

Operation Manual

PRODUCT NAME

Activated Carbon Filter

MODEL / Series / Product Number

AMK20- (F, N) 01 \sim (F, N) 02 (B) (-2, 6, C, R, Z) -D AMK30- (F, N) 02 \sim (F, N) 03 (B) (-2, 6, R, Z) -D AMK40- (F, N) 02 \sim (F, N) 04 (B) (-2, 6, R, Z) -D

SMC Corporation

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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.

*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1:Robots etc.



Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

/ 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. Our products cannot be used beyond their specifications. Our products are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not covered.
 - 1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
 - 2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, fuel equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
 - 3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.



Safety Instructions

We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing industries.

Use in non-manufacturing industries is not covered.

Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.

The new Measurement Act prohibits use of any unit other than SI units in Japan.

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.

Precautions for Design

⚠ Warning

- 1) Do not use the product if no leakage is allowed due to the environment, or if the fluid is not air.
- 2) Polycarbonate resin is used for the external parts including the bowl. Organic solvents including thinner, acetone, alcohol and ethylene chloride; chemicals including sulphuric acid, nitric acid and hydrochloric acid; cutting oil, synthetic oils, ester-based compressor oil, alkali, kerosene, gasoline, lock material of screw are harmful. Do not use the product where these are present.

Туре	Chemical name	Application examples	Material		
Туре		Application examples	Polycarbonate	Nylon	
Acid	Hydrochloric acid Sulphuric acid, Phosphoric acid Acetic acid Chromic acid	Acid washing liquid for metals	Δ	×	
Alkaline	Sodium hydroxide (Caustic soda) Potash Calcium hydroxide (Slacked lime) Ammonia water Carbotane of soda	Degreasing of metals Industrial salts Water-soluble cutting oil	×	0	
Inorganic salts	Sodium sulphide Sulphate of potash Sulphate of soda	-	×	Δ	
Chlorine solvents	Carbon tetrachloride Chloroform Ethylene chloride Methylene chloride	Cleaning liquid for metals Printing ink Dilution	×	Δ	
Aromatic series	Benzene Toluene Paint thinner	Coatings Dry cleaning	×	Δ	
Ketone	Acetone Methyl ethyl ketone Cyclohexane	Photographic film, Dry cleaning, Textile industries	×	×	
Alcohol	Ethyl alcohol I P A Methyl alcohol	Antifreeze Adhesives	Δ	×	
Oil	Gasoline Kerosene	-	×	0	
Ester	Phthalic acid dim ethyl Phthalic acid diethyl	Synthetic oil Anti-rust additives	×	0	
Ether	Methyl ether Ethyl ether	Brake oil additives	×	0	
Amino	Methyl amine	Cutting oil Brake oil additives Rubber accelerator	×	×	
Others	Thread-lock fluid Sea water Leak tester	-	×	Δ	
	Essentially safe. △: S	Some effects may occur.	x: Effects will occ		

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

- 3) Avoid the application where charge and discharge of pressure to/from a standard bowl is switched frequently. This may damage the bowl. A metal bowl is recommended in these cases.
- 4) Protect from ultra violet ray and radiation heat by shield.
- 5) If the air equipment is mounted on the outlet of the product, particles will be generated from the equipment and required cleanliness may not be obtained. Instead, install the air equipment at the inlet.
- 6) Applications in which the difference between the inlet and outlet pressure exceeds 0.1 MPa must be avoided. Otherwise, the element may break.
- 7) 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.

⚠ Caution

1) The activated carbon filter (AMK series) adsorbs oil vapor contained in the compressed air and removes the odors derived from it, but does not remove all odors.

Selection

⚠ Warning

- 1) Grease is used on the internal sliding parts and seals. The grease may flow to the outlet side.
- 2) Select the model so that the maximum discharge value (instantaneous) of the flow rate will not exceed the maximum flow capacity.

Installation

⚠ Warning

- Do not drop or apply impact during transportation or installation; It will cause damage to the product and result in operation failure.
- 2) Do not install in areas of high humidity or high temperature. Operation outside of the product specification range may cause damage to the product or operation failure, or shorten the product life.
- 3) Connect the product ensuring the direction of "1"(IN) and "2"(OUT) for air direction or an arrow.
- 4) Install with adequate space for maintenance beneath the product. Refer to [11. Dimensions] (P23) for necessary space.

