

Modular air combination units

HF1-AC-D-X7000 Series

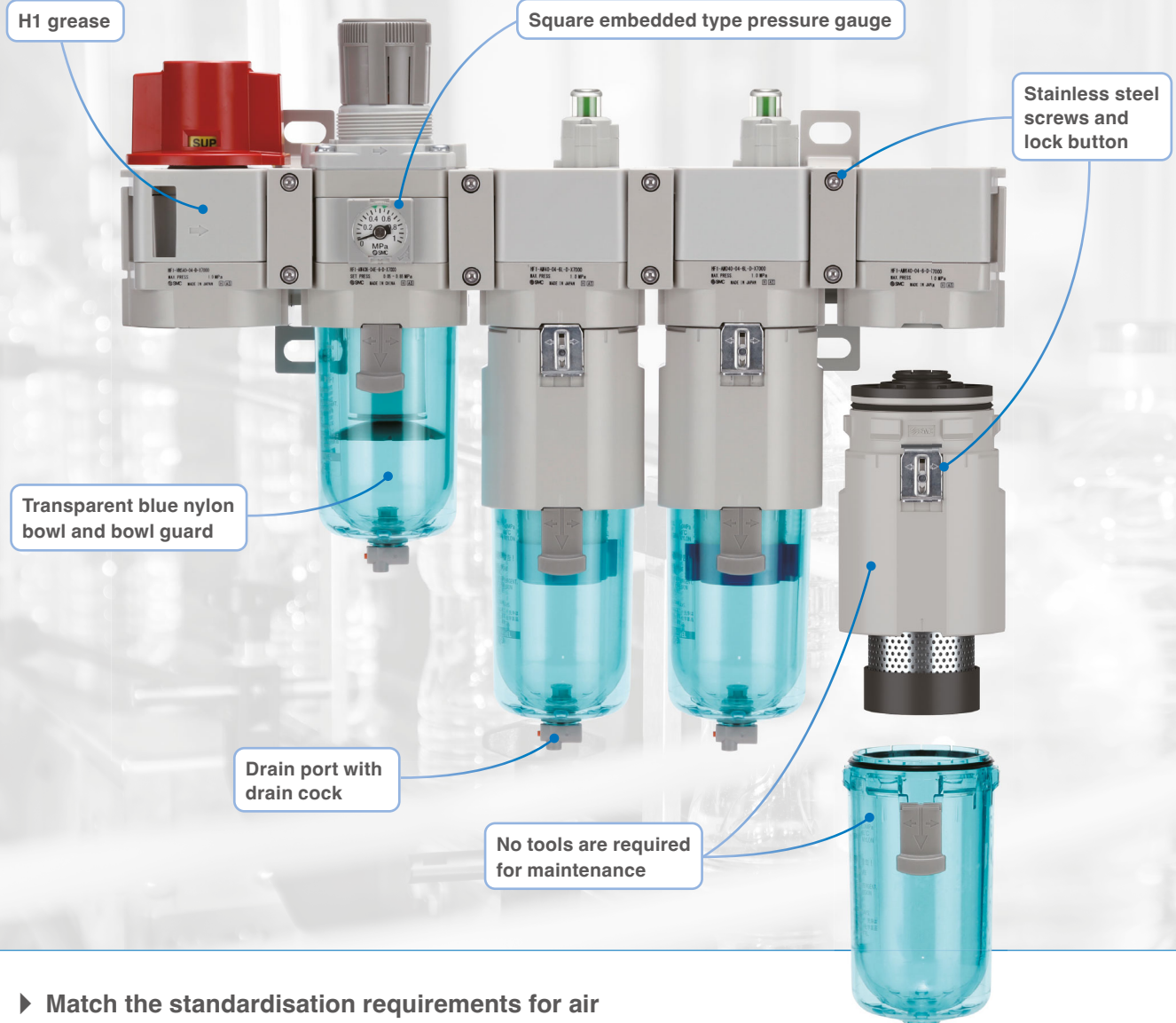


**Air preparation units for
food & packaging**

-Air purity class compliant with ISO 8573-1

Modular air combination units

HF1-AC-D-X7000 Series



► **Match the standardisation requirements for air purity class.**

– Air purity class compliant with ISO 8573-1

► **Prevent accumulation of dust and foreign matter**

– Modular design with uniform body style.

► **Guarantee durability and easy maintenance**

– Double-layer: Transparent blue nylon bowl and bowl guard

► **Enclosure: IP44**

► **1/8 to 1 port sizes**

► **Flow rate from 380 l/min to 8000 l/min**

► **Inch and Metric port threads**

► **Element service indicator**

Choose a combination for each purpose...

* ISO purity with inlet air purity: [7:4:4]

HF1-AC□-D-X7000A

Pressure relief valve
Filter regulator
Micro mist separator



3:4:2*

HF1-AC□-D-X7000B

Pressure relief valve
Filter regulator
Mist separator
Micro mist separator
Activated carbon filter



1:4:1*

HF1-AC40X-□-D-X7000C

Pressure relief valve
Filter regulator
Micro mist separator
Membrane air dryer



3:3:2*

HF1-AC40X-□-D-X7000D

Pressure relief valve
Filter regulator
Mist separator
Micro mist separator
Membrane air dryer
Activated carbon filter



1:3:1*

** For other assembled product combinations please contact SMC

HF1-AC□-D-X7000A

How to Order

HF1-AC 30 X-F 03 DE-6L R-D-X7000 A

①

②

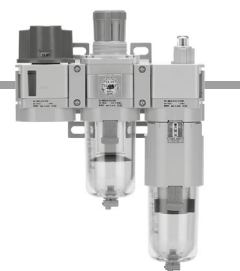
③

④

⑤

The material of the specific outer parts is stainless

Compressed air purity class [3:4:2] HF1-AC40X-□-D-X7000A



- ④ Option/⑤ Semi-standard: Select one each for "a" to "d".
 - Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.
- Example) HF1-AC40X-N04DE-6LRZ-D-X7000A

		Symbol	Description	①						
				Body size						
				20	30	40	60			
②	Thread type	—	Rc*1	●	●	●	●			
		N	NPT	●	●	●	●			
		F	G	●	●	●	●			
+										
③	Port size	01	1/8	●	—	—	—			
		02	1/4	●	●	●	—			
		03	3/8	—	●	●	—			
		04	1/2	—	—	●	—			
		10	1	—	—	—	●			
+										
④	Option	a	Float type auto drain	—	Without auto drain*2		●	●	●	●
				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			—	●	●	●			
+										
		b	Pressure gauge	—	Without pressure gauge*3		●	●	●	●
				E	Square embedded type pressure gauge (with limit indicator)		●	●	●	●
+										
			Bowl*4	6	Nylon Bowl		●	●	●	●*5
			Indicator	L	With element service indicator*6		●	●	●	●
+										
⑤	Semi-standard	c	Flow direction	—	Flow direction: Left to right		●	●	●	●
				R	Flow direction: Right to left		●	●	●	●
		+								
		d	Unit	—	Unit of pressure: MPa	Unit of temperature: °C	●	●	●	●
				Z	Unit of pressure: psi	Unit of temperature: °F	○*7	○*7	○*7	○*7

*1 The pipe thread type for the EXH port is G.

*2 Drain port: With drain cock

*3 With pressure gauge connection thread (Port size 1/8)

*4 Refer to the chemical data of the standard product catalogue for chemical resistance of the bowl.

*5 AMD is metal bowl.

*6 Element service indicator is mounted on AMD.

*7 ○: For pipe thread type: NPT only

Specifications

Model		HF1-AC20X-□-D-X7000A	HF1-AC30X-□-D-X7000A	HF1-AC40X-□-D-X7000A	HF1-AC60X-□-D-X7000A
Component	Pressure relief 3 port valve [VHS]	HF1-VHS20-□-D-X7000	HF1-VHS30-□-D-X7000	HF1-VHS40-□-D-X7000	HF1-VHS50-□-D-X7000
	Filter regulator [AW]	HF1-AW20K-□-D-X7000	HF1-AW30K-□-D-X7000	HF1-AW40K-□-D-X7000	HF1-AW60K-□-D-X7000
	Micro mist separator [AMD]	HF1-AMD20-□-D-X7000	HF1-AMD30-□-D-X7000	HF1-AMD40-□-D-X7000	HF1-AMD60-□-D-X7000
Port size		1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2	1
Pressure gauge port size*1		1/8			
Fluid		Air			
Ambient and fluid temperatures		-5 to 60 °C (23 to 140 °F) (No freezing)			
Proof pressure		1.5 MPa (225 psi)			
Max. operating pressure		1.0 MPa (150 psi)			
Auto drain minimum operating pressure	N.C.	0.1 MPa (15 psi)	0.15 MPa (20 psi)		
	N.O.	0.1 MPa (15 psi)			
Set pressure range*2		0.05 to 0.85 MPa (7 to 125 psi)			
Compressed air purity class*3		ISO8573-1:2010 [3:4:2]*4			
Maximum flow rate for air purity class*5		380 l/min (ANR)	1,000 l/min (ANR)	2,700 l/min (ANR)	8,000 l/min (ANR)
Drain capacity		8 cm ³	25 cm ³	45 cm ³	45 cm ³ *6
Bowl material		Nylon*7			
Bowl guard		—*8	Attached (Nylon)*9		
Regulator construction		Relieving type			
Grease		NSF H1 grade*10			
Enclosure		IP44*11			
Weight 0		0.51 kg	1.03 kg	2.02 kg	4.48 kg

*1 Pressure gauge connection thread is not available for AW with a square embedded type pressure gauge.

