

Type FEQ Slam-Shut Valve

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Introduction

Scope of the Manual

This instruction manual provides installation, adjustment, maintenance and parts ordering information for the Type FEQ slam-shut valve.

Description

The Type FEQ slam-shut valve is used to totally and to rapidly cut the flow of gas when the inlet and/or outlet pressure in the system either exceeds or drops below the set pressure. Consequently, the Type FEQ slam-shut valve can protect transmission and distribution networks or pipelines supplying industries and commercial businesses.

Principle of Operation

Pressure from the system is sensed through control lines into the manometric sensing device (BMS). The BMS will transmit the pressure fluctuations to the mechanism box (BM). If these fluctuations reach the set pressure of the BMS, the device will activate the tripping mechanism in the BM and cause the valve to slam shut. See Figure 3.



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Figure 1. Type FEQ Slam-Shut Valve

The BM is designed to close the slam-shut valve. The detection of pressure variances is sensed by a double stage trip mechanism. The first stage is the detection stage and will only trip when the system pressure reaches the set pressure of the BMS. The second stage is the power stage and once tripped by the first stage, the closing spring causes the valve plug to slam shut and to remain closed until the valve is manually reset. If there are any inlet pressure variances or vibrations subjected to the second stage components, they are not transmitted to the first stage trip mechanism.

After the Type FEQ has closed, it must be manually reset before it can be put back in service. Before resetting the Type FEQ, check for and correct the cause of the overpressure/underpressure condition.

To reset the power stage, use the handle hanging outside the BM and rotate it clockwise slowly (See Figures 7 and 8).

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Specifications

This section lists the specifications for the Type FEQ slam-shut valve. Factory specification are stamped on the nameplate fastened on the slam-shut valve at the factory.

<p>Maximum Inlet Pressure⁽¹⁾ 100 bar / 1450 psig</p> <p>Inlet Pressure Range⁽¹⁾ P1: ≤ 100 bar / 1450 psig</p> <p>Trip Pressure Range⁽¹⁾ 0.01 to 100 bar / 0.145 to 1450 psig</p> <p>Accuracy Up to AG 1</p> <p>Response Time ≤1 second</p> <p>Flow Coefficients See Table 2</p> <p>Body Size and End Connection Flange Size: DN 25, 50, 80, 100 and 150 / 1, 2, 3, 4 and 6 in. Flange Rating: CL150 RF, CL300 RF and CL600 RF</p> <p>Rain-proof BM Box Equivalent to IPX5</p>	<p>Pressure Sensing Connection 3/8 NPT</p> <p>Pressure Registration External</p> <p>Temperature Capabilities⁽¹⁾ -20 to 60°C / -4 to 140°F</p> <p>Working Medium Standard Service: Natural gas, coal gas, LP-Gas, other non-corrosive gases Options: The blend gas of up to 25% hydrogen (by volume) and above standard service gases</p> <p>Construction Materials Body: WCC Steel Bonnet: Steel Valve Plug: Steel Valve Plug Seal O-ring: Nitrile (NBR) Rubber Seat Ring: Stainless steel Mechanism Box (BM): Cast Iron First and Second-stage Mechanism: Steel Diaphragm: Nitrile (NBR) Rubber</p> <p>Approximate Weights See Table 5</p>
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1. The pressure/temperature limits in this Instruction Manual or any applicable standard limitation should not be exceeded.

Note

Please store the relatching handle properly to avoid losing it.

When movement is started on the stem, the internal bypass will open and will equalize the pressure on each side of the valve plug before the valve plug can be moved off the seat. Continue turning the handle for this will raise the valve plug. Compress the closing spring and latch the second stage (power stage) mechanism. Slowly open the inlet valve.

Configuration

The Type FEQ consists of a main valve, a BM, a one or two manometric sensing devices (Type BMS1 or BMS2), a handle and others (see Figure 2 for the configuration). Incorporated in Type FEQ valve plug is an automatic internal bypass valve mechanism which balances pressures on both sides of the plug when resetting.

