Compressed Air Preparation Filter

New RoHS

Compressed Air Purity Class ISO 8573

- **Line Filter *AFF* Series** — 1 µm Water droplet removal
- **Mist Separator *AM* Series** — 0.1 µm Oil mist separation and removal
- **Micro Mist Separator *AMD* Series** — 0.01 µm Oil mist separation and removal

New Added size 20 and 40.

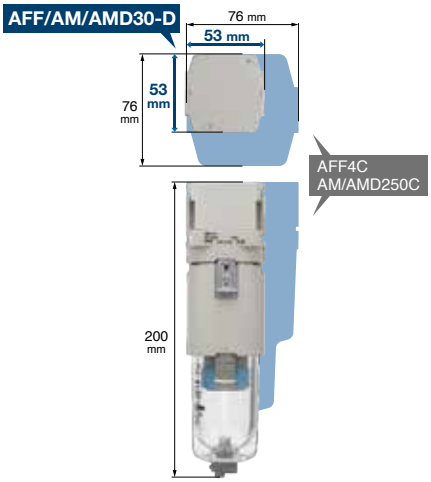
New Modular connection is possible. p. 9

Weight reduced by 50%

AFF/AM□20: 0.19 kg (Existing model: 0.38 kg)

Face-to-face and depth dimensions reduced by 30%

AFF/AM□30: □53 mm (Existing model: □76 mm)



Variations

Series	Size	Port size	Flow capacity L/min (ANR)
AFF	20	1/8, 1/4	New 300
	30	1/4, 3/8	750
	40	1/4, 3/8, 1/2	New 1500
AM	20	1/8, 1/4	New 300
	30	1/4, 3/8	750
	40	1/4, 3/8, 1/2	New 1500
AMD	20	1/8, 1/4	New 300
	30	1/4, 3/8	750
	40	1/4, 3/8, 1/2	New 1500

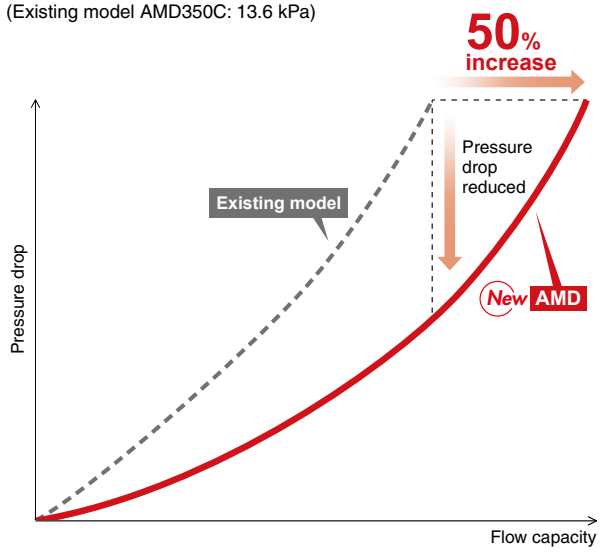
AFF/AM/AMD Series

Increased air flow capacity due to lower pressure drop which contributes to energy saving

Flow capacity:
1500 L/min (ANR)

50% increase
∗ AMD Series

Pressure drop:
Max. 50% reduction
AMD40: 6.8 kPa
(Existing model AMD350C: 13.6 kPa)



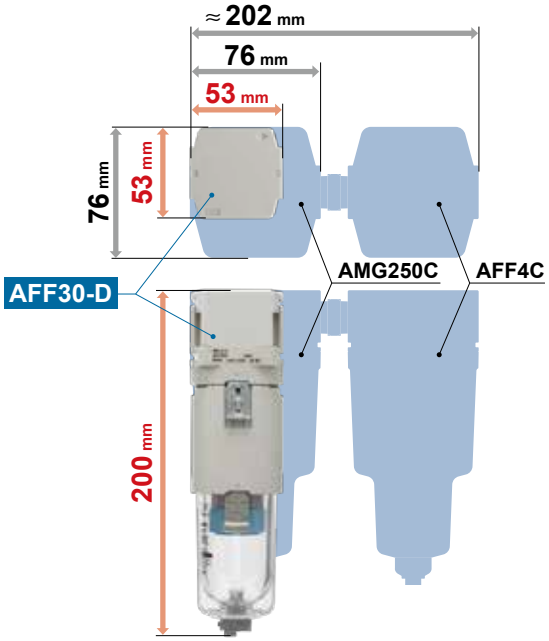
Space-saving design, Reduced piping labor!

Face-to-face dimension reduced by approx. 150 mm

AMG250C + AFF4C ≈ 202 mm → AFF30-D 53 mm

The AFF series line filter removes both water droplets and solid particles. It eliminates*1 the need for a separate filter for removing water droplets (water separator, AMG series), thus greatly reducing the face-to-face dimension and also reducing the required installation space and piping work.

∗1 When using within the product's specification range



Lightweight

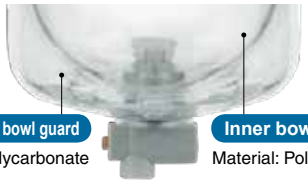
Max. 50% lighter
0.38 kg ➡ **0.19 kg**

Series	Size	Weight	Reduction rate
AFF · AM · AMD	20	0.38 kg ➡ **0.19 kg**	50%
	30	0.55 kg ➡ **0.39 kg**	29%
	40	0.90 kg ➡ **0.79 kg**	12%

∗ Comparison against existing products (AFF□C, AM□C, AMD□C series)

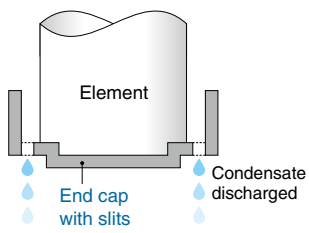
Transparent bowl guard (Double layer design)

- The inside is visible from 360°.
- The bowl is completely protected from the environment, allowing for improved safety.



An end cap with slits is used for the element.

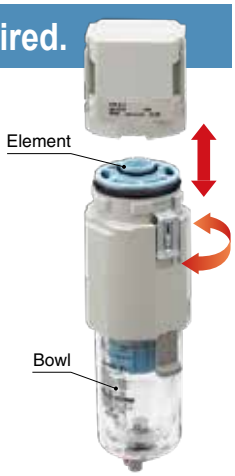
This eliminates the accumulation of condensate. Even high velocity fluid is not spattered. The result is a compact bowl design.



Condensate is not accumulated so no water flows to the downstream side.

No tools are required.

Easier replacement of the element
The element and the bowl are in one piece.
Replacement can be done in hand.



