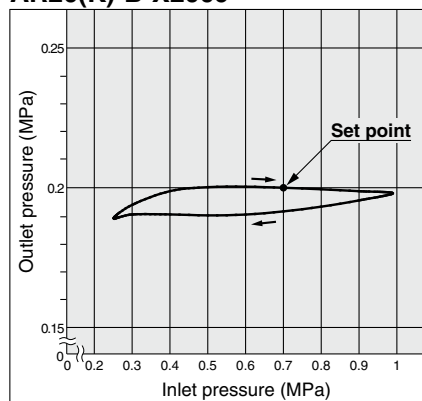
Regulator **AR20-B to AR60-B-X2009**

Regulator with Backflow Function **AR20K-B to AR60K-B-X2009**

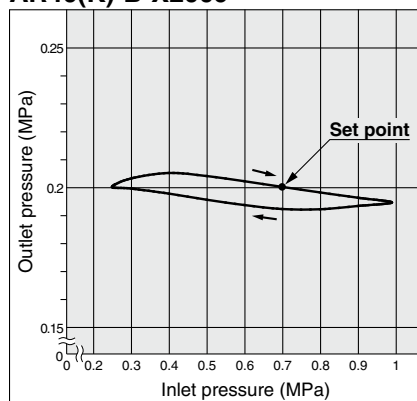
Pressure Characteristics (Representative values)

Conditions: Inlet pressure of 0.7 MPa, Outlet pressure of 0.2 MPa, Flow rate 20 L/min (ANR)

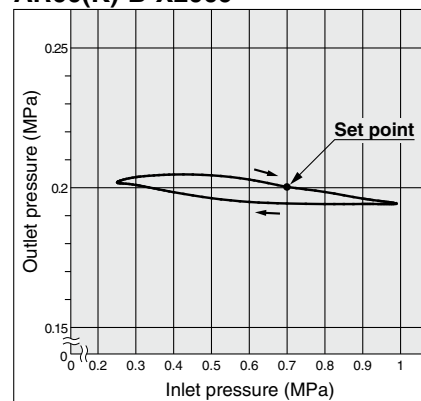
AR20(K)-B-X2009



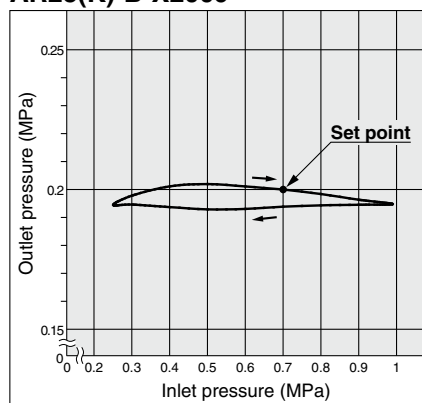
AR40(K)-B-X2009



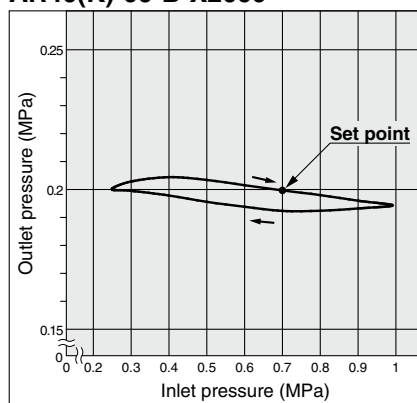
AR60(K)-B-X2009



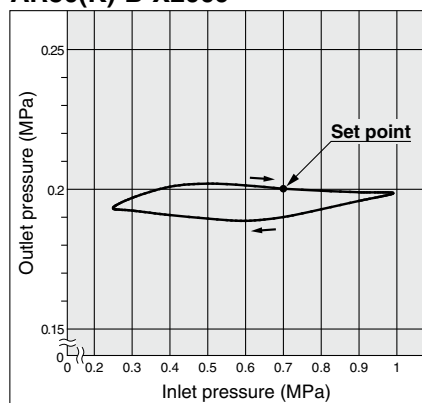
AR25(K)-B-X2009



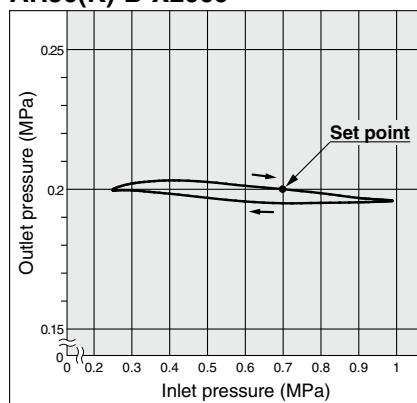
AR40(K)-06-B-X2009



AR30(K)-B-X2009



AR50(K)-B-X2009



Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

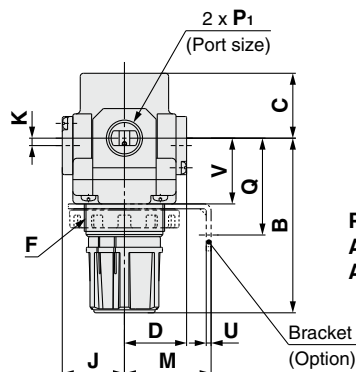
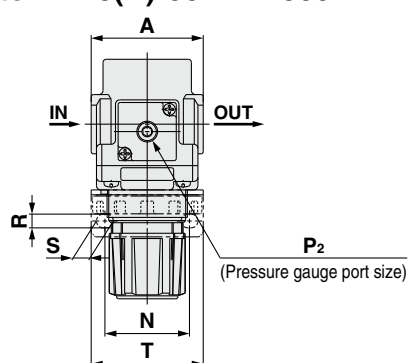
Pneumatic Auxiliary Equipment

AR20-B to AR60-B-X2009

AR20K-B to AR60K-B-X2009

Dimensions

AR20(K)-B-X2009 to AR40(K)-06-B-X2009



Panel mounting dimensions

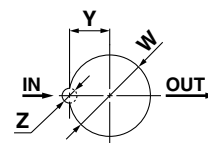
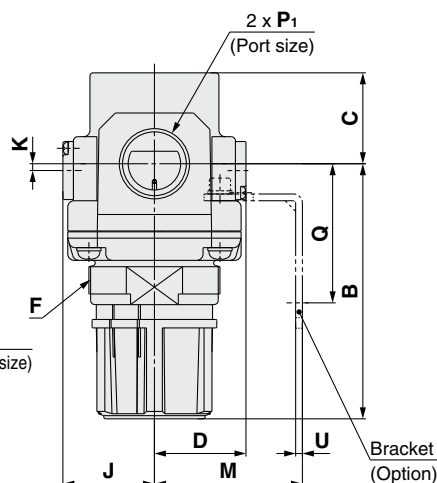
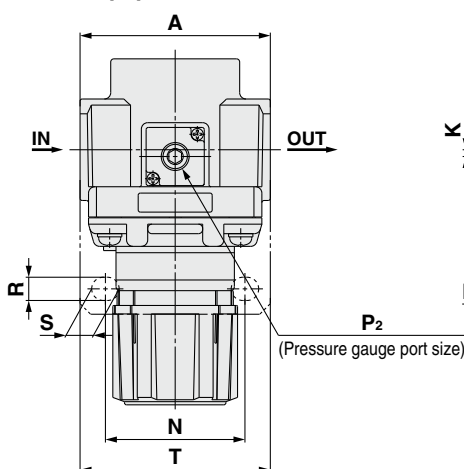


Plate thickness
AR20(K)-B to AR30(K)-B: Max. 3.5
AR40(K)-B : Max. 5

AR50(K)-B-X2009/AR60(K)-B-X2009



Applicable model	AR20(K)-B-X2009 to AR60(K)-B-X2009
Option	Round type pressure gauge
Dimensions	

Model	Standard specifications										Optional specifications
	P1	P2	A	B ^{Note 1)}	C	D	F	J	K	H	J
AR20(K)-B-X2009	1/8, 1/4	1/8	40	67.4	26.5	28.5	M28 x 1	28.5	2 ^{Note 2)}	ø37.5	65
AR25(K)-B-X2009	1/4, 3/8	1/8	53	71.9	28	27.5	M32 x 1.5	27.5	0	ø37.5	64
AR30(K)-B-X2009	1/4, 3/8	1/8	53	85.6	30.7	29.4	M38 x 1.5	29.4	3.5	ø37.5	65.9
AR40(K)-B-X2009	1/4, 3/8, 1/2	1/8	70	91.7	35.8	33.8	M42 x 1.5	33.8	3.5	ø42.5	71.3
AR40(K)-06-B-X2009	3/4	1/8	75	93.2	35.8	33.8	M42 x 1.5	33.8	3	ø42.5	71.3
AR50(K)-B-X2009	3/4, 1	1/8	90	125.2	43	43.3	M62 x 1.5	43.3	3.2	ø42.5	80.8
AR60(K)-B-X2009	1	1/8	95	129.6	46	43.3	M62 x 1.5	43.3	3.2	ø42.5	80.8

Model	Optional specifications										
	Bracket mount							Panel mount			
	M	N	Q	R	S	T	U	V	W	Y	Z
AR20(K)-B-X2009	30	34	43.9	5.4	15.4	55	2.3	24.7	28.5	14	6
AR25(K)-B-X2009	30	34	43.9	5.4	15.4	55	2.3	25.7	32.5	16	6
AR30(K)-B-X2009	41	40	45.8	6.5	8	53	2.3	31.1	38.5	19	7
AR40(K)-B-X2009	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7
AR40(K)-06-B-X2009	50	54	55.5	8.5	10.5	70	2.3	37	42.5	21	7
AR50(K)-B-X2009	70	66	65.8	11	13	90	3.2	—	—	—	—
AR60(K)-B-X2009	70	66	65.8	11	13	90	3.2	—	—	—	—

Note 1) Full length dimension B is measured when the knob is unlocked.

Note 2) For the AR20(K)-B only, the position of the pressure gauge is above the center of the piping.

Regulator with Built-in Pressure Gauge

ARG20/30/40-X2009 (Degreasing Wash, White Vaseline Specification)

Refer to page 203 for accessories (spacers/brackets).

How to Order

ARG 20 - 01 G1 - X2009

Body size

Symbol	Port size
20	1/8
30	3/8
40	1/2

Thread type

Symbol	Type
Nil	Rc

Port size

Symbol	Port size	Body size		
		20	30	40
01	1/8	●	—	—
02	1/4	●	●	●
03	3/8	—	●	●
04	1/2	—	—	●

Option (1)

Symbol	Description
Nil	—
B	With bracket (With set nuts)

Option (2)

Symbol	Description
Nil	—
H	With set nuts

Degreasing wash,
White vaseline

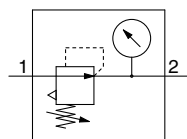
Semi-standard

Symbol	Description
Nil	0.05 to 0.85 MPa setting
Note) 1	0.02 to 0.2 MPa setting
N	Non-relieving type

When more than one specification is required, indicate in ascending alphanumeric order.

Note) Adjusting spring and pressure gauge (full-span 0.3 MPa) are different from those for the standard specification.
All products can be set at 0.2 MPa or more.

Symbol



Mounting angle of pressure gauge

Symbol	G1	G2	G3	G4
Mounting angle	0°	90°	180°	270°
Mounting angle view				

Option/Semi-standard Combinations

◎: Combination available □: Combination not available

Combination		Symbol	Option		Semi-standard	
Option	Option/Semi-standard specifications		B	H	1	N
	With bracket	B	◎	◎	◎	◎
	With set nut	H	◎	◎	◎	◎
Semi-standard	0.02 to 0.2 MPa setting	-1	◎	◎	◎	◎
	Non-relieving type	-N	◎	◎	◎	◎

Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

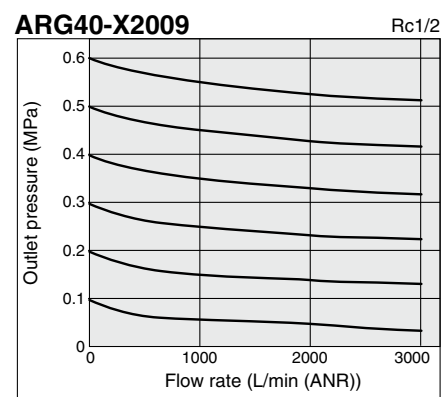
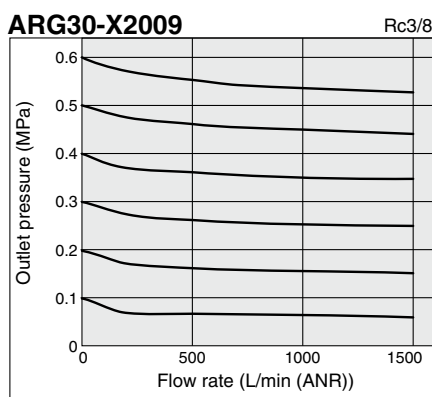
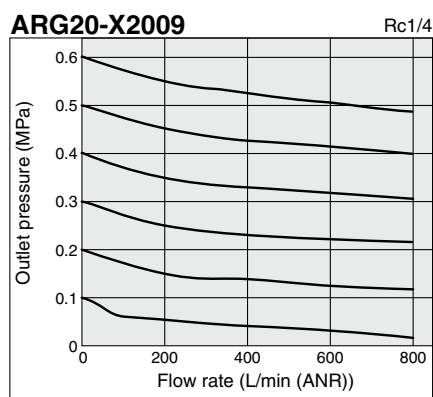
ARG20/30/40-X2009

Standard Specifications

Model	ARG20-X2009	ARG30-X2009	ARG40-X2009
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Fluid	Air		
Proof pressure	1.5 MPa		
Maximum operating pressure	1.0 MPa		
Regulating pressure range	0.05 to 0.85 MPa		
Relief pressure	Set pressure + 0.05 MPa (at relief flow rate of 0.1 L/min (ANR))		
Ambient and fluid temperatures	-5 to 60°C (With no freezing)		
Construction	Relieving type		
Weight (kg)	0.21	0.40	0.57

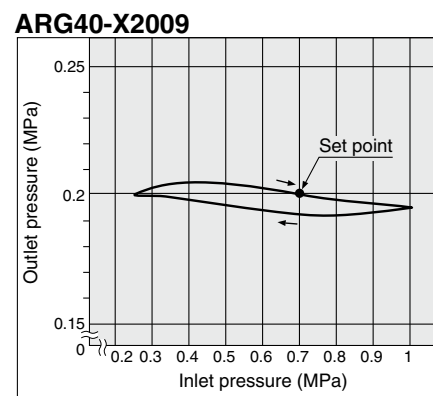
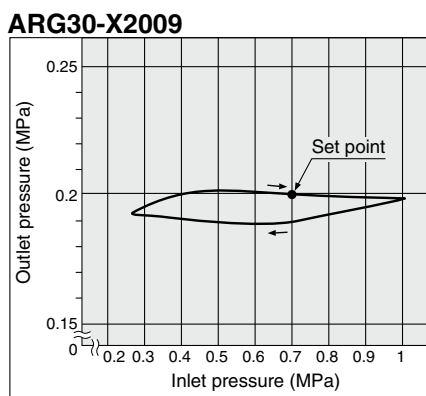
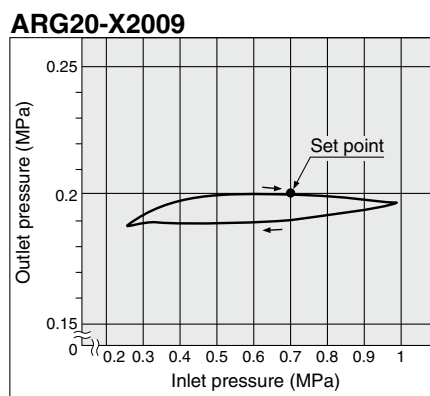
Flow Rate Characteristics (Representative Values)

Condition: Inlet pressure of 0.7 MPa



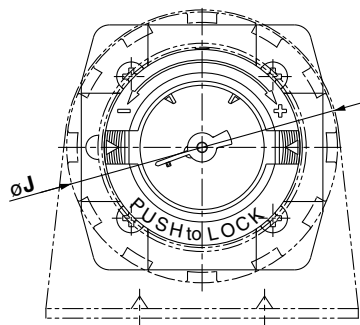
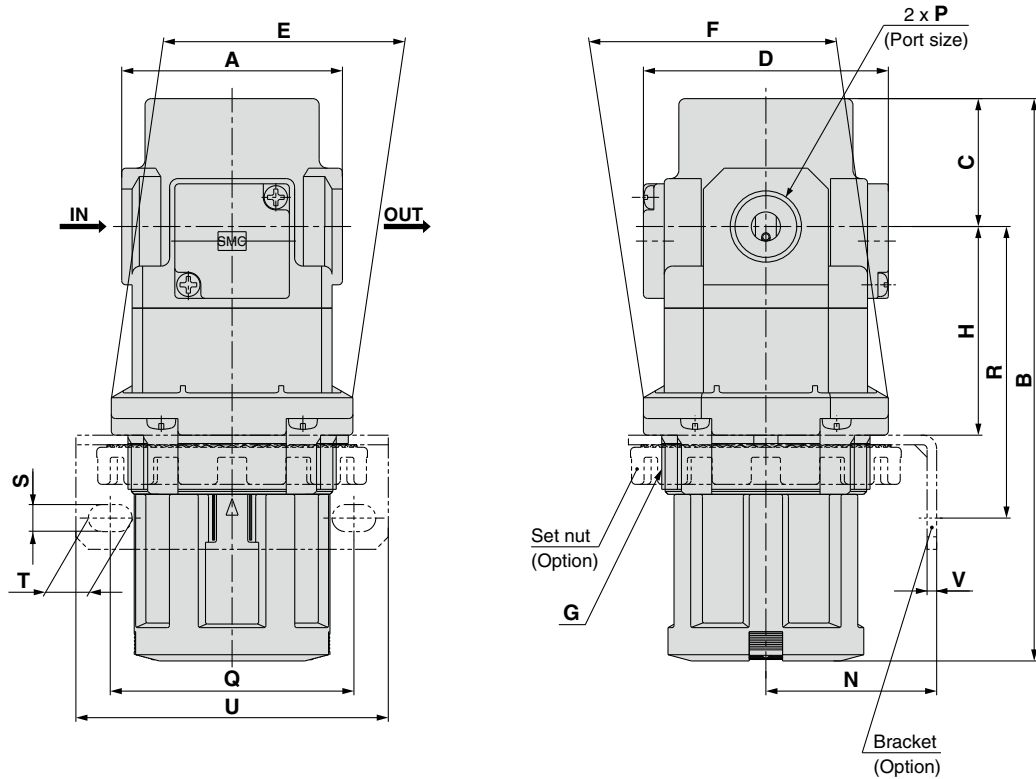
Pressure Characteristics (Representative Values)

Conditions: Inlet pressure of 0.7 MPa, Outlet pressure of 0.2 MPa, Flow rate 20 L/min (ANR)



Dimensions

ARG□-X2009



Panel fitting dimension

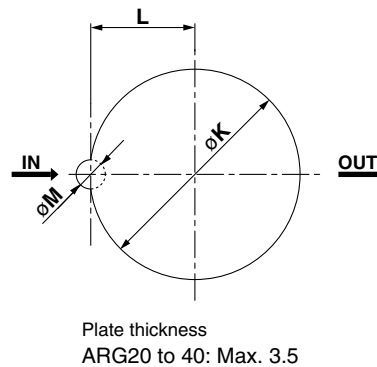


Plate thickness
ARG20 to 40: Max. 3.5

Model	Standard specifications								Optional specifications											
	P	A	B Note)	C	D	E	F	G	Panel mount						Bracket mount					
									H	J	K	L	M	Q	U	T	S	R	V	N
ARG20-X2009	1/8, 1/4	40	114	26.5	57	45	47	M39 x 1.5	38	52.5	39.5	19.5	6	48	65	10.4	5.4	60	2.3	35
ARG30-X2009	1/4, 3/8	53	138.5	31	59	58	59	M50 x 1.5	50	65	50.5	25	7	58.5	75	10.5	6.5	70	2.3	45
ARG40-X2009	1/4, 3/8, 1/2	70	150.5	36	68	70	70	M55 x 1.5	54	70	55.5	27.5	7	65.5	85	12.5	8.5	75	2.3	50

Note) Full length dimension B is measured when the knob is unlocked.

Regulator with Built-in Pressure Gauge with Backflow Function

ARG20K/30K/40K-X2009 (Degreasing Wash, White Vaseline Specification)

Refer to page 203 for accessories (spacers/brackets).

How to Order

ARG 20 K - 01 - G1 - - X2009

Body size

Symbol	Port size
20	1/8
30	3/8
40	1/2

With backflow function

Thread type

Symbol	Type
Nil	Rc

Port size

Symbol	Port size	Body size		
		20	30	40
01	1/8	●	—	—
02	1/4	●	●	●
03	3/8	—	●	●
04	1/2	—	—	●

Degreasing wash, White vaseline

Semi-standard

Symbol	Description
Nil	0.05 to 0.85 MPa setting
Note) 1	0.02 to 0.2 MPa setting
N	Non-relieving type

When more than one specification is required, indicate in ascending alphanumeric order.

Note) Adjusting spring and pressure gauge (full-span 0.3 MPa) are different from those for the standard specification.
All products can be set at 0.2 MPa or more.

Option (2)

Symbol	Description
Nil	—
H	With set nuts

Option (1)

Symbol	Description
Nil	—
B	With bracket (With set nuts)

Mounting angle of pressure gauge

Symbol	G1	G2	G3	G4
Mounting angle	0°	90°	180°	270°
Mounting angle view				

Option/Semi-standard Combinations

Combination		Option		Semi-standard	
Option/Semi-standard specifications	Symbol	B	H	1	N
Option	With bracket	B		○	○
	With set nut	H		○	○
Semi-standard	0.02 to 0.2 MPa setting	-1	○	○	○
	Non-relieving type	-N	○	○	

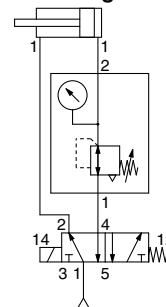
Application examples of a regulator with a backflow function

With a built-in mechanism which enables reliable discharge of air pressure from outlet to inlet

Example 1)

When the pressure in the rear and the front of the cylinder differs:

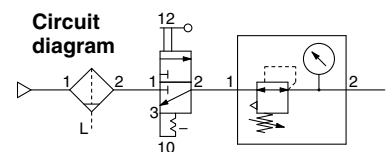
Circuit diagram



Example 2)

When the air supply is cut off and releasing the inlet pressure to the atmosphere, the residual pressure release of the outlet side can be ensured for a safety purpose.

Circuit diagram



Standard Specifications

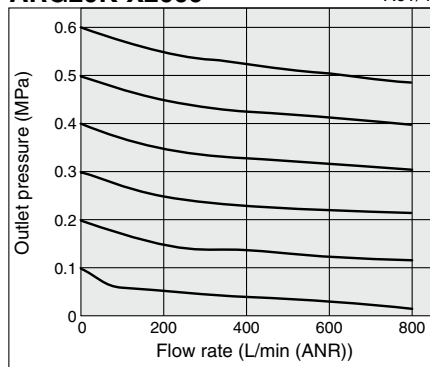
Model	ARG20K-X2009	ARG30K-X2009	ARG40K-X2009
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Fluid	Air		
Proof pressure	1.5 MPa		
Maximum operating pressure	1.0 MPa		
Regulating pressure range ^{Note)}	0.05 to 0.85 MPa		
Relief pressure	Set pressure + 0.05 MPa (at relief flow rate of 0.1 L/min (ANR))		
Ambient and fluid temperatures	-5 to 60°C (With no freezing)		
Construction	Relieving type		
Weight (kg)	0.21	0.40	0.57

Note) Set the inlet pressure to 0.05 MPa or higher than the set pressure.

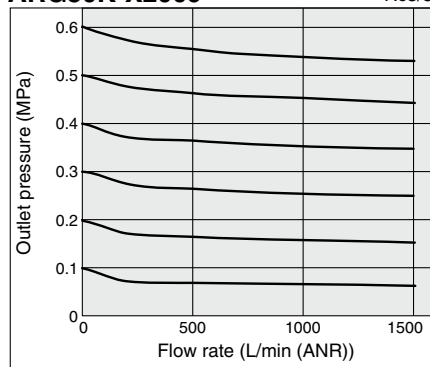
Flow Rate Characteristics (Representative Values)

Condition: Inlet pressure of 0.7 MPa

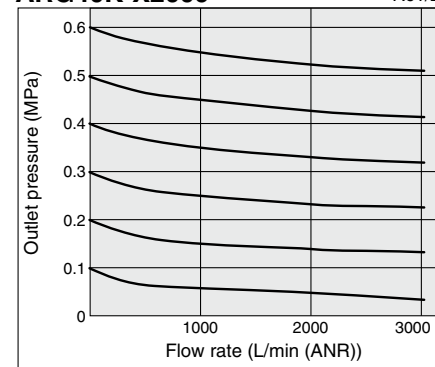
ARG20K-X2009 Rc1/4



ARG30K-X2009 Rc3/8



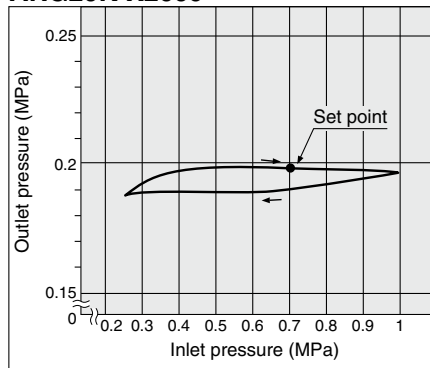
ARG40K-X2009 Rc1/2



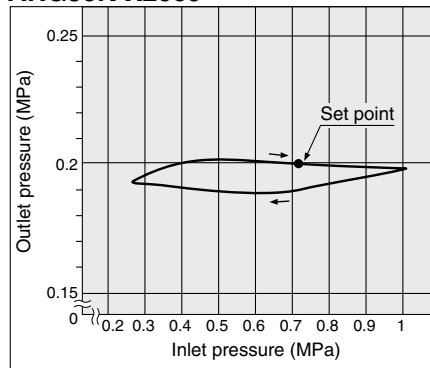
Pressure Characteristics (Representative Values)

Conditions: Inlet pressure of 0.7 MPa, Outlet pressure of 0.2 MPa, Flow rate 20 L/min (ANR)

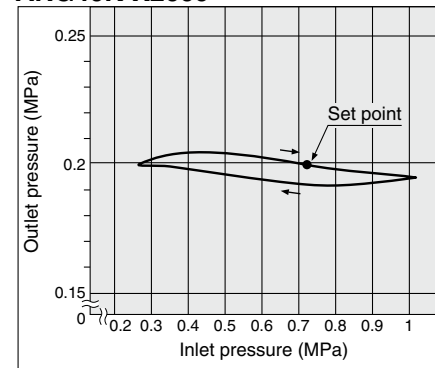
ARG20K-X2009



ARG30K-X2009



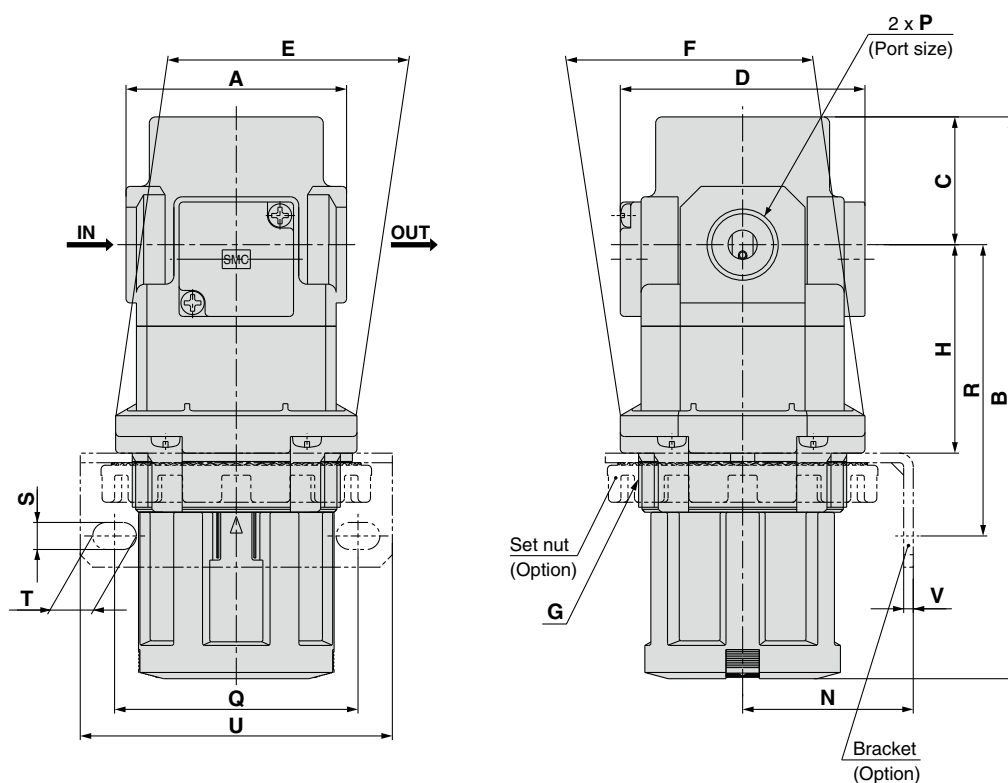
ARG40K-X2009



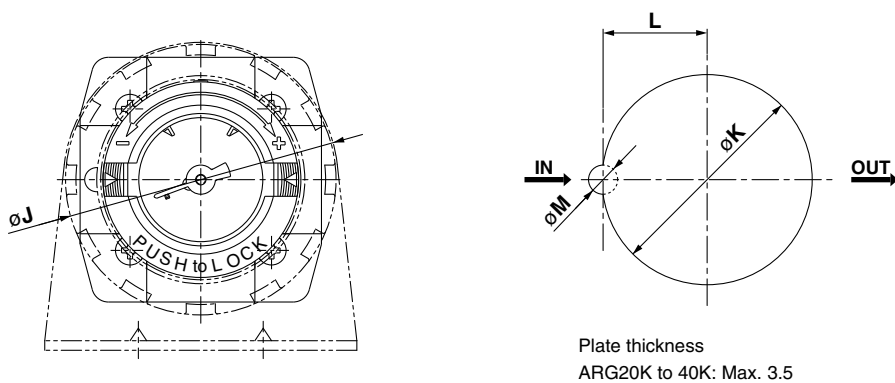
ARG20K/30K/40K-X2009

Dimensions

ARG□K-X2009



Panel fitting dimension



Model	Standard specifications								Optional specifications											
	P	A	B Note)	C	D	E	F	G	Panel mount						Bracket mount					
									H	J	K	L	M	Q	U	T	S	R	V	N
ARG20K-X2009	1/8, 1/4	40	114	26.5	57	45	47	M39 x 1.5	38	52.5	39.5	19.5	6	48	65	10.4	5.4	60	2.3	35
ARG30K-X2009	1/4, 3/8	53	138.5	31	59	58	59	M50 x 1.5	50	65	50.5	25	7	58.5	75	10.5	6.5	70	2.3	45
ARG40K-X2009	1/4, 3/8, 1/2	70	150.5	36	68	70	70	M55 x 1.5	54	70	55.5	27.5	7	65.5	85	12.5	8.5	75	2.3	50

Note) Full length dimension B is measured when the knob is unlocked.

Manifold Regulator

Modular Type

ARM2500-X247 (Degreasing Wash, White Vaseline Specification)

ARM3000-X247 (Degreasing Wash, White Vaseline Specification)

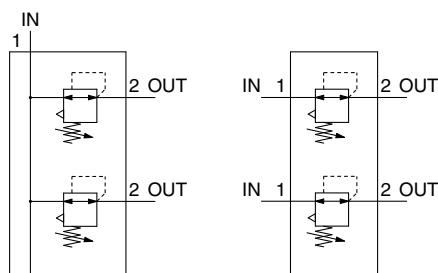
- A modular type that can be freely mounted on a manifold station.
- Optimal for central pressure control.
- Easily set up using the new knob. Also has a One-touch lock system.



Symbol

Common IN

Individual IN



How to Order

ARM 2500 - 05 A - 02 G1 - X247

- Regulator for manifold**: ARM
- Body size**: 2500 (2500, 3000)
- Number of stations**: 05 (02, 10)
- Degreasing wash, White vaseline**: X247
- Accessory (Pressure gauge)**:

Nil	None (With plug)
G1	Back side thread: G33-10-01-X4
G2	Vertical side thread: GA33-10-01-X4

 * Pressure gauges are shipped together, but not assembled.
- Port size (OUT side)**:

Symbol	Port size	Applicable model
02	1/4	ARM2500
03	3/8	ARM3000
- Thread type**:

Nil	Rc
-----	----
- Piping**:

Symbol	Type	IN
A	Common IN	From end plate
B	Individual IN	From OUT port or G port

Standard Specifications

Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Regulating pressure range	0.05 to 0.85 MPa
Ambient and fluid temperatures	-5 to 60°C (No freezing)
Fluid	Air
Construction	Relieving type

Port Size/Weight

Model	Piping	Port size			Pressure gauge port size	Weight (kg)	
		IN side		OUT side		Regulator	End plate
		Body	End plate				
ARM2500-X247	Common IN	—	3⁄8	1⁄4	1⁄8	0.26	0.06
	Individual IN	1⁄4	—	1⁄4	1⁄8		
ARM3000-X247	Common IN	—	1⁄2	3⁄8	1⁄8	0.47	0.11
	Individual IN	3⁄8	—	3⁄8	1⁄8		

Weight by the Number of Stations

Model	Stations	2	3	4	5	6	7	8	9	10
ARM2500-X247		0.68	0.96	1.23	1.51	1.78	2.06	2.33	2.61	2.89
ARM3000-X247		1.25	1.75	2.25	2.75	3.26	3.76	4.26	4.76	5.26

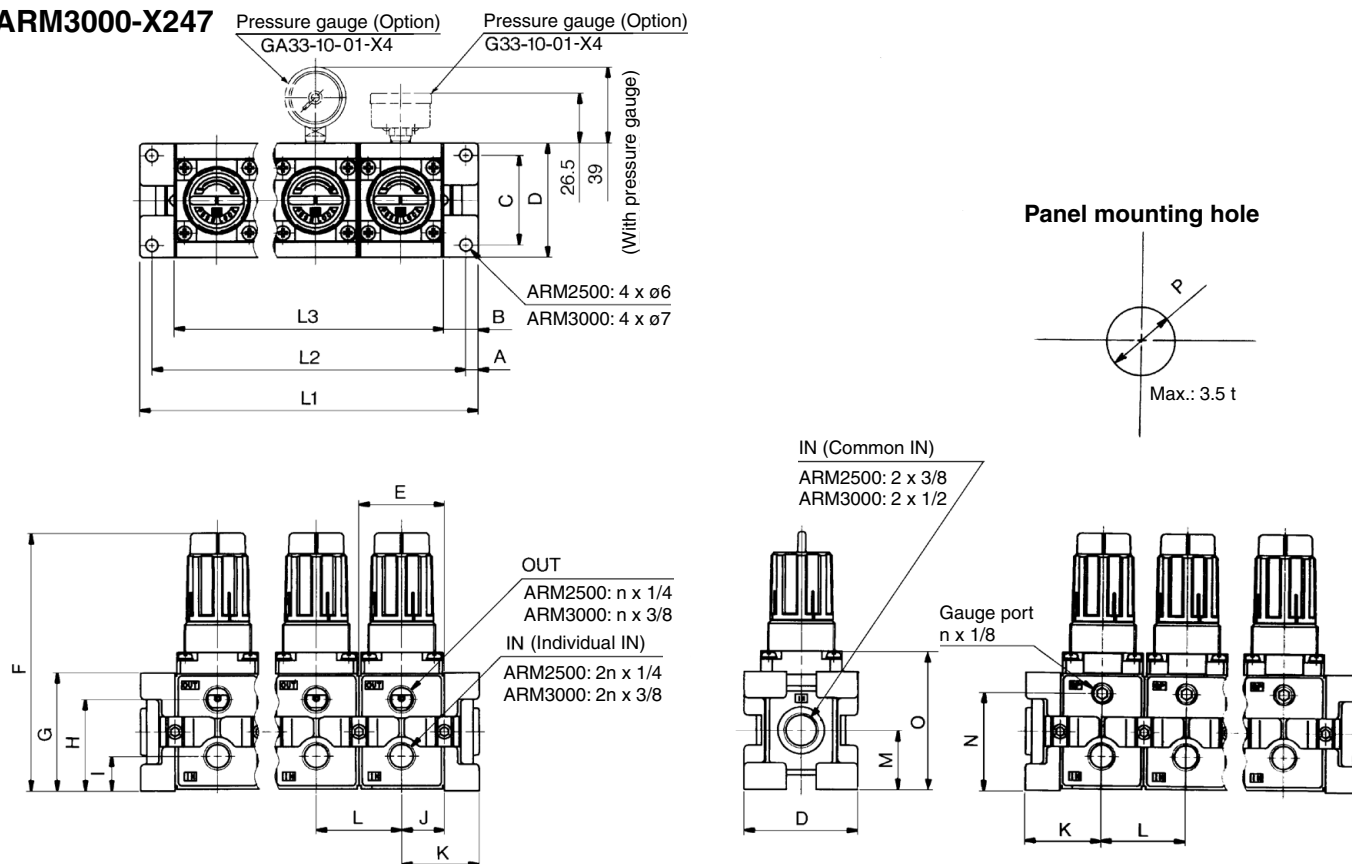
ARM2500-X247

ARM3000-X247

Dimensions

ARM2500-X247

ARM3000-X247



Dimensions

* For products with pressure gauge, pressure gauges are shipped together with product.

Model	Symbol	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
ARM2500-X247		6	17	44	56	42	126.5	58	45	17	21	38	42	29	48	68	33.5
ARM3000-X247		7	21	54	68	55	153.5	70	53	23.5	27.5	48.5	55	35	59	85.5	42.5

Dimensions by the Number of Stations

Model	Symbol	Manifold stations								
		2	3	4	5	6	7	8	9	10
ARM2500-X247	L1	118	160	202	244	286	328	370	412	454
	L2	106	148	190	232	274	316	358	400	442
	L3	84	126	168	210	252	294	336	378	420
ARM3000-X247	L1	152	207	262	317	372	427	482	537	592
	L2	138	193	248	303	358	413	468	523	578
	L3	110	165	220	275	330	385	440	495	550

Pneumatic Auxiliary Equipment	Pressure Control Equipment	Air Preparation Equipment	Directional Control Valves	Paint Process Equipment
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Compact Manifold Regulator Common Supply Type **ARM11A Series** (Oil-free specification)

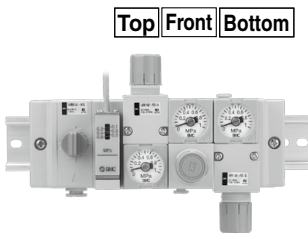
How to Order

ARM11A **A** **1** - **3** **07** - **M** **Z** - **N**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

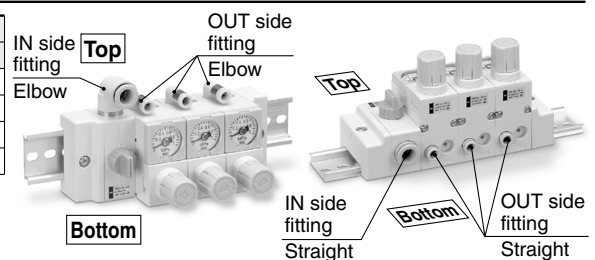
1. Knob Position

Symbol	Position
A	Top
B	Front
C	Bottom



2. IN/OUT Piping Position

Position Symbol	IN side			OUT side		
	Bottom	Top	Bottom	Top	Bottom	Top
1	●			●		
2			●			●
3	●					●
4			●	●		



3. Regulator Block Stations

Symbol	Stations
1	1 station
2	2 stations
3	3 stations
4	4 stations
5	5 stations
6	6 stations
7	7 stations
8	8 stations
9	9 stations
M	10 stations

4. IN/OUT Fitting Type (Refer to the figure below.)

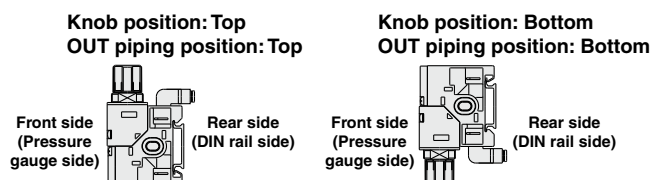
Metric size

Mounting position Fitting type Symbol	IN side						OUT side			
	Straight			Elbow			Straight		Elbow ^{Note)}	
	ø6	ø8	ø10	ø6	ø8	ø10	ø4	ø6	ø4	ø6
07	●						●			
08	●							●		
09		●						●		
10		●						●		
11			●					●		
12			●					●		
19				●					●	
20				●					●	
21					●				●	
22					●				●	
23						●			●	
24						●			●	
26	●								●	
27	●								●	
28		●							●	
29		●							●	
30			●						●	
31			●						●	
33				●				●		
34				●				●		
35					●			●		
36					●			●		
37						●	●			
38						●		●		

Inch size

Mounting position Fitting type Symbol	IN side						OUT side			
	Straight			Elbow			Straight		Elbow ^{Note)}	
	ø1/4	ø5/16	ø3/8	ø1/4	ø5/16	ø3/8	ø5/32	ø1/4	ø5/32	ø1/4
57	●						●			
58	●							●		
59		●						●		
60		●						●		
61			●					●		
62			●					●		
69				●					●	
70				●					●	
71					●				●	
72					●				●	
73						●			●	
74						●			●	
76	●								●	
77	●								●	
78		●							●	
79		●							●	
80			●						●	
81			●						●	
83				●				●		
84				●				●		
85					●			●		
86					●			●		
87						●	●			
88						●		●		

Note) When the knob and the OUT piping are located on the same side, the elbow fitting is directed to the rear side (DIN rail side). Use caution to ensure the connector is not disturbed, depending on piping direction, when choosing to attach a digital pressure switch.



5. Accessories

Symbol	Pressure display ^{Note 1, 2)}		Supply block type		Supply block mounting position		
	Without pressure display	With pressure display	Common supply block	3-way valve common supply block	L side (Left)	R side (Right)	B side (Both)
Nil	●		●		●		
B	●			●	●		
D	●		●			●	
F	●			●		●	
H	●		●				●
J		●	●		●		
L		●		●	●		
N		●	●			●	
P		●		●		●	
R		●	●				●

Note 1) Pressure display means a pressure gauge.

When choosing to attach a digital pressure switch is chosen for attachment, be sure to enter the symbol, referring to table 8, "Digital Pressure Switch Output Specifications". Otherwise, a pressure gauge will come with the regulator.

Note 2) Pressure gauges are not compatible with copper-free and fluorine-free specifications.

6. Semi-standard

Symbol	0.35 MPa setting ^{Note 1)}	Non-relieving	Oil-free ^{Note 2)}
3			●
5	●		●
6		●	●
7	●	●	●

Note 1) A pressure gauge with a full span of 0.4 MPa is attached.
Note 2) The oil-free specification is grease-free in the fluid contact area.

7. Unit Representation

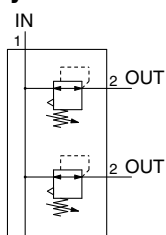
Symbol	Description
Nil	Display unit for product name plate and pressure gauge: MPa
Z ^{Note 1, 2)}	Display unit for product name plate and pressure gauge: psi
ZA ^{Note 1, 3)}	Digital pressure switch: with unit switching (MPa is initially set.)

Note 1) This option is available for use outside Japan only. (The SI unit has to be used in Japan.)

Note 2) The digital pressure switch is equipped with unit switching and initially set to psi.

Note 3) This option is available with the digital pressure switch. A lead wire with connector (2 m) is included.

Symbol



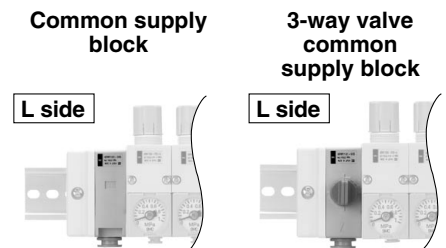
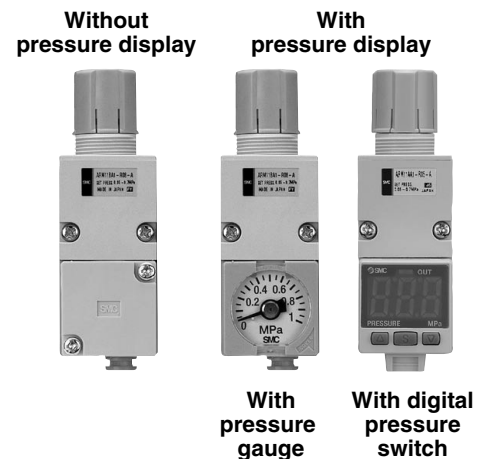
Note) A standard model is equipped with a backflow function. Main valve opens when the inlet pressure is released, and then the outlet pressure backflows into the inlet side.

8. Digital Pressure Switch Output Specifications ^{Note)}

Symbol	Details
Nil	None
N	NPN open collector
P	PNP open collector

Note) When a digital pressure switch is attached, the "pressure display" in table 5 "Accessories" will be equipped.

The electrical entry is positioned on the side opposite the knob.



Specifications

Manifold (Regulator block, Common supply block, 3-way valve common supply block)

Regulator construction		Direct acting
Working principal		Diaphragm regulator
Relief mechanism	Standard	Relief type
	Optional	Non-relieving type
Backflow function ^{Note 1)}		Within (Unbalance type)
IN side tubing O.D.		ø6, ø8, ø10, ø1/4, ø5/16, ø3/8
OUT side tubing O.D.		ø4, ø6, ø5/32, ø1/4
Proof pressure		1.5 MPa
Maximum operating pressure		1.0 MPa
Set pressure range	Standard	0.05 to 0.7 MPa
	Optional	0.05 to 0.35 MPa (Low pressure type)
Fluid		Air
Ambient and operating fluid temperatures ^{Note 2)}		5 to 60°C

Note 1) 0.1 MPa or greater set pressure is required when used in the reverse flow.

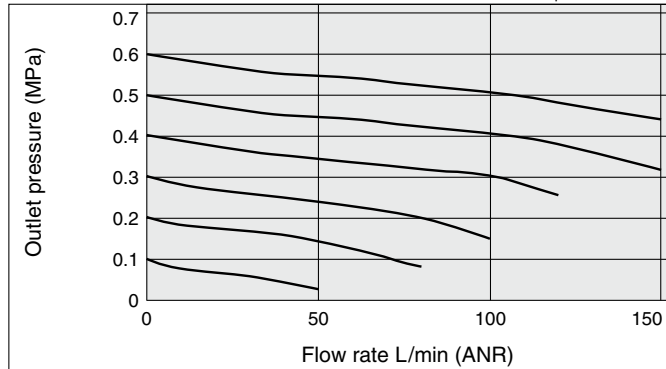
Note 2) 5 to 50°C when the digital pressure switch will be used.

Refer to the Web Catalog for the digital pressure switch and pressure switch specifications.

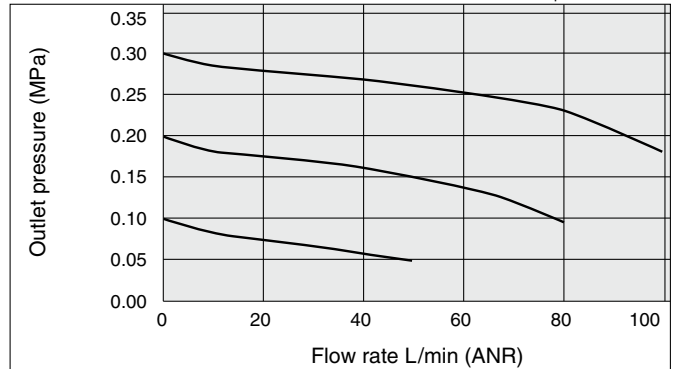
ARM11A Series

Flow Rate Characteristics (Representative Values)

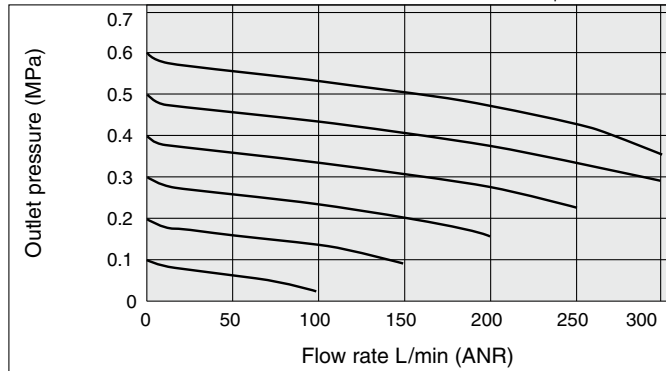
ARM11AA1-307 (One-touch fittings: IN ϕ 6, OUT ϕ 4) Condition: Inlet pressure 0.7 MPa



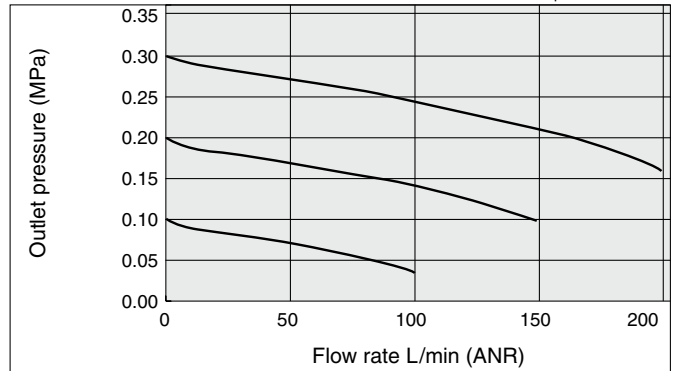
ARM11AA1-307-1 (One-touch fittings: IN ϕ 6, OUT ϕ 4) Condition: Inlet pressure 0.5 MPa



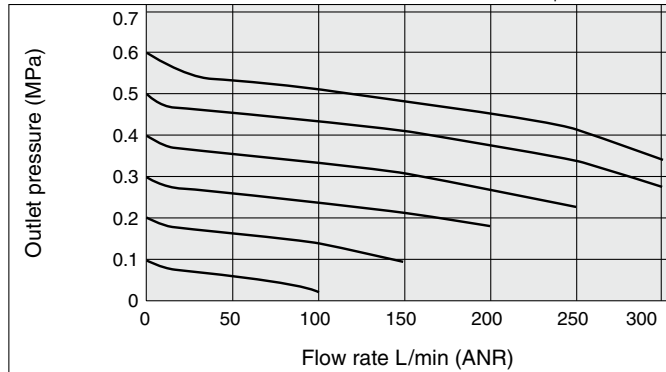
ARM11AA1-310 (One-touch fittings: IN ϕ 8, OUT ϕ 6) Condition: Inlet pressure 0.7 MPa



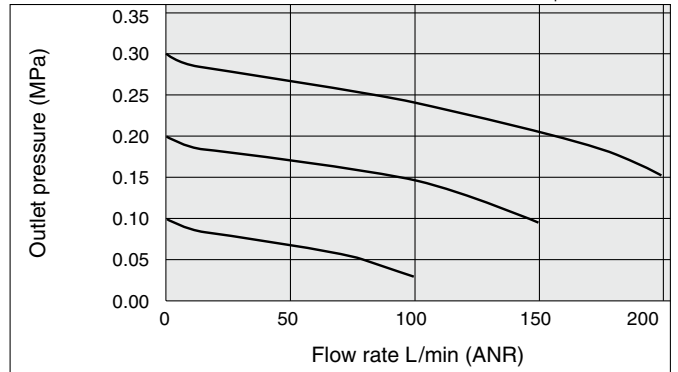
ARM11AA1-310-1 (One-touch fittings: IN ϕ 8, OUT ϕ 6) Condition: Inlet pressure 0.5 MPa



ARM11AA1-312 (One-touch fittings: IN ϕ 10, OUT ϕ 6) Condition: Inlet pressure 0.7 MPa

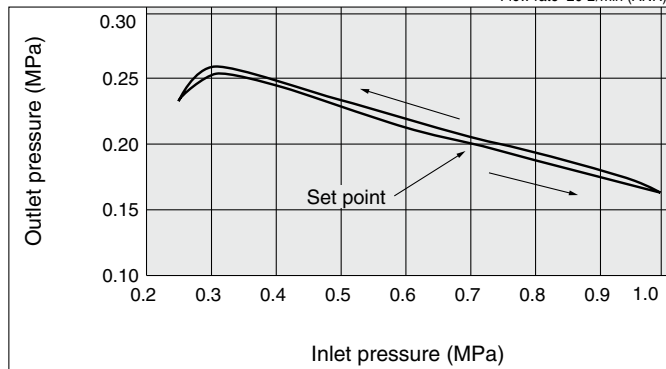


ARM11AA1-312-1 (One-touch fittings: IN ϕ 10, OUT ϕ 6) Condition: Inlet pressure 0.5 MPa

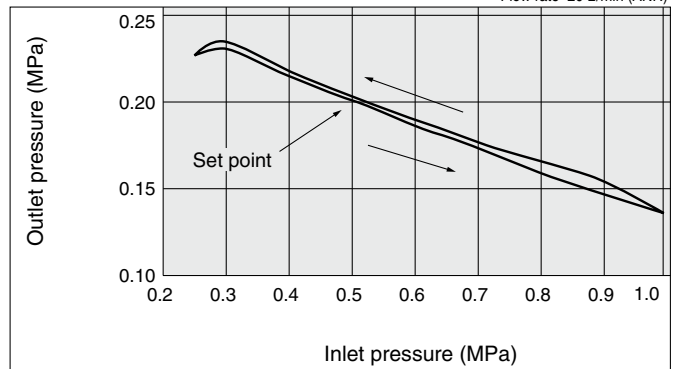


Pressure Characteristics (Representative Values)

ARM11AA1-307 Conditions: Inlet pressure 0.7 MPa
Outlet pressure 0.2 MPa
Flow rate 20 L/min (ANR)



ARM11AA1-307-1 Conditions: Inlet pressure 0.5 MPa
Outlet pressure 0.2 MPa
Flow rate 20 L/min (ANR)

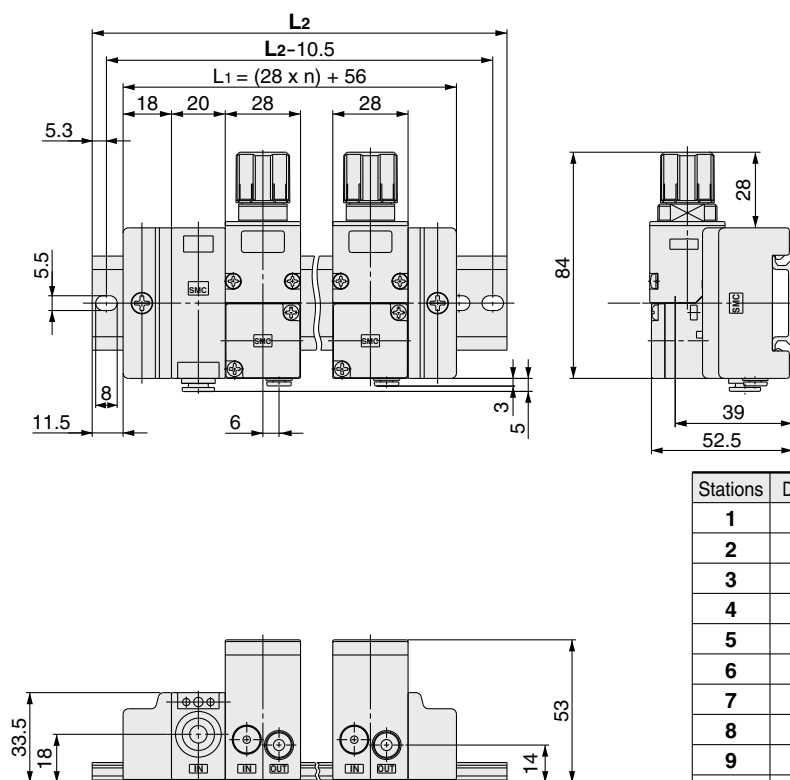


Dimensions

ARM11AA1-□12

Knob position: Top / Common supply block

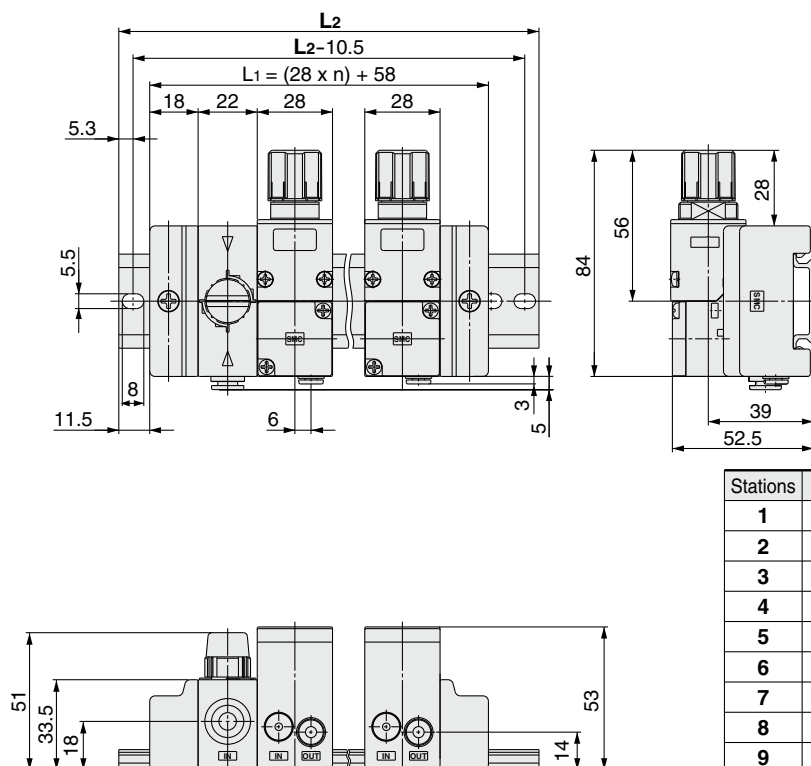
For One-touch fittings part and manifold option dimensions, refer to the **Web Catalog**.



Stations	DIN rail part no. (for L and R sides)	L2 dimension
1	AXT100-DR-9	123
2	AXT100-DR-11	148
3	AXT100-DR-13	173
4	AXT100-DR-16	210.5
5	AXT100-DR-18	235.5
6	AXT100-DR-20	260.5
7	AXT100-DR-22	285.5
8	AXT100-DR-25	323
9	AXT100-DR-27	348
M	AXT100-DR-29	373

ARM11AA1-□12-B

Knob position: Top / 3-way valve common supply block



Stations	DIN rail part no. (for L and R sides)	L2 dimension
1	AXT100-DR-9	123
2	AXT100-DR-11	148
3	AXT100-DR-13	173
4	AXT100-DR-16	210.5
5	AXT100-DR-18	235.5
6	AXT100-DR-20	260.5
7	AXT100-DR-22	285.5
8	AXT100-DR-25	323
9	AXT100-DR-27	348
M	AXT100-DR-29	373

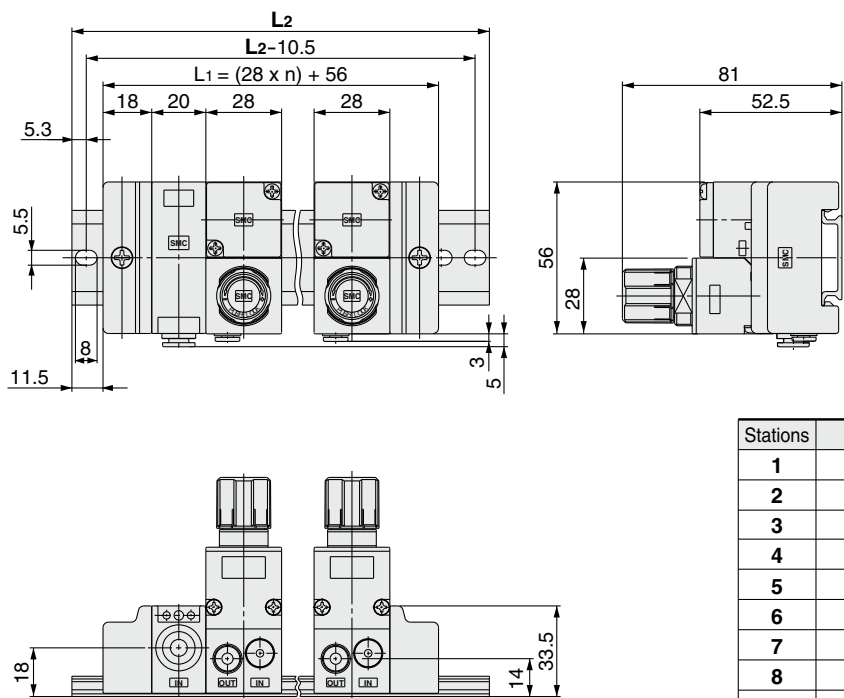
ARM11A Series

Dimensions

ARM11AB1-□12

Knob position: Front / Common supply block

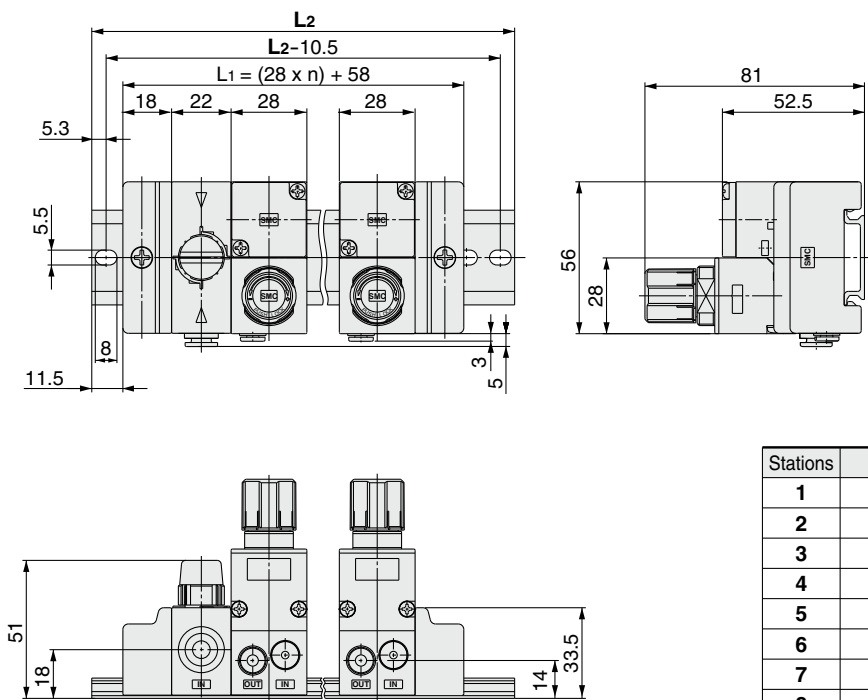
For One-touch fittings part and manifold option dimensions, refer to the [Web Catalog](#).



Stations	DIN rail part no.	L2 dimension
1	AXT100-DR-9	123
2	AXT100-DR-11	148
3	AXT100-DR-13	173
4	AXT100-DR-16	210.5
5	AXT100-DR-18	235.5
6	AXT100-DR-20	260.5
7	AXT100-DR-22	285.5
8	AXT100-DR-25	323
9	AXT100-DR-27	348
M	AXT100-DR-29	373

ARM11AB1-□12-B

Knob position: Front / 3-way valve common supply block



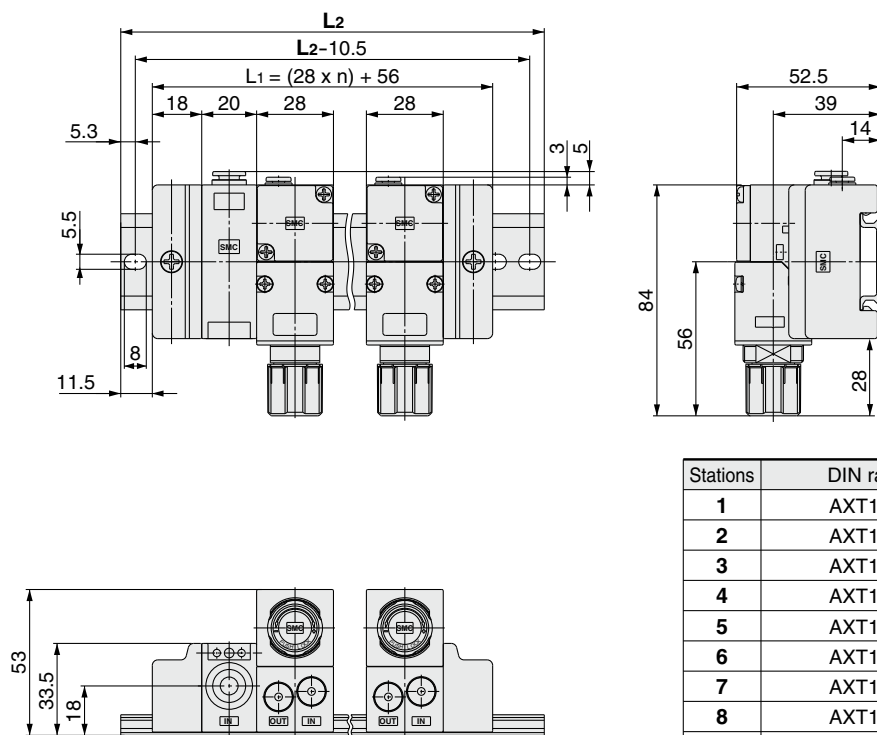
Stations	DIN rail part no.	L2 dimension
1	AXT100-DR-9	123
2	AXT100-DR-11	148
3	AXT100-DR-13	173
4	AXT100-DR-16	210.5
5	AXT100-DR-18	235.5
6	AXT100-DR-20	260.5
7	AXT100-DR-22	285.5
8	AXT100-DR-25	323
9	AXT100-DR-27	348
M	AXT100-DR-29	373

Dimensions

ARM11AC2-□12

Knob position: Bottom / Common supply block

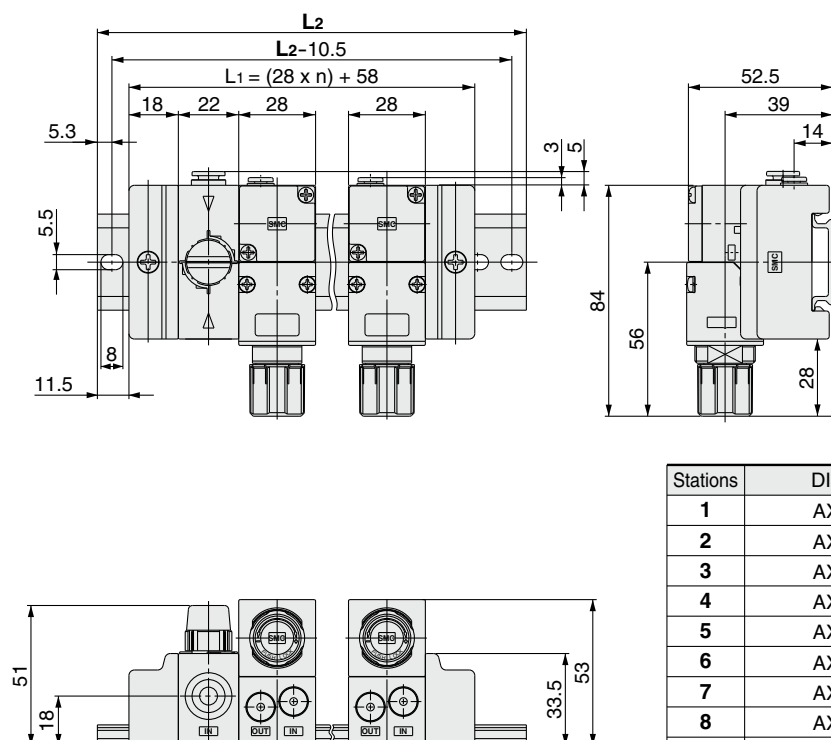
For One-touch fittings part and manifold option dimensions, refer to the [Web Catalog](#).



Stations	DIN rail part no.	L2 dimension
1	AXT100-DR-9	123
2	AXT100-DR-11	148
3	AXT100-DR-13	173
4	AXT100-DR-16	210.5
5	AXT100-DR-18	235.5
6	AXT100-DR-20	260.5
7	AXT100-DR-22	285.5
8	AXT100-DR-25	323
9	AXT100-DR-27	348
M	AXT100-DR-29	373

ARM11AC2-□12-B

Knob position: Bottom / 3-way valve common supply block



Stations	DIN rail part no.	L2 dimension
1	AXT100-DR-9	123
2	AXT100-DR-11	148
3	AXT100-DR-13	173
4	AXT100-DR-16	210.5
5	AXT100-DR-18	235.5
6	AXT100-DR-20	260.5
7	AXT100-DR-22	285.5
8	AXT100-DR-25	323
9	AXT100-DR-27	348
M	AXT100-DR-29	373

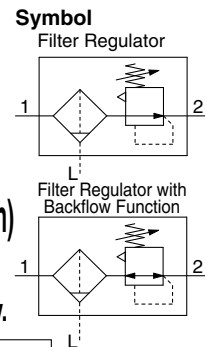
Filter Regulator

AW20-B to AW60-B-X2009 (Degreasing Wash, White Vaseline Specification)

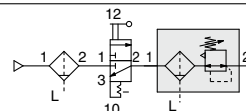
Filter Regulator with Backflow Function

AW20K-B to AW60K-B-X2009 (Degreasing Wash, White Vaseline Specification)

- Integrated filter and regulator units save space and require less piping.
- With the backflow function, it incorporates a mechanism to exhaust the air pressure in the outlet side reliably and quickly.



Example) When the air supply is cut off and releasing the inlet pressure to the atmosphere, the residual pressure release of the outlet side can be ensured for a safety purpose.



Refer to page 203 for accessories (spacers/brackets).

How to Order

AW **30** **K** - **03** **BG** - **B** - **X2009**

① ② ③ ④ ⑤ ⑥

Degreasing wash, White vaseline

• Option/Semi-standard: Select one each for a to i.
• Option/Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.
Example) AW30K-03BG-1N-B-X2009

		Symbol	Description	1					
				Body size					
				20	30	40	60		
2	With backflow function	Nil	Without backflow function	●	●	●	●		
		K	With backflow function	●	●	●	●		
+									
3	Pipe thread type	Nil	Rc	●	●	●	●		
+									
4	Port size	01	1/8	●	—	—	—		
		02	1/4	●	●	●	—		
		03	3/8	—	●	●	—		
		04	1/2	—	—	●	—		
		06	3/4	—	—	●	●		
		10	1	—	—	—	●		
+									
5	Option	a	Mounting	Nil	Without mounting option	●	●	●	●
				B	With bracket	●	●	●	●
				H	With set nut (for panel mount)	●	●	●	—
	+								
	b	Float type auto drain	Nil	Without auto drain	●	●	●	●	
			C	Float type auto drain (N.C.)	●	●	●	●	
			D	Float type auto drain (N.O.)	—	●	●	●	
	+								
	c	Pressure gauge	Nil	Without pressure gauge	●	●	●	●	
			G	Round type pressure gauge (with limit indicator)	●	●	●	●	
+									
6	Semi-standard	d	Set pressure	Nil	0.05 to 0.85 MPa setting	●	●	●	●
				1	0.02 to 0.2 MPa setting	●	●	●	●
		+							
	e	Bowl	Nil	Polycarbonate bowl	●	●	●	●	
			6	Nylon bowl	●	●	●	●	
			C	With bowl guard	●	—	—	—	

		Symbol	Description	①						
				Body size						
				20	30	40	60			
⑥	Semi-standard	f	Drain port	Nil	With drain cock		●	●	●	●
				+						
		g	Exhaust mechanism	Nil	Relieving type		●	●	●	●
				N	Non-relieving type		●	●	●	●
				+						
		h	Flow direction	Nil	Flow direction: Left to right		●	●	●	●
				R	Flow direction: Right to left		●	●	●	●
				+						
		i	Pressure unit	Nil	Name plate, caution plate for bowl, and pressure gauge in SI units: MPa		●	●	●	●

Standard Specifications

Model	AW20(K)-B-X2009	AW30(K)-B-X2009	AW40(K)-B-X2009	AW40(K)-06-B-X2009	AW60(K)-B-X2009
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2	3/4	3/4, 1
Pressure gauge port size	1/8				
Fluid	Air				
Ambient and fluid temperatures	-5 to 60°C (with no freezing)				
Proof pressure	1.5 MPa				
Maximum operating pressure	1.0 MPa				
Set pressure range	0.05 to 0.85 MPa				
Nominal filtration rating	5 μm				
Drain capacity (cm³)	8	25	45		
Bowl material	Polycarbonate				
Bowl guard	Semi-standard (Steel)	Standard (Polycarbonate)			
Construction	Relieving type				
Weight (kg)	0.20	0.36	0.66	0.72	2.05

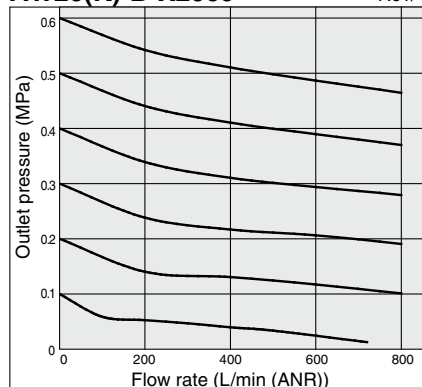
AW20-B to AW60-B-X2009

AW20K-B to AW60K-B-X2009

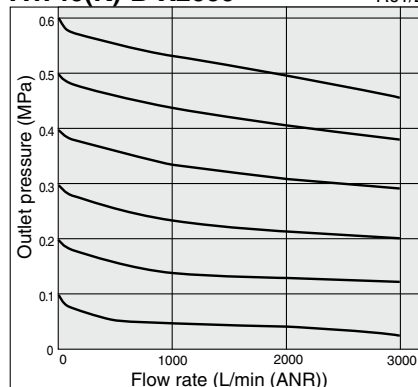
Flow Rate Characteristics (Representative values)

Condition: Inlet pressure of 0.7 MPa

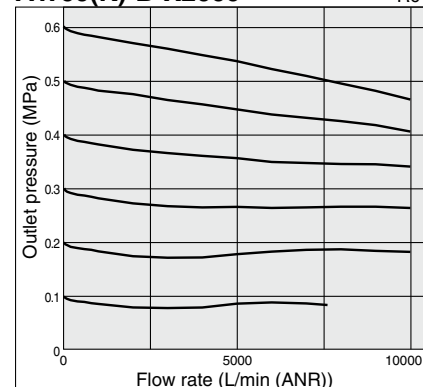
AW20(K)-B-X2009 Rc1/4



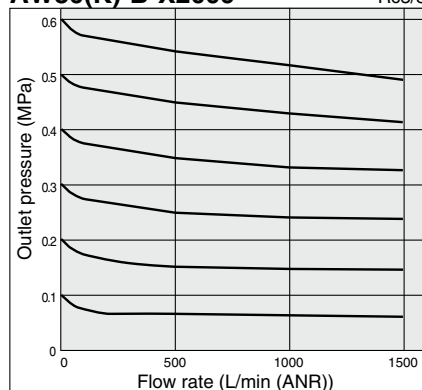
AW40(K)-B-X2009 Rc1/2



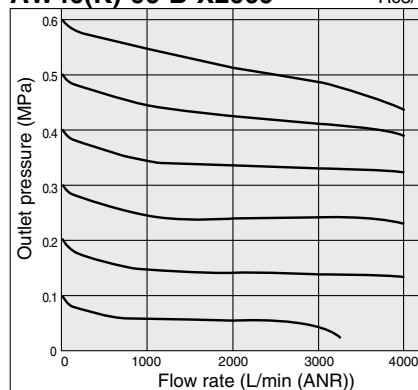
AW60(K)-B-X2009 Rc1



AW30(K)-B-X2009 Rc3/8



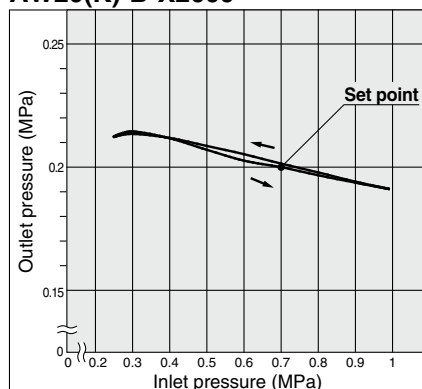
AW40(K)-06-B-X2009 Rc3/4



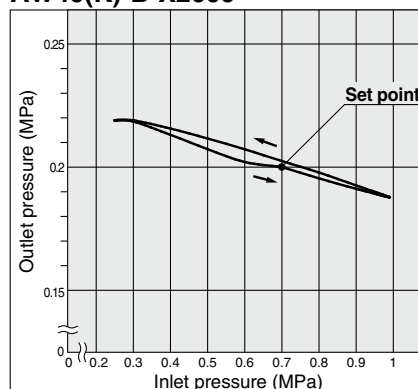
Pressure Characteristics (Representative values)

Conditions: Inlet pressure of 0.7 MPa, Outlet pressure of 0.2 MPa, Flow rate 20 L/min (ANR)

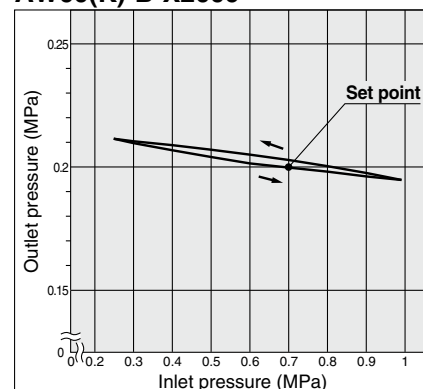
AW20(K)-B-X2009



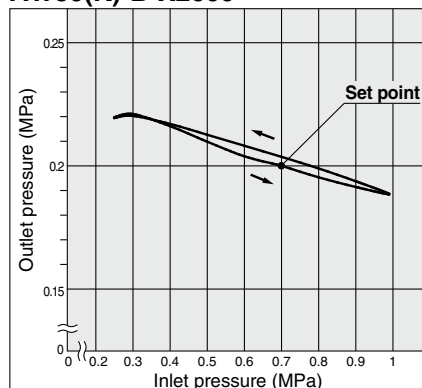
AW40(K)-B-X2009



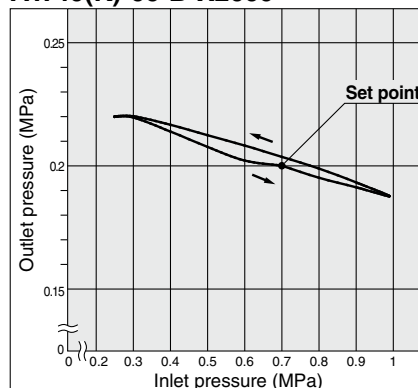
AW60(K)-B-X2009



AW30(K)-B-X2009

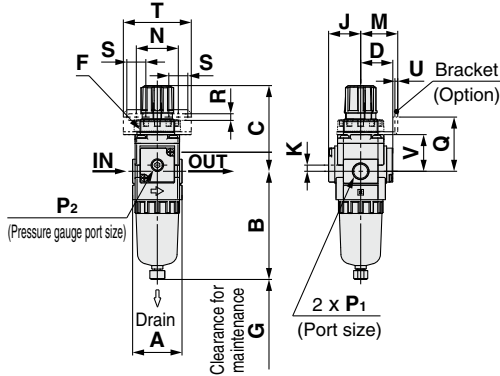


AW40(K)-06-B-X2009



Dimensions

AW20(K)-B-X2009



Panel fitting dimension

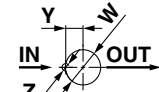
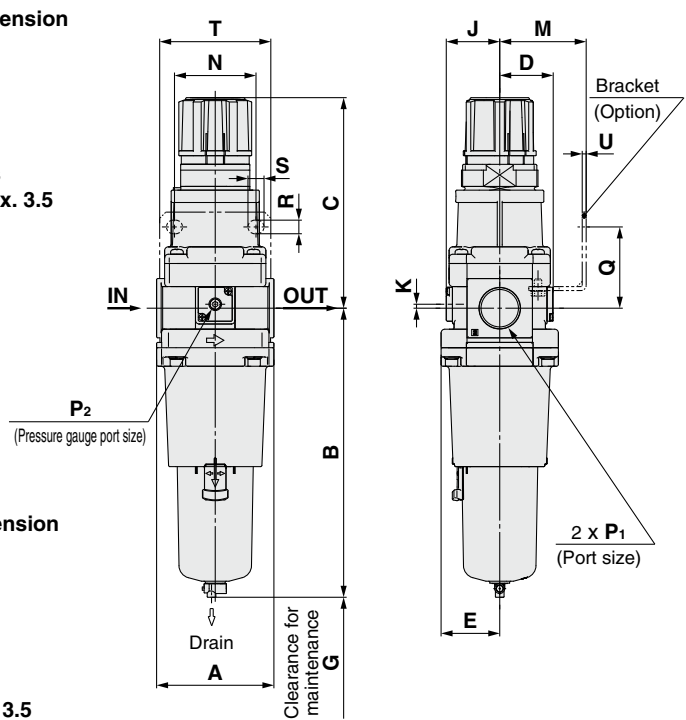
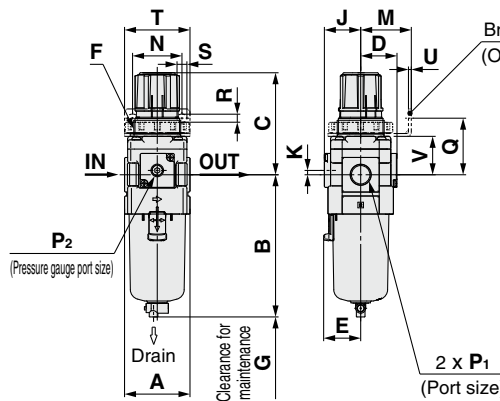


Plate thickness
AW20(K)-B: Max. 3.5

AW60(K)-B-X2009



AW30(K)-B-X2009 to AW40(K)-06-B-X2009



Panel fitting dimension

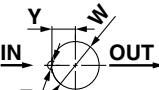


Plate thickness
AW30(K)-B: Max. 3.5
AW40(K)-B: Max. 5

Applicable model	AW20(K)-B-X2009 to AW60(K)-B-X2009
Option	Round type pressure gauge
Dimensions	

Applicable model	AW20(K)-B-X2009	AW30(K)-B-X2009 to AW60(K)-B-X2009
Optional/Semi-standard specifications	With auto drain (N.C.)	With auto drain (N.O./N.C.)
Dimensions		

Model	Standard specifications												Optional specifications
	P ₁	P ₂	A	B	C (Note)	D	E	F	G	J	K	H	J
AW20(K)-B-X2009	1/8, 1/4	1/8	40	87.6	72.4	26	—	M28 x 1	40	26	5	ø37.5	62.5
AW30(K)-B-X2009	1/4, 3/8	1/8	53	115.1	85.6	29.4	30	M38 x 1.5	55	29.4	3.5	ø37.5	65.9
AW40(K)-B-X2009	1/4, 3/8, 1/2	1/8	70	147.1	91.7	37.3	38.4	M42 x 1.5	80	37.3	1.5	ø42.5	74.8
AW40(K)-06-B-X2009	3/4	1/8	75	149.1	93.2	37.3	38.4	M42 x 1.5	80	37.3	1.2	ø42.5	74.8
AW60(K)-B-X2009	3/4, 1	1/8	95	234.1	175.5	43.3	47.5	—	20	43.3	3.2	ø42.5	80.8

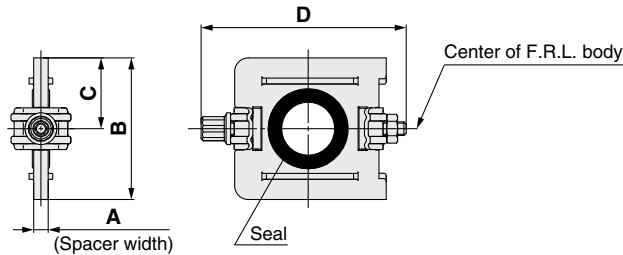
Model	Optional specifications											
	Bracket mount						Panel mount				With auto drain	
	M	N	Q	R	S	T	U	V	W	Y	Z	B
AW20(K)-B-X2009	30	34	43.9	5.4	15.4	55	2.3	29.7	28.5	14	6	104.9
AW30(K)-B-X2009	41	40	45.8	6.5	8	53	2.3	31.1	38.5	19	7	156.8
AW40(K)-B-X2009	50	54	54	8.5	10.5	70	2.3	35.5	42.5	21	7	186.9
AW40(K)-06-B-X2009	50	54	55.5	8.5	10.5	70	2.3	37	42.5	21	7	188.9
AW60(K)-B-X2009	70	66	65.8	11	13	90	3.2	—	—	—	—	273.9

Note) The dimension of C is the length when the filter regulator knob is unlocked.

