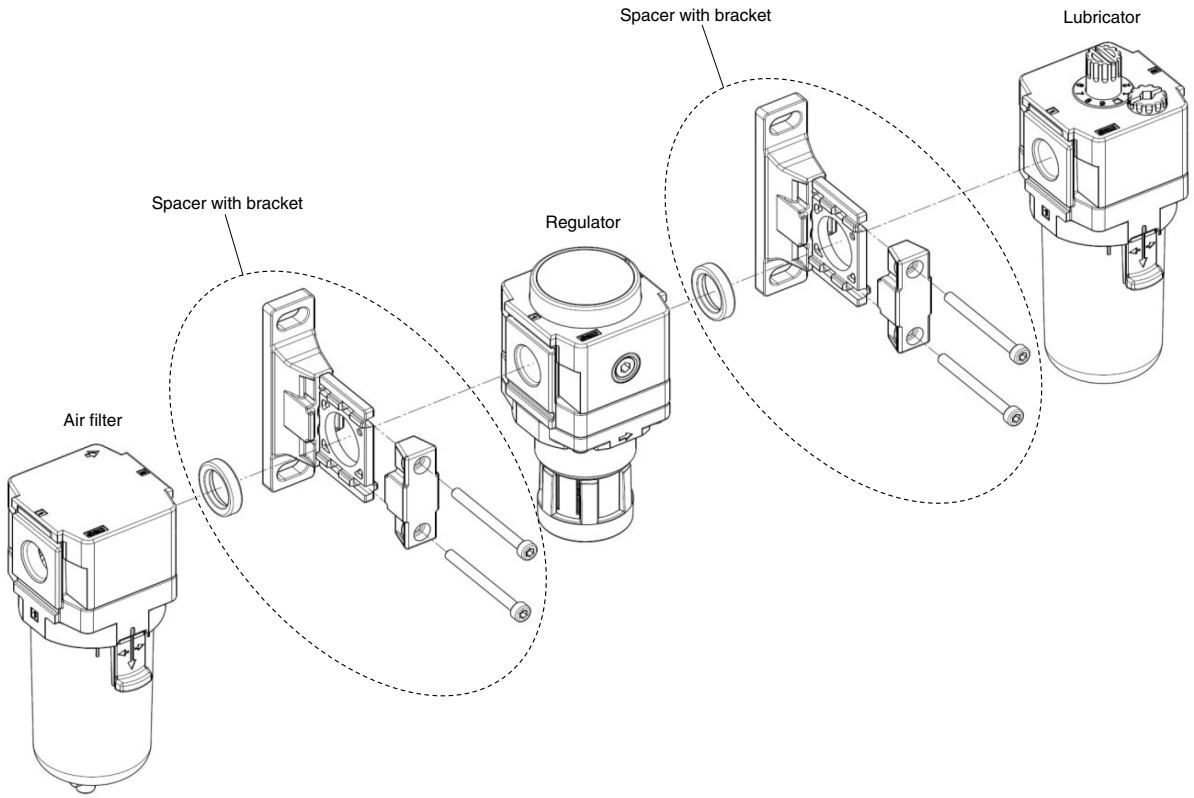
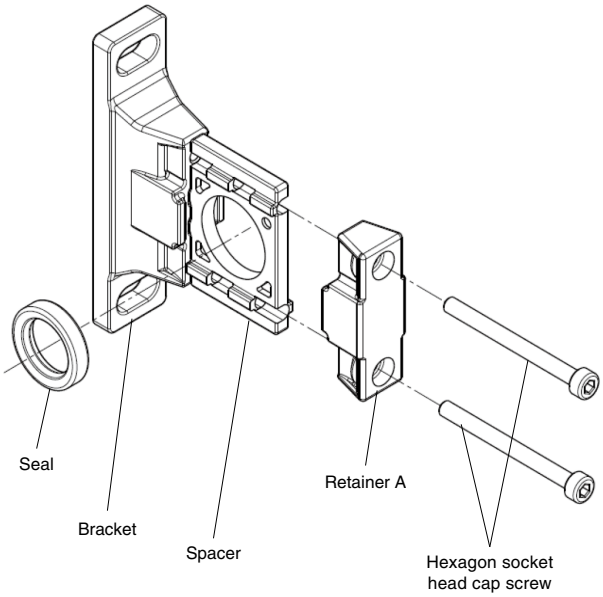
Replacement Procedure
Modular F.R.L. Pressure Control Equipment

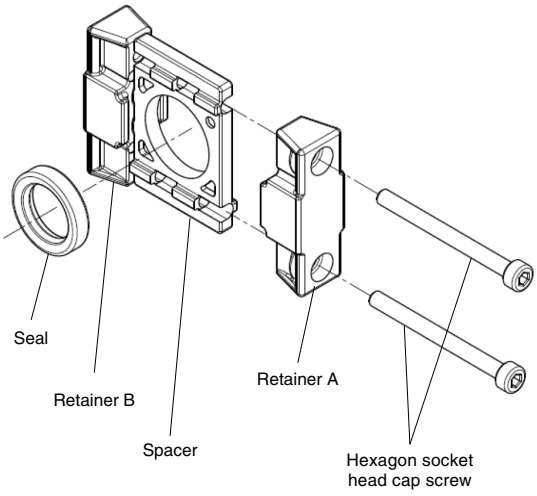
1) F.R.L. units


Spacer with bracket
Lubricator
Spacer with bracket
Regulator
Air filter

2) Spacer with bracket



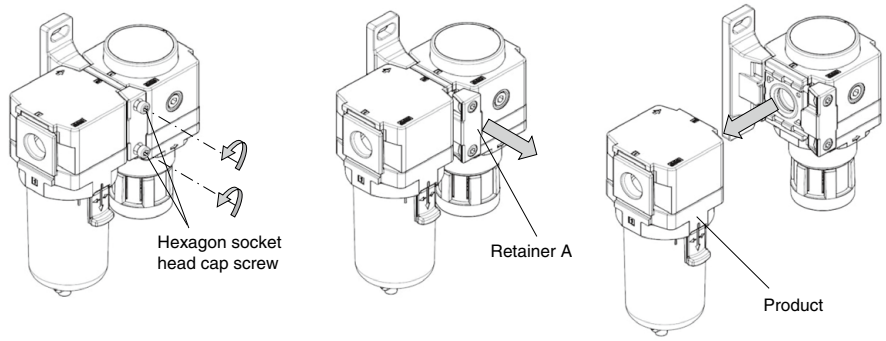
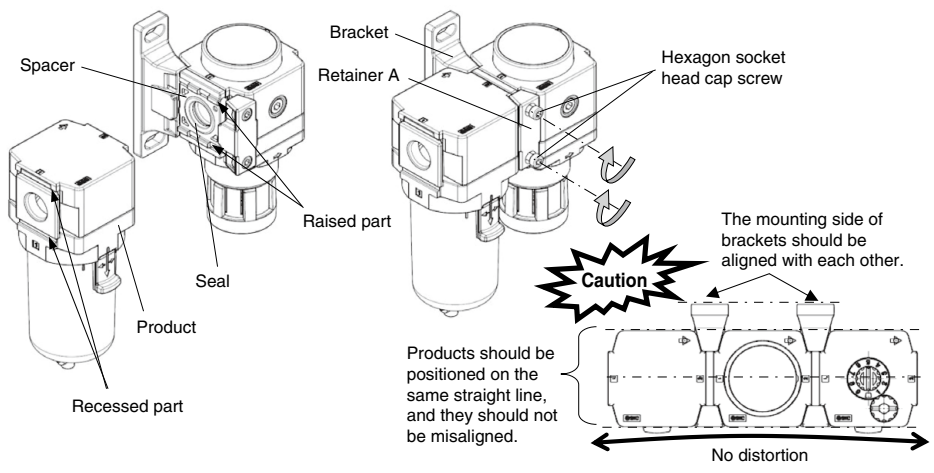
3) Spacer



⚠Warning

- Before replacement, ensure that the regulator is not pressurized.
- Also, make sure to loosen the knob of the regulator or filter regulator so that the set pressure is zero.
- After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

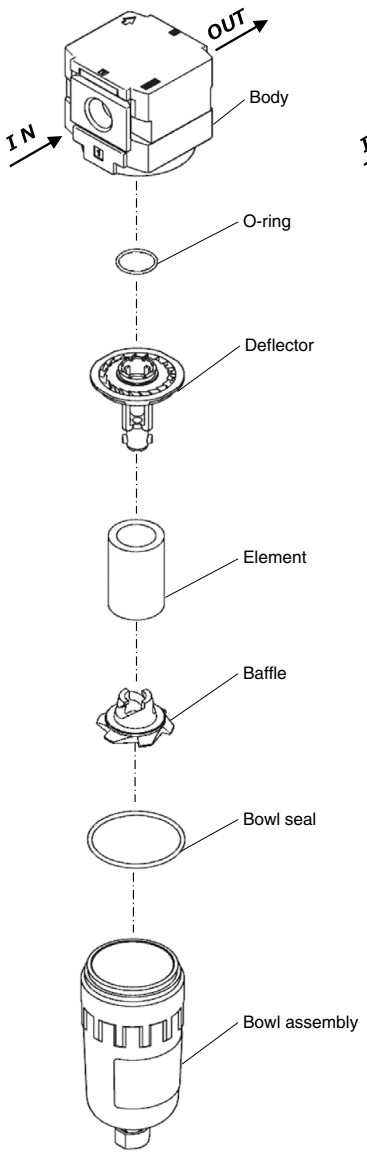
1. Air Combination

Applicable model	Process	Procedure	Tools	Check item
AC20-D AC30-D AC40-D AC50-D AC60-D	Disassembly	1) Untighten the 2 hexagon socket head cap screws with a hexagon wrench to loosen retainer A.	Hexagon wrench Nominal: AC20-D: 2 AC30-D, AC40-D, AC40-06-D: 3 AC50-D, AC60-D: 4	—
		2) Remove the product.	—	—
				
	Process	Procedure	Tools	Check item
	Assembly	3) Fit the raised part of the spacer to the recessed part of the product.	—	—
		4) Tighten retainer A with the 2 hexagon socket head cap screws temporarily.	—	—
		5) Tighten those 2 hexagon socket head cap screws with a hexagon wrench evenly. Refer to the criteria shown on the right for the tightening torque for the screws.	Hexagon wrench Nominal: AC20-D: 2 AC30-D, AC40-D, AC40-06-D: 3 AC50-D, AC60-D: 4	Tightening torque: AC20-D: 0.36 ± 0.036 N·m AC30-D, AC40-D: 1.2 ± 0.05 N·m AC40-06-D: 1.4 ± 0.05 N·m AC50-D, AC60-D: 3.0 ± 0.05 N·m
				

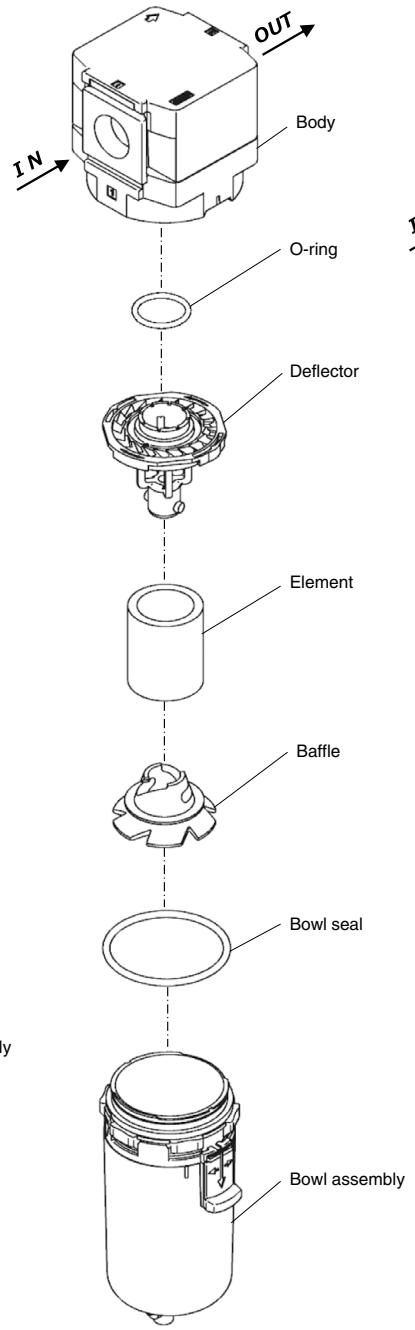
Note) For individual product, refer to the operation manual of each product.

AF20-D to 60-D Series Exploded View

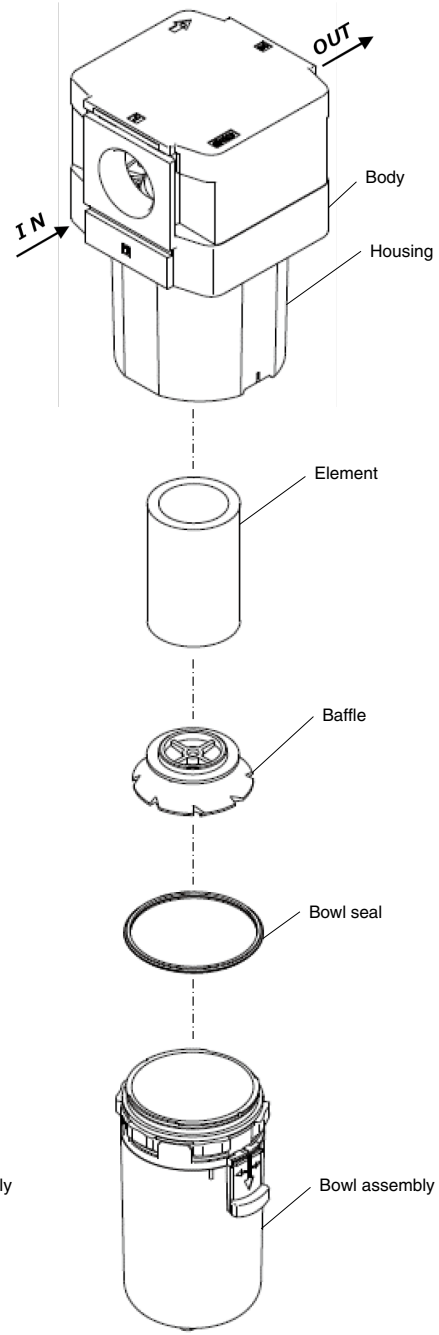
1) AF20-D



2) AF30-D/40-D

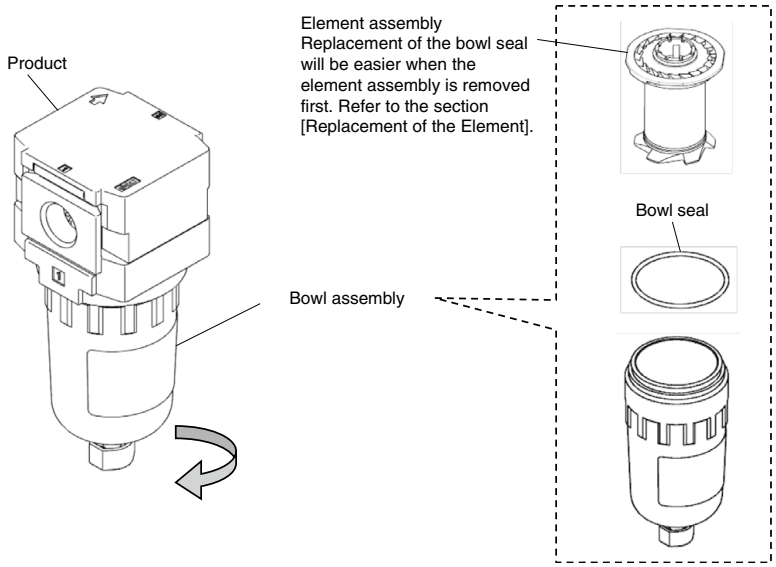


3) AF50-D/60-D

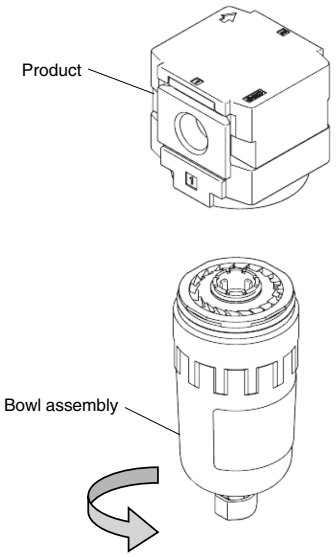


1. Replacement of Bowl Assembly

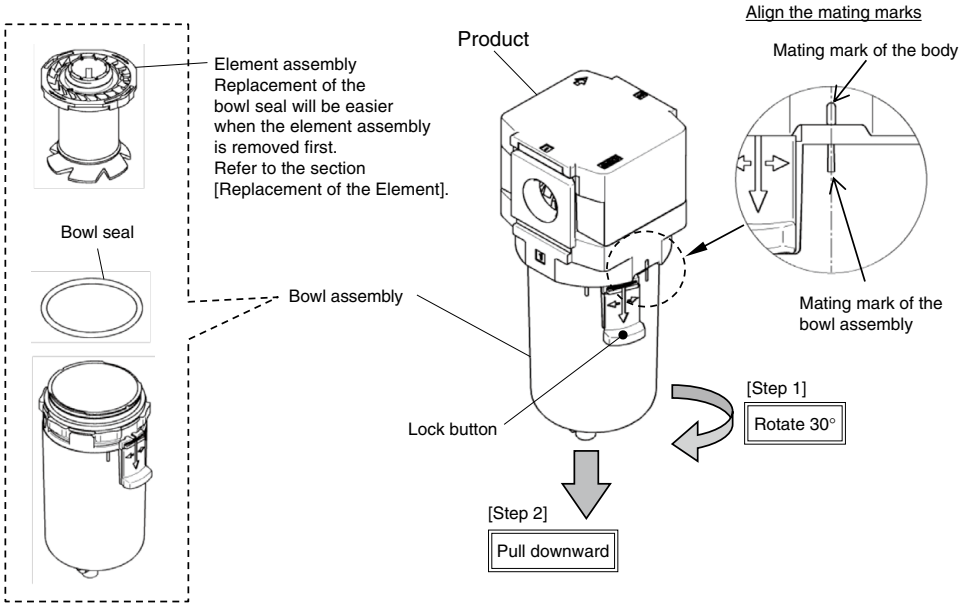
Applicable model	Process	Procedure	Tools	Check item
AF20-D	Disassembly	1) Remove the bowl assembly from the product. If the bowl assembly is tightened too much to be removed, use a hook wrench until it can be loosened by hand.	SMC's special wrench Part no.: 1129129	—



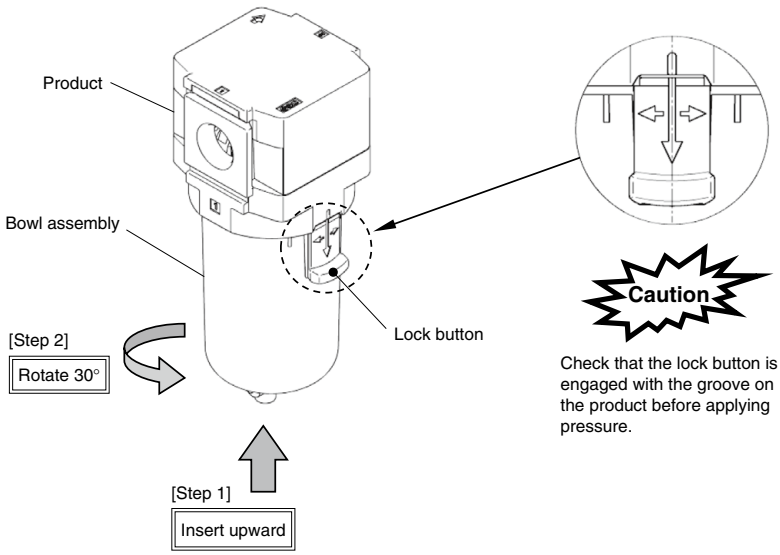
Applicable model	Process	Procedure	Tools	Check item
AF20-D	Assembly	1) Screw the bowl assembly into the product. Tighten it referring to the specified torque.	—	Referential tightening torque: 2.1 N·m



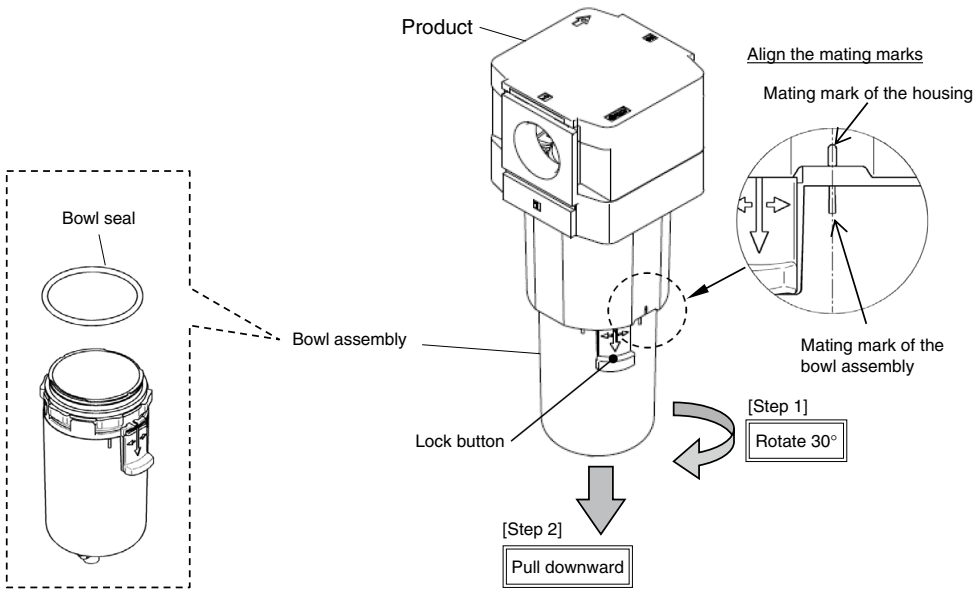
Applicable model	Process	Procedure	Tools	Check item
AF30-D AF40-D	Disassembly	1) Remove the bowl assembly from the product. While the lock button is held down, rotate the bowl assembly by approx. 30 degrees so that the mating marks of the body and bowl assembly meet each other. Then remove the bowl assembly by pulling it downward.	—	—



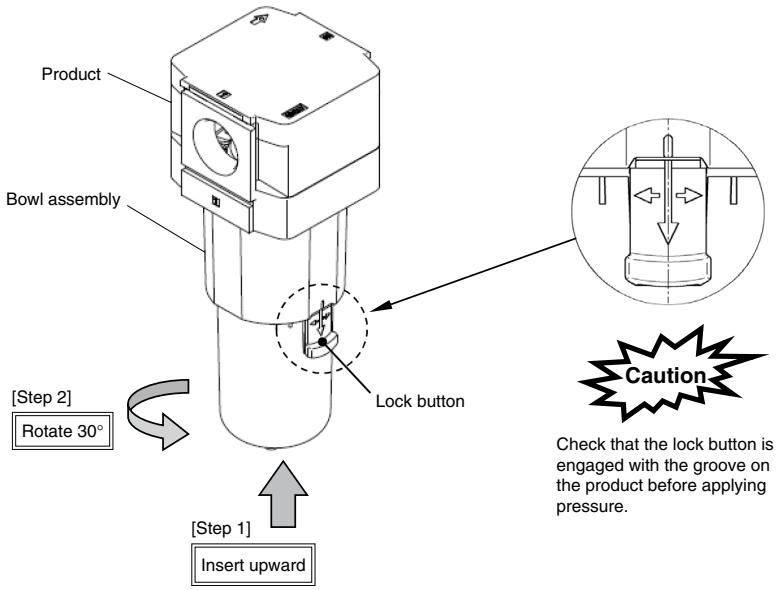
Process	Procedure	Tools	Check item
Assembly	1) Mount the bowl assembly to the product and rotate the bowl assembly until the lock button is locked in position as shown in the figure below.	—	—



Applicable model	Process	Procedure	Tools	Check item
AF50-D AF60-D	Disassembly	1) Remove the bowl assembly from the product. While the lock button is held down, rotate the bowl assembly by approx. 30 degrees so that the mating marks of the body and bowl assembly meet each other. Then remove the bowl assembly by pulling it downward.	—	—

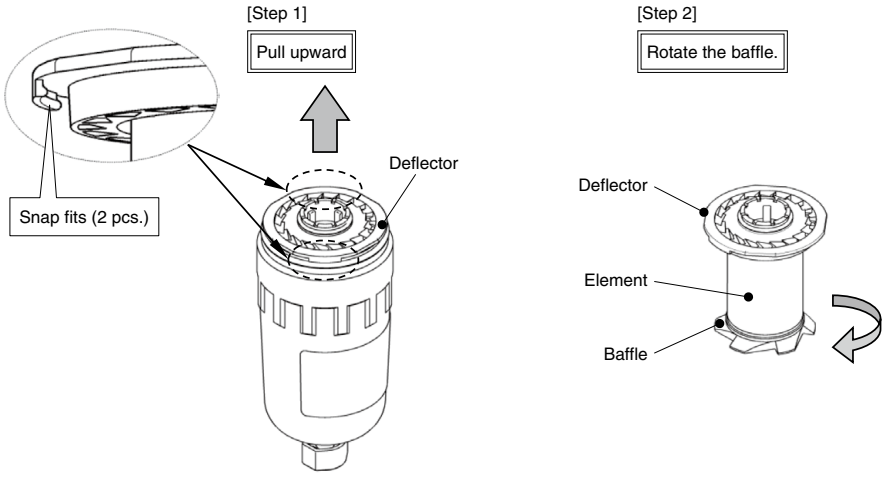


Process	Procedure	Tools	Check item
Assembly	1) Mount the bowl assembly to the product and rotate the bowl assembly until the lock button is locked in position as shown in the figure below.	—	—

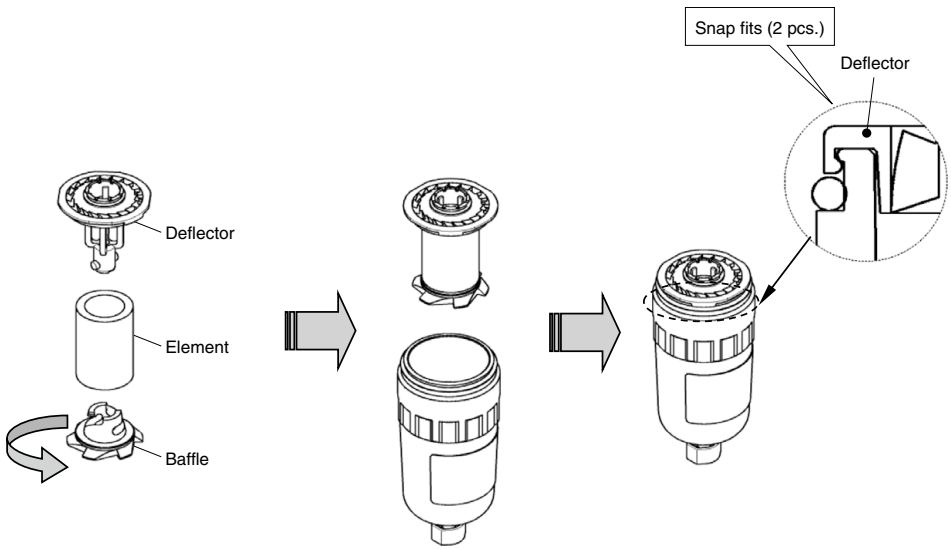


2. Replacement of the Element

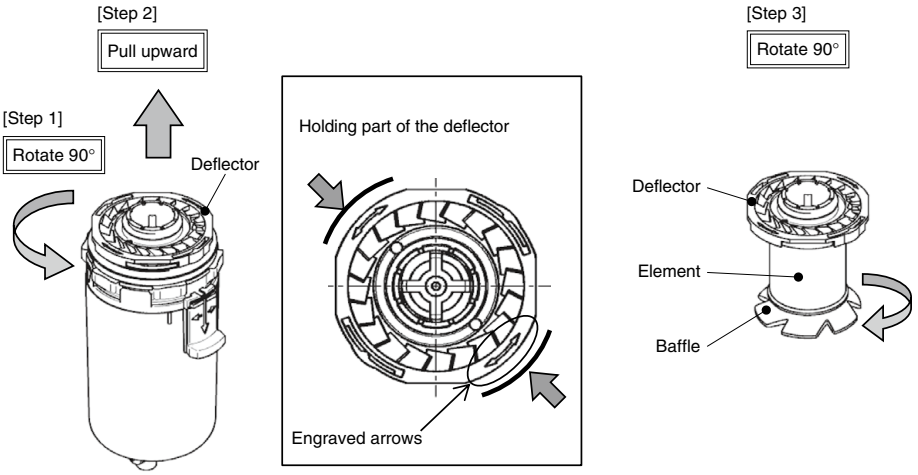
Applicable model	Process	Procedure	Tools	Check item
AF20-D	Disassembly	1) First remove the bowl assembly referring to the section [Replacement of the Bowl Assembly], then remove the snap fits (2 pcs.) of the deflector and pull upward to remove the element assembly. Rotate the baffle in the arrow direction to remove the element from the element assembly.	—	—



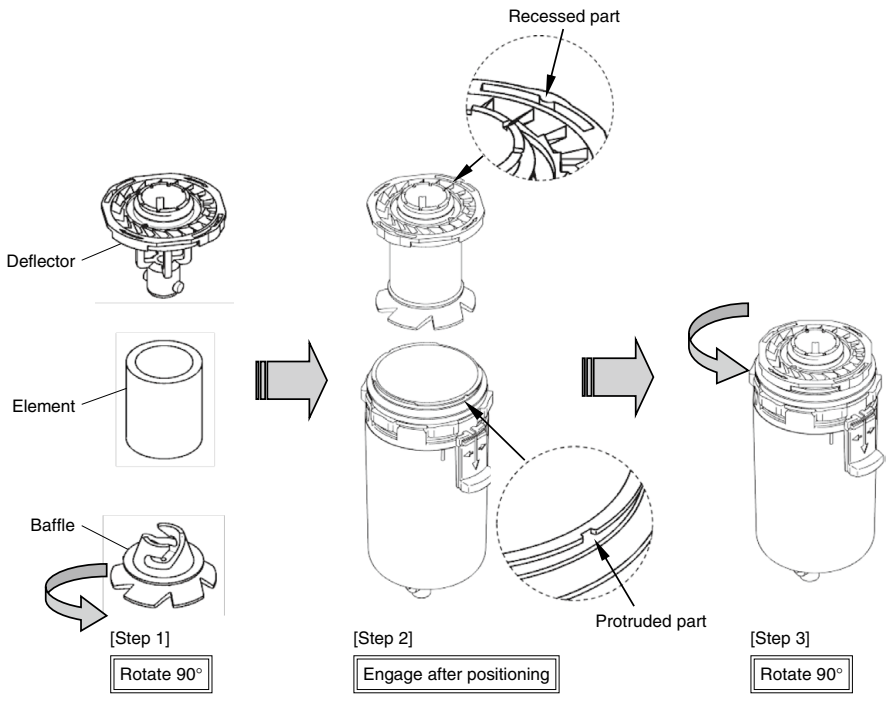
Process	Procedure	Tools	Check item
Assembly	1) Mount the element to the deflector and rotate the baffle in the arrow direction to mount the element to the baffle. Once the element and baffle are mounted, press the deflector downward until the snap fits (2 pcs.) are engaged with the bowl assembly. Mount the bowl assembly referring to section [Replacement of the Bowl Assembly] .	—	—

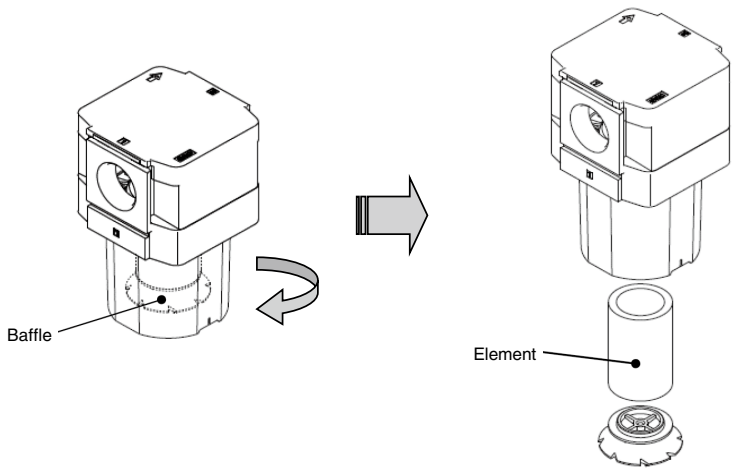
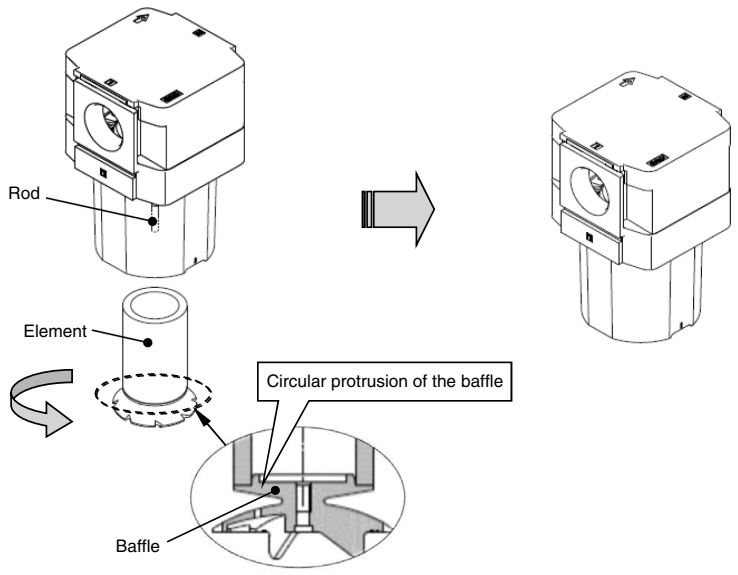


Applicable model	Process	Procedure	Tools	Check item
AF30-D AF40-D	Disassembly	1) First remove the bowl assembly referring to the section [Replacement of the Bowl Assembly], then remove the snap fits (2 pcs.) of the deflector and pull upward to remove the element assembly. Rotate the baffle in the arrow direction to remove the element from the element assembly.	—	—

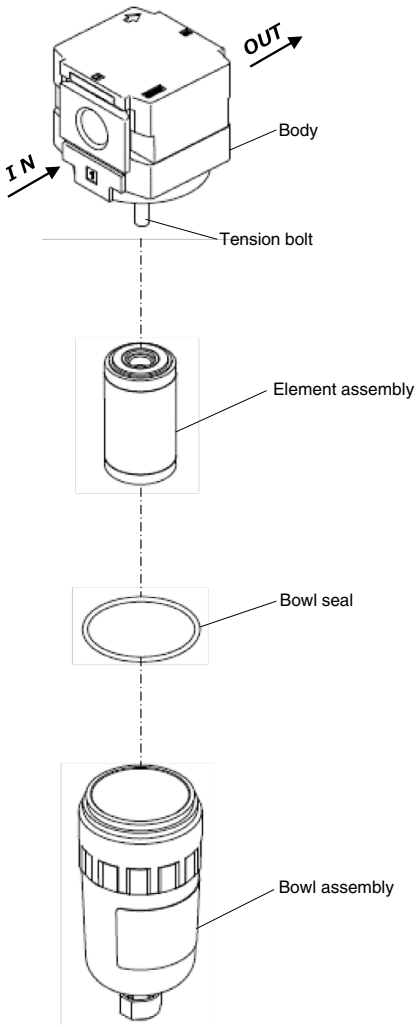


Process	Procedure	Tools	Check item
Assembly	1) Mount the element to the deflector and rotate the baffle in the arrow direction to mount the element to the baffle. Then insert the element assembly into the bowl assembly and rotate in either direction so that the protruded part of the element assembly engages with the recessed part of the bowl assembly. Mount the bowl assembly referring to the section [Replacement of the Bowl Assembly].	—	—

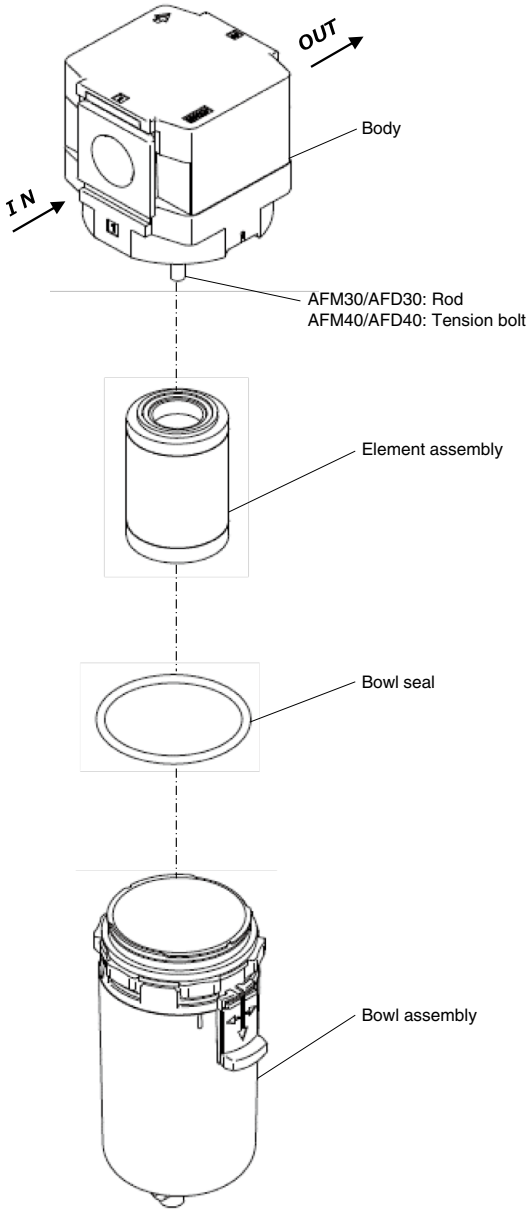


Applicable model	Process	Procedure	Tools	Check item
AF50-D AF60-D	Disassembly	1) Remove the bowl assembly referring to the section [Replacement of the Bowl Assembly] . When the bowl assembly is removed, rotate the baffle to the left to remove the element.	—	—
				
	Process	Procedure	Tools	Check item
	Assembly	1) Assemble the element and baffle. Then, assemble the baffle to the rod by rotating it to the right by hand. Rotate the baffle until the element is set without play. Then, rotate the baffle another 1/2 turn to the right. Refer to the tightening torque in the Criteria when tightening by hand. Mount the bowl assembly referring to the section [Replacement of the Bowl Assembly].	—	Referential tightening torque: 1.8 N·m
				

1) AFM20-D
AFD20-D



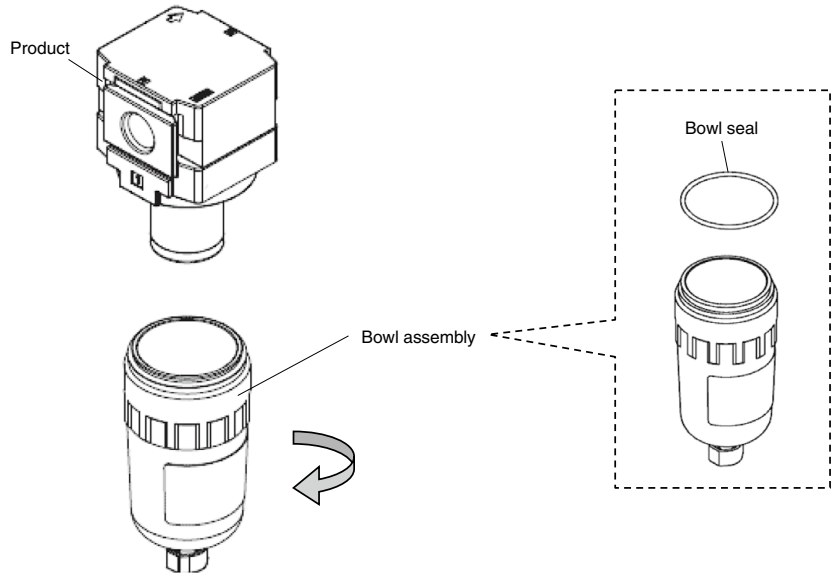
2) AFM30-D, AFM40-D
AFD30-D, AFD40-D



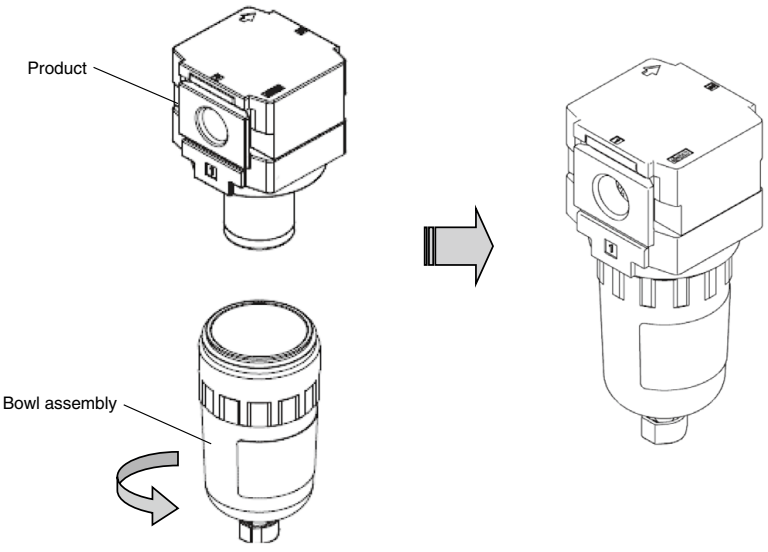
⚠Warning
Before replacement, ensure that the regulator is not pressurized.
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

1. Replacement of the Bowl Assembly

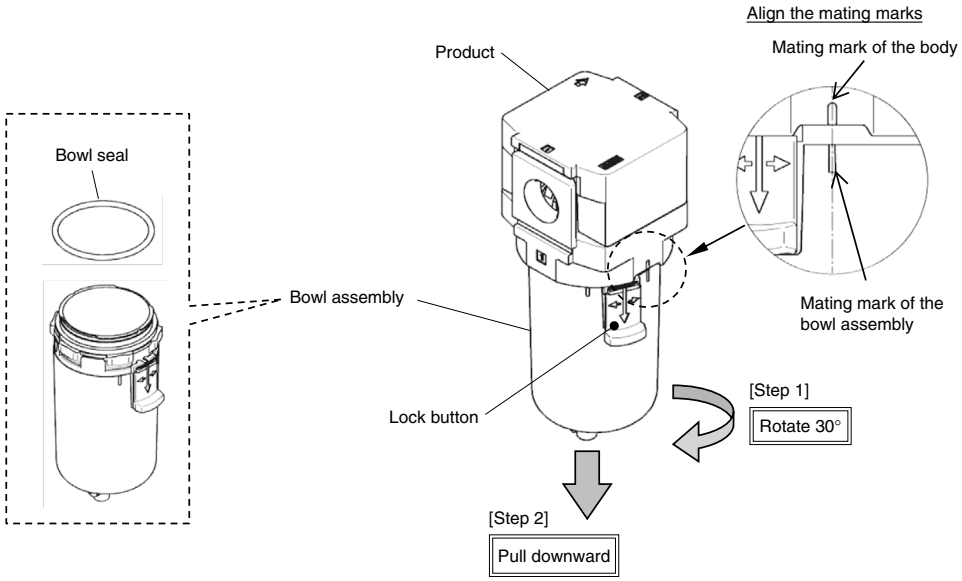
Applicable model	Process	Procedure	Tools	Check item
AFM20-D AFD20-D	Disassembly	1) Remove the bowl assembly from the product. If the bowl assembly is tightened too much to be removed, use a hook wrench until it can be loosened by hand.	SMC's special wrench Part no.: 1129129	—



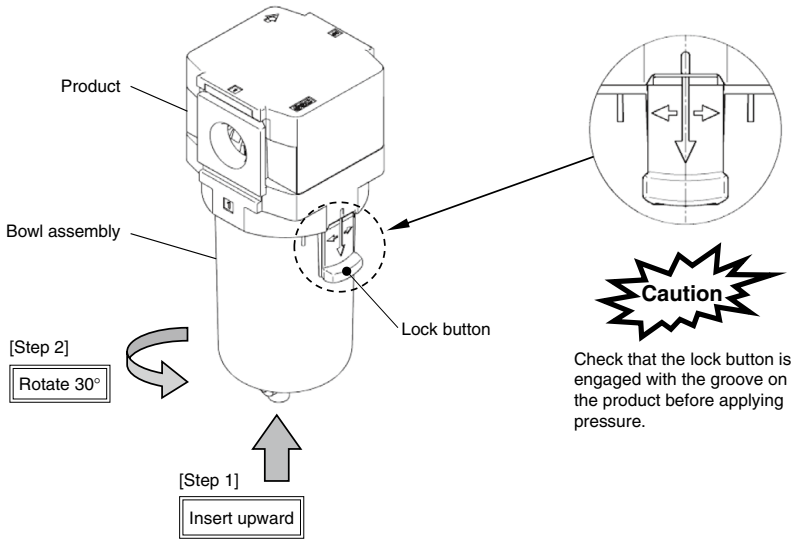
Process	Procedure	Tools	Check item
Assembly	1) Screw the bowl assembly into the product. Tighten it referring to the specified torque.	—	Referential tightening torque: 2.1 N·m



Applicable model	Process	Procedure	Tools	Check item
AFM30-D AFM40-D AFD30-D AFD40-D	Disassembly	1) Remove the bowl assembly from the product. While the lock button is held down, rotate the bowl assembly by approx. 30 degrees so that the mating marks of the body and bowl assembly meet each other. Then remove the bowl assembly by pulling it downward.	—	—

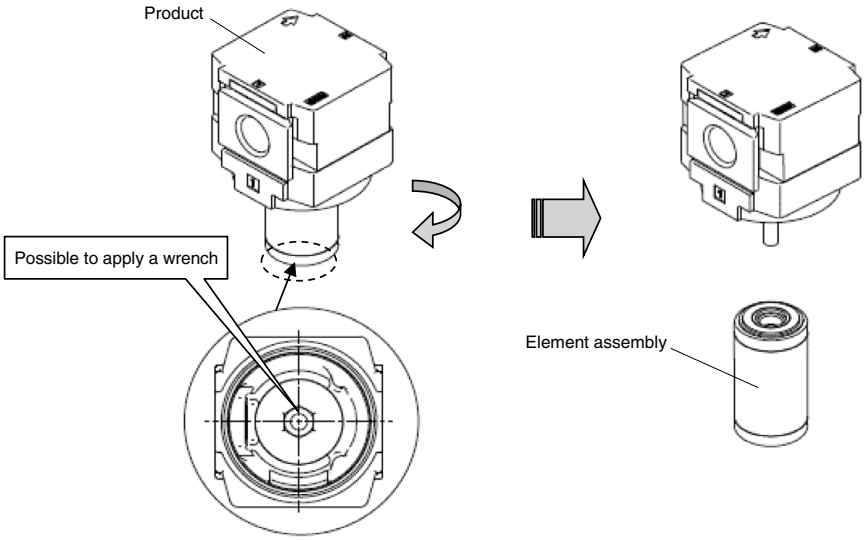


Process	Procedure	Tools	Check item
Assembly	1) Mount the bowl assembly to the product and rotate the bowl assembly until the lock button is locked in position as shown in the figure below.	—	—

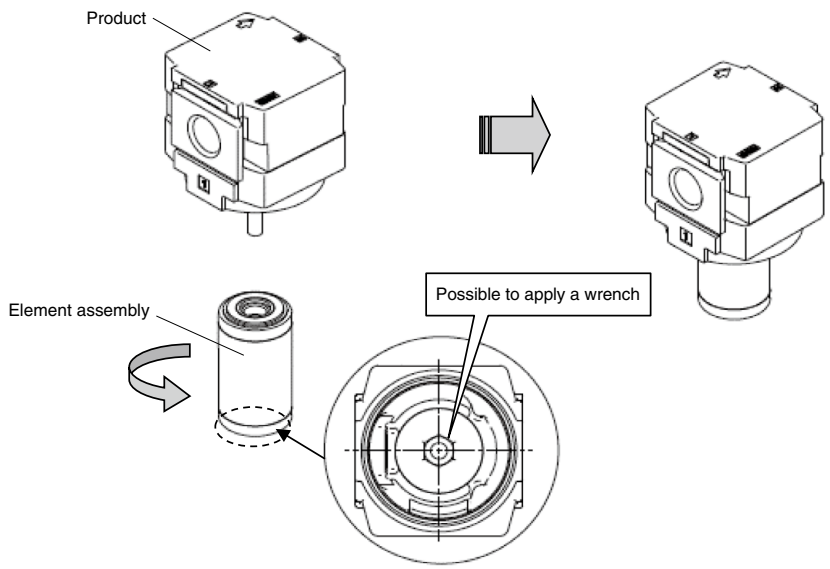


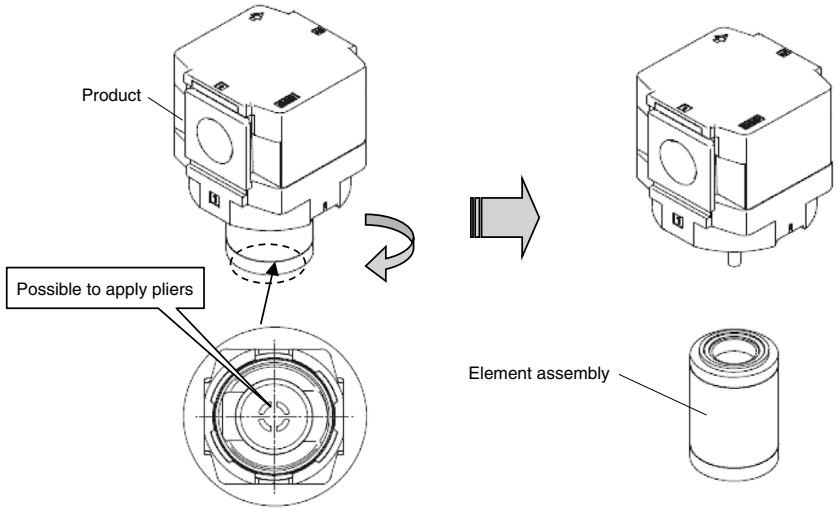
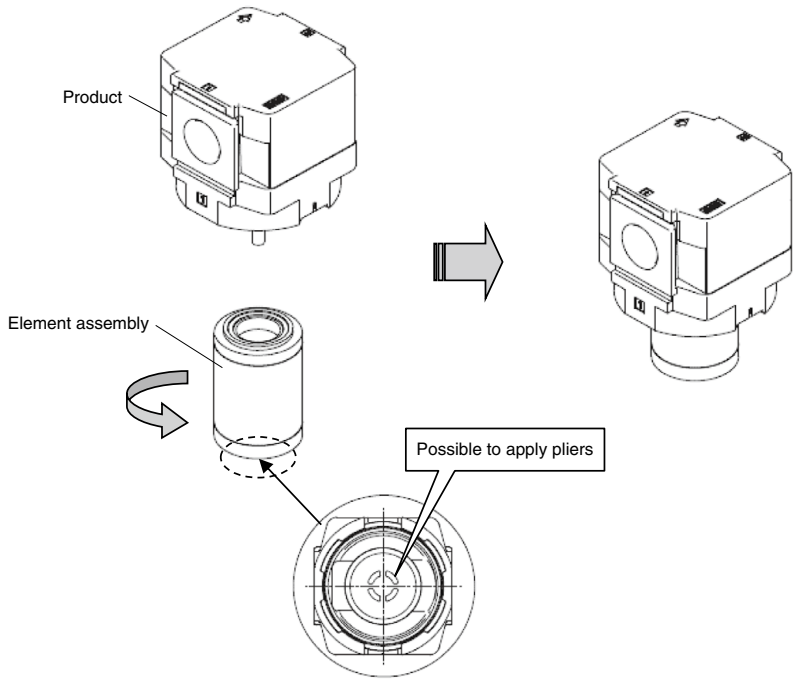
2. Replacement of the Element

Applicable model	Process	Procedure	Tools	Check item
AFM20-D AFD20-D	Disassembly	1) Remove the bowl assembly referring to the section [Replacement of the Bowl Assembly] . After that, remove the element assembly by rotating it counterclockwise using a wrench.	Wrench Nominal size: 7	—

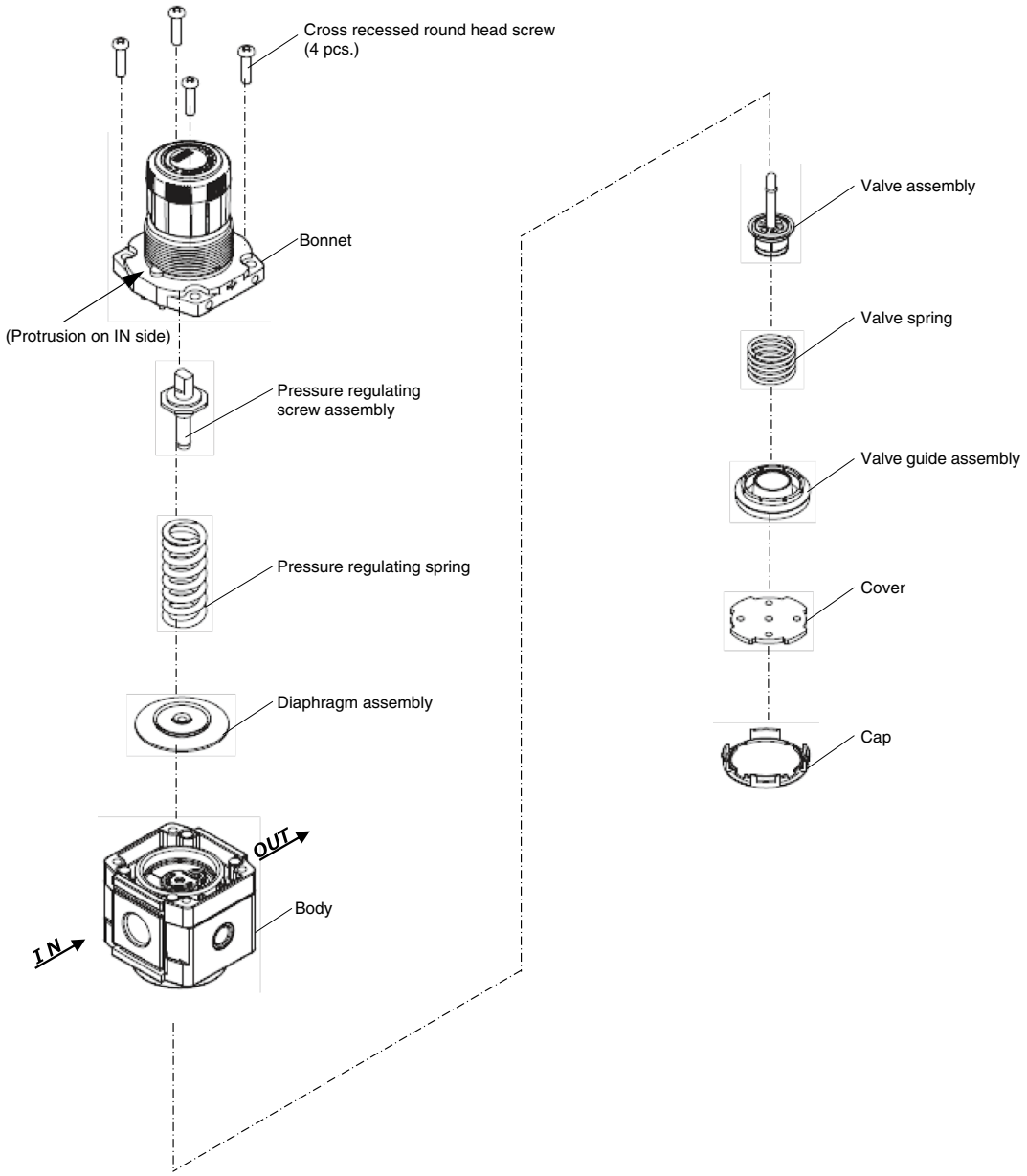


Process	Procedure	Tools	Check item
Assembly	1) Mount the element assembly by rotating it clockwise using a wrench. Tighten the element assembly referring to the torque specified on the right. Mount the the bowl assembly referring to the section [Replacement of the Bowl Assembly].	Wrench Nominal size: 7	Tightening torque: 0.49 ± 0.05 N·m

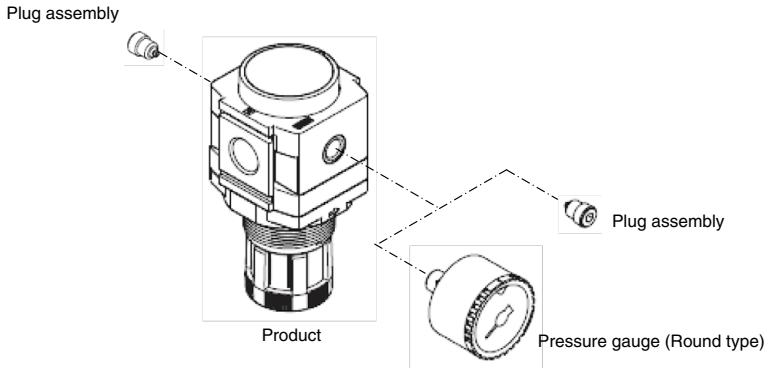


Applicable model	Process	Procedure	Tools	Check item
AFM30-D AFM40-D AFD30-D AFD40-D	Disassembly	1) Remove the bowl assembly referring to the section [Replacement of the Bowl Assembly]. After that, remove the element assembly by rotating it counterclockwise using round nose pliers.	Round nose pliers	—
				
	Process	Procedure	Tools	Check item
	Assembly	1) Mount the element assembly by rotating it clockwise using round nose pliers. Tighten the element assembly referring to the torque specified on the right. Mount the bowl assembly referring to the section [Replacement of the Bowl Assembly].	Round nose pliers	Tightening torque: **AFM30-D**: 1.47 ± 0.2 N·m **AFM40-D**: 1.96 ± 0.2 N·m
				

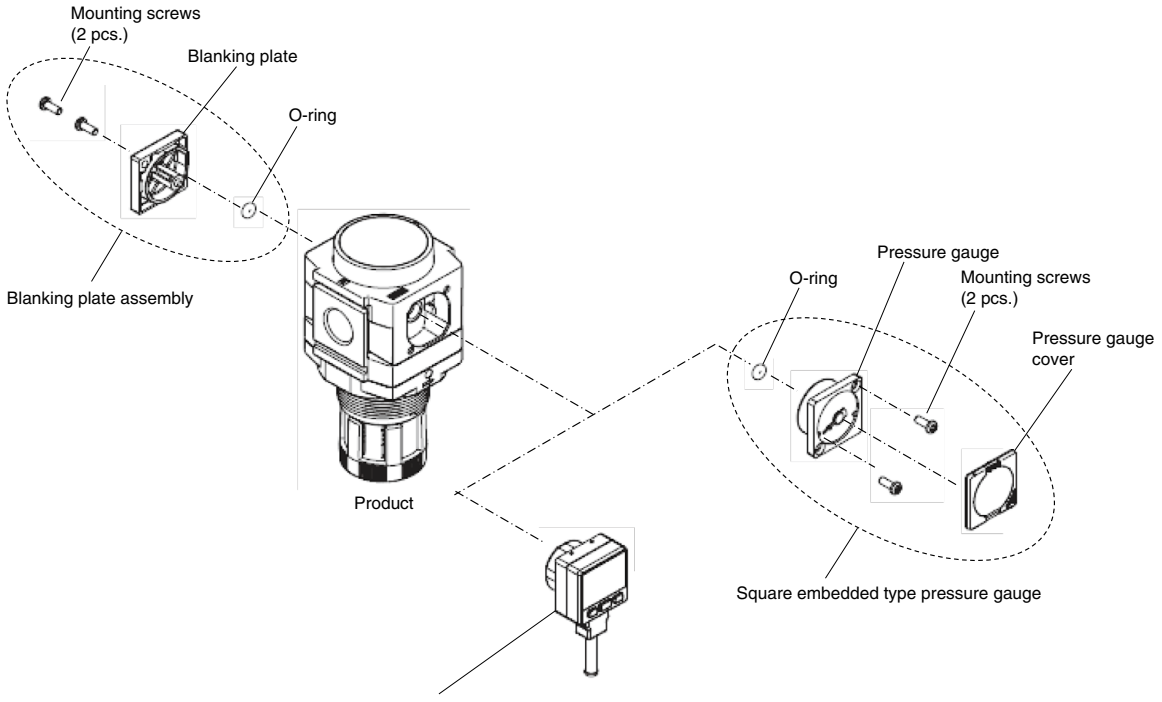
AR20-D/AR30-D/AR40-D/AR50-D/AR60-D



Pressure Gauge Port
[Applicable model: Without pressure gauge/With pressure gauge (Round type)]



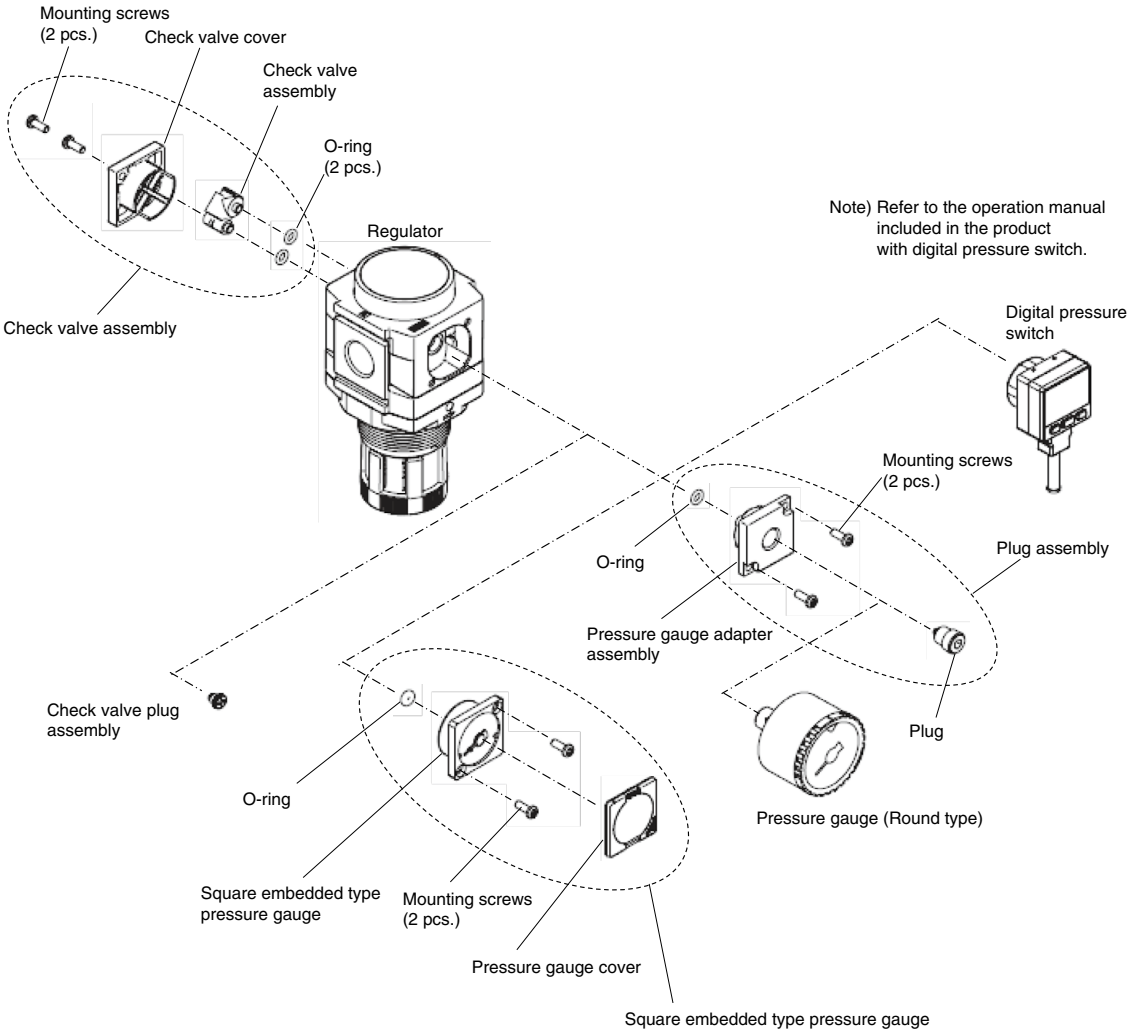
Pressure Gauge Port
[Applicable model: With square embedded type pressure gauge/With digital pressure switch]



Note) Refer to the operation manual included in the product with digital pressure switch.

· When the pressure gauge is mounted on the back of the product, swap all parts for the front and back.

Pressure Gauge Port [Applicable model: With backflow function]



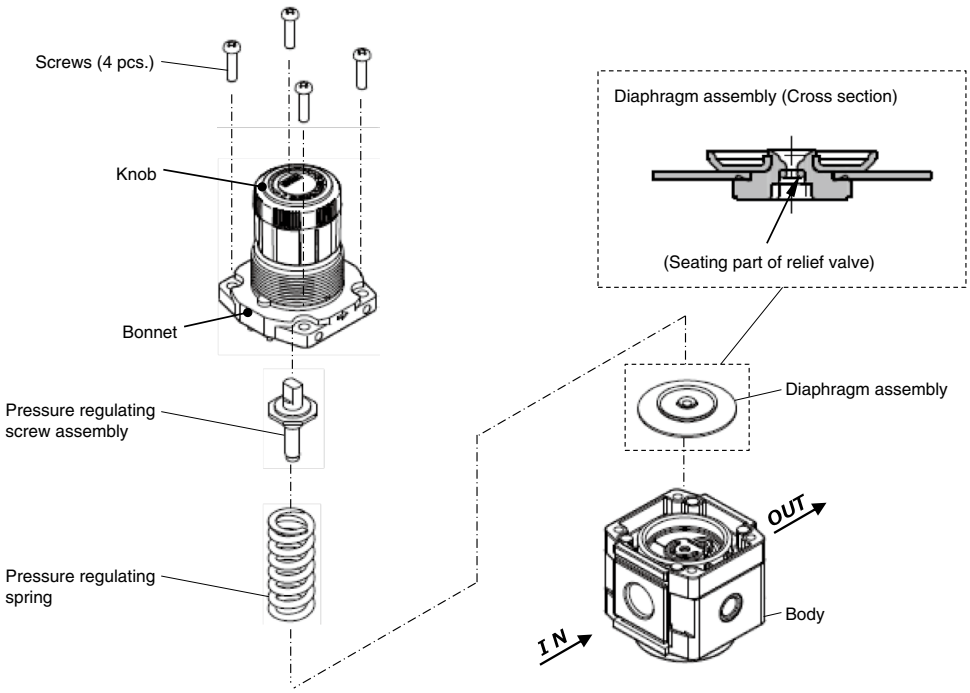
· When the pressure gauge is mounted on the back of the product, swap all parts for the front and back.