Piping

⚠ Warning:

- 1) Before piping, perform flushing or cleaning of the piping, etc. to remove any cutting chips, cutting oil, solid foreign matter, etc. from the piping. Contamination of piping may cause damage or malfunction.
- 2) When screwing together pipes and fittings, etc., be certain that chips from the pipe threads and sealant do not get inside the pipe. When a sealant tape is used, leave 1 thread ridge exposed at the end of the threads.
- 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. Excess tightening torque may cause damage to threads. 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)

Threadaire	4/0	1/4	2/0	1/2
Thread size	1/8	1/4	3/8	1/2
Torque	3 to 5	8 to 12	15 to 20	20 to 25

- 4) When a one-touch fitting of SMC is used, refer to the operation manual for the one-touch fitting.
- 5) Do not apply torsion or bending moment other than the weight of the product itself. External piping needs to be supported separately as it may cause damage. Non-flexible piping like steel tube is susceptible to excessive moment load or vibration. Insert flexible tubes to prevent this.

Air Source



- Use clean air. Do not use compressed air containing chemicals, organic solvent, synthetic oil or corrosive gas as it may be cause of breakage of components or operation failure.
- 2) Air containing too much moisture may deteriorate the performance. Install the refrigerated air dryer or aftercooler before the line filter.
- 3) Make sure that the supply pressure is not below the minimum operating pressure. If it is used at the minimum operating pressure or less, pressure resistance increases, leading to the decrease of operation life or operation failure.

⚠ Caution

1) Install the micro mist separator AMD or AFD series or the micro mist separator with pre-filter AMH series as a pre-filter to the inlet of the product in order to avoid the deteriorating the performance.

Maintenance



- 1) Release the pressure in the product to the atmosphere when replacing parts or removing piping.
- 2) Maintenance and checks should be done by following the procedure in the operation manual. Incorrect handling of the product may cause breakage or operation failure of the equipment or device.
- 3) Do not touch the product when operating at high temperature (40 to 60°C). The operators may get burnt. Be sure to confirm that the temperature of the container or operating part is reduced to 40 degrees or less to prevent burns.

- 4) Perform periodical check to find cracks, flaws or other deterioration on resin bowl. If any of them is seen, as malfunction is caused, replace with new bowl or metal bowl. Investigate and/or review the operating conditions if necessary.
- 5) Check for dirt in resin bowl periodically. If any dirt is seen, replace with new bowl. If removing dirt by washing the resin bowl, never use washing material other than neutral detergent. Otherwise, the bowl is damaged.
- 6) Replace the element before 1 year or 2000 operating hours passed from start of use as it may deteriorate the performance.
 - The replacement period of the element varies depending on the operating conditions. Even before the aforementioned replacement period is reached, if there is an oil smell on the outlet side, please replace it.



1) Check the element periodically and replace it with a new one if necessary. If it is found that outlet pressure drops or the flow is restricted, check the condition of the element.

2. Application

This product aims at eliminating oil vapor in the air line.

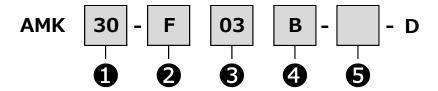
3. Standard specifications

Model No.	AMK20	AMK30	AMK40		
Port size	1/8, 1/4	1/4, 3/8	1/4, 3/8, 1/2		
Fluid		Compressed air			
Ambient and o fluid temperature	-5	to 60 °C (No freezin	g)		
Proof pressure		1.5MPa			
Max. operating pressure		1.0MPa			
Min. operating pressure		0.05MPa			
Outlet side oil concentration Note 1)		0.003mg/m³ or less			
Compressed air purity class Note 2)	ISO	8573-1:2010 [1:4:1]	Note 3)		
Max. flow capacity Note 4)	300L/min (ANR)	750L/min(ANR)	1500L/min(ANR)		
Bowl material		Polycarbonate			
Bowl guard	Semi-standard (Steel) Standard(Polycarbonate)				
Weight	0.19kg	0.39kg	0.79kg		

Note 1) Conditions in accordance with below and in addition to the conditions above.