Variations

Series	Size	Port size 1/8	1/4	3/8	1/2	Flow capacity L/min (ANR)	Option/ Accessory
AFF Series **Line Filter** Large dust particle filtration, Water droplet separation Water droplet removal ratio: 99% Nominal filtration rating: 1 µm [Filtration efficiency: 99%] Gray	20	●	●			300	· Bracket · Auto drain
	30		●	●		750	
	40		●	●	●	1500	
AM Series **Mist Separator** Dust filtration, Oil mist separation Nominal filtration rating: 0.1 µm [Filtration efficiency: 99%] Oil mist density at outlet: Max. 1.0 mg/m³ (ANR) [≈ 0.8 ppm] Light blue	20	●	●			300	
	30		●	●		750	
	40		●	●	●	1500	
AMD Series **Micro Mist Separator** Dust filtration, Oil mist separation Nominal filtration rating: 0.01 µm [Filtration efficiency: 99.9%] Oil mist density at outlet: Max. 0.1 mg/m³ (ANR) [≈ 0.08 ppm] Blue	20	●	●			300	
	30		●	●		750	
	40		●	●	●	1500	

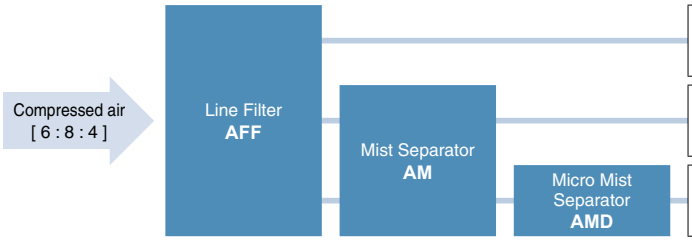
Flow capacity increased by 50%
Existing model (AMD150C): 200 L/min

Flow capacity increased by 50%
Existing model (AMD250C): 500 L/min

Flow capacity increased by 50%
Existing model (AMD350C): 1000 L/min

Compliant with ISO 8573 Compressed Air Purity Class

System which conforms to the degree of purity required for compressed air (For details ➡ page 12)



Purity class as a system		
Particles	Liquid water	Oil
4	7	4
2	7	3
1	7	2

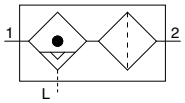
Certified by a third party organization

Contaminants	ISO 12500: Filters for compressed air – test methods	ISO 8573: Compressed air
Particles	ISO 12500-3:2009 Filters for compressed air – test methods – **Particulates**	ISO 8573-4:2001 Compressed air – Test methods for **solid particle content**
Liquid water	ISO 12500-4:2009 Filters for compressed air – test methods – **Water**	ISO8573-9:2004 Compressed air – Test methods for **liquid water content**
Oil	ISO 12500-1:2007 Filters for compressed air – test methods – **Oil aerosols**	ISO 8573-2:2007 Compressed air – Test methods for **oil aerosol content**

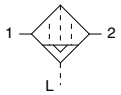
RoHS

Symbol

Line Filter



Mist Separator
Micro Mist Separator



AFF AM AMD

How to Order

AFF **30** – ❸ **03** **BD** – ❻ – **D**

❶ ❷ ❸ ❹ ❺ ❻

· 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) AM30-N03BD-6RZ-D

			Symbol	Description	❷ Body size 20	30	40
❶	Filter type		**AFF**	Nominal filtration rating: 1 μm Water droplet removal ratio: 99%	●	●	●
			AM	Nominal filtration rating: 0.1 μm Oil mist density at outlet: 1 mg/m³	●	●	●
			AMD	Nominal filtration rating: 0.01 μm Oil mist density at outlet: 0.1 mg/m³	●	●	●
				+			
❸	Thread type		**Nil**	Rc	●	●	●
			N∗1	NPT	●	●	●
			F∗2	G	●	●	●
				+			
❹	Port size		**01**	1/8	●	—	—
			02	1/4	●	●	●
			03	3/8	—	●	●
			04	1/2	—	—	●
				+			
❺	Option	**a** Mounting	**Nil**	Without mounting option	●	●	●
			B∗3	With bracket	●	●	●
				+			
		b Float type auto drain	**Nil**	Without auto drain	●	●	●
			C∗4	N.C. (Normally closed)	●	●	●
			D∗5	N.O. (Normally open)	—	●	●
				+			
❻	Semi-standard	**c** Bowl∗6	**Nil**	Polycarbonate bowl	●	●	●
			2	Metal bowl	●	●	●
			6	Nylon bowl	●	●	●
			8	Metal bowl with level gauge	—	●	●
			C	With bowl guard	●	—∗7	—∗7
			6C	With bowl guard/Nylon bowl	●	—∗8	—∗8
				+			
		d Drain port∗9	**Nil**	With drain cock	●	●	●
			J∗10	Drain guide 1/8	●	—	—
				Drain guide 1/4	—	●	●
			W∗11	Drain cock, Barb fitting (ø6)	—	●	●
				+			
		e Flow direction	**Nil**	Flow direction: Left to right	●	●	●
			R	Flow direction: Right to left	●	●	●
				+			
		f Unit	**Nil**	Name plate and caution plate for bowl in SI unit: MPa	●	●	●
			Z∗12	Name plate and caution plate for bowl in imperial units: psi, °F	○∗13	○∗13	○∗13

∗1 Drain guide is NPT1/8 (applicable to the AFF20, AM20, and AMD20) and NPT1/4 (applicable to the AFF30, AFF40, AM30, AM40, AMD30, and AMD40). The auto drain port comes with a ø3/8" One-touch fitting (applicable to the AFF30, AFF40, AM30, AM40, AMD30, and AMD40).

∗2 Drain guide is G1/8 (applicable to the AFF20, AM20, and AMD20) and G1/4 (applicable to the AFF30, AFF40, AM30, AM40, AMD30, and AMD40).

∗3 A bracket is not assembled and supplied loose at the time of shipment. Including 2 mounting screws

∗4 When pressure is not applied, condensate which does not start the auto drain mechanism will be left in the bowl. Releasing the residual condensate before ending operations for the day is recommended.

∗5 If the compressor is small (0.75 kW, discharge flow is less than 100 L/min (ANR)), air leakage from the drain cock may occur during the start of operations. N.C. type is recommended.

∗6 Refer to the chemical data on page 13 for chemical resistance of the bowl.

∗7 A bowl guard is provided as standard equipment (polycarbonate).

∗8 A bowl guard is provided as standard equipment (nylon).

∗9 The combination of float type auto drain C and D is not available.

∗10 Without a valve function. The mounting screws are the same as the thread of ❸.

∗11 The combination of metal bowl 2 and 8 is not available.

∗12 For pipe thread type: NPT
This product is for overseas use only according to the new Measurement Act. (The SI unit type is provided for use in Japan.)

∗13 ○: For pipe thread type: NPT only

Line Filter AFF Series

Standard Specification

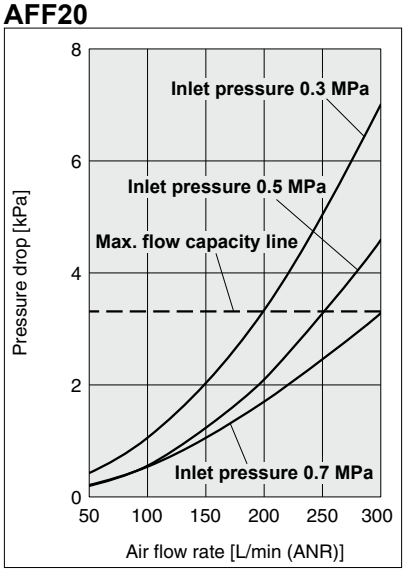
Model			AFF20	AFF30	AFF40
Fluid			Compressed air		
Ambient and fluid temperature		°C	–5 to 60 (No freezing)		
Proof pressure		MPa	1.5		
Max. operating pressure		MPa	1.0		
Min. operating pressure		MPa	0.05		
Auto drain minimum operating pressure	**(N.C.)**	MPa	0.1	0.15	
	(N.O.)	MPa	—	0.1	
Nominal filtration ratin *1		μm	1 (99% filtered particle size)		
Water droplet removal ratio*2, *3		%	99		
Compressed air purity class*4		—	ISO 8573-1:2010 [4 : 7 : 4]*5		
Max. fl w capacity*6		L/min (ANR)	300	750	1500
Port size		—	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Weight		kg	0.19	0.39	0.79
Drain capacity		cm^3	8	25	45