⚠Warning

Before replacement, ensure that the regulator is not pressurized.
Also, make sure to loosen the knob of the regulator so that the set pressure is zero.
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

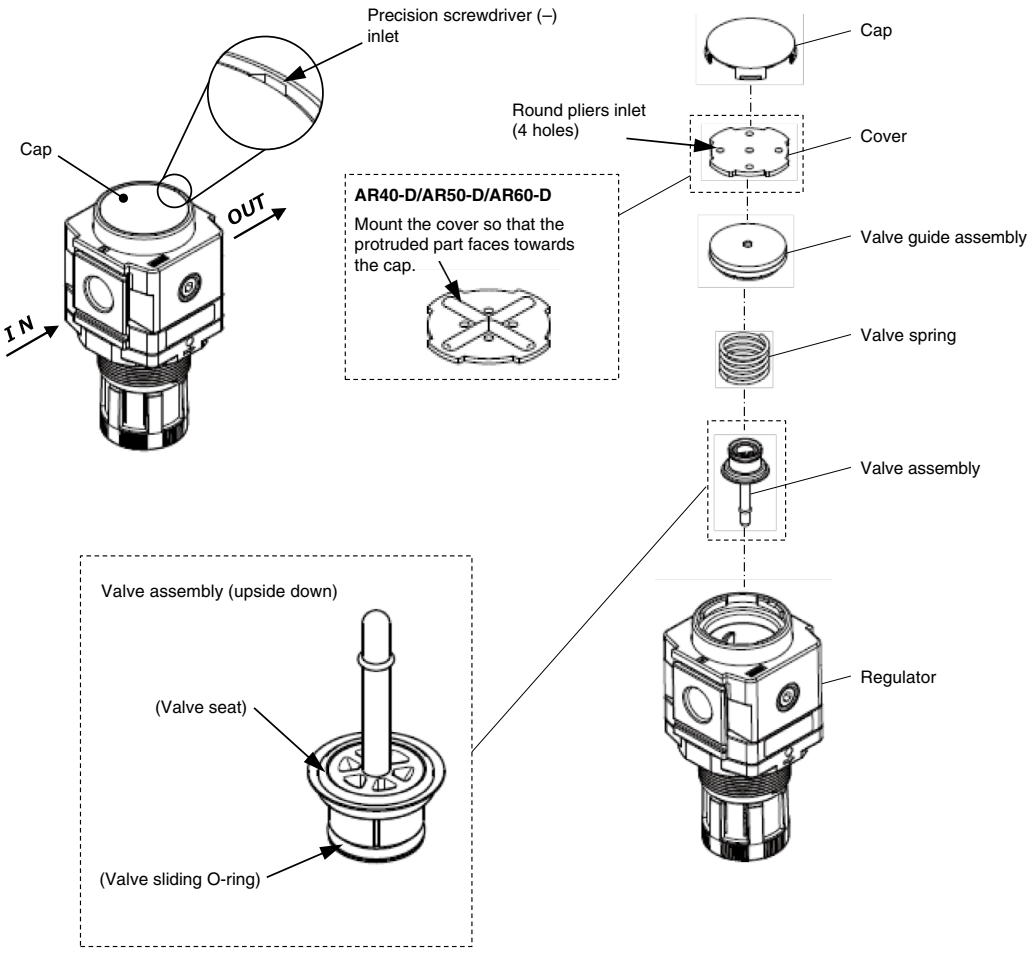
1. Diaphragm Assembly

Applicable model	Process	Procedure	Tools	Check item
AR20-D AR30-D AR40-D AR50-D AR60-D	Disassembly	1) Loosen the knob completely before disassembly.	—	—
		2) Remove the 4 screws and remove the bonnet.	AR20/AR30/AR40 Phillips screwdriver (+) AR50/AR60 Hexagon wrench Nominal size: 5	—
		3) Remove the pressure regulating screw assembly, pressure regulating spring, and diaphragm assembly in that order.	—	—
	Assembly	4) Assemble the diaphragm assembly, pressure regulating spring, and then pressure regulating screw assembly.	—	Direction of the diaphragm assembly and the pressure regulating screw assembly
		5) Assemble the bonnet to the body. While the convex side of the bonnet is facing the IN side, mount it onto the body. Then tighten the 4 mounting screws temporarily, before tightening them diagonally and evenly to fix the bonnet.	AR20/AR30/AR40 Phillips screwdriver (+) AR50/AR60 Hexagon wrench Nominal size: 5	Tightening torque: AR20-D, AR30-D: 2.35 ± 0.3 N·m AR40-D, AR50-D, AR60-D: 3.5 ± 0.3 N·m



2. Valve Guide Assembly and the Valve Assembly

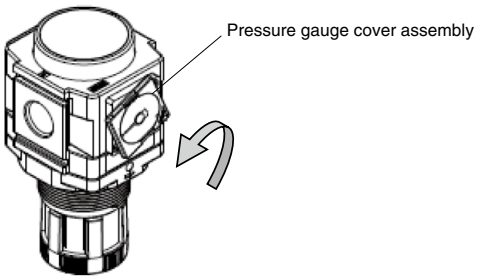
Applicable model	Process	Procedure	Tools	Check item
AR20-D AR30-D AR40-D AR50-D AR60-D	Disassembly	1) Remove the cap. Insert a precision screwdriver (-) between the body and cap to lift the cap.	Precision screwdriver (–)	—
		2) Remove the cover. Insert round pliers into the small holes of the cover and rotate 45 degree to the left or right, then lift the cover to remove.	Round pliers Nominal: 125	—
		3) Remove the valve guide assembly. Remove it while lifting the circumferential part with a precision screwdriver.	Precision screwdriver (–)	—
		4) Remove the valve spring.	—	—
		5) Remove the valve assembly.	—	—
	Assembly	6) After replacing the removed components with new components, place them into the regulator. Assemble the components in reverse order to the removal procedure.	—	See below for the mounting direction of the components.

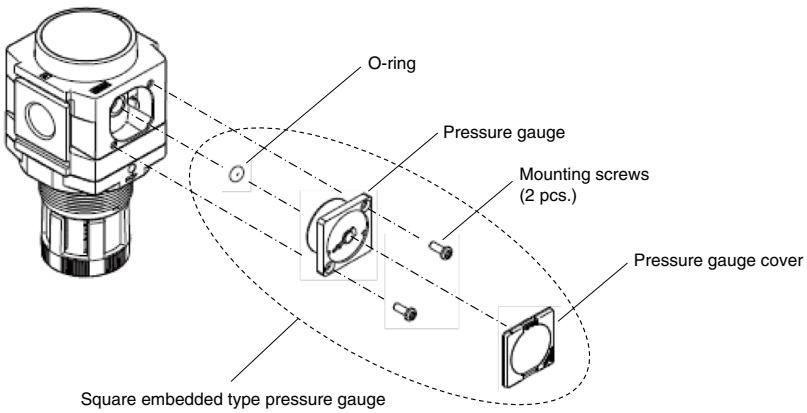


3. Square Embedded Type Pressure Gauge

Applicable model	Process	Procedure	Tools	Check item
AR20-D AR20K-D AR30-D AR30K-D AR40-D AR40K-D AR50-D AR50K-D AR60-D AR60K-D	Disassembly	1) Remove the pressure gauge cover. Rotate the pressure gauge cover 15 degrees in the arrow direction (counterclockwise) and pull it out.	—	—
		2) Remove the pressure gauge. Remove the 2 mounting screws and remove the pressure gauge.	Phillips screwdriver (+)	—
	Assembly	3) Confirm that the O-ring is mounted onto the pressure gauge. When the O-ring comes out or is left on the regulator, mount the O-ring to the pressure gauge correctly.	—	Presence of the O-ring
		4) Mount the pressure gauge. Mount the pressure gauge to the regulator with the mounting screws and tighten the screws referring to the tightening torque specified in the right column.	Phillips screwdriver (+)	Tightening torque: 0.85 ± 0.05 N·m
		5) Mount the pressure gauge cover. Set the pressure gauge cover with its arrow on the lower right corner. Mate the 2 fingers of the pressure gauge cover with the 2 finger slits of the pressure gauge, and rotate the pressure gauge cover 15 degrees to the opposite direction of the arrow (clockwise).	—	—

Note) Applicable to the product with square embedded type pressure gauge (E).

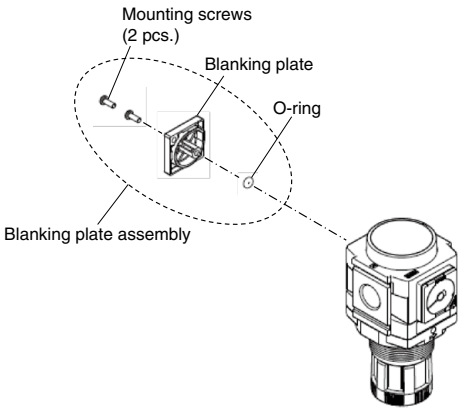




4. Blanking Plate Assembly

Applicable model	Process	Procedure	Tools	Check item
AR20-D AR30-D AR40-D AR50-D AR60-D	Disassembly	1) Remove the blanking plate. Remove the 2 mounting screws and remove the blanking plate.	Phillips screwdriver (+)	—
	Assembly	2) Confirm that the O-ring is mounted onto the blanking plate. When the O-ring comes out or is left on the regulator, mount the O-ring to the pressure gauge correctly.	—	Presence of the O-ring
		3) Mount the blanking plate. Mount the blanking plate to the product with the mounting screws and tighten the screws referring to the tightening torque specified in the right column.	Phillips screwdriver (+)	Tightening torque: 0.6 ± 0.05 N·m

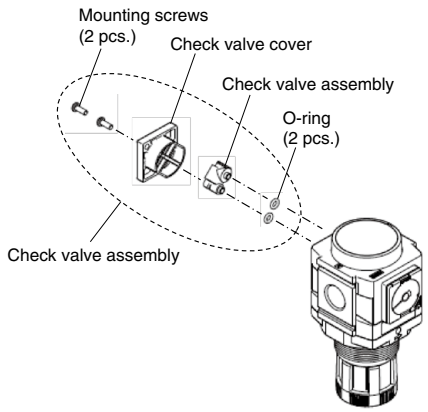
Note) Applicable to the product with square type pressure gauge (E), or digital pressure switch (E1 to E4). Not applicable to the product with backflow function.

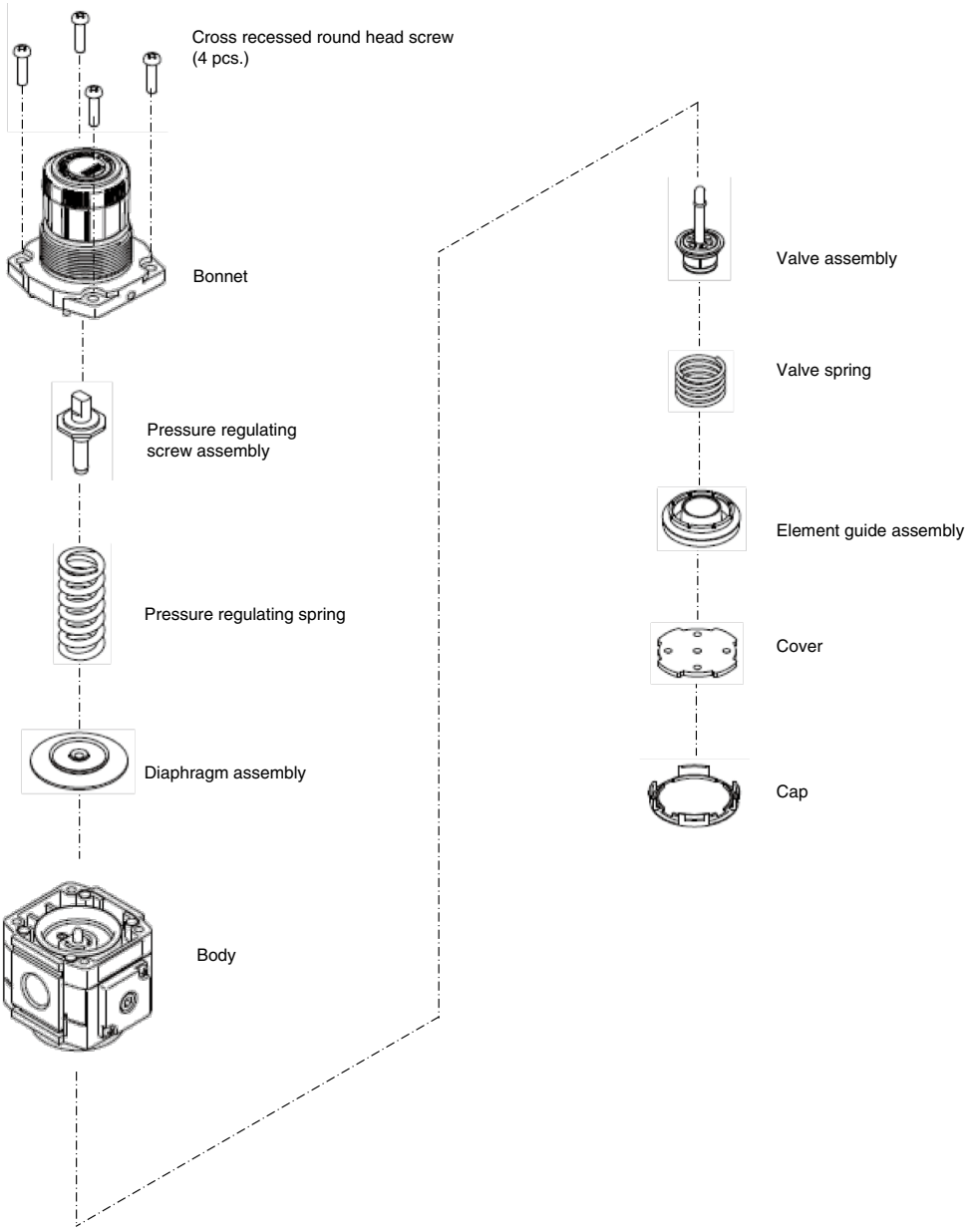


5. Check Valve Assembly

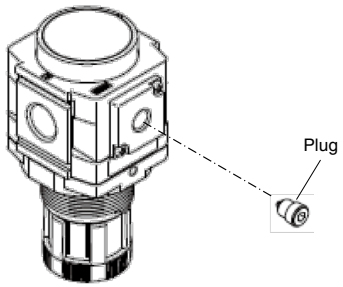
Applicable model	Process	Procedure	Tools	Check item
AR20K-D AR30K-D AR40K-D AR50K-D AR60K-D	Disassembly	1) Remove the check valve cover. Remove the 2 mounting screws and the check valve cover.	Phillips screwdriver (+)	—
		2) Remove the check valve assembly. Remove the check valve assembly by pulling it toward the operator.	—	—
	Assembly	3) Confirm that the O-ring is mounted onto the check valve assembly. When the O-ring comes out or is left on the regulator, mount the O-ring to the check valve assembly correctly.	—	Presence of the O-ring
		4) Mount the check valve cover. Mount the check valve cover to the product with the mounting screws and tighten the screws referring to the tightening torque specified in the right column.	Phillips screwdriver (+)	Tightening torque: 0.6 ± 0.05 N·m

Note) Applicable to the product with backflow function.

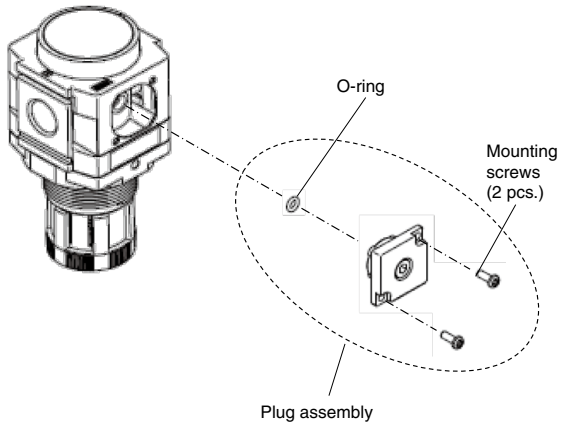



Cross recessed round head screw
(4 pcs.)
Bonnet
Pressure regulating
screw assembly
Pressure regulating spring
Diaphragm assembly
Body
Valve assembly
Valve spring
Element guide assembly
Cover
Cap

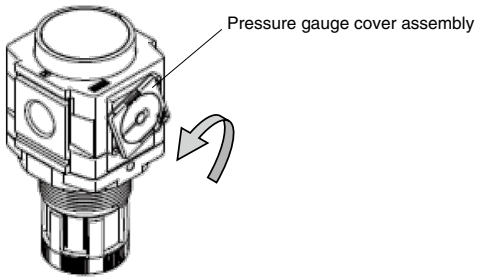
Pressure Gauge Port
[Applicable model: Without pressure gauge]

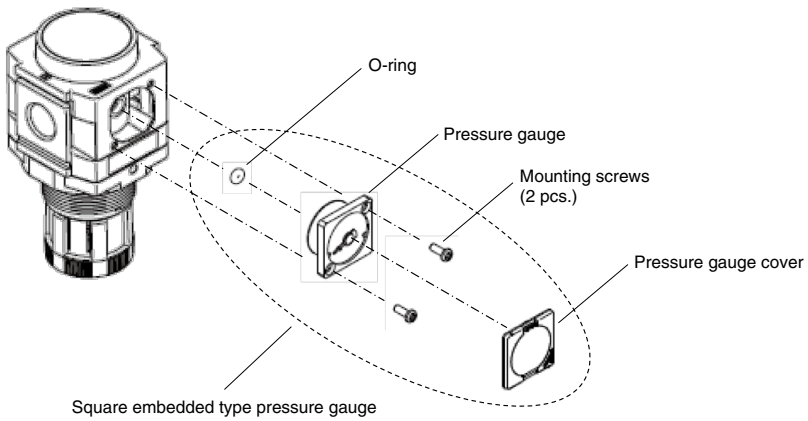


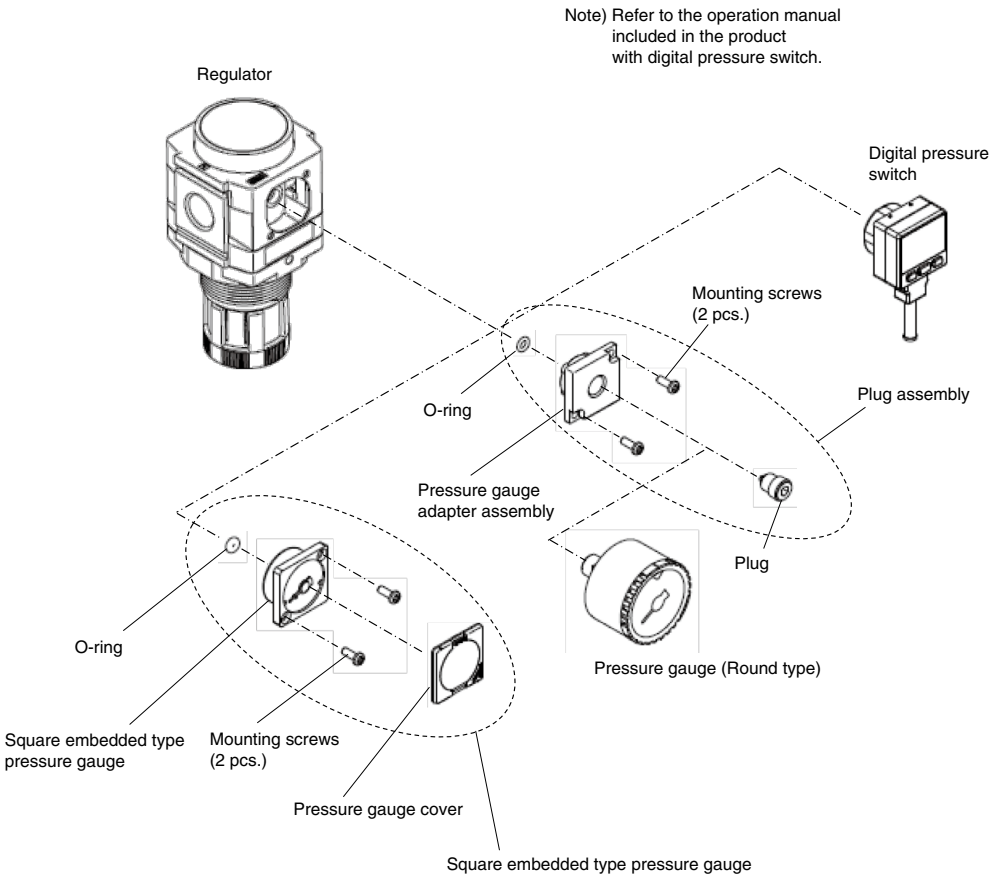
Pressure Gauge Port
[Applicable model: Without pressure gauge]



Pressure Gauge Port [Applicable model: With square embedded type pressure gauge]







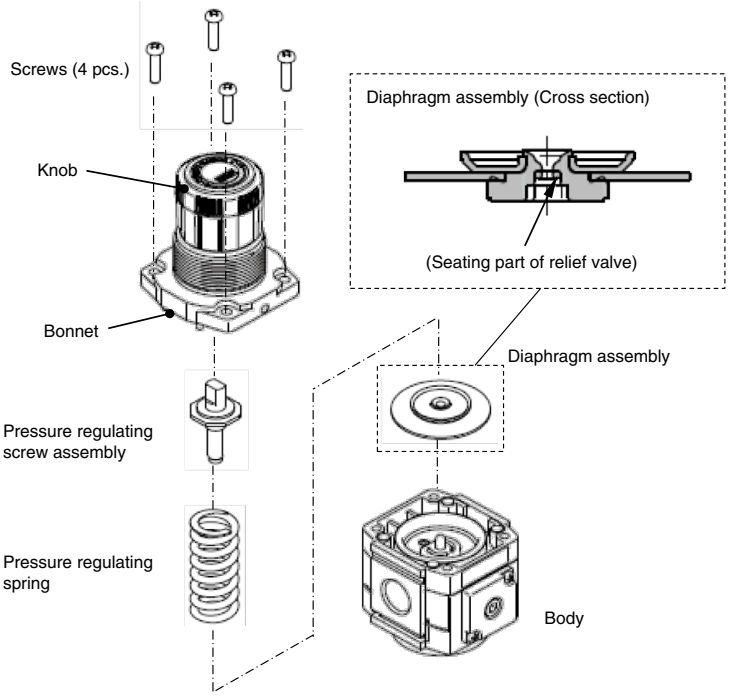
· When swapping the square embedded type pressure gauge and the digital pressure switch, tighten them with 0.85 ± 0.05 N·m. Tighten others with 0.6 ± 0.05 N·m.

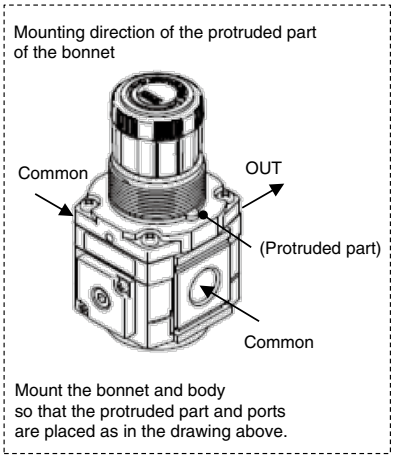
⚠Warning

Before replacement, ensure that the regulator is not pressurized.
Also, make sure to loosen the knob of the regulator so that the set pressure is zero.
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

1. Replacement of the Diaphragm Assembly

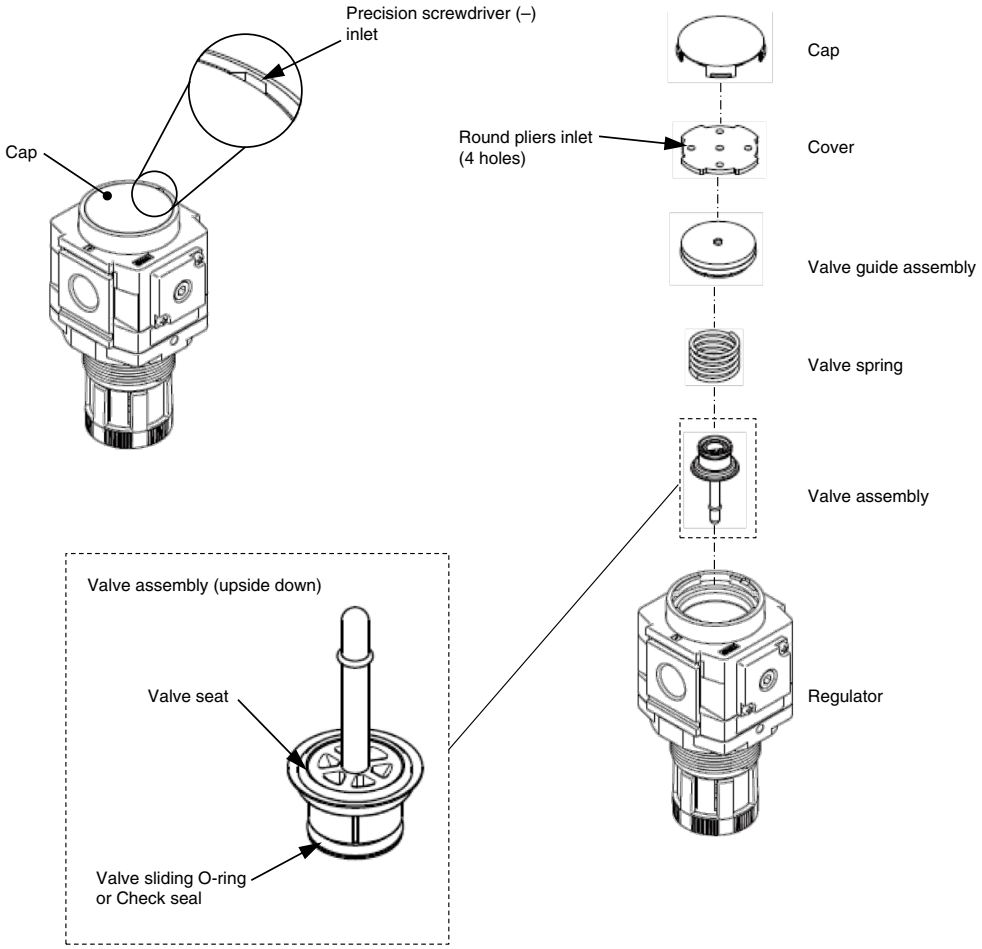
Applicable model	Process	Procedure	Tools	Check item
AR20M AR30M AR40M	Disassembly	1) Loosen the knob completely before disassembly.	—	—
		2) Remove the 4 screws and remove the bonnet.	Phillips screwdriver (+)	—
		3) Remove the pressure regulating screw assembly, pressure regulating spring, and diaphragm assembly in that order.	—	—
	Assembly	4) Assemble the diaphragm assembly, pressure regulating spring, and then pressure regulating screw assembly.	—	Direction of the diaphragm assembly and the pressure regulating screw assembly
		5) Assemble the bonnet to the body. Mount the bonnet to the body with the protruded side facing upwards an inline with ports. Tighten four mounting screws temporarily, then tightening them diagonally and evenly to fix the bonnet.	Phillips screwdriver (+)	Tightening torque: AR20M / AR30M: 2.35 ± 0.3 N·m AR40M: 3.5 ± 0.3 N·m





2. Replacement of the Valve Guide Assembly and the Valve Assembly

Applicable model	Process	Procedure	Tools	Check item
AR20M AR30M AR40M	Disassembly	1) Remove the cap. Insert a precision screwdriver (-) between the body and cap to lift the cap.	Precision screwdriver (–)	—
		2) Remove the cover. Insert round pliers into the small holes of the cover and rotate 45 degree to the left or right, then lift the cover to remove.	Round pliers Nominal: 125	—
		3) Remove the valve guide assembly. Remove it while lifting the circumferential part with a precision screwdriver.	Precision screwdriver (–)	—
		4) Remove the valve spring.	—	—
		5) Remove the valve assembly.	—	—
	Assembly	6) After replacing the removed components with new components, place them into the regulator. Assemble the components in reverse order to the removal procedure.	—	See below for the mounting direction of the components.



3. Replacement of the Square Embedded Type Pressure Gauge

Applicable model	Process	Procedure	Tools	Check item
AR20M AR30M AR40M	Disassembly	1) Remove the pressure gauge cover. Rotate the pressure gauge cover 15 degrees in the arrow direction (counterclockwise) and pull it out.	—	—
		2) Remove the pressure gauge. Remove the 2 mounting screws and remove the pressure gauge.	Phillips screwdriver (+)	—
	Assembly	3) Confirm that the O-ring is mounted onto the pressure gauge. When the O-ring comes out or is left on the regulator, mount the O-ring to the pressure gauge correctly.	—	Presence of the O-ring
		4) Mount the pressure gauge. Mount the pressure gauge to the regulator with the mounting screws and tighten the screws referring to the tightening torque to the specified criteria.	Phillips screwdriver (+)	Tightening torque: 0.85 ± 0.05 N·m
		5) Mount the pressure gauge cover. Set the pressure gauge cover with its arrow on the lower right corner. Mate the 2 fingers of the pressure gauge cover with the 2 finger slits of the pressure gauge, and rotate the pressure gauge cover 15 degrees to the opposite direction of the arrow (clockwise).	—	—

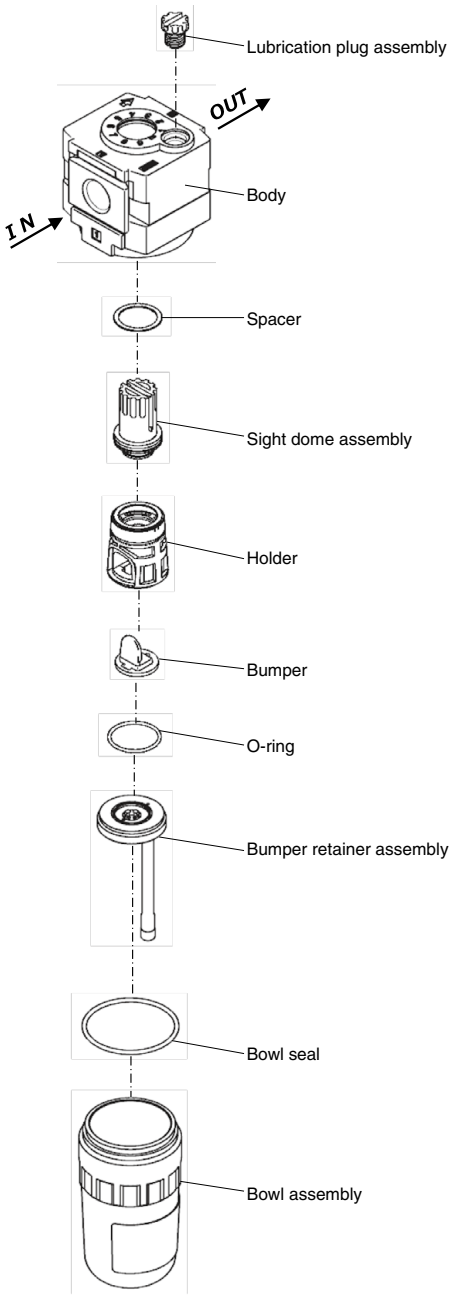
4. Replacement of the Plug

Applicable model	Process	Procedure	Tools	Check item
AR20M AR30M AR40M	Disassembly	1) Remove the plug by turning counterclockwise.	Hexagon wrench Nominal size: 4	—
	Assembly	2) Assemble the plug by turning clockwise to the specified tightening torque.	Hexagon wrench Nominal size: 4	Tightening torque: 0.6 ± 0.05 N·m

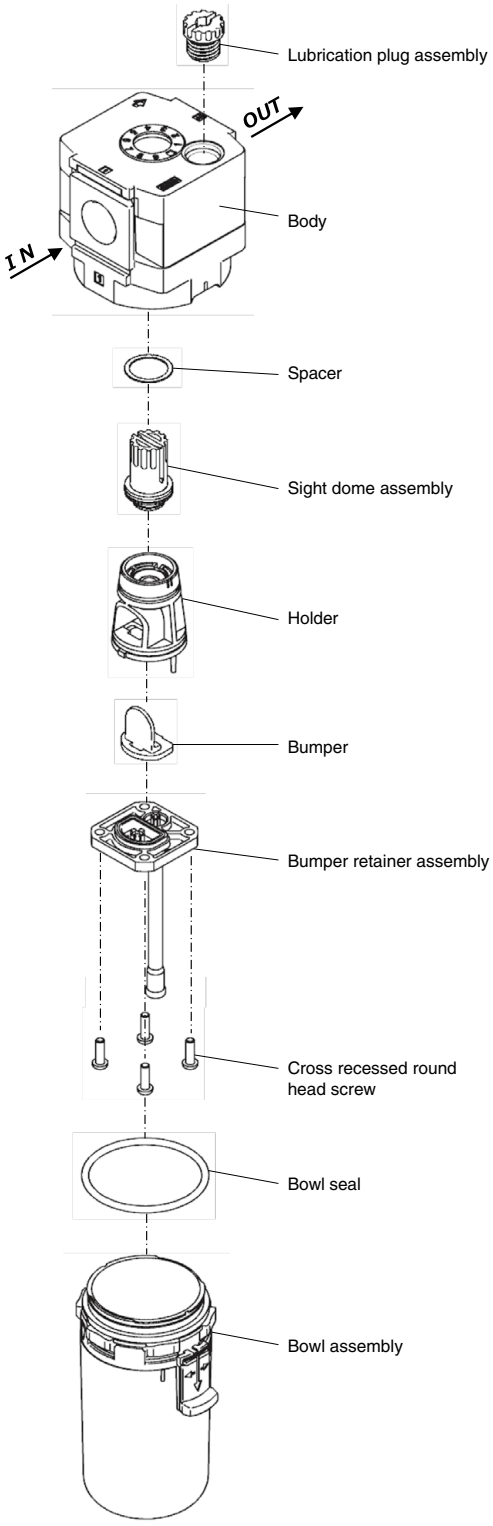
5. Replacement of the Plug Assembly

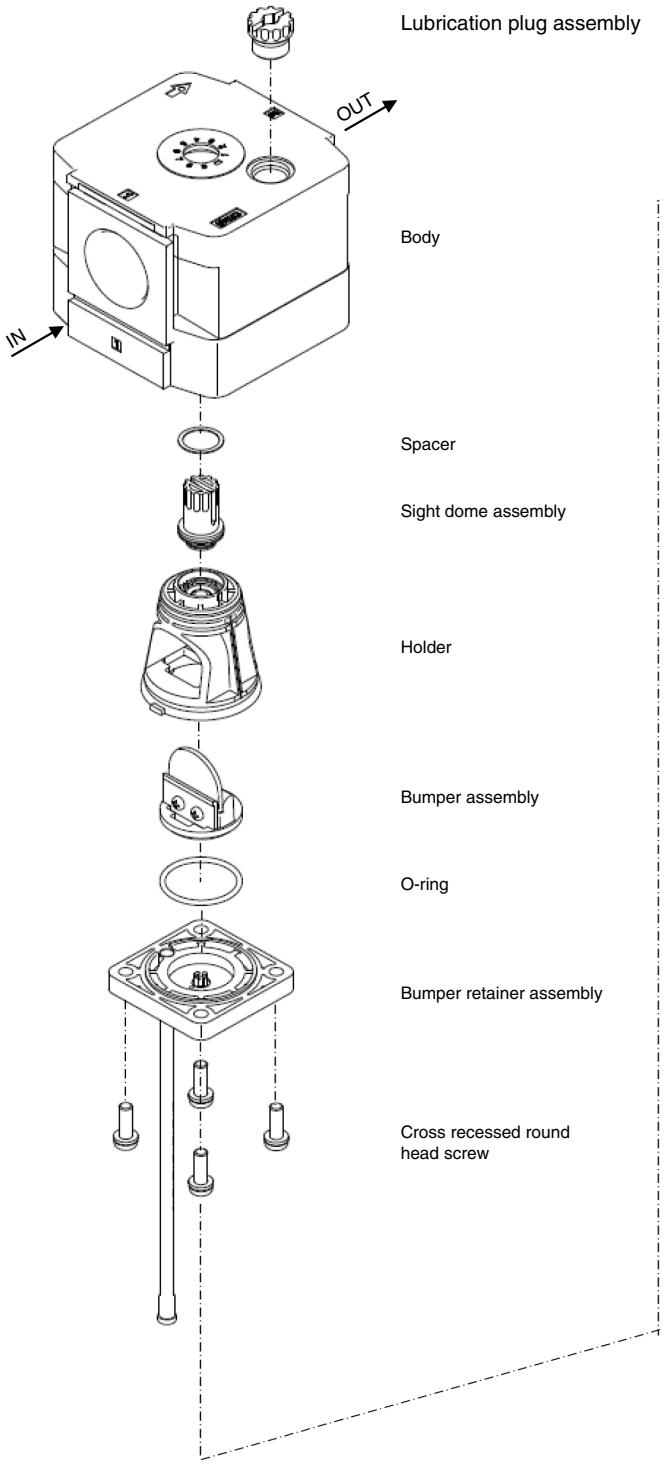
Applicable model	Process	Procedure	Tools	Check item
AR20M AR30M AR40M	Disassembly	1) Remove the plug assembly. Remove the 2 mounting screws and remove the plug assembly.	Phillips screwdriver (+)	—
	Assembly	2) Confirm that the O-ring is mounted onto the component "A." When the O-ring comes out or is left on the regulator, mount the O-ring to the plug assembly correctly.	—	Presence of the O-ring
		3) Assemble the plug assembly. Assemble the plug assembly to the product with the mounting screws and tighten the screws referring to the tightening torque specified in the right column.	Phillips screwdriver (+)	Tightening torque: 0.6 ± 0.05 N·m

1) AL20-D



2) AL30-D/AL40-D





Lubrication plug assembly

Body

Spacer

Sight dome assembly

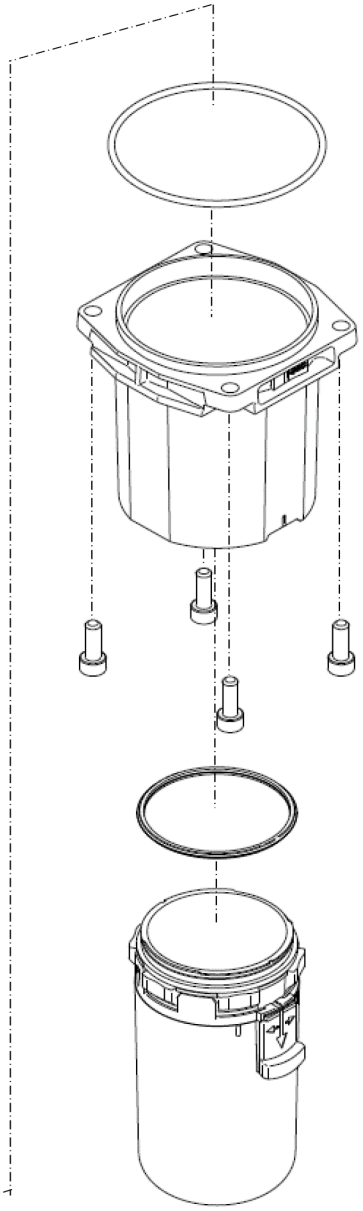
Holder

Bumper assembly

O-ring

Bumper retainer assembly

Cross recessed round head screw



O-ring

Housing

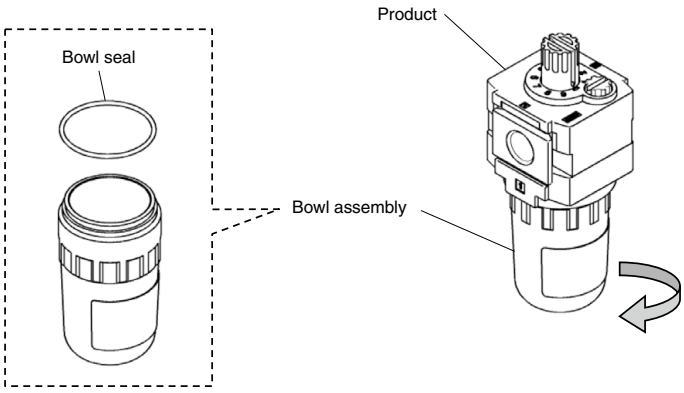
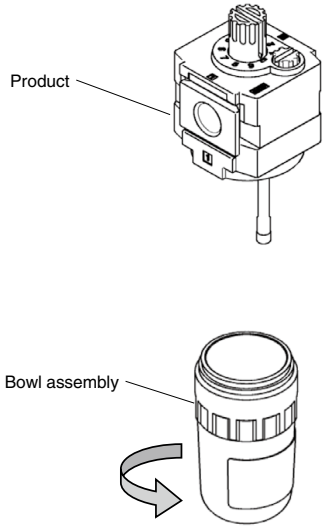
Hexagon socket head cap screw

Bowl seal

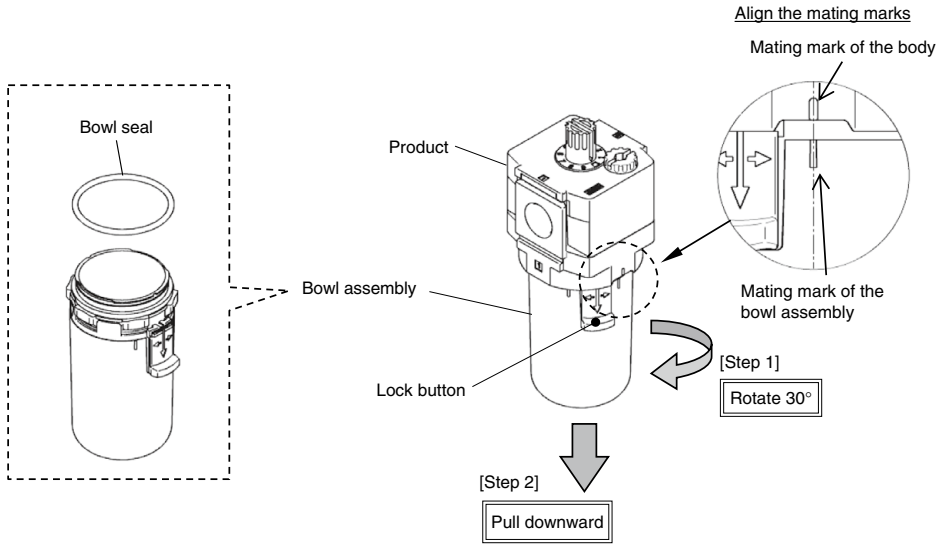
Bowl assembly

⚠Warning
Before replacement, ensure that the regulator is not pressurized.
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

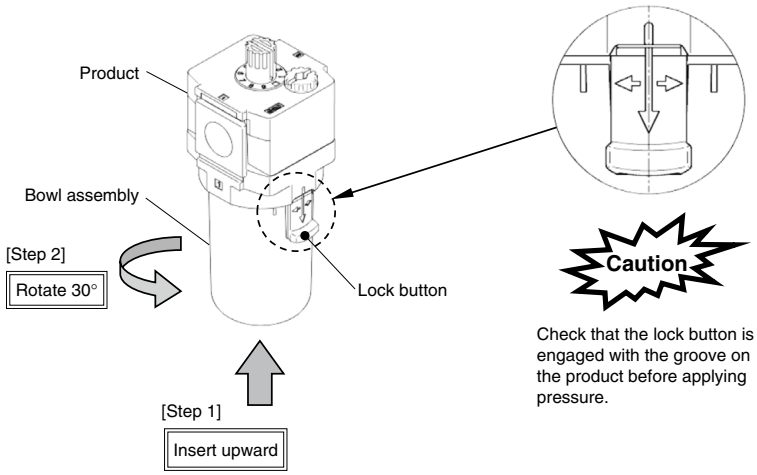
1. Bowl Assembly

Applicable model	Process	Procedure	Tools	Check item
AL20-D	Disassembly	1) Remove the bowl assembly from the product. If the bowl assembly is tightened too much to be removed, use a hook wrench until it can be loosened by hand.	SMC's special wrench Part no.: 1129129	—
				
	Process	Procedure	Tools	Check item
	Assembly	2) Screw the bowl assembly into the product. Tighten it referring to the specified torque.	—	Referential tightening torque: 2.1 N·m
				

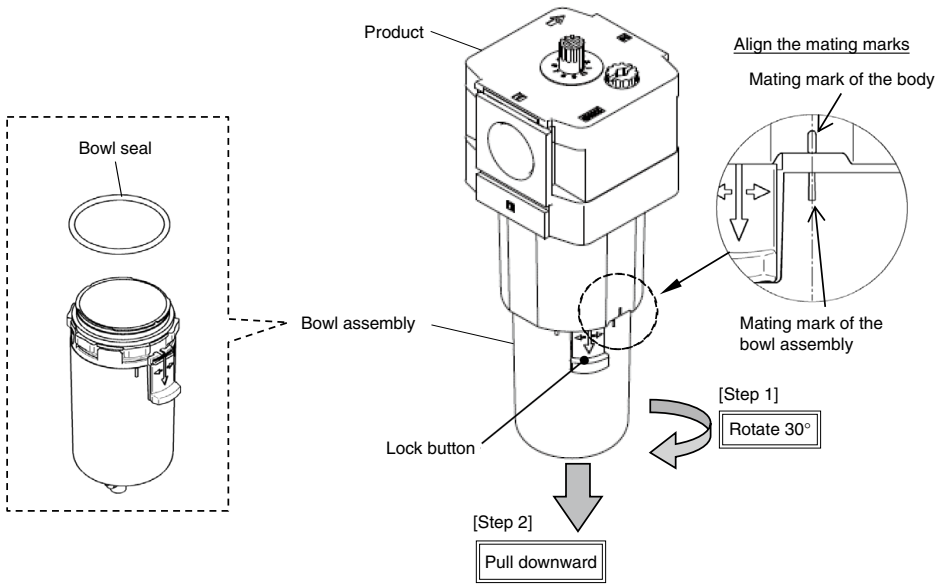
Applicable model	Process	Procedure	Tools	Check item
AL30-D AL40-D	Disassembly	1) Remove the bowl assembly from the product. While the lock button is held down, rotate the bowl assembly by approx. 30 degrees so that the mating marks of the body and bowl assembly meet each other. Then remove the bowl assembly by pulling it downward.	—	—



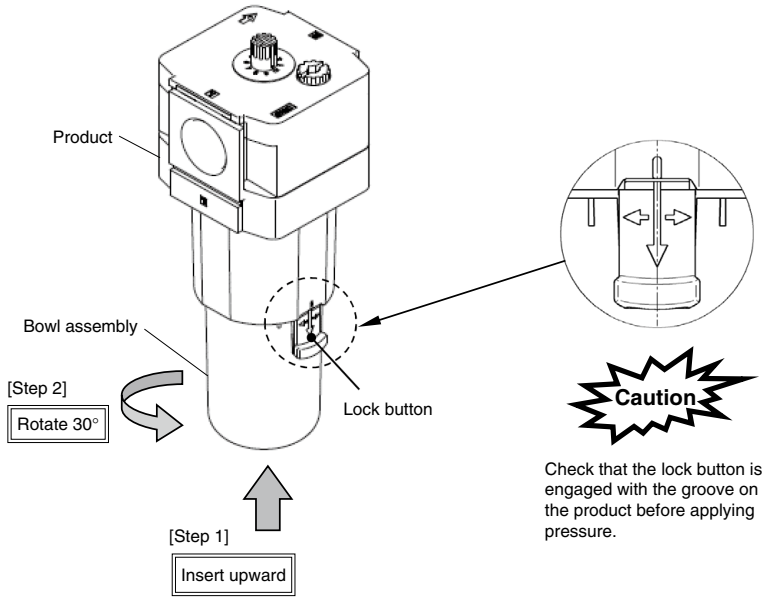
Process	Procedure	Tools	Check item
Assembly	2) Mount the bowl assembly to the product and rotate the bowl assembly until the lock button is locked in position as shown in the figure below.	—	—



Applicable model	Process	Procedure	Tools	Check item
AL50-D AL60-D	Disassembly	1) Remove the bowl assembly from the product. While the lock button is held down, rotate the bowl assembly by approx. 30 degrees so that the mating marks of the body and bowl assembly meet each other. Then remove the bowl assembly by pulling it downward.	—	—

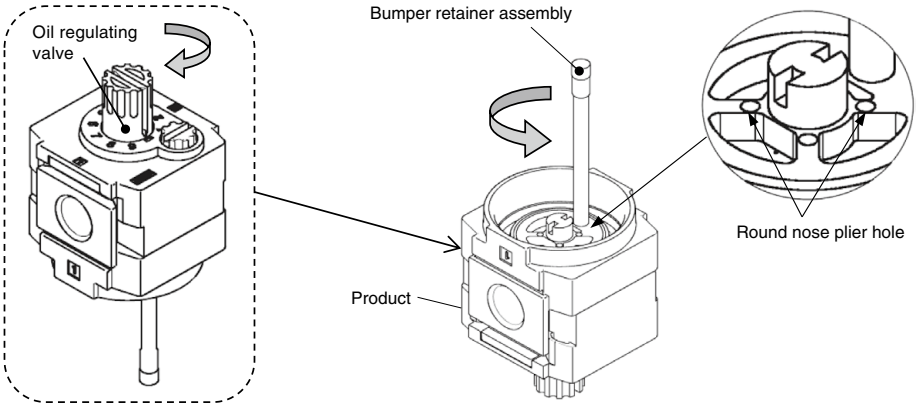


Process	Procedure	Tools	Check item
Assembly	2) Mount the bowl assembly to the product and rotate the bowl assembly until the lock button is locked in position as shown in the figure below.	—	—

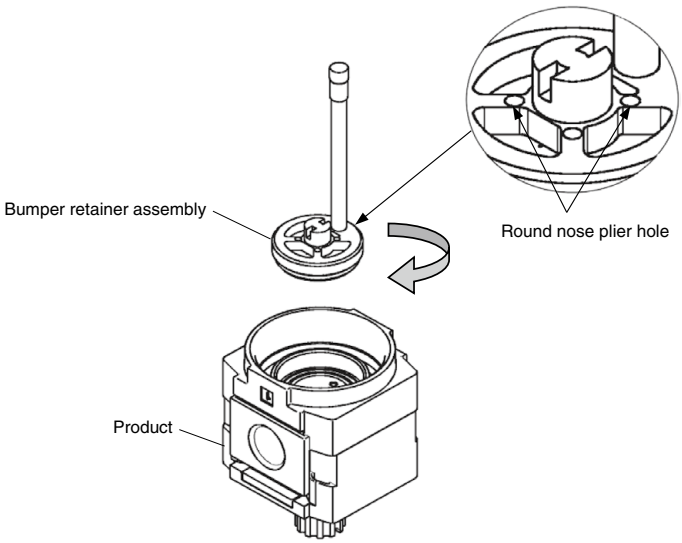


2. Bumper Retainer Assembly

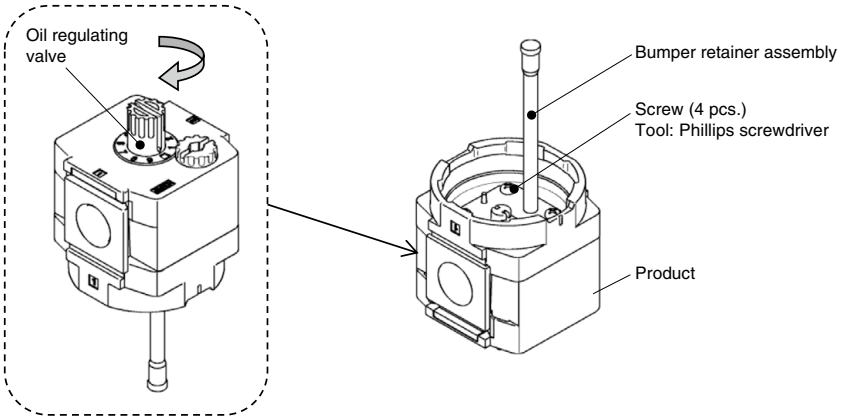
Applicable model	Process	Procedure	Tools	Check item
AL20-D	Disassembly	1) Remove the bowl assembly referring to section [Replacement of Bowl Assembly] . After removing the bowl assembly, rotate the oil regulating valve by hand to close the valve fully before disassembly. Remove the bumper retainer assembly by hooking the round nose pliers to the holes and turning them in the direction of the figure.	Round nose pliers (125 or 150)	—



Process	Procedure	Tools	Check item
Assembly	2) Screw the damper retainer assembly into the product. After assembling, mount the bowl assembly referring to section [Replacement of the Bowl Assembly] .	Round nose pliers (125 or 150)	Tightening torque (N·m) Model: AL20-D — Torque: 1.4 ± 0.1

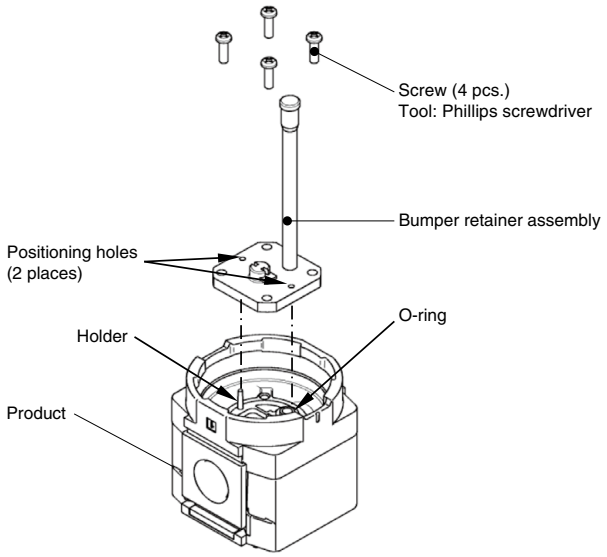


Applicable model	Process	Procedure	Tools	Check item
AL30-D AL40-D	Disassembly	1) Remove the bowl assembly referring to section [Replacement of the Bowl Assembly] . After removing the bowl assembly, rotate the oil regulating valve by hand to close the valve fully before disassembly. Remove the 4 screws, and then remove the bumper retainer assembly. There is an O-ring between the bumper retainer assembly and the holder assembly. Be careful not to miss it.	Phillips screwdriver (+)	—

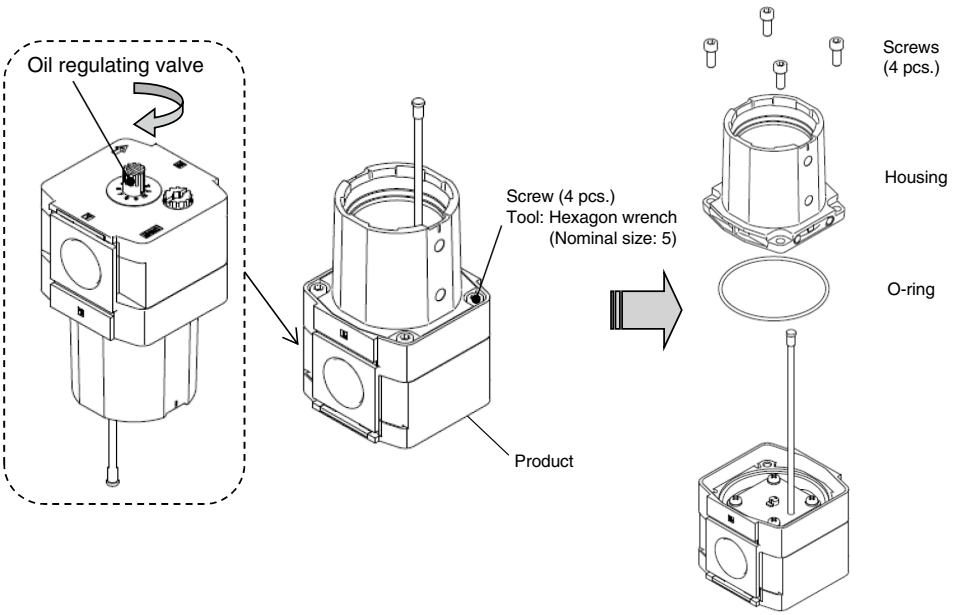


Process	Procedure	Tools	Check item
Assembly	2) Ensure that the O-ring is mounted correctly. Mate the holders and the positioning holes on the bumper retainer assembly. Tighten the bumper retainer assembly with 4 screws as in the figure below. After assembling, mount the bowl assembly referring to section [Replacement of the Bowl Assembly] .	Phillips screwdriver (+)	Tightening torque (N·m)

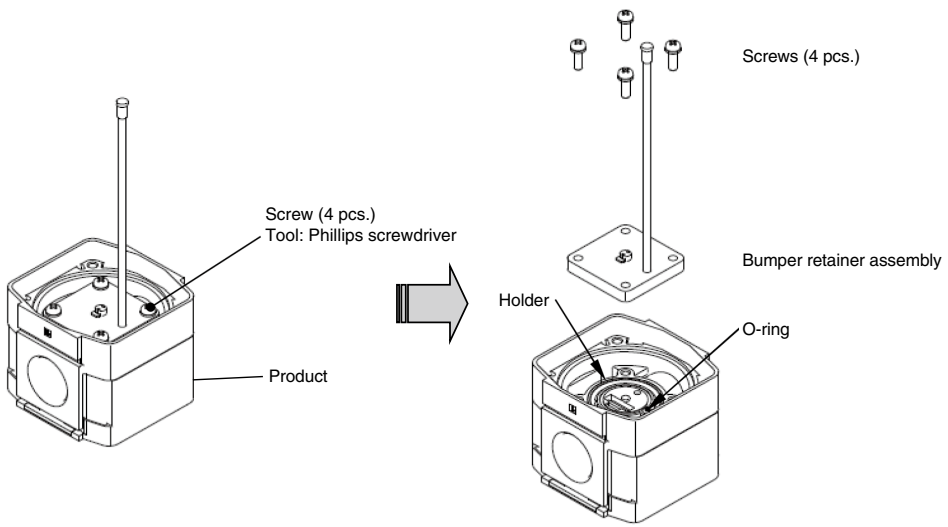
Model	Torque
AL30-D	0.4 ± 0.1
AL40-D	0.7 ± 0.2



Applicable model	Process	Procedure	Tools	Check item
AL50-D AL60-D	Disassembly	1) Remove the bowl assembly referring to section [Replacement of the Bowl Assembly] . After removing the bowl assembly, rotate the oil regulating valve by hand to close the valve fully before disassembly. Remove the 4 screws. Remove the housing and O-ring.	Hexagon wrench (Nominal size: 5)	—

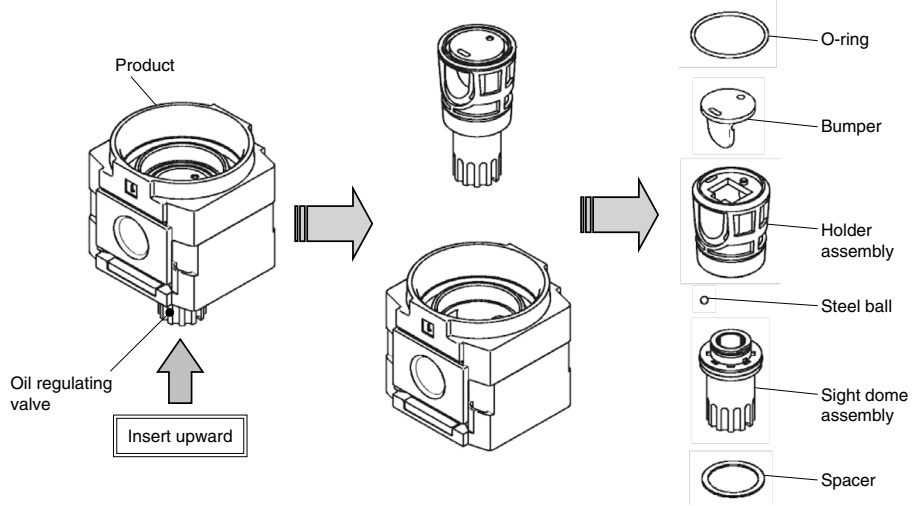


Process	Procedure	Tools	Check item
Disassembly	2) Remove the 4 screws and then remove the bumper retainer. There is an O-ring between the bumper retainer assembly and the holder assembly. Be careful not to miss it.	Phillips screwdriver (+)	—

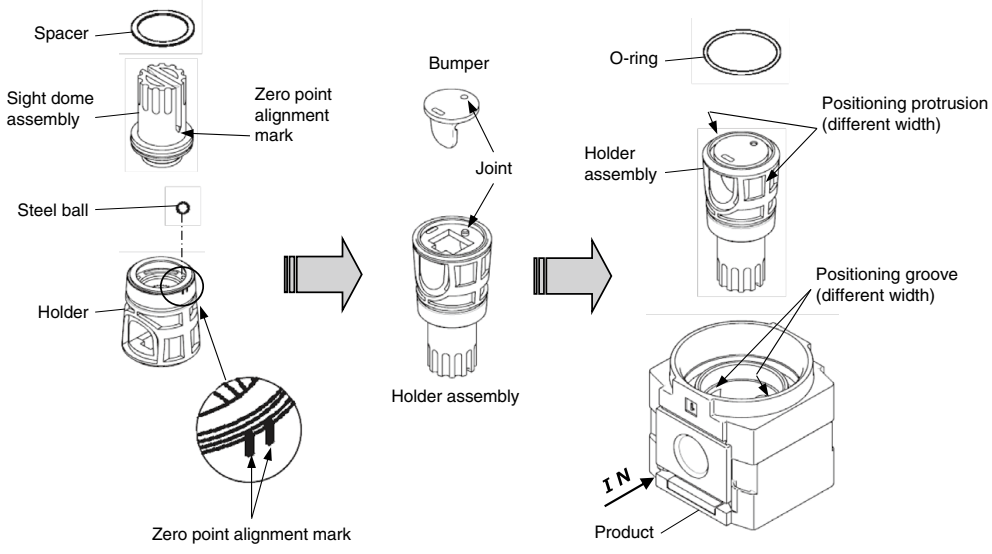


3. Bumper and the Sight Dome Assembly

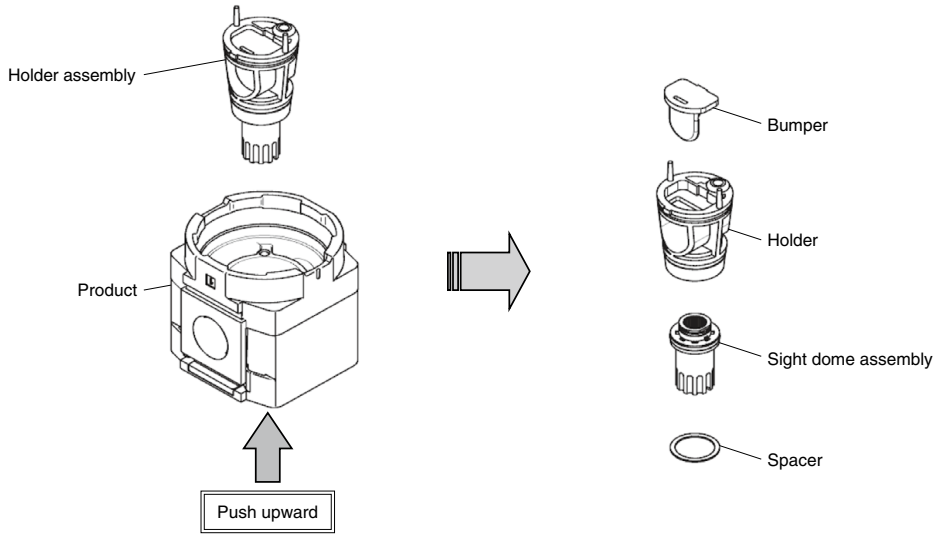
Applicable model	Process	Procedure	Tools	Check item
AL20-D	Disassembly	1) Remove the bumper retainer assembly referring to section [Replacement of the Bumper Retainer Assembly]. After removing the bumper retainer assembly, remove the holder assembly by pushing the oil regulating value (sight dome assembly) into the body. Separate the holder assembly and sight dome assembly by hand. There is a steel ball inside. Please take care not to miss it.	—	—



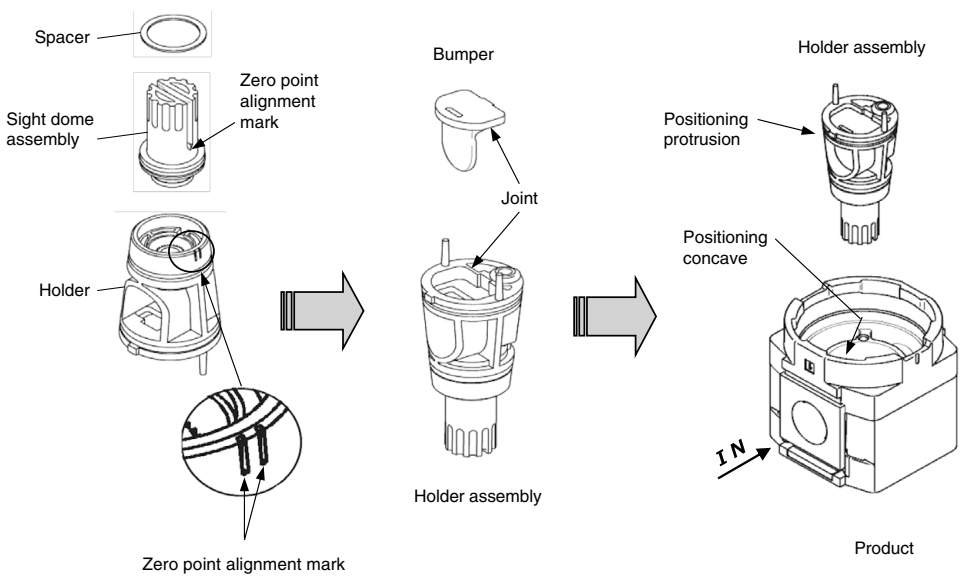
Process	Procedure	Tools	Check item
Assembly	2) Assemble the spacer, sight dome assembly, steel ball and holder. Place the steel ball in the oil inlet of the holder assembly and assemble the sight dome assembly by aligning the zero point alignment mark of the sight dome assembly with the zero point alignment mark of the holder assembly. Next, install the bumper in the holder assembly. Assemble them in a direction that matches the shape of the bumper and the protrusion of the holder assembly. Lastly, assemble the holder assembly to the body. When the holder assembly and body are assembled with correct positioning, the end surfaces of the holder and body become flat. After assembling the O-ring, assemble the bumper retainer assembly referring to section [Replacement of the Bumper Retainer Assembly].	—	—



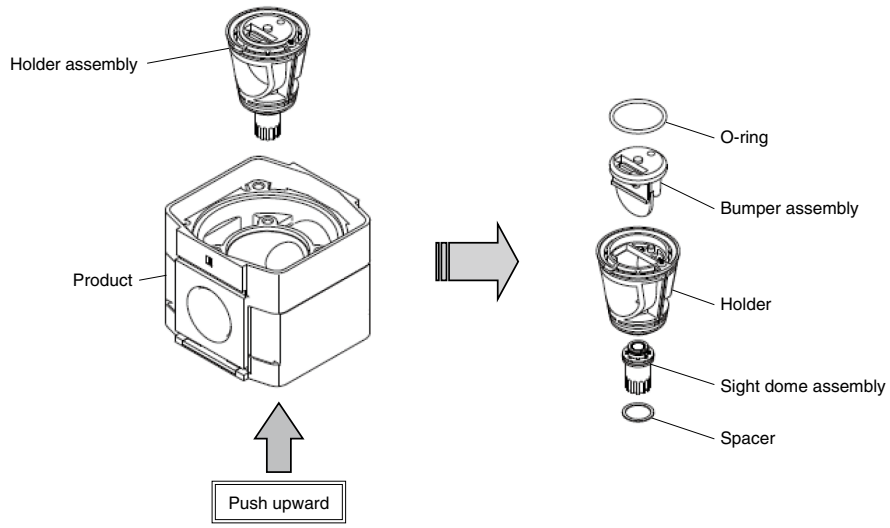
Applicable model	Process	Procedure	Tools	Check item
AL30-D AL40-D	Disassembly	1) Remove the bumper retainer assembly referring to section [Replacement of the Bumper Retainer Assembly]. Remove the sight dome assembly by pushing it in the arrow direction. Separate the holder assembly and sight dome assembly by hand. Remove the bumper using tweezers so that it is not damaged.	Tweezers	—