Installation



Personal injury, equipment damage or leakage due to escaping gas or bursting of pressure-containing parts may result if the slam-shut valve is installed where its capabilities can be exceeded or where conditions exceed any ratings of the adjacent piping or piping connections. To avoid this, install the slam-shut valve in correct service conditions, which meet the requirement of unit capabilities, applicable codes, regulations or standards. Additionally, physical damage to the slam-shut valve could break the BM off the main valve, causing personal injury and property damage due to escaping gas. To avoid such injury or damage, install the unit in a safe location.

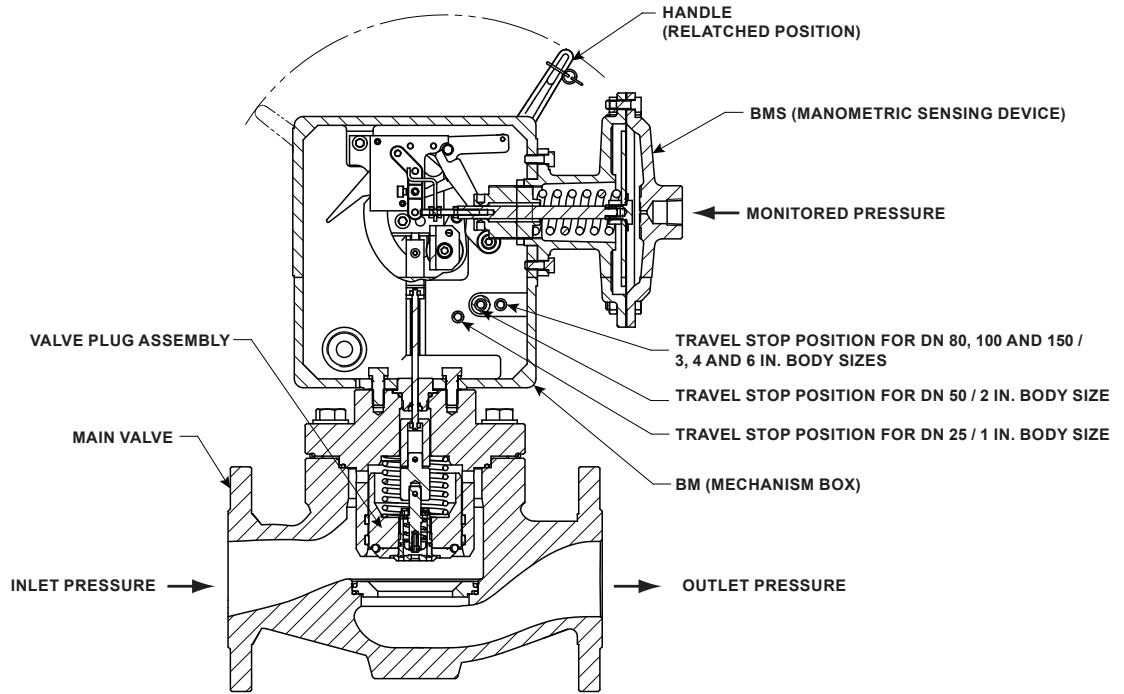


Figure 2. Type FEQ Configuration

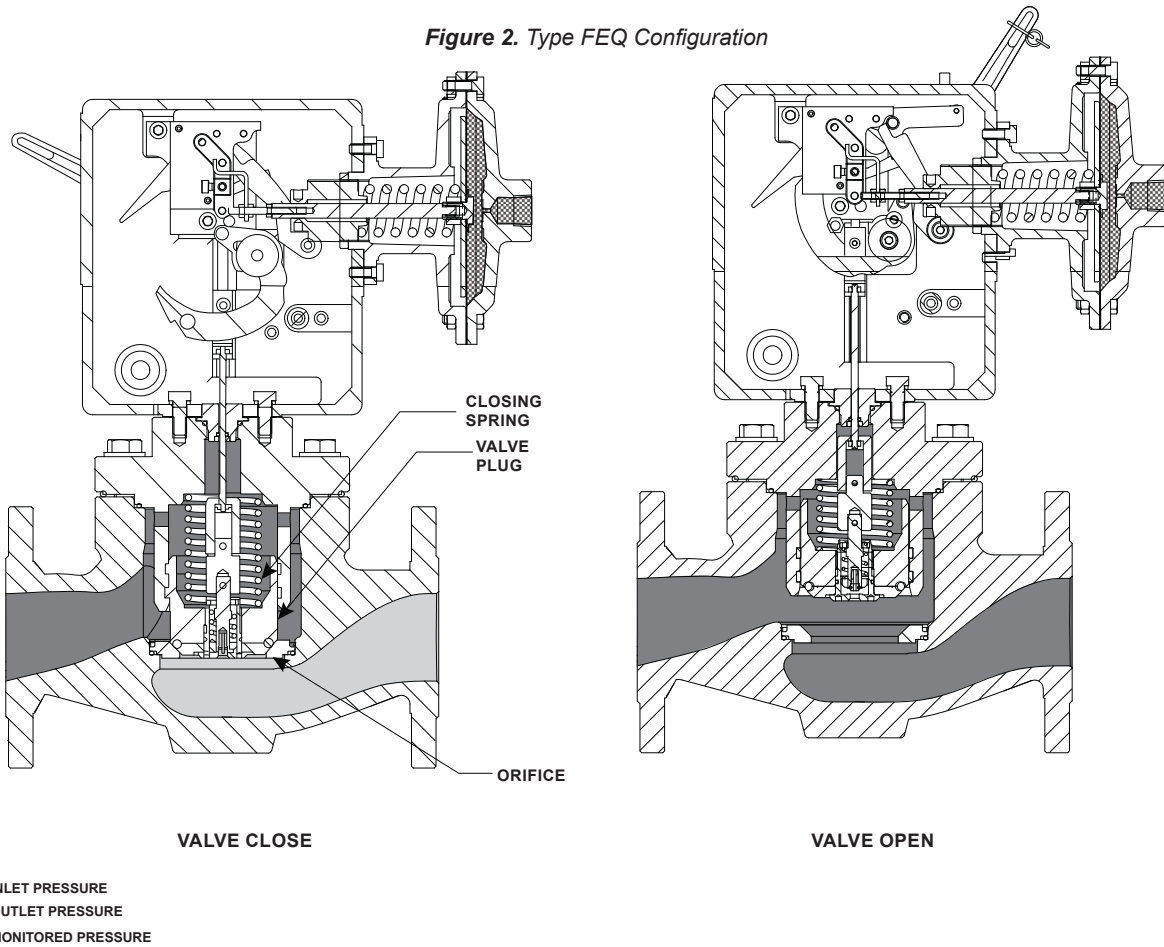


Figure 3. Type FEQ Operational Schematic

Type FEQ

Table 1. Trip Pressure Range

MANOMETRIC SENSING DEVICE (BMS) TYPE	MANOMETRIC SENSING DEVICE (BMS) SIZE, mm / In.	TRIP PRESSURE RANGE OF MANOMETRIC SENSING DEVICE (BMS), bar / psi
A	162 / 6.4	0.01 to 2.3 / 0.145 to 33.4
B	71 / 2.8	1.0 to 16 / 14.5 to 232
C	27 / 1.1	16 to 40 / 232 to 580
D	17 / 0.7	40 to 100 / 580 to 1450

Table 2. Flow Coefficients

FLOW COEFFICIENT	BODY SIZE, DN / In.				
	25 / 1	50 / 2	80 / 3	100 / 4	150 / 6
C _g	570	2073	4817	7845	15,398
C _i	31	30	31	31	34
C _v	18	69	153	249	453