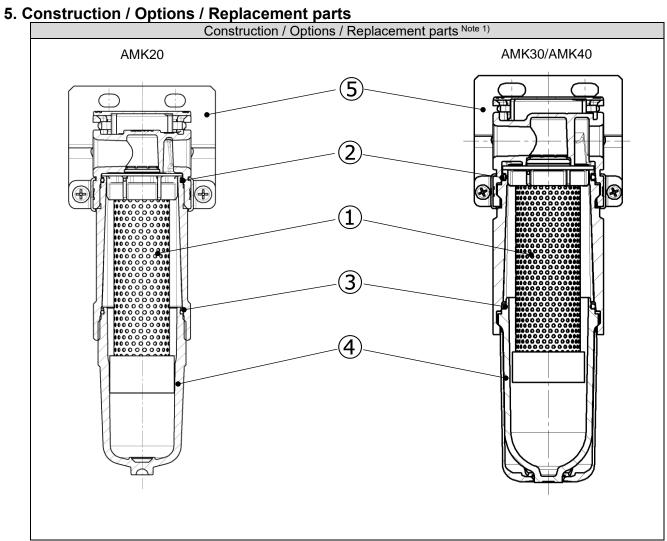
- The micro mist separator AMD or AFD series or the micro mist separator with pre-filter(AMH series) is installed on the inlet side.
- · The air flow capacity, upstream pressure, and oil concentration on the filter inlet side are stable.
- · New element
- Note 2) Based on ISO 8573-1:2010 Compressed air Part1: Contaminants and purity classes.
- Note 3) The compressed air quality class on the inlet side is [1:4:2].
- Note 4) Inlet pressure: 0.7 MPa. Flow at 20°C, atmospheric pressure, and 65% of relative humidity .

4. How to Order



					0			
			Symbol	Details		Body size		
						20	30	40
				Nil	Rc	•	•	•
9		Thre	ead type	N	NPT	•	•	•
				F	G	•	•	•
				01	1/8	•	-	-
8		Do	ort size	02	1/4	•	•	•
Ð		1 0	71 SIZE	03	3/8	-	•	•
				04	1/2	-	-	•
4	Options	а	Mounting	Nil	Without mounting option		•	•
)	Opt	а	Mounting	В	With bracket	•	•	•
				Nil	Polycarbonate bowl	•	•	•
				2	Metal bowl	•	•	•
		b	Bowl	6	Nylon bowl	•	•	•
	dard			С	With bowl guard	•	-	-
6	Semi-standard			6C	With bowl guard (Nylon bowl)	•	-	-
	emi-	С	Flow	Nil	Flow direction: left to right	•	•	•
	Š		direction	R	Flow direction: Right to left	•	•	•
			Pressure unit	Nil	Pressure unit: MPa Temp. unit: °C	•	•	•
		d	Temperature unit	Z	Pressure unit: psi Temp. unit: °F	ONote 2)	ONote 2)	ONote 2)

Note 1) For ② Options and ③ Semi-standard : Select one each for a to d. Note 2) O: For NPT thread type only.



Replacement parts

Component No.	Parts description		Component number	
110.		AMK20	AMK30	AMK40
1	Element	AMK24P-060AS	AMK34P-060AS	AMK44P-060AS
2	Bowl seal	C22FP-260S	C32FP-260S	C42FP-260S
3	Down Seal	02211-2000	03211-2000	04211-2000
4	Bowl assembly	Refer to [6. Bowl assembly specifications] (P10 to P12).		

Note 1) The numbers in the table and construction are consistent with the number in [9. How to Replace the Components] (P15-21) and [10. Disassembly Drawing] (P22).

Options

Component number	Parts description	Component number			
		AMK20	AMK30	AMK40	
5	Bracket assembly Note 2)	AF24P-070AS	AF34P-070AS	AF44P-070AS	

Note 2) Refer to the [7. Assembly of Optional parts] (P13) for mounting the bracket assembly.

6. Bowl assembly specifications

6-1. Bowl assembly for AMK20

Semi-standard	embly for AMK20 -	6	С	6C
Appearance and part No.	Semi-standard symbol: "-" (Standard) Port thread type Rc C2SF-D-X401 NPT C2SF(-Z)-D-X40 Semi-standard symbol: "6" Port thread type Rc Q2SF-6-A-X40 RC C2SF-6-A-X40 RC C2SF-6-A-X40	1	Semi-standard symbol: Port thread	"C" D. D. "6C" D.
Semi-standard symbol	2			
Appearance and part No.	Semi-standard symbol: "2" Port thread type Rc C2SF-2-A-X401 NPT C2SF-2(Z)-A-X401			

Note 1) Part No. 4 includes Bowl seal 3. Refer to [10. Disassembly Drawing] (P23).