AF□, AR□, AW Series

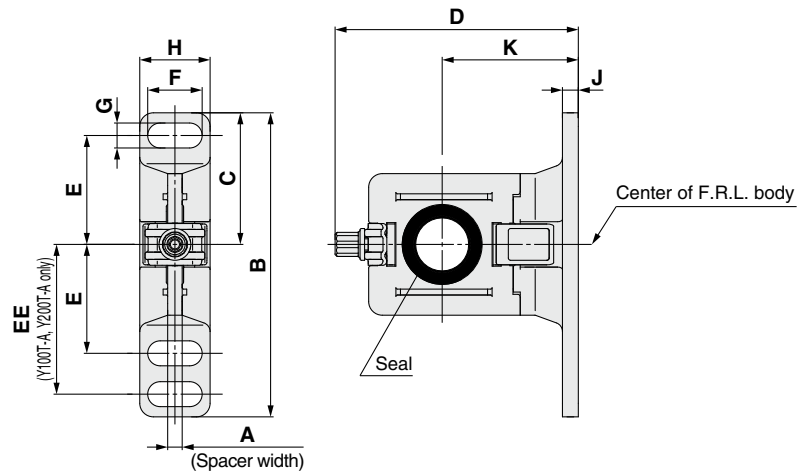
Accessories (Spacers/Brackets)

Spacer (White Vaseline Specification)



Spacer part no.	A	B	C	D	Applicable series
Y100-A-X2013	6	17.9	9	35.4	For body size 10
Y200-A-X2013	3.2	31.2	15.6	44.9	For body size 20
Y300-A-X2013	4.2	43.4	21.7	57.9	For body size 25 and 30
Y400-A-X2013	5.2	53	26.5	68.5	For body size 40
Y500-A-X2013	5.2	57	28.5	75.6	For body size 40 and port size 06

Spacer with Bracket (White Vaseline Specification)



Spacer with bracket part no.	A	B	C	D	E	EE	F	G	H	J	K	Applicable series
Y100T-A-X2013	6	56	24.5	43.6	20	27	6.8	4.5	13	3	25	For body size 10
Y200T-A-X2013	3.2	67	29	53.4	24	33	12	5.5	15.5	3.5	30	For body size 20
Y300T-A-X2013	4.2	82	41	71.5	35	—	14	7	19	4	41	For body size 25 and 30
Y400T-A-X2013	5.2	96	48	86.1	40	—	18	9	26	5	50	For body size 40
Y500T-A-X2013	5.2	96	48	89.6	40	—	18	9	26	5	50	For body size 40 and port size 06

Precision Regulator

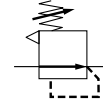
IR1000/2000/3000-X142 *-X1105*

(White Vaseline, Fluororubber Specification)

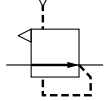
RoHS

Symbol

Basic type



Air operated type



Standard Specifications

Model	Basic type (Knob)			Air operated type	
	IR10□0-A-X1105	IR20□0-A-X1105	IR30□0-A-X1105	IR2120-X142	IR3120-X142
Fluid	Air				
Proof pressure	1.5 MPa				
Max. supply pressure	1.0 MPa				
Min. supply pressure ^{Note 1)}	Set pressure +0.05 MPa		Set pressure +0.1 MPa	Set pressure +0.05 MPa	Set pressure +0.1 MPa
Set pressure range	IR1000-A: 0.005 to 0.2 MPa	IR2000-A: 0.005 to 0.2 MPa	IR3000-A: 0.01 to 0.2 MPa	0.01 to 0.8 MPa	0.01 to 0.8 MPa
	IR1010-A: 0.01 to 0.4 MPa	IR2010-A: 0.01 to 0.4 MPa	IR3010-A: 0.01 to 0.4 MPa		
	IR1020-A: 0.01 to 0.8 MPa	IR2020-A: 0.01 to 0.8 MPa	IR3020-A: 0.01 to 0.8 MPa		
Input signal pressure	—			0.01 to 0.8 MPa	0.01 to 0.8 MPa
Sensitivity	Within 0.2% of full span				
Repeatability ^{Note 2)}	Within ±0.5% of full span				
Linearity ^{Note 3)}	—			Within ±1% of full span	
Air consumption	1 L/min (ANR) or less ^{Note 4)}			4.4 L/min (ANR) or less ^{Note 5)}	11.5 L/min (ANR) or less ^{Note 5)}
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 temperatures	-5 to 60°C (No freezing)				
Weight (kg) ^{Note 6)}	0.13	0.23	0.47	0.35	0.71

Note 1) When there is no flow rate on the outlet.

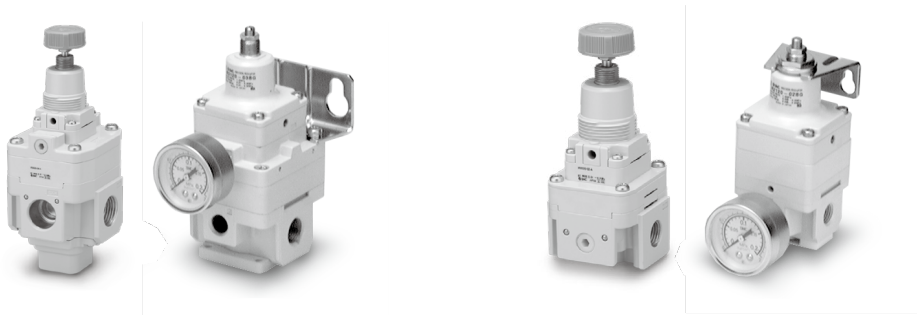
Note 2) Other characteristics such as aging deterioration and temperature characteristics are not included.

Note 3) Indicates the linearity of the output pressure with respect to the input signal pressure.

Note 4) Measuring conditions: Supply pressure 1.0 MPa, Set pressure 0.2 MPa

Note 5) Measuring conditions: Supply pressure 1.0 MPa

Note 6) Without accessories



* Photos are when a pressure gauge is mounted. Pressure gauge is shipped together, but not assembled.

How to Order

Basic type

IR **1** **0** **0** **0** - **01** **BG** - **A** - **X1105**

① ② ③ ④ ⑤ ⑥ ⑦

• White vaseline, Fluororubber

		Symbol	Description	①				
				Body size				
				1	2	3		
②	Set pressure range	0	0.005 to 0.2 MPa	●	●	—		
			0.01 to 0.2 MPa	—	—	●		
		1	0.01 to 0.4 MPa	●	●	●		
		2	0.01 to 0.8 MPa	●	●	●		
			+					
③	Exhaust direction	0	Bottom exhaust	●	●	●		
		1	Front exhaust	—	—	●		
		2	Rear exhaust	—	—	●		
			+					
④	Pipe thread type	Nil	Rc	●	●	●		
		N	NPT	●	●	●		
		F	G	●	●	●		
			+					
⑤	Port size	01	1/8	●	—	—		
		02	1/4	—	●	●		
		03	3/8	—	—	●		
		04	1/2	—	—	●		
			+					
⑥	Option	a	Mounting ^{Note 2)}	Nil	Without mounting option	●	●	●
				B ^{Note 3)}	With bracket	●	●	●
				H	With hexagon panel nut (for panel mount)	●	●	●
				+				
	b	Pressure gauge	Nil	Without pressure gauge	●	●	●	
			G	Round type pressure gauge	●	●	●	
			+					
⑦	Semi-standard	c	Flow direction	Nil	Flow direction: Left to right	●	●	●
				R	Flow direction: Right to left	●	●	●
					+			
		d	Knob	Nil	Upward	●	●	●
				V	Downward	●	●	●
				+				
	e	Pressure unit	Nil	Name plate and pressure gauge in SI units: MPa	●	●	●	
			Z	Name plate and pressure gauge in imperial units: psi ^{Note 4), 5)}	●	●	●	
			ZA	Digital pressure switch: With unit conversion function ^{Note 5)}	●	●	●	

Note 1) Options are shipped together with the product, but not assembled.

Note 2) B and H cannot be selected at the same time.

Note 3) The current bracket cannot be used for this product.

Note 4) For pipe thread type: NPT

Note 5) According to the New Measurement Act, only the SI unit type is provided for use in Japan.

· Option/Semi-standard: Select one each for a to e.
· Option/Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.
Example) IR1000-01BG-RVZ-A-X1105

How to Order

Air operated type

IR 2 1 2 0 - 02 BG - X142

• White vaseline, Fluororubber

		Symbol	Description	①		
				Body size		
				2	3	
②	Set pressure range	2	0.01 to 0.8 MPa	●	●	
+						
③	Exhaust direction	0	Front exhaust	●	—	
			Rear exhaust	—	●	
+						
④	Pipe thread type	Nil	Rc	●	●	
		N	NPT	●	●	
		F	G	●	●	
+						
⑤	Port size	02	1/4	●	●	
		03	3/8	—	●	
		04	1/2	—	●	
+						
⑥	Option	Mounting	Nil	Without mounting option	●	●
			B	With bracket	●	●
		Pressure gauge ^{Note 1)}	Nil	Without pressure gauge	●	●
			G	Round type pressure gauge	●	●
+						
⑦	Semi-standard	Nil	Flow direction: Left to right	●	●	
		R	Flow direction: Right to left	●	●	

Note 1) Pressure gauges are shipped together, but not assembled.

Paint Process Equipment

Directional Control Valves

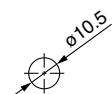
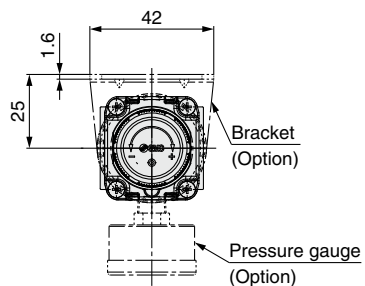
Air Preparation Equipment

Pressure Control Equipment

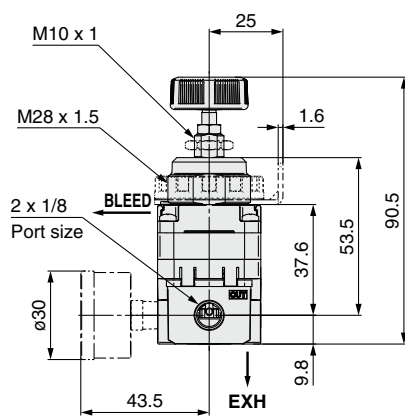
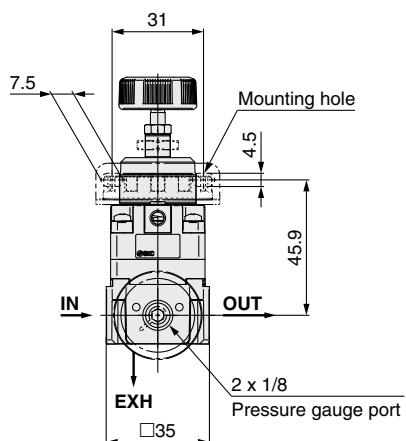
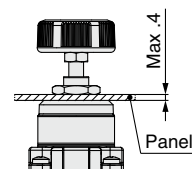
Pneumatic Auxiliary Equipment

Dimensions

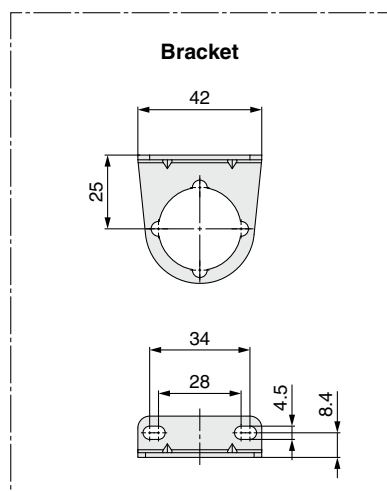
Basic type (Knob): IR10□0-01□-A-X1105



Mounting hole for
hexagon panel nut

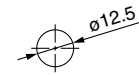
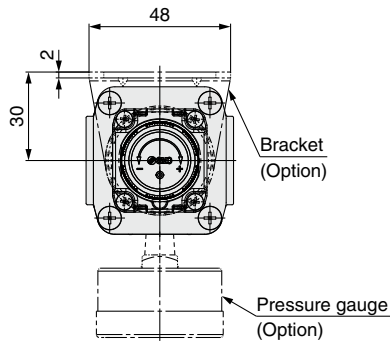


When connecting to the EXH port,
please contact your SMC sales representative separately.

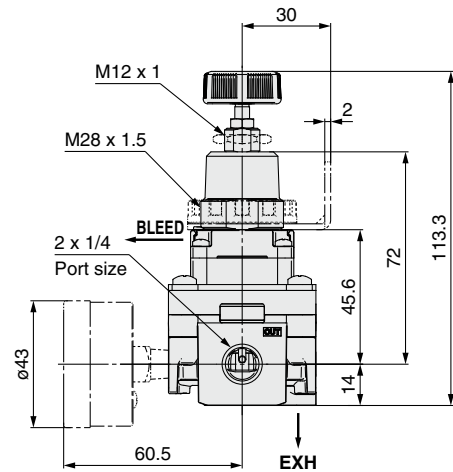
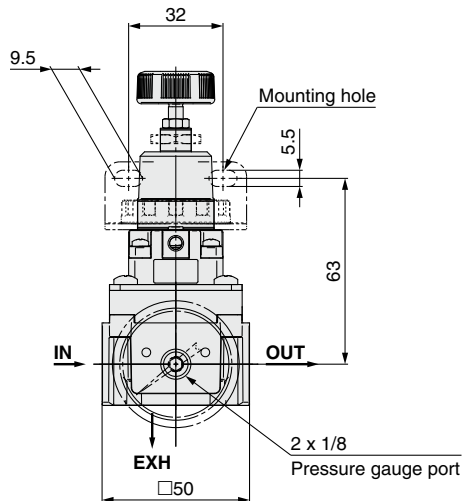
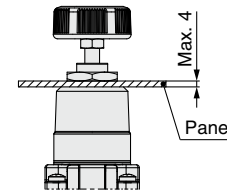


Dimensions

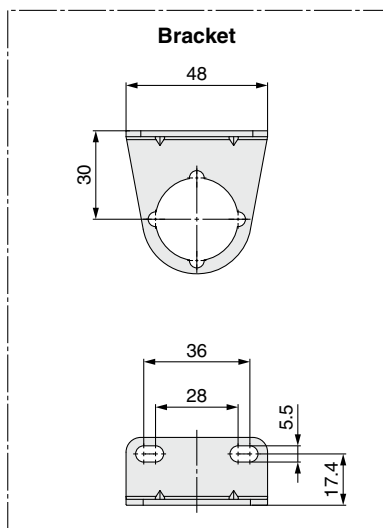
Basic type (Knob): IR20□0-02□-A-X1105



**Mounting hole for
hexagon panel nut**

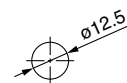
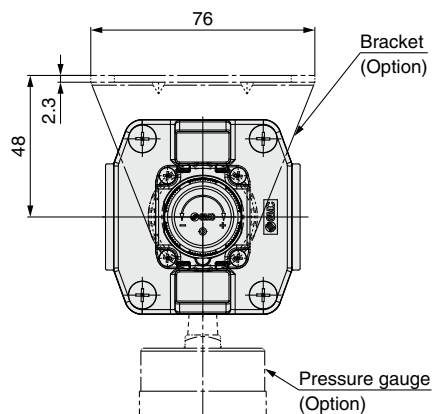


When connecting to the EXH port,
please contact your SMC sales representative separately.

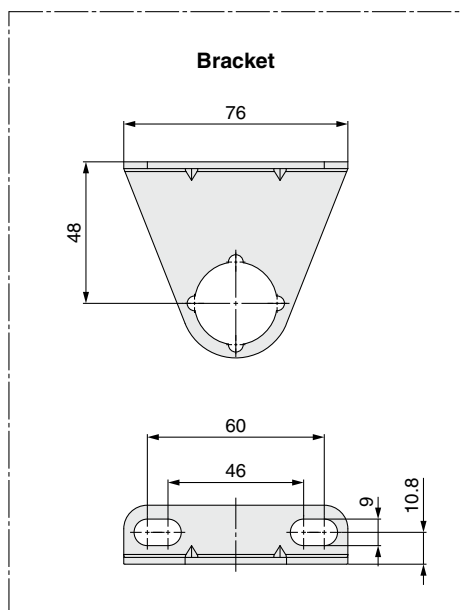
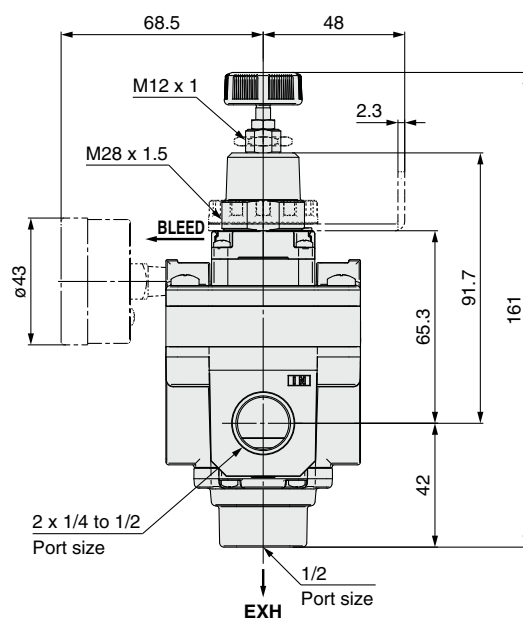
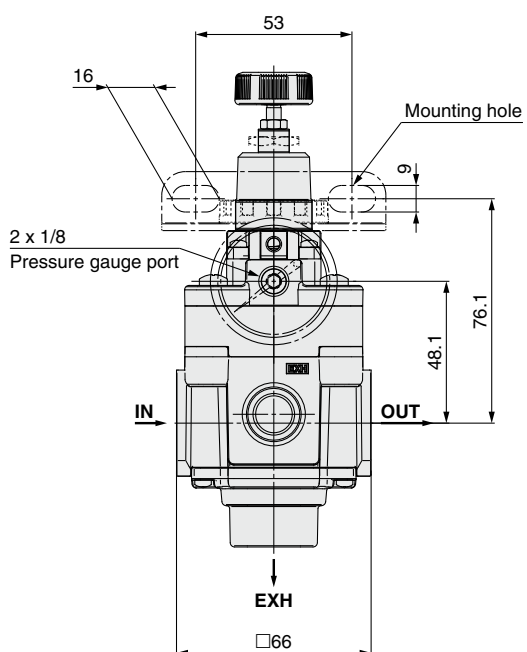
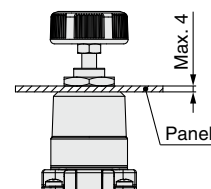


Dimensions

Basic type (Knob): IR30□0-0□□-A-X1105

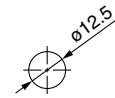
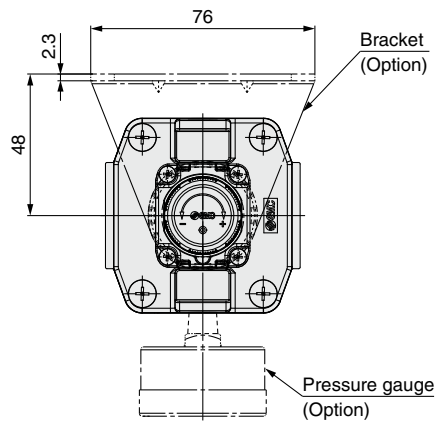


Mounting hole for hexagon panel nut

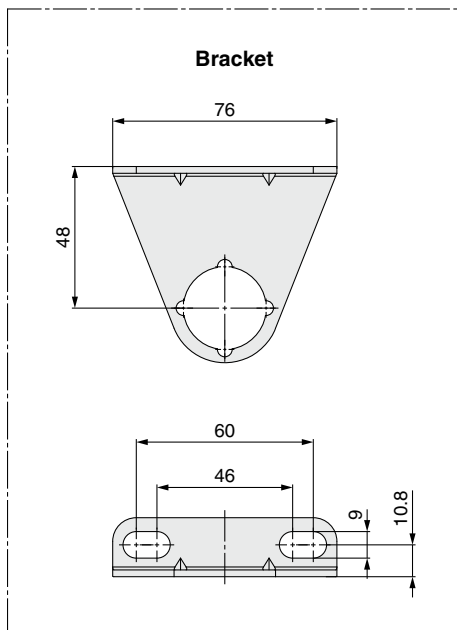
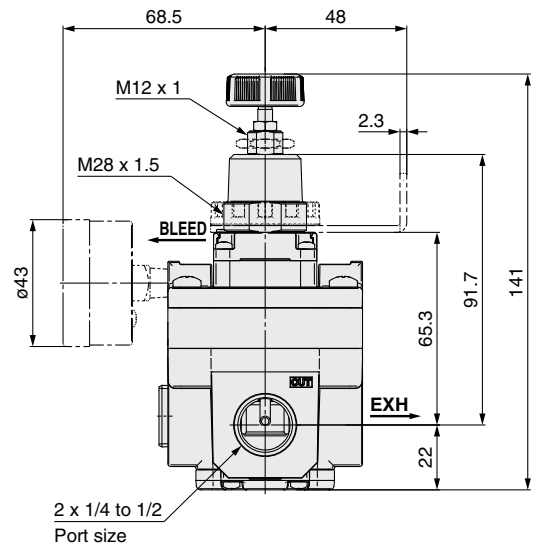
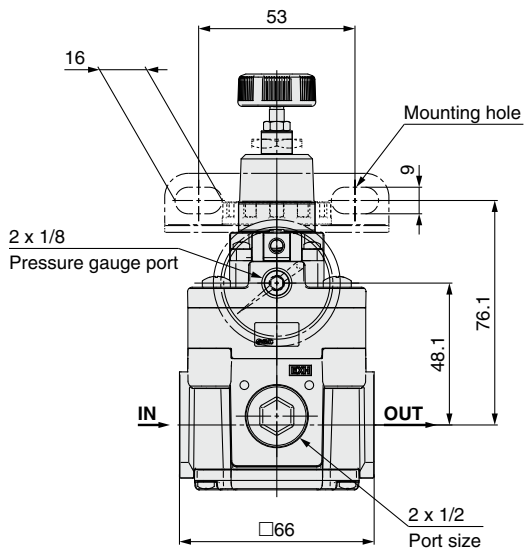
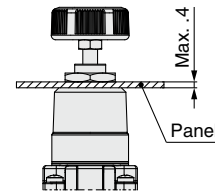


Dimensions

Basic type (Knob): IR30□¹/₂-0□□-A-X1105

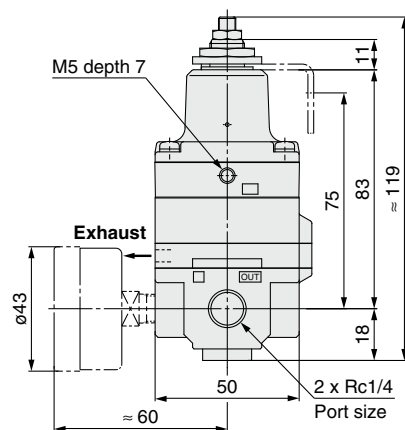
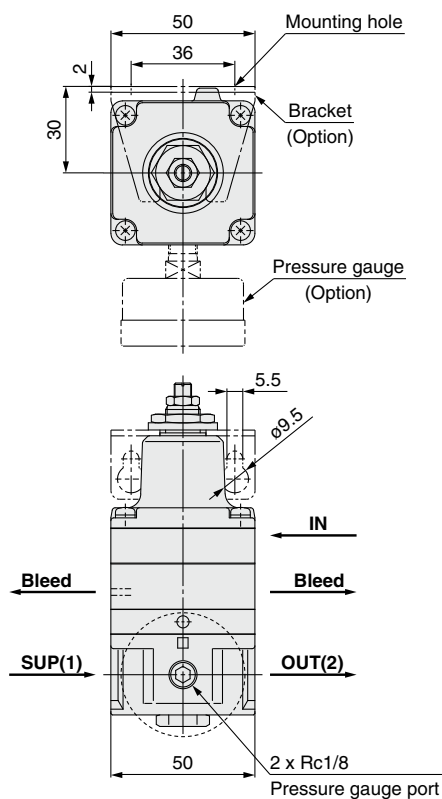


Mounting hole for hexagon panel nut

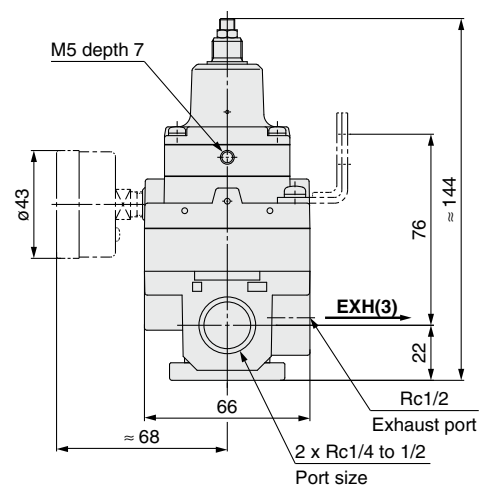
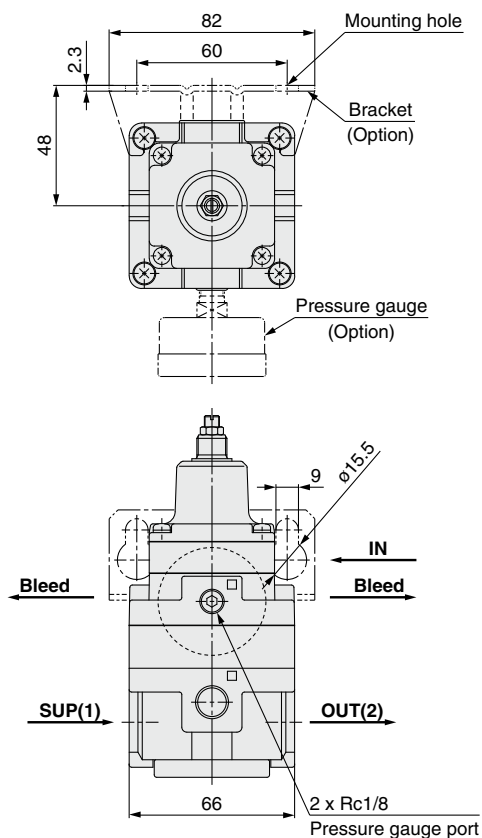


Dimensions

Air operated type: IR2120-02□-X142



Air operated type: IR3120-0□□-X142



IR1000 Series

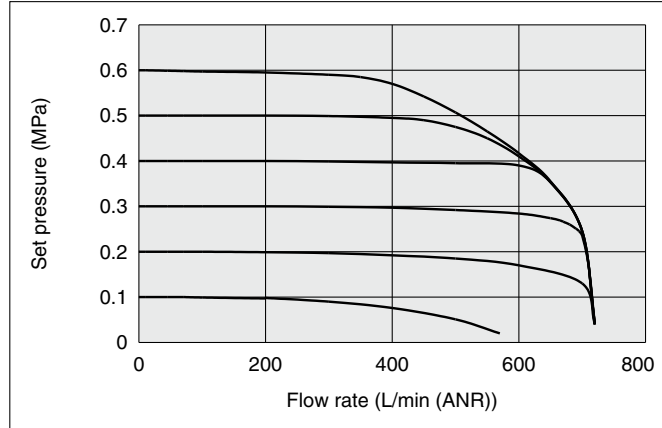
* The operating conditions or external disturbance may affect each of the characteristics. So, the characteristic values shown below are not guaranteed.

Flow Rate Characteristics

* Testing methods conform to JIS B 8372.

IR1020-01-A-X1105

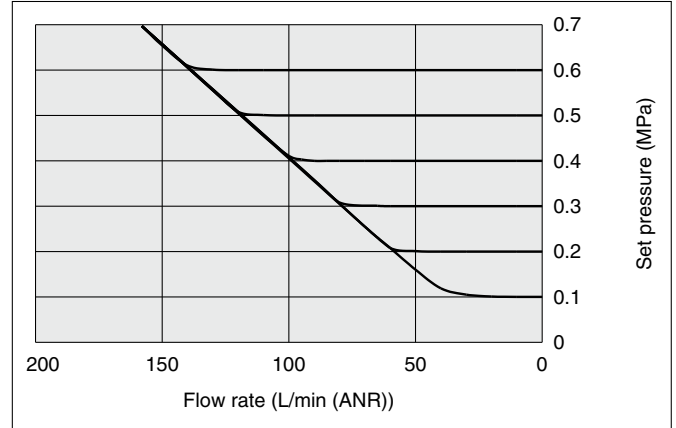
Supply pressure: 0.7 MPa



Relief Characteristics

IR1020-01-A-X1105

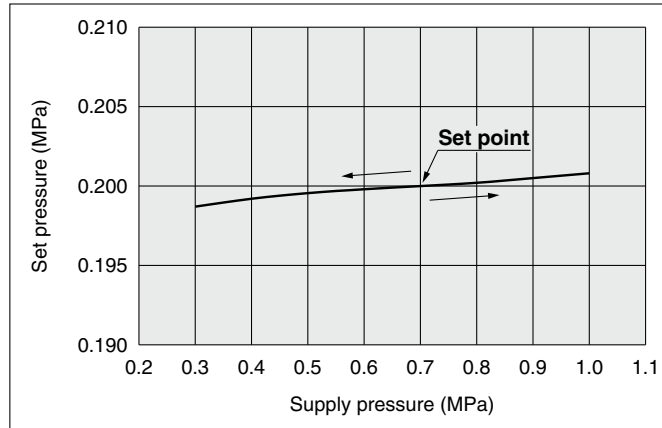
Back pressure: 0.7 MPa



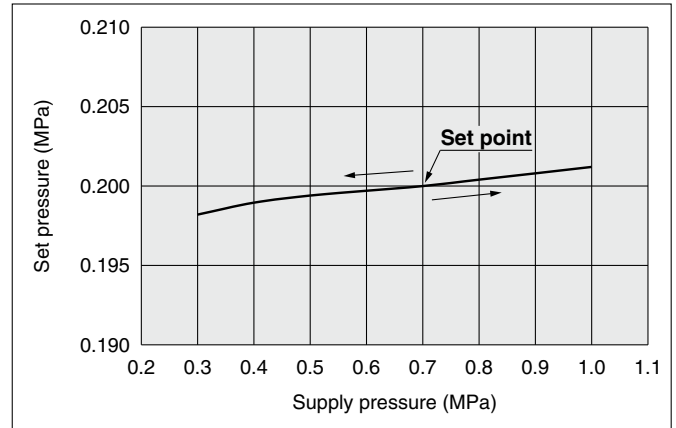
Pressure Characteristics

Supply pressure: 0.3 to 1.0 MPa, Set pressure: 0.2 MPa, Flow rate: 0 L/min (ANR)

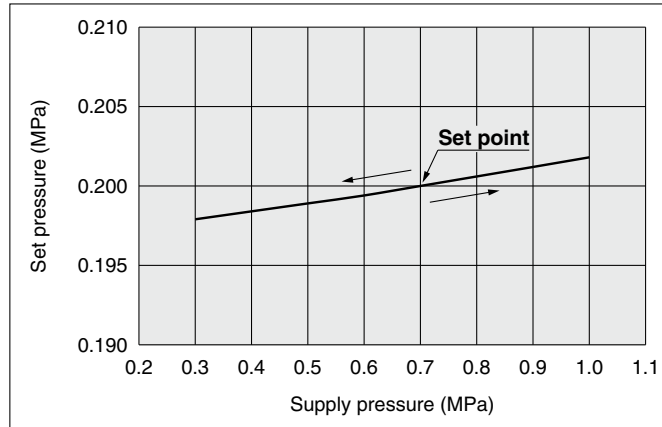
IR1000-A-X1105



IR1010-A-X1105



IR1020-A-X1105



IR2000 Series

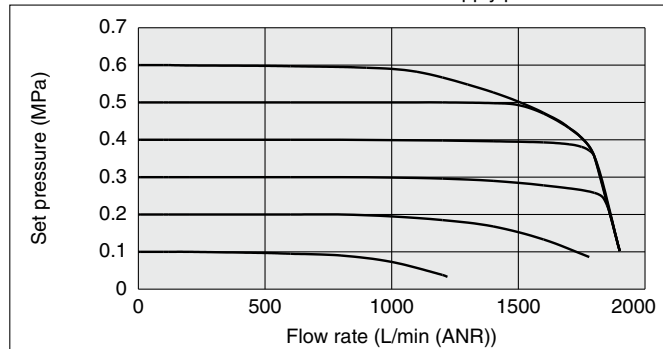
* The operating conditions or external disturbance may affect each of the characteristics. So, the characteristic values shown below are not guaranteed.

Flow Rate Characteristics

* Testing methods conform to JIS B 8372.

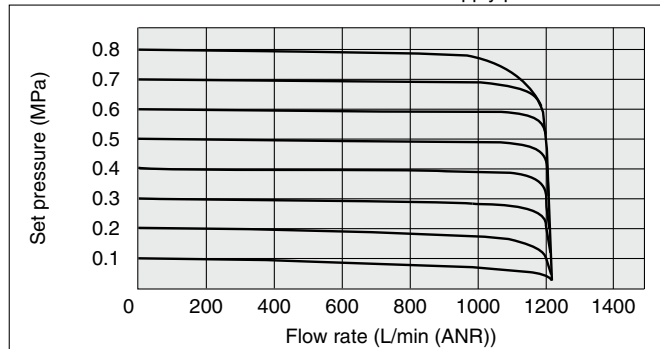
IR2020-02-A-X1105

Supply pressure: 0.7 MPa



IR2120-02-X142

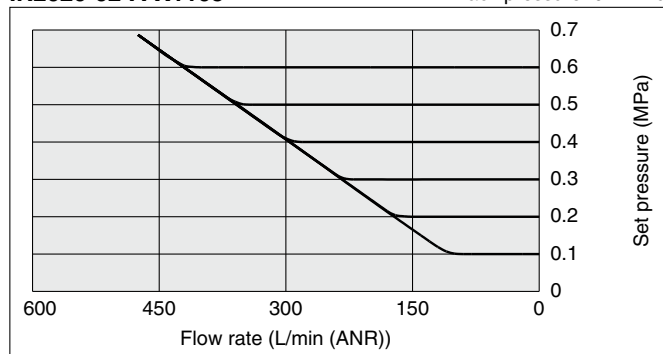
Supply pressure: 1.0 MPa



Relief Characteristics

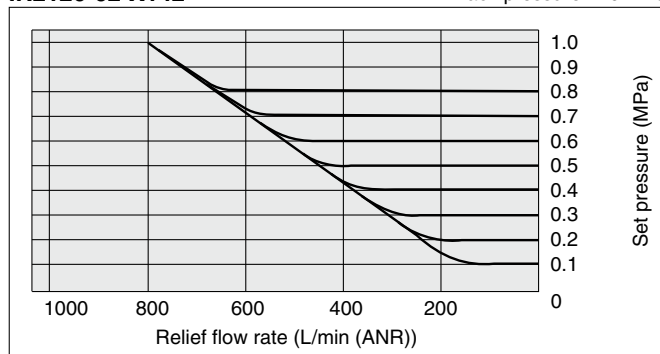
IR2020-02-A-X1105

Back pressure: 0.7 MPa



IR2120-02-X142

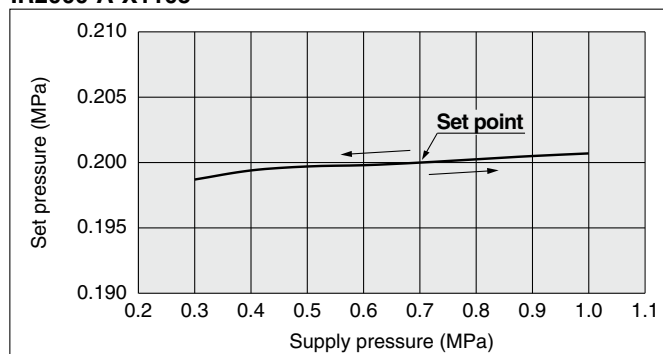
Back pressure: 1.0 MPa



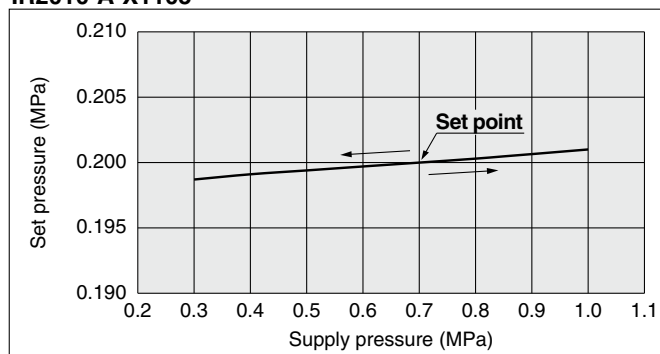
Pressure Characteristics

Supply pressure: 0.3 to 1.0 MPa, Set pressure: 0.2 MPa, Flow rate: 0 L/min (ANR)

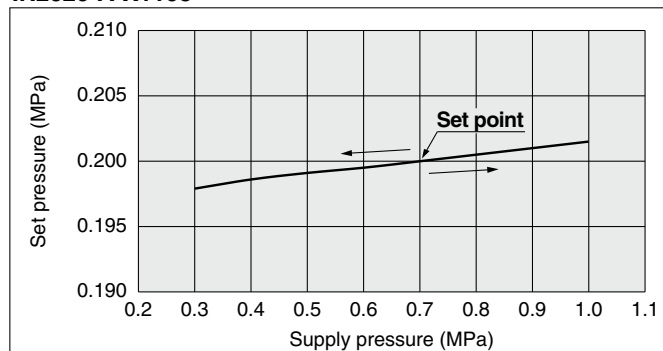
IR2000-A-X1105



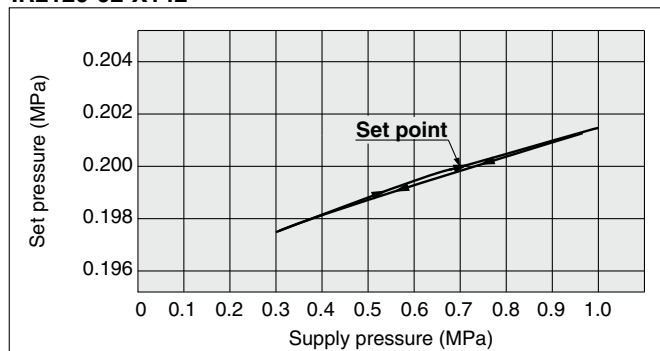
IR2010-A-X1105



IR2020-A-X1105



IR2120-02-X142



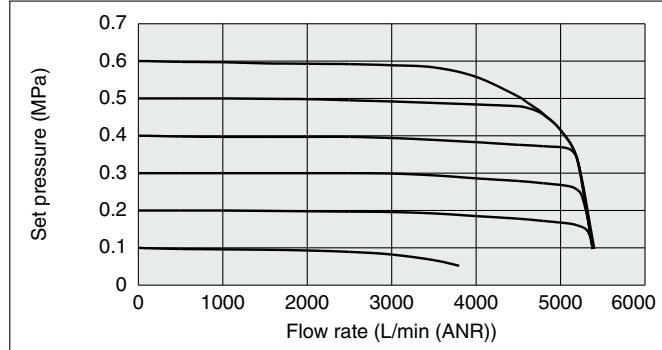
IR3000 Series

* The operating conditions or external disturbance may affect each of the characteristics. So, the characteristic values shown below are not guaranteed.

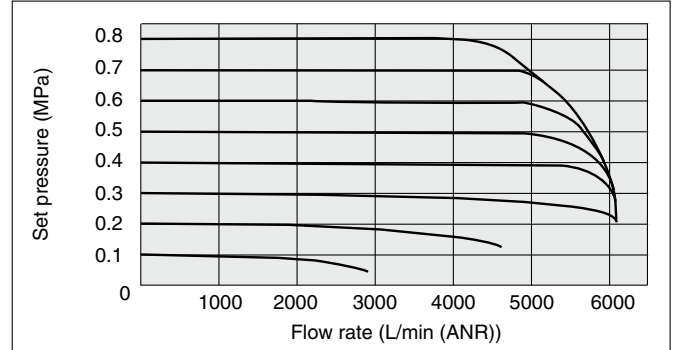
Flow Rate Characteristics

* Testing methods conform to JIS B 8372.

IR3020-04-A-X1105 Supply pressure: 0.7 MPa

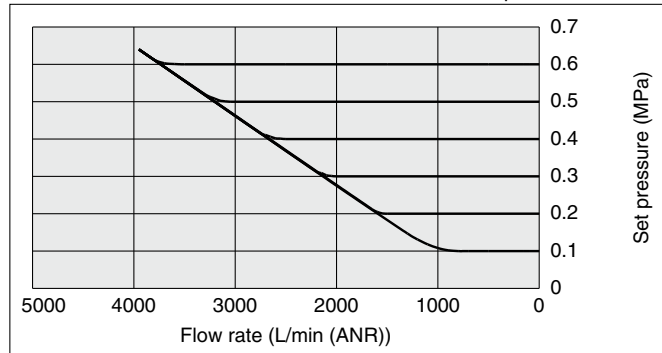


IR3120-03-X142 Supply pressure: 1.0 MPa

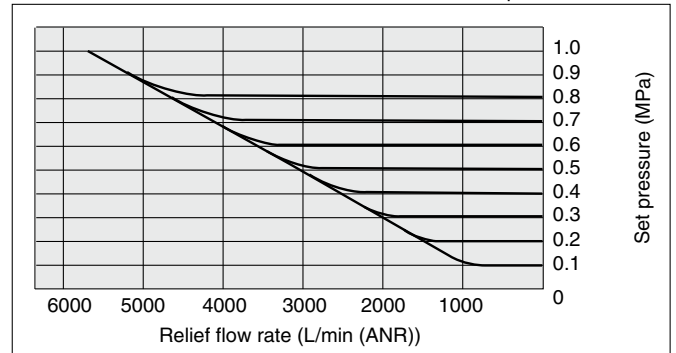


Relief Characteristics

IR3020-04-A-X1105 Back pressure: 0.7 MPa



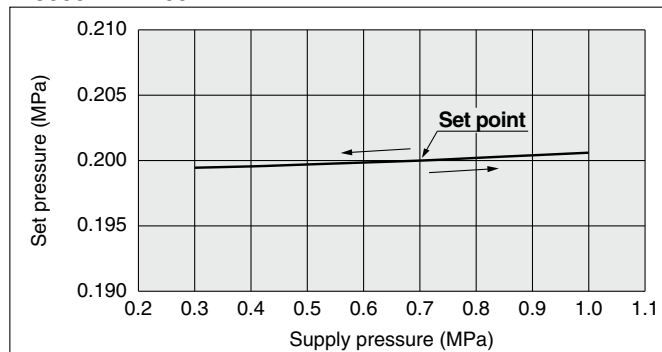
IR3120-03-X142 Back pressure: 1.0 MPa



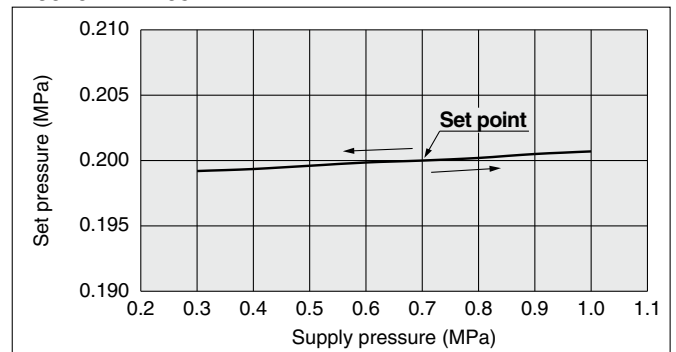
Pressure Characteristics

Supply pressure: 0.3 to 1.0 MPa, Set pressure: 0.2 MPa, Flow rate: 0 L/min (ANR)

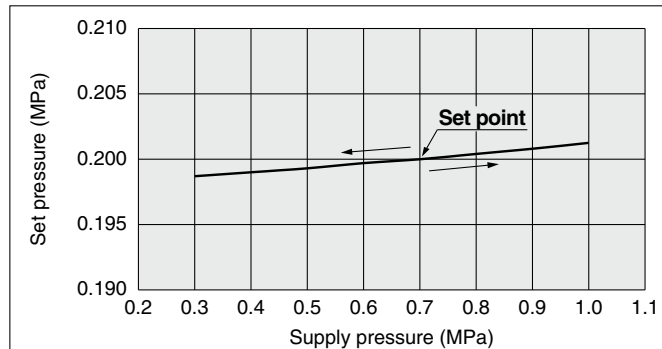
IR3000-A-X1105



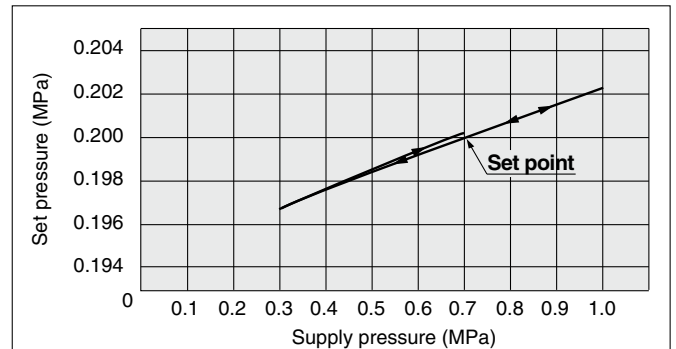
IR3010-A-X1105



IR3020-A-X1105



IR3120-03-X142



Electro-Pneumatic Regulator

ITV2000/3000

-X600 (White Vaseline, Fluororubber Specification)

-X600-G (White Vaseline, Fluororubber Specification,
With Gauge Port)



How to Order

ITV **2** **0** **1** **0** - **0** **1** **2** **S** - **X600**

Model

2	2000 type
3	3000 type

Pressure range

1	0.1 MPa
3	0.5 MPa
5	0.9 MPa

Power supply voltage

0	24 VDC
1	12 to 15 VDC

Input signal/ Communication model

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
40	4 points preset input

Note) Please contact SMC for communication specifications.

Monitor output

1	Analog output 1 to 5 VDC
2	Switch output/NPN output
3	Switch output/PNP output
4	Analog output 4 to 20 mA DC (Sink type)
Nil	None

Thread type

Nil	Rc
N	NPT
T	NPTF
F	G

Made to order

Symbol	Specifications
X600	White vaseline, Fluororubber
X600-G	White vaseline, Fluororubber, With gauge port

Pressure display unit

Nil	MPa
2 Note)	kgf/cm ²
3	bar
4 Note)	psi
5	kPa

Note) This product is for overseas use only according to the New Measurement Act. (The SI unit type is provided for use in Japan.)

Cable connector type

S	Straight type 3 m
L	Right angle type 3 m
N	Without cable connector

Bracket*

Nil	Without bracket
B	Flat bracket
C	L-bracket

* Bracket is included.

Port size

2	1/4 (2000, 3000 type)
3	3/8 (2000, 3000 type)
4	1/2 (3000 type)

Standard Specifications



Symbol

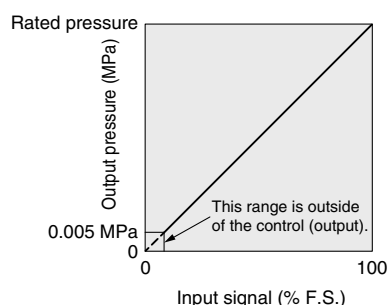
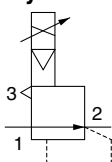


Fig 1. Input/output characteristics chart

Model		ITV201□-X600-□	ITV203□-X600-□	ITV205□-X600-□
		ITV301□-X600-□	ITV303□-X600-□	ITV305□-X600-□
Minimum supply pressure		Set pressure +0.1 MPa		
Maximum supply pressure		0.2 MPa	1.0 MPa	
Set pressure range		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)		
Input impedance	Current type	250 Ω 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)}	Analog output	1 to 5 VDC (Output impedance: Approx. 1 kΩ) 4 to 20 mA DC (Sink type) (Output impedance: 250 Ω or less) Output accuracy ±6% F.S. or less		
	Switch output	NPN open collector output: Max. 30 V, 80 mA PNP open collector output: Max. 80 mA		
Linearity		±1% F.S. or less		
Hysteresis		0.5% F.S. or less		
Repeatability		±0.5% F.S. or less		
Sensitivity		0.2% F.S. or less		
Temperature characteristics		±0.12% F.S./°C or less		
Output ^{Note 4)} pressure display	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 temperatures		0 to 50°C (No condensation)		
Enclosure		IP65		
Weight	ITV20□□	Approx. 350 g (without options)		
	ITV30□□	Approx. 645 g (without options)		

Note 1) Refer to Fig. 1 for the relationship between set pressure and input. 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 analog output or switch output.

Further, when switch output is selected, select either NPN output or PNP output.

When measuring ITV analog output from 1 to 5 VDC, if the load impedance is less than 100 k Ω , the analog output monitor accuracy of within $\pm 6\%$ (full span) may not be available. The product with the accuracy of within $\pm 6\%$ 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. 0.001 to 0.500 MPa). Note that the unit cannot be changed.

Note 5) The minimum unit for 0.9 MPa (130 psi) types is 1 psi.

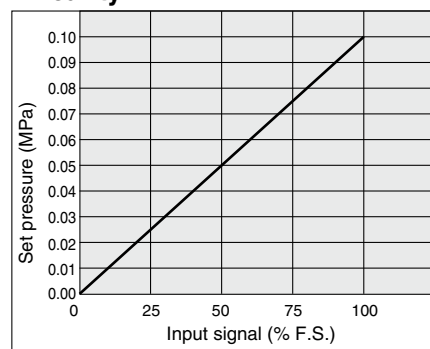
Note 6) Value for the state with no over current circuit included. If an allowance is provided for an over current circuit, the input impedance varies depending on the input current. This is 350 Ω or less for an input current of 20 mA DC.

Note 7) The above characteristics are confined to the static state. When air is consumed on the output side, the pressure may fluctuate.

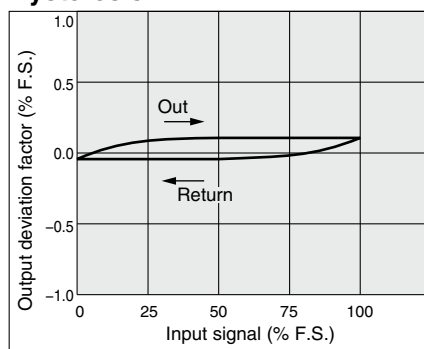
Note 8) This product does not have a shut-off valve function. If air pressure is supplied without electric power being applied, output pressure may increase to the pressure equivalent of the supply pressure. Operate the system to shut off the supply pressure when not operating the product.

ITV201-X600-X

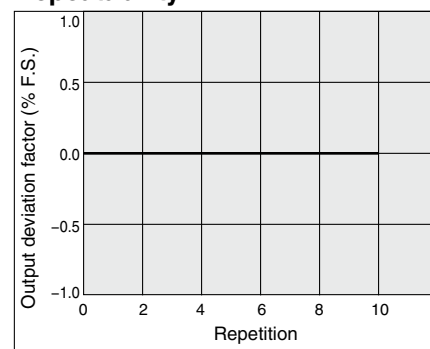
Linearity



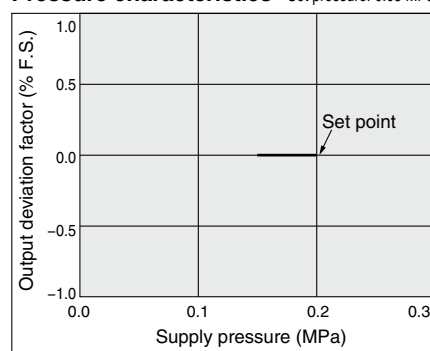
Hysteresis



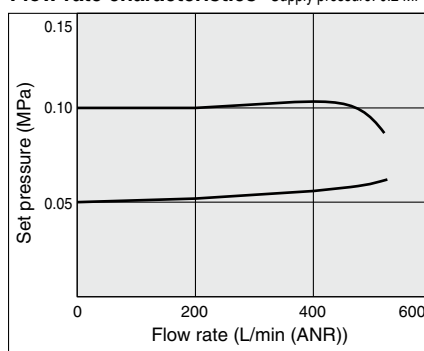
Repeatability



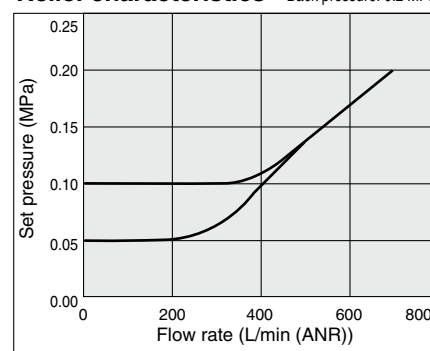
Pressure characteristics Set pressure: 0.05 MPa



Flow rate characteristics Supply pressure: 0.2 MPa

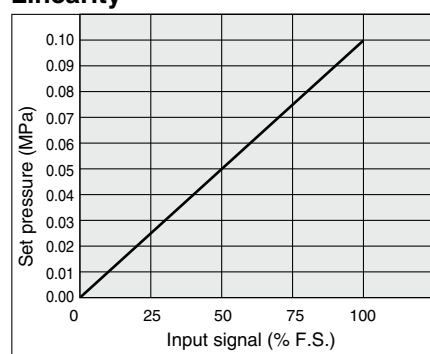


Relief characteristics Back pressure: 0.2 MPa

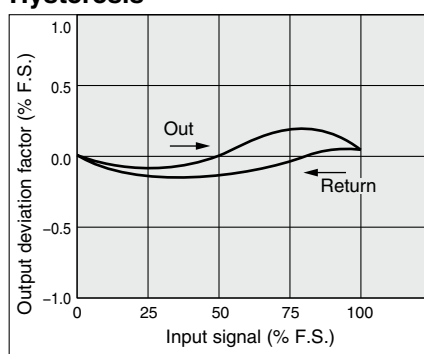


ITV301-X600-X

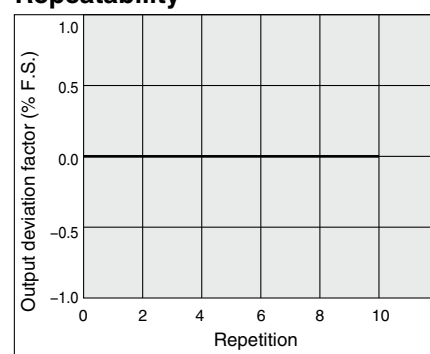
Linearity



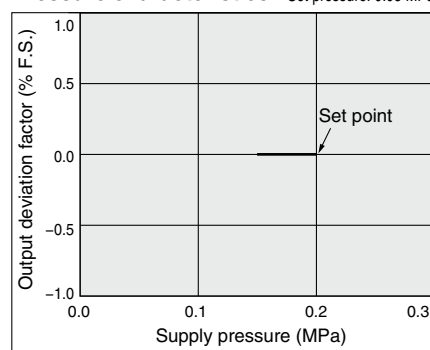
Hysteresis



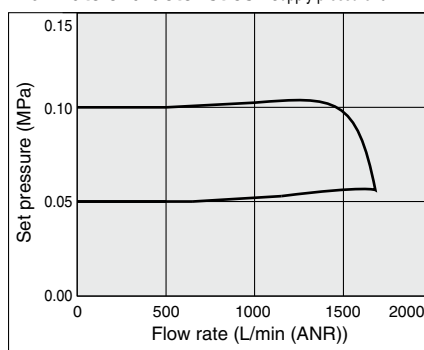
Repeatability



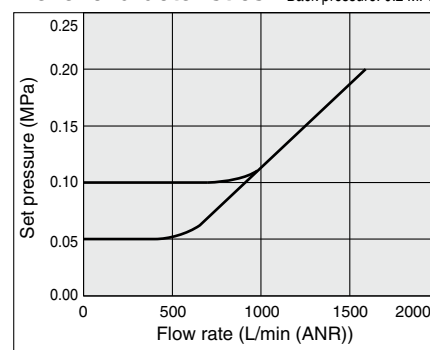
Pressure characteristics Set pressure: 0.05 MPa



Flow rate characteristics Supply pressure: 0.2 MPa

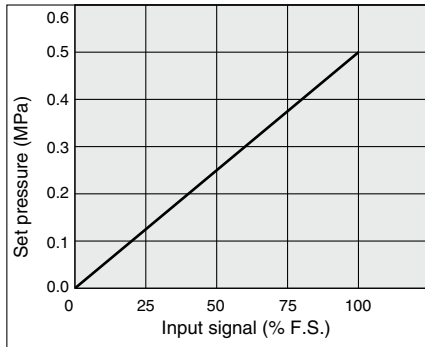


Relief characteristics Back pressure: 0.2 MPa

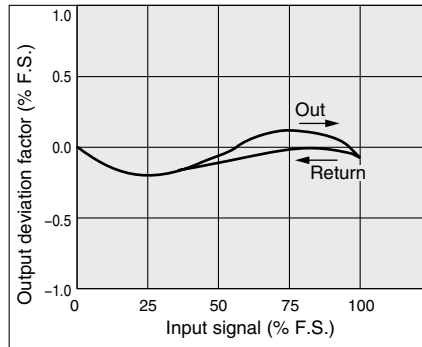


ITV203□-X600-□

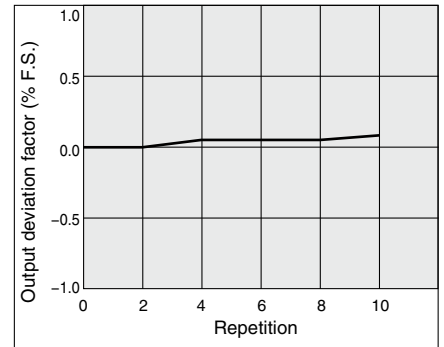
Linearity



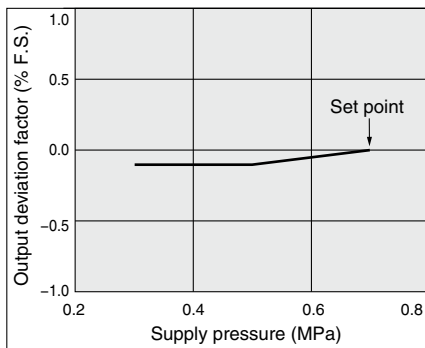
Hysteresis



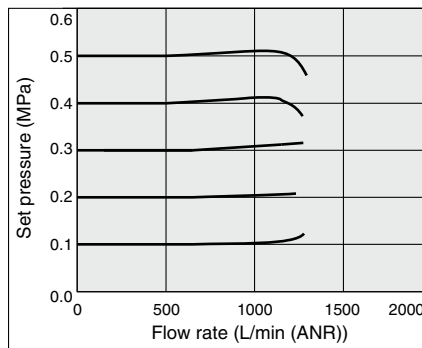
Repeatability



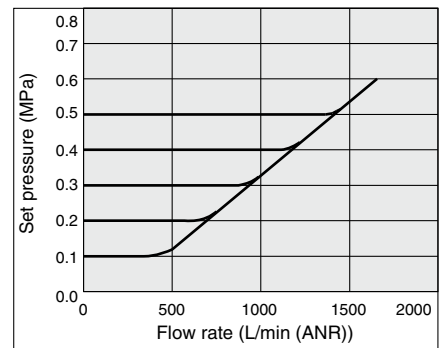
Pressure characteristics Set pressure: 0.2 MPa



Flow rate characteristics Supply pressure: 0.7 MPa

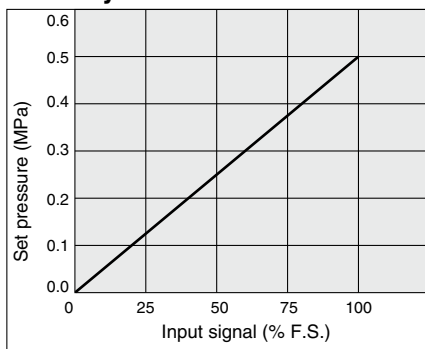


Relief characteristics Back pressure: 0.7 MPa

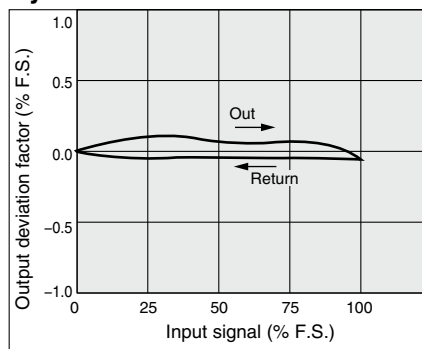


ITV303□-X600-□

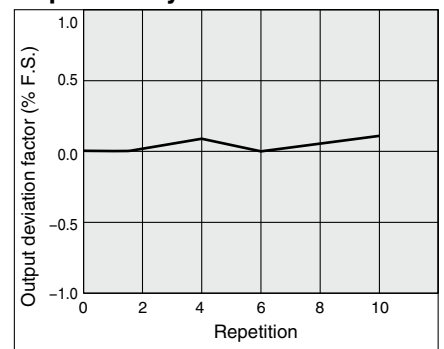
Linearity



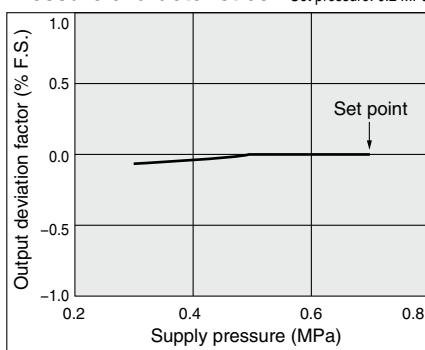
Hysteresis



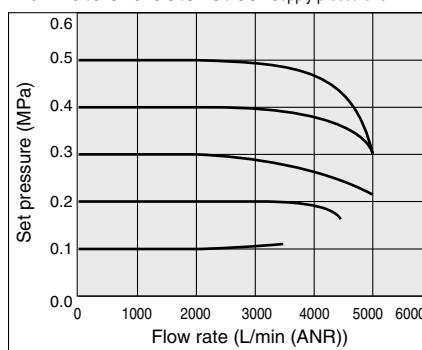
Repeatability



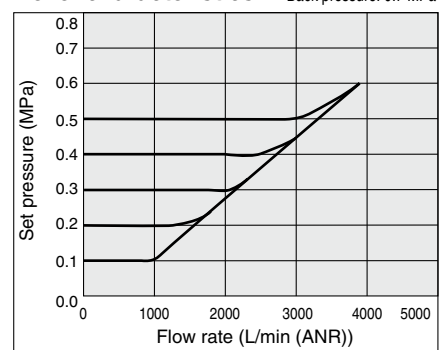
Pressure characteristics Set pressure: 0.2 MPa



Flow rate characteristics Supply pressure: 0.7 MPa

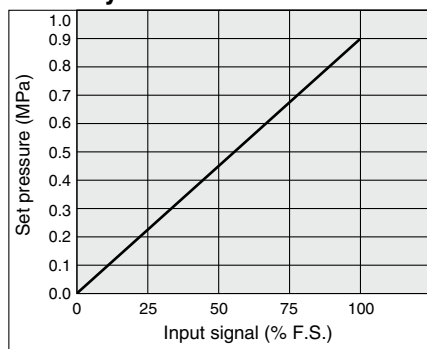


Relief characteristics Back pressure: 0.7 MPa

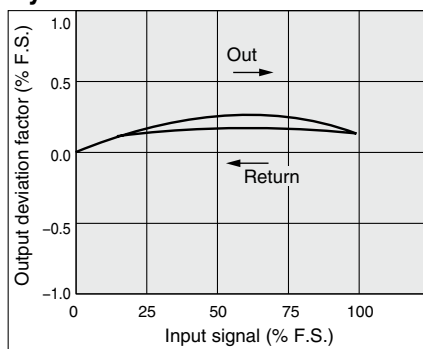


ITV205-X600

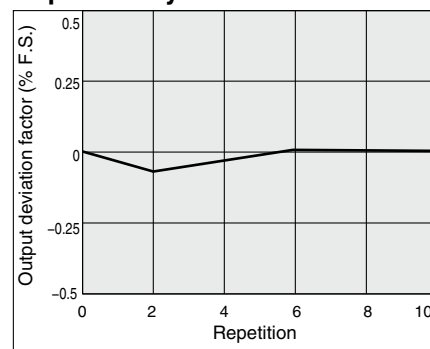
Linearity



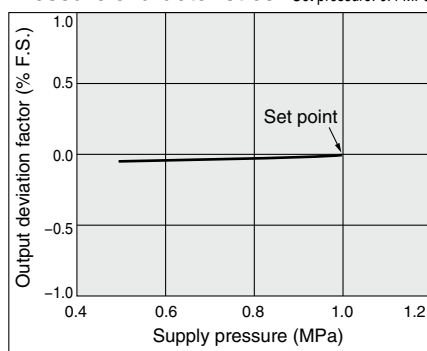
Hysteresis



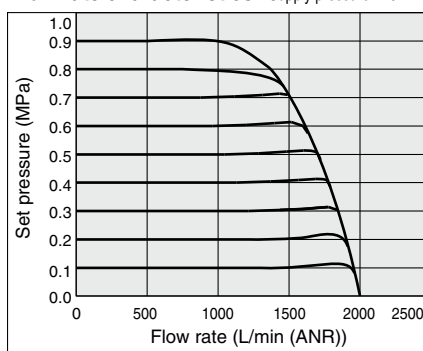
Repeatability



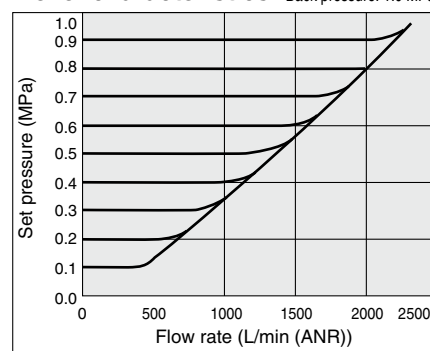
Pressure characteristics Set pressure: 0.4 MPa



Flow rate characteristics Supply pressure: 1.0 MPa

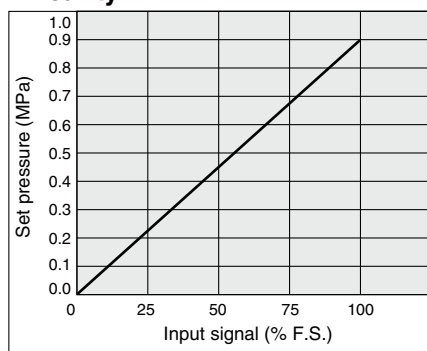


Relief characteristics Back pressure: 1.0 MPa

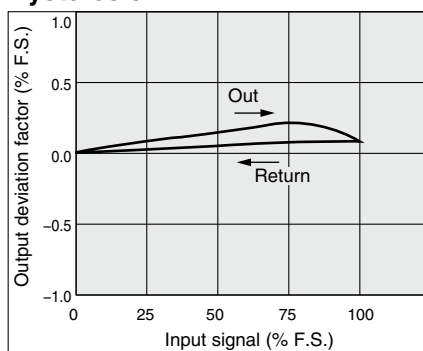


ITV305-X600

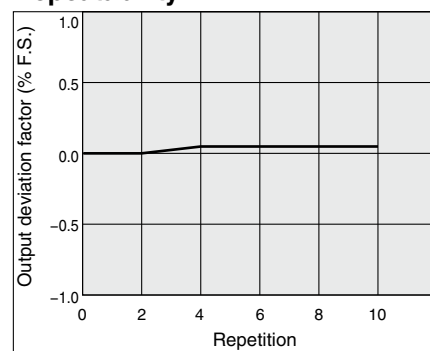
Linearity



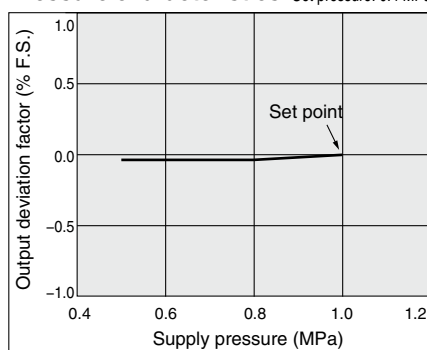
Hysteresis



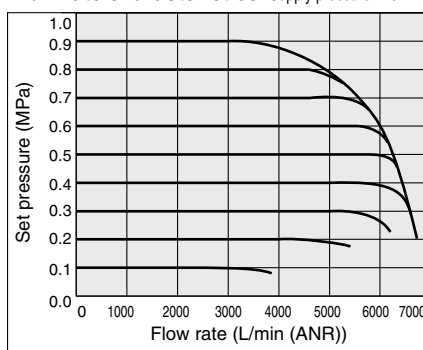
Repeatability



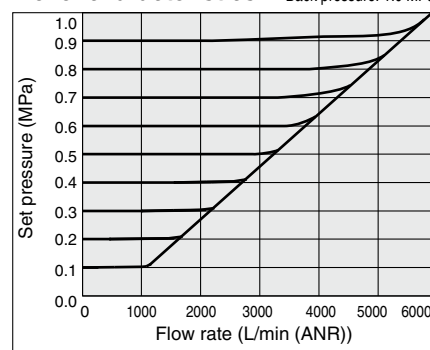
Pressure characteristics Set pressure: 0.4 MPa



Flow rate characteristics Supply pressure: 1.0 MPa



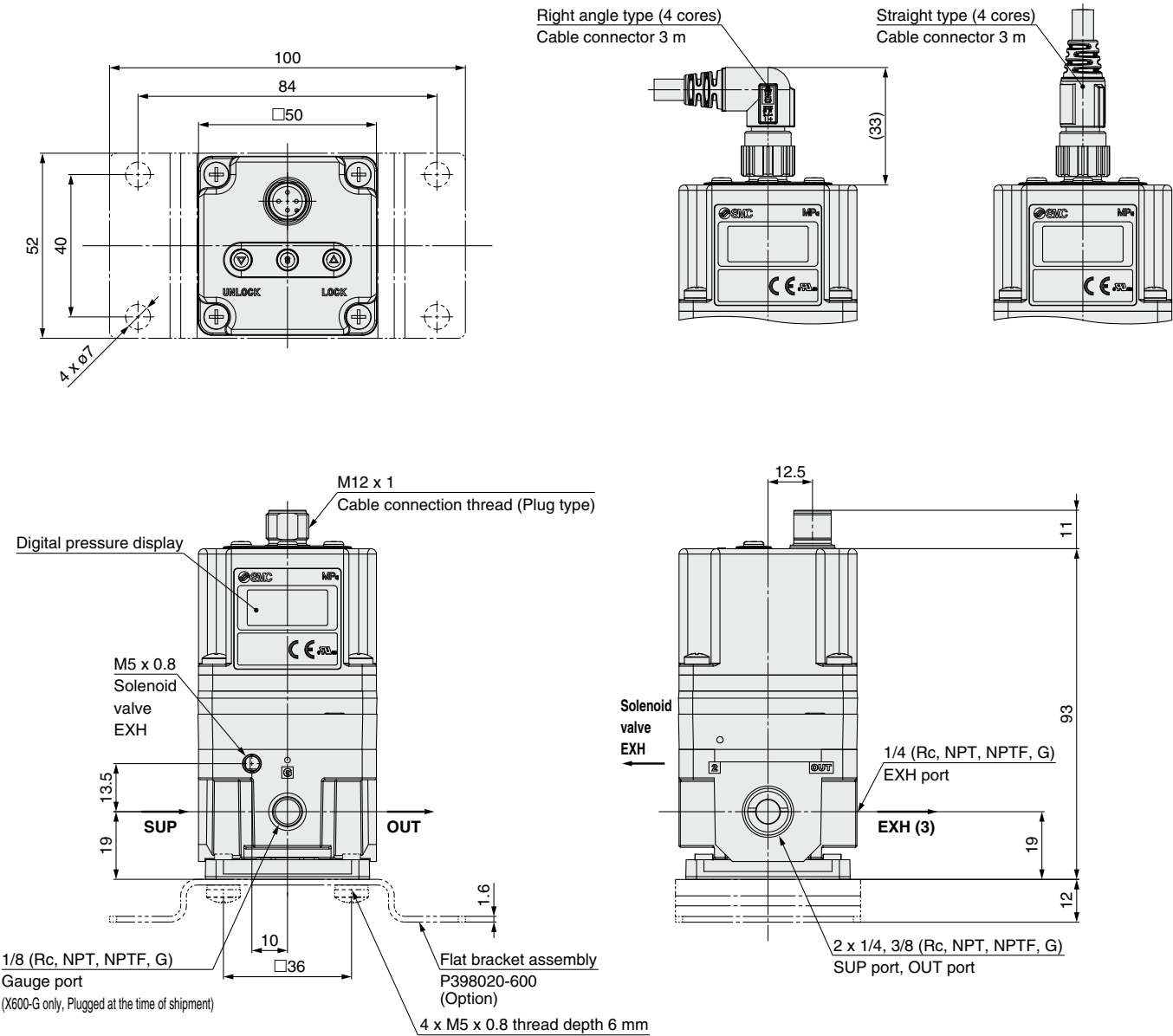
Relief characteristics Back pressure: 1.0 MPa



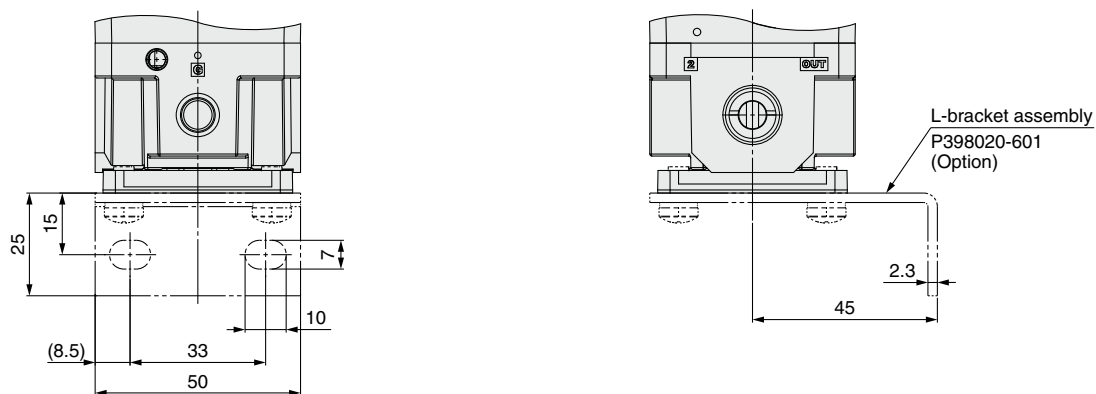
Dimensions

ITV20□□-X600-□
Flat bracket

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



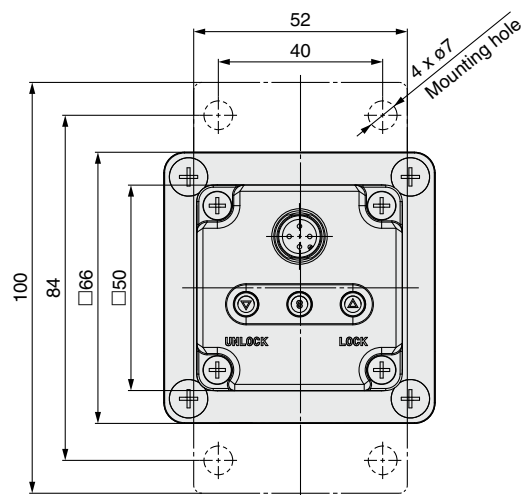
L-bracket



Dimensions

ITV30□□-X600-□

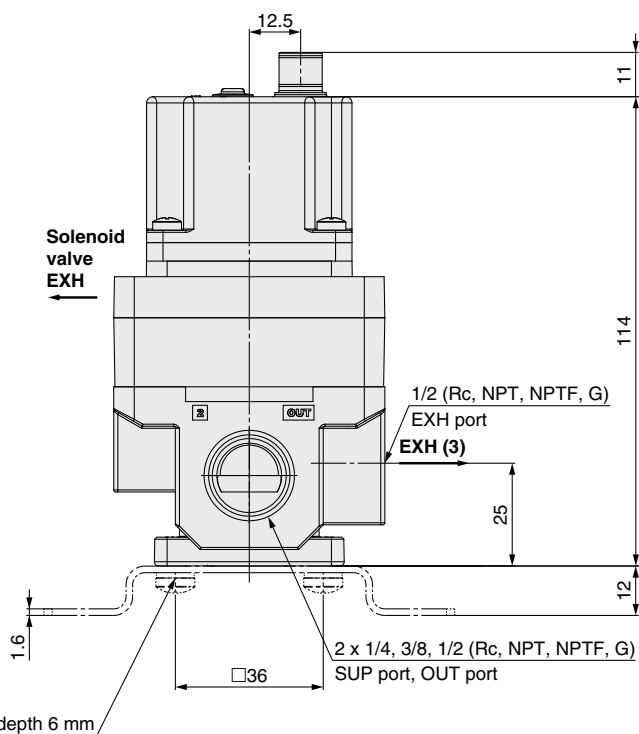
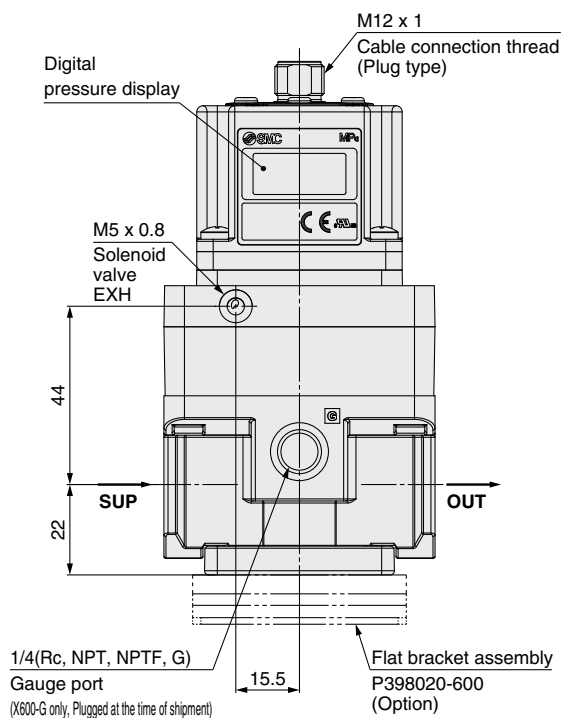
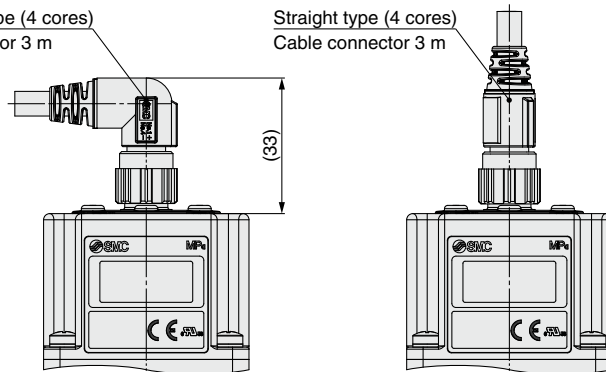
Flat bracket



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

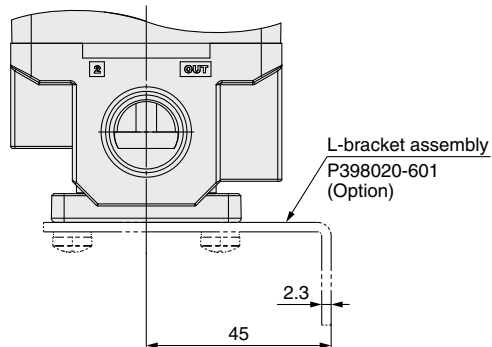
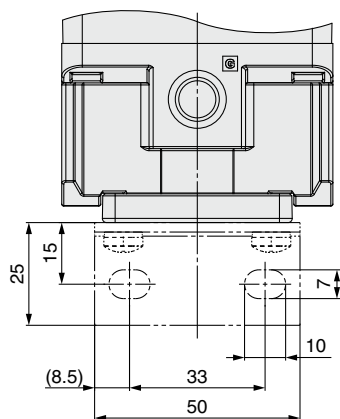
Right angle type (4 cores)
Cable connector 3 m

Straight type (4 cores)
Cable connector 3 m



4 x M5 x 0.8 thread depth 6 mm

L-bracket



Booster Regulator VBA Series

These products are standard specifications. These are not oil-free and white vaseline specification products.

