

# Main Line Filter

New

Compressed Air Preparation Filter

Nominal filtration rating 1  $\mu\text{m}$

Water droplet removal

Flow Capacity

**14.5**  $\text{m}^3/\text{min}$   
(ANR)

20%  
improvement

Weight

**5.0** kg

Pressure Drop

**5** kPa or less

Depth  
**160** mm

Face to Face  
**170** mm

AFF90D

Rc2



**AFF Series**

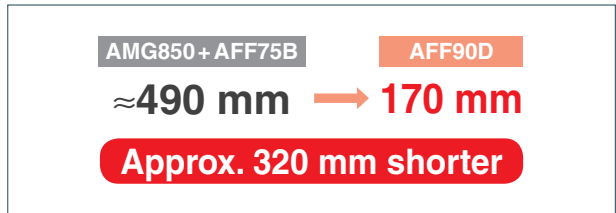
**SMC**

CAT.EUS30-17A-UK

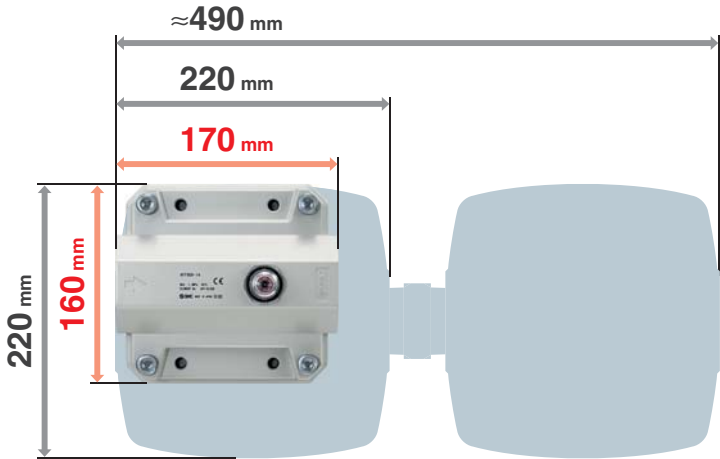
# Main Line Filter *AFF Series*

## Space-saving design, Labor-saving in piping!

Water droplets and solid particles can be removed with just one AFF.  
A separate filter for removing water droplets (water separator, AMG series) is not necessary any more. Space and piping work are reduced.



AFF90D



### Lightweight

Light body weight to thinner stainless steel bowl.  
Easier installation.



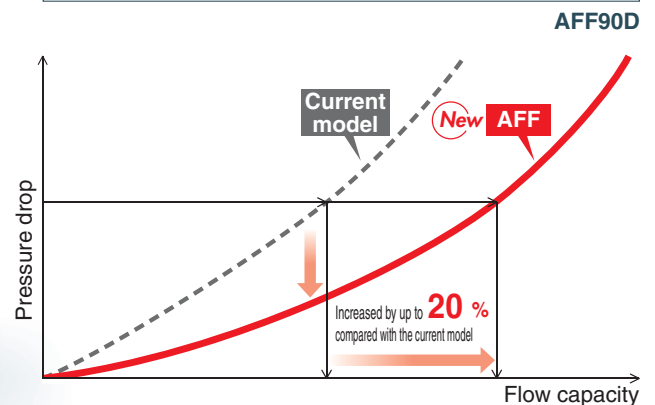
Size	Weight
AFF70D	3.4 kg (Current model: 4.2 kg)
AFF80D	4.7 kg
AFF90D	5.0 kg (Current model: 10.5 kg)

**Max. 52% lighter**



Increase in an air flow capacity due to lower pressure drop contributing to energy saving

**Flow capacity: 14.5 m<sup>3</sup>/min (ANR)**  
**Pressure drop: 5 kPa or less**



### 3 sizes are available.

Model with 11.0 m<sup>3</sup>/min flow capacity added. More choices available depending on the flow rate of customer.

Size	Nominal filtration rating	Port size	Flow capacity [m <sup>3</sup> /min (ANR)]
AFF70D	1 μm*1	1, 1 1/2	7.0
			6.0 (AFF37B (Current model))
AFF80D		1 1/2	11.0
AFF90D	1 1/2, 2	1 1/2, 2	14.5
			12.0 (AFF75B (Current model))

\*1 ISO 8573-4: 2010 compliant

## Easier replacement of the element

### Stopper function prevents the bowl from falling.

The bowl does not fall even if the bolts are removed. It is not necessary to hold the bowl for removing the bolts. Safe and secure mounting and removing of the bowl with both hands is possible.