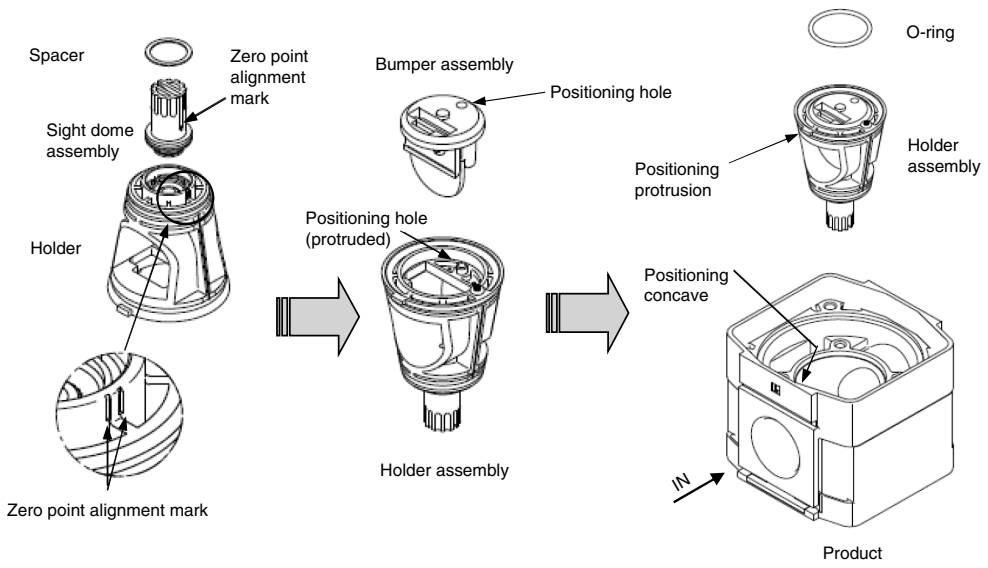
Process	Procedure	Tools	Check item
Assembly	2) Assemble the spacer, sight dome assembly and holder. Assemble the sight dome assembly by aligning the zero point alignment mark of the sight dome assembly with the zero point alignment mark of the holder assembly. Next, install the bumper in the holder assembly. Assemble them in a direction that matches the shape of the bumper and the concave of the holder assembly. Lastly, assemble the holder assembly to the body. When the holder assembly and body are assembled with correct positioning, the end surfaces of the holder and body become flat. After assembling, mount the bumper retainer assembly referring to section [Replacement of the Bumper Retainer Assembly].	—	—



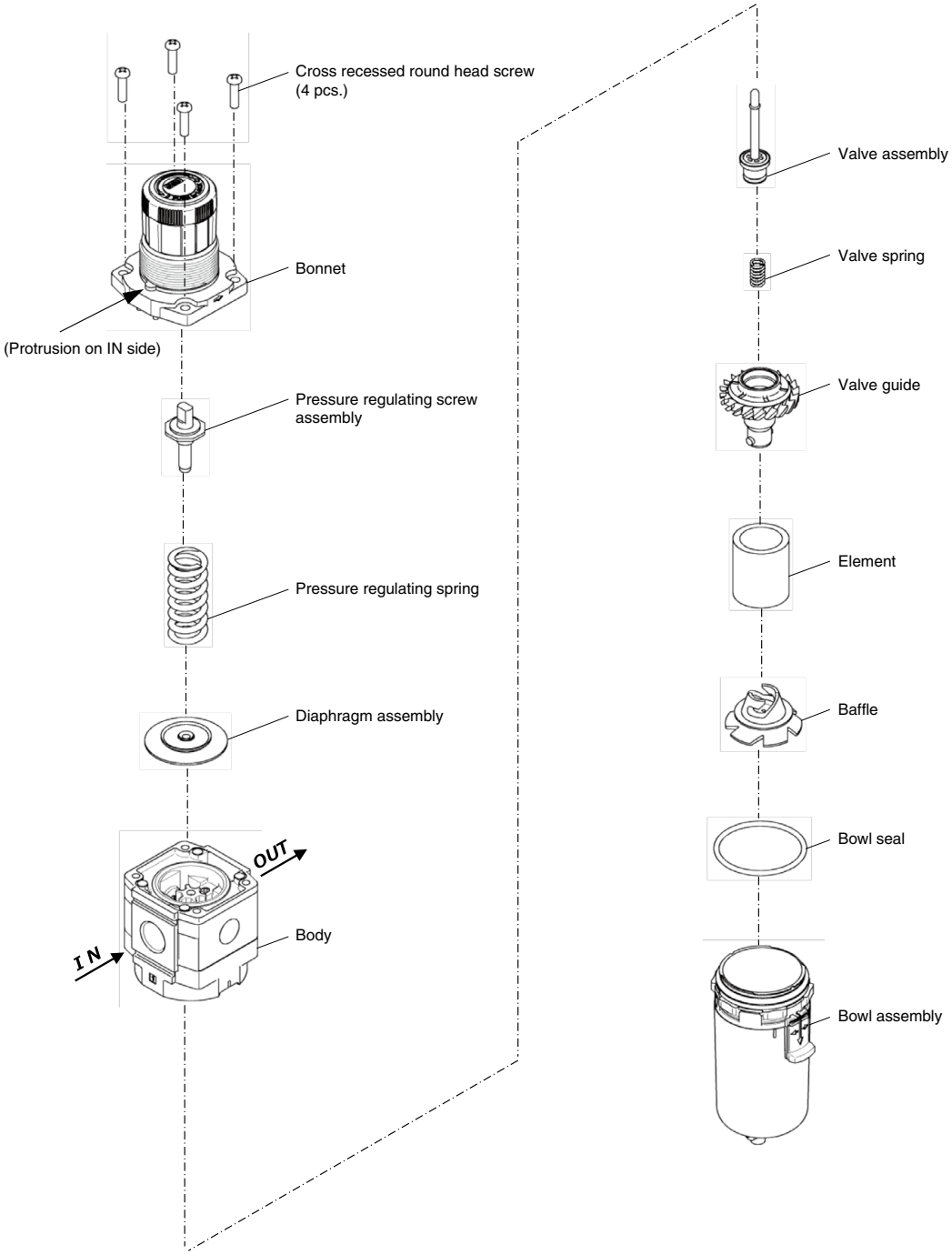
Applicable model	Process	Procedure	Tools	Check item
AL50-D AL60-D	Disassembly	1) Remove the retainer assembly referring to section [Replacement of the Bumper Retainer Assembly]. Remove the sight dome assembly by pushing it in the arrow direction. Separate the holder assembly and sight dome assembly by hand. Remove the bumper assembly using tweezers so that it is not damaged.	Tweezers	—



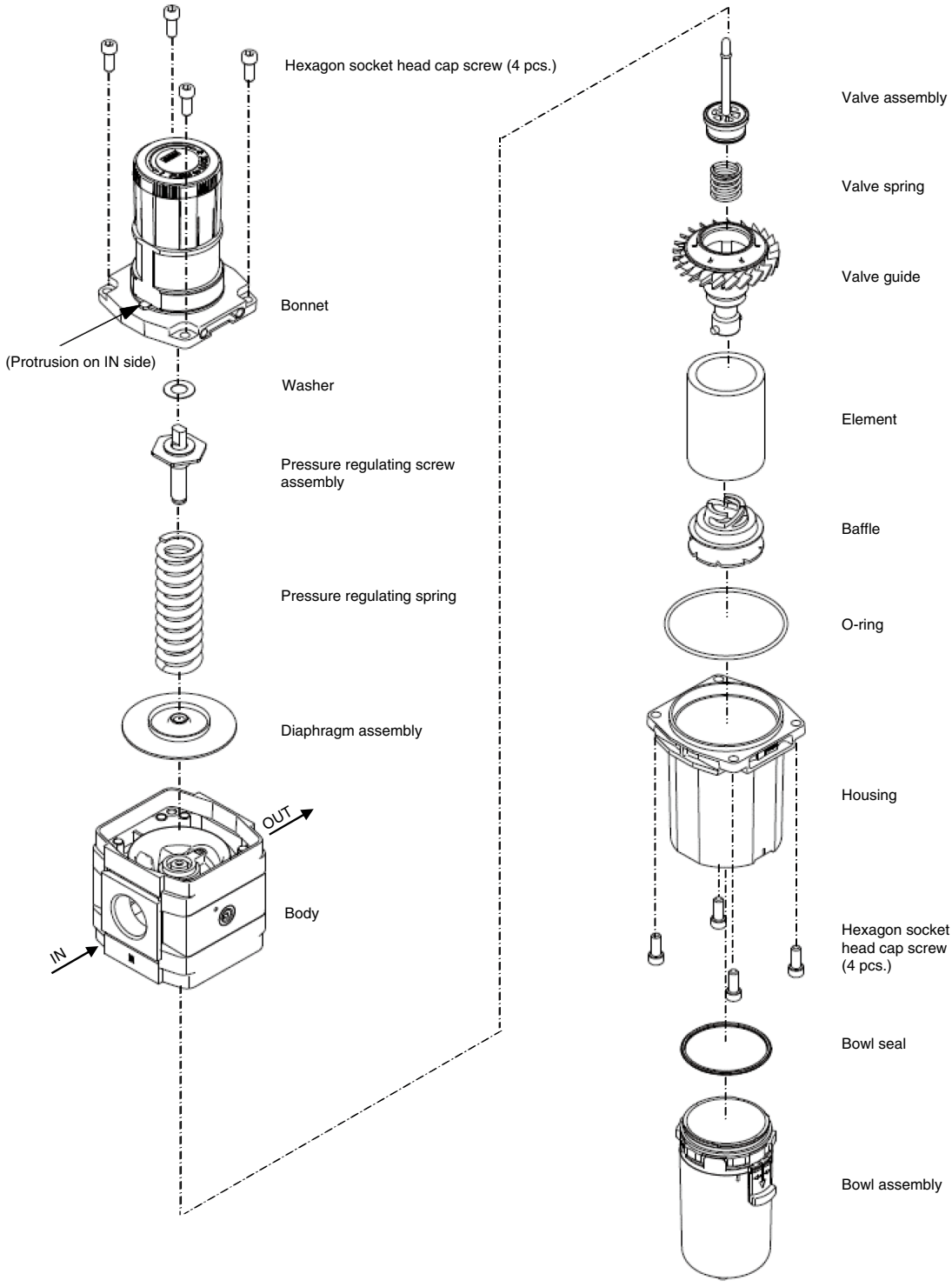
Process	Procedure	Tools	Check item
Assembly	2) Assemble the spacer, sight dome assembly and holder. Assemble the sight dome assembly by aligning the zero point alignment mark of the sight dome assembly with the zero point alignment mark of the holder assembly. Next, install the bumper assembly in the holder assembly. Assemble the bumper assembly and holder assembly when their positioning hole match. Be careful with the side of the protrusion. Lastly, assemble the holder assembly and O-ring to the body. When the holder assembly and body are assembled with correct positioning, the end surfaces of the holder and body become flat. After assembling, mount the retainer assembly referring to section [Replacement of the Bumper Retainer Assembly].	—	—



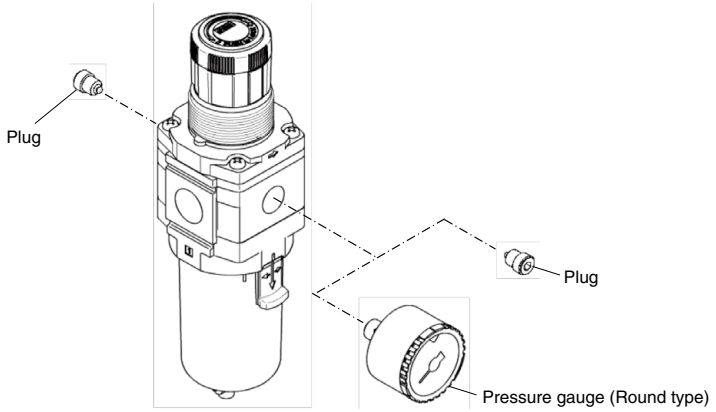
AW20-D/AW30-D/AW40-D



AW60-D

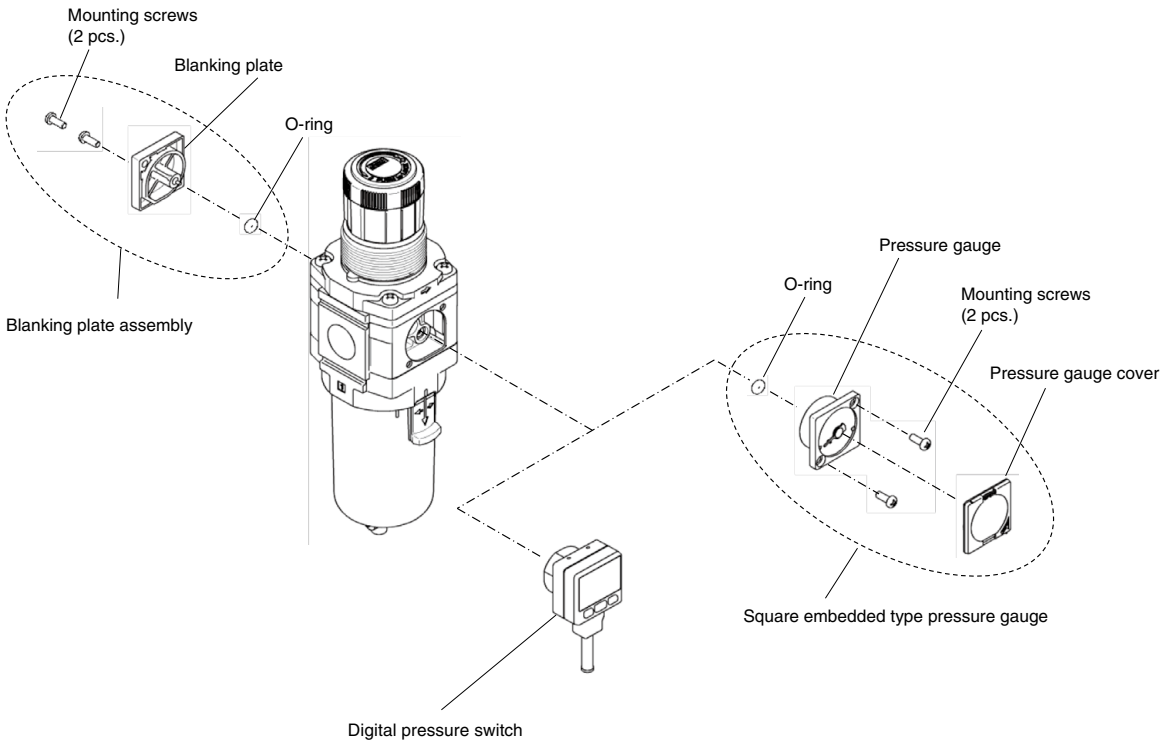

Hexagon socket head cap screw (4 pcs.)
Bonnet
(Protrusion on IN side)
Washer
Pressure regulating screw assembly
Pressure regulating spring
Diaphragm assembly
OUT
IN
Body
Valve assembly
Valve spring
Valve guide
Element
Baffle
O-ring
Housing
Hexagon socket head cap screw (4 pcs.)
Bowl seal
Bowl assembly

Pressure Gauge Port
[Applicable model: Without pressure gauge/With pressure gauge (Round type)]



Filter regulator

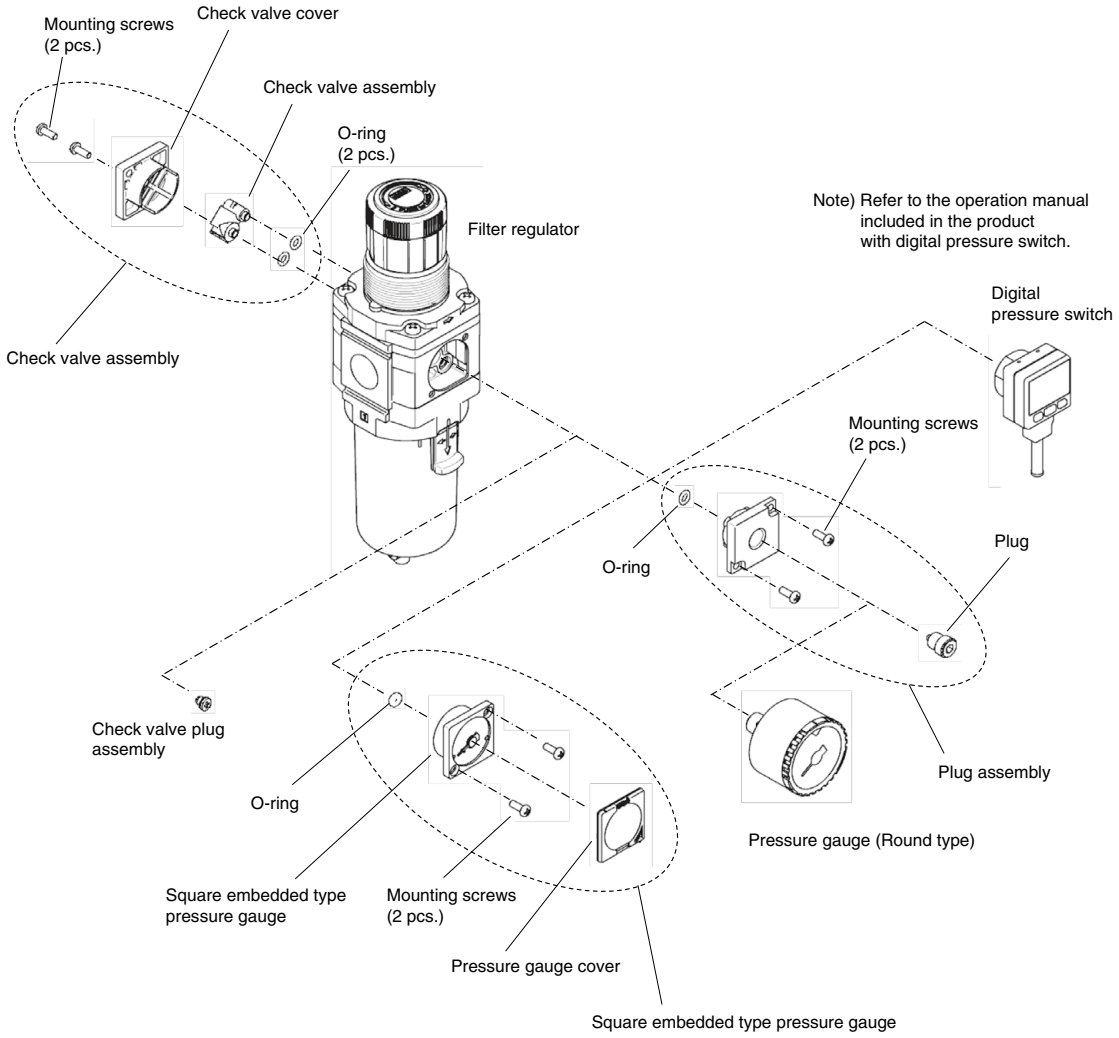
Pressure Gauge Port
[Applicable model: With square embedded type pressure gauge/With digital pressure switch]



Note) Refer to the operation manual included in the product with digital pressure switch.

· When the pressure gauge is mounted on the back of the product, swap all parts for the front and back.

Pressure Gauge Port [Applicable model: With backflow function]



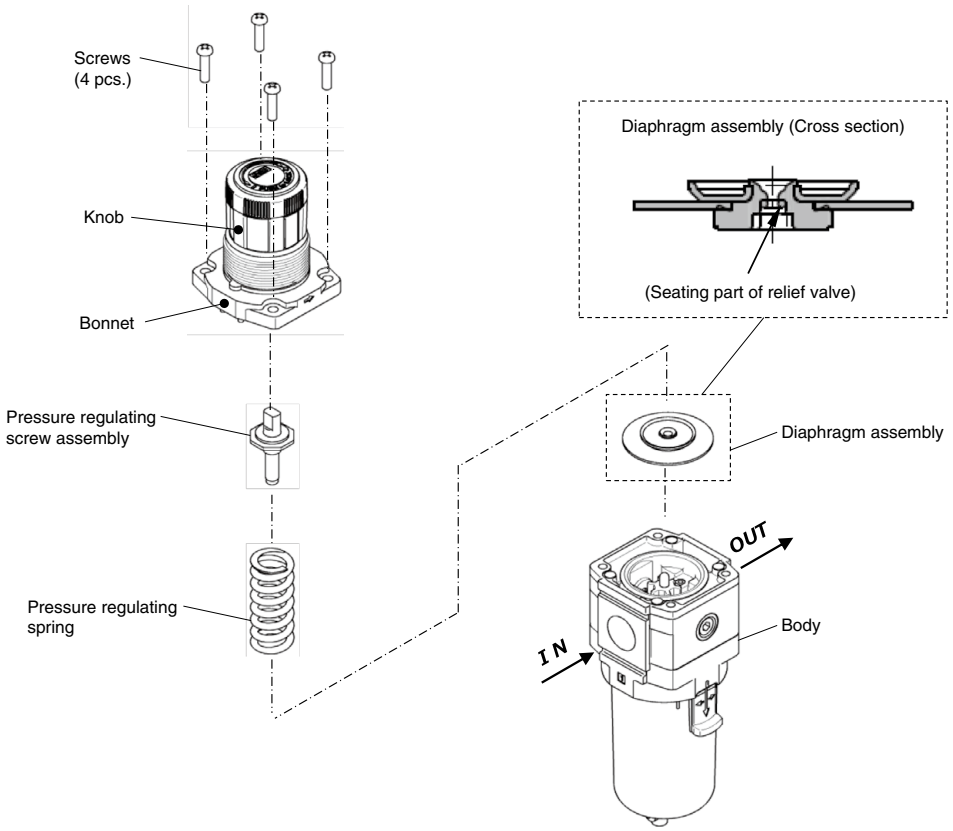
· When the pressure gauge is mounted on the back of the product, swap all parts for the front and back.
Be sure to change the check valve plug as well.

⚠Warning

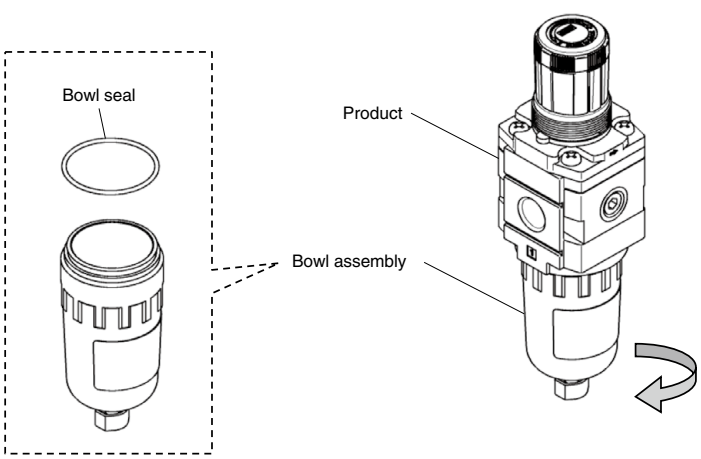
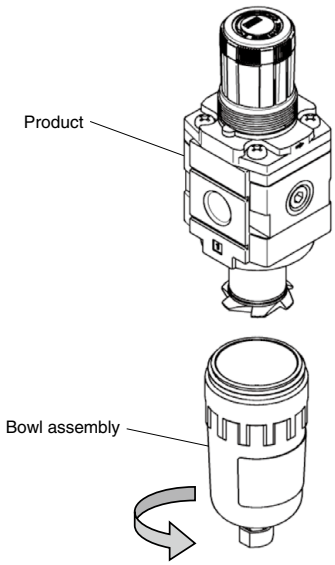
Before replacement, ensure that the regulator is not pressurized.
Also, make sure to loosen the knob of the filter regulator so that the set pressure is zero.
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

1. Diaphragm Assembly

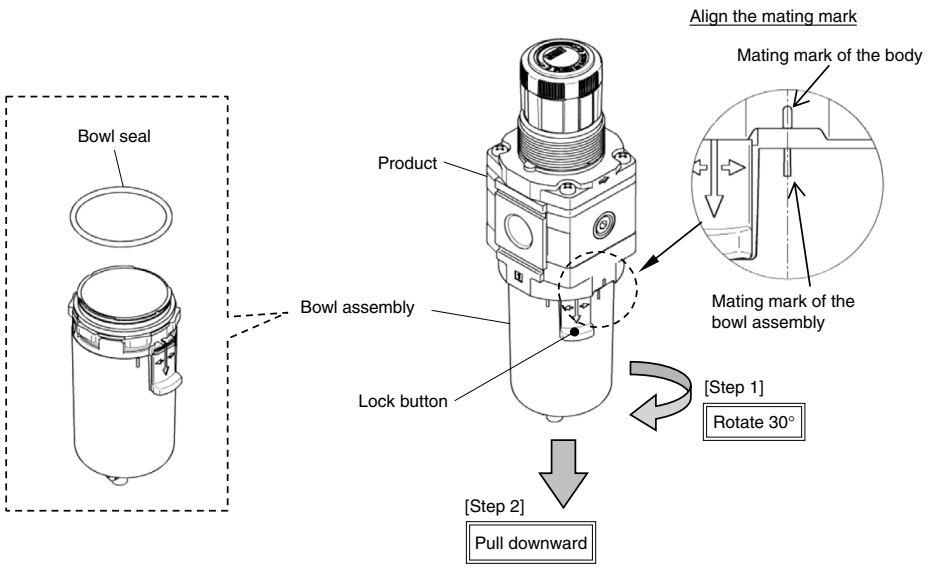
Applicable model	Process	Procedure	Tools	Check item
AW20-D AW30-D AW40-D AW60-D	Disassembly	1) Loosen the knob completely before disassembly.	—	—
		2) Remove the 4 screws and remove the bonnet.	AW20/AW30/AW40 Phillips screwdriver (+) AW60 Hexagon wrench Nominal size: 5	—
		3) Remove the pressure regulating screw assembly, pressure regulating spring, and diaphragm assembly in that order.	—	—
	Assembly	4) Assemble the diaphragm assembly, pressure regulating spring, and then pressure regulating screw assembly.	—	Direction of the diaphragm assembly and the pressure regulating screw assembly
		5) Assemble the bonnet to the body. While the convex side of the bonnet is facing the IN side, mount it onto the body. Then tighten the 4 mounting screws temporarily before tightening them diagonally and evenly to fix the bonnet.	AW20/AW30/AW40 Phillips screwdriver (+) AW60 Hexagon wrench Nominal size: 5	Tightening torque: AW20-D, AW30-D: 2.35 ± 0.3 N·m AW40-D, AW60-D: 3.5 ± 0.3 N·m



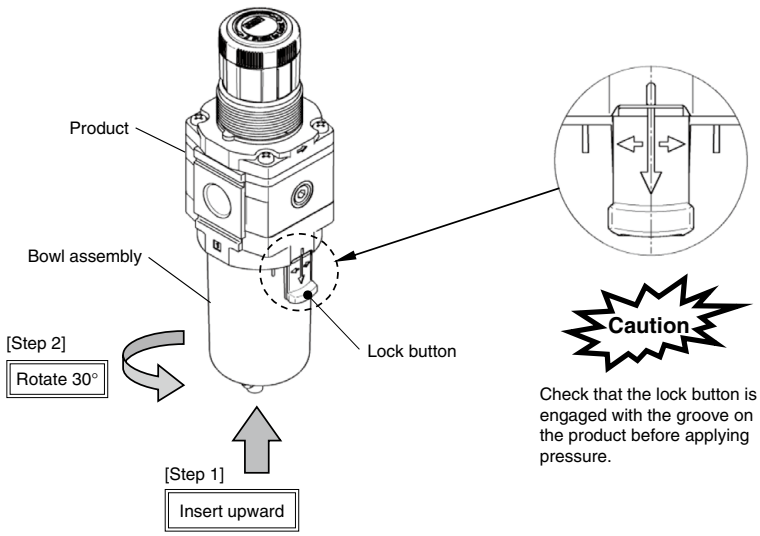
2. Bowl Assembly

Applicable model	Process	Procedure	Tools	Check item
AW20-D AW20K-D	Disassembly	1) Remove the bowl assembly from the product. If the bowl assembly is tightened too much to be removed, use a hook wrench until it can be loosened by hand.	SMC's special wrench Part no.: 1129129	—
				
	Process	Procedure	Tools	Check item
	Assembly	2) Screw the bowl assembly into the product. Tighten it referring to the specified torque.	—	Referential tightening torque: 2.1 N·m
				

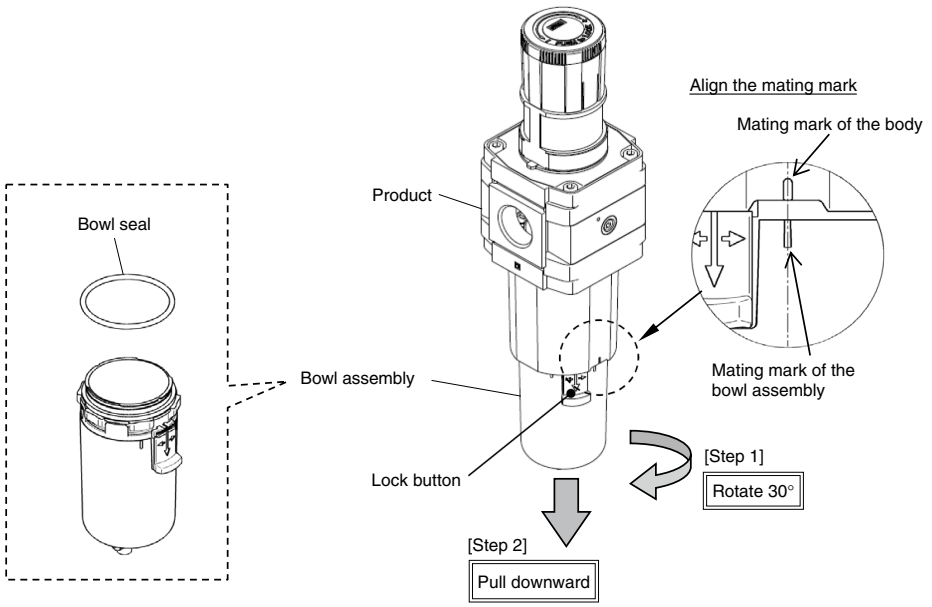
Applicable model	Process	Procedure	Tools	Check item
AW30-D AW30K-D AW40-D AW40K-D	Disassembly	1) Remove the bowl assembly from the product. While the lock button is held down, rotate the bowl assembly by approx. 30 degrees so that the mating marks of the body and bowl assembly meet each other. Then remove the bowl assembly by pulling it downward.	—	—



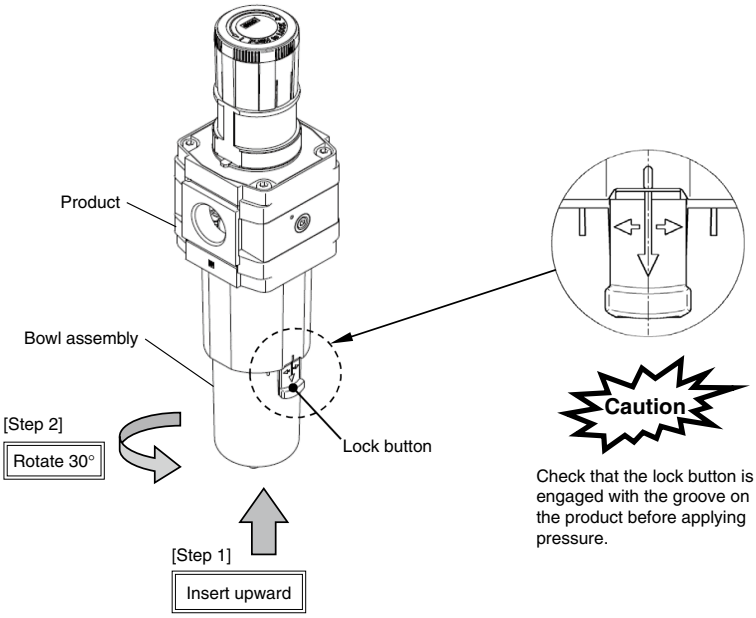
Process	Procedure	Tools	Check item
Assembly	2) Mount the bowl assembly to the product and rotate the bowl assembly until the lock button is locked in position as shown in the figure below.	—	—



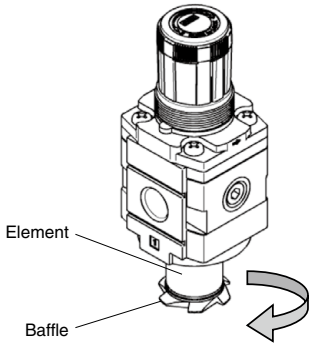
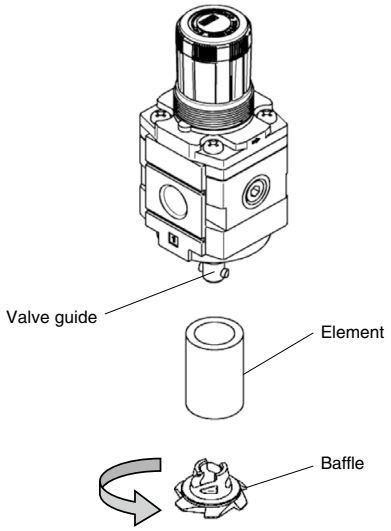
Applicable model	Process	Procedure	Tools	Check item
AW60-D AW60K-D	Disassembly	1) Remove the bowl assembly from the product. While the lock button is held down, rotate the bowl assembly by approx. 30 degrees so that the mating marks of the body and bowl assembly meet each other. Then remove the bowl assembly by pulling it downward.	—	—

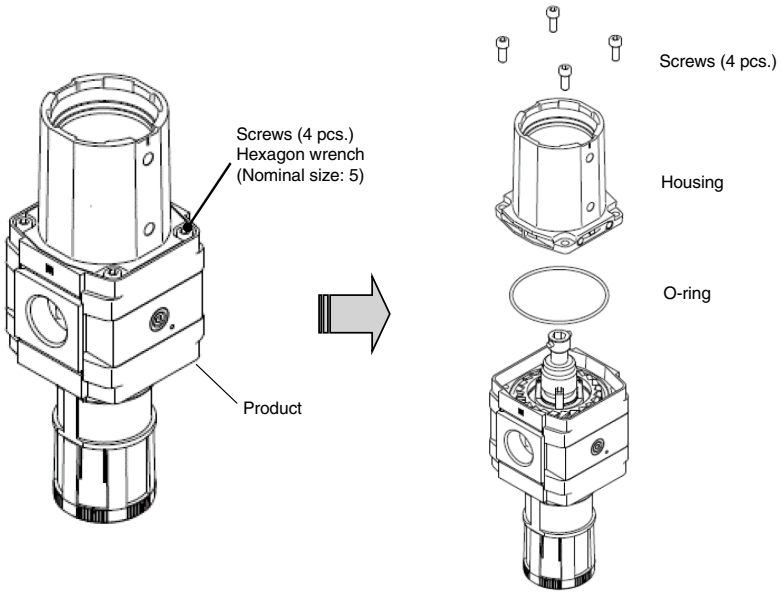
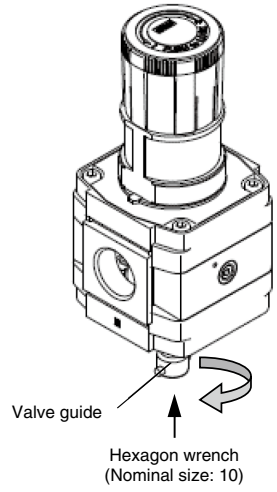


Process	Procedure	Tools	Check item
Assembly	2) Mount the bowl assembly to the product and rotate the bowl assembly until the lock button is locked in position as shown in the figure below.	—	—



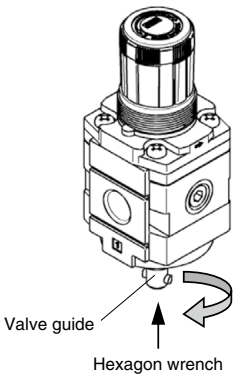
3. Element Assembly

Applicable model	Process	Procedure	Tools	Check item
AW20-D AW20K-D AW30-D AW30K-D AW40-D AW40K-D	Disassembly	1) Remove the bowl assembly referring to section [Replacement of the Bowl Assembly]. Rotate the baffle in the arrow direction to remove the element.	—	—
				
	Process	Procedure	Tools	Check item
	Assembly	2) Mount the element to the valve guide and rotate the baffle in the arrow direction to mount the element. Assemble the bowl assembly referring to section [Replacement of the Bowl Assembly].	—	—
				

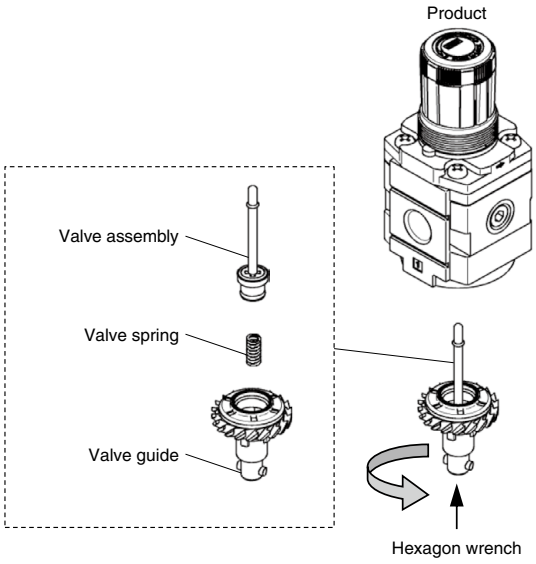
Applicable model	Process	Procedure	Tools	Check item
AW60-D AW60K-D	Disassembly	1) Remove the bowl assembly and element referring to sections [Replacement of the Bowl Assembly] and [Replacement of the Element]. Remove 4 screws and remove the housing and O-ring.	Hexagon wrench Nominal size: 5	—
				
	Process	Procedure	Tools	Check item
	Disassembly	2) Rotate the valve guide in the arrow direction to remove, taking care not to lose the valve spring.	Hexagon wrench Nominal size: 10	—
				

4. Valve Assembly

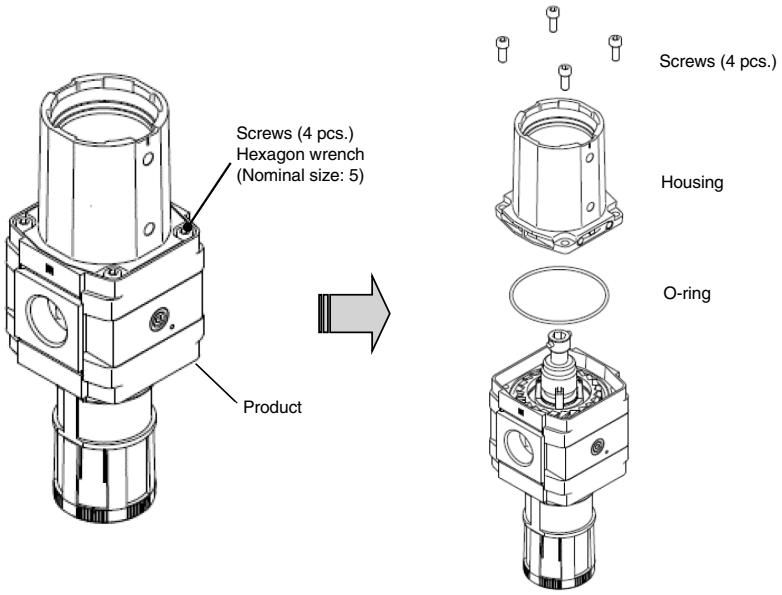
Applicable model	Process	Procedure	Tools	Check item
AW20-D AW20K-D AW30-D AW30K-D AW40-D AW40K-D	Disassembly	1) Remove the bowl assembly and element referring to sections [Replacement of the Bowl Assembly] and [Replacement of the Element]. Rotate the valve guide in the arrow direction to remove, taking care not to lose the valve spring.	Hexagon wrench **AW20-D** Nominal: 4 **AW30-D** Nominal: 6 **AW40-D** Nominal: 8	—



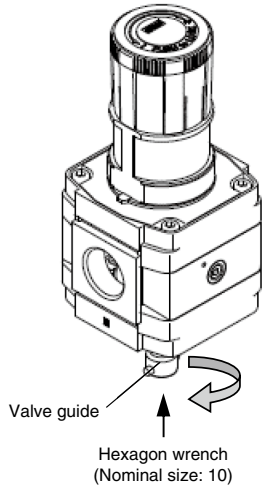
Process	Procedure	Tools	Check item
Assembly	2) Mount the valve spring and valve assembly on the valve guide as shown in the drawing. Rotate the valve guide in the arrow direction to mount the valve guide to the product. Assemble the element and the bowl assembly referring to sections [Replacement of the Element] and [Replacement of the Bowl Assembly].	Hexagon wrench **AW20-D** Nominal: 4 **AW30-D** Nominal: 6 **AW40-D** Nominal: 8	Tightening torque: **AW20-D** 0.45 N·m **AW30-D** 0.95 N·m **AW40-D** 1.15 N·m



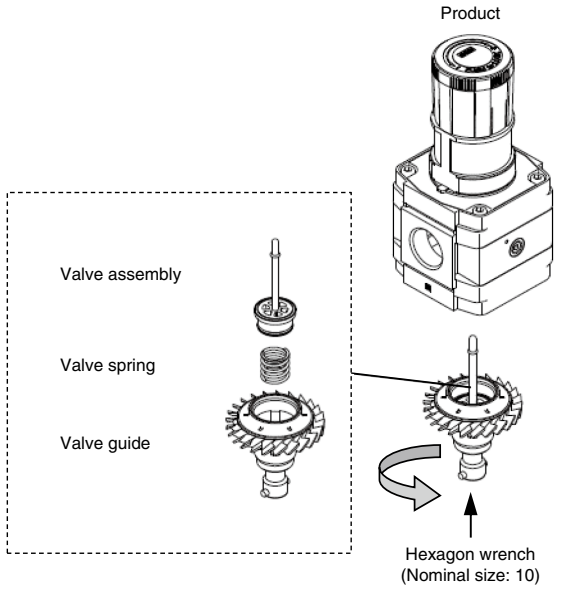
Applicable model	Process	Procedure	Tools	Check item
AW60-D AW60K-D	Disassembly	1) Remove the bowl assembly and element referring to sections [Replacement of the Bowl Assembly] and [Replacement of the Element]. Remove the 4 screws and then remove the housing and O-ring.	Hexagon wrench Nominal size: 5	—



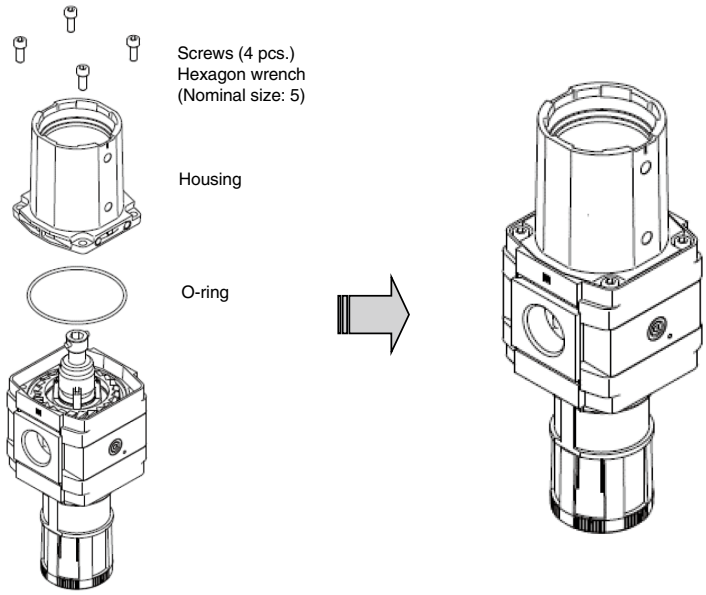
Process	Procedure	Tools	Check item
Disassembly	2) Rotate the valve guide in the arrow direction to remove, taking care not to lose the valve spring.	Hexagon wrench Nominal size: 10	—



Applicable model	Process	Procedure	Tools	Check item
	Assembly	3) Mount the valve spring and valve assembly on the valve guide as shown in the drawing. Rotate the valve guide in the arrow direction to mount the valve guide to the product.	Hexagon wrench Nominal size: 10	Tightening torque: 6.5 ± 0.3 N·m



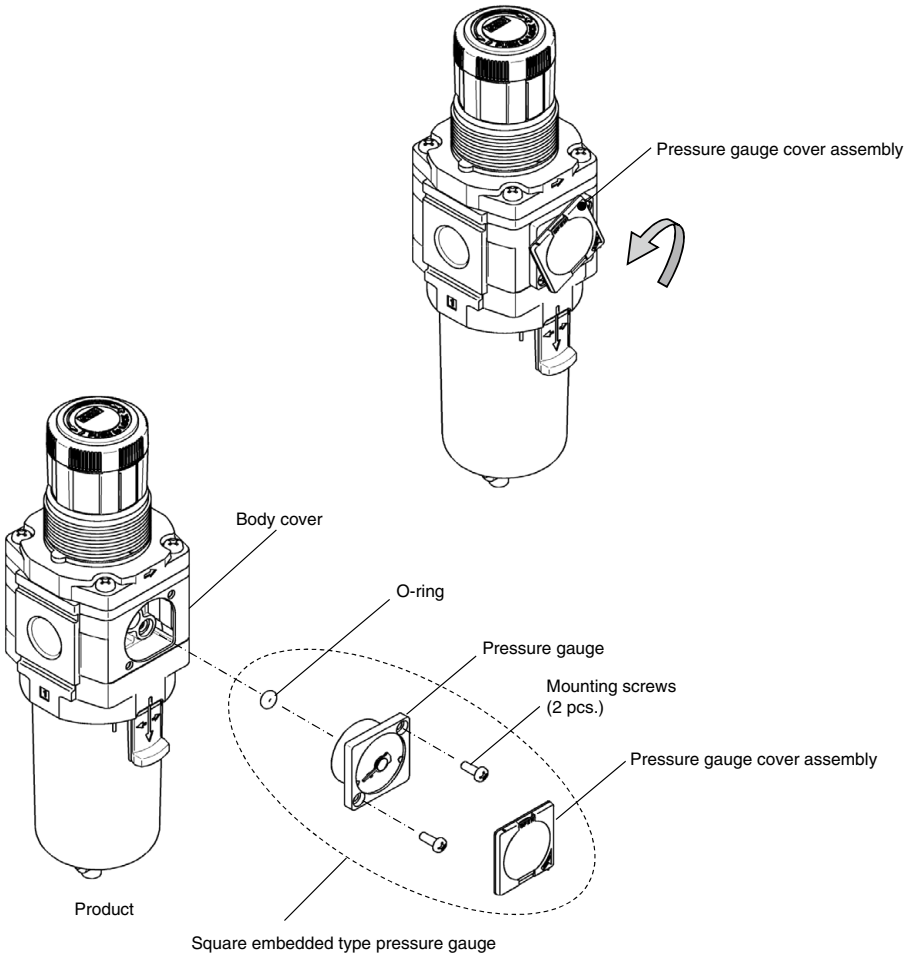
Applicable model	Process	Procedure	Tools	Check item
AW60-D AW60K-D	Assembly	4) Mount the O-ring and housing to the body. Assemble them with the 4 screws. Then, assemble the element and the bowl assembly referring to section [Replacement of the Element] and [Replacement of the Bowl Assembly] .	Hexagon wrench Nominal size: 5	Tightening torque: 3.5 ± 0.3 N·m



5. Square Embedded Type Pressure Gauge

Applicable model	Process	Procedure	Tools	Check item
AW20-D AW20K-D AW30-D AW30K-D AW40-D AW40K-D AW60-D AW60K-D	Disassembly	1) Remove the pressure gauge cover assembly. Rotate the pressure gauge cover assembly 15 degrees in the arrow direction (counterclockwise) and pull it out.	—	—
		2) Remove the pressure gauge. Remove the 2 mounting screws and remove the pressure gauge. The body cover comes out together. Please take care not missing it.	Phillips screwdriver (+)	—
	Assembly	3) Confirm that the O-ring is mounted onto the pressure gauge. When the O-ring comes out or is left on the filter regulator, mount the O-ring to the pressure gauge correctly.	—	Presence of the O-ring
		4) Assemble the pressure gauge. Mount the pressure gauge to the filter regulator with the mounting screws and tighten the screws referring to the tightening torque specified in the right column.	Phillips screwdriver (+)	Tightening torque: 0.85 ± 0.05 N·m
		5) Mount the pressure gauge cover assembly. Set the pressure gauge cover assembly with its arrow on the lower right corner. Mate the 2 fingers of the pressure gauge cover assembly with the 2 finger slits of the pressure gauge, and rotate the pressure gauge cover assembly 15 degrees to the opposite direction of the arrow (clockwise).	—	—

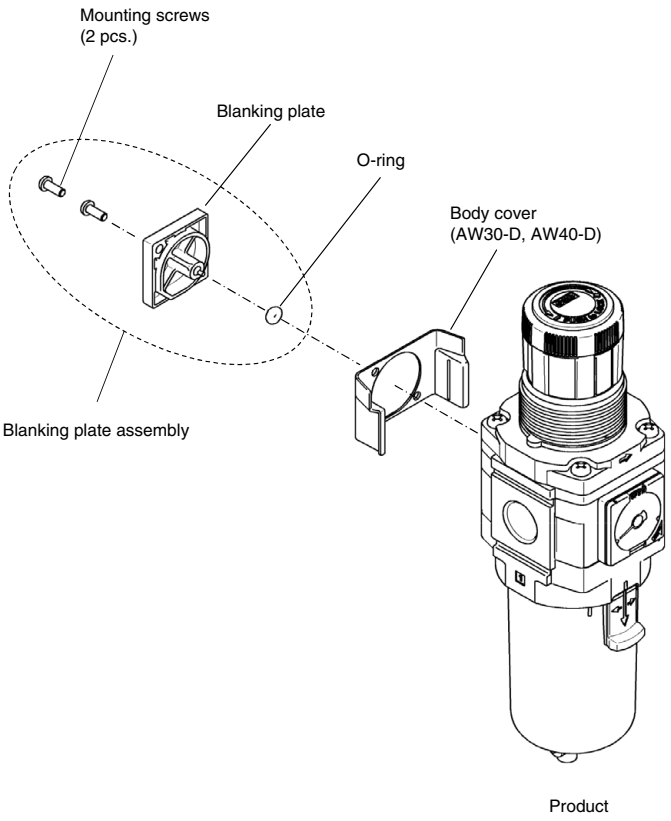
Note) Applicable to the product with square embedded type pressure gauge (E).



6. Blanking Plate Assembly

Applicable model	Process	Procedure	Tools	Check item
AW20-D AW30-D AW40-D AW60-D	Disassembly	1) Remove the blanking plate. Remove the 2 mounting screws and remove the blanking plate. The body cover (AW30-D, AW40-D) comes out together. Please take care not missing it.	Phillips screwdriver (+)	—
	Assembly	2) Confirm that the O-ring is mounted onto the blanking plate. When the O-ring comes out or is left on the filter regulator, mount the O-ring to the blanking plate correctly.	—	Presence of the O-ring
		3) Assemble the blanking plate. Mount the blanking plate to the product, over the body cover, with the mounting screws and tighten them referring to the tightening torque specified in the right column.	Phillips screwdriver (+)	Tightening torque: 0.6 ± 0.05 N·m

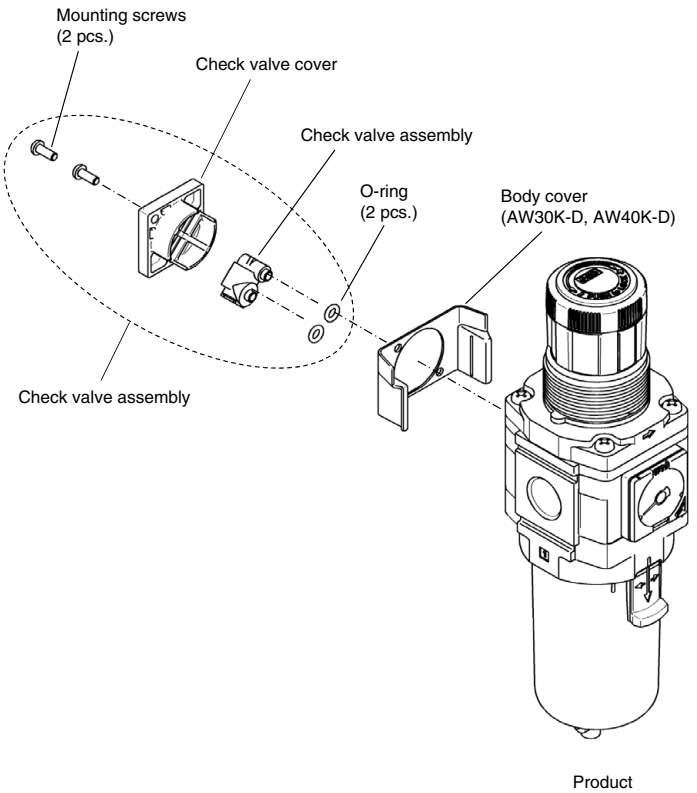
Note) Applicable to the product with square embedded type pressure gauge (E) or digital pressure switch (E1 to E4). Not applicable to the product with backflow function.



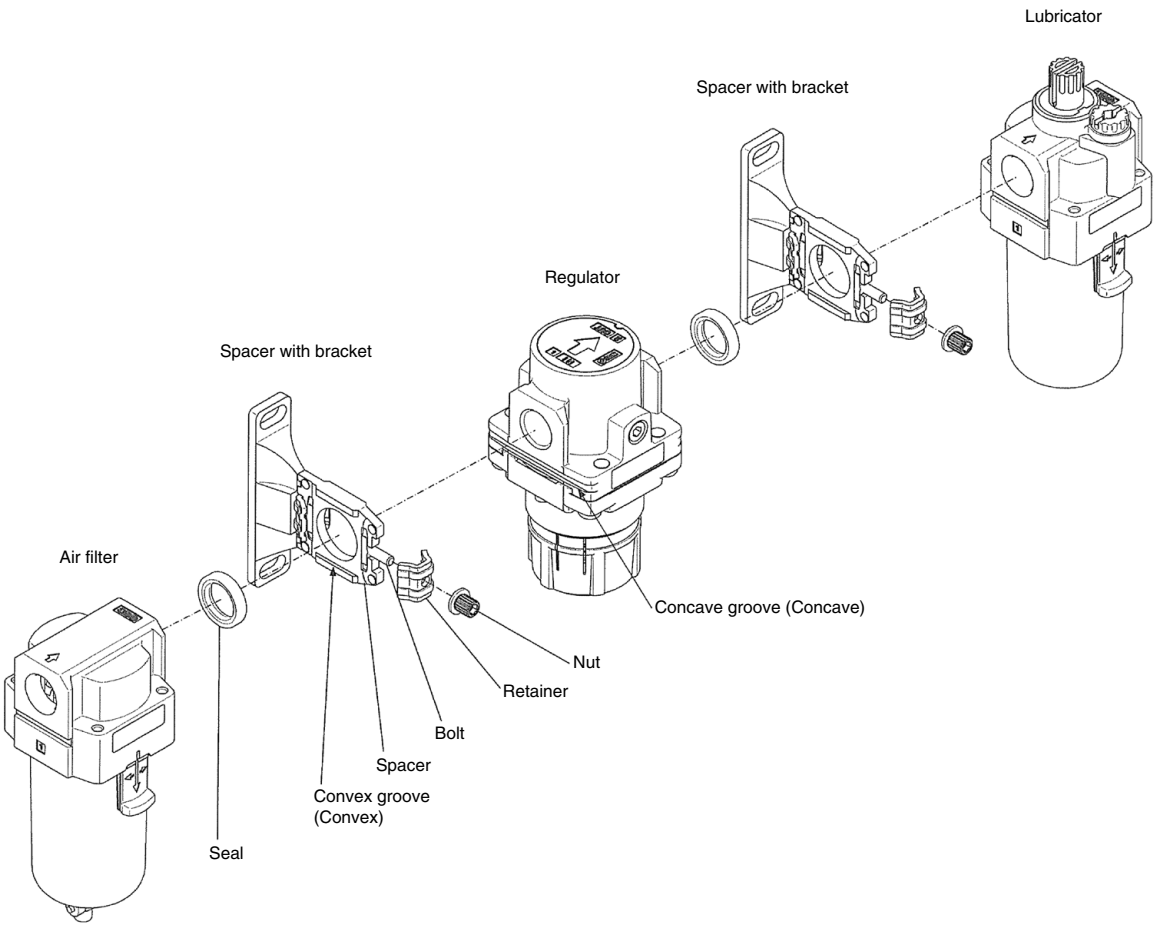
7. Check Valve Assembly

Applicable model	Process	Procedure	Tools	Check item
AW20K-D AW30K-D AW40K-D AW60K-D	Disassembly	1) Remove the check valve cover. Remove the 2 mounting screws and the check valve cover. The body cover comes out together. Please take care not missing it.	Phillips screwdriver (+)	—
		2) Remove the check valve assembly. Remove the check valve assembly by pulling it toward the operator.	—	—
	Assembly	3) Confirm that the O-ring is mounted onto the check valve assembly. When the O-ring comes out or is left on the filter regulator, mount the O-ring to the check valve assembly correctly.	—	Presence of the O-ring
		4) Assemble the check valve cover. Assemble the check valve cover to the product with the mounting screws and tighten the screws referring to the tightening torque specified in the right column.	Phillips screwdriver (+)	Tightening torque: 0.6 ± 0.05 N·m

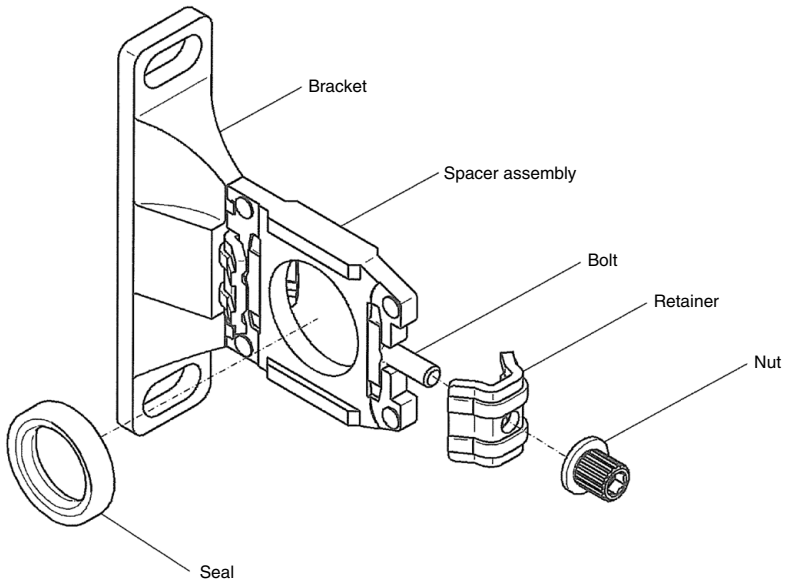
Note) Applicable to the product with backflow function.



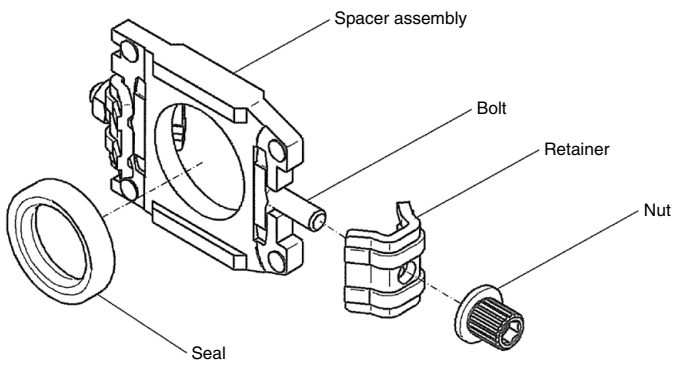
1) F.R.L. units


Lubricator
Spacer with bracket
Regulator
Spacer with bracket
Air filter
Concave groove (Concave)
Nut
Retainer
Bolt
Spacer
Convex groove
(Convex)
Seal

2) Spacer with bracket



3) Spacer



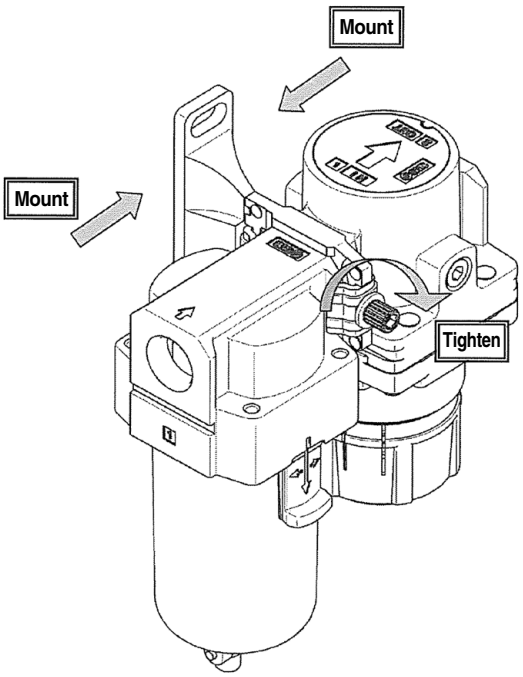
⚠Warning

- Before replacement, ensure that the regulator is not pressurized.
- Rotate the knob of the regulator and filter regulator to zero.
- Replace while referring to the “Exploded View.”
- After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

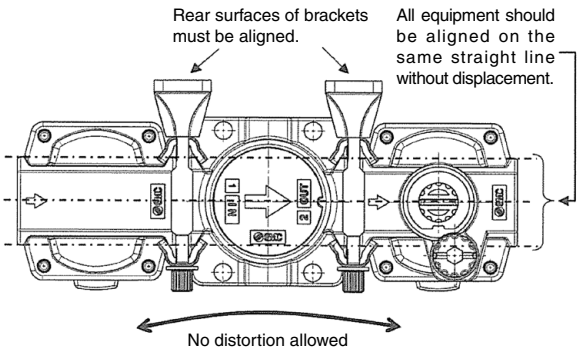
1. Air Combination

Process	Procedure	Tools	Check item
Disassembly	1) Remove the pipes connected to the product as required.	—	—
	2) Remove the nut and retainer. Insert the hexagon wrench into the hexagon hole on the nut, and turn the wrench to the left to remove the nut and retainer. At this time, hold the product by hand to prevent it from falling.	Hexagon wrench Nominal: **AC10-A, AC20-B**: 3 **AC25, 30-B**: 4 **AC40(-06)-B**: 5 **AC50, 55, 60-B**: 6	—
	3) Remove the product.	—	—
Assembly	4) Mount the spacer onto the product. Engage the convex groove on the spacer with the concave groove on the product. At this time, be careful not to confuse the IN and OUT of the product.	—	—
	5) While holding the product by hand, let the bolt on the spacer pass through the retainer, and then turn the nut to the right to tighten it temporarily.	—	—
	6) Tighten the nut. Insert the hexagon wrench into the hexagon hole on the nut, and turn the wrench to the right to tighten the nut. Refer to the “Check item” in the right column for the tightening torque.	Hexagon wrench Nominal: **AC10-A, AC20-B**: 3 **AC25, 30-B**: 4 **AC40(-06)-B**: 5 **AC50, 55, 60-B**: 6	Tightening torque: **AC10-A, AC20-B**: 0.6 ± 0.05 N·m **AC25, 30-B**: 1.5 ± 0.05 N·m **AC40(-06)-B, AC50, 55, 60-B**: 3.0 ± 0.1 N·m

[Modular connection (assembly) method]

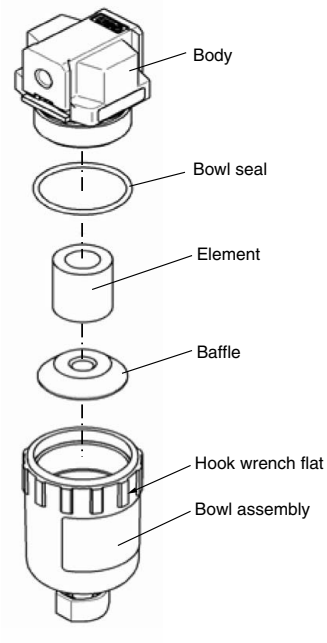


[Precautions for the Modular connection (assembly)]

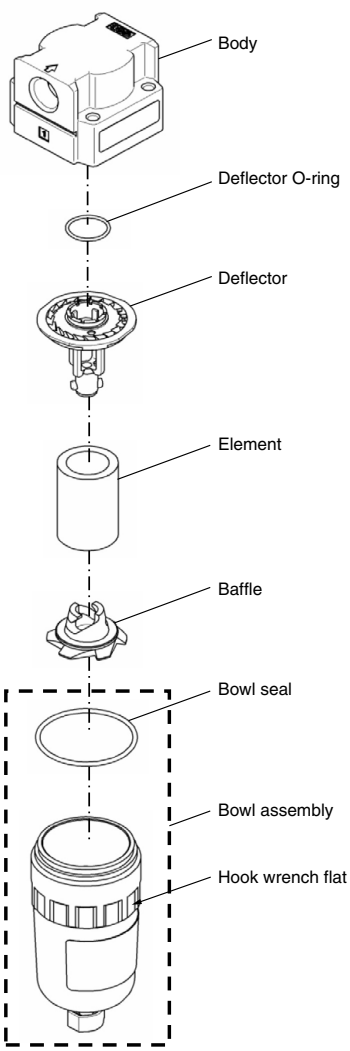


∗ For details on each product, refer to the corresponding operation manuals.