RoHS

How to Order



Made to Order

(For details, refer to page 226.)

VBA 40A - 04 - - -

Body size

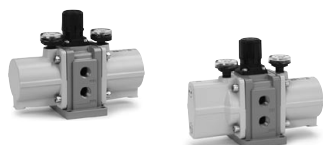
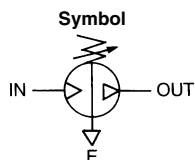
10A	1/4", Knob-operated type	Pressure increase ratio: Twice
20A	3/8", Knob-operated type	
40A	1/2", Knob-operated type	
22A	3/8", Air-operated type	
42A	1/2", Air-operated type	Pressure increase ratio: 2 to 4 times
43A	1/2", Max. operating pressure 1.6 MPa	
11A (Note)	1/4", Knob-operated type	

Note) Set the pressure increase ratio to 2 or more.

Thread type (Note)

Symbol	Thread type
Nil	Rc
F	G
N	NPT
T	NPTF

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.



Port size

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

Made to order

Symbol	Specifications
Nil	None
X2	With soft wiper

* Only applicable to the VBA40A

Semi-standard

Symbol	Semi-standard
Nil	Standard product
Z (Note)	- Pressure unit on the product name label: psi - Pressure unit on the pressure gauge: MPa and psi

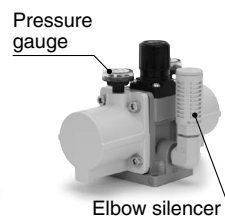
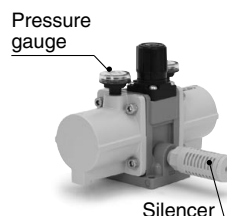
Note) Thread type: NPT, NPTF

Under the new measurement law, the pressure unit of "psi" on the pressure gauges cannot be used in Japan.

Option

Symbol	Option
Nil	None
G	Pressure gauge
N	Silencer
S	High-noise reduction silencer (Note)
GN	Pressure gauge, Silencer
GS	Pressure gauge, High-noise reduction silencer (Note)
LN	Elbow silencer (Note)
LS	Elbow high-noise reduction silencer (Note)
GLN	Pressure gauge, Elbow silencer (Note)
GLS	Pressure gauge, Elbow high-noise reduction silencer (Note)

Note) Refer to "Combination of Thread Type and Options."



Combination of Thread Type and Options

Body size	Thread type	Option										Semi-standard	
		Nil	G	N	S	GN	GS	LN	LS	GLN	GLS	Nil	-Z
10A 11A	Nil	●	●	●	●	●	●	●	●	●	●	●	—
	F	●	●	●	●	●	●	●	●	●	●	●	—
	N	●	●	●	—	●	—	●	—	●	—	●	●
	T	●	●	●	—	●	—	●	—	●	—	●	●
20A 22A	Nil	●	●	●	●	●	●					●	—
	F	●	●	●	●	●	●					●	—
	N	●	●	●	●	●	●					●	●
	T	●	●	●	●	●	●					●	●
40A 42A 43A	Nil	●	●	●	●	●	●					●	—
	F	●	●	●	●	●	●					●	—
	N	●	●	●	●	●	●					●	●
	T	●	●	●	●	●	●					●	●

Air Tank Compatibility Chart

Air tank	Booster regulator	VBA10A/11A	VBA20A/22A	VBA40A/42A	VBA43A
VBAT05A(1)		●	—	—	—
VBAT05S(1)		●	●	—	—
VBAT10A(1)		—	—	—	—
VBAT10S(1)		—	—	—	—
VBAT20A(1)		—	●	●	—
VBAT20S(1)		—	—	—	●
VBAT38A(1)		—	●	●	—
VBAT38S(1)		—	—	—	●

VBA Series

Standard Specifications

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 ^{Note 4)}
Pressure adjustment mechanism	Knob-operated with relief mechanism ^{Note 2)}			Air-operated		Knob-operated with relief mechanism ^{Note 2)}	
Max. flow rate ^{Note 3)} (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 (Rc) (IN/OUT/EXH: 3 locations)	1/4	3/8	1/2	3/8	1/2		1/4
Pressure gauge port size (Rc) (IN/OUT: 2 locations)	1/8						
Tank connection port (with plug) ^{Note 5)}	1/4	3/8	1/2	3/8	1/2		1/4
Ambient and fluid temperatures (°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) Be sure to secure an air supply capacity of the minimum operating pressure (0.1 MPa) or more.

Note 2) If the OUT pressure is higher than the set pressure by the knob, excess pressure is exhausted from the back of the knob.

Note 3) Flow rate at IN= OUT= 0.5 MPa. The pressure varies depending on the operating conditions. Refer to "Flow Rate Characteristics" in the **Web Catalog**.

Note 4) Set the pressure increase ratio to 2 or more.

Note 5) The tank connection port cannot be used for applications other than the connection with VBAT.

Options/Part No.

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

Model	VBA10A-02	VBA20A-03	VBA40A-04	VBA22A-03	VBA42A-04	VBA43A-04	VBA11A-02
Description	VBA10A-F02	VBA20A-F03	VBA40A-F04	VBA22A-F03	VBA42A-F04	VBA43A-F04	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
Elbow for silencer	L KT-VBA10A-18	—	—	—	—	—	KT-VBA10A-18

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.)

Pressure Gauge, Silencer (When thread type is NPT or NPTF.)

Model	VBA10A-N02*	VBA20A-N03*	VBA40A-N04*	VBA22A-N03*	VBA42A-N04*	VBA43A-N04*	VBA11A-N02*
Description	VBA10A-T02* *: when "-Z"	VBA20A-T03* *: when "-Z"	VBA40A-T04* *: when "-Z"	VBA22A-T03* *: when "-Z"	VBA42A-T04* *: when "-Z"	VBA43A-T04* *: when "-Z"	VBA11A-T02* *: when "-Z"
Pressure gauge *: when Nil	G G27-20-01	G36-10-N01		KT-VBA22A-7N	G36-10-N01	G27-20-N01	G27-20-01
Pressure gauge *: when "-Z" ^{Note 4)}	G G27-P20-01-X30	G36-P10-N01-X30		KT-VBA22A-8N	G36-P10-N01-X30	G27-P20-N01-X30	G27-P20-01-X30
Silencer	N AN20-N02	AN30-N03	AN40-N04	AN30-N03	AN40-N04	AN40-N04	AN20-N02
High-noise reduction silencer	S —	ANA1-N03	ANA1-N04	ANA1-N03	ANA1-N04	ANA1-N04	—
Elbow for silencer	L KT-VBA10A-18N	—	—	—	—	—	KT-VBA10A-18N

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-7N, KT-VBA22A-8N are pressure gauges with fittings. (Please order two units when using with IN and OUT.)

Note 3) Under the new measurement law, the pressure unit of "psi" on the pressure gauges cannot be used in Japan.

Note 4) Pressure unit on the pressure gauge: MPa and psi

Related Products/Part No.

Mist Separator, Exhaust Cleaner

Model	For VBA10A-02 For VBA11A-02	For VBA20A-03 For VBA22A-03	For VBA40A-04 For VBA42A-04 For VBA43A-04
Description			
Mist separator	AM250C-02	AM450C-04, 06	AM550C-06, 10
Exhaust cleaner	AMC310-03	AMC510-06	AMC610-10

Note) Refer to page 227 for air tanks, page 91 for mist separators and the **Web Catalog** for exhaust cleaners.

Refer to the separate operation manual for the connection method.

Air Supply

⚠ Caution

- If dry air (atmospheric pressure dew point: -23°C or less) is used, the life expectancy may be shortened because dry air will accelerate evaporation of grease inside.

Design

⚠ Caution

1. System configuration

- Be sure to secure an air supply capacity of the minimum operating pressure (0.1 MPa) or more. If the internal operating pressure becomes the minimum operating pressure or less, the switching valve may remain in the intermediate position, which may cause a restart failure.
- The IN port of the booster regulator has metallic mesh to prevent dust from entering the booster regulator. However, it cannot remove dust continuously or separate drainage. Make sure to install a mist separator (AM series) on the inlet side of the booster regulator.
- The booster regulator has a sliding part inside, and it generates dust. Also, install an air purification device such as an air filter or a mist separator on the outlet side as necessary.
- Connect a lubricator to the outlet side, because the accumulated oil in the booster regulator may result in a malfunction.

2. Exhaust air measures

- Provide a dedicated pipe to release the exhaust air from each booster regulator. If exhaust air is converged into a pipe, the back pressure that is created could cause improper operation.
- Depending on the necessity, install a silencer or an exhaust cleaner on the exhaust port of the booster regulator to reduce the exhaust noise.

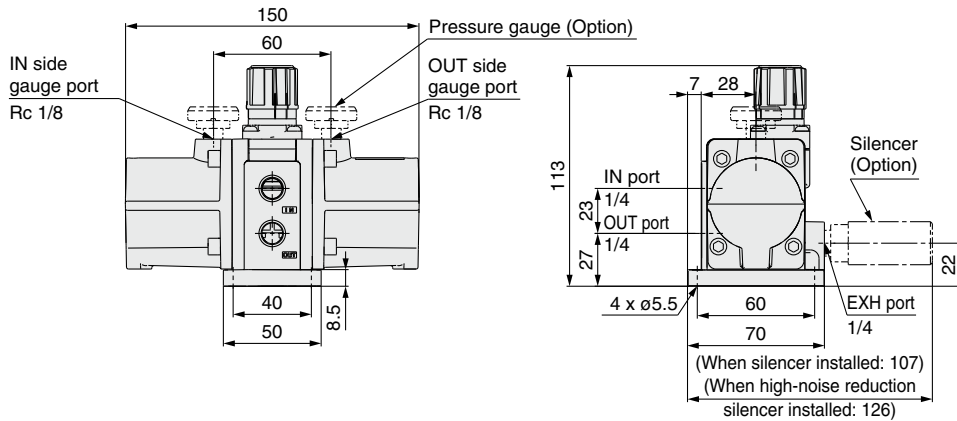
3. Maintenance space

- Allow the sufficient space for maintenance and inspection.

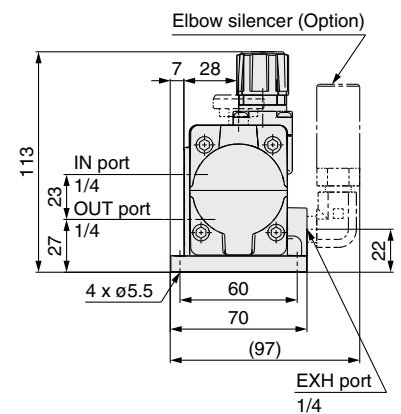
VBA Series

Dimensions

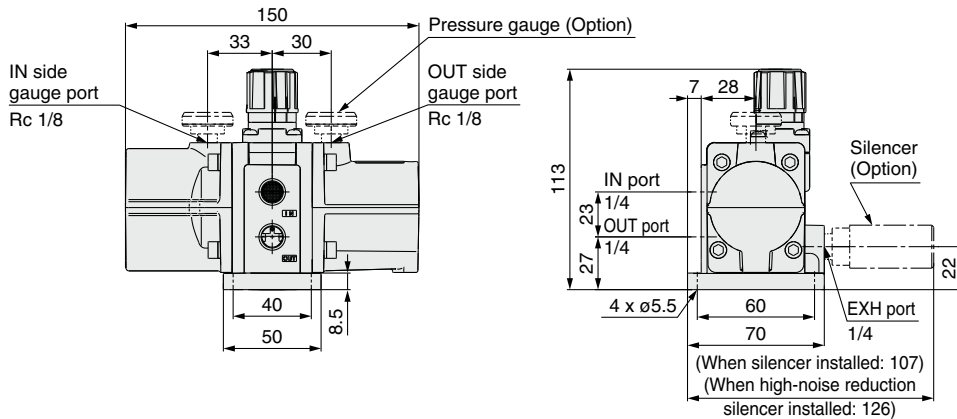
VBA10A-02



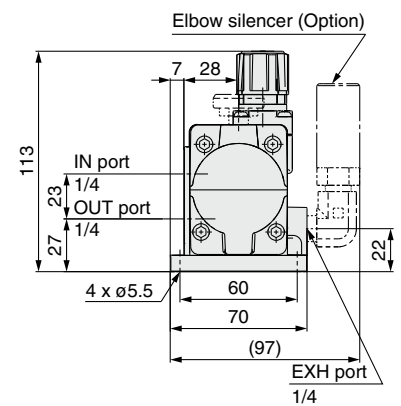
With elbow silencer (Option)



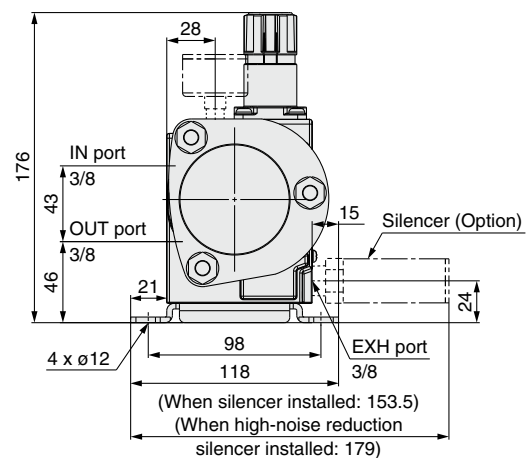
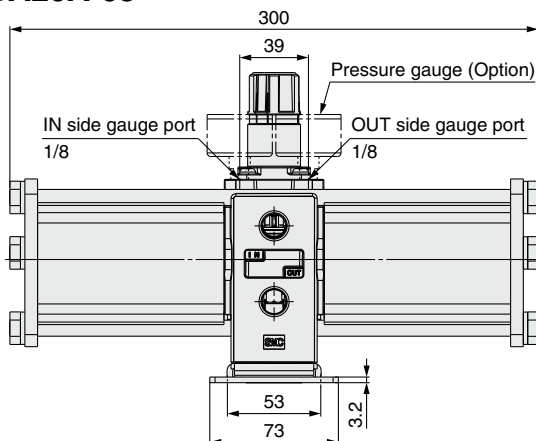
VBA11A-02



With elbow silencer (Option)



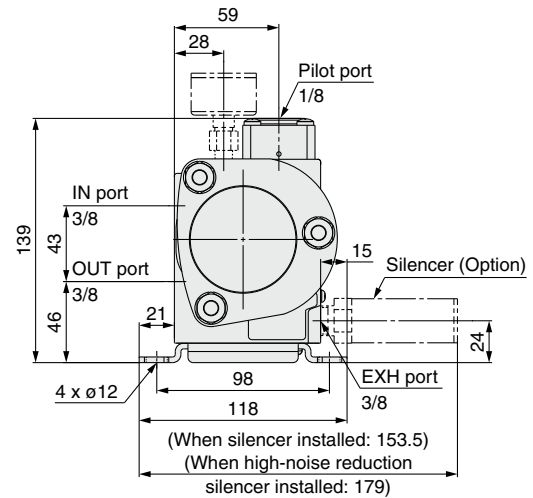
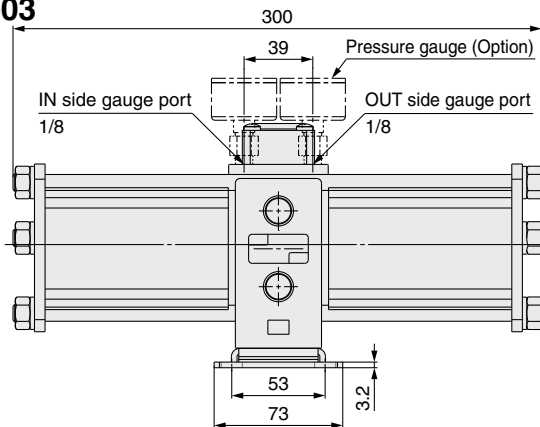
VBA20A-03



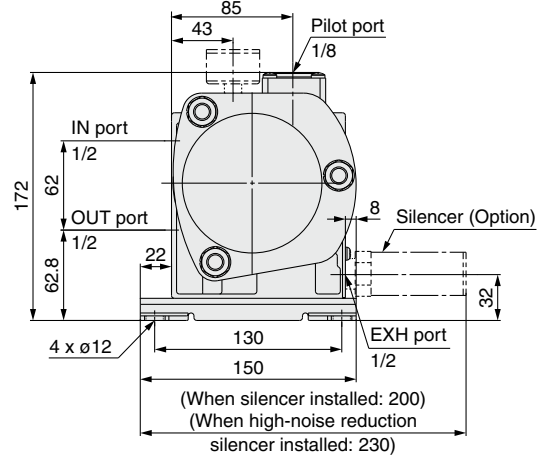
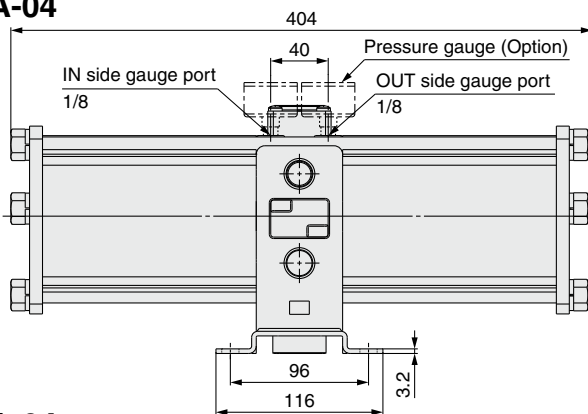
(The dimensions of -X2 are the same as those of the standard product.)

Dimensions

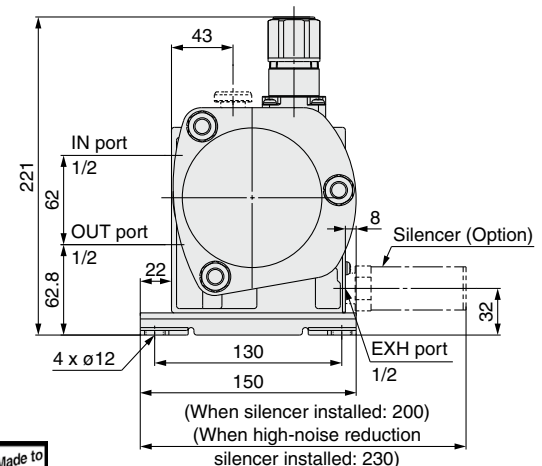
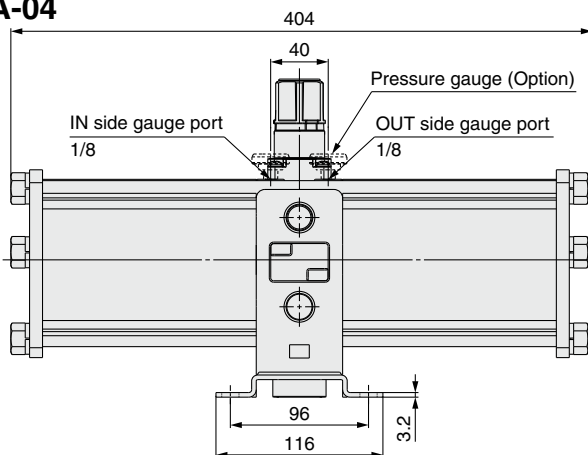
VBA22A-03



VBA42A-04



VBA43A-04



Made to Order Note)

Note) -X2 specification cannot be combined with made-to-order options 20-, 56-, and 80-.

1 Copper-free/Fluorine-free

The inner or outer copper parts material has been changed to stainless steel or aluminum. The fluorine resin parts has been changed to general resin.

20 — Standard model no.

- Made to Order
Copper-free/Fluorine-free

* For booster regulator with pressure gauge, please consult SMC.
* This option cannot be selected for air tank with safety valve.

2 CE explosion-proof directive (ATEX) compliant

56 — Standard model no.

- Made to Order
CE explosion-proof directive (ATEX):
Category 3GD

3 Ozone resistant

Ozone resistance is strengthened through the use of fluororubber (diaphragm) and hydrogenated NBR (valve, rod seal) for the rubber parts of the seal material.

80 — Standard model no.

- Made to Order
Ozone resistant

* Weather resistant NBR (diaphragm) and hydrogenated NBR (valve) are used for the rubber parts of the standard model.



For detailed dimensions, specifications and lead times, please contact SMC.

Air Tank VBAT Series

These products are standard specifications. These are not oil-free and white vaseline specification products.

RoHS

* Except the Chinese pressure vessel regulations compliant product (-X104)



Made to Order

(For details, refer to page 228.)

How to Order

- Compact connections are possible with booster regulators.
- It can be used alone as a tank.
- Also partially compatible with overseas standards (Refer to the Web Catalog.)



VBAT05A1



VBAT10S1



VBAT20S1



VBAT38A1

Standard Product (For Japanese Market)

VBAT 10 A 1 - S

Note) The thread type for each port is Rc.

Tank internal capacity

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

Option

Symbol	Option
Nil	None
V	Drain valve

Option

Symbol	Option	Applicable model
Nil	None Note)	All models
R	Safety valve (Set pressure: 1 MPa)	VBAT05A1, VBAT10A1 VBAT20A1, VBAT38A1
S	Safety valve (Set pressure: 2 MPa)	VBAT05A1 VBAT10A1

Note) A safety valve port is provided only when option R or S is selected.

Material

Symbol	Material
A	Carbon steel (SS400)
S	Stainless steel 304

⚠ Caution

When used as a single unit (not connected with a booster regulator) and pressurized at over 1 MPa at normal temperatures, the air tank falls under the scope of the "High Pressure Gas Safety Act" in Japan.

Design

⚠ Caution

The inner surface of the air tank is not cleaned. Install an air purification device such as an air filter or a mist separator on the OUT side as necessary.

Standard Product (For Japanese Market)

Specifications

Model	VBAT05□1	VBAT10□1	VBAT20□1	VBAT38□1
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	
OUT port size	3/8	1/2	1/2	3/4
Ambient and fluid temperatures (°C)	0 to 75			
Installation	Horizontal (Floor mounting)			
Weight (kg)	6.6	10	14	21
	3.2	4.9	12	19
Material	Carbon steel (SS400)			
	Stainless steel 304			
Paint	Outside: Silver paint, Inside: Rustproof paint			
	None			

Note 1) The accessories and options are included in the same container.

Note 2) Since neither copper nor fluorine parts are used for the tank, the standard model can be used as a copper-free product when drain valve is not necessary.

Options/Accessories/Part No.

<For VBAT□A1 (Carbon Steel)>

Model	VBAT05A1-□	VBAT10A1-□	VBAT20A1-□	VBAT38A1-□
Accessory kit	VBAT5A-Y-3	VBAT10A-Y-3	VBAT20A-Y-3	
Safety valve (When selecting an option) ^{Note 1) 2)}	VBAT-R (Set pressure: 1 MPa), VBAT-S (Set pressure: 2 MPa)		VBAT-R (Set pressure: 1 MPa)	
Drain valve (When selecting an option)	VBAT-V1			

Note 1) The set pressure of the safety valve cannot be changed.

Note 2) The safety valve is a safety measure that protects the tank from excess pressure. The valve opens automatically when the specified pressure is reached, releasing excess pressure inside the tank. The valve closes again when the pressure drops below a designated value. Select a pressure valve appropriate for the maximum operating pressure specification of the tank.

<For VBAT□S1 (Stainless Steel)>

Model	VBAT05S1-□	VBAT10S1-□	VBAT20S1-□	VBAT38S1-□
Accessory kit	VBAT5S-Y-4	VBAT10S-Y-4	VBAT20S-Y-4	
Drain valve (When selecting an option)	VBAT-V1			

The Accessory Kit is a Set of Nos. ① to ④.

No.	Description	VBAT5A-Y-3	VBAT10A-Y-3	VBAT20A-Y-3
		VBAT5S-Y-4	VBAT10S-Y-4	VBAT20S-Y-4
		Quantity		
①	O-ring	1	1 (VBA1□A) 1 (VBA2□A)	1
②	Hexagon socket head taper screwed plug (for drain port)	1	1	1
③	Hexagon socket head cap screw	4	4 (VBA1□A) 4 (VBA2□A)	4
④	Anchor bolt/nut	—	—	4

Made to Order



For detailed dimensions, specifications and lead times, please contact SMC.

1 Copper-free/Fluorine-free

VBAT-V2 (A set of stainless steel needle valve and fittings) is included with the standard product.

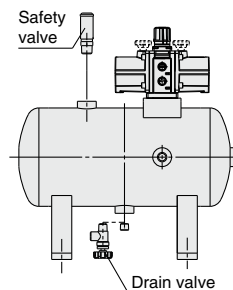
20 — VBAT10		A	1 — V
Made to Order	Tank internal capacity		Drain valve/ VBAT-V2
Copper-free/Fluorine-free		Material	
Symbol	Internal capacity	Symbol	Material
05	5 L	A	Carbon steel (SS400)
10	10 L	S	Stainless steel
20	20 L		
38	38 L		

Note 1) The thread type for each port is Rc.

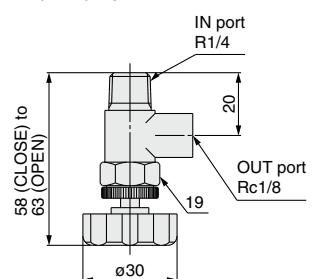
Note 2) Stainless steel fittings and a needle valve are included in the same container as accessories. (For lead times and detailed dimensions, please contact SMC.) It can be ordered separately.

Note 3) Since neither copper nor fluorine parts are used for the tank, the standard model can be used as a copper-free product when drain valve is not necessary.

Note 4) The material of the safety valve is brass only.

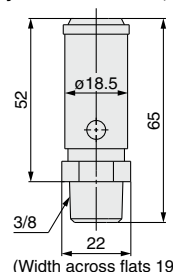


Drain valve: VBAT-V1



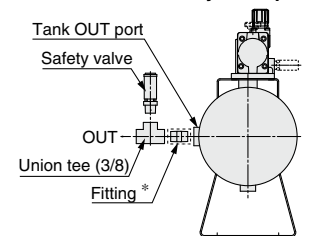
Body material: Brass

Safety valve: VBAT-R, VBAT-S



Body material: Brass

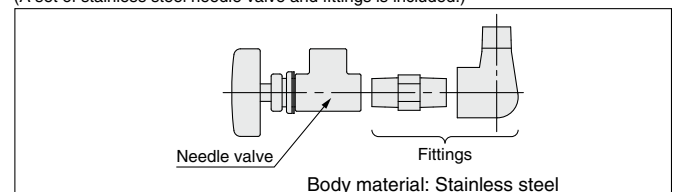
Safety valve mounting diagram when there is no safety valve port



* When the tank OUT port is 3/8, use 3/8 fittings. When the size of the tank OUT port is other than 3/8, change the size with a 3/8 union tee fitting.

Mounting diagram for drain valve VBAT-V2

(A set of stainless steel needle valve and fittings is included.)

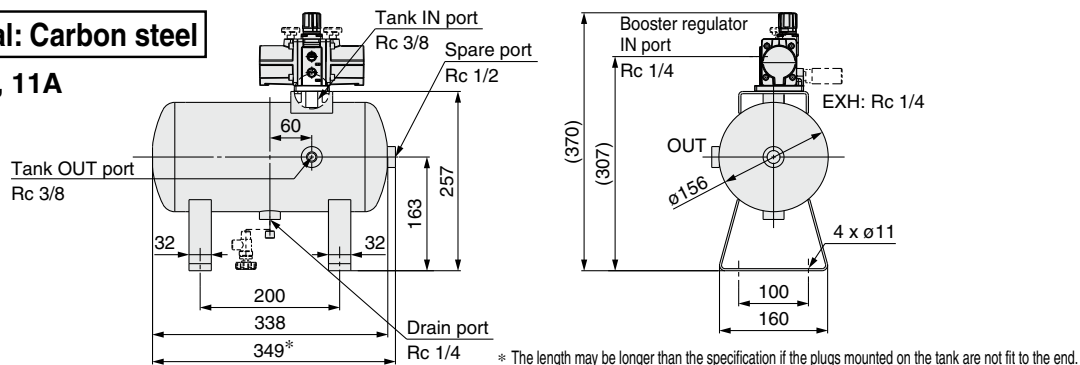


VBAT Series

Dimensions: Standard Product (For Japanese Market)

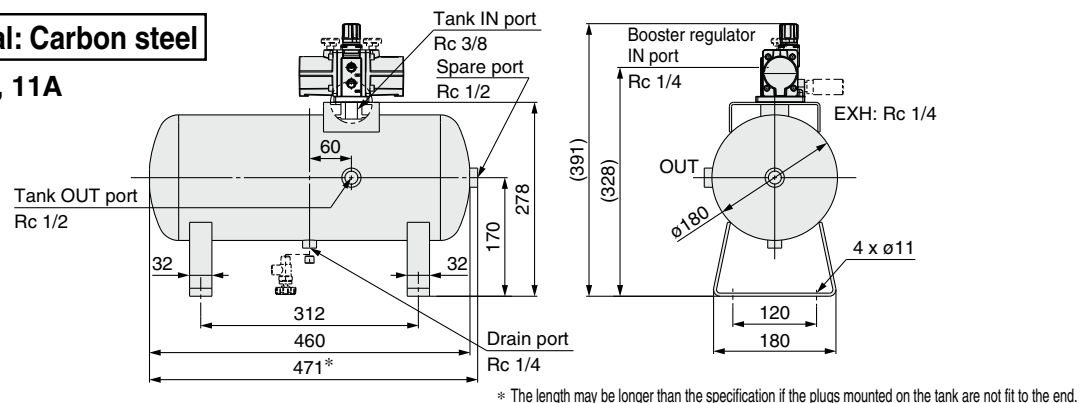
VBAT05A1 Material: Carbon steel

Connected to VBA10A, 11A



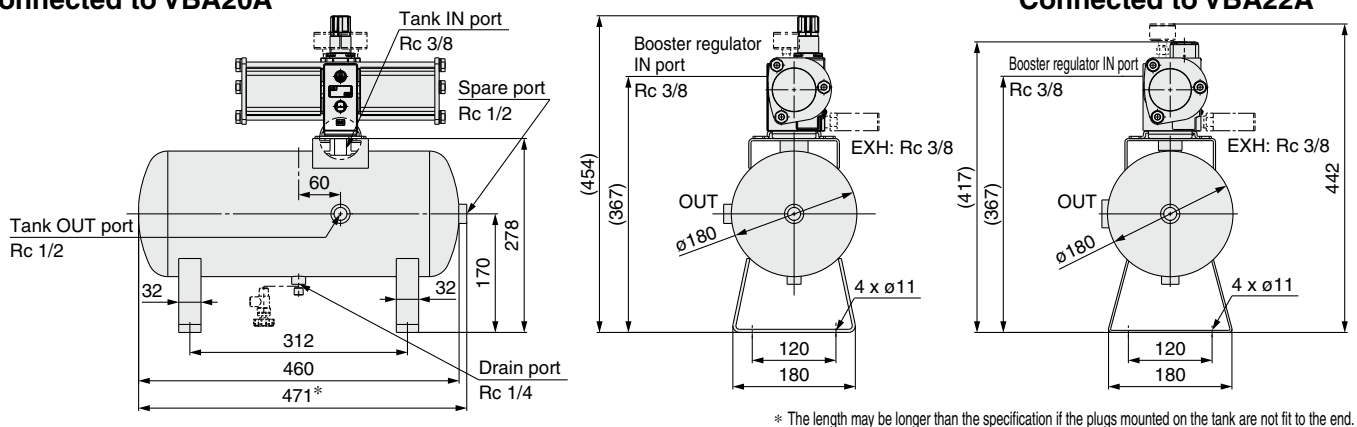
VBAT10A1 Material: Carbon steel

Connected to VBA10A, 11A



Connected to VBA20A

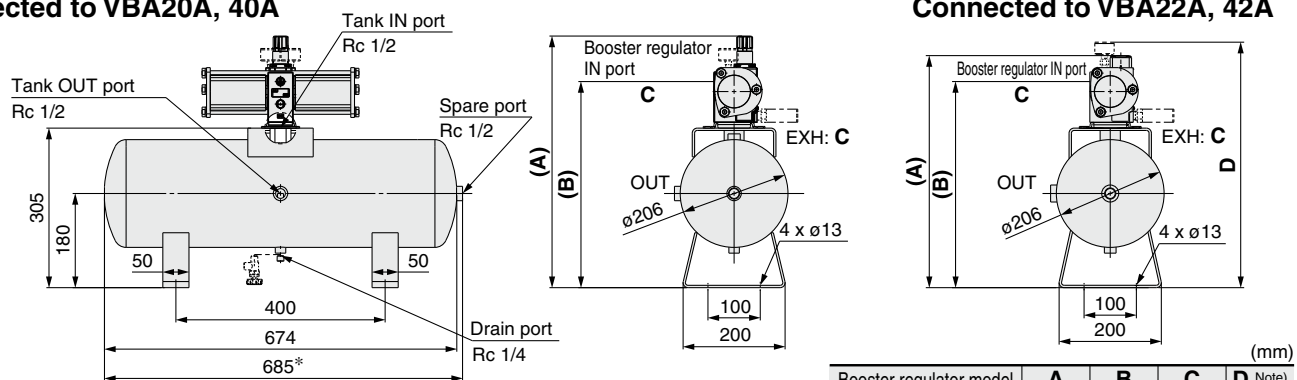
Connected to VBA22A



VBAT20A1 Material: Carbon steel

Connected to VBA20A, 40A

Connected to VBA22A, 42A



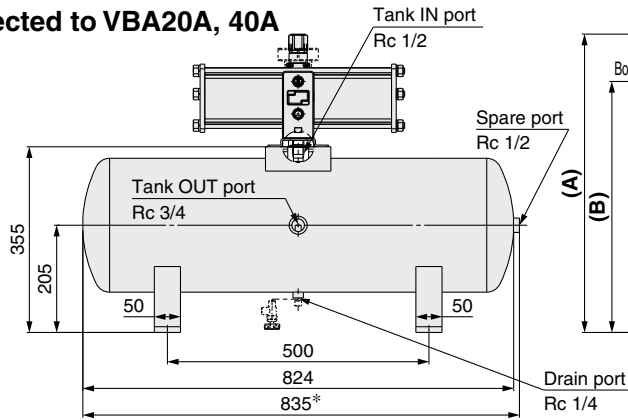
Booster regulator model	A	B	C	D (Note)
VBA20A	481	394	Rc 3/8	—
VBA40A	520	429.8	Rc 1/2	—
VBA22A	444	394	Rc 3/8	469
VBA42A	477	429.8	Rc 1/2	493

Note) When option G (pressure gauge) is selected

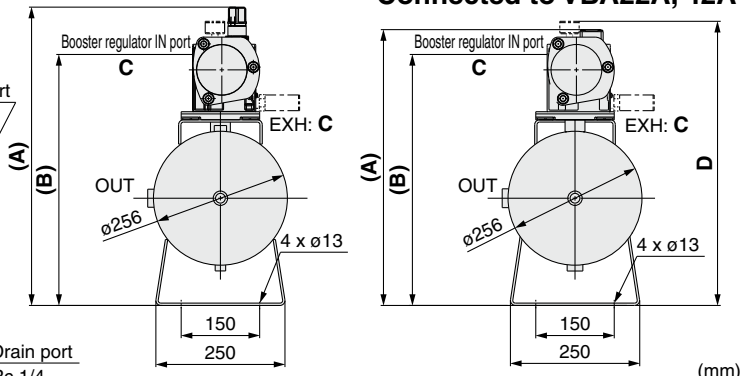
Dimensions: Standard Product (For Japanese Market)

VBAT38A1 Material: Carbon steel

Connected to VBA20A, 40A



Connected to VBA22A, 42A



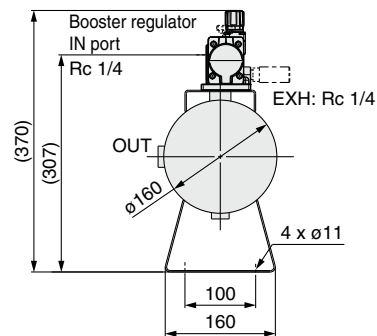
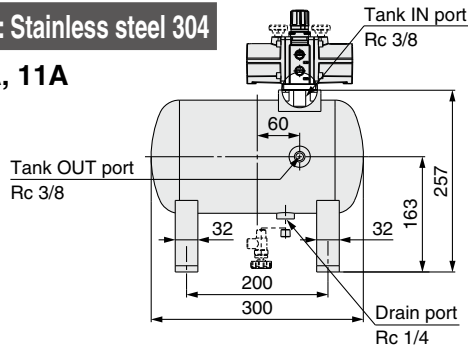
Booster regulator model	A	B	C	D (Note)
VBA20A	531	444	Rc 3/8	—
VBA40A	570	479.8	Rc 1/2	—
VBA22A	494	444	Rc 3/8	519
VBA42A	527	479.8	Rc 1/2	543

Note) 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.

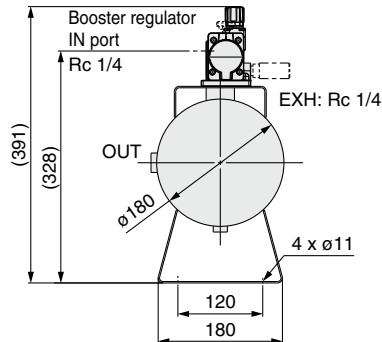
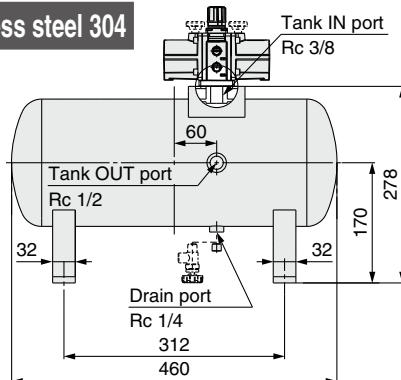
VBAT05S1 Material: Stainless steel 304

Connected to VBA10A, 11A

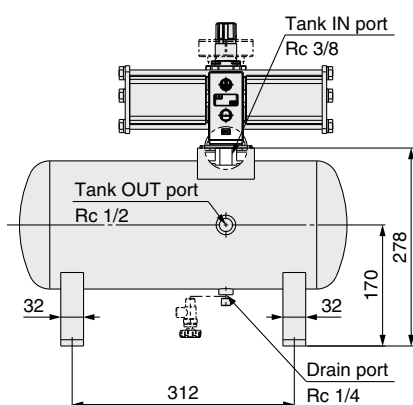


VBAT10S1 Material: Stainless steel 304

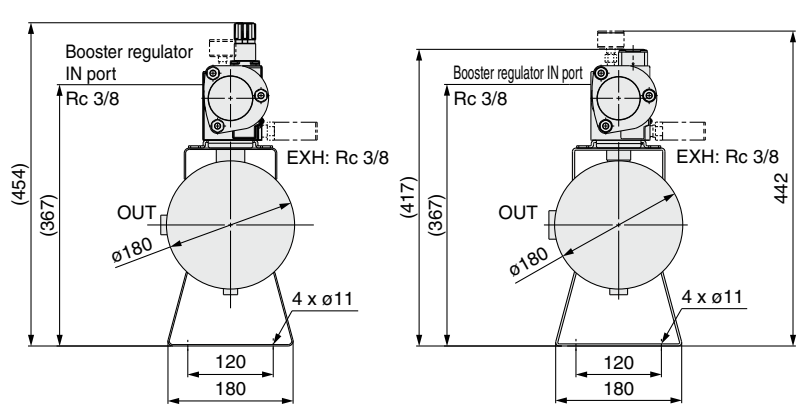
Connected to VBA10A, 11A



Connected to VBA20A



Connected to VBA22A

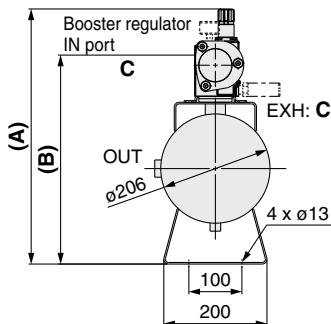
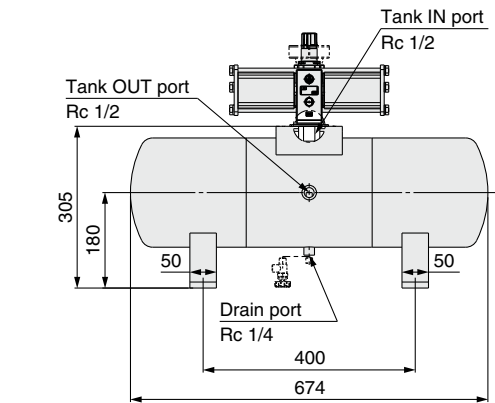


VBAT Series

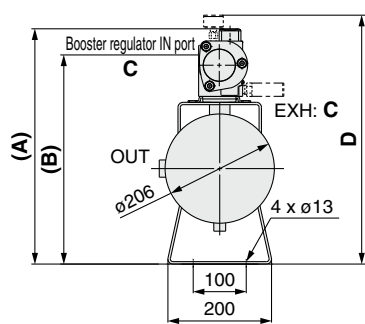
Dimensions: Standard Product (For Japanese Market)

VBAT20S1 Material: Stainless steel 304

Connected to VBA20A, 40A, 43A



Connected to VBA22A, 42A

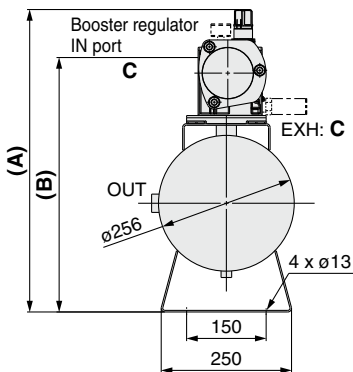
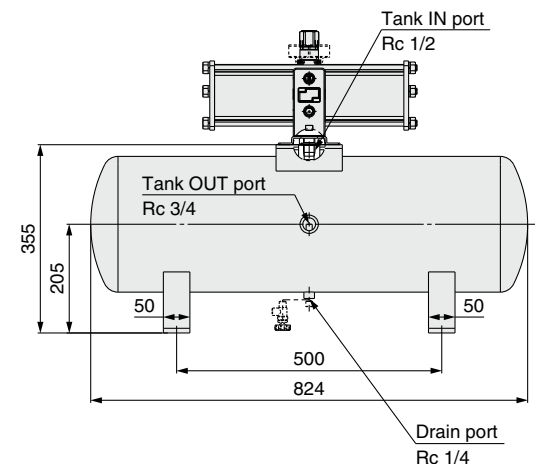


Booster regulator model	A	B	C	D (Note)
VBA20A	481	394	Rc 3/8	—
VBA40A	520	429.8	Rc 1/2	—
VBA22A	444	394	Rc 3/8	469
VBA42A	477	429.8	Rc 1/2	493
VBA43A	526	429.8	Rc 1/2	—

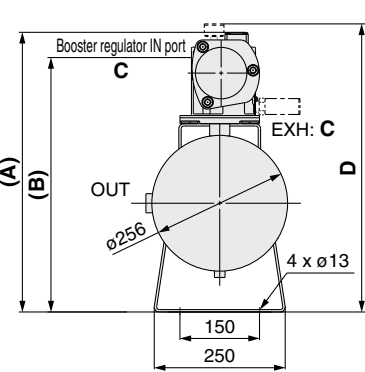
Note) When option G (pressure gauge) is selected

VBAT38S1 Material: Stainless steel 304

Connected to VBA20A, 40A, 43A



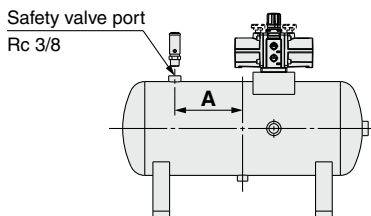
Connected to VBA22A, 42A



Booster regulator model	A	B	C	D (Note)
VBA20A	531	444	Rc 3/8	—
VBA40A	570	479.8	Rc 1/2	—
VBA22A	494	444	Rc 3/8	519
VBA42A	527	479.8	Rc 1/2	543
VBA43A	576	479.8	Rc 1/2	—

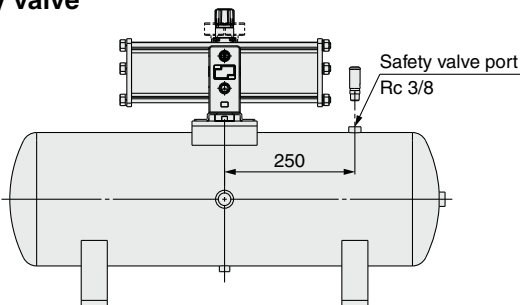
Note) When option G (pressure gauge) is selected

VBAT0510A1-R With safety valve

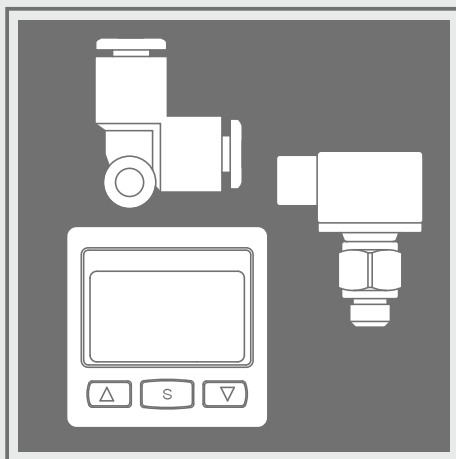


Tank model	A
VBAT05	60
VBAT10	130

VBAT2038A1-R With safety valve



Pneumatic Auxiliary Equipment



Product name	Series	Page
■ Fittings and Tubing		
One-touch Fittings	KQ2-X12	p. 233
S Couplers	KKH	p. 234
S Couplers	KK130-X186	p. 237
Rectangular Multi-connector	KDM-X12	p. 240
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S Couplers/Stainless Steel Type	KKA	p. 244
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Soft Nylon Tubing	TS/TISA	p. 251
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Speed Controller with One-touch Fitting (Elbow Type/Universal Type)	AS-X12	p. 259
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2-Color Display Digital Pressure Switch	ZSE80(F)/ISE80(H)	p. 285
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Digital Flow Switch	PFMB	p. 295
Digital Flow Switch	PFMC	p. 301
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Blow Gun	VMG-X3	p. 307
Pressure Gauge for General Purpose	G33-X4	p. 312
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Electrostatic Sensor Monitor	IZE11	p. 340
Handheld Electrostatic Meter	IZH10	p. 343

One-touch Fittings

KQ2-X12 (White Vaseline Specification)

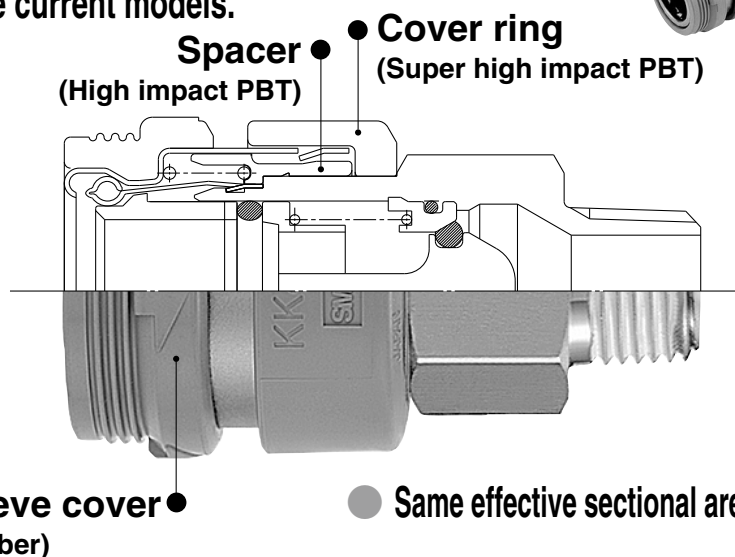
RoHS

Variations

Hexagon Socket Head Male Connector KQ2S 	45° Male Elbow KQ2K 	Bulkhead Union KQ2E 	Universal Female Elbow KQ2VF 	Universal Male Elbow KQ2V 
Extended Male Elbow KQ2W 	Bulkhead Connector KQ2E 	Branch Universal Female Elbow KQ2ZF 	Male Connector KQ2H 	Female Connector KQ2F 
Straight Union KQ2H 	Different Diameter Straight KQ2H 	Cross KQ2TW 	Male Elbow KQ2L 	Union Elbow KQ2L 
Plug-in Elbow KQ2L 	Reducer Elbow KQ2L 	Different Diameter Cross KQ2TX 	Male Branch Tee KQ2T 	Union Tee KQ2T 
Different Diameter Tee KQ2T 	Different Diameter Tee KQ2T 	Different Diameter Cross KQ2TY 	Hexagon Socket Head Universal Male Elbow KQ2VS 	Branch Male Elbow KQ2LU 
Female Elbow KQ2LF 	Double Universal Male Elbow KQ2VD 	Triple Universal Male Elbow KQ2VT 	Branch Universal Male Elbow KQ2Z 	Double Branch Universal Male Elbow KQ2ZD 
Male Run Tee KQ2Y 	Triple Branch Universal Male Elbow KQ2ZT 	Branch Union Elbow KQ2LU 	Extended Plug-in Elbow KQ2W 	Male Delta Union KQ2D 
Delta Union KQ2D 	Double Branch "Y" KQ2UD 	Different Diameter Double Union "Y" KQ2UD 	Different Diameter Plug-in "Y" KQ2X 	Double Plug-in "Y" KQ2XD 
Union "Y" KQ2U 	Different Diameter Union "Y" KQ2U 	Plug-in "Y" KQ2U 	Branch "Y" KQ2U 	Plug-in Reducer KQ2R 
Bulkhead Male Elbow KQ2LE 	Tube Cap KQ2C 			

S Couplers (White Vaseline Specification)

- Able to absorb drop impact (equivalent to impact energy of 0.5 J).
- The pulling strength for the plugs and sockets has been improved.
Twice as strong as the current models.



- Same effective sectional area as that of KK series.

Plug (P)

Male thread type

	Body size	Connection port size	Part no.
	1/8	R 1/8	KK3P-01MS
		R 1/4	-02MS
		R 3/8	-03MS
	1/4	R 1/8	KK4P-01MS
		R 1/4	-02MS
		R 3/8	-03MS
		R 1/2	-04MS

Female thread type

	Body size	Connection port size	Part no.
	1/8	Rc 1/8	KK3P-01F
		Rc 1/4	-02F
		Rc 3/8	-03F
	1/4	Rc 1/4	KK4P-02F
		Rc 3/8	-03F

Nut fitting type (for fiber reinforced urethane hose)

	Body size	Applicable hose I.D./O.D. (mm)	Part no.
	1/8	5/8	KK3P-50N
		6/9	-60N
		6.5/10	-65N
	1/4	5/8	KK4P-50N
		6/9	-60N
		6.5/10	-65N
		8/12	-80N
		8.5/12.5	-85N

The White Vaseline specification for the KK series (the type with One-touch fitting) is X1.

Socket (S)

Male thread type

	Body size	Connection port size	Part no.
	1/8	R 1/8	KKH3S-01MS
		R 1/4	-02MS
		R 3/8	-03MS
	1/4	R 1/8	KKH4S-01MS
		R 1/4	-02MS
		R 3/8	-03MS
		R 1/2	-04MS

Female thread type

	Body size	Connection port size	Part no.
	1/8	Rc 1/8	KKH3S-01F
		Rc 1/4	-02F
		Rc 3/8	-03F
	1/4	Rc 1/4	KKH4S-02F
		Rc 3/8	-03F

Nut fitting type (for fiber reinforced urethane hose)

	Body size	Applicable hose I.D./O.D. (mm)	Part no.
	1/8	5/8	KKH3S-50N
		6/9	-60N
		6.5/10	-65N
	1/4	5/8	KKH4S-50N
		6/9	-60N
		6.5/10	-65N
		8/12	-80N
		8.5/12.5	-85N

The KKH series are only available as sockets.
The KK series should be used as plugs.

KKH Series

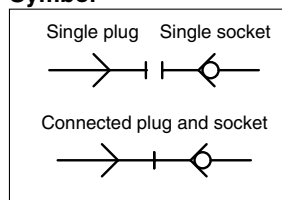
S Couplers

KKH Series

(White Vaseline Specification)



Symbol



Specifications

Fluid	Air, Water
Operating pressure range Note)	KKH3: -90 kPa to 1 MPa KKH4: 0 to 1 MPa
Proof pressure	1.5 MPa
Ambient and fluid temperatures	Air: -5 to 60°C Water: 5 to 40°C (No freezing)
Plating, Sealant	Electroless nickel plated (copper-free and fluorine-free application), With male thread sealant
Connection plug	KK series plug

Note) Do not use the S couplers with a leak tester or for vacuum retention because they are not guaranteed for zero leakage.

Performance

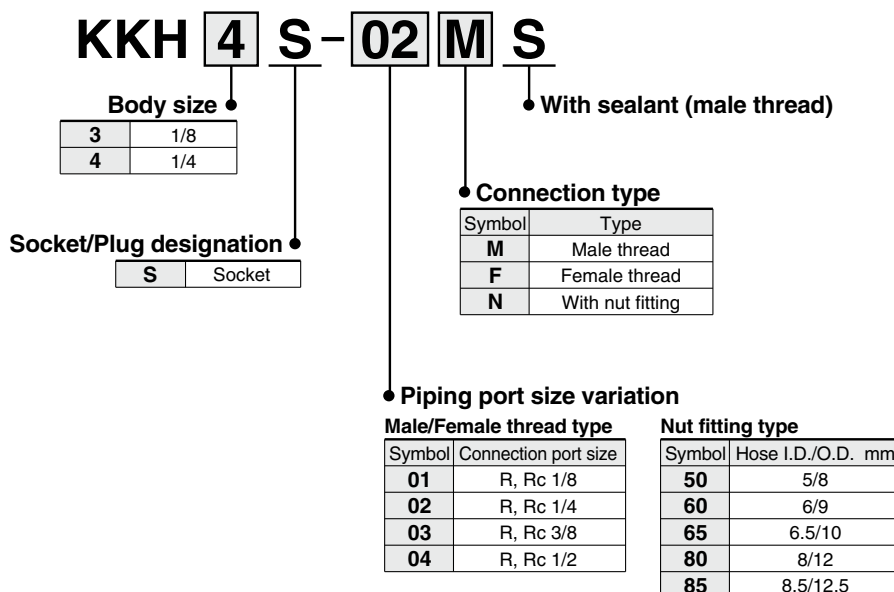
Plug and socket connection	One-touch connection and release
Check valve	Socket: Built-in check valve (standard)
Sleeve lock mechanism	_____

Effective Area

Body size	Plug	Socket	Effective area mm ²
1/8	KK3P-01MS	KKH3S-01MS	20
1/4	KK4P-02MS	KKH4S-02MS	39

The flow rate characteristics are the same as those of the KK series.
For details, refer to the **Web Catalog**.

How to Order



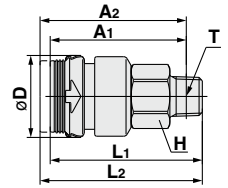
Dimensions/Socket (S)

Male thread type

(mm)



Body size	Model	T Connection port size	H Width across flats	øD	L1	L2 When connected	A1*	A2* When connected	Min. bore size	Effective area mm ²	Weight g
1/8	KKH3S-01MS	R 1/8	14	20.2	36.6	39.1	33.5	36.0	6.0	20.4	20.3
	-02MS	R 1/4	17		37.0	39.5	31.5	34.0	9.0	21.1	19.4
	-03MS	R 3/8	17		37.6	40.1	32.2	34.5	9.0	21.1	27.7
1/4	KKH4S-01MS	R 1/8	19	28.0	49.5	53.2	46.4	50.1	6.0	22.9	48.7
	-02MS	R 1/4			50.5	54.2	45.0	48.7	9.0	38.9	45.3
	-03MS	R 3/8			48.9	52.6	43.5	47.2	11.0	40.4	52.1
	-04MS	R 1/2			48.8	52.5	41.7	45.4	13.0	42.7	62.4



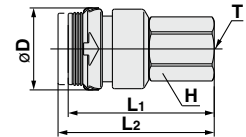
* Reference dimension for R threads after installation.

Female thread type

(mm)



Body size	Model	T Connection port size	H Width across flats	øD	L1	L2 When connected	Min. bore size	Effective area mm ²	Weight g
1/8	KKH3S-01F	Rc 1/8	14	20.2	36.0	38.5	8.2	20.6	23.8
	-02F	Rc 1/4	17		40.1	42.4		21.1	33.1
	-03F	Rc 3/8	19		41.9	44.3		21.1	37.1
1/4	KKH4S-02F	Rc 1/4	19	28.0	50.4	54.1	10.9	39.6	58.1
	-03F	Rc 3/8			51.1	54.8	14.4	42.7	47.4

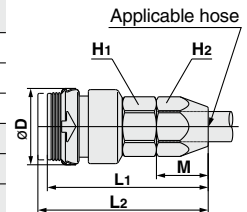


Nut fitting type (for fiber reinforced urethane hose)

(mm)



Body size	Model	Applicable hose I.D./O.D.	H1 Width across flats	H2 Width across flats	øD	L1	L2 When connected	M	Min. bore size	Effective area mm²	Weight g
1/8	KKH3S-50N	5/8	14	14	20.2	42.6	45.1	13.7	4.5	12.2	32.3
	-60N	6/9	17	17		44.4	46.9	16.5	5.4	18.3	48.9
	-65N	6.5/10							5.9	19.2	46.6
1/4	KKH4S-50N	5/8	19	14	28.0	54.1	57.8	13.7	4.5	12.2	57.0
	-60N	6/9		17		56.8	60.5	16.5	5.4	20.4	70.5
	-65N	6.5/10							5.9	24.1	68.0
	-80N	8/12		19		55.4	59.1	17.4	7.4	35.1	69.7
	-85N	8.5/12.5							7.8	36.6	72.3



The KKH series are only available as sockets. The KK series should be used as plugs.
The White Vaseline specification for the KK series (the type with One-touch fitting) is X1.
For dimensions, refer to the **Web Catalog**.

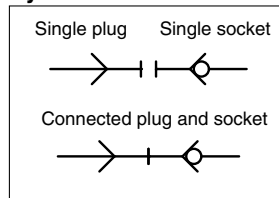
S Couplers

KK130-X186

(White Vaseline Specification)



Symbol



Specifications

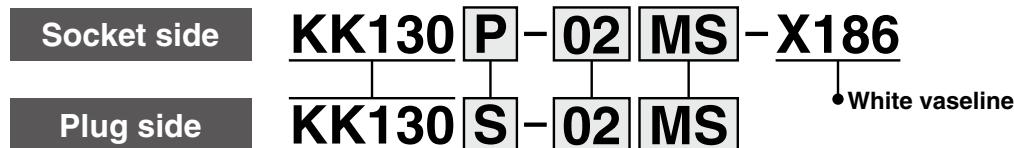
Fluid	Air (Note)
Operating pressure range	0 to 1.5 MPa One-touch fitting type: 0 to 1.0 MPa
Proof pressure	2.0 MPa
Ambient and fluid temperatures	-20 to 80°C (No freezing) One-touch fitting type: -5 to 60°C (No freezing)
Plating	Sleeve: Electroless nickel plated Other external metal parts: Zinc chromated
Sealant	Male thread with sealant

Note) Cannot be used for water.

Performance

Plug and socket connection	Sleeve slide detachable type
Check valve	Socket: Built-in check valve
Flow direction	Dual directional
Sleeve lock mechanism	Manual locking type (with detent) Semi-standard

How to Order



130 series

Socket/Plug

Connection type

Note 1) Grease is used for the One-touch fitting type. Please note that grease is not used for other plugs.

Symbol	Type
P	Plug
S	Socket
L	Semi-standard Socket (With sleeve lock mechanism)

Symbol	Type
MS	Male thread (With sealant)
F	Female thread
B	With barb fitting
N	With nut fitting
H	With One-touch fitting

Port size variations

Male/Female thread type

Symbol	Thread size
01	R, Rc1/8
02	R, Rc1/4
03	R, Rc3/8
04	R, Rc1/2
N01	NPT1/8
N02	NPT1/4
N03	NPT3/8
N04	NPT1/2

Barb fitting type

Symbol	Hose nominal
07	6 (1/4")
09	8 (1/4")
11	9 (3/8")
13	12 (1/2")

* The figures in () indicate the internal diameter of the applicable hose.

Nut fitting type

Symbol	Applicable hose I.D./O.D. mm
50	5/8
60	6/9
65	6.5/10
80	8/12
85	8.5/12.5
110	11/16

One-touch fitting type

Symbol	Applicable tube O.D. mm	
06	ø6	Metric size
08	ø8	
10	ø10	
12	ø12	
07	ø1/4"	Inch size
09	ø5/16"	
11	ø3/8"	
13	ø1/2"	

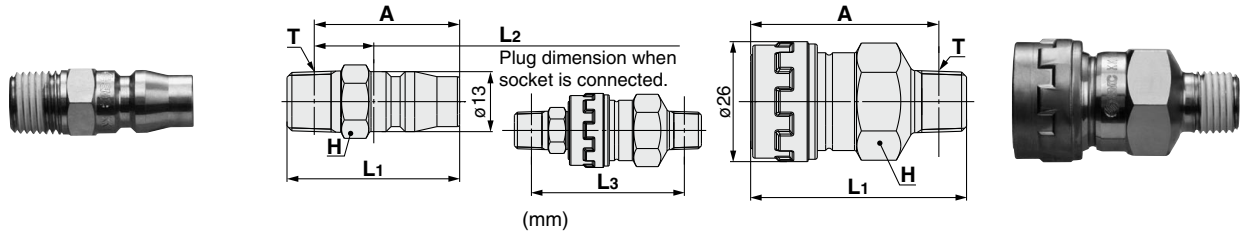
Dimensions

Plug (KK130P) Note)

Note) Grease is not used for the plug (KK130P).

Socket (KK130S, L)

Male thread type



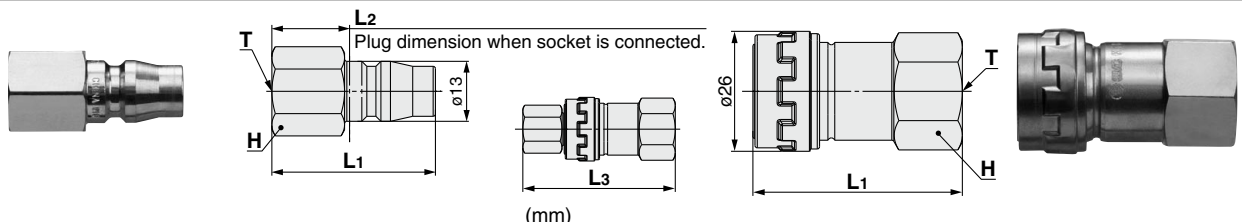
Model	T Connection male thread	H Width across flats	L1	L2	A ^{*1}	Min. hole size	Weight g	When connected Full length L3
KK130P-01MS	R1/8	14	34.0	11.1	30.0	6.0	18	51.1
-02MS	R1/4	14	38.0	13.1	32.0	8.0	22	53.9
-03MS	R3/8	19	39.0	13.6	32.5	8.0	37	53.3
-04MS	R1/2	22	43.0	16.1	35.0	8.0	52	55.9
KK130P-N01MS	NPT1/8	14	34.0	10.1	29.0	6.0	18	49.4
-N02MS	NPT1/4	14	38.0	11.6	30.5	8.0	22	51.5
-N03MS	NPT3/8	19	39.0	12.6	31.5	8.0	37	51.7
-N04MS	NPT1/2	22	43.0	14.1	33.0	8.0	52	52.3

*1 Reference dimension after installation

Model	T Connection male thread	H Width across flats	L1	A ^{*1}	Min. hole size	Weight g
KK130S(L)-01MS-X186	R1/8	22	44.0	40.0	6.0	73
-02MS-X186	R1/4	22	46.8	40.8	8.5	74
-03MS-X186	R3/8	22	46.2	39.7	8.5	82
-04MS-X186	R1/2	22	47.8	39.8	14.0	83
KK130S(L)-N01MS-X186	NPT1/8	22	44.3	39.3	6.0	73
-N02MS-X186	NPT1/4	22	47.4	39.9	8.5	74
-N03MS-X186	NPT3/8	22	46.6	39.1	8.5	82
-N04MS-X186	NPT1/2	22	48.2	38.2	14.0	83

*1 Reference dimension after installation

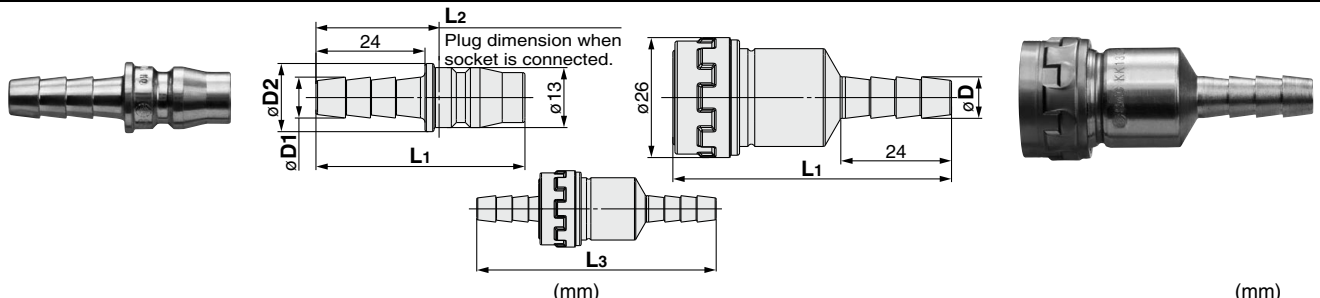
Female thread type



Model	T Connection male thread	H Width across flats	L1	L2	Min. hole size	Weight g	When connected Full length L3
KK130P-01F	Rc1/8	14	30.0	11.1	8.0	18	53.0
-02F	Rc1/4	17	36.0	17.1	8.0	28	62.5
-03F	Rc3/8	21	37.0	18.1	8.0	38	66.5
-04F	Rc1/2	27	42.0	23.1	8.0	73	76.0
KK130P-N01F	NPT1/8	14	30.0	11.1	8.0	18	53.0
-N02F	NPT1/4	17	36.0	17.1	8.0	28	62.5
-N03F	NPT3/8	21	37.0	18.1	8.0	38	66.5
-N04F	NPT1/2	27	42.0	23.1	8.0	73	76.0

Model	T Connection male thread	H Width across flats	L1	Min. hole size	Weight g
KK130S(L)-01F-X186	Rc1/8	22	41.9	8.0	90
-02F-X186	Rc1/4	22	45.4	11.0	92
-03F-X186	Rc3/8	22	48.4	11.0	91
-04F-X186	Rc1/2	27	52.9	14.0	117
KK130S(L)-N01F-X186	NPT1/8	22	41.9	8.0	90
-N02F-X186	NPT1/4	22	45.4	11.0	92
-N03F-X186	NPT3/8	22	48.4	11.0	91
-N04F-X186	NPT1/2	27	52.9	14.0	117

Barb fitting type (for rubber hose)



Model	Hose nominal	øD1	øD2	L1	L2	Min. hole size	Weight g	When connected Full length L3
KK130P-07B	6 (1/4")	7.2	14.0	46.0	27.1	4.5	16	88.0
-09B	8 (1/4")	9.0	15.0	46.0	27.1	5.0	19	87.5
-11B	9 (3/8")	11.3	16.0	46.0	27.1	8.0	19	87.0
-13B	12 (1/2")	15.0	18.0	46.0	27.1	8.0	33	86.0

* The figures in () indicate the internal diameter of the applicable hose.

Model	Hose nominal	øD1	L1	Min. hole size	Weight g
KK130S(L)-07B-X186	6 (1/4")	7.2	60.9	4.5	70
-09B-X186	8 (1/4")	9.0	60.4	5.0	72
-11B-X186	9 (3/8")	11.3	59.9	7.7	73
-13B-X186	12 (1/2")	15.0	58.9	9.0	81

* The figures in () indicate the internal diameter of the applicable hose.

KK130-X186

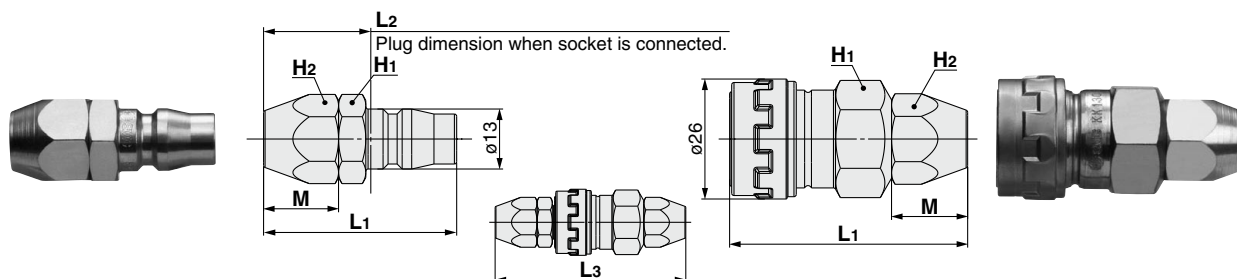
Dimensions

Plug (KK130P) Note)

Note) Grease is not used for the plug (KK130P).

Socket (KK130S, L)

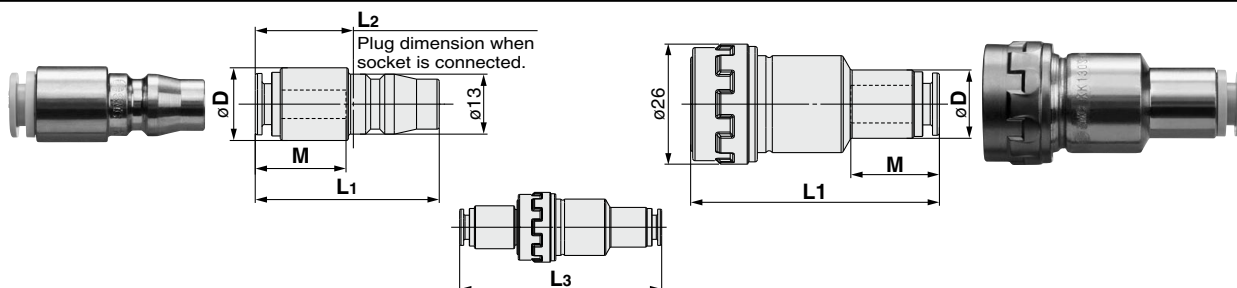
Nut fitting type (for fiber reinforced urethane hose)



Model	Applicable hose I.D./O.D.	H ₁	H ₂	L ₁	L ₂	M	Min. hole size	Weight g	When connected Full length L ₃
KK130P-50N	5/8	14	14	39.7	20.8	13.7	4.5	27	70.4
-60N	6/9	17	17	42.4	23.5	16.4	5.5	42	75.1
-65N	6.5/10	17	17	42.5	23.6	16.5	6.0	39	75.2
-80N	8/12	19	19	43.4	24.5	17.4	8.0	46	77.1
-85N	8.5/12.5	19	19	43.4	24.5	17.4	8.0	48	77.1
-110N	11/16	24	24	49.1	30.2	20.1	8.0	86	82.8

Model	Applicable hose I.D./O.D.	H ₁	H ₂	L ₁	M	Min. hole size	Weight g
KK130S(L)-50N-X186	5/8	22	14	49.6	13.7	4.5	85
-60N-X186	6/9	22	17	51.6	16.4	5.5	95
-65N-X186	6.5/10	22	17	51.6	16.5	6.0	92
-80N-X186	8/12	22	19	52.6	17.4	8.0	97
-85N-X186	8.5/12.5	22	19	52.6	17.4	8.0	101
-110N-X186	11/16	24	24	52.6	20.1	10.0	119

One-touch fitting type Note)



Model	Applicable tube O.D. mm	D	L ₁	L ₂	M	Min. hole size	Weight g	When connected Full length L ₃
KK130P-06H	6	15.0	39.9	21.0	16.7	4.5	24	73.3
-08H	8	16.0	39.9	21.0	18.6	6.0	24	74.3
-10H	10	18.0	40.4	21.5	20.7	8.0	24	76.8
-12H	12	20.0	42.7	23.8	21.7	8.0	29	79.1
-07H	1/4"	15.0	39.9	21.0	16.7	4.5	24	73.3
-09H	5/16"	16.0	39.9	21.0	18.6	6.0	24	74.3
-11H	3/8"	18.0	40.4	21.5	20.7	7.0	25	76.8
-13H	1/2"	20.0	42.7	23.8	21.7	8.0	27	79.1

Model	Applicable tube O.D. mm	D	L ₁	M	Min. hole size	Weight g
KK130S(L)-06H-X186	6	13.0	52.3	16.7	4.5	72
-08H-X186	8	14.8	53.3	18.6	6.0	74
-10H-X186	10	17.8	55.3	20.7	9.0	77
-12H-X186	12	20.0	55.3	21.7	9.0	80
-07H-X186	1/4"	13.0	52.3	16.7	4.5	72
-09H-X186	5/16"	14.8	53.3	18.6	6.0	74
-11H-X186	3/8"	17.6	55.3	20.7	7.0	79
-13H-X186	1/2"	20.0	55.3	21.7	9.0	78

Note) Grease is used for the One-touch fitting type.

Rectangular Multi-connector

KDM-X12

(White Vaseline Specification)

No. of Connecting Tubes: 10, 20

Multi-connector is effective in saving labor for separate transportation of the panel and the machine, and for exchanging units due to failure.

Substantial reduction in mounting space

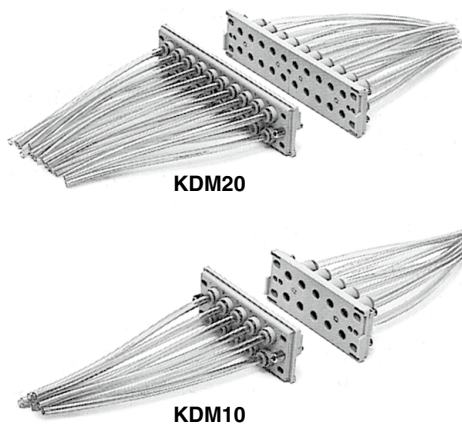
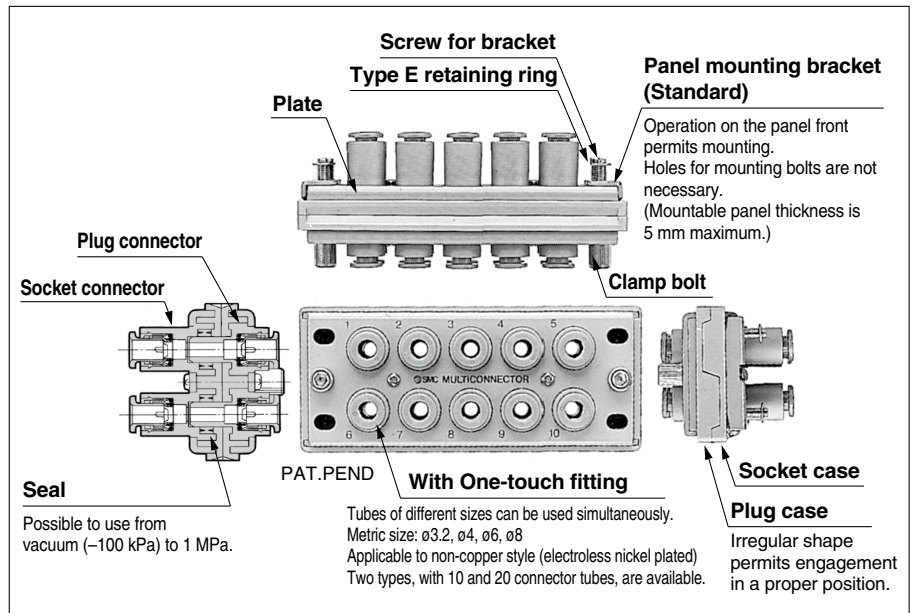
In comparison with a model requiring many union joints for panels and partitions, this model needs only a small space.

One-touch connection/disconnection of connector

Multiple pipes can be connected/disconnected in one-touch operation without connection error. Thus man-hours for connection/disconnection are cut down substantially.

One-touch tube connection

One-touch fittings substantially cuts down man-hours for piping.



Model

No. of connecting tubes	Tubing O.D.	Model	Weight (g)	Color of release button
10	ø3.2	KDM10-23-X12	300	White
	ø4	KDM10-04-X12		
	ø6	KDM10-06-X12	520	
	ø8	KDM10-08-X12		
20	ø3.2	KDM20-23-X12	520	
	ø4	KDM20-04-X12		
	ø6	KDM20-06-X12	950	
	ø8	KDM20-08-X12		

Applicable Tubing

Tubing material	FEP, PFA, Nylon, Soft nylon, Polyurethane
Tubing O.D.	ø3.2, ø4, ø6, ø8

Specifications

Fluid	Air
Operating pressure range ^{Note)}	-100 kPa to 1 MPa
Proof pressure	1.5 MPa
Ambient and fluid temperatures	-5 to 60°C (No freezing)

Note) Please avoid using in a vacuum holding application such as a leak tester, since there is leakage.