The lightweight stainless bowl with reduced thickness means easier element replacement.

**1** Remove the 4 securing bolts.



AFF90D



AFF80D

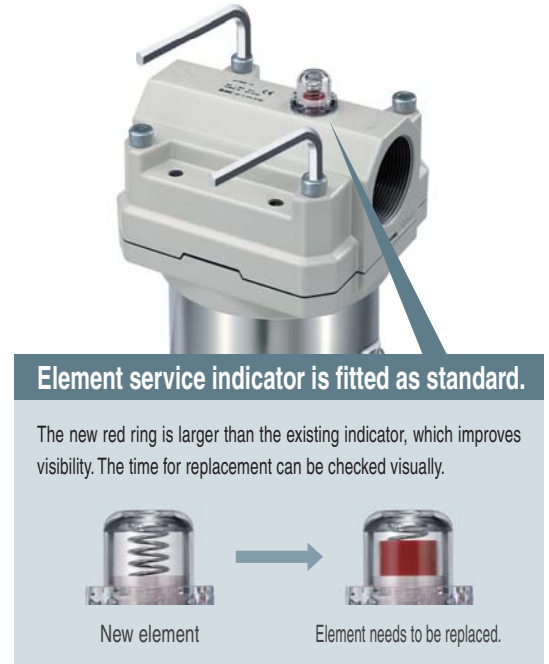


AFF70D



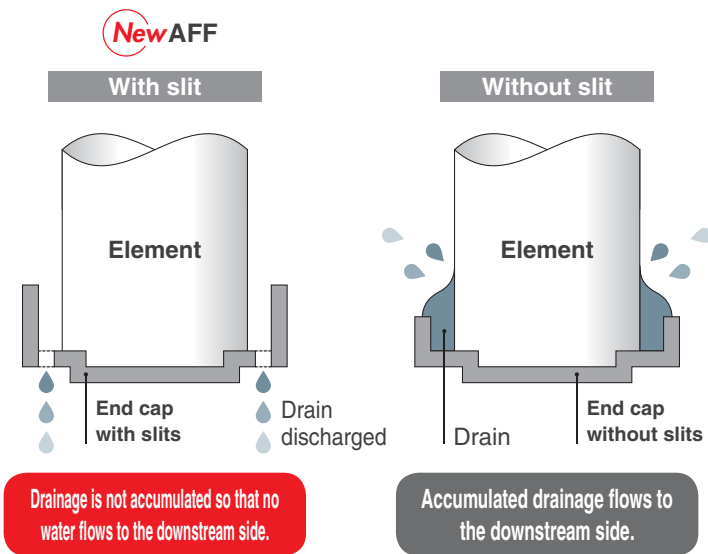


**Possible to remove the bolts from the same direction (front)**



**An end cap with slits is used for the element.**

The end cap with slits eliminates the accumulation of drain water. Even high velocity fluid is not spattered. Results in compact bowl design.



# Main Line Filter

# AFF Series

Nominal filtration rating 1 μm  
Water droplet removal

RoHS



## Standard Specifications

Model		AFF70D	AFF80D	AFF90D
Operating range	Fluid	Compressed air		
	Operating pressure range [MPa]	0.1 to 1.0		
	Ambient and fluid temperature [°C]	-5 to 60 (No freezing)		
	Proof pressure [MPa]	1.5		
Rated conditions	Flow capacity*3/Standard condition (ANR)*1 [m³/min]	7.0	11.0	14.5
	Inlet pressure [MPa]	0.7		
Performance	Nominal filtration rating*4 [μm]	1.0 (Filtration efficiency: 99 %)		
	Water droplet removal ratio*5 [%]	99		
	Float type auto-drain	N.O. (Normally open), Drain port is open when pressure is not applied.		
	Port size	Rc1 or Rc1 1/2	Rc1 1/2	Rc1 1/2 or Rc2
	Weight [kg]	3.4	4.7	5.0
	Recommended element replacement interval (Guideline)	2 years in operation or when the element service indicator shown, whichever comes first.		

