

**PENTAIR  
HYGIENIC PROCESS VALVES  
(FORMERLY KEYSTONE)**

**F267+ / F268J+  
REPAIR AND  
MAINTENANCE  
INSTRUCTIONS**

# PENTAIR HYGIENIC PROCESS VALVES (Formerly Keystone)

# HYGIENIC SINGLE SEAT VALVES

F267+ / F268j+

Repair and maintenance instructions for DN 25 (1") -  
DN 100 (4") F267J+ and F268J+ single seat valves  
with F272S reversible actuator.

## MAINTENANCE INSTRUCTIONS

### Notes

Use a medium strength thread lock compound eg. LOCTITE 243, on all screwed shaft joints.  
Lubricate all O-rings and bushes with an approved food grade lubricant before fitting.

### IMPORTANT

Keep fingers clear of moving parts when applying or removing air to the actuator.

### Tools & equipment

Tools & equipment required for the maintenance of this valve are as follows:

- Appropriate sized open ended spanners: M10,M13,M16,M17, & M24.
- Appropriate sized hex drive keys: M5, M6 (if required).
- Compressed air source, controlled via a small on/off valve, preferably with venting port (recommended).
- Medium strength thread lock e.g. LOCTITE 243.
- Food approved spray-on silicone lubricant, and food grade grease. eg. MOLYKOTE 111.
- O-ring hook or similar tool (See Fig.1).
- Pentair dovetail seal loading tool, hand type [See Fig.2] or bench type [See Fig. 3].

## DISASSEMBLY INSTRUCTIONS (REFER TO DIAGRAM ON PAGE 2)

1. Remove, if present, any indicators or control units.  
**For spring-to-close valves:** Supply pressurized air to P II to lift spring load off seat (see over page).
2. Loosen and remove the upper clamp set.
3. Vent all air pressure from actuator, returning plug will lift actuator assembly slightly.  
**For spring-to-open valves:** Vent all air pressure from actuator.
4. Disconnect all air tubes.
5. Pull actuator assembly (1), together with valve plug (11), from the body, take care to avoid damage to the seal surfaces.
6. Loosen and remove the plug (11), from actuator assembly, use flats on actuator shaft and on plug stem.

**NOTE:** If LOCTITE does not release use a small amount of heat on joint.

### If servicing the actuator seals

1. Loosen and remove o-ring retaining plate bolts (1.4) and remove plates (1.1 & 1.3)
2. Sight housing/product flange sub-assembly (2), can be removed to assist if necessary.
3. Extract the shaft O-rings (1.3) using hook tool [Fig. 1].

### If servicing CIP poppet valves

Extract the shaft O-rings (1.3) using hook tool [Fig. 1].

Figure 1



Figure 2



Figure 3



## SAFETY PRECAUTIONS



### Caution!

This symbol indicates important messages and safety instructions.  
For safety reasons, it is important to take the following precautions before working on the valve.

1. Before attempting to remove the valve from service, ensure all pipelines connected to the valve are depressurised and evacuated of all compressed air, liquids or process media. LOCKOUT procedures must be in place to prevent lines becoming charged with process or cleaning fluids during maintenance.

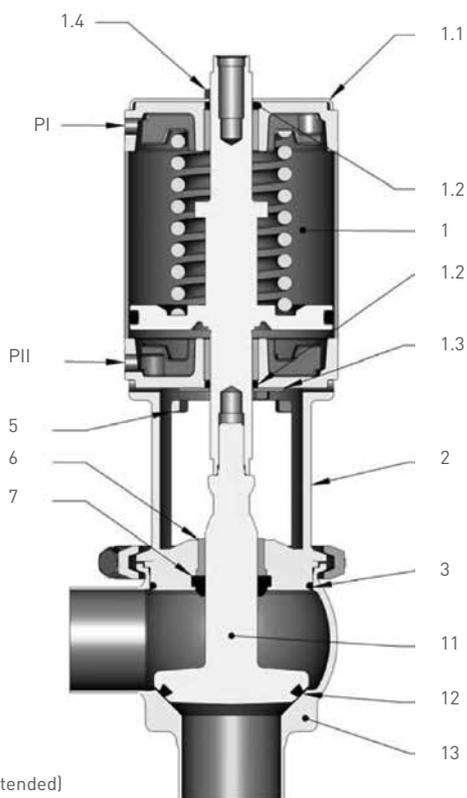
2. Keep fingers clear of moving parts at all times when operating the actuator. When handling the actuator, never place any part of the body between the plug sealing faces and the valve seats while the actuator is charged with air.