∗1 Conditions in accordance with [Test condition: ISO 8573-4:2001, Test method ISO 12500-3:2009 compliant] in addition to the conditions above.
· Flow capacity, inlet pressure, and the amount of solid bodies at the filter inlet are stable.
· New element
∗2 Conditions in accordance with [Test condition: ISO 12500-4:2009 compliant] in addition to the conditions above.
· Water droplet at filter inlet = 33 g/m^3
(Water droplet indicates condensed moisture. Water vapor which is not condensed is not included.)
· Inlet temperature = 25°C
· Flow capacity, inlet pressure, inlet temperature, and the amount of water droplets at the filter inlet are stable.
· New element
∗3 A bowl seal and other O-rings are slightly lubricated.
∗4 The compressed air purity class is indicated based on ISO 8573-1:2010 Compressed air – Part 1: Contaminants and purity classes.
For details on this standard, refer to page 12.
∗5 The compressed air quality class on the inlet side is [6 : 8 : 4].
∗6 Inlet pressure: 0.7 MPa. Flow at 20°C, atmospheric pressure, and 65% of relative humidity

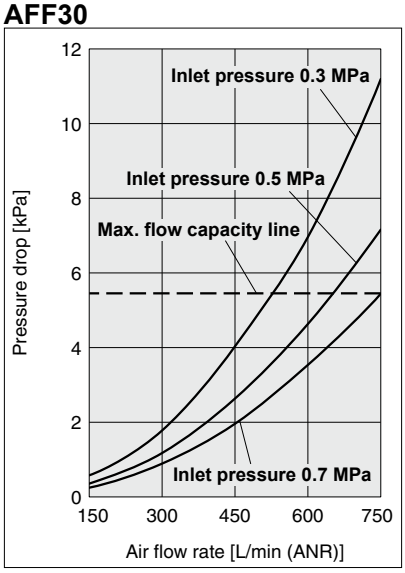
Flow Rate Characteristics (Representative values)

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

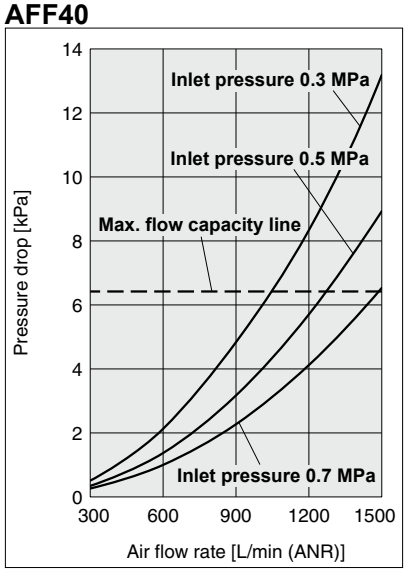
AFF20



AFF30



AFF40



Mist Separator AM Series

Standard Specification

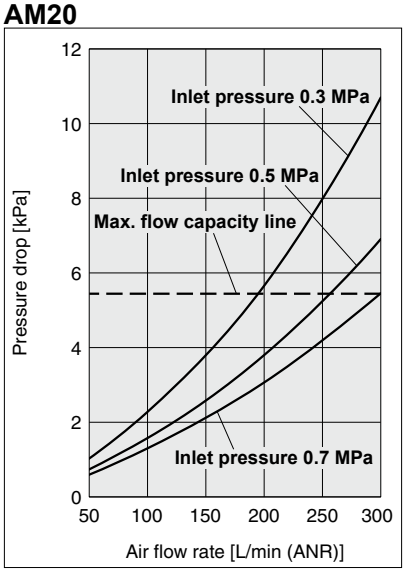
Model			AM20	AM30	AM40
Fluid			Compressed air		
Ambient and fluid temperature		°C	–5 to 60 (No freezing)		
Proof pressure		MPa	1.5		
Max. operating pressure		MPa	1.0		
Min. operating pressure		MPa	0.05		
Auto drain minimum operating pressure	(N.C.)	MPa	0.1	0.15	
	(N.O.)	MPa	—	0.1	
Nominal filtration ratin *1		μm	0.1 (99% filtered particle size)		
Oil mist density at outlet*2, *3		mg/m³	1 (≈ 0.8 ppm) or less		
Compressed air purity class*4		—	ISO 8573-1:2010 [2 : 7 : 3]*5		
Max. fl w capacity*6		L/min (ANR)	300	750	1500
Port size		—	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Weight		kg	0.19	0.39	0.79
Drain capacity		cm³	8	25	45

*1 Conditions in accordance with [Test condition: ISO 8573-4:2001, Test method ISO 12500-3:2009 compliant] in addition to the conditions above.
· Flow capacity, inlet pressure, and the amount of solid bodies at the filter inlet are stable.
· New element
*2 Conditions in accordance with [Test condition: ISO 8573-2:2007, Test method ISO 12500-1:2007 compliant] in addition to the conditions above.
· Oil mist concentration on the filter inlet side = 10 mg/m³
· Flow capacity, inlet pressure, and the oil mist concentration at the filter inlet are stable.
· New element
*3 A bowl seal and other O-rings are slightly lubricated.
*4 The compressed air purity class is indicated based on ISO 8573-1:2010 Compressed air – Part 1: Contaminants and purity classes.
For details on this standard, refer to page 12.
*5 The compressed air quality class on the inlet side is [4 : 7 : 4].
*6 Inlet pressure: 0.7 MPa. Flow at 20°C, atmospheric pressure, and 65% of relative humidity

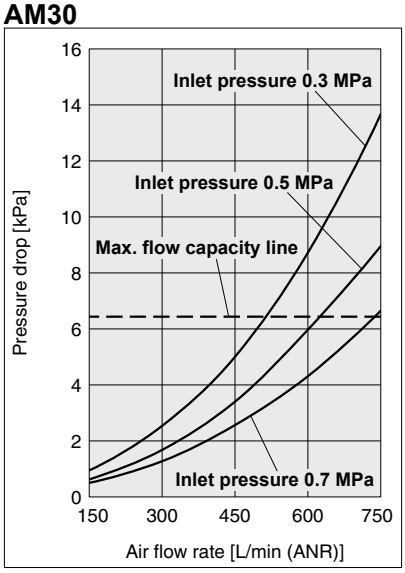
Flow Rate Characteristics (Representative values)