Note 2) "Z" in Part No. ④ indicates standard specifications. The pressure unit: psi. The temperature unit: oF.

Note 3) Refer to [4. How to Order] (P9) for option and semi-standard symbols.

	sembly for AMK30	
Semi-standard symbol	-	6
Appearance and part No.	Semi-standard symbol (Standard) Port thread 4 Part Notype Rc C3SK-E NPT C3SK(-Z) Semi-standard symbol Port thread 4 Part Notype Rc C3SK-6-G NPT C3SK-6-(Z)	No. D D-D DI: "6" No.
Semi-standard symbol		2
Appearance and part No.	Semi-standard symbol Port thread	No. X401

Note 1) Part No. ④ includes Bowl seal ③. Refer to [10. Disassembly Drawing] (P23).

Note 2) "Z" in Part No. ④ indicates standard specifications. The pressure unit: psi. The temperature unit: °F. Note 3) Refer to [4. How to Order] (P9) for option and semi-standard symbols.

6.2 Powl accombly for AMK10

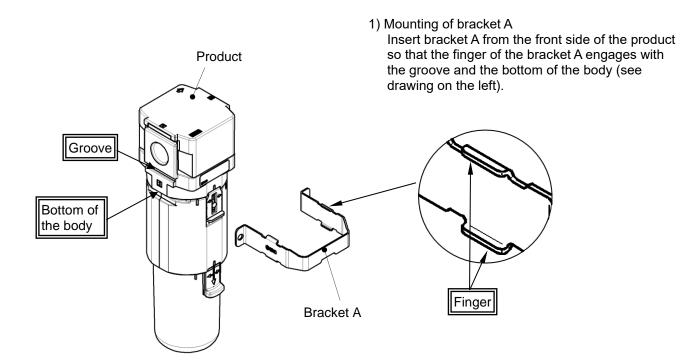
6-3. Bowl assembly for AMK40					
Semi-standard symbol	-	6			
Appearance and part No.	Semi-standard symbol: "-" (Standard) Port thread				
Semi-standard symbol	2				
Appearance and part No.	Semi-standard symbol: "2" Port thread 4 Part No. type Rc C4SF-2-A-X401 NPT C4SF-2(Z)-A-X401				

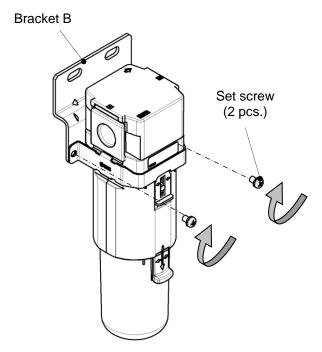
Note 1) Part No. ④ includes Bowl seal ③. Refer to [10. Disassembly Drawing] (P23).

Note 2) "Z" in Part No. ④ indicates standard specifications. The pressure unit: psi. The temperature unit: °F. Note 3) Refer to [4. How to Order] (P9) for option and semi-standard symbols.

7. Assembly of Optional parts

Bracket





2) Mounting of bracket B

Fix the bracket B with the set screw (2pcs.) included in the package. Refer to the table below for the tightening torque.

Line filter	Tools	Tightening torque
AMK20	· · · ·	
AMK30	Phillips screwdriver(+)	$0.75 \pm 0.2 \text{N m}$
AMK40	3crewanver(1)	

8. Troubleshooting

Refer to [9. How to Replace the Components] (P15 to 21) and [10. Disassembly Drawing] (P22).