3. The F272S actuators are seal welded and contain a spring under compression. DO NOT attempt to dismantle this sealed unit, as the spring could cause serious harm.

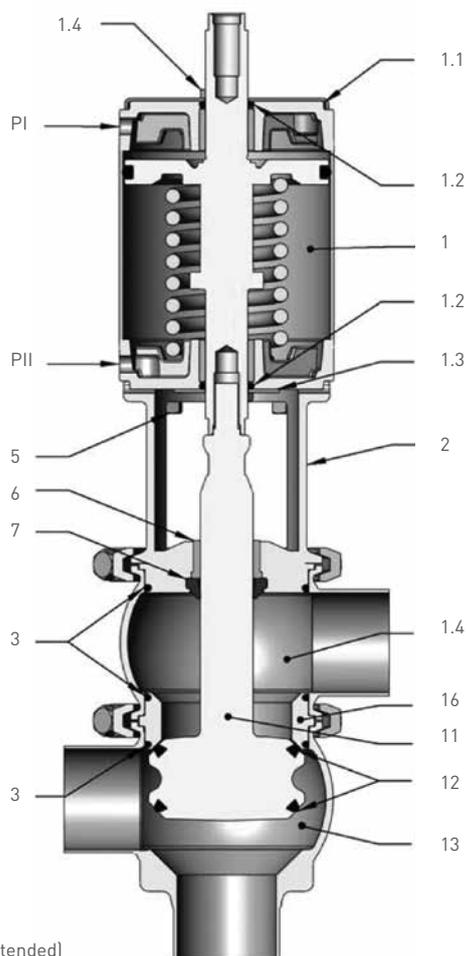
4. Before disassembly of spring-to-close valves, compressed air must be used to move the valve to the open position. Failure to do this will result in the actuator/plug assembly leaping out of the valve body when the upper clamp is removed, possibly causing injury.

# PENTAIR HYGIENIC SINGLE SEAT VALVES

## F267+ / F268J+ REPAIR AND MAINTENANCE INSTRUCTIONS



F267J+ (Spring extended)



F268J+ (Spring extended)

### Parts List

Item No	Description	Material	Qty
1	F272S - Actuator assembly	Various	1
1.1	Top cover	SS304	1
● 1.2	O-ring end plates	NBR	2
1.3	O-ring retainer	SS304	1
1.4	Hex head bolt M6x16	SS304	4
2	Sight housing / product flange	SS304/316L	1
2.1	Sight housing	SS304	1
2.2	Product flange	SS316L1	1
◆ 3	O-ring body	Various	2
4	Not used		
5	Hex head bolt M8x16SS304	4	
◆ 6	Stem seal bush	PTFE	1
◆ 7	Stem seal (wiper)	Various1	
8	Hex head bolt M8x45	SS304	2
9	Nyloc nut M8	SS304	2
10	Clamp pair	SS304	1
11	Plug	SS316L	1
◆ 12	Dovetail seal	Various	1
13	Body F267J (butt weld)	SS316L	1
14	Body F268J (butt weld)	SS316L	1
16	Intermediate seat	SS316L	1

### Seal kits

●	Actuator seal kit	Various	1
◆	Wet end seal kit	EPDM	1
		NBR	1
		FPM	1

3A Compliance - To maintain 3A Compliance only use genuine Pentair spare parts.

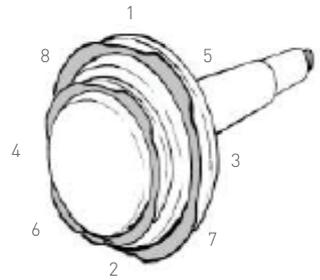
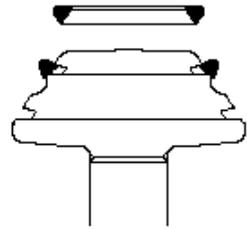
# PENTAIR HYGIENIC SINGLE SEAT VALVES

## F267+ / F268J+ REPAIR AND MAINTENANCE INSTRUCTIONS

### REPLACING THE DOVETAIL SEALS

#### Notes

1. Recommended tool for seal replacement is a Pentair seal loading tool (see tools above).
2. A small amount of Silicon spray around the groove and seal can assist in the seal loading process.
1. First pry out of their grooves any seals to be replaced by piercing in the centre of the seal with the sharp end of the o-ring hook and levering outwards. Take care not to slip and injure yourself during this process and not to damage the edges of the seal grooves. The seals will be destroyed during this stage.
2. Take the seal to be fitted and sit it on the tapered end of the plug.
3. Place a thumb on the top of the seal and push the top lip of the smallest diameter of the seal into the groove (see sketch A).
4. Stretch the remainder of the seal in a circular direction until the entire top lip is inside the groove.
5. Now using the Pentair loading tool, begin by folding one small area of the remaining outside lip in the groove.
6. Carry on the same operation directly opposite the first point and continue as shown in sketch B.
7. Once the seal is fully loaded check that it is protruding uniformly around its entire circumference. If the seal appears spongy in places, this indicates air entrapment. This can be re-leaked by forcing the tip of the Pentair loading tool down the side of the seal in the affected area, to vent any trapped air.