*2 Pressure can be set higher than the specification pressure in some cases, but use pressure within the specification range.
Set range of outlet pressure shall be 85 % or less of the inlet pressure.

*3 The compressed air purity class is indicated based on ISO8573-1:2010 Compressed air
- Part1: Contaminants and purity classes. For details on this standard, refer to page 17.

*4 The compressed air purity class on the inlet side is [7:4:4].

*5 Set pressure: 0.6 MPa (at the maximum flow rate is flowing)

*6 AMD is 100 cm³.

*7 AMD of HF1-AC60X-D-X7000A is metal bowl.

*8 Bowl guard is not attached to HF1-AC20X-D-X7000A.

*9 Bowl guard is not attached to AMD of HF1-AC60X-D-X7000A.

*10 Except adjust screw assembly of AW.

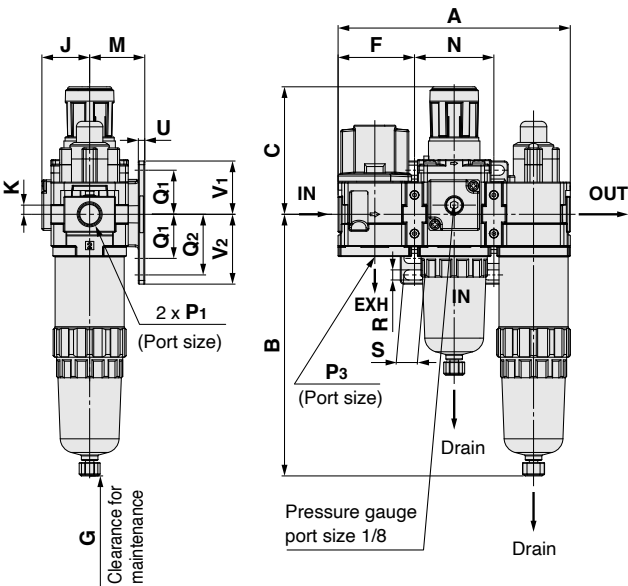
*11 IP44 will only be reached if you apply the following conditions:

- A silencer must be installed at the exhaust outlet of VHS, but is not shipped together with the product. Please refer to the replacement parts section for applicable silencers.
- The regulator knob of the AW filter regulator must be in locked position.

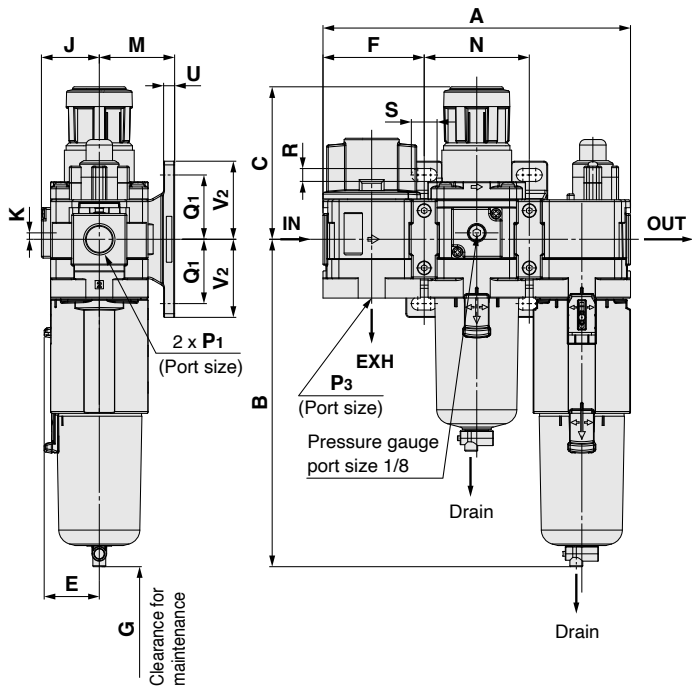
HF1-AC□-D-X7000A

Dimensions

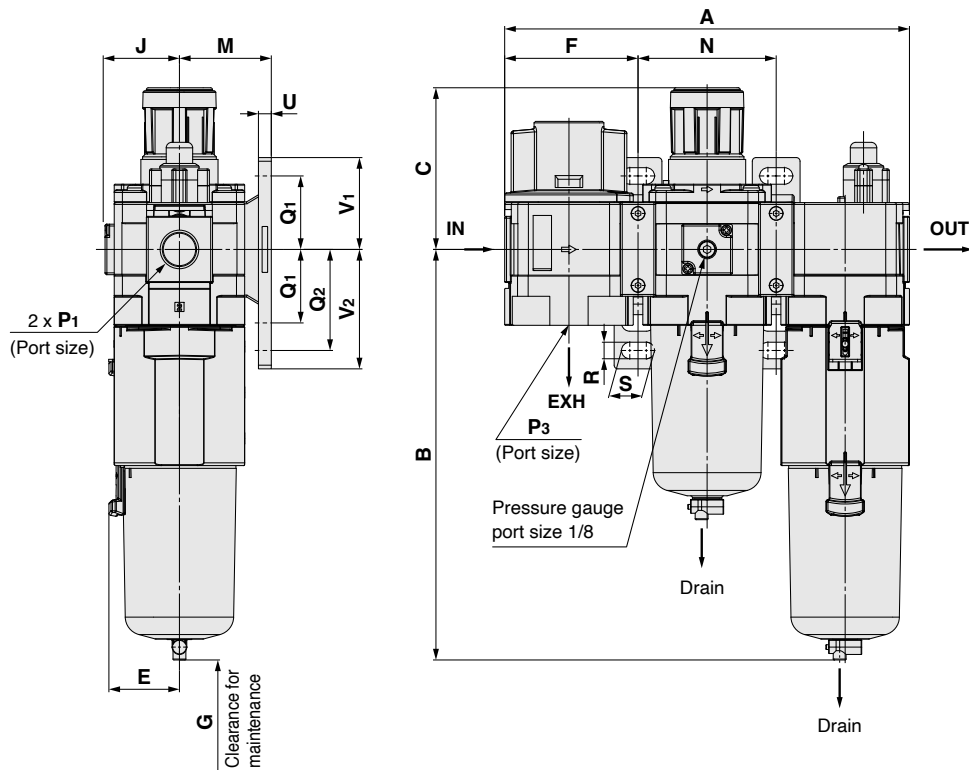
HF1-AC20X-□-D-X7000A



HF1-AC30X-□-D-X7000A

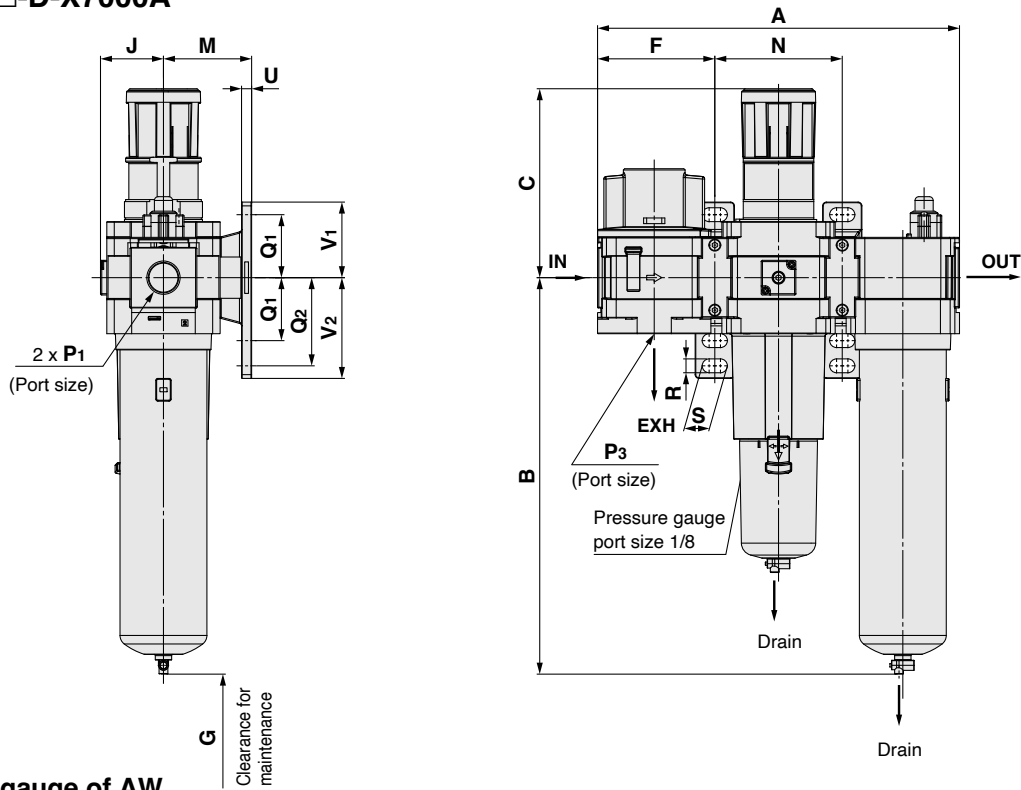


HF1-AC40X-□-D-X7000A



Dimensions

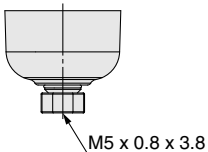
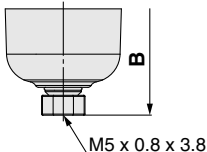
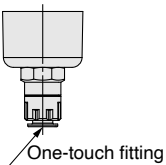
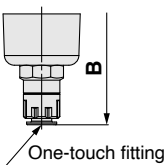
HF1-AC60X-□-D-X7000A