Р	Problem		Possible causes	Countermeasure	Page for
Category	Failure		Possible Causes	Countermeasure	reference
Flow rate	As pressure drop is large, fluid does not flow.	1.	The element of the filter on the inlet side is clogged.	Replace the element of the filter on the inlet side.	-
	Oil is smelled from the outlet side.	1.	The element has reached the time for replacement.	Replace the element.	P15 to 16 P18 to 19
	Oil mist comes from the outlet side.	1.	The element of the filter on the inlet side has reached the time for replacement.	Replace the element of the filter on the inlet side and the element of the activated carbon filter.	P15 to 16 P18 to 19
Performance		2.	The level of fluid accumulated in the drain on the inlet side filter has reached the bottom of the element surface or higher.	Discharge the drain accumulated in the container and wipe off the oil content in the pipes. Then, replace the element of the activated carbon filter.	P15 to 16 P18 to 19
	Particles flow from the outlet side.	1.	From the filter installed on the inlet side, particles come out.	Replace the element of the filter on the inlet side and the element of the activated carbon filter.	P15 to 16 P18 to 19
	Air leaks between the body and joint.	1.	Breakage of joint seal.	Replace the bowl seal.	P17 P20 to 21
Air leakage	Air leaks between the joint and the bowl.	1.	Breakage of the bowl seal.	Replace the bowl seal.	P17 P20 to 21
	Air leakage from the bowl.	1.	Bowl is damaged.	Replace the bowl assembly.(If the solvent is considered to be harmful, replacement to the metal bowl is recommended)	P17 P20 to 21

Note 1) Fluorine grease is recommended when applying additional grease.

9. How to Replace the Components

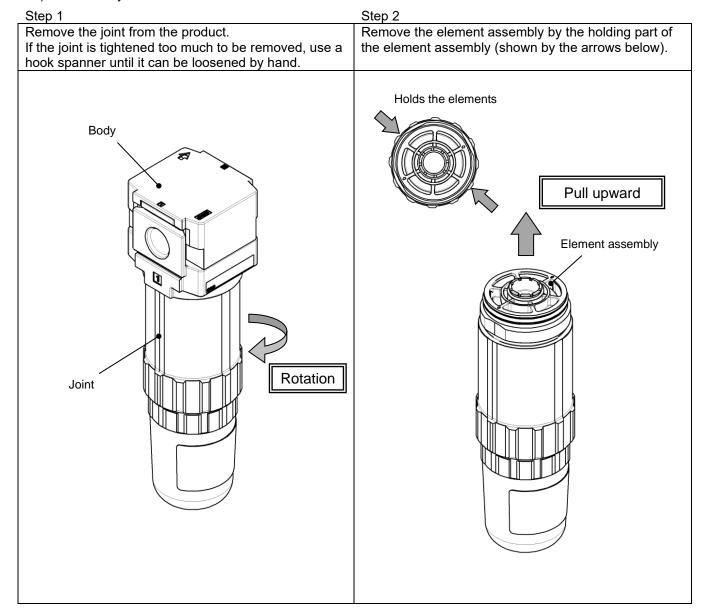
⚠ Warning

Before replacement, make sure that no pressure remains in the equipment.

After replacement, confirm that the product satisfies specific functions and no external leakage occurs before operating it.

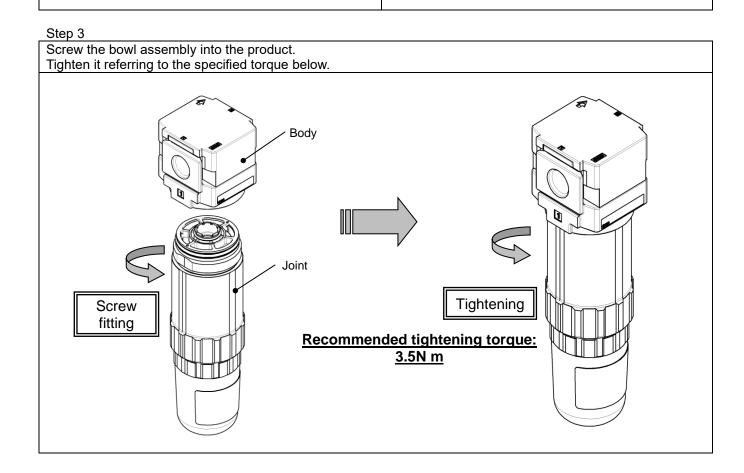
9-1. Element Replacement for AMK20

1) Disassembly



2) Assembly

Step 1 Step 2 Aligh 2 arrow marks and 2 recessed areas of the joint. Press the element downward until the element and joint come into contact with each other completely. If they are forced to be inserted without aligning, the element will break. Arrow mark Assemble of the element (2 places) 1 Element assembly Recessed area of the joint (2 places) **Joint** Make sure that the joint and element contact completely 1 Element assembly 4 Bowl assembly



