





## FGES·L Series/Safety Instruction

Be sure to read before handling.

These safety instructions are intended to prevent a hazardous situation and/or damage to human and equipment by using FGES, L series properly.

**⚠ Caution** : Operator error could result in injury or equipment damage.

**⚠ Warning** : Operator error could result in serious injury or loss of life.

Incorrect handling lead to cause fluid leakage or displacement  
Of the cover which result in unexpected accident.  
Compatibility of the equipment shall be judged by system  
designers with knowledge and experience.

### Operating condition range

#### **⚠ Warning**

- ① **Operating pressure**
  - Do not use pressure exceeding specified range.
- ② **Operating temperature**
  - Do not use where temperature exceeding specified range.
- ③ **Operating fluid**
  - Do not use this for gases.
  - Do not use with corrosive fluid.
  - Do not use fluid which swell or deteriorates packing, "O" ring or element.
- ④ **Operating environment**
  - Do not use in corrosive environment.
  - Do not use where exposed to vibration or impact.

### Caution on operation

#### **⚠ Warning**

- ① Do not loosen V band while pressure is applied.
- ② Install V band correctly to specified position. (See page 7)
- ③ Replace deteriorated or swollen "O" ring.  
Replace "O" ring in one year after starting use, or fluid leakage occurs.  
(See page 4 Table 1 : "O" ring for replacement)
- ④ When supplying pressure for starting the pump, open the relief port to discharge air.
- ⑤ Do not use V band which is deformed or thread is grounded.  
(See page 4 table 1 : V band for replacement)

Cautions shall be followed to avoid element damage and ensure the performance and maintainability.

### Design and installation

#### **⚠ Warning**

- ① **Design the system which operating conditions including operating pressure, operating temp., operating fluid, and operating environment shall be appropriate safe operation.**
- ② **Pressure drop ( $\Delta P$ )**
  - Set the flow so that the initial pressure drop is 0.02MPa or less.
- ③ **Space to install**
  - Reserve maintenance space for installation and piping.
- ④ **Flusing**
  - Flush piping line with air before the first usage.
- ⑤ **Prepare air discharge circuit upon necessity.**
- ⑥ **For high temp. type, protection against burning shall be prepared.**
- ⑦ **Prepare drain or the circuit to discharge fluid upon necessity.**
- ⑧ **Use the filter with circuit in which changing load of the pressure and the flow is small.**



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### Maintenance

#### Caution

- ① **Foreign matters shall be discharged from drain outlet.**
- ② **Replacement of the element**

When it is the time for replacement of the element, replace with a new element immediately.

  - The life of element-
  - When pressure drop reaches 0.1MPa, replace the element referring the procedure in this manual. Incorrect handling causes the damage of equipment and device, and the operation failure.  
(See Page 6,7 : Replacement of element)
- ③ **Cleaning of equipment**

When replacing the element, clean “O” ring, packing seat surface, the joint part of V band, and thread for sealing properly.
- ④ **Surface temp.**

Confirm that the surface temp. is 40°C or lower when replacing the element. For high temp. use, attention should be taken to avoid burning.