With pressure gauge of AW

Applicable model	Optional specifications
	Square embedded type pressure gauge
HF1-AC20X-□-D-X7000A to HF1-AC60X-□-D-X7000A	

Bowl assembly specification of AW and AMD

Applicable model	Optional specifications													
	AW with auto drain	AMD with auto drain												
HF1-AC20X-□-D-X7000A														
HF1-AC30X-□-D-X7000A to HF1-AC60X-□-D-X7000A	 <table><tr><th>Thread type</th><th>Applicable tube O.D.</th></tr><tr><td>Rc, G</td><td>Ø 10</td></tr><tr><td>NPT</td><td>Ø 3/8"</td></tr></table>	Thread type	Applicable tube O.D.	Rc, G	Ø 10	NPT	Ø 3/8"	 <table><tr><th>Thread type</th><th>Applicable tube O.D.</th></tr><tr><td>Rc, G</td><td>Ø 10</td></tr><tr><td>NPT</td><td>Ø 3/8"</td></tr></table>	Thread type	Applicable tube O.D.	Rc, G	Ø 10	NPT	Ø 3/8"
Thread type	Applicable tube O.D.													
Rc, G	Ø 10													
NPT	Ø 3/8"													
Thread type	Applicable tube O.D.													
Rc, G	Ø 10													
NPT	Ø 3/8"													

Model	Standard specifications																			Optional specifications	
	P ₁	P ₃	A	B	C	E	F	G	J	K	Bracket mount								Without pressure gauge	With auto drain	
											M	N	Q ₁	Q ₂	R	S	U	V ₁			V ₂
HF1-AC20X-□-D-X7000A	1/8 · 1/4	1/8	126.4	142.4	71.8	—	41.6	60	26	5	30	43.2	24	33	5.5	11.5	3.5	29	38	27	159.6
HF1-AC30X-□-D-X7000A	1/4 · 3/8	1/4	167.4	178.2	86.5	30	55.1	80	31.5	3.5	41	57.2	35	—	7	14	6	42.5	42.5	32.5	219.8
HF1-AC40X-□-D-X7000A	1/4 · 3/8 · 1/2	3/8	220.4	223.5	91.5	38.4	72.6	110	40.5	—	50	75.2	40	55	9	18	7	50	65	41.5	263.3
HF1-AC60X-□-D-X7000A	1	1/2	287.4	314.8	155	—	93.1	30	50	—	70	101.2	50	70	11	20	8	60	80	51	336.3

HF1-AC□-D-X7000B

How to Order

HF1-AC 30 X-F 03 DE-6L R-D-X7000 B

1

2

3

4

5

The material of the specific outer parts is stainless

Compressed air purity class [1:4:1]



HF1-AC40X-□-D-X7000B

· ④ Option/⑤ Semi-standard: Select one each for "a" to "d".
 · Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.
 Example) HF1-AC40X-N04DE-6LRZ-D-X7000B

		Symbol	Description	①						
				Body size						
				20	30	40	60			
②	Thread type	—	Rc*1	●	●	●	●			
		N	NPT	●	●	●	●			
		F	G	●	●	●	●			
+										
③	Port size	01	1/8	●	—	—	—			
		02	1/4	●	●	●	—			
		03	3/8	—	●	●	—			
		04	1/2	—	—	●	—			
		10	1	—	—	—	●			
+										
④	Option	a	Float type auto drain	—	Without auto drain*2		●	●	●	●
				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			—	●	●	●			
+										
		b	Pressure gauge	—	Without pressure gauge*3		●	●	●	●
				E	Square embedded type pressure gauge (with limit indicator)		●	●	●	●
+										
			Bowl*4	6	Nylon Bowl		●	●	●	●*5
			Indicator	L	With element service indicator*6		●	●	●	●
+										
⑤	Semi-standard	c	Flow direction	—	Flow direction: Left to right		●	●	●	●
				R	Flow direction: Right to left		●	●	●	●
		+								
		d	Unit	—	Unit of pressure: MPa	Unit of temperature: °C	●	●	●	●
				Z	Unit of pressure: psi	Unit of temperature: °F	○*7	○*7	○*7	○*7

*1 The pipe thread type for the EXH port is G.

*2 Drain port: With drain cock

*3 With pressure gauge connection thread (Port size 1/8)

*4 Refer to the chemical data of the standard product catalogue for chemical resistance of the bowl.

*5 AM, AMD and AMK is metal bowl.

*6 Element service indicator is mounted on AM and AMD.

*7 ○: For pipe thread type: NPT only

Specifications

Model		HF1-AC20X-□-D-X7000B	HF1-AC30X-□-D-X7000B	HF1-AC40X-□-D-X7000B	HF1-AC60X-□-D-X7000B
Component	Pressure relief 3 port valve [VHS]	HF1-VHS20-□-D-X7000	HF1-VHS30-□-D-X7000	HF1-VHS40-□-D-X7000	HF1-VHS50-□-D-X7000
	Filter regulator [AW]	HF1-AW20K-□-D-X7000	HF1-AW30K-□-D-X7000	HF1-AW40K-□-D-X7000	HF1-AW60K-□-D-X7000
	Mist separator [AM]	HF1-AM20-□-D-X7000	HF1-AM30-□-D-X7000	HF1-AM40-□-D-X7000	HF1-AM60-□-D-X7000
	Micro mist separator [AMD]	HF1-AMD20-□-D-X7000	HF1-AMD30-□-D-X7000	HF1-AMD40-□-D-X7000	HF1-AMD60-□-D-X7000
	Activated carbon filter [AMK]	HF1-AMK20-□-D-X7000	HF1-AMK30-□-D-X7000	HF1-AMK40-□-D-X7000	HF1-AMK60-□-D-X7000
Port size		1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2	1
Pressure gauge port size*1		1/8			
Fluid		Air			
Ambient and fluid temperatures		-5 to 60 °C (23 to 140 °F) (No freezing)			
Proof pressure		1.5 MPa (225 psi)			
Max. operating pressure		1.0 MPa (150 psi)			
Auto drain minimum operating pressure	N.C.	0.1 MPa (15 psi)	0.15 MPa (20 psi)		
	N.O.	0.1 MPa (15 psi)			
Set pressure range*2		0.05 to 0.85 MPa (7 to 125 psi)			
Compressed air purity class*3		ISO8573-1:2010 [1:4:1]*4			
Maximum flow rate for air purity class*5		380 l/min (ANR)	1,000 l/min (ANR)	2,700 l/min (ANR)	6,700 l/min (ANR)
Drain capacity		8 cm ³	25 cm ³	45 cm ³	45 cm ³ *6
Bowl material		Nylon*7			
Bowl guard		— *8	Attached (Nylon)*9		
Regulator construction		Relieving type			
Grease		NSF H1 grade*10			
Enclosure		IP44*11			
Weight		0.90 kg	1.90 kg	3.71 kg	7.76 kg

*1 Pressure gauge connection thread is not available for AW with a square embedded type pressure gauge.

*2 Pressure can be set higher than the specification pressure in some cases, but use pressure within the specification range.

Set range of outlet pressure shall be 85 % or less of the inlet pressure.

*3 The compressed air purity class is indicated based on ISO8573-1:2010 Compressed air

- Part1: Contaminants and purity classes. For details on this standard, refer to page 17.

*4 The compressed air purity class on the inlet side is [7:4:4].

*5 Set pressure: 0.6 MPa (at the maximum flow rate is flowing)

*6 AM, AMD are 100 cm³.

*7 AM, AMD, AMK of HF1-AC60X-D-X7000A are metal bowls.

*8 Bowl guard is not attached to HF1-AC20X-D-X7000B.

*9 Bowl guards are not attached to AM, AMD, AMK of HF1-AC60X-D-X7000B.

*10 Except adjust screw assembly of AW.

