Industrial Filters Replacement Procedure

1. Installation

1-1. Connect the piping after confirming IN and OUT.
1-2. Use clean pipes for piping.
1-3. The seal tapes should not come off.
1-4. Hold the filter cover with a spanner when connecting the tubes for piping to the filter.
Never hold the filter case when piping.
1-5. Secure the space (not less than 50mm) under the filter so that the element can be taken out.

2. Removal of the Element

2-1. Stop the fluid from flowing into the filter.
2-2. Loosen the hexagon head bolt (air ventilation) to release the internal pressure of the filter completely.
2-3. Remove the plug to discharge the drainage from the filter.
2-4. Loosen the nut to remove the case.
The case can be removed by lowering it for approximately 50mm.
2-5. Remove the element from the case.
* For the filter that uses 2 elements (L250), be careful not to loose the guide used for sealing between the elements because it is re-used.
2-6. Wash and clean inside the case, the gasket, the packing and the plug with clean fluid or solvent.
* Do not take the tension bolt away from the case.

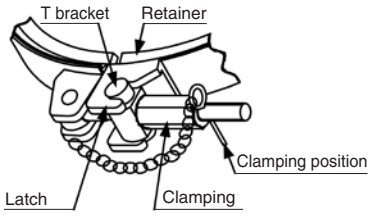
3. Mounting of the Element

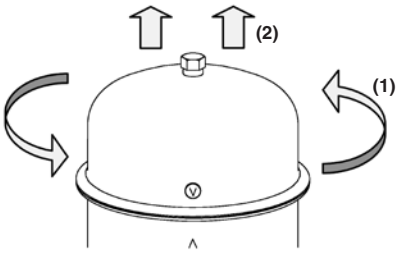
3-1. Replace the defective gasket and packing with new ones if there any of them are defective.
3-2. Put the tension bolt through the hole of the element, and insert the element into the case.
* For the filter that uses 2 elements, insert the guide between the elements.
3-3. Align the tension bolt to the center hole of the cover, and insert the case that has the element inside into the cover.
3-4. Press the casing from the bottom, and tighten the nut from the top of the cover.
3-5. Confirm that it has no fluid leakage after the test operation before starting the actual operation.

1. Removal of the Cover

1-1. Stop operation
1-2. Close the valve in order of INLET, then, OUTLET.
1-3. Zeroes the pressure in the filter.
1-4. Open the drain valve for inlet and outlet to discharge all fluid inside.
1-5. Pull out the V-band clamping position check pin.
1-6. Loosen V-band tightening nut and remove the latch. Then, remove the cover and O-ring for checking,
1-7. Rotate the cover counterclockwise and lift it to remove the cover. (In order of (1)(2) in drawing on the right)
1-8. If O-ring is swollen, replace it with a new O-ring.

O-ring for replacement Part no.: JISB2401-1A-P185 (NBR)
Part no.: JISB2401-4D-P185 (FKM)

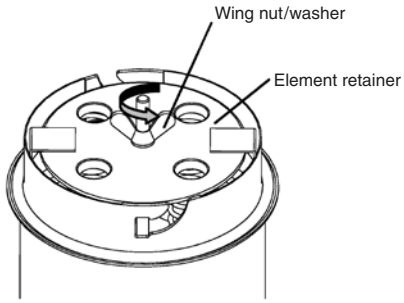




⚠Warning
Remove V-band/cover after confirming the pressure in the filter is zero.

2. Removal of the Element

2-1. Remove the wing nut and the washer.
2-2. Remove the element retainer.
2-3. Remove the element mounting bracket (a part integrating the element holder and the spring).
2-4. Take out parts in order of the element, then, joint (element guide).
∗ It is not a must to take out the element guide.
Element, and joint can be taken out together by taking out the element guide.
Note) Joint may not be necessary depending on filter and element type.



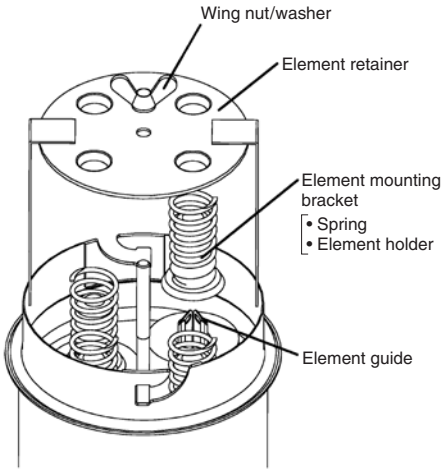
⚠Caution
Attention should be taken to avoid burning for high temperature.

3. Mounting of the Element

3-1. To recycle the micro mesh element and sintered element, eliminate any dust between the end plate and the seal completely.

⚠Caution
Replace all equipment using fluoropolymer seal. Recycle of used seal leads to cause sealing leakage.

3-2. Mount the element guide if it is removed.
3-3. Insert parts in order of the element, joint , element, then, element mounting bracket so that they are concentric.
Note) Joint may not be necessary.

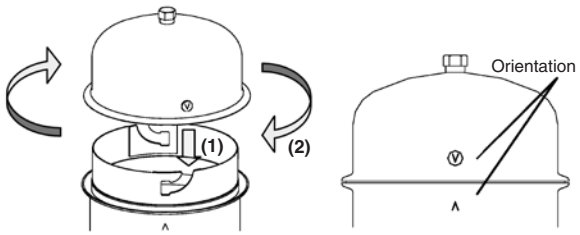


⚠Caution
When element is mounted, do not drop the parts from the top of the element guide for mounting.

3-4. When 2 to 3 elements are placed on top of the other, a set in which the element and joint are prepared can be mounted to the element support.
3-5. Assemble the element mounting bracket.
3-6. Mount the element retainer carefully.

4. Mounting of O-ring and Cover

4-1. Set O-ring to the case
4-2. Rotate the cover clockwise while pushing till the end so that the orientation mark of the case and the cover match. [In order of (1) and (2) on drawing on the right]



5. Mounting and Tightening V-band

5-1. Mount V-band to the collar of the cover and the case correctly. [Refer Fig. (a), (b)]

⚠Warning
The cover may be fallen off due to incorrect mounting. Mount the cover properly.

5-2. Hit the circumference of V-band lightly with plastic hammer for secure mounting.
5-3. Mount T-bracket to the latch correctly. [See Fig. (c)]
5-4. Tighten the clamping nut to specified position (position from where clamping position check pin can be inserted), and insert the clamping position check pin. [See Fig.(c)]
5-5. When clamping nut can not be tightened to specified position(position where clamping position check pin can be inserted), replace V-band and O-ring to new ones. (See table 1).

⚠Caution
Clean V-band and the contact surface between the cover and the case before mounting. Dirty contact surface lead to cause leakage.

⚠Warning
Replace with a new V-band when deformation or worn out by screw is found on the band.

[V-band for replacement] Part no. : CY-24S

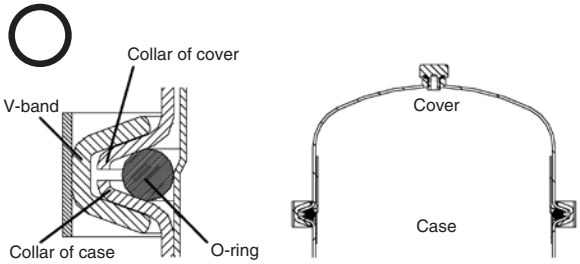


Fig. (a) Correct mounting of V-band

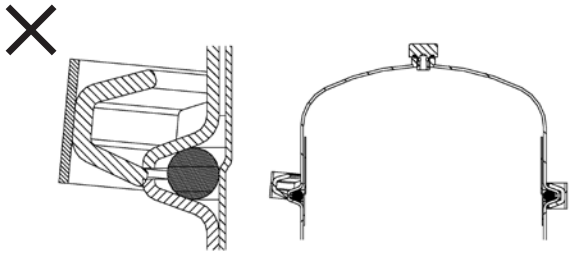


Fig. (b) Incorrect mounting of V-band
(Not correctly with collar of cover)

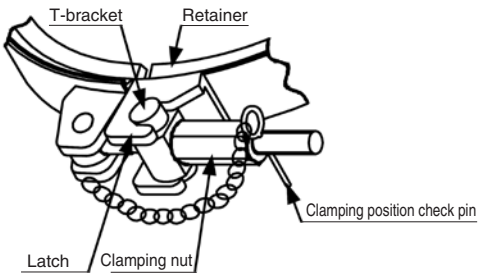
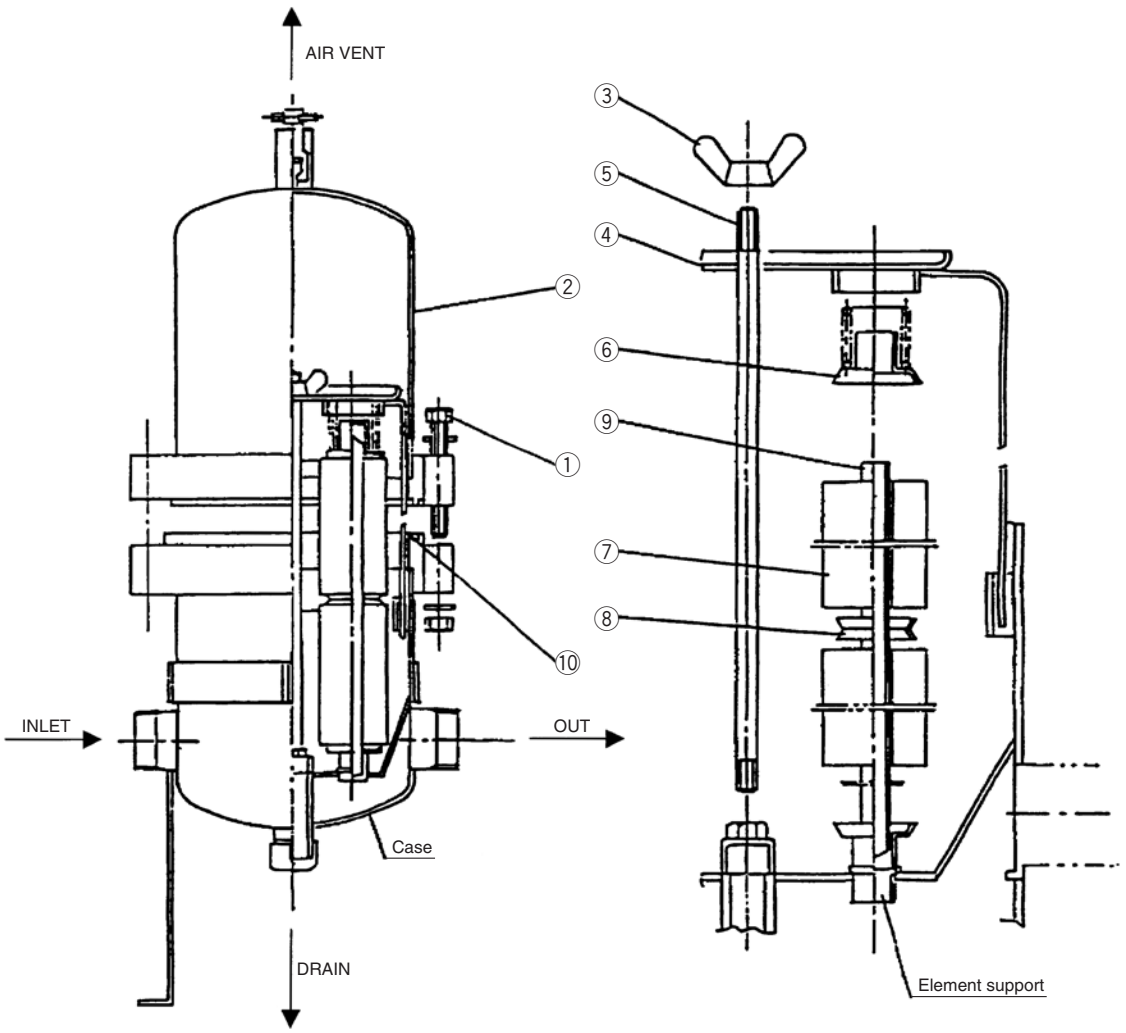