### DISASSEMBLY INSTRUCTIONS FOR F268J PLUS (REFER TO DIAGRAM ON PAGE 2)

**NOTE:** For other valve types if unsure of method consult factory.

1. Remove, if present, any indicators or control units.  
Disconnect any pipe fittings to ports of upper body (14) and separate pipe from valve.  
**For spring-to-close (STC)/extend valves:** Supply pressurized air to PII to lift spring load off lower valve seat.  
**For spring-to-open (STO)/retract valves:** Vent all air pressure from actuator.
  2. Loosen and remove the lower clamp set.
  3. Leave air pressure still on PII for STC valves only.
  4. Now pull actuator (1) complete with sight housing/product flange (2) valve internals and upper body out of the lower body (13) still fixed to piping.  
**For spring extend valves:** Vent air pressure from actuator.  
**For spring retract valves:** Supply pressurized air to PI.
  5. Loosen and remove the plug (11), from actuator assy. and withdraw from the valve body assy. Use flats on actuator shaft and on plug stem.
- NOTE:** If LOCTITE does not release use a small amount of heat on joint.
6. Remove intermediate seat (16) from upper body (14).
  7. Vent all air pressure from actuator and disconnect all air tubes.
  8. Loosen and remove the upper clamp set and separate upper body from sight housing/product flange.  
**If servicing the actuator seals:**
    1. Loosen and remove O-ring retaining plate bolts (1.4) and remove plates (1.1 & 1.3)
    2. Sight housing/product flange sub-assembly (2) can be removed to assist if necessary.
    3. Extract the shaft O-rings (1.3) using hook tool [Fig. 1].**If servicing CIP poppet valves:**  
Extract the shaft O-rings (1.3) using hook tool [Fig. 1]

# PENTAIR HYGIENIC SINGLE SEAT VALVES

## F267+ / F268J+ REPAIR AND MAINTENANCE INSTRUCTIONS

### ASSEMBLY INSTRUCTIONS FOR F267J PLUS (REFER TO DIAGRAM ON PAGE 2)

1. First fit the new O-rings (1.2) into their respective grooves.
2. Now fit the O-ring retaining plates (1.1 & 1.3) If a control head is to be fitted (1.1) is replaced with an O-ring retaining bush (15), which is supplied with each new actuator or complete valve assembly (can also be purchased separately).
3. If the sight housing (2) was removed earlier replace this now, using a small amount of thread lock on all screws.
4. Replace stem seal bush (6) only if it shows signs of wear, and fit stem seal (7) if required.
5. Apply thread lock compound onto the thread of the male shaft (11).
6. Fit the male shaft thru the stem seal and into the end of the actuator cassette and tighten using shaft flats.
7. Fit a new body seal O-ring (3) to the sight housing product flange, and lightly lube outside edges.
8. Refit the actuator control head if fitted, and install all air lines.  
For spring-to-close valves:  
Supply regulated air to PII of the actuator to retract the plug.  
For spring-to-open valves:  
Remove air supply from PII of the actuator to allow plug to retract.
9. Guide the plug assembly into the valve body, taking care not to damage the sealing surfaces and align and engage the body seal fully.
10. Install the upper clamp set and tighten.
11. Stroke the valve using the manual controls to check the position indicator switches are working correctly, adjust if required.

#### Notes

1. Recommended tool for actuator seal replacement is an O-ring hook (see tools above).
2. Spray a small amount of silicon spray on all the O-rings before fitting. Lubricate bushes with a light smear of a food grade grease such as MOLYKOTE 111.
3. All shaft joints to be secured using a medium strength thread lock compound, such as LOCTITE 243.