*11 IP44 will only be reached if you apply the following conditions:

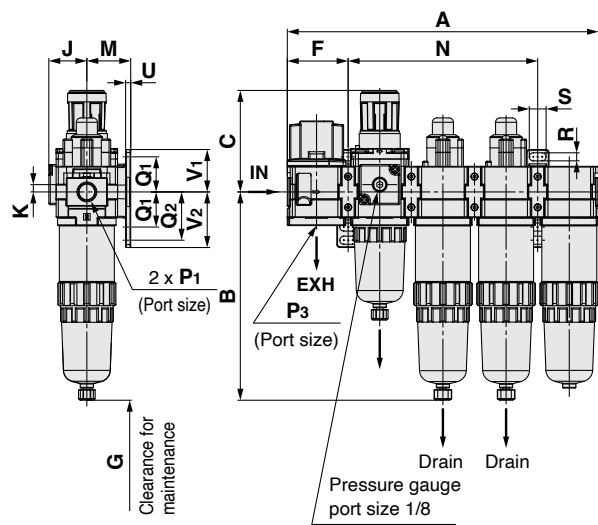
- A silencer must be installed at the exhaust outlet of VHS, but is not shipped together with the product. Please refer to the replacement parts section for applicable silencers.

- The regulator knob of the AW filter regulator must be in locked position.

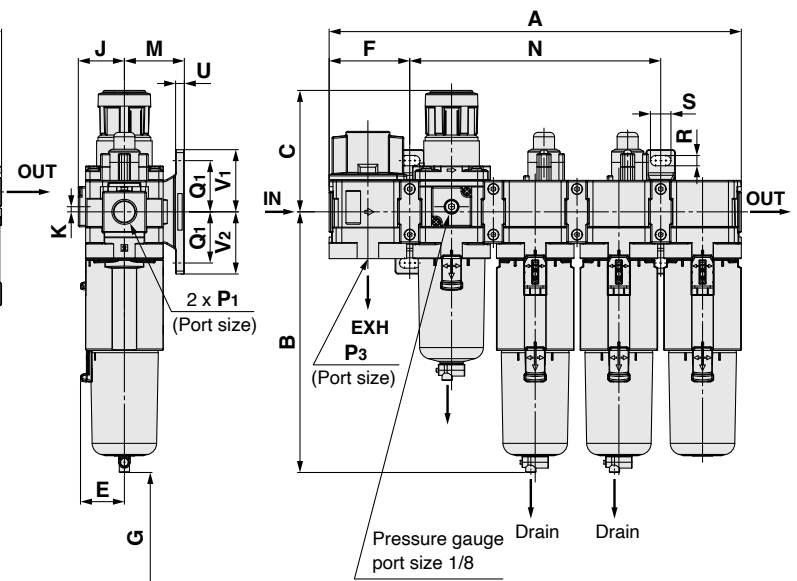
HF1-AC□-D-X7000B

Dimensions

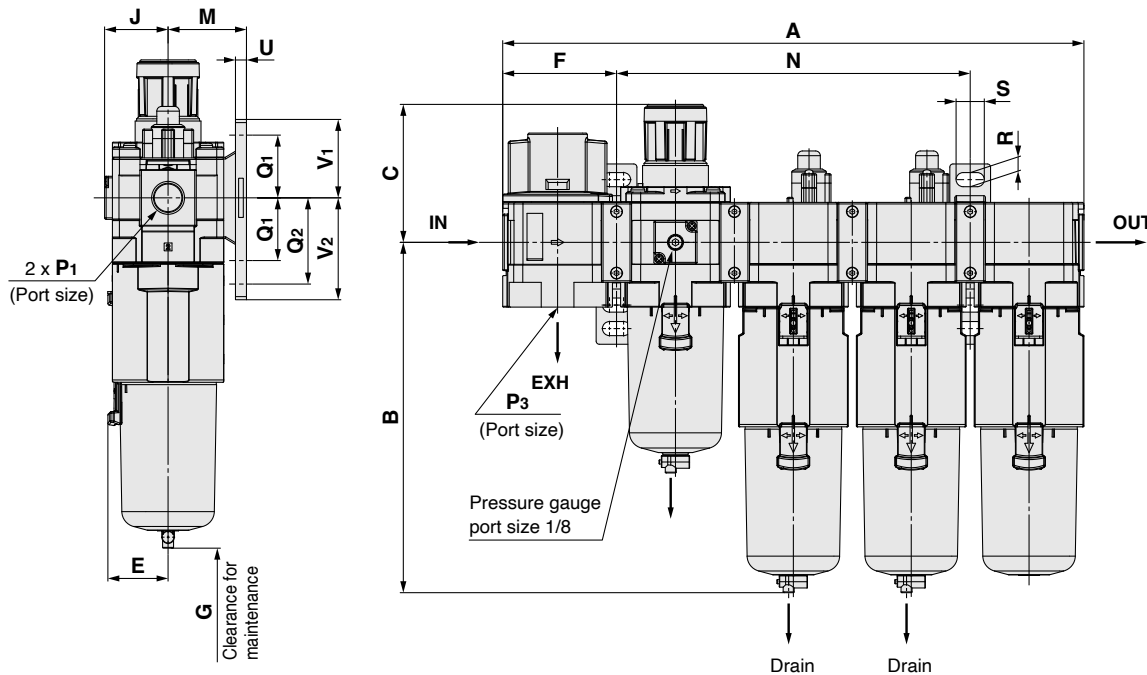
HF1-AC20X-□-D-X7000B



HF1-AC30X-□-D-X7000B

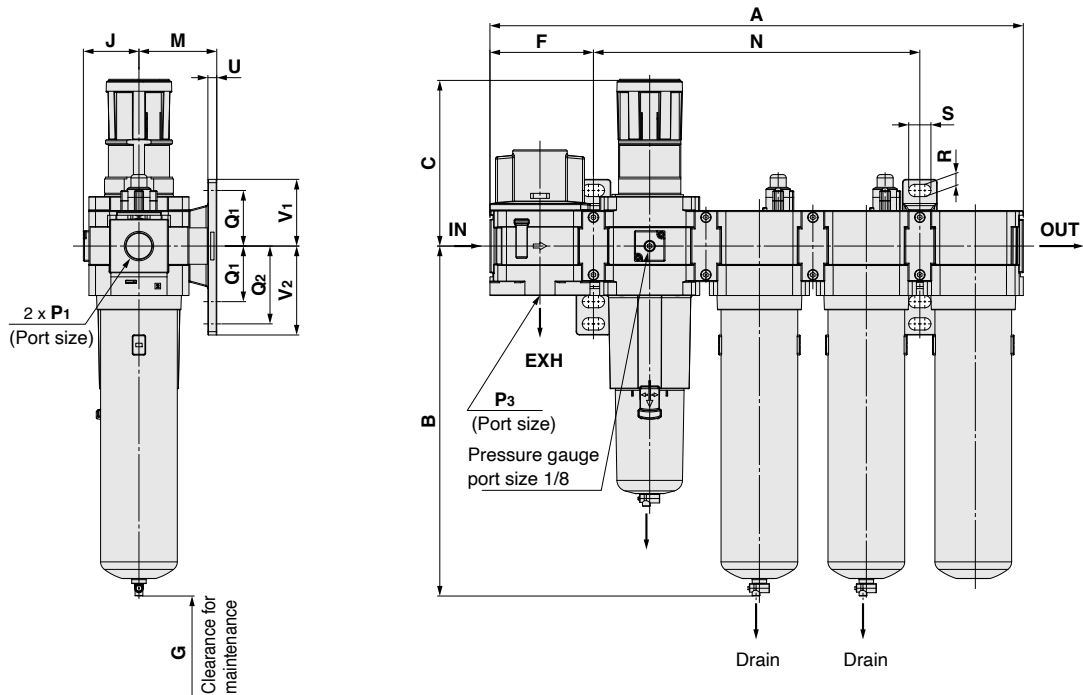


HF1-AC40X-□-D-X7000B



Dimensions

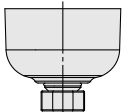
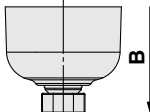
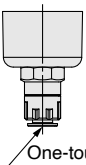
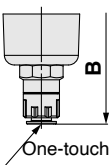
HF1-AC60X-□-D-X7000B



With pressure gauge of AW

Applicable model	Optional specifications
	Square embedded type pressure gauge
HF1-AC20X-□-D-X7000B to HF1-AC60X-□-D-X7000B	

Bowl assembly specification of AW, AM and AMD

Applicable model	Optional specifications													
	AW with auto drain	AM, AMD with auto drain												
HF1-AC20X-□-D-X7000B	 M5 x 0.8 x 3.8	 M5 x 0.8 x 3.8												
HF1-AC30X-□-D-X7000B to HF1-AC60X-□-D-X7000B	 One-touch fitting <table border="1" data-bbox="679 1736 912 1836"><thead><tr><th>Thread type</th><th>Applicable tube O.D.</th></tr></thead><tbody><tr><td>Rc, G</td><td>Ø 10</td></tr><tr><td>NPT</td><td>Ø 3/8"</td></tr></tbody></table>	Thread type	Applicable tube O.D.	Rc, G	Ø 10	NPT	Ø 3/8"	 One-touch fitting <table border="1" data-bbox="1243 1736 1476 1836"><thead><tr><th>Thread type</th><th>Applicable tube O.D.</th></tr></thead><tbody><tr><td>Rc, G</td><td>Ø 10</td></tr><tr><td>NPT</td><td>Ø 3/8"</td></tr></tbody></table>	Thread type	Applicable tube O.D.	Rc, G	Ø 10	NPT	Ø 3/8"
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Rc, G	Ø 10													
NPT	Ø 3/8"													
Thread type	Applicable tube O.D.													
Rc, G	Ø 10													
NPT	Ø 3/8"													