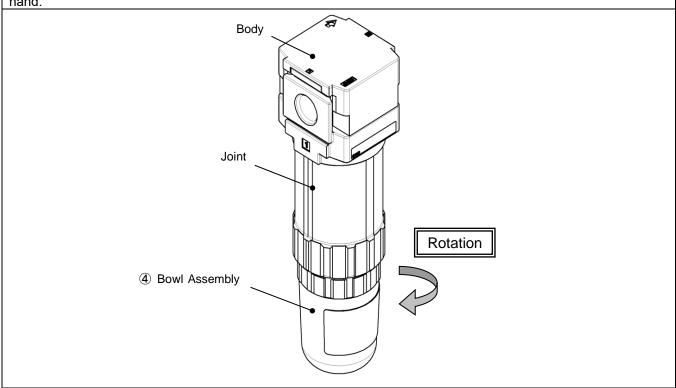
9-2. Bowl Assembly Replacement for AMK20

1) Disassembly

Step 1

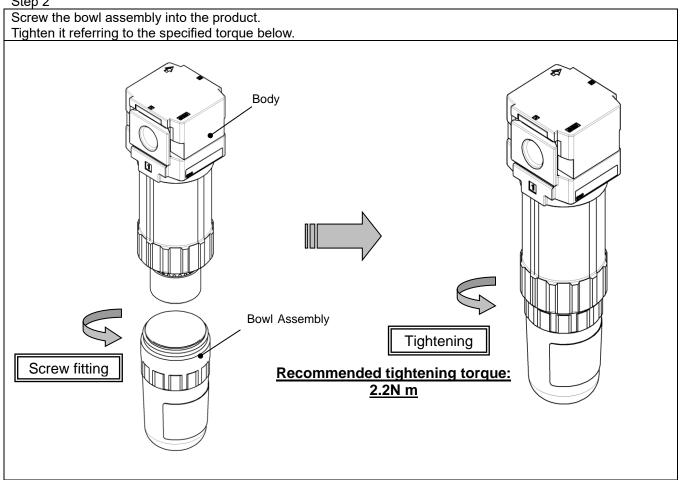
Remove the bowl assembly from the product.

If the bowl assembly is tightened too much to be removed, use a hook spanner until it can be loosened by