KDM-X12

Principal Parts Material

Plug case, Socket case		POM
Plate, Bracket		SPCC plated
Plug connector, Socket connector	Body	PBT, C3604 Electroless nickel plated (ø8)
	Chuck	Stainless steel 304
	Guide	Stainless steel 304, C3604 Electroless nickel plated, PBT (ø8)
	Collet, Release button	POM
	Seal	NBR
Clamp bolt, Screw for bracket, Cross-recessed head machine screw		SWRM (Nickel plated)
Type E retaining ring		Stainless steel 304

Model

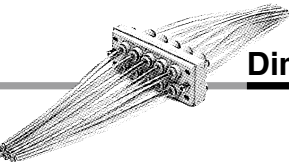
No. of connection tubes	Tubing O.D.	Model	
		Plug	Socket
10	ø3.2	KDM10P-23-X12	KDM10S-23-X12
	ø4	KDM10P-04-X12	KDM10S-04-X12
	ø6	KDM10P-06-X12	KDM10S-06-X12
	ø8	KDM10P-08-X12	KDM10S-08-X12
20	ø3.2	KDM20P-23-X12	KDM20S-23-X12
	ø4	KDM20P-04-X12	KDM20S-04-X12
	ø6	KDM20P-06-X12	KDM20S-06-X12
	ø8	KDM20P-08-X12	KDM20S-08-X12

Mixed Sizes of Plug Connectors and Socket Connectors

The rectangular multi-connector permits connector exchange in any desired position, thus allowing use of different sizes of tubes.

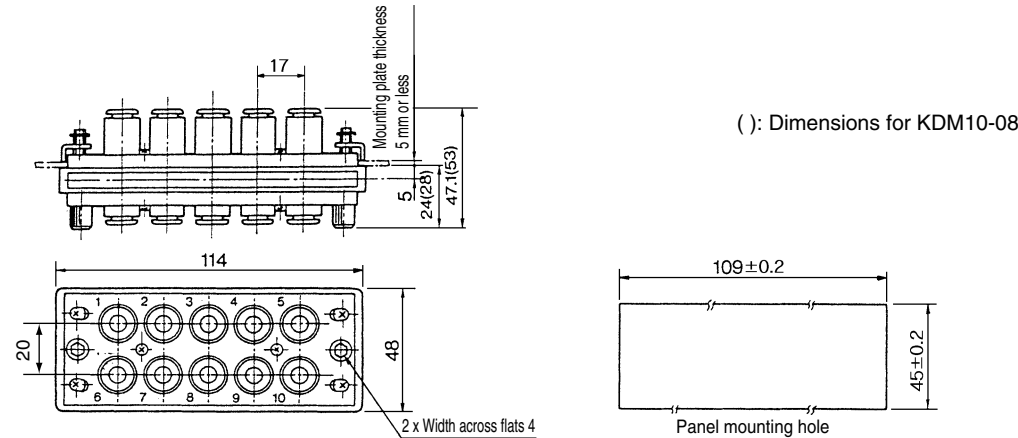
Model

Connector	Tubing O.D.	Model	Color of release button
Plug connector	ø3.2	KDMP-23-X12	White
	ø4	KDMP-04-X12	
	ø6	KDMP-06-X12	
	ø8	KDMP-08-X12	
Socket connector (with seal)	ø3.2	KDMS-23-X12	
	ø4	KDMS-04-X12	
	ø6	KDMS-06-X12	
	ø8	KDMS-08-X12	

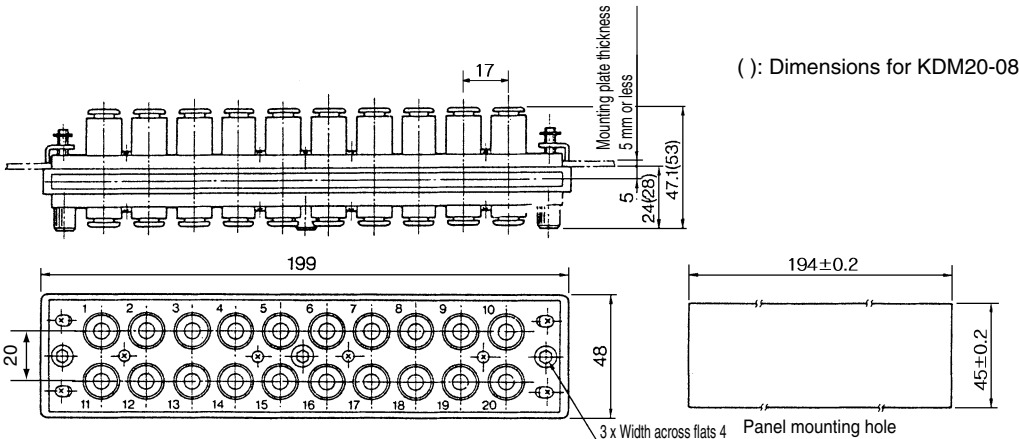


Dimensions

KDM10-□-X12



KDM20-□-X12



Stainless Steel 316 One-touch Fittings

KQG2 Series (Grease-free)

○Compact and light

○Material

Metal parts: **Stainless steel 316**

Seal parts: Special **FKM**

○Applicable tubing material

FEP, PFA, Nylon, Soft nylon,
Polyurethane, Polyolefin

○Fluid temperature: **-5 to 150°C**

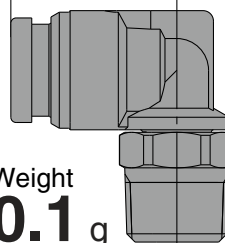
○Grease-free

○Can be used with steam

Applicable tubing	Connection thread
Metric size	M, R, Rc
Inch size	UNF, NPT

KQG2L06-01S

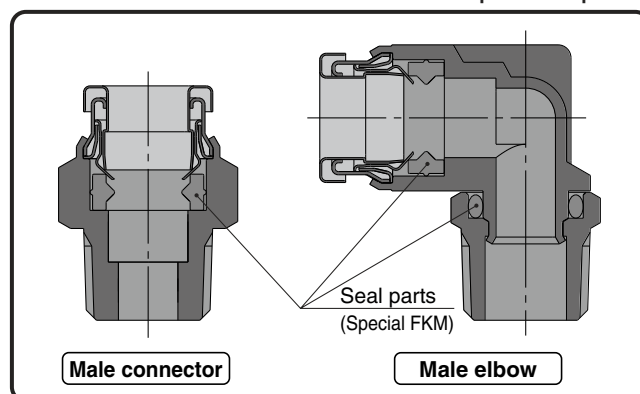
15.9 mm



Weight

10.1 g

All **Stainless steel 316** except seal parts



Stainless Steel 316 One-touch Fittings *KQG2 Series*

Variations

Male Connector

KQG2H



Bulkhead Union

KQG2E



Different Diameter Union "Y"

KQG2U



Hexagon Socket Head Male Connector

KQG2S



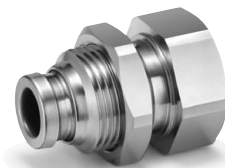
Union Tee

KQG2T



Bulkhead Connector

KQG2E



Straight Union

KQG2H



Union "Y"

KQG2U



Extended Male Elbow

KQG2W



Male Elbow

KQG2L



Different Diameter Tee

KQG2T



Female Connector

KQG2F



Male Branch Tee

KQG2T



Plug-in Reducer

KQG2R



Plug

KQG2P



Union Elbow

KQG2L



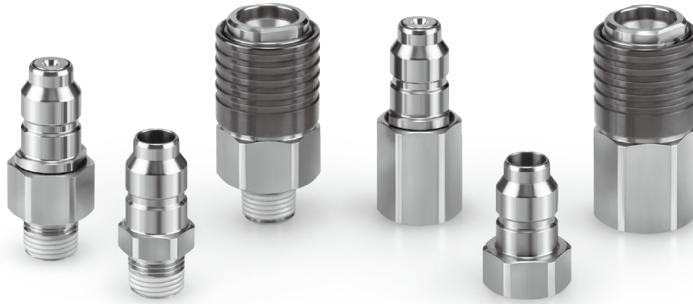
Different Diameter Straight

KQG2H

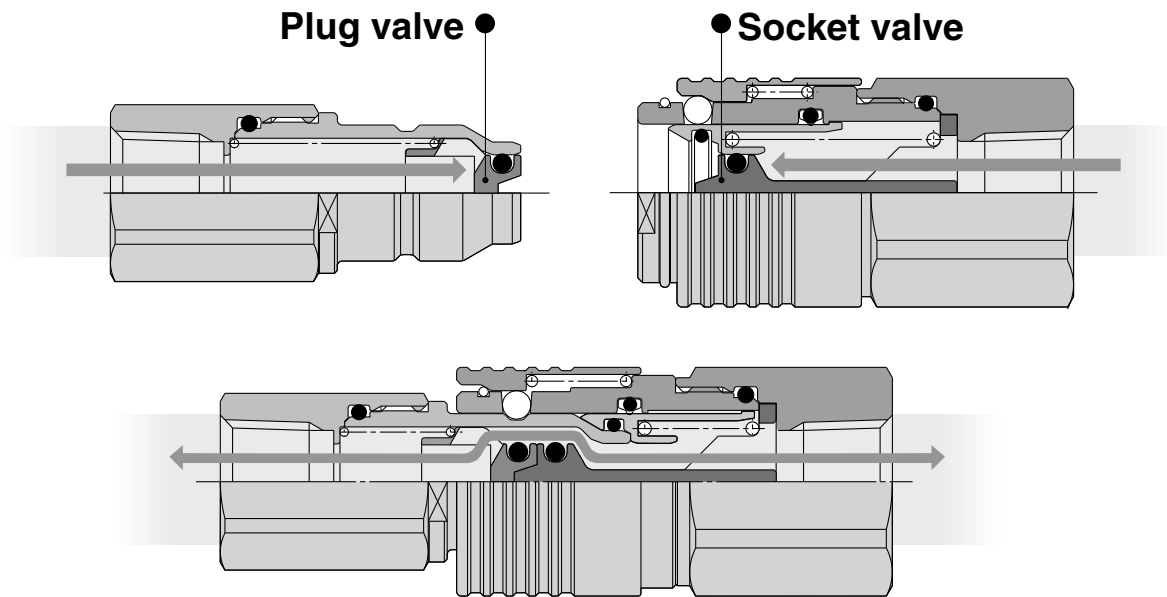


S Couplers Stainless steel type

RoHS



- **Body material: Stainless steel 304**
Seal material: Fluororubber (Special FKM)
- **Both plug and socket have an integral check valve.**
Available with and without check valves depending on the operating conditions.
- **Reduces liquid dripping when the plug and socket are uncoupled.**
Liquid dripping: 0.02 to 0.77 cm³ at each removal Aeration: 0.1 to 2.7 cm³ at each removal



- **Non-greased specification (standard)**
Allows smooth installation and removal even without grease
 - O-ring: Fluorine coated
 - Sliding parts of plug and socket: Fluorine coated is used.
- **Fluid: Water, Air**
- **Operating temperature range: -5 to 150°C**
Note) This product should not be used with steam.

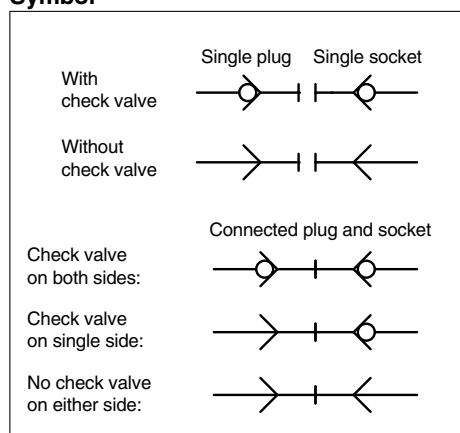
KKK Series

S Couplers/Stainless Steel Type RoHS

KKA Series (Grease-free)



Symbol



Characteristics with check valve on both sides

Body size	Liquid dripping cm ³ at each removal	Aeration cm ³ at each removal
KKA3	0.02	0.1
KKA4	0.04	0.1
KKA6	0.06	0.2
KKA7	0.14	0.5
KKA8	0.27	0.9
KKA9	0.77	2.7

Liquid dripping:

Volume of water leakage at the time when the plug and socket are uncoupled.

Aeration:

Volume of external air entrained when the plug and socket are connected.

Specifications

Fluid	Water, Air
Operating pressure range Note 1)	KKA3: -100 kPa to 1 MPa KKA4/6/7/8/9: 0 to 1 MPa
Proof pressure	10 MPa
Ambient and fluid temperatures	-5 to 150°C (No freezing) Note) This product should not be used with steam.
Non-greased specification	No grease is used. (Rubber, Metal sliding parts: Fluorine coated)
Material	Metal part: Stainless steel 304, Rubber material: Fluororubber (Special FKM)
Seal	With male thread sealant

Note 1) Do not use the S couplers with a leak tester or for vacuum retention because they are not guaranteed for zero leakage.

Performance

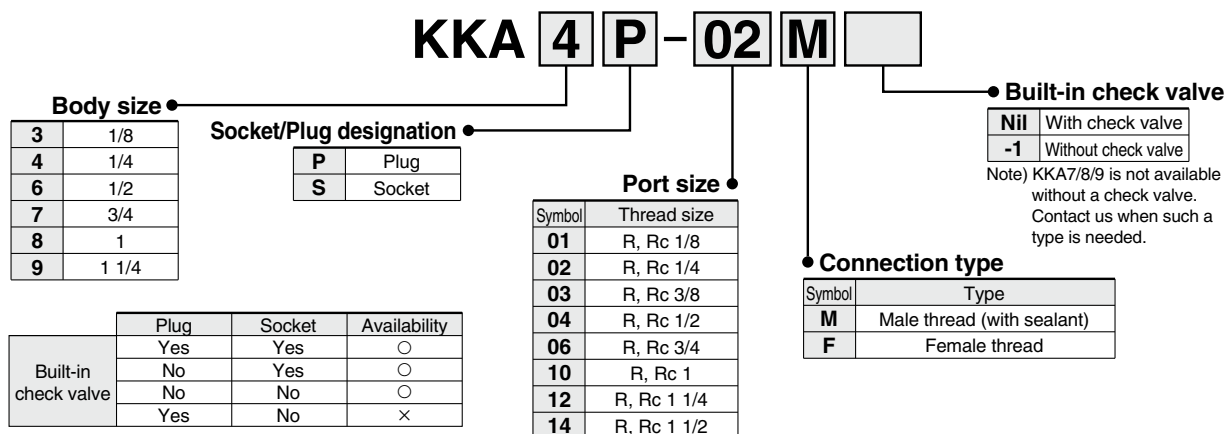
Plug and socket connection	One-touch connection and release
Check valve	Check valve on both sides, Without check valve

Note) KKA series cannot be connected with KK series or KKH series.

Effective Area

Built-in check valve	Plug	Socket	Effective area mm ²
Plug: With check valve Socket: With check valve	KKA3P-01F	KKA3S-01F	17.4
	KKA4P-02F	KKA4S-02F	26.4
	KKA6P-04F	KKA6S-04F	54.2
	KKA7P-06F	KKA7S-06F	99.6
	KKA8P-10F	KKA8S-10F	168.3
Plug: Without check valve Socket: With check valve	KKA9P-12F	KKA9S-12F	332.1
	KKA3P-01M-1	KKA3S-01M	18.5
	KKA4P-02M-1	KKA4S-02M	31.8
	KKA6P-04M-1	KKA6S-04M	55.3
	KKA3P-01M-1	KKA3S-01M-1	22.6
Plug: Without check valve Socket: Without check valve	KKA4P-02M-1	KKA4S-02M-1	40.2
	KKA6P-04M-1	KKA6S-04M-1	76.0

How to Order



Note) A plug with check valve should be used in combination with a socket with check valve.

If a socket without check valve is used, the check valve of the plug will not open.

Dimensions/Plug (P)

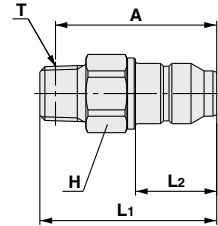
With check valve

Male thread type

(mm)



Body size	Model	T Connection port size	H Width across flats	L1	L2	A	Min. bore size	Effective area mm ²	Weight g
1/8	KKA3P-01M	R 1/8	14	35.4	16.0	31.4	5.6	17.4	15.4
	-02M	R 1/4		38.4		32.4			19.8
	-03M	R 3/8		39.4		32.9			32.9
1/4	KKA4P-02M	R 1/4	17	42.2	18.9	36.2	6.9	26.4	28.3
	-03M	R 3/8		43.2		36.7			36.6
	-04M	R 1/2	22	46.2		38.2			65.9
1/2	KKA6P-03M	R 3/8	24	47.1	20.4	40.6	10.0	54.2	60.3
	-04M	R 1/2		47.9		39.9			69.2
	-06M	R 3/4	30	49.9		40.4			119.0
3/4	KKA7P-04M	R 1/2	32	66.3	27.6	58.1	13.5	99.6	173.9
	-06M	R 3/4		69.4		59.9			209.6
	-10M	R 1	36	69.9		59.5			275.0
1	KKA8P-06M	R 3/4	41	82.9	35.6	73.4	17.5	168.3	362.8
	-10M	R 1		85.4		75.0			403.9
	-12M	R 1 1/4	46	85.4		72.7			538.6
1 1/4	KKA9P-10M	R 1	55	109.5	49.1	99.1	22.0	264.9	824.1
	-12M	R 1 1/4		109.0		96.3	24.6	332.1	861.4
	-14M	R 1 1/2		109.0		96.3			936.3

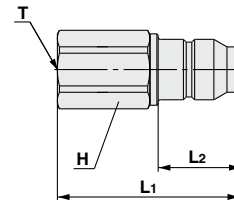


Female thread type

(mm)



Body size	Model	T Connection port size	H Width across flats	L1	L2	Min. bore size	Effective area mm ²	Weight g
1/8	KKA3P-01F	Rc 1/8	14	36.0	16.0	5.6	17.4	20.2
	-02F	Rc 1/4	17	39.6				31.8
	-03F	Rc 3/8	19	40.4				35.8
1/4	KKA4P-02F	Rc 1/4	17	43.4	18.9	6.9	26.4	36.1
	-03F	Rc 3/8	19	44.4				40.2
	-04F	Rc 1/2		48.6				69.7
1/2	KKA6P-03F	Rc 3/8	24	48.7	20.4	10.0	54.2	84.1
	-04F	Rc 1/2		52.9				79.7
	-06F	Rc 3/4	30	54.6				123.8
3/4	KKA7P-04F	Rc 1/2	32	67.7	27.6	13.5	99.6	217.1
	-06F	Rc 3/4		69.4				196.8
	-10F	Rc 1		72.4				325.9
1	KKA8P-06F	Rc 3/4	41	82.0	35.6	17.5	168.3	420.5
	-10F	Rc 1		85.0				391.3
	-12F	Rc 1 1/4	50	87.3				552.8
1 1/4	KKA9P-10F	Rc 1	55	107.8	49.1	24.6	332.1	986.9
	-12F	Rc 1 1/4		110.1				925.6
	-14F	Rc 1 1/2		110.1				848.2



Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

KKA Series

Dimensions/Socket (S)

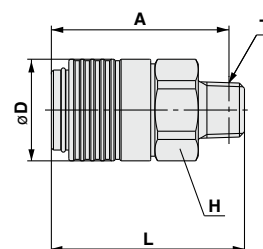
With check valve

Male thread type

(mm)

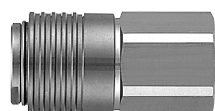


Body size	Model	T Connection port size	H Width across flats	øD	L	A	Min. bore size	Effective area mm ²	Weight g
1/8	KKA3S-01M	R 1/8	17	18.5	38.1	34.1	5.9	18.5	38.5
	-02M	R 1/4			41.1	35.1			41.8
	-03M	R 3/8			42.1	35.6			46.3
1/4	KKA4S-02M	R 1/4	22	24.2	46.0	40.0	7.7	31.8	76.8
	-03M	R 3/8			47.0	40.5			78.5
	-04M	R 1/2			50.0	42.0			86.6
1/2	KKA6S-03M	R 3/8	30	30.7	51.4	44.9	10.2	55.3	149.1
	-04M	R 1/2			54.4	46.4			160.4
	-06M	R 3/4			56.4	46.9			184.8
3/4	KKA7S-04M	R 1/2	36	42.5	76.3	68.1	13.6	101.5	426.1
	-06M	R 3/4			79.3	69.8			457.8
	-10M	R 1			82.8	72.4			514.0
1	KKA8S-06M	R 3/4	46	55	94.9	85.4	17.6	169.9	873.5
	-10M	R 1			98.4	88.0			931.1
	-12M	R 1 1/4			100.4	87.7			1012.9
1 1/4	KKA9S-10M	R 1	63	69	125.5	115.1	25.1	344.9	1680.7
	-12M	R 1 1/4			127.5	114.8			1758.1
	-14M	R 1 1/2			127.5	114.8			1819.4

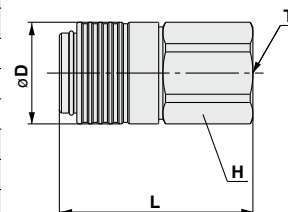


Female thread type

(mm)



Body size	Model	T Connection port size	H Width across flats	øD	L	Min. bore size	Effective area mm ²	Weight g
1/8	KKA3S-01F	Rc 1/8	17	18.5	37.6	5.9	18.5	46.9
	-02F	Rc 1/4			41.2			47.2
	-03F	Rc 3/8	19		43.1			52.3
1/4	KKA4S-02F	Rc 1/4	22	24.2	46.1	7.7	31.8	97.1
	-03F	Rc 3/8			46.9			91.1
	-04F	Rc 1/2	24		52.3			104.3
1/2	KKA6S-03F	Rc 3/8	30	30.7	50.5	10.2	55.3	189.6
	-04F	Rc 1/2			56.2			202.0
	-06F	Rc 3/4			57.9			180.6
3/4	KKA7S-04F	Rc 1/2	36	42.5	75.1	13.6	101.5	477.2
	-06F	Rc 3/4			76.5			457.4
	-10F	Rc 1	41		82.3			550.9
1	KKA8S-06F	Rc 3/4	46	55	90.9	17.6	169.9	935.2
	-10F	Rc 1			93.9			914.7
	-12F	Rc 1 1/4	50		99.2			1002.1
1 1/4	KKA9S-10F	Rc 1	63	69	121.8	25.1	344.9	1919.1
	-12F	Rc 1 1/4			121.8			1810.0
	-14F	Rc 1 1/2			121.8			1732.6

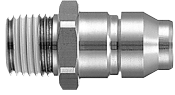


Dimensions/Plug (P)

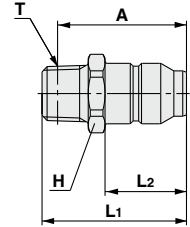
Without check valve

Male thread type

(mm)



Body size	Model	T Connection port size	H Width across flats	L1	L2	A	Min. bore size	Effective area mm ²	Weight g
1/8	KKA3P-01M-1	R 1/8	12	28.5	16.0	24.5	6.0	22.6	9.8
	-02M-1	R 1/4	14	31.5		25.5			14.6
	-03M-1	R 3/8		32.5		26.0			23.6
1/4	KKA4P-02M-1	R 1/4	17	34.4	18.9	28.4	8.0	40.2	21.0
	-03M-1	R 3/8		35.4		28.9			27.9
	-04M-1	R 1/2		39.4		31.4			50.2
1/2	KKA6P-03M-1	R 3/8	22	37.9	20.4	31.4	11.0	76.0	41.9
	-04M-1	R 1/2		40.9		32.9			56.0
	-06M-1	R 3/4		42.9		33.4			98.7

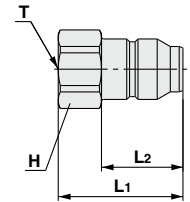


Female thread type

(mm)



Body size	Model	T Connection port size	H Width across flats	L1	L2	Min. bore size	Effective area mm ²	Weight g
1/8	KKA3P-01F-1	Rc 1/8	14	23.2	16.0	6.0	22.6	9.6
	-02F-1	Rc 1/4	17	30.3				20.2
	-03F-1	Rc 3/8	19	32.0				26.2
1/4	KKA4P-02F-1	Rc 1/4	17	29.7	18.9	8.0	40.2	20.0
	-03F-1	Rc 3/8	19	34.0				25.8
	-04F-1	Rc 1/2	24	39.4				46.1
1/2	KKA6P-03F-1	Rc 3/8	22	30.9	20.4	11.0	76.0	34.3
	-04F-1	Rc 1/2	24	39.6				50.0
	-06F-1	Rc 3/4	30	42.8				78.6

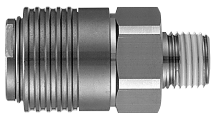


Dimensions/Socket (S)

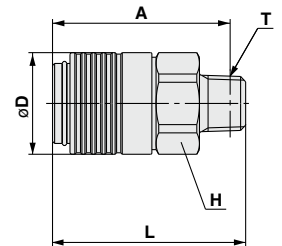
Without check valve

Male thread type

(mm)



Body size	Model	T Connection port size	H Width across flats	øD	L	A	Min. bore size	Effective area mm ²	Weight g
1/8	KKA3S-01M-1	R 1/8	17	18.5	38.1	34.1	6.1	23.4	36.1
	-02M-1	R 1/4			41.1	35.1			39.4
	-03M-1	R 3/8			42.1	35.6			43.9
1/4	KKA4S-02M-1	R 1/4	22	24.2	46.0	40.0	8.1	41.2	71.9
	-03M-1	R 3/8			47.0	40.5			73.6
	-04M-1	R 1/2			50.0	42.0			81.7
1/2	KKA6S-03M-1	R 3/8	30	30.7	51.4	44.9	11.4	81.6	138.3
	-04M-1	R 1/2			54.4	46.4			149.6
	-06M-1	R 3/4			56.4	46.9			174.0

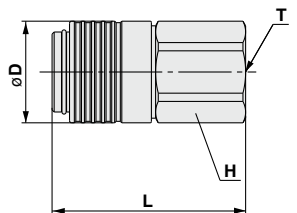


Female thread type

(mm)



Body size	Model	T Connection port size	H Width across flats	øD	L	Min. bore size	Effective area mm ²	Weight g
1/8	KKA3S-01F-1	Rc 1/8	17	18.5	37.6	6.1	23.4	44.5
	-02F-1	Rc 1/4			41.2			44.8
	-03F-1	Rc 3/8			43.1			49.9
1/4	KKA4S-02F-1	Rc 1/4	22	24.2	46.1	8.1	41.2	92.2
	-03F-1	Rc 3/8			46.9			86.2
	-04F-1	Rc 1/2			52.3			99.4
1/2	KKA6S-03F-1	Rc 3/8	30	30.7	50.5	11.4	81.6	178.8
	-04F-1	Rc 1/2			56.2			191.2
	-06F-1	Rc 3/4			57.9			169.8

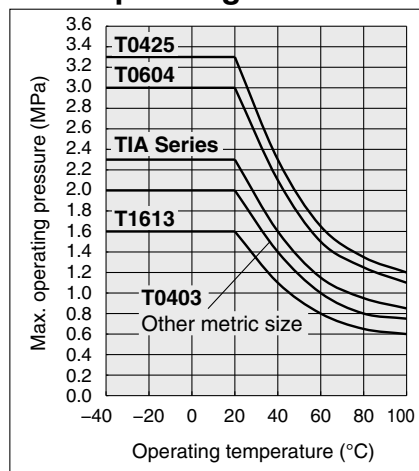


Nylon Tubing T/TIA Series

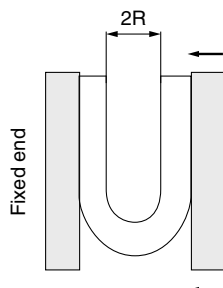
RoHS

For general pneumatic tubing, Nylon tubing

Max. Operating Pressure



How to measure the minimum bending radius.



At a temperature of 20°C, bend the tubing into a U shape. Fix one end and gradually move the other end closer. Measure 2R at the point where the outside diameter's rate of change is 10%.

⚠ Precautions

Be sure to read this before handling the products.
Refer to the Web Catalog for safety instructions and fittings and tubing precautions.

⚠ Caution

- Applicable for general industrial water. Please consult with SMC if using other kinds of fluid. Surge pressure must be under the max. operating pressure. If the surge pressure exceeds the maximum operating pressure, it will result in damage to fittings and tubes.
- Please exercise caution when using this item in a clean room. There is a possibility of plasticizer and other materials precipitating on the tube surface and detracting from the cleanliness level of the room.

Model

● — 20 m roll □ — 100 m roll (T1613 is reel.)

	Tubing size												
	Metric size (T series)							Inch size (TIA series)					
Model	T0425	T0403	T0604	T0645	T0806	T1075	T1209	T1613	TIA01	TIA05	TIA07	TIA11	TIA13
Tubing O.D. (mm)	4	4	6	6	8	10	12	16	3.18	4.76	6.35	9.53	12.7
Tubing I.D. (mm)	2.5	3	4	4.5	6	7.5	9	13	2.18	3.48	4.57	6.99	9.56
Black (B)													
White (W)													
Red (R)													
Blue (BU)													
Yellow (Y)													
Green (G)													
5/32"													
5/16"													
Nominal size (inch) 1/8" 3/16" 1/4" 3/8" 1/2" Nominal size (mm) 3.2													

Specifications

Specifications

Fluid		Air/Water												
Max. operating pressure (MPa) Note 1)	20°C or less	3.3	2.0	3.0	2.0	2.0	2.0	2.0	1.6	2.3	2.3	2.3	2.3	2.3
	40°C	2.3	1.4	2.1	1.4	1.4	1.4	1.4	1.1	1.6	1.6	1.6	1.6	1.6
	60°C	1.65	1.0	1.5	1.0	1.0	1.0	1.0	0.8	1.15	1.15	1.15	1.15	1.15
	80°C	1.35	0.8	1.25	0.8	0.8	0.8	0.8	0.65	0.95	0.95	0.95	0.95	0.95
	100°C	1.2	0.75	1.1	0.75	0.75	0.75	0.75	0.6	0.85	0.85	0.85	0.85	0.85
Applicable fittings Note 1) Note 2)		One-touch fittings, Insert fittings, Self-align fittings, Miniature fittings												
Min. bending radius (mm) Note 3)	Min. bending radius	13	20	24	30	40	50	60	100	15	25	30	50	65
	Bending value (Reference)	10	15	18	23	30	40	45	75	12	20	23	40	48
Operating temperature Note 1)		-40 to +100°C, Water: 0 to +70°C (No freezing)												
Material		Nylon 12												

Note 1) Be sure to operate under the maximum operating pressure conditions using the lower maximum operating specification of either the tubing or fittings.

Note 2) Mount an inner sleeve when using metal One-touch fittings in high-temperature environments of 60°C or more. Use self-align fittings at a temperature of 60°C or less.

Note 3) The minimum bending radius is the representative value measured as shown in the left figure.

- Use a tube above the recommended minimum bending radius.
- The tubing may be bent if used under the recommended minimum bending radius. Therefore, refer to the refraction value and make sure that the tubing is not bent or flattened.
- Please note that the refraction value is not warranted because of the value when 2R is measured by the method in the left figure if the tubing is bent or flattened, etc.

How to Order

T0425 B - 20

Tubing model

Color

Symbol	Color
B	Black (Opaque)
W	White (Material color)
R	Red (Opaque)
BU	Blue (Opaque)
Y	Yellow (Opaque)
G	Green (Opaque)

Length per roll

Symbol	Length
20	20 m roll
100	100 m roll (Black and white only)

Made to Order

(Please contact SMC for specifications in detail, dimensions, delivery and specifications other than those mentioned above.)

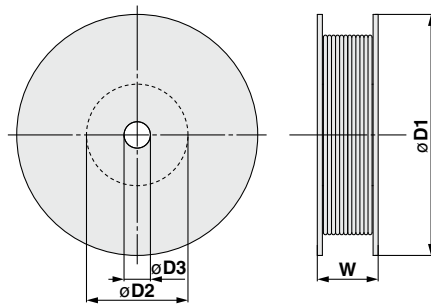
100 m reel	Metric size and Inch size except ø16: Suffix "-X3" to the end of part number. Ex.) T0425R-100-X3
Longer length reel	Metric size: Suffix "-X3" to the end of part number. Ex.) T0425G-500-X3
20 m roll	Inch size: Suffix "-X4" to the end of part number. Ex.) TIA01BU-20-X4
Reinforced corrugated cardboard specification longer length reel	ø6, Black and White only: Suffix "-X64" to the end of part number. Ex.) T0604B-500-X64

Made to Order Availability

Part no.	Length	Model	T0425 *	T0604 *	T0806 *	T1075 *	T1209 *	TIA01 *	TIA05 *	TIA07 *	TIA11 *	TIA13 *	Color
X3	100 m reel		○	○	○	○	○	○	○	○	○	○	Black, White, Red, Blue, Yellow, Green
	150 m reel					○							
	200 m reel				○								
	500 m reel		○	○									
X4	20 m roll							○	○	○	○	○	Red, Blue, Yellow, Green
X64	250 m reel			○									Black, White
	500 m reel			○									

Reinforced corrugated cardboard specification: Longer length reel/-X64

Dimensions



Dimensions

Model	øD1	øD2	øD3	W	Weight (kg)	Color
T0604□-250-X64	475	200	52	120	5.1	Black,
T0604□-500-X64	475	200	52	200	9.4	White

Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

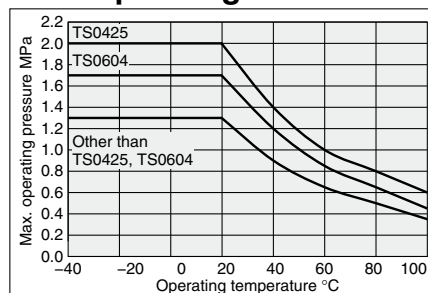
Pneumatic Auxiliary Equipment

Soft Nylon Tubing TS/TISA Series

RoHS

For general pneumatic tubing
Pliable soft nylon tubing

Max. Operating Pressure



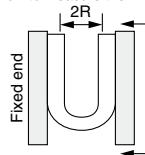
⚠ Precautions

Be sure to read this before handling the products.
Refer to the Web Catalog for safety instructions
and fittings and tubing precautions.

⚠ Caution

- Compatible with water due to a change in materials. Compatible fluid types are printed on the tube body for differentiation, so please be sure to check this. ^{Note 1} If using the previous TS/TISA series with "water", the tube may shrink and cause air leakage or the tube may fall out.
- The products which changed the material are applicable for general industrial water. Please contact SMC if using other kinds of fluid. Surge pressure must be under the max. operating pressure. If the surge pressure exceeds the maximum operating pressure, it will result in damage to fittings and tubes.
- Please exercise caution when using this item in a clean room. There is a possibility of plasticizer and other materials precipitating on the tube surface and detracting from the cleanliness level of the room.

How to measure the minimum bending radius



At a temperature of 20°C, bend the tubing into a U shape. Fix one end and gradually move the other end closer. Measure 2R at the point where the outside diameter's rate of change is 10%.

Model

● — 20 m roll □ — 100 m roll (TS1612 is reel.)

Model	Tubing size									
	Metric size (TS series)					Inch size (TISA series)				
Tubing O.D. (mm)	4	6	8	10	12	16	3.18	4.76	6.35	9.53
Tubing I.D. (mm)	2.5	4	6	7.5	9	12	2.18	3.48	4.57	6.99
Black (B)	●	●	●	●	●	●	●	●	●	●
White (W)	●	●	●	●	●	●	●	●	●	●
Red (R)	●	●	●	●	●	●	●	●	●	●
Blue (BU)	●	●	●	●	●	●	●	●	●	●
Yellow (Y)	●	●	●	●	●	●	●	●	●	●
Green (G)	●	●	●	●	●	●	●	●	●	●
Nominal size (inch)										
1/8" 3/16" 1/4" 3/8" 1/2"										
Nominal size (mm)										
3.2										

Specifications

Fluid	Air/Water ^{Note 1)}									
Max. operating pressure	20°C or less	2.0	1.7	1.3	1.3	1.3	1.3	1.3	1.3	1.3
40°C	1.4	1.2	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
60°C	1.0	0.85	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
80°C	0.8	0.65	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
100°C	0.6	0.45	0.35	0.35	0.35	0.4	0.35	0.35	0.35	0.35
Applicable fittings ^{Note 2) 3)}	One-touch fittings, Insert fittings, Self-align fittings, Miniature fittings									
Min. bending radius	15	23	45	55	65	90	18	27	30	55
radius mm ^{Note 4)}	12	17	34	42	50	70	12	15	23	42
Operating temperature ^{Note 2)}	-40 to +100°C, Water: 0 to +50°C (No freezing)									
Material	Nylon 12									

Note 1) Refer to the "Printing/Fluid".

Note 2) Be sure to operate under the maximum operating pressure and operating temperature conditions using the lower specifications of either the tubing or fittings.

Note 3) Mount an inner sleeve when using metal One-touch fittings in high-temperature environments of 60°C or more. Use self-align fittings at a temperature of 60°C or less.

Note 4) The minimum bending radius is the representative value measured as shown in the left figure.

- Use a tube above the minimum bending radius.
- The tubing may be bent if used under the minimum bending radius. Therefore, refer to the bending value and make sure that the tubing is not bent or flattened.
- Please note that the bending value is not warranted because of the representative value when 2R is measured by the method in the left figure if the tubing is bent or flattened, etc.

Printing/Fluid

Print code		Fluid
Previous	SMC TS 0604 SOFTNYLON 6 x 4	Air
NEW	● SMC TS 0604 SOFTNYLON 6 x 4	Air/Water

How to Order

Length per roll		Color	
Symbol	Length	Symbol	Color
20	20 m roll	B	Black (Opaque)
100	100 m roll (Black and white only)	W	White (Material color)
		R	Red (Opaque)
		BU	Blue (Opaque)
		Y	Yellow (Opaque)
		G	Green (Opaque)

Made to Order

(Please contact SMC for specifications in detail, dimensions, delivery and specifications other than those mentioned above.)

100 m reel	Metric size and Inch size except ø16: Suffix "-X3" to the end of part number. Ex.) TS0425R-100-X3
Longer length reel	Metric size: Suffix "-X3" to the end of part number. Ex.) TS0425G-500-X3
20 m roll	Inch size: Suffix "-X4" to the end of part number. Ex.) TISA01BU-20-X4

Made to Order Availability

Part no.	Length	Model	TS0425	TS0604	TS0806	TS1075	TS1209	TISA01	TISA05	TISA07	TISA11	TISA13	Color
X3	100 m reel		○	○	○	○	○	○	○	○	○	○	Black, White, Red, Blue, Yellow, Green
	150 m reel					○							
	200 m reel				○								
	500 m reel		○	○									
X4	20 m roll							○	○	○	○	○	Red, Blue, Yellow, Green

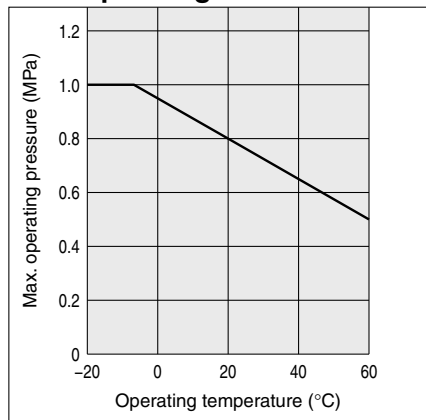
Polyurethane Tubing TU/TIUB Series

RoHS



For general pneumatic tubing
Flexible
Polyurethane tubing
Additional 21 new colors.

Max. Operating Pressure

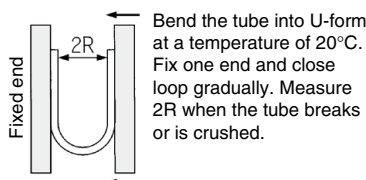


⚠ Precautions

Be sure to read this before handling the products.
Refer to the Web Catalog for safety instructions
and fittings and tubing precautions.

⚠ Caution

- Applicable for general industrial water. Please consult with SMC if using for the other kind of fluid. Also, the surge voltage pressure must be under the maximum operating pressure. If the surge pressure exceeds the maximum operating pressure, it will result in damage to fittings and tubes.
- Abnormal temperature rise caused by adiabatic compression may result in the tube bursting.
- The value of the minimum bending radius is measured at the temperature of 20°C as shown in the figure below.



Model/Specifications

● — 20 m roll □ — 100 m roll (TU1610 is reel.) ◇ — 100 m roll, 200 m roll
△ — Option ■ — Manufactured upon receipt of order (Please consult with SMC.)

	Tubing size											
	Metric size (TU series)							Inch size (TIUB series)				
Model	TU0212	TU0425	TU0604	TU0805	TU1065	TU1208	TU1610	TIUB01	TIUB05	TIUB07	TIUB11	TIUB13
Tubing O.D. (mm)	2	4	6	8	10	12	16	3.18	4.76	6.35	9.53	12.7
Tubing I.D. (mm)	1.2	2.5	4	5	6.5	8	10	2	3.18	4.23	6.35	8.46
Black (B)	●	◆	◆	●	●	●	●	●	●	●	●	●
White (W)	●	◆	◆	●	●	●	●	●	▲	▲	▲	▲
Red (R)	●	◆	◆	●	●	●	■	●	▲	▲	▲	▲
Blue (BU)	●	◆	◆	●	●	●	●	●	●	●	●	●
Yellow (Y)	●	◆	◆	●	●	●	■	●	▲	▲	▲	▲
Green (G)	●	◆	◆	●	●	●	■	●	▲	▲	▲	▲
Clear (C)	●	◆	◆	●	●	●	●	●	▲	▲	▲	▲
Orange (YR)	■	◆	◆	●	●	●	■	●	▲	▲	▲	▲
Solid blue (BU1)	■	◆	◆	●	●	●	■	●	■	■	■	■
Clear blue (BU2)	■	◆	◆	●	●	●	■	●	■	■	■	■
Medium blue (BU3)	■	◆	◆	●	●	●	■	●	■	■	■	■
Brown (BR1)	■	◆	◆	●	●	●	■	●	■	■	■	■
Solid green (G1)	■	◆	◆	●	●	●	■	●	■	■	■	■
Clear green (G2)	■	◆	◆	●	●	●	■	●	■	■	■	■
Neon green (G3)	■	◆	◆	●	●	●	■	●	■	■	■	■
Dark green (G4)	■	◆	◆	●	●	●	■	●	■	■	■	■
Gray (GR1)	■	◆	◆	●	●	●	■	●	■	■	■	■
Light gray (GR2)	■	◆	◆	●	●	●	■	●	■	■	■	■
Neon pink (P1)	■	◆	◆	●	●	●	■	●	■	■	■	■
Solid purple (PU1)	■	◆	◆	●	●	●	■	●	■	■	■	■
Clear purple (PU2)	■	◆	◆	●	●	●	■	●	■	■	■	■
Solid red (R1)	■	◆	◆	●	●	●	■	●	■	■	■	■
Clear red (R2)	■	◆	◆	●	●	●	■	●	■	■	■	■
Silver (S1)	■	◆	◆	●	●	●	■	●	■	■	■	■
Solid yellow (Y1)	■	◆	◆	●	●	●	■	●	■	■	■	■
Clear yellow (Y2)	■	◆	◆	●	●	●	■	●	■	■	■	■
Neon yellow (Y3)	■	◆	◆	●	●	●	■	●	■	■	■	■
Clear orange (YR1)	■	◆	◆	●	●	●	■	●	■	■	■	■
Neon orange (YR2)	■	◆	◆	●	●	●	■	●	■	■	■	■
Nominal size (inch)												
1/8 " 3/16 " 1/4 " 3/8 " 1/2 "												
5/32 " 5/16 "												

Fluid		Air/Water											
Max. operating pressure (MPa)	20°C	0.8											
	40°C	0.65											
	60°C	0.5											
Applicable fittings		One-touch fittings, Insert fittings, Self-align fittings, Miniature fittings											
Min. bending radius (mm)		4	10	15	20	27	35	45	10	15	23	27	35
Operating temperature		-20 to +60°C (Water: 0 to 40°C) (No freezing)											
Material		Polyurethane											

TU/TIUB Series

How to Order

TU0425 **BU** – **20**

Tubing model

Length per roll

Symbol	Length
20	20 m roll
100	100 m roll

Color

Symbol	Color	Symbol	Color
B	Black (Opaque)	GR1	Gray (Opaque)
W	White (Opaque)	GR2	Light gray (Opaque)
R	Red (Translucent)	P1	Neon pink (Opaque)
BU	Blue (Translucent)	PU1	Solid purple (Opaque)
Y	Yellow (Opaque)	PU2	Clear purple (Translucent)
G	Green (Opaque)	R1	Solid red (Opaque)
C	Clear (Material color)	R2	Clear red (Translucent)
YR	Orange (Opaque)	S1	Silver (Opaque)
BU1	Solid blue (Opaque)	Y1	Solid yellow (Opaque)
BU2	Clear blue (Translucent)	Y2	Clear yellow (Translucent)
BU3	Medium blue (Opaque)	Y3	Neon yellow (Opaque)
BR1	Brown (Opaque)	YR1	Clear orange (Translucent)
G1	Solid green (Opaque)	YR2	Neon orange (Opaque)
G2	Clear green (Translucent)		
G3	Neon green (Opaque)		
G4	Dark green (Opaque)		

Made to Order

(Please contact SMC for specifications in detail, dimensions, delivery and specifications other than those mentioned above.)

100 m reel

Metric size and Inch size: Suffix “-X3” to the end of part number. Ex.) TU0425R-100-X3

Longer length reel

Metric size: Suffix “-X3” to the end of part number. Ex.) TU0425G-500-X3

20 m roll

Inch size: Suffix “-X4” to the end of part number. Ex.) TIUB07W-20-X4

Compatible with the Food Sanitation Law

Metric size: Suffix “-X217” to the end of part number. Ex.) TU0425BU-20-X217

Made to Order Availability

Part no.	Length	Model	TU0425□	TU0604□	TU0805□	TU1065□	TU1208□	TIUB01□	TIUB05□	TIUB07□	TIUB11□	TIUB13□	Color
X3	100 m reel		○	○	○	○	○	○	○	○	○	○	Black, White, Red, Blue, Yellow, Green, Clear, Orange
	200 m reel				○								
	400 m reel			○									
	500 m reel		○										
X4	20 m roll								○	○	○	○	Red, White, Yellow, Green, Clear, Orange
X217*	20 m roll		○	○	○	○	○						Black, White, Blue, Clear

* Note that the model number is not printed on the tube body.

Multi-core, Multi-color Specification Flat Tubing

Refer to the **Web Catalog** for details.

Moisture Control Tube

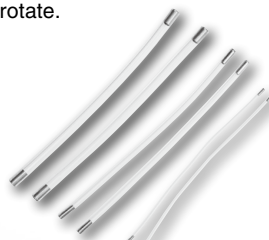
Prevents condensation in piping

for small cylinders/air grippers.

Diffuses water vapor in the piping to the outside!

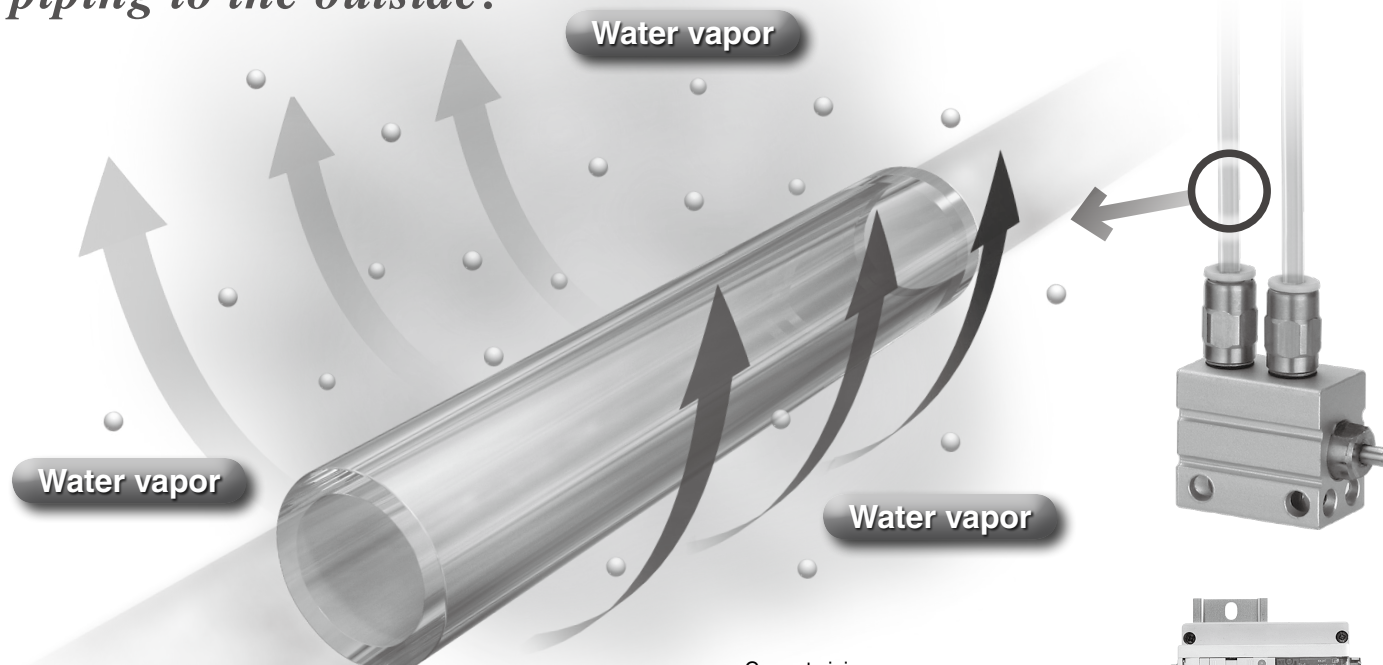
Linear shape

Suitable for applications where cylinders do not rotate.



Coil shape

Reduces tube buckling of moving part.



Additional power supply and works are not necessary!

All you have to do is install the moisture control tube!!

No condensation

Moisture control tube

Condensation generated

General tube

Operating a small cylinder, air gripper, or air operated valve, etc. which has a small volume may cause condensation of water in the area near the actuator due to the volume ratio of the actuator volume and the operating piping volume.

IDK Series

Prevents condensation issue with pneumatic equipment.

If condensation occurs...

Grease deteriorates or is washed away.

Operation failure

Shorter life

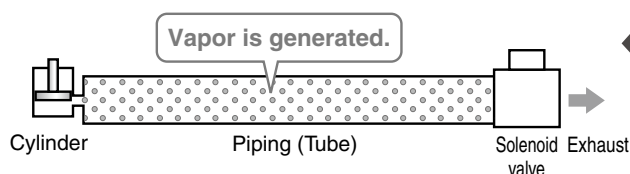
Air quality affects the operation and the life of the equipment in a pneumatic system, so dehumidified air is necessary. In particular, if small actuators are continuously operated at high frequency, condensation may be generated even with dehumidified air, due to the characteristics of the system. The moisture control tube prevents condensation from being formed by diffusing water vapor generated in the piping to the outside before the water vapor is condensed.

Supply

The mechanism of condensation in small actuators

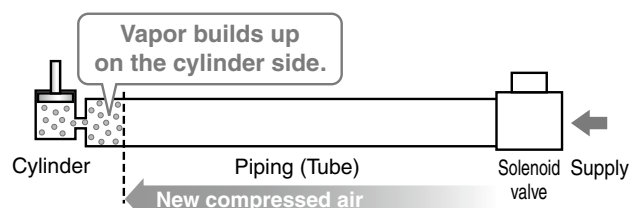
Exhaust

- 1 The temperature in the piping rapidly drops due to adiabatic expansion.
- 2 If the temperature in the piping becomes lower than the dew point of the compressed air, vapor will be generated.
- 3 The vapor cannot be exhausted (cannot be pushed out) as the volume of the actuator is small.



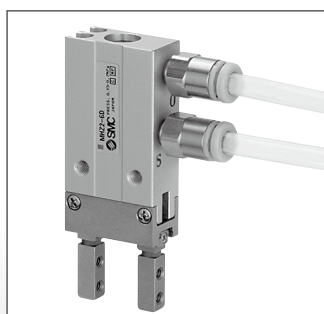
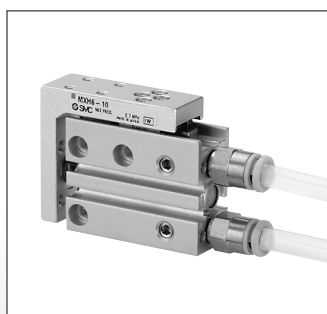
Supply

Residual vapor is pressed by compressed air and accumulates in the area near the actuator.

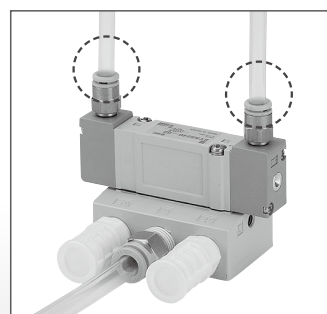


Equipment in which condensation is a possibility

Small diameter cylinders/air grippers



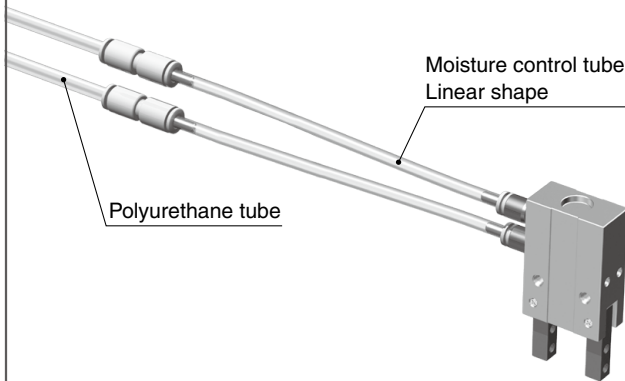
Air operated valves (Pilot port)



Additional power supply and works are not necessary!
Just by installing the moisture control tube prevents condensation.

Linear shape

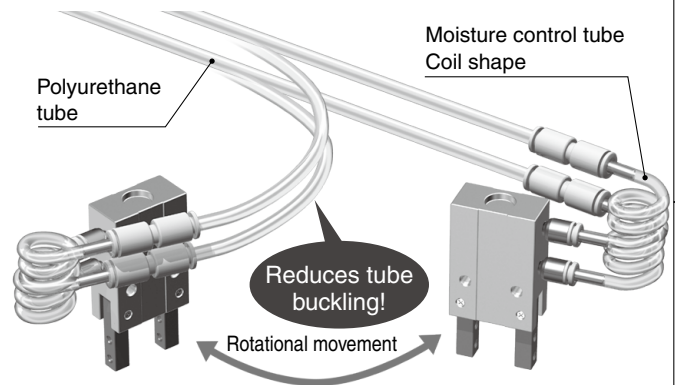
Suitable for applications where cylinders do not rotate.



Model	Tube O.D.	Tube effective length	
		100	200
IDK02	ø2	●	●
IDK04	ø4	●	●
IDK06	ø6	●	●

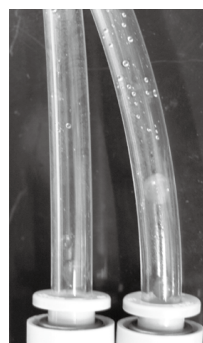
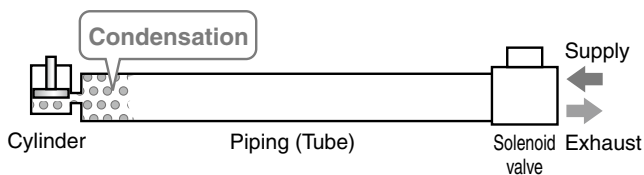
Coil shape

Since other tubes with a small bending radius are used on moving parts, the buckling trouble of the moisture control tubes can be reduced.

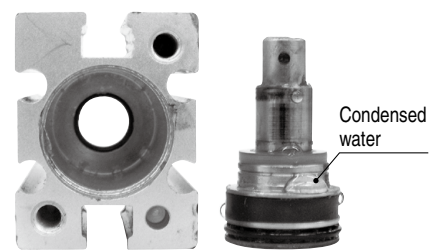


Model	Tube O.D.	Tube effective length	
		100	200
IDK04	ø4	●	●
IDK06	ø6	●	●

The accumulated vapor is liquefied (condensed) due to repeated supply/exhaust.



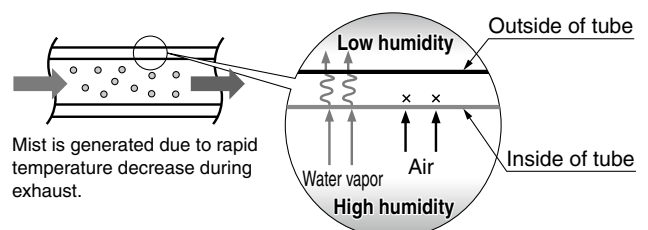
Water droplets



Grease deteriorates or is washed away.

Operating principle of moisture control tube

This moisture control tube has characteristics to balance the humidity inside the tube with that outside the tube. If the humidity inside the tube differs from that outside the tube, the moisture control tube penetrates the water vapor from the higher humidity side to the lower humidity side. The moisture control tube penetrates only the water vapor and rarely penetrates the air. The humidity inside the tube is put in the high humidity status due to the mist generated every exhaust, causing dew condensation. The moisture control tube penetrates the generated mist from the inside of the tube with a high humidity to its outside with a low humidity to prevent accumulation of water vapor and dew condensation inside the tube.

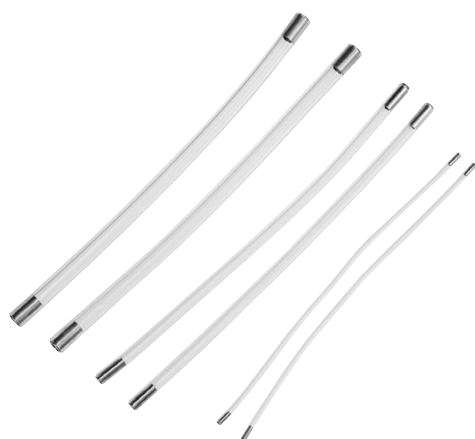


The water vapor is generated and it moves from the inside of the tube with a high humidity to its outside with a low humidity.

Moisture Control Tube

IDK Series

Specifications (Linear Shape)



Model	IDK02	IDK04	IDK06
Fluid	Compressed air		
Max. operating pressure	0.7 MPa		
Installation temperature/Relative humidity	40°C/75%RH or less		
Operating temperature	0 to 60°C (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.		
Color	Transparent [Color will change to brown over time, but the functions are not affected.]		
Applicable fittings	KQ2		
Material	Fluoropolymer		

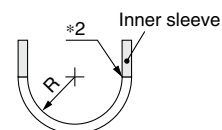
Note 1) Use the moisture control tube in a line with a refrigerated air dryer and a mist separator installed in the upstream compressed air line. The condensation prevention performance may be lowered depending on the quality of the supply compressed air (oil, dew point).

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.



How to Order

IDK **02** - **100**

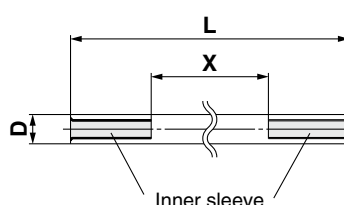
Tube O.D. ●

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

● Tube effective length

Symbol	Effective length
100	100 mm
200	200 mm

Dimensions



Model	O.D. x I.D. D	Unit: mm	
		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.

Made to Order

If you require the moisture control tube with an effective length not listed in the above table, please contact SMC.

Specifications (Coil Shape)



Model	IDK04-□-C1	IDK06-□-C1
Fluid	Compressed air	
Max. operating pressure	0.7 MPa	
Fluid temperature	0 to 60°C (No freezing)	
Ambient temperature	0 to 40°C, Relative humidity 0 to 75%RH	
Operating environment*1	Indoors, where product is not exposed to water (0 to 40°C, Relative humidity 0 to 75%RH)	
O.D. [mm]	4	6
I.D. [mm]	2.5	4
Tube effective length*2 [mm]	100, 200	
Quantity of moisture control tubes	2 pcs.	
Color	Transparent [Color 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 length when the tube is straight. This effective length is made into a coil shape.

How to Order

IDK 04 - 100 - C1

Tube O.D.

Symbol	O.D.
04	4 mm
06	6 mm

Note) Part number for a set of 2 tubes

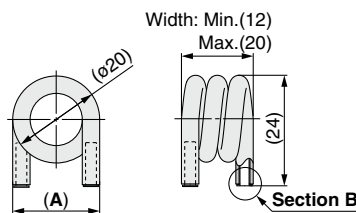
Coil shape

Tube effective length

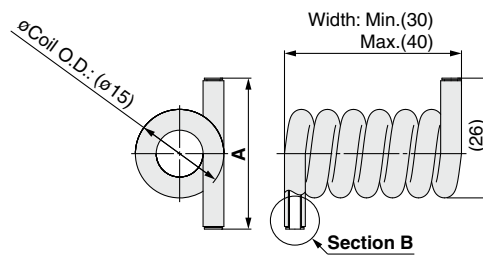
Symbol	Effective length
100	100 mm
200	200 mm

Dimensions (per tube)

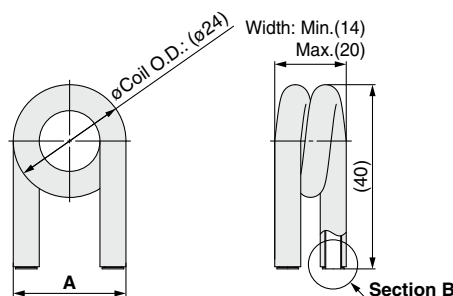
IDK04-100-C1



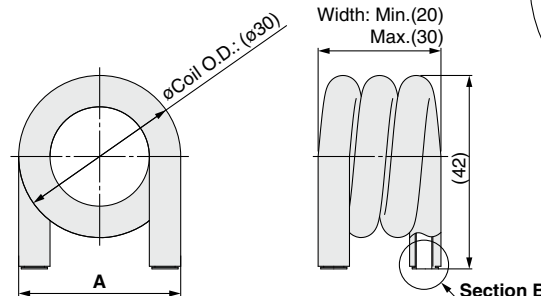
IDK04-200-C1



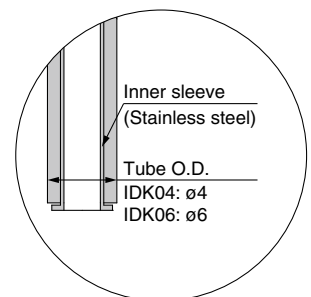
IDK06-100-C1



IDK06-200-C1



Section B details



* Due to the material, the above dimensions may vary depending on the environment (temperature, humidity) including the spread of dimension A.

Speed Controller with One-touch Fitting Elbow Type/Universal Type

AS-X12

(White Vaseline Specification)

Minimizes installation time and cost

Reduces the mounting height and enables compact machinery design. Effective area is larger than the former model.

Tube swivels 360°

Universal type permits 360° piping swivel.

ø2 size added to applicable tubing sizes

- **Metric size** (Release button: White color)
ø2, ø3.2, ø4, ø6, ø8, ø10, ø12

Maximum operating pressure 1 MPa max.

Applicable tubing materials

Nylon, soft nylon, polyurethane, FEP, and PFA tubing are applicable.

Retainer prevents accidental loss of needle.

Option

Hexagonal lock nut, Nickel plated option

Model

Elbow type	Universal type	Port size	Applicable tubing O.D.							
			Metric size							
			2	3.2	4	6	8	10	12	
AS12□1F-M3-X12	AS13□1F-M3-X12	M3 x 0.5	Note 2)	●	●	●				
AS12□1F-M5-X12	AS13□1F-M5-X12	M5 x 0.8	Note 2)	●	●	●	●			
AS12□1F-U10/32-X12	AS13□1F-U10/32-X12	10-32 UNF		●	●	●	●			
AS22□1F-01-X12	AS23□1F-01-X12	R 1/8		●	●	●	●	Note 2)		
AS22□1F-02-X12	AS23□1F-02-X12	R 1/4			●	●	●	●		
AS32□1F-02-X12	AS33□1F-02-X12	R 1/4				●	●	●	●	
AS32□1F-03-X12	AS33□1F-03-X12	R 3/8				●	●	●	●	
AS42□1F-04-X12	AS43□1F-04-X12	R 1/2						●	●	

Note 1) AS12□1F-M5-02 applicable cylinder bore sizes are 2.5, 4, 6.

Note 2) Elbow type only

Note 3) Meter-out and meter-in types can be visually differentiated by the lock nut. The lock nut on the meter-out type is electroless nickel plated, while the meter-in type is black zinc chromate plated.

Note 4) ● Marking is electroless nickel plated, provided as standard. (N specifications)

Specifications

Fluid	Air
Proof pressure	1.5 MPa (1.05 MPa ^{Note 1)})
Max. operating pressure	1 MPa (0.7 MPa ^{Note 1)})
Mini. operating pressure	0.1 MPa
Ambient and fluid temperatures	−5 to 60°C (No freezing)
Applicable tubing material ^{Note 2)}	Nylon, Soft nylon, Polyurethane ^{Note 3)} , FEP, PFA
Option	With seal ^{Note 4)} , Round lock nut, Electroless nickel plated ^{Note 5)}

Note 1) In case of AS12□1F-M3-02, AS12□1F-M5-02

Note 2) Use caution regarding the max. operating pressure when soft nylon or polyurethane tubing is used. (Refer to the **Web Catalog** for details.)

Note 3) In case of AS12□1F-M3-02 and AS12□1F-M5-02, polyurethane only.

Note 4) M3, M5, 10-32UNF type ports are not available with seals.

Note 5) Brass parts are all electroless nickel plated.

Flow Rate and Effective Area

Model		AS12□1F-M3-X12 AS13□1F-M3-X12 AS12□1F-M5-02-X12	AS12□1F-M5-X12 AS13□1F-M5-X12	AS22□1F-01-X12 AS23□1F-01-X12	AS22□1F-02-X12 AS23□1F-02-X12	AS32□1F-X12 AS33□1F-X12	AS42□1F-X12 AS43□1F-X12
Tubing O.D.	Metric size	ø2 ø3.2 ø4	ø3.2 ø4 ø6	ø3.2 ø4 ø6 ø8 ø10	ø4 ø6 ø8 ø10	ø6 ø8 ø10 ø12	ø10 ø12
Controlled flow (Free flow)	Flow rate L/min (ANR)	20	100	180	230	260 390 460 660 790 920	1580 1710
	Sonic conductance dm ³ /(s·bar)	0.06	0.28	0.5	0.64	0.72 1.1 1.3 1.8 2.2 2.6	4.4 4.8

Note 1) Flow rate values are measured at 0.5 MPa and 20°C.

Note 2) U10/32 has the same specification as M5.

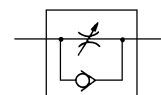
Elbow type



Universal type



Symbol



How to Order

AS 2 2 0 1F - 01 - 06 S - X12 -

Body size

1	M3, M5 standard
2	1/8, 1/4 standard
3	3/8 standard
4	1/2 standard

Type

2	Elbow
3	Universal

Control type

0	Meter-out
1	Meter-in

With One-touch fitting

Thread type

Nil	Metric thread (M3, M5)
	Unified thread (10-32 UNF)
N	R
	NPT

Port size

M3	M3 x 0.5
M5	M5 x 0.8
U10/32	10-32 UNF
01	1/8
02	1/4
03	3/8
04	1/2

Option

Nil	None
S	With seal
N	Electroless nickel plated

*1 If more than one option is required, write option part numbers in the order of "S", "N".
*2 M3, M5, and U10/32 are not available with seals.

Applicable tubing O.D.

Metric size

02	ø2
23	ø3.2*
04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

Note) For applicable tubing O.D. selection, refer to the Model (page 259).
* Use ø1/8" tube.

Lock nut option

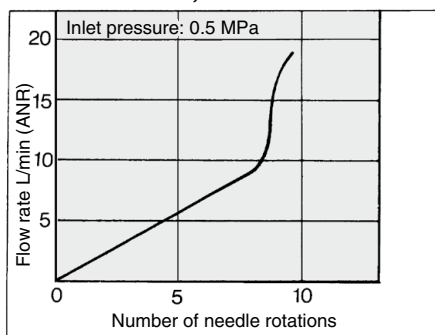
Nil	Hexagon lock nut
J	Round lock nut

White vaseline

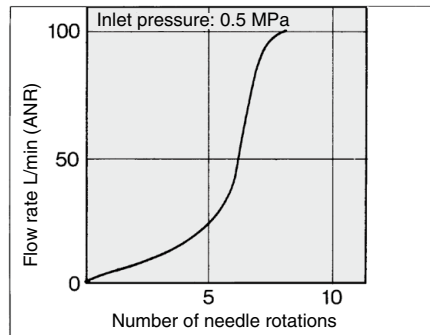
Needle Valve/Flow Rate Characteristics

Note) The flow rate characteristics are representative values.

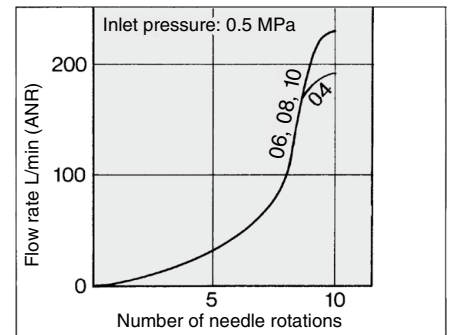
AS1201F-M3, AS1211F-M3-X12
AS1301F-M3, AS1311F-M3-X12
AS1201F-M5-02, AS1211F-M5-02-X12



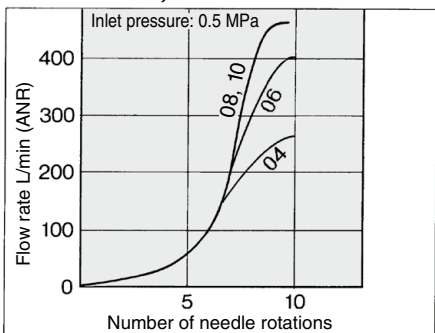
AS1201F-M5, AS1211F-M5-X12
AS1301F-M5, AS1311F-M5-X12



AS2201F-01, AS2211F-01-X12
AS2301F-01, AS2311F-01-X12

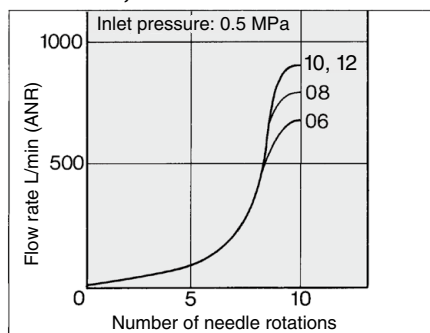


AS2201F-02, AS2211F-02-X12
AS2301F-02, AS2311F-02-X12

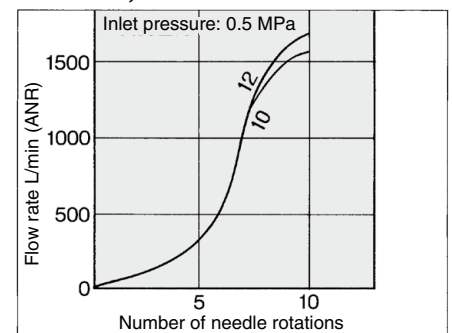


Note) "-U10/32" is the same as "M5".

AS3201F, AS3211F-X12
AS3301F, AS3311F-X12



AS4201F, AS4211F-X12
AS4301F, AS4311F-X12

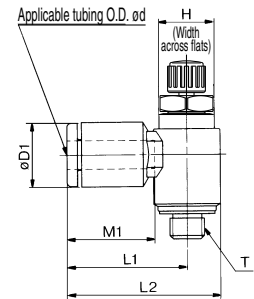
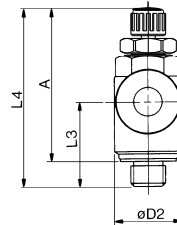
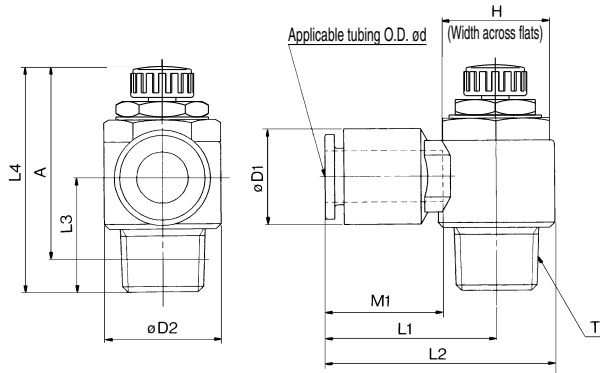


AS-X12

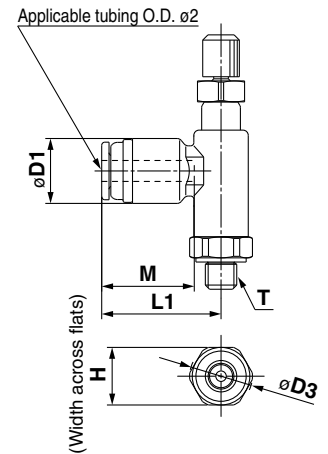
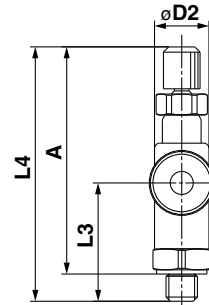


Elbow Type

M3 port
M5 port



ø2 tubing type
AS12□1F-M3-02
AS12□1F-M5-02



Metric Size

Model	Applicable tubing O.D. d	T	Note 1) H	D1	D2	D3	L1	L2	L3	L4 Note 3) Max. Min.	A Note 2) Max. Min.	M1	Weight (g)
AS12□1F-M3-02-X12	2	M3 x 0.5	5.5	6	5.2	6	11.4	—	11	26.8	24.3	24.3	2.4
AS12□1F-M5-02-X12	2	M5 x 0.8	7	6	5.2	7.5	11.4	—	11.5	27.3	24.8	24.3	3
AS12□1F-M3-23-X12	3.2	M3 x 0.5	5.5	8.4	7.2	—	16.1	19.7	10.5	26.6	24.1	24	4
AS12□1F-M3-04-X12	4	—	9.3	—	—	—	—	—	10	—	—	—	—
AS12□1F-M5-23-X12	3.2	M5 x 0.8	8	8.4	—	—	17.3	22.1	12.3	—	—	12.7	7
AS12□1F-U10/32-23-X12	4	10-32UNF	8	9.3	9.6	—	17.3	22.1	28.6	25.8	25	22.2	—
AS12□1F-U10/32-04-X12	4	10-32UNF	8	9.3	9.6	—	17.3	22.1	28.6	25.8	25	22.2	—
AS12□1F-M5-06-X12	6	M5 x 0.8	11.6	—	—	—	18.1	22.9	11.7	—	—	13.5	—
AS12□1F-U10/32-06-X12	6	10-32UNF	11.6	—	—	—	18.1	22.9	11.7	—	—	13.5	—
AS22□1F-01-23-X12	3.2	—	9.3	—	—	—	20.4	27.5	13.4	—	—	12.7	16
AS22□1F-01-04-X12	4	—	9.3	—	—	—	20.4	27.5	13.4	—	—	13.5	17
AS22□1F-01-06-X12	6	1/8	12 (12.7)	11.6	14.2	—	20.4	27.5	35.2	30.2	32.1	27.1	19
AS22□1F-01-08-X12	8	—	15.2	—	—	—	25.3	32.4	32.1	39.2	14.1	21	21
AS22□1F-01-10-X12	10	—	18.5	—	—	—	32.1	39.2	14.1	—	—	21	21
AS22□1F-02-04-X12	4	—	10.4	—	—	—	25.2	34.4	17.7	—	—	16	32
AS22□1F-02-06-X12	6	—	12.8	—	—	—	25.2	34.4	39.9	34.9	34.4	29.4	17
AS22□1F-02-08-X12	8	—	15.2	—	—	—	27.2	36.4	35.3	44.5	19.5	18.5	34
AS22□1F-02-10-X12	10	—	18.5	—	—	—	35.3	44.5	19.5	—	—	21	36
AS32□1F-02-06-X12	6	1/4	12.8	—	—	—	27.8	39.3	21.3	48.3	43.3	37.8	17
AS32□1F-02-08-X12	8	—	15.2	—	—	—	29.5	41	21.3	48.3	43.3	37.8	18.5
AS32□1F-02-10-X12	10	—	18.5	—	—	—	31.8	43.3	21.3	48.3	43.3	37.8	21
AS32□1F-02-12-X12	12	—	20.9	—	—	—	32.8	44.3	21.3	48.3	43.3	37.8	22
AS32□1F-03-06-X12	6	—	12.8	—	—	—	27.8	39.3	19.8	45.4	40.4	35.2	17
AS32□1F-03-08-X12	8	—	15.2	—	—	—	29.5	41	19.8	45.4	40.4	35.2	18.5
AS32□1F-03-10-X12	10	—	18.5	—	—	—	31.8	43.3	19.8	45.4	40.4	35.2	21
AS32□1F-03-12-X12	12	—	20.9	—	—	—	32.8	44.3	19.8	45.4	40.4	35.2	22
AS42□1F-04-10-X12	10	1/2	24 (23.8)	18.5	—	—	33.6	47.9	24.5	56.7	49.2	42.1	21
AS42□1F-04-12-X12	12	—	21.7	28.6	—	—	35.2	49.5	24.5	56.7	49.2	42.1	22

Note 1) () are the dimensions of NPT thread.

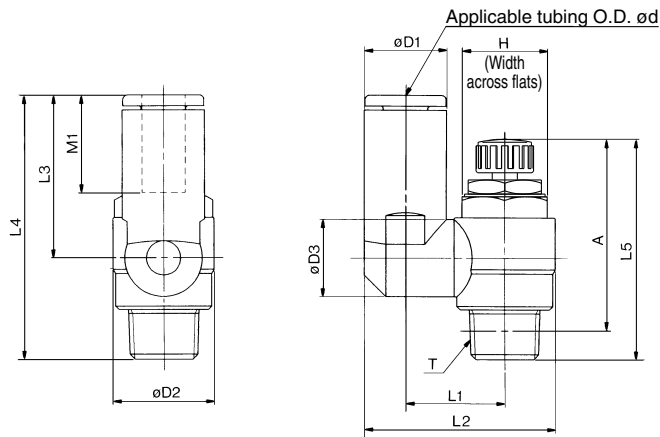
Note 2) Reference thread dimensions after installation

Note 3) Reference dimensions

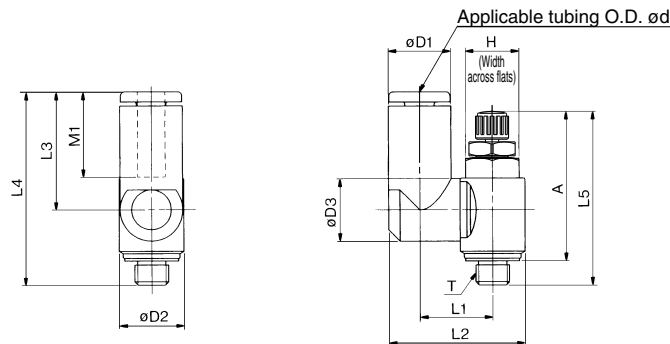
Speed Controller with One-touch Fitting Elbow Type/Universal Type **AS-X12**



Universal Type



M3 port
M5 port



Metric Size

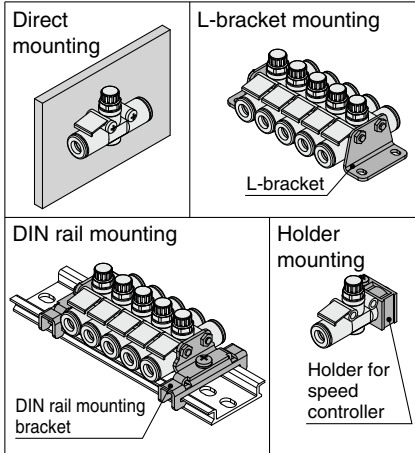
Model	Applicable tubing O.D. d	T	Note 1) H	D1	D2	D3	L1	L2	L3	L4	L5 Note 3)		A Note 2)		M1	Weight (g)
											Max.	Min.	Max.	Min.		
AS13□1F-M3-23-X12	3.2	M3 x 0.5	5.5	8.4	7.2	7.2	10.1	17.9	17.6	28.3	26.6	24.1	24	21.5	12.7	4
AS13□1F-M3-04-X12	4			9.3				18.3	17.9	28.6						5
AS13□1F-M5-23-X12	3.2	M5 x 0.8	8	8.4	9.6	9.3	10.8	19.8	17.5	28.7	28.6	25.8	25	22.2	12.7	7
AS13□1F-U10/32-23-X12	10-32UNF			9.3				20.3		31.8						
AS13□1F-M5-04-X12	4	M5 x 0.8	10-32UNF	11.6	21.4	20.6	31.8	28.6	25.8	25	22.2	13.5	17	18	21	21
AS13□1F-U10/32-04-X12	10-32UNF			11.6												
AS13□1F-M5-06-X12	6	M5 x 0.8	10-32UNF	11.6	21.4	20.6	31.8	28.6	25.8	25	22.2	13.5	17	18	21	21
AS13□1F-U10/32-06-X12	10-32UNF			11.6												
AS23□1F-01-23-X12	3.2	1/8	12 (12.7)	8.4	14.2	9.3	13.1	24.4	17.5	30.9	35.2	30.2	32.1	27.1	12.7	17
AS23□1F-01-04-X12	4			9.3				24.9		30.9						
AS23□1F-01-06-X12	6	1/4	17 (17.5)	11.6	18.5	12.9	14	26.9	35.2	36.3	39.9	34.9	34.4	29.4	13.5	18
AS23□1F-01-08-X12	8			15.2				30.9		40.8						
AS23□1F-02-04-X12	4	3/8	19	10.4	23	12.9	20.6	30.6	48.3	39.6	45.4	40.4	40	35	16	32
AS23□1F-02-06-X12	6			12.8				34		42.1						
AS23□1F-02-08-X12	8	1/2	24 (23.8)	15.2	28.6	16.2	23	35.2	56.7	45.1	56.7	49.2	49.6	42.1	18.5	36
AS23□1F-02-10-X12	10			18.5				47.9		53.9						
AS33□1F-02-06-X12	6	3/8	19	12.8	23	12.9	20.6	38.5	48.3	46.5	45.4	40.4	40	35	17	60
AS33□1F-02-08-X12	8			15.2				49.5		53.9						
AS33□1F-02-10-X12	10	1/2	24 (23.8)	18.5	28.6	16.2	23	53.9	56.7	57.1	56.7	49.2	49.6	42.1	21	104
AS33□1F-02-12-X12	12			20.9				55.7		60.8						
AS33□1F-03-06-X12	6	3/8	19	12.8	23	12.9	20.6	45	45.4	48	45.4	40.4	40	35	17	56
AS33□1F-03-08-X12	8			15.2				48		52.4						
AS33□1F-03-10-X12	10	1/2	24 (23.8)	18.5	28.6	16.2	23	52.4	56.7	57.1	56.7	49.2	49.6	42.1	21	104
AS33□1F-03-12-X12	12			20.9				54.2		60.8						
AS43□1F-04-10-X12	10	1/2	24 (23.8)	18.5	28.6	16.2	23	57.1	56.7	60.8	56.7	49.2	49.6	42.1	21	104
AS43□1F-04-12-X12	12			21.7				60.8		60.8						

Note 1) () are the dimensions of NPT thread.
Note 2) Reference thread dimensions after installation
Note 3) Reference dimensions

Speed Controller with One-touch Fittings In-line Type

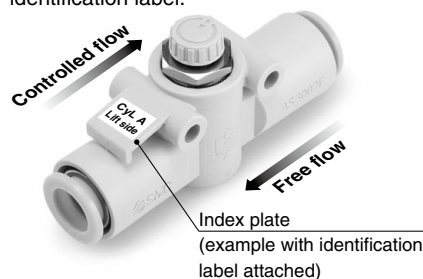
AS-X12 (White Vaseline Specification) -X21 (Restrictor + White Vaseline Specification)

4 types of mounting variations



Index plate

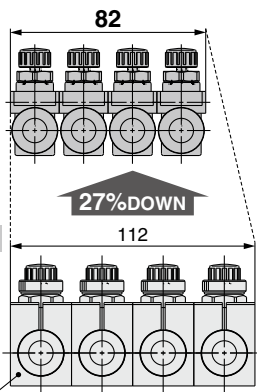
It is possible to identify the product when multiple controllers are mounted and identify the flow direction by attaching an identification label.