Model	Standard specifications																		Optional specifications		
	P ₁	P ₃	A	B	C	E	F	G	J	K	Bracket mount								Without pressure gauge	With auto drain	
											M	N	Q ₁	Q ₂	R	S	U	V ₁			V ₂
HF1-AC20X-□-D-X7000B	1/8 · 1/4	1/8	212.8	142.4	71.8	—	41.6	60	26	5	30	43.2	24	33	5.5	11.5	3.5	29	38	27	159.6
HF1-AC30X-□-D-X7000B	1/4 · 3/8	1/4	281.8	178.2	86.5	30	55.1	80	31.5	3.5	41	57.2	35	—	7	14	6	42.5	42.5	32.5	219.8
HF1-AC40X-□-D-X7000B	1/4 · 3/8 · 1/2	3/8	370.8	223.5	91.5	38.4	72.6	110	40.5	—	50	75.2	40	55	9	18	7	50	65	41.5	263.3
HF1-AC60X-□-D-X7000B	1	1/2	479.8	314.8	155	—	93.1	30	50	—	70	101.2	50	70	11	20	8	60	80	51	336.3

HF1-AC40X-□-D-X7000C

How to Order

HF1-AC40X-**F****03****DE**-6L**R**-D-X7000**C**

①

②

③

④

The material of the specific outer parts is stainless

Compressed air purity class [3:3:2]



· ③ Option/④ Semi-standard: Select one each for "a" to "d".
 · Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.
 Example) HF1-AC40X-N04DE-6LRZ-D-X7000C

HF1-AC40X-□-D-X7000C

		Symbol	Description	Body size		
				40		
①	Thread type	—	Rc*1	●		
		N	NPT	●		
		F	G	●		
		+				
②	Port size	02	1/4	●		
		03	3/8	●		
		04	1/2	●		
		+				
③	Option	a	Float type auto drain			
			—	Without auto drain*2	●	
			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	●		
		+				
	b	Pressure gauge	—	Without pressure gauge*3	●	
			E	Square embedded type pressure gauge (with limit indicator)	●	
+						
Bowl*4		6	Nylon Bowl	●		
Indicator		L	With element service indicator*5	●		
+						
④	Semi-standard	c	Flow direction			
			—	Flow direction: Left to right	●	
		R	Flow direction: Right to left	●		
		+				
		d	Unit	—	Unit of pressure: MPa Unit of temperature: °C	●
				Z	Unit of pressure: psi Unit of temperature: °F	○*6

*1 The pipe thread type for the EXH port is G.

*2 Drain port: With drain cock

*3 With pressure gauge connection thread (Port size 1/8)

*4 Refer to the chemical data of the standard product catalogue for chemical resistance of the bowl.

*5 Element service indicator is mounted on AMD.

*6 ○: For pipe thread type: NPT only

Specifications

Model		HF1-AC40X-□-D-X7000C
Component	Pressure relief 3 port valve [VHS]	HF1-VHS40-□-D-X7000
	Filter regulator [AW]	HF1-AW40K-□-D-X7000
	Micro mist separator [AMD]	HF1-AMD40-□-D-X7000
	Membrane air dryer [IDG]	IDG40-□-D-X7000
Port size		1/4, 3/8, 1/2
Pressure gauge port size*1		1/8
Fluid		Air
Ambient and fluid temperatures		-5 to 50 °C (23 to 122 °F) (No freezing)
Proof pressure		1.5 MPa (225 psi)
Max. operating pressure		1.0 MPa (150 psi)
Set pressure range*2		0.3 to 0.85 MPa (45 to 125 psi)
Compressed air purity class*3		ISO8573-1:2010 [3:3:2]*4
Maximum flow rate for air purity class*5	Inlet flow rate	582 l/min (ANR)
	Out let flow rate	500 l/min (ANR)
	Purge flow rate	82 l/min (ANR)
Drain capacity		45 cm ³
Bowl material		Nylon
Bowl guard		Attached (Nylon)
Regulator construction		Relieving type
Grease		NSF H1 grade*6
Enclosure		IP44*7
Weight		3.43 kg

*1 Pressure gauge connection thread is not available for AW with a square embedded type pressure gauge.

*2 Pressure can be set higher and lower than the specification pressure in some cases, but use pressure within the specification range. Set range of outlet pressure shall be 85 % or less of the inlet pressure.

*3 The compressed air purity class is indicated based on ISO8573-1:2010 Compressed air - Part1: Contaminants and purity classes. For details on this standard, refer to page 17.

*4 The compressed air purity class on the inlet side is [7:4:4].

*5 Set pressure: 0.7 MPa (at the maximum flow rate is flowing)

*6 Except adjust screw assembly of AW.

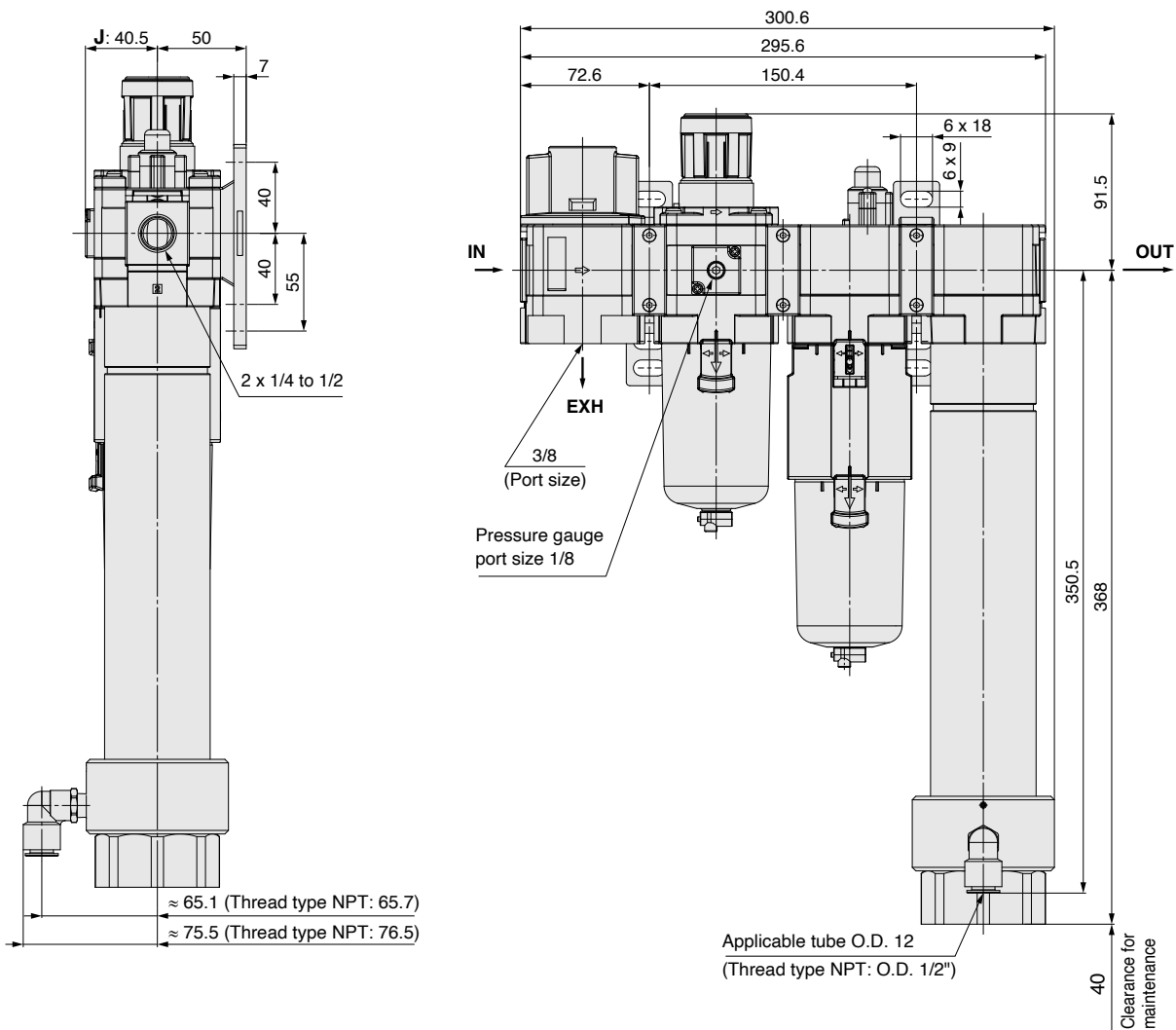
*7 IP44 will only be reached if you apply the following conditions:

- A silencer must be installed at the exhaust outlet of VHS, but is not shipped together with the product. Please refer to the replacement parts section for applicable silencers.
 - The regulator knob of the AW filter regulator must be in locked position.
 - The elbow fitting in the purge flow outlet must be facing downwards to prevent fluid from entering the membrane dryer.
 - Additional measures can be necessary to prevent fluid to enter the membrane dryer depending on the application.
- (Please contact SMC for support)

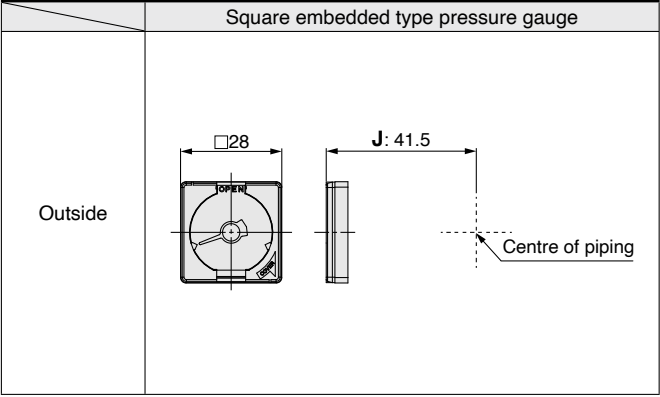
HF1-AC40X-□-D-X7000C

Dimensions

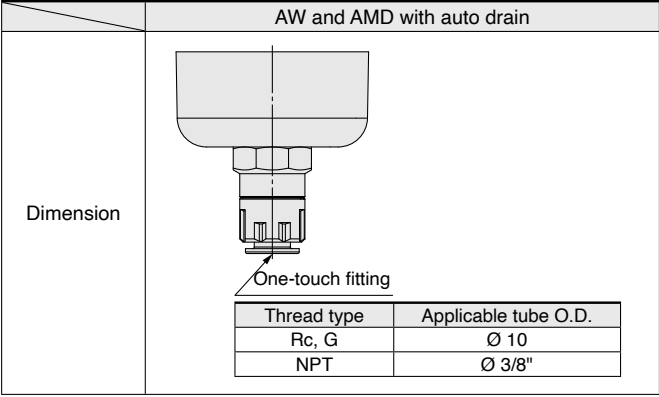
HF1-AC40X-□-D-X7000C



With pressure gauge of AW



Bowl assembly specification of AW and AMD



Air Combination

HF1-AC40X-□-D-X7000D

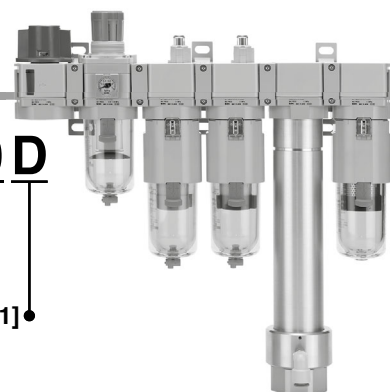
How to Order

HF1-AC40X-**F****03****DE**-6L**R**-D-X7000**D**

① ② ③ ④

The material of the specific outer parts is stainless

Compressed air purity class [1:3:1]



HF1-AC40X-□-D-X7000D

· ③ Option/④ Semi-standard: Select one each for "a" to "d".
 · Semi-standard symbol: When more than one specification is required, indicate in alphanumeric order.
 Example) HF1-AC40X-N04DE-6LRZ-D-X7000D

		Symbol	Description	Body size		
				40		
①	Thread type	—	Rc*1	●		
		N	NPT	●		
		F	G	●		
		+				
②	Port size	02	1/4	●		
		03	3/8	●		
		04	1/2	●		
		+				
③	Option	a	Float type auto drain	—	Without auto drain*2	●
			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	●	
		+				
	b	Pressure gauge	—	Without pressure gauge*3	●	
			E	Square embedded type pressure gauge (with limit indicator)	●	
	+					
	Bowl*4		6	Nylon Bowl	●	
Indicator		L	With element service indicator*5	●		
+						
④	Semi-standard	c	Flow direction	—	Flow direction: Left to right	●
				R	Flow direction: Right to left	●
		+				
		d	Unit	—	Unit of pressure: MPa Unit of temperature: °C	●
				Z	Unit of pressure: psi Unit of temperature: °F	○*6

*1 The pipe thread type for the EXH port is G.

*2 Drain port: With drain cock

*3 With pressure gauge connection thread (Port size 1/8)

*4 Refer to the chemical data of the standard product catalogue for chemical resistance of the bowl.

*5 Element service indicator is mounted on AM and AMD.

*6 ○: For pipe thread type: NPT only

HF1-AC40X-□-D-X7000D

Specifications

Model		HF1-AC40X-□-D-X7000D
Component	Pressure relief 3 port valve [VHS]	HF1-VHS40-□-D-X7000
	Filter regulator [AW]	HF1-AW40K-□-D-X7000
	Mist separator [AM]	HF1-AM40-□-D-X7000
	Micro mist separator [AMD]	HF1-AMD40-□-D-X7000
	Membrane air dryer [IDG]	IDG40-□-D-X7000
	Activated carbon filter [AMK]	HF1-AMK40-□-D-X7000
Port size		1/4, 3/8, 1/2
Pressure gauge port size*1		1/8
Fluid		Air
Ambient and fluid temperatures		-5 to 50 °C (23 to 122 °F) (No freezing)
Proof pressure		1.5 MPa (225 psi)
Max. operating pressure		1.0 MPa (150 psi)
Set pressure range*2		0.3 to 0.85 MPa (45 to 125 psi)
Compressed air purity class*3		ISO8573-1:2010 [1:3:1]*4
Maximum flow rate for air purity class*5	Inlet flow rate	582 l/min (ANR)
	Out let flow rate	500 l/min (ANR)
	Purge flow rate	82 l/min (ANR)
Drain capacity		45 cm ³
Bowl material		Nylon
Bowl guard		Attached (Nylon)
Regulator construction		Relieving type
Grease		NSF H1 grade*6
Enclosure		IP44*7
Weight		5.15 kg

*1 Pressure gauge connection thread is not available for AW with a square embedded type pressure gauge.

*2 Pressure can be set higher and lower than the specification pressure in some cases, but use pressure within the specification range. Set range of outlet pressure shall be 85 % or less of the inlet pressure.

*3 The compressed air purity class is indicated based on ISO8573-1:2010 Compressed air - Part1: Contaminants and purity classes. For details on this standard, refer to page 17.

*4 The compressed air purity class on the inlet side is [7:4:4].

*5 Set pressure: 0.7 MPa (at the maximum flow rate is flowing)

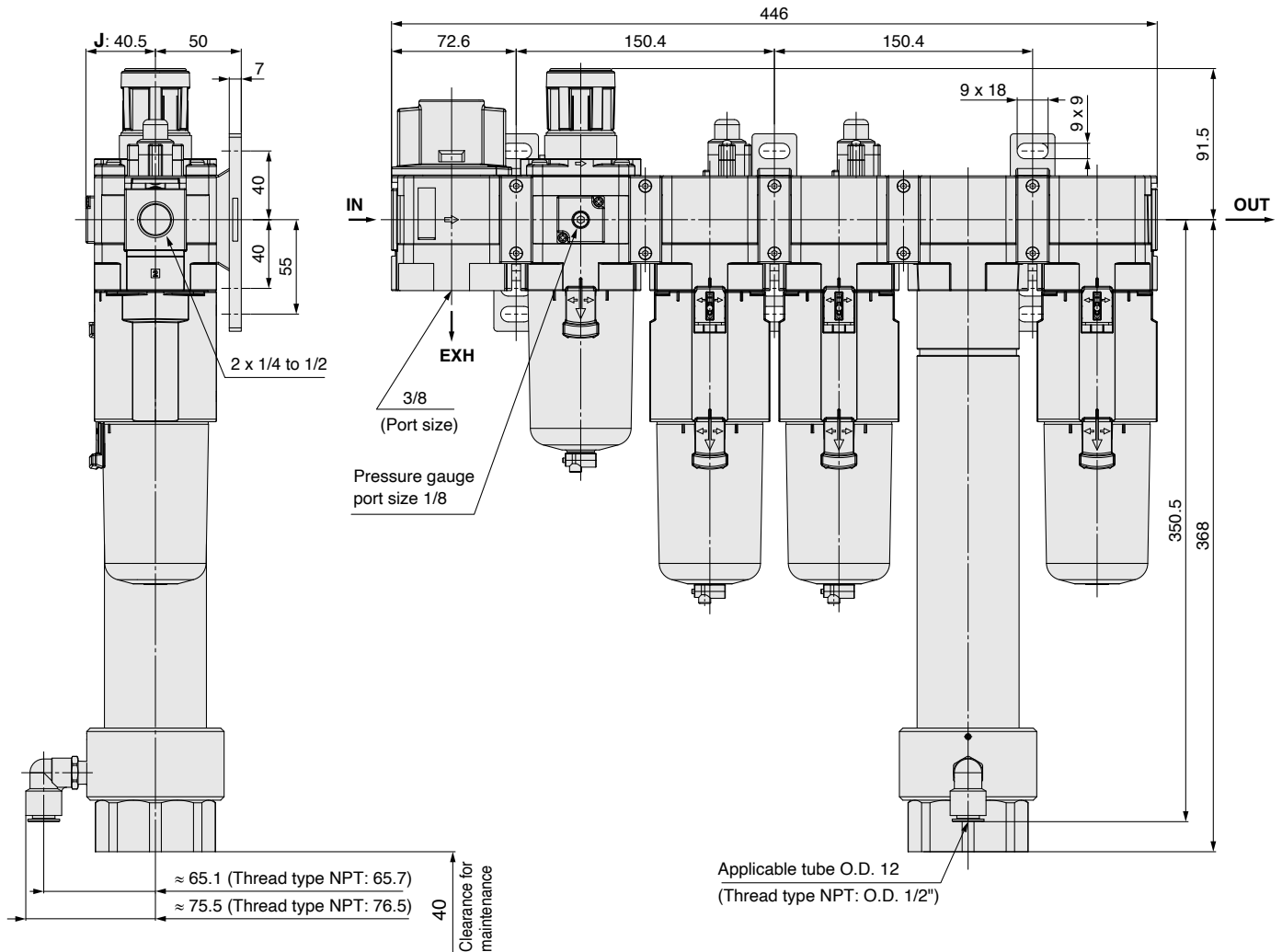
*6 Except adjust screw assembly of AW.