Fig. (c) V-band tightening

6. Restart and Air Discharge

6-1. When restart the operation after the replacement of the element, mount V-band to specified position. Confirm connecting parts and seal do not leak before start operation.
6-2. When restart the operation, open the upper air relief port to **discharge air**.

1. Instruction Drawing for Disassembly & Reassembly of Filter



①Hexagon head bolt, nut, washer
②Cover
③Wing nut
④Elemtnt retainer
⑤Tension bolt
⑥Element mounting bracket
⑦Element
⑧Joint
⑨Element guide
⑩O-ring

2. Removal of the Cover

2-1. Close the inlet and outlet valves.
2-2. Open the drain valve to make the pressure in the filter zero, and open the air vent valve to completely remove the inside fluid.
2-3. Loosen the hexagon head bolts and nuts fastening the filter cover to the filter case.
2-4. Remove the cover.

3. Removal of the Element

3-1. Remove the wing nut.
3-2. Remove the element retainer.
3-3. Take out parts in order of the element mounting bracket, element, joint, and element guide.
The element guide may not necessarily be taken out. It is not a must to take out the element guide.
After removal of the element mounting bracket, the elements and joints can be taken out as a unit by taking out the element guide in accordance with instructions shown in Fig. 1.

Note) Joint may not be necessary.

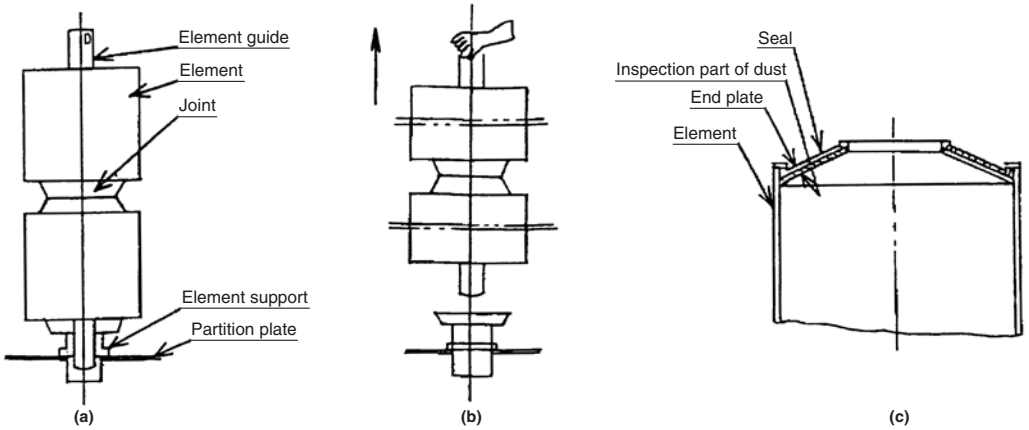


Fig. 1

4. Cleaning of the Element

4-1. Immerse any taken-out element in a cleaning liquid such as trichlene, carbon tetrachloride, volatile oils for 10 to 15 min.
4-2. Clean it in trichlene liquid with ultrasonic vibration. If ultrasonic cleaning is impossible, wash them in the following way:
4-3. Take out the element from the cleaning liquid and clean the inside and out side of the element thoroughly with a brush (preferrably a soft brush such as brass brush.)
4-4. Reimmerse the element in the liquid and remove dirty substances on the inside of the element by agitating the liquid.
4-5. Take out the element and blow compressed air into the inside of the element to make the dirty substances in the inside come out to the surface.
4-6. Brush the element in the cleaning liquid to take away dirty substances on its surface.
4-7. Repeat the following (4-4) till the element is free from dirty substances on its surface.
4-8. Take out the element and blow compressed air into the inside.
4-9. Immerse the element in clean water and agitate the water.
4-10. Take out the element from the water and blow compressed air into the inside of the element to blow off moisture therein. Then dry it.

Note 1) Cleaning liquids should be handled in a well ventilated and fire-free place.
Note 2) Use plastic or rubber gloves to prevent the skin from coming into direct contact with washing liquid.
Note 3) Should a loaded element not be normalized by repeated cleaning, send it back to the manufacturer for cleaning.

5. Mounting of the Element

(Handle the elements in a clean atmosphere.)

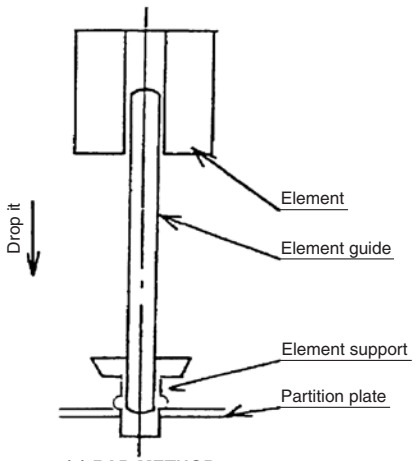
5-1. For fitting a cylindrical or pleat type micromesh element (which does not use spherical seal) or a sintered element, remove dust between the end plate and the seal completely without fail, before fitting. (Refer to Fig. 1 c)

Note) Replace any Teflon seal if used.
It should be kept in mind that the reuse of Teflon seal can result in poor sealing because of its hardness.

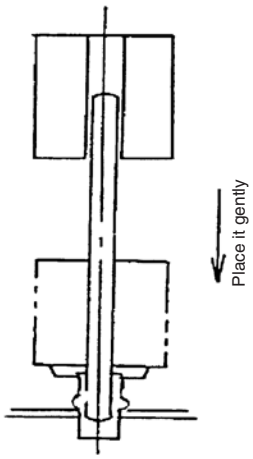
5-2. Mount the element guide if taken off.

5-3. Insert an element, joint, the other element, and element mounting bracket in this order and in such a way that they are exactly concentric.

Note) Some units may not require the joint, does not need according to circumstances.
In incorporating the element to the element guide, do not drop the element from the upper end of the element guide.



x (a) BAD METHOD



○ (b) GOOD METHOD

Note) When 2 or 3 elements are put one upon another, it is possible to firstly set elements and joints to the element guide and then mount the element guide assembly on the element support. (Refer to Fig. 1, reversely to the order of removal.)

5-4. Incorporate the element mounting bracket.

5-5. Fit the element retainer gently.

6. Mounting of the Cover

6-1. After making sure that the gasket is not damage, set it at the given place.
Damaged gasket requires replacement.

6-2. Set the cover at the given place.

6-3. Fasten the hexagon head bolts, nuts and washer.

7. Restart and Air Discharge

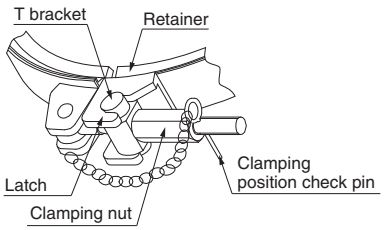
Make sure that no pressure-leak is exhibited from the seat surface. Then put the unit into regular operation in accordance with the procedure of operation described below.

7-1. Before starting the operation, make sure of the open or close position of each valve in the piping and of being perfectly sealed at the joining parts.

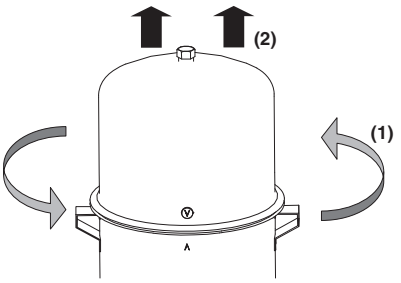
7-2. Open the air discharging valve and supply fluid. Upon air in the container is removed completely, close the air discharging valve. Then start a regular operation.

Note) Since this filter consists of many thin press-formed parts, it must be handled using clean gloves.

1. Removal of the Cover



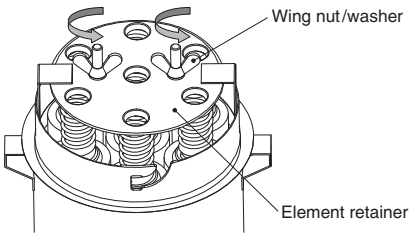
1-1. Stop operation.
1-2. Close the valve in order of INLET, then, OUTLET.
1-3. Zeroes the pressure in the filter.
1-4. Open the drain valve for inlet and outlet to discharge all fluid inside.
1-5. Pull out the V-band clamping position check pin.
1-6. Loosen V-band tightening nut and remove the latch. Then, remove the cover and O-ring for checking,
1-7. Rotate the cover counterclockwise and lift it to remove the cover. [In order of (1)(2) in drawing on the right]
1-8. If O-ring is swollen, replace it with a new O-ring.



O-ring for replacement Part no.: AL-25S (NBR)
Part no.: AL-22S (FKM)

⚠Warning
Remove V-band/cover after confirming the pressure in the filter is zero.

2. Removal of the Element



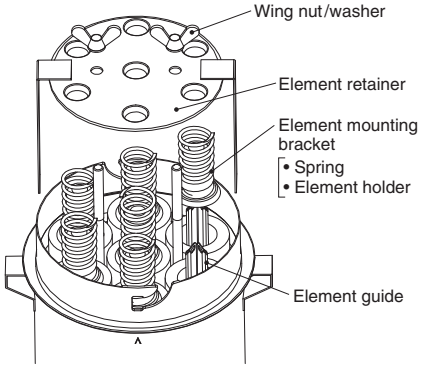
2-1. Remove the wing nut and the washer.