2) Assembly

Step 2

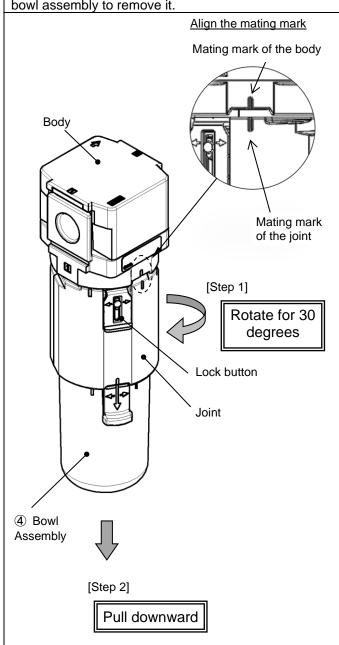


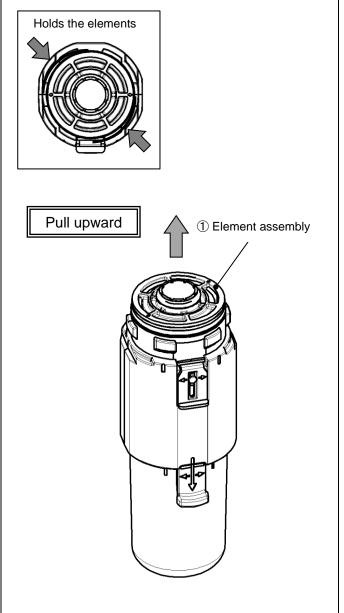
1) Disassembly

Step 1 Step 2

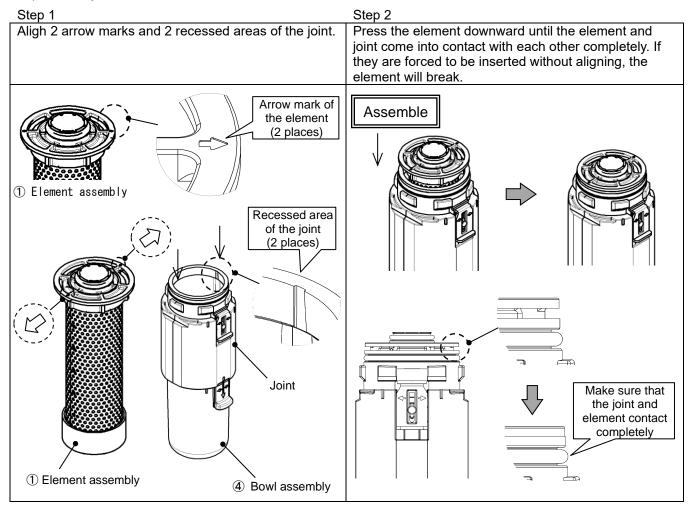
To remove the joint from the body, rotate for approx. 30 degrees with the lock button held down. Align the mating mark of the body and joint and pull down the bowl assembly to remove it.

Hold the element as shown below and pull upward to remove the element assembly.





2) Assembly

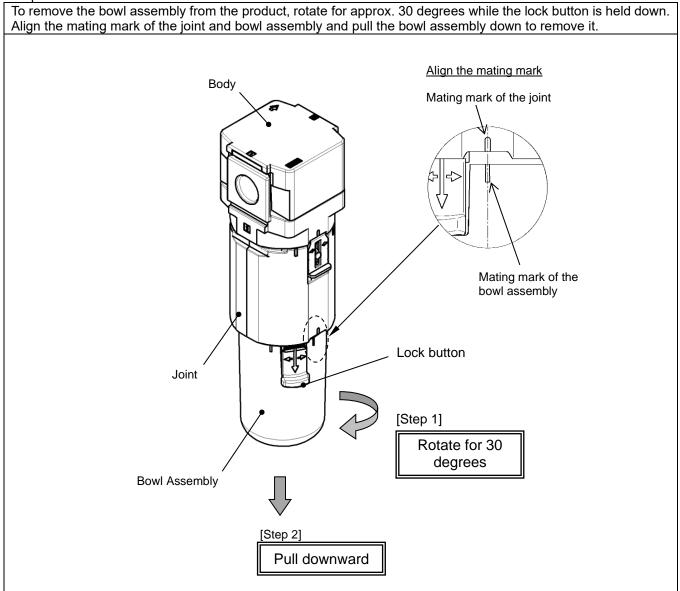


Step 3 While the lock button is held down, mount the body and joint where their marks meet. Rotate the joint until the lock button meets the body groove (approx. 30 degrees). Mating mark of the body [Step 1] Assemble Body [Step 2] Mating mark of the joint 30 degrees Rotation Lock button Make sure that the lock button is locked to the grove of the product before pressurizing it. Joint