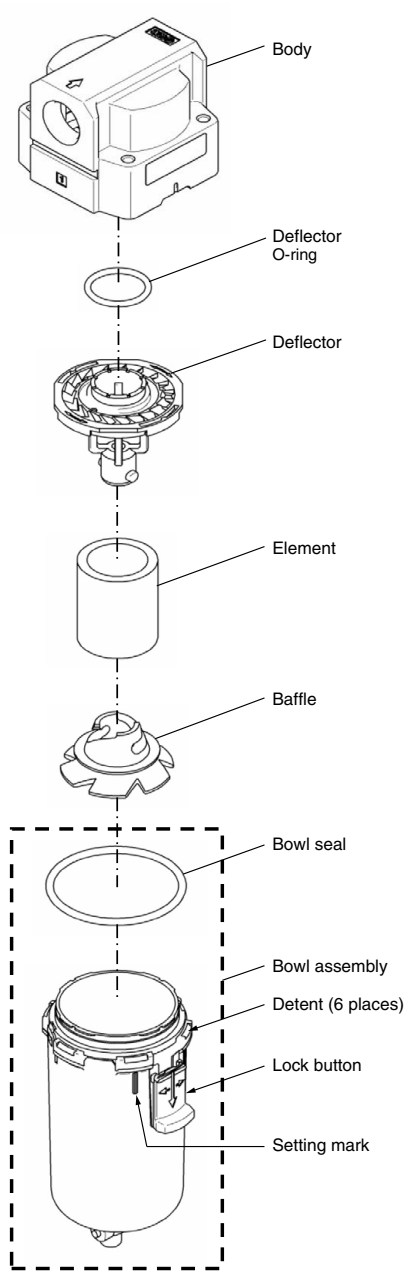
1) AF10-A

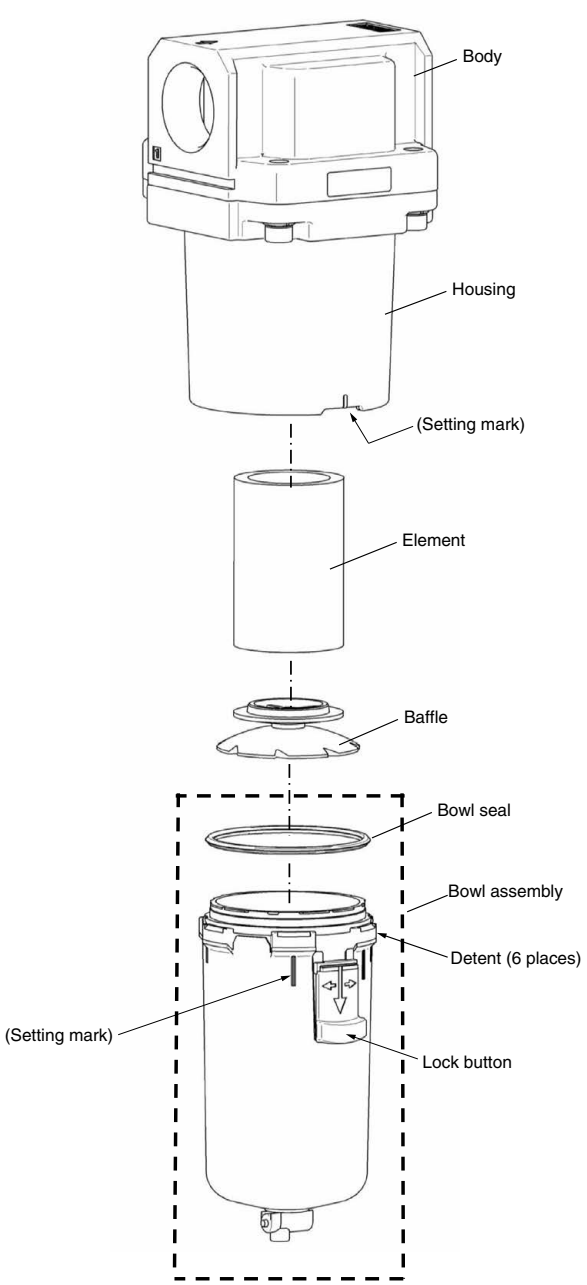


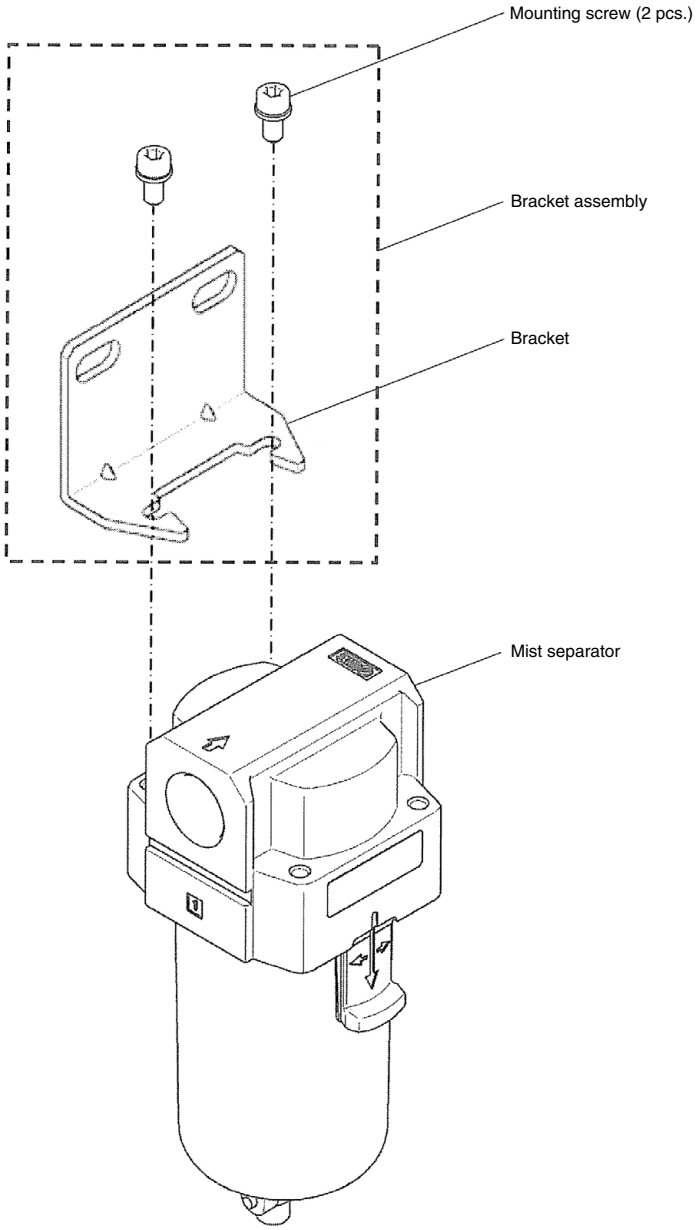
2) AF20-A



3) AF30-A/40-A



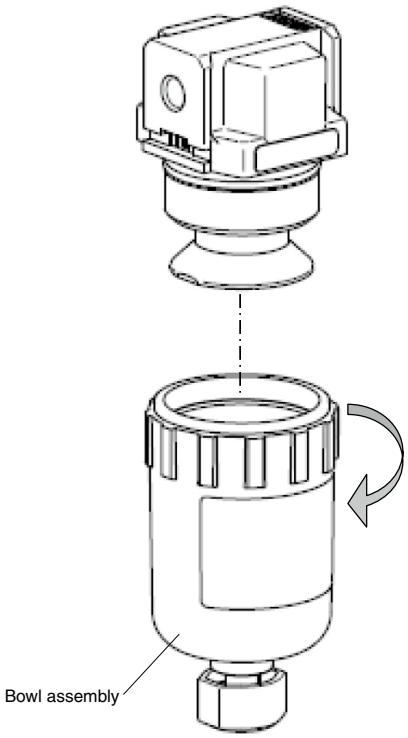
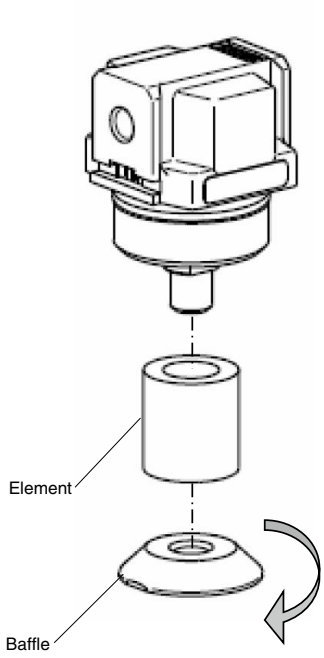

Body
Housing
(Setting mark)
Element
Baffle
Bowl seal
Bowl assembly
Detent (6 places)
(Setting mark)
Lock button


Mounting screw (2 pcs.)
Bracket assembly
Bracket
Mist separator

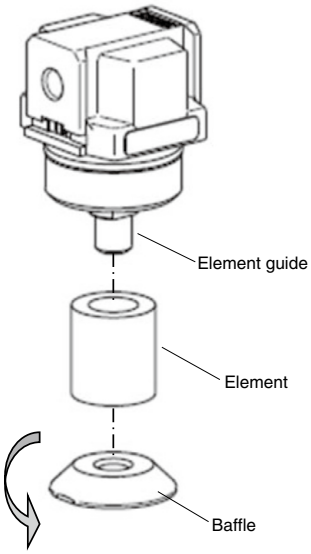
⚠Warning

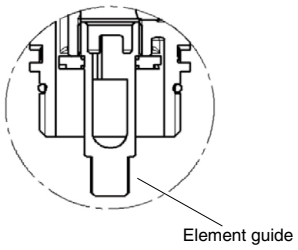
Before replacement, ensure that the regulator is not pressurized.
Replace while referring to the “Exploded View.”
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

1. Bowl Assembly, Element

Applicable model	AF10-A	
Process	Disassembly	
Procedure	1) Turn the bowl assembly in the direction shown in the figure below to remove it from the product. If the bowl assembly has been tightened too much to be removed, use a hook wrench until it can be loosened by hand. (Hook wrench nominal: 25/28)	2) Turn the baffle by hand in the direction shown in the figure below to remove the element.
		

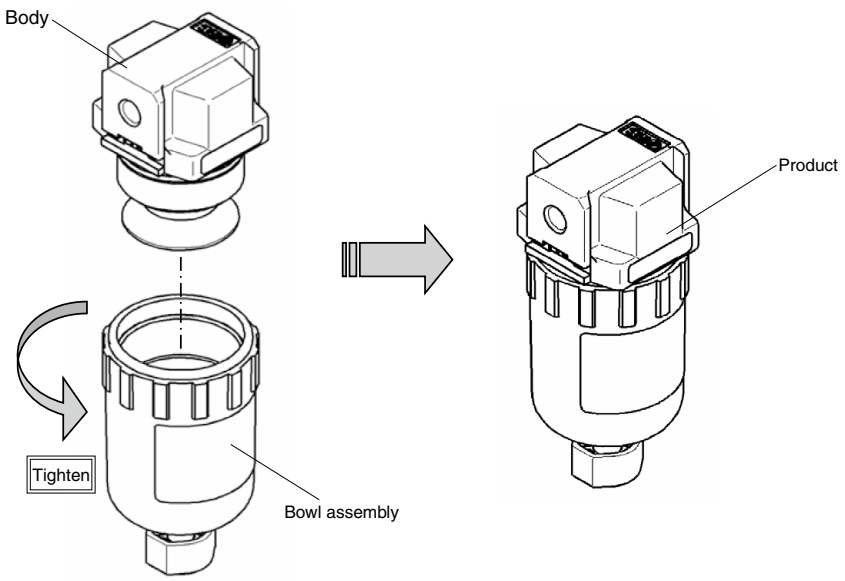
Applicable model	AF10-A	
Process	Assembly	
Procedure	1) Mount the element to the element guide. (Direction is not specified.)	2) Turn the baffle by hand in the direction shown in the figure below to tighten the element. As the mounting direction of the baffle is specified, refer to the “Exploded View.” For manual tightening, use the “Referential tightening torque” provided below.





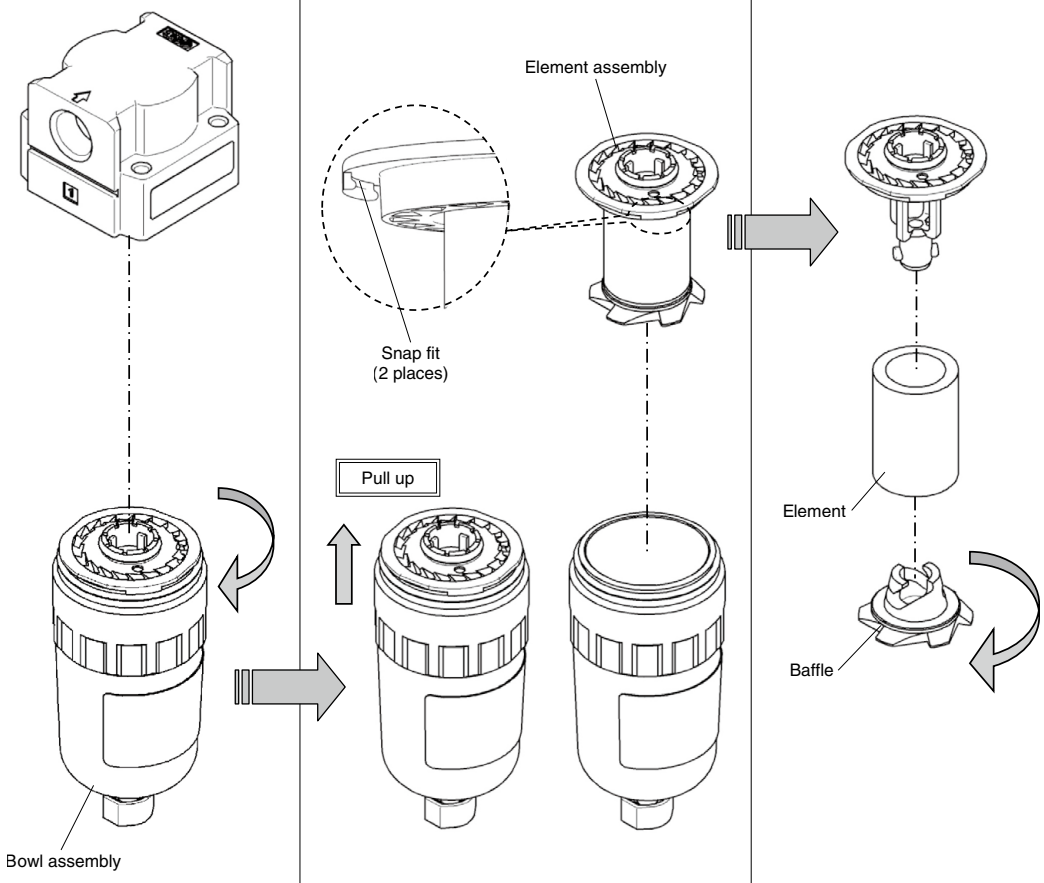
Referential tightening torque: 0.35 ± 0.05 N·m

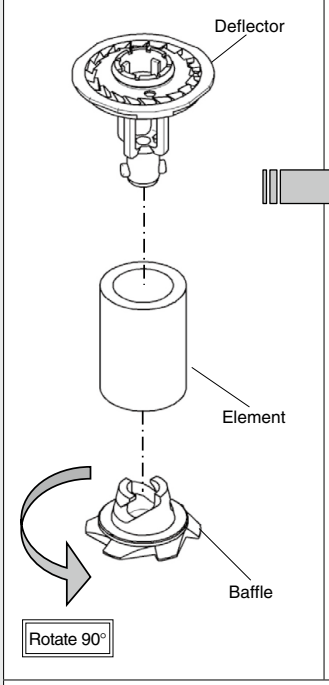
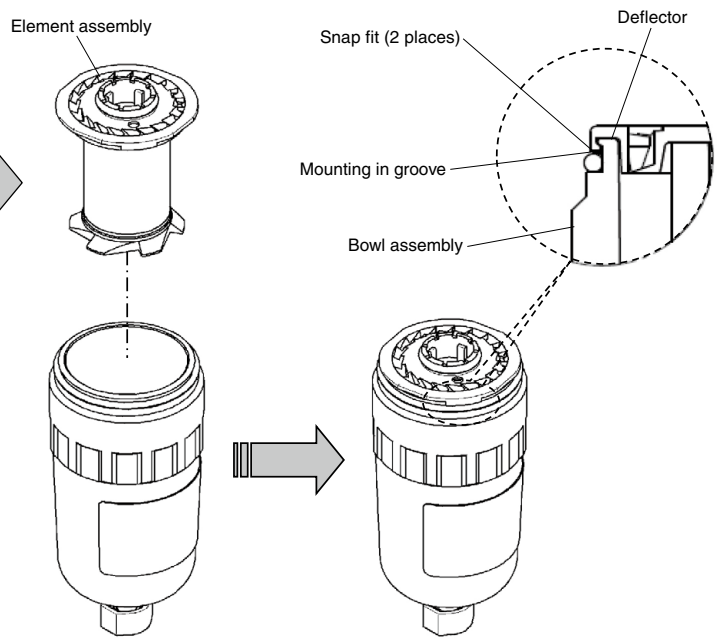
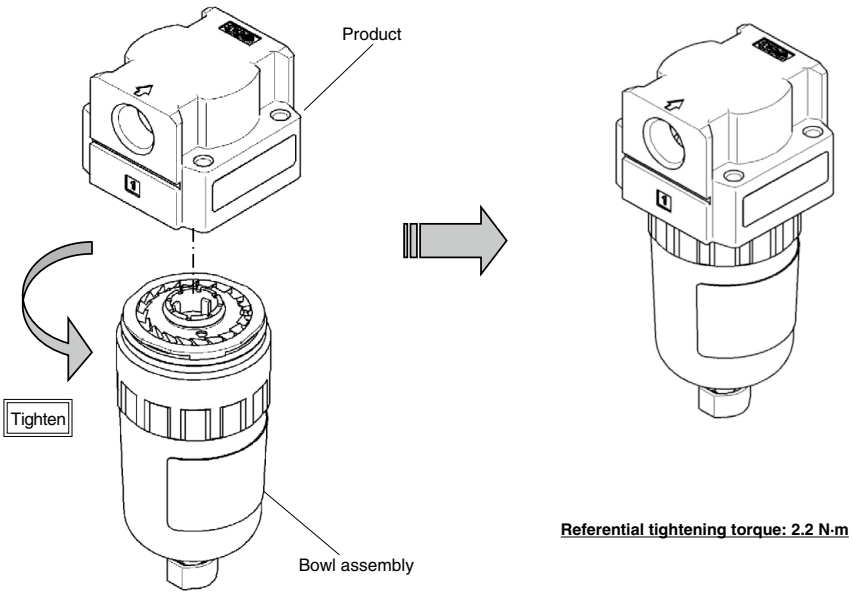
3) Mount the bowl assembly onto the body firmly by turning it in the direction shown in the figure below.
For manual tightening, use the “Referential tightening torque” provided below.



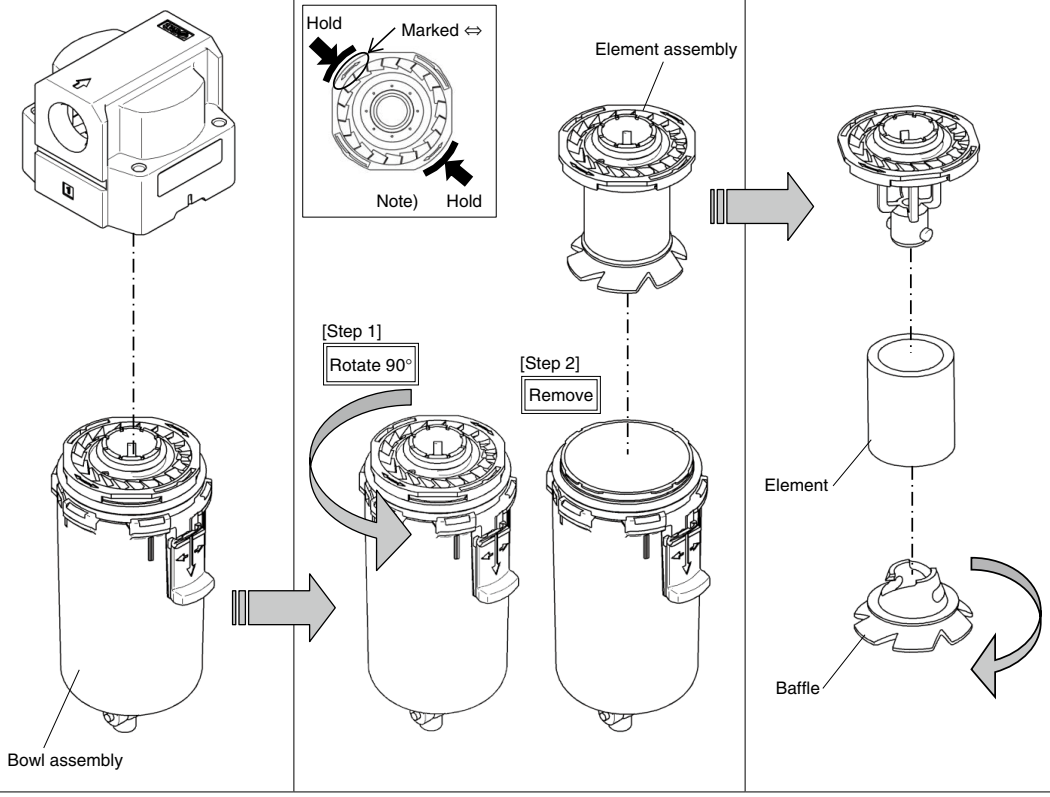
Referential tightening torque: 1.5 N·m

Applicable model	AF20-A		
Process	Disassembly		
Procedure	1) Turn the bowl assembly to the left to remove it from the product. If the bowl assembly has been tightened too much to be removed, use SMC's special wrench until it can be loosened by hand. (SMC's special wrench part no.: 1129129 (Recommended))	2) Hold the outer periphery, avoiding the two snap fits on the deflector, and pull it up to remove the element assembly.	3) Turn the baffle in the direction of the arrow to remove the element.



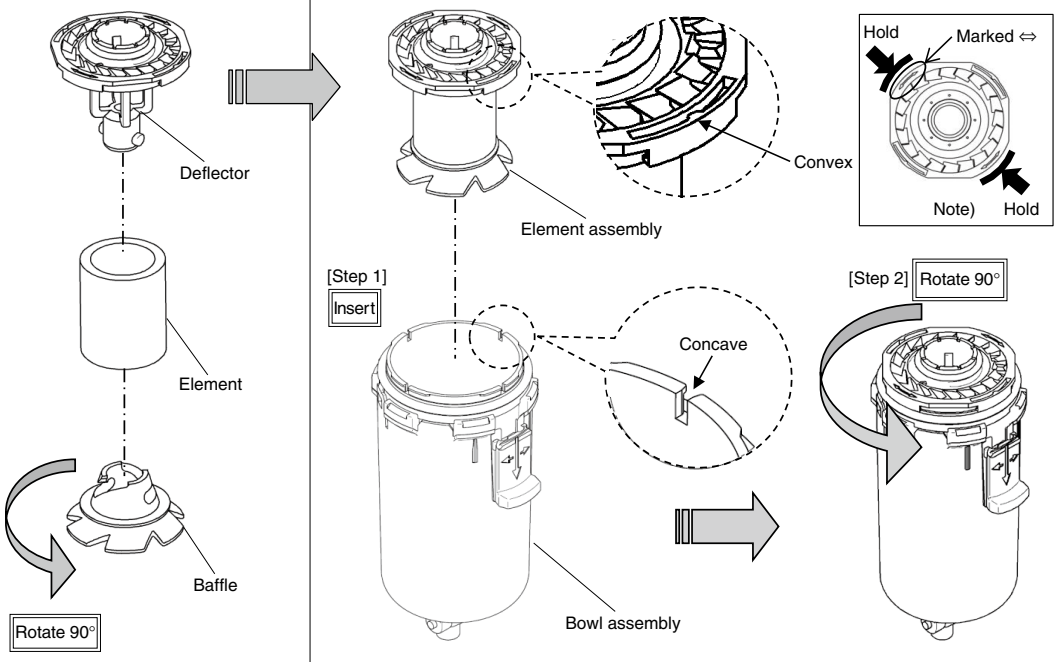
Applicable model	AF20-A	
Process	Assembly	
Procedure	1) Mount the element onto the deflector, and turn the baffle in the direction shown in the figure below to secure the element.	2) When mounting the element assembly onto the bowl assembly, engage the two snap fits on the deflector with the bowl assembly (until you hear a click).
		
	3) Mount the bowl assembly onto the product firmly by turning it to the right. For manual tightening, use the “Referential tightening torque” provided below.	
	 **Referential tightening torque: 2.2 N·m**	

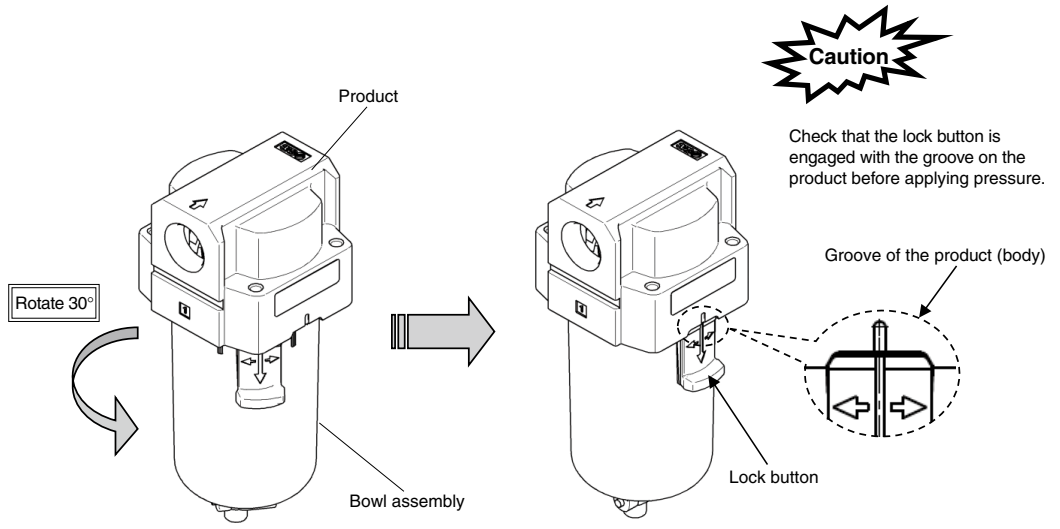
Applicable model	AF30-A/40-A		
Process	Disassembly		
Procedure	1) Remove the bowl assembly from the product.	2) Turn the element assembly 90 degrees either to the left or right to remove it.	3) Turn the baffle in the direction of the arrow to remove the element.



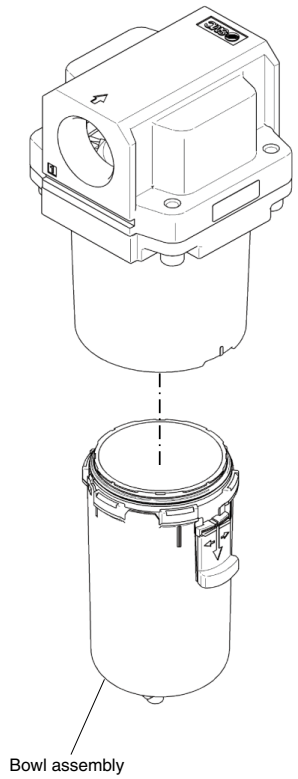
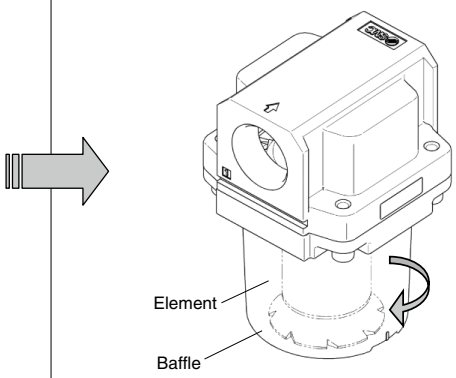
Note) Hold the sections marked ⇔ on the circular arc, and turn the element assembly.

Applicable model	AF30-A/40-A
Process	Assembly
Procedure	1) Mount the element onto the deflector, and turn the baffle in the direction shown in the figure below to secure the element.
	2) After mounting the element assembly onto the bowl assembly, turn the element assembly 90 degrees either to the left or right until the convex on the element assembly is engaged with the concave on the bowl assembly.
	3) Mount the bowl assembly onto the product, and turn it until the lock button is aligned with the groove on the product as shown in the figure below.

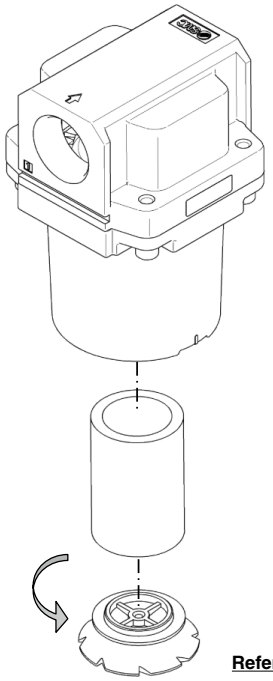


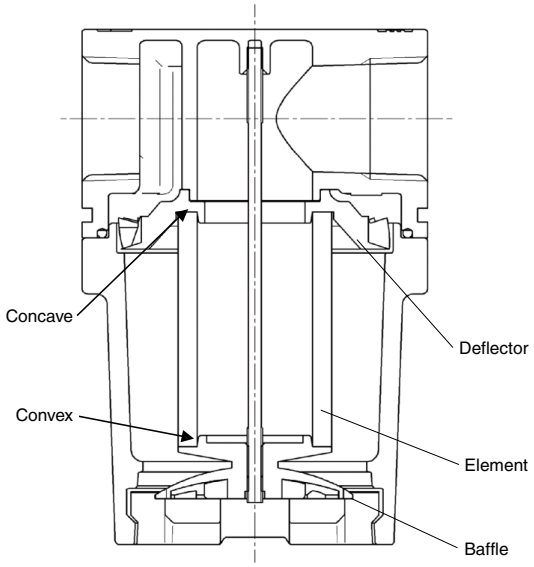


Note) Hold the sections marked ⇔ on the circular arc, and turn the element assembly.

Applicable model	AF50-A/60-A	
Process	Disassembly	
Procedure	1) Remove the bowl assembly from the product.	2) Turn the baffle in the direction of the arrow to remove the element.
		

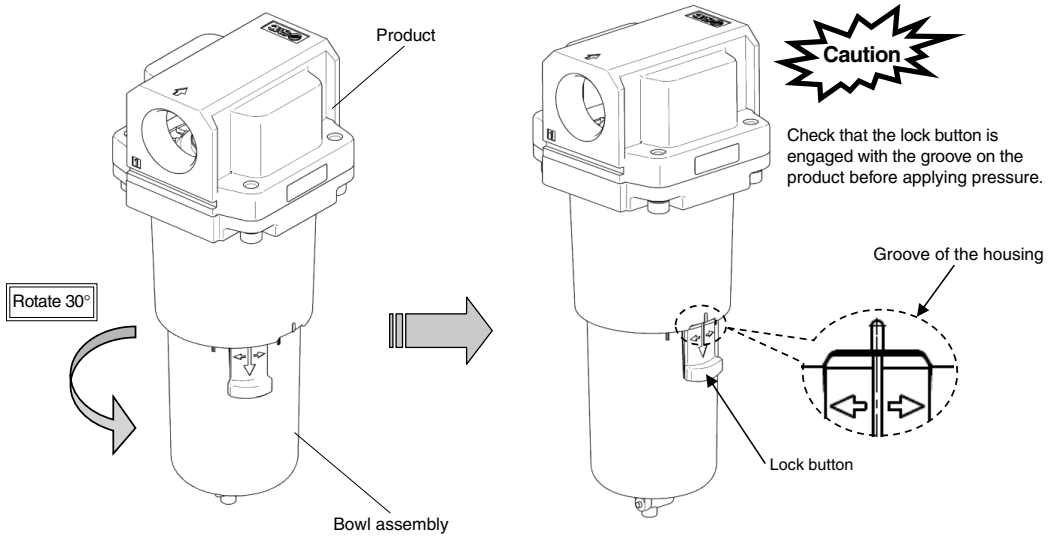
Applicable model	AF50-A/60-A
Process	Assembly
Procedure	1) Mount the element by engaging it with the concave on the deflector. Insert the baffle into the element, paying attention to the mounting direction (so that the convex on the baffle is engaged with the element). Turn the baffle to the right until it is slightly jointed with the element. Then, tighten it further by making an additional half turn to the right. For manual tightening, use the “Referential tightening torque” provided below.





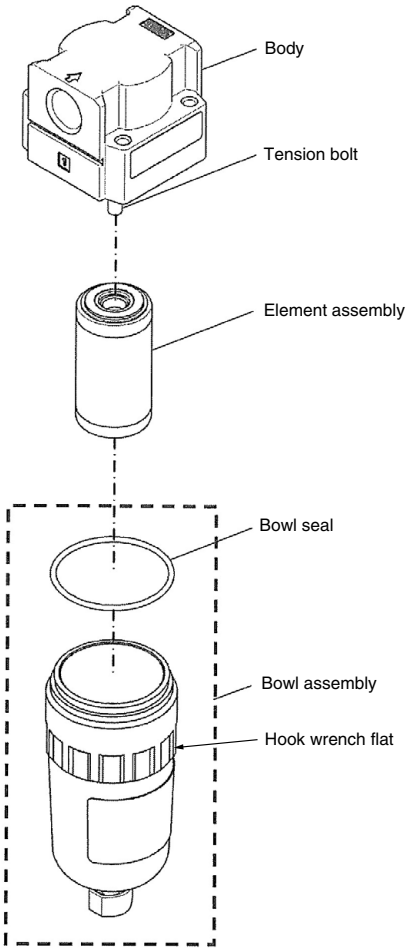
Referential tightening torque: 1.8 N·m

2) Mount the bowl assembly onto the product, and turn the bowl assembly until the lock button is aligned with the groove on the housing as shown in the figure below.

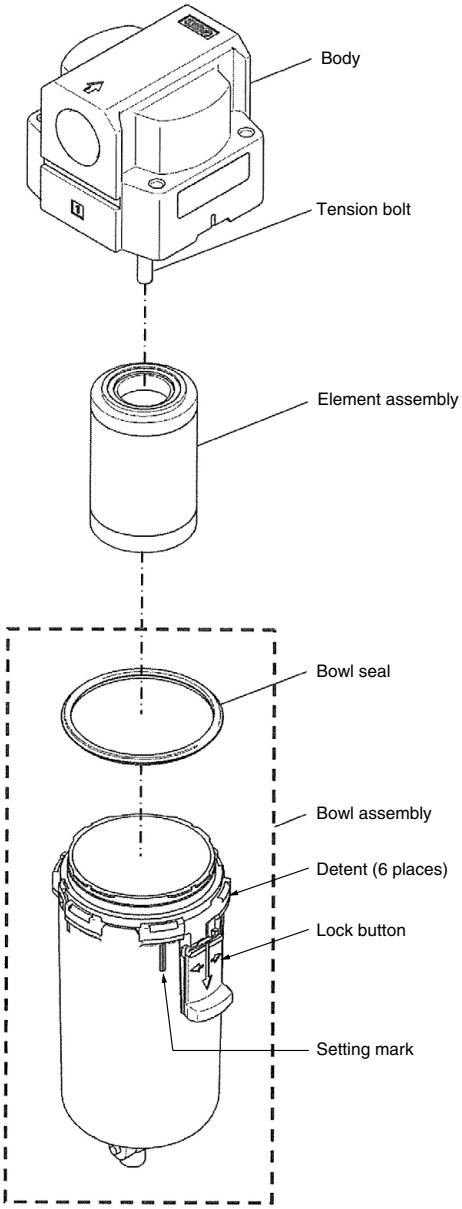


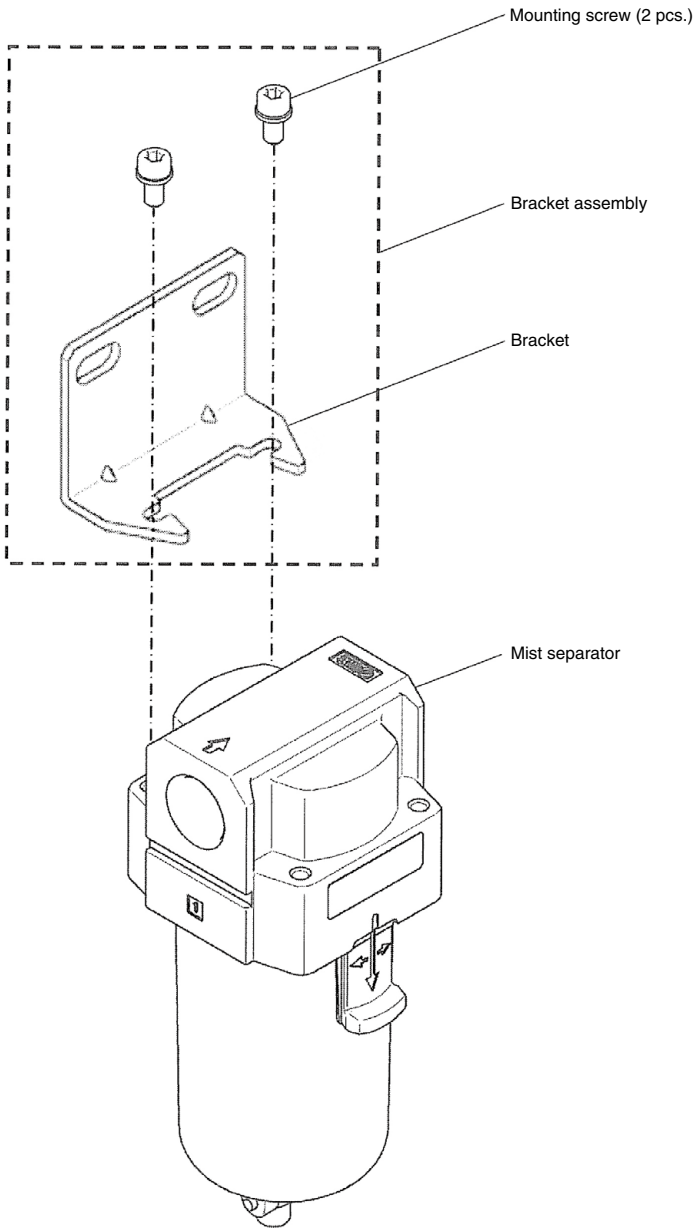
AFM20-A to 40-A Exploded View 1

1) AFM20-A



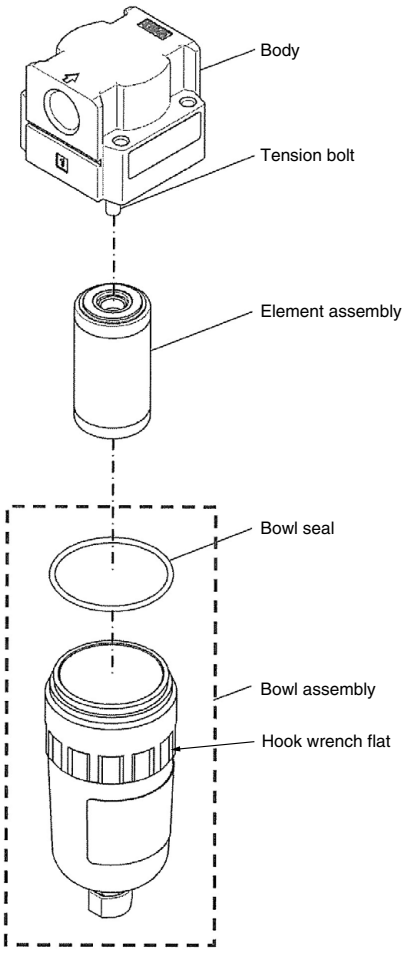
2) AFM30-A/40-A



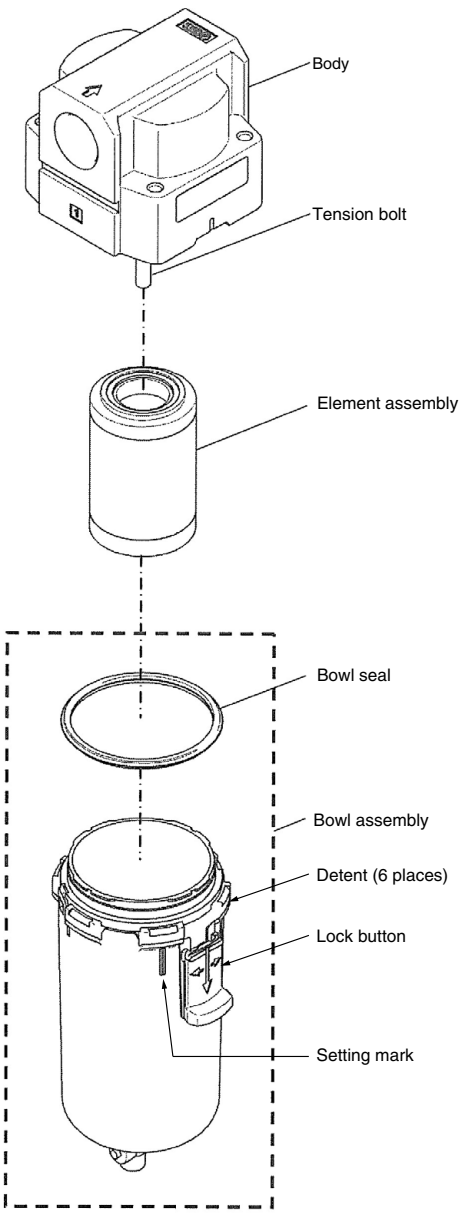

Mounting screw (2 pcs.)
Bracket assembly
Bracket
Mist separator

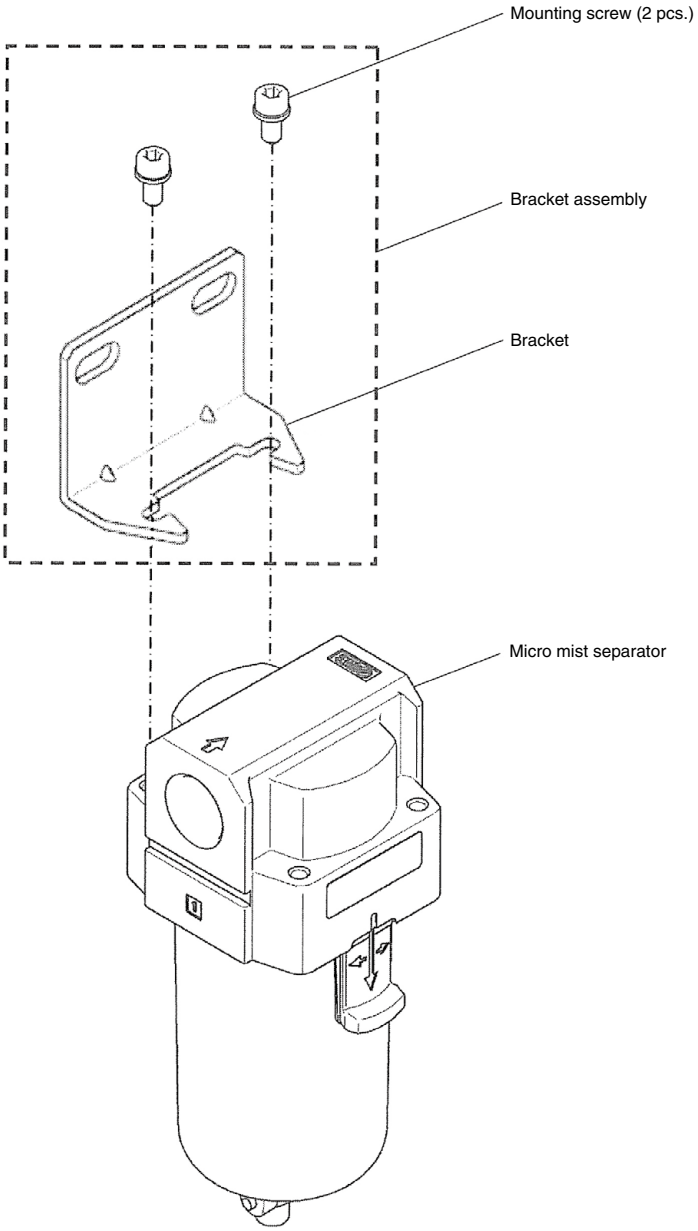
AFD20-A to 40-A Exploded View 1

1) AFD20-A



2) AFD30-A/40-A

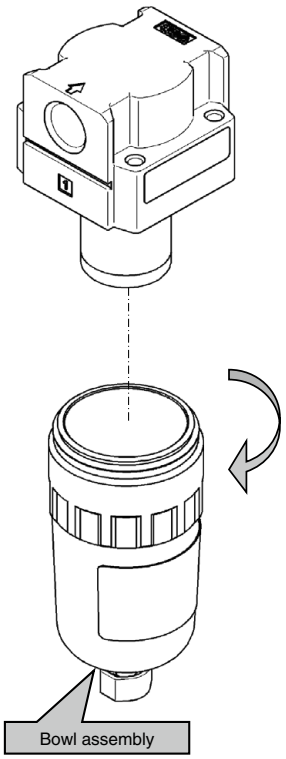
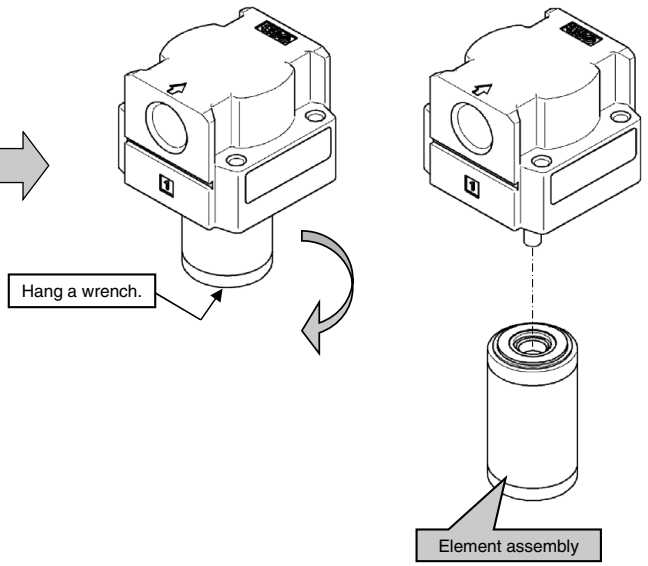



Mounting screw (2 pcs.)
Bracket assembly
Bracket
Micro mist separator

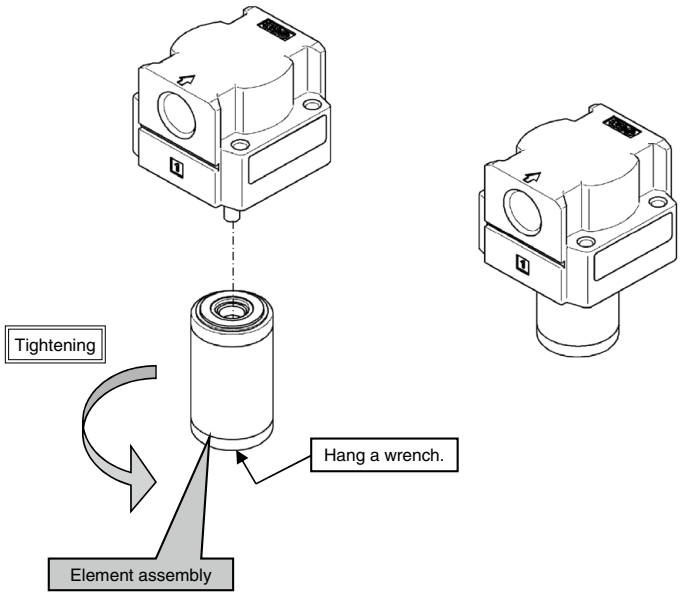
⚠Warning

Before replacement, ensure that the regulator is not pressurized.
Replace while referring to the “Exploded View.”
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

1. Bowl Assembly, Element Assembly

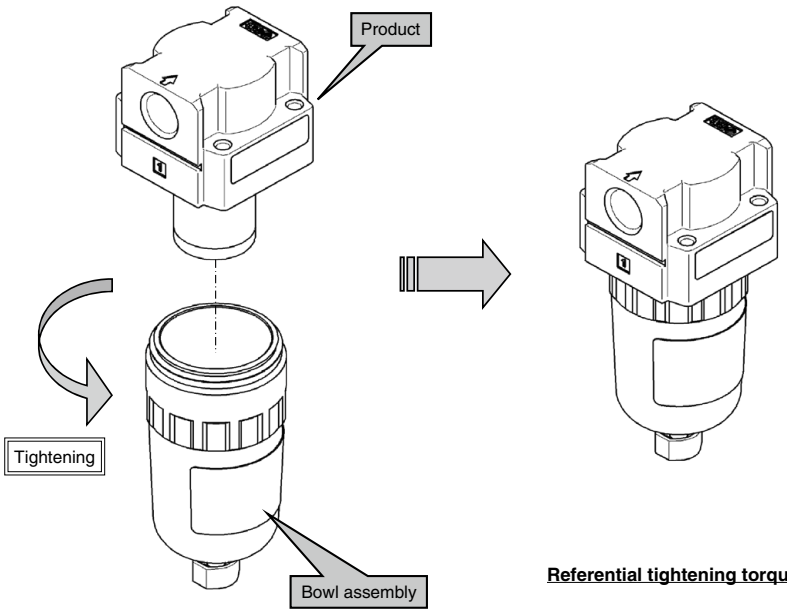
Applicable model	AFD20-A	
Process	Disassembly	
Procedure	1) The bowl assembly is released counterclockwise, detaches it from the product. If the bowl assembly is tightened too much to be removed, use hook wrench until it can be loosened by hand. (Hook wrench, Nominal: 34/38)	2) Hold the element with a wrench to rotate it counterclockwise and remove the element. (Wrench, Nominal: 7)
		

Applicable model	AFD20-A
Process	Assembly
Procedure	1) Hold the element with a wrench to rotate it counterclockwise and remove the element. See check item for referential tightening torque. (Wrench Nominal: 7)



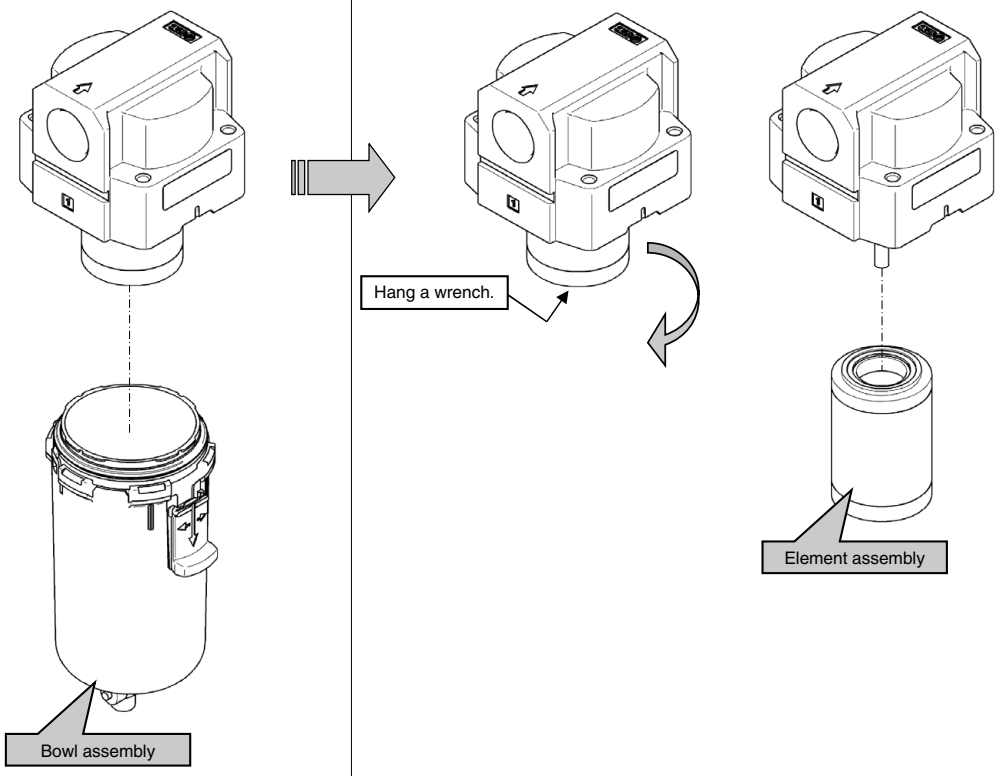
Tightening torque: 0.49 ± 0.05 N·m

2) The bowl assembly is rotated clockwise and and secured to the product.
Tighten by hand is the followed tightening to torque level shown.

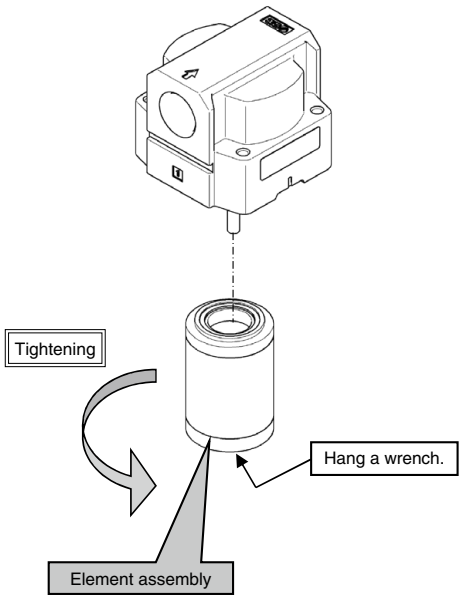


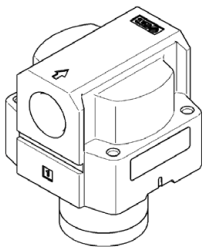
Referential tightening torque: 2.2 N·m

Applicable model	AFD30,40-A	
Process	Disassembly	
Procedure	1) The bowl assembly is detached from the product.	2) Hold the element with a round pliers to rotate it counterclockwise and remove the element.



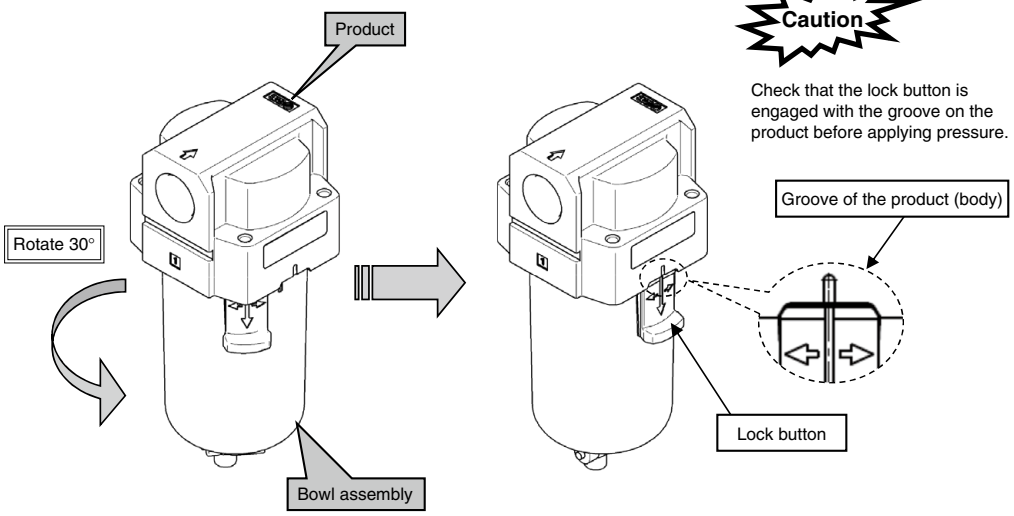
Applicable model	AFD30,40-A
Process	Assembly
Procedure	1) Hold the element with a round pliers to rotate it counterclockwise and remove the element. See check item for referential tightening torque.





Tightening torque:
AFD30-A: 1.47 ± 0.2 N·m
AFD40-A: 1.96 ± 0.2 N·m

2) The bowl assembly is rotated until the bowl assembly is attached to the product, and the lock button clicks into body when locked in position.

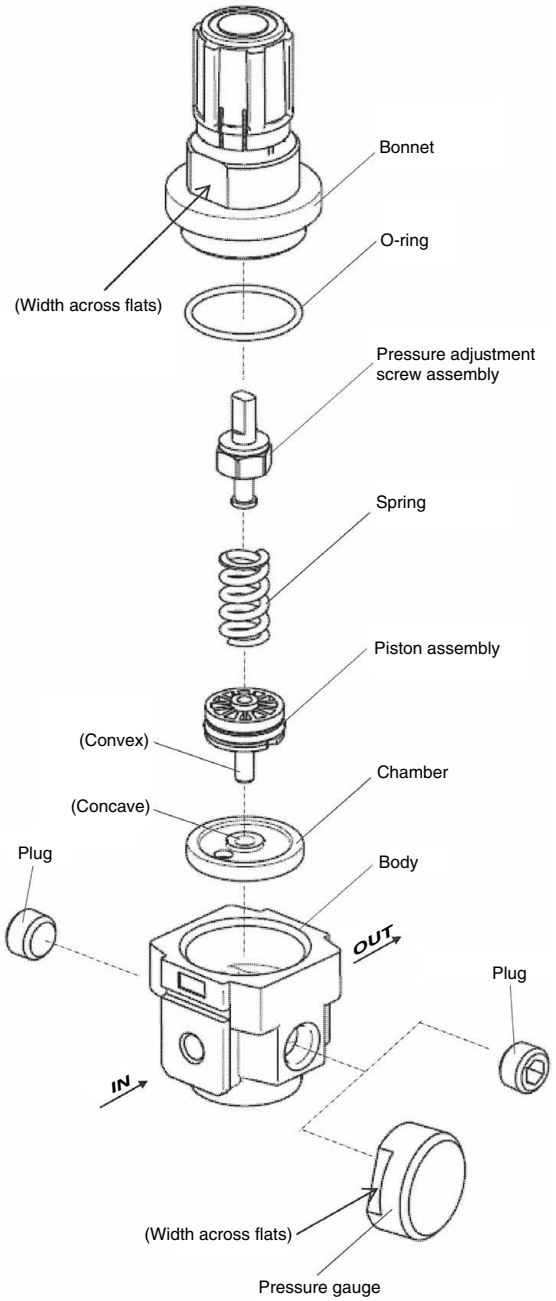


Caution

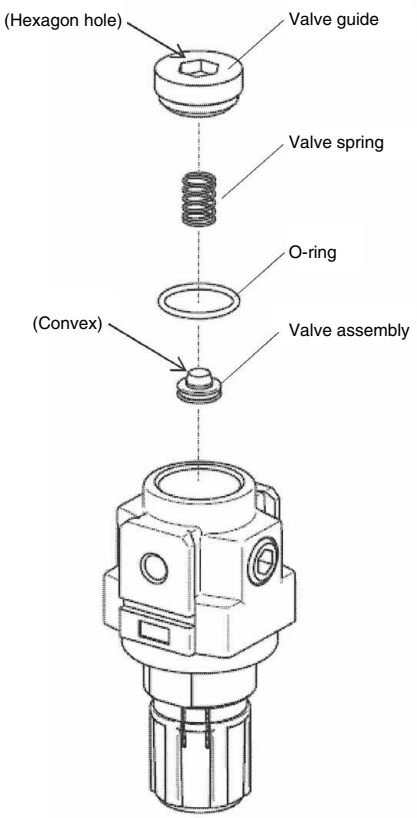
Check that the lock button is engaged with the groove on the product before applying pressure.

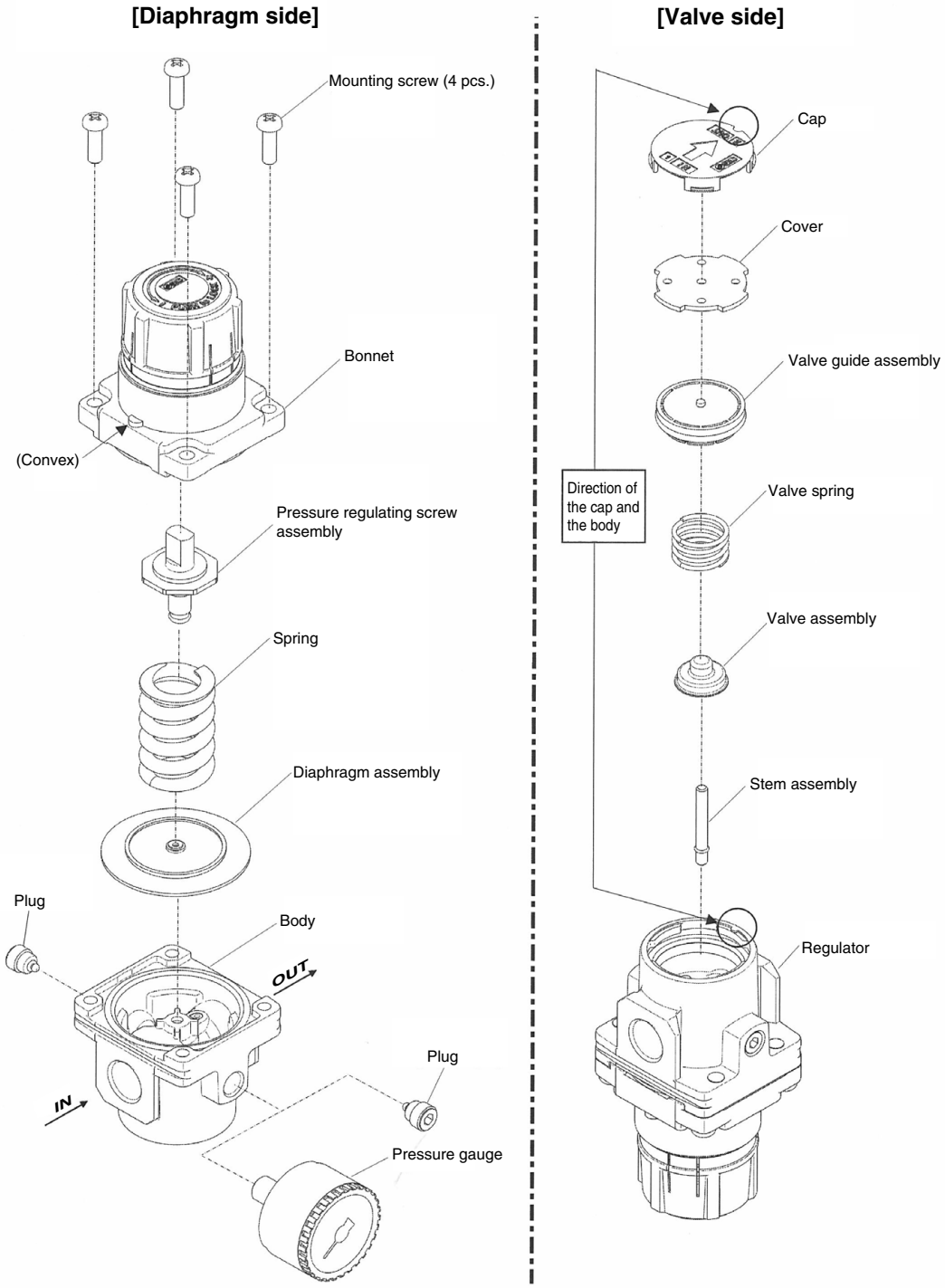
AR10-A Exploded View 1

[Piston side]

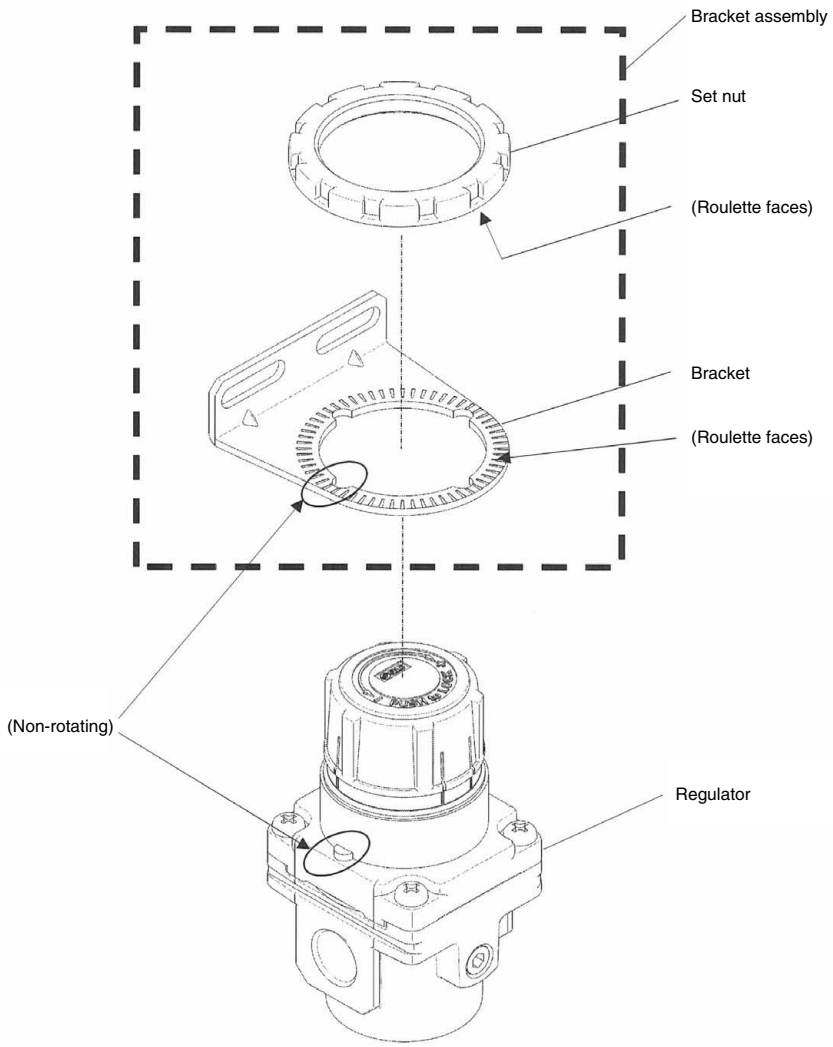


[Valve side]




[Diaphragm side]
[Valve side]
Mounting screw (4 pcs.)
Bonnet
(Convex)
Pressure regulating screw assembly
Spring
Diaphragm assembly
Plug
Body
OUT
IN
Plug
Pressure gauge
Cap
Cover
Valve guide assembly
Direction of the cap and the body
Valve spring
Valve assembly
Stem assembly
Regulator

Bracket Assembly, Panel Mount Exploded View 3



⚠Warning
Before replacement, ensure that the regulator is not pressurized.
Rotate the pressure adjusting knob to zero.
Replace while referring to the “Exploded View.”
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

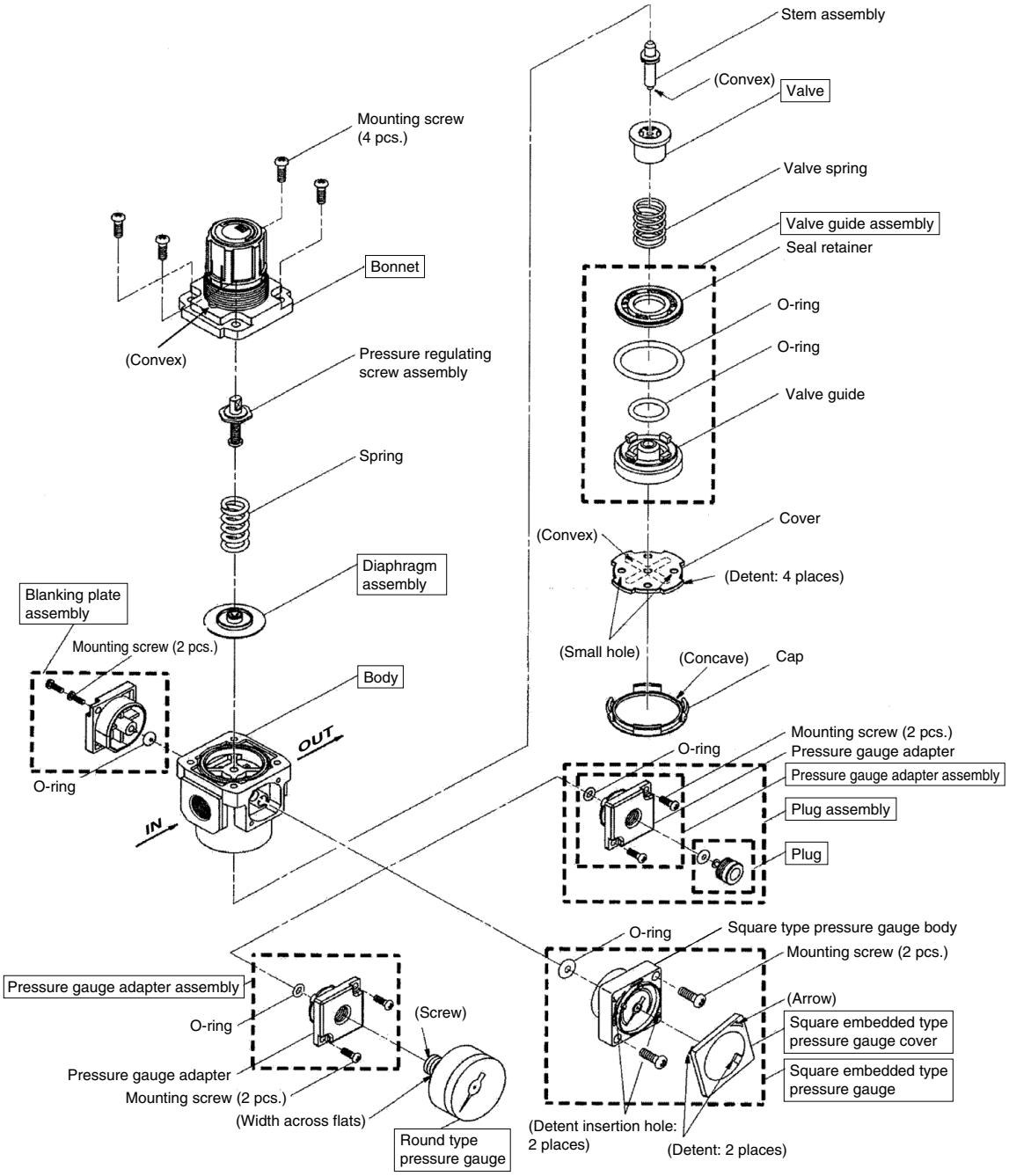
1. Diaphragm Assembly (Piston Assembly)

Applicable model	Process	Procedure	Tools	Check item
AR10-A	Disassembly	1) Remove the bonnet assembly. Hold the bonnet with a wrench on the width across flat, and rotate counterclockwise to remove the bonnet assembly.	Wrench Nominal: 16	
		2) Remove the piston assembly from the bonnet. Pull out the piston assembly with the knob facing downwards. Otherwise, the pressure regulating screw assembly or spring may fall out.	—	
	Assembly	3) Mount the piston assembly to the bonnet assembly. Insert the piston assembly into the bonnet so that the piston assembly convex faces the body. If the pressure regulating screw or spring is not mounted on the bonnet, mount it before mounting the piston assembly.	—	
		4) Ensure the chamber is mounted on the body. If the chamber is removed during disassembly, mount the chamber ensuring that it's facing the right direction. The convex of the chamber should face the bonnet side.	—	Presence of the chamber Mounting direction
		5) Mount the bonnet assembly to the body. Hold the bonnet assembly with a wrench on the wrench flat, and rotate the body clockwise to secure it. Refer to the “Check item” for the tightening torque.	Wrench Nominal: 16	Tightening torque: 1.8 ± 0.3 N·m
AR20-A AR25-A AR30-A AR40-A	Disassembly	1) Removing bonnet Remove all 4 screws, and then remove the bonnet. Carefully store the bonnet parts. <Bonnet parts> · Pressure regulating screw assembly · Spring · Diaphragm assembly	Phillips head screwdriver	
	Assembly	2) Mount the disassembled parts onto the body. Perform mounting while referring to the “Exploded View” (page 631).	—	Direction of the diaphragm assembly and the pressure regulating screw assembly
		3) Mounting bonnet Mount the convex IN side of the bonnet to the body, and tighten the 4 mounting screws half way with a Phillips head screwdriver. Then, tighten the screws completely in a diagonal pattern with the indicated tightening torque.	Phillips head screwdriver	Tightening torque: **AR20-A**, **AR25-A**: 0.62 ± 0.3 N·m **AR30-A**: 3.5 ± 0.3 N·m **AR40-A**: 2.6 ± 0.3 N·m

2. Valve Guide (Assembly), Valve Assembly

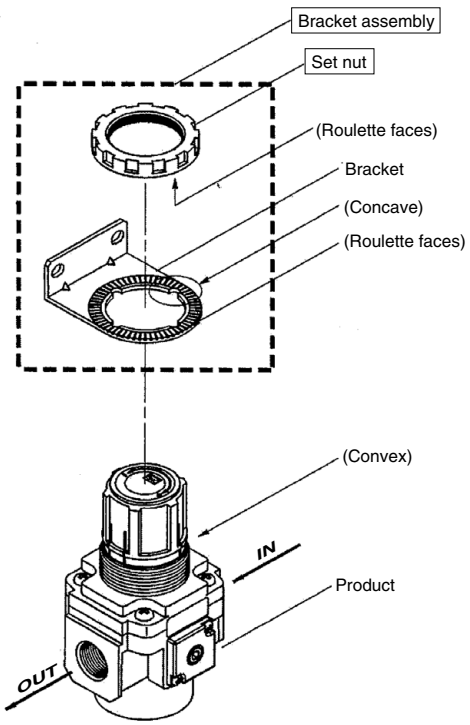
Applicable model	Process	Procedure	Tools	Check item
AR10-A	Disassembly	1) Remove the valve guide. Insert the hexagon wrench key into the valve guide hexagon socket, and rotate counterclockwise to remove it.	Hexagon wrench key Nominal: 6	—
		2) Remove the valve spring.	—	—
		3) Remove the valve.	—	—
	Assembly	4) Mount the valve. Set the valve so that the convex surface faces the valve guide.	—	The concave surface is the valve guide side (top).
		5) Mount the valve spring. Insert the valve so that the inner circumference of the valve spring fits in the convex surface of the valve.	—	—
		6) Ensure the O-ring is mounted. Ensure the valve guide seal O-ring is mounted. Mount the O-ring if the ring is missing.	—	Presence of the O-ring
		7) Mount the valve guide. Insert the hexagon wrench key into the valve guide hexagon socket, and rotate the wrench clockwise to tighten the guide. Refer to the “Check item” for the tightening torque.	Hexagon wrench key Nominal: 6	Tightening torque: 0.75 ± 0.15 N·m
AR20-A AR25-A AR30-A AR40-A	Disassembly	1) Remove the cap. Insert a watchmaker's screwdriver into the gap between the body and the cap and dig up the cap.	Watchmaker's screwdriver (−)	—
		2) Remove the cover. Insert the circular pliers into the 2 small holes of the cover, rotate 45 degrees to one side or the other, and then lift.	Circular pliers Nominal: 125	—
		3) Remove the valve guide assembly. Lift the outer periphery with a watchmaker’s screwdriver or similar for removal.	Watchmaker's screwdriver (−)	—
		4) Remove the valve spring.	—	—
		5) Remove the valve assembly.	—	—
	Assembly	6) Mount the disassembled parts onto the body. Perform mounting while referring to the “Exploded View.”	—	· Direction of the valve · Direction of the cap

AR20-B to 60-B Exploded View 1

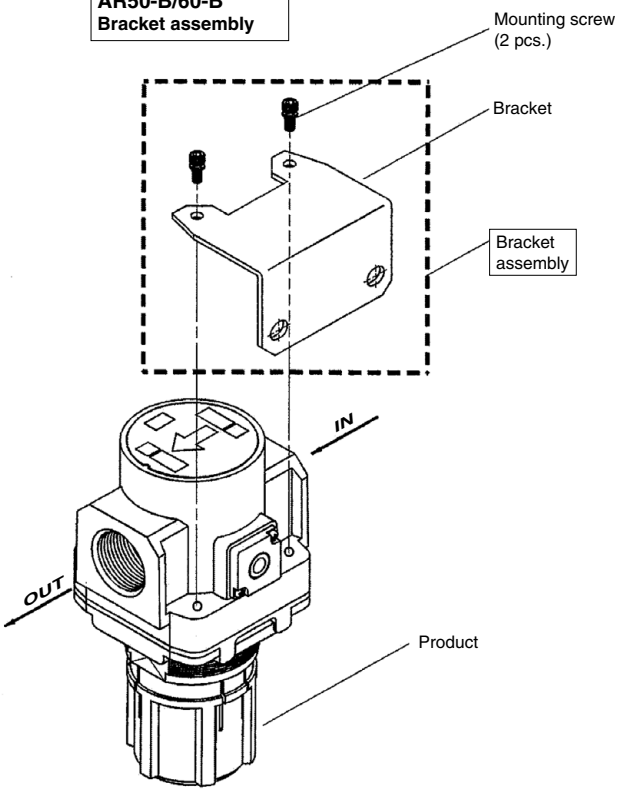


Note) It is possible to mount the square embedded type pressure gauge, pressure gauge adapter assembly, or plug assembly instead of the blanking plate assembly.