⚠Caution
Please remove two wing nuts at the same time. The element retainer might not be able to incline from one side when it is outside and to remove well.

2-2. Remove the element retainer.
2-3. Remove the element mounting bracket (a part integrating the element holder and the spring).
2-4. Take out parts in order of the element, then, joint (element guide).
∗ It is not a must to take out the element guide.
Element, and joint can be taken out together by taking out the element guide.
Note) Joint may not be necessary depending on filter and element type.

⚠Caution
Attention should be taken to avoid burning for high temperature.

3. Mounting of the Element



3-1. To recycle the micro mesh element and sintered element, eliminate any dust between the end plate and the seal completely.
3-2. Mount the element guide if it is removed.
3-3. Insert parts in order of the element, joint , element, then, element mounting bracket so that they are concentric.
Note) Joint may not be necessary.

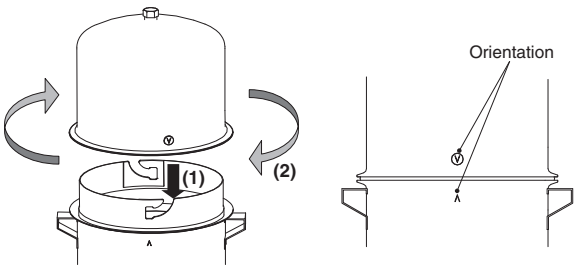
⚠Caution
When element is mounted, do not drop the parts from the upper end of the element guide for mounting.

3-4. When 2 to 3 elements are placed on top of the other, a set in which the element and joint are prepared can be mounted to the element support.
3-5. Assemble the element mounting bracket.
3-6. Mount the element retainer carefully.

4. Mounting of O-ring and Cover

4-1. Set O-ring to the case.

4-2. Rotate the cover clockwise while pushing till the end so that the orientation mark of the case and the cover match. [In order of (1) and (2) on drawing on the right]



5. Mounting and Tightening of V-band

5-1. Mount V-band to the collar of the cover and the case correctly. [Refer Fig. (a), (b)]

⚠Warning

The cover may be fallen off due to incorrect mounting. Mount the cover properly.

5-2. Hit the circumference of V-band lightly with plastic hammer for secure mounting.

5-3. Mount T-bracket to the latch correctly. [See Fig. (c)]

5-4. Tighten the clamping nut to specified position (position from where clamping position check pin can be inserted), and insert the clamping position check pin. [See Fig. (c)]

5-5. When clamping nut can not be tightened to specified position (position where clamping position check pin can be inserted), replace V band and O-ring to new ones. (See table 1).

⚠Warning

Replace with a new V-band when deformation or worn out by screw is found on the band

[V-band for replacement] Part no: CY-27S

⚠Caution

Clean V-band and the contact surface between the cover and the case before mounting. Dirty contact surface lead to cause leakage.

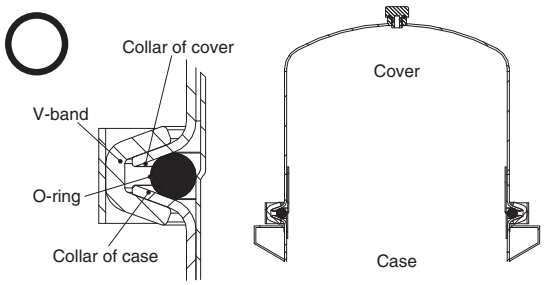


Fig. (a) Correct mounting of V-band

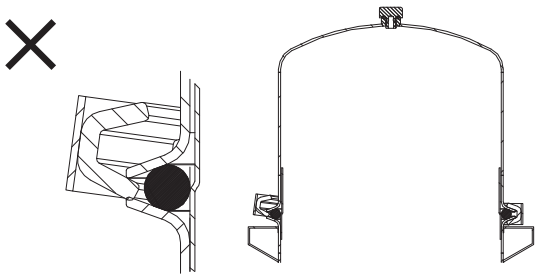


Fig. (b) Incorrect mounting of V-band

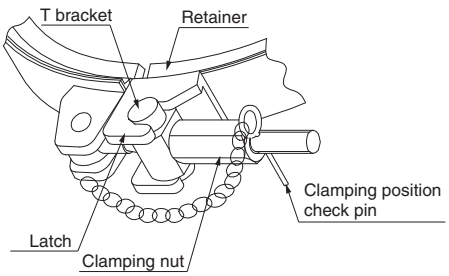


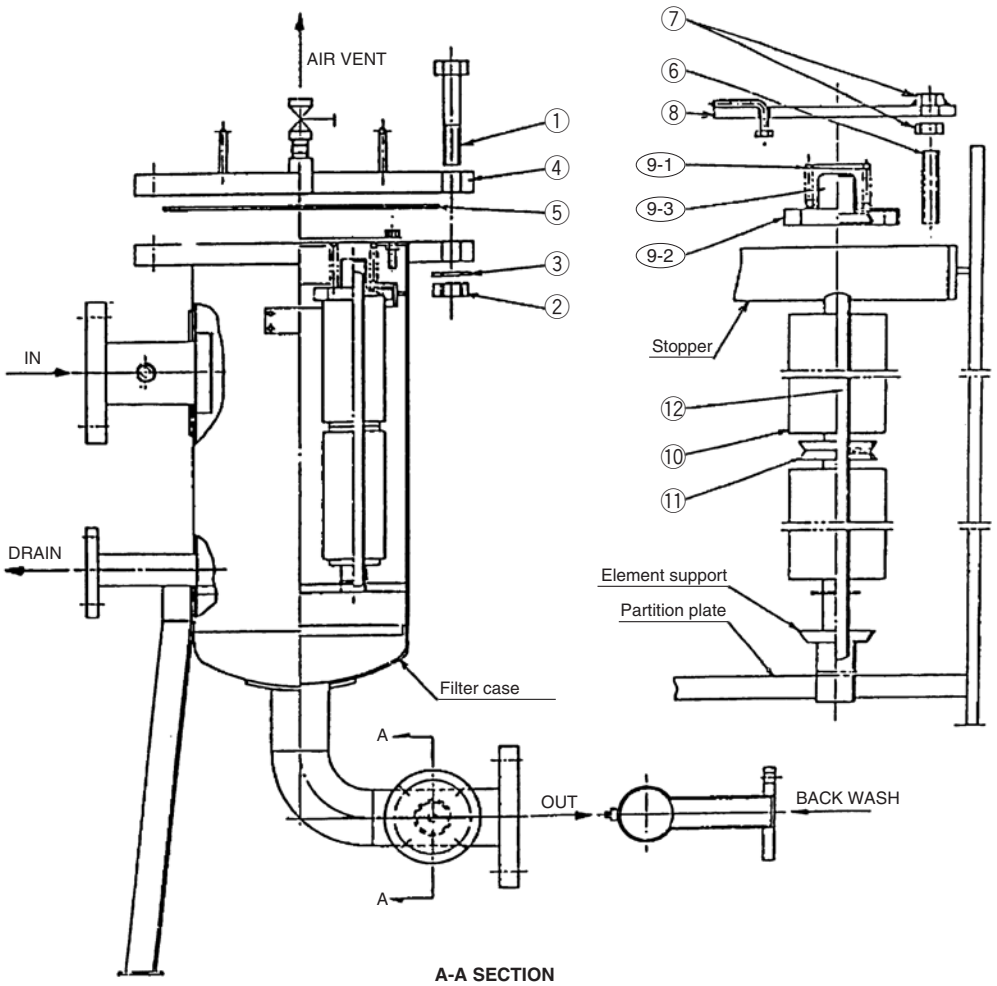
Fig. (c) V-band tightening

6. Restart and Air Discharge

6-1. When restart the operation after the replacement of the element, follow the procedure of section 4 “Operation”.

6-2. When restart the operation, open the upper air relief port to **discharge air**.

1. Instruction Drawing for Disassembly & Reassembly of Filter



①Hexagon head bolt
②Hexagon nut
③Washer
④Cover
⑤Gasket
⑥Adjustment bolt
⑦Lock nut
⑧Element retainer
⑨Element mounting bracket
⑨-1Spring
⑨-2Vibration stop
⑨-3Element holder
⑩Element
⑪Joint
⑫Element guide

2. Overhaul

2-1. If the differential pressure rises due to clogging and reaches the threshold for element replacement (0.1 MPa), replace the element with the new one.

2-2. The removal and mounting of the element at the time of overhauling shall be made in the following sequence.

3. Removal of the Cover

3-1. Close the valves at inlet and outlet.

3-2. Open the air vent and drain valves and make the pressure inside the filter zero (0) in order to discharge all fluid inside.

3-3. Loosen the bolt and nut of ① and ② for tightening the filter cover and filter case meanly little by little. When the nut can be turned with hand, remove them one after another in order from the end.

3-4. Remove the cover and gasket.

4. Removal of the Element

4-1. Remove the element retainer.
Set the bolt and nut of ⑥ and ⑦ in the plate as it is.
Please note that it could cause deformation due to the incomplete sealing or overtightened element if it is mounted without any adjustment. For details, refer to section 7, “Adjustment Method for Mounting Other Elements”.

4-2. Take them out in the element mounting bracket, element, joint, element guide in order.
The element guide is not required to be taken out forcibly.
After the element holder is taken out, if the element guide is taken out in such a manner as shown in Fig. 1, the element and joint can be taken out together.

Note) In some cases, no joint is required.