Table 3. Spring Adjustment Ranges and Part Numbers

MANOMETRIC SENSING DEVICE (BMS) TYPE	MANOMETRIC SENSING DEVICE (BMS) SIZE, mm / In.	MAXIMUM SENSING INLET PRESSURE, bar / psig	SPRING RANGE, bar / psig	SPRING PART NUMBER	SPRING COLOR	MINIMUM DIFFERENCE ALLOWED BETWEEN SET PRESSURE AND NOMINAL DOWNSTREAM REGULATOR PRESSURE, bar / psig	FOR OUPSO, MAXIMUM DIFFERENCE ALLOWED BETWEEN MAXIMUM AND MINIMUM SET PRESSURE ⁽¹⁾ , bar / psig
A	162 / 6.4 (Diaphragm)	5.0 / 72	0.01 to 0.035 / 0.14 to 0.51	JJJ56CXT07	Purple	0.004 / 0.058	0.01 / 0.14
			0.025 to 0.08 / 0.36 to 1.16	JJJ56CXT08	Orange	0.005 / 0.073	0.025 / 0.36
			0.045 to 0.14 / 0.65 to 2.1	JJJ56CXT09	Red	0.01 / 0.14	0.05 / 0.72
			0.07 to 0.24 / 1.1 to 3.5	JJJ56CXT10	Yellow	0.014 / 0.21	0.06 / 0.87
			0.115 to 0.38 / 1.7 to 5.5	JJJ56CXT11	Green	0.018 / 0.26	0.15 / 2.2
			0.14 to 0.75 / 2.1 to 10.9	JJJ56CXT13	Gray	0.05 / 0.72	0.35 / 5.1
			0.25 to 1.3 / 3.6 to 18.9	JJJ56CXT14	Brown	0.08 / 1.16	0.6 / 8.7
B	71 / 2.8 (Diaphragm)	16 / 2.8	0.45 to 2.3 / 6.5 to 33.4	JJJ56CXT15	Black	0.17 / 2.5	1.1 / 16.0
			1.0 to 5.1 / 14.5 to 74.0	JJJ56CXT12	Blue	0.35 / 5.1	2.5 / 36.3
			2.1 to 11 / 30.4 to 160	JJJ56CXT14	Brown	0.7 / 10.2	5.5 / 79.8
C	27 / 1.1 (Piston)	100 / 1450	4.0 to 16 / 58.0 to 232	JJJ56CXT15	Black	1.6 / 23.2	10 / 145
			16 to 22 / 232 to 319	JJJ56CXT14	Brown	3.0 / 43.5	Cannot be used in applications that require one BMS device to provide both high and low pressure trip applications
D	17 / 0.7 (Piston)	100 / 1450	22 to 40 / 319 to 580	JJJ56CXT15	Black	6.5 / 94.3	
			40 to 55 / 580 to 798	JJJ56CXT14	Brown	7.0 / 102	
			55 to 100 / 798 to 1450	JJJ56CXT15	Black	12 / 174	

1. Maximum difference between overpressure and underpressure when using one manometric device (BMS) with one spring. For difference between underpressure and overpressure set pressures greater than this maximum number, use two manometric devices (Type BMS1 or BMS2) for protection. When using a Type BMS1 and a Type BMS2, the Type BMS1 can only be used for overpressure shutoff.