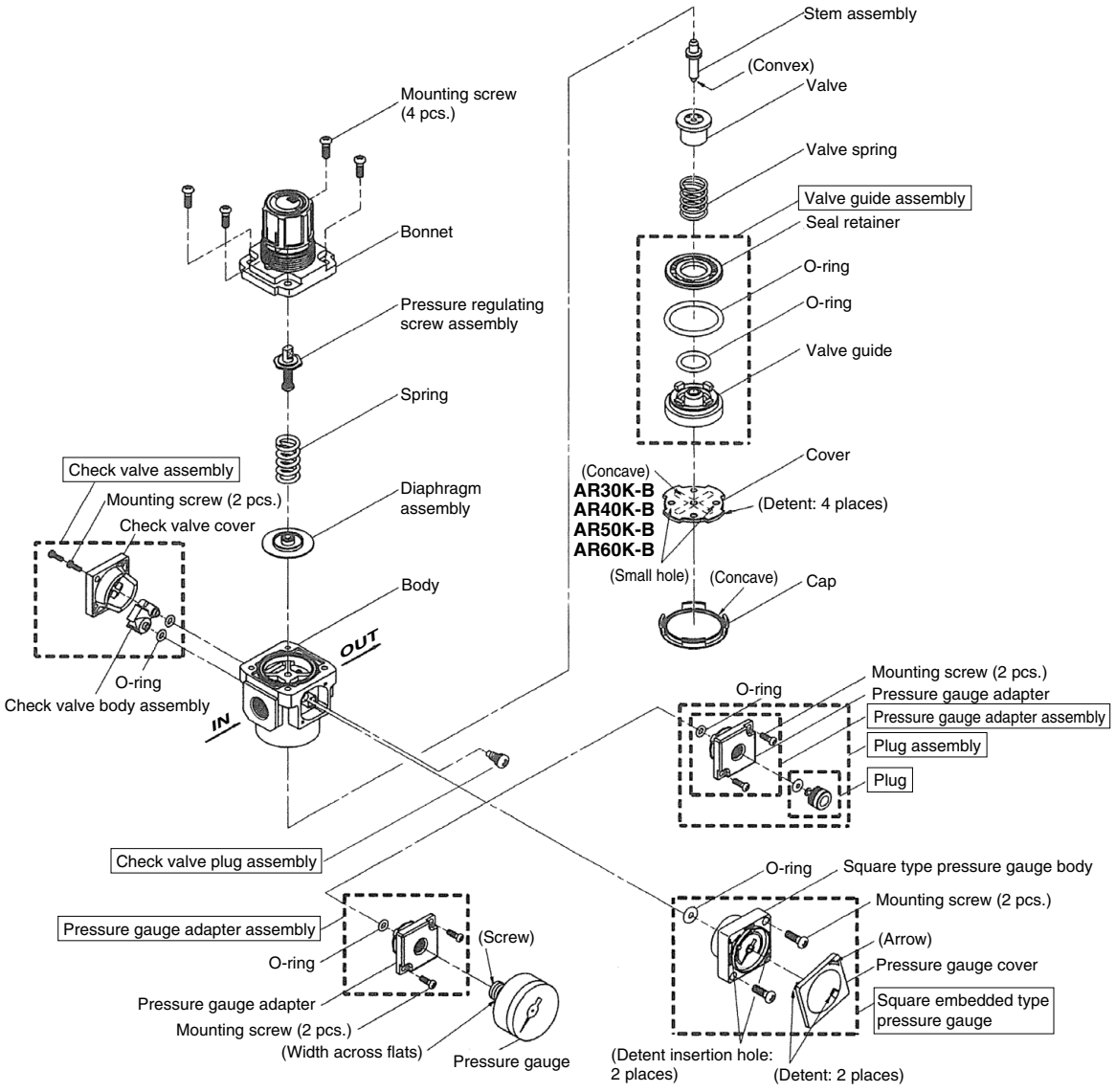
AR20-B/25-B/30-B/40-B
Bracket assembly



AR50-B/60-B
Bracket assembly

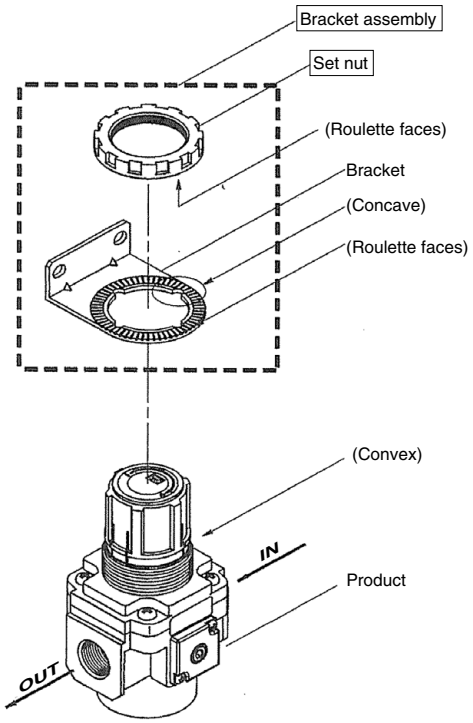


AR20K-B to 60K-B Exploded View 1

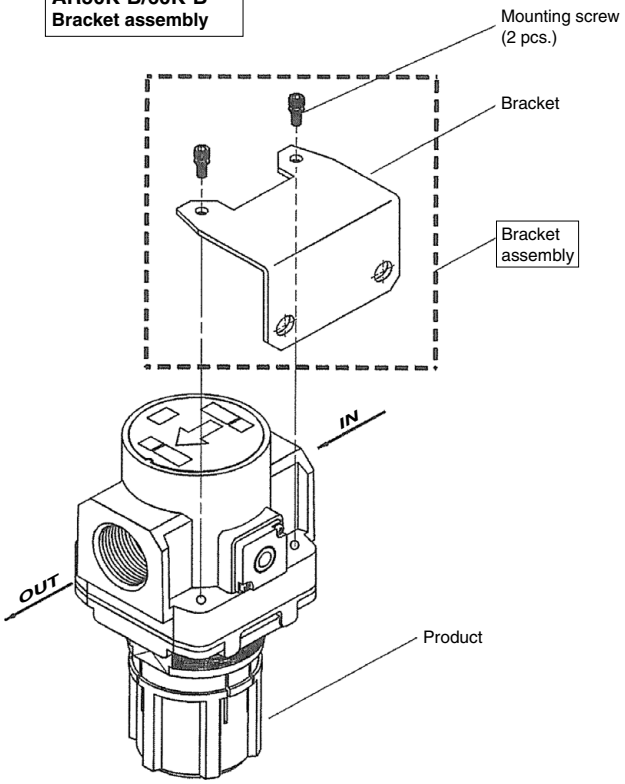


Note) The flow direction can be changed by removing the check valve assembly and replacing it with the square embedded type pressure gauge, pressure gauge adapter assembly, and plug assembly.

AR20K-B/25K-B/30K-B/40K-B
Bracket assembly



AR50K-B/60K-B
Bracket assembly



⚠Warning
Before replacement, ensure that the regulator is not pressurized.
Rotate the pressure adjusting knob to zero.
Replace while referring to the “Exploded View.”
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

1. Diaphragm Assembly

Applicable model	Process	Procedure	Tools	Check item
AR20(K)-B AR25(K)-B AR30(K)-B AR40(K)-B AR50(K)-B AR60(K)-B	Disassembly	1) Remove the bonnet. Rotate the set screw counterclockwise with a Phillips head screwdriver to remove the bonnet from the body.	Phillips head screwdriver	—
		2) Remove parts in order of the pressure regulating screw assembly, spring, and the diaphragm assembly. Please note that the diaphragm assembly will be attached to the bonnet if disassembled with the knob facing down.	—	—
	Assembly	3) Mount parts to the body in order of the diaphragm assembly, spring, and pressure regulating screw.	—	Direction of the diaphragm assembly and the pressure regulating screw assembly
		4) Mount the bonnet to the body. Mount the convex IN side of the bonnet to the body, and tighten the 4 mounting screws half way with a Phillips head screwdriver. Then, tighten the screws completely in a diagonal pattern with the indicated tightening torque.	Phillips head screwdriver	Tightening torque: **AR20(K)-B** 2.35 ± 0.3 N·m **AR25(K)-B** 2.35 ± 0.3 N·m **AR30(K)-B** 2.35 ± 0.3 N·m **AR40(K)-B** 3.5 ± 0.3 N·m **AR50(K)-B** 3.5 ± 0.3 N·m **AR60(K)-B** 3.5 ± 0.3 N·m

2. Valve Guide (Assembly), Valve Assembly

Applicable model	Process	Procedure	Tools	Check item
AR20(K)-B AR25(K)-B AR30(K)-B AR40(K)-B AR50(K)-B AR60(K)-B	Disassembly	1) Remove the cap. Insert a watchmaker’s screwdriver in the gap between the body and the cap and dig up the cap.	Watchmaker’s screwdriver (−)	—
		2) Remove the cover. Insert the circular pliers into the 2 small holes of the cover, rotate 45 degrees to one side or the other and lift.	Circular pliers Nominal: 125	—
		3) Remove the valve guide assembly. Hold the valve guide with a needle nose pliers, and lift it.	Needle nose pliers	—
		4) Remove the valve spring.	—	—
		5) Remove the valve.	—	—
	Assembly	6) Mount the valve. Mate the stem convex and the valve center hole.	—	Positioning the stem and the valve (centering)
		7) Mount the valve spring. Insert the valve spring into the valve hole.	—	—
		8) Mount the valve guide assembly and the cover assembly to the body. Align the body groove and the cover clamp, push in the valve guide and cover assembly, insert the circular pliers into the 2 small holes of the cover and rotate 45 degrees to one side or the other to lock into place.	Circular pliers Nominal: 125	—
		9) Mount the cap. Mate the convex of the body cover and the concave of the cap, and push them in to settle. Ensure the end of the body and the cap are almost flat.	—	Direction of the body and the cap. Body end and the cap are almost flat.

3. Bracket Assembly, Panel Mount

Applicable model	Process	Procedure	Tools	Check item
AR20(K)-B AR25(K)-B AR30(K)-B AR40(K)-B	Assembly	1) Mount the parts to the bracket (panel). Mate the bracket (panel) concave and the bonnet convex to mount the bracket.	—	—
		2) Settle the bracket (panel) with set nut. Rotate the set nut clockwise with a hook wrench to settle the parts to the bracket (panel). For the tightening torque, refer to the "Check item" on the right. When mounting the bracket, ensure that the roulette faces of the set nut and the bracket are mated appropriately. When mounting with bracket, set nut tightened manually is adequate for general used.	Hook wrench Nominal: AR20(K)-B 34/38 AR25(K)-B 40/42 AR30(K)-B 52/55 AR40(K)-B 52/55	Tightening torque: AR20(K)-B 2.0 ± 0.2 N·m AR25(K)-B 2.5 ± 0.2 N·m AR30(K)-B 3.5 ± 0.3 N·m AR40(K)-B 4.0 ± 0.4 N·m
AR50(K)-B AR60(K)-B	Assembly (Bracket assembly)	1) Mount the bracket to the product. Fix them by tightening the 2 mounting screws using a hexagon wrench key.	Hexagon wrench key Nominal: 5	Referential tightening torque: 2.6 N·m

4. Square Embedded Type Pressure Gauge

Applicable model	Process	Procedure	Tools	Check item
AR20(K)-B AR25(K)-B AR30(K)-B AR40(K)-B AR50(K)-B AR60(K)-B	Disassembly	1) Remove the pressure gauge cover. Rotate the pressure gauge cover 15 degrees to the arrow mark (counterclockwise) to pull it out.	—	—
		2) Remove the pressure gauge Rotate the 2 mounting screws counterclockwise with a Phillips head screwdriver to remove the pressure gauge and two mounting screws.	Phillips head screwdriver	—
	Assembly	3) Ensure that the O-ring is mounted to the pressure gauge. Mount the O-ring to the pressure gauge if the ring fall off.	—	Presence of the O-ring
		4) Mount the pressure gauge. Rotate the 2 mounting screws clockwise with a Phillips head screwdriver to mounting screws temporary. Then settle them with tightening torque in check item.	Phillips head screwdriver	Tightening torque: 0.6 ± 0.05 N·m
		5) Mount the pressure gauge cover. Insert the pressure gauge mating two detent of the pressure gauge and holes for them so that the arrow of the pressure gauge cover comes upper right. Rotate the pressure gauge cover 15 degree opposite to the arrow to mount the pressure gauge.	—	—

5. Circular Pressure Gauge

Applicable model	Process	Procedure	Tools	Check item
AR20(K)-B AR25(K)-B AR30(K)-B AR40(K)-B AR50(K)-B AR60(K)-B	Disassembly	1) Remove the pressure gauge. Hold the pressure gauge with a wrench on the wrench flat. Then, rotate the gauge.	Wrench Nominal: AR20(K)-B, AR25(K)-B, AR30(K)-B, AR40(K)-B, AR50(K)-B, AR60(K)-B: 14	—
	Assembly	2) Wind the pressure gauge thread with the sealant tape leaving 1.5 to 2 threads from the end.	—	Wind sealant tape leaving 1.5 to 2 threads
		3) Mount the pressure gauge. Hold the pressure gauge with a wrench on the wrench flat, and rotate it clockwise to mount the circular pressure gauge. Refer to the "Check item" for tightening torque of pressure gauge.	Wrench Nominal: AR20(K)-B, AR25(K)-B, AR30(K)-B, AR40(K)-B, AR50(K)-B, AR60(K)-B: 14	Tightening torque: AR20(K)-B, AR25(K)-B, AR30(K)-B, AR40(K)-B, AR50(K)-B, AR60(K)-B: 7 to 9 N·m

6. Pressure Gauge Adapter, Plug

Applicable model	Process	Procedure	Tools	Check item
AR20(K)-B AR25(K)-B AR30(K)-B AR40(K)-B AR50(K)-B AR60(K)-B	Disassembly	1) Remove the plug. Insert the hexagon wrench key to hexagon socket of the plug. Rotate the plug counterclockwise to remove the plug.	Hexagon wrench key Nominal: AR20(K)-B, AR25(K)-B, AR30(K)-B, AR40(K)-B, AR50(K)-B, AR60(K)-B: 4	—
		2) Remove the pressure gauge adapter. Rotate the 2 mounting screws counterclockwise with a Phillips head screwdriver to remove the pressure gauge adapter and two mounting screws.	Phillips head screwdriver	—
	Assembly	3) Ensure that the O-ring is mounted to the pressure gauge adapter. If not, mount the O-ring.	—	—
		4) Mount the pressure gauge adapter. Rotate the 2 screws clockwise with a Phillips head screwdriver to fix pressure gauge adapter. Refer to the “Check item” for tightening torque of 2 screws.	Phillips head screwdriver (Torque driver)	Tightening torque: 0.6 ± 0.05 N·m
		5) Mount the plug assembly. Insert hexagon wrench key into hexagon socket on the plug and rotate clockwise to fix the plug. Refer to the “Check item” for tightening torque of 2 screws.	Hexagon wrench key Nominal: AR20(K)-B, AR25(K)-B, AR30(K)-B, AR40(K)-B, AR50(K)-B, AR60(K)-B: 4	Tightening torque: AR20(K)-B, AR25(K)-B, AR30(K)-B, AR40(K)-B, AR50(K)-B, AR60(K)-B: 0.6 ± to 0.05 N·m

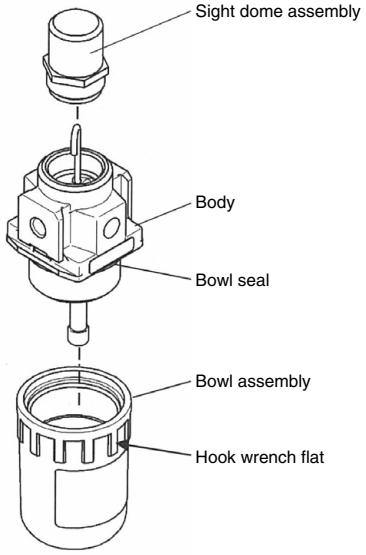
7. Blanking Plate Assembly

Applicable model	Process	Procedure	Tools	Check item
AR20-B AR25-B AR30-B AR40-B AR50-B AR60-B	Disassembly	1) Remove the blanking plate. Rotate the 2 mounting screws counterclockwise with a Phillips head screwdriver to remove the blanking plate and the 2 mounting screws.	Phillips head screwdriver	—
	Assembly	2) Ensure that the O-ring is mounted to the blanking plate. If not, mount the O-ring.	—	—
		3) Mount the blanking plate. Rotate the 2 screws clockwise with a Phillips head screwdriver to fix blanking plate. Refer to the “Check item” for tightening torque of 2 screws.	Phillips head screwdriver (Torque driver)	Tightening torque: 0.6 ± 0.05 N·m

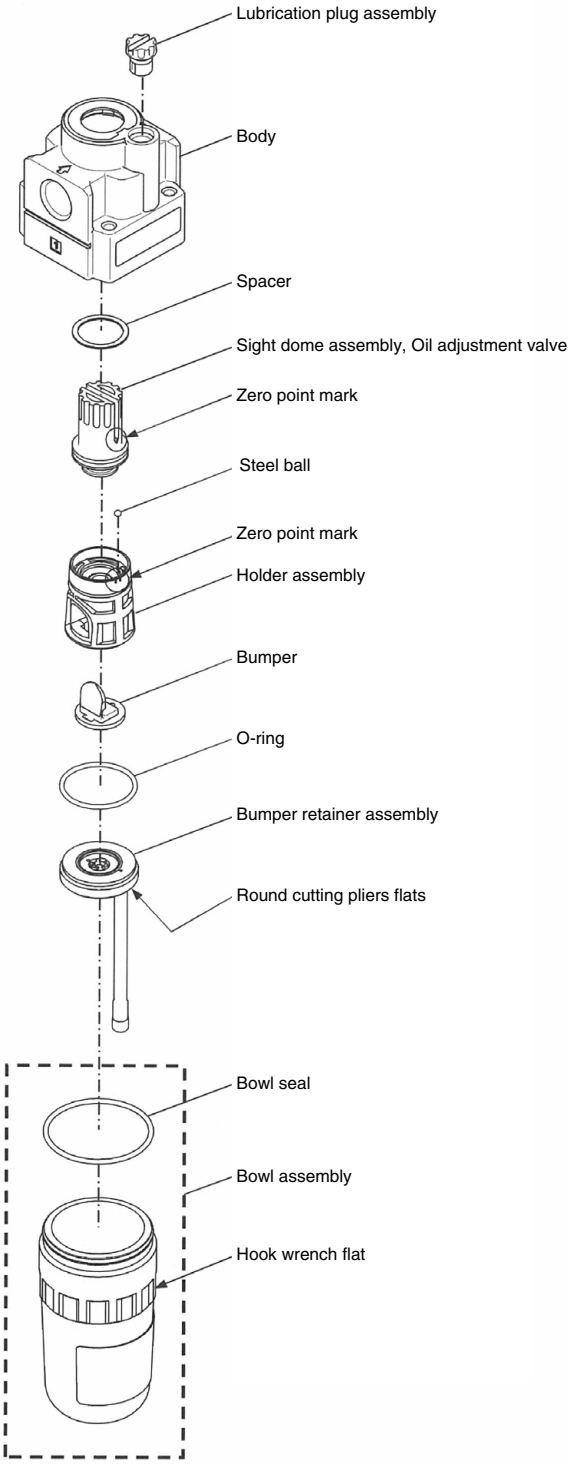
8. Check Valve Assembly

Applicable model	Process	Procedure	Tools	Check item
AR20K-B AR25K-B AR30K-B AR40K-B AR50K-B AR60K-B	Disassembly	1) Remove the check valve cover. Rotate the 2 screws counterclockwise with a Phillips head screwdriver and remove the check valve cover and the screws.	Phillips head screwdriver	—
		2) Remove the check valve assembly from the body. The check valve can be removed by pulling it out by hand. At this time, confirm that the O-ring is mounted to body side properly so that it would not come out from the body.	—	—
	Assembly	3) Confirm that the 2 O-rings are mounted to body side. If not, mount them to the body.	—	—
		4) Insert convexes on the check valve into O-ring insert holes on the body.	—	Direction of the check valve body assembly
		5) Mount the check valve cover. Rotate the 2 screws clockwise with a Phillips head screwdriver to fix the check valve cover. Refer to the “Check item” for tightening torque of 2 screws.	Phillips head screwdriver (Torque driver)	Tightening torque: 0.6 ± 0.05 N·m

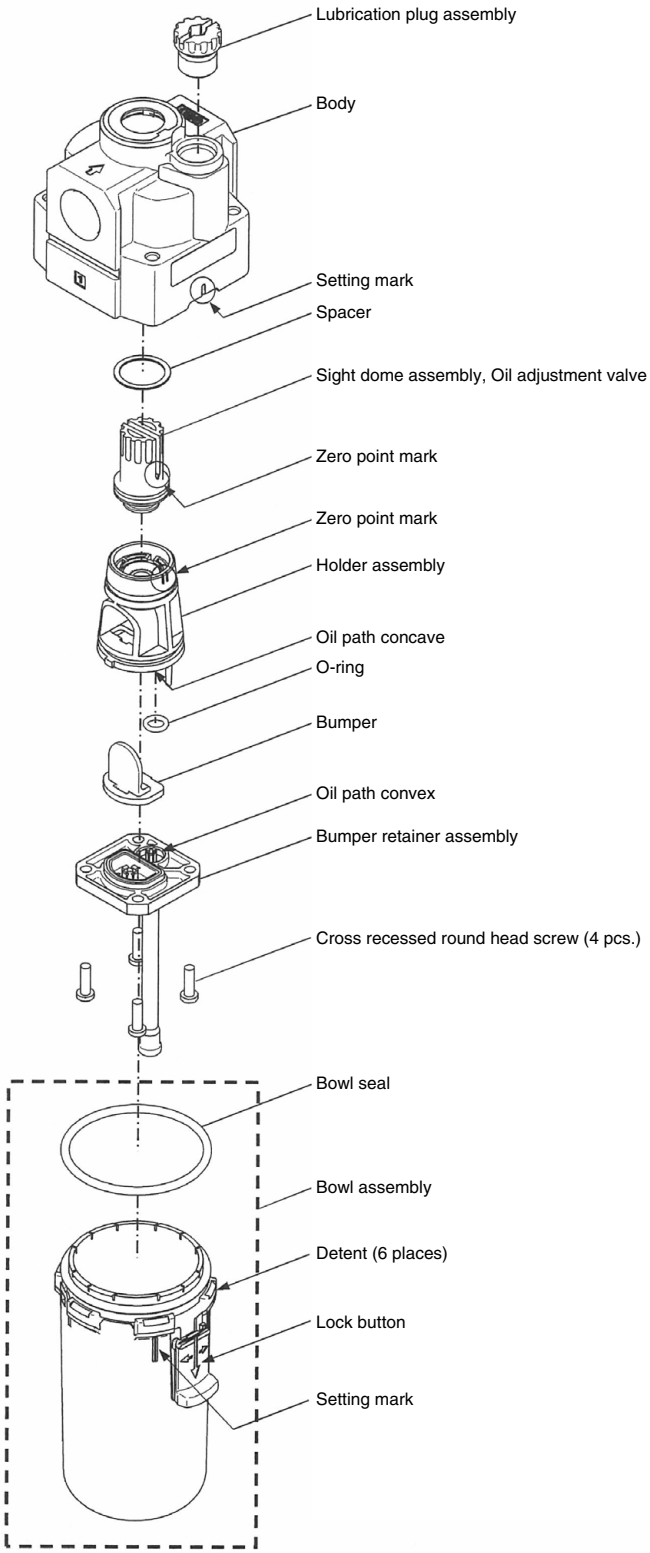
1) AL10-A



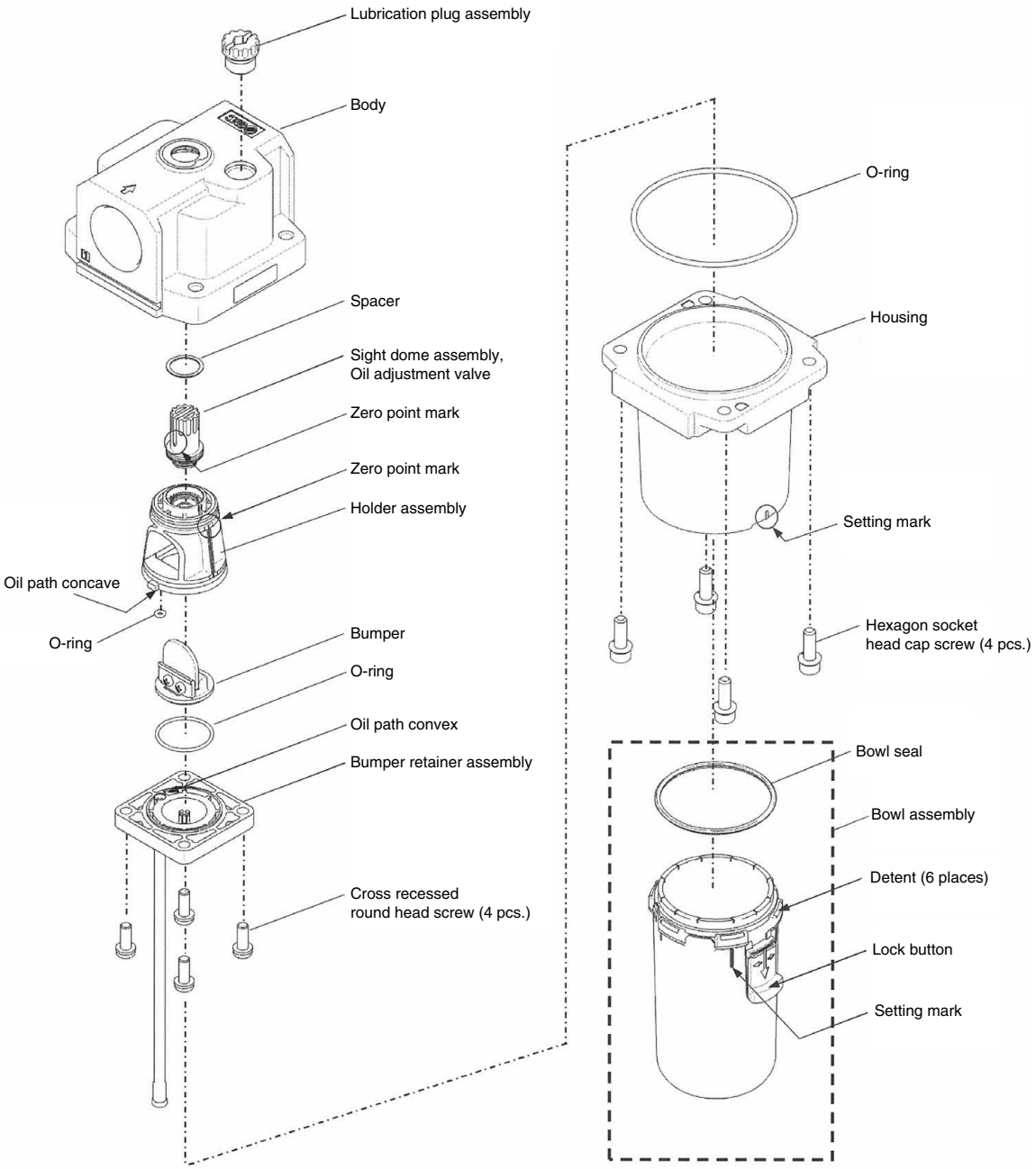
2) AL20-A

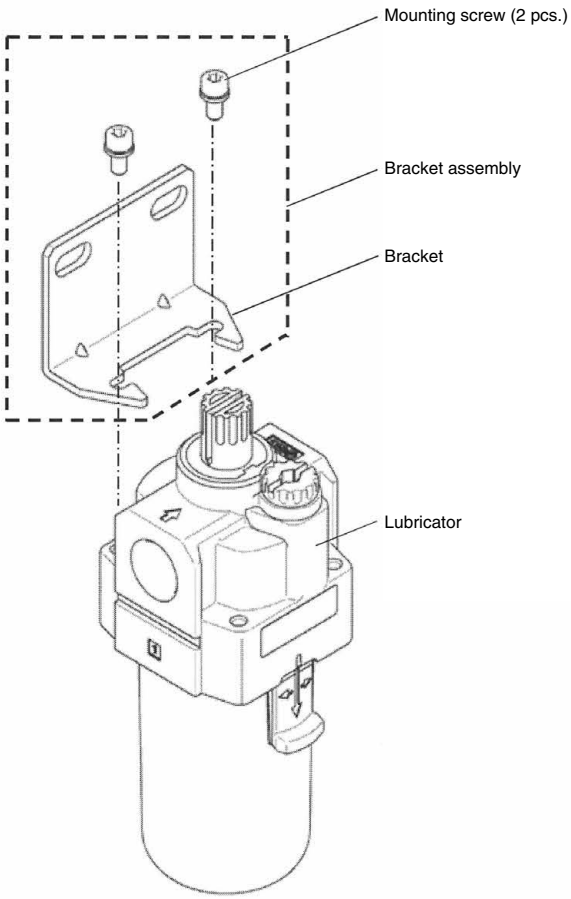


3) AL30-A/40-A


Lubrication plug assembly
Body
Setting mark
Spacer
Sight dome assembly, Oil adjustment valve
Zero point mark
Zero point mark
Holder assembly
Oil path concave
O-ring
Bumper
Oil path convex
Bumper retainer assembly
Cross recessed round head screw (4 pcs.)
Bowl seal
Bowl assembly
Detent (6 places)
Lock button
Setting mark

4) AL50-A/60-A


Lubrication plug assembly
Body
Spacer
Sight dome assembly,
Oil adjustment valve
Zero point mark
Zero point mark
Holder assembly
Oil path concave
O-ring
Bumper
O-ring
Oil path convex
Bumper retainer assembly
Cross recessed
round head screw (4 pcs.)
O-ring
Housing
Setting mark
Hexagon socket
head cap screw (4 pcs.)
Bowl seal
Bowl assembly
Detent (6 places)
Lock button
Setting mark


Mounting screw (2 pcs.)
Bracket assembly
Bracket
Lubricator

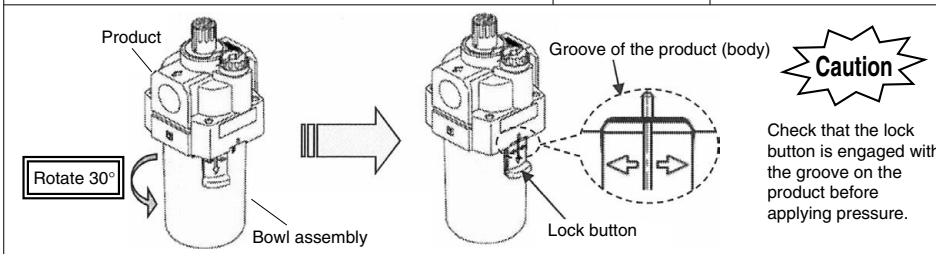
⚠Warning
Before replacement, ensure that the regulator is not pressurized.
Replace while referring to the "Exploded View."
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

1. Bowl Assembly, Sight Dome Assembly

Applicable model	Process	Procedure	Tools	Check item
AL10-A	Disassembly	1) Remove the bowl assembly. Hold the bowl assembly by hand and rotate counterclockwise to remove the bowl assembly. If the bowl assembly is tightened too much to be removed, use a hook wrench until it can be loosened by hand.	(Hook wrench Nominal: 25/28)	—
		2) Remove the sight dome assembly. Rotate counterclockwise with a wrench to remove the sight dome assembly.	Wrench Nominal: 14	—
	Assembly	3) Mount the bowl assembly. Hold the bowl assembly by hand and rotate clockwise. Do not use tool for mounting because the bowl may be damaged. Refer to the "Check item" for referential tightening torque.	—	Referential tightening torque: 1.5 N·m
		4) Mount the sight dome assembly. Rotate clockwise with a wrench to mount the sight dome assembly. Tightening torque at this time is shown on the "Check item."	Wrench Nominal: 14 (Torque wrench)	Tightening torque: 0.8 ± 0.2 N·m

2. Bowl Assembly, Bumper Retainer Assembly, Bumper, Sight Dome Assembly

Applicable model	Process	Procedure	Tools	Check item
AL20-A	Disassembly	1) Remove the bowl assembly. Hold the bowl assembly by hand and rotate counterclockwise to remove the bowl assembly. If the bowl assembly is tightened too much to be removed, use a wrench until it can be loosened by hand.	SMC's special wrench (Recommended) Part no.: 1129129	—
		2) Close the oil adjustment valve (outer of the sight dome) fully. Rotate the oil adjustment valve clockwise by manual until feeling the end of rotation with light force.	—	—
		3) Remove the bumper retainer assembly. Hold the bumper retainer assembly with a pair of round cutting pliers and rotate counterclockwise.	Round cutting pliers Nominal: 125 or 150	—
		4) Remove the O-ring, bumper, holder assembly, steel ball, sight dome assembly and spacer. Push the sight dome assembly forward to the body by hand for disconnection. And the holder assembly and the sight dome assembly can be separated away by hand as well, but at the time the attention has to be paid not to lose the steel balls between them. The bumper can be pulled out with a pair of tweezers.	Tweezers	—
	Assembly	5) Insert the spacer to the sight dome assembly.	—	—
		6) Connect the sight dome assembly, the steel balls and the holder assembly. After inserting the steel balls into the path hole of oil on the holder assembly, put the sight dome assembly into the holder assembly by meeting zero point mark of both holder assembly and the sight dome.	—	Zero point mark on the holder assembly shall meet with zero point mark on the sight dome assembly.
		7) Insert the bumper into the holder assembly. For insertion, meet the setting concave (bumper) and convex (holder assembly).	—	Setting concave on the bumper shall meet with the setting convex on the holder assembly.
		8) Insert the assembly 5) to 7) mentioned above (sight dome + spacer + steel ball + holder assembly + damper) to the body. For insertion, meet the setting convex and concave on the body holder. Proper insertion makes the face of the holder and the body flat.	—	Setting concave on the body shall meet with the setting convex of the holder. The face of the holder and the body is made flat.
		9) Mount the bumper retainer assembly. Hold the bumper retainer assembly with a pair of round cutting pliers and rotate clockwise. tightening torque at this time is shown on the "Check item."	Round cutting pliers Nominal: 125 or 150	Tightening torque: 1.4 ± 0.1 N·m
		10) Mount the bowl assembly. Hold the bowl assembly by hand and rotate clockwise. Do not use tool for mounting because the bowl may be damaged. Refer to the "Check item" for referential tightening torque.	—	Referential tightening torque: 2.1 N·m

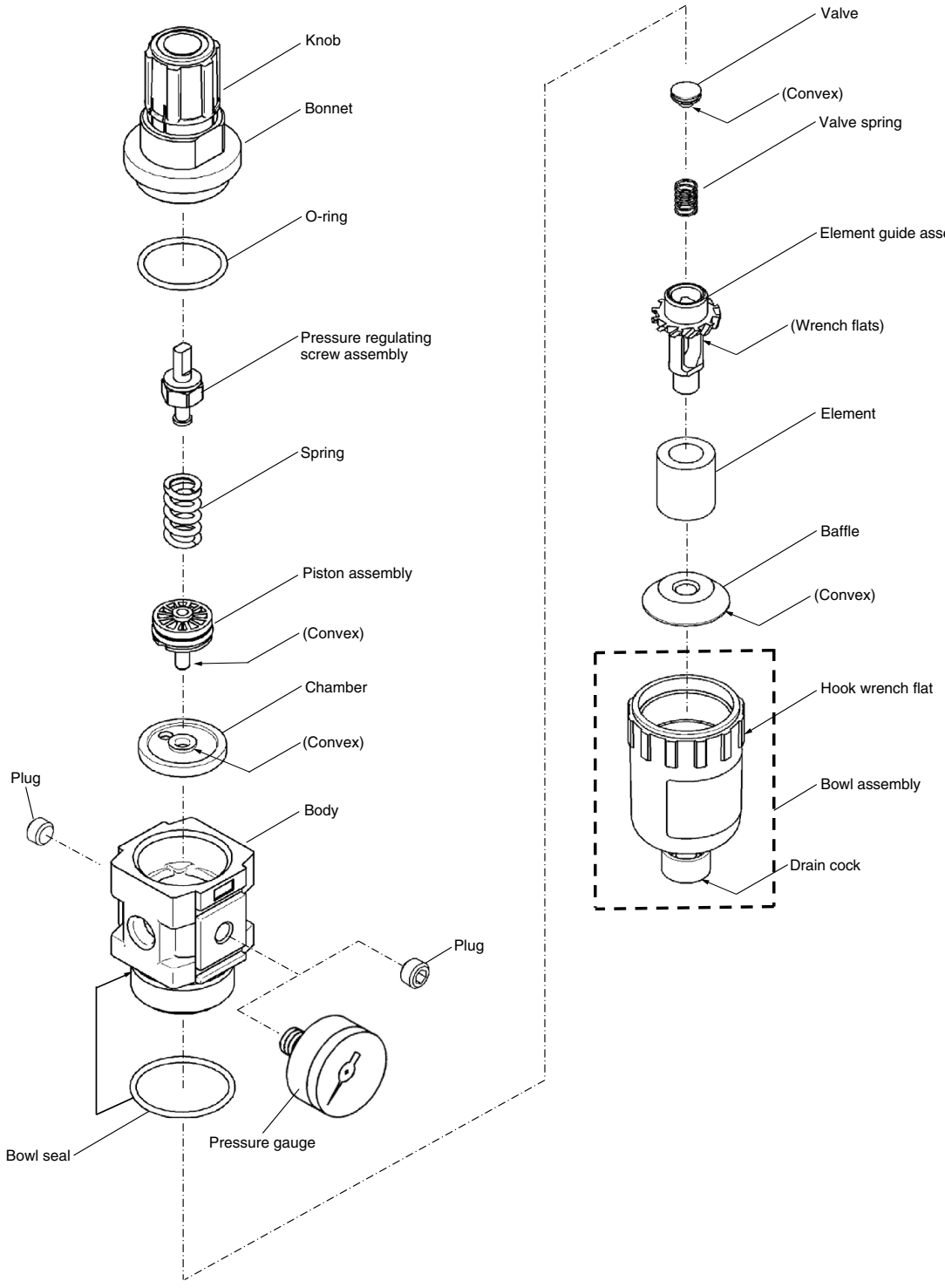
Applicable model	Process	Procedure	Tools	Check item
AL30-A AL40-A	Disassembly	1) Remove the bowl assembly. Push the lock button on the bowl assembly down and rotate clock or counterclockwise by 30°. After the rotation, the bowl assembly can be pulled out.	—	—
		2) Close the oil adjustment valve (outer of the sight dome) fully. Rotate the oil adjustment valve clockwise by manual until feeling the end of rotation with light force.	—	—
		3) Remove the bumper retainer assembly. Loosen and remove the 4 cross recessed round head screws with a Phillips head screwdriver to remove the bumper retainer assembly. At this time, the attention has to be paid not to lose the O-ring between the bumper retainer assembly and the holder assembly.	Phillips head screwdriver	—
		4) Remove the bumper, holder assembly, sight dome assembly and spacer. Push the sight dome assembly forward to the body by hand for disconnection. And the holder assembly and the sight dome assembly can be separated away by hand as well. The bumper can be pulled out with a pair of tweezers.	Tweezers	—
	Assembly	5) Insert the spacer into the sight dome assembly.	—	—
		6) Connect the sight dome assembly with the holder assembly. Put the sight dome assembly into the holder assembly by meeting zero point mark of both holder assembly and the sight dome assembly.	—	Zero point mark on the holder assembly shall meet with zero point mark on the sight dome assembly.
		7) Insert the bumper into the holder assembly. For insertion, the shape of the bumper is matched to the shape of the convex part of the holder assembly.	—	Setting the shape of the bumper shall meet with the setting convex of the holder assembly.
		8) Insert the assembly 5) to 7) mentioned above (sight dome + spacer + holder assembly + bumper) to the body. For insertion, meet the setting convex and concave on the body holder. Proper insertion makes the face of the holder and the body flat.	—	Setting concave on the body shall meet with the setting convex of the holder. The face of the holder and the body is made flat.
		9) Mount the bumper retainer assembly. Place the bumper retainer assembly so that the oil path convex (bumper holder assembly) and concave (holder) could meet, and then fix it by the 4 cross recessed round head screws with a Phillips head screwdriver. Tightening torque at this time is shown on the "Check item." And the screw which is tightened next after first tightened screw shall be what is located at cross corner of first one.	Phillips head screwdriver	Tightening torque AL30-A: 0.4 ± 0.1 N·m AL40-A: 0.7 ± 0.2 N·m
		10) Mount the bowl assembly. Insert the bowl assembly into the body by using individual setting mark and rotate clock or counterclockwise by 30° (until the lock button is released). If the release of the lock button is confirmed, mount of the bowl assembly is completed.	—	Lock button is up.
				

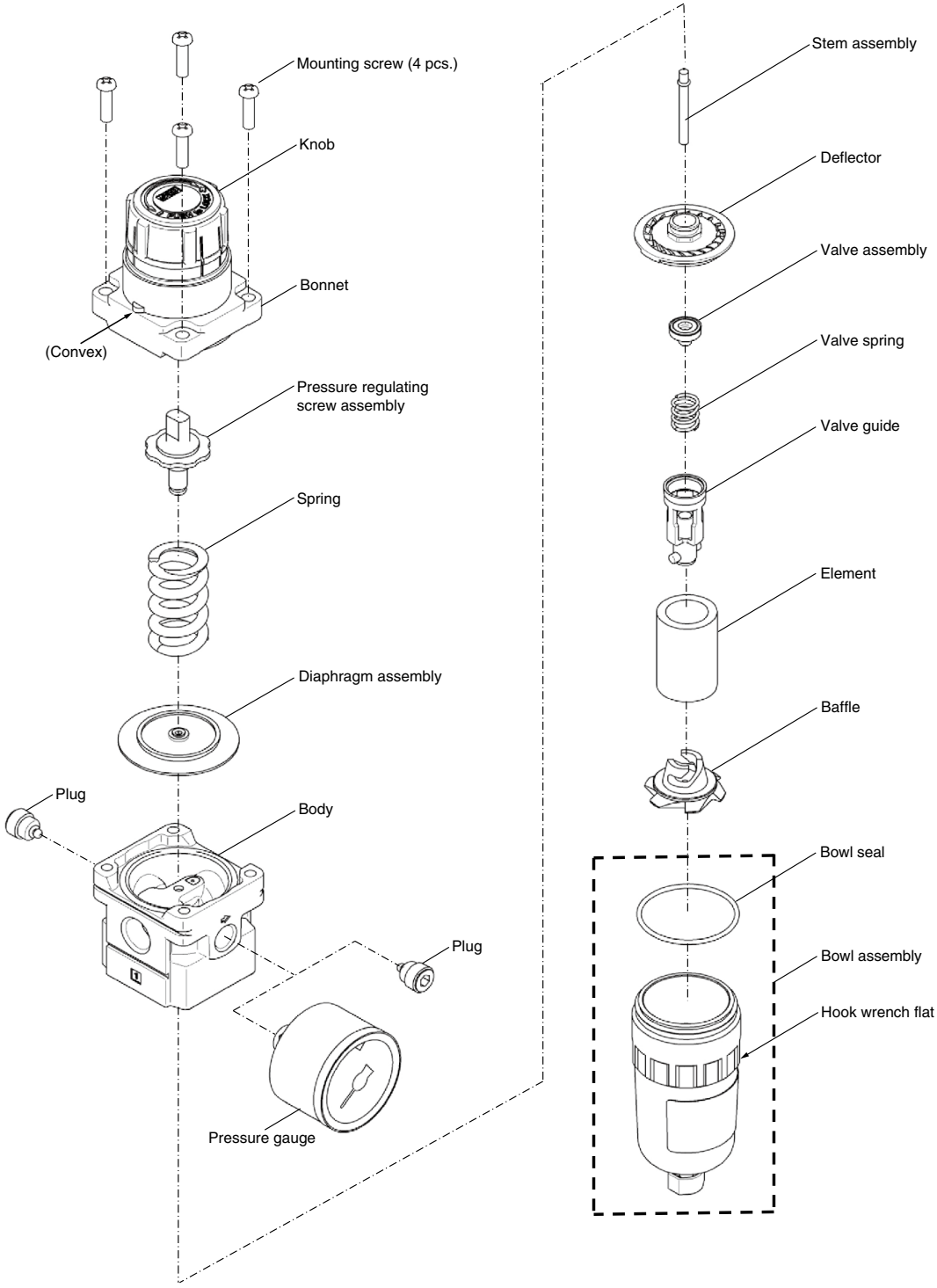
Applicable model	Process	Procedure	Tools	Check item
AL50-A AL60-A	Disassembly	1) Remove the housing including the bowl assembly. Loosen the 4 hexagon socket head cap screws with a hexagon wrench to remove the housing (including the bowl assembly) and O-ring.	Hexagon wrench Nominal: 5	—
		2) Close the oil adjustment valve (outer of the sight dome) fully. Rotate the oil adjustment valve clockwise by manual until feeling the end of rotation with light force.	—	—
		3) Remove the damper retainer assembly. Loosen and remove the 4 cross recessed round head screws with a Phillips head screwdriver to remove the bumper retainer assembly.	Phillips head screwdriver	—
		4) Remove the O-ring, bumper assembly, holder assembly, sight dome assembly and spacer. Push the sight dome assembly forward to the body by hand for disconnection. And the holder assembly and the sight dome assembly can be separated away by hand as well.	—	—
	Assembly	5) Insert the spacer into the sight dome assembly.	—	—
		6) Connect the sight dome assembly with the holder assembly. Put the sight dome assembly into the holder assembly by meeting zero point mark of both holder assembly and the sight dome assembly.	—	Zero point mark on the holder assembly shall meet with zero point mark on the sight dome assembly.
		7) Insert the bumper into the holder assembly. For insertion, the setting hole of the bumper assembly is matched to the convex part of the holder assembly.	—	Setting the setting hole of the bumper assembly shall meet with the convex of the holder assembly.
		8) Insert the assemblies 5) to 7) mentioned above (sight dome + spacer + holder assembly + bumper assembly) to the body. For insertion, meet the setting convex and concave on the body holder. Proper insertion makes the face of the holder and the body flat.	—	Setting concave on the body shall meet with the Setting convex of the holder. The face of the holder and the body is made flat.
		9) Install the O-ring to the holder assembly.	—	—
		10) Mount the bumper retainer assembly. Place the bumper retainer assembly so that the oil path convex (bumper holder assembly) and concave (holder) could meet, and then fix it by the 4 cross recessed round head screws with a Phillips head screwdriver. Tightening torque at this time is shown on the “Check item.” And the screw which is tightened next after first tightened screw shall be what is located at cross corner of first one.	Phillips head screwdriver	Tightening torque AL50-A: 1.4 ± 0.1 N·m AL60-A: 1.4 ± 0.1 N·m
		11) Install the O-ring to the body.	—	—
		12) Mount the housing including the bowl assembly. Place the housing including the bowl assembly on the body at the position with configuration match by checking the appearance of them and fix it by the 4 hexagon socket head cap screws with a hexagon wrench. Tightening torque at this time is shown on the “Check item.” And the screw which is tightened next after first tightened screw shall be what is located at cross corner of first one.	Hexagon wrench Nominal: 5	Tightening torque AL50-A: 4.5 ± 1 N·m AL60-A: 4.5 ± 1 N·m

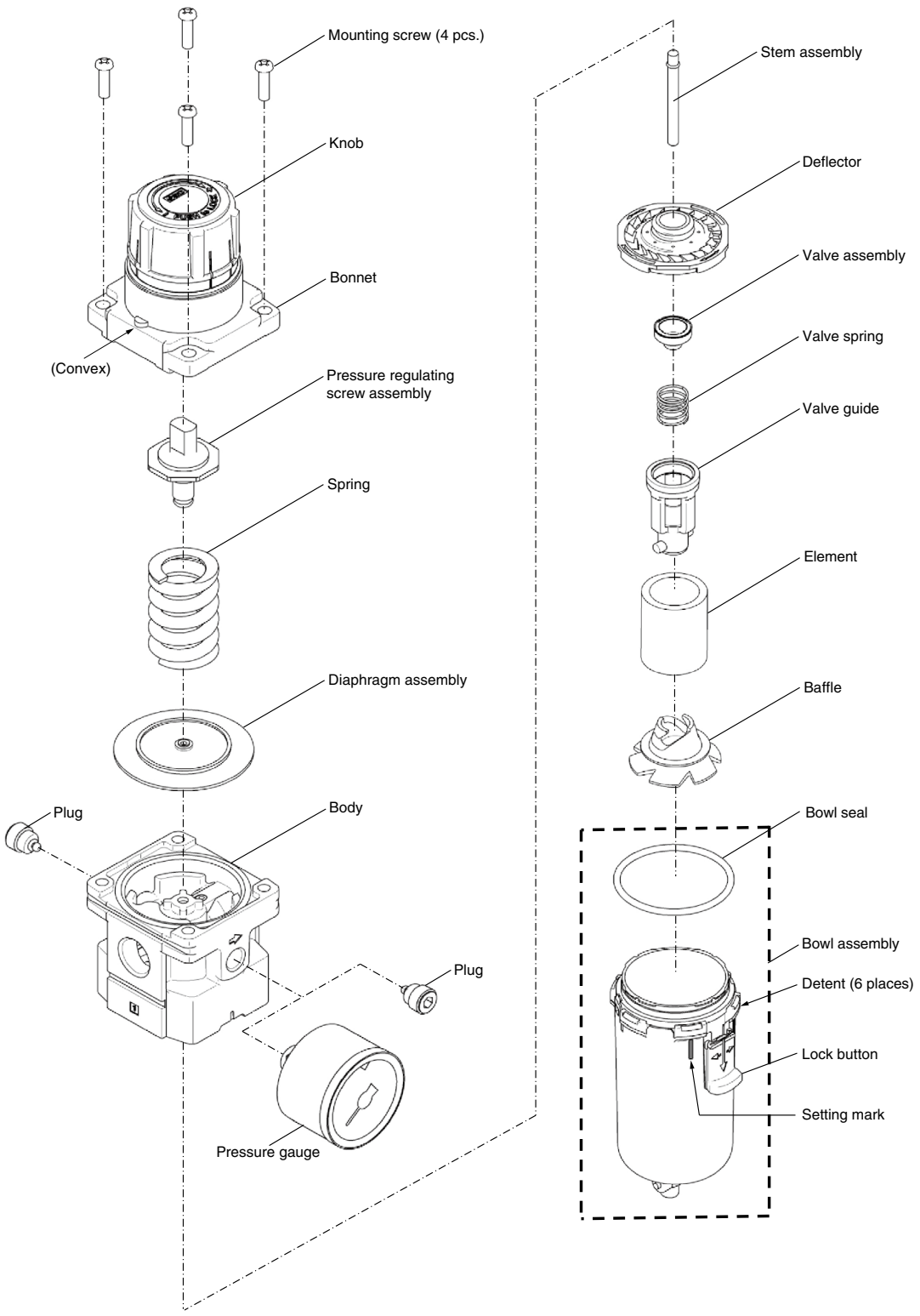
3. Lubrication Plug Assembly

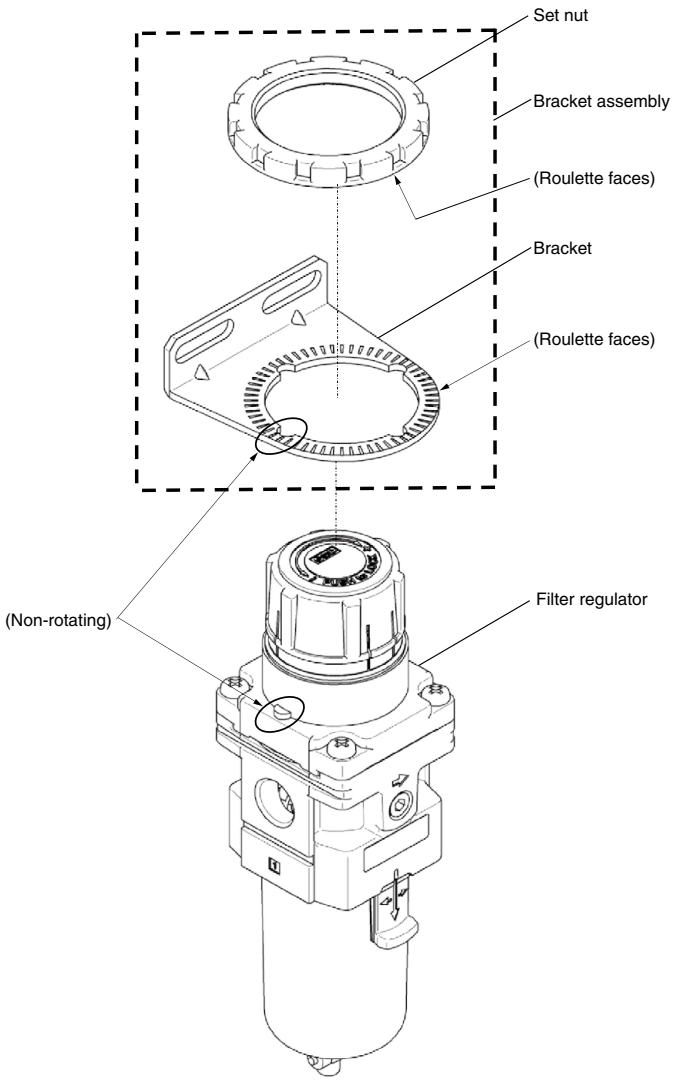
Applicable model	Process	Procedure	Tools	Check item
AL20-A AL30-A AL40-A AL50-A AL60-A	Disassembly	1) Remove the lubrication plug assembly. Insert a flat head screwdriver into the groove on the top of lubrication plug and rotate counterclockwise to remove the lubrication plug assembly from the body.	Flat head screwdriver	—
	Assembly	2) Mount the lubrication plug assembly. Insert a flat head screwdriver into the groove on the top of lubrication plug and rotate clockwise to fix the lubrication plug assembly to the body. The tightening torque at this time is shown on the “Check item.”	Flat head screwdriver	Tightening torque AL20-A: 0.3 ± 0.05 N·m AL30-A: 0.4 ± 0.05 N·m AL40-A to 60-A: 0.55 ± 0.05 N·m

AW10-A Exploded View 1



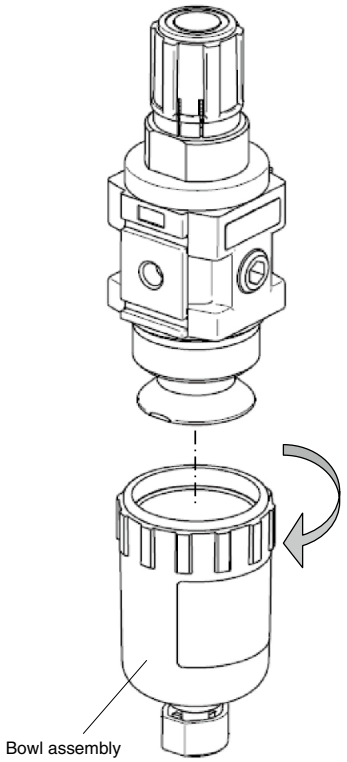
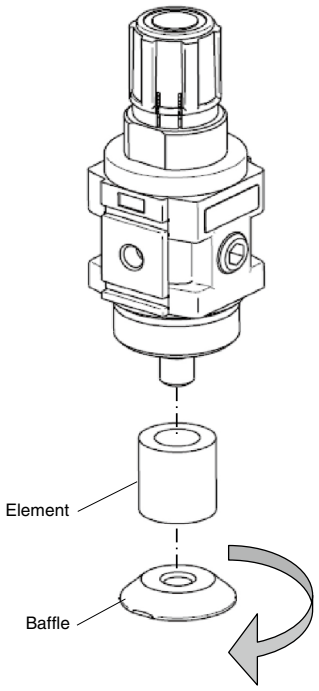

Mounting screw (4 pcs.)
Knob
Bonnet
(Convex)
Pressure regulating screw assembly
Spring
Diaphragm assembly
Plug
Body
Plug
Pressure gauge
Stem assembly
Deflector
Valve assembly
Valve spring
Valve guide
Element
Baffle
Bowl seal
Bowl assembly
Hook wrench flat


Mounting screw (4 pcs.)
Knob
Bonnet
(Convex)
Pressure regulating screw assembly
Spring
Diaphragm assembly
Plug
Body
Plug
Pressure gauge
Stem assembly
Deflector
Valve assembly
Valve spring
Valve guide
Element
Baffle
Bowl seal
Bowl assembly
Detent (6 places)
Lock button
Setting mark

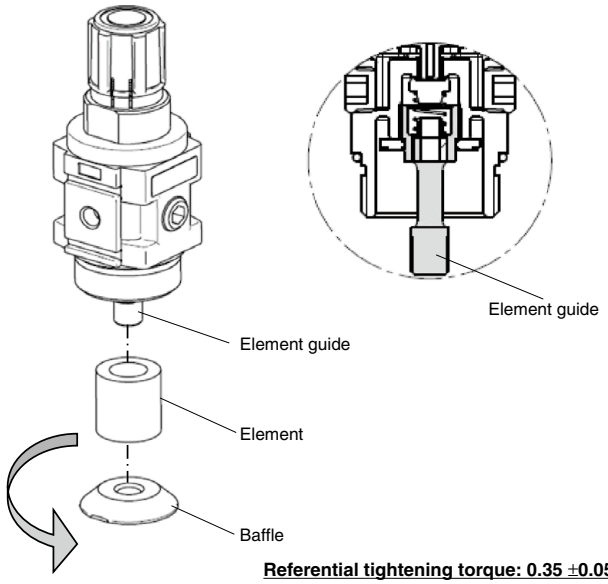

Set nut
Bracket assembly
(Roulette faces)
Bracket
(Roulette faces)
(Non-rotating)
Filter regulator

⚠Warning
Before replacement, ensure that the regulator is not pressurized.
Rotate the pressure adjusting knob to zero.
Replace while referring to the “Exploded View.”
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

1. Bowl Assembly, Element

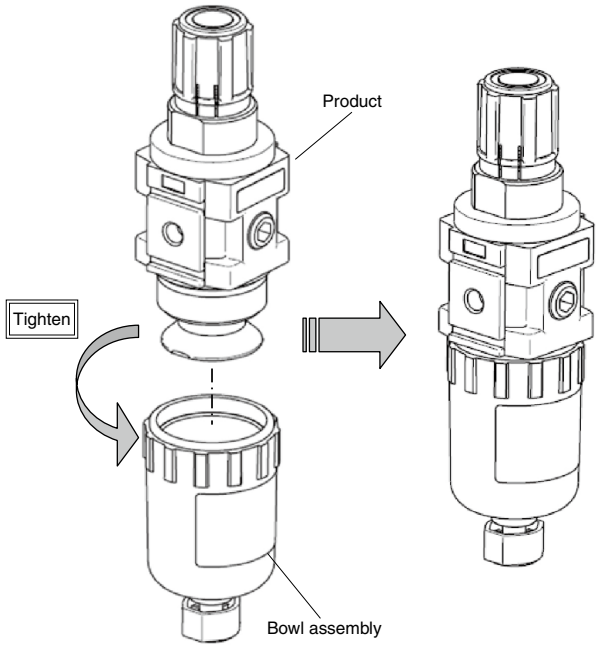
Applicable model	AW10-A	
Process	Disassembly	
Procedure	1) Turn the bowl assembly in the direction shown in the figure below to remove it from the product. If the bowl assembly has been tightened too much to be removed, use a hook wrench until it can be loosened by hand. (Hook wrench nominal: 25/28)	2) Turn the baffle by hand in the direction shown in the figure below (in the direction of the arrow) to remove the baffle and element.
		