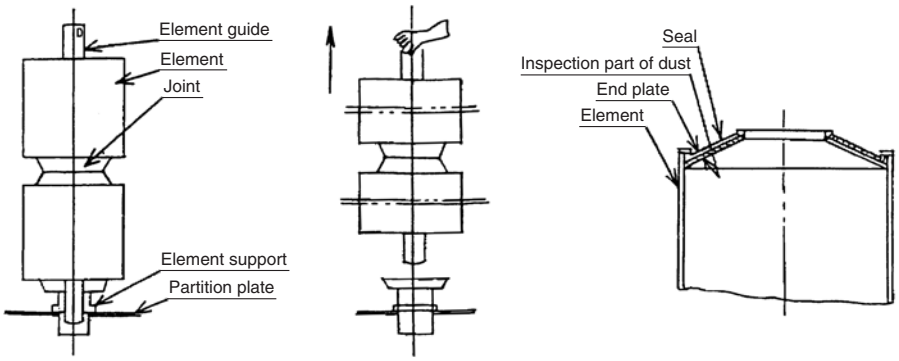


Fig. 1

5. Mounting of the Element

(Be sure to handle at clean surrounding condition)

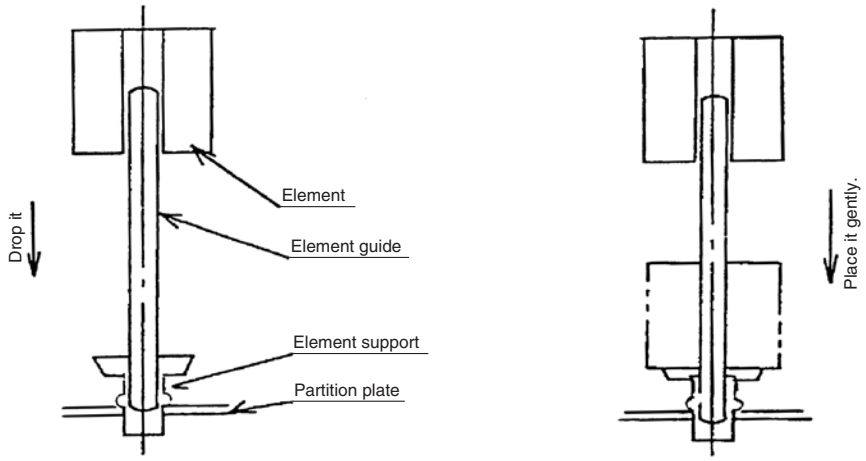
5-1. In the case of micro mesh element (cylindrical or pleat type (spherical seal is not used)) and sintered element, be sure to remove dust completely between end plate and seal completely. (Refer to Fig. 1 (c))

Note) When Teflon seal is used, be sure to exchange it for new one.
As it is hard, as the seal becomes imperfect, attention must be paid to it.

5-2. Mount the element guide if taken off.

5-3. Insert them in the order of element, joint, element, element mounting bracket in order in such a way that they are concentric.
In some cases, no joint is required.

Note) When the element is mounted, be sure to avoid building in it by dropping from the upper end of the element guide.

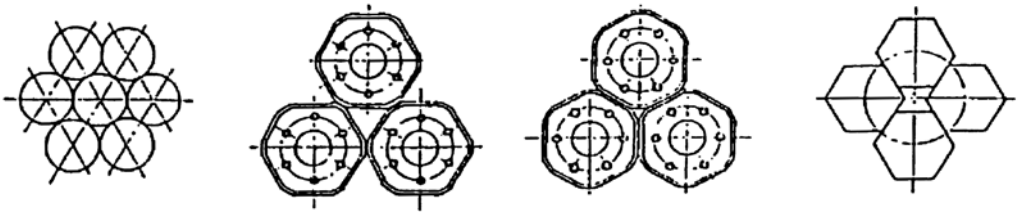


x (a) BAD METHOD ○ (a) GOOD METHOD

Fig. 2

∗ Incidentally, when the number of arrangements is many and the number of piling of elements is 3-4 stages, the one in which element and joint are set in the element guide can be set at element support. [Refer to Fig. 1 for the details: Procedure opposite to that for removal]

5-4. The element mounting bracket must be built in it by such a manner as shown in (b) and (c) of (Fig. 3).



x Bad example ○ Good example

(a) Arannging condition of element. (b) Arrangement of more 7 pcs. (c) 4-pcs. arrangement

Fig. 3

Note) Fig. 3 (b) and (c) show the arranging condition of the element mounting bracket (spring, vibration stop, element holder) shown in Fig. 4

5-5. Fit the element retainer gently.

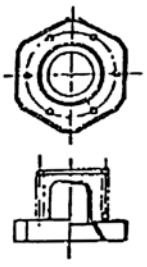
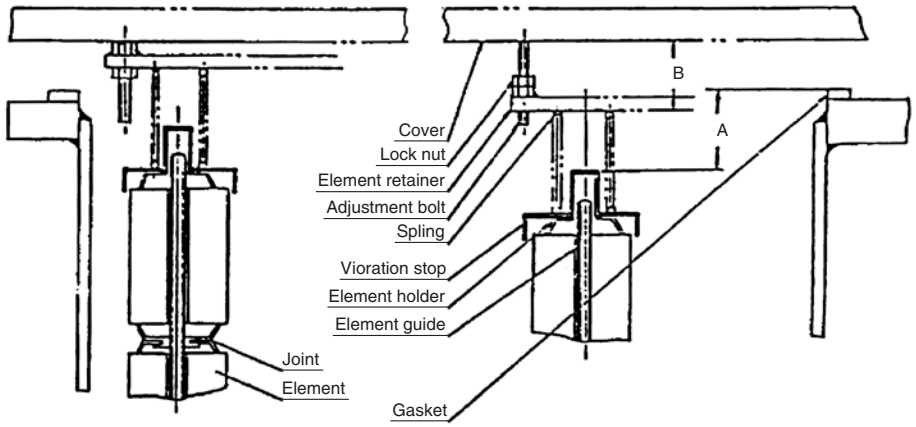


Fig. 4

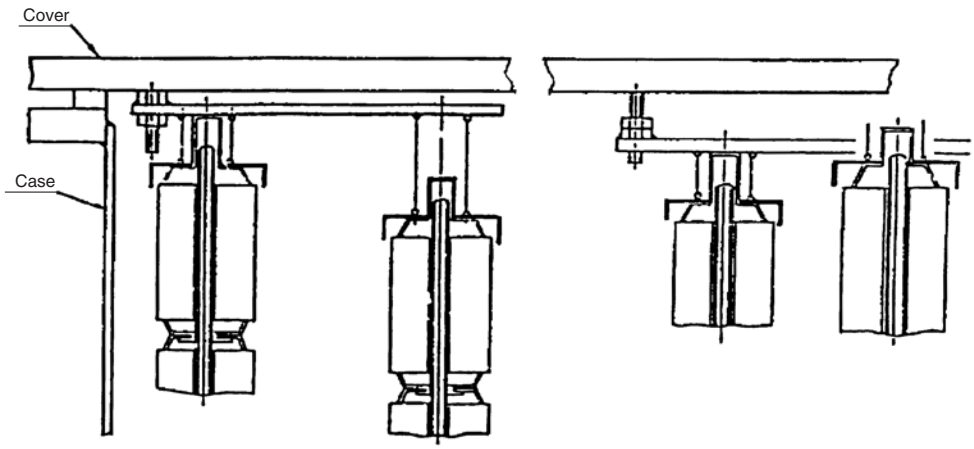
6. Mounting of the Cover

6-1. After confirmation that there is no damage in the gasket, set it at specified position and set the bolts of ① ② and ③, washer, nut and tighten it uniformly diagonally. When the gasket is damaged, exchange it for new one.

6-2. After confirmation that there is no leakage of pressure from the seat surface, start the normal operation.
(Method of operation, please refer to the instruction manual.)



(a) Mounting condition employing joint (b) Mounting condition not employing joint



(c) Good condition (d) Bad condition (e) Good condition (f) Bad condition

Fig. 5 Tightening condition

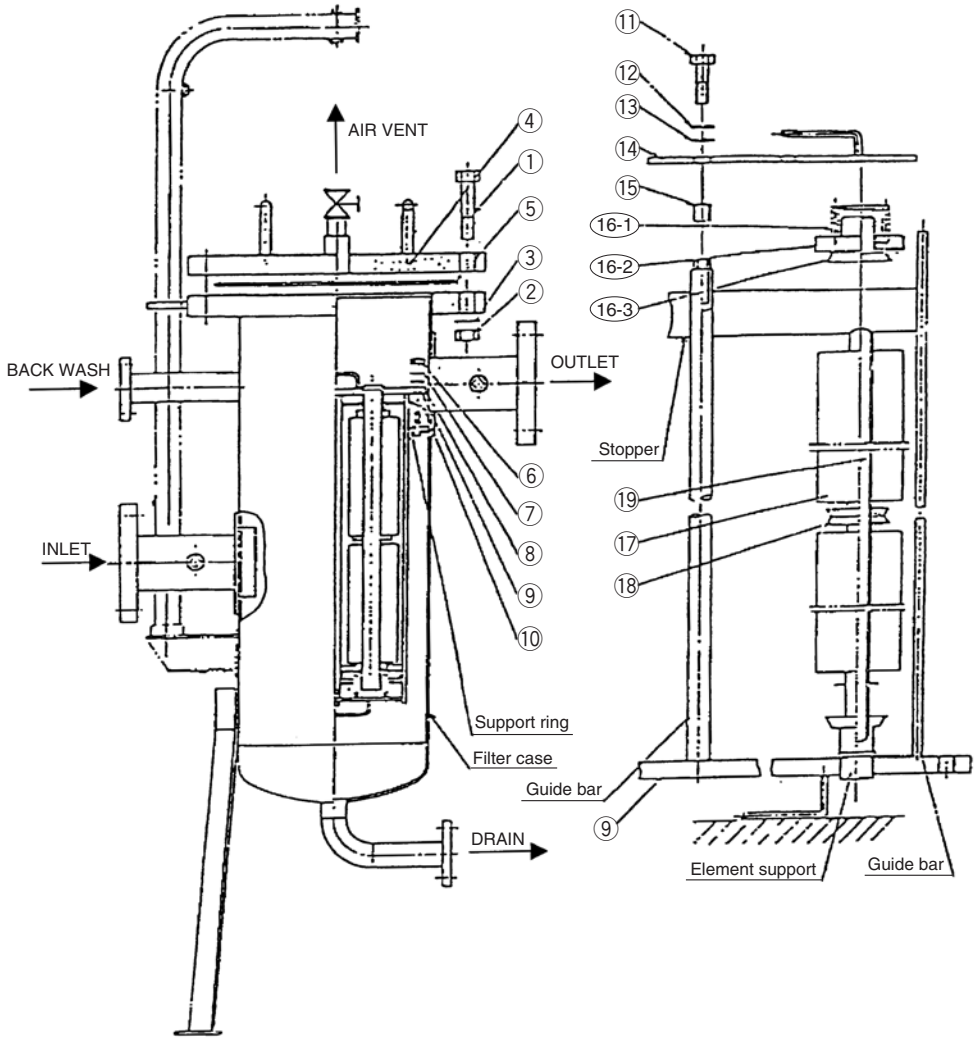
7. Adjustment Method for Mounting Other Elements

7-1. Adjust it in such a way that the element retainer and element are at close contact condition when the filter cover is installed, employing the adjustment bolt and lock nut shown in (Fig. 5) [Refer to (c) and (e) of Fig. 5] when the element retainer is installed.

7-2. Adjustment must be made in the following manner.
Make measurement on dimensions A as shown in Fig. 5 (b) and adjust it in such a way that Dimensions A are equal to those B, resulting in being at such a condition as shown in (e) of Fig. 5.
As can be seen in Fig. 5 (a) and (b), the lock nut should be set to the bottom in the installation employing the joint. In the installation not employing the joint, set it to the top.