### Flow Capacity of the Compressor Intake Condition under Rated Conditions

Model	AFF70D	AFF80D	AFF90D
Flow capacity*3/Compressor intake condition*2 [m³/min]	7.3	11.5	15.1

\*1 Flow at 20 °C, atmospheric pressure, and 65 % of relative humidity

\*2 32 °C, flow rate when converted to atmospheric pressure

\*3 The flow capacity varies depending on the inlet pressure.

\*4 Filtration efficiency for conditions below in addition to the rated conditions above [Test condition ISO 8573-4: 2010 compliant]

\* Flow capacity, inlet pressure and the amount of solid bodies at the filter inlet are stable.

\* New element

\*5 Water droplet elimination rate for the conditions below in addition to the rated conditions above [Test condition ISO 8573-9: 2010, Test method ISO 12500-4: 2009 compliant]

\* Water droplet at filter inlet = 33 g/m³ (ANR)

(Water droplet indicates condensed moisture. Water vapour 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

\*6 Surface finish of the outer surface of the container is equivalent to No. 2D\*

(There may be scratches, rubbing, stains, or discolouration which do not affect the function or performance.)

\* A symbol for the surface finish of a cold rolled stainless steel sheet defined in JIS G 4305.

## How to Order

AFF **70D** - **10** - **F** - **N**

### Size

Symbol	Flow capacity
70D	7 m³/min (ANR)
80D	11 m³/min (ANR)
90D	14.5 m³/min (ANR)

### Thread type

Symbol	Type
—	Rc
F	G
N	NPT

### Port size

Symbol	Port size	Applicable body size		
		70D	80D	90D
10	1	●	—	—
14	1 1/2	●	●	●
20	2	—	—	●

### Accessory

Symbol	Description
—	None
B	Bracket*1, *2

\*1 Included in the same package but not assembled.

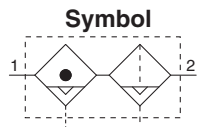
(It is customer's responsibility to assemble.)

\*2 Even when the accessory is selected, the product label does not include accessory (body only).

### Option

Symbol	Description	Auto drain	Max. operating pressure [MPa]
—	Auto drain	Yes	1.0
H	Auto drain	Yes	1.6
J	Drain guide (3/8 inch female thread)	No	1.6

\* Option H and J cannot be included in one part number.



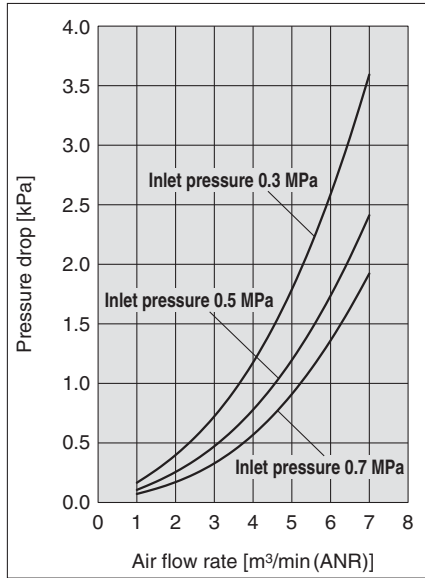
## Accessory Part Nos.

Description	Material	Model		
		AFF70D	AFF80D	AFF90D
Bracket	—	AM-BM70D	AM-BM90D	

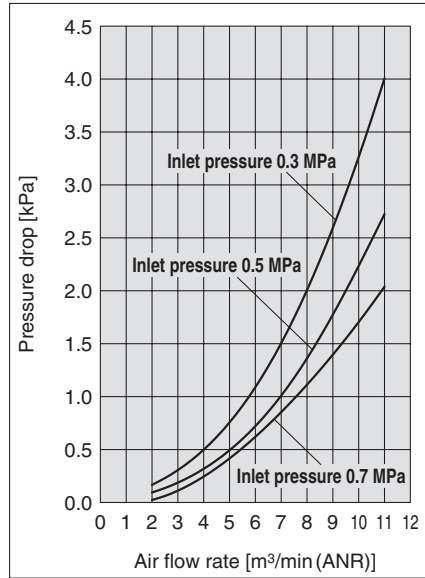
\* Including mounting bolts (2 pcs.)