Applicable model	AW10-A	
Process	Assembly	
Procedure	1) Mount the element to the element guide. (Direction is not specified.)	2) Turn the baffle by hand in the direction shown in the figure below to tighten the element. As the mounting direction of the baffle is specified, refer to the "Exploded View." For manual tightening, use the "Referential tightening torque" provided below.



Referential tightening torque: 0.35 ±0.05 N·m

3) Mount the bowl assembly onto the product firmly by turning it in the direction shown in the figure below.
For manual tightening, use the "Referential tightening torque" provided below.

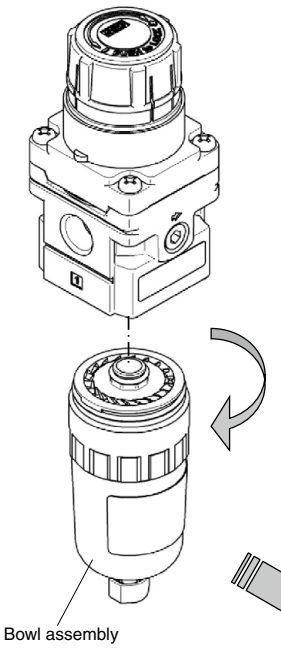


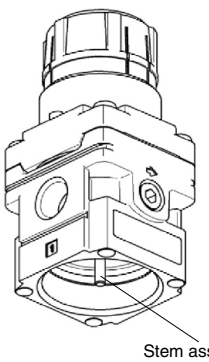
Referential tightening torque: 1.5 N·m

Applicable model	AW20-A
Process	Disassembly

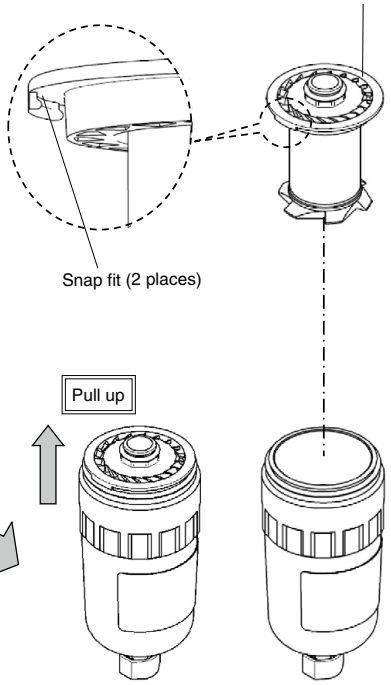
Procedure

1) Turn the bowl assembly in the direction shown in the figure below to remove it from the product. If the bowl assembly has been tightened too much to be removed, use SMC's special wrench until it can be loosened by hand.
(SMC's special wrench part no.: 1129129 (Recommended))

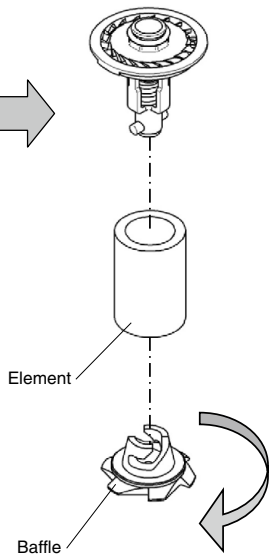




2) Hold the outer periphery, avoiding the 2 snap fits on the deflector, and pull it up to remove the element assembly.

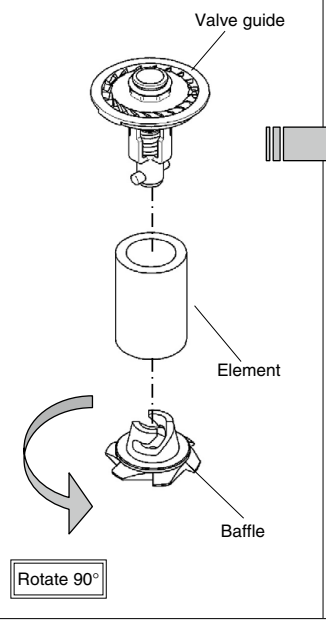
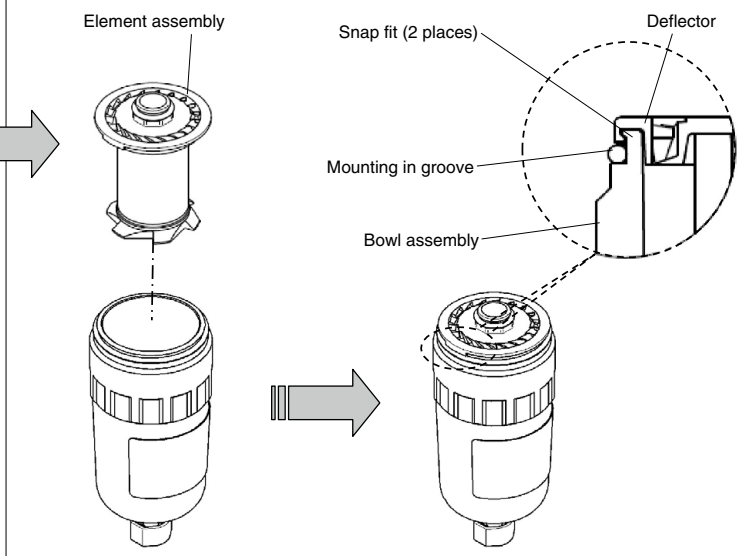
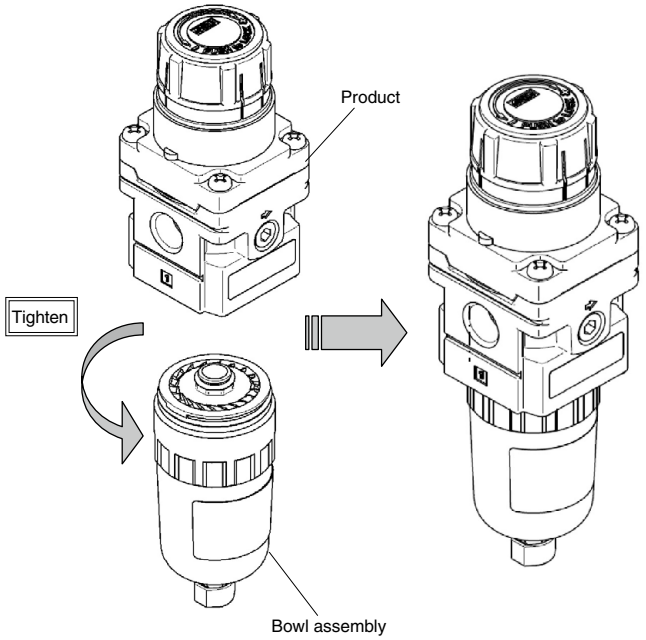


3) Turn the baffle in the direction of the arrow to remove the element.



Caution

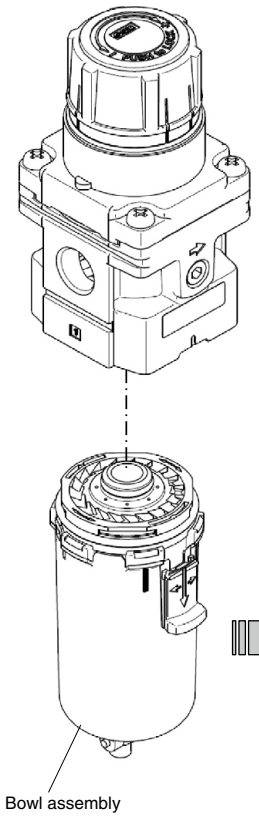
Do not pull on the stem assembly when removing it. Doing so may lead to a malfunction.

Applicable model	AW20-A
Process	Assembly
Procedure	1) Mount the element onto the valve guide, and turn the baffle in the direction shown in the figure below to secure the element. 
	2) When mounting the element assembly onto the bowl assembly, engage the 2 snap fits on the deflector with the bowl assembly (until you hear a click). 
	3) Mount the bowl assembly onto the product firmly by turning it to the right. For manual tightening, use the “Referential tightening torque” provided below.  **Referential tightening torque: 2.1 N·m**

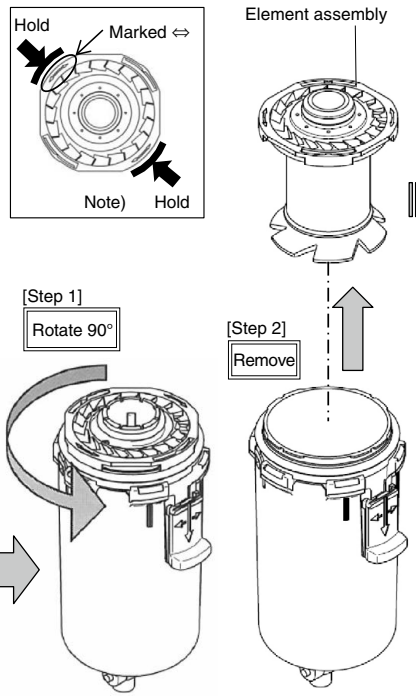
Applicable model	AW30-A/40-A
Process	Disassembly

Procedure

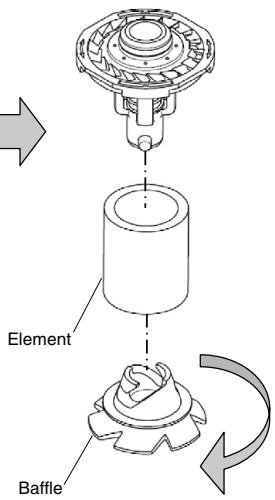
1) Remove the bowl assembly from the product.

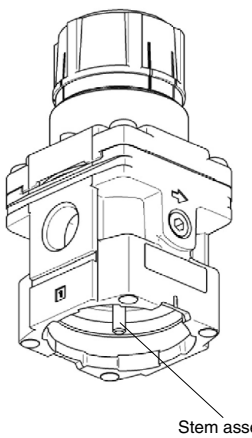


2) Turn the element assembly 90 degrees either to the left or right to remove it.



3) Turn the baffle in the direction of the arrow to remove the element.



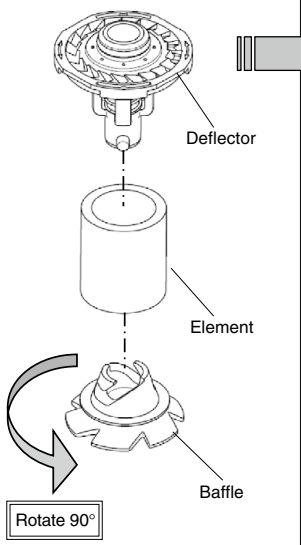


Caution

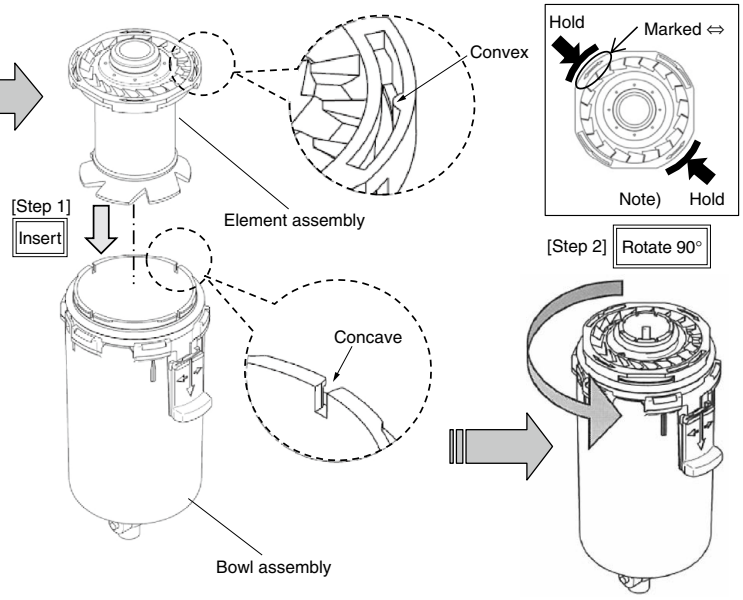
Do not pull on the stem assembly when removing it. Doing so may lead to a malfunction.

Note) Hold the sections marked ⇔ on the circular arc, and turn the element assembly.

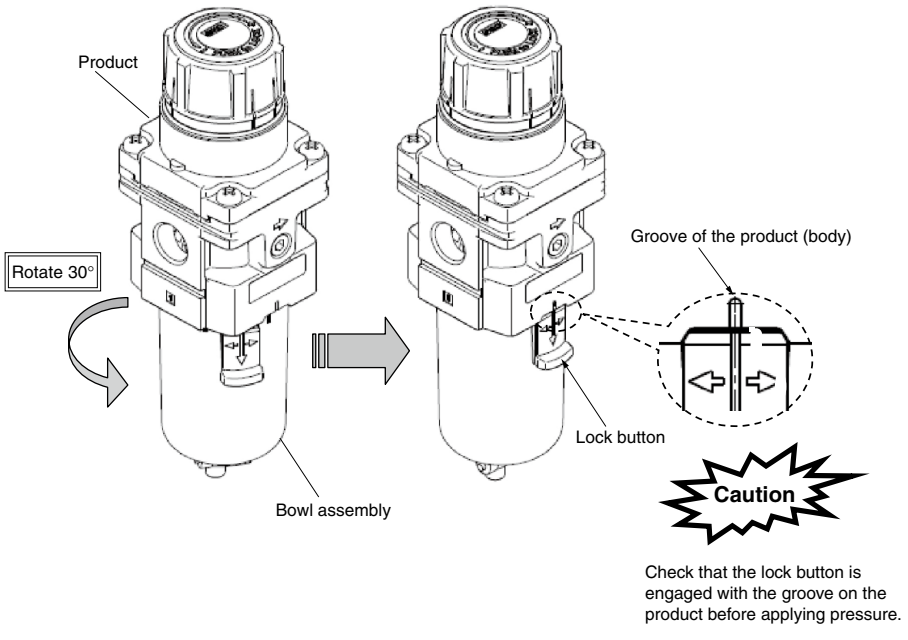
Applicable model	AW30-A/40-A
Process	Assembly
Procedure	1) Mount the element onto the deflector, and turn the baffle in the direction shown in the figure below to secure the element.



2) After mounting the element assembly onto the bowl assembly, turn the element assembly 90 degrees either to the left or right until the convex on the element assembly is engaged with the concave on the bowl assembly.



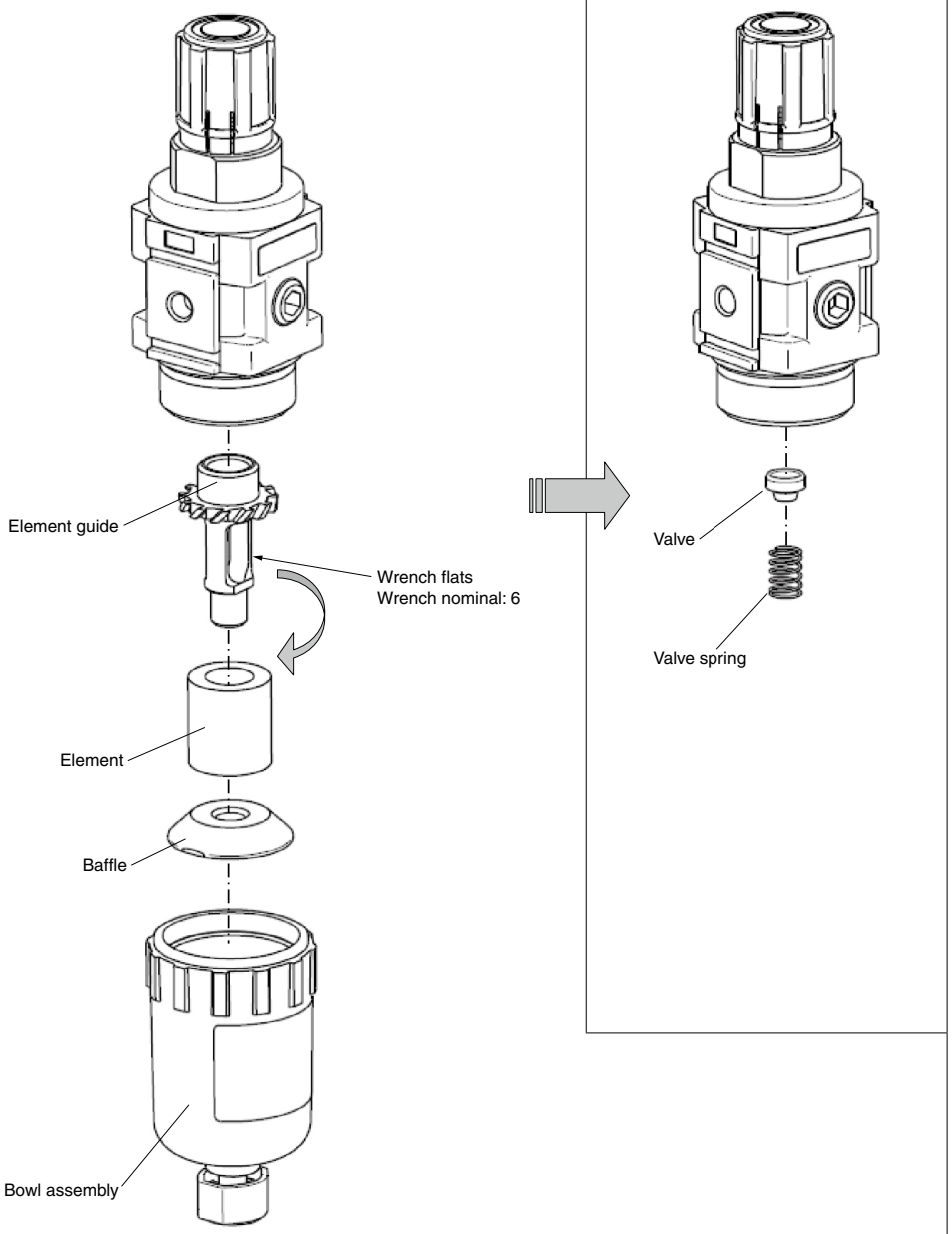
3) Mount the bowl assembly onto the product, and turn it until the lock button is aligned with the groove on the product as shown in the figure below.



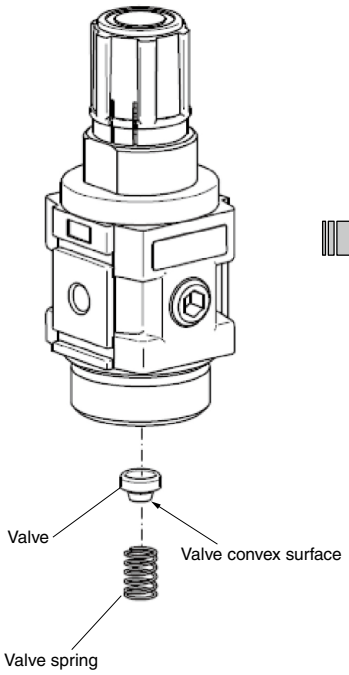
Note) Hold the sections marked ⇔ on the circular arc, and turn the element assembly.

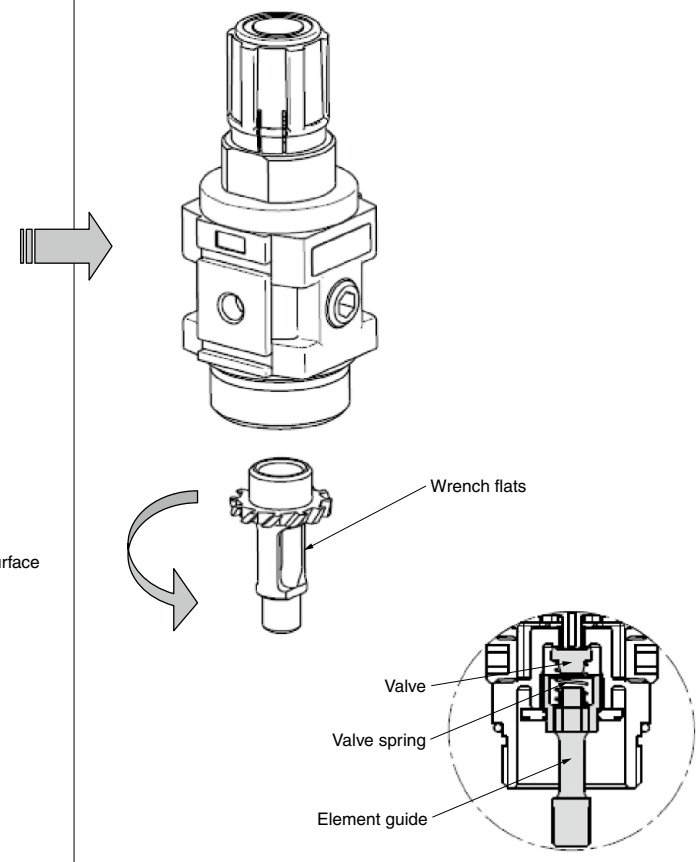
2. Valve Assembly

Applicable model	AW10-A		
Process	Disassembly		
Procedure	1) Remove the bowl assembly and element from the product.*	2) Remove the element guide. Hold the element guide with a wrench to rotate it in the direction shown in the figure below and remove the valve guide.	3) Remove the valve spring and valve.
	* For the removal procedure, refer to <Disassembly> (AW10-A: page 654) of the bowl assembly and element.		



Applicable model	AW10-A
Process	Assembly
Procedure	1) ①Set the valve so that the convex faces the element guide. ②Set the valve so that the convex enters the inner perimeter of the valve spring.
	2) Mount the element guide. Hold the element guide with a wrench to rotate it in the direction shown in the figure below and mount the element guide. Refer to the table below for the tool and tightening torque to be used.





Tool	Tightening torque
Wrench nominal: 6	0.35 ±0.05 N·m

Applicable model	AW20-A/AW30-A/AW40-A
Process	Disassembly

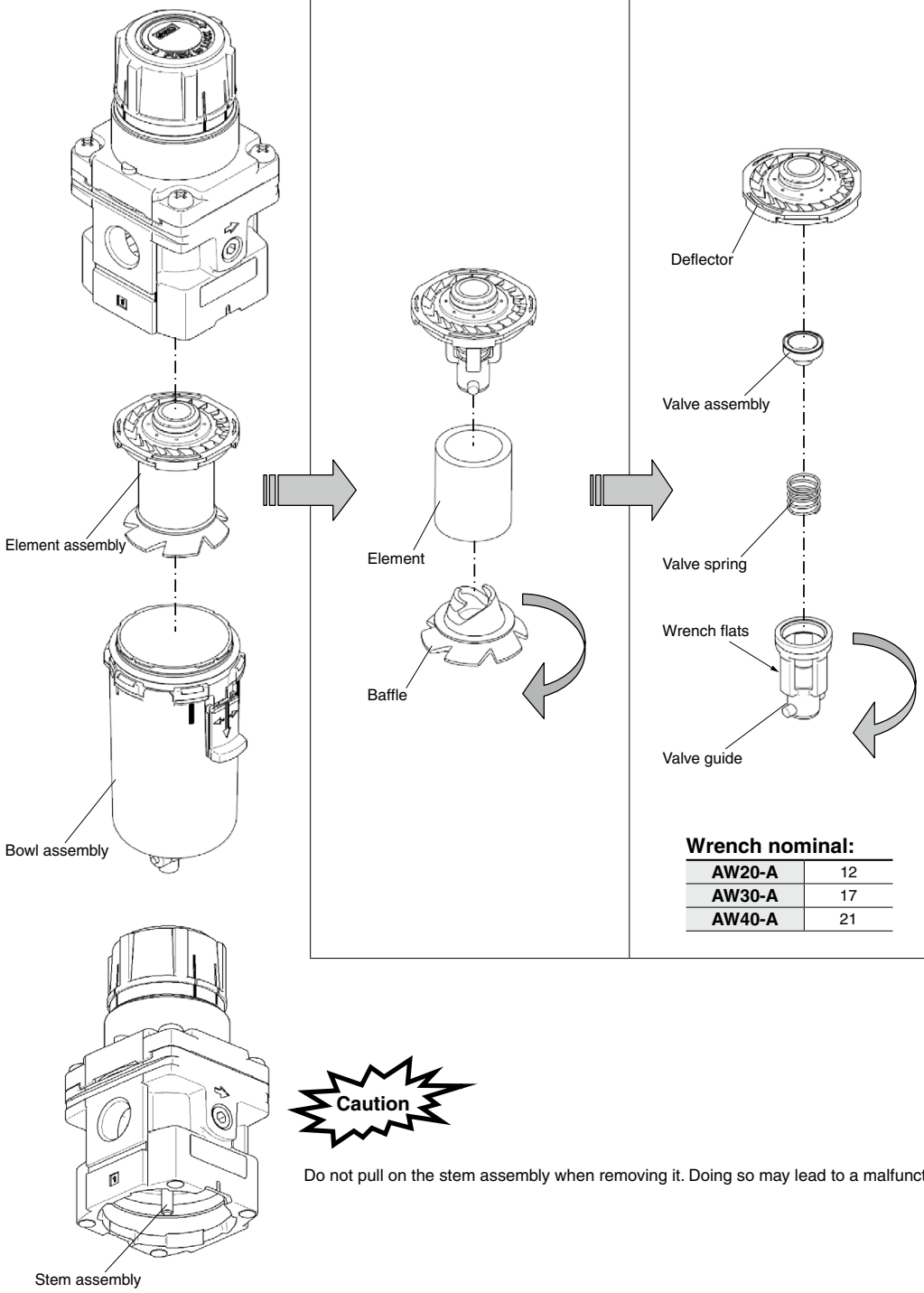
Procedure

1) Remove the bowl assembly and element assembly from the product.

2) Remove the element and baffle from the element assembly.

3) Hold the valve guide with a wrench, and turn it in the direction of the arrow to remove the deflector, valve assembly, and valve spring. (Wrench nominal: Refer to the table below.)

* For the removal procedure, refer to <Disassembly> (AW20-A: page 656, AW30-A/40-A: page 658) of the bowl assembly and element assembly.



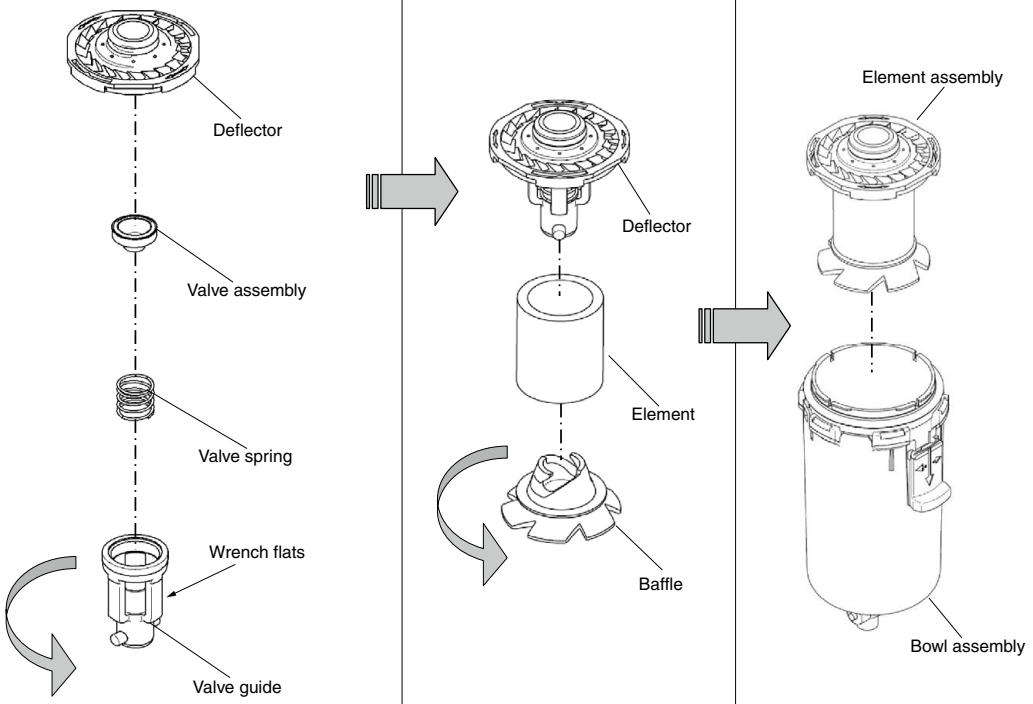
Wrench nominal:

AW20-A	12
AW30-A	17
AW40-A	21

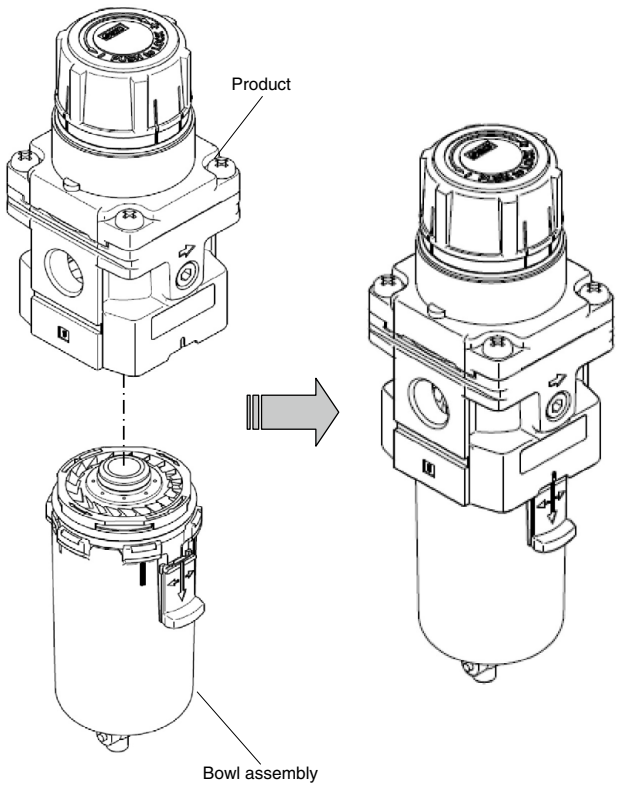
Caution

Do not pull on the stem assembly when removing it. Doing so may lead to a malfunction.

Applicable model	AW20-A/AW30-A/AW40-A		
Process	**Assembly**		
Procedure	1) Hold the valve guide with a wrench, and turn it in the direction of the arrow to tighten the deflector, valve assembly, and valve spring. Refer to the table below for the tools and tightening torques to be used.	2) Mount the element onto the deflector and secure the baffle. * For the mounting procedure, refer to <Assembly> (AW20-A: page 657, AW30-A/40-A: page 659) of the bowl assembly and element assembly.	3) Mount the element assembly onto the bowl assembly.



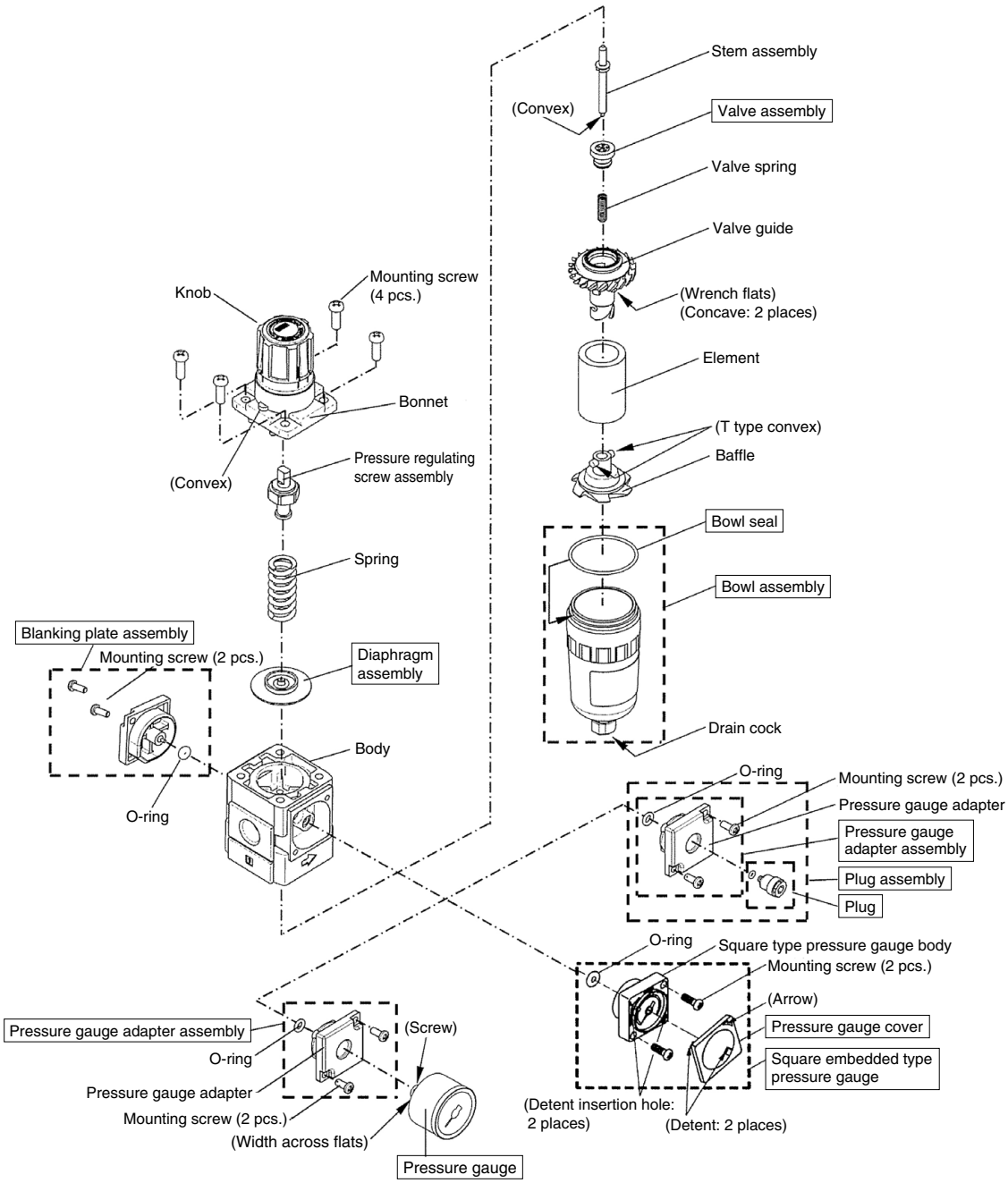
	Tool	Tightening torque
AW20-A	Wrench nominal: 12	0.45 ±0.05 N·m
AW30-A	Wrench nominal: 17	0.95 ±0.05 N·m
AW40-A	Wrench nominal: 21	1.15 ±0.05 N·m

Applicable model	AW20-A/AW30-A/AW40-A
Process	Assembly
Procedure	4) Mount the bowl assembly onto the product firmly.
	∗ For the mounting procedure, refer to <Assembly> (AW20-A: page 657, AW30-A/40-A: page 659) of the bowl assembly and element assembly.
	

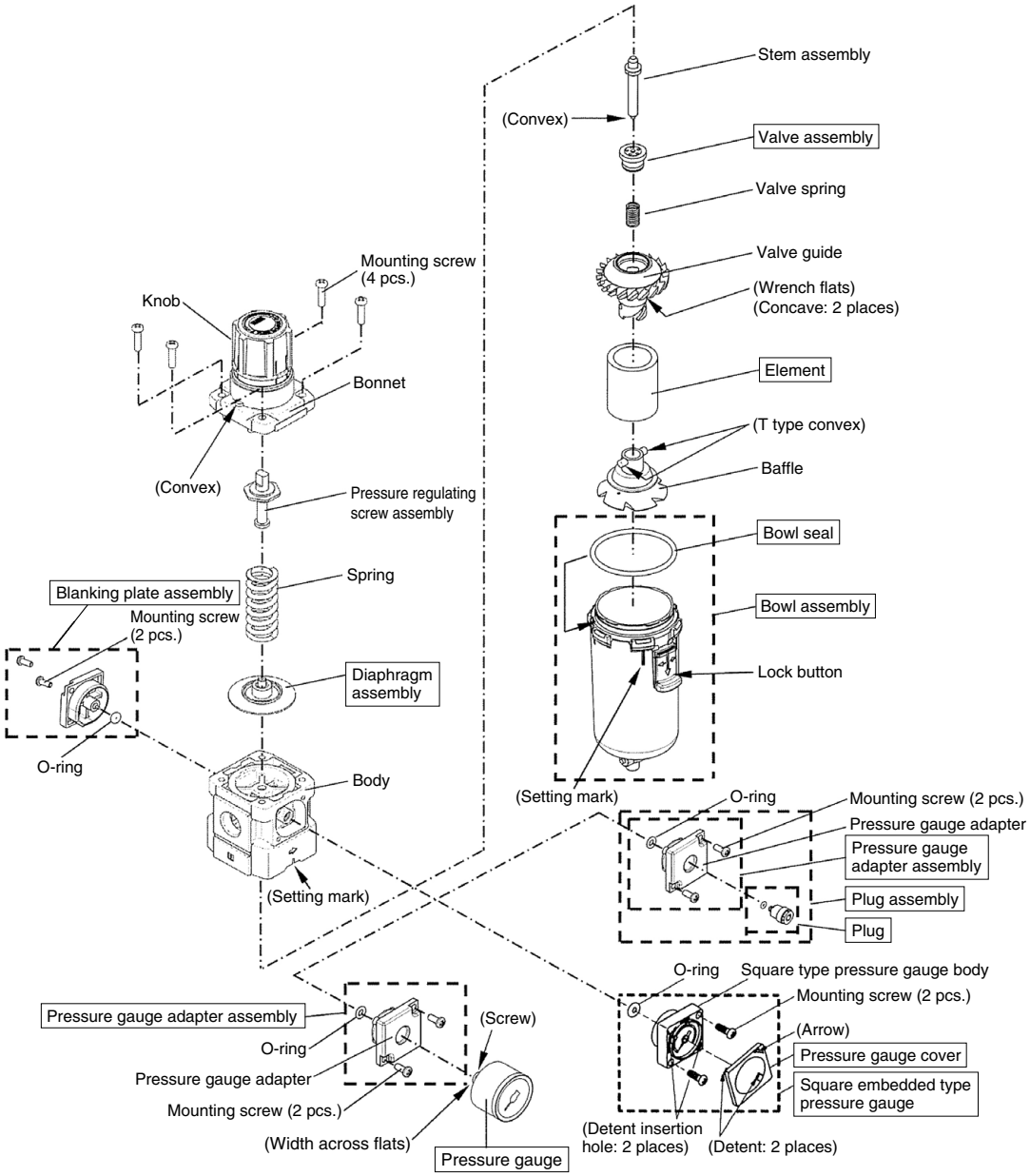
3. Diaphragm Assembly

Applicable model	Process	Procedure	Tools	Check item
AW10-A	Disassembly	1) Remove the bonnet assembly. Hold the bonnet with a wrench on the width across flat, and rotate counterclockwise to remove the bonnet assembly.	Wrench Nominal: 16	—
		2) Remove the piston assembly from the bonnet assembly. Pull out the piston assembly with the knob facing downwards. Otherwise, the pressure regulating screw assembly or spring may fall out.	—	—
	Assembly	3) Mount the piston assembly to the bonnet assembly. Insert the piston assembly into the bonnet so that the piston assembly convex faces the body. If the pressure regulating screw or pressure regulating spring is not mounted on the bonnet, mount it before mounting the piston assembly.	—	—
		4) Ensure that the chamber is mounted on the body. If the chamber is removed during disassembly, mount the chamber ensuring that it's facing the right direction. The convex of the chamber should face the bonnet.	—	Presence of the chamber Mounting direction
		5) Mount the bonnet assembly to the body. Hold the bonnet assembly with a wrench on the width across flat, and rotate the body clockwise to secure it. Refer to the “Check item” for the tightening torque.	Wrench Nominal: 16	Tightening torque: 1.8 ± 0.3 N·m
AW20-A AW30-A AW40-A	Disassembly	1) Removing bonnet Remove all 4 screws, and then remove the bonnet. Carefully store the bonnet parts. <Bonnet parts> · Pressure regulating screw assembly · Spring · Diaphragm assembly	Phillips head screwdriver	—
	Assembly	2) Mount the disassembled parts onto the body. Perform mounting while referring to the “Exploded View” (pages 662 to 664).	—	Direction of the pressure regulating screw assembly and diaphragm assembly
		3) Mounting bonnet Mount the convex IN side of the bonnet to the body, and tighten the 4 mounting screws half way with a Phillips head screwdriver. Then, tighten the screws completely in a diagonal pattern with the indicated tightening torque.	Phillips head screwdriver	Tightening torque: **AW20-A** 0.62 ± 0.3 N·m **AW30-A** 3.5 ± 0.3 N·m **AW40-A** 2.6 ± 0.3 N·m

AW20-B Exploded View 1

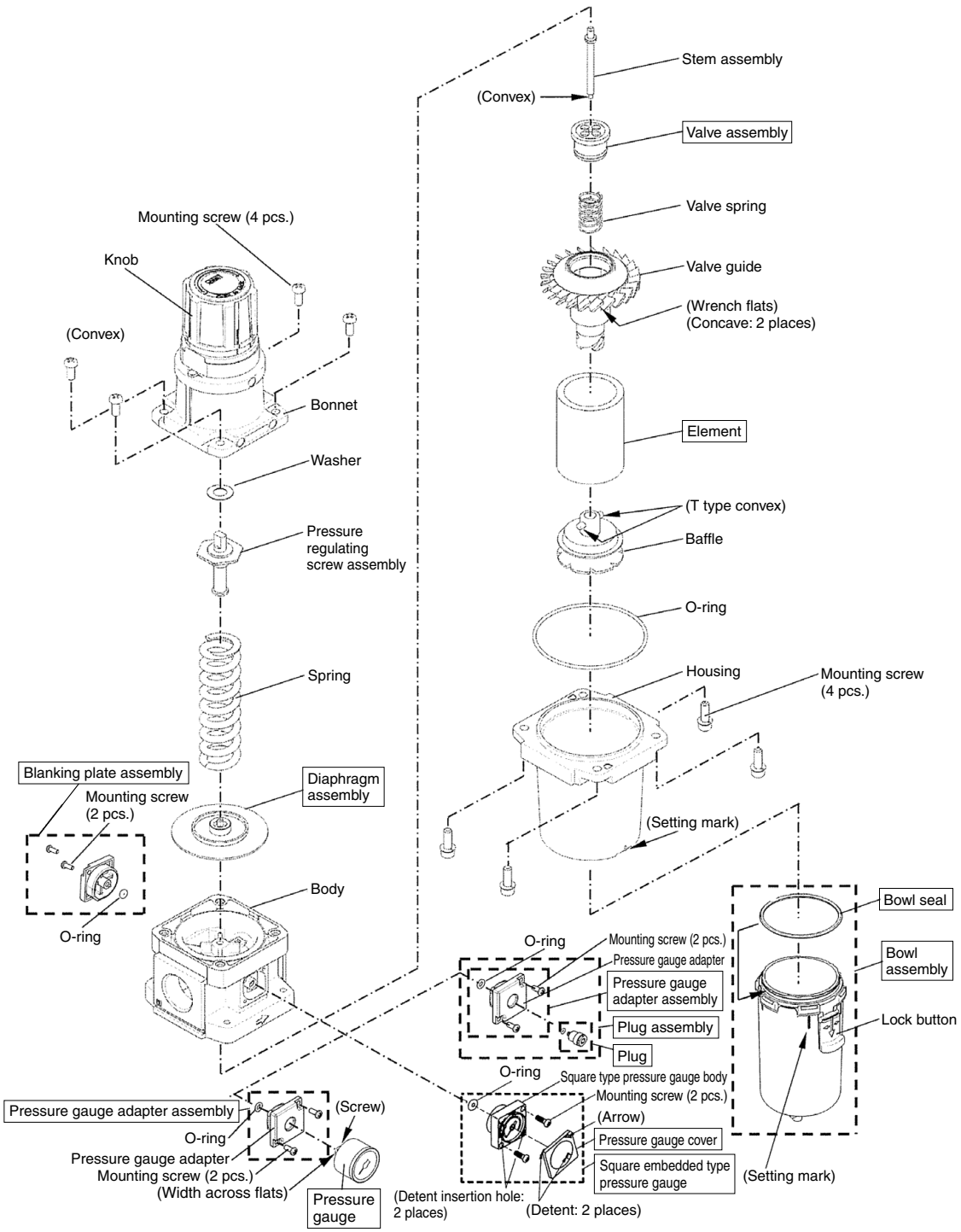


Note) It is possible to mount a square embedded type pressure gauge, a pressure gauge adapter assembly, or a plug assembly instead of a blanking plate assembly.

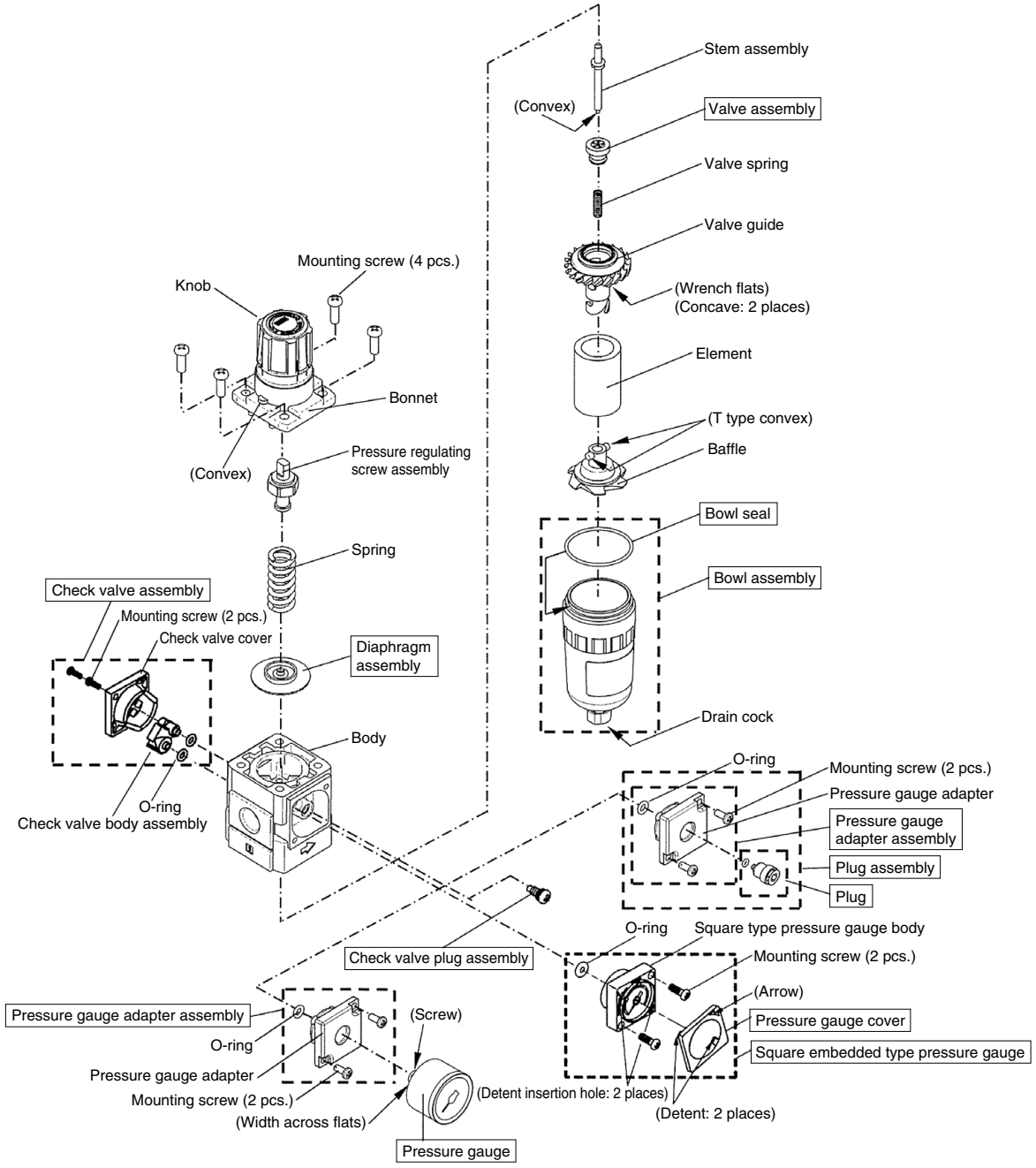


Note) It is possible to mount a square embedded type pressure gauge, a pressure gauge adapter assembly, or a plug assembly instead of a blanking plate assembly.

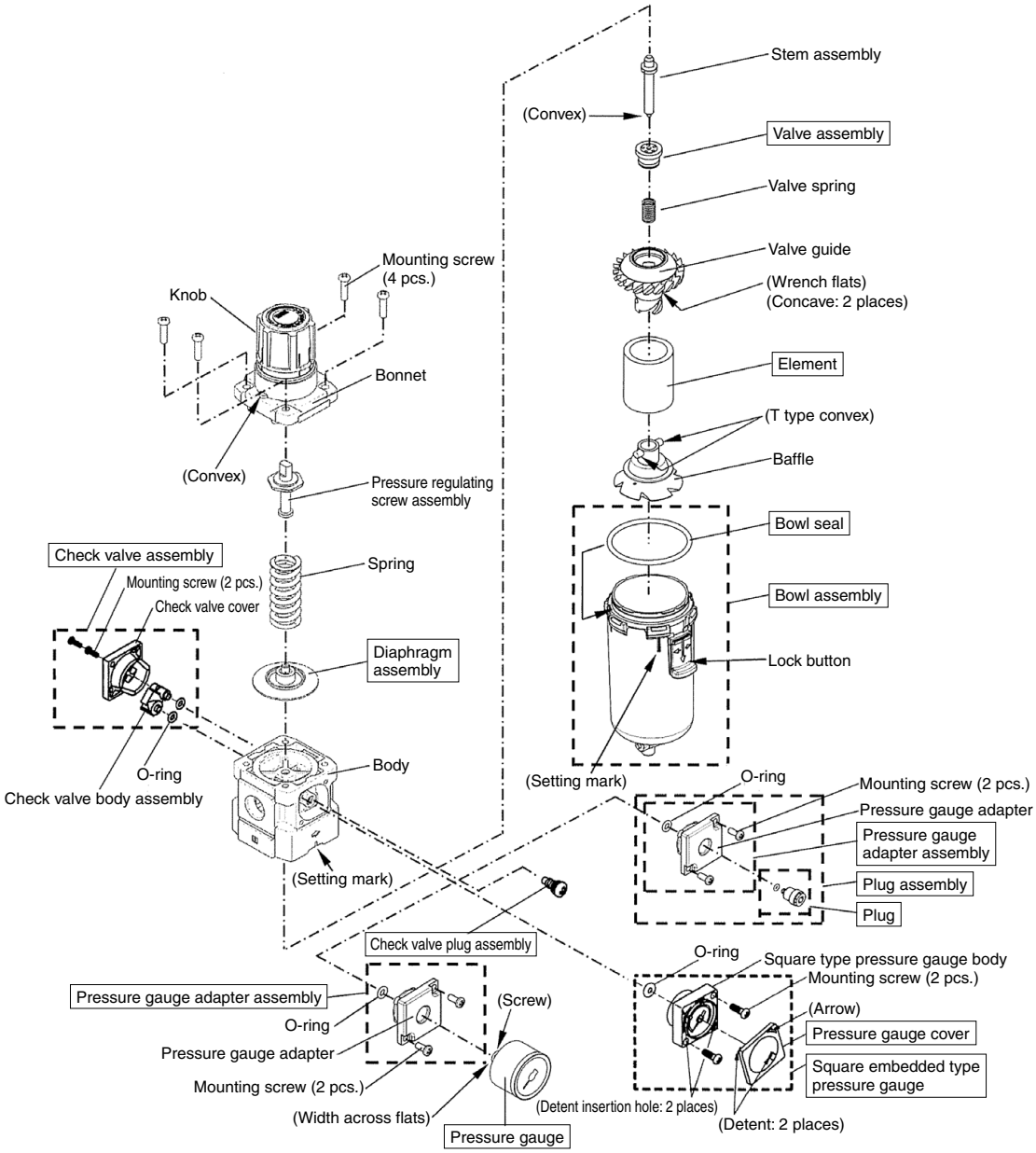
AW60-B Exploded View 3



Note) It is possible to mount a square embedded type pressure gauge, a pressure gauge adapter assembly, or a plug assembly instead of a blanking plate assembly.

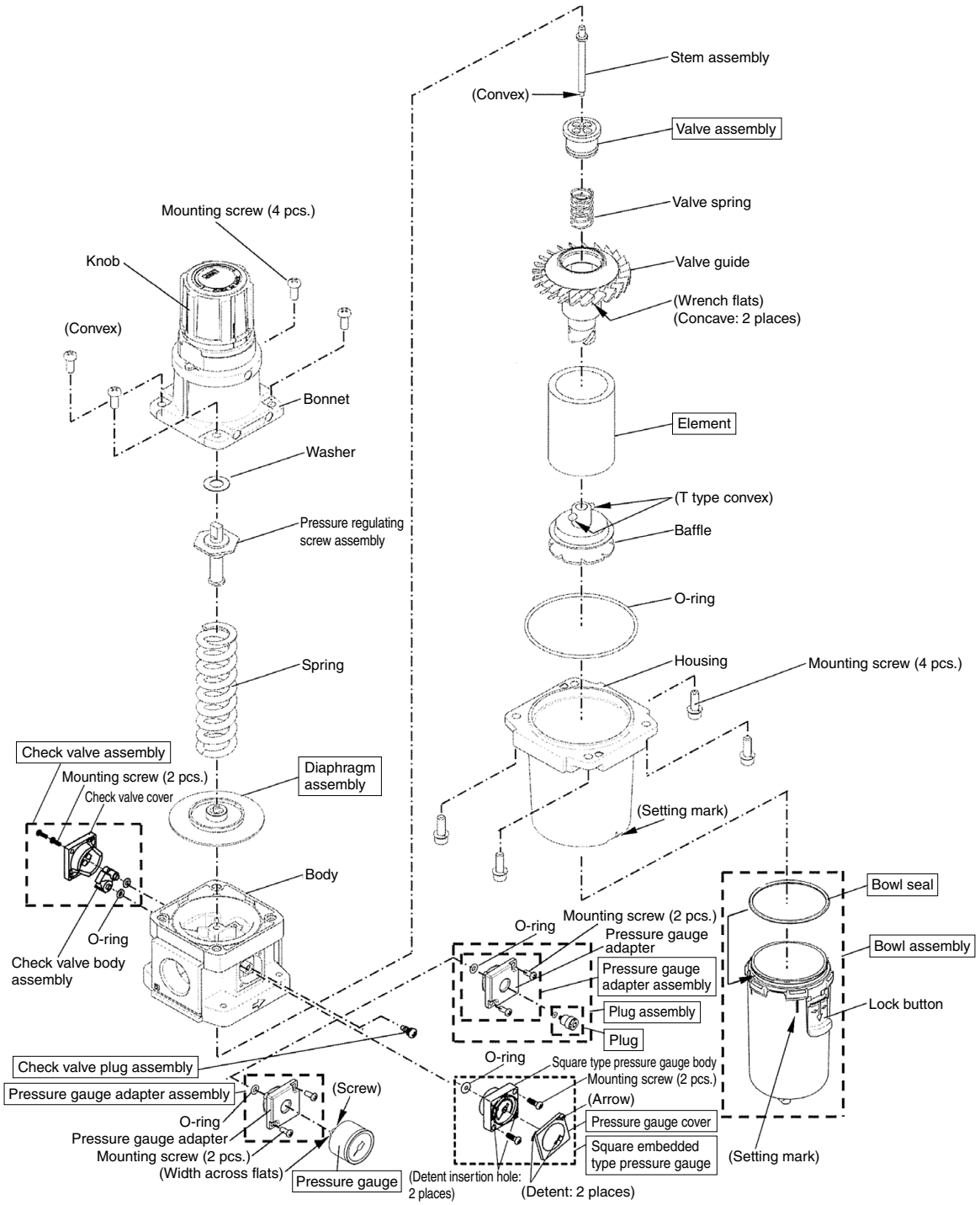


Note) The flow direction can be changed by removing the check valve assembly and replacing it with the square embedded type pressure gauge, pressure gauge adapter assembly, and plug assembly. At this time, the check valve plug assembly must also be replaced.

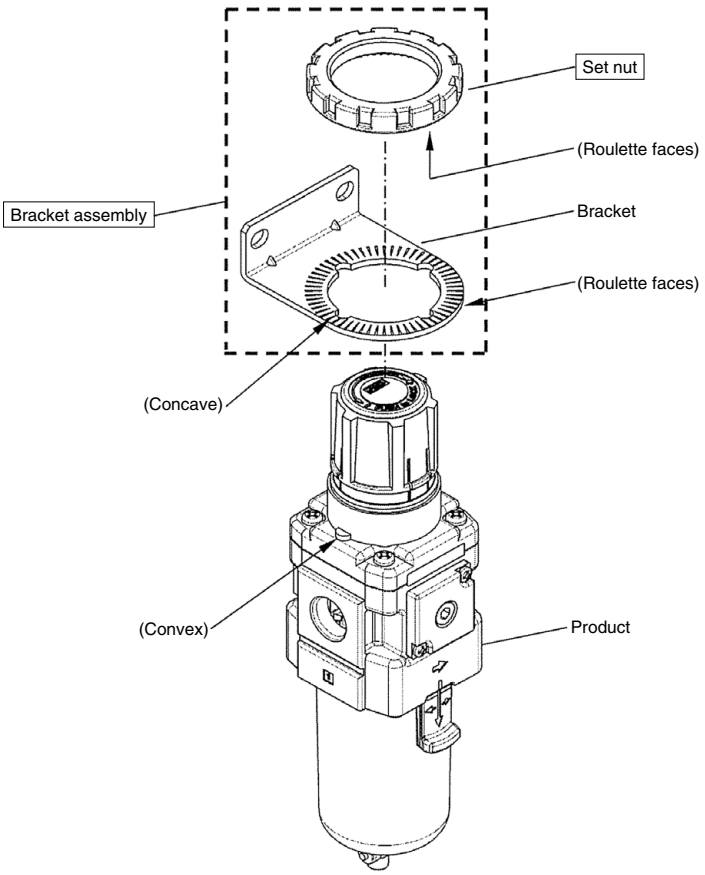


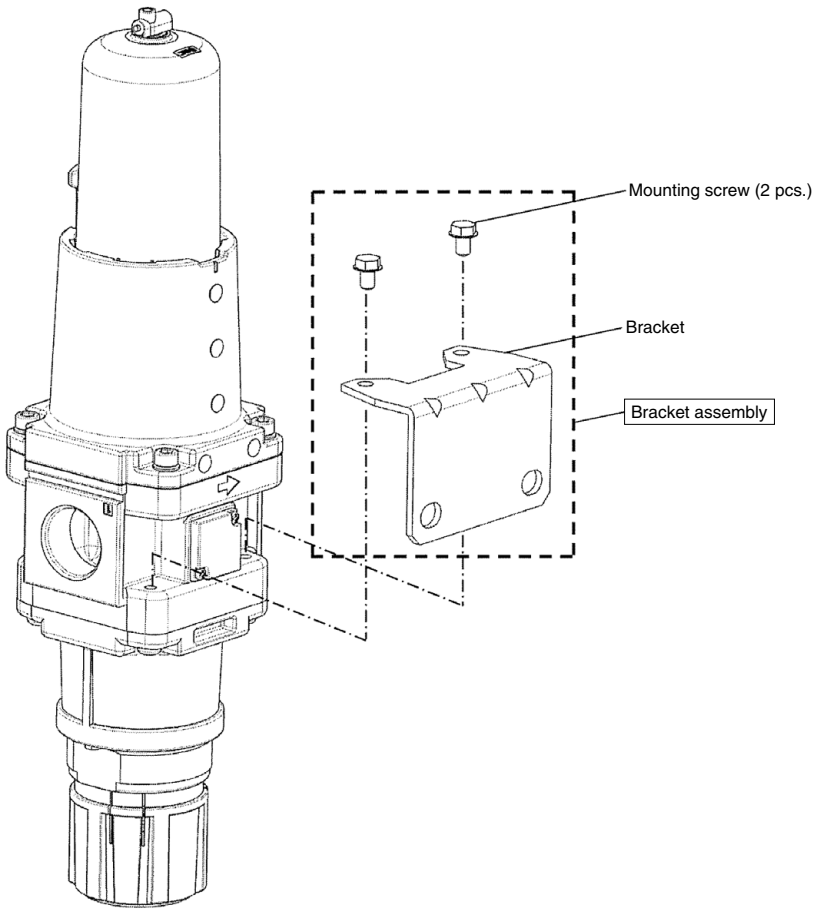
Note) The flow direction can be changed by removing the check valve assembly and replacing it with the square embedded type pressure gauge, pressure gauge adapter assembly, and plug assembly. At this time, the check valve plug assembly must also be replaced.

AW60K-B Exploded View 3



Note) The flow direction can be changed by removing the check valve assembly and replacing it with the square embedded type pressure gauge, pressure gauge adapter assembly, and plug assembly. At this time, the check valve plug assembly must also be replaced.


Set nut
(Roulette faces)
Bracket assembly
Bracket
(Roulette faces)
(Concave)
(Convex)
Product


Mounting screw (2 pcs.)
Bracket
Bracket assembly

⚠Warning

Before replacement, ensure that the regulator is not pressurized.
Rotate the pressure adjusting knob to zero.
Replace while referring to the "Exploded View."
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

1. Bowl Assembly/Element

Applicable model	Process	Procedure	Tools	Check item
AW20(K)-B	Disassembly	1) Remove the bowl assembly. Hold the bowl assembly by hand and rotate counterclockwise to remove the bowl assembly. If the bowl assembly has been tightened too much to be removed, use a wrench until it can be loosened by hand.	SMC's special wrench (Recommended) Part no.: 1129129	—
		2) Remove the baffle and element. Rotate the baffle by hand and counterclockwise to remove the baffle and element.	—	—
	Assembly	3) Mount the element. Mount the element to the valve guide.	—	—
		4) Mount the baffle. Insert the baffle so that concave on the valve guide could meet T convex on the baffle. And rotate it clockwise manually until feeling the snap fit (approx. 110°) to fix to the element.	—	—
		5) Mount the bowl assembly. Hold the bowl assembly by hand and rotate clockwise. Do not use tool for mounting because the bowl may be damaged. Refer to the "Check item" for referential tightening torque.	—	Referential tightening torque: 2.1 N·m
AW30(K)-B AW40(K)-B AW60(K)-B	Disassembly	1) Remove the bowl assembly. Push the bowl assembly lock button. Lifting the bowl assembly, rotate the assembly 30 degree (right or left) to pull out the assembly.	—	—
		2) Remove the baffle and element. Rotate the baffle by hand and counterclockwise to remove the baffle and element.	—	—
	Assembly	3) Mount the element. Mount the element to the valve guide.	—	—
		4) Mount the baffle. Insert the baffle so that concave on the valve guide could meet T convex on the baffle. And rotate it clockwise manually until feeling the snap fit (approx. 110°) to fix to the element.	—	Direction of baffle. For element convex side.
		5) Mount the bowl assembly. Match the mating mark of the body and the bowl assembly to insert the assembly to the body. Rotate the assembly 30 degree (right or left) until the lock button is tossed up to mount the bowl assembly. Ensure that the lock button is up.	—	Lock button is up.