1. Instruction Drawing for Disassembly & Reassembly of Filter

Element assembly exploded view



①Hexagon head bolt
②Hexagon nut
③Washer
④Cover
⑤Gasket
⑥Hexagon nut
⑦Spring washer
⑧Washer
⑨Partition-plate
⑩Gasket
⑪Hexagon head bolt
⑫Spring washer
⑬Washer
⑭Element retainer
⑮Collar
⑯Element mounting bracket
⑯-1Spring
⑯-2Vibration stop
⑯-3Element holder
⑰Element
⑱Joint
⑲Element guide

2. Overhaul

2-1. If the differential pressure rises due to clogging and reaches the threshold for element replacement (0.1 MPa), replace the element with the new one.

2-2. The removal and mounting of the element at the time of overhauling shall be made in the following sequence.

3. Removal of the Cover

3-1. Close the valves at inlet and outlet.

3-2. Open the air vent and drain valves and make the pressure inside the filter zero (0) in order to discharge all fluid inside.

3-3. Loosen the bolt ①, nut ②, the filter cover and filter case uniformly little by little.
When the nut can be turned with hand, remove them one after in order the end.

3-4. Remove the cover and gasket.

4. Method for Removal of Element Assembly

4-1. Loosen the nut ⑥ little by little uniformly.
Remove the nut, spring washer and washer.

4-2. Lift the element assembly from the container by means of a dabit or any other lifting device out of the container.
Then, lift it vertically so that the guide bar protecting the element does not touch the support ring too much.

4-3. Turn the element assembly taken out of the container upside down so that the partition plate is located downwards as illustrated in the disassembly drawing.

5. Removal of the Element

5-1. Loosen the hexagon head bolt of ⑪ uniformly little by little.
Remove the spring washer and washer.

5-2. Remove the element retainer.

5-3. Take out the members in the order of collar, elememt mounting bracket, element, joint and element guide.
The elemet guide is not needed to be taken out forcibly. If the element guide is taken out in the procedure after taking out of the element holder (Fig. 1 (b)), both element and joint can be taken out at the same time.

Note) Joint is not needed in some cases.

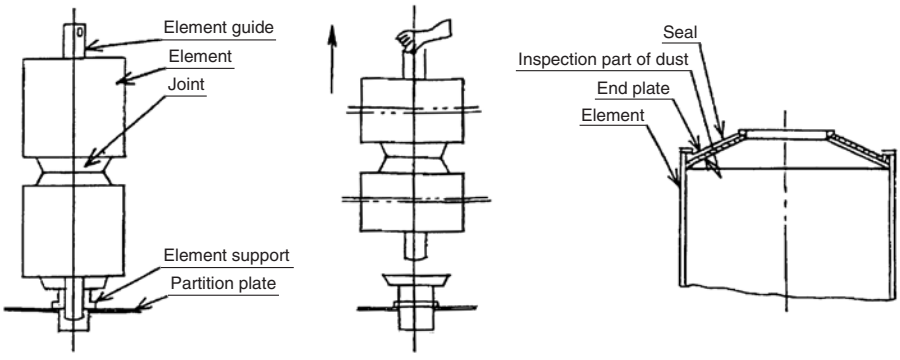


Fig. 1

6. Mounting of the Element

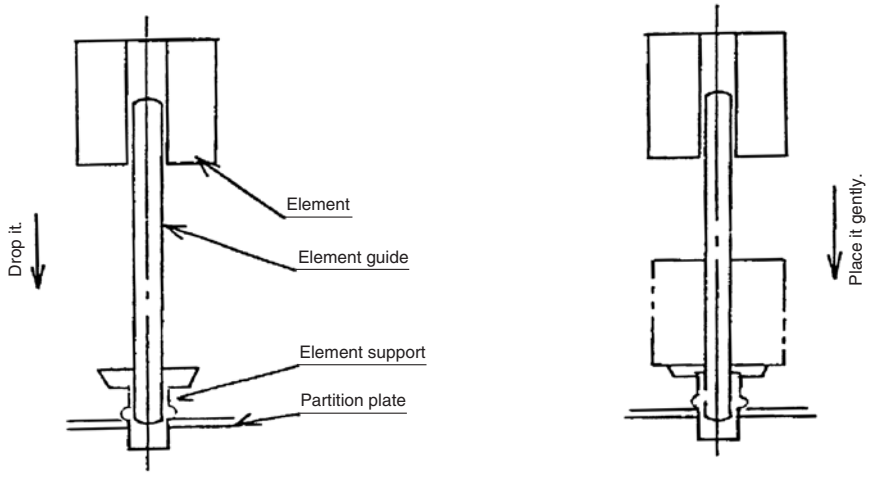
(Be sure to handle it in the clean environmental condition.)

6-1. In the case of micromesh element (cylindrical and pleat type (employing no seal)) and sintered element, be sure to remove the dust located between end plate and seal without fail. (Refer to Fig. 1 (c) for the details)

6-2. When the element guide is removed, fit it.

6-3. Insert the members correctly in the order of element, joint, element and element fitting hardware in such a way that concentricity may be obtained.

Note) No joint is needed sometimes.
When the element is installed, do not drop it from the upper end of the element guide and assemble it. (Fig. 2)

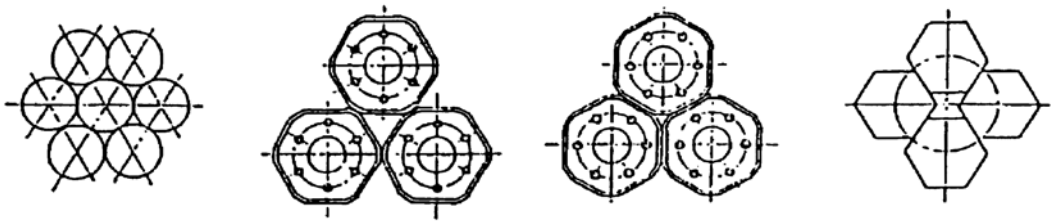


x (a) BAD METHOD ○ (b) GOOD METHOD

Fig. 2

Note) When the number of arranged ones is many and the number of stacking of elements is 3-4 stages, the element guide to which the element and joint are set can be set to the element support. (Refer to Fig. 1 for the details: Opposite procedure to that for taking out)

6-4. The fitting hardware for element shall be assembled in such a method as shown by (b) and (c) of (Fig. 3).



x : Bad example ○ : Good example

(a) Arranging condition of element (b) Arrangement of more 7 pcs. (c) 4 pcs. arrangement

Fig. 3

Note) Fig. 3 (b) and (c) show the arranging condition of the element mounting bracket in Fig. 4 (spring, vibration stop, element holder).

6-5. The collar should be set to the bottom of the element retainer only when the honeycomb element is used. For other elements, it should be set to the top of the retainer.

Note 1) The collar is not used for single element assembly.

Note 2) The collar for honeycomb element cannot be used for other elements.

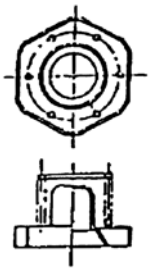
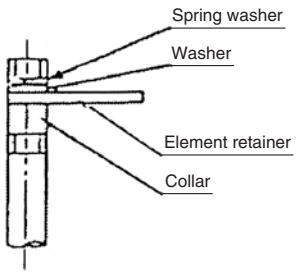
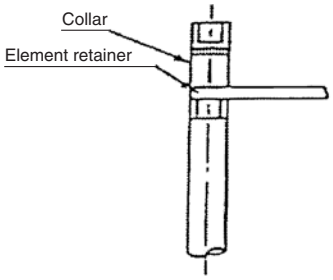


Fig. 4



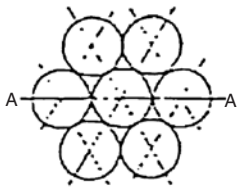
(a) Honeycomb element



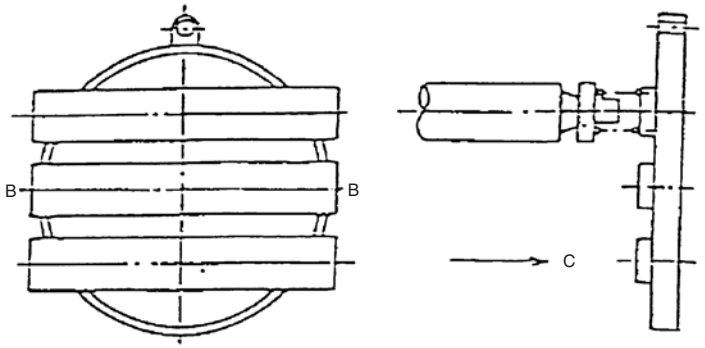
(b) Other elements
(Sintered, paper, micromesh)

Fig. 5

6-6. The element retainer shall be assembled in such a way that the symbol A-A in (a) of Fig. 6 is overlapped with symbol B-B of element retainer shown in (b) of Fig. 6 in parallel.



(A) Arranging condition of element



View of "c"

(b) Element retainer

Fig. 6

Note 1) When the element retainer is installed, place it correctly in such a way that the element mounting bracket is not moved.

Note 2) Fit the washer of ⑬ ⑫ and spring washer and tighten the bolt of ⑪ uniformly little by little. Then, tighten it to such an extent that the guide bar comes in close contact with bolt nut, spring washer, washer, element retainer.

7. Mounting of the Element Assembly

7-1. Turn the element assembly set at 4-2-4 upside down in such a way that the partition plate comes upside.

7-2. Before the element assembly is installed, be sure to install the gasket at specified position correctly.

7-3. Employing the dabit and other lifting devices, assemble it in the same way that the element assembly is taken out.

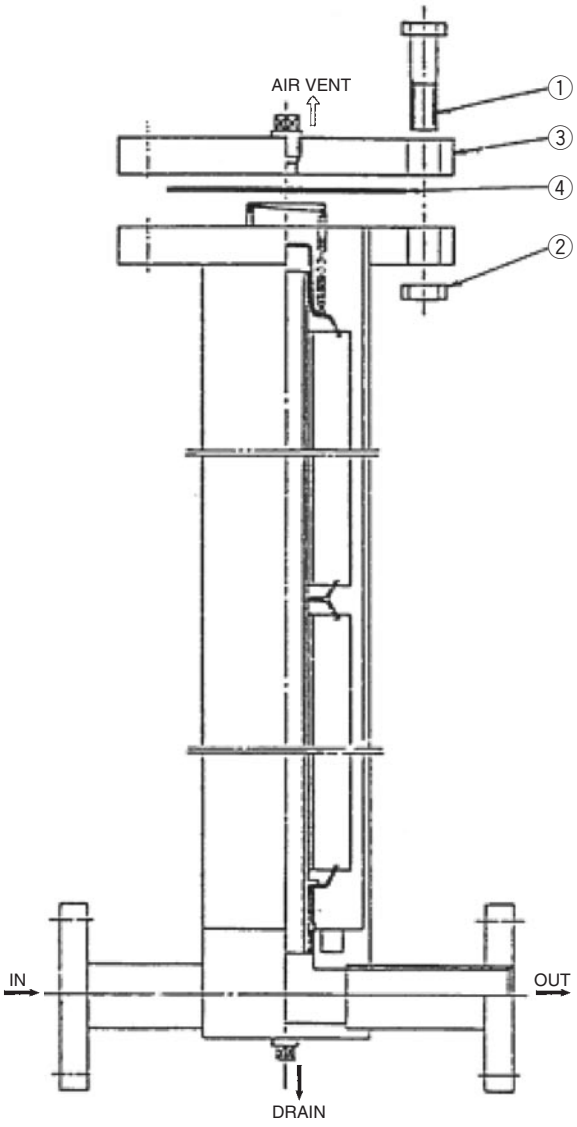
7-4. Install the washer of ⑧ and ⑦ and spring washer and tighten it uniformly with nut of ⑥.