Compact

NEW
Four AS3002F-10 controllers connected

Current
Four AS3001F-10 controllers connected with holders (TMH-10)



Lightweight

Reduced by 30% compared with the current product (AS2002F-04)

Flow rate characteristics are equivalent to the current product.

263

Model

Model	Applicable tubing O.D.												Applicable cylinder bore size (mm)	
	Metric size						Inch size							
	2	3.2	4	6	8	10	12	1/8"	5/32"	1/4"	5/16"	3/8"		1/2"
AS1002F-X□	●	●	●	●				●	●	●				6, 10, 16, 20 ^{Note)}
AS2002F-X□			●	●					●	●				20, 25, 32
AS2052F-X□				●	●					●	●			20, 25, 32, 40
AS3002F-X□				●	●	●	●			●	●	●		40, 50, 63
AS4002F-X□						●	●					●	●	63, 80, 100

Note) AS1002F-02 applicable cylinder bore sizes are 2.5, 4, 6.

Specifications

Fluid	Air
Proof pressure	1.5 MPa (1.05 MPa (Note 1))
Max. operating pressure	1 MPa (0.7 MPa (Note 1))
Min. operating pressure	0.1 MPa
Ambient and fluid temperatures	-5 to 60°C (No freezing)
Applicable tubing material (Note 2)	Nylon, Soft nylon, Polyurethane, FEP, PFA

Note 1) In case of AS1002F-02

Note 2) Use caution regarding the max. operating pressure when soft nylon or polyurethane tubing is used.
(For details, refer to the **Web Catalog**.)

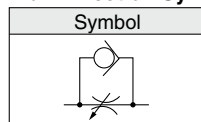
Note 3) Brass parts are all electroless nickel plated.

Flow Rate and Effective Area

Model		AS1002F-X□		AS2002F-X□		AS2052F-X□		AS3002F-X□			AS4002F-X□	
Tubing O.D.	Metric size	ø2	ø3.2, ø4, ø6	ø4	ø6	ø6	ø8	ø6	ø8	ø10, ø12	ø10	ø12
	Inch size	—	ø1/8", ø5/32" ø1/4"	ø5/32"	ø1/4"	—	ø1/4" ø5/16"	ø1/4"	ø5/16"	ø3/8"	ø3/8"	ø1/2"
Controlled flow (Free flow)	Air flow L/min (ANR)	20	100	130	230	290	460	390	660	920	920	1390
	Sonic conductance dm³/(s·bar)	0.06	0.28	0.36	0.64	0.81	1.3	1.1	1.8	2.6	2.6	3.9

Note) Flow rate values are measured at 0.5 MPa and 20°C.

Flow Direction Symbols on Body



How to Order

AS 400 2F - 12 - X12 - □

Body size	
100	M3, M5 standard
200	1/8 standard
205	1/4 standard
300	3/8 standard
400	1/2 standard

With One-touch fittings

Made to Order

Symbol	Specifications
X12	White vaseline
X21	Restrictor + White vaseline

Applicable tubing O.D.

Metric size	Inch size
02	ø1/8"
23	ø3.2*
04	ø4
06	ø6
08	ø8
10	ø10
12	ø12
01	ø1/8"
03	ø5/32"
07	ø1/4"
09	ø5/16"
11	ø3/8"
13	ø1/2"

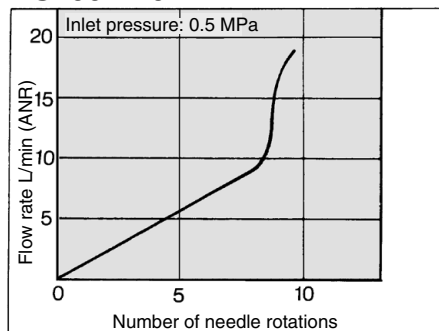
* Use ø1/8" tube.



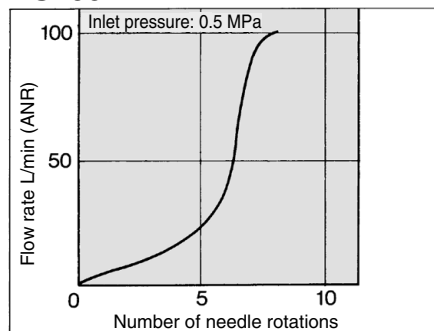
Needle Valve/Flow Rate Characteristics

Note) The flow rate characteristics are representative values.

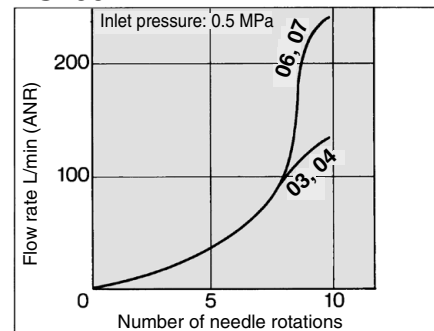
AS1002F-02-X□



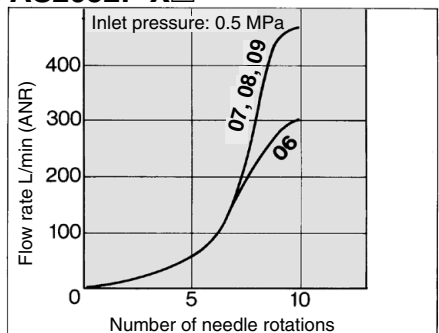
AS1002F-X□



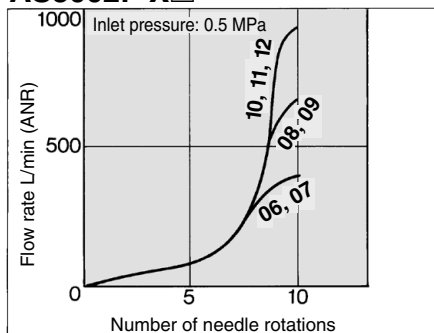
AS2002F-X□



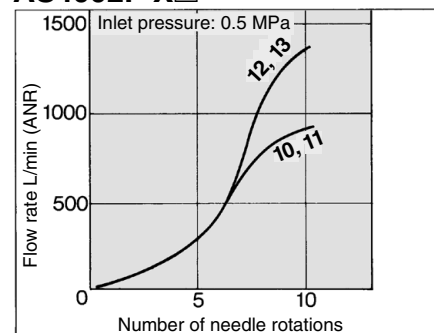
AS2052F-X□



AS3002F-X□



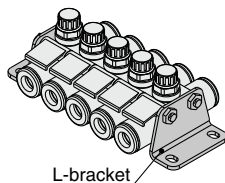
AS4002F-X□



Options

L-bracket

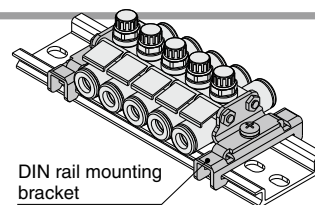
Part no.	Applicable series
AS-12L	AS1002F-02
AS-10L	AS1002F
AS-20L	AS2002F
AS-25L	AS2052F
AS-30L	AS3002F
AS-40L	AS4002F



L-bracket

DIN rail mounting bracket

Part no.	Applicable series
AS-10D	AS1002F
AS-20D	AS2002F
AS-25D	AS2052F
AS-30D	AS3002F
AS-40D	AS4002F



DIN rail mounting bracket

* Bracket for AS1002F-02 is not available.

* Prepare DIN rail by user.

Part no. list of threaded stud kit for manifold

Model		4 stations	6 stations	8 stations	10 stations
Metric size	Inch size				
AS1002F-02-X□	—	AS-31B	AS-32B	AS-33B	AS-34B
AS1002F-23-X□	AS1002F-01-X□	AS-32B	AS-33B	AS-34B	AS-36B
AS1002F-04-X□	AS1002F-03-X□		AS-35B	AS-36B	AS-37B
AS1002F-06-X□	—		AS-34B	AS-36B	AS-38B
—	AS1002F-07-X□		—	—	—
AS2002F-04-X□	AS2002F-03-X□	AS-32B	AS-34B	AS-35B	AS-37B
AS2002F-06-X□	—		AS-34B	AS-36B	AS-38B
—	AS2002F-07-X□		—	—	—
AS2052F-06-X□	—		—	—	—
—	AS2052F-07-X□	AS-41B	AS-42B	AS-44B	AS-45B
AS2052F-08-X□	AS2052F-09-X□		AS-44B	AS-45B	AS-47B
AS3002F-06-X□	—		AS-44B	AS-45B	AS-47B
—	AS3002F-07-X□		AS-44B	AS-45B	AS-47B
AS3002F-08-X□	AS3002F-09-X□	AS-42B	AS-44B	AS-45B	AS-47B
AS3002F-10-X□	—		AS-44B	AS-45B	AS-47B
—	AS3002F-11-X□		AS-44B	AS-45B	AS-47B
AS3002F-12-X□	—		AS-44B	AS-45B	AS-47B
AS4002F-10-X□	—	AS-43B	AS-45B	AS-47B	AS-48B
—	AS4002F-11-X□		AS-45B	AS-47B	AS-48B
AS4002F-12-X□	—		AS-45B	AS-47B	AS-48B
—	AS4002F-13-X□		AS-45B	AS-47B	AS-48B

Details of threaded stud kit for manifold

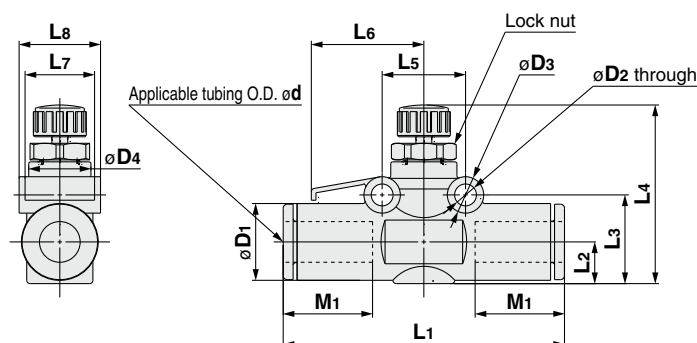
Part no.	Threaded stud		Accessories			
	Length	pcs.	Hexagon nut	pcs.	Flat washer	pcs.
AS-31B	38	2	M3	4	M3	4
AS-32B	62	2				
AS-33B	72	2				
AS-34B	90	2				
AS-35B	104	2				
AS-36B	114	2				
AS-37B	135	2				
AS-38B	140	2				
AS-41B	78	2	M4	4	M4	4
AS-42B	111	2				
AS-43B	119	2				
AS-44B	147	2				
AS-45B	179	2				
AS-46B	191	2				
AS-47B	236	2				
AS-48B	277	2				

* Precautions when options are ordered

Threaded studs for manifold are not included when L-bracket and DIN rail mounting bracket are ordered. Please order them according to the number of stations.

Ex.) AS2002F-04 When connecting 4 pcs. and mounting L-brackets on both sides	
• Speed controller	AS2002F-04 4 pcs.
• L-bracket	AS-20L 2 pcs.
• Threaded stud kit for manifold	AS-32B 1 pc.

Dimensions



Metric Size

Model	Applicable tubing O.D. ϕd	D1	D2	D3	D4	L1	L2	L3	L4 (Note)		L5	L6	L7	L8	M1	Weight (g)
									Max.	Min.						
AS1002F-02-X□	2	6	3.2	5	6	25.4	3.4	7.9	20.9	18.4	11	9.8	5	6.7	8.8	3
AS1002F-23-X□	3.2	8.4	3.3	5.5	9.1	36	4.4	11.1	23.8	21	11	15.4	8.8	9.8	12.7	5
AS1002F-04-X□	4	9.3				37	5.1	11.8	24.5	21.7				10.1	12.7	5.5
AS1002F-06-X□	6	11.6	3.3	5.5	10	39.5	6.1	12.8	25.5	22.7	12.6	17	10.5	12.3	13.5	6.5
AS2002F-04-X□	4	9.3				40.7	5.2	12.3	28.9	25.4				11.5	12.7	8.5
AS2002F-06-X□	6	11.6	4.3	7.8	14	42.5	6.3	13.4	30	26.5	17	22.8	12	12.3	13.5	9.5
AS2052F-06-X□	6	12.8				53.2	6.7	16.3	34.5	29.5				15.7	17	19
AS2052F-08-X□	8	15.2	4.3	8	19.3	57.2	8	17.6	35.8	30.8	22	25	12	16.1	18	22
AS3002F-06-X□	6	13.2				59	7.4	19.3	38.6	33.6				20.5	17	36
AS3002F-08-X□	8	15.2	4.3	8	25	65	8.2	20.1	39.4	34.4	28	33	14	18	21	38
AS3002F-10-X□	10	18.5				70.8	9.8	21.7	41	36				21	22	42
AS3002F-12-X□	12	20.9	4.3	8	25	76	10.9	22.8	42.1	37.1	28	33	14	22.1	22	44
AS4002F-10-X□	10	18.5				76.9	10.3	22.7	51.6	44.1				21	22	76
AS4002F-12-X□	12	21.7				81.3	11.3	23.7	52.6	45.1				22	22	82

Note) Reference dimensions

Inch Size

Model	Applicable tubing O.D. ϕd	D1	D2	D3	D4	L1	L2	L3	L4 (Note)		L5	L6	L7	L8	M1	Weight (g)
									Max.	Min.						
AS1002F-01-X□	1/8"	8.4	3.3	5.5	9.1	36	4.5	11.2	23.8	21	11	15.4	8.8	9.8	12.7	5
AS1002F-03-X□	5/32"	9.3				37	5.2	11.9	24.5	21.7				10.1	12.7	5.5
AS1002F-07-X□	1/4"	12	3.3	5.5	10	39.5	6.1	12.8	25.5	22.7	12.6	17	10.5	12.8	13.7	6.5
AS2002F-03-X□	5/32"	9.3				40.7	5.2	12.3	28.9	25.4				11.5	12.7	8.5
AS2002F-07-X□	1/4"	12	4.3	7.8	14	42.6	6.5	13.6	30.2	26.7	17	22.8	12	12.8	13.7	9.5
AS2052F-07-X□	1/4"	13.2				53.4	6.9	16.5	34.7	29.7				15.7	17	19
AS2052F-09-X□	5/16"	15.2	4.3	8	19.3	57.2	8	17.6	35.8	30.8	22	25	12	16.1	18	22
AS3002F-07-X□	1/4"	13.2				59	7.4	19.3	38.6	33.6				20.5	17	35
AS3002F-09-X□	5/16"	15.2	4.3	8	25	65	8.2	20.1	39.4	34.4	28	33	14	18	21	38
AS3002F-11-X□	3/8"	18.5				69.8	9.8	21.7	41	36				21	22	52
AS4002F-11-X□	3/8"	18.5	4.3	8	25	76.9	10.3	22.7	51.6	44.1	28	33	14	21	22	86
AS4002F-13-X□	1/2"	21.7				81.3	11.3	23.7	52.6	45.1				22	22	95

Note) Reference dimensions

Proper tightening torque for a lock nut is shown in the table below.

For standard installation, turn 15 to 30° using tool, after fastening by hand.

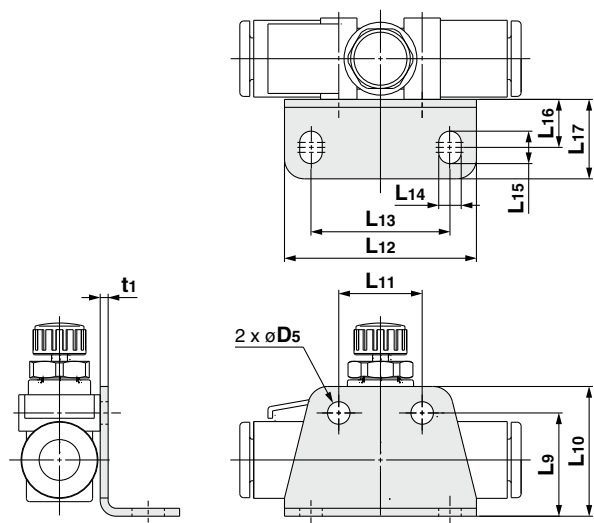
Pay attention not to over tighten the product.

Model	Proper tightening torque (N·m)
AS1002F-02-X□	0.07
AS1002F-X□	0.2
AS2002F-X□	0.3
AS2052F-X□	1
AS3002F-X□	2
AS4002F-X□	4

Dimensions

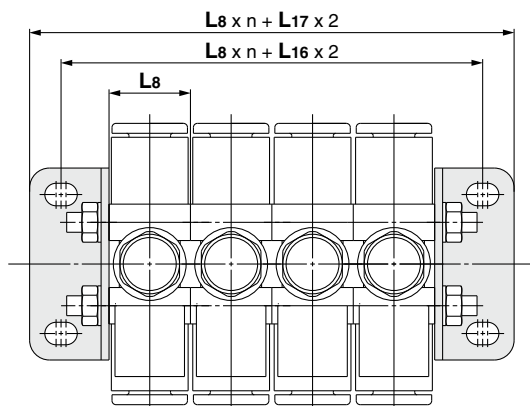
L-bracket

Bracket on a single side



Part no.	Applicable series	D5	L9	L10	L11	L12	L13	L14	L15	L16	L17	t1
AS-12L	AS1002F-02-X□	3.4	9.9	13.4	11	27.5	19.5	3.4	4.9	7.3	12	1
AS-10L	AS1002F-X□		14.8	18.3								
AS-20L	AS2002F-X□		15.6	19.6	12.6	29	21					1.2
AS-25L	AS2052F-X□		19.6	24.6	17	38	28					
AS-30L	AS3002F-X□	4.5	24.8	29.8	22	43	33	4.5	6.5	9.5	15.5	1.4
AS-40L	AS4002F-X□		25.7	30.7	28	49	39					

Brackets on both sides

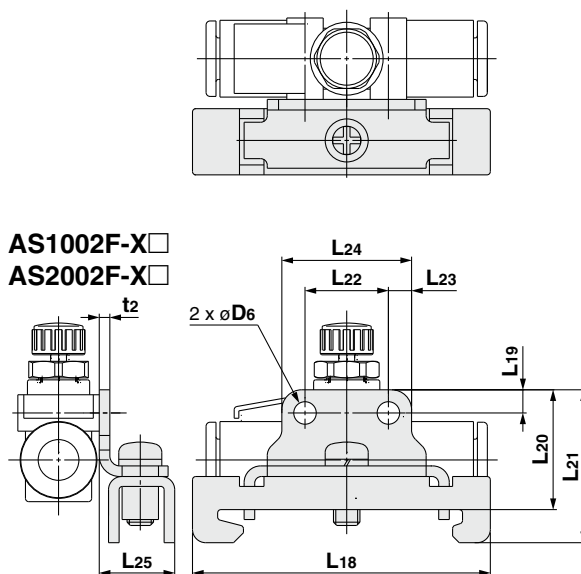


*1 Refer to page 265 for L8.

*2 The above figure shows the manifold with controllers connected using two L-brackets and a threaded stud kit for manifold.
Refer to page 264 for threaded stud kits for manifold.

DIN rail mounting bracket

Bracket on a single side



AS1002F-X□

AS2002F-X□

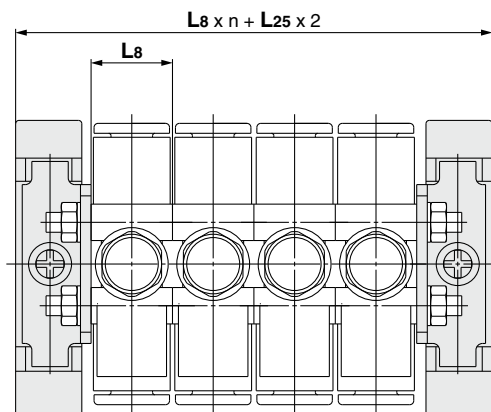
AS2052F-X□

AS3002F-X□

AS4002F-X□

Part no.	Applicable series	D6	L18	L19	L20	L21	L22	L23	L24	L25	t2	
AS-10D	AS1002F-X□	3.4	45	3.5	18.2	23.2	11	3.5	18	11.2	1.6	
AS-20D	AS2002F-X□				18.6	23.6	12.6		19.6			
AS-25D	AS2052F-X□	4.5		4.4	22	27	17	4.4	25.8			
AS-30D	AS3002F-X□				27.2	32.2	22		30.8			
AS-40D	AS4002F-X□				28.1	33.1	28		36.8			

Brackets on both sides



*1 Refer to page 265 for L8.

*2 The above figure shows the manifold with controllers connected using two DIN rail mounting brackets and a threaded stud kit for manifold.
Refer to page 264 for threaded stud kits for manifold.

Dual Speed Controller with One-touch Fitting

ASD-X12

(White Vaseline Specification)

RoHS

Enables bi-directional flow control. Unrestricted 360° tube mounting direction.



Model

Part no.	Port size	Applicable tubing O.D.											
		Metric size					Inch size						
		ø4	ø6	ø8	ø10	ø12	ø1/8"	ø5/32"	ø3/16"	ø1/4"	ø5/16"	ø3/8"	
ASD230F-M5-X12	M5 x 0.8	●	●										
ASD330F-01-X12	R 1/8		●	●									
ASD430F-02-X12	R 1/4		●	●	●								
ASD530F-02-X12	R 1/4		●	●	●	●							
ASD530F-03-X12	R 3/8		●	●	●	●							
ASD630F-04-X12	R 1/2				●	●							
ASD230F-U10/32-X12	10-32 UNF						●	●	●	●			
ASD330F-N01-X12	NPT 1/8								●				
ASD430F-N02-X12	NPT 1/4									●	●	●	
ASD530F-N02-X12	NPT 1/4									●	●	●	
ASD530F-N03-X12	NPT 3/8									●	●	●	
ASD630F-N04-X12	NPT 1/2											●	

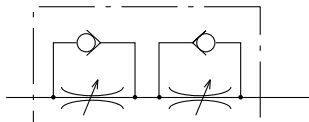
Specifications

Fluid	Air
Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperatures	-5 to 60°C (No freezing)
Applicable tubing material ⁽¹⁾	Nylon, Soft nylon, Polyurethane, FEP, PFA
Option	Round lock nut

Note 1) Use caution regarding the max. operating pressure when soft nylon or polyurethane tubing is used.
(Refer to the [Web Catalog](#) for details.)

Note 2) Brass parts are all electroless nickel plated.
The lock nut on the meter-out type is zinc chromated (the round lock nut is electroless nickel plated), while the meter-in type is black zinc chromate plated.

Symbol



Flow Direction Symbols on Body

	Meter-out type	Meter-in type
Indication symbol		
Symbol		

Flow Rate and Effective Area

Model		ASD230F-X12	ASD330F-X12	ASD430F-X12		ASD530F-X12			ASD630F-X12	
Tubing O.D.	Metric size	ø4, ø6	ø6, ø8	ø6	ø8, ø10	ø6	ø8	ø10, ø12	ø10	ø12
	Inch size	ø1/8" ø5/32" ø3/16" ø1/4"	ø3/16" ø1/4"	—	ø1/4" ø5/16" ø3/8"	ø1/4"	ø5/16"	ø3/8"	—	ø3/8"
	Flow rate L/min (ANR)	75	175	295	350	500	600	700	1200	1300
Controlled flow (Free flow)	Sonic conductance dm ³ /(s·bar)	0.21	0.49	0.82	0.97	1.4	1.7	1.9	3.3	3.6

Note) Flow rate values are measured at 0.5 MPa and 20°C.

How to Order

ASD 3 30 **F** - 01 - 06 **S** - **X12** -

Body size

2	M5 standard
3	1/8 standard
4	1/4 standard
5	3/8 standard
6	1/2 standard

Universal

With One-touch fitting

Thread type

Nil	Metric thread (M5)
	Unified thread (10-32 UNF)
	R
N	NPT

Lock nut option

Nil	Hexagon lock nut
J	Round lock nut

White vaseline

With seal Note)

Note) M5 and U10/32 sizes: s (with seal) is not necessary.

Applicable tubing O.D. Note)

Metric size

04	ø4
06	ø6
08	ø8
10	ø10
12	ø12

Inch size

01	ø1/8"
03	ø5/32"
05	ø3/16"
07	ø1/4"
09	ø5/16"
11	ø3/8"

Note) For applicable tubing O.D. selection, refer to the Model on page 267.

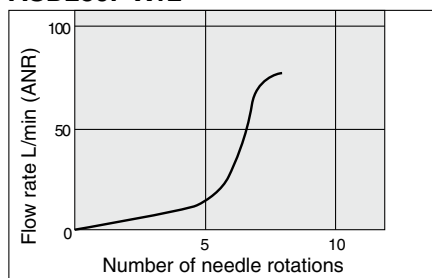
Bore size

M5	M5 x 0.8
U10/32	10-32 UNF
01	1/8
02	1/4
03	3/8
04	1/2

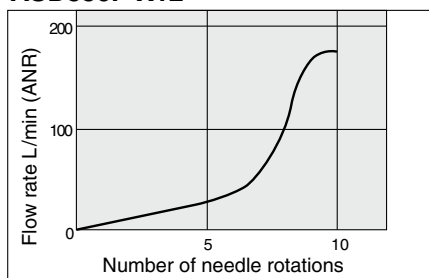
Needle Valve/Flow Rate Characteristics (Inlet Pressure: 0.5 MPa)

Note) The flow rate characteristics are representative values.

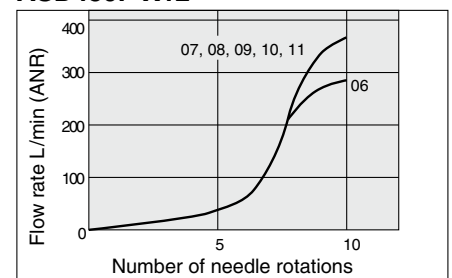
ASD230F-X12



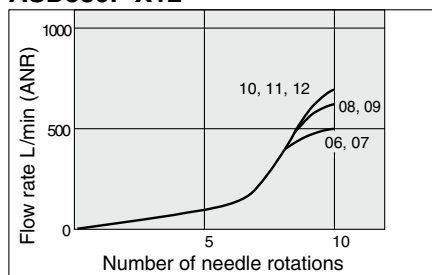
ASD330F-X12



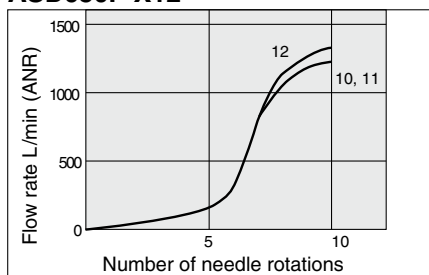
ASD430F-X12



ASD530F-X12



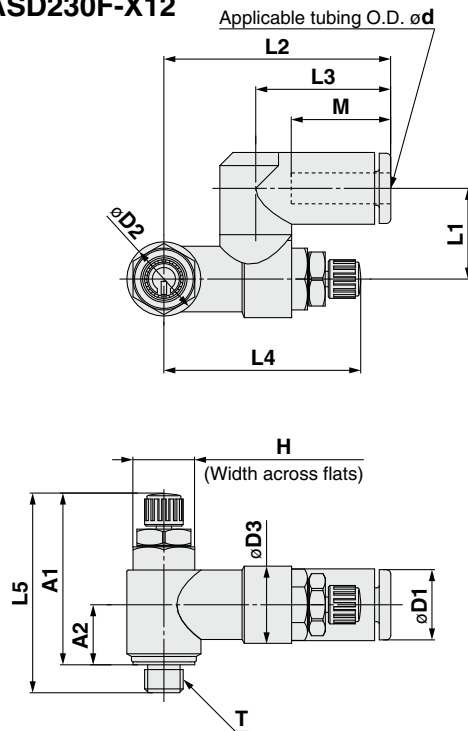
ASD630F-X12



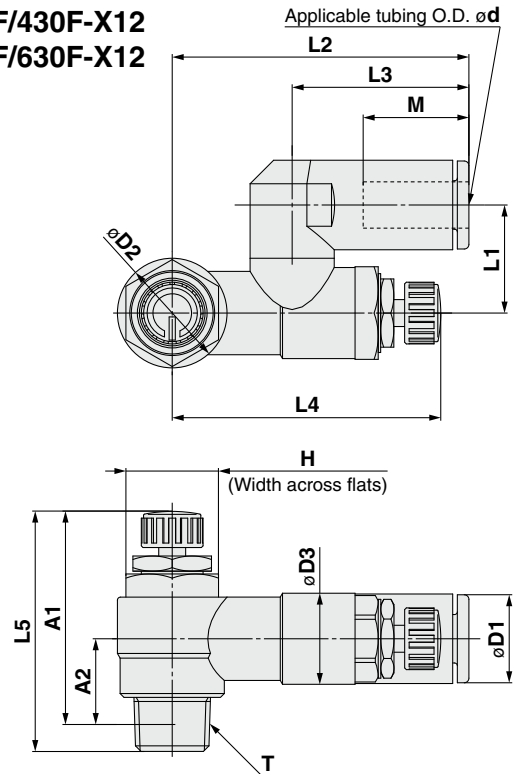
ASD-X12

Dimensions: Metric Size

ASD230F-X12



**ASD330F/430F-X12
ASD530F/630F-X12**



Metric Size

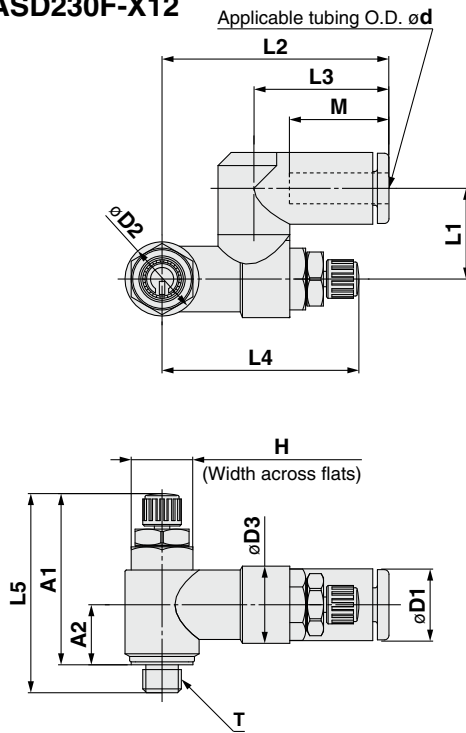
Model	d	T	H	D1	D2	D3	L1	L2	L3	L4 Note 1)		L5 Note 1)		A1 Note 2)		Note 2) A2	M	Weight (g)
										Max.	Min.	Max.	Min.	Max.	Min.			
ASD230F-M5-04-X12	4	M5 x 0.8	8	9.3	9.6	10	11.7	29.4	17.5	28.3	25.5	28.6	25.8	25	22.2	7.8	12.9	12
ASD230F-M5-06-X12	6			11.6				32.5	20.6								13.7	13
ASD330F-01-06S-X12	6	R 1/8	12	11.6	14.2	11.8	14	38.5	22.9	39.6	34.6	35.2	30.2	32.1	27.1	10.6	13.7	29
ASD330F-01-08S-X12	8			15.2			15.8	44.8	28.2	38.9	33.9						18.5	31
ASD430F-02-06S-X12	6	R 1/4	17	12.8	18.5	15	18	43.5	25.2	41.7	36.7	39.9	34.9	34.4	29.4	11	17	53
ASD430F-02-08S-X12	8			15.2			18	46.5	28.2								18.5	55
ASD430F-02-10S-X12	10			18.5			19.7	49.3	31								21	58
ASD530F-02-06S-X12	6	R 1/4	19	12.8	23	19.8	20.3	48.3	25.2	46.9	41.9	48.3	43.3	42.8	37.8	15.4	17	74
ASD530F-02-08S-X12	8			15.2			20.3	51.3	28.2								18.5	76
ASD530F-02-10S-X12	10			18.5			23.1	54.1	32.6								21	80
ASD530F-02-12S-X12	12			20.9			23.1	55.9	34.4								22	83
ASD530F-03-06S-X12	6	R 3/8	19	12.8	23	19.8	20.3	48.3	25.2	46.9	41.9	45.4	40.4	40	35	14	17	74
ASD530F-03-08S-X12	8			15.2			20.3	51.3	28.2								18.5	93
ASD530F-03-10S-X12	10			18.5			23.1	54.1	32.6								21	98
ASD530F-03-12S-X12	12			20.9			23.1	55.9	34.4								22	101
ASD630F-04-10S-X12	10	R 1/2	24	18.5	28.6	26.5	25.9	64.3	32.6	64.8	57.3	56.7	49.2	49.6	42.1	18.6	21	177
ASD630F-04-12S-X12	12			20.9				66.1	34.4								22	179

Note 1) Reference dimensions

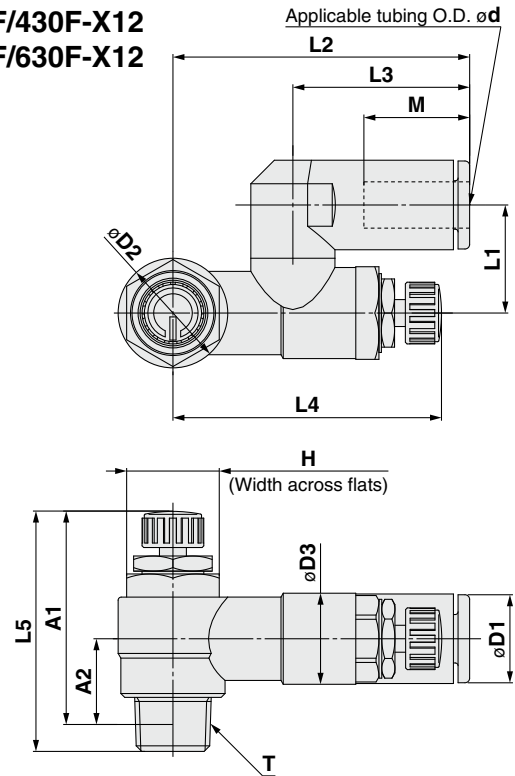
Note 2) Reference dimensions of M5 x 0.8, R threads after installation

Dimensions: Inch Size

ASD230F-X12



**ASD330F/430F-X12
ASD530F/630F-X12**



Inch Size

Model	d	T	H	D1	D2	D3	L1	L2	L3	L4 Note 1)		L5 Note 1)		A1 Note 2)		Note 2) A2	M	Weight (g)
										Max.	Min.	Max.	Min.	Max.	Min.			
ASD230F-U10/32-01-X12	1/8"	10-32 UNF	8	8.4	9.6	10	11.7	29.4	17.5	28.3	25.5	28.6	25.8	25	22.2	7.8	12.9	12
ASD230F-U10/32-03-X12	5/32"			9.3				35.2	23.3								16.5	13
ASD230F-U10/32-05-X12	3/16"			11.4				32.6	20.7								13.5	15
ASD230F-U10/32-07-X12	1/4"			12				32.6	20.7								13.5	13
ASD330F-N01-05S-X12	3/16"	NPT 1/8	12.7	11.6	14.2	11.8	14	39.5	23.9	39.6	34.6	35.2	30.2	32	27	10.6	16.5	30
ASD330F-N01-07S-X12	1/4"			13.2			15.8	42.2	25.6	38.9	33.9						17	31
ASD330F-N01-09S-X12	5/16"			15.2			15.8	44.8	28.2	38.9	33.9						18.5	31
ASD430F-N02-07S-X12	1/4"	NPT 1/4	17.5	13.2	18.5	15	18	43.9	25.6	41.7	36.7	39.9	34.9	34.6	29.6	11	17	55
ASD430F-N02-09S-X12	5/16"			15.2			18	46.5	28.2								18.5	55
ASD430F-N02-11S-X12	3/8"			18.5			19.7	49.3	31								21	62
ASD530F-N02-07S-X12	1/4"	NPT 1/4	19	13.2	23	19.8	20.3	48.7	25.6	46.9	41.9	48.3	43.3	43	38	15.4	17	76
ASD530F-N02-09S-X12	5/16"			15.2			20.3	51.3	28.2								18.5	76
ASD530F-N02-11S-X12	3/8"			18.5			23.1	54.1	32.6								21	84
ASD530F-N03-07S-X12	1/4"	NPT 3/8	19	13.2	23	19.8	20.3	48.7	25.6	46.9	41.9	45.4	40.4	40.3	35.3	14	17	93
ASD530F-N03-09S-X12	5/16"			15.2			20.3	51.3	28.2								18.5	93
ASD530F-N03-11S-X12	3/8"			18.5			23.1	54.1	32.6								21	102
ASD630F-N04-11S-X12	3/8"	NPT 1/2	23.8	18.5	28.6	26.5	25.9	64.3	32.6	64.8	57.3	56.7	49.2	49.6	42.1	18.6	21	180

Note 1) Reference dimensions

Note 2) Reference dimensions of U10/32 and NPT threads after installation

Speed Controller: Standard Type

In-line Type

AS-X12

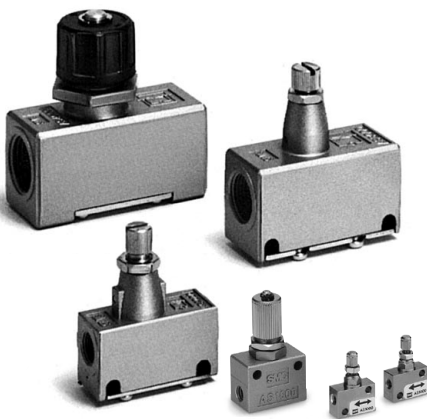
(White Vaseline Specification)

Compact size saves space.

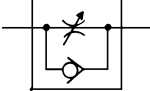
Speed may be accurately controlled even at low speeds.

Constant speed easily set.

Retainer prevents an accidental loss of needle.



Symbol



Model/Flow Rate and Effective Area

Model	Port size	Free flow		Controlled flow		Applicable cylinder bore size (mm)	Weight (g)
		Flow rate L/min (ANR)	Sonic conductance dm ³ /(s·bar)	Flow rate L/min(ANR)	Sonic conductance dm ³ /(s·bar)		
AS1000-M3-X12	M3 x 0.5	20	0.06	20	0.06	2.5, 4, 6	4.7
AS1000-M5-X12	M5 x 0.8	90	0.25	80	0.22	6, 10, 16, 20, 25	33
AS2000-01-X12	1/8	340	0.94	250	0.7	20, 25, 32, 40	90
AS2000-02-X12	1/4	340	0.94	250	0.7		115
AS3000-02-X12	1/4	810	2.3	810	2.3	32, 40, 50, 63	130
AS3000-03-X12	3/8	810	2.3	810	2.3		124
AS4000-02-X12	1/4	1,670	4.6	1,670	4.6	40, 50, 63 80, 100	221
AS4000-03-X12	3/8	1,670	4.6	1,670	4.6		214
AS4000-04-X12	1/2	1,670	4.6	1,670	4.6		205
AS5000-02-X12	1/4	2,840	7.9	2,840	7.9	40, 50, 63 80, 100	242
AS5000-03-X12	3/8	4,270	11.9	4,270	11.9		233
AS5000-04-X12	1/2	4,270	11.9	4,270	11.9		224

Note) Flow rate values are measured at 0.5 MPa and 20°C.

Specifications

Fluid	Air
Proof pressure Note)	1.5 MPa (1.05 MPa)
Max. operating pressure Note)	1 MPa (0.7 MPa)
Min. operating pressure Note)	0.05 MPa (0.1 MPa)
Ambient and fluid temperatures	-5 to 60°C (No freezing)

Note) (): Values for AS1000

Accessory

Description	Part no.	Applicable model
Nipple	M-5N	AS1000

Note) AS1000 with nipple: AS1000-M5-N

How to Order

AS

1

000

-

M5

-

X12

-

Body size

1	M3, M5 standard
2	1/8, 1/4 standard
3	3/8 standard
4	1/2 standard
5	1/2 standard

Lock nut option

Nil	Hexagon lock nut
J Note)	Round lock nut

Note) Only for AS1000

White vaseline

Thread type

Nil	Metric thread (M3, M5)
	Rc
N	NPT
F	G

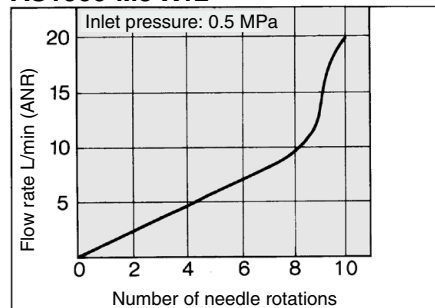
Port size

	Port size	Applicable series
M3	M3 x 0.5	AS1000
M5	M5 x 0.8	AS1000
01	1/8	AS2000
02	1/4	AS2000, 3000, 4000, 5000
03	3/8	AS3000, 4000, 5000
04	1/2	AS4000, 5000

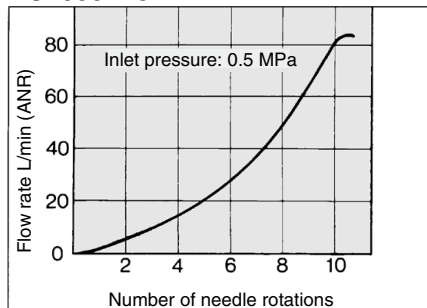
Needle Valve/Flow Rate Characteristics

Note) The flow rate characteristics are representative values.

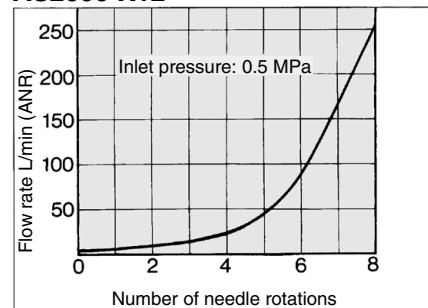
AS1000-M3-X12



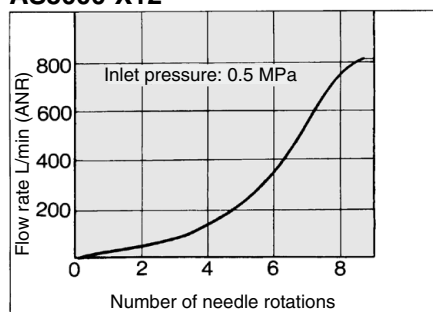
AS1000-M5-X12



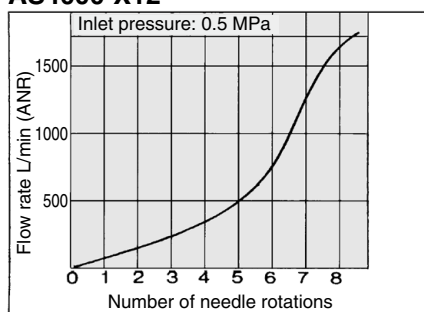
AS2000-X12



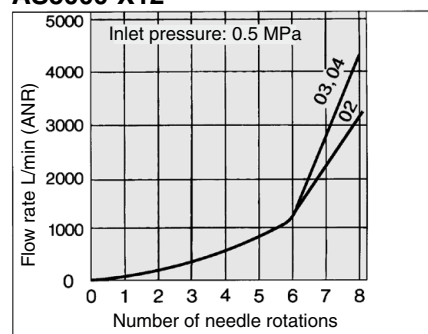
AS3000-X12



AS4000-X12

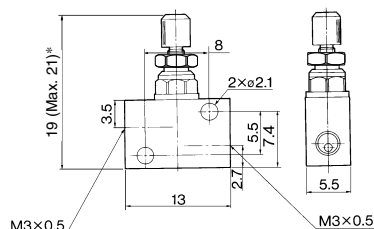


AS5000-X12



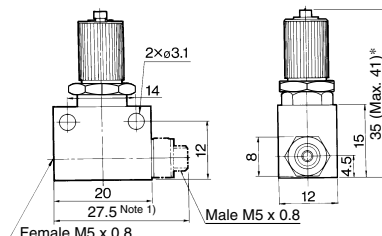
Dimensions

AS1000-M3-X12



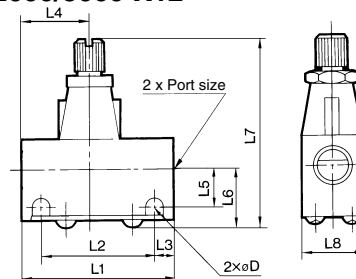
* Reference dimensions

AS1000-M5-X12



* Reference dimensions
Note 1) Dimension for AS1000-M5-N

AS2000/3000-X12

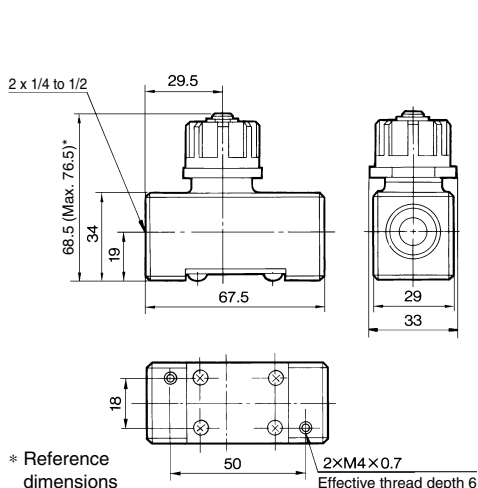


Dimensions

Model	Port size	L1	L2	L3	L4	L5	L6	L7 (Note 1)	L8	D
AS2000-01-X12	1/8	40	30	5	17	10	15.5	54.5	50	16 4.5
AS2000-02-X12	1/4	40	30	5	23	11.5	17	56	51.5	20 4.5
AS3000-02, 03-X12	1/4, 3/8	56	45.5	5.25	25	13.2	20.6	68	61	26 5.5

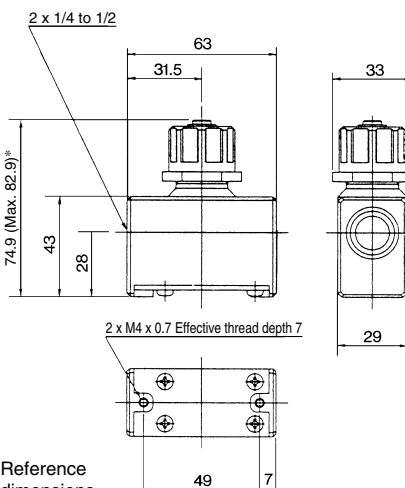
Note 1) L7: Reference dimensions

AS4000-X12



* Reference dimensions

AS5000-X12



* Reference dimensions

Quick Exhaust Valve

AQ-X113

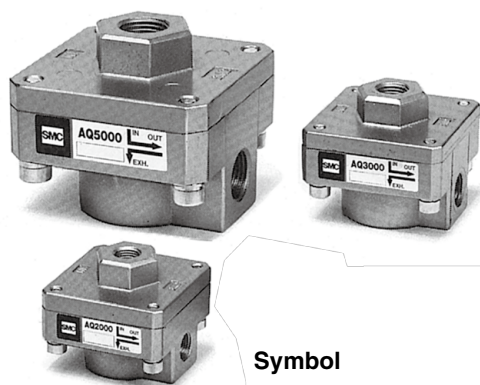
(White Vaseline Specification)

Excellent exhaust characteristics

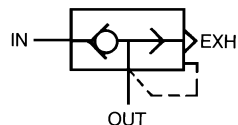
Large flow capacity

Compact and lightweight

A wide selection of models



Symbol



Model

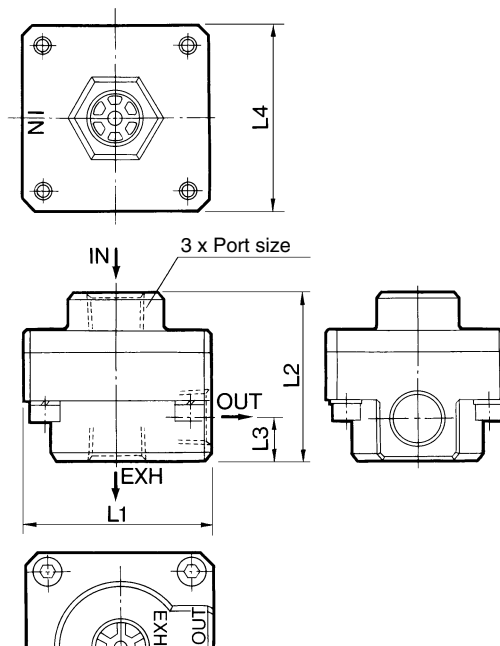
Model	Port size	Sonic conductance $\text{dm}^3/(\text{s}\cdot\text{bar})$		Weight (g)
		IN → OUT	OUT → EXH	
AQ2000-01-X113	1/8	5	5	110
AQ2000-02-X113	1/4	7	8	105
AQ3000-02-X113	1/4	8	8.4	215
AQ3000-03-X113	3/8	12	14	205
AQ5000-04-X113	1/2	21	23	690
AQ5000-06-X113	3/4	27	36	650

Specifications

Fluid		Air
Proof pressure		1.5 MPa
Max. operating pressure	AQ2000 to 5000	1 MPa
Min. operating pressure	AQ2000 to 5000	0.05 MPa
Ambient and fluid temperatures		-5 to 60 (No freezing)

Dimensions

AQ2000/3000/5000-X113



How to Order

AQ 2 000 - 02 - X113

Standard size

2	1/4
3	3/8
5	3/4

White vaseline

Type

Symbol	Type
0	Diaphragm

Thread type

Nil	Metric thread (M5)
N	Rc
F	NPT
	G

Port size

Port size	Applicable series
01	1/8 AQ2000
02	1/4 AQ2000, 3000
03	3/8 AQ3000
04	1/2 AQ5000
06	3/4 AQ5000

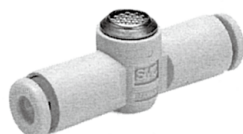
Model	Port size	L1	L2	L3	L4
AQ2000-X113	1/8, 1/4	45	40	10	45
AQ3000-X113	1/4, 3/8	56	50	12.5	56
AQ5000-X113	1/2, 3/4	85	75	18	85

Quick Exhaust Valve with One-touch Fittings

AQ240F/340F-X12 (White Vaseline Specification)



With exhaust port fitting



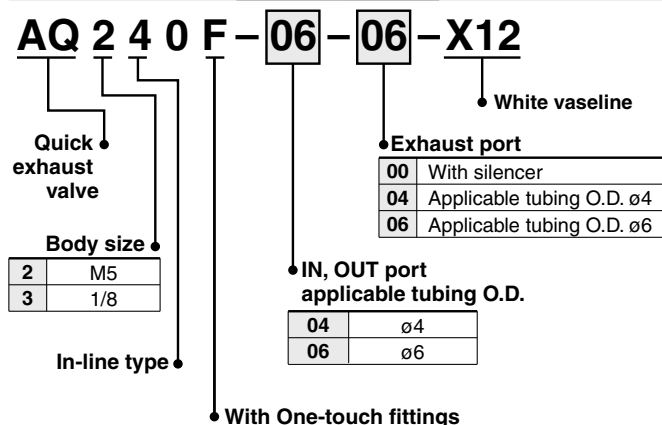
With silencer

Space-saving

Rectilinear IN-OUT tubing connections

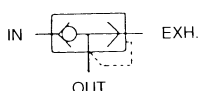
- With One-touch fittings and silencer
- With silencer
- Lightweight (Resin body)

How to Order

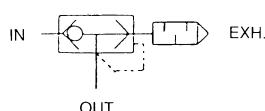


Note) Brass parts are all electroless nickel plated.

Symbol



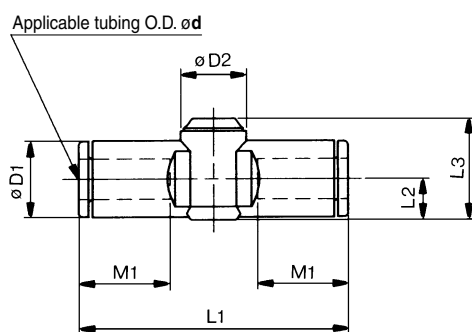
With exhaust port fitting



With silencer

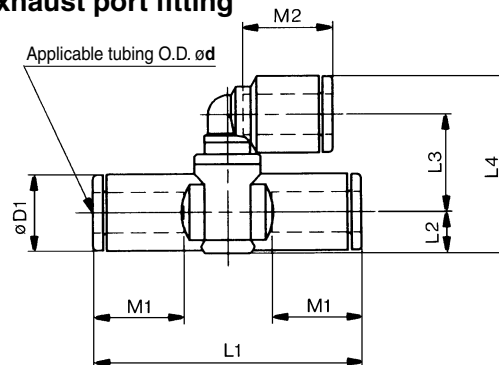
Dimensions

With silencer



Model	Tubing O.D. ød	D1	D2	L1	L2	L3	M1	Weight (g)
AQ240F-04-00-X12	4	9.3	10.0	39.2	5.2	14.3	12.9	5
AQ240F-06-00-X12	6	11.6	10.0	40.7	6.2	15.4	13.7	6
AQ340F-06-00-X12	6	11.6	11.8	44.8	6.3	19.5	13.7	11

With exhaust port fitting



Model	Tubing O.D. ød	D1	L1	L2	L3	L4	M1	M2	Weight (g)
AQ240F-04-04-X12	4	9.3	39.2	5.2	13.7	23.5	12.9	12.9	6
AQ240F-06-06-X12	6	11.6	40.7	6.2	14.7	26.7	13.7	13.7	8
AQ340F-06-06-X12	6	11.6	44.8	6.3	19.6	31.7	13.7	13.7	13

Specifications

Fluid	Air
Proof pressure	1.5 MPa
Max. operating pressure	1 MPa
Min. operating pressure	0.1 MPa
Ambient and fluid temperatures	-5 to 60°C (No freezing)
Applicable tubing material ^{Note 1)}	Nylon, Soft nylon, Polyurethane, FEP, PFA

Note 1) Use caution regarding the max. operating pressure when soft nylon or polyurethane tubing is used. (Refer to the **Web Catalog** for details.)

Model

Model	Applicable tubing O.D.		Sonic conductance dm ³ /(s·bar)	
	4	6	IN → OUT	OUT → EXH.
AQ240F-04-□-X12	●		0.34	0.5
AQ240F-06-□-X12		●	0.48	0.54
AQ340F-06-□-X12		●	0.8	0.8

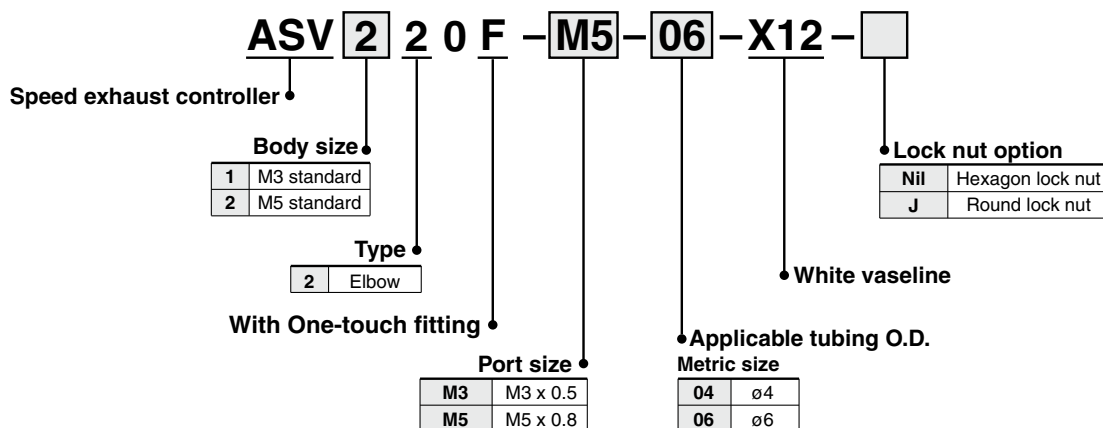
Speed Exhaust Controller

ASV-X12

(White Vaseline Specification)

Size: M3, M5

How to Order



Integration of a quick exhaust valve and an exhaust restrictor permits high-speed cylinder operation.

- Silencer and One-touch fittings are installed.
- Brass parts are all electroless nickel plated.



Model

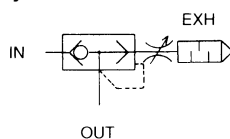
Model	Port size	Applicable tubing O.D. (mm)		Sonic conductance dm ³ /(s·bar)	
		4	6	IN → OUT	OUT → EXH.
ASV120F-M3-X12	M3 x 0.5	●		0.06	0.06
ASV220F-M5-X12	M5 x 0.8	●	●	0.26	0.26

Specifications

Series	ASV120F-X12	ASV220F-X12
Fluid	Air	
Proof pressure	1.5 MPa	
Max. operating pressure	1 MPa	
Min. operating pressure	0.1 MPa	
Ambient and fluid temperatures	-5 to 60°C (No freezing)	
Applicable tubing material ^{Note)}	Nylon, Soft nylon, Polyurethane, FEP, PFA	
Option	Round lock nut	

Note) Use caution regarding the max. operating pressure when soft nylon or polyurethane tubing is used. (Refer to the **Web Catalog** for details.)

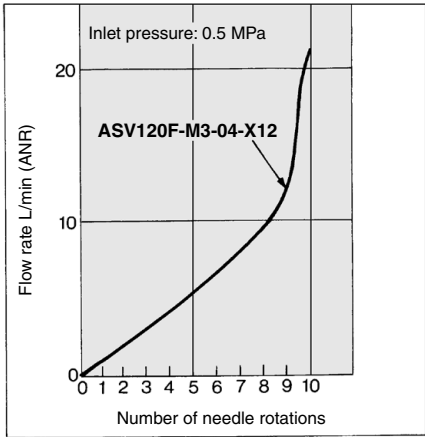
Symbol



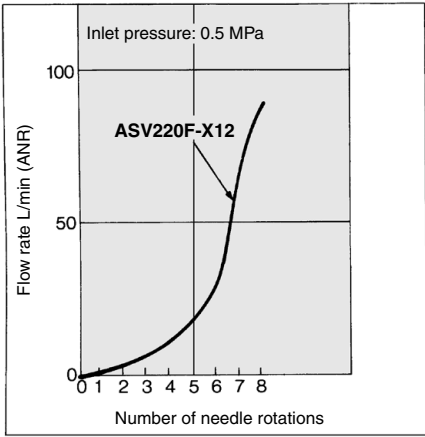
Needle Valve/Flow Rate Characteristics

Note) The flow rate characteristics are representative values.

ASV120F-X12
OUT-Exhaust Flow

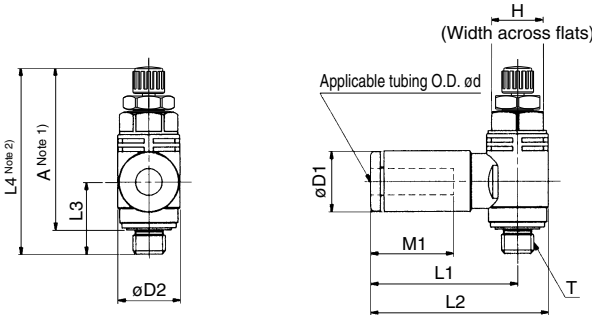


ASV220F-X12
OUT-Exhaust Flow



Dimensions

ASV120F/220F-X12



Metric Size

Model	Applicable tubing O.D. d	T	H	D1	D2	L1	L2	L3	L4		A*		M1	Weight (g)
									Max.	Min.	Max.	Min.		
ASV120F-M3-04-X12	4	M3 x 0.5	5.5	9.3	7.2	21.4	25	9.8	28.6	26.1	25.8	23.3	12.7	5
ASV220F-M5-04-X12	4	M5 x 0.8	8	9.3	9.6	22.8	27.6	11.1	31.4	28.6	27.7	24.9	12.7	8
ASV220F-M5-06-X12	6	M5 x 0.8	8	11.6	9.6	23.6	28.4	11.1	31.4	28.6	27.7	24.9	13.5	9

Note 1) Reference dimensions of M thread after installation Note 2) L4: Reference dimensions

Check Valve

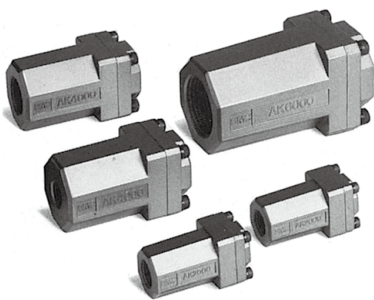
AK-X113

(White Vaseline Specification)

Large flow capacity

Low cracking pressure: 0.02 MPa

A wide variation of models



Model

Model	Port size	Sonic conductance $\text{dm}^3/(\text{s}\cdot\text{bar})$	Weight (g)
AK2000-01-X113	1/8	5	105
AK2000-02-X113	1/4	5.5	100
AK4000-02-X113	1/4	9.4	155
AK4000-03-X113	3/8	17	150
AK4000-04-X113	1/2	19	140
AK6000-06-X113	3/4	40	345
AK6000-10-X113	1	46	315

Specifications

Fluid	Air
Proof pressure	1.5 MPa
Maximum operating pressure	1 MPa
Minimum operating pressure	0.02 MPa
Ambient and fluid temperatures	-5 to 60°C (No freezing)

How to Order

AK 2 000 - 02 - X113

Standard size

2	1/4
4	1/2
6	1

Thread type

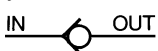
NII	Rc
N	NPT
F	G

Port size

Port size	Applicable series
01	1/8 AK2000
02	1/4 AK2000, 4000
03	3/8 AK4000
04	1/2 AK4000
06	3/4 AK6000
10	1 AK6000

White vaseline

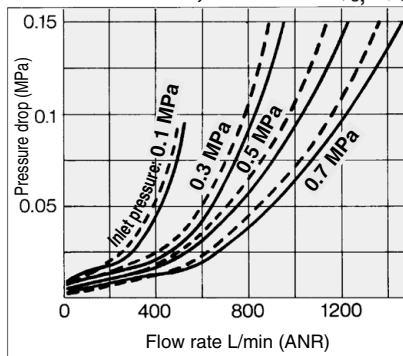
Symbol



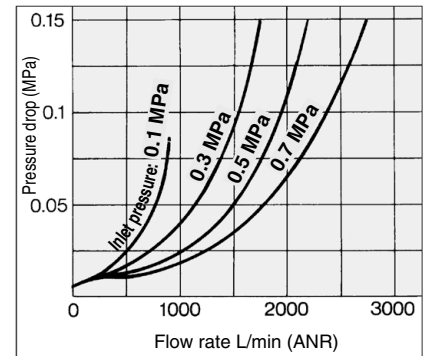
Flow Rate Characteristics

Note) The flow rate characteristics are representative values.

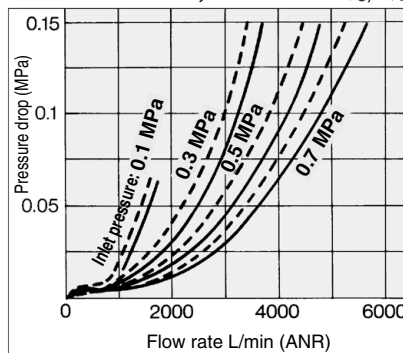
AK2000-01-X113, -02-X113 -- 1/8, 1/4



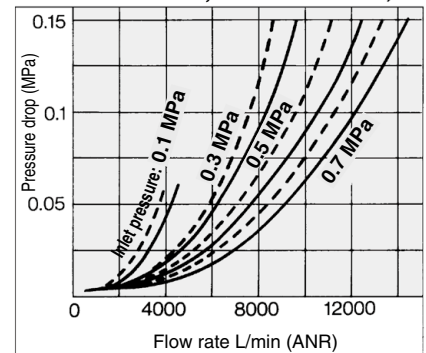
AK4000-02-X113



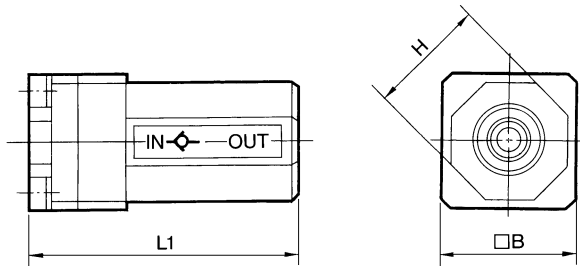
AK4000-03-X113, -04-X113 -- 3/8, 1/2



AK6000-06-X113, -10-X113 -- 3/4, 1



Dimensions



Model	Port size	L1	B	H
AK2000-01, 02-X113	1/8, 1/4	50	25	22
AK4000-02, 03, 04-X113	1/4, 3/8, 1/2	67	36	36
AK6000-06, 10-X113	3/4, 1	95	50	50

Pneumatic Auxiliary Equipment
Pressure Control Equipment
Air Preparation Equipment
Directional Control Valves
Paint Process Equipment

Check Valve with One-touch Fittings **AKH-X12** (White Vaseline Specification)

How to Order

Straight type

AKH 04 - 00 - X12

Male connector type

AKH 04 A - 01 S - X12

Applicable tubing O.D.

Metric size	Inch size
04	03
06	07
08	09
10	11
12	13

Check valve free flow direction

A	From male thread to One-touch fitting	
B	From One-touch fitting to male thread	

• White vaseline

• With seal (Standard)

* M5 and 10-32 UNF types are not required.

• Port size

M5	M5 x 0.8
U10/32	10-32UNF
01	1/8
02	1/4
03	3/8
04	1/2

• Thread type

Nil	Metric thread (M5)
	Unified thread (10-32UNF)
	R
N	NPT

Applicable Tubing O.D./Port Size Combinations

Metric size							Inch size						
Model	Applicable tubing O.D.	Port size R					Model	Applicable tubing O.D.	Port size NPT				
		M5	1/8	1/4	3/8	1/2			10-32 UNF	1/8	1/4	3/8	1/2
AKH04□-X12	ø4	●	●				AKH03□-X12	ø5/32	●	●			
AKH06□-X12	ø6	●	●	●			AKH07□-X12	ø1/4	●	●	●		
AKH08□-X12	ø8		●	●	●		AKH09□-X12	ø5/16		●	●	●	
AKH10□-X12	ø10			●	●	●	AKH11□-X12	ø3/8			●	●	●
AKH12□-X12	ø12				●	●	AKH13□-X12	ø1/2				●	●

Specifications



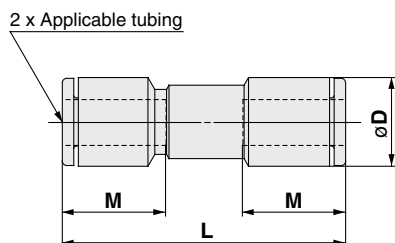
Fluid	Air
Proof pressure	1.5 MPa
Operating pressure range	-100 kPa to 1 MPa
Cracking pressure	0.005 MPa Note 1)
Ambient and fluid temperatures	-5 to 60°C (No freezing)
Applicable tubing material Note 2)	Nylon, Soft nylon, Polyurethane, FEP, PFA

Note 1) The valve does not open fully at this pressure level.

Note 2) Use caution regarding the max. operating pressure when soft nylon or polyurethane tubing is used.
(Refer to the **Web Catalog** for details.)

Dimensions

Straight type: AKH



Metric Size

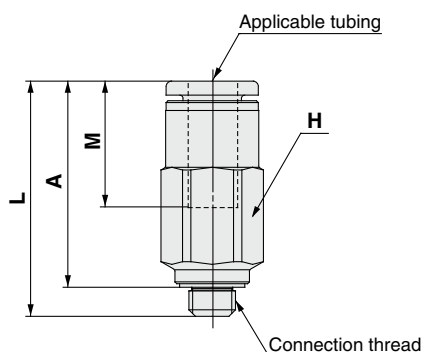
Applicable tubing O.D.	Model	øD	L	M	Sonic conductance dm ³ /(s·bar)	Weight (g)
4	AKH04-00-X12	9.3	33.5	12.7	0.56	3
6	AKH06-00-X12	11.6	37.1	13.5	1.3	5
8	AKH08-00-X12	15.2	53.3	18.5	2.8	10
10	AKH10-00-X12	18.5	63.6	21	4.8	17
12	AKH12-00-X12	21.7	70.2	22	6.8	25

Inch Size

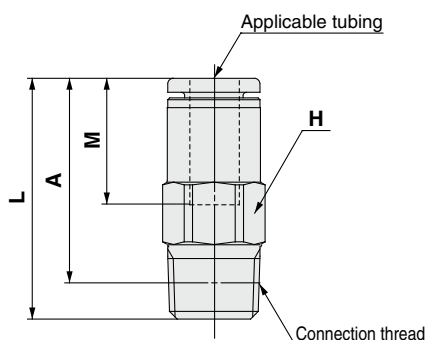
Applicable tubing O.D.	Model	øD	L	M	Sonic conductance dm ³ /(s·bar)	Weight (g)
5/32	AKH03-00-X12	9.3	33.5	12.7	0.56	3
1/4	AKH07-00-X12	12	39	13.6	1.3	6
5/16	AKH09-00-X12	15.2	53.3	18.5	2.8	10
3/8	AKH11-00-X12	18.5	63.6	21	4.8	17
1/2	AKH13-00-X12	21.7	70.2	22	6.8	24

Male connector type: AKH

<For M5, UNF10-32>



<For R, NPT>



Metric Size

Applicable tubing O.D.	Connection thread R	Model	H (Width across flats)	L	A*	M	Sonic conductance dm ³ /(s·bar)	Weight (g)
4	M5 x 0.8	AKH04□-M5-X12	8	24.3	21.2	12.7	0.56	5
	1/8	AKH04□-01S-X12	10	24.6	20.6			10
6	M5 x 0.8	AKH06□-M5-X12	10	25.8	22.2	13.5	0.56	8
	1/8	AKH06□-01S-X12		26.9	22.9		1.3	
	1/4	AKH06□-02S-X12	14	30	24	17	1.3	22
8	1/8	AKH08□-01S-X12	14	31.7	27.7	18.5	1.3	16
	1/4	AKH08□-02S-X12		42	36		2.8	24
	3/8	AKH08□-03S-X12	17	42	35.5	21	2.8	43
10	1/4	AKH10□-02S-X12	17	54.3	48.3	21	4.8	45
	3/8	AKH10□-03S-X12		47.3	40.8			39
	1/2	AKH10□-04S-X12	22	49.3	41.3	22	4.8	80
12	3/8	AKH12□-03S-X12	19	60.5	54	22	6.8	62
	1/2	AKH12□-04S-X12	22	54.5	46.5			80

* Reference dimensions of R thread after installation

Inch Size

Applicable tubing O.D.	Connection thread NPT	Model	H (Width across flats)	L	A*	M	Sonic conductance dm ³ /(s·bar)	Weight (g)
5/32	10-32 UNF	AKH03□-U10/32-X12	8	24.3	21.2	12.7	0.56	5
	1/8	AKH03□-N01S-X12	11.11	24.6	20.6			10
1/4	10-32 UNF	AKH07□-U10/32-X12	11.11	25.8	22.7	13.6	0.56	10
	1/8	AKH07□-N01S-X12		26.9	22.9		1.3	11
	1/4	AKH07□-N02S-X12	14.29	31	25	17	1.3	18
5/16	1/8	AKH09□-N01S-X12	14.29	31.7	27.7	18.5	1.3	16
	1/4	AKH09□-N02S-X12		42	36		2.8	24
	3/8	AKH09□-N03S-X12	17.46	42	35.5	21	2.8	43
3/8	1/4	AKH11□-N02S-X12	17.46	54.2	48.3	21	4.8	47
	3/8	AKH11□-N03S-X12		47.2	40.7			40
	1/2	AKH11□-N04S-X12	22.23	49.2	41.2	22	4.8	79
1/2	3/8	AKH13□-N03S-X12	22.23	60.5	54	22	6.8	87
	1/2	AKH13□-N04S-X12		54.5	46.5			85

* Reference dimensions of NPT thread after installation

2-Color Display

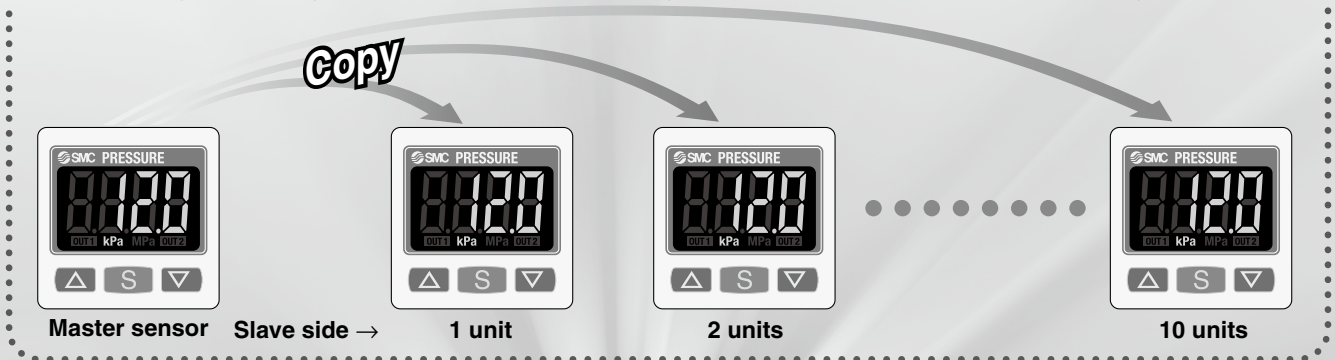
High-Precision Digital Pressure Switch



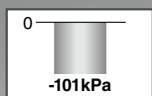
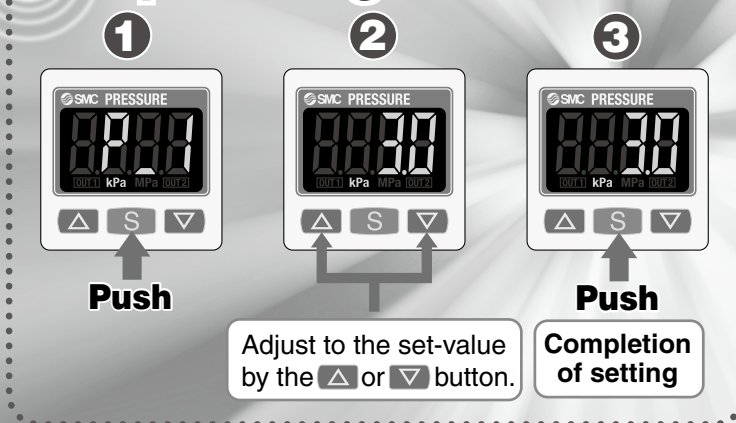
Can copy to up to 10 switches simultaneously.

The settings of the master sensor can be copied to the slave sensors.

- Reducing setting labor
- Minimizing risk of mistakes in setting

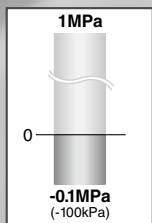


3-step setting



Added vacuum range.

- Rated pressure range: 0.0 to -101.0 kPa



Expanded pressure range for positive-pressure type to the vacuum range.

- Rated pressure range: -0.100 to 1.000 MPa

2 added outputs

- NPN or PNP open collector 2 outputs
- NPN or PNP open collector 1 output + Analog output (1 to 5 V or 4 to 20 mA)



ISE30A-X2

2-Color Display High-Precision Digital Pressure Switch

ISE30A-X2 (Grease-free Specification)



How to Order

For positive pressure

ISE30A - 01 - N - M - - - - X2

Rated pressure range

ISE30A -0.1 to 1 MPa

Piping specifications

01	R1/8 (M5 female threaded)	
N01	NPT1/8 (M5 female threaded)	

Unit specifications

Nil	With display unit switching function Note 1)
M	Fixed SI unit Note 2)
P*	With display unit switching function Note 1) (Initial value psi)

* Made to order

Note 1) Under the New Measurement Law, sales of switches with the unit switching function have not been allowed for use in Japan.

Note 2) Unit: kPa, MPa

Option 1

Nil	Without lead wire	
L	Lead wire with connector (Lead wire length 2 m) Note)	
G	Lead wire with connector (Lead wire length 2 m) Note) With connector cover	

Note) For output types N and P, the number of core of lead wires will be 3, and for other types, it will be 4.

Output specifications

N	NPN open collector 1 output
P	PNP open collector 1 output
A	NPN open collector 2 outputs
B	PNP open collector 2 outputs
C*	NPN open collector 1 output + Analog voltage output
D*	NPN open collector 1 output + Analog current output
E*	PNP open collector 1 output + Analog voltage output
F*	PNP open collector 1 output + Analog current output

* Made to order

Grease-free

Option 3

Symbol	Operation manual Note)	Calibration certificate Note)
Nil	○	—
Y	—	—
K	○	○
T	—	○

Note) All texts in both English and Japanese.

Option 2

Nil	None
A1	Bracket A
A2	Bracket B
A3	Bracket C
B	Panel mount adapter
D	Panel mount adapter + Front protection cover

ISE30A-X2

For pressure switch precautions and specific product precautions, refer to the "Operation Manual" on the SMC website.

Specifications

Model			ISE30A-X2 (Positive pressure)
Rated pressure range			-0.100 to 1.000 MPa
Display/Set pressure range			-0.105 to 1.050 MPa
Withstand pressure			1.5 MPa
Display/Minimum unit setting			0.001 MPa
Applicable fluid			Air, Non-corrosive gas, Non-flammable gas
Power supply voltage			12 to 24 VDC ±10%, Ripple (p-p) 10% or less (with power supply polarity protection)
Current consumption			40 mA or less
Switch output			NPN or PNP open collector 1 output, NPN or PNP open collector 2 outputs
	Maximum load current		80 mA
	Maximum applied voltage		28 V (at NPN output)
	Residual voltage		1 V or less (with load current of 80 mA)
	Response time		2.5 ms or less (with anti-chattering function: 20, 100, 500, 1000, 2000 ms)
	Short circuit protection		Yes
Repeatability			±0.2% F.S. ±1 digit
Hysteresis	Hysteresis mode		Variable (0 or above) ^{Note 1)}
	Window comparator mode		
Analog output	^{Note 2)} Voltage output	Output voltage (Rated pressure range)	0.6 to 5 V ±2.5% F.S.
		Linearity	±1% F.S.
		Output impedance	Approx. 1 kΩ
	^{Note 3)} Current output	Output current (Rated pressure range)	2.4 to 20 mA ±2.5% F.S.
		Linearity	±1% F.S.
		Load impedance	Maximum load impedance: Power supply voltage 12 V: 300 Ω, Power supply voltage 24 V: 600 Ω Minimum load impedance: 50 Ω
Display			4-digit, 7-segment, 2-color LCD (Red/Green)
Display accuracy			±2% F.S. ±1 digit (Ambient temperature of 25 ±3°C)
Indicator light			Lights up when switch output is turned ON. OUT1: Green, OUT2: Red
Environment	Enclosure		IP40
	Operating temperature range		Operating: 0 to 50°C, Stored: -10 to 60°C (No freezing or condensation)
	Operating humidity range		Operating/Stored: 35 to 85% RH (No condensation)
	Withstand voltage		1000 VAC for 1 minute between terminals and housing
	Insulation resistance		50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing
Temperature characteristics			±2% F.S. (25°C reference)
Lead wire with connector			Oilproof heavy-duty vinyl cable, 3 cores ø3.5, 2 m 4 cores Conductor area: 0.15 mm² (AWG26), Insulator O.D.: 1.0 mm
Standards			CE, UL/CSA (E216656), RoHS

Note 1) If applied pressure fluctuates near the set value, set the hysteresis above the fluctuation range to prevent chattering.