### Flow Rate Characteristics

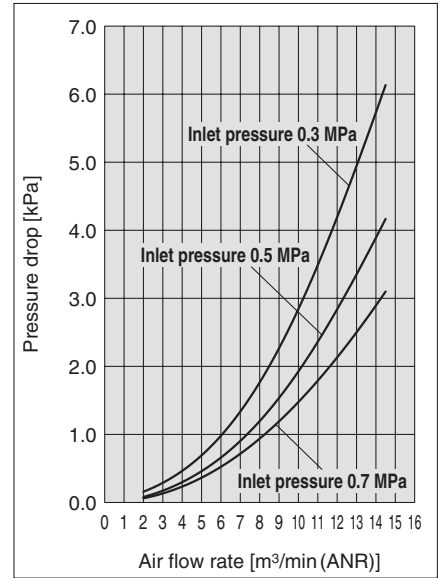
**AFF70D**



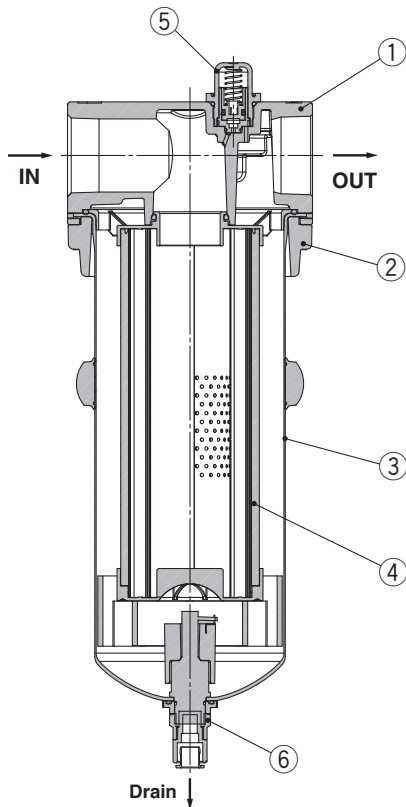
**AFF80D**



**AFF90D**



### Construction



#### Component Parts

No.	Description	Material
1	Body	Aluminium die-cast
2	Flange	Aluminium die-cast
3	Bowl	Stainless steel
4	Element	—
5	Element service indicator	—
6	Auto drain	—

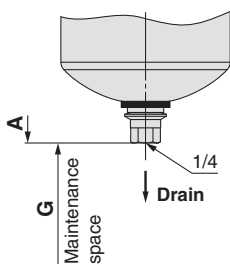
#### Replacement Parts

No.	Description	Material	Model		
			AFF70D	AFF80D	AFF90D
4	Element	—	AFF-EL70D	AFF-EL80D	AFF-EL90D

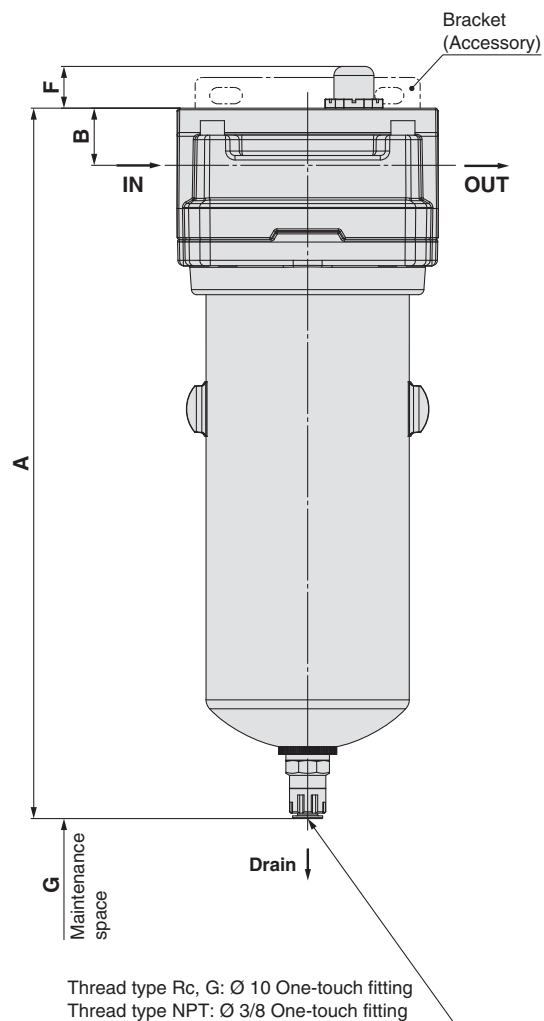
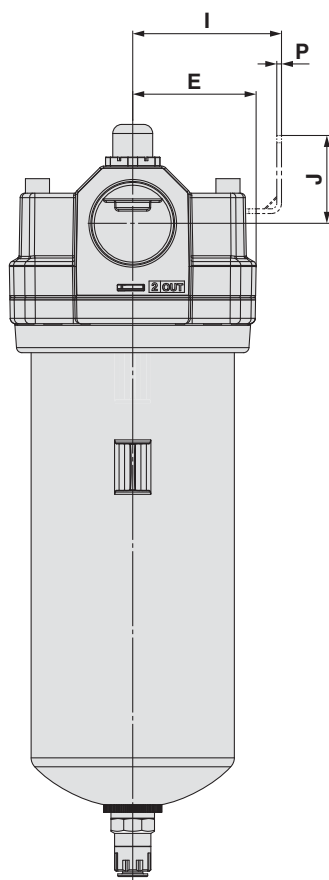
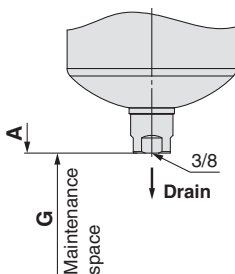
## Dimensions