### ASSEMBLY INSTRUCTIONS FOR F268J PLUS (REFER TO DIAGRAM ON PAGE 2)

1. First fit the new O-rings (1.2) into their respective grooves.
2. Now fit the O-ring retaining plates (1.1 & 1.3) If a Control Head is to be fitted (1.1) is replaced with an O-ring retaining bush (15), which is supplied with each new actuator or complete valve assembly (can also be purchased separately).
3. If the sight housing (2) was removed earlier replace this now, using a small amount of thread lock on all screws.
4. Replace stem seal bush (6) only if it shows signs of wear, and fit stem seal (7) if required.
5. Fit a new body seal O-ring (3) to the sight housing product flange, and lightly lube outside edges.
6. Fit a new body seal O-ring (3) onto intermediate seat (16).
7. Fit upper body (13) to intermediate seat (16).
8. Fit actuator and product flange sub-assy. to upper body and intermediate seat sub assy.
9. Apply thread lock compound onto the male thread of shaft (11).
10. Fit the shaft thru the intermediate seat, stem seal and into the end of the actuator cassette and tighten by hand as far a possible.
11. Refit the actuator control head if fitted, and install all air lines.  
**For STC/extend valves:**  
Tighten shafts using flats, then supply regulated air to PII of the actuator to retract the plug and set the body and seat in place (leave retracted while installing into lower body).  
**For STO/retract valves:**  
Supply regulated air to PII of the actuator to allow plug to extend, then tighten shafts using flats.
12. Vent all air pressure from actuator allowing the plug to retract and set the body and seat in place.
13. Guide the upper valve sub-assembly into the lower valve body, taking care not to damage the sealing surfaces and align and engage the body seal on the bottom of the intermediate seat fully.
14. Install the lower clamp set and tighten.
15. Stroke the valve using the manual controls to check the position indicator switches are working correctly, adjust if required.

#### Notes

1. Recommended tool for actuator seal replacement is an O-ring hook (see tools above).
2. Spray a small amount of silicon spray on all the O-rings before fitting. Lubricate bushes with a light smear of a food grade grease such as MOLYKOTE 111.
3. All shaft joints to be secured using a medium strength thread lock compound, such as LOCTITE 243.

# PENTAIR HYGIENIC SINGLE SEAT VALVES

## F267+ / F268J+ REPAIR AND MAINTENANCE INSTRUCTIONS

Symptom	Remedy
Valve closes with great force	Valve closes in the flow direction. Install the valve so it closes against flow direction.
Valve is opened by liquid pressure	Liquid operating pressure is above 6 bar (spring to close and double acting valve). Air supply pressure is below 4 bar (spring to open and double acting valve).  NOTE: Values may vary depending on actuator configuration and valve size, if in doubt contact factory with details of specific conditions.
Leakage along plugs 11	Check stem seal 7.
Leakage at clamp joints	Check O-ring 3.
Air leakage in actuator assembly	Check O-rings 1.2
Valve opens/closes slowly	Air supply pressure is below 4 bar. Air tube is too long, is pinched, or the diameter is too small. Liquid in the actuator.
Valve opens/closes with irregular movement	Check if there is liquid in the actuator.
Liquid in actuator	Drain and place a water separator in the air supply.

### TECHNICAL SPECIFICATIONS

#### Valve material

All metal parts that come into contact with the liquid are made of All metal parts that come into contact with the liquid are made of stainless steel according to W.Nr. 1.4404 (AISI 316L). The parts that do not come into contact with the liquid are made of stainless steel according to W.Nr. 1.4301 (AISI 304) or appropriate polymer. The actuator bearings are made of Bronze alloy.

#### Gasket material

The O-rings that come into contact with the liquid are made of EPDM, NBR or FPM. The wiper seal is made of SANTOPRENE, EPDM, NBR or FPM.

#### Air supply pressure

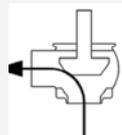
The air supply pressure must be between 4 and 8 bar. We recommend dry air of 6 bar.

#### Air consumption

The air consumption in nl.(normal litres) per stroke is given in the table below. The consumption is calculated for a single acting actuator.

#### Valve Body Porting Options

Type	Configuration	
F267J+STD Standard flow	L	T



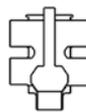
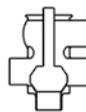
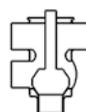
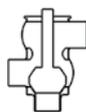
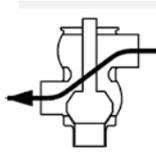
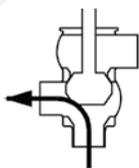
#### F268J+STD Standard flow

LL

TL

LT

TT



#### Air Consumption

Air pressure	Valve sizes			
	025	040-050	065-080	100
4 Bar	0.9	1.2	3.2	4.6
6 Bar	1.2	1.7	4.5	6.4
8 Bar	1.5	2.1	5.6	8.2



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