### Piping and operation

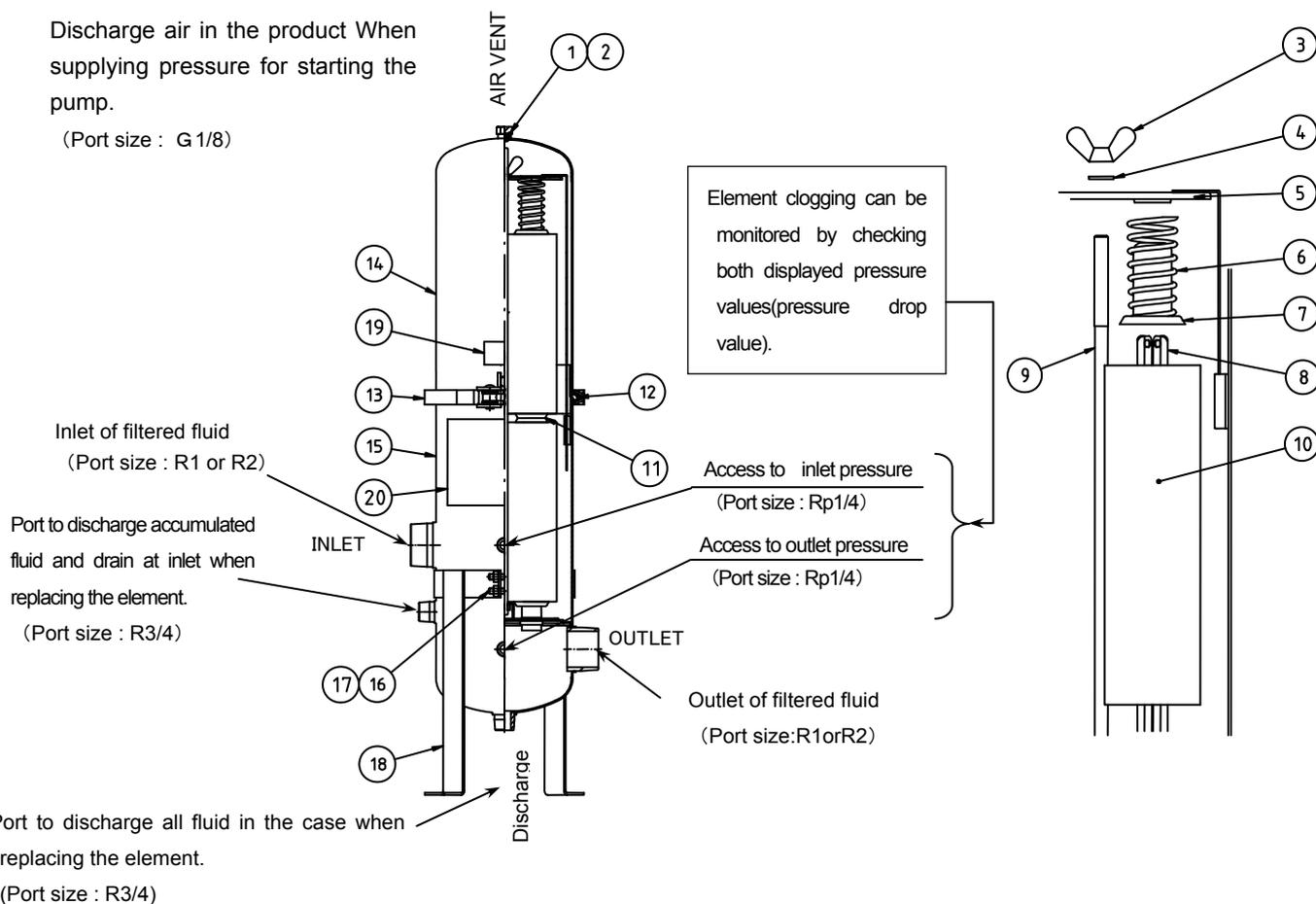
#### Caution

- ① Ensure the direction of IN/OUT for piping.
- ② Arrange piping so that air discharging work is available.
- ③ Check each port size for selecting valves and fitting suitable for operating conditions. Flush piping line with air before operation to check any problem including fluid leakage.
- ④ Fix the feet to the ground firmly using foundation bolt(M12).
- ⑤ The piping of INLET and OUTLET shall be fixed firmly to the mounting frame using the saddle so that load including vibration or weight is not applied to the piping.
- ⑥ When supplying pressure for starting the pump, ensure opening/closing of piping and connecting parts are completely sealed. If fluid leakage is present, stop operation immediately. Investigate the cause, and replace “O” ring to a new one. Then, tighten the fitting and perform any corrective action for fluid leakage before restarting operation.
- ⑦ When supplying pressure for starting the pump, open the relief port(hexagon plug) to discharge air. Release the air(loosen the hex. plug) at the same time supplying the fluid to substitute air in the product by fluid. When air is discharged, close the relief port(tighten the hex. plug) before starting operation.

# 1. Construction

Discharge air in the product When supplying pressure for starting the pump.

(Port size : G 1/8)



**Fig. 1 Description of parts and functions**

Table 1. Description and function of parts

No	Description	Part number	Material	Function
①	Hex. plug	AG-10S	SUS304	Plug to release air in the housing
②	“O” ring	JIS B2401-1A-P11	NBR	“O” ring to seal the cover and hex. plug
		JIS B2401-4D-P11	FKM	
③	Wing nut	M10×1.5 Class 1	SUS304	Fix the element retainer
④	washer	M10	SUS304	
⑤	Element retainer	—	SUS304	Fix the element
⑥	Spring	AN-3S	SUS316WPA	Stabilizes the element seal
⑦	Element holder	L-27S	SUS316	Seals the element
⑧	Element guide	U-7S、 U-8S、 U-9S	SUS304	Guides the element
⑨	Tension bolt	—	SUS304	Shaft to fix the element
⑩	Element	—	—	Assemble elements into this
⑪	Joint	J-4S	SUS316	Seal the space between element
⑫	“O” ring	JIS B2401-1A-P185	NBR	“O” ring used to seal the sealing part of the cover and the case
		JIS B2401-4D-P185	FKM	
⑬	V band	CY-24S	SUS304/SWCH	Engage the cover and the case and settle them
⑭	Cover	—	SUS304	The lid of the product
⑮	Case	—	SUS304	Main body of the case
⑯	Hex. bolt	M8×1.25×L30 Chromated	SS400	Fix the feet
⑰	Hex. nut	M8×1.25 Chromated	SS400	
⑱	Foot	—	SS400	Support the body (Fix to the ground)
⑲	Description on label	BH-73S	Tetlon	⚠ Caution When becomes dirty, replace with a new one
⑳	Caution label	BH-75S	Tetlon	