### Option

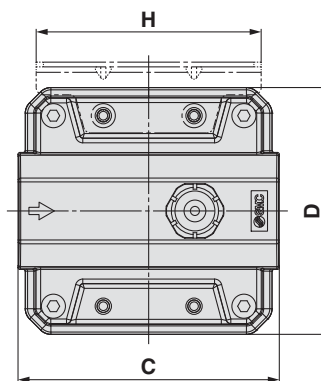
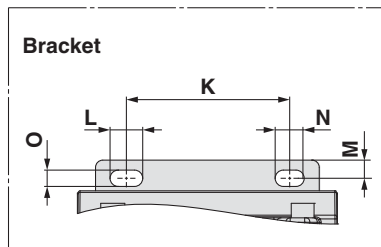
H: Auto drain (1.6 MPa)



J: Drain guide



Thread type Rc, G:  $\varnothing$  10 One-touch fitting  
Thread type NPT:  $\varnothing$  3/8 One-touch fitting



\* Figures indicate the auto drain (1.0 MPa).

## Dimensions

[mm]

Model	Port size	Auto drain (1.0 MPa)	Auto drain (1.6 MPa)	Drain guide	B	C	D	E	F	G	Bracket related dimensions								
											A								H
AFF70D	1, 1 1/2	391.5	379.5	382	31.5	144	136	68	23	40	124	82	48.4	90	18	9	16	10	2.6
AFF80D	1 1/2	404	392	394.5	38	170	160	80	23	40	148	93.5	58.5	110	22	11	20	12	3.2
AFF90D	1 1/2, 2	470	458	460.5	38	170	160	80	23	40	148	93.5	58.5	110	22	11	20	12	3.2





# AFF Series

## Specific Product Precautions 1

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For air preparation equipment precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <http://www.smc.eu>

### Design

#### ⚠ Caution

1. Design the layout so that the mist separator should be installed in an area that is less susceptible to pulsations.

The element could be damaged if a difference between the inlet pressure and the outlet pressure exceeds 0.1 MPa.

2. Be careful of dust generation by the pneumatic equipment mounted on the outlet side.

When installing pneumatic equipment on the outlet side of the filter, dust particles may come off from outlet equipment, which will lower the cleanliness of compressed air. Consider this impact upon the cleanliness of compressed air when installing pneumatic equipment on the outlet side.

3. Precautions for the use of N.O. auto drain

The valve of the N.O. auto drain does not close unless the air pressure is 0.1 MPa or more. Air may keep bleeding from the drain discharge port if the air capacity of the compressor is small. For products with a normally closed (N.C.) auto drain, please consult SMC.

4. The auto drain has a One-touch fitting for piping. Use tube with O.D. 10 mm and length 5 m or less for piping of the auto drain.

5. Provide a design that prevents back pressure and back flow.

Back pressure or back flow may damage an element.

#### ⚠ Warning

1. Hold the female thread side and tighten to the recommended torque when screwing in the piping material.

Insufficient tightening torque may cause loosening or defective sealing. Over-tightening torque may damage the thread etc. If it is tightened without holding the female thread side, excessive force will be directly applied to the piping bracket resulting in a product failure.