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

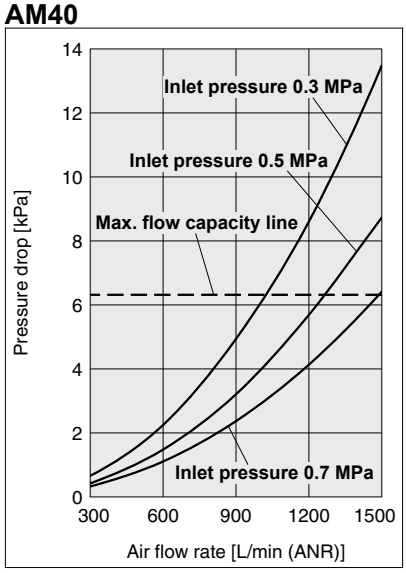
AM20



AM30



AM40



Micro Mist Separator AMD Series

Standard Specification

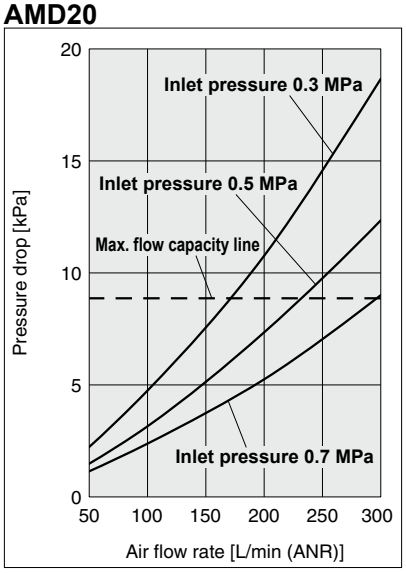
Model			AMD20	AMD30	AMD40
Fluid			Compressed air		
Ambient and fluid temperature		°C	–5 to 60 (No freezing)		
Proof pressure		MPa	1.5		
Max. operating pressure		MPa	1.0		
Min. operating pressure		MPa	0.05		
Auto drain minimum operating pressure	(N.C.)	MPa	0.1	0.15	
	(N.O.)	MPa	—	0.1	
Nominal filtration ratin *1		μm	0.01 (99.9% filtered particle size)		
Oil mist density at outlet*2, *3		mg/m³	0.1 (≈ 0.08 ppm) or less*4		
Compressed air purity class*5		—	ISO8573-1:2010 [1 : 7 : 2]*6		
Max. fl w capacity*7		L/min (ANR)	300	750	1500
Port size		—	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2
Weight		kg	0.19	0.39	0.79
Drain capacity		cm³	8	25	45

*1 Conditions in accordance with [Test condition: ISO 8573-4:2001, Test method ISO 12500-3:2009 compliant] in addition to the conditions above.
· Flow capacity, inlet pressure, and the amount of solid bodies at the filter inlet are stable.
· New element
*2 Conditions in accordance with [Test condition: ISO 8573-2:2007, Test method ISO 12500-1:2007 compliant] in addition to the conditions above.
· Oil mist concentration on the filter inlet side = 1 mg/m³
· Flow capacity, inlet pressure, and the oil mist concentration at the filter inlet are stable.
· New element
*3 A bowl seal and other O-rings are slightly lubricated.
*4 0.01 (≈ 0.008 ppm) or less in the initial state
*5 The compressed air purity class is indicated based on ISO 8573-1:2010 Compressed air – Part 1: Contaminants and purity classes.
For details on this standard, refer to page 12.
*6 The compressed air quality class on the inlet side is [2 : 7 : 3].
*7 Inlet pressure: 0.7 MPa. Flow at 20°C, atmospheric pressure, and 65% of relative humidity

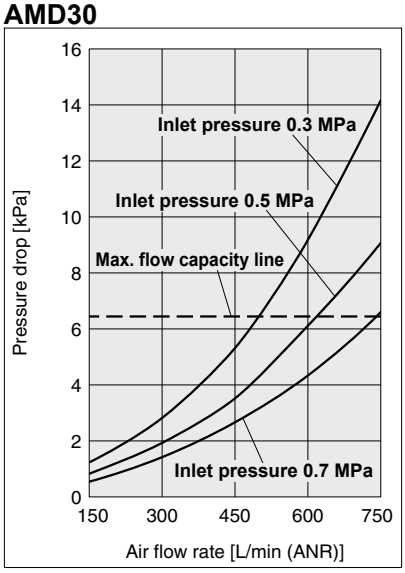
Flow Rate Characteristics (Representative values)

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

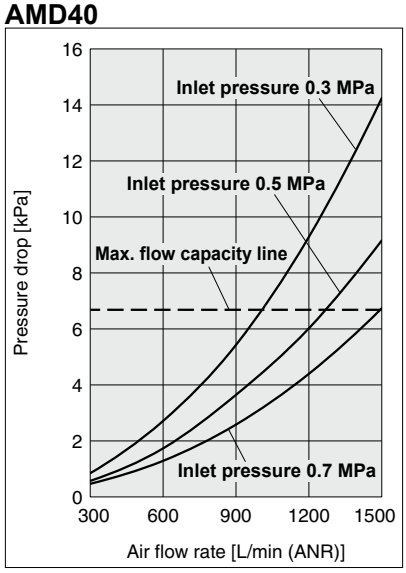
AMD20



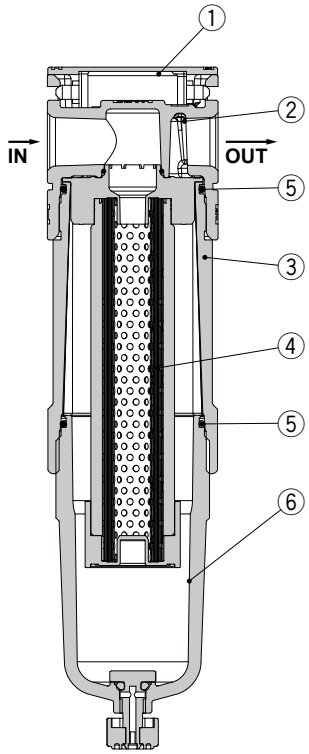
AMD30



AMD40



Construction: AFF, AM, AMD



Component Parts

No.	Description	Material
1	**Body cover**	Resin
2	**Body**	Aluminum die-cast
3	**Joint**	Aluminum die-cast

Replacement Parts

No.	Description		Part number		
			20	**30**	**40**
4	**Element**	**AFF**	AFF24P-060AS	AFF34P-060AS	AFF44P-060AS
		AM	AM24P-060AS	AM34P-060AS	AM44P-060AS
		AMD	AMD24P-060AS	AMD34P-060AS	AMD44P-060AS
5	**Bowl seal**		C2SFP-260S	C32FP-260S	C42FP-260S
6	**Bowl assembly**		Refer to the "Bowl Assembly/Part Nos."		

∗ The guideline for the element replacement is within 2 years of operation or, when pressure drop exceeds 0.1 MPa, whichever comes first.

Bowl Assembly/Part Nos.

Bowl material	Drain discharge mechanism	Drain port	Other	Model		
				20	**30**	**40**
Polycarbonate	Manual	With drain cock	—	C2SF-D	—	—
			With bowl guard	C2SF-C-D	C3SF-D	C4SF-D
		Drain cock with barb fitting	With bowl guard	—	C3SF-W-D	C4SF-W-D
		With drain guide (without valve function)	—	C2SF□-J-D	—	—
			With bowl guard	C2SF□-CJ-D	C3SF□-J-D	C4SF□-J-D
	Automatic∗1 (Auto drain)	Normally closed (N.C.)	—	AD27-D	—	—
			With bowl guard	AD27-C-D	AD37□-D	AD47□-D
		Normally open (N.O.)	With bowl guard	—	AD38□-D	AD48□-D
Nylon	Manual	With drain cock	—	C2SF-6-A	—	—
			With bowl guard	C2SF-6C-A	C3SF-6-A	C4SF-6-A
		Drain cock with barb fitting	With bowl guard	—	C3SF-6W-A	C4SF-6W-A
		With drain guide (without valve function)	—	C2SF□-6J-A	—	—
			With bowl guard	C2SF□-6CJ-A	C3SF□-6J-A	C4SF□-6J-A
	Automatic∗1 (Auto drain)	Normally closed (N.C.)	—	AD27-6-A	—	—
			With bowl guard	AD27-6C-A	AD37□-6-A	AD47□-6-A
		Normally open (N.O.)	With bowl guard	—	AD38□-6-A	AD48□-6-A
Metal	Manual	With drain cock	—	C2SF-2-A	C3SF-2-A	C4SF-2-A
			With level gauge	—	C3LF-8-A	C4LF-8-A
		With drain guide (without valve function)	—	C2SF□-2J-A	C3SF□-2J-A	C4SF□-2J-A
			With level gauge	—	C3LF□-8J-A	C4LF□-8J-A
	Automatic∗1 (Auto drain)	Normally closed (N.C.)	—	AD27-2-A	AD37□-2-A	AD47□-2-A
			With level gauge	—	AD37□-8-A	AD47□-8-A
		Normally open (N.O.)	—	—	AD38□-2-A	AD48□-2-A
			With level gauge	—	AD38□-8-A	AD48□-8-A

∗1 Bowl assembly comes with a bowl seal. □ in bowl assembly part numbers indicates a pipe thread type (applicable tubing for auto drain). No indication is necessary for Rc thread; however, indicate N for NPT thread, and F for G thread. (For auto drain, Nil: ø10, N: ø3/8") Please consult with SMC separately for psi and °F unit display specifications.