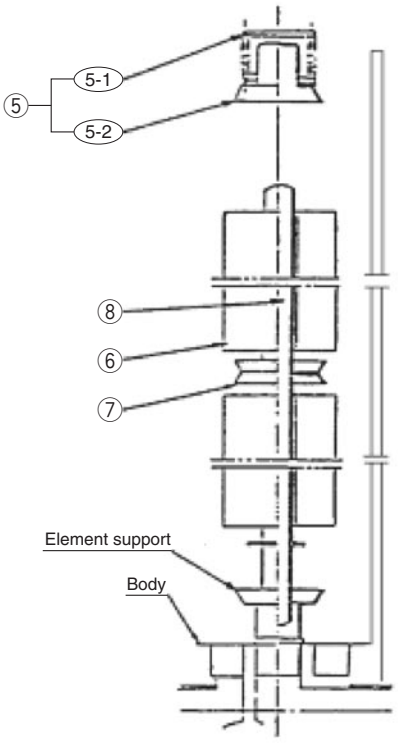
8. Mounting of the Cover

8-1. Ensure that the gasket is not damaged, and set it to the specified position. Also set the bolts ①②③, washer and nut, and tighten it evenly from the opposing corners.
If the gasket is damaged, replace it with the new one.

8-2. After ensuring that there is no pressure leakage, start the actual operation.

1. Instruction Drawing for Disassembly & Reassembly of Filter





①Hexagon head Bolt	⑤Element mounting bracket	⑦Joint
②Hexagon Nut	(5-1)Spring	⑧Element guide
③Cover	(5-2)Element holder	
④Gasket	⑥Element	

2. Overhaul

2-1. If the differential pressure rises due to clogging and reaches the threshold for element replacement (0.1 MPa), replace the element with the new one.

2-2. Take out the element at the time of overhauling and carry out the mounting operation in the following sequence.

3. Removal of the Cover

3-1. Close the valves at inlet and outlet.

3-2. Open the air vent valve and drain valve in order make the pressure inside the filter zero (0) and discharge all fluid from the inside.

3-3. Loosen the bolt and nut ① and ② for tightening of the filter cover and filter case little by little meanly at first. When the nut can be turned with hand, remove them one after another in order from the end.

3-4. Remove the cover and gasket.

4. Removal of the Element

4-1. Take out the element mounting bracket, element, joint, element guide in order.

4-2. It is not required to take out the element forcibly.

4-3. After taking out the element holder, the element and joint can be taken out together if the element guide is taken out in such a manner as mentioned in (Fig.1).

Note) In some cases, no joint is required.

5. Mounting of the Element

(Handle it at clean surrounding condition)

5-1. As for the elements except the honeycomb and paper elements, check if there is no dust between the end plate and seal when taking them out. If there is any dust, clean it off. (See Fig. 1 (c).)

5-2. Mount it when the element guide is removed:

5-3. Insert them in the order of element, joint, element, element mounting bracket in such a way that they are concentric.

Note) No joint is needed in some cases.
When the element is installed, avoid building in it by dropping from the upper end of the element guide when the element is installed.

6. Mounting of the Cover

6-1. After confirmation that there is no damage in the gasket, set it at specified position and set the bolt and nut ① and ② and tighten it uniformly diagonally.
When the gasket is damaged, exchange it for new one.

6-2. After confirmation that there is no leakage of pressure from the seat surface, start operation.

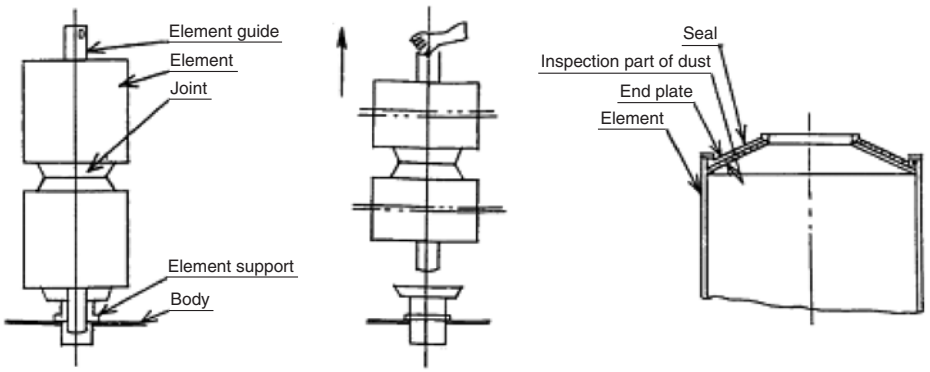


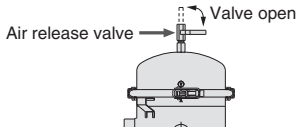
Fig.1

One element included type

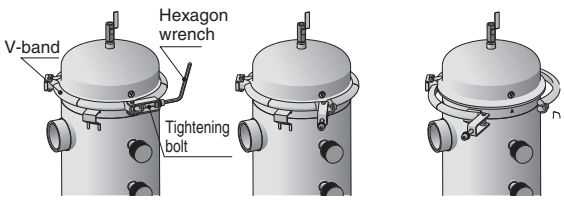
1. Removal of the Element

1-1. After stopping the operation, close the valve in the order of inlet and outlet.

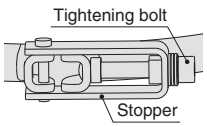
1-2. Open the air release valve to let the internal pressure of a filter be zero, and open the liquid discharging valve to let out the internal fluid completely.



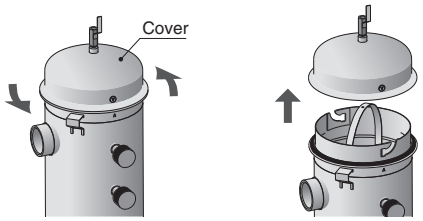
1-3. Loosen the tightening bolts of the V-band and remove the stopper.
(The tightening bolts can be loosened with a hexagon wrench [width across flats 6 mm].)



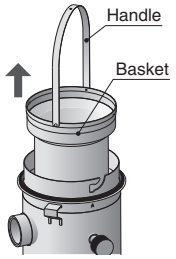
∗ Check the O-ring and the V-band, and if there is any abnormality, replace it with a new one.
(Refer to “Replacement Parts” on page 268.)



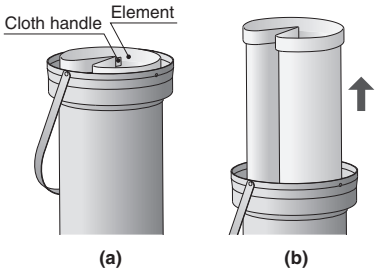
1-4. Remove the cover upward by turning it counterclockwise.



1-5. Using the handle, remove the basket vertically.
∗ Inspect the O-ring attached to the holder assembly in the case, and replace it with a new one if it is expanded or there is any abnormality.
(Refer to “Replacement Parts” on page 268.)

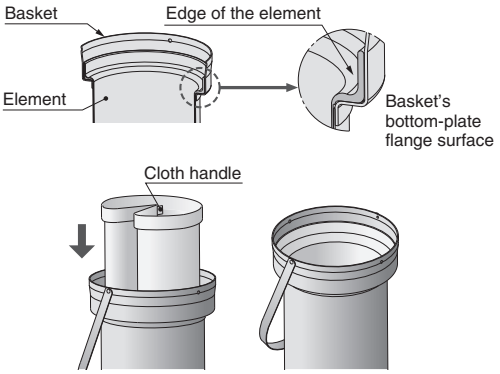


1-6. A handle made of cloth is attached to the element so that elements can be pulled out of the basket by fingers or using sticks, pulling them to the center. (Element for replacement: Refer to “Part number of element for replacement” on page 268.)



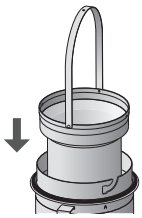
2. Mounting of the Element

2-1. Pull a new element by the cloth handle toward the center, and put it inside the basket, folding the edge of an element. Further, push the edge of an element to the basket’s bottom-plate flange surface thoroughly.



∗ Set the handle avoiding attaching it to the notch (guide slit) of the case and INLET.

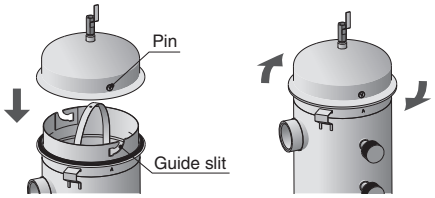
2-2. Grasp the handle and put the basket in the case.



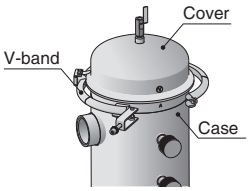
2-3. Set the O-ring to the case.

* Replace the O-ring with a new one if it is expanded or there is any abnormality. (Refer to “Replacement Parts” on page 268.)

2-4. Adjust the pins (two locations) to the guide slit of the case inside the cover, and push them thoroughly and turning clockwise.

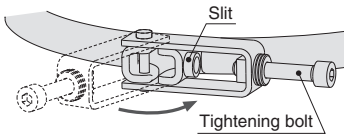


2-5. Install the V-band in the edge of the cover and case correctly.

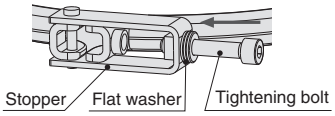


* Clean the contact surface of the V-band, cover and case prior to the attachment.

2-6. Align the tightening bolts with the slit and fasten properly.