## 2. Specification

Table 2. Specifications

	Parameter		Note
Vessel	Operating fluid		Fluid only Gas is not allowed
	Max. operating pressure		0.7MPa
	Max. operating temp.		80□
	Capacity		14L,21L,29L
	Weight		10kg,13kg,18kg
	Applicable regulation and standard		Not applied
	Accessory	Pressure gauge	To measure inlet and outlet pressure
Element	Material		Depends on element See element specification for details
	Filtration		
	Element differential element proof		
Others	Element replacement differential pressure		0.1MPa (Differential pressure)

## 3. Installation / Piping

### 1) Installation

- Fix the feet to the ground firmly using foundation bolt(M12).
- Install and arrange piping at the place with enough space for maintenance.

### 2) Piping

- Check connect port size to use valves and fitting suitable for operating conditions.
- Arrange the piping so that pressure in the product can be released.

※Confirm cautions on page 2 and 3 for use.

## 4. Operation

### 1) Operation

- Mount V band to specified position. Confirm connecting parts and seal do not leak before start operation.
- When starting operation, open upper relief port(loosen hex. plug) to discharge air.

### 2) Replacing the element

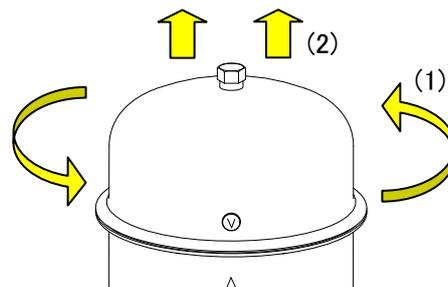
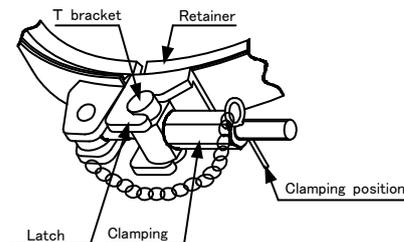
- Replace the element when pressure drop become lower than specification value.  
For the replacement of the element, see Replacement of the element on page 6.

※Confirm cautions on page 2 and 3 for use.

## 5. Replacement of the element

### 1 【Removal of the cover】

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



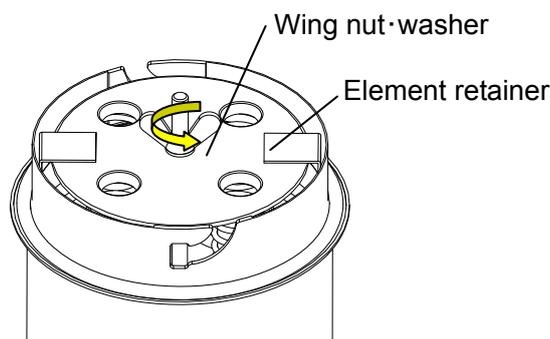
**⚠ Warning** Remove V band/cover after confirming the pressure in the filter is zero.

### 2 【Removal of element】

- (1) Remove the wing nut and the washer.
  - (2) Remove the element retainer.
  - (3) Remove the element mount bracket(a part integrating the element holder and the spring).
  - (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 temp. type.



### 3 【Mounting of the element】

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

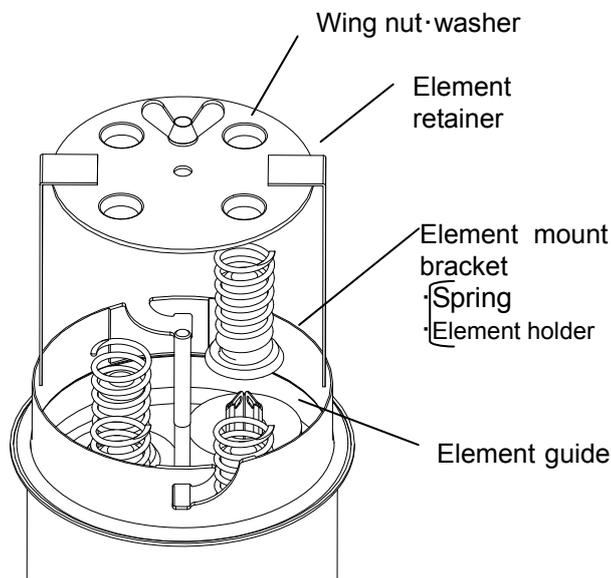
**Caution** Replace all equipment using fluororesin packing.