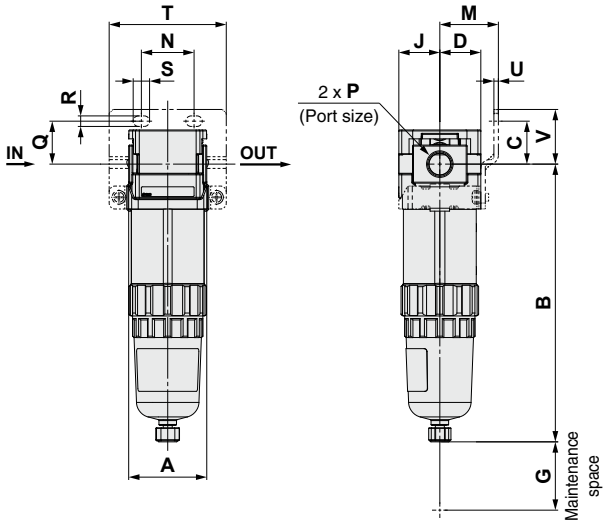
Option/Part Nos.

Description	Part number		
	20	**30**	**40**
Bracket assembly	AF24P-070AS	AF34P-070AS	AF44P-070AS
Auto drain	Refer to the "Bowl Assembly/Part Nos."		

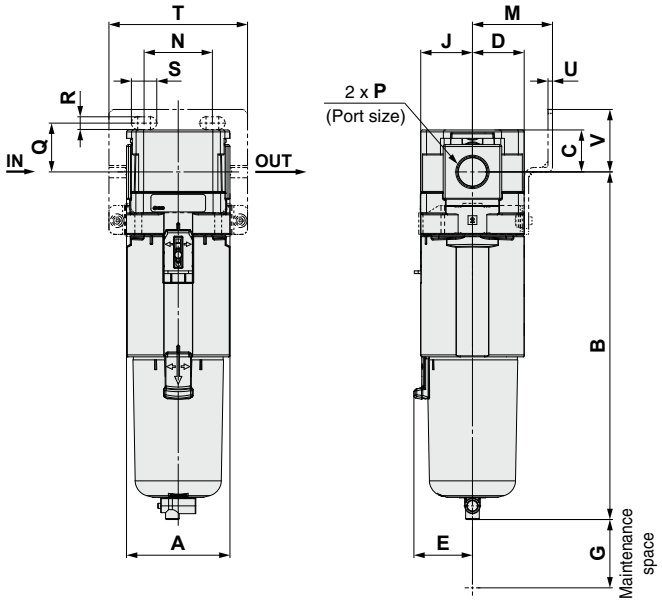
∗ Assembly of a bracket A/B and 2 mounting screws

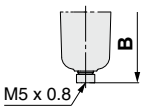
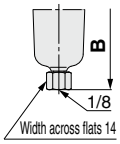
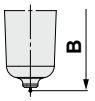
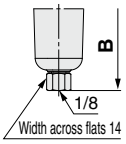
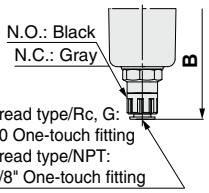
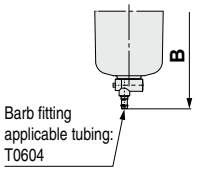
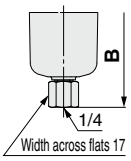
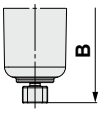
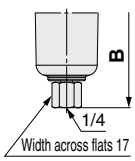
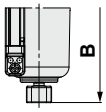
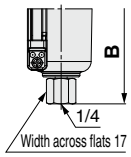
Dimensions

AFF/AM/AMD20



AFF/AM/AMD30
AFF/AM/AMD40



Applicable model	Optional specifications	Semi-standard					
	With auto drain	PC/PA bowl		Metal bowl		Metal bowl with level gauge	
		Drain cock with barb fitting	With drain guide	With drain cock	With drain guide	With drain cock	With drain guide
AFF/AM/AMD20							
AFF/AM/AMD30 **AFF/AM/AMD40**							

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
AFF20-D/AM20-D/AMD20-D	1/8, 1/4	40	142.3	17.5	21	—	25	21	30	27	22	5.4	8.4	60	2.3	28	159.6
AFF30-D/AM30-D/AMD30-D	1/4, 3/8	53	178.1	21.5	26.5	30	35	26.5	41	35	25	6.5	13	71	2.3	32	219.8
AFF40-D/AM40-D/AMD40-D	1/4, 3/8, 1/2	70	223.7	25.5	35.5	38.4	40	35.5	50	52	30	8.5	12.5	88	2.3	39	263.5

Model	Semi-standard specifications					
	PC/PA bowl		Metal bowl		Metal bowl with level gauge	
	With barb fitting	With drain guide	With drain cock	With drain guide	With drain cock	With drain guide
	B	B	B	B	B	B
AFF20-D/AM20-D/AMD20-D	—	146.1	142.1	148.6	—	—
AFF30-D/AM30-D/AMD30-D	186.6	184.9	180.6	185.1	200.6	205.1
AFF40-D/AM40-D/AMD40-D	232.2	230.5	226.1	230.6	246.1	250.6

Simple Specials System

A system designed to respond quickly and easily to your special ordering needs

Short lead times

This system enables us to respond to your special needs (additional machining, accessory assembly, or the designing of a modular unit) and deliver your personalized products as quickly as standard products.

Repeat orders

Once we receive a Simple Special part number from one of your previous order, we will process the order, manufacture the product, and deliver it to you.

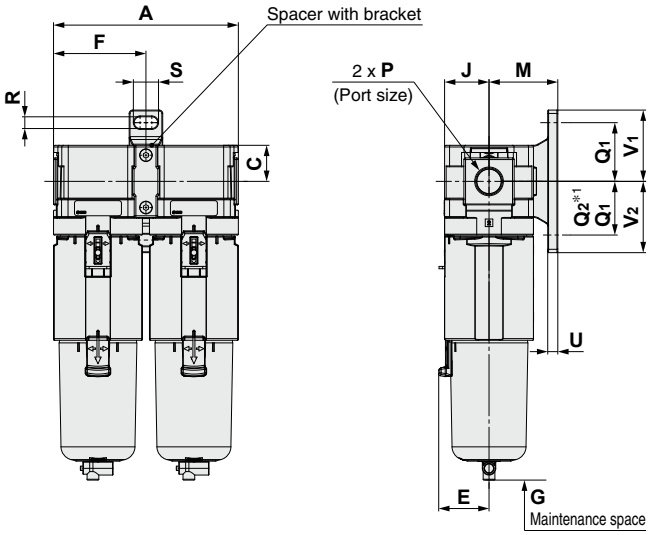
Please contact your local sales representative for more details.