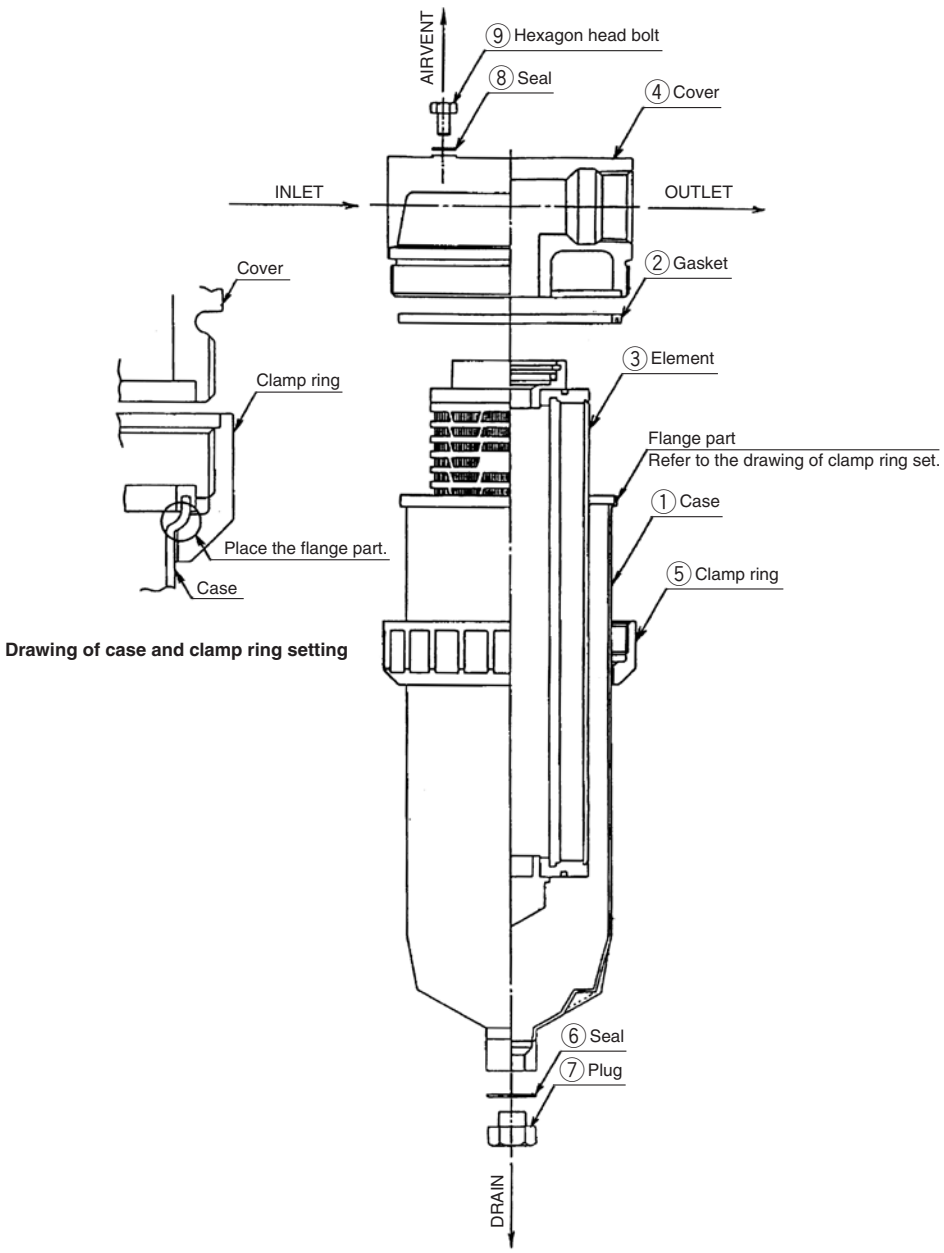


2-7. Tighten the tightening bolts until they cohere to the flat washers.



* When restarting this product after replacing the elements, be sure to release the air by opening the release valve on the top.

1. Instruction Drawing for Disassembly & Reassembly of Filter



Drawing of case and clamp ring setting

1. Removal of the Element

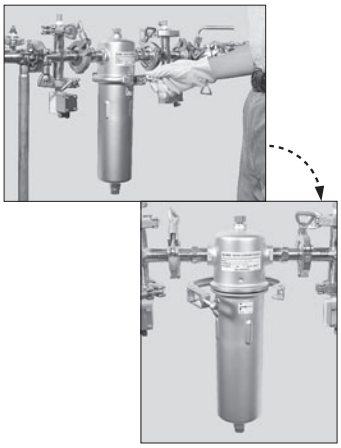
1-1. Stop the fluid sent to the filter. (If a valve is installed before or after the filter, close the valve.)
1-2. Loosen the air vent (hexagon head bolt ⑨) and completely discharge the pressure in the filter.
1-3. Remove drain (plug ⑦) and discharge the fluid from the filter.
1-4. A large force is required to loosen clamp ring ⑤. Use a commercially available belt wrench etc. to loosen clamp ring ⑤ so that the tool is not removed, so as to make it turnable by hand. Remove case ① by hand while supporting it, and remove the element together with case ①.
1-5. Pull out element ③ from cover ④. Since the PTFE seal is used, a certain amount of force may be necessary to pull out the element. If there is not enough space under case ①, lower case ① by about 100mm, and remove the element together with case ①.
1-6. Dispose the removed element.
1-7. Clean the inside of case, ①, gasket ②, seal ⑥ and plug ⑦ using clean operation fluid or solvent.

2. Mounting of new Element

2-1. Check that the sealing surface of case ① is not scarred.
2-2. Check whether or not the gasket and seal are damaged or deformed.
Replace any abnormal one with a new one.
2-3. Since the PTFE seal is used for element ③, a certain amount of force is needed to set the element. Set the element in the following procedure.
Handle element ③ carefully to keep it clean, for example, open the element package only when the element is mounted.
a. Fit the grooved part of gasket ② into the flange part of case ①.
b. Place element ③ in case ①. Element ③ must be positioned at the center of case ①.
c. Set clamp ring ⑤ to case ①. The tapered part of clamp ring ⑤ must be facing downward.
d. Set seal part of the element ③ to the cover ④ while the flange part of case ① is being placed on clamp ring ⑤.
e. Since PTFE is used for the material of gasket ②, a large force is required to tighten clamp ring ⑤. After screwing clamp ring ⑤ into cover ④ by hand, use a commercially available belt wrench etc. to tighten the clamp ring so that the tool is not removed and no leakage occurs. (Reference tightening rotation angle: approx. 1/4 to 1/2 turn after tightening by hand)
* This makes the element ③ be pushed up as a whole, and the element seal will be installed to the case ① sealing. The element ③ can also be pushed hard by hand to be surely installed before setting the case ①.
2-4. Set seal ⑥ on plug ⑦ of drain and tighten hexagon head bolt ⑨ of the air vent so that no leakage occurs.
2-5. Start the operation.

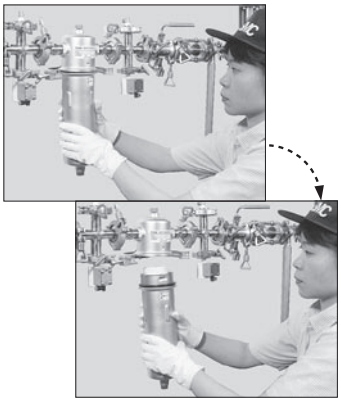
1. Removal of the Element

1-1. Stop liquid flowing into the filter. (If there are valves before and after the filter, close these valves.)
1-2. Release pressure inside the filter completely by loosening the air vent plug.
1-3. Discharge fluid inside the filter by removing the drain plug.
1-4. Remove the stopper from the retainer by loosening the wing bolt on the V-band.



1-5. To extract the element from the case, rotate the case counterclockwise about 20 degrees until it stops, then lower it by about 40 mm and remove it from the cover.

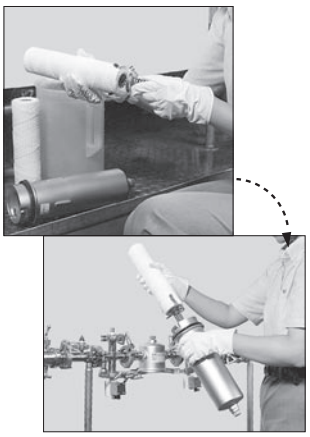
Note) When two L250 elements are used, do not discard the intermediate holder and lower element holder attached under the element, since they are reused.



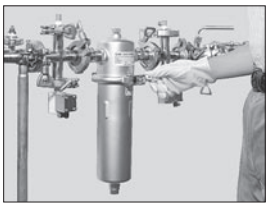
1-6. Clean the inside of the case, gaskets, seals, holders, plugs, etc., with a pure fluid or solvent.

2. Installing the Element

2-1. Make sure that O-rings are not damaged or deformed. If needed, replace with new ones.
2-2. Set the lower element holder under the element, and place them in the case.
[When using two L250 elements]
Insert the intermediate holder into the lower part of the second element (upper level), and then place them into the case after inserting one side of the intermediate holder into the upper part of the element that is attached to the lower holder.



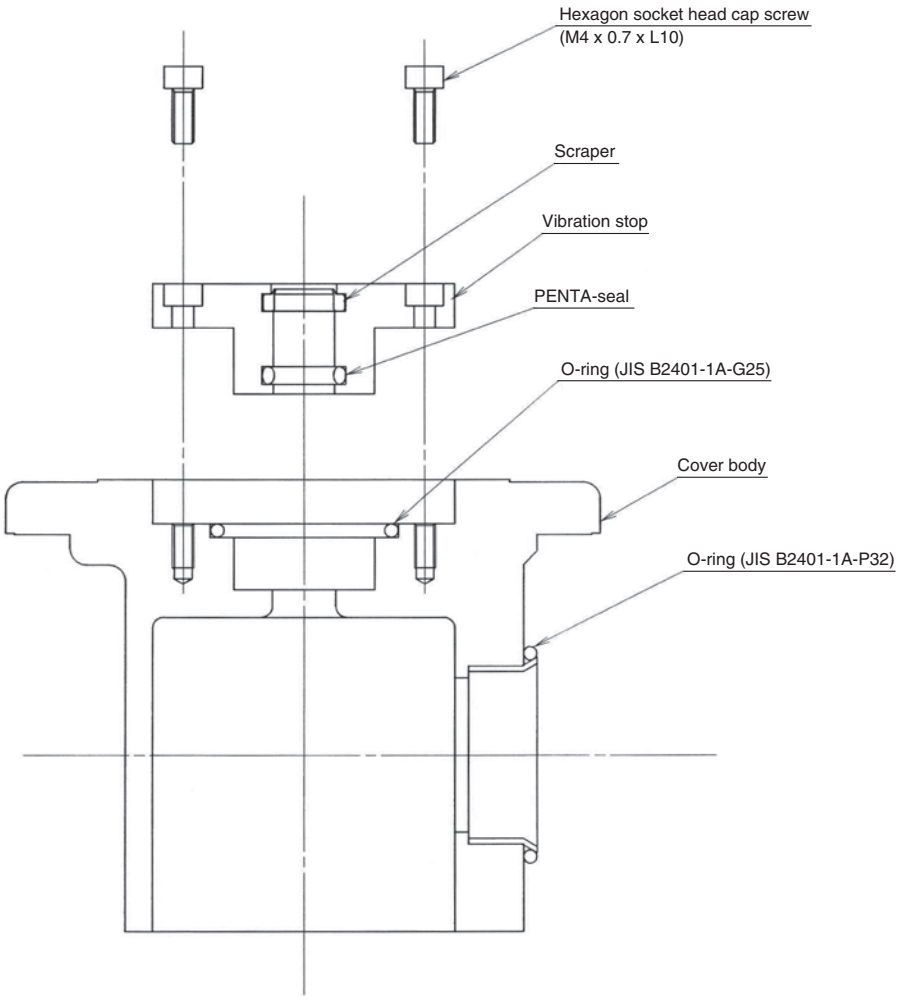
2-3. Align the indentations of the case with the projections of the cover, lift the case upward by about 10 mm and rotate it clockwise about 20 degrees.
2-4. Mount it in such a way that the entire flanged perimeter of the cover and case are held by the retainer of the V-band.