Note 2) When analog voltage output is selected, analog current output cannot be used together.

Note 3) When analog current output is selected, analog voltage output cannot be used together.

Piping Specifications

Model		01	N01
Port size		R1/8 M5 x 0.8	NPT1/8 M5 x 0.8
Wetted parts material	Sensor pressure receiving area	Sensor pressure receiving area: Silicon	
	Piping port	C3602 (electroless nickel plating) O-ring: HNBR	
Weight	Including lead wire with connector (3 cores, 2 m)	81 g	
	Including lead wire with connector (4 cores, 2 m)	85 g	
	Excluding lead wire with connector	43 g	

Option/Part No.

When optional parts are required separately, use the following part numbers to place an order.

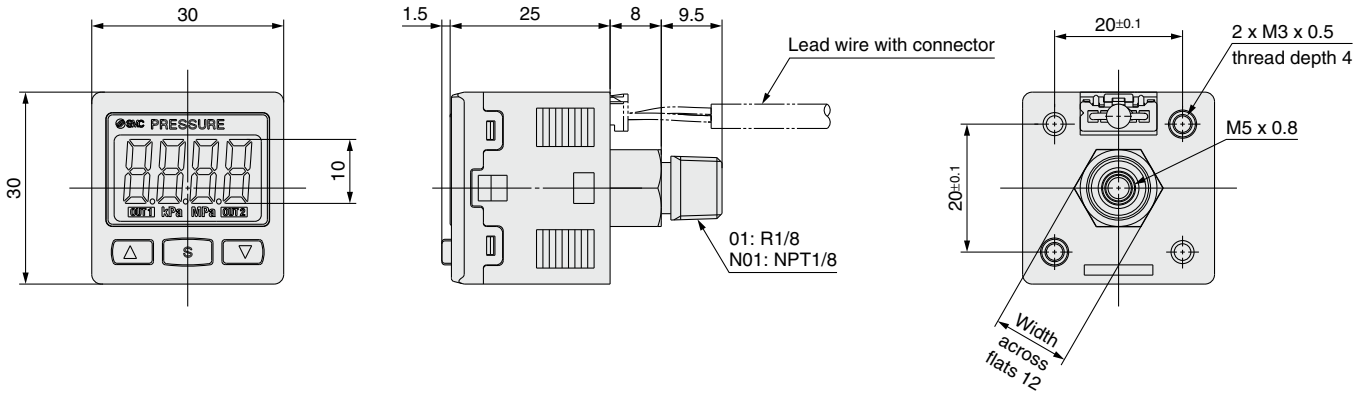
Part no.	Option	Note	Part no.	Option	Note
ZS-38-A1	Bracket A	Mounting screw (with 2 pcs. of M3 x 5L)	ZS-38-3L	Lead wire with connector	3 cores, for 1 output, 2 m
ZS-38-A2	Bracket B	Mounting screw (with 2 pcs. of M3 x 5L)	ZS-38-4L	Lead wire with connector	4 cores, for 2 outputs, 2 m
ZS-38-A3	Bracket C	Mounting screw (with 2 pcs. of M3 x 5L)	ZS-38-3G	Lead wire with connector (with connector cover)	3 cores, for 1 output, 2 m
ZS-27-C	Panel mount adapter	Mounting screw (with 2 pcs. of M3 x 8L)	ZS-38-4G	Lead wire with connector (with connector cover)	4 cores, for 2 outputs, 2 m
ZS-27-D	Panel mount adapter + Front protection cover	Mounting screw (with 2 pcs. of M3 x 8L)	ZS-38-5L	Lead wire with a connector for copying	3 cores, copy function, 1 m
ZS-27-01	Front protection cover		ZS-38-U	Lead wire unit with a connector for copying	Copy function (up to 10 slaves)

Dimensions

ISE30A(F) —  —  —     — X2

● Piping specifications

01 / **N01**



Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

2-Color Display Digital Pressure Switch



Stainless diaphragm

Oil-free (Single-layer diaphragm structure)

Sensor unit: **Stainless steel 630**

Fitting parts: **Stainless steel 304**

The sensor unit and fitting parts are also applicable to stainless steel 316L.

IP65 compliant

Grease-free

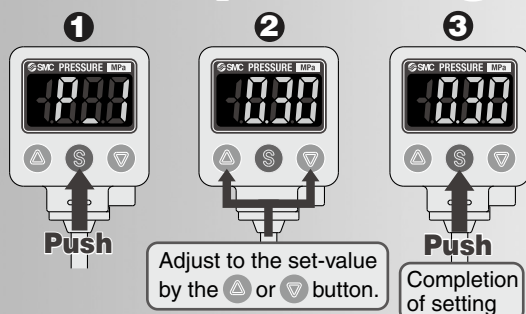


● 2-color display

See abnormal values at a glance.

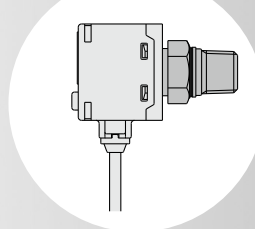


● 3-step setting

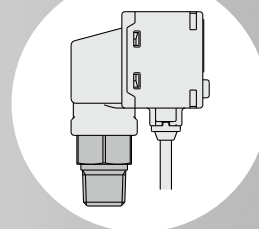


● Choice of 2 piping directions

Rear ported



Bottom ported



● Rated pressure range

0.0 to -101.0 kPa and -0.100 to 2.00 MPa available as standard

ZSE80(F)/ISE80(H) Series

2-Color Display Digital Pressure Switch For General Fluids



ZSE80/ISE80 Series

Grease-free

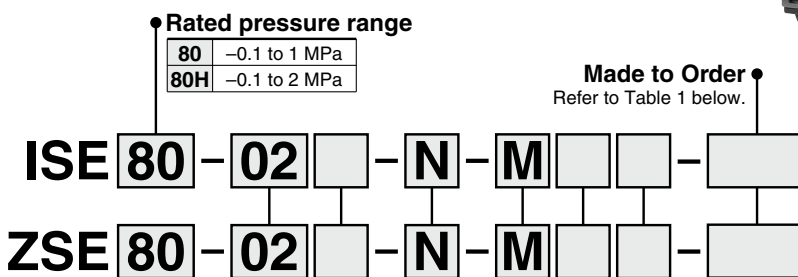
How to Order



Made to Order
Refer to Table 1 below.

For positive pressure

For vacuum/
compound pressure



Rated pressure range

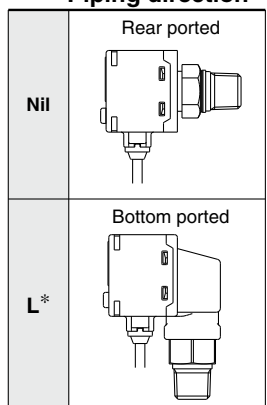
80	0 to -101 kPa
80F	-100 to 100 kPa

Piping specifications

02	R1/4 (M5 female threaded)
N02	NPT1/4 (M5 female threaded)
F02*	G1/4*1 (M5 female threaded)
C01	Rc1/8
A2	URJ1/4
B2	TSJ1/4

* Not applicable to piping direction "L (Bottom ported)".
* 1 According to ISO 228-1

Piping direction



* Not applicable to piping specifications "F02(G1/4)".

Output specifications

N	NPN open collector 1 output
P	PNP open collector 1 output
A	NPN open collector 2 outputs
B	PNP open collector 2 outputs
R	NPN open collector 2 outputs + Analog voltage output/Auto-shift switching
T	PNP open collector 2 outputs + Analog voltage output/Auto-shift switching
S	NPN open collector 2 outputs + Analog current output/Auto-shift switching
V	PNP open collector 2 outputs + Analog current output/Auto-shift switching



Table 1
Made to Order

Symbol	Specifications
-X500 Note 1)	Wetted parts: Stainless steel 316L
-X501	Lead wire length 3 m
-X510	Restrictor installed fitting
-X531 Note 2)	M12 4-pin pre-wired connector
-X555 Note 3)	Rated pressure -100 to 300 kPa

Note 1) Not applicable to the rated pressure range -0.1 to 2 MPa specification.

Refer to the **Web Catalog** for details.

Note 2) Suitable for output specifications A, B only

Note 3) Suitable for output specifications R, T only

Option

Option	Piping direction	Part no.
Bracket	Rear ported	ZS-24-A
	Rear ported	ZS-24-D
	Bottom ported	ZS-35-A
Panel mount adapter	Rear ported	ZS-35-C
	Bottom ported	ZS-35-B
Panel mount adapter + Front protection cover	Rear ported	ZS-35-F
	Bottom ported	ZS-35-E

Option 2

Symbol	Operation manual Note)	Calibration certificate Note)
Nil	●	—
Y	—	—
K	●	●
T	—	●

Note) All texts in both English and Japanese

Unit specifications

Nil	With unit display switching function Note 1)
M	Fixed SI unit Note 2)
P	With unit display switching function Note 1) (Initial value psi)

Note1) Under the New Measurement Law, sales of switches with the unit switching function are not allowed for use in Japan.

Note2) Unit ISE80H: MPa
Others: MPa, kPa

Option 1

Nil	None
A	With bracket Rear ported Bottom ported
	With bracket Note) ZS-24-D
C	Panel mount adapter Rear ported Bottom ported
	Panel mount adapter + Front protection cover Rear ported Bottom ported

Note) Rear ported only

Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

ZSE80/ISE80 Series

Specifications

For pressure switch precautions and specific product precautions, refer to the "Operation Manual" on the SMC website.

Model			ZSE80 (Vacuum pressure)	ZSE80F (Compound pressure)	ISE80 (Positive pressure)	ISE80H (Positive pressure)
Rated pressure range			0.0 to −101.0 kPa	−100.0 to 100.0 kPa	−0.100 to 1.000 MPa	−0.100 to 2.00 MPa
Pressure display range/Set pressure range			10.0 to −111.1 kPa	−110.0 to 110.0 kPa	−0.105 to 1.100 MPa	−0.105 to 2.20 MPa
Withstand pressure			500 kPa		2 MPa	4 MPa
Wetted parts material			Pressure sensor: Stainless steel 630, Fitting: Stainless steel 304 (Gasket: NBR ^{Note 1)})			
Applicable fluid			Fluids do not corrode stainless steel 630 and 304 (NBR ^{Note 1)})			
Port size			R1/4, NPT1/4, G1/4 ^{Note 2)} , URJ1/4, TSJ1/4, Rc1/8 Piping direction: Rear/Bottom			
Power supply voltage			12 to 24 VDC ±10%, Ripple (p-p) 10% or less (with power supply polarity protection)			
Current consumption			45 mA or less			
Switch output			NPN 1 output, NPN 2 outputs, PNP 1 output, PNP 2 outputs			
	Maximum load current		80 mA			
	Maximum load voltage		28 V (at NPN output)			
	Residual voltage		1 V or less (with load current of 80 mA)			
	Response time		2.5 ms (with anti-chattering function: 20, 100, 500, 1000, 2000 ms)			
	Short circuit protection		Yes			
Repeatability			±0.2% F.S. ±1 digit			
Hysteresis	Hysteresis mode		Variable (0 or above)			
	Window comparator mode					
Analog output	Voltage output	Output voltage (Rated pressure range)	1 to 5 V ±2.5% F.S.		0.6 to 5 V ±2.5% F.S.	0.8 to 5 V ±2.5% F.S.
		Linearity	±1% F.S.			
		Output impedance	Approx. 1 kΩ			
	Current output	Output current (Rated pressure range)	4 to 20 mA ±2.5% F.S.		2.4 to 20 mA ±2.5% F.S.	3.2 to 20 mA ±2.5% F.S.
		Linearity	±1% F.S.			
		Load impedance	Maximum load impedance: 300 Ω (Power supply voltage 12 V) 600 Ω (Power supply voltage 24 V) Minimum load impedance: 50 Ω			
Auto-shift input			Non-voltage input (Reed or Solid state), Low level: 0.4 V or less, 5 ms or longer input			
Display			3 1/2-digit, 7-segment, 2-color LCD (Red/Green)			
Display accuracy			±2% F.S. ±1 digit (Ambient temperature of 25 ±3°C)			
Indicator light			Lights up when output is turned ON. OUT1, OUT2: Orange			
Function			Anti-chattering, Zero-clear, Keylock function, Auto-preset, Auto-shift, Display unit switching, Power-saving mode			
Environment	Enclosure		IP65			
	Operating temperature range		Operating: 0 to 50°C, Stored: −10 to 60°C (No freezing or condensation)			
	Operating humidity range		Operating/Stored: 35 to 85% RH (No condensation)			
	Withstand voltage		250 VAC for 1 minute between terminals and housing			
	Insulation resistance		2 MΩ or more (50 VDC measured via megohmmeter) between terminals and housing			
Temperature characteristics			±3% F.S. (25°C reference, within operating temperature range)			
Lead wire			Oilproof heavy-duty vinyl cable, 3 cores (N.P) ø3.5, 2 m 4 cores (A.B) Conductor area: 0.15 mm² (AWG26) 5 cores (R.T.S.V) Insulator O.D.: 0.95 mm			
Standards			CE, UL/CSA (E216656), RoHS			

Note 1) When F02(G1/4) is selected.

Note 2) F02(G1/4) is available for rear ported only.

Piping Specifications

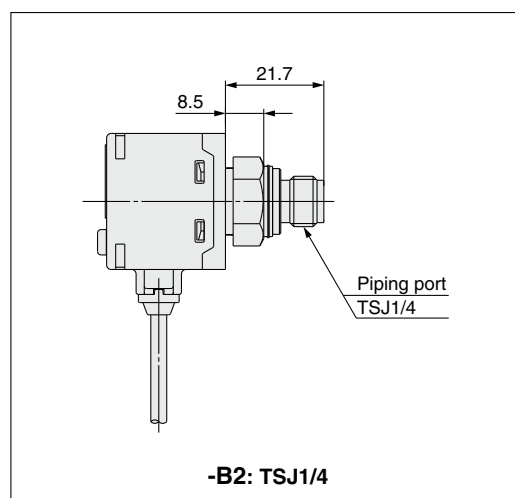
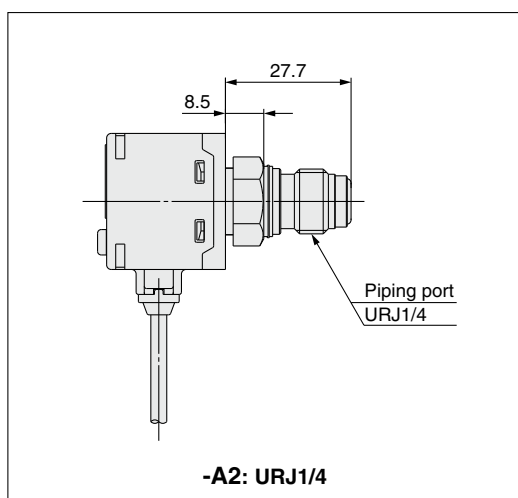
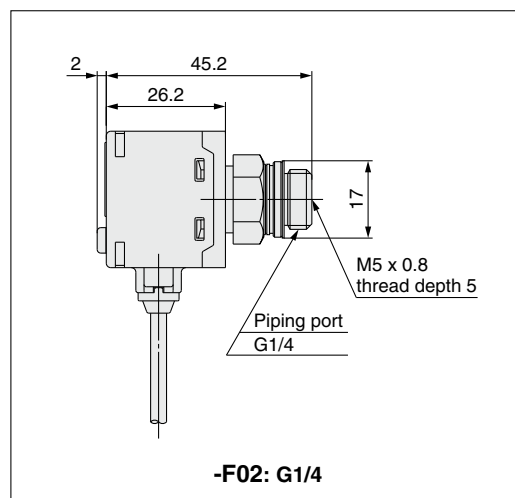
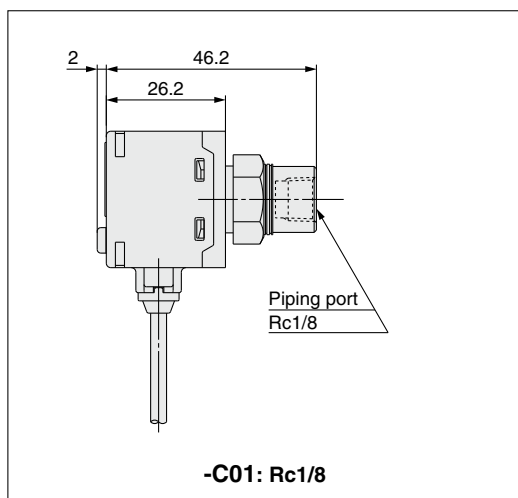
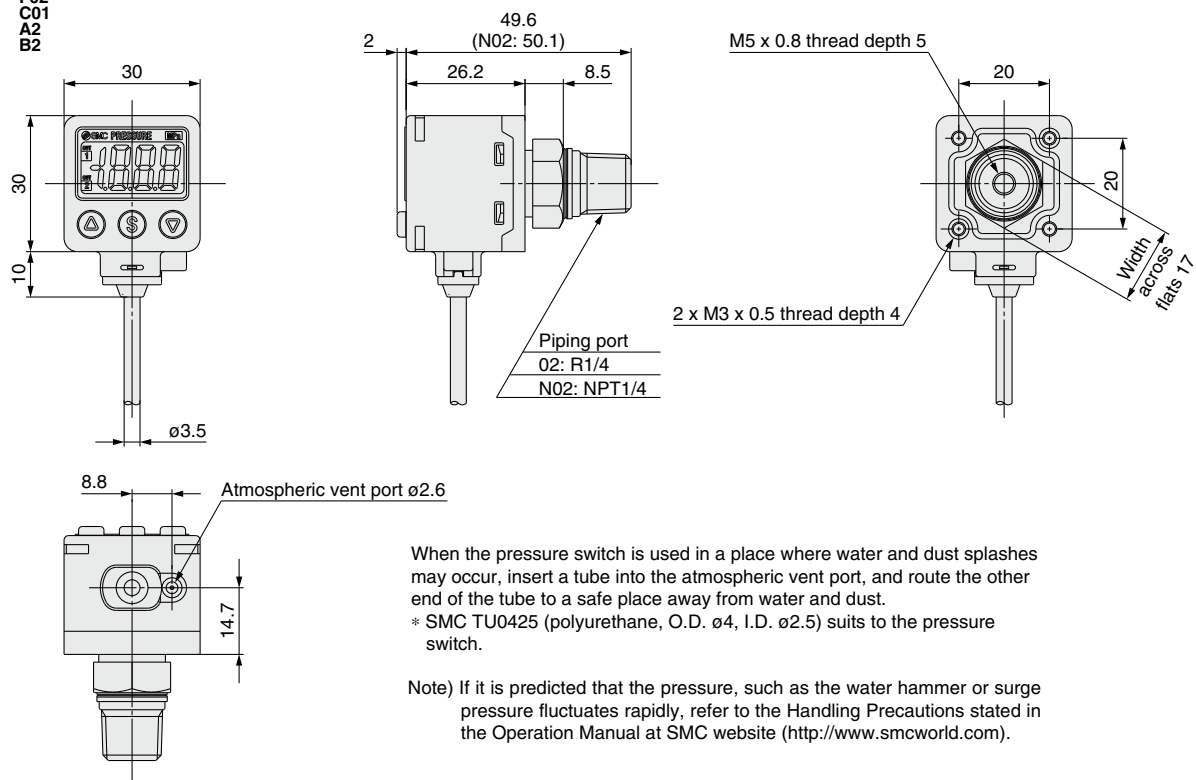
Model	02	N02	F02	C01	A2	B2
Port size	R1/4	NPT1/4	G1/4	Rc1/8	URJ1/4	TSJ1/4
Weight (Bottom ported)	117 g	118 g	—	114 g	120 g	111 g
Weight (Rear ported)	89 g	90 g	86 g	86 g	92 g	83 g
Leakage	1×10^{-5} Pa·m ³ /s				1×10^{-10} Pa·m ³ /s	

2-Color Display Digital Pressure Switch For General Fluids **ZSE80/ISE80 Series**

Dimensions (For details about lead wires, refer to the product specifications.)

ZSE/ISE80□□-

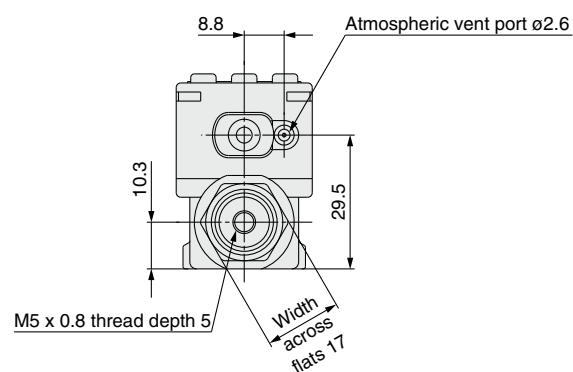
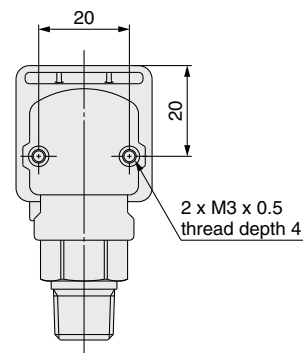
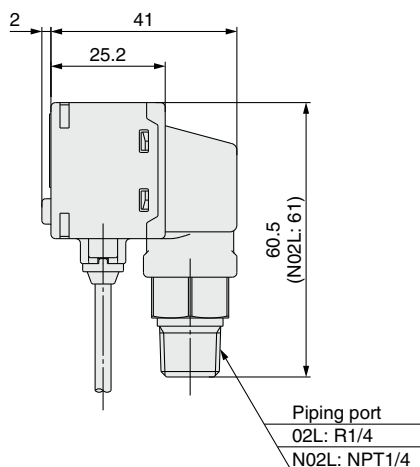
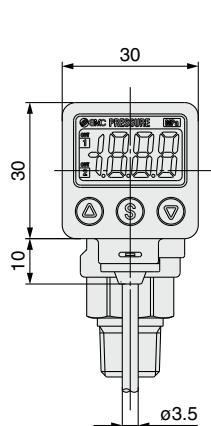
02
N02
F02
C01
A2
B2



ZSE80/ISE80 Series

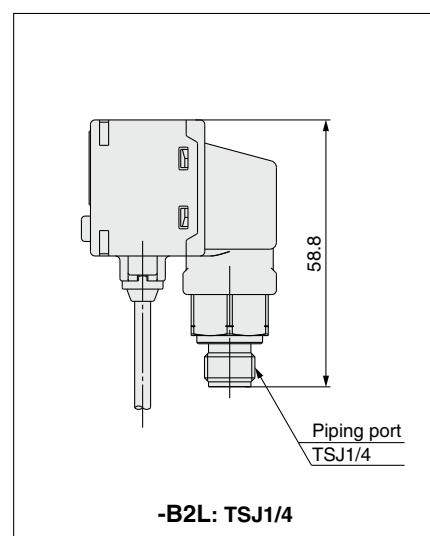
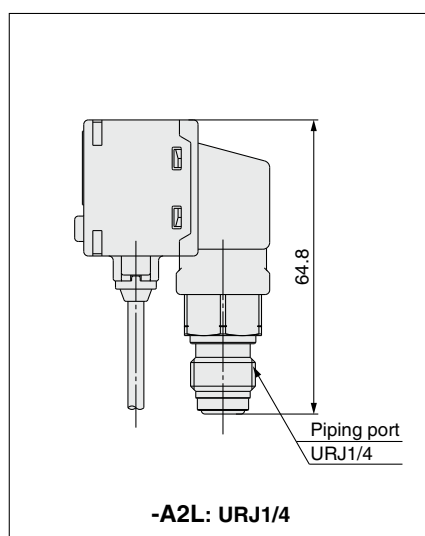
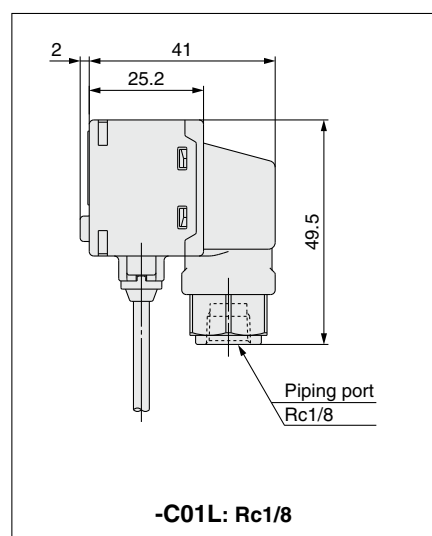
Dimensions (For details about lead wires, refer to the product specifications.)

ZSE/ISE80□□-
 02L
 N02L
 C01L
 A2L
 B2L



When the pressure switch is used in a place where water and dust splashes may occur, insert a tube into the atmospheric vent port, and route the other end of the tube to a safe place away from water and dust.
 * SMC TU0425 (polyurethane, O.D. $\phi 4$, I.D. $\phi 2.5$) suits to the pressure switch.

Note) If it is predicted that the pressure, such as the water hammer or surge pressure fluctuates rapidly, refer to the Handling Precautions stated in the Operation Manual at SMC website (<http://www.smcworld.com>).



Compact Pneumatic Pressure Sensor

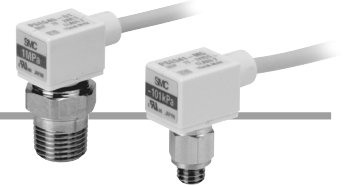
PSE540-X2

(Grease-free Specification)



RoHS

How to Order



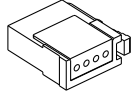
Sensor range

0	Positive pressure [0 to 1 MPa]
1	Negative pressure [0 to -101 kPa]
3	Compound pressure [-100 to 100 kPa]

Accuracy

Nil	±2% F.S.
A	±1% F.S.

Option (Connector)

Nil	None
C2	Connector for pressure sensor controller (1 pc.) 

PSE54 1 - M3 - X2

Grease-free

Port size

M3	M3 x 0.5	
M5	M5 x 0.8	
01	R1/8 (with M5 female thread)	
N01	NPT1/8 (with M5 female thread)	
R04	ø4 reducer	
R06	ø6 reducer	

IM5	M5 female thread, through type	
IM5H	M5 female thread, through type (with mounting hole)	

Note) The connector is not attached to the cable, but is included with the shipment.

Option/Part No.

Description	Part no.	Note
Connector for pressure sensor controller	ZS-28-C	1 pc.

Specifications

For pressure switch precautions and specific product precautions, refer to the "Operation Manual" on the SMC website.

Model		PSE540-X2	PSE541-X2	PSE543-X2
Rated pressure range		0 to 1 MPa	0 to −101 kPa	−100 to 100 kPa
Extension analog output range		−0.1 to 0 MPa	10.1 to 0 kPa	—
Proof pressure		1.5 MPa	500 kPa	
Applicable fluid		Air/Non-corrosive gas/Non-flammable gas		
Power supply voltage		12 to 24 VDC ±10%, Ripple (p-p) 10% or less (with reverse connection protection)		
Current consumption		15 mA or less		
Output specifications		Analog output 1 to 5 V (within rated pressure range), 0.6 to 1 V (within extension analog output range), Output impedance: Approx. 1 kΩ		
Accuracy (Ambient temperature at 25°C)		PSE54□: ±2% F.S. (within rated pressure range), ±5% F.S. (within extension analog output range) PSE54□A: ±1% F.S. (within rated pressure range), ±3% F.S. (within extension analog output range)		
Linearity		±0.7% F.S. or less	±0.4% F.S.	
Repeatability		±0.2% F.S.		
Power supply voltage effect		±0.8% F.S.		
Environment	Enclosure	IP40		
	Operating temperature range	Operating: 0 to 50°C, Stored: −20 to 70°C (No freezing or condensation)		
	Operating humidity range	Operating/Stored: 35 to 85% RH (No condensation)		
	Withstand voltage	1000 VAC (in 50/60 Hz) for 1 minute between terminals and housing		
	Insulation resistance	50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing		
Temperature characteristics		±2% F.S. (25°C reference)		
Sensor cable		Oilproof heavy-duty vinyl cable (ellipse), 3 cores, 2.7 x 3.2, 3 m, Conductor area: 0.15 mm², Insulator O.D.: 0.9 mm		
Standards		CE, UL/CSA (E216656), RoHS		

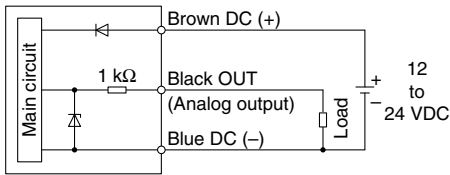
Piping Specifications

Model		M3	M5	01	N01	R04	R06	IM5	IM5H
Port size		M3 x 0.5	M5 x 0.8	R1/8 M5 x 0.8	NPT1/8 M5 x 0.8	ø4 reducer	ø6 reducer	M5 female thread, through type	M5 female thread, through type (with mounting hole)
Material	Case	Resin case: PBT Fitting: Stainless steel 303		Resin case: PBT Fitting: C3604BD		PBT		Resin case: PBT Fitting: A6063S-T5	
	Pressure sensing section	Pressure sensor: Silicon, O-ring: FKM							
Weight	With sensor cable	42.4 g	42.7 g	49.3 g		41.4 g	41.6 g	43.3 g	44.1 g
	Without sensor cable	2.9 g	3.2 g	9.8 g		1.9 g	2.1 g	3.8 g	4.6 g

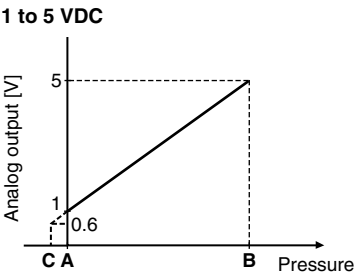
PSE540-X2

Internal Circuit and Wiring Example

PSE54□-X2
Voltage output type
1 to 5 V
Output impedance
Approx. 1 kΩ



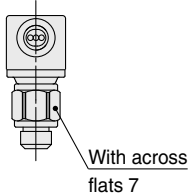
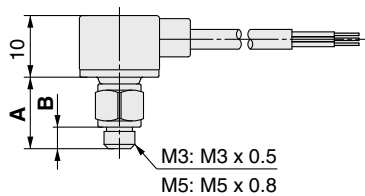
Analog Output



Range	Rated pressure range	A	B	C
For vacuum	0 to -101 kPa	0	-101 kPa	10.1 kPa
For compound pressure	-100 kPa to 100 kPa	-100 kPa	100 kPa	—
For positive pressure	0 to 1 MPa	0	1 MPa	-0.1 MPa

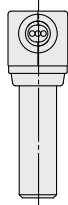
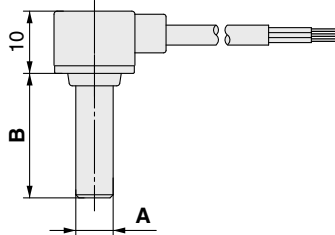
Dimensions

PSE54□-M3-M5-X2



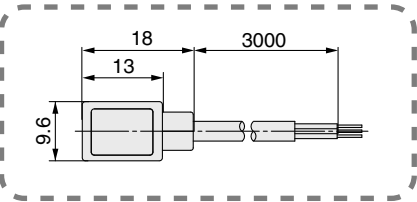
	PSE54□-M3	PSE54□-M5
A	10.8	11.5
B	3	3.5

PSE54□-R04-R06-X2

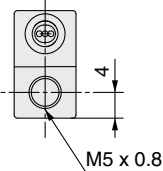
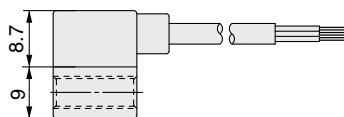


	PSE54□-R04	PSE54□-R06
A	ø4	ø6
B	18	20

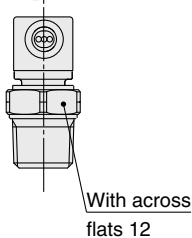
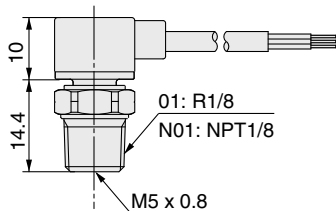
Common Dimensions



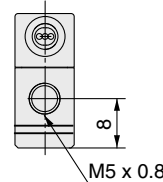
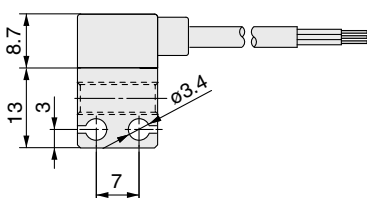
PSE54□-IM5-X2



PSE54□-01-N01-X2



PSE54□-IM5H-X2



Pressure Sensor Controller

PSE300 Series



How to Order



DIN rail/Terminal block type

PSE3 0 0 T - M



Connector type

PSE3 0 0 - M

Input specifications

0	Voltage input
1	Current input

Input/Output specifications

0	NPN 2 outputs + 1-5 V output
1	NPN 2 outputs + 4-20 mA output
2	NPN 2 outputs + Auto-shift input
3	PNP 2 outputs + 1-5 V output
4	PNP 2 outputs + 4-20 mA output
5	PNP 2 outputs + Auto-shift input

Unit specifications

Nil	With display unit switching function Note 1)
M	Fixed SI unit Note 2)

Note 1) Under the New Measurement Law, sales of switches with the unit switching function are not allowed for use in Japan.

Note 2) Fixed unit
For vacuum, low pressure, low differential pressure and compound pressure: kPa
For positive pressure: MPa (For 1 MPa)
kPa (For 500 kPa)

Option 1

Nil	None
L	Power supply/Output connection cable ZS-28-A

Note) The cable is not attached to the product, but is included with the shipment.

Order DIN rail separately. Refer to the **Web Catalog** for details.

Option/Part No.

Description	Part no.	Note
Power supply/Output connection cable (2 m)	ZS-28-A	
Bracket	ZS-28-B	With M3 x 5L (2 pcs.)
Sensor connector	ZS-28-C	1 pc.
Panel mount adapter	ZS-27-C	With M3 x 8L (2 pcs.)
Panel mount adapter + Front protective cover	ZS-27-D	With M3 x 8L (2 pcs.)
Front protective cover	ZS-27-01	1 pc.

Option

Nil	None
E	Front protective cover

Option 3

Nil	None
C	Sensor connector

Note) The connector is not attached to the cable, but is included with the shipment.

Option 2

Nil	None
A	Bracket
B	Panel mount adapter
D	Panel mount adapter + Front protective cover

Note) These options are not attached to products, but are included with the shipment.

Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

PSE300 Series

Specifications

For pressure switch precautions and specific product precautions, refer to the "Operation Manual" on the SMC website.

Model		PSE3□□			
Applicable pressure sensor		PSE533 PSE543	PSE531 PSE541	PSE532	PSE530 PSE540
Display/Set pressure (differential pressure) range		−101 to 101 kPa	10 to −101 kPa	−10 to 100 kPa	−0.1 to 1 MPa
Display/Set resolution		0.2 kPa	0.1 kPa	0.1 kPa	0.001 MPa
Pressure range ^{Note 1)}		For compound pressure	For vacuum	For low pressure	For positive pressure
Rated pressure (differential pressure) range		−100 to 100 kPa	0 to −101 kPa	0 to 100 kPa	0 to 1 MPa
Extension analog output range ^{Note 2)}		—	10.1 to 0 kPa	−10 to 0 kPa	−0.1 to 0 MPa
Power supply voltage		12 to 24 VDC ±10%, Ripple (p-p) 10% or less (with reverse connection protection)			
Current consumption		50 mA or less (Current consumption for sensor is not included.)			
Sensor input		PSE30□: Voltage input 1 to 5 VDC (Input impedance: 1 MΩ) PSE31□: Current input 4 to 20 mA DC (Input impedance: 100 Ω)			
	Number of inputs	1 input			
	Input protection	With excess voltage protection (Up to 26.4 V)			
Hysteresis		Hysteresis mode: Variable, Window comparator mode: Variable			
Switch output		NPN or PNP open collector output: 2 outputs			
	Maximum load current	80 mA			
	Maximum load voltage	30 VDC (at NPN output)			
	Residual voltage	1 V or less (with load current of 80 mA)			
	Output protection	With short circuit protection			
Response time		1 ms or less			
	Anti-chattering function	Response time settings for anti-chattering function: 20 ms, 160 ms, 640 ms, 1280 ms			
Repeatability		±0.1% F.S.			
Analog output	Voltage output ^{Note 2)}	Output voltage: 1 to 5 V (within rated pressure (differential pressure) range), 0.6 to 1 V (within extension analog output range) Output impedance: Approx. 1 kΩ, Linearity: ±0.2% F.S. (Not including sensor accuracy), Response speed: 150 ms or less			
	Accuracy (To display value) (25°C)	±0.6% F.S.			
	Current output ^{Note 2)}	Output current: 4 to 20 mA (within rated pressure (differential pressure) range), 2.4 to 4 mA (within extension analog output range) Maximum load impedance: 300 Ω (at 12 VDC), 600 Ω (at 24 VDC), Minimum load impedance: 50 Ω Linearity: ±0.2% F.S. (Not including sensor accuracy), Response time: 150 ms or less			
	Accuracy (To display value) (25°C)	±1.0% F.S.			
Display accuracy (Ambient temperature at 25°C)		±0.5% F.S. ±2 digits	±0.5% F.S. ±1 digit		
Display		3 + 1/2 digit, 7 segment indicator, 2-color display (Red/Green), Sampling frequency: 5 times/s			
Indicator light		OUT1: Lights up when turned ON (Green), OUT2: Lights up when turned ON (Red)			
Auto-shift input ^{Note 2)}		Non-voltage input (Reed or Solid state), Low level input: 5 ms or more, Low level: 0.4 V or less			
Environment	Enclosure	IP40			
	Operating temperature range	Operating: 0 to 50°C, Stored: −10 to 60°C (No freezing or condensation)			
	Operating humidity range	Operating/Stored: 35 to 85% RH (No condensation)			
	Withstand voltage	1000 VAC for 1 minute between terminals and housing			
	Insulation resistance	50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing			
Temperature characteristics		±0.5% F.S. (25°C reference)			
Connection		PSE3□□: Power supply/Output connection: 5P connector, Sensor connection: 4P connector PSE3□□T: Terminal block			
Material		Front case: PBT, Rear case: PBT (PSE3□□), Modified PPE (PSE3□□T)			
Weight	With power supply/Output connection cable	PSE3□□: 85 g			
	Without power supply/Output connection cable	PSE3□□: 30 g, PSE3□□T: 50 g			
Power supply/Output connection cable		Oilproof heavy-duty vinyl cable, 5 cores, ø4.1, 2 m, Conductor area: 0.2 mm² Insulator O.D.: 1.12 mm			
Standards		CE, UL/CSA (E216656), RoHS			

Note 1) Pressure range can be selected during initial setting.

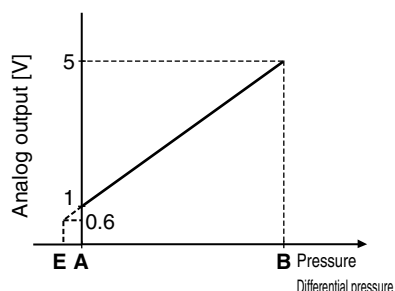
Note 2) Auto-shift function is not available when analog output is selected.

Also, analog output option is not available when auto-shift function is selected.

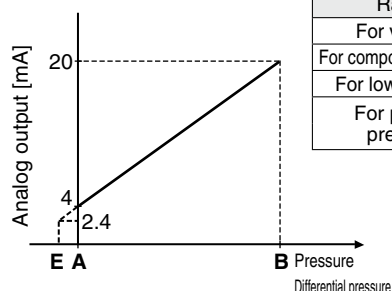
Note 3) The following units can be selected with display unit switching function:
For vacuum & compound pressure: kPa·kgf/cm²·bar·psi·mmHg·inHg
For positive pressure & low pressure: MPa·kPa·kgf/cm²·bar·psi

Analog Output

1 to 5 VDC



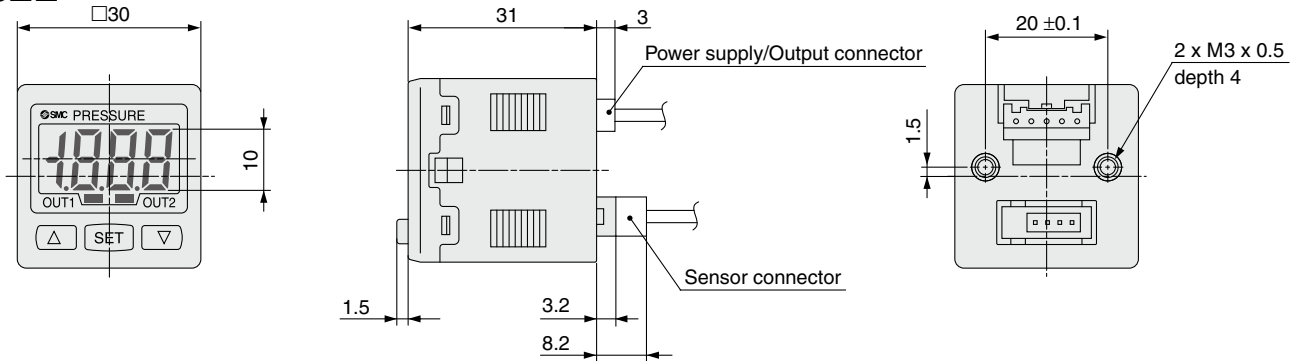
4 to 20 mA DC



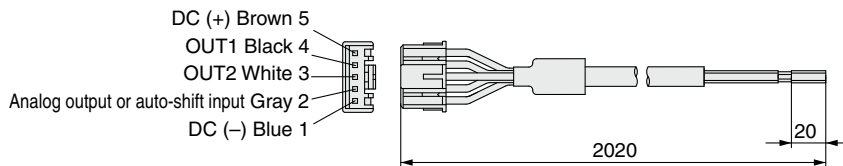
Range	Rated pressure range	A	B	E
For vacuum	0 to −101 kPa	0	−101 kPa	10.1 kPa
For compound pressure	−100 kPa to 100 kPa	−100 kPa	100 kPa	—
For low pressure	0 to 100 kPa	0	100 kPa	−10 kPa
For positive pressure	0 to 1 MPa	0	1 MPa	−0.1 MPa
	0 to 500 kPa	0	500 kPa	−50 kPa

Dimensions

PSE3□□

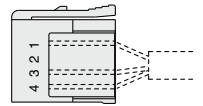


Power supply/Output connection cable (ZS-28-A)



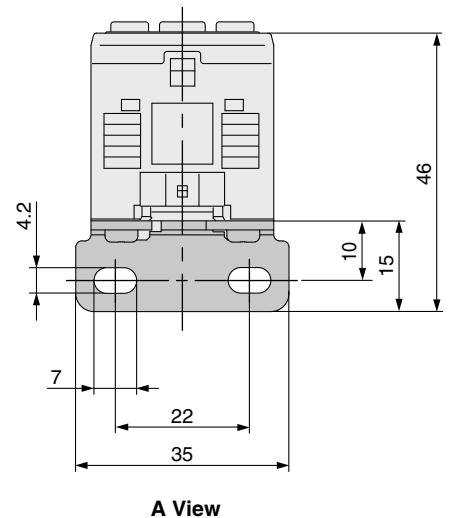
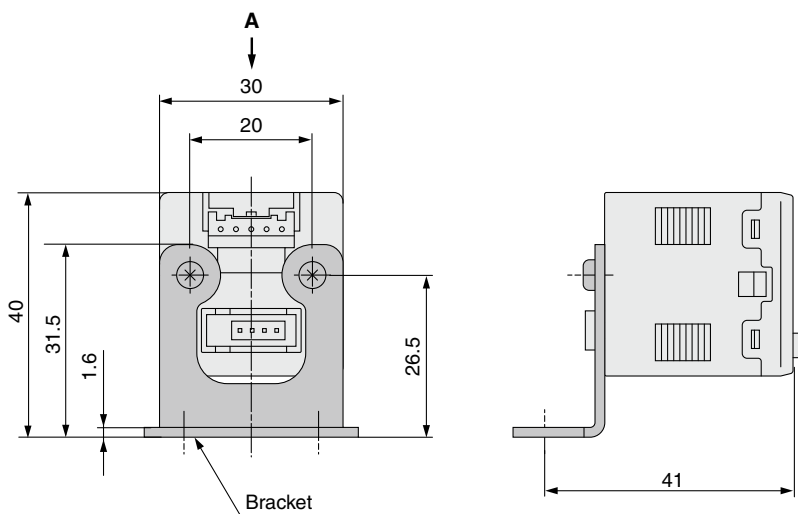
Sensor connector

PIN no.	Terminal	
	PSE30□	PSE31□
1	DC(+)(Brown)	DC(+)(Brown)
2	N.C.	N.C.
3	DC(-)(Blue)	N.C.
4	IN (1 to 5 V) (Black)	IN (4 to 20 mA) (Blue)

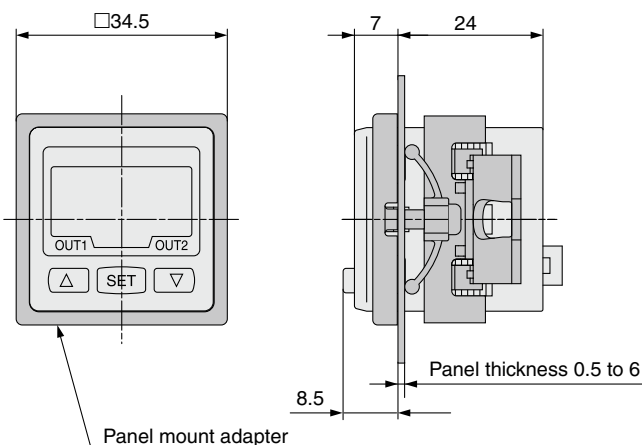


Note: The colors in () indicate the wire color of the PSE5□□ series.

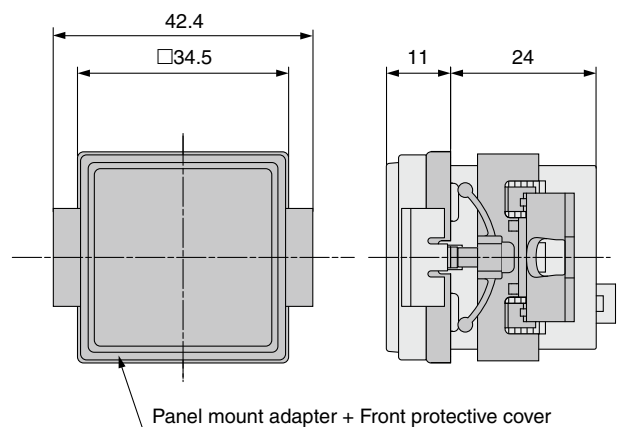
With bracket



With panel mount adapter



With panel mount adapter + Front protective cover



2-Color Display Digital Flow Switch

Applicable fluid **Dry air, N₂**



Expanded flow range! Wide range of flow measurement with one product

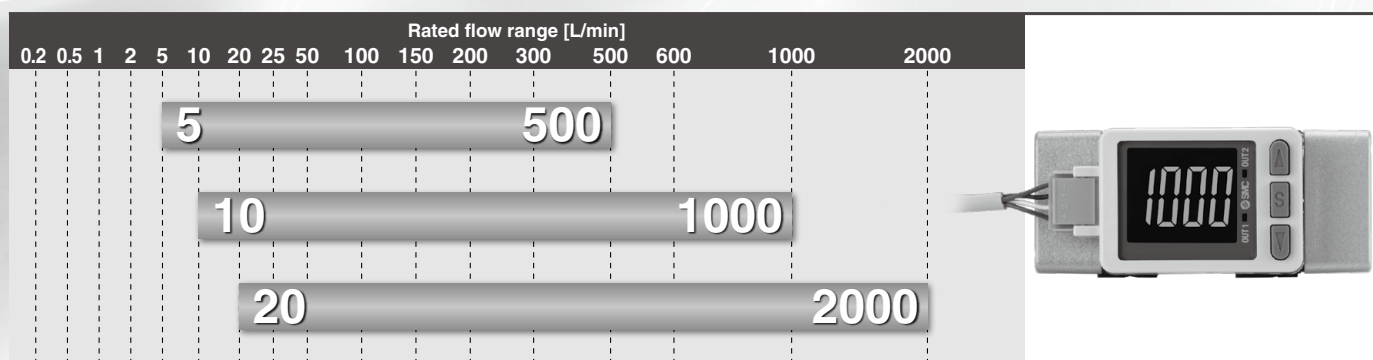
Flow ratio*1

100:1

*1 Rated flow ratio is 10 : 1 for the current PF2A.

Smallest settable increment: 1 L/min

Current PF2A: 5 L/min



Compact, Space saving

Compared with the current PF2A

Weight

Approx.

66% reduction

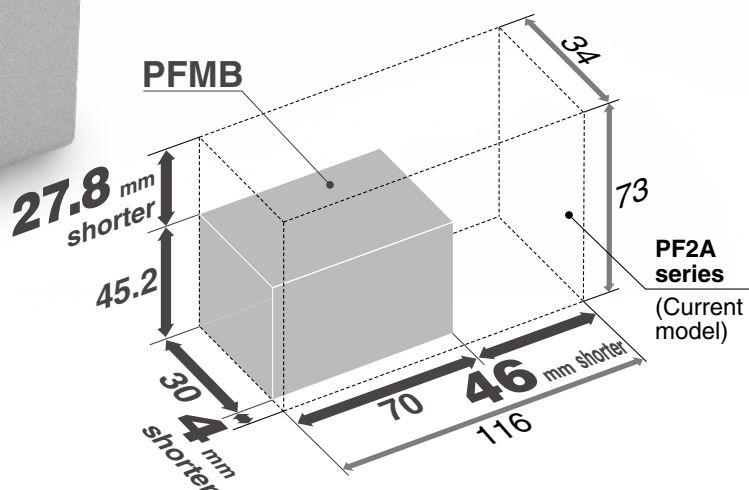
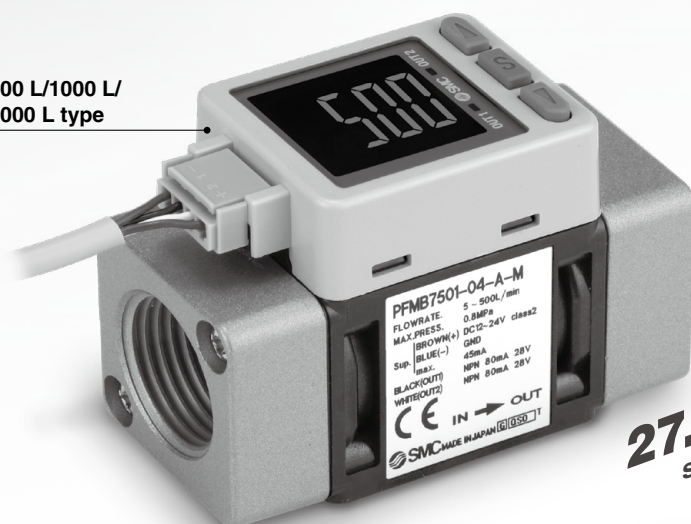
290 g → 100 g

Mounting space

Approx.

67% reduction

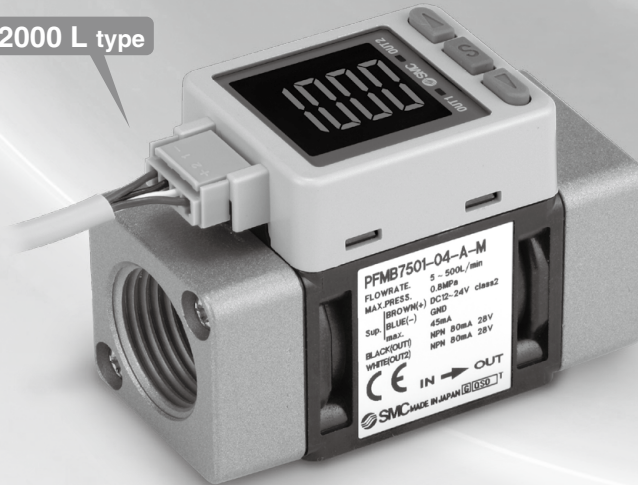
500 L/1000 L/
2000 L type



Compared with the PFMB7501-04 and PF2A751-04

PFMB Series

500 L/1000 L/2000 L type



Response time

Can be selected from

50 ms (0.05 s)/ **0.1 s**
0.5 s/ **1.0 s**/ **2.0 s**

Response time can be set depending on application.

Grease-free

Reversible display

When the switch is used upside down, the orientation of the display can be rotated to make it easier to read.

When display is upside down.



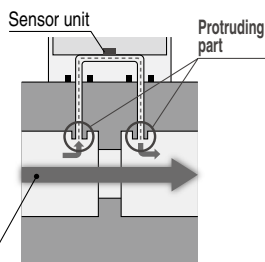
With a reversible display function
(Can be set with the reversible display mode.)



Bypass structure

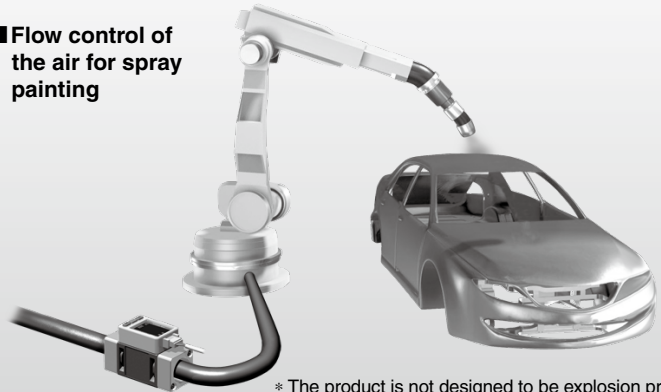
Bypass structure with protruding part at the main piping, reduces the contact of moist air with the sensor, reducing degradation of the sensor and maintaining accuracy.

Moist air



Application

■ Flow control of the air for spray painting



* The product is not designed to be explosion proof.

2-Color Display

Digital Flow Switch

PFMB7 Series (Grease-free)



RoHS

How to Order

PFMB 7 **501** - **04** - **A** - **M**

Rated flow range (Flow rate range)

501	5 to 500 L/min
102	10 to 1000 L/min
202	20 to 2000 L/min

Thread type

Nil	Rc
N	NPT
F	G*1

*1 ISO228 compliant

Port size

	Port size	Rated flow range		
		501	102	202
04	1/2	●	●	—
06	3/4	—	—	●

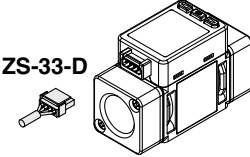
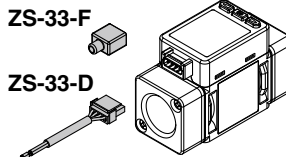
Output specification

	OUT1	OUT2
A	NPN	NPN
B	PNP	PNP
C	NPN	Analog 1 to 5 V
D	NPN	Analog 4 to 20 mA
E *1	PNP	Analog 1 to 5 V
F *1	PNP	Analog 4 to 20 mA
G *1	NPN	External input *2
H *1	PNP	External input *2

*1 Made to order

*2 Accumulated flow value, peak/bottom flow value can be reset by external signal input.

Option 1

Nil	W
Lead wire with connector (2 m)	Lead wire with connector (2 m) + Rubber cover for connector (Silicone rubber)
	
N	
Without lead wire with connector	

* When only optional parts are required, refer to Option 1/Part Nos. below.

Option 1/Part Nos.

Option	Part no.	Qty.	Note
Lead wire with connector	ZS-33-D	1	Lead wire: 2 m
Rubber cover (Silicone rubber)	ZS-33-F	1	For connector



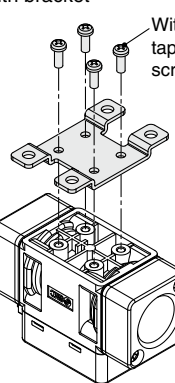
Calibration certificate *1

Nil	None
A *2	With calibration certificate

*1 Certificate in both English and Japanese

*2 Made to order

Option 2

Nil	R
No bracket	With bracket 

* Options are shipped together with the product, but not assembled. When only optional parts are required, refer to Option 2/Part Nos. below.

Unit specification

M	SI unit only *1
Nil	Units selection function *2

*1 Fixed unit: Instantaneous flow: L/min
Accumulated flow: L

*2 This product is for overseas use only according to the New Measurement Act. (The SI unit type is provided for use in Japan.)

Unit can be changed. Instantaneous flow: L/min ↔ cfm
Accumulated flow: L ↔ ft³

Option 2/Part Nos.

Option	Part no.	Qty.	Note
Bracket (for PFMB7201)	ZS-33-M	1	With 2 tapping screws (3 x 6)
Bracket (for PFMB7201S)	ZS-33-MS	1	With 3 tapping screws (3 x 6)
Panel mount adapter (for PFMB7201)	ZS-33-J	1	
Panel mount adapter (for PFMB7201S)	ZS-33-JS	1	
Bracket (for PFMB7501/7102)	ZS-42-C	1	With 4 tapping screws (3 x 6)
Bracket (for PFMB7202)	ZS-42-D	1	With 4 tapping screws (3 x 6)

Refer to the Web Catalog for flow switch precautions. For details on the specific product precautions, refer to the "Operation Manual" on the SMC website.

Specifications

Model	PFMB7501	PFMB7102	PFMB7202
Fluid	Applicable fluid *1 Dry air, N ₂ (Air quality grade is JIS B 8392-1 1.1.2 to 1.6.2, ISO 8573-1 1.1.2 to 1.6.2)		
Fluid temperature range	0 to 50°C		
Detection method	Thermal type		
Rated flow range	5 to 500 L/min	10 to 1000 L/min	20 to 2000 L/min
Flow	Set point range	5 to 525 L/min	10 to 1050 L/min
	Instantaneous flow	0 to 999,999,990 L	
	Accumulated flow	1 L/min	
	Smallest settable increment	10 L	
	Accumulated volume per pulse (Pulse width = 50 ms)	10 L/pulse	
Pressure	Rated pressure range	0 to 0.8 MPa	
	Proof pressure	1.2 MPa	
	Pressure loss	Refer to "Pressure Loss" graph.	
	Pressure characteristics *3	±5% F.S. (0 to 0.8 MPa, 0.6 MPa standard)	
	Power supply voltage	12 to 24 VDC ±10%	
Electrical	Current consumption	55 mA or less	
	Protection	Polarity protection	
Accuracy	Display accuracy	±3% F.S.	
	Analog output accuracy	±3% F.S.	
	Repeatability	±1% F.S. (±2% F.S. when the response time is set to 0.05 s)	
	Temperature characteristics	±5% F.S. (0 to 50°C, 25°C standard)	
Switch output	Output type	NPN open collector PNP open collector	
	Output mode	Select from Hysteresis, Window comparator, Accumulated output, or Accumulated pulse output modes.	
	Switch operation	Select from Normal or Reversed output.	
	Maximum load current	80 mA	
	Maximum applied voltage (NPN only)	28 VDC	
	Internal voltage drop (Residual voltage)	NPN output type: 1 V or less (at load current of 80 mA) PNP output type: 1.5 V or less (at load current of 80 mA)	
	Response time *4	Select from 0.05 s, 0.1 s, 0.5 s, 1 s, or 2 s.	
	Hysteresis *5	Variable from 0	
	Protection	Short circuit protection	
	Output type	Voltage output: 1 to 5 V, Current output: 4 to 20 mA	
Analog output	Impedance	Output impedance: Approx. 1 kΩ	
	Current output	Maximum load impedance at power supply voltage of 24 V: 600 Ω, at power supply voltage of 12 V: 300 Ω	
External input	Response time *7	Linked to the response time of the switch output	
	External input	Input voltage: 0.4 V or less (Reed or Solid state) for 30 ms or longer	
Display	Input mode	Select from Accumulated value external reset or Peak/Bottom value reset.	
	Reference condition *9	Select from Standard conditions or Normal conditions.	
	Display mode	Select from Instantaneous flow or Accumulated flow.	
	Unit *10	L/min or cfm can be selected.	
	Instantaneous flow	L or ft ³ can be selected.	
	Accumulated flow	—	
	Display range	—25 to 525 L/min (Displays [0] when value is within the -4 to 4 L/min range) -50 to 1050 L/min (Displays [0] when value is within the -9 to 9 L/min range) -100 to 2100 L/min (Displays [0] when value is within the -19 to 19 L/min range)	
	Minimum display unit	0 to 999,999,999 L	
	Instantaneous flow	1 L/min	
	Accumulated flow	10 L	
Environment	Display	LCD, Color: Red/Green, 4 digits, 7 segments	
	Indicator LED	LED ON when switch output is ON (OUT1/OUT2: Orange)	
	Enclosure	IP40	
	Withstand voltage	1000 VAC for 1 minute between terminals and housing	
	Insulation resistance	50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing	
Standards	Operating temperature range	Operating: 0 to 50°C, Stored: -10 to 60°C (No condensation or freezing)	
	Operating humidity range	Operating/Stored: 35 to 85% RH (No condensation or freezing)	
Piping	Piping specification	CE, RoHS	
	Piping entry direction	Rc1/2, NPT1/2, G1/2	
Main materials of parts in contact with fluid		Rc3/4, NPT3/4, G3/4	
Weight	Body	100 g	155 g
	Flow adjustment valve	—	
	Lead wire	+35 g	
	Bracket	+25 g	+30 g
	Panel mount adapter	—	
	DIN rail mounting bracket	—	

*1 Refer to the "Example of recommended pneumatic circuit" in the **Web Catalog**.

*2 When using the accumulated value hold function, use the operating conditions to calculate the product life, and do not exceed it. The maximum access limit of the memory device is 1 million times. If the product is operated 24 hours per day, the product life will be as follows:

• 5 min interval: life is calculated as 5 min x 1 million = 5 million min = 9.5 years
• 2 min interval: life is calculated as 2 min x 1 million = 2 million min = 3.8 years
If the accumulated value external reset is repeatedly used, the product life will be shorter than the calculated life.

*3 Do not release the OUT side piping port of the product directly to the atmosphere without connecting piping. If the product is used with the piping port released to atmosphere, accuracy may vary.

*4 The time from when the flow is changed by a step input (when the flow rate changes from 0 to the maximum value of the rated flow range instantaneously) until the switch output turns ON (or OFF) when set to be 90% of the rated flow rate

*5 If the flow fluctuates around the set value, the width for setting more than the fluctuating width needs to be set. Otherwise, chattering will occur.

*6 When using a product with an analog output

*7 The time from when the flow is changed by a step input (when the flow rate changes from 0 to the maximum value of the rated flow range instantaneously) until the analog output reaches 90% of the rated flow rate

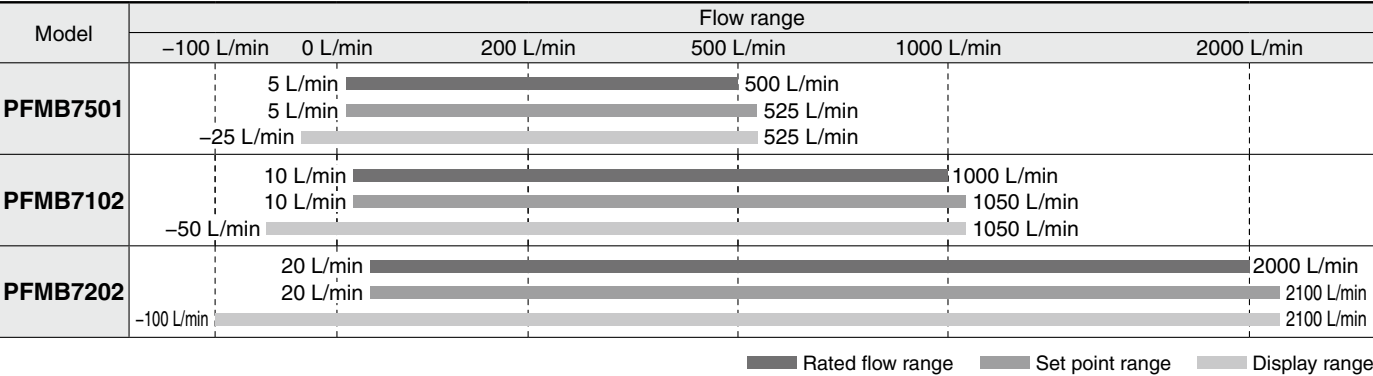
*8 When using a product with an external input

*9 The flow rate given in the specifications is the value under standard conditions.

*10 Setting is only possible for models with the units selection function.

PFMB7 Series

Flow Range

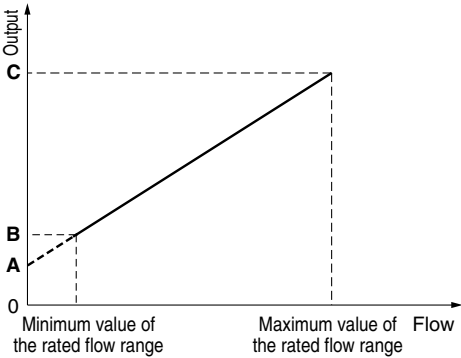


Analog Output

Flow/Analog Output

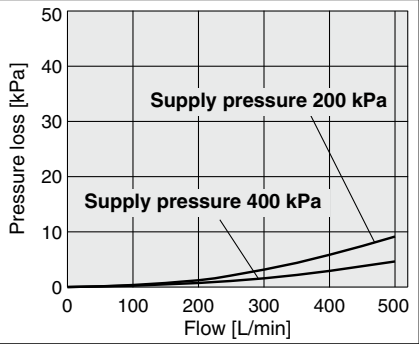
	A	B	C
Voltage output	1 V	1.04 V	5 V
Current output	4 mA	4.16 mA	20 mA

Model	Minimum value of the rated flow range	Maximum value of the rated flow range
PFMB7501	5 L/min	500 L/min
PFMB7102	10 L/min	1000 L/min
PFMB7202	20 L/min	2000 L/min

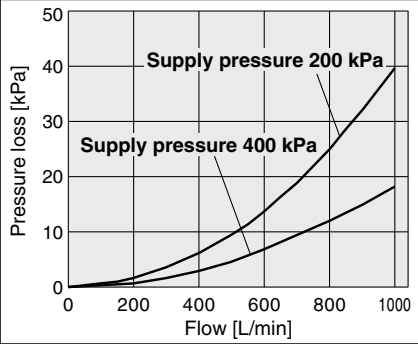


Pressure Loss (Reference Data)

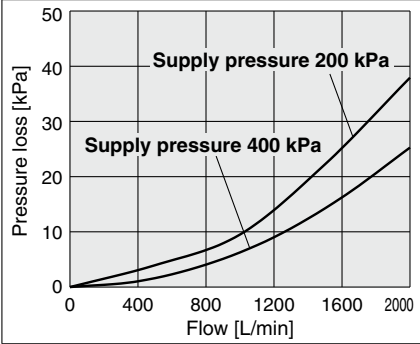
PFMB7501 (for 500 L/min)



PFMB7102 (for 1000 L/min)

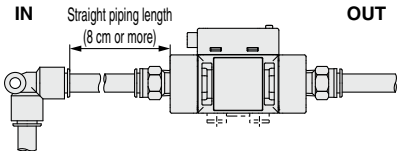


PFMB7202 (for 2000 L/min)

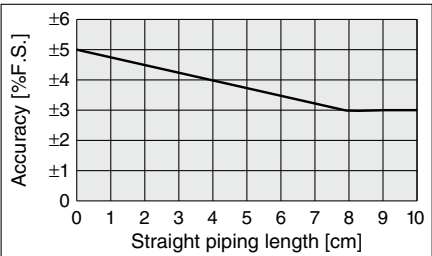


Straight Piping Length and Accuracy

- The piping on the IN side must have a straight section of piping with a length of 8 cm or more. If a straight section of piping is not installed, the accuracy can vary by approximately $\pm 2\%$ F.S.
 - * "Straight section" means a part of the piping without any bends or rapid changes in the cross sectional area.
 - When the PFMB7501 or 7102 is connected to tubing, use a tube I.D. 9 mm or more just before the product.
- The accuracy can vary by approximately $\pm 2\%$ F.S. when such tubing is not used.

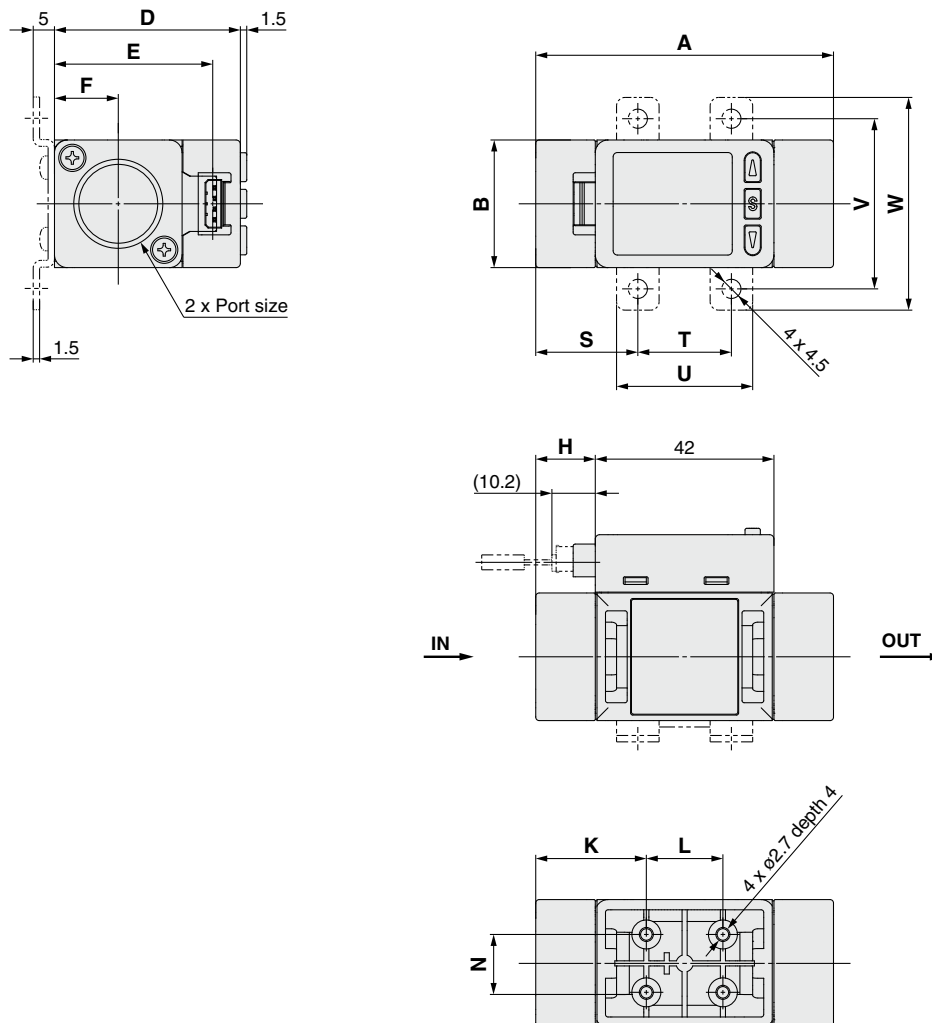


PFMB7501/7102/7202



Dimensions

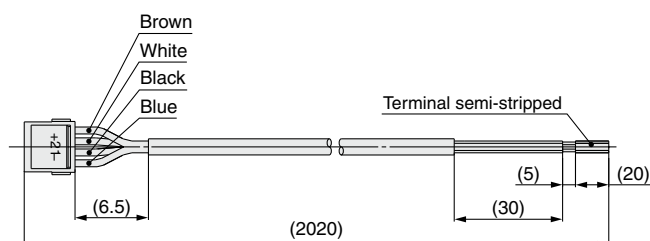
PFMB7501/7102/7202



Model	Symbol	A	B	D	E	F	H	K	L	N
PFMB7501/7102		70	30	43.7	37.2	15	14	26	18	13.6
PFMB7202		90	35	49.2	42.7	17.5	24	31	28	16.8

Model	Symbol	Bracket dimensions				
		S	T	U	V	W
PFMB7501/7102		24	22	32	40	50
PFMB7202		30	30	42	48	58

Lead wire with connector (Part no.: ZS-33-D)



Cable Specifications

Conductor	Nominal cross section	AWG26
	Outside diameter	Approx. 0.50 mm
Insulator	Outside diameter	Approx. 1.00 mm
	Color	Brown, White, Black, Blue
Sheath	Material	Oil-resistant PVC
Finished outside diameter		$\phi 3.5$

* For wiring, refer to the "Operation Manual" on the SMC website.
Documents/Download --> Instruction Manuals

3-Color Display Digital Flow Switch



Applicable fluid **Dry air, N₂**

RoHS

3-color/2-screen display*1

*1 2-row display of main screen and sub screen

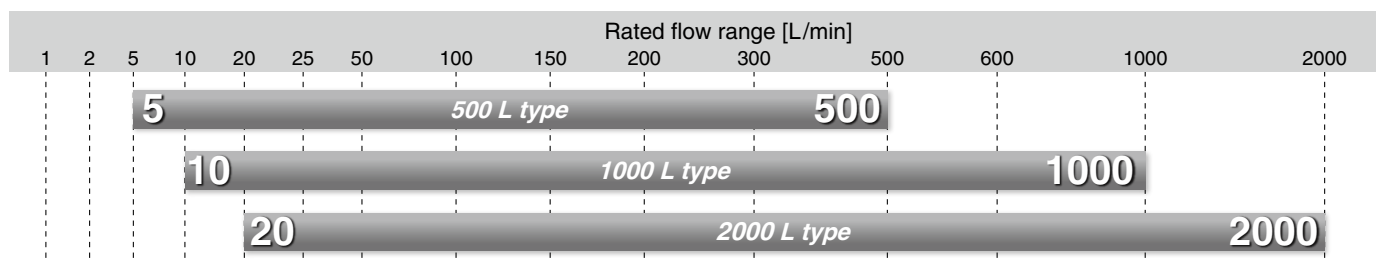


Expanded flow range

Wide range of flow measurement with one product

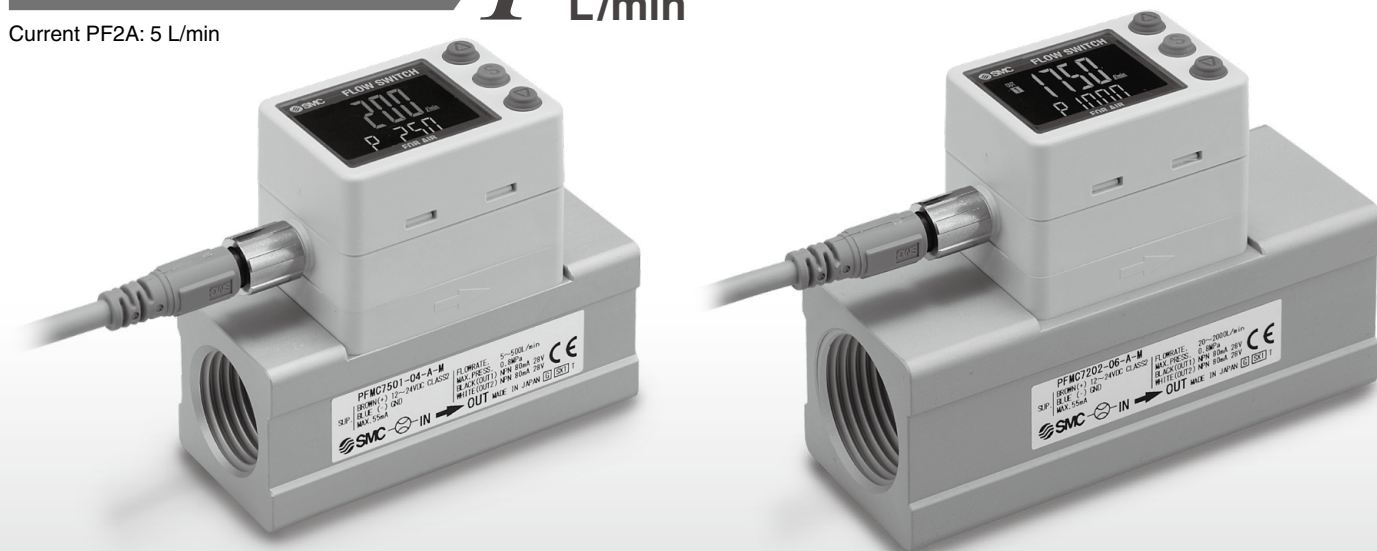
Flow ratio*2 **100:1**

*2 Rated flow ratio is 10 : 1 for the current PF2A.



Smallest settable increment **1** L/min

Current PF2A: 5 L/min

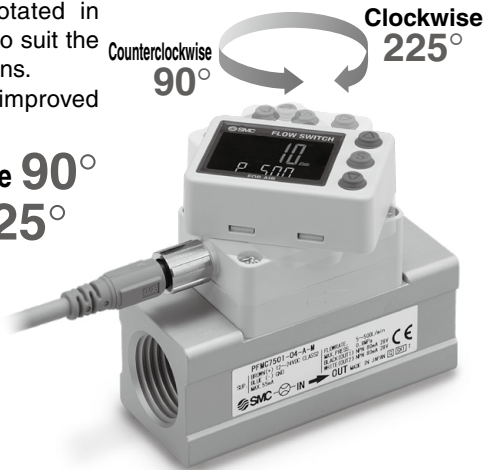


PFMC Series

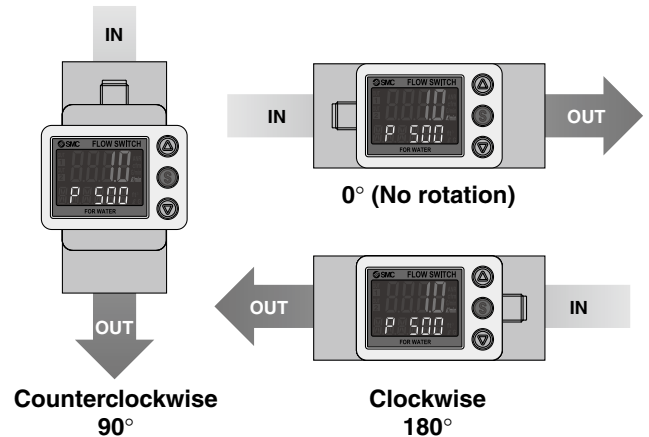
Rotary Display

Display can be rotated in increments of 45° to suit the installation conditions.
Easy operation, improved visibility.

Counterclockwise 90°
Clockwise 225°



Installation example



Response Time

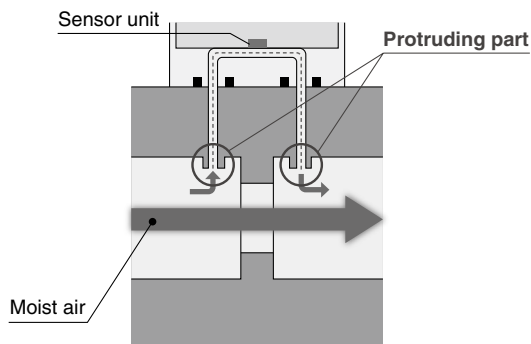
Can be selected from **50** ms (0.05 s)/ **0.5** s/ **1.0** s/ **2.0** s

Response time can be set depending on application.

Grease-free

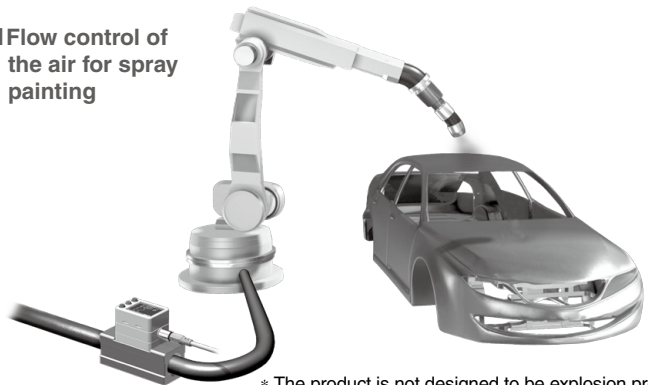
Bypass Structure

Bypass structure with protruding part at the main piping, reduces the contact of moist air with the sensor, reducing degradation of the sensor and maintaining accuracy.