Examples of Simple Specials

Combination example ❶

∗ Please contact your local sales representative for ordering procedures.

Line Filter AFF30-03-D ——— 1 pc.
Mist Separator AM30-03-D ——— 1 pc.
Spacer with Bracket Y300T-D ——— 1 pc.

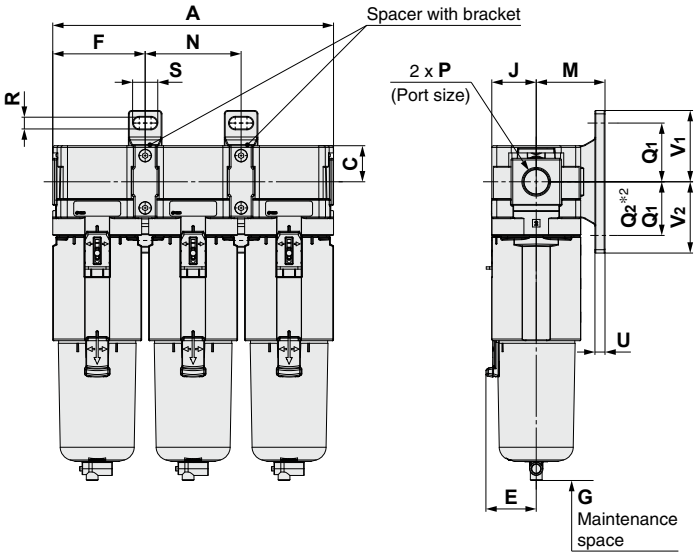


∗1 **Q2** (Size 20, 40) **Q1** (Size 30)

Combination example ❷

∗ Please contact your local sales representative for ordering procedures.

Line Filter AFF30-03-D ——— 1 pc.
Mist Separator AM30-03-D ——— 1 pc.
Micro Mist Separator AMD30-03-D ——— 1 pc.
Spacer with Bracket Y300T-D ——— 2 pcs.



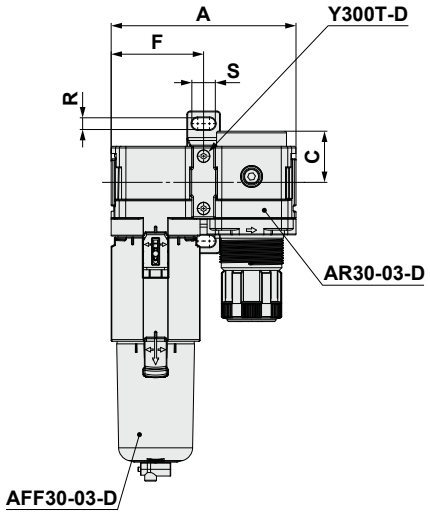
∗2 **Q2** (Size 20, 40) **Q1** (Size 30)

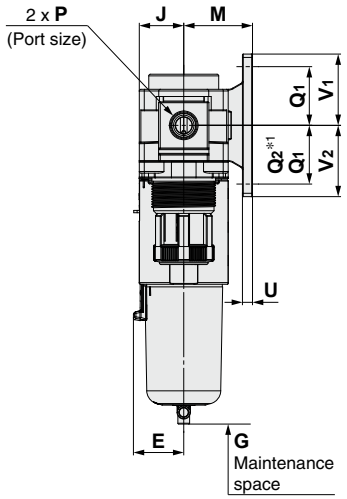
Model	Number of components	Standard specifications							Optional specifications								
									Bracket mount								
		P	A	C	E	F	G	J	M	N	Q1	Q2	R	S	U	V1	V2
AFF20-D/AM20-D/AMD20-D	2	1/8, 1/4	83.2	17.5	—	41.6	25	21	30	—	24	33	5.5	11.5	3.5	29	38
	3		126.4							43.2							
AFF30-D/AM30-D/AMD30-D	2	1/4, 3/8	110.2	21.5	30	55.1	35	26.5	41	—	35	—	7	14	6	42.5	42.5
	3		167.4							57.2							
AFF40-D/AM40-D/AMD40-D	2	1/4, 3/8, 1/2	145.2	25.5	38.4	72.6	40	35.5	50	—	40	55	9	18	7	50	65
	3		220.4							75.2							

Combination example ❸

＊ Please contact your local sales representative for ordering procedures.

Line Filter AFF30-03-D ——————1 pc.
Regulator AR30-03-D ——————1 pc.
Spacer with Bracket Y300T-D ————1 pc.





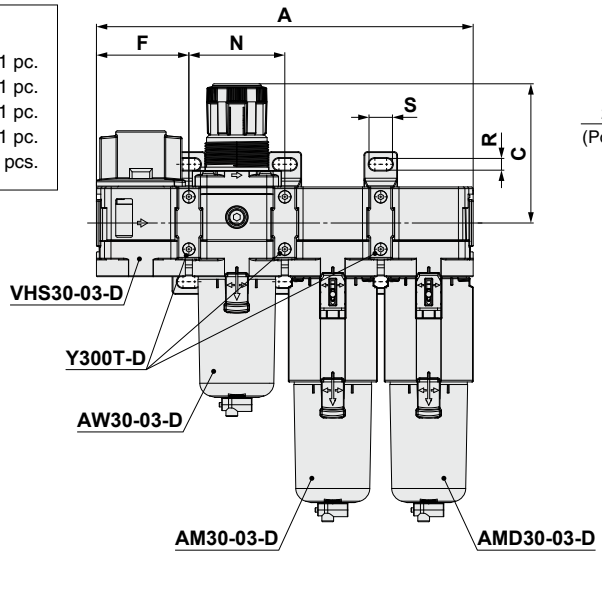
＊1 **Q2** (Size 20, 40) **Q1** (Size 30)

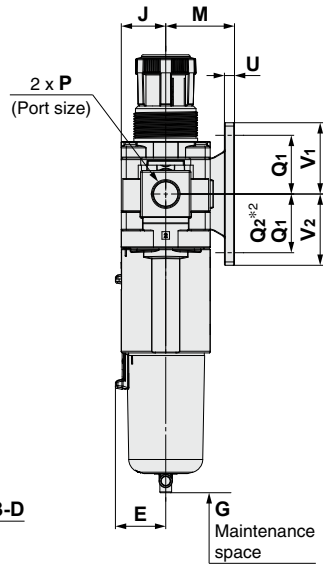
Model	Number of components	Standard specifications							Optional specifications							
									Bracket mount							
		P	A	C	E	F	G	J	M	Q_1	Q_2	R	S	U	V_1	V_2
Size 20	2	1/8, 1/4	83.2	26.5	—	41.6	25	21	30	24	33	5.5	11.5	3.5	29	38
Size 30	2	1/4, 3/8	110.2	30.5	30	55.1	35	26.5	41	35	—	7	14	6	42.5	42.5
Size 40	2	3/8, 1/2	145.2	35.5	38.4	72.6	40	35.5	50	40	55	9	18	7	50	65

Combination example ❹

＊ Please contact your local sales representative for ordering procedures.

Pressure Relief 3-port Valve
VHS30-03-D ——————1 pc.
Filter Regulator AW30-03-D ————1 pc.
Mist Separator AM30-03-D ————1 pc.
Micro Mist Separator AMD30-03-D —1 pc.
Spacer with Bracket Y300T-D ————3 pcs.