2. Diaphragm Assembly

Applicable model	Process	Procedure	Tools	Check item
AW20(K)-B AW30(K)-B AW40(K)-B AW60(K)-B	Disassembly	1) Remove the bonnet assembly. Rotate the set screw counterclockwise with a Phillips head screwdriver to remove the bonnet from the body.	Phillips head screwdriver	—
		2) Remove parts in order of the pressure regulating screw assembly, spring, and the diaphragm assembly. Please be noted that the diaphragm assembly adheres to the bonnet if disassemble parts with the knob facing downwards.	—	—
	Assembly	3) Mount parts to the body in order of the diaphragm assembly, spring, and pressure regulating screw assembly.	—	Direction of the diaphragm assembly and the pressure regulating screw assembly
		4) Mount the bonnet to the body. Mount the convex IN side of the bonnet to the body, and tighten the 4 mounting screws half way with a Phillips head screwdriver. Then, tighten the screws completely in a diagonal pattern with the indicated tightening torque.	Phillips head screwdriver	Tightening torque: **AW20(K)-B** 2.35 ± 0.3 N·m **AW30(K)-B** 2.35 ± 0.3 N·m **AW40(K)-B** 3.5 ± 0.3 N·m **AW60(K)-B** 3.5 ± 0.3 N·m

3. Valve Assembly

Applicable model	Process	Procedure	Tools	Check item
AW20(K)-B AW30(K)-B AW40(K)-B	Disassembly	1) Remove the valve guide after removing the bowl assembly and element. Hold the valve guide with a wrench on the wrench flat to rotate it counterclockwise, and remove the valve guide.	Wrench Nominal: AW20(K)-B 11 AW30(K)-B 17 AW40(K)-B 21	—
		2) Remove the valve spring.	—	—
		3) Remove the valve assembly.	—	—
	Assembly	4) Mount the valve assembly. Connect the stem convex and the valve center hole.	—	Positioning of the stem and the valve (centering)
		5) Mount the valve spring. Insert the valve spring into the valve hole.	—	—
		6) Mount the valve guide. Hold the valve guide with a wrench on the wrench flat to rotate it clockwise, and mount the valve guide. Refer to the "Check item" for the tightening torque.	Wrench Nominal: AW20(K)-B 11 AW30(K)-B 17 AW40(K)-B 21	Tightening torque: AW20(K)-B 0.8 ± 0.1 N·m AW30(K)-B 2.35 ± 0.3 N·m AW40(K)-B 3.5 ± 0.3 N·m
AW60(K)-B	Disassembly	1) Remove the bowl assembly, housing, and element. Remove a housing from a body by rotating the 4 mounting screws counterclockwise with a hexagon wrench key.	Hexagon wrench key Nominal: 5	—
		2) Remove the valve guide. Hold the valve guide with a wrench on the wrench flat to rotate it counterclockwise and remove the valve guide.	Wrench Nominal: 30	—
		3) Remove the valve spring.	—	—
		4) Remove the valve assembly.	—	—
	Assembly	5) Mount the valve assembly. Connect the stem convex and the valve center hole.	—	Positioning of the stem and the valve (centering)
		6) Mount the valve spring. Insert the valve spring into the valve hole.	—	—
		7) Mount the valve guide. Hold the valve guide with a wrench on the wrench flat to rotate it clockwise, and mount the valve guide. Refer to the "Check item" for the tightening torque.	Wrench Nominal: 30	Tightening torque: 6.5 ± 0.3 N·m
		8) Mount the housing. Mount the O-ring on the body, assemble the housing, and tighten the 4 mounting screws temporarily. Tighten the screws additionally and evenly with the tightening torque shown on the right with a hexagon wrench key.	Hexagon wrench key Nominal: 5	Tightening torque: 4.5 ± 1.0 N·m

4. Bracket Assembly, Panel Mount

Applicable model	Process	Procedure	Tools	Check item
AW20(K)-B AW30(K)-B AW40(K)-B	Assembly	1) Mount the parts to the bracket (panel). Connect the bracket (panel) concave and the bonnet convex to mount the bracket.	—	—
		2) Secure the bracket (panel) with the set nut. Rotate the set nut clockwise with a hook wrench to secure the parts to the bracket (panel). Refer to the "Check item" for the tightening torque. The set nut knurling surface should face the bracket. When mounting with a bracket, a manually tightened set nut is adequate for general use.	Hook wrench Nominal: AW20(K)-B 34/38 AW30(K)-B 52/55 AW40(K)-B 52/55	Tightening torque: AW20(K)-B 2.0 ± 0.2 N·m AW30(K)-B 3.5 ± 0.3 N·m AW40(K)-B 4.0 ± 0.4 N·m
AW60(K)-B	Assembly	1) Mount the product to the bracket. The 2 mounting screws are tightened with a wrench for holding.	Wrench Nominal: 10	Tightening torque: 2.6 N·m

5. Square Embedded Pressure Gauge

Applicable model	Process	Procedure	Tools	Check item
AW20(K)-B AW30(K)-B AW40(K)-B AW60(K)-B	Disassembly	1) Remove the pressure gauge cover. Rotate the pressure gauge cover 15 degrees counterclockwise to pull out the pressure gauge cover.	—	—
		2) Remove the pressure gauge. Rotate the 2 mounting screws counterclockwise with a Phillips head screwdriver to remove the pressure gauge and the 2 mounting screws.	Phillips head screwdriver	—
	Assembly	3) Ensure that the O-ring is mounted to the pressure gauge. Mount the O-ring to the pressure gauge if the ring fall off.	—	Presence of O-ring
		4) Mount the pressure gauge. Rotate the mounting screws clockwise with a Phillips head screwdriver to mounting screws temporarily. Then settle them with tightening torque in "Check item."	Phillips head screwdriver	Tightening torque: 0.6 ± 0.05 N·m
		5) Mount the pressure gauge cover. Insert the pressure gauge mating 2 detents of the pressure gauge and holes for them so that the arrow of the pressure gauge cover comes upper right. Rotate the pressure gauge cover 15 degrees opposite to the arrow to mount the pressure gauge.	—	—

6. Circular Pressure Gauge

Applicable model	Process	Procedure	Tools	Check item
AW20(K)-B AW30(K)-B AW40(K)-B AW60(K)-B	Disassembly	1) Remove the pressure gauge. Hold the pressure gauge with a wrench on the width across flat. Then, rotate the gauge counterclockwise to remove the gauge.	Wrench Nominal: AW20(K)-B, AW30(K)-B, AW40(K)-B, AW60(K)-B: 14	—
	Assembly	2) Wind the pressure gauge thread with the sealant tape leaving 1.5 to 2 threads from the end.	—	Wind sealant tape leaving 1.5 to 2 threads
		3) Mount the pressure gauge. Hold the pressure gauge on the width across flat with a wrench, and rotate it clockwise to mount the circular pressure gauge. Refer to the "Check item" for tightening torque of pressure gauge.	Wrench Nominal: AW20(K)-B, AW30(K)-B, AW40(K)-B, AW60(K)-B: 14	Tightening torque: AW20(K)-B, AW30(K)-B, AW40(K)-B, AW60(K)-B: 7 to 9 N·m

7. Pressure Gauge Adapter, Plug

Applicable model	Process	Procedure	Tools	Check item
AW20(K)-B AW30(K)-B AW40(K)-B AW60(K)-B	Disassembly	1) Remove the plug. Insert the hexagon wrench key to hexagon hole of hexagon plug. Rotate the plug counterclockwise to remove the plug.	Hexagon wrench key Nominal: AW20(K)-B, AW30(K)-B, AW40(K)-B, AW60(K)-B: 4	—
		2) Remove the pressure gauge adapter. Rotate the 2 mounting screws counterclockwise with a Phillips head screwdriver to remove the pressure gauge and 2 mounting screws.	Phillips head screwdriver	—
	Assembly	3) Confirm the pressure gauge adapter has the O-ring. If not, mount the O-ring.	—	—
		4) Mount the pressure gauge adapter. Rotate the 2 mounting screws clockwise with a Phillips head screwdriver to fix the pressure gauge adapter. Refer to the “Check item” for tightening torque of 2 screws.	Phillips head screwdriver (Torque driver)	Tightening torque: 0.6 ± 0.05 N·m
		5) Mount the plug assembly. Insert the hexagon wrench key into hexagon hole on the plug and rotate clockwise to fix the plug. Refer to the “Check item” for tightening torque of 2 screws.	Hexagon wrench key Nominal: AW20(K)-B, AW30(K)-B, AW40(K)-B, AW60(K)-B: 4	Tightening torque: AW20(K)-B, AW30(K)-B, AW40(K)-B, AW60(K)-B: 0.6 ± 0.05 N·m

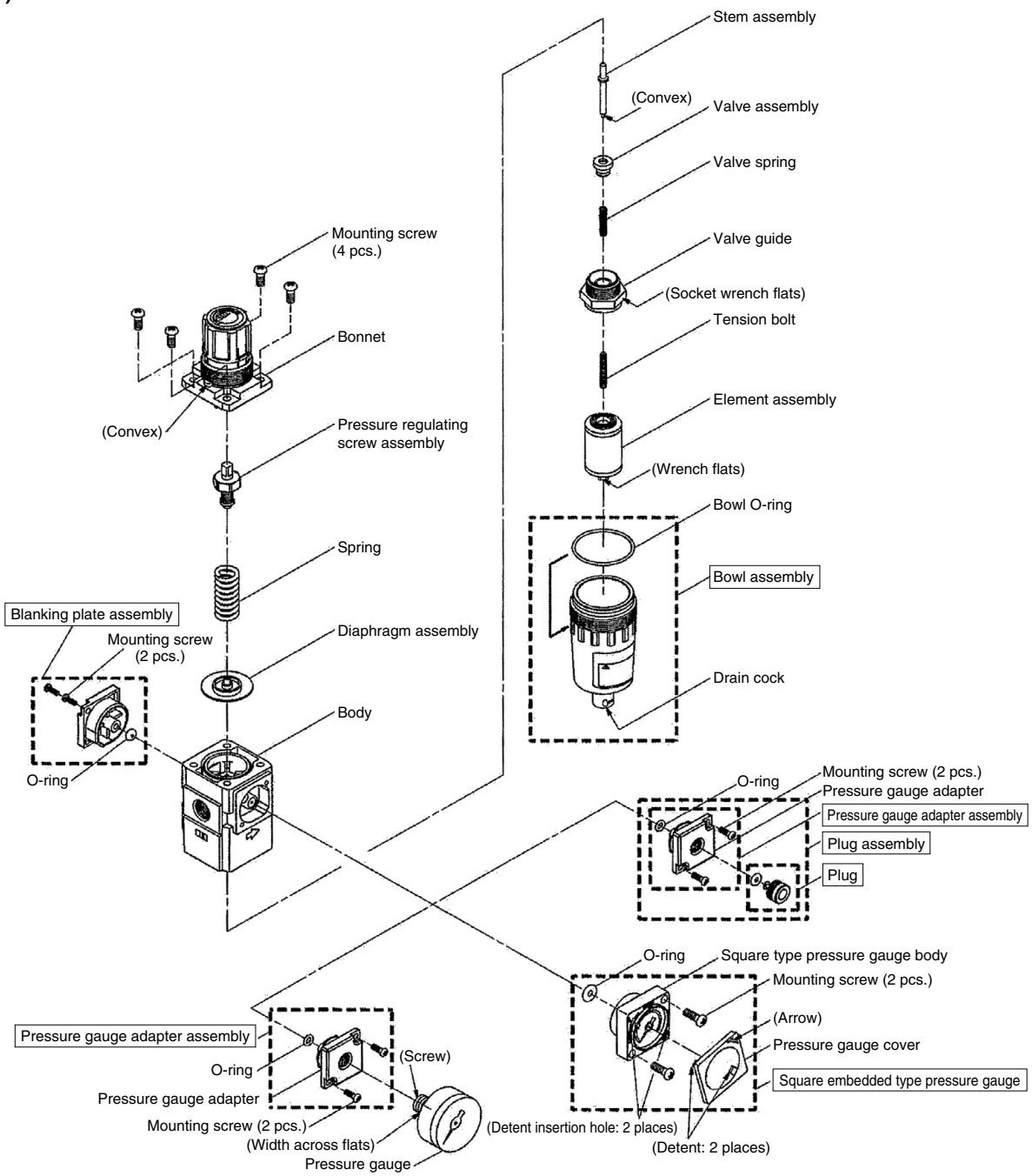
8. Blanking Plate Assembly

Applicable model	Process	Procedure	Tools	Check item
AW20(K)-B AW30(K)-B AW40(K)-B AW60(K)-B	Disassembly	1) Remove the blanking plate. Rotate the 2 mounting screws counterclockwise with a Phillips head screwdriver to remove the blanking plate and 2 mounting screws.	Phillips head screwdriver	—
	Assembly	2) Confirm the blanking plate has the O-ring. If not, mount the O-ring.	—	—
		3) Mount the blanking plate. Rotate the 2 mounting screws clockwise with a Phillips head screwdriver to fix the blanking plate. Refer to the “Check item” for tightening torque of 2 screws.	Phillips head screwdriver (Torque driver)	Tightening torque: 0.6 ± 0.05 N·m

9. Check Valve Assembly

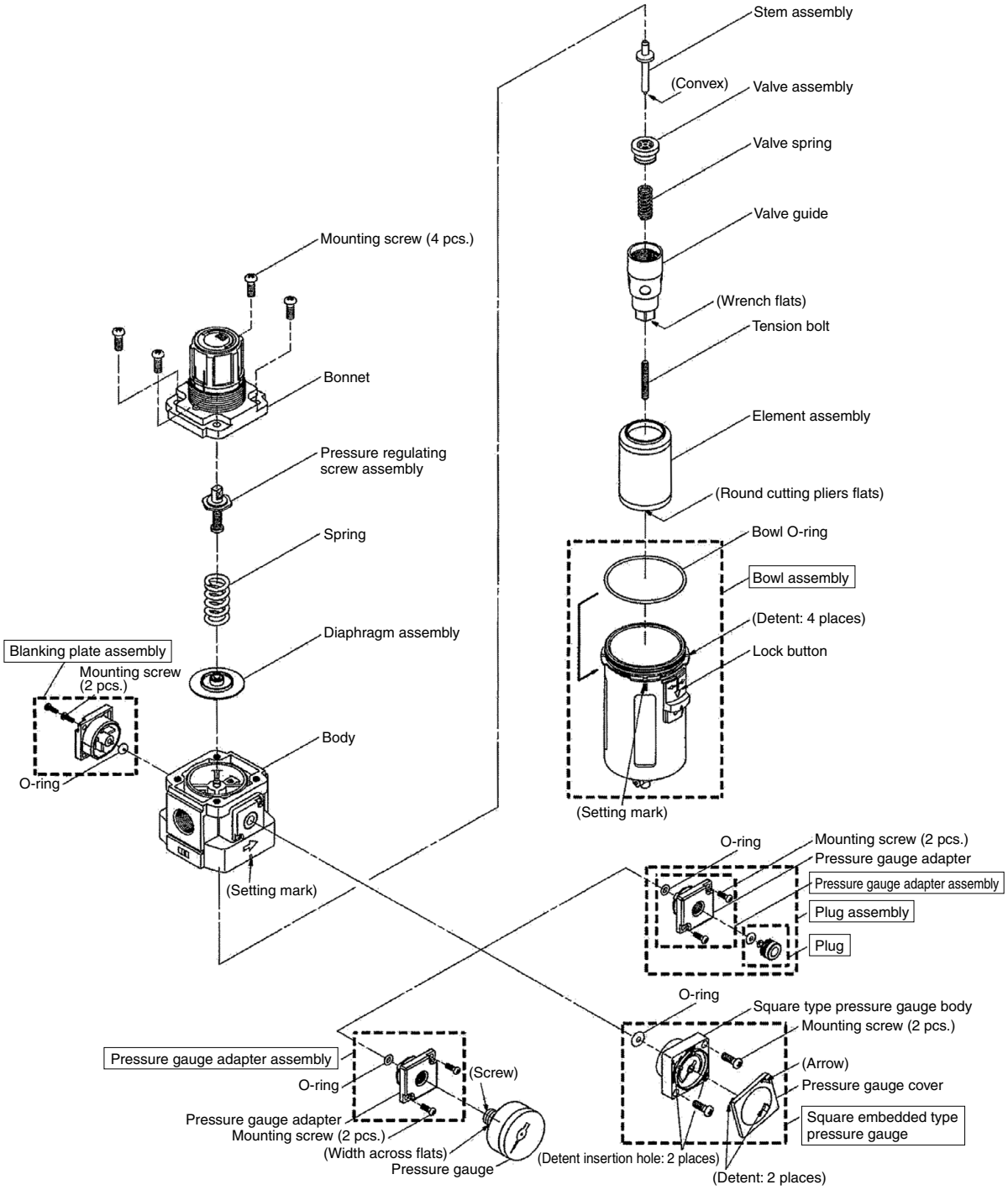
Applicable model	Process	Procedure	Tools	Check item
AW20K-B AW30K-B AW40K-B AW60K-B	Disassembly	1) Remove the check valve cover. Rotate the 2 mounting screws counterclockwise with a Phillips head screwdriver to remove the check valve cover.	Phillips head screwdriver	—
		2) Remove the check valve assembly from the body. Pull and remove the check valve assembly. Then, ensure that the 2 O-rings do not fall out of the body.	—	—
	Assembly	1) Ensure that the O-rings do not fall out of the body and mount them if they fall off.	—	—
		2) Insert convex on the check valve body into the 2 inserting holes for the O-rings respectively.	—	Direction of the check valve body assembly
		3) Mount the check valve cover. Rotate the 2 mounting screws clockwise with a Phillips head screwdriver to fix the check valve cover to the body. Refer to the “Check item” for adequate tightening torque for the screws.	Phillips head screwdriver (Torque driver)	Tightening torque: 0.6 ± 0.05 N·m

1) AWM20



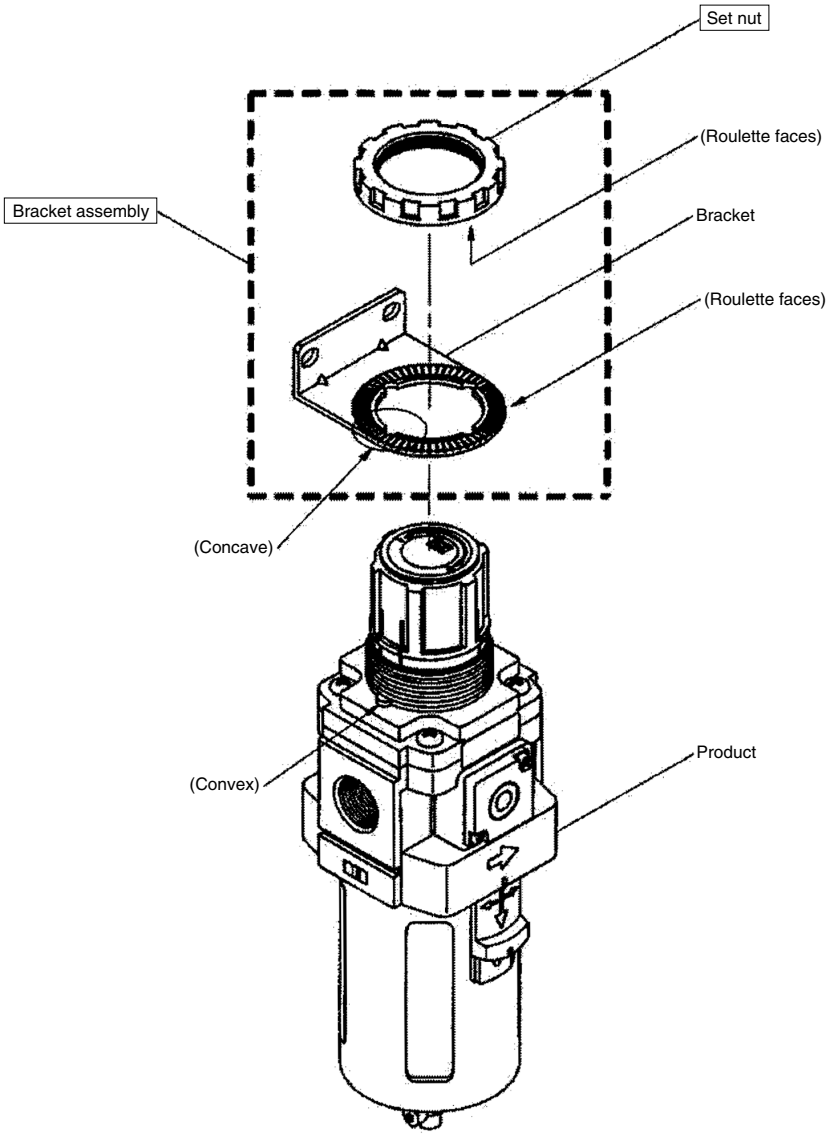
Note) It is possible to mount a square embedded type pressure gauge, a pressure gauge adapter assembly, or a plug assembly instead of a blanking plate assembly.

2) AWM30/40



Note) It is possible to mount a square embedded type pressure gauge, a pressure gauge adapter assembly, or a plug assembly instead of a blanking plate assembly.

3) AWM20/30/40 Bracket assembly, panel mount exploded view



⚠Warning
Before replacement, ensure that the regulator is not pressurized.
Rotate the pressure adjusting knob to zero.
Replace while referring to the "Exploded View."
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

1. Bowl Assembly/Element

Applicable model	Process	Procedure	Tools	Check item
AWM20	Disassembly	1) Remove the bowl assembly. Hold the bowl assembly by hand and rotate counterclockwise to remove the bowl assembly. If the bowl assembly has been tightened too much to be removed, use a hook wrench until it can be loosened by hand.	(Hook wrench Nominal: 34/38)	—
		2) Remove the element. Hold the element with a wrench to rotate it counterclockwise and remove the element.	Wrench Nominal: 7	—
	Assembly	3) Mount the element. Hold the element with a wrench to rotate it clockwise, and mount the element. Refer to the "Check item" for the tightening torque.	Wrench Nominal: 7	Tightening torque: 0.49 ± 0.05 N·m
		4) Mount the bowl assembly. Hold the bowl assembly by hand and rotate clockwise. Do not use tool for mounting because the bowl may be damaged. Refer to the "Check item" for referential tightening torque.	—	Referential tightening torque: 2.1 N·m
AWM30 AWM40	Disassembly	1) Remove the bowl assembly. Push the bowl assembly lock button by hand. Lifting the bowl assembly, rotate the assembly 45 degrees (right or left) to pull out the assembly.	—	—
		2) Remove the element. Hold the element with a round cutting to rotate it counterclockwise, and remove the element.	Round cutting	—
	Assembly	3) Mount the element. Hold the element with a round cutting to rotate it clockwise, and mount the element. Refer to the "Check item" for the tightening torque.	Round cutting	Tightening torque: AWM30 1.47 ± 0.2 N·m AWM40 1.96 ± 0.2 N·m
		4) Mount the bowl assembly. Match the mating mark of the body and the bowl assembly to insert the assembly to the body. Rotate the assembly 45 degrees (right or left) until the lock button is tossed up to mount the bowl assembly. Ensure that the lock button is up.	—	Lock button is up.

2. Diaphragm Assembly

Applicable model	Process	Procedure	Tools	Check item
AWM20 AWM30 AWM40	Disassembly	1) Remove the bonnet. Rotate the set screw counterclockwise with a Phillips head screwdriver to remove the bonnet from the body.	Phillips head screwdriver	—
		2) Remove parts in order of the pressure regulating screw assembly, spring, and the diaphragm assembly. Please be noted that the diaphragm assembly adheres to the bonnet if disassemble parts with the knob facing downwards.	—	—
	Assembly	3) Mount parts to the body in order of the diaphragm assembly, spring, and pressure regulating screw.	—	Direction of the diaphragm assembly and the pressure regulating screw assembly
		4) Mount the bonnet to the body. Mount the convex IN side of the bonnet to the body, and tighten the 4 mounting screws half way with a Phillips head screwdriver. Then, tighten the screws completely in a diagonal pattern with the indicated tightening torque.	Phillips head screwdriver	Tightening torque: **AWM20** 2.35 ± 0.3 N·m **AWM30** 2.35 ± 0.3 N·m **AWM40** 3.5 ± 0.3 N·m

3. Valve Assembly

Applicable model	Process	Procedure	Tools	Check item
AWM20	Disassembly	1) Remove the valve guide after removing the bowl assembly and element. Hold the valve guide with a socket wrench on the socket wrench flat to rotate it counterclockwise, and remove the valve guide.	Socket wrench Nominal: 18	—
		2) Remove the valve spring.	—	—
		3) Remove the valve.	—	—
	Assembly	4) Mount the valve. Connect the stem convex and the valve center hole.	—	Positioning of the stem and the valve (centering)
		5) Mount the valve spring. Insert the valve spring into the valve hole.	—	—
		6) Mount the valve guide. Hold the valve guide with a socket wrench on the socket wrench flat to rotate it clockwise, and mount the valve guide. Refer to the "Check item" for the tightening torque.	Socket wrench Nominal: 18	Tightening torque: 40 ± 3.5N·m
		7) Mount the element and bowl assembly.	—	—
AWM30 AWM40	Disassembly	1) Remove the valve guide after removing the bowl assembly and element. Hold the valve guide with a wrench to rotate it counterclockwise, and remove the valve guide.	Wrench Nominal: AWM30: 8; AWM40: 12	—
		2) Remove the valve spring.	—	—
		3) Remove the valve.	—	—
	Assembly	4) Mount the valve. Connect the stem convex and the valve center hole.	—	Positioning of the stem and the valve (centering)
		5) Mount the valve spring. Insert the valve spring into the valve hole.	—	—
		6) Mount the valve guide. Hold the valve guide with a wrench on the wrench flat to rotate it clockwise, and mount the valve guide. Refer to the "Check item" for the tightening torque.	Wrench Nominal: AWM30: 8; AWM40: 12	Tightening torque: AWM30: 25 ± 2.5 N·m; AWM40: 55 ± 5 N·m
		7) Mount the element and bowl assembly.		

4. Bracket Assembly, Panel Mount

Applicable model	Process	Procedure	Tools	Check item
AWM20 AWM30 AWM40	Assembly	1) Mount the parts to the bracket (panel). Connect the bracket (panel) concave and the bonnet convex to mount the bracket.	—	—
		2) Secure the bracket (panel) with the set nut. Rotate the set nut clockwise with a hook wrench to secure the parts to the bracket (panel). Refer to the "Check item" for the tightening torque. The set nut knurling surface should face the bracket. When mounting with a bracket, a manually tightened set nut is adequate for general use.	Hook wrench Nominal: AWM20: 34/38; AWM30: 52/55; AWM40: 52/55	Tightening torque: AWM20: 2.0 ± 0.2 N·m; AWM30: 3.5 ± 0.3 N·m; AWM40: 4.0 ± 0.4 N·m

5. Square Embedded Type Pressure Gauge

Applicable model	Process	Procedure	Tools	Check item
AWM20 AWM30 AWM40	Disassembly	1) Remove the pressure gauge cover. Rotate the pressure gauge cover 15 degrees counterclockwise to pull out the pressure gauge cover.	—	—
		2) Remove the pressure gauge. Rotate the 2 mounting screws counterclockwise with a Phillips head screwdriver to remove the pressure gauge and the 2 mounting screws.	Phillips head screwdriver	—

Applicable model	Process	Procedure	Tools	Check item
AWM20 AWM30 AWM40	Assembly	3) Ensure that the O-ring is mounted to the pressure gauge. Mount the O-ring to the pressure gauge if the ring fall off.	—	Presence of the O-ring
		4) Mount the pressure gauge. Rotate the 2 mounting screws clockwise with a Phillips head screwdriver to mounting screws temporarily. Then secure them with tightening torque in “Check item.”	Phillips head screwdriver	Tightening torque: 0.3 ± 0.05 N·m
		5) Mount the pressure gauge cover. Insert the pressure gauge mating 2 detents of the pressure gauge and holes for them so that the arrow of the pressure gauge cover comes upper right. Rotate the pressure gauge cover 15 degrees opposite to the arrow to mount the pressure gauge.	—	—

6. Circular Pressure Gauge

Applicable model	Process	Procedure	Tools	Check item
AWM20 AWM30 AWM40	Disassembly	1) Remove the pressure gauge. Hold the pressure gauge with a wrench on the width across flat. Then, rotate the gauge counterclockwise to remove the gauge.	Wrench Nominal: 14	—
	Assembly	2) Wind the pressure gauge thread with the sealant tape leaving 1.5 to 2 threads from the end.	—	Wind sealant tape leaving 1.5 to 2 threads
		3) Mount the pressure gauge. Hold the pressure gauge on the width across flat with a wrench, and rotate it clockwise to mount the circular pressure gauge. Refer to the “Check item” for tightening torque of pressure gauge.	Wrench Nominal: 14	Tightening torque: AWM20: 7 to 9 N·m AWM30: 7 to 9 N·m AWM40: 12 to 14 N·m

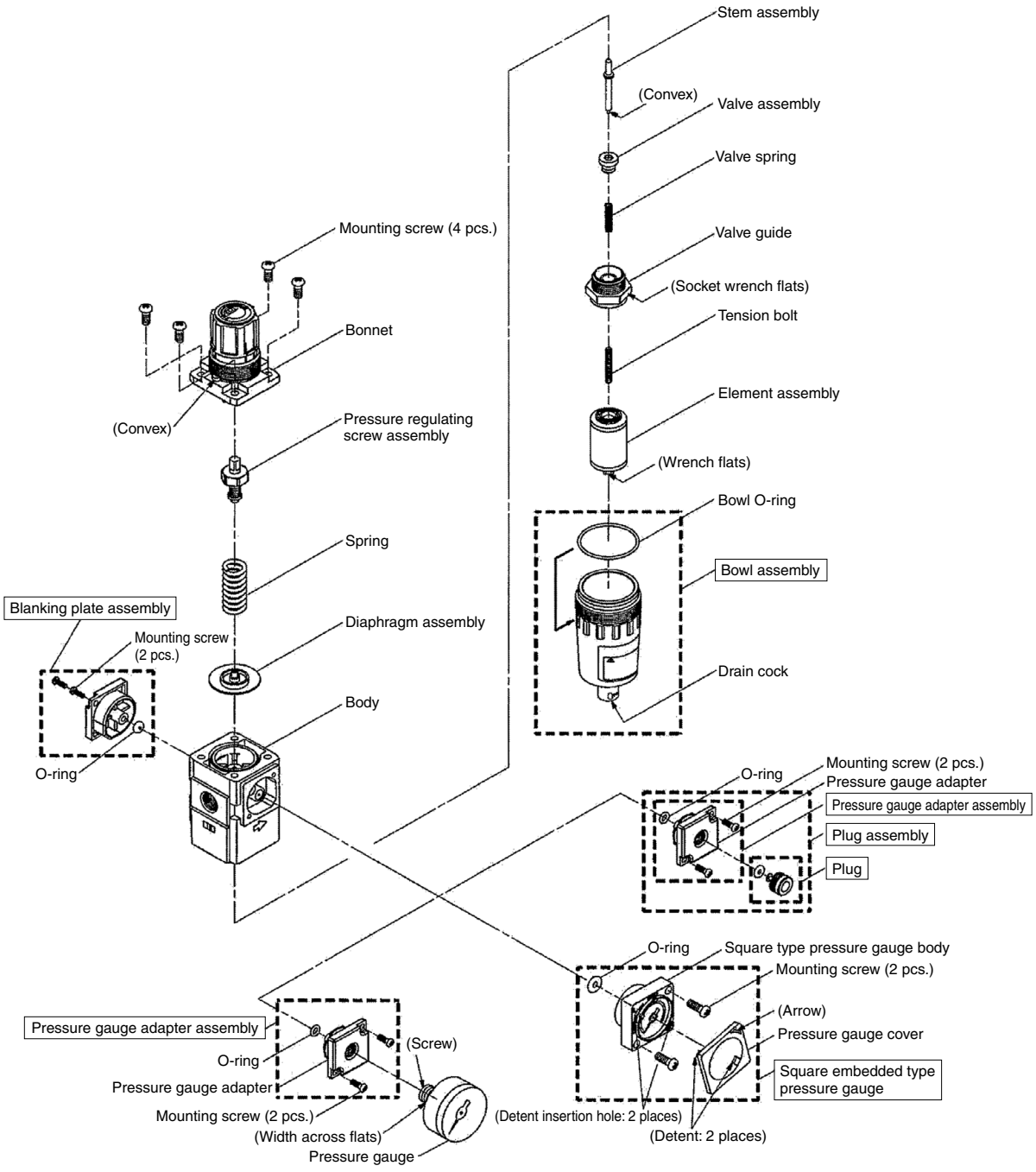
7. Pressure Gauge Adapter, Plug

Applicable model	Process	Procedure	Tools	Check item
AWM20 AWM30 AWM40	Disassembly	1) Remove the plug. Insert the hexagon wrench key to the hexagon hole of hexagon plug. Rotate the plug counterclockwise to remove the plug.	Hexagon wrench key Nominal: AWM20: 4 AWM30: 4 AWM40: 6	—
		2) Remove the pressure gauge adapter. Rotate the 2 mounting screws counterclockwise with a Phillips head screwdriver to remove the pressure gauge and 2 mounting screws.	Phillips head screwdriver	—
	Assembly	3) Confirm that the pressure gauge adapter has the O-ring. If not, mount the O-ring.	—	—
		4) Mount pressure gauge adapter. Rotate the 2 mounting screws clockwise with a Phillips head screwdriver to fix pressure gauge adapter. Refer to the “Check item” for tightening torque of 2 screws.	Phillips head screwdriver (Torque driver)	Tightening torque: 0.3 ± 0.05 N·m
		5) Mount plug assembly. Insert the hexagon wrench key into the hexagon hole on the plug and rotate clockwise to fix the plug. Refer to the “Check item” for tightening torque of 2 screws.	Hexagon wrench key Nominal: AWM20: 4 AWM30: 4 AWM40: 6	Tightening torque: AWM20: 0.6 ± 0.05 N·m AWM30: 0.6 ± 0.05 N·m AWM40: 1.0 ± 0.1 N·m

8. Blanking Plate Assembly

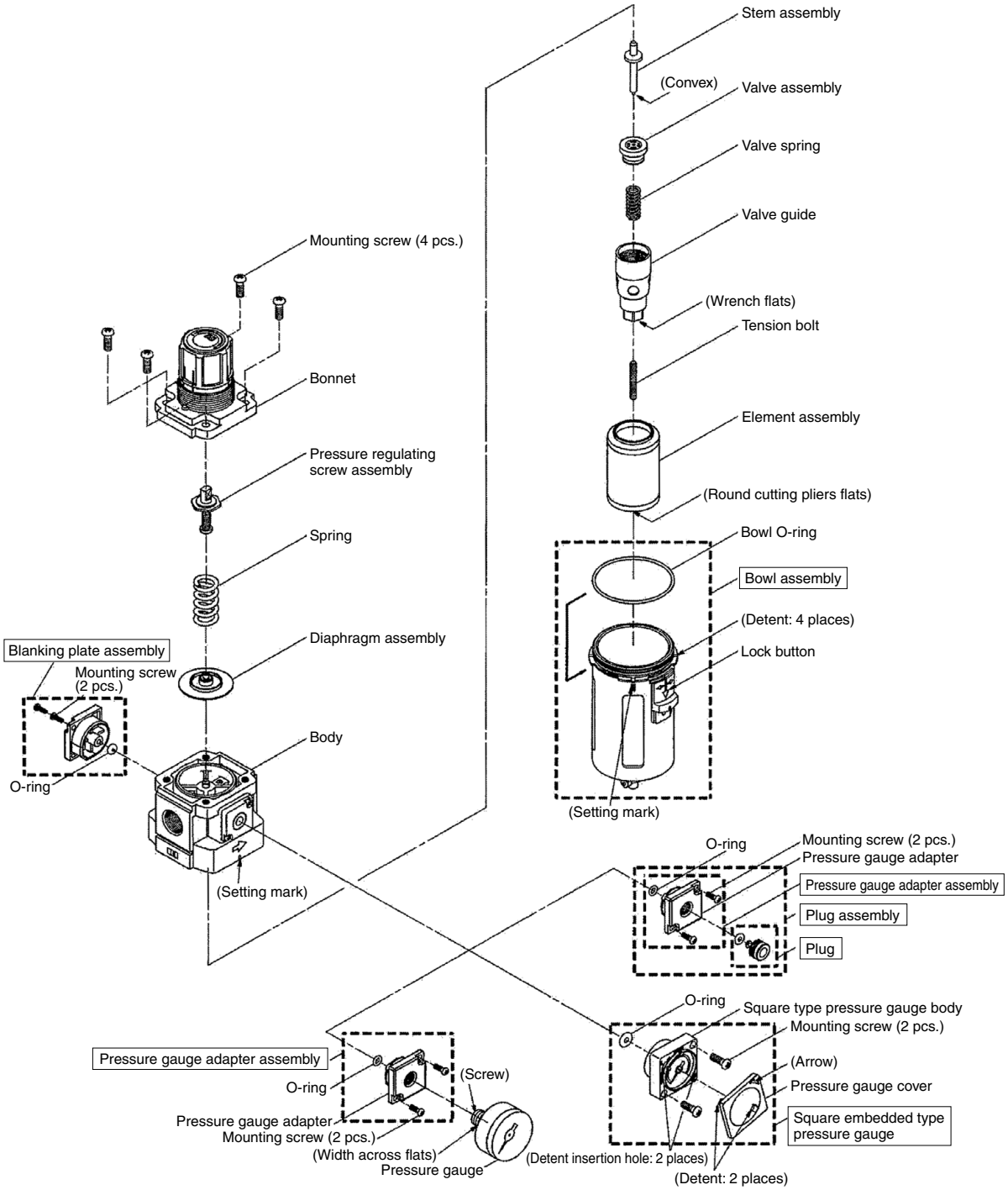
Applicable model	Process	Procedure	Tools	Check item
AWM20 AWM30 AWM40	Disassembly	1) Remove the blanking plate. Rotate the 2 mounting screws counterclockwise with a Phillips head screwdriver to remove the blanking plate and 2 mounting screws.	Phillips head screwdriver	—
	Assembly	2) Confirm that the blanking plate has the O-ring. If not, mount the O-ring.	—	—
		3) Mount the blanking plate. Rotate the 2 mounting screws clockwise with a Phillips head screwdriver to fix the blanking plate. Refer to the “Check item” for tightening torque of 2 screws.	Phillips head screwdriver (Torque driver)	Tightening torque: 0.3 ± 0.05 N·m

1) AWD20



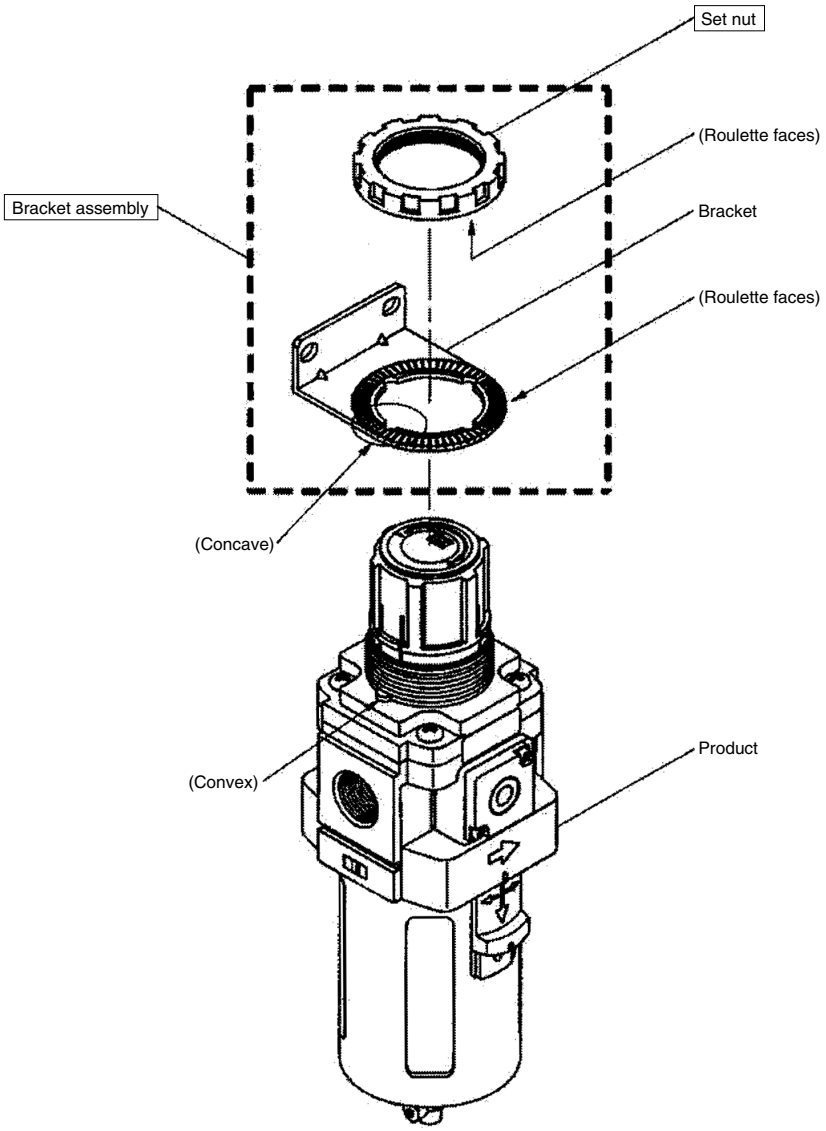
Note) It is possible to mount a square embedded type pressure gauge, a pressure gauge adapter assembly, or a plug assembly instead of a blanking plate assembly.

2) AWD30/40



Note) It is possible to mount a square embedded type pressure gauge, a pressure gauge adapter assembly, or a plug assembly instead of a blanking plate assembly.

3) AWD20/30/40 Bracket assembly, panel mount exploded view



⚠Warning
Before replacement, ensure that the regulator is not pressurized.
Rotate the pressure adjusting knob to zero.
Replace while referring to the "Exploded View."
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

1. Bowl Assembly/Element

Applicable model	Process	Procedure	Tools	Check item
AWD20	Disassembly	1) Remove the bowl assembly. Hold the bowl assembly by hand and rotate counterclockwise to remove the bowl assembly. If the bowl assembly has been tightened too much to be removed, use a hook wrench until it can be loosened by hand.	(Hook wrench Nominal: 34/38)	—
		2) Remove the element. Hold the element with a wrench to rotate it counterclockwise and remove the element.	Wrench Nominal: 7	—
	Assembly	3) Mount the element. Hold the element with a wrench to rotate it clockwise, and mount the element. Refer to the "Check item" for the tightening torque.	Wrench Nominal: 7	Tightening torque: 0.49 ± 0.05 N·m
		4) Mount the bowl assembly. Hold the bowl assembly by hand and rotate clockwise. Do not use tool for mounting because the bowl may be damaged. Refer to the "Check item" for referential tightening torque.	—	Referential tightening torque: 2.1 N·m
AWD30 AWD40	Disassembly	1) Remove the bowl assembly. Push the bowl assembly lock button by hand. Lifting the bowl assembly, rotate the assembly 45 degrees (right or left) to pull out the assembly.	—	—
		2) Remove the element. Hold the element with a round cutting to rotate it counterclockwise, and remove the element.	Round cutting	—
	Assembly	3) Mount the element. Hold the element with a round cutting to rotate it clockwise, and mount the element. Refer to the "Check item" for the tightening torque.	Round cutting	Tightening torque: AWD30 1.47 ± 0.2 N·m AWD40 1.96 ± 0.2 N·m
		4) Mount the bowl assembly. Match the mating mark of the body and the bowl assembly to insert the assembly to the body. Rotate the assembly 45 degrees (right or left) until the lock button is tossed up to mount the bowl assembly. Ensure that the lock button is up.	—	Lock button is up.

2. Diaphragm Assembly

Applicable model	Process	Procedure	Tools	Check item
AWD20 AWD30 AWD40	Disassembly	1) Remove the bonnet assembly. Rotate the set screw counterclockwise with a Phillips head screwdriver to remove the bonnet from the body.	Phillips head screwdriver	—
		2) Remove parts in order of the pressure regulating screw assembly, spring, and the diaphragm assembly. Please be noted that the diaphragm assembly adheres to the bonnet if disassemble parts with the knob facing downwards.	—	—
	Assembly	3) Mount parts to the body in order of the diaphragm assembly, spring, and pressure regulating screw assembly.	—	Direction of the diaphragm assembly and the pressure regulating screw assembly
		4) Mount the bonnet to the body. Mount the convex IN side of the bonnet to the body, and tighten the 4 mounting screws half way with a Phillips head screwdriver. Then, tighten the screws completely in a diagonal pattern with the indicated tightening torque.	Phillips head screwdriver	Tightening torque: **AWD20** 2.35 ± 0.3 N·m **AWD30** 2.35 ± 0.3 N·m **AWD40** 3.5 ± 0.3 N·m

3. Valve Assembly

Applicable model	Process	Procedure	Tools	Check item
AWD20	Disassembly	1) Remove the valve guide after removing the bowl assembly and element. Hold the valve guide with a socket wrench on the socket wrench flat to rotate it counterclockwise, and remove the valve guide.	Socket wrench Nominal: 18	—
		2) Remove the valve spring.	—	—
		3) Remove the valve.	—	—
	Assembly	4) Mount the valve. Connect the stem convex and the valve center hole.	—	Positioning of the stem and the valve (centering)
		5) Mount the valve spring. Insert the valve spring into the valve hole.	—	—
		6) Mount the valve guide. Hold the valve guide with a socket wrench on the socket wrench flat to rotate it clockwise, and mount the valve guide. Refer to the "Check item" for the tightening torque.	Socket wrench Nominal: 18	Tightening torque: 40 ± 3.5 N·m
		7) Mount the element and bowl assembly.		
AWD30 AWD40	Disassembly	1) Remove the valve guide after removing the bowl assembly and element. Hold the valve guide with a wrench to rotate it counterclockwise, and remove the valve guide.	Wrench Nominal: **AWD30** 8 **AWD40** 12	—
		2) Remove the valve spring.	—	—
		3) Remove the valve.	—	—
	Assembly	4) Mount the valve. Connect the stem convex and the valve center hole.	—	Positioning of the stem and the valve (centering)
		5) Mount the valve spring. Insert the valve spring into the valve hole.	—	—
		6) Mount the valve guide. Hold the valve guide with a wrench on the wrench flat to rotate it clockwise, and mount the valve guide. Refer to the "Check item" for the tightening torque.	Wrench Nominal: **AWD30** 8 **AWD40** 12	Tightening torque: **AWD30** 25 ± 2.5 N·m **AWD40** 55 ± 5 N·m
		7) Mount the element and bowl assembly.		

4. Bracket Assembly, Panel Mount

Applicable model	Process	Procedure	Tools	Check item
AWD20 AWD30 AWD40	Assembly	1) Mount the parts to the bracket (panel). Connect the bracket (panel) concave and the bonnet convex to mount the bracket.	—	—
		2) Secure the bracket (panel) with the set nut. Rotate the set nut clockwise with a hook wrench to secure the parts to the bracket (panel). Refer to the "Check item" for the tightening torque. The set nut knurling surface should face the bracket. When mounting with a bracket, a manually tightened set nut is adequate for general use.	Hook wrench Nominal: **AWD20** 34/38 **AWD30** 52/55 **AWD40** 52/55	Tightening torque: **AWD20** 2.0 ± 0.2 N·m **AWD30** 3.5 ± 0.3 N·m **AWD40** 4.0 ± 0.4 N·m

5. Square Embedded Type Pressure Gauge

Applicable model	Process	Procedure	Tools	Check item
AWD20 AWD30 AWD40	Disassembly	1) Remove the pressure gauge cover. Rotate the pressure gauge cover 15 degrees counterclockwise to pull out the pressure gauge cover.	—	—
		2) Remove the pressure gauge. Rotate the 2 mounting screws counterclockwise with a Phillips head screwdriver to remove the pressure gauge and the 2 mounting screws.	Phillips head screwdriver	—

Applicable model	Process	Procedure	Tools	Check item
AWD20 AWD30 AWD40	Assembly	3) Ensure that the O-ring is mounted to the pressure gauge. Mount the O-ring to the pressure gauge if the ring fall off.	—	Presence of O-ring
		4) Mount the pressure gauge. Rotate the 2 mounting screws clockwise with a Phillips head screwdriver to mounting screws temporarily. Then secure them with tightening torque in “Check item.”	Phillips head screwdriver	Tightening torque: 0.3 ± 0.05 N·m
		5) Mount the pressure gauge cover. Insert the pressure gauge mating 2 detents of the pressure gauge and holes for them so that the arrow of the pressure gauge cover comes upper right. Rotate the pressure gauge cover 15 degrees opposite to the arrow to mount the pressure gauge.	—	—

6. Circular Pressure Gauge

Applicable model	Process	Procedure	Tools	Check item
AWD20 AWD30 AWD40	Disassembly	1) Remove the pressure gauge. Hold the pressure gauge with a wrench on the width across flat. Then, rotate the gauge counterclockwise to remove the gauge.	Wrench Nominal: 14	—
	Assembly	2) Wind the pressure gauge thread with the sealant tape leaving 1.5 to 2 threads from the end.	—	Wind sealant tape leaving 1.5 to 2 threads
		3) Mount the pressure gauge. Hold the pressure gauge on the width across flat with a wrench, and rotate it clockwise to mount the circular pressure gauge. Refer to the “Check item” for tightening torque of pressure gauge.	Wrench Nominal: 14	Tightening torque: AWD20: 7 to 9 N·m AWD30: 7 to 9 N·m AWD40: 12 to 14 N·m

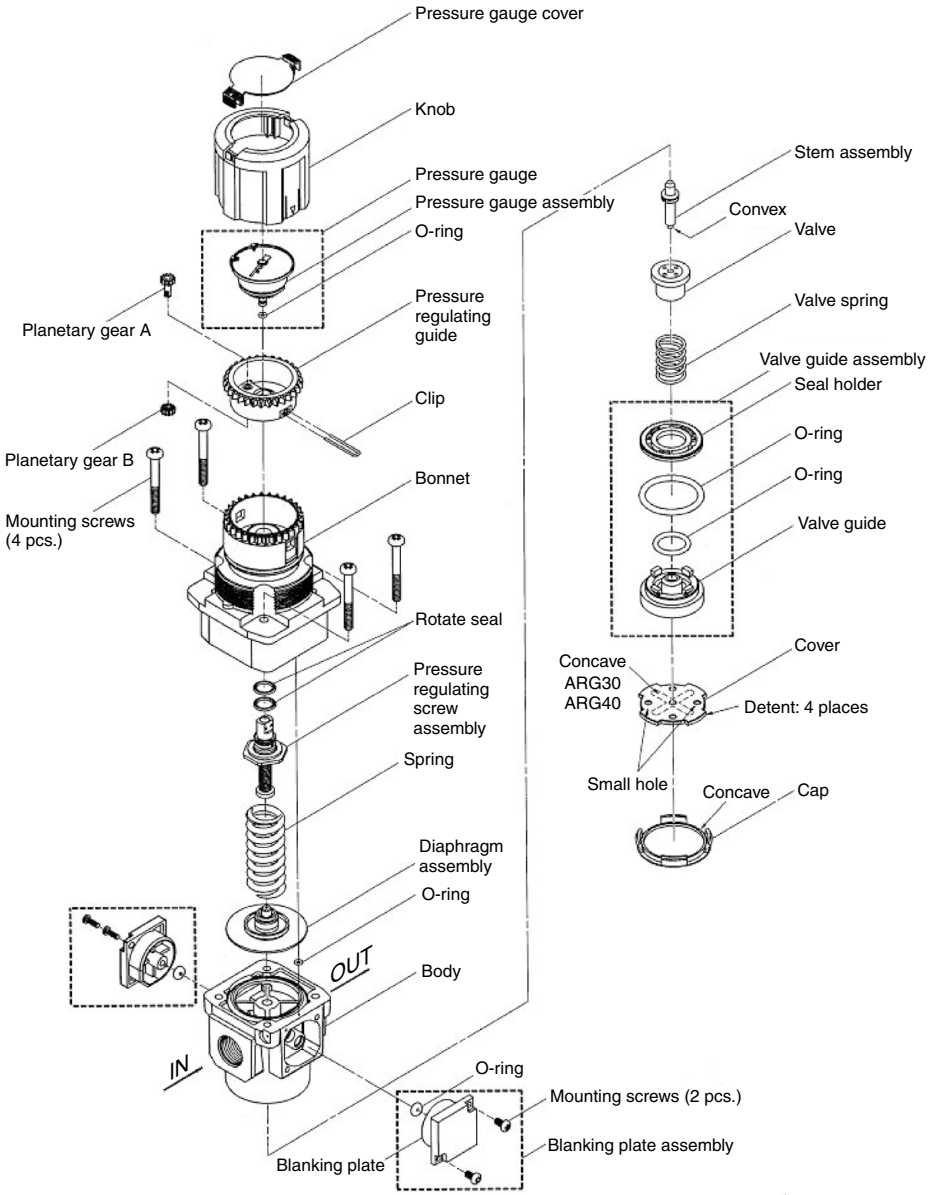
7. Pressure Gauge Adapter, Plug

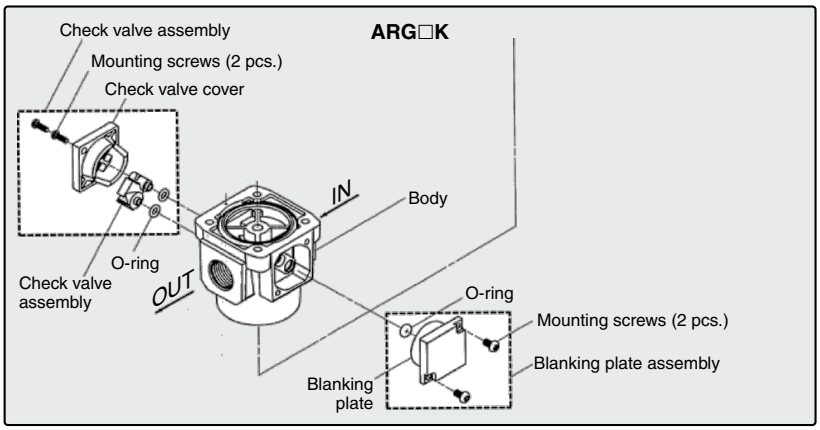
Applicable model	Process	Procedure	Tools	Check item
AWD20 AWD30 AWD40	Disassembly	1) Remove the plug. Insert the hexagon wrench key to the hexagon hole of hexagon plug. Rotate the plug counterclockwise to remove the plug.	Hexagon wrench key Nominal: AWD20: 4 AWD30: 4 AWD40: 6	—
		2) Remove the pressure gauge adapter. Rotate the 2 mounting screws counterclockwise with a Phillips head screwdriver to remove the pressure gauge and 2 mounting screws.	Phillips head screwdriver	—
	Assembly	3) Confirm that the pressure gauge adapter has the O-ring. If not, mount the O-ring.	—	—
		4) Mount the pressure gauge adapter. Rotate the 2 mounting screws clockwise with a Phillips head screwdriver to fix the pressure gauge adapter. Refer to the “Check item” for tightening torque of 2 screws.	Phillips head screwdriver (Torque driver)	Tightening torque: 0.3 ± 0.05 N·m
		5) Mount the plug assembly. Insert the hexagon wrench key into the hexagon hole on the plug and rotate clockwise to fix the plug. Refer to the “Check item” for tightening torque of 2 screws.	Hexagon wrench key Nominal: AWD20: 4 AWD30: 4 AWD40: 6	Tightening torque: AWD20: 0.6 ± 0.05 N·m AWD30: 0.6 ± 0.05 N·m AWD40: 1.0 ± 0.1 N·m

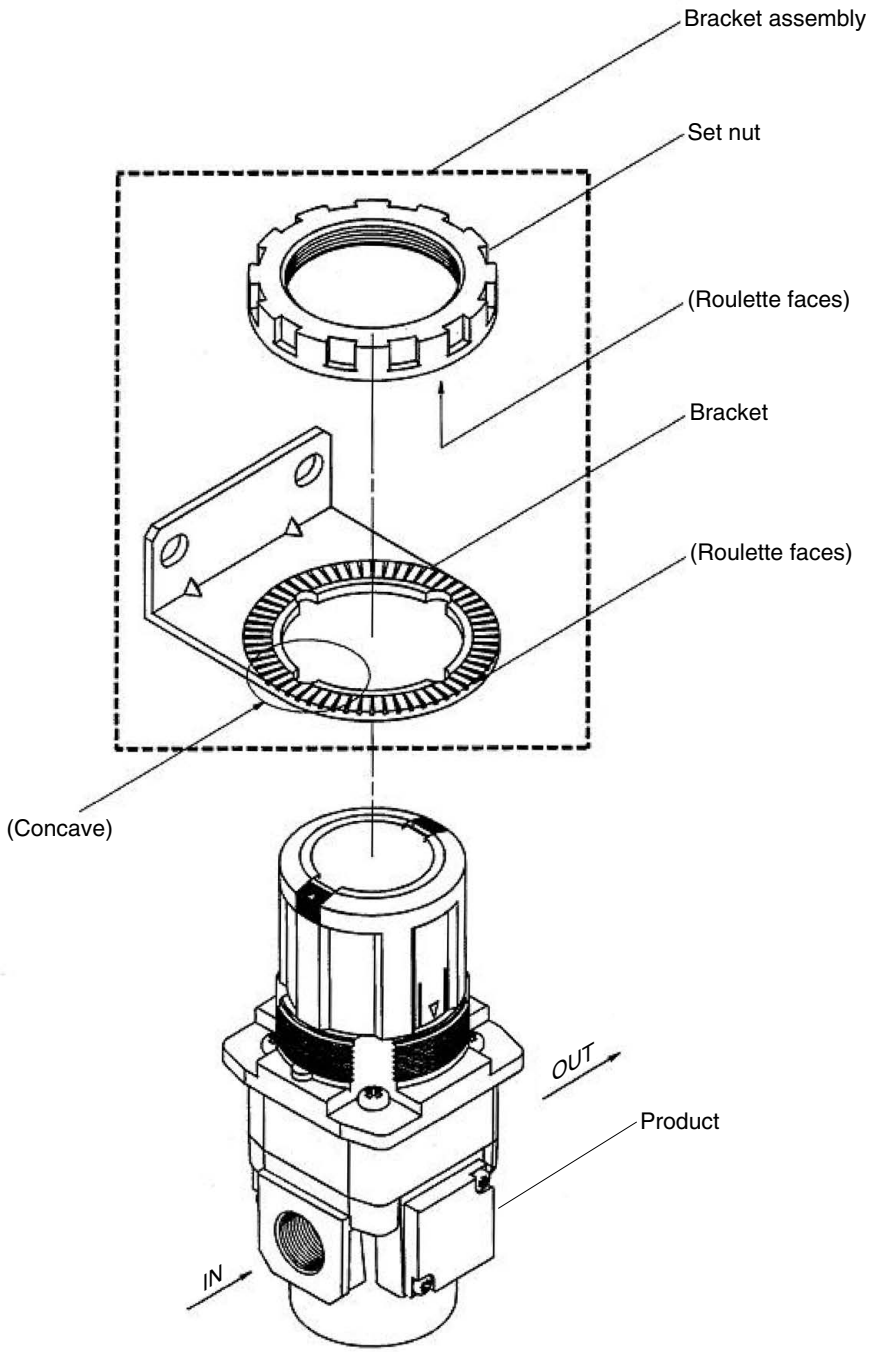
8. Blanking Plate Assembly

Applicable model	Process	Procedure	Tools	Check item
AWD20 AWD30 AWD40	Disassembly	1) Remove the blanking plate. Rotate the 2 mounting screws counterclockwise with a Phillips head screwdriver to remove the blanking plate and the 2 mounting screws.	Phillips head screwdriver	—
	Assembly	2) Confirm that the blanking plate has the O-ring. If not, mount the O-ring.	—	—
		3) Mount the blanking plate. Rotate the 2 mounting screws clockwise with a Phillips head screwdriver to fix the blanking plate. Refer to the “Check item” for tightening torque of 2 screws.	Phillips head screwdriver (Torque driver)	Tightening torque: 0.3 ± 0.05 N·m

ARG20(K), 30(K), 40(K) Exploded View 1






Bracket assembly
Set nut
(Roulette faces)
Bracket
(Roulette faces)
(Concave)
OUT
Product
IN

⚠Warning

Before replacement, ensure that the regulator is not pressurized.
Rotate the pressure adjusting knob to zero.
Replace while referring to the "Exploded View."
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

1. Diaphragm Assembly

Applicable model	Process	Procedure	Tools	Check item
ARG20(K) ARG30(K) ARG40(K)	Disassembly	1) Remove the bonnet assembly. Rotate the mounting screw counterclockwise with a Phillips head screwdriver to remove the bonnet from the body.	Phillips head screwdriver	—
		2) Remove parts in order of the spring and the diaphragm assembly. Please be noted that the diaphragm assembly adheres to the bonnet if disassemble parts with the knob facing downwards.	—	—
	Assembly	3) Mount the diaphragm assembly first and then spring on the body.	—	Direction of the diaphragm assembly
		4) Mount the bonnet to the body. Mount the convex IN side of the bonnet to the body, and tighten the 4 mounting screws half way with a Phillips head screwdriver. Then, tighten the screws completely in a diagonal pattern with the indicated tightening torque.	Phillips head screwdriver	Tightening torque: **ARG20(K)** 2.15 ± 0.3 N·m **ARG30(K)** 2.35 ± 0.3 N·m **ARG40(K)** 3.5 ± 0.3 N·m

2. Valve Guide Assembly, Valve

Applicable model	Process	Procedure	Tools	Check item
ARG20(K) ARG30(K) ARG40(K)	Disassembly	1) Remove the cap. Insert a watchmaker's screwdriver in the gap between the body and the cap and dig up the cap.	Watchmaker's screwdriver	—
		2) Remove the cover. Insert the circular pliers into the 2 small holes of the cover, rotate 45 degrees to one side or the other and lift.	Circular pliers Nominal: 125	—
		3) Remove the valve guide assembly. Hold the valve guide with a needle nose pliers, and lift it.	Needle nose pliers	—
		4) Remove the valve spring.	—	—
		5) Remove the valve.	—	—
	Assembly	6) Mount the valve. Connect the stem convex and the valve center hole.	—	Positioning of the stem and the valve (centering)
		7) Mount the valve spring. Insert the valve spring to the valve hole.	—	—
		8) Mount the valve guide assembly and the cover assembly to the body. Align the body groove and the cover clamp, push in the valve guide and cover assembly, insert the circular pliers into the 2 small holes of the cover and rotate 45 degrees to one side or the other to lock into place.	Circular pliers Nominal: 125	—
		9) Mount the cap. Connect the convex of the body cover and the concave of the cap, and push them in to secure. Ensure that the end of the body and the cap are almost flat.	—	Alignment mark of the body and the cap. The body end and the cap are almost flat.

3. Bracket Assembly, Panel Mount

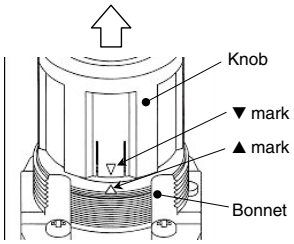
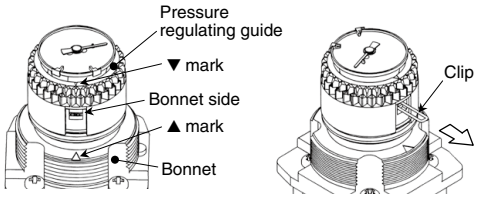
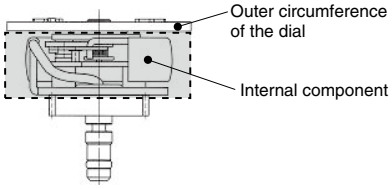
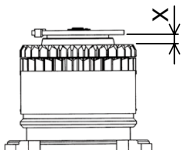
<table>
<tr><th>Applicable model</th><th>Process</th><th>Procedure</th><th>Tools</th><th>Check item</th></tr>
<tr><td rowspan="2">ARG20(K)
ARG30(K)
ARG40(K)</td><td>Assembly</td><td>1) Mount the parts to the bracket (panel).
Connect the bracket (panel) concave and the bonnet convex to mount the bracket.</td><td>—</td><td>—</td></tr>
<tr><td>2) Secure the bracket (panel) with the set nut.
Rotate the set nut clockwise with a hook wrench to secure the parts to the bracket (panel).
Refer to the “Check item” for the tightening torque.

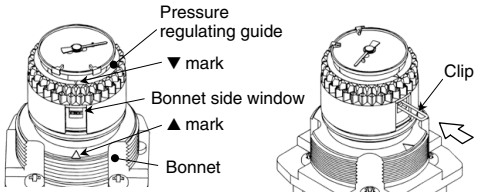
When mounting the bracket for ARG20(K)/30(K)/40(K), ensure that the roulette faces of the set nut and the bracket are mated appropriately.