**⚠** Recycle of used packing leads to cause sealing leakage.

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

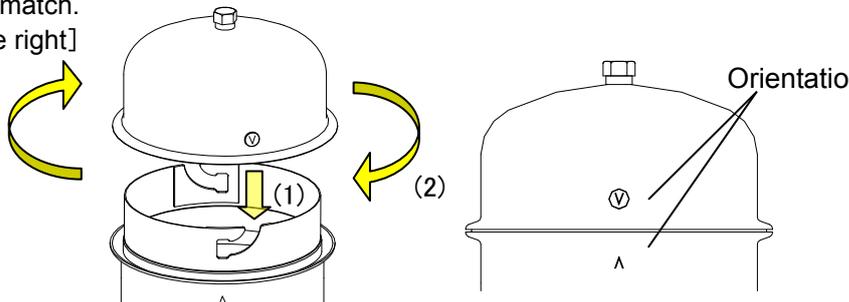
**⚠ Caution** When element is mounted, do not drop the parts from the top of the element guide for mounting.

- 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.
- ⑤ Assemble the element mount bracket.
- ⑥ Mount the element retainer carefully.

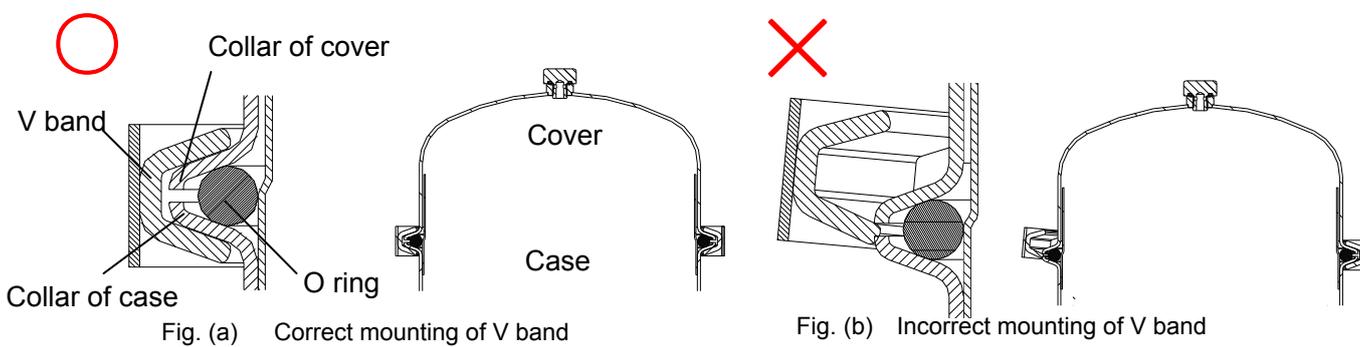


**4** 【Mount “O” ring and cover】

- ①Set “O” ring to the case
- ②Rotate 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** 【Mount and tighten V band】



- ①Mount V band to the collar of the cover and the case correctly. [Refer Fig. (a), (b)]
- ②Hit the circumference of V band lightly with plastic hammer for secure mounting.
- ③Mount T bracket to the latch correctly. [See Fig. (c)]
- ④Tighten the clamping nut to specified nut(position from where clamping position check pin can be inserted), and insert the clamping position check pin. [See Fig.(c)]
- ⑤When tightening 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 The cover may be fallen off due to incorrect mounting. Mount the cover properly.

⚠ 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

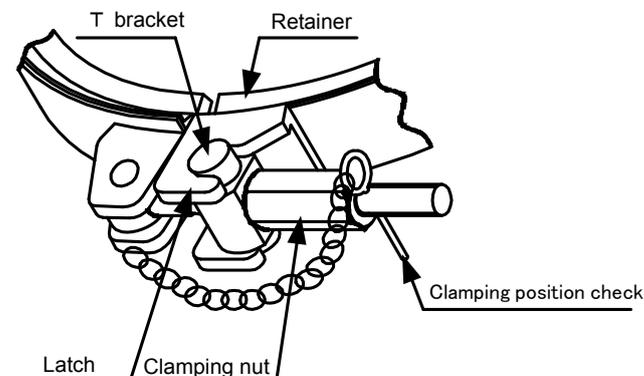


Fig. (c) V band tightening

**6** 【Restart and air discharge】

- (1)When restart the operation after the replacement of the element, follow the procedure of section 4 “Operation”.
- (2) When restart the operation, open the upper air relief port to **discharge air**.

SMC Corporation  
4-14-1, Sotokanda, Chiyoda, Tokyo 101-0021 JAPAN  
TEL: +813 3502 2740 FAX: +813 3508 2480  
URL <http://www.smcworld.com>

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