Application

■ Flow control of the air for spray painting



* The product is not designed to be explosion proof.

Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

3-Color Display

Digital Flow Switch

PFMC Series (Grease-free)



RoHS

How to Order

PFMC 7 **501** - **04** - **A** - **M**

Rated flow range

501	5 to 500 L/min
102	10 to 1000 L/min
202	20 to 2000 L/min

Thread type

Nil	Rc
N	NPT
F	G*1

*1 ISO228 compliant

Port size

Symbol	Port size	Rated flow range		
		501	102	202
04	1/2	●	●	—
06	3/4	—	—	●

Output specification

Symbol	OUT1	OUT2
A	NPN	NPN
B	PNP	PNP
C	NPN	Analog (1 to 5 V)
D	NPN	Analog (4 to 20 mA)
E *2	PNP	Analog (1 to 5 V)
F *2	PNP	Analog (4 to 20 mA)
G *2	NPN	External input*3
H *2	PNP	External input*3

*2 Made to order

*3 Can be selected from accumulated value external reset and peak/bottom value reset.

Calibration certificate

Nil	None
A *8	Yes

*8 Made to order: Certificate in both English and Japanese

Option 2

Nil	No bracket
R	With bracket*7

*7 Each option is shipped together with the product, but not assembled.

Unit specification

Nil	Units selection function*5
M	SI unit only*6

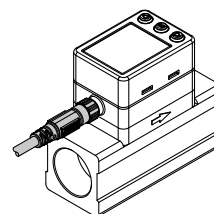
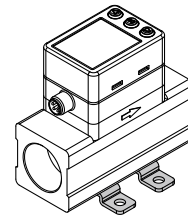
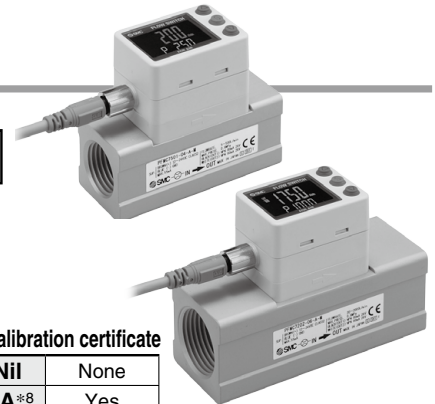
*5 This product is for overseas use only according to the New Measurement Act. (The SI unit type is provided for use in Japan.)

*6 Fixed unit: Instantaneous flow: L/min, Accumulated flow: L

Option 1

Nil	With lead wire and M8 connector (3 m)*4
N	Without lead wire and M8 connector

*4 Each option is shipped together with the product, but not assembled.



Options/Part Nos.

When only optional parts are required, order with the part numbers listed below.

Part no.	Option	Note
ZS-40-A	Lead wire and M8 connector	Length: 3 m
ZS-42-A	Bracket	Mounting screw for PFMC7501/7102 (M3 x 5, 2 pcs.)
ZS-42-B	Bracket	Mounting screw for PFMC7202 (M3 x 5, 2 pcs.)

Refer to the Web Catalog for flow switch precautions. For details on the specific product precautions, refer to the "Operation Manual" on the SMC website.

Specifications

	Model		PFCM7501	PFCM7102	PFCM7202
Fluid	Applicable fluid		Dry air, N ₂ (Air quality grade is JIS B 8392-1 1.1.2 to 1.6.2, ISO 8573-1 1.1.2 to 1.6.2.)		
	Fluid temperature range		0 to 50°C		
Flow	Detection method		Thermal type		
	Rated flow range		5 to 500 L/min	10 to 1000 L/min	20 to 2000 L/min
	Set point range	Instantaneous flow	5 to 525 L/min	10 to 1050 L/min	20 to 2100 L/min
		Accumulated flow	0 to 999,999,990 L		
	Smallest settable increment	Instantaneous flow	1 L/min		
		Accumulated flow	10 L		
	Accumulated volume per pulse (Pulse width = 50 ms)		1 L/pulse	10 L/pulse	
	Accumulated value hold function *1		Intervals of 2 mins or 5 mins can be selected.		
Pressure	Rated pressure range		0 to 0.8 MPa		
	Proof pressure		1.2 MPa		
	Pressure loss		Refer to “Pressure Loss” graph.		
	Pressure characteristics *2		±5% F.S. (0 to 0.8 MPa, 0.6 MPa standard)		
Electrical	Power supply voltage		12 to 24 VDC ±10% Ripple (p-p) 10% or less		
	Current consumption		55 mA or less		
	Protection		Polarity protection		
Accuracy	Display accuracy		±3% F.S.		
	Analog output accuracy		±3% F.S.		
	Repeatability		±1% F.S. (±2% F.S. when response time is set to 0.05 s)		
	Temperature characteristics		±5% F.S. (0 to 50°C, 25°C standard)		
Switch output	Output type		NPN open collector PNP open collector		
	Output mode		Select from Hysteresis, Window comparator, Accumulated output or Accumulated pulse output modes.		
	Switch operation		Select from Normal or Reversed output.		
	Max. load current		80 mA		
	Max. applied voltage (NPN only)		28 VDC		
	Internal voltage drop (Residual voltage)		NPN output type: 1 V or less (at load current of 80 mA) PNP output type: 1.5 V or less (at load current of 80 mA)		
	Response time *3		Select from 0.05 s, 0.1 s, 0.5 s, 1 s, or 2 s		
	Hysteresis *4		Variable from 0		
Analog output *5	Protection		Short circuit protection		
	Output type		Voltage output: 1 to 5 V, Current output: 4 to 20 mA Output impedance: Approx. 1 kΩ		
	Impedance	Voltage output	Maximum load impedance at power supply voltage of 24 V: 600 Ω, at power supply voltage of 12 V: 300 Ω		
		Current output	Minimum load impedance: 50 Ω		
	Response time *6		Linked with the response time of the switch output.		
External input *7	External input		Input voltage: 0.4 V or less (Reed or Solid state) for 30 ms or longer		
	Input mode		Accumulated value external reset, Peak/Bottom value reset Select from Standard condition or Normal condition.		
Display	Reference condition		Select from Standard condition or Normal condition.		
	Unit	Instantaneous flow	L/min, cfm (ft ³ /min)		
		Accumulated flow	L, ft ³		
	Display range	Instantaneous flow	(Displays [0] when value is within -25 to 525 L/min (Displays [0] when value is within -4 to 4 L/min range.)	(Displays [0] when value is within -50 to 1050 L/min (Displays [0] when value is within -9 to 9 L/min range.)	(Displays [0] when value is within -100 to 2100 L/min (Displays [0] when value is within -19 to 19 L/min range.)
		Accumulated flow	0 to 999,999,999 L		
	Minimum display unit	Instantaneous flow	1 L/min		
		Accumulated flow	10 L		
	Display		LCD, 2-screen display (Main screen/Sub screen) Main screen: Red/Green, Sub screen: White Main screen: 4 digits, 7 segments, Sub screen: 6 digits, 11 segments		
	Indicator LED		LED ON when switch output is ON. (OUT1/OUT2: Orange)		
Environment	Enclosure		IP65		
	Withstand voltage		250 VAC for 1 min between terminals and housing		
	Insulation resistance		2 MΩ or more (50 VDC measured via megohmmeter) between terminals and housing		
	Operating temperature range		Operating: 0 to 50°C, Stored: -10 to 60°C (No condensation or freezing)		
	Operating humidity range		Operating/Stored: 35 to 85% RH (No condensation or freezing)		
Standards			CE, UL (CSA), RoHS		
Piping specification			Rc1/2, NPT1/2, G1/2		Rc3/4, NPT3/4, G3/4
Materials of parts in contact with fluid			Stainless steel 304, PPS, Aluminum alloy, HNBR, Si, Au, GE4F		
Weight	Piping specification	Rc thread NPT thread	160 g		240 g
		G thread	170 g		245 g
	Lead wire		+80 g		
	Bracket		+25 g		+30 g

*1 When using the accumulated value hold function, use the operating conditions to calculate the product life, and do not exceed it. The maximum access limit of the memory device is 1 million times. If the product is operated 24 hours per day, the product life will be as follows:
 • 5 min interval: life is calculated as 5 min x 1 million = 5 million min = 9.5 years
 • 2 min interval: life is calculated as 2 min x 1 million = 2 million min = 3.8 years
 If the accumulated value external reset is repeatedly used, the product life will be shorter than the calculated life.

*2 Do not release the OUT side piping port of the product directly to the atmosphere without connecting piping. If the product is used with the piping port released to atmosphere, accuracy may vary.

*3 The time from when the flow is changed by a step input (when the flow rate changes from 0 to the maximum flow instantaneously) until the switch output turns ON (or OFF) when set at 90% of the rated flow rate.

*4 If the flow fluctuates around the set value, be sure to keep a sufficient margin. Otherwise, chattering will occur.

*5 Setting is only possible for models with analog output.

*6 The time from when the flow is changed as a step input (when the flow rate changes from 0 to the maximum flow instantaneously) until the analog output reaches 90% of the rated flow rate.

*7 Setting is only possible for models with external input.

PFMC Series

Flow Range

Model	Flow range					
	-100 L/min	0 L/min	200 L/min	500 L/min	1000 L/min	2000 L/min
PFMC7501		5 L/min	500 L/min			
		5 L/min	525 L/min			
	-25 L/min		525 L/min			
PFMC7102		10 L/min	1000 L/min			
		10 L/min	1050 L/min			
	-50 L/min		1050 L/min			
PFMC7202		20 L/min	2000 L/min			
		20 L/min	2100 L/min			
	-100 L/min		2100 L/min			

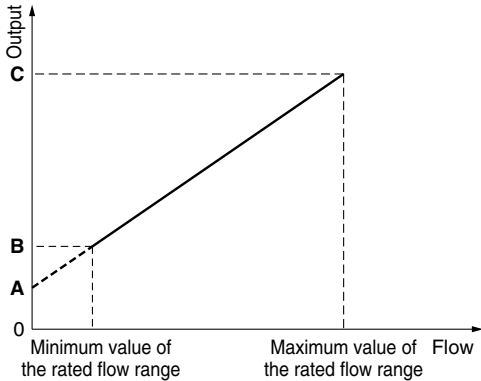
Rated flow range
Set point range
Display range

Analog Output

Flow/Analog Output

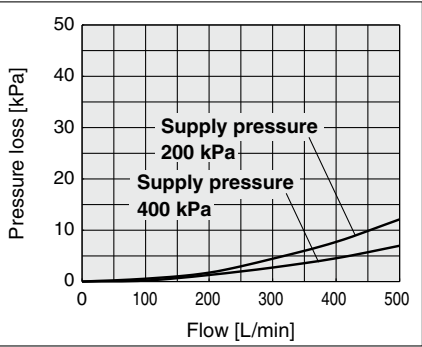
	A	B	C
Voltage output	1 V	1.04 V	5 V
Current output	4 mA	4.16 mA	20 mA

Model	Minimum value of the rated flow range	Maximum value of the rated flow range
PFMC7501	5 L/min	500 L/min
PFMC7102	10 L/min	1000 L/min
PFMC7202	20 L/min	2000 L/min

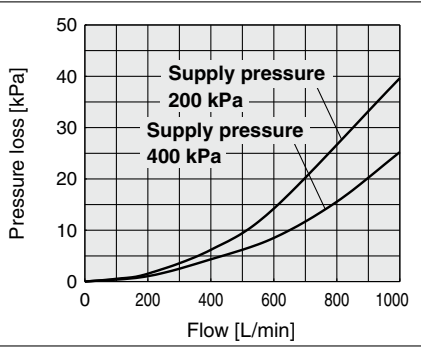


Pressure Loss (Reference Data)

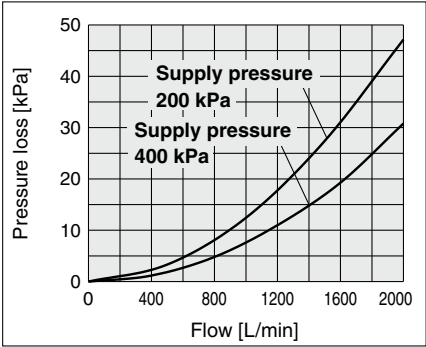
PFMC7501 (for 500 L/min)



PFMC7102 (for 1000 L/min)

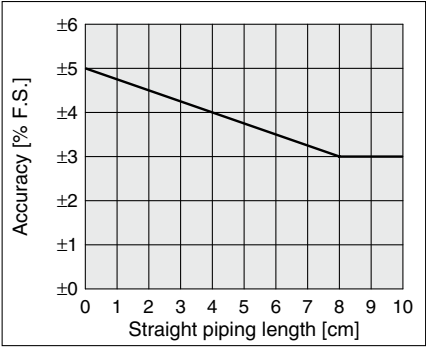
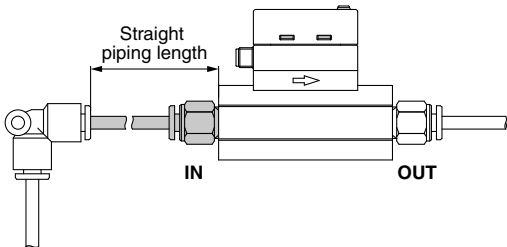


PFMC7202 (for 2000 L/min)



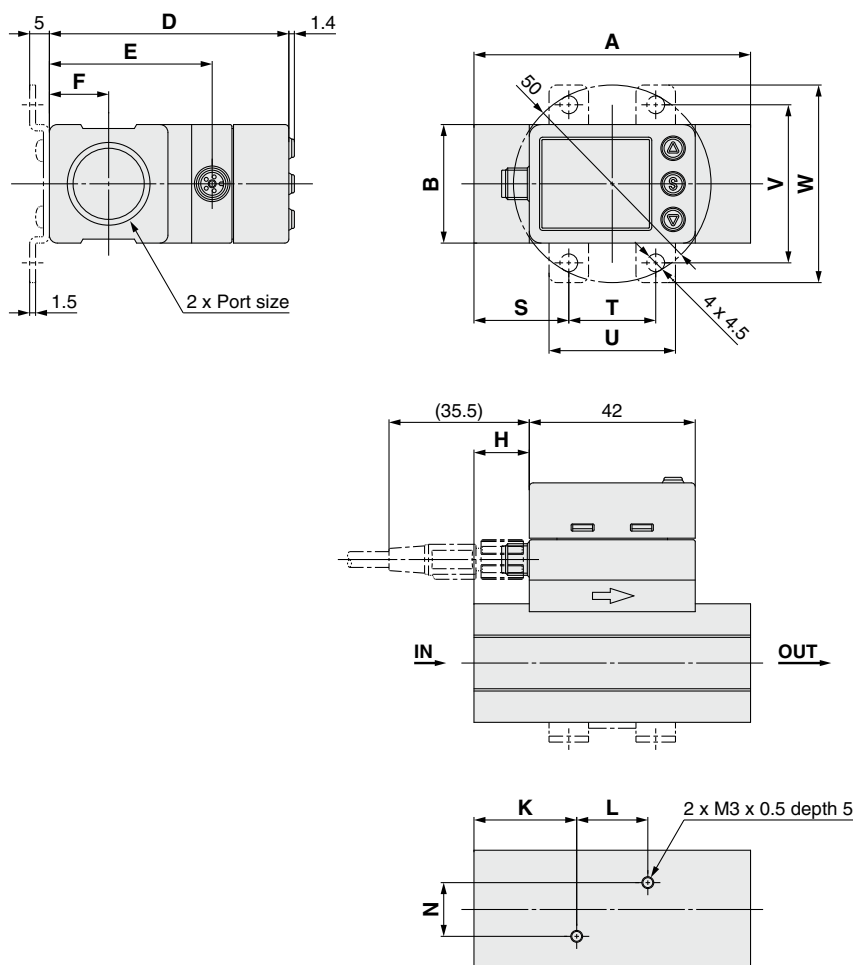
IN Side Straight Piping Length and Accuracy (Reference Data)

- The piping on the IN side must have a straight section of piping with a length of 8 cm or more. If a straight section of piping is not installed, the accuracy can vary by approximately $\pm 2\%$ F.S.
- * "Straight section" means a part of the piping without any bends or rapid changes in the cross sectional area.
- When the PFMC7501 or 7102 is connected to tubing, use a tube I.D. 9 mm or more just before the product. The accuracy can vary by approximately $\pm 2\%$ F.S. when such tubing is not used.



Dimensions

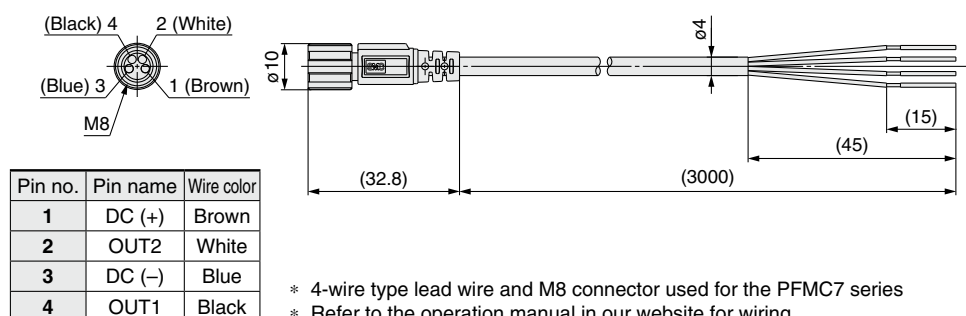
PFMC7501/7102/7202



Model	Symbol	Port size	A	B	D	E	F	H	K	L	N
PFMC7501/7102		Rc1/2, NPT1/2	70	30	60.6	41.2	15	14	26	18	13.6
PFMC7202		Rc3/4, NPT3/4, G3/4	90	35	66.1	46.7	17.5	24	31	28	16.8
PFMC7501/7102		G1/2	76	30	60.6	41.2	15	14	26	18	13.6

Model	Symbol	Bracket dimensions				
		S	T	U	V	W
PFMC7501/7102		24	22	32	40	50
PFMC7202		30	30	42	48	58

Lead wire and M8 connector (Part no.: ZS-40-A)



Pin no.	Pin name	Wire color
1	DC (+)	Brown
2	OUT2	White
3	DC (-)	Blue
4	OUT1	Black

* 4-wire type lead wire and M8 connector used for the PFMC7 series
* Refer to the operation manual in our website for wiring.

Cable Specifications

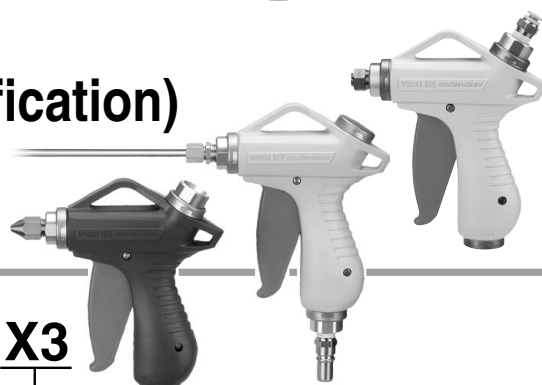
Conductor	Nominal cross section	AWG23
	Outside diameter	Approx. 0.7 mm
Insulator	Material	Heat-resistant PVC
	Outside diameter	Approx. 1.1 mm
Sheath	Color	Brown, White, Black, Blue
	Material	Heat-and oil-resistant PVC
Finished outside diameter		ø4

Blow Gun

VMG-X3

(White Vaseline Specification)

RoHS



How to Order

VMG 1 1 W - 02 - 32 - C - X3

Piping entry

1	Bottom
2	Top

Body color

W	White
BU	Dark blue

• White vaseline

With nozzle cover (Only for male thread nozzle, ø6 extension nozzle)

Nil	None
C	With nozzle cover/HNBR
CF	With nozzle cover/Fluororubber

Connection size

Symbol	Piping connection method	Size and model no.	
02	Threaded	Thread size	Rc1/4
03			Rc3/8
N02			NPT1/4
N03			NPT3/8
F02			G1/4
F03			G3/8
11	S coupler	Model no. of coupler used	KK4P-02MS
12	plug		KK130P-02MS
H06	Metric size One-touch fitting	Model no. of fitting used	KQ2H06-02AS-X12
H08			KQ2H08-02AS-X12
H10			KQ2H10-02AS-X12
H07	Inch size One-touch fitting	Model no. of fitting used	KQ2H07-35AS-X12
H09			KQ2H09-35AS-X12
H11			KQ2H11-35AS-X12

Note 1) S coupler and fitting are included in the same package.

Note 2) Port size is Rc1/4 if using the S coupler plug.

Note 3) The blow gun port size is Rc1/4 if using the metric size One-touch fitting.

Note 4) The blow gun port size is NPT1/4 if using the inch size One-touch fitting.

Nozzle

Symbol	Type	Nozzle size	Nozzle part no.
Nil	Without nozzle		
01	Male thread nozzle	ø1	KN-R02-100
02		ø1.5	KN-R02-150
03		ø2	KN-R02-200
04		ø2.5	KN-R02-250
05		ø3	VMG1-R02-300
06		ø3.5	VMG1-R02-350
07	High efficiency nozzle	ø4	VMG1-R02-400
11		ø1	KNH-R02-100
12		ø1.5	KNH-R02-150
13		ø2	KNH-R02-200
21	Low noise nozzle with male thread	ø0.75 x 4	KNS-R02-075-4
22		ø0.9 x 8	KNS-R02-090-8
23		ø1 x 4	KNS-R02-100-4
24		ø1.1 x 8	KNS-R02-110-8

Extension nozzle

Symbol	Type	Nozzle length	Nozzle size	Nozzle part no.
31	ø6 copper extension nozzle (Note)	300 mm	ø1.5	VMG1-06-150-300
32			ø2	VMG1-06-200-300
33		600 mm	ø1.5	VMG1-06-150-600
34			ø2	VMG1-06-200-600
35		100 mm	ø1.5	VMG1-06-150-100
36			ø2	VMG1-06-200-100
37	ø8 copper extension nozzle (Note)	150 mm	ø1.5	VMG1-06-150-150
38			ø2	VMG1-06-200-150
41		100 mm	ø2.5	VMG1-08-250-100
42			ø3	VMG1-08-300-100
43			ø3.5	VMG1-08-350-100
44		150 mm	ø2.5	VMG1-08-250-150
45			ø3	VMG1-08-300-150
46			ø3.5	VMG1-08-350-150
47		300 mm	ø2.5	VMG1-08-250-300
48			ø3	VMG1-08-300-300
49			ø3.5	VMG1-08-350-300
50	ø8 copper extension nozzle (Note)	600 mm	ø2.5	VMG1-08-250-600
51			ø3	VMG1-08-300-600
52			ø3.5	VMG1-08-350-600

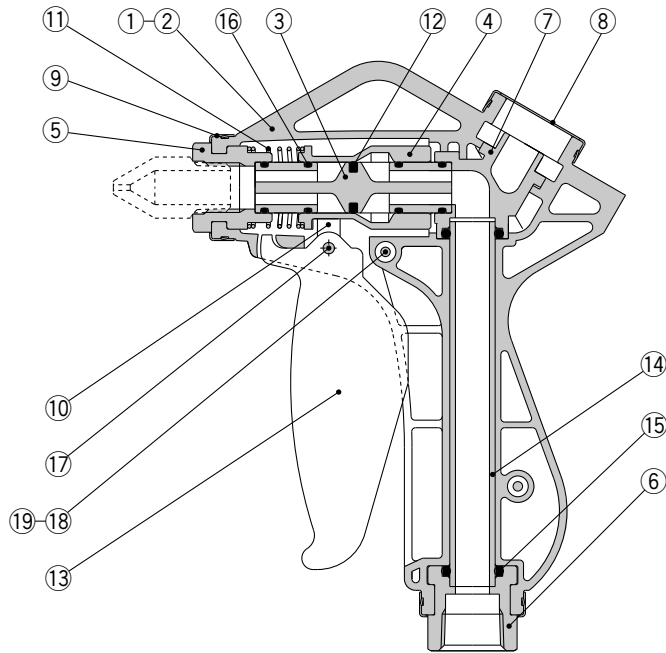
Note) Part number for set of extension nozzle and fitting. Extension nozzle and fitting are included in the same package.

Refer to "How to attach extension nozzle" in the operation manual for assembly procedures.

Specifications

Fluid	Air	
Operating pressure range	0 to 1.0 MPa	
Proof pressure	1.5 MPa	
Ambient and fluid temperatures	-5 to 60°C (No freezing)	
Flow rate characteristics (With nozzle removed)	C (dm³/s·bar): 6.0, b: 0.25 (Effective area: 30 mm²)	
Port size	Rc, NPT, G 1/4, 3/8	
Piping entry	Bottom	Top
Nozzle port size	Rc1/4	
Weight (Main unit only)	165 g	
Operational force (when the valve is fully open)	7 N	

Construction



Component Parts

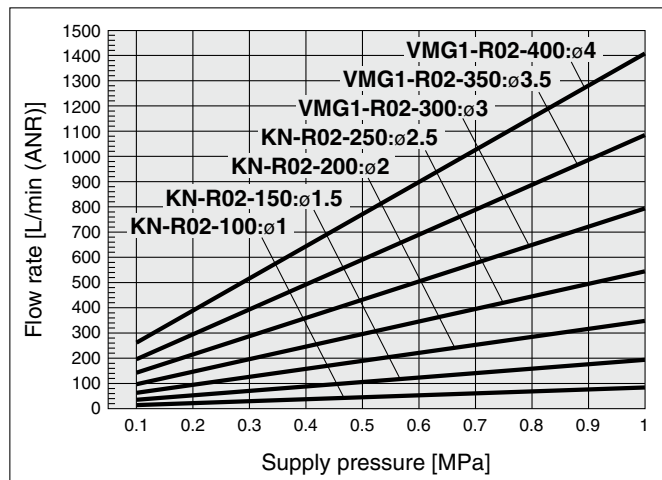
No.	Description	Material	Note
1	Body L	PBT	
2	Body R	PBT	
3	Main valve	PBT	
4	Valve guide	POM	
5	Nozzle holder	Aluminium alloy	Anodized
6	Port	Aluminium alloy	Anodized
7	Elbow	PBT	Only for the VMG12□
8	Cover	Stainless steel	
9	Ring	Stainless steel	
10	Arm	PBT	
11	Spring	Stainless steel	
12	Main valve seal	HNBR	
13	Lever	PBT	
14	Piping (bottom)	POM	Only for the VMG11□ Combined with the elbow (7).
15	O-ring	NBR	
16	O-ring	NBR	
17	Parallel pin	Stainless steel	
18	Cross recessed round head screw	Stainless steel	
19	Hexagon nut	Stainless steel	

Note) Grease is used on rubber and sliding sections.

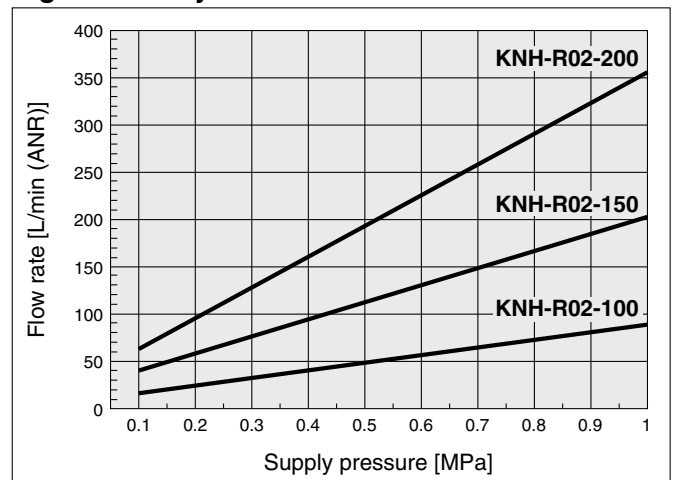
Flow Rate Characteristics

Note) Values when the main valve is fully open

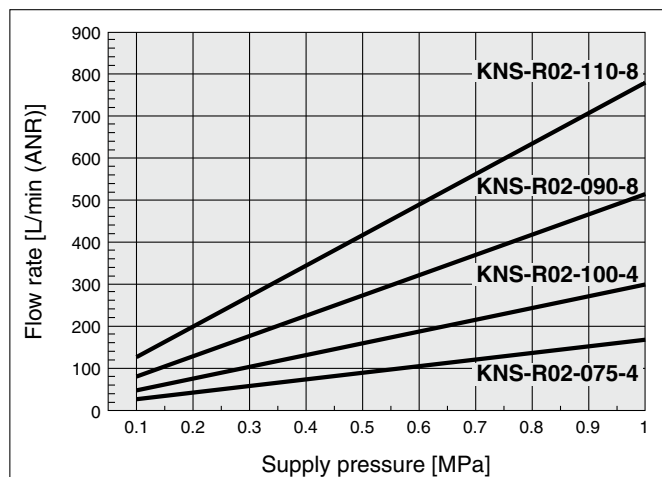
Male thread nozzle



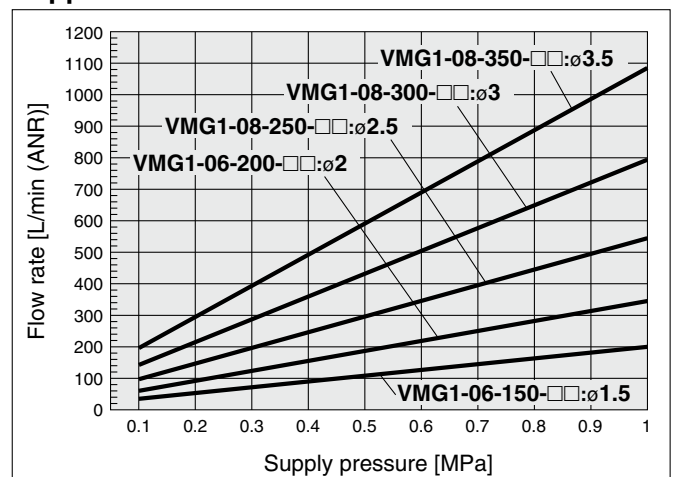
High efficiency nozzle



Low noise nozzle with male thread



Copper extension nozzle

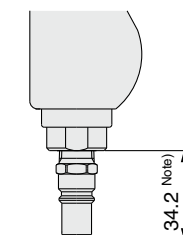
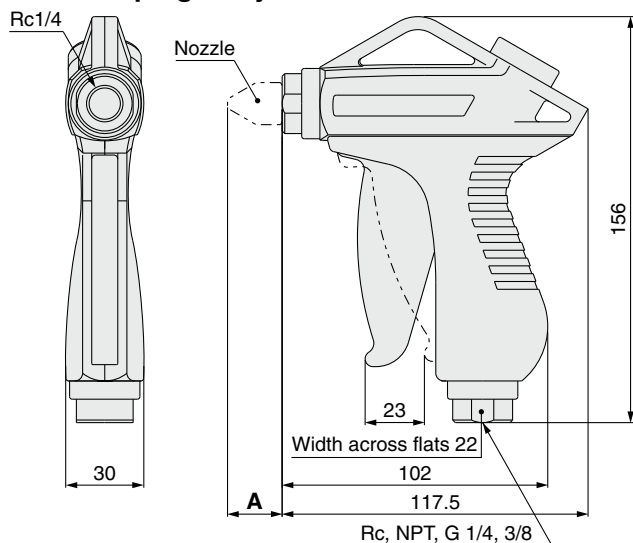


VMG-X3

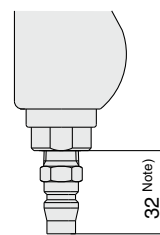
Dimensions

VMG11/Piping entry: Bottom

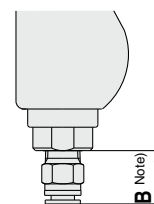
Note) Reference dimensions after installation



S coupler plug mounting
(KK4P-02MS)

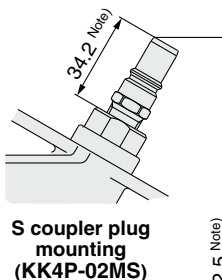
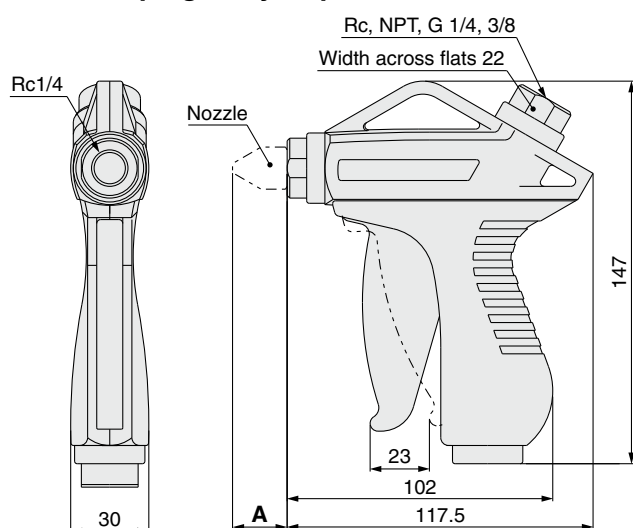


S coupler plug mounting
(KK130P-02MS)

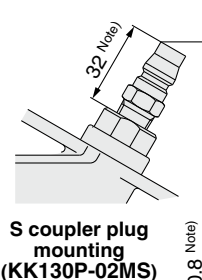


One-touch fitting mounting
(KQ2H series)

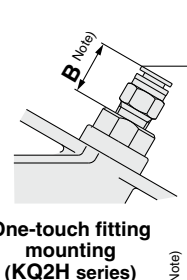
VMG12/Piping entry: Top



S coupler plug mounting
(KK4P-02MS)



S coupler plug mounting
(KK130P-02MS)



One-touch fitting mounting
(KQ2H series)

Symbol	Type	Nozzle part no.	Nozzle size	A (Note)
01	Male thread nozzle	KN-R02-100	ø1	23.4
02		KN-R02-150	ø1.5	23
03		KN-R02-200	ø2	22.5
04		KN-R02-250	ø2.5	22.1
05		VMG1-R02-300	ø3	22
06		VMG1-R02-350	ø3.5	21.5
07		VMG1-R02-400	ø4	21.5
11	High efficiency nozzle	KNH-R02-100	ø1	44
12		KNH-R02-150	ø1.5	
13		KNH-R02-200	ø2	
21	Low noise nozzle with male thread	KNS-R02-075-4	ø0.75 x 4	12
22		KNS-R02-090-8	ø0.9 x 8	
23		KNS-R02-100-4	ø1 x 4	
24		KNS-R02-110-8	ø1.1 x 8	
31	ø6 copper extension nozzle (Note)	Nozzle length: 300 mm VMG1-06-150-300	ø1.5	298
32		Nozzle length: 300 mm VMG1-06-200-300	ø2	
33		Nozzle length: 600 mm VMG1-06-150-600	ø1.5	598
34		Nozzle length: 600 mm VMG1-06-200-600	ø2	
35		Nozzle length: 100 mm VMG1-06-150-100	ø1.5	98
36		Nozzle length: 100 mm VMG1-06-200-100	ø2	
37		Nozzle length: 150 mm VMG1-06-150-150	ø1.5	148
38		Nozzle length: 150 mm VMG1-06-200-150	ø2	

Note) Reference dimensions after installation

Symbol	Type	Nozzle part no.	Nozzle size	A (Note)
41		Nozzle length: 100 mm VMG1-08-250-100	ø2.5	98
42		Nozzle length: 100 mm VMG1-08-300-100	ø3	
43		Nozzle length: 100 mm VMG1-08-350-100	ø3.5	
44		Nozzle length: 150 mm VMG1-08-250-150	ø2.5	
45	ø8 copper extension nozzle (Note)	Nozzle length: 150 mm VMG1-08-300-150	ø3	148
46		Nozzle length: 150 mm VMG1-08-350-150	ø3.5	
47		Nozzle length: 300 mm VMG1-08-250-300	ø2.5	
48		Nozzle length: 300 mm VMG1-08-300-300	ø3	
49		Nozzle length: 300 mm VMG1-08-350-300	ø3.5	298
50		Nozzle length: 600 mm VMG1-08-250-600	ø2.5	
51		Nozzle length: 600 mm VMG1-08-300-600	ø3	
52		Nozzle length: 600 mm VMG1-08-350-600	ø3.5	

Type	One-touch fitting model	B (Note)	C (Note)
Metric size One-touch fitting	KQ2H06-02AS-X12	12	153.2
	KQ2H08-02AS-X12	17.3	158.6
	KQ2H10-02AS-X12	22.6	163.8
Inch size One-touch fitting	KQ2H07-35AS-X12	12.3	153.7
	KQ2H09-35AS-X12	17.7	158.9
	KQ2H11-35AS-X12	20.7	162

Note) Reference dimensions after installation

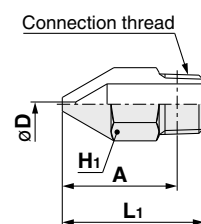
Dimensions: Nozzles/KN Series

Male thread nozzle: KN



Part no.	Nozzle size D	Connection thread	Width across flats H₁	L₁	A*
KN-R02-100	ø1	R1/4	14	31.4	25.4
KN-R02-150	ø1.5			31	25
KN-R02-200	ø2			30.5	24.5
KN-R02-250	ø2.5			30.1	24.1
VMG1-R02-300	ø3			30	24
VMG1-R02-350	ø3.5			29.5	23.5
VMG1-R02-400	ø4			29.5	23.5

* Reference dimensions after R thread installation

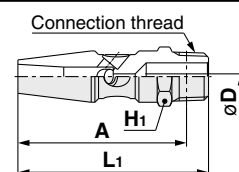


High efficiency nozzle: KNH



Part no.	Nozzle size D	Connection thread	Width across flats H₁	L₁	A*
KNH-R02-100	ø1	R1/4	14	52	46
KNH-R02-150	ø1.5				
KNH-R02-200	ø2				

* Reference dimensions after R thread installation

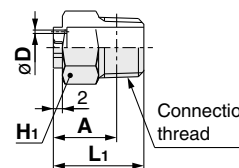


Low noise nozzle with male thread: KNS



Part no.	Nozzle size D	Connection thread	Width across flats H₁	L₁	A*
KNS-R02-075-4	ø0.75 x 4	R1/4	14	20	14
KNS-R02-090-8	ø0.9 x 8				
KNS-R02-100-4	ø1 x 4				
KNS-R02-110-8	ø1.1 x 8				

* Reference dimensions after R thread installation



Copper extension nozzle set

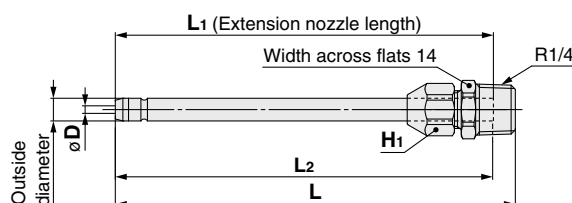


Part no.	Nozzle size D	Outside diameter	L₁	L₂ Note1)	L Note1)	Width across flats H₁
VMG1-06-150-100	ø1.5	ø6	100	100	106	12
VMG1-06-200-100	ø2					
VMG1-06-150-150	ø1.5		150	150	156	
VMG1-06-200-150	ø2					
VMG1-06-150-300	ø1.5		300	300	306	
VMG1-06-200-300	ø2					
VMG1-06-150-600	ø1.5	ø8	600	600	606	14
VMG1-06-200-600	ø2					
VMG1-08-250-100	ø2.5		100	100	106	
VMG1-08-300-100	ø3					
VMG1-08-350-100	ø3.5					
VMG1-08-250-150	ø2.5		150	150	156	
VMG1-08-300-150	ø3					
VMG1-08-350-150	ø3.5					
VMG1-08-250-300	ø2.5		300	300	306	
VMG1-08-300-300	ø3					
VMG1-08-350-300	ø3.5					
VMG1-08-250-600	ø2.5		600	600	606	
VMG1-08-300-600	ø3					
VMG1-08-350-600	ø3.5					

Note 1) Reference dimensions after installation

Note 2) Copper extension nozzle and self-align fitting are included in the same package, (but unassembled).

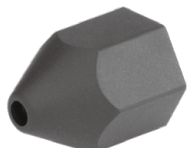
Refer to "How to attach extension nozzle" in the operation manual for assembly procedures.



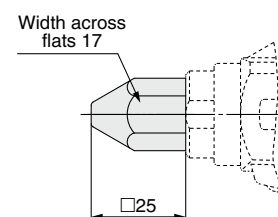
Dimensions: Nozzle Cover

Cover for male thread nozzle

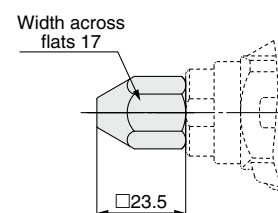
(mm)



Nozzle cover part no.	Material	Applicable blow gun model	
		Model	Nozzle type
P5670129-01	HNBR	VMG1□□-□-01 to 04	Male thread nozzle
P5670129-01F	Fluororubber		ø1 to ø2.5
P5670129-02	HNBR	VMG1□□-□-05 to 07	Male thread nozzle
P5670129-02F	Fluororubber		ø3 to ø4



VMG1□-□□-1 to 04



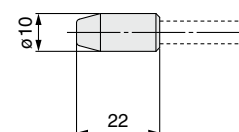
VMG1□-□□-05 to 07

Cover for copper extension nozzle

(mm)



Nozzle cover part no.	Material	Applicable blow gun model	
		Model	Nozzle type
P5670129-11	HNBR	VMG1□□-□-31 to 38	ø6 copper extension nozzle
P5670129-11F	Fluororubber		



VMG1□-□□-31 to 38

Pressure Gauge for General Purpose

G33-X4

(Oil-free Specification)



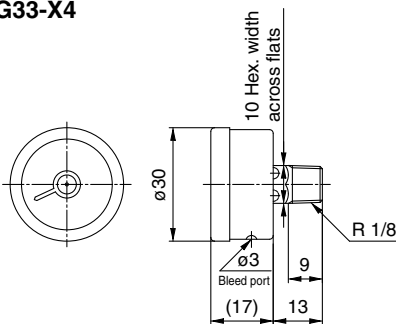
- Be sure to read the precautions in the **Web Catalog** for selection and mounting.

Symbol



Dimensions

G33-X4



G33-□-01-X4

Standard Specifications

Model		G33-X4
Type		Back side thread
Port size Note 1)		R 1/8
Fluid Note 2)		Air
Indication precision		±3% F.S. (Full span)
Material	Case	Stainless steel
	Clear cover	Glass
	Stud	Brass
	Bourdon tube	Brass

Note1) When mounting a pressure gauge, use caution not to tighten excessively. Excessive tightening will cause product to be damaged. Use a pipe tape for sealing. Recommended tightening torque: R 1/8: Set between 7 and 9 N·m.

Note2) When using other fluids, please consult with SMC for fluid compatibility information concerning corrosive potential.

Model (Standard)

Model	Pressure range Note 1)	Indication unit	Connection thread	Note
	MPa			
G33-2-01-X4	0 to 0.2	MPa	R 1/8	—
G33-3-01-X4	0 to 0.3			
G33-4-01-X4	0 to 0.4			
G33-6-01-X4	0 to 0.6			
G33-10-01-X4	0 to 1.0			

Note 1) Do not apply pressure more than the maximum display pressure. This will cause a malfunction.

How to Order

G 33 - 10 - 01 - X4	
Pressure gauge	
Model	
Symbol	Outside diameter
33	ø30
Option	
Symbol	Specifications
X4	Oil-free (Wetted parts degrease washing)
Connection thread	
Symbol	Size
01	R 1/8
Max. display pressure	
Symbol	Unit
2	0.2 MPa
3	0.3 MPa
4	0.4 MPa
6	0.6 MPa
10	1.0 MPa

Pressure Gauge for General Purpose/ With Limit Indicator

G36-X4 (Oil-free Specification) RoHS



· Be sure to read the precautions in the **Web Catalog** for selection and mounting.

Symbol



Standard Specifications

Model		G36-X4
Type		Back side thread
Port size Note 1)		R $\frac{1}{8}$
Fluid Note 2)		Air
Indication precision Note 3)		±3% F.S. (Full span)
Fluid contact part cleaning		Wetted parts degrease washing
Material	Case (Surface treatment)	Stainless steel (Black melamine painted)
	Clear cover (Surface treatment)	Polycarbonate (Hard coated) Part no.: G36-00-00-3
	Stud (Surface treatment)	Brass
	Bourdon tube	Brass
Weight (kg)		0.04

Note 1) When installing a pressure gauge, be careful not to fasten too tight. Excessive tightening will result in damage. Use a sealant tape for sealing.

Note 2) Avoid freezing as this may cause a malfunction.

Note 3) The guaranteed temperature range is 23°C ±5°C.

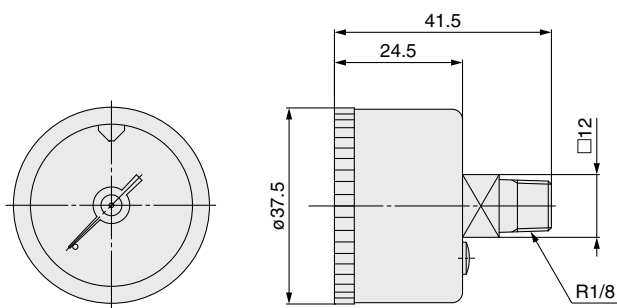
Model (Standard)

Model	Pressure range Note)	Indication unit	Connection thread	Note
	MPa			
G36-2-01-X4	0 to 0.2	MPa	R $\frac{1}{8}$	—
G36-4-01-X4	0 to 0.4			
G36-7-01-X4	0 to 0.7			
G36-10-01-X4	0 to 1.0			

Note) Do not apply pressure more than the maximum display pressure. This will cause a malfunction.

Dimensions

G36-X4



How to Order

G 36 - 10 - 01 - X4

Special specification

Symbol	Specifications
X4	Oil-free (Wetted parts degrease washing)

Connection thread

Symbol	Size
01	R $\frac{1}{8}$

Max. display pressure

Symbol	Unit
2	0.2 MPa
4	0.4 MPa
7	0.7 MPa
10	1.0 MPa

Size

Symbol	O.D.
36	37.5

• Pressure gauge

Oil-free/External Parts Copper-free Pressure Gauge/ With Limit Indicator

G46E

RoHS



Be sure to read the precautions in the **Web Catalog** for selection and mounting.

Symbol



Standard Specifications

Model		G46E
Type		Back side thread
Port size Note 1)		R $\frac{1}{8}$, R $\frac{1}{4}$ (Option M: with M5 female thread)
Fluid Note 3)		Air
Indication precision Note 4)		$\pm 3\%$ F.S. (Full span)
Fluid contact part cleaning		Wetted parts degrease washing
Material	Case (Surface treatment)	Stainless steel (Black melamine painted)
	Clear cover (Surface treatment)	Polycarbonate (Hard coated) Part no.: G46-00-00-2
	Stud (Surface treatment)	Brass (Electroless nickel plating)
	Bourdon tube	Brass Note 2)
Weight (kg)		0.08
Attachment:		C Part no.: 1305104-1A
With cover ring assembly		C1 Part no.: 1305104-3A

Note 1) When mounting a pressure gauge, use caution not to tighten excessively. Excessive tightening will cause product failure. Use a sealant tape for sealing.

Note 2) Bourdon tube and internal movable parts (gear, etc.) are made of brass and are not electrolessly nickel plated. This is not an internally copper-free product.

Note 3) Avoid freezing as this may cause a malfunction.

Note 4) The guaranteed temperature range is 23°C $\pm 5^\circ\text{C}$.

Model (Standard)

Model	Pressure range ^{Note)}	Indication unit	Connection thread	Note
	MPa			
G46E-2-01/02	0 to 0.2	MPa	R 1/8, 1/4	—
G46E-4-01/02	0 to 0.4			
G46E-7-01/02	0 to 0.7			
G46E-10-01/02	0 to 1.0			
G46E-2-01 to 02M	0 to 0.2		R 1/8, 1/4 M5 (Female thread)	
G46E-4-01 to 02M	0 to 0.4			
G46E-7-01 to 02M	0 to 0.7			
G46E-10-01 to 02M	0 to 1.0			

Note) Do not apply pressure more than the maximum display pressure. This will cause a malfunction.

How to Order

G 46 E - 10 - 01 - - -

Pressure gauge

Size

Symbol	O.D.
46	$\phi 42.5$

Oil-free, external parts copper-free

Max. display pressure

Symbol	Unit
2	0.2 MPa
4	0.4 MPa
7	0.7 MPa
10	1.0 MPa

Connection thread

Symbol	Size
01	R $\frac{1}{8}$
02	R $\frac{1}{4}$

Attachment

Symbol	Specifications
Nil	Without cover ring assembly
C	Clear cover has no protrusion. (Clear cover is irremovable.)
C1	Clear cover has protrusion. (Clear cover is removable.)

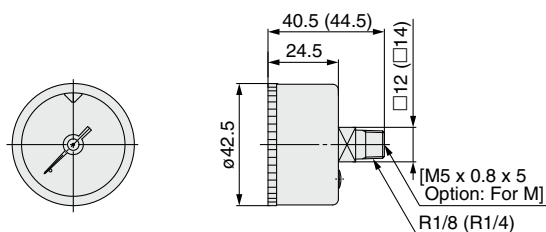
Option

Symbol	Specifications
Nil	—
M Note)	With M5 (Female thread)

Note) Use M5 female thread when piping onto a panel.

Dimensions * The dimensions in (): Connection thread R 1/4

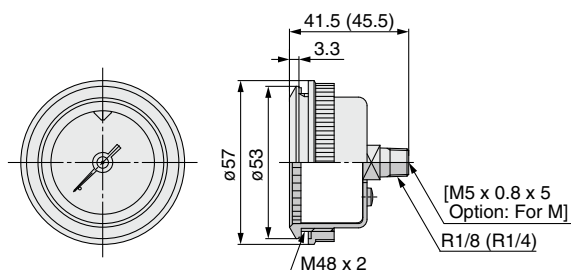
G46E-□□-01 to 02 (M)



With cover ring assembly (For panel mount)

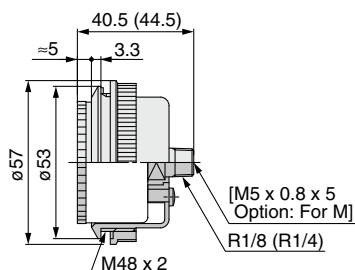
G46E-□□-01 to 02 (M)-C

Type C (Clear cover is not removable.)

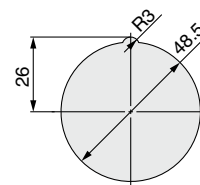


G46E-□□-01 to 02 (M)-C1

Type C1 (Clear cover is removable.)



Panel fitting dimensions
Plate thickness Max. 3.5 t



For details on the mounting method, refer to the **Web Catalog**.

Ionizer



Potential amplitude: **25 V or less** ^{Note 1)}

Rapid neutralization of static electricity: Fastest time: **0.1 seconds** ^{Note 2)}



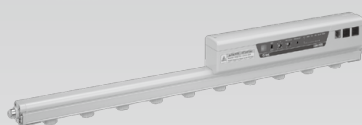
Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

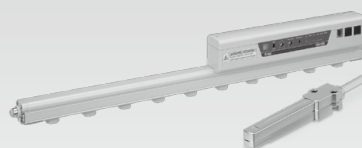
Pressure Control Equipment

Pneumatic Auxiliary Equipment



Dual AC type *IZS42 Series*

Potential amplitude of the workpiece is reduced with Dual AC type.



Feedback sensor type *IZS41 Series*

Rapid neutralization of static electricity by a feedback sensor



Standard type *IZS40 Series*

Simple operation: Can be controlled by powering the ionizer ON.

Note 1) IZS42, Installation height: 300 mm

Note 2) Conditions/With feedback sensor, Discharge time from 1000 V to 100 V
Discharged object: Charged plate (150 mm x 150 mm, capacitance 20 pF)
Installation distance: 200 mm (Tungsten emitter with air purge)

IZS40/41/42 Series



Dual AC type IZS42 Series (Potential amplitude reduction specification)

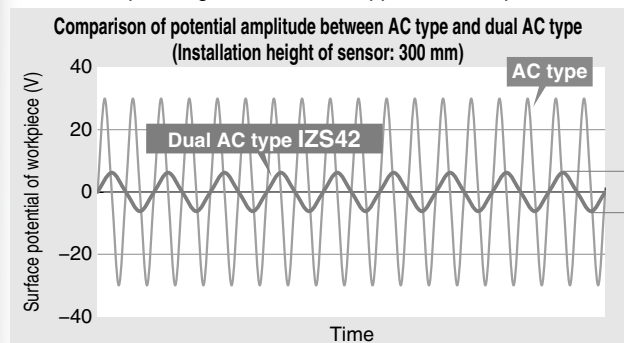
Potential amplitude: 25 V or less 80% reduction compared to the current model

(Compared to the IZS31 series at the installation height of 300 mm)

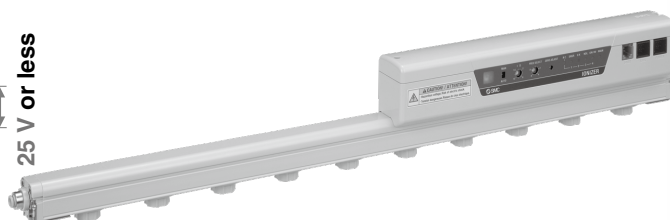
Potential amplitude is reduced with **SMC independent Dual AC type sensor**.

Static neutralization in consideration of damage to a device which is sensitive to electrostatic discharge (ESD) can be achieved.

Potential amplitude generated in the applicable workpiece is reduced even if the workpiece is mounted within close proximity of the ionizer.

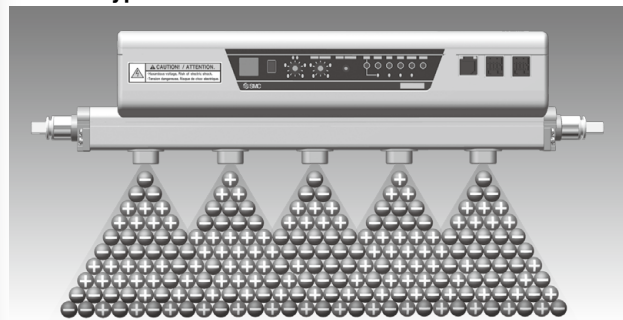


25 V or less



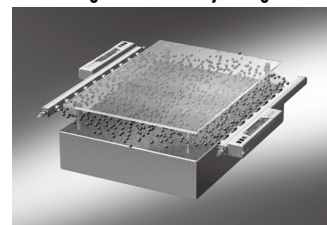
Independent Dual AC type is implemented.

Dual AC type/IZS42



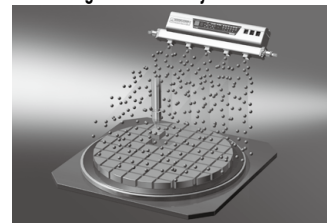
Discharges + ions and - ions at the same time to allow the + and - ions to reach the workpiece evenly, thereby reducing the potential amplitude.

Neutralizing static electricity on a glass substrate



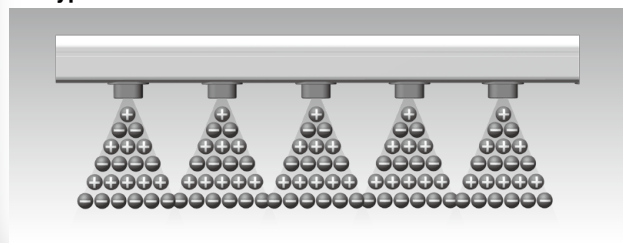
Prevents the breakage of glass substrates due to the static electricity which is generated when the substrate is lifted from the surface plate.

Neutralizing static electricity on an electric substrate



Prevents the breakage of electric substrates due to the static electricity which is generated when the substrates are picked up after dicing.

AC type



+ ion and - ion layers reach the workpiece alternately, which increases the potential amplitude.

Standard type IZS40 Series

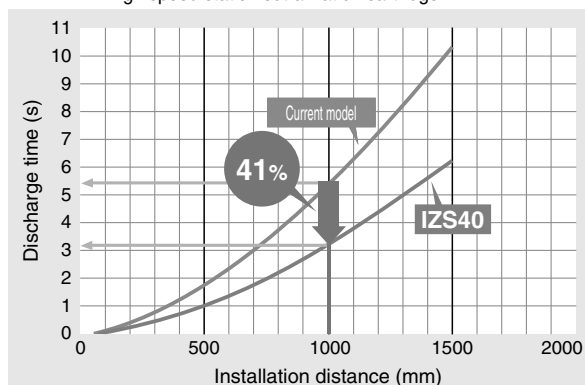
Simple operation: Can be controlled by powering the ionizer ON.

Discharge time = 3.2 seconds (41% shortened)
when installed at long distance (1000 mm)



Static neutralization data when voltage is reduced from 1000 V to 100 V.

Conditions: Ion generation frequency 30 Hz Supply pressure: 0.1 MPa
High speed static neutralization cartridge

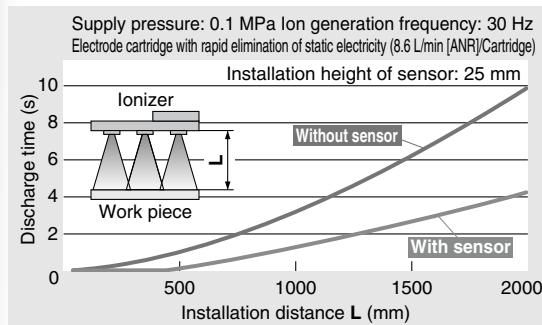
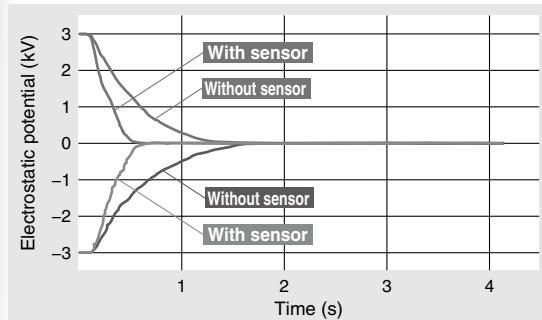


Feedback sensor type IZS41 Series (High speed static neutralization specification)

Rapid neutralization of static electricity by a feedback sensor

Note) An auto balance sensor is installed.

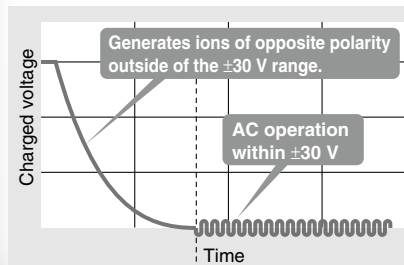
The discharge speed has been increased by detecting the workpiece's electrostatic potential by the feedback sensor (option) and continuously emitting ions with a reverse polarity.



Run mode after static neutralization (when the electrostatic potential is within ± 30 V) can be selected.

- **Energy saving run mode** Stops generating ions after static neutralization to reduce power consumption.
- **Continuous static neutralization run mode** After static neutralization, the ionizer continues to neutralize static electricity in AC mode while maintaining the electrostatic potential within ± 30 V.

Continuous static neutralization run mode

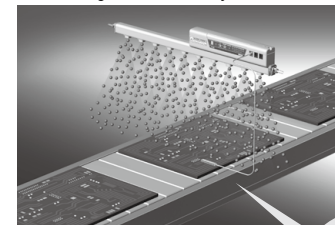


Mode		Ion emission waveform	
Sensing AC	Energy saving run	+	Stop
	Continuous static neutralization run	+	
AC (Without sensor)		+	
		-	
Workpiece electrification		Static neutralization completion	

Feedback sensor

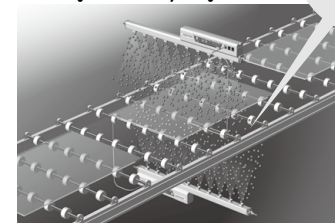
Detects the polarity of a discharged object and measures the charged voltage.

Neutralizing static electricity on an electric substrate



- Prevents element disruption due to discharge.
- Prevents adhesion of dust.

Neutralizing static electricity on a glass substrate



- Prevents breakage due to adhesion and discharge.
- Prevents adhesion of dust.

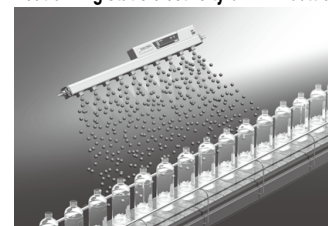
- AC adapter power supply is available.

e-con connector is used.



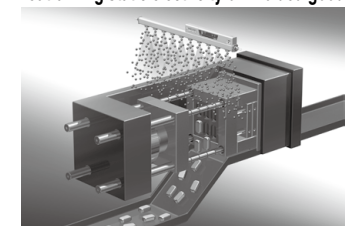
Suitable for static neutralization of resin and rubber pieces (small parts).

Neutralizing static electricity on PET bottles



- Trip-resistance during conveying
- Prevents adhesion of dust.

Neutralizing static electricity on molded goods



- Improves detachability of molded goods from a die.

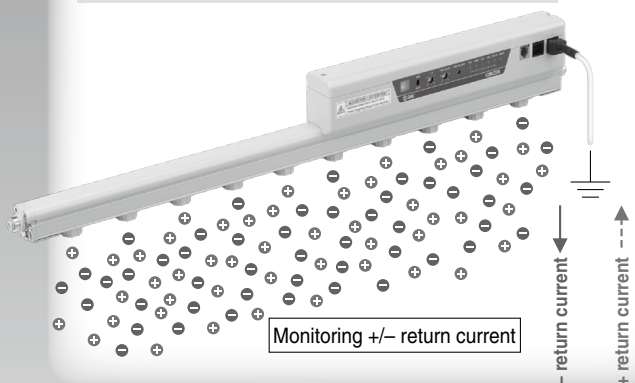
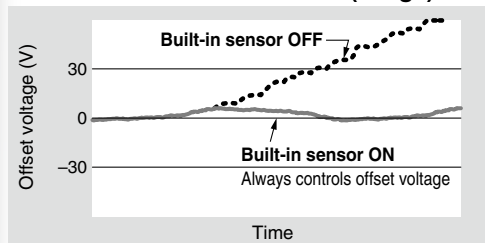
Reduction of adjustment and maintenance labor by auto balance sensor IZS 41 IZS 42

Built-in type (Standard)

The sensor is installed within the ionizer body and may be mounted anywhere.

The offset voltage (ion balance) in the static neutralization area is controlled so that the voltage is maintained at a constant value by monitoring the ions emitted from the ionizer using the ground line, and adjusting the + and - ion supply rate.

Effect of auto balance sensor (Image)

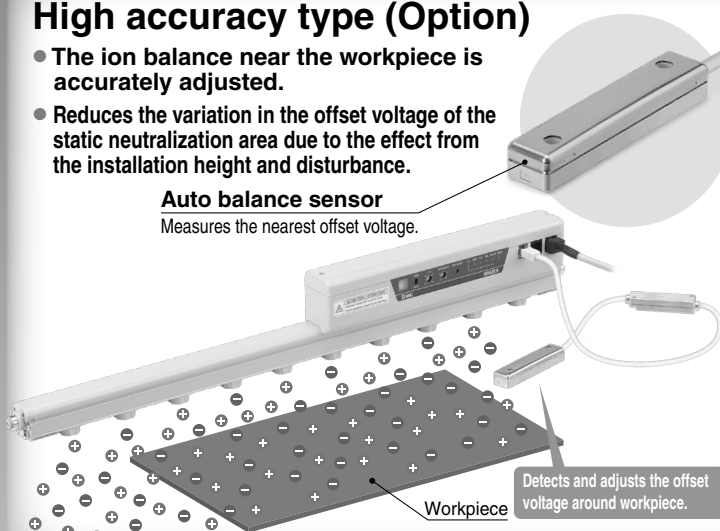


High accuracy type (Option)

- The ion balance near the workpiece is accurately adjusted.
- Reduces the variation in the offset voltage of the static neutralization area due to the effect from the installation height and disturbance.

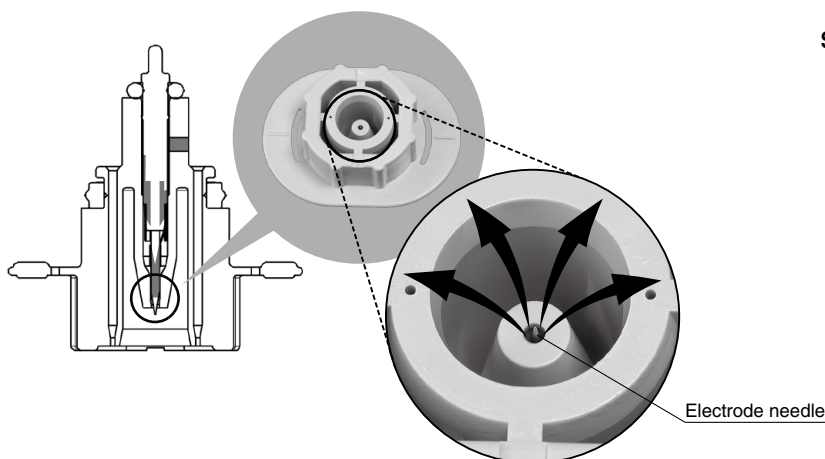
Auto balance sensor

Measures the nearest offset voltage.



Low maintenance emitter cartridges are used.

- Minimizes contamination of emitters by discharging compressed air at the surface of the emitters.



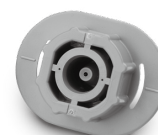
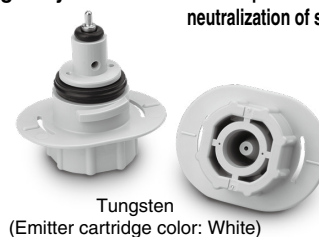
Air covers the emitter.

- 2 types of emitter materials

Tungsten

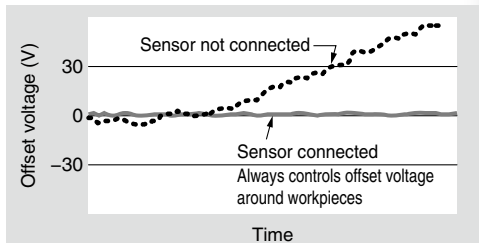
: General-purpose emitter excellent against wear

Single crystal silicon: Emitter specialized in static neutralization of silicon wafers



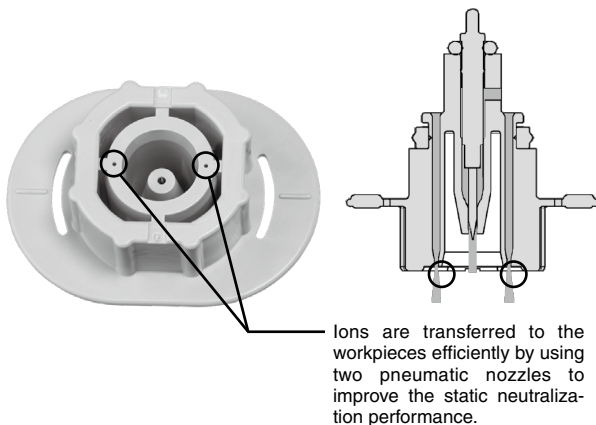
- The mode can be selected from “Manual Run” mode which performs adjustment only when connected, and “Automatic Run” mode which always performs adjustment while connected.

Effect of auto balance sensor (Image)



- High speed static neutralization cartridges and energy saving static neutralization cartridges are available.

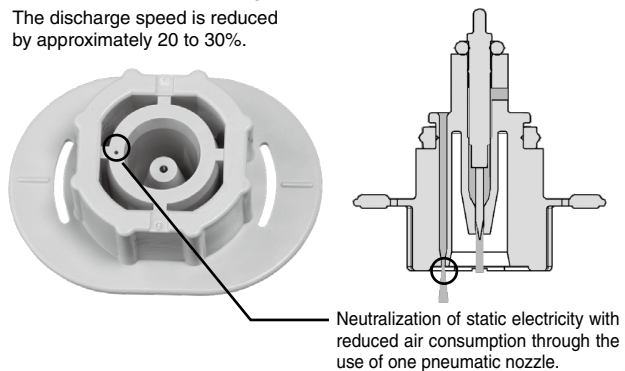
High speed de-ionizing cartridge



Energy saving type de-ionizing cartridge

The flow rate consumption of the energy-saving static neutralization cartridge is approximately **50%** less than that of the high speed static neutralization cartridge.

The discharge speed is reduced by approximately 20 to 30%.



Setting ionizer with remote controller

IZS 41 IZS 42

- May be used to adjust and set several ionizers remotely.
- Can recognize and control up to 16 ionizers through address setting.
- Frequency setting
- Offset voltage adjustment
- Maintenance detection alarm level can be adjusted (3 levels).
- Built-in sensor valid/invalid may be selected.

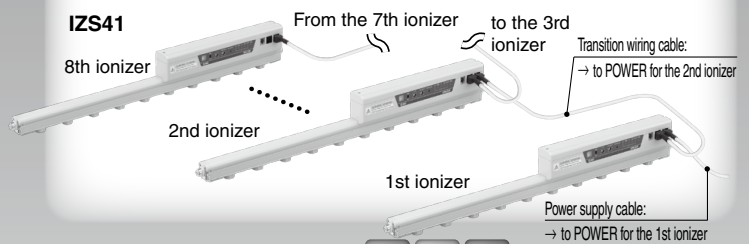


Transition wiring may be used.

IZS 41 IZS 42

Total number of ionizers that may be connected IZS41: Max. 8 units. IZS42: Max. 5 units.
<Conditions> Bar length 340 to 2500 mm, Power supply cable 3 m, Transition wiring cable 2 m

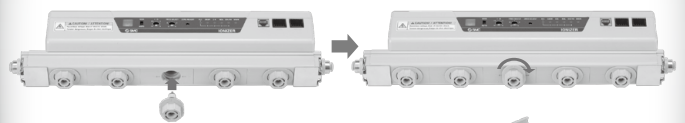
Reduces man hours required for connecting wires to the power supply.



Safety functions

IZS 40 IZS 41 IZS 42

- Emitter cartridge drop prevention function
Locking by double-action

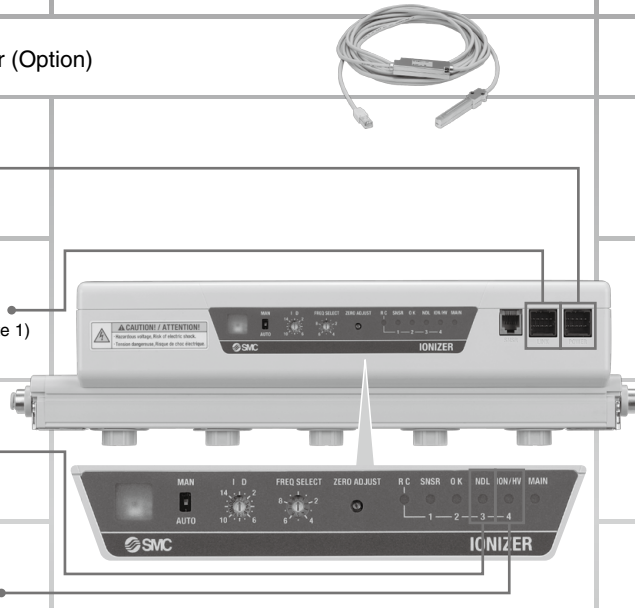


- Drop prevention cover
Can even more reliably prevent emitter cartridges from dropping off.



Ionizer IZS40/41/42 Series

Models and Functions

Series		IZS42	IZS41	IZS40
Method of applying voltage		Dual AC	AC, Sensing AC, DC	AC, DC
Auto balance sensor	Built-in type (Standard)	●	●	—
	High accuracy type (Option)	●	●	
Feedback sensor (Option)		—	●	—
I/O		●	●	—
Transition wiring may be used. Note 1)		●	●	—
Maintenance detector		●	●	—
Incorrect high voltage warning		●	●	●
Low maintenance emitter		●	●	●
Emitter cartridge	Energy saving type de-ionizing	●	●	●
	High speed de-ionizing	●	●	
With One-touch fitting (ø6, ø8, ø10)		●	●	●
Bracket mount		●	●	●
Non-standard bar length (Made to Order)		●	●	●

Note 1) Order transition wiring separately.

Accessories sold separately (per series)

Series	IZS42	IZS41	IZS40
Remote controller	●	●	—
AC adapter	●	●	●
Drop prevention cover	●	●	●
Cleaning kit	●	●	●

Ionizer



IZS40/41/42 Series

How to Order

Type

40 Standard type

Type 40 IZS 40 - 1600 [] [] - 10 B - []

Type 41/42 IZS 42 - 1600 [] [] [] - 10 B [] - []

Bar type

41 Feedback sensor type

42 Dual AC type

Emitter cartridge type/Emitter material

Symbol	Emitter cartridge type	Emitter material
Nil	High speed de-ionizing cartridge	Tungsten
C		Silicon
J	Energy saving type de-ionizing cartridge	Tungsten
K		Silicon

Bar length

Symbol	Bar length (mm)
340	340
400	400
460	460
580	580
640	640
820	820
1120	1120
1300	1300
1600	1600
1900	1900
2320	2320
2500	2500

Input/Output specifications

Nil	NPN
P	PNP

* Since input/output function cannot be used, specify "Nil" when the AC adapter is being used.

Power supply cable

Nil	With power supply cable (3 m)
Z	With power supply cable (10 m)
N	Without power supply cable

* When only an e-con connector for the IZS40 is required, specify "N", and order a part (Model: ZS-28-C) separately.

* To use AC adapter, specify "N", and select AC adapter sold separately (on page 325). (A cord is attached to the AC adapter.)

Sensor

Symbol	Sensor	IZS41	IZS42
Nil	Built-in sensor	●	●
F	Feedback sensor	●	—
G	Auto balance sensor [High accuracy type]	●	●

* Feedback sensor cannot be used for the IZS42.

Bracket

Nil	Without bracket
B	With bracket*

* The number of intermediate brackets differ depending on the bar length. (Refer to the below table.)

Number of brackets

Bar length symbol	End bracket	Intermediate bracket
340 to 760	With 2 pcs.	None
820 to 1600		With 1 pc.
1660 to 2380		With 2 pcs.
2440 to 2500		With 3 pcs.

One-touch fitting

06	ø6 One-touch fitting
08	ø8 One-touch fitting
10	ø10 One-touch fitting

* Refer to the table below for selection of One-touch fittings.

Recommended piping port size (mm)

One-touch fitting symbol	Applicable tube O.D. mm	Bar length symbol											
		340	400	460	580	640	820	1120	1300	1600	1900	2320	2500
06	ø6	○	○	○	○	○	●	●	●	—	—	—	—
08	ø8	—	—	—	—	—	○	○	○	●	●	●	●
10	ø10	—	—	—	—	—	—	—	—	○	○	○	○

○ : With piping on one side
● : With piping on both sides

Made to Order

Symbol	Contents	Specifications
-X10	Non-standard bar length	Symbol for producible bar length: 460 + 60 x n (n: Integer from 1 to 34) (For 2, 3, 6, 11, 14, 19, 24, 31 and 34 for n, use a standard model.)

Ordering example) IZS 40 - 1660 [] [] - 10 B - X10

IZS 42 - 1660 [] [] [] - 10 B [] - X10

Type
41
42

Bar length	520	1000	1420	1780	2140
700	1060	1480	1840	2200	
760	1180	1540	1960	2260	
880	1240	1660	2020	2380	
940	1360	1720	2080	2440	

Symbol	Contents	Specifications
-X14	Model with drop prevention cover	The main unit is shipped fitted with a drop prevention cover available as an option.

IZS40/41/42 Series

Specifications

Ionizer model		IZS40	IZS41-□□ (NPN)	IZS41-□□P (PNP)	IZS42-□□ (NPN)	IZS42-□□P (PNP)
Ion generation method		Corona discharge type				
Method of applying voltage		AC, DC	AC, Sensing AC, DC			Dual AC
Applied voltage		±7,000 V			±6,000 V	
Offset voltage (Note)		Within ±30 V				
Air purge	Fluid	Air (Clean dry air)				
	Operating pressure	0.5 MPa or less				
	Proof pressure	0.7 MPa				
	Connecting tube O.D.	ø6, ø8, ø10				
Current consumption		330 mA or less	440 mA or less (Sensing AC, Automatic run/Manual run: 480 mA or less)		700 mA or less (Automatic run/Manual run: 740 mA or less)	
Power supply voltage		21.6 to 26.4 VDC (Within 24 VDC ±10%)				
Power supply voltage in a transition wiring		—	24 VDC to 26.4 VDC			
Input signal	Discharge stop signal	—	Connected to 0 V	Connected to +24 V	Connected to 0 V	Connected to +24 V
	Maintenance detection signal		Voltage range: 5 VDC or less Current consumption: 5 mA or less	Voltage range: 19 VDC to power supply voltage Current consumption: 5 mA or less	Voltage range: 5 VDC or less Current consumption: 5 mA or less	Voltage range: 19 VDC to power supply voltage Current consumption: 5 mA or less
Output signal	Maintenance detection signal	—	Max. load current: 100 mA Residual voltage 1 V or less (Load current at 100 mA) Max. applied voltage: 26.4 VDC	Max. load current: 100 mA Residual voltage 1 V or less (Load current at 100 mA)	Max. load current: 100 mA Residual voltage 1 V or less (Load current at 100 mA) Max. applied voltage: 26.4 VDC	Max. load current: 100 mA Residual voltage 1 V or less (Load current at 100 mA)
	Error signal					
Function		Incorrect high voltage ion discharge detection (Ion discharge stops during detection)	Offset voltage control with the built-in sensor, maintenance detection, incorrect high voltage ion discharge detection (stops discharge during detection), ion discharge stop input, transition wiring, remote controller (sold separately), external sensor connection			
Effective de-ionizing distance		50 to 2000 mm	50 to 2000 mm (Sensing AC mode: 200 to 2000 mm, Manual run/Automatic run: 100 to 2000 mm)		50 to 2000 mm (Manual run/Automatic run: 100 to 2000 mm)	
Ambient and fluid temperature		0 to 40°C				
Ambient humidity		35 to 80% RH (with no condensation)				
Material		Body cover: ABS, Emitter cartridge: PBT, Emitter: Tungsten, Single crystal silicon				
Impact resistance		100 m/s ²				
Standards/Directive		CE (EMC Directive: 2004/108/EC)				

Note) When the air purge is performed between a charged object and an ionizer at a distance of 300 mm

Number of emitter cartridges/Bar weight

Number of emitter cartridges per bar weight													
Bar length symbol	340	400	460	580	640	820	1120	1300	1600	1900	2320	2500	
Number of emitter cartridges	5	6	7	9	10	13	18	21	26	31	38	41	
Weight (g)	IZS40	590	640	690	790	830	980	1220	1360	1600	1840	2170	2320
	IZS41	740	790	840	940	980	1130	1370	1510	1750	1990	2320	2470
	IZS42	860	910	960	1060	1100	1250	1490	1630	1870	2110	2440	2590

External sensor

Sensor model	IZS31-DF (Feedback sensor)	IZS31-DG (Auto balance sensor) [High accuracy type]
Ambient temperature	0 to 50°C	
Ambient humidity	35 to 80% RH (with no condensation)	
Case material	ABS	ABS, Stainless steel
Impact resistance	100 m/s ²	
Weight	200 g (including cable weight)	220 g (including cable weight)
Installation distance	10 to 50 mm (Recommended)	—
Standards/Directive	CE, UL, CSA	

AC adapter (Sold separately)

Model	IZF10-CG□, IZS41-CG□
Input voltage	100 VAC to 240 VAC, 50/60 Hz
Output current	1 A
Ambient temperature	0 to 40°C
Ambient humidity	35 to 65% RH (with no condensation)
Weight	220 g
Standards/Directive	CE, UL, CSA

Remote controller (Sold separately)

Model	IZS41-RC
Type	Infrared ray type
Transmission capacity	5 m ^{Note 1)}
Power supply	2 AAA sized batteries (sold separately) ^{Note 2)}
Ambient temperature	0 to 45°C
Ambient humidity	35 to 80% RH (with no condensation)
Weight	33 g (excluding dry cell batteries)
Standards/Directive	CE

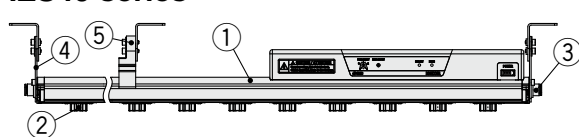
Note 1) Varies depending on the operating conditions and environment.

Note 2) Batteries are not supplied.

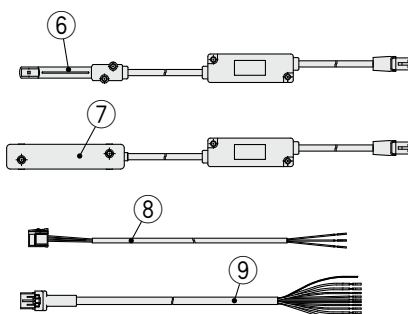
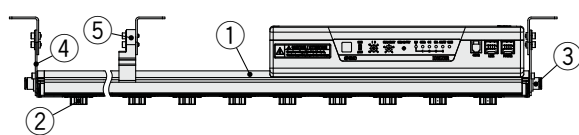
Note 3) Refer to the operation manual for handling of the remote controller.