When mounting with a bracket, a manually tightened set nut is adequate for general use. (ARG20(K)/30(K)/40(K))</td><td>ARG20(K)/30(K)/40(K)
Hook wrench
Nominal:
ARG20(K) 52/55
ARG30(K) 58/65
ARG40(K) 65/70</td><td>Tightening torque:
ARG20(K) 2.5 ± 0.2 N·m
ARG30(K) 3.5 ± 0.3 N·m
ARG40(K) 4.0 ± 0.4 N·m</td></tr>
</table>

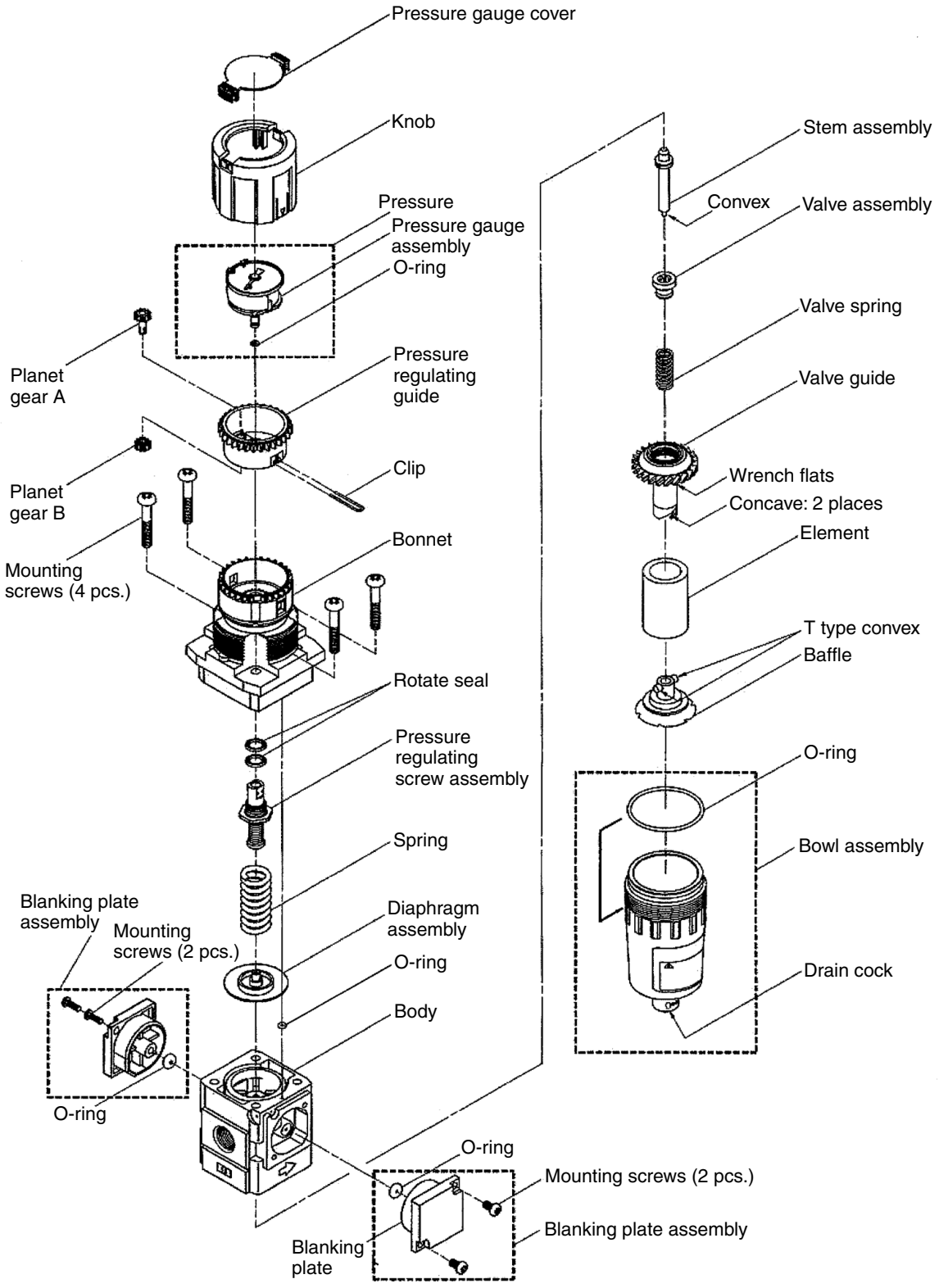
⚠Warning

Before replacement, ensure that the regulator is not pressurized.
Rotate the pressure adjusting knob to zero.
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

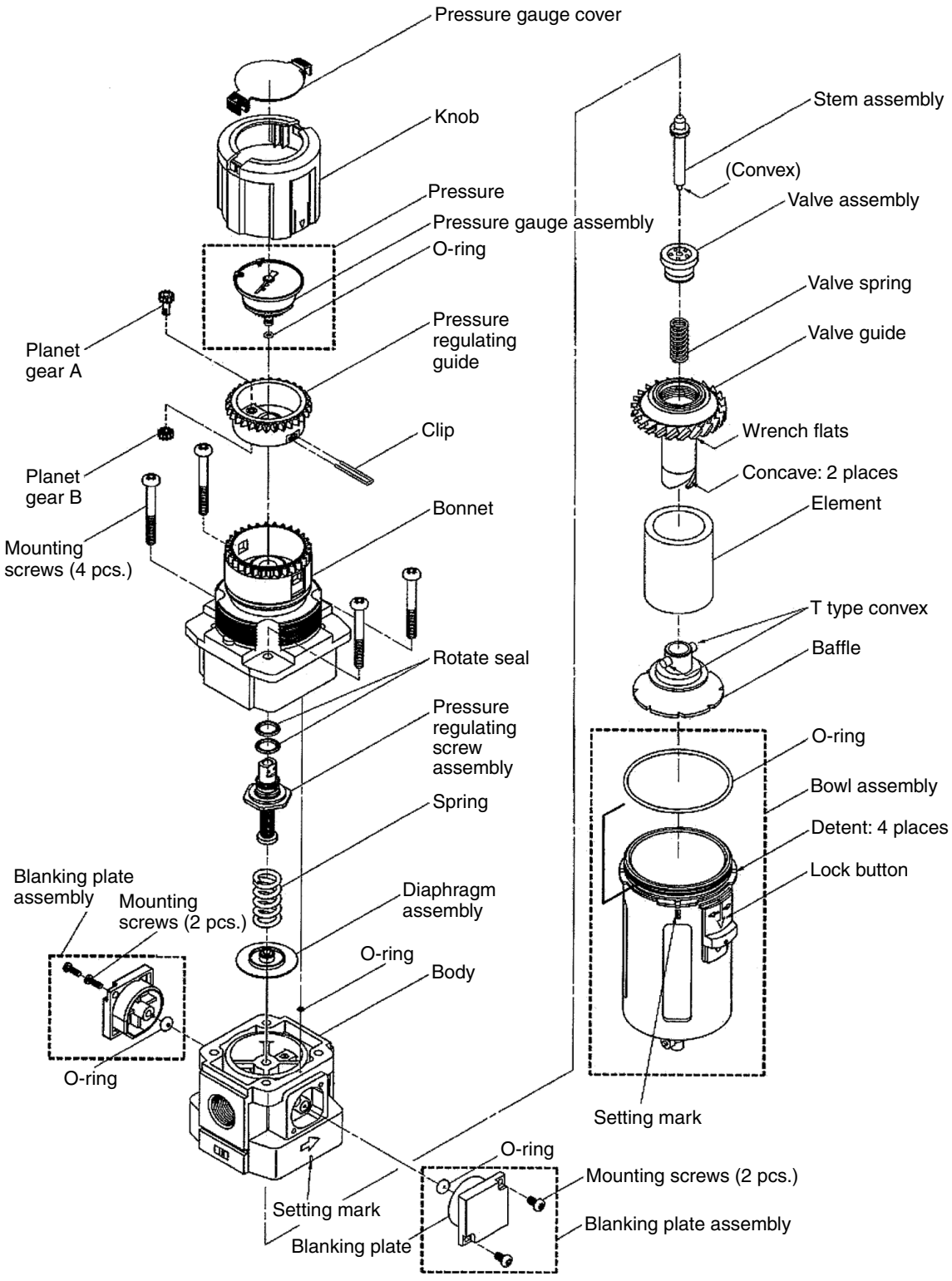
Applicable model	Process	Procedure	Tools	Check item
ARG20(K) ARG30(K) ARG40(K)	Disassembly	1) Preparation Release the pressure regulating knob lock with the pressure regulating knob completely loosened.	—	The orange line can be seen between the pressure regulating knob and the bonnet.
		2) Removal of the knob Pull out the knob to remove at the position where ▼ mark of the knob and ▲ mark of the bonnet meet.  	—	—
		3) Removal of the clip The clip becomes visible from the side window of the bonnet if ▲ mark of the bonnet and ▼ mark of the pressure regulating guide meet, pull out the clip with a pair of tweezers. * Rotate the pressure regulating guide clockwise when matching the mark.  	Tweezers	—
		4) Removal of the pressure gauge Pull out the pressure gauge holding the outer circumference of the dial. * Do not touch the internal component of the pressure gauge (surrounded by dashed line). It may damage the indication accuracy of the pressure gauge.  	—	—
	Assembly	5) Setting the pressure gauge Hold the outer circumference of the dial and set the gauge at specified angle, and push in the gauge lightly. For reference, Table 1 shows the gap dimension between the bottom surface of the dial and the top surface of the pressure regulating guide after mounting the pressure gauge. Note 1) If the gauge does not enter by some interference when setting the pressure gauge, set the gauge by slightly rotating it in rotating direction. (The planet gear of the pressure regulating guide and the sun gear integrated in the pressure gauge interfere each other.) Note 2) Set the pressure gauge completely. Note 3) The end of the pressure gauge has greased the O-ring. Attention should be taken so that dust and particle not enter to the pressure gauge.	—	 Table 1 Gap dimension X dimension (Reference valve): ARG20(K) 2.6 mm; ARG30(K) 3.3 mm; ARG40(K) 3.3 mm

Applicable model	Process	Procedure	Tools	Check item
ARG20(K) **ARG30(K)** **ARG40(K)**	**Assembly**	6) Setting the clip Insert the clip from the side window of the bonnet where ▲ mark of the pressure regulating guide and ▼ mark of the bonnet meet. Use something sharp like tweezers when inserting the clip to the end. If the clip is not inserted to the end the knob may not rotate after setting the knob. Note 1) The clip is slightly tapered to the end to avoid falling off. Slightly open the end of the clip when setting the clip. Note 2) Following causes are possible when the clip is stuck in the middle. ①The pressure regulating screw is lower than the original position. (Gap is made between the pressure regulating nut and the spring. When the pressure regulating screw is completely loosened, the pressure regulating screw may be lowered if excessive press force applied to the pressure regulating screw.) Countermeasure … Turn the pressure regulating guide approx. 5 times clockwise (pressure rise direction). ②Pressure gauge is not properly set. Countermeasure…5) See setting the pressure gauge.  	Tweezers	—
		7) Setting the knob Set the knob, and finish.	—	—

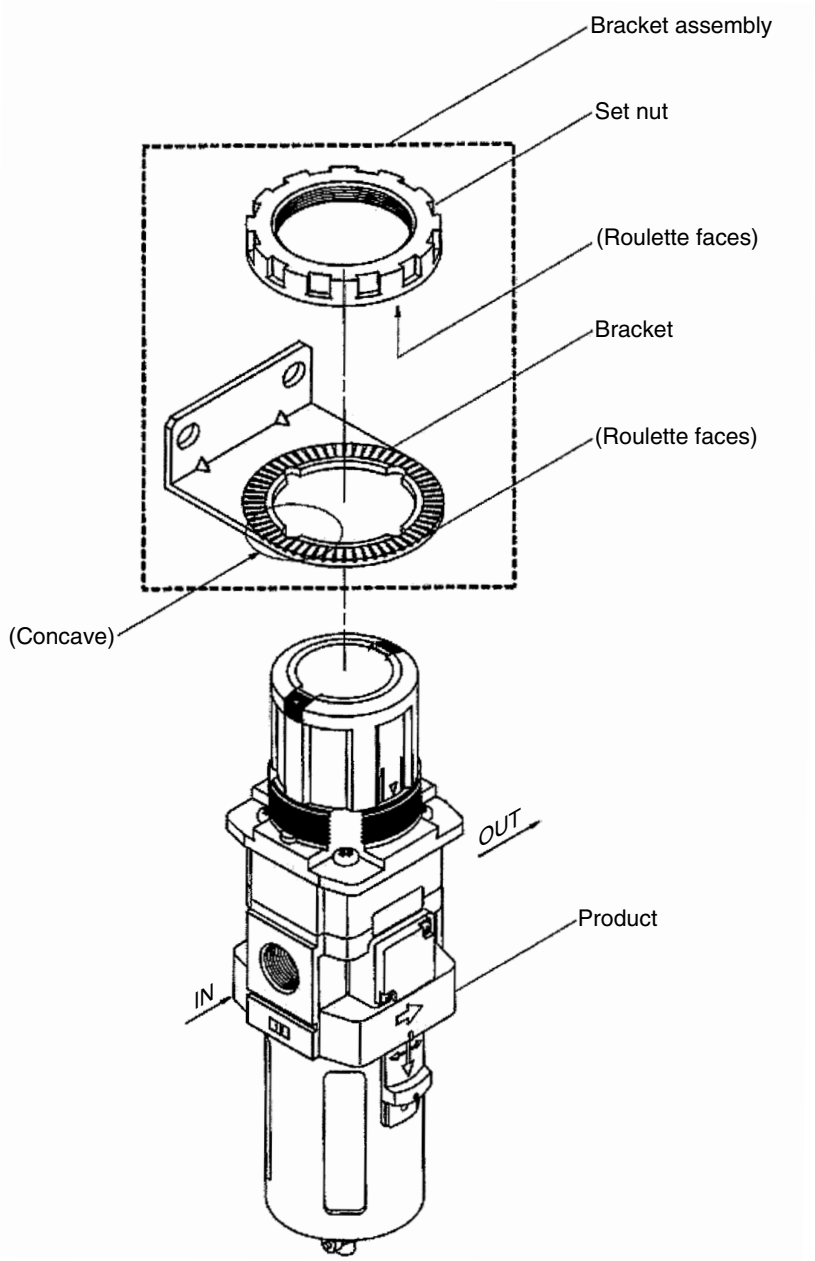
AWG20 Exploded View 1



AWG30, 40 Exploded View 2



AWG20, 30, 40 Bracket Assembly, Panel Mount Exploded View 3



⚠Warning

Before replacement, ensure that the regulator is not pressurized.
Rotate the pressure adjusting knob to zero.
Replace while referring to the "Exploded View."
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

1. Bowl Assembly/Element

Applicable model	Process	Procedure	Tools	Check item
AWG20	Disassembly	1) Remove the bowl assembly. Hold the bowl assembly by hand and rotate counterclockwise to remove the bowl assembly. If the bowl assembly has been tightened too much to be removed, use a hook wrench until it can be loosened by hand.	(Hook wrench) (Nominal: 34/38)	—
		2) Remove the baffle and element. Rotate the baffle by hand and counterclockwise to remove the baffle and element.	—	—
	Assembly	3) Mount the element. Mount the element to the valve guide.	—	—
		4) Mount the baffle. Insert the baffle so that concave on the valve guide could meet T convex on the baffle. And rotate it clockwise manually until feeling the snap fit (approx. 110°) to fix to the element.	—	—
		5) Mount the bowl assembly. Hold the bowl assembly by hand and rotate clockwise. Do not use tool for mounting because the bowl may be damaged. Refer to the "Check item" for referential tightening torque.	—	Referential tightening torque: 2.1 N·m
AWG30 AWG40	Disassembly	1) Remove the bowl assembly. Push the bowl assembly lock button. Lifting the bowl assembly, rotate the assembly 45 degrees (right or left) to pull out the assembly.	—	—
		2) Remove the baffle and element. Rotate the baffle by hand and counterclockwise to remove the baffle and element.	—	—
	Assembly	3) Mount the element. Mount the element to the valve guide.	—	—
		4) Mount the baffle. Insert the baffle so that concave on the valve guide could meet T convex on the baffle. And rotate it clockwise manually until feeling the snap fit (approx. 110°) to fix to the element.	—	Direction of the baffle. For element convex side.
		5) Mount the bowl assembly. Match the mating mark of the body and the bowl assembly to insert the assembly to the body. Rotate the assembly 45 degrees (right or left) until the lock button is tossed up to mount the bowl assembly. Ensure that the lock button is up.	—	Lock button is up.

2. Diaphragm Assembly

Applicable model	Process	Procedure	Tools	Check item
AWG20 AWG30 AWG40	Disassembly	1) Remove the bonnet assembly. Rotate the set screw counterclockwise with a Phillips head screwdriver to remove the bonnet from the body.	Phillips head screwdriver	—
		2) Remove parts in order of the spring, and the diaphragm assembly. Please be noted that the diaphragm assembly adheres to the bonnet if disassemble parts with the knob facing downwards.	—	—
	Assembly	3) Mount parts to the body in order of the diaphragm assembly, spring.	—	Diaphragm
		4) Mount the bonnet to the body. Mount the convex IN side of the bonnet to the body, and tighten the 4 mounting screws half way with a Phillips head screwdriver. Then, tighten the screws completely in a diagonal pattern with the indicated tightening torque.	Phillips head screwdriver	Tightening torque: **AWG20** 2.15 ± 0.3 N·m **AWG30** 2.35 ± 0.3 N·m **AWG40** 3.5 ± 0.3 N·m

3. Valve Assembly

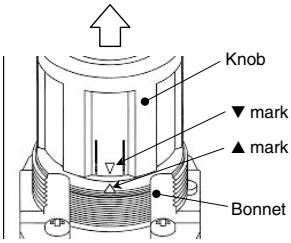
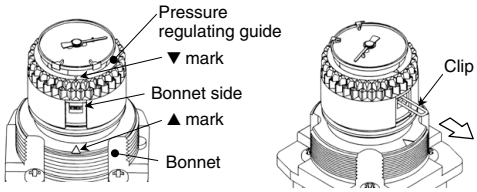
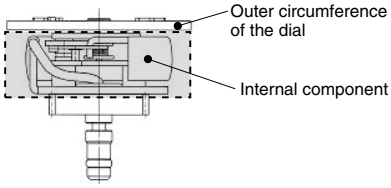
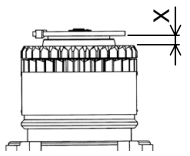
Applicable model	Process	Procedure	Tools	Check item
AWG20 AWG30 AWG40	Disassembly	1) Remove the valve guide after removing the bowl assembly and element. Hold the valve guide with a wrench on the wrench flat to rotate it counterclockwise, and remove the valve guide.	Wrench Nominal: AWG20: 7 AWG30: 17 AWG40: 21	—
		2) Remove the valve spring.	—	—
		3) Remove the valve assembly.	—	—
	Assembly	4) Mount the valve assembly. Connect the stem convex and the valve center hole.	—	Positioning of the stem and the valve (centering)
		5) Mount the valve spring. Insert the valve spring into the valve hole.	—	—
		6) Mount the valve guide. Hold the valve guide with a wrench on the wrench flat to rotate it clockwise, and mount the valve guide. Refer to the "Check item" for the tightening torque.	Wrench Nominal: AWG20: 7 AWG30: 17 AWG40: 21	Tightening torque: AWG20: 0.8 ± 0.1 N·m AWG30: 2.35 ± 0.3 N·m AWG40: 3.5 ± 0.3 N·m

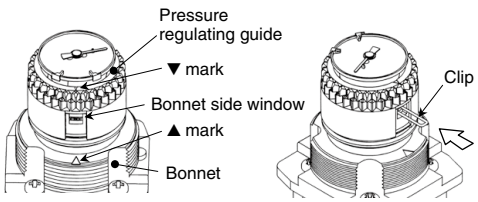
4. Bracket Assembly, Panel mount

Applicable model	Process	Procedure	Tools	Check item
AWG20 AWG30 AWG40	Assembly	1) Mount the parts to the bracket (panel) Connect the bracket (panel) concave and the bonnet convex to mount the bracket.	—	—
		2) Secure the bracket (panel) with the set nut. Rotate the set nut clockwise with a hook wrench to secure the parts to the bracket (panel). Refer to the "Check item" for the tightening torque. Set nut knurling surface should face the bracket (AWG20 to 40). When mounting with bracket, a manually tightened set nut is adequate for general use. (AWG20 to 40)	AWG20/30/40 Hook wrench Nominal: AWG20: 52/55 AWG30: 58/65 AWG40: 65/70	Tightening torque: AWG20: 2.0 ± 0.2 N·m AWG30: 3.5 ± 0.3 N·m AWG40: 4.0 ± 0.4 N·m

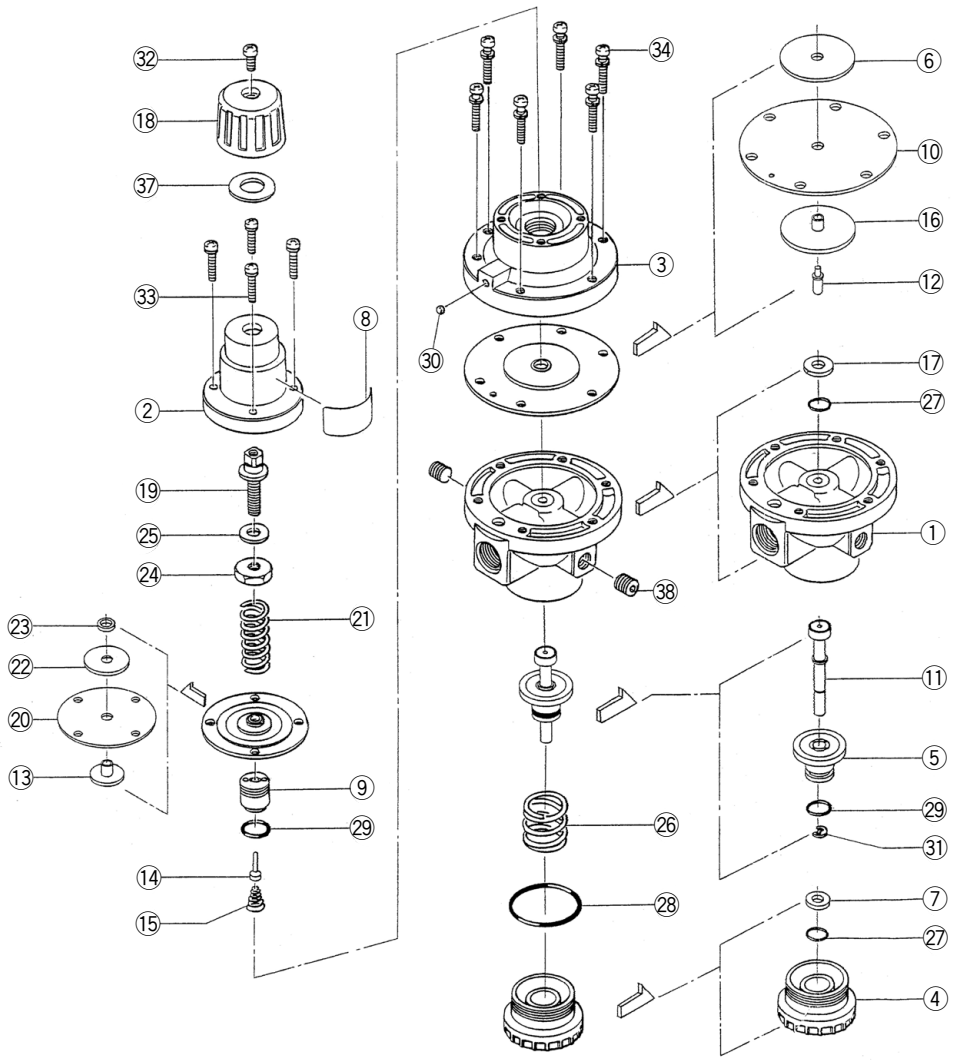
⚠Warning

Before replacement, ensure that the regulator is not pressurized.
Rotate the pressure adjusting knob to zero.
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

Applicable model	Process	Procedure	Tools	Check item
AWG20 AWG30 AWG40	Disassembly	1) Preparation Release the knob lock with the pressure regulating knob completely loosened.	—	The orange line can be seen between the knob and the bonnet.
		2) Removal of the knob Pull out the knob to remove at the position where ▼ mark of the knob and ▲ mark of the bonnet meet. 	—	—
		3) Removal of the clip The clip becomes visible from the side window of the bonnet if ▲ mark of the bonnet and ▼ mark of the pressure regulating guide meet, pull out the clip with a pair of tweezers. * Rotate the pressure regulating guide clockwise when matching the mark. 	Tweezers	—
		4) Removal of the pressure gauge Pull out the pressure gauge holding the outer circumference of the dial. * Do not touch the internal component of the pressure gauge (surrounded by dashed line). It may damage the indication accuracy of the pressure gauge. 	—	—
	Assembly	5) Setting the pressure gauge Hold the outer circumference of the dial and set the gauge at specified angle, and push in the gauge lightly. For reference, Table 1 shows the gap dimension between the bottom surface of the dial and the top surface of the pressure regulating guide after mounting the pressure gauge. Note 1) If the gauge does not enter by some interference when setting the pressure gauge, set the gauge by slightly rotating it in rotating direction. (The planet gear of the pressure regulating guide and the sun gear integrated in the pressure gauge interfere each other.) Note 2) Set the pressure gauge completely. Note 3) The end of the pressure gauge has greased the O-ring. Attention should be taken so that dust and particle not enter to the pressure gauge.	—	 Table 1 Gap dimension X dimension (Reference value): AWG20 2.6 mm, AWG30 3.3 mm, AWG40 3.3 mm

Applicable model	Process	Procedure	Tools	Check item
AWG20 **AWG30** **AWG40**	**Assembly**	6) Setting the clip Insert the clip from the side window of the bonnet where ▲ mark of the pressure regulating guide and ▼ mark of the bonnet meet. Use something sharp like tweezers when inserting the clip to the end. If the clip is not inserted to the end the knob may not rotate after setting the knob. Note 1) The clip is slightly tapered to the end to avoid falling off. Slightly open the end of the clip when setting the clip. Note 2) Following causes are possible when the clip is stuck in the middle. ①The pressure regulating screw is lower than the original position. (Gap is made between the pressure regulating nut and the spring. When the pressure regulating screw is completely loosened, the pressure regulating screw may be lowered if excessive press force applied to the pressure regulating screw.) Countermeasure … Turn the pressure regulating guide approx. 5 times clockwise (pressure rise direction). ②Pressure gauge is not properly set. Countermeasure…5) See setting the pressure gauge.  	Tweezers	—
		7) Setting the knob Set the knob, and finish.	—	—

AR425 Exploded View 1

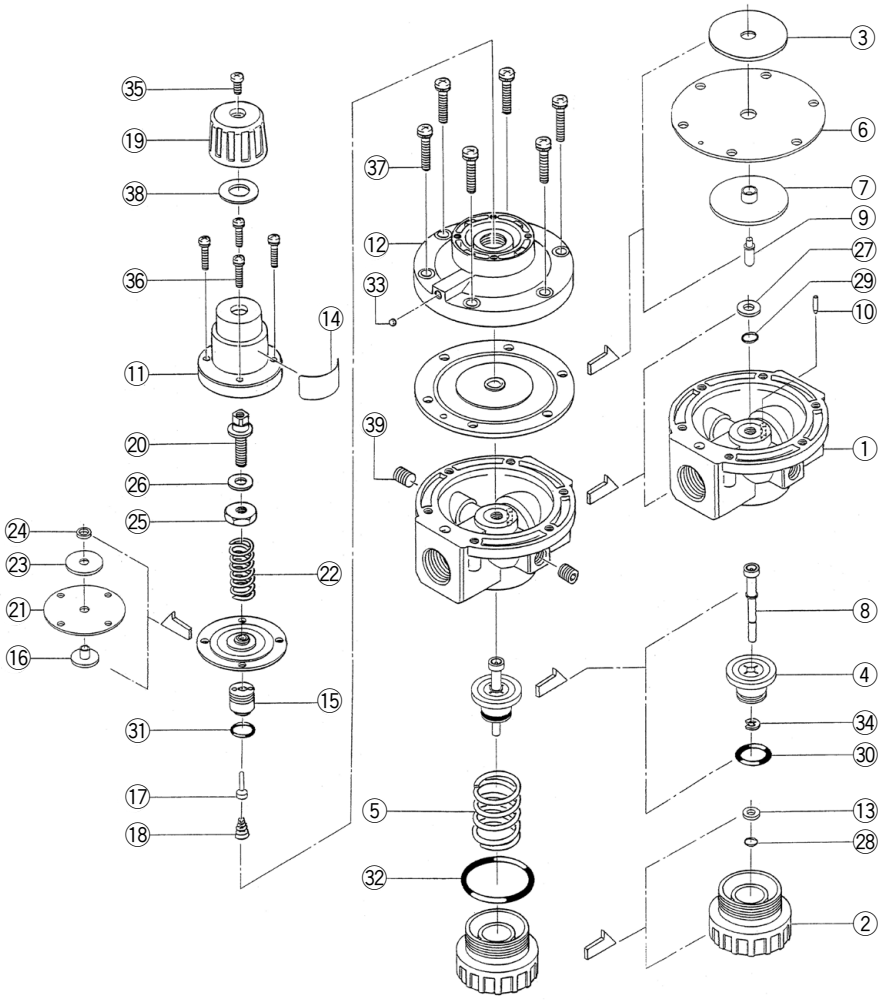


Component Parts

Item	Part Name	Qty.	Remarks
①	**Body**	1	Chromate treatment
②	**Bonnet**	1	Chromate treatment
③	**Chamber**	1	Chromate treatment
④	**Valve guide**	1	Chromate treatment
⑤	**Valve**	1	Rubber lining material: HNBR
⑥	**Diaphragm shell**	1	Zinc chromate treatment
⑦	**O-ring holder**	1	Chromate treatment
⑧	**Name plate**	1	Complete product no. indicated
⑨	**Valve seat**	1	
⑩	**Diaphragm**	1	
⑪	**Stem**	1	Rubber lining material: HNBR
⑫	**Rod**	1	
⑬	**Diaphragm holder**	1	
⑭	**Pilot valve**	1	Rubber lining material: HNBR
⑮	**Valve spring**	1	
⑯	**Diaphragm holder**	1	
⑰	**O-ring holder**	1	Chromate treatment
⑱	**Knob**	1	

Item	Part Name	Qty.	Remarks
⑲	**Adjustment screw**	1	Zinc chromate treatment
⑳	**Diaphragm**	1	
㉑	**Spring**	1	Zinc chromate treatment
㉒	**Diaphragm shell**	1	Chromate treatment
㉓	**Washer**	1	
㉔	**Spring holder**	1	Zinc chromate treatment
㉕	**Seal**	1	
㉖	**Valve spring**	1	
㉗	**O-ring**	2	JIS B2401 P5
㉘	**O-ring**	1	JIS B2401 G35
㉙	**O-ring**	2	JIS B2401 P10
㉚	**Steel ball**	1	ø4
㉛	**Retaining ring**	1	JIS B2805 4
㉜	**Cross recessed round head screw**	1	M5 x 0.8 x 8 Black zinc chromate treatment
㉝	**Cross recessed round head screw**	4	M4 x 0.7 x 16 Nickel plating
㉞	**Cross recessed round head screw**	6	M5 x 0.8 x 22 Nickel plating
㊲	**Flat washer**	1	ø10.5 x ø20 x 1.2 Zinc chromate treatment
㊳	**Hexagon socket head plug**	2	R(PT) 1/4 Nickel plating

AR625 Exploded View 2

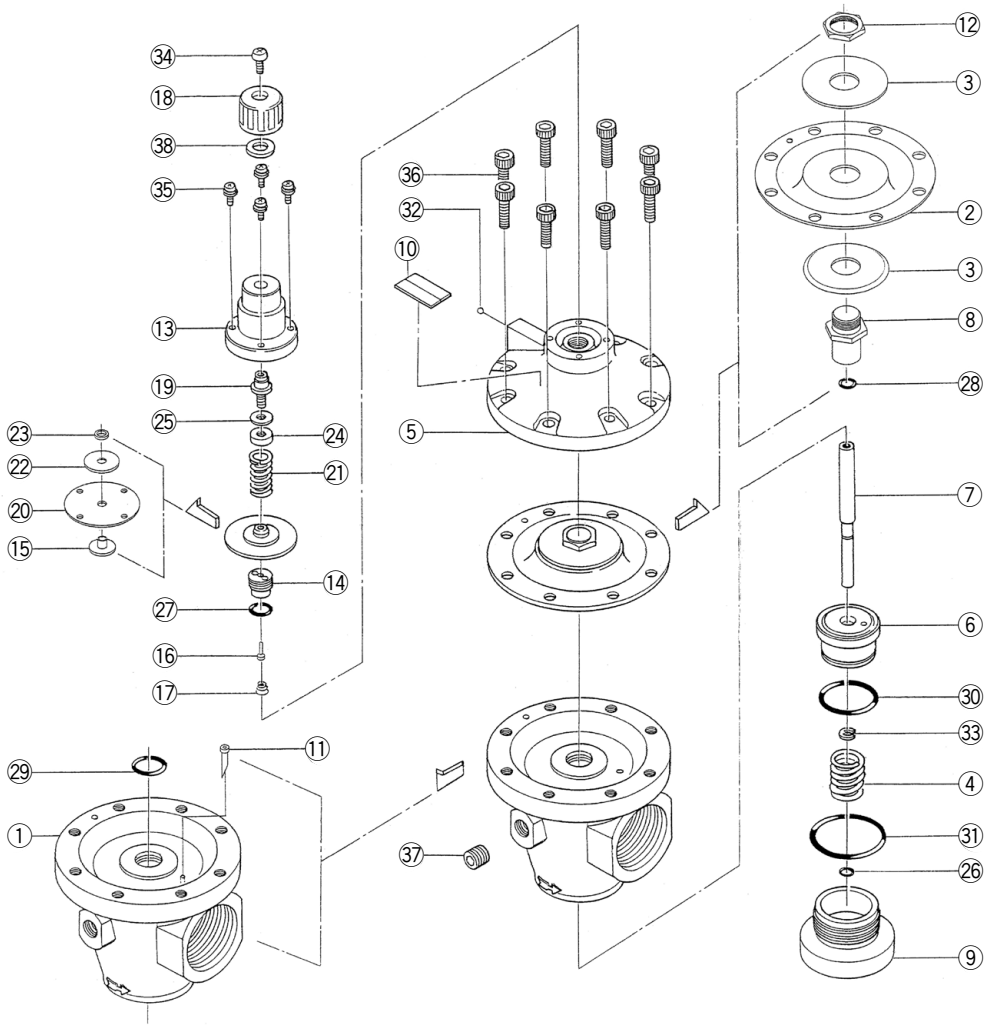


Component Parts

Item	Part Name	Qty.	Remarks
①	**Body**	1	Chromate treatment
②	**Valve guide**	1	Chromate treatment
③	**Diaphragm shell**	1	Zinc chromate treatment
④	**Valve**	1	Rubber lining material: HNBR
⑤	**Valve spring**	1	
⑥	**Diaphragm**	1	
⑦	**Diaphragm holder**	1	
⑧	**Stem**	1	Rubber lining material: HNBR
⑨	**Rod**	1	
⑩	**Static pressure tube**	1	
⑪	**Bonnet**	1	Chromate treatment
⑫	**Chamber**	1	Chromate treatment
⑬	**O-ring holder**	1	Chromate treatment
⑭	**Name plate**	1	Complete product no. indicated
⑮	**Valve seat**	1	
⑯	**Diaphragm holder**	1	
⑰	**Pilot valve**	1	Rubber lining material: HNBR
⑱	**Valve spring**	1	
⑲	**Knob**	1	
⑳	**Adjustment screw**	1	Zinc chromate treatment

Item	Part Name	Qty.	Remarks
㉑	**Diaphragm**	1	
㉒	**Spring**	1	Zinc chromate treatment
㉓	**Diaphragm shell**	1	Chromate treatment
㉔	**Washer**	1	
㉕	**Spring holder**	1	Zinc chromate treatment
㉖	**Seal**	1	
㉗	**O-ring holder**	1	Chromate treatment
㉘	**O-ring**	1	JIS B2401 P5
㉙	**O-ring**	1	JIS B2401 P6
㉚	**O-ring**	1	JIS B2401 P16
㉛	**O-ring**	1	JIS B2401 P10
㉜	**O-ring**	1	JIS B2401 G40
㉝	**Steel ball**	1	ø4
㉞	**Retaining ring**	1	JIS B2805 4
㉟	**Cross recessed round head screw**	1	M5 x 0.8 x 8 Black zinc chromate treatment
㊱	**Cross recessed round head screw**	4	M4 x 0.7 x 16 Nickel plating
㊲	**Cross recessed round head screw**	6	M6 x 1 x 22 Nickel plating
㊳	**Flat washer**	1	ø10.5 x ø20 x 1.2 Zinc chromate treatment
㊴	**Hexagon socket head plug**	2	R(PT) 1/4 Nickel plating

AR825 Exploded View 3

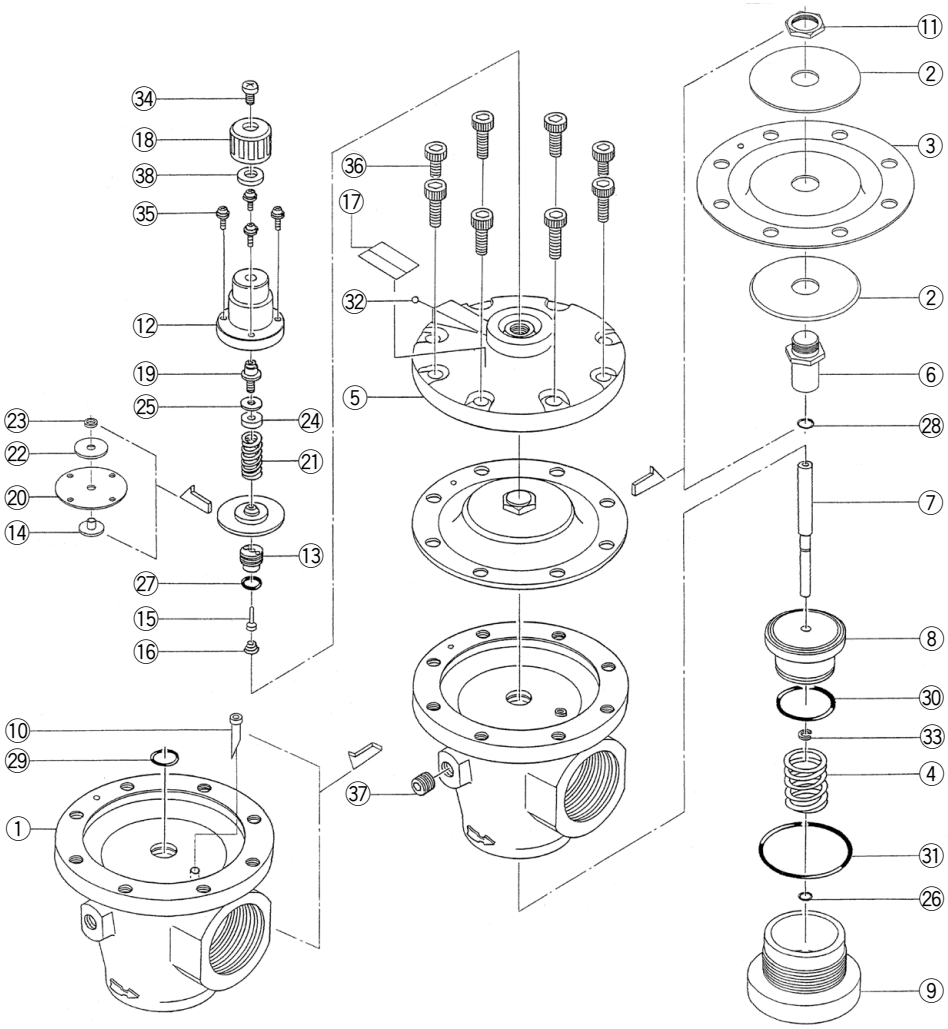


Component Parts

Item	Part Name	Qty.	Remarks
①	**Body**	1	Chromate treatment
②	**Diaphragm**	1	
③	**Diaphragm shell**	2	Zinc chromate treatment
④	**Valve spring**	1	
⑤	**Chamber**	1	Chromate treatment
⑥	**Valve**	1	Rubber lining material: HNBR
⑦	**Stem**	1	
⑧	**Diaphragm shell holder**	1	
⑨	**Valve guide**	1	Chromate treatment
⑩	**Name plate**	1	Complete product no. indicated
⑪	**Static pressure tube**	1	
⑫	**Set nut**	1	
⑬	**Bonnet**	1	Chromate treatment
⑭	**Valve seat**	1	
⑮	**Diaphragm holder**	1	
⑯	**Pilot valve**	1	Rubber lining material: HNBR
⑰	**Valve spring**	1	
⑱	**Knob**	1	
⑲	**Adjustment screw**	1	Zinc chromate treatment

Item	Part Name	Qty.	Remarks
⑳	**Diaphragm**	1	
㉑	**Spring**	1	Zinc chromate treatment
㉒	**Diaphragm shell**	1	Chromate treatment
㉓	**Washer**	1	
㉔	**Spring holder**	1	Zinc chromate treatment
㉕	**Seal**	1	
㉖	**O-ring**	1	JIS B2401 P7
㉗	**O-ring**	1	JIS B2401 P10
㉘	**O-ring**	1	
㉙	**O-ring**	1	JIS B2401 P20
㉚	**O-ring**	1	JIS B2401 P30
㉛	**O-ring**	1	JIS B2401 G50
㉜	**Steel ball**	1	ø4
㉝	**Retaining ring**	1	TE-23
㉞	**Cross recessed round head screw**	1	M5 x 0.8 x 8 Black zinc chromate treatment
㉟	**Cross recessed round head screw**	4	M4 x 0.7 x 16 Nickel plating
㊱	**Hexagon socket head cap screw**	8	M8 x 1.25 x 18 Nickel plating
㊲	**Hexagon socket head plug**	2	R(PT) 1/4 Nickel plating
㊳	**Flat washer**	1	ø10.5 x ø20 x 1.2 Zinc chromate treatment

AR925 Exploded View 4



Component Parts

Item	Part Name	Qty.	Remarks
①	**Body**	1	Chromate treatment
②	**Diaphragm shell**	2	Zinc chromate treatment
③	**Diaphragm**	1	
④	**Valve spring**	1	
⑤	**Chamber**	1	Chromate treatment
⑥	**Diaphragm shell holder**	1	
⑦	**Stem**	1	
⑧	**Valve**	1	Rubber lining material: HNBR
⑨	**Valve guide**	1	Chromate treatment
⑩	**Static pressure tube**	1	
⑪	**Set nut**	1	
⑫	**Bonnet**	1	Chromate treatment
⑬	**Valve seat**	1	
⑭	**Diaphragm holder**	1	
⑮	**Pilot valve**	1	Rubber lining material: HNBR
⑯	**Valve spring**	1	
⑰	**Name plate**	1	Complete product no. indicated
⑱	**Knob**	1	
⑲	**Adjustment screw**	1	Zinc chromate treatment

Item	Part Name	Qty.	Remarks
⑳	**Diaphragm**	1	
㉑	**Spring**	1	Zinc chromate treatment
㉒	**Diaphragm shell**	1	Chromate treatment
㉓	**Washer**	1	
㉔	**Spring holder**	1	Zinc chromate treatment
㉕	**Seal**	1	
㉖	**O-ring**	1	JIS B2401 P7
㉗	**O-ring**	1	JIS B2401 P10
㉘	**O-ring**	1	
㉙	**O-ring**	1	JIS B2401 P20
㉚	**O-ring**	1	JIS B2401 P42
㉛	**O-ring**	1	JIS B2401 G70
㉜	**Steel ball**	1	ø5
㉝	**Retaining ring**	1	TE-23
㉞	**Cross recessed round head screw**	1	M5 x 0.8 x 8 Black zinc chromate treatment
㉟	**Cross recessed round head screw**	4	M4 x 0.7 x 16 Nickel plating
㊱	**Hexagon socket head cap screw**	8	M10 x 1.5 x 20 Nickel plating
㊲	**Hexagon socket head plug**	2	R(PT) 1/4 Nickel plating
㊳	**Flat washer**	1	ø10.5 x ø20 x 1.2 Zinc chromate treatment

1. Element Replacement Method

To replace the element, carry out the procedure of 1-1 to 1-8 below while referring to the figure.

1-1. Using a hexagonal wrench, loosen the 4 hexagon socket head cap screws and remove the bowl. At this time, confirm that the O-ring groove in the bowl. If the O-ring is out of place, fit it into the O-ring groove.

1-2. Using a wrench, loosen the domed cap nut and remove it together with the gasket.

1-3. Pull the element downwards and remove it. If the element is difficult to remove, remove it by pushing it in the horizontal direction.

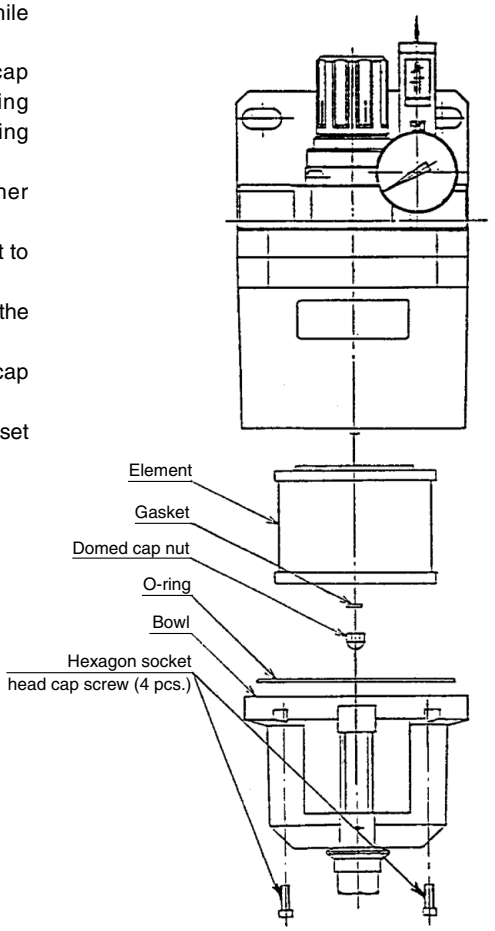
1-4. Coat the top of the element seal with a thin layer of grease, then set the seal so that it is uppermost and pass the tension bolt through it.

1-5. Pass the tension bolt through the gasket, then tighten the domed cap nut to fix the gasket in place.

1-6. Confirm that the O-ring is fitted in the O-ring groove in the bowl, and set the liquid level gauge so that it is facing the front.

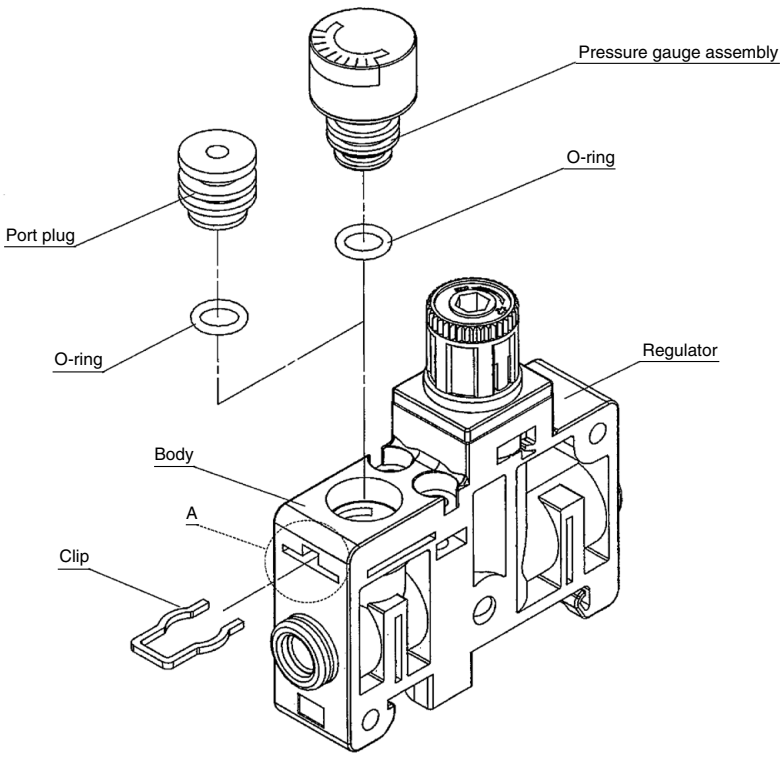
1-7. Fix the bowl by tightening the 4 hexagon socket head cap screws.

1-8. Confirm that there is no leakage between the bowl and the housing.

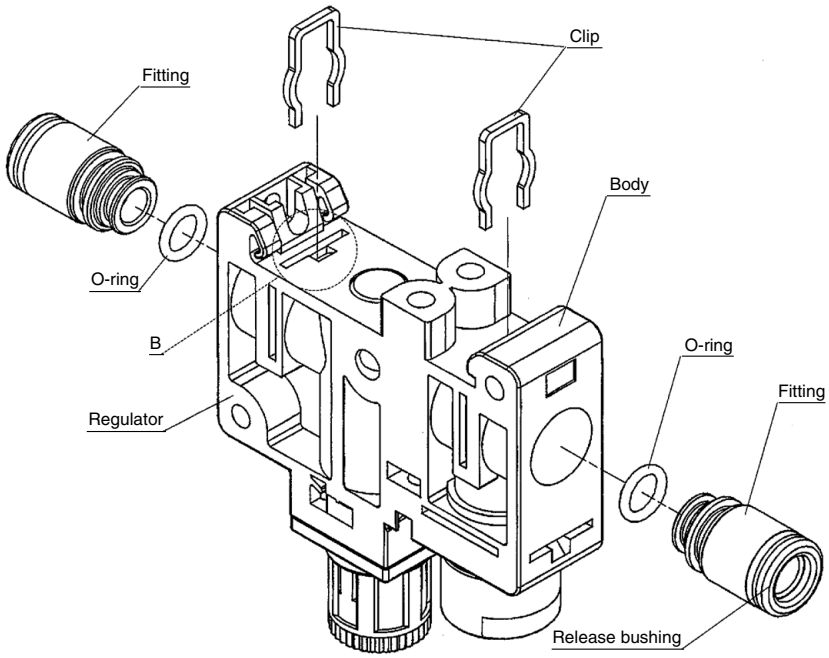


⚠Warning
Before replacement, ensure that the regulator is not pressurized.
Fully rotate the pressure adjusting knob counterclockwise and return it to zero.
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

1. Replacement of Pressure Gauge/Port Plug

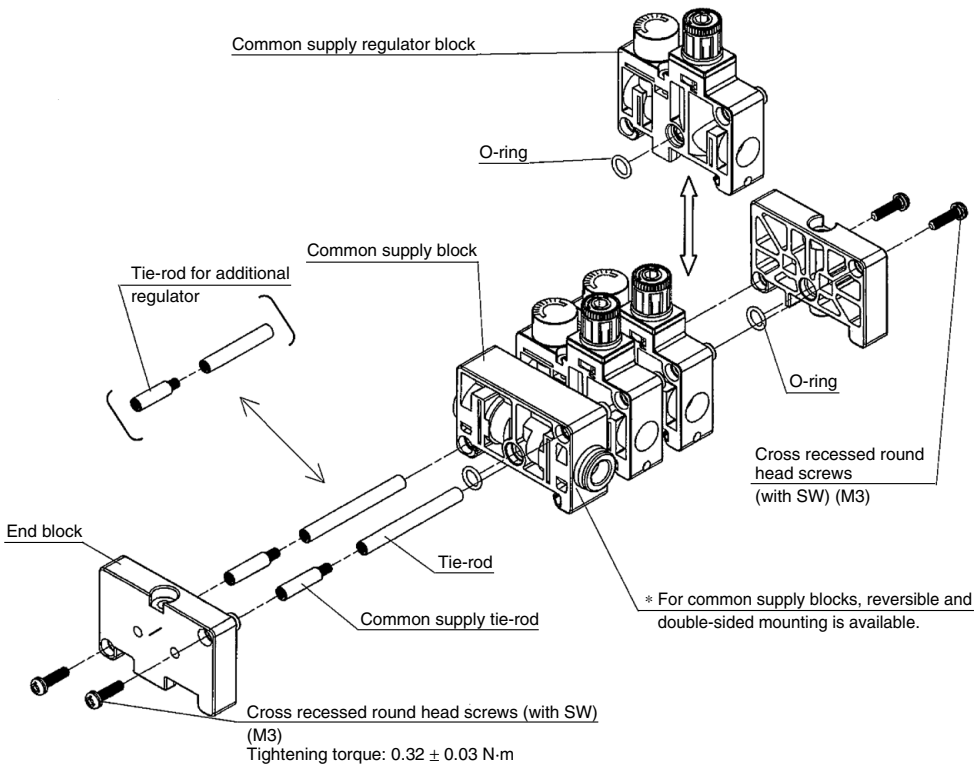
Content	Replacement of Pressure gauge/Port plug	
Parts	Pressure gauge, Port plug	
Tools	Watchmaker's flat head screwdriver	
Process	Disassembly	Assembly
Procedure	1) Insert a watchmaker's flat head screwdriver along with taper of hole A on OUT side of the body. 2) Hook the tip of the screwdriver to the inserted clip, and pull out the clip. ∗ As the clip may fly out, pull it slowly as holding it with a hand. 3) Pull out the mounted pressure gauge/port plug.	1) Insert the pressure gauge/port plug all the way in properly. 2) Put the clip back to the hole. Use the tip of the watchmaker's flat head screwdriver to insert the clip to the end properly.
Check item	—	1) Presence of the O-ring (If dust or particles are remained on the O-ring it may cause air leakage. Therefore take measures to prevent them from attaching on the O-ring.
Exploded view		

2. Replacement of One-touch Fittings

Content	Exchange of One-touch fittings (IN side and OUT side port)	
Parts	One-touch fittings	
Tools	Watchmaker's flat head screwdriver	
Process	Disassembly	Assembly
Procedure	1) Insert a watchmaker's flat head screwdriver along with taper of hole B on OUT side of the body. 2) Hook the tip of the screwdriver to the inserted clip, and pull out the clip. ∗ As the clip may fly out, pull it slowly as holding it with a hand. 3) Pull out the mounted One-touch fitting.	1) Insert the One-touch fitting all the way in properly. 2) Put the clip back to the hole. Use the tip of the watchmaker's flat head screwdriver to insert the clip to the end properly.
Check item	—	1) Presence of the O-ring (If dust or particles are remained on the O-ring it may cause air leakage. Therefore take measures to prevent them from attaching on the O-ring.)
Exploded view	 ∗ If it is hard to remove the fitting, do not remove the release bushing with a strong force. It that case, install the tube and plug, and pull the fitting out together with them.	

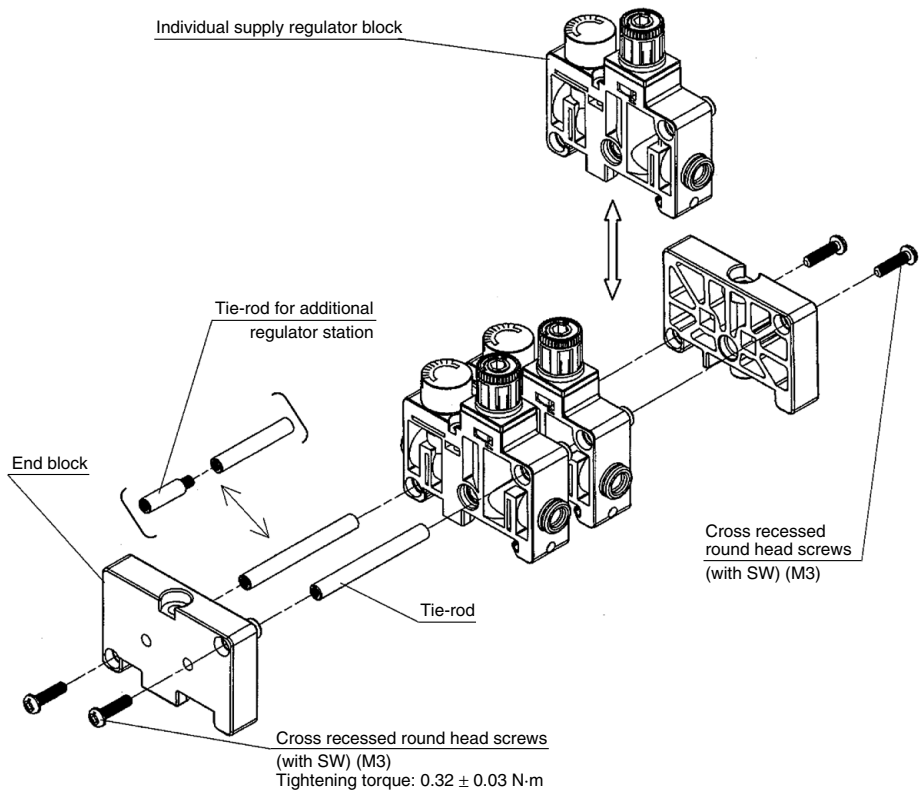
3. Replacement of Manifold Stations (Common Supply Specification)

Content	Change of Manifold stations and Common supply block	
Parts	Regulator block, Common supply block	
Tools	Phillips head screwdriver	
Process	Disassembly	Assembly
Procedure	1) Loosen and remove the cross recessed round head screw on the corner of the end block. 2) Pull out the tie-rod from the end block, common supply block and regulator.	1) Connect the several tie-rods from each other. 2) Engage the tie-rods with the upper left side of the end block, and temporarily tighten them with 2 pcs. of cross recessed round head screws. 3) Check that O-ring is mounted on the recessed connection of each block of the manifold, and insert the each block to the tie-rods. 4) Temporarily tighten the cross recessed round head screws on the right side. 5) Tighten the cross recessed round head screws on both sides of manifold within the following specified torque.
Check item	—	1) Presence of the O-ring (If dust or particles are remained on the O-ring it may cause air leakage. Therefore take measures to prevent them from attaching on the O-ring.)
Exploded view	Note) The length of tie-rod and common supply tie-rod is varied depending on the applicable stations. Tie-rods for additional stations, tie-rods for applicable stations or common supply tie-rods are necessary separately.	



4. Replacement of Manifold Stations (Individual Supply Specification)

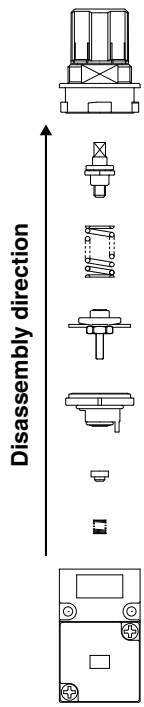
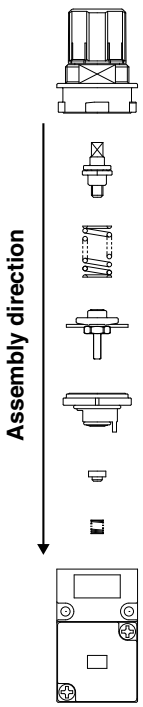
Content	Change of Manifold stations	
Parts	Regulator block	
Tools	Phillips head screwdriver	
Process	Disassembly	Assembly
Procedure	1) Loosen and remove the cross recessed round head screw on the corner of the end block. 2) Pull out the tie-rod from the end block, common supply block and regulator.	1) Connect the several tie-rods from each other. 2) Engage the tie-rods with the upper left side of the end block, and temporarily tighten them with 2 pcs. of cross recessed round head screws. 3) Insert each block to the tie-rod. 4) Temporarily tighten the cross recessed round head screws (2 pcs.) on the right side. 5) Tighten the cross recessed round head screws on both sides of manifold within the following specified torque.
Check item	—	—
Exploded view	Note) The length of tie-rod and common supply tie-rod is varied depending on the applicable stations. Tie-rods for additional stations, tie-rods for applicable stations or common supply tie-rods are necessary separately.	



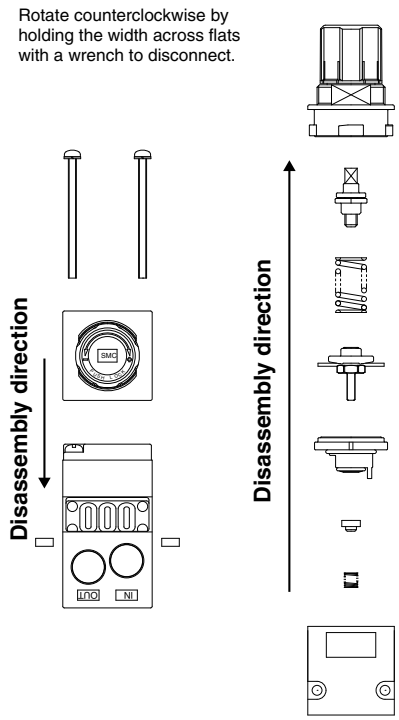
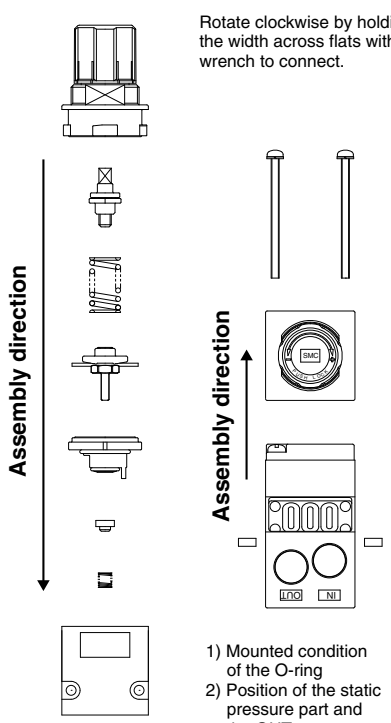
⚠Warning
Before replacement, ensure that the regulator is not pressurized.
Fully rotate the pressure adjusting knob counterclockwise and return it to zero.
After replacement, ensure that the specified function is satisfied and that no external leakage is found before resuming operation.

1. ARM10 Regulator

(Wash and Replacement of the Diaphragm, O-rings, Valve, and Valve Spring)

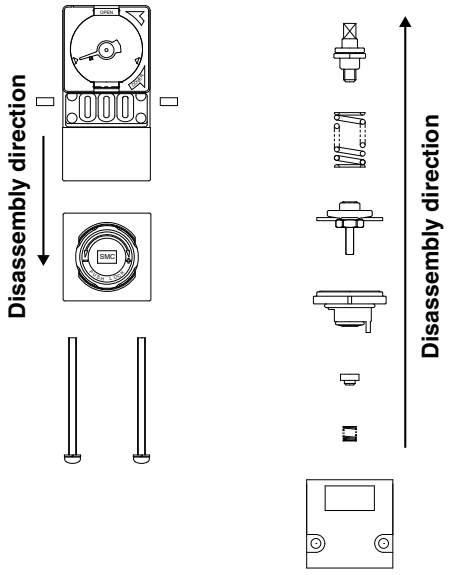
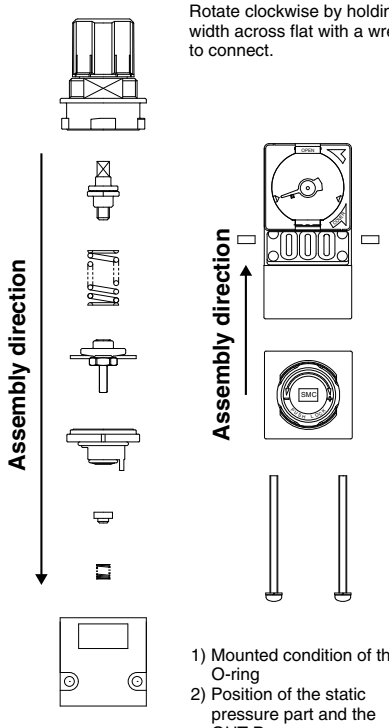
Tools	Wrench (18 mm in width), Snap ring pliers, Tweezers	
Process	**Disassembly**	**Assembly**
Procedure	1) Rotate the bonnet counterclockwise by holding its width across flats with a wrench to disconnect. (The pressure regulating screw and spring are to remain mounted on the bonnet.) 2) Remove the diaphragm assembly manually. 3) Remove the valve seat assembly by holding it with a pair of snap ring pliers. 4) Remove the valve and valve spring.	1) Mount the valve spring and the valve with a pair of tweezers. 2) Mount the valve seat assembly (with the 2 O-rings mounted) with a pair of snap ring pliers so that the static pressure part of the valve seat and the OUT passage can be in the proper position. 3) Hold the valve seat assembly by accessing it from the side opening to prevent it from coming apart. 4) Mount the diaphragm assembly. 5) Mount the bonnet which has the pressure regulating screw and spring installed to its body, and rotate it clockwise by holding the width across flats with a wrench to connect it to the body.
Check item	—	1) Presence of the O-ring 2) Position of the static pressure part of the valve and the OUT passage
Disassembly/ Assembly procedure	 Rotate counterclockwise by holding the width across flats with a wrench to disconnect.	 Rotate clockwise by holding the width across flats with a wrench to connect. 1) Mounted condition of the O-ring 2) Position of the static pressure part and the OUT passage

2. ARM11□A/ARM11□C Regulator Block (Knob Position: Top or Bottom Type)
(Wash and Replacement of the Gasket, Diaphragm, O-rings, Valve, and Valve Spring)

Tools	Phillips head screwdriver, Wrench (18 mm in width), Snap ring pliers, Tweezers	
Process	**Disassembly**	**Assembly**
Procedure	1) Loosen and remove the round head screws of regulator assembly with a Phillips head screwdriver to become the regulator assembly to be disconnected manually. 2) Rotate the bonnet counterclockwise by holding its width across flats with a wrench to disconnect. (The pressure regulating screw and spring are to remain mounted on the bonnet.) 3) Remove the diaphragm assembly manually. 4) Remove the valve seat assembly by holding it with a pair of snap ring pliers. 5) Remove the valve and valve spring.	1) Mount the valve spring and the valve with a pair of tweezers. 2) Mount the valve seat assembly (with the 2 O-rings mounted) with a pair of snap ring pliers so that the static pressure part of the valve seat and character “A” on body can be in the proper position. 3) Hold the valve seat assembly by accessing it from the side opening to prevent it from coming apart. 4) Mount the diaphragm assembly. 5) Mount the bonnet which has the pressure regulating screw and spring installed to its body, and rotate it clockwise by holding the wrench flat with a wrench to connect it to the body. 6) Mount the regulator assembly on manifold block and hold it by tightening the 2 round screws with a Phillips head screwdriver.
Check item	—	1) Presence of the O-ring 2) Position of the static pressure part of the valve seat and character “A” on body. 3) Tightening torque of the round screw: 0.32 ± 0.03 N·cm
Disassembly/ Assembly procedure		 1) Mounted condition of the O-ring 2) Position of the static pressure part and the OUT passage

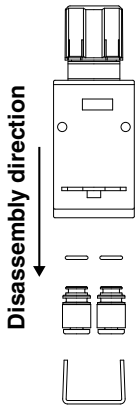
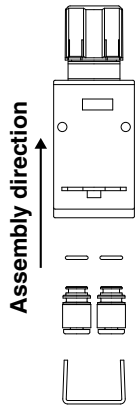
3. ARM11□B Regulator Block (Knob Position: Front Type)

(Wash and Replacement of the Gasket, Diaphragm, O-rings, Valve, and Valve Spring)

Tools	Phillips head screwdriver, Wrench (18 mm in width), Snap ring pliers, Tweezers	
Process	**Disassembly**	**Assembly**
Procedure	1) Loosen and remove the round head screws of regulator assembly with a Phillips head screwdriver to become the regulator assembly to be disconnected manually. 2) Rotate the bonnet counterclockwise by holding its width across flats with a wrench to disconnect. (The pressure regulating screw and spring are to remain mounted on the bonnet.) 3) Remove the diaphragm assembly manually. 4) Remove the valve seat assembly by holding it with a pair of snap ring pliers. 5) Remove the valve and valve spring.	1) Mount the valve spring and the valve with a pair of tweezers. 2) Mount the valve seat assembly (with the 2 O-rings mounted) with a pair of snap ring pliers so that the static pressure part of the valve seat and character “B” on body can be in the proper position. 3) Hold the valve seat assembly by accessing it from the side opening to prevent it from coming apart. 4) Mount the diaphragm assembly. 5) Mount the bonnet which has the pressure regulating screw and spring installed to its body, and rotate it clockwise by holding the wrench flat with a wrench to connect it to the body. 6) Mount the regulator assembly on manifold block and hold it by tightening the 2 round screws with a Phillips head screwdriver.
Check item	—	1) Presence of the O-ring 2) Position of the static pressure part of the valve seat and character “B” on body 3) Tightening torque of the round head screw: 0.32 ± 0.03 N·cm
Disassembly/ Assembly procedure	Rotate counterclockwise by holding the width across flat with a wrench to disconnect. 	Rotate clockwise by holding the width across flat with a wrench to connect.  1) Mounted condition of the O-ring 2) Position of the static pressure part and the OUT Passage

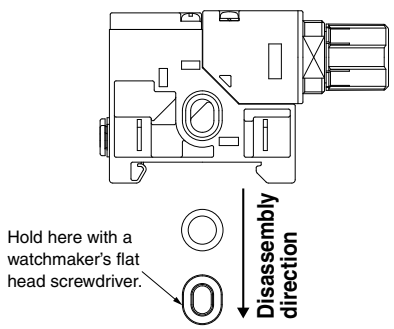
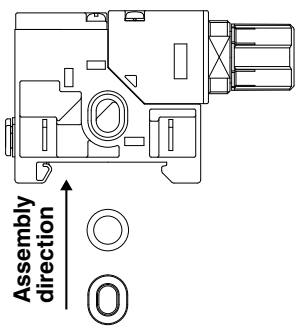
4. ARM10, 11 Regulator, Manifold Block

(Wash, Air Blowing and Replacement of the O-ring for the Fittings)

Tools	Watchmaker's flat head screwdriver	
Process	**Disassembly**	**Assembly**
Procedure	1) Remove the clip by holding it with a watchmaker's flat head screwdriver. 2) Pull the fitting assembly out manually.	1) Push the fitting assembly until it comes to a stop to mount. 2) Push the clip until it comes to a stop to mount.
Check item	—	1) Confirm the fitting assembly reaches the mounting end for it. 2) Confirm the clip reaches the mounting end for it.
Disassembly/ Assembly procedure		

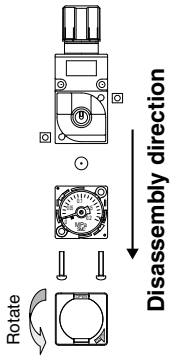
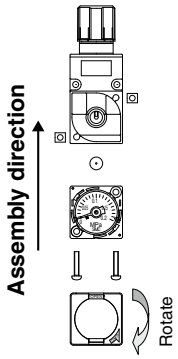
5. ARM11 Regulator Block

(Wash and Replacement of the O-ring for the Bushing)

Tools	Watchmaker's flat head screwdriver	
Process	**Disassembly**	**Assembly**
Procedure	1) Remove the bushing by holding it with a watchmaker's flat head screwdriver. 2) Remove the O-ring from the bushing.	1) Mount the O-ring to the bushing. 2) Push the bushing until it comes to a stop to mount.
Check item	—	1) Confirm the bushing reaches the mounting end for it.
Disassembly/ Assembly procedure		

6. ARM10 Regulator

(Wash and Replacement of the O-ring for the Pressure Gauge)

Tools	Phillips head screwdriver	
Process	**Disassembly**	**Assembly**
Procedure	1) Remove the cover assembly by rotating it counterclockwise manually. 2) Loosen and remove the 2 round head screws with a Phillips head screwdriver. 3) Remove the pressure gauge assembly. 4) Remove the O-ring.	1) Mount the O-ring. 2) Mount the pressure gauge assembly. 3) Hold the pressure gauge assembly by tightening the 2 round head screws with a Phillips head screwdriver. 4) Mount the cover assembly by rotating clockwise manually. (Mind direction of cover and position of locating mark and detent.)
Check item	—	1) Presence of the O-ring 2) Tightening torque of the round head screw: 0.32 ± 0.03 N·cm
Disassembly/ Assembly procedure		

7. ARM11 Regulator Block

(Wash and Replacement of the O-ring for the Pressure Gauge)

Tools	Phillips head screwdriver	
Process	**Disassembly**	**Assembly**
Procedure	1) Loosen and remove the round head screws from the regulator assembly with a Phillips head screwdriver to become the regulator assembly to be disconnected. 2) Remove the cover assembly by rotating counterclockwise manually. 3) Remove the 2 round head screws from the pressure assembly with a Phillips head screwdriver. 4) Remove the pressure gauge assembly. 5) Remove the O-ring.	1) Mount the O-ring to the bushing. 2) Mount the pressure gauge assembly. 3) Hold the pressure gauge assembly by tightening the 2 round head screws with a Phillips head screwdriver. 4) Mount the cover assembly by rotating clockwise manually. (Pay attention to the cover direction, alignment mark and detent.) 5) Mount the regulator assembly to the manifold block and hold it by tightening the 2 round screws with a Phillips head screwdriver.
Check item	—	1) Presence of the O-ring 2) Tightening torque of the round head screw: 0.32 ± 0.03 N·cm
Disassembly/ Assembly procedure