＊2 **Q2** (Size 20, 40) **Q1** (Size 30)

Model	Number of components	Standard specifications							Optional specifications								
									Bracket mount								
		P	A	C	E	F	G	J	M	N	Q_1	Q_2	R	S	U	V_1	V_2
Size 20	4	1/8, 1/4	169.6	71.8	—	41.6	25	21	30	43.2	24	33	5.5	11.5	3.5	29	38
Size 30	4	1/4, 3/8	224.6	86.5	30	55.1	35	26.5	41	57.2	35	—	7	14	6	42.5	42.5
Size 40	4	3/8, 1/2	295.6	91.5	38.4	72.6	40	35.5	50	75.2	40	55	9	18	7	50	65

Accessories Sold Separately (for Individual Parts)

Spacer / Spacer with Bracket

Y 300 □ – D

❶ ❷

	Symbol	Description	❶ Body size [Applicable size] 200 (AFF20, AM20, AMD20)	300 (AFF30, AM30, AMD30)	400 (AFF40, AM40, AMD40)
❷ Bracket	Nil	Spacer	●	●	●
	T	Spacer with bracket	●	●	●

Spacer (Y□-D)

Spacer with bracket (Y□T-D)

Standard Specifications

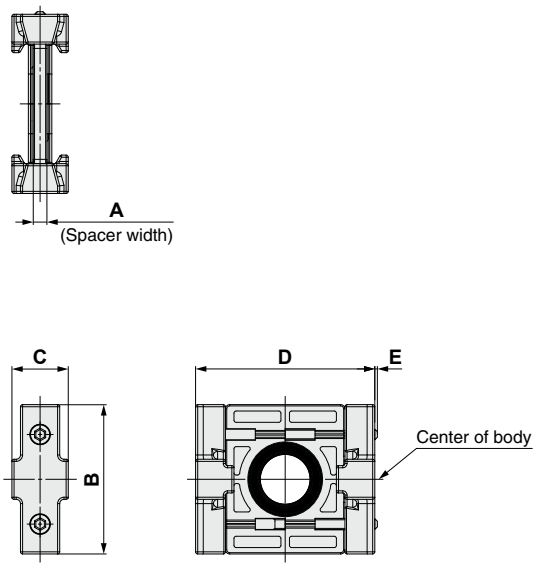
Fluid	Air
Ambient and fluid temperature	–5 to 60°C (No freezing)
Proof pressure	1.5 MPa
Max. operating pressure	1.0 MPa

Replacement Parts

Description	Material	Part number Y200-D Y200T-D	Y300-D Y300T-D	Y400-D Y400T-D
Seal	HNBR	Y220P-050S	Y320P-050S	Y420P-050S

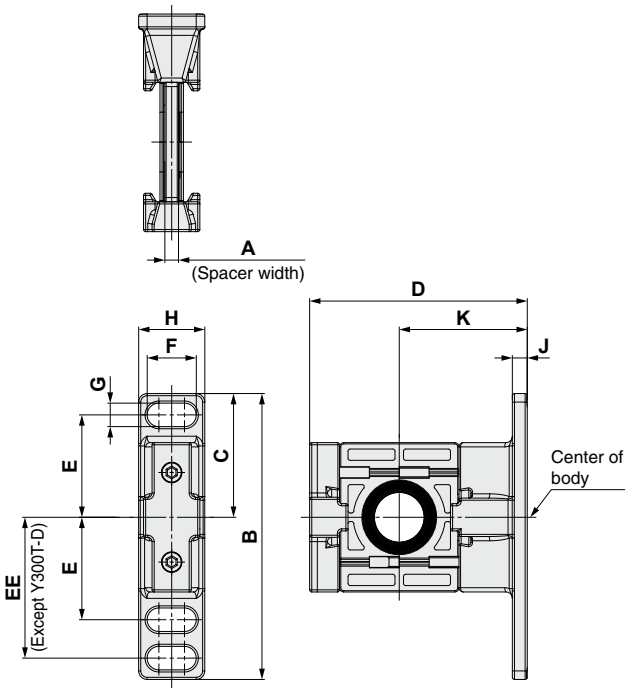
Dimensions

Spacer



Part no.	A	B	C	D	E	Applicable model
Y200-D	3.2	35	13.2	42	0.6	**AFF/AM/AMD20**
Y300-D	4.2	43	16.2	53	—	**AFF/AM/AMD30**
Y400-D	5.2	51	19.2	71	—	**AFF/AM/AMD40**

Spacer with bracket



Part no.	A	B	C	D	E	EE	F	G	H	J	K	Applicable model
Y200T-D	3.2	67	29	51	24	33	11.5	5.5	15.5	3.5	30	**AFF/AM/AMD20**
Y300T-D	4.2	85	42.5	67.5	35	—	14	7	20	6	41	**AFF/AM/AMD30**
Y400T-D	5.2	115	50	85.5	40	55	18	9	26	7	50	**AFF/AM/AMD40**

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 vapor (gas), Water droplets
- Oil: Liquid oil, Oil mist, Vapor

[Purity Classes]

Class	Particles				Humidity and liquid water		Oil
	Maximum number of particles per cubic meter as a function of particle size d [μm]			Mass concentration Cp	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/m³]	[°C]	[g/m³]	[mg/m³]
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	> 5

[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]

Oil class

2	Concentration of total oil ≤ 0.1 mg/m³

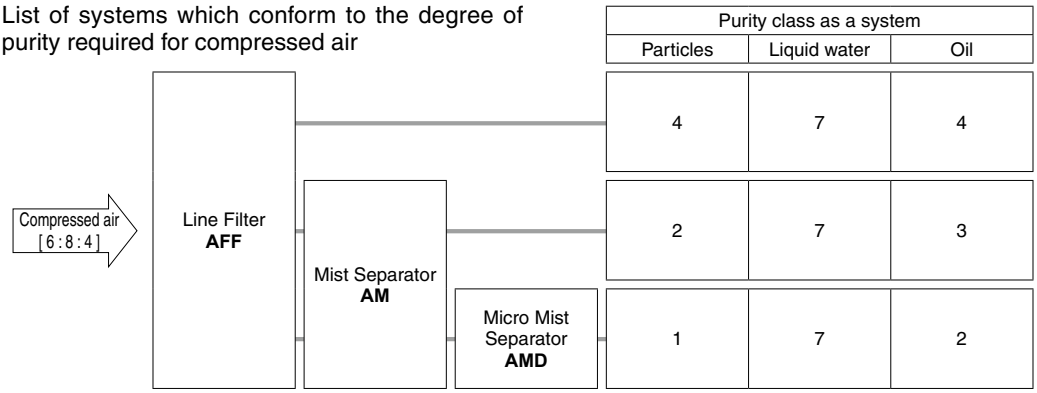
Particle class

4	1.0 μm < d ≤ Particles of 5.0 μm ≤ 10000 particles/m³

Humidity and liquid water class

6	Pressure dew point ≤ +10°C

List of systems which conform to the degree of purity required for compressed air



Purity class as a system		
Particles	Liquid water	Oil
4	7	4
2	7	3
1	7	2

The class indicates the compressed air purity according to ISO 8573-1:2010 (JIS B 8392-1:2012) and indicates the maximum purity class which can be obtained using that system. Note, however, that this value will differ according to the inlet air conditions.

AFF/AM/AMD Series
Specific Product Precautions 1

Be sure to read this before handling the products. Refer to the back cover for safety instruc-tions. For air preparation equipment precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website.

Design

⚠Warning

1. The resin parts are used for the exterior such as the bowl (material: polycarbonate).

Organic solvents including synthetic fluid, chemicals including acetone, alcohol, ethylene chloride, sulphuric acid, nitrate, hydrochloric acid, cutting oil, kerosene, gasoline, lock material of screw are harmful. Do not use the product where these are present.