*7 IP44 will only be reached if you apply the following conditions:

- A silencer must be installed at the exhaust outlet of VHS, but is not shipped together with the product. Please refer to the replacement parts section for applicable silencers.
- The regulator knob of the AW filter regulator must be in locked position.
- The elbow fitting in the purge flow outlet must be facing downwards to prevent fluid from entering the membrane dryer.
- Additional measures can be necessary to prevent fluid to enter the membrane dryer depending on the application.
(Please contact SMC for support)

Dimensions

HF1-AC40X-□-D-X7000D



With pressure gauge of AW

Square embedded type pressure gauge	
Outside	Technical drawing of a square embedded type pressure gauge. The front view shows a square gauge with a diameter of 28 mm. The gauge has 'OPEN' and 'CLOSE' markings. The side view shows a gauge with a height of J: 41.5 mm. The center of the gauge is aligned with the center of the piping, indicated by a dashed line and the label 'Centre of piping'.

Bowl assembly specification of AW, AM and AMD

AW, AM and AMD with auto drain

Thread type	Applicable tube O.D.
Rc, G	Ø 10
NPT	Ø 3/8"

HF1-AC□-D-X7000□

Characteristics of component

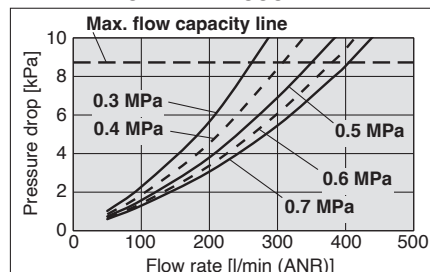
HF1-AW□-D-X7000

Refer to the characteristics of the standard product.

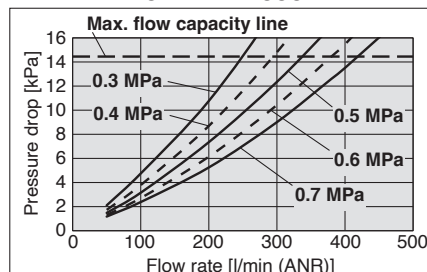
HF1-AM□-D-X7000, HF1-AMD□-D-X7000, HF1-AMK□-D-X7000

Flow rate characteristics (Representative values)

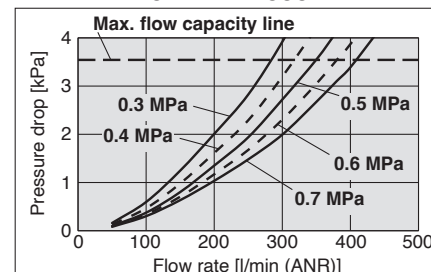
HF1-AM20□-D-X7000



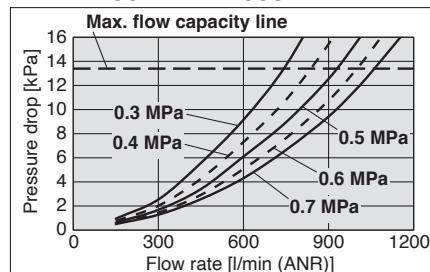
HF1-AMD20□-D-X7000



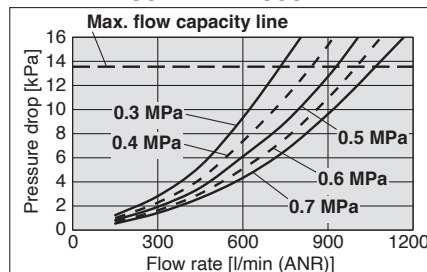
HF1-AMK20□-D-X7000



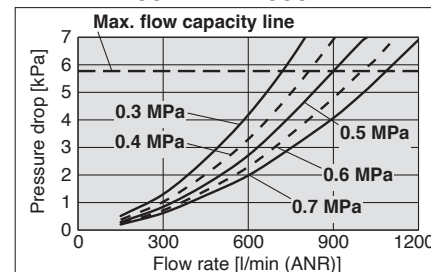
HF1-AM30□-D-X7000



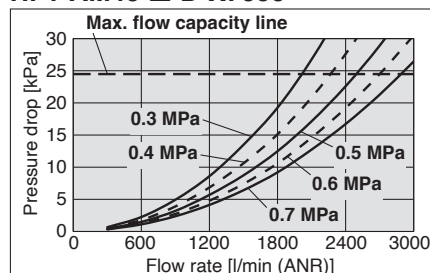
HF1-AMD30□-D-X7000



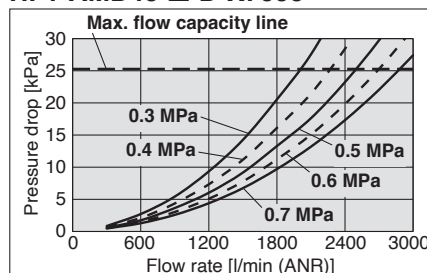
HF1-AMK30□-D-X7000



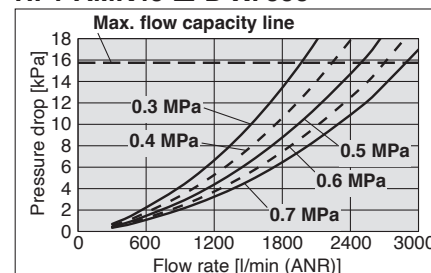
HF1-AM40□-D-X7000



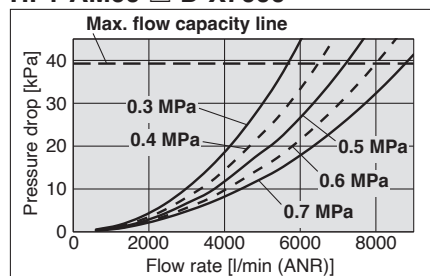
HF1-AMD40□-D-X7000



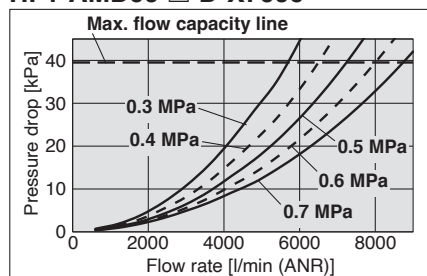
HF1-AMK40□-D-X7000



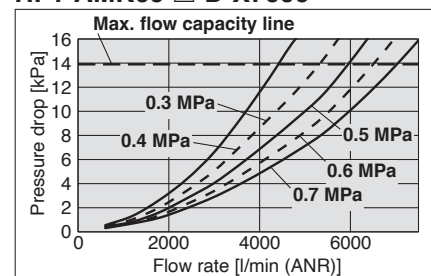
HF1-AM60□-D-X7000



HF1-AMD60□-D-X7000

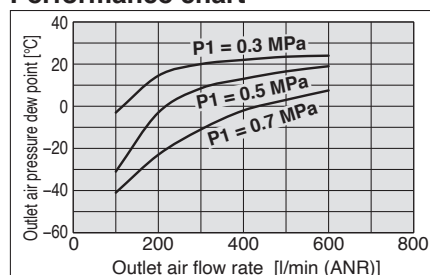


HF1-AMK60□-D-X7000

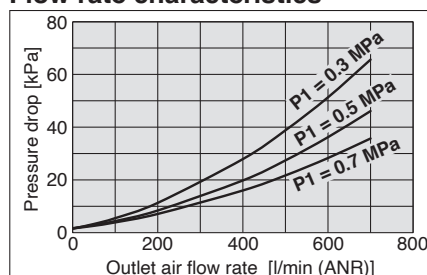


IDG40□-D-X7000

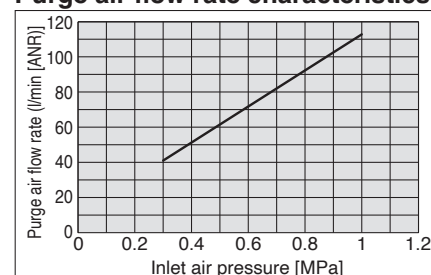
Performance chart^{*1}



Flow rate characteristics^{*2}



Purge air flow rate characteristics



^{*1} Conditions: Inlet air temperature 25 °C (saturated air), P1: Inlet air pressure.