2-5. Set the stopper on the retainer while holding down the V-band outside perimeter, and then tighten the wing bolt to the prescribed position.
2-6. Tighten the drain plug.
2-7. When air release is completed, tighten the air vent plug.

1. Instruction Drawing for Disassembly & Reassembly of Cover Assembly

Series FN1



2. Disassembly

Series FN1

2-1. Remove the cover [Two M4 hexagon socket head cap screws See Figure 1]
2-2. Remove the cylinder flange fixing screws (four M8 hexagon socket head cap screws), and remove the entire body of the cylinder. [Slide the entire body of the cylinder in the horizontal direction, and remove the cylinder from the joint. See Fig. 2]
2-3. Remove the four struts. [See Fig. 2]
2-4. Pull the cover assembly upward. [Pull out the entire body of the element. See Fig. 3]
2-5. Remove the mounting bracket inside the cover assembly. [Remove the set screw, and turn the mounting bracket. See Fig. 4]
For FN11□2□-10, two screws are mounted in the middle of the guide assembly [M3 See Fig. 4]
2-6. The element can now be pulled out of the cover.
Do not disassemble the element any further.

Note) Reassembly should be performed by reversing the disassembly procedure.

Refer to the schematic drawings for the assembly and disassembly procedures for the cover, seals etc.

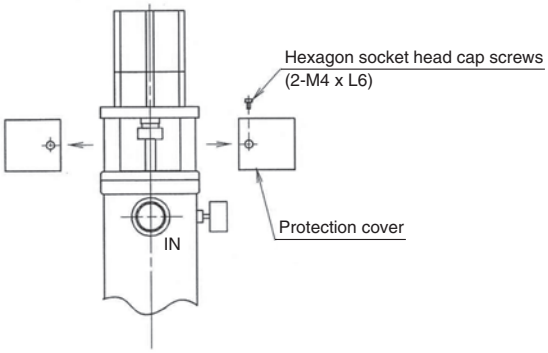


Fig. 1

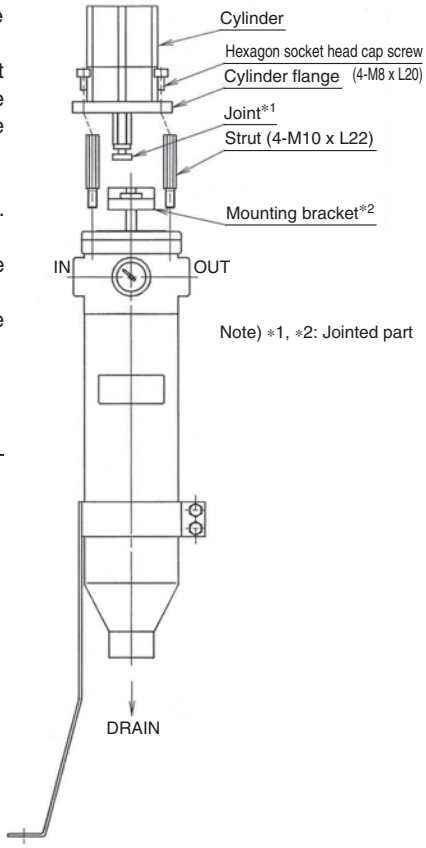
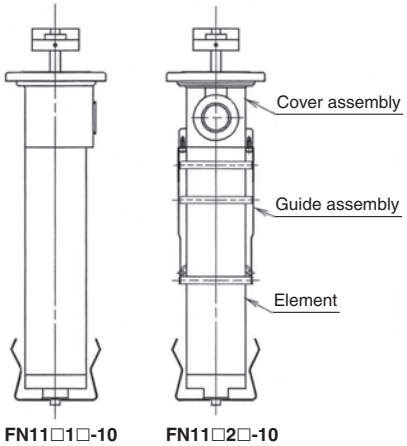
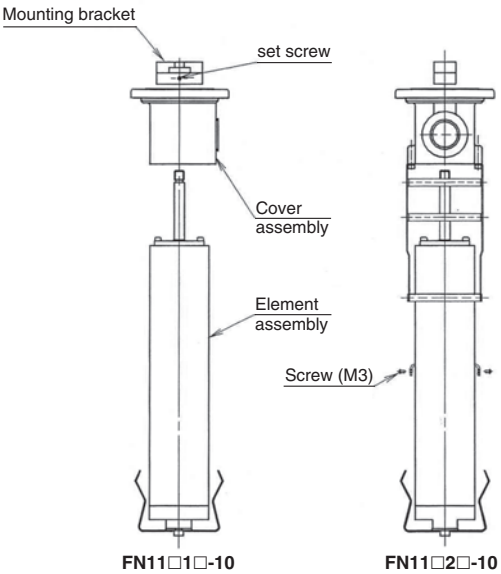


Fig. 2



FN11□1□-10 **FN11□2□-10**

Fig. 3



FN11□1□-10 **FN11□2□-10**

Fig. 4

Series FN4

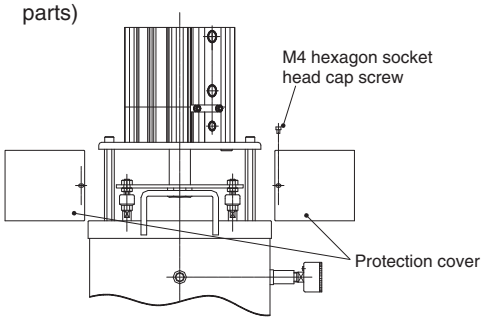
Basically, this filter does not need any maintenance, but if an element needs cleaning (differential pressure cannot be returned as dust adheres) or an element or a seal needs replacement, clean or replace the element by following the dismantling procedure below.

2-1. Stopping operation

a. Stop the operation of filter.
b. Close the valves at IN and OUT.
c. Open the DRAIN valve to make the internal pressure zero and to exhaust all the fluid inside.

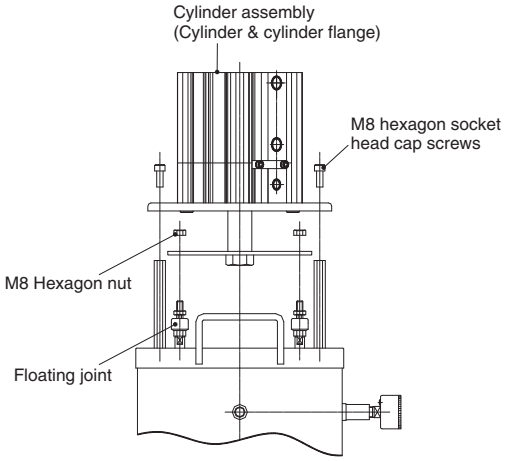
2-2. Removing protection cover

a. Remove the set screws of a protection cover, and slide the cover to the side.
(M4 hexagon socket head cap screws at two parts)



2-3. Removing cylinder

a. Remove the M8 hexagon nut at four parts.
b. Remove the cylinder flange holding bolts.
Holding bolt: M8 hexagon socket head cap screws at four parts up to the cylinder, and remove it.

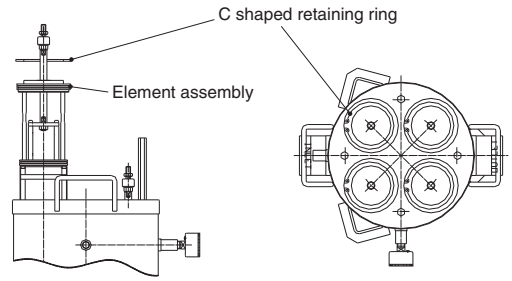


2-4. Taking out element assembly

a. Remove the C shaped retaining ring at four parts.
b. Withdraw the element assembly upward from the case.

∗ Remove the O-ring to the new one if it has any problems such as swelling.

[O-ring for replacement]
KT-FN41N (JIS B2401-1A-G90 and G80) (Material: NBR)
KT-FN41V (JIS B2401-4D-G90 and G80) (Material: FPM)

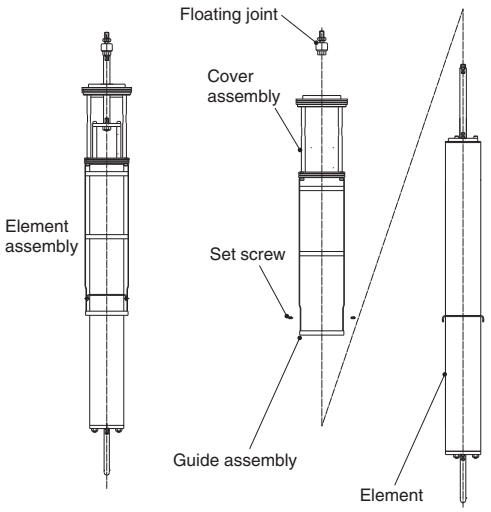


2-5. Removing element

a. Remove the floating joint.
b. Remove the intermediate screws of the guide assembly.
c. Withdraw the element from the cover assembly.

∗ Do not dismantle the element further more.

[Replacement Element]
END400-005 (5 μm Type)
END400-020 (20 μm Type)
∗ 4 elements are required per unit.



2-6. Cleaning element

a. Clean the element taken out.
[Cleaning method] Ultrasonic cleaning, solvent cleaning, blowing cleaning, etc

∗ Do not clean it with acid or a hard brush.

2-7. Assembling and restarting

a. Assemble it by fllowing the dismantling procedure backward.
b. For restarting, follow Section 3 “Operation” in the Operation Manual.