Effects of atmosphere of organic solvents and chemicals, and where these elements are likely to adhere to the equipment. Shown below is chemical data for substances causing degradation as reference.

Type	Chemical name	Application examples	Material	
			Polycarbonate	Nylon
Acid	Hydrochloric acid Sulfuric acid Phosphoric acid Acetic acid Chromic acid	Acid washing liquid for metals	△	×
Alkaline	Sodium hydroxide (Caustic soda) Potash Calcium hydroxide (Slack lime) Ammonia water Carbonate of soda	Degreasing of metals Industrial salts Water-soluble cutting oil	×	○
Inorganic salts	Sodium sulfide Potassium nitrate Sulfate of soda	—	×	△
Chlorine solvents	Carbon tetrachloride Chloroform Ethylene chloride Methylene chloride	Cleansing liquid for metals Printing ink Dilution	×	△
Aromatic series	Benzene Toluene Paint thinner	Coatings Dry cleaning	×	△
Ketone	Acetone Methyl ethyl ketone Cyclohexane	Photographic film Dry cleaning Textile industries	×	×
Alcohol	Ethyl alcohol IPA Methyl alcohol	Antifreeze Adhesives	△	×
Oil	Gasoline Kerosene	—	×	○
Ester	Phthalic acid dimethyl Phthalic acid diethyl	Synthetic oil Anti-rust additives	×	○
Ether	Methyl ether Ethyl ether	Brake oil additives	×	○
Amino	Methyl amino	Cutting oil Brake oil additives Rubber accelerator	×	×
Others	Thread-lock fluid Seawater Leak tester	—	×	△

○: Essentially safe △: Some effects may occur. ×: Effects will occur.

When the above factors are present, or there is some doubt, use a metal bowl for safety.

Design

⚠Warning

2. Applications in which the difference between the inlet and outlet pressure exceeds 0.1 MPa must be avoided. Otherwise, the element may break.

3. For air blow applications, prevent airborne particles from the operating environment entering into the compressed air stream. Foreign matter may adhere to the workpiece during the air blow.

4. If air equipment is installed at the outlet side of the product, particles may be generated from the equipment and thus required cleanliness may not be obtained. Please consider installing air equipment at the inlet side of the product.

Selection

⚠Warning

1. Select the model so that the maximum discharge (instantaneous) flow rate value does not exceed the rated air capacity.

2. Use the N.O. type auto drain under the following requirements to avoid malfunctions.

Output of compressor: 0.75 kW or more. Discharged flow rate: 100 L/min (ANR) or more. If multiple auto drains are used, confirm used compressor has capacity over the result of multiplying the above capacity and the number of used auto drains. { For example, in the case of two auto drains, the compressor need the capacity of 1.5 kW [200 L/min (ANR)] or more. } Set operating pressure at 0.1 MPa or more.

3. Use the N.C. type auto drain under the following requirements to avoid malfunctions.

Operating pressure for AD27-D: 0.1 MPa or more
Operating pressure for AD37-D/AD47-D: 0.15 MPa or more

Mounting

⚠Warning

1. Connect the product ensuring the direction of "1"(IN) and "2"(OUT) for air direction or an arrow. Incorrect connections may cause malfunctions.

2. Install with adequate space for maintenance beneath the product. Refer to the dimensions of each part for necessary space.

3. Install vertically so that the drain outlet turns downward. Use with the drain outlet turned horizontal or upward causes malfunctions.

AFF/AM/AMD Series
Specific Product Precautions 2

Be sure to read this before handling the products. Refer to the back cover for safety instruc-tions. For air preparation equipment precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website.

Piping

⚠Warning

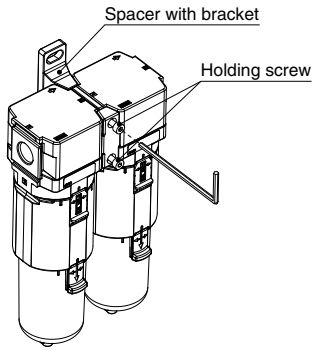
1. Tighten the two set screws on the spacer with bracket or spacer evenly.

Tighten them to the recommended tightening torque.

Insufficient tightening torque may cause loosening or defective sealing. Excessive tightening torque may damage the thread, etc.

Recommended Torque Unit: N·m

Applicable model	AFF20 AM20 AMD20	AFF30 AM30 AMD30	AFF40 AM40 AMD40
Spacer with bracket part number	Y200T-D	Y300T-D	Y400T-D
Spacer part number	Y200-D	Y300-D	Y400-D
Torque	0.33 to 0.39	1.0 to 1.2	1.0 to 1.2



2. Piping load and moment

Avoid any torsional or bending moments other than those caused by the equipment's own weight, as this can cause damage.

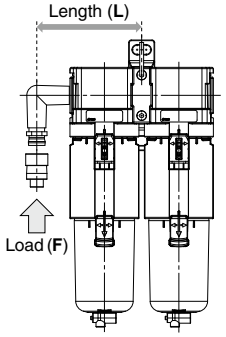
Support external piping separately. If moment applied to the equipment is unavoidable during operation, the moment should be lower than the maximum moment shown below.

Piping materials without flexibility, such as steel tube piping, are prone to be affected by excess moment loads or vibrations from the piping side. Use flexible tubing in between to avoid such effects.

Unit: N·m

Applicable model	AFF20 AM20 AMD20	AFF30 AM30 AMD30	AFF40 AM40 AMD40
Maximum moment (**M**)	14.5	16	19.5

Maximum moment (**M**) = Length (**L**) x Load (**F**)



Piping

⚠Warning

3. Connect piping/fittings using the recommended torque while holding the female thread side tightly.

Insufficient tightening torque can cause loose piping or sealing failure. Over tightening may break the thread. If the female side is not held while tightening, excessive force will be applied to the bracket directly, causing breakage.

Recommended Tightening Torque Unit: N·m

Connection thread	1/8	1/4	3/8	1/2
Torque	7 to 9	12 to 14	22 to 24	28 to 30

4. When an SMC One-touch fitting is used, refer to the operation manual for the One-touch fitting.

Air Supply

⚠Warning

1. Air containing too much moisture may deteriorate the performance. Install the refrigerated air dryer or aftercooler at the inlet side of the product.

Maintenance

⚠Warning

1. Timing of element replacement is within 2 years of operation or, when pressure drop (difference between the inlet pressure and outlet pressure) exceeds 0.1 MPa, whichever comes first. Otherwise, the element may break.

⚠Caution

1. For the N.C. type auto drain, when there is no pressure, condensate, which is not enough to activate the auto drain mechanism, will remain in the bowl. It is recommended to release the residual condensate manually at the end of the working day.

UNIT CONVERSIONS

	unit	conversion	result		unit	conversion	result
length	m	x 3.28	ft	pressure	MPa	x 145	psi
	mm	x 0.04	in		kPa	÷ 6.895	psi
mass	g	x 0.04	oz	temperature	°C	x1.8 then add 32	°F
volume	cm^3	÷ 16.387	in^3	torque	N·m	x 0.738	ft-lb
	L	x 61.024	in^3	force	N	÷ 4.448	lbf
speed	mm/s	÷ 25.4	in/s	flow	L/min	÷ 28.317	cfm

⚠ 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 catalog 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 catalog.
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 catalog 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 the "Handling Precautions for SMC Products" (M-E03-3) and "Operation Manual" before use.

SMC