^{*2} Conditions: Inlet air temperature 25 °C, P1: Inlet air pressure.

Replacement parts

HF1-AW□-D-X7000

Description	HF1-AC20X-□-D-X7000A HF1-AC20X-□-D-X7000B	HF1-AC30X-□-D-X7000A HF1-AC30X-□-D-X7000B	HF1-AC40X-□-D-X7000A HF1-AC40X-□-D-X7000B HF1-AC40X-□-D-X7000C HF1-AC40X-□-D-X7000D	HF1-AC60X-□-D-X7000A HF1-AC60X-□-D-X7000B
Valve assembly	AW24P-060AS	AW34P-060AS	AW44P-060AS	AW64P-060AS
Filter element	AF20P-060S	AF30P-060S	AF40P-060S	AW60P-060S
Baffle	AF24P-040S	AF34P-040S	AF44P-040S	AW64P-060S
Diaphragm assembly	AR24P-150AS	AR34P-150AS	AR44P-150AS	AR54P-150AS
Bowl seal	C2SFP-260S	C32FP-260S	C42FP-260S	
Bowl assembly	With drain cock	HF1-C2SF-6-A	HF1-C3SF-6-A	HF1-C4SF-6-A
	Auto drain (N.C.)	HF1-AD27-6-A	HF1-AD37-6-A	HF1-AD47-6-A
	Auto drain (N.O.)	—	HF1-AD38-6-A	HF1-AD48-6-A

HF1-AM□-D-X7000

Description	HF1-AC20X-□-D-X7000B	HF1-AC30X-□-D-X7000B	HF1-AC40X-□-D-X7000B HF1-AC40X-□-D-X7000D	HF1-AC60X-□-D-X7000B
Element	AM24P-060AS	AM34P-060AS	AM44P-060AS	AM64P-060AS
Bowl seal	C2SFP-260S	C32FP-260S	C42FP-260S	AM54P-160S
Bowl assembly	With drain cock	HF1-C2SF-6-A	HF1-C3SF-6-A	HF1-C4SF-6-A
	Auto drain (N.C.)	HF1-AD27-6-A	HF1-AD37-6-A	HF1-AD47-6-A
	Auto drain (N.O.)	—	HF1-AD38-6-A	HF1-AD48-6-A

HF1-AMD□-D-X7000

Description	HF1-AC20X-□-D-X7000A HF1-AC20X-□-D-X7000B	HF1-AC30X-□-D-X7000A HF1-AC30X-□-D-X7000B	HF1-AC40X-□-D-X7000A HF1-AC40X-□-D-X7000B HF1-AC40X-□-D-X7000C HF1-AC40X-□-D-X7000D	HF1-AC60X-□-D-X7000A HF1-AC60X-□-D-X7000B
Element	AMD24P-060AS	AMD34P-060AS	AMD44P-060AS	AMD64P-060AS
Bowl seal	C2SFP-260S	C32FP-260S	C42FP-260S	AM54P-160S
Bowl assembly	With drain cock	HF1-C2SF-6-A	HF1-C3SF-6-A	HF1-C4SF-6-A
	Auto drain (N.C.)	HF1-AD27-6-A	HF1-AD37-6-A	HF1-AD47-6-A
	Auto drain (N.O.)	—	HF1-AD38-6-A	HF1-AD48-6-A

HF1-AMK□-D-X7000

Description	HF1-AC20X-□-D-X7000B	HF1-AC30X-□-D-X7000B	HF1-AC40X-□-D-X7000B HF1-AC40X-□-D-X7000D	HF1-AC60X-□-D-X7000B
Element	AMK24P-060AS	AMK34P-060AS	AMK44P-060AS	AMK64P-060AS
Bowl seal	C2SFP-260S	C32FP-260S	C42FP-260S	AM54P-160S
Bowl assembly	C2SF-6-A-X401	C3SK-6-D	C4SK-6-D	AMK64P-120AS

IDG40-□-D-X7000

Description			HF1-AC40X-□-D-X7000C HF1-AC40X-□-D-X7000D	
Membrane module kit			IDG-EL40-D	

HF1-VHS□-D-X7000

Description	HF1-AC20X-□-D-X7000A HF1-AC20X-□-D-X7000B HF1-AC20X-□-D-X7000C HF1-AC20X-□-D-X7000D	HF1-AC30X-□-D-X7000A HF1-AC30X-□-D-X7000B HF1-AC30X-□-D-X7000C HF1-AC30X-□-D-X7000D	HF1-AC40X-□-D-X7000A HF1-AC40X-□-D-X7000B HF1-AC40X-□-D-X7000C HF1-AC40X-□-D-X7000D	HF1-AC60X-□-D-X7000A HF1-AC60X-□-D-X7000B HF1-AC60X-□-D-X7000C HF1-AC60X-□-D-X7000D
Silencer	AN10-01	AN20-02	AN30-03	AN40-04

International Standard ISO 8573-1:2010

Compressed Air Purity Classes

Compressed air is used in a variety of manufacturing processes. In this age, compressed air with a high degree of purity is becoming increasingly necessary.

For this reason, it is necessary to remove contaminants from systems which supply compressed air and to secure the quality. The standard which stipulates the class according to the quantities of contaminants in compressed air is ISO 8573-1.

[Outline]

Stipulates the purity class of contaminants (particles, water, oil) mixed in with the compressed air

[Scope]

Can be used in various places in compressed air systems

[Terms and Definitions]

- Purity class: An index assigned for each classification obtained by dividing the concentration of each contaminant into ranges
- Particle: Small discrete mass of solid or liquid matter
- Humidity and liquid water: Water vapour (gas), Water droplets
- Oil: Liquid oil, Oil mist, Oil vapour

[Purity Classes]

Class	Particles			Humidity and liquid water		Oil
	Maximum number of particles per cubic meter as a function of particle size d [μm]			Pressure dew point	Concentration of liquid water Cw	Concentration of total oil
	0.1 < d ≤ 0.5	0.5 < d ≤ 1.0	1.0 < d ≤ 5.0	[mg/m ³]	[°C]	[g/m ³]
0	As specified by the equipment user or supplier and more stringent than class 1					
1	≤ 20000	≤ 400	≤ 10	—	≤ -70	≤ 0.01
2	≤ 400000	≤ 6000	≤ 100	—	≤ -40	≤ 0.1
3	—	≤ 90000	≤ 1000	—	≤ -20	≤ 1
4	—	—	≤ 10000	—	≤ +3	≤ 5
5	—	—	≤ 100000	—	≤ +7	—
6	—	—	—	0 < Cp ≤ 5	≤ +10	—
7	—	—	—	5 < Cp ≤ 10	—	Cw ≤ 0.5
8	—	—	—	—	—	0.5 < Cw ≤ 5
9	—	—	—	—	—	5 < Cw ≤ 10
x	—	—	—	Cp > 10	—	Cw > 10

[How to Perform a Test to Check the Performance]

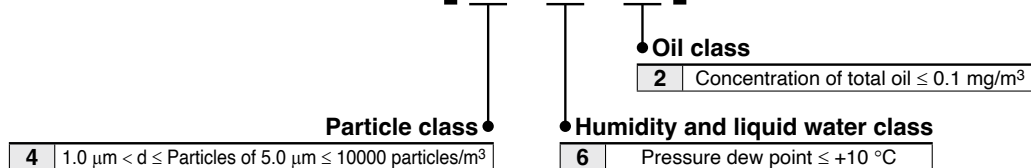
ISO 12500, which sets out the test method to be used in order to check the filter performance for each of the three kinds of contaminants, is indicated below.

- Particle: ISO 12500-3:2009
- Liquid water: ISO 12500-4:2009
- Oil: ISO 12500-1:2007

* Measured using a dedicated evaluation system which has been certified according to ISO 12500-□ and also by a third party (Certified)

[Purity Class Designation Example]

ISO 8573-1:2010 [4 : 6 : 2]



Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)¹⁾, and other safety regulations.

-  **Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
-  **Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
-  **Danger:** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

- 1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines.
(Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots - Safety.
etc.

Warning

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

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

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

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Caution

1. The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”. Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.²⁾ Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.
- 2) Vacuum pads are excluded from this 1 year warranty.
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

Caution

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.

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