#### Recommended Torque

Unit: N·m

Connection thread	1/8	1/4	3/8	1/2	3/4	1	1 1/2	2
Torque	7 to 9	12 to 14	22 to 24	28 to 30	28 to 30	36 to 38	48 to 50	48 to 50

\* After tightening manually, tighten additionally by about 1/6 turn with a tightening tool.

2. Do not apply torsional moment or bending moment (except the product's own weight) to the bracket. It may damage the bracket. Support external piping separately.

3. Inflexible piping such as steel piping tends to be affected by spread of excessive moment load or vibration from the piping side. Lay flexible tubing between the steel pipe and the product to prevent such effects.

### Selection

#### ⚠ Caution

1. About the system composition of purifying compressed air

Compressed air generally contains particulate contaminants as listed below, though there are some variations due to the compressor type and specifications. Determine the system configuration according to the desired cleanliness of compressed air and application, while referring to the “Air Preparation Equipment Selection Guide” (Web Catalogue).

#### [Particulate contaminants in compressed air]

- Moisture (water droplets, water vapour)
- Dust, chemical substances, etc. sucked from ambient air
- Degraded oil content from compressor (including degraded oil)
- Solid foreign matter such as rust inside piping and oil

2. Select according to the maximum flow capacity.

When compressed air is used for air blow etc., find the maximum air consumption before selecting the size. (If compressed air exceeding the maximum flow rate is supplied, it may cause deterioration of the cleanliness of the compressed air, the outflow of oil mist on the outlet side, and also cause element damage.)

3. G thread specification

Not applicable for ISO 1179-1. Please consult with SMC for applicable model.

### Mounting

#### ⚠ Caution

1. About the mounting orientation of the products

Make sure to install this product on horizontal piping. If it is installed diagonally, laterally, or upside down, the drain separated by the element will splash to the outlet side.

### Piping

#### ⚠ Caution

1. Connect it with IN and OUT ports in proper location. It does not work with the connection reversed.

Verify the direction of the flow of the compressed air and the mark that indicates the inlet of the product before connecting. It cannot be used if connected in the opposite direction.

2. Perform air blow (flushing) sufficiently before and after piping.

Before piping is connected, it should be thoroughly flushed with air or washed to remove chips, cutting oil and other debris inside the pipe.

3. Winding of sealant tape

When screwing in the pipes or fittings, make sure to prevent cutting chips or the sealant material on the threaded portion of the pipe from entering the piping. If sealant tape is to be used, leave about 1.5 to 2 ridges of threads uncovered.



## AFF Series

# Specific Product Precautions 2

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For air preparation equipment precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <http://www.smc.eu>

### Air Supply

#### ⚠ Caution

1. **The mist separator is not applicable to gases other than compressed air.**

The mist separator is not applicable to gases other than compressed air (example: oxygen, hydrogen, flammable gas, mixed gas).

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

Do not use compressed gas containing chemicals, organic solvents, salt or corrosive gas. This can cause rust, damage to rubber and resin parts, or malfunction.

3. **Operate within the specified operating pressure range.**

Damage, failure, or malfunction may occur if the mist separator is operated above the maximum operating pressure.

If the mist separator is used below the minimum operating pressure, increase in the air flow resistance due to clogging will have such influence that the desired flow rate cannot be obtained.

If the mist separator is used under a low pressure such as for a blower, conduct sufficient tests by users to confirm the specifications and performances.

### Operating Environment

#### ⚠ Caution

1. **Do not use in the following environments, as this can cause failure.**

- 1) In locations having corrosive gases, organic solvents, and chemical solutions, or in locations where these elements are likely to adhere to the equipment.
- 2) In locations where salt water, water, or water vapour could come in contact with the equipment.
- 3) In locations that is exposed to shocks and vibrations.

2. **Be careful about the contamination of the work pieces due to entrainment of the ambient air.**

If compressed air is used for air blow, compressed air blowing out from the blow nozzle may entrain foreign matter (solid particles and liquid particles) floating in the ambient air, blowing it against the work pieces and causing adhesion. Therefore, sufficient precautions must be taken about the ambient environment.

### Maintenance

#### ⚠ Caution

1. **Replace the element with a new one when the replacement timing has come. Without replacement, the element will be damaged.**

When replacing the element, replace the O-ring with a new one. Refer to the operation manual for replacement procedure.

##### <Element replacement>

When the element service indicator operates or 2 year after starting operation, whichever comes first.