Construction

IZS40 series



IZS41/42 series



No.	Description
1	Ionizer
2	Emitter cartridge
3	One-touch fitting
4	End bracket
5	Intermediate bracket
6	Feedback sensor
7	Auto balance sensor [High accuracy type]
8	Power supply cable (for IZS40)
9	Power supply cable (for IZS41/42)

Accessories (for Individual Parts)

Feedback sensor IZS31-DF



Auto balance sensor [High accuracy type] IZS31-DG



Power supply cable

- IZS40-CP (3 m) · IZS41-CP (3 m)
- IZS40-CPZ (10 m) · IZS41-CPZ (10 m)



For IZS40

For IZS41/42

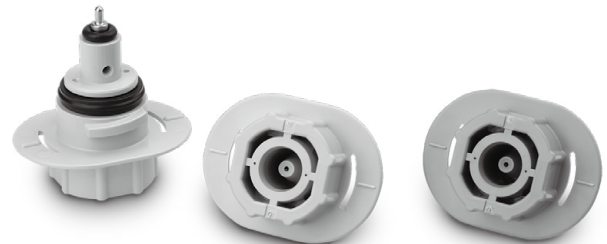
Made to Order

How to Order	
IZS - CP - X13	
Type	Power supply cable full length
40 For IZS40	Symbol Cable full length
41 For IZS41/42	01 1 m
	02 2 m
	...
	19 19 m
	20 20 m

Model with Made-to-order power supply cable
Available in 1 m increments from 1 m to 20 m.
Note 1) 11 m or longer power cables are not CE Marking-compliant.
Note 2) Use standard power supply cables for 3 m and 10 m lengths.

High speed de-ionizing cartridge

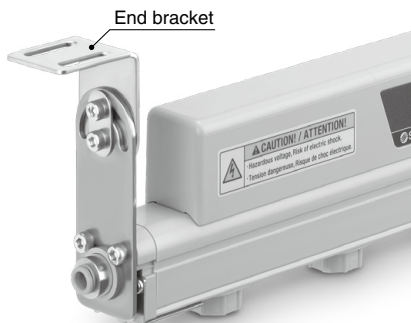
- IZS40-NT (Emitter material: Tungsten)
 - IZS40-NC (Emitter material: Silicon)
- ### Energy saving type de-ionizing cartridge
- IZS40-NJ (Emitter material: Tungsten)
 - IZS40-NK (Emitter material: Silicon)



Tungsten
(Emitter cartridge color: White)

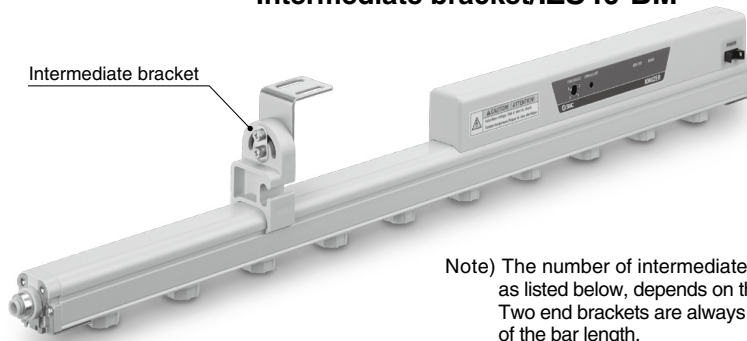
Silicon
(Emitter cartridge color: Gray)

End bracket/IZS40-BE



Note) Ionizer mounting screws attached, M4 x 8, 2 pcs.

Intermediate bracket/IZS40-BM



Note) The number of intermediate brackets required, as listed below, depends on the bar length. Two end brackets are always required regardless of the bar length.

Bar length symbol	End bracket	Intermediate bracket
340 to 760	With 2 pcs.	None
820 to 1600		With 1 pc.
1660 to 2380		With 2 pcs.
2440 to 2500		With 3 pcs.

Note) The model number is for a single bracket.

IZS40/41/42 Series

Sold Separately

Drop prevention cover

IZS40-E 3

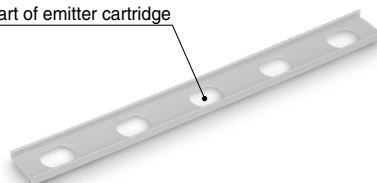
Number of fixed emitter cartridges

IZS40-E3	3
IZS40-E4	4
IZS40-E5	5

Number of required drop prevention covers

Bar length symbol	Number of required drop prevention covers		
	IZS40-E3	IZS40-E4	IZS40-E5
340	—	—	1
400	2	—	—
460	1	1	—
580	—	1	1
640	—	—	2
820	1	—	2
1120	1	—	3
1300	2	—	3
1600	2	—	4
1900	2	—	5
2320	1	—	7
2500	2	—	7

Mounted part of emitter cartridge



Specify "-X14" at the end of the standard model number when ordering a drop prevention cover attached to the body.

Standard model no. - X14



Drop prevention cover

When attached to the body

Remote controller/IZS41-RC



AC adapter For IZS40

IZF10-C

AC adapter

G1	AC adapter + AC cord
G2	AC adapter (without AC cord)

* AC cord is only for use in Japan. (Rated voltage 125 V, plug JIS C8303, inlet IEC60320-C8) External input and output cannot be used when the AC adapter is being used.



For IZS40

For IZS41/42

IZS41-C

AC adapter

G1	AC adapter + AC cord
G2	AC adapter (without AC cord)

* AC cord is only for use in Japan. (Rated voltage 125 V, plug JIS C8303, inlet IEC60320-C8) External input and output cannot be used when the AC adapter is being used.



For IZS41/42

Transition wiring cable

IZS41-CF

Transition wiring cable

02	Full length 2 m
05	Full length 5 m
08	Full length 8 m



Made to Order

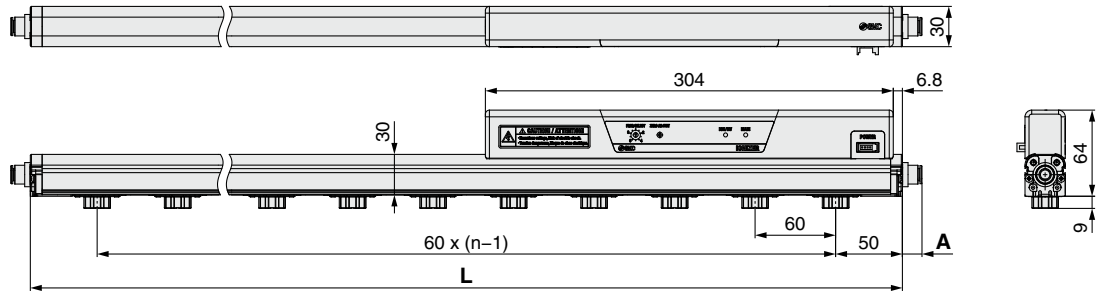
How to Order	
IZS41-CF - X13	
Transition wiring cable length	
Model with Made-to-order transition wiring cable	Symbol
Available in 1 m increments from 1 m to 20 m.	01
Note 1) 11 m or longer power cables are not CE Marking-compliant.	03
Note 2) Use standard power supply cables for 2 m, 5 m and 8 m lengths.	19
Note 3) Transition wiring is not possible for the IZS40.	20
	Cable full length
	1 m
	3 m
	19 m
	20 m

Cleaning kit/IZS30-M2



Dimensions

Ionizer/IZS40

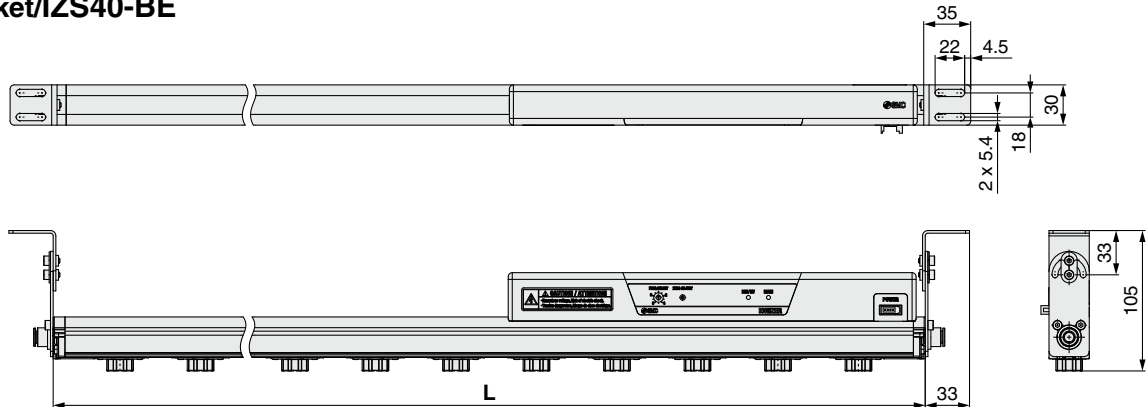


Applicable tube O.D.	A
06	13
08	15
10	22

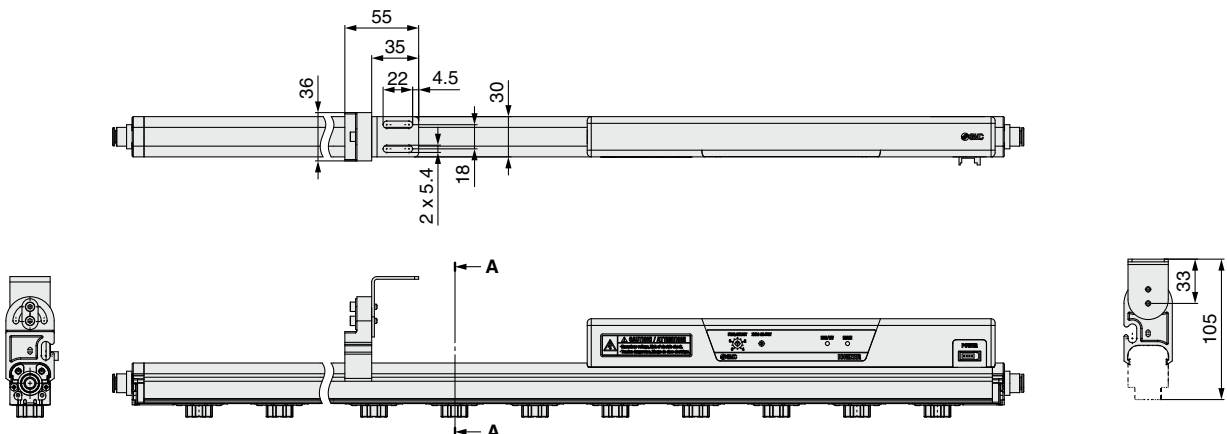
n (Number of emitter cartridges),
L Dimension

Part no.	n	L (mm)
IZS40-340	5	340
IZS40-400	6	400
IZS40-460	7	460
IZS40-580	9	580
IZS40-640	10	640
IZS40-820	13	820
IZS40-1120	18	1120
IZS40-1300	21	1300
IZS40-1600	26	1600
IZS40-1900	31	1900
IZS40-2320	38	2320
IZS40-2500	41	2500

End bracket/IZS40-BE



Intermediate bracket/IZS40-BM

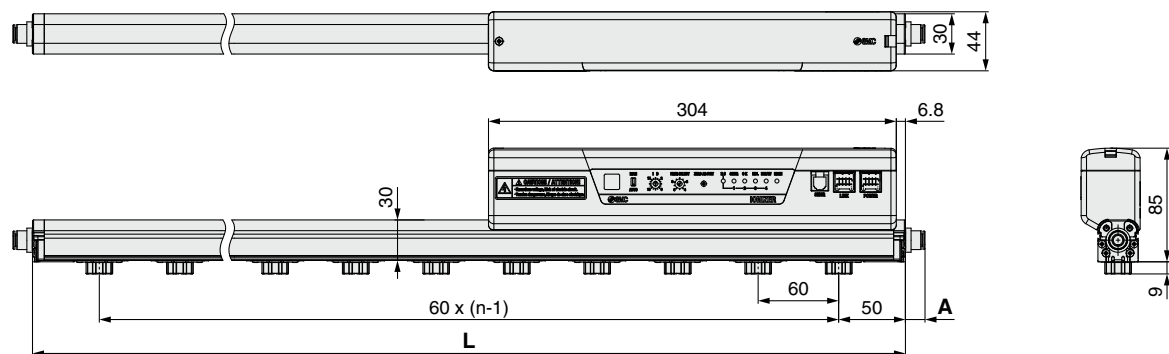


A-A section

IZS40/41/42 Series

Dimensions

Ionizer/IZS41, 42

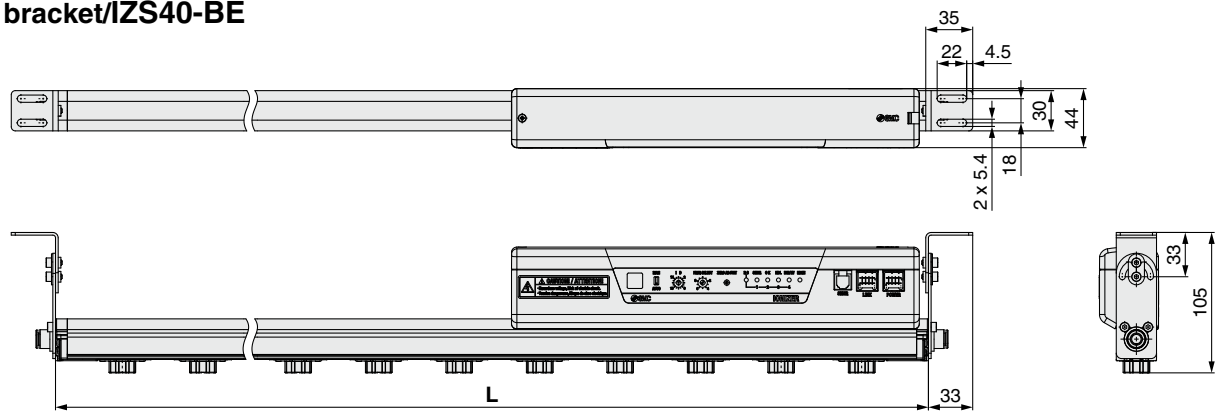


Applicable tube O.D.	A
06	13
08	15
10	22

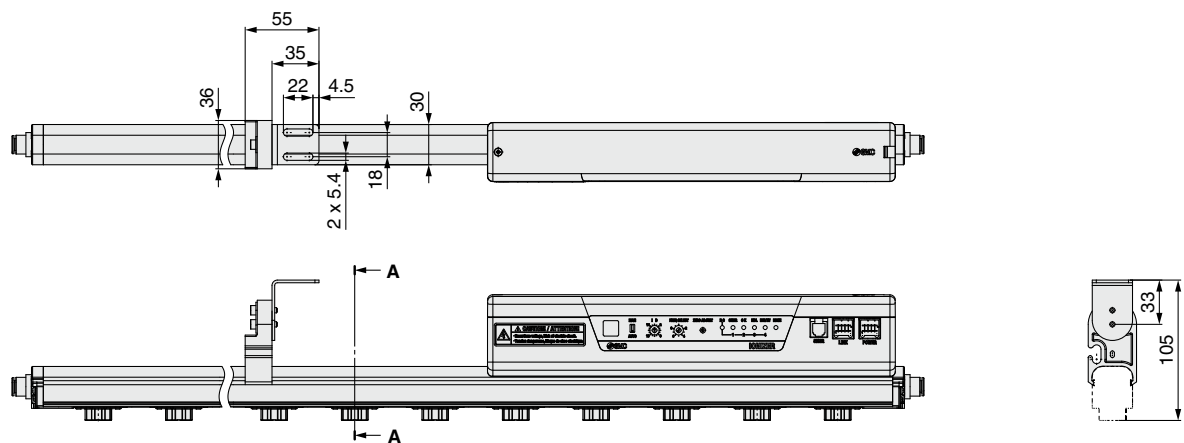
n (Number of emitter cartridges),
L Dimension

Part no.	n	L (mm)
IZS4□-340	5	340
IZS4□-400	6	400
IZS4□-460	7	460
IZS4□-580	9	580
IZS4□-640	10	640
IZS4□-820	13	820
IZS4□-1120	18	1120
IZS4□-1300	21	1300
IZS4□-1600	26	1600
IZS4□-1900	31	1900
IZS4□-2320	38	2320
IZS4□-2500	41	2500

End bracket/IZS40-BE



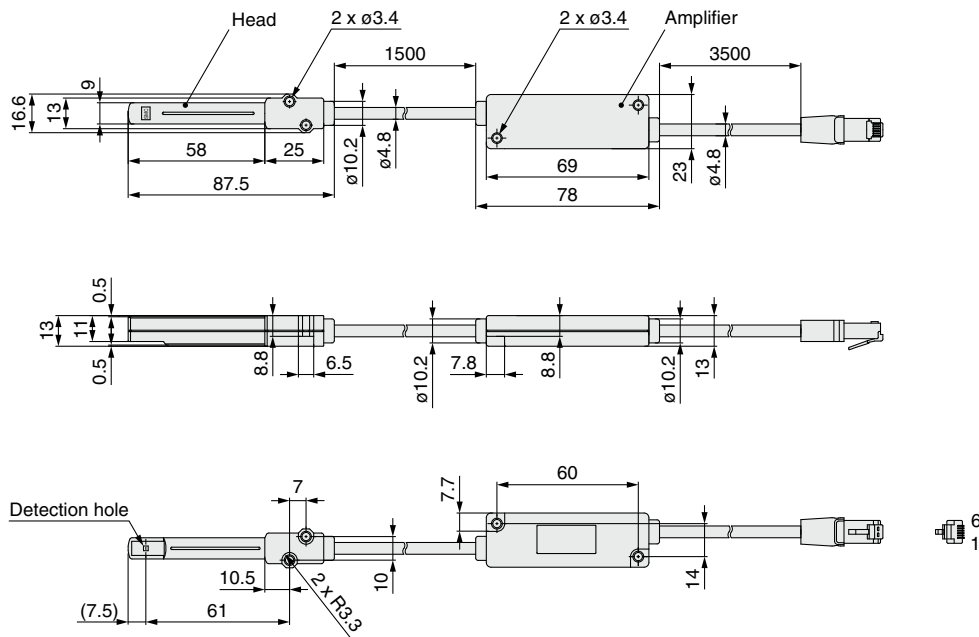
Intermediate bracket/IZS40-BM



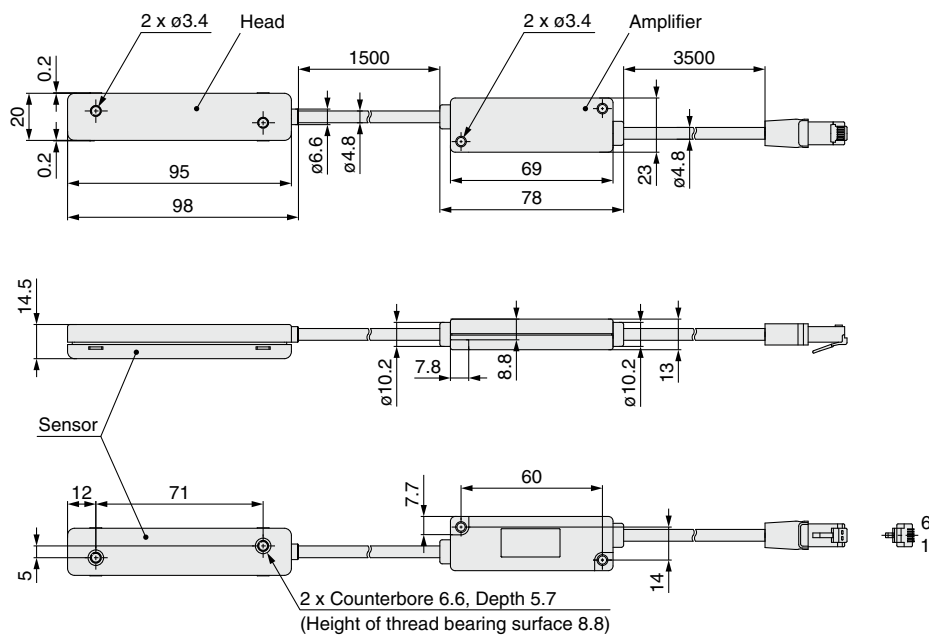
A-A section

Dimensions

Feedback sensor/IZS31-DF



Auto balance sensor [High accuracy type]/IZS31-DG



Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

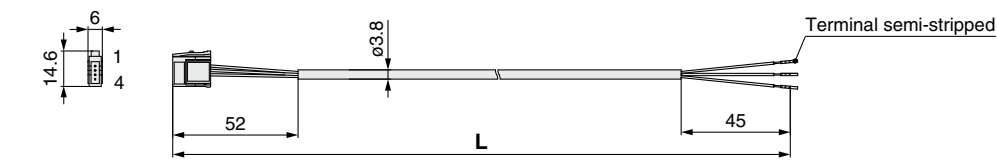
Pneumatic Auxiliary Equipment

IZS40/41/42 Series

Dimensions

Power supply cable

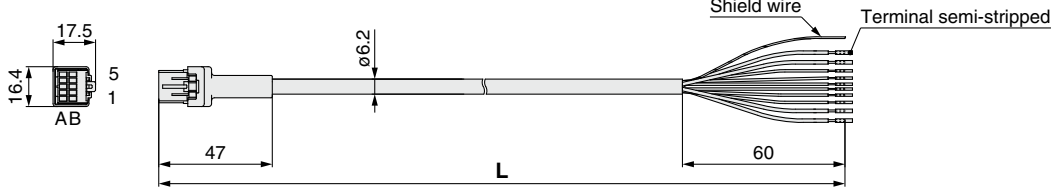
IZS40-CP□



Cable Specifications

No. of cable wire/Size		3 cores/AWG24
Conductor	Nominal cross section	0.2 mm ²
	Outside diameter	0.66 mm
Insulator	Outside diameter	1.0 mm
Sheath	Material	Lead-free PVC
	Outside diameter	3.8 mm

IZS41-CP□



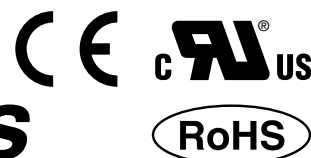
Cable Specifications

No. of cable wire/Size		10 cores/AWG20 (4 cores), AWG28 (6 cores)
Conductor	Nominal cross section	0.54 mm ² (4 cores), 0.09 mm ² (6 cores)
	Outside diameter	0.96 mm (4 cores), 0.38 mm (6 cores)
Insulator	Outside diameter	1.4 mm Blue, Brown 0.7 mm White, Green, Light green, Purple, Gray, Yellow
Sheath	Material	Heat-resistant PVC
	Outside diameter	6.2 mm

Part no.	L (mm)
IZS40-CP	3000
IZS41-CP	
IZS40-CPZ	9800
IZS41-CPZ	

Nozzle Type Ionizer

IZN10E Series



How to Order

IZN10E-01 P 06 Z-B1

High frequency AC nozzle type

Nozzle type

Symbol	Type
01	Energy saving static neutralization nozzle
02	High flow rate nozzle
11	Female threads for piping*1

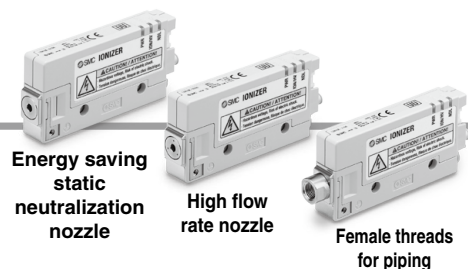
*1 Refer to the cautions when using the female threads for piping shown below.

Input/Output specifications

Symbol	Type
Nil	NPN input/output
P	PNP input/output

Port size (One-touch fitting)

Symbol	Type
06	ø6: Metric size
07	ø6.35 (1/4"): Inch size
16	ø6: Metric size (Elbow)
17	ø6.35 (1/4"): Inch size (Elbow)



Bracket

Symbol	Type	Part no.
Nil	None	—
B1	L-bracket	IZN10-B1
B2	Pivoting bracket	IZN10-B2
B3	DIN rail mounting bracket	IZN10-B3

* Refer to page 332. Brackets are the same as those for the current model (IZN10). Mounting is interchangeable.

Power supply cable

Symbol	Type	Part no.
Nil	With power supply cable (3 m)	IZN10E-CP
Z	With power supply cable (10 m)	IZN10E-CPZ
N	Without power supply cable	—

* Mounting is interchangeable with the current model (IZN10).

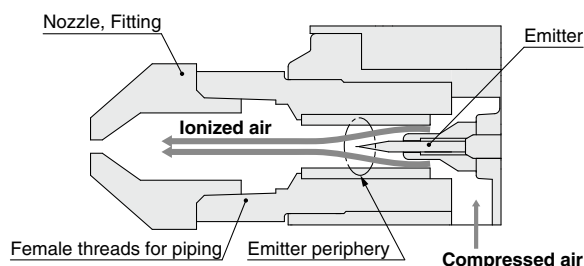


Made to Order
(For details, refer to the Web Catalog.)

Symbol	Specifications
-X367	Nozzle with right angles

Cautions when using the IZN10E-11 female threads for piping

- For the female thread (Rc1/8) type, a custom made nozzle or fittings/tubing combination must be prepared and connected by the user.
- If a nozzle with discharge port diameter or tubing with an I.D. of less than 4 mm is connected, the air pressure inside the nozzle may increase depending on the configuration.
- This product uses a high frequency AC voltage. If the air pressure around the emitter increases during ion generation, the ion generation efficiency decreases and the maintenance alarm (signal output, maintenance LED) will be activated (refer to the figure to the right).
- When the maintenance alarm is generated, the static neutralization performance is decreased.
- The table below shows the supply pressure specifications when made-to-order nozzles and fittings/tubing combinations are connected.



Sectional view of the female threads for piping

Made-to-order nozzle product names/Piping examples	Made-to-order nozzle part no.	Supply pressure specifications
Circular diffusion nozzle	IZN10-G-X198	0.05 to 0.1 MPa
Flat diffusion nozzle	IZN10-G-X199	0.05 to 0.1 MPa
Bar nozzle (straight type)	IZN10-G-□-X216	0.05 to 0.1 MPa
Circumferential jet bar nozzle (straight type)	IZN10-G-X278	0.05 to 0.15 MPa
Bender tube nozzle	IZN10-G-□-X205	0.05 to 0.15 MPa
Long nozzle	IZN10-G-□-X226	0.05 to 0.15 MPa
Fitting (Applicable tubing O.D. 6 mm) + Tube (O.D. 6 mm, I.D. 4 mm)*1	—	0.05 to 0.1 MPa
Fitting (Applicable tubing O.D. 8 mm) + Tube (O.D. 8 mm, I.D. 5 mm)*1	—	0.05 to 0.3 MPa

*1 When connecting the tubing, use a length of tubing 500 mm or less for the connection, regardless of the inside diameter size.

- When using piping materials prepared by the user, secure an air passage of 4 mm or more inside diameter. If using tubing, ensure the minimum bending radius is used and keep the tube length to 500 mm or less.
- Please install so as not to receive a moment force on the nozzle.

IZN10E Series

Specifications

Model		IZN10E-□ (NPN specification)	IZN10E-□P (PNP specification)
Ion generation method		Corona discharge type	
Method of applying voltage		High frequency AC type	
Applied voltage*1		2.5 kVAC	
Offset voltage (Ion balance)*2	Energy saving static neutralization nozzle	±10 V	
	High flow rate nozzle	±15 V	
Air purge	Fluid	Air (Clean dry air)	
	Operating pressure*3*4	0.05 MPa to 0.7 MPa	
	Connecting tube size	ø6, ø1/4 inch	
Power supply voltage		24 VDC ±10%	
Current consumption		80 mA or less	
Input signal	Discharge stop signal	Connected to 0 V Voltage range: 5 VDC or less Current consumption: 5 mA or less	Connected to +24 V Voltage range: 19 VDC to power supply voltage Current consumption: 5 mA or less
	Reset signal		
	External switch signal 1		
	External switch signal 2		
Output signal	Discharge signal	Max. load current: 40 mA Residual voltage: 1 V or less (Load current at 40 mA) Max. applied voltage: 26.4 VDC	Max. load current: 40 mA Residual voltage: 1 V or less (Load current at 40 mA)
	Error signal		
	Maintenance signal		
Effective static neutralization range		20 to 500 mm	
Ambient temperature (Operating/Stored)		0 to 55°C	
Ambient humidity (Operating/Stored)		35 to 65% RH (No condensation)	
Material	Housing	ABS, Stainless steel	
	Nozzle	Stainless steel	
	Emitter	Tungsten	
Impact resistance		100 m/s ²	
Body weight	Energy saving static neutralization nozzle	70 g	
	High flow rate nozzle	70 g	
	Female threads for piping	75 g	
Bracket weight	L-bracket	30 g	
	Pivoting bracket	40 g	
	DIN rail mounting bracket (Single unit)	40 g	
Standards/Directive		CE, UL, CSA, RoHS	

*1 Measured with a probe of 1000 MΩ and 5 pF.

*2 Measurement values based on a charged plate (dimensions: 150 mm x 150 mm, capacitance: 20 pF) defined by ANSI standard (ANSI/ESD STM3.1-2006). The distance between the charged plate and the ionizer: 100 mm, the air purge is 0.3 MPa (energy saving static neutralization nozzle) / 0.1 MPa (high flow rate nozzle).

*3 Static electricity cannot be neutralized without air purge. As the concentration of ozone inside the nozzle increases, there is a possibility that the product and surrounding equipment may be adversely affected, so be sure to air purge during ion generation.

*4 To stop the air purge temporarily during operation, turn the discharge stop signal input OFF to prevent the increase of ozone concentration inside the nozzle.

* Refer to the cautions on page 330 when using the IZN10E-11 (female threads for piping).

Model		IZN10E-C□-□
Input voltage*1		100 to 240 VAC, 50/60 Hz
Output voltage		24 VDC
Output current		1 A max
Ambient temperature	Operating	0 to 40°C
	Stored	-20 to 60°C
Ambient humidity	Operating/Stored	10 to 90%RH
Standards/Directive		CE, cUL

*1 For the AC cord type, note that the rated voltage of the AC cord included as an accessory is 125 V (See page 333).

Accessories

Bracket

IZN10 - B1

• Bracket

Symbol	Type
B1	L-bracket
B2	Pivoting bracket
B3	DIN rail mounting bracket

L-bracket

IZN10-B1



Fixed mounting



Pivot mounting

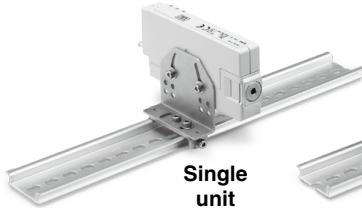
Pivoting bracket

IZN10-B2



DIN rail mounting bracket

IZN10-B3



Single unit



Manifold*1

*1 The L-bracket and the DIN rail mounting bracket can be used with the manifold.

Power supply cable

IZN10E - CP

• Power supply cable

Symbol	Type
Nil	3 m
Z	10 m

Power supply cable: Made to order

IZN10E - CP 01 - X13

• Power supply cable length

Symbol	Type
01	1 m
:	:
20	20 m

* Available in 1 m increments from 1 m to 20 m.

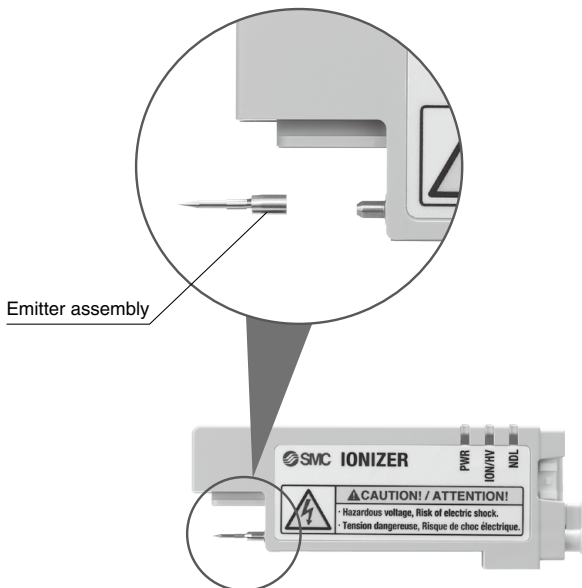
Use standard power supply cables for 3 m and 10 m lengths.



Repair Parts

Emitter assembly

IZN10E-NT



Body assembly

IZN10E - A002 - 01 06

• Nozzle type

Symbol	Type
01	Energy saving static neutralization nozzle
02	High flow rate nozzle
11	Female threads for piping



• One-touch fitting

Symbol	Type
06	ø6: Metric size
07	ø6.35 (1/4"): Inch size
16	ø6: Metric size (Elbow)
17	ø6.35 (1/4"): Inch size (Elbow)

Cartridge assembly

IZN10E - A003 -

• Input/Output specifications

Symbol	Type
Nil	NPN input/output
P	PNP input/output



IZN10E Series

Options

Manifold mounting parts set

This set consists of a hexagon socket head cap screw, spacer, and hexagon nut.

*1 The ionizer, L-bracket, and DIN rail mounting bracket need to be prepared separately.

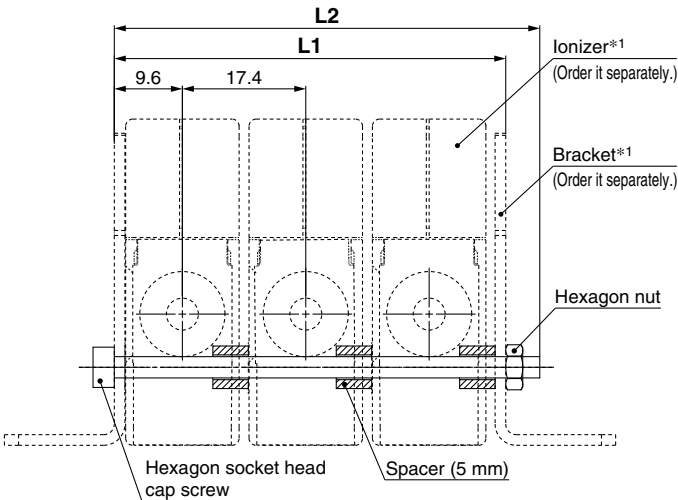
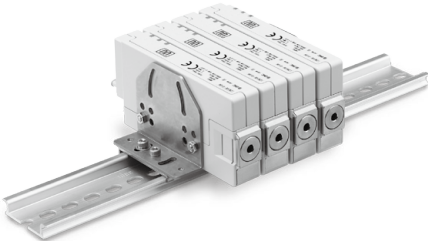
IZN10E – ES 4

Mounting pitch

Symbol	Pitch
ES	17.4 mm

Mounting stations

Symbol	Stations
2	2
3	3
4	4



Part no.	L1	L2	Number of spacers
IZN10E-ES2	37.8	45	4
IZN10E-ES3	55.2	60	6
IZN10E-ES4	72.6	76	8

AC adapter

IZN10E – C G1 –

AC adapter

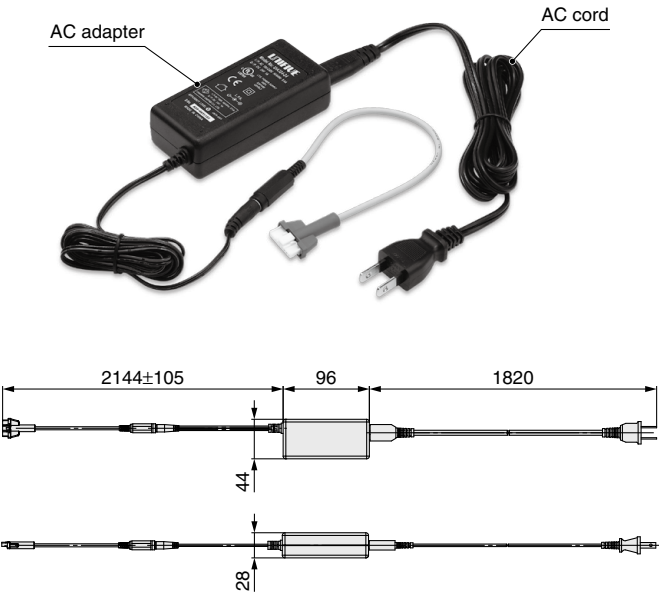
Symbol	Type
G1	With AC cord*1
G2	Without AC cord

Input/Output specifications*2

Symbol	Type
Nil	NPN input/output
P	PNP input/output

*1 AC cord is only for use in Japan. (Rated voltage 125 V, Plug JIS C8303, Inlet IEC60320-C8)

*2 Select the same input/output specification as the ionizer.



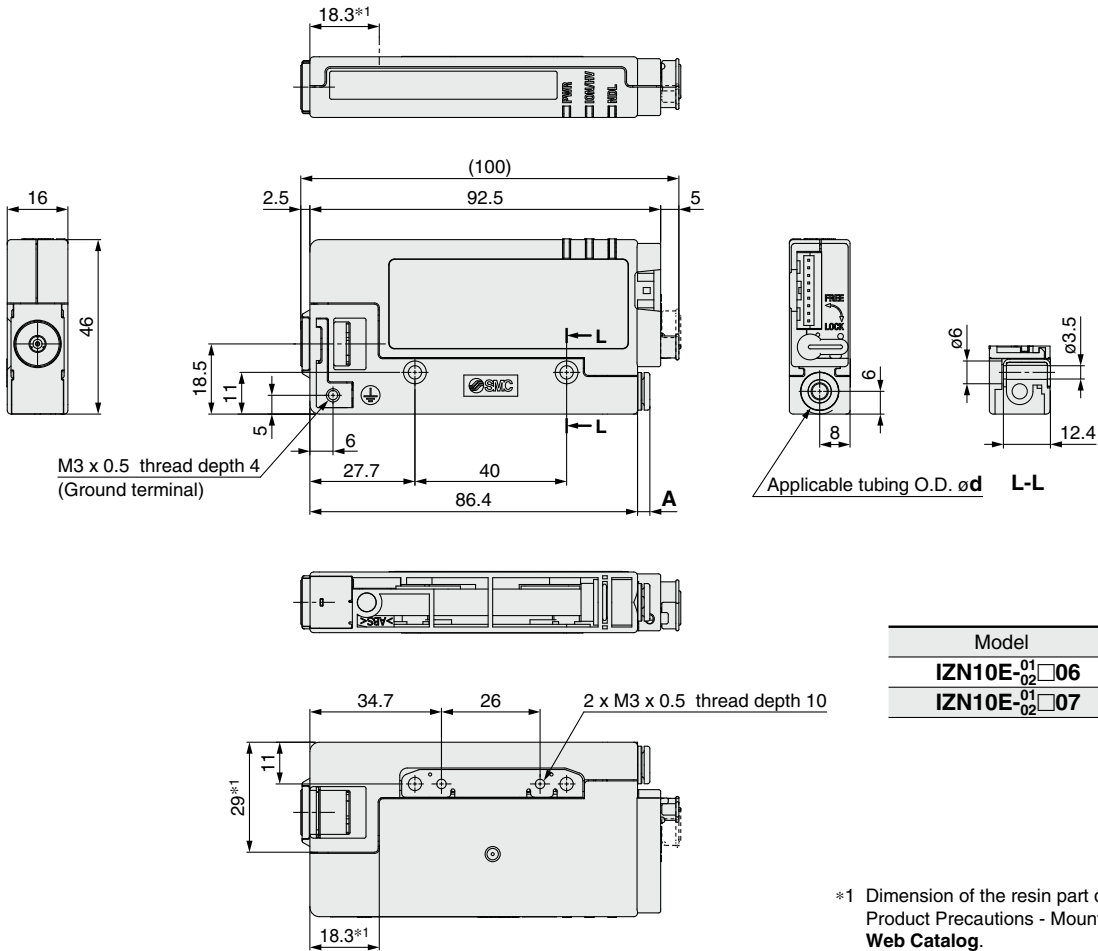
Cleaning kit IZS30-M2



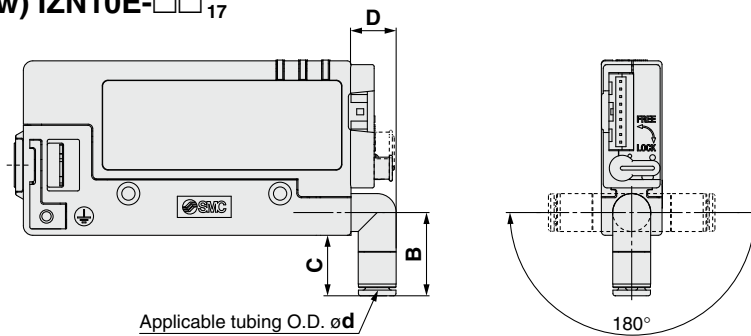
Dimensions

Energy saving static neutralization nozzle IZN10E-01□⁰⁶₀₇

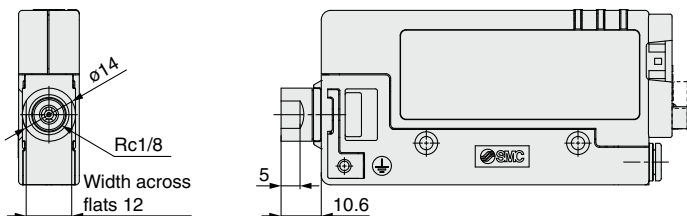
High flow rate nozzle IZN10E-02□⁰⁶₀₇



One-touch fitting (Elbow) IZN10E-□□¹⁶₁₇



Female threads for piping (Rc1/8) IZN10E-11□□

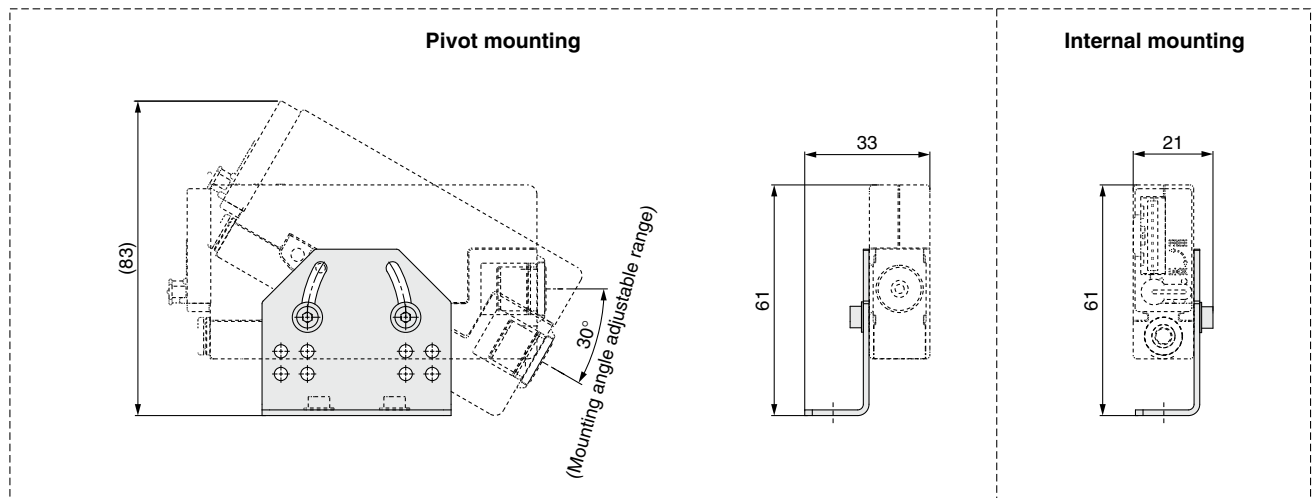
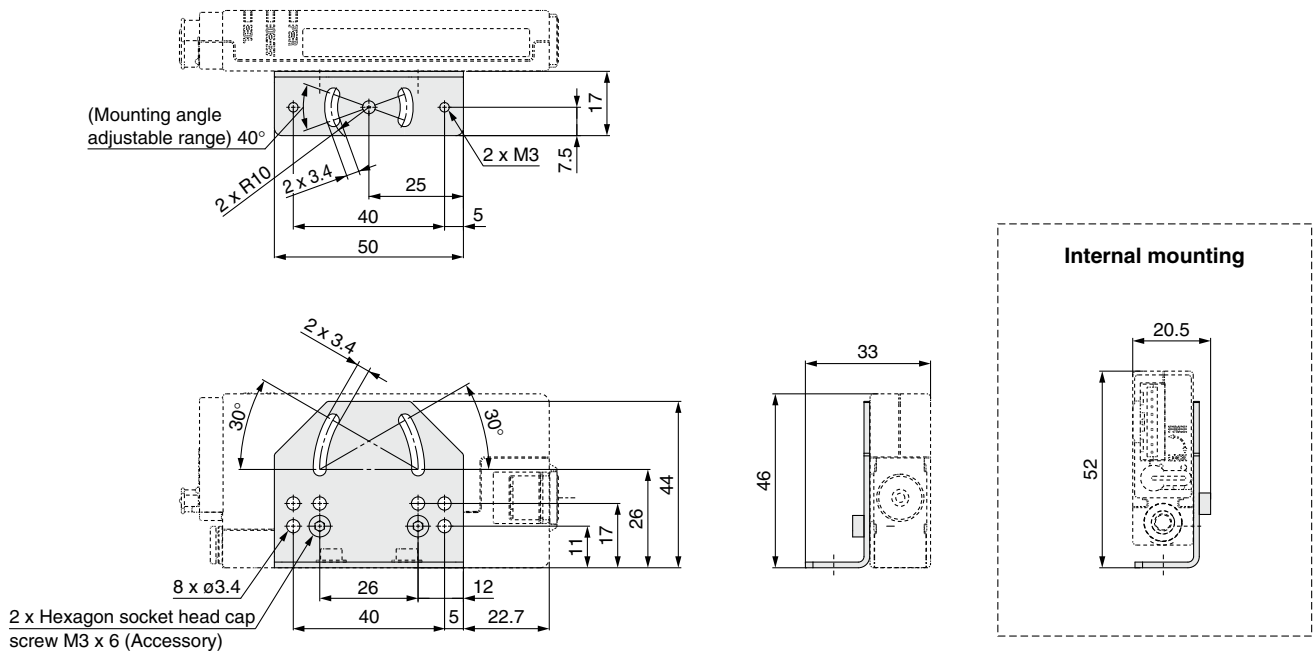


Model	d	B	C	D
IZN10E-□□ ¹⁶	6	22	16	11.5
IZN10E-□□ ¹⁷	1/4"	24.5	18.5	12

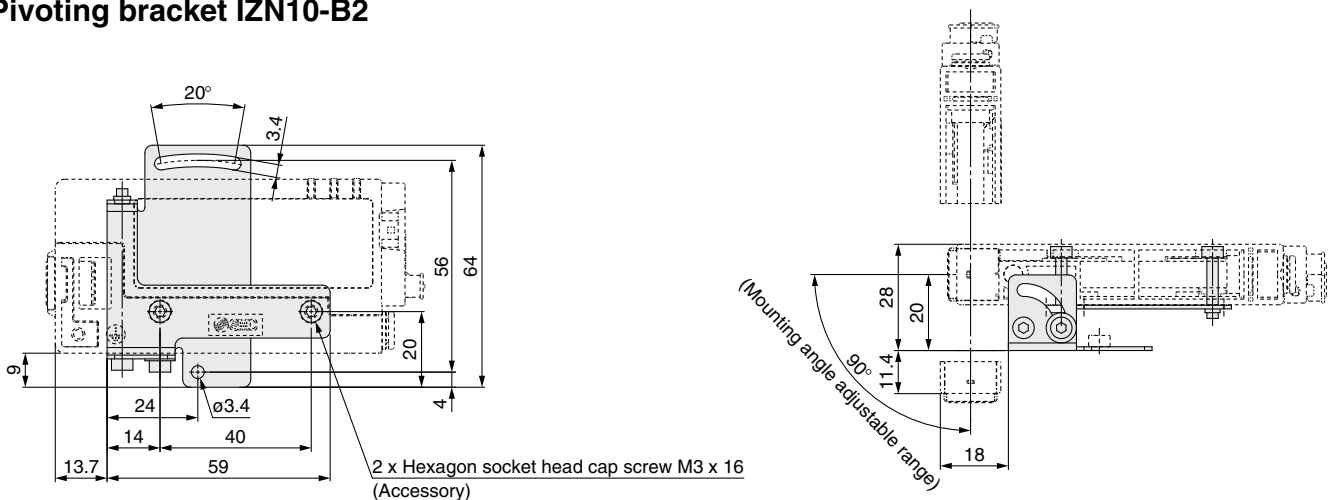
IZN10E Series

Dimensions

L-bracket IZN10-B1

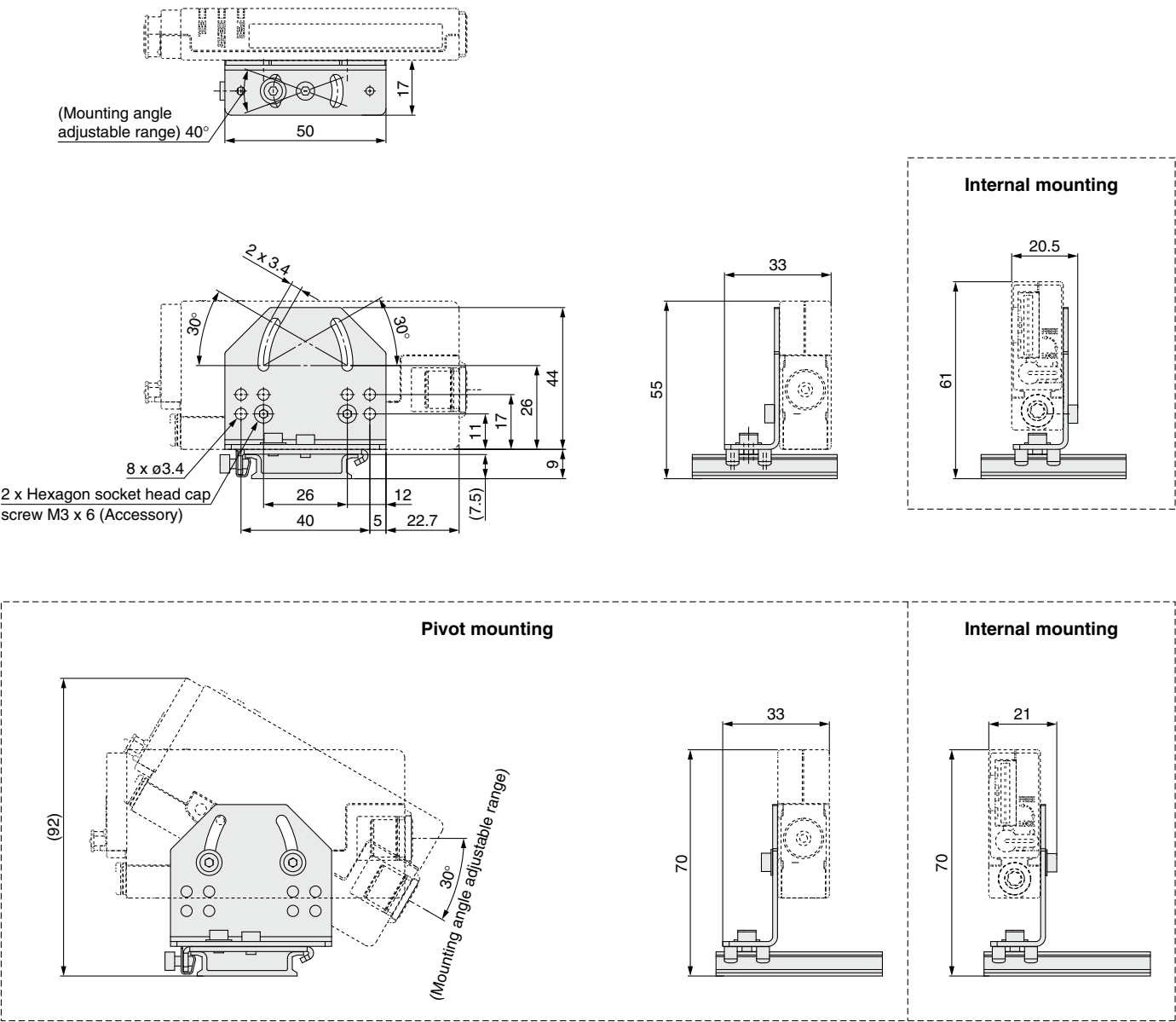


Pivoting bracket IZN10-B2

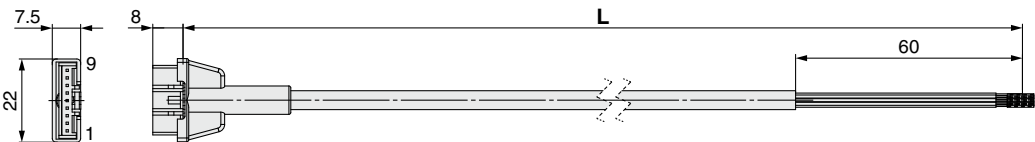


Dimensions

DIN rail mounting bracket IZN10-B3



Power supply cable IZN10E-CP□



Model	L [mm]
IZN10E-CP	3000
IZN10E-CPZ	9800

Cable Specifications

Conductor	No. of cable wire/Size	9 cores/AWG26
	Nominal cross section	0.15 mm ²
Insulator	O.D.	0.5 mm
	O.D.	0.95 mm Brown, Blue, Orange, Pink, White, Purple, Yellow, Gray, Light blue
Sheath	Material	Lead-free PVC
	O.D.	5 mm

Electrostatic Sensor

IZD10 Series



How to Order

IZD 10 – 1 10

Model

10 Electrostatic sensor

Potential measurement

1	±0.4 kV
5	±20 kV



Specifications

Model	IZD10-110	IZD10-510
Potential measurement	±0.4 kV (at detection distance: 25 mm) ^{Note)}	±20 kV (at detection distance: 50 mm) ^{Note)}
Output voltage	1 to 5 V (Output impedance: Approx. 100 Ω)	
Effective detection distance	10 to 50 mm	25 to 75 mm
Linearity	±5% F.S. (0 to 50°C, at detection distance: 25 mm)	±5% F.S. (0 to 50°C, at detection distance: 50 mm)
Output delay time	100 ms or less	
Power supply voltage	21.6 to 26.4 VDC (Within 24 VDC ±10%)	
Current consumption	40 mA or less	
Operating ambient temperature	0 to 50°C	
Operating ambient humidity	35 to 85% Rh (with no condensation)	
Material	Head case : ABS Amplifier case : ABS	
Vibration resistance	Durability 50 Hz Amplitude 1 mm X, Y, Z each 2 hours	
Shock resistance	100 m/s ²	
Weight	185 g (including cable weight)	
Compliance with EN standards	Protective class : Class III (EN60950-1) Pollution Degree 3 CE marking : Low voltage directive : 2006/95/EC Only when connected to a SELV-type external circuit.	
EMC directive	2004/108/EC	
UL standards	UL508	

Note) The relationship between the measured potential and the output voltage varies depending on the detection distance.
For details on the relationship in the detection distance between the measured potential and the output voltage, refer to the graph in "Technical Data - Output Signal" in the **Web Catalog**.

Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

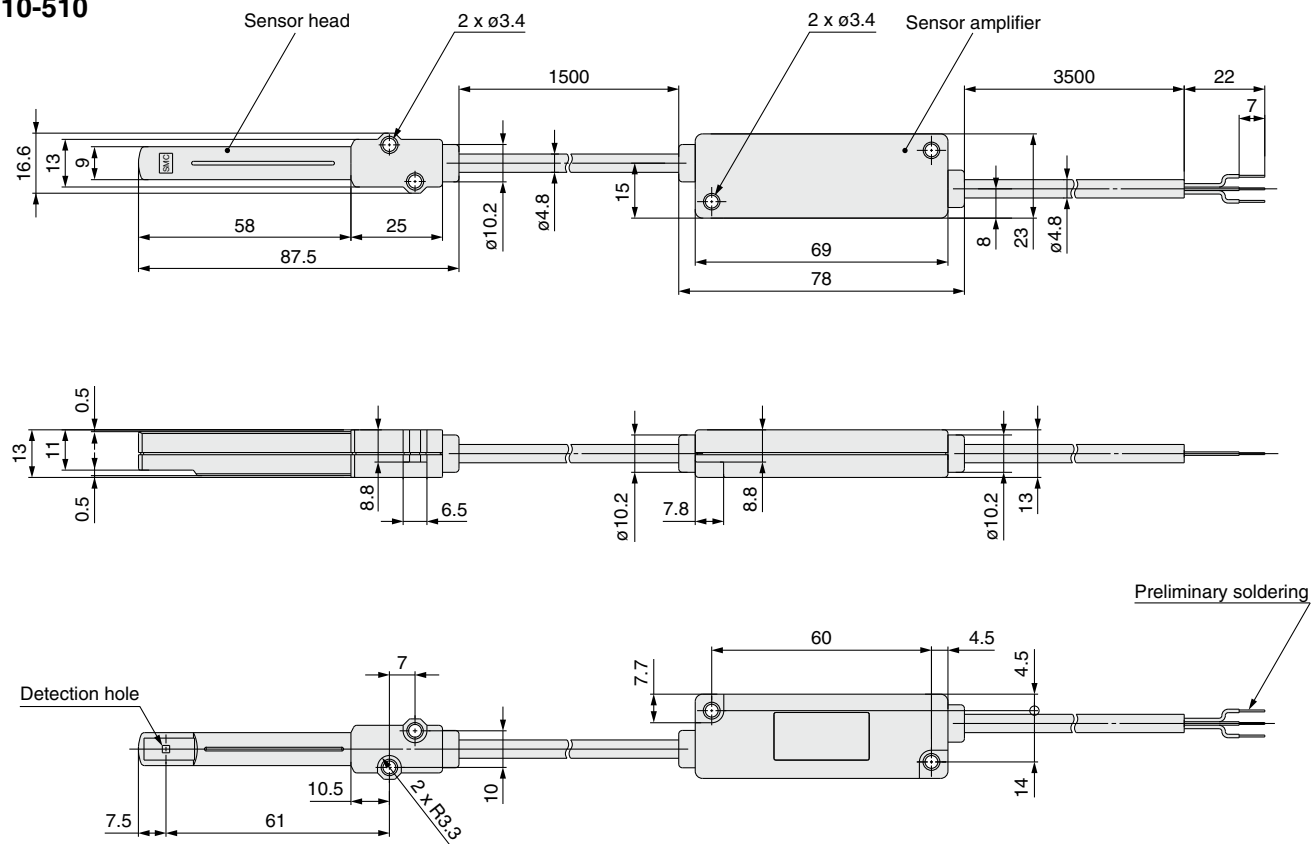
Pressure Control Equipment

Pneumatic Auxiliary Equipment

IZD10 Series

Dimensions

IZD10-110
IZD10-510



Cable Specifications

No. of cable wire/Size		3 cores/AWG26
Conductor	Nominal cross section	0.14 mm ²
	O.D.	0.48 mm
Insulator	O.D.	0.95 mm
Sheath	Material	Lead-free PVC
	O.D.	4.8 mm

Electrostatic Sensor Monitor

IZE11 Series



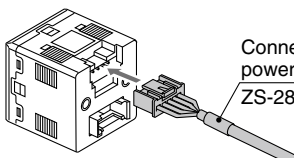
How to Order

IZE11 0 - [] [] []

Input/Output specifications

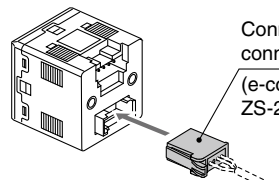
0	NPN open collector 2 outputs + Analog output 1-5 V
1	NPN open collector 2 outputs + Analog output 4-20 mA
2	PNP open collector 2 outputs + Analog output 1-5 V
3	PNP open collector 2 outputs + Analog output 4-20 mA

Option 1

Nil	None
L	Connector cable for power supply/output  Connector cable for power supply/output ZS-28-A

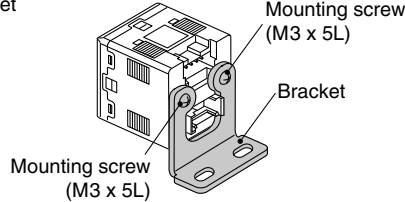
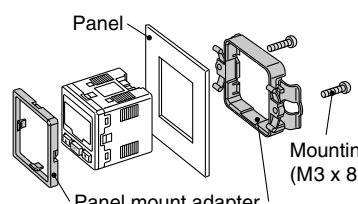
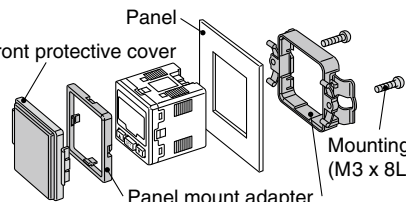
Note) The cable is not connected but packed together with product for shipment.

Option 3

Nil	None
C	With connector for sensor connection  Connector for sensor connection (e-con connector) ZS-28-C

Note) The connector is not connected but packed together with product for shipment.

Option 2

Nil	None
A	Bracket  Mounting screw (M3 x 5L) Bracket Mounting screw (M3 x 5L)
B	Panel mount adapter  Panel Panel mount adapter Mounting screw (M3 x 8L)
D	Panel mount adapter + Front protective cover  Panel Front protective cover Panel mount adapter Mounting screw (M3 x 8L)

Note) The options are not attached but packed together with product for shipment.

Options/Part No.

Description	Part no.	Note
Connector cable for power supply / output (2 m)	ZS-28-A	
Bracket	ZS-28-B	With M3 x 5L (2 pcs.)
Connector for sensor connection	ZS-28-C	1 pc.
Panel mount adapter	ZS-27-C	With M3 x 8L (2 pcs.)
Panel mount adapter + Front protective cover	ZS-27-D	With M3 x 8L (2 pcs.)

Paint Process Equipment

Directional Control Valves

Air Preparation Equipment

Pressure Control Equipment

Pneumatic Auxiliary Equipment

IZE11 Series

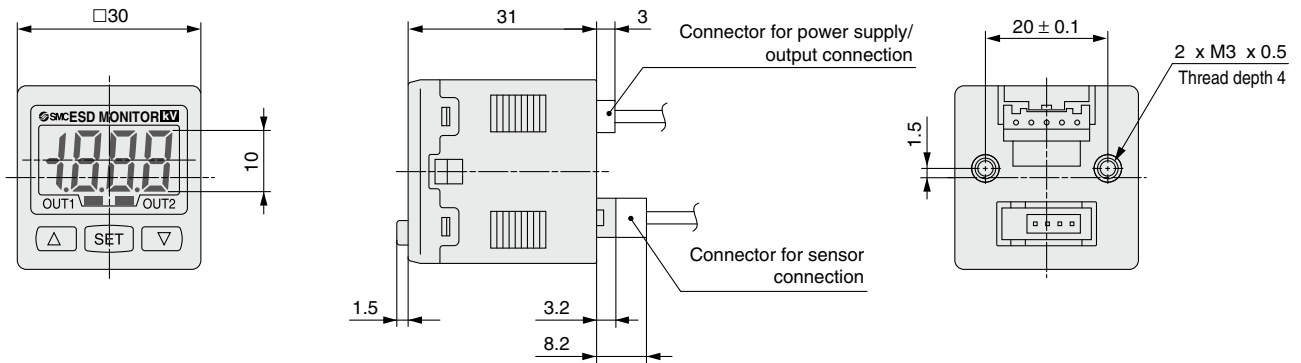
Specifications

Model		IZE11□	
Connection sensor		IZD10-110	IZD10-510
Rated measurement range		-0.4 kV to +0.4 kV ^{Note 1)}	-20 kV to +20 kV ^{Note 2)}
Min. unit setting		0.001 kV	0.1 kV
Measurement distance setting		10 to 50 mm	25 to 75 mm
Power supply voltage		21.6 to 26.4 VDC (24 VDC ±10% or less, with power supply polarity protection)	
Current consumption		50 mA or less (excluding sensor unit's current consumption)	
Sensor input		1 to 5 VDC (Input impedance: 1 MΩ)	
	Number of inputs	1 input	
	Input protection	With excess voltage protection (up to 26.4 V)	
	Hysteresis	Hysteresis mode: Variable Window comparator mode: Variable	
Switch output		NPN or PNP open collector: 2 outputs	
	Max. load current	80 mA	
	Max. applied voltage	30 VDC (with NPN output)	
	Residual voltage	1 V or less (with load current of 80 mA)	
	Short circuit protection	With short circuit protection	
	Response time (including sensor response time)	100 ms or less Response time with anti-chattering function: 500 ms, 1 s, 2 s or less	
Analog output	Voltage output	Output voltage: 1 to 5 V (with rated pressure range), Output impedance: Approx. 1 kΩ	
	Accuracy (for readings) (25°C)	±1% F.S. or less	
	Current output	Output current: 4 to 20 mA (with rated pressure range) Max. load impedance: 600 Ω (at 24 VDC), Min. load impedance: 50 Ω	
	Accuracy (for readings) (25°C)	±1% F.S. or less	
	Response time (including sensor response time)	200 ms (without filter), 1.5 s (with filter) or less	
Display accuracy		±0.5% F.S. ±1 digit or less	
Display		3 + 1/2 digit, 7-segment indicator, 2-color display (Red/Green) Sampling cycle: 5 times/s	
Indicator light		OUT1: Lights up when output is turned ON (Green), OUT2: Lights up when output is turned ON (Red).	
Environment	Enclosure	IP40	
	Operating temperature range	Operating: 0 to 50°C, Stored: -10 to 60°C (with no freezing or condensation)	
	Operating humidity range	Operating/Stored: 35 to 85% RH (with no condensation)	
	Withstand voltage	1000 VAC for 1 minute between terminals and housing	
	Insulation resistance	50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing	
	Vibration resistance	10 to 150 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s ² acceleration, in X, Y, Z direction for 2 hrs. each (De-energized)	
	Impact resistance	100 m/s ² in X, Y, Z directions 3 times each (De-energized)	
Temperature characteristics		±0.5% F.S. or less (25°C reference)	
Connection method		Power supply, Output connection: 5-pin connector, Sensor connection: 4-pin connector	
Material		Front case: PBT, Rear case: PBT	
Weight (excluding power supply/output connection cable)		30 g	
Standards		CE marking, UL (CSA) compliant	

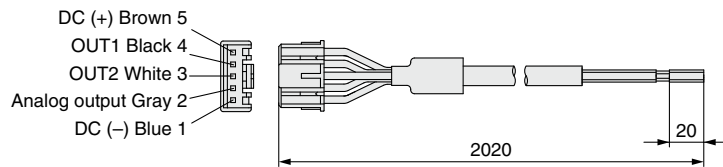
Note 1) Rated value when the distance between the charged object and the sensor is 25 mm

Note 2) Rated value when the distance between the charged object and the sensor is 50 mm

Dimensions



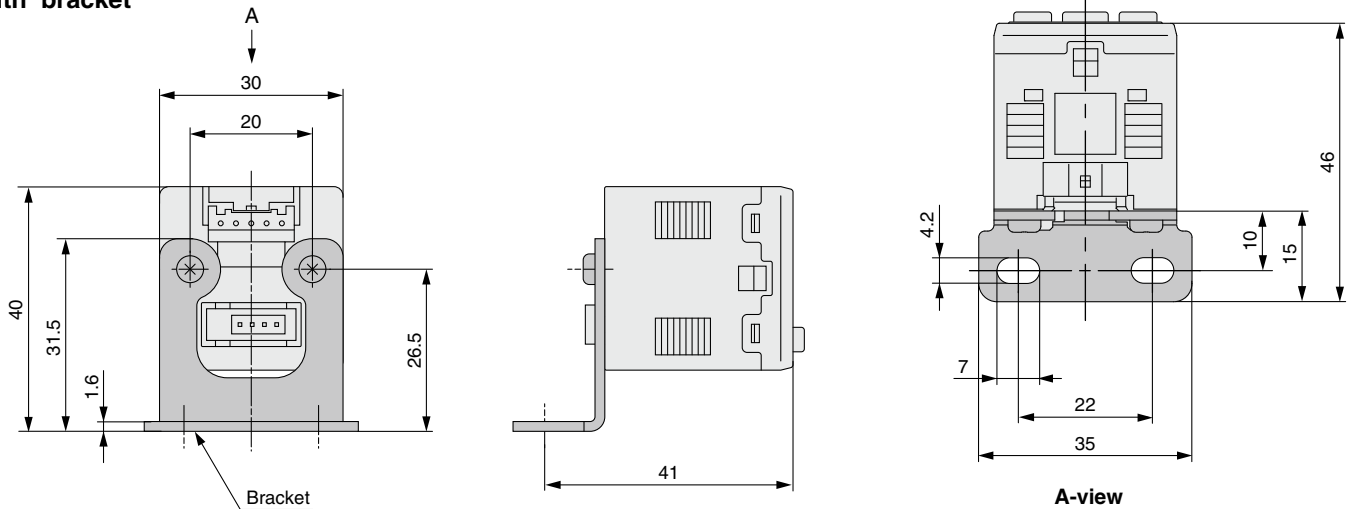
Connection cable for power supply/output (ZS-28-A)



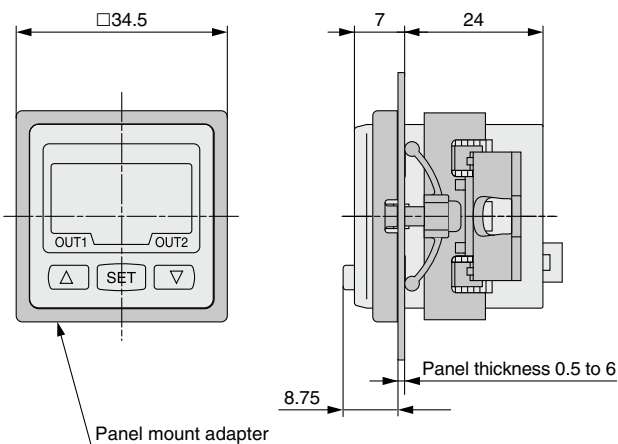
Connector for sensor connection

Pin no.	Terminal name
1	DC (+)
2	N.C.
3	DC (-)
4	IN (1 to 5 V)

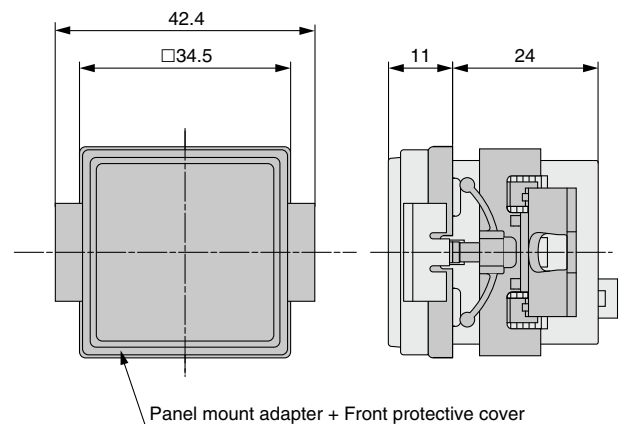
With bracket



With panel mount adapter



With panel mount adapter + Front protective cover



Handheld Electrostatic Meter

IZH10 Series



How to Order



IZH10-

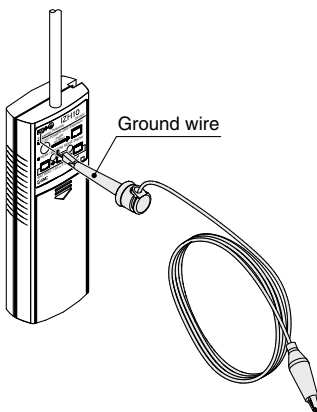
• Option

Nil	None
H	High-voltage measuring handle

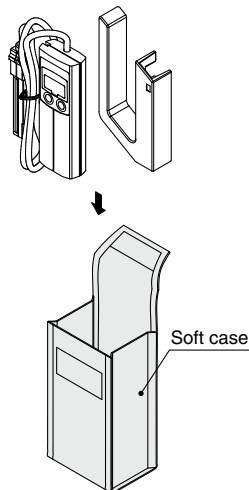
Accessories and Option/Part Number for Individual Parts

* The ground wire and soft case are attached to the IZH series.

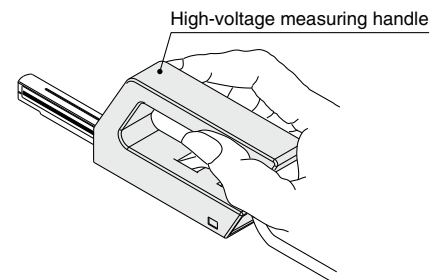
Ground wire (1.5 m)/Accessories IZH-A-01



Soft case/Accessories IZH-B-01



High-voltage measuring handle/Option IZH-C-01



Note) Be sure to use a high-voltage measuring handle in situations such as during high-voltage measurement when there is a possibility of personnel coming in contact with electricity.

Specifications

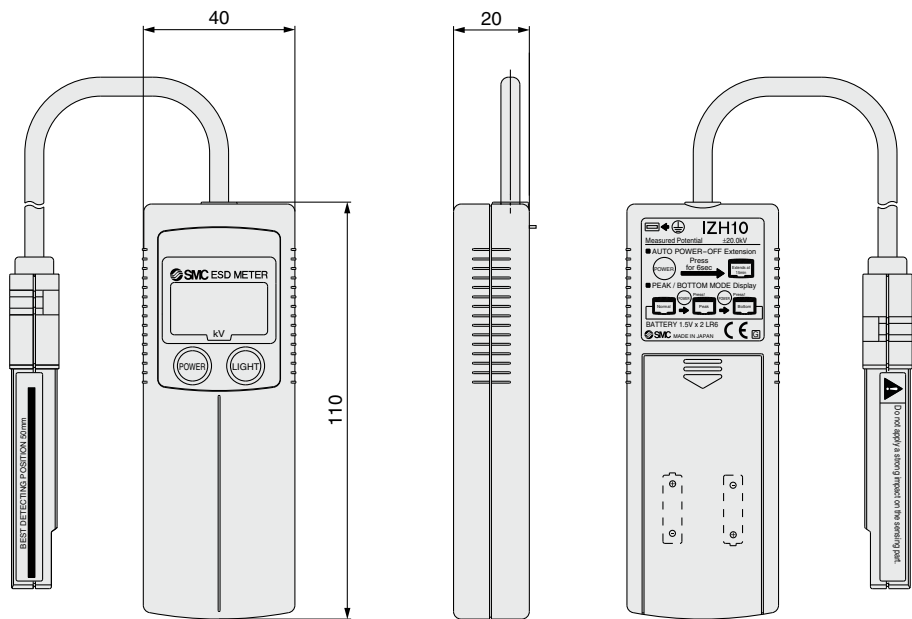
Model		IZH10
Rated charge amount range		±20.0 kV
Minimum display unit		0.1 kV (±1.0 kV to ±20.0 kV), 0.01 kV (0 to ±0.99 kV)
Measurement distance		50 mm (between sensor part and measured target)
Power supply Note 1)		1.5 VDC 2A alkali dry cell battery, 2 pcs (continuous use for 15 hours or more, see Note 2))
Display accuracy		±5% F.S. ±1 digit
Environment	Enclosure	IP40
	Operating temperature range	Operating: 0 to 40°C, Stored: -10 to 60°C (with no freezing or condensation)
	Operating humidity range	Operating/Stored: 35 to 85% R.H. (with no condensation)
	Vibration resistance	10 to 150 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s ² acceleration, in X, Y, Z directions for 2 hs. each (De-energized)
	Impact resistance	100 m/s ² in X, Y, Z directions 3 times each (De-energized)
Material		Display part: PC/ABS Sensor part: ABS
Weight		85 g (excluding dry cell batteries)
Standards		CE marking
Accessories		Ground wire, Soft case

Note 1) 2A alkali dry cell batteries are not included, and must be acquired separately.

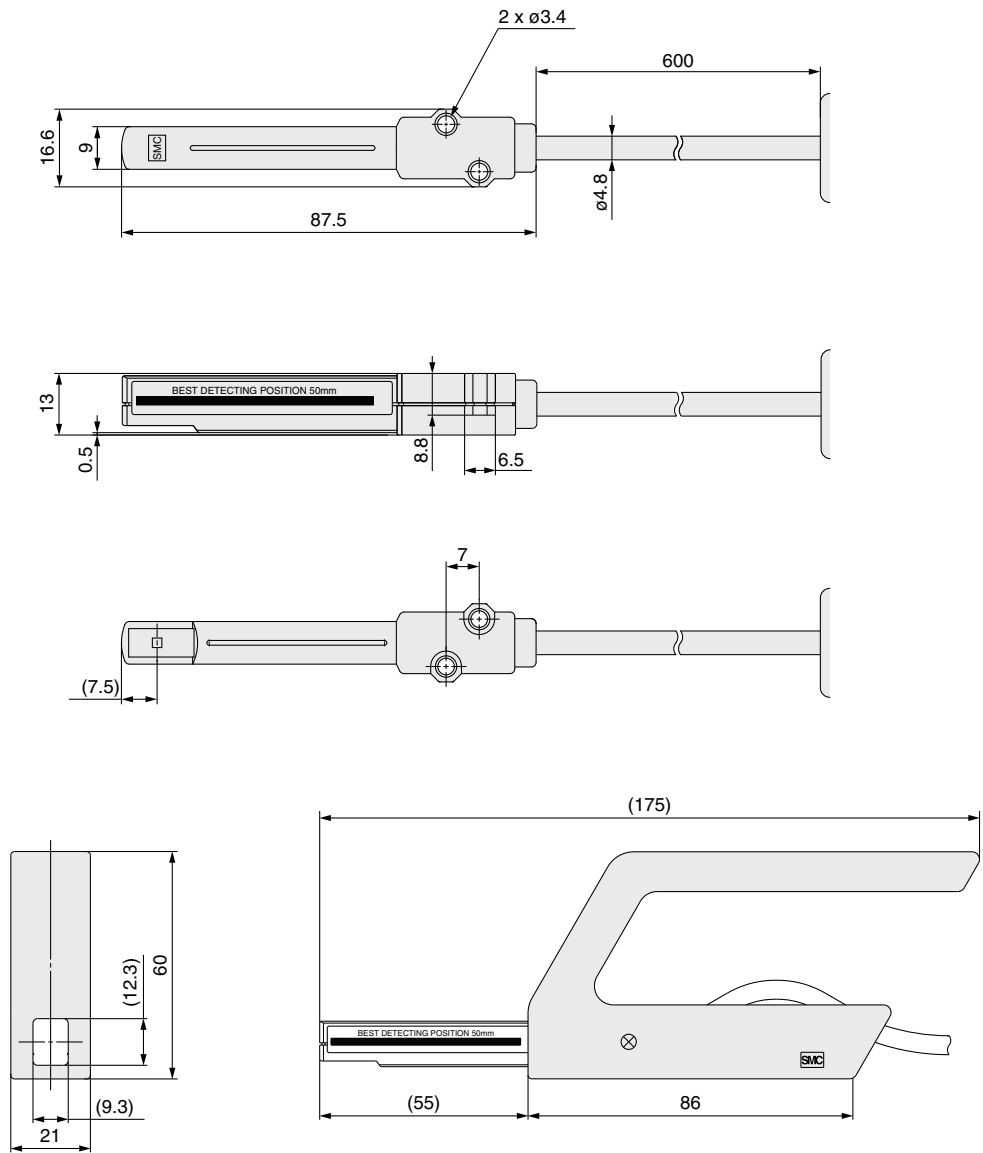
Note 2) When new alkali dry cell batteries are used at ordinary temperature.

Dimensions (Unit: mm)

Display part



Sensor part



Paint Process Equipment
Directional Control Valves
Air Preparation Equipment
Pressure Control Equipment
Pneumatic Auxiliary Equipment

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AF50-A-X2009	Air Filter (Degreasing Wash, White Vaseline Specification)	p. 122
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Catalog for Painting Processes

Revision History

Edition B	* The 3-port solenoid valve VP series 24 VAC specifications has been added. * The main line filter AFF series external shape size has been changed. * The mist separator AM series external shape size has been changed. * The micro mist separator AMD series external shape size has been changed. * The electro-pneumatic regulator ITV series specifications and external shape size have been changed. * The in-line type speed controller AS series has been replaced with the new AS series (refreshed). * The speed controller AS, ASD, ASV series external shape size has been changed. * The stainless steel 316 One-touch fittings KQG series has been replaced with KQG2 series. * The stainless steel insert fittings KFG series has been replaced with KFG2 series.	PQ
Edition C	* The check valve AK series has been added. * The regulator XT series has been added. * The fluoropolymer tubing TQ, TLM, and TILM series have been added. * The thermo-dryer IDH series has been added. * The compact manifold regulator ARM series has been added. * The spacer for modular connection Y series has been added. * The booster regulator VBA series has been added. * The air tank VBAT series has been added. * The speed controller with One-touch fittings AS-X21 has been added. * The high-precision digital pressure switch ISE□ series has been added. * The pressure sensor PSE□ series has been added. * The digital flow switch PFM□ series has been added. * The rectangular multi-connector KDM-X1320 has been added. * The S couplers KK series has been added. * The moisture control tube IDK series has been added. * The electro-pneumatic regulator ITV series and other products have been replaced with new products (refreshed).	WQ

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D-G

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