9-4. Bowl Assembly Replacement for AMK30 / AMK40

1) Disassembly

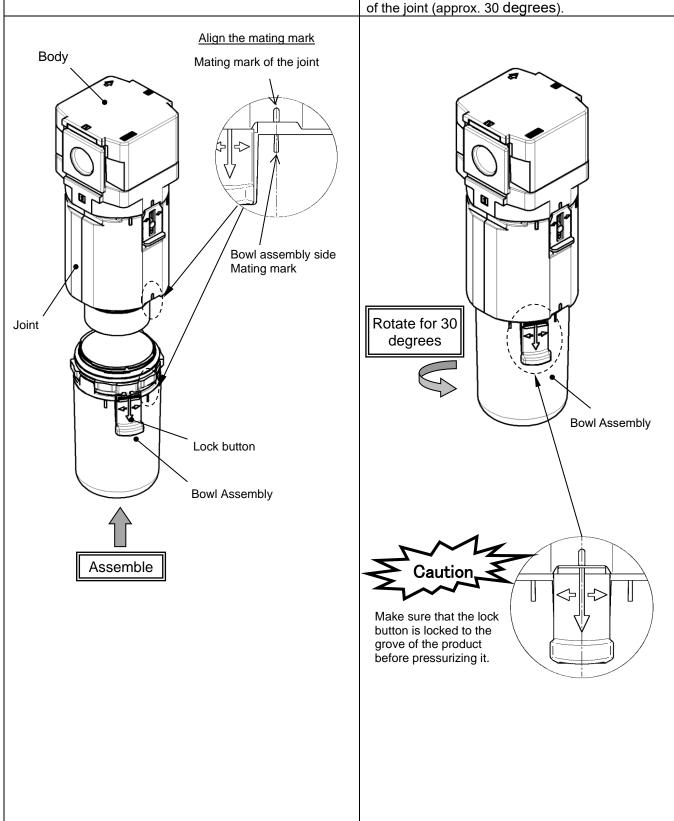
Step 1



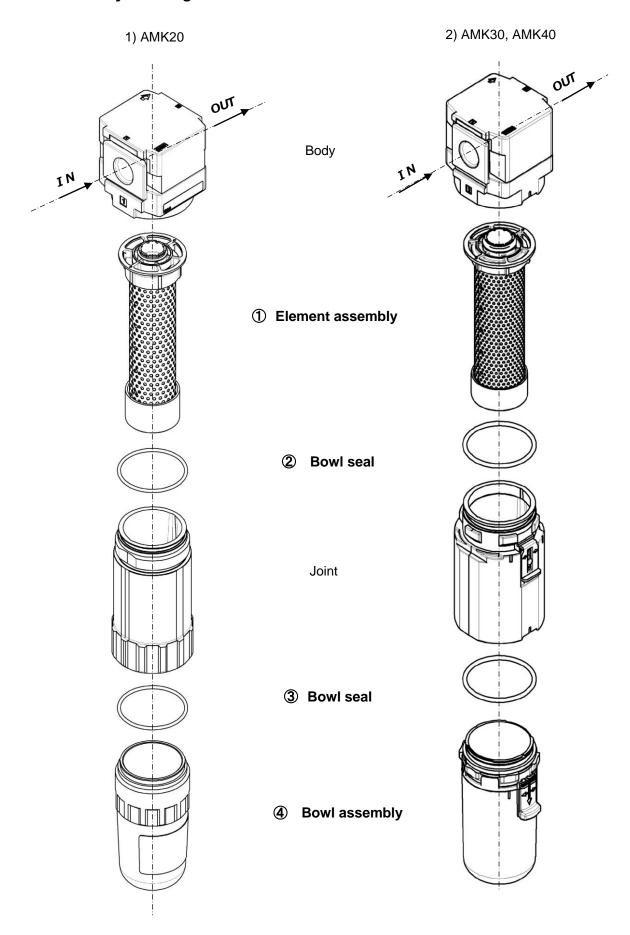
Step 1 Step 2

Mount the bowl assembly at the position where the mating mark of the joint and bowl assembly meet.

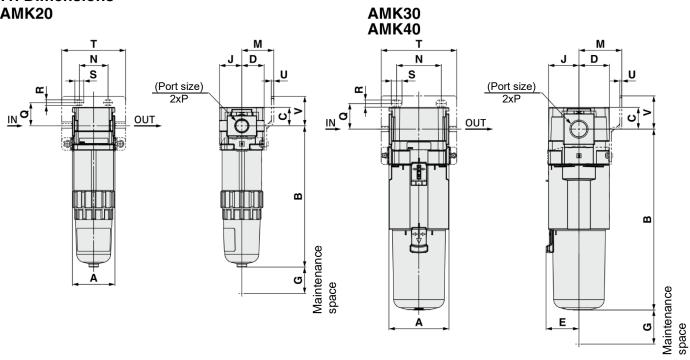
While the lock button is held down, rotate the bowl assembly so that the lock button meets the groove of the joint (approx. 30 degrees)



10. Disassembly Drawing



11. Dimensions AMK20



Model No.	Standard specifications								Bracket mount							
	Р	Α	В	С	D	Е	G	J	М	N	Q	R	S	т	U	v
AMK20	1/8·1/4	40	133.9	17.5	21	-	25	21	30	27	22	5.4	8.4	60	2.3	28
AMK30	1/4·3/8	53	167	21.5	26.5	30	35	26.5	41	35	25	6.5	13	71	2.3	32
AMK40	1/4·3/8·1/2	70	212.5	25.5	35.5	38.4	40	35.5	50	52	30	8.5	12.5	88	2.3	39

semi-standard bowl

	Semi-standard specifications				
Model No.	Metal bowl				
	В				
AMK20	139.1				
AMK30	167				
AMK40	212.4				

Revision history

1st edition: Octorber 2020 Revision: December 2021 Revision: March 2024 Revision: March 2025

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