### Maintenance

#### ⚠ Caution

2. **To replace the element, make sure that the residual pressure in the filter container is zero. Replacement with residual pressure in the container may cause injury or damage of the filter.**

3. **Be sure to exhaust the drain accumulated in the filter container.**

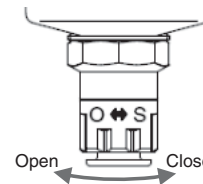
Failure to discharge the drain will allow the accumulated drain to flow over to the outlet side.

4. **Maintenance of the auto drain**

- Auto drain usually exhausts the drain with the manual knob set to “S” side. Manual auto drain exhaust is also possible.

##### <Manual operation>

A manual knob attached to the auto drain end is tightened to the “S” side in normal operation. The drain can be discharged by loosening it to the “O” side. (Be careful, however, if pressure remains inside the filter when the drain is discharged, the drain will blow out from the drain port.)



5. **Perform periodical check to find cracks, flaws or other deterioration of the element service indicator. If any are seen, replace with new parts and review the operating condition. Otherwise, a malfunction may occur. Please consult SMC if the review of the operating conditions is not possible.**

### Others

#### ⚠ Caution

1. **About oil-free products**

The AFF series includes parts (such as resin parts, rubber parts, and elements) that does not allow degreasing wash. Therefore, oil-free products with all parts degreasing washed is not available.

2. **Degreasing wash**




Certain parts such as the body and bowl can be degreasing washed. Please contact SMC after confirming the specifications. (Available by request for special)

3. **Change of oil**

Oil is used on some parts of the AFF series. The type of oil can be changed. (Available by request for special)

## 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.

## 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

- 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.

### 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.

### SMC Corporation (Europe)

Austria	☎ +43 (0)2262622800	www.smc.at	office@smc.at	Lithuania	☎ +370 5 2308118	www.smclt.lt	info@smclt.lt
Belgium	☎ +32 (0)33551464	www.smcpnematics.be	info@smcpneumatics.be	Netherlands	☎ +31 (0)205318888	www.smcpnematics.nl	info@smcpneumatics.nl
Bulgaria	☎ +359 (0)2807670	www.smc.bg	office@smc.bg	Norway	☎ +47 67129020	www.smc-norge.no	post@smc-norge.no
Croatia	☎ +385 (0)13707288	www.smc.hr	office@smc.hr	Poland	☎ +48 222119600	www.smc.pl	office@smc.pl
Czech Republic	☎ +420 541424611	www.smc.cz	office@smc.cz	Portugal	☎ +351 226166570	www.smc.eu	postpt@smc.smces.es
Denmark	☎ +45 70252900	www.smcdk.com	smc@smcdk.com	Romania	☎ +40 213205111	www.smcromania.ro	smcromania@smcromania.ro
Estonia	☎ +372 6510370	www.smcpnematics.ee	smc@smcpneumatics.ee	Russia	☎ +7 8127185445	www.smc-pneumatik.ru	info@smc-pneumatik.ru
Finland	☎ +358 207513513	www.smc.fi	smc@smc.fi	Slovakia	☎ +421 (0)413213212	www.smc.sk	office@smc.sk
France	☎ +33 (0)164761000	www.smc-france.fr	info@smc-france.fr	Slovenia	☎ +386 (0)73885412	www.smc.si	office@smc.si
Germany	☎ +49 (0)61034020	www.smc.de	info@smc.de	Spain	☎ +34 902184100	www.smc.eu	post@smc.smces.es
Greece	☎ +30 210 2717265	www.smchellas.gr	sales@smchellas.gr	Sweden	☎ +46 (0)86031200	www.smc.nu	post@smc.nu
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Ireland	☎ +353 (0)14039000	www.smcpnematics.ie	sales@smcpneumatics.ie	Turkey	☎ +90 212 489 0 440	www.smcpnomatik.com.tr	info@smcpnomatik.com.tr
Italy	☎ +39 0292711	www.smcitalia.it	mailbox@smcitalia.it	UK	☎ +44 (0)845 121 5122	www.smcpnematics.co.uk	sales@smcpneumatics.co.uk
Latvia	☎ +371 67817700	www.smc.lv	info@smclv.lv				

SMC CORPORATION Akihbara UDX 15F, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, JAPAN Phone: 03-5207-8249 FAX: 03-5298-5362