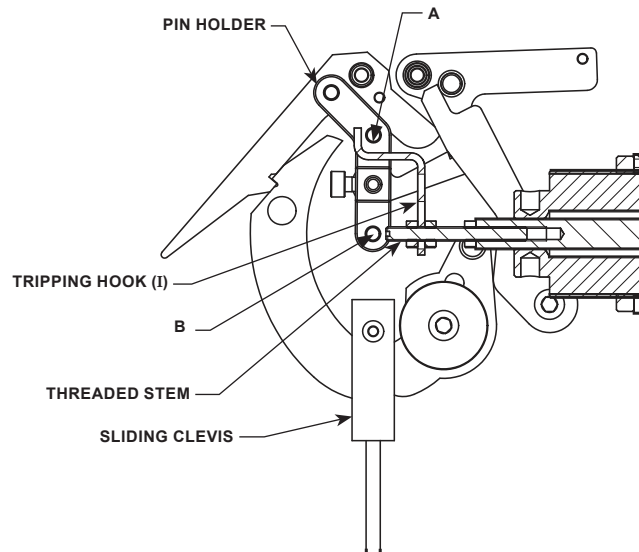


Figure 4. Tripping Mechanism

Installation, operation and maintenance procedures performed by unqualified personnel may result in improper adjustment and unsafe operation. Either condition may result in equipment damage or personal injury. Use qualified personnel when installing, operating and maintaining the unit.

Requirements for Installation

Note

Fire and seismic factors are not taken into consideration.

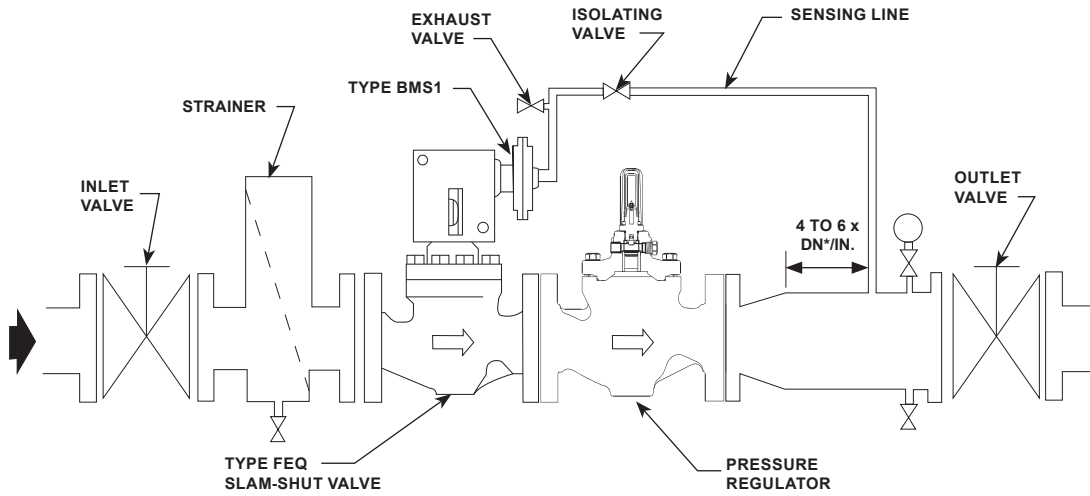
- Ensure that the pipeline pressure matches the operational pressure shown on the Type FEQ nameplate.
- The safety manometric sensing device (BMS) and spring selection must correspond to the operating conditions on the outlet side of the regulator.
- Install the Type FEQ according to direction of the arrow riveted on the body.
- Clean out all pipelines before installation and ensure that the valve has not been damaged or collected foreign material during shipment.
- When assembling with adjacent elements, care must be taken not to create additional force on the body. If the need arises, a support must be used and be installed under the flanges.

- The Type FEQ is installed on the inlet side of the regulator, on a horizontal pipeline, with the mechanism box (BM) above the body (all sizes) or below the pipe (for DN 25, 50 and 80 / 1, 2 and 3 in. body sizes).
- Leave sufficient space for operation, maintenance and disassembly.
- No modification should be made to the structure of the equipment (drilling, grinding, soldering, etc.).
- The equipment should not receive any type of shock, especially the release relay.
- The BMS requires an external sensing line which should be tapped into a straight run of pipe 4 to 6 pipe diameters downstream of the slam-shut valve. See Figures 5 and 6 for details.
- Use gauges to monitor inlet and outlet pressures. See Figures 5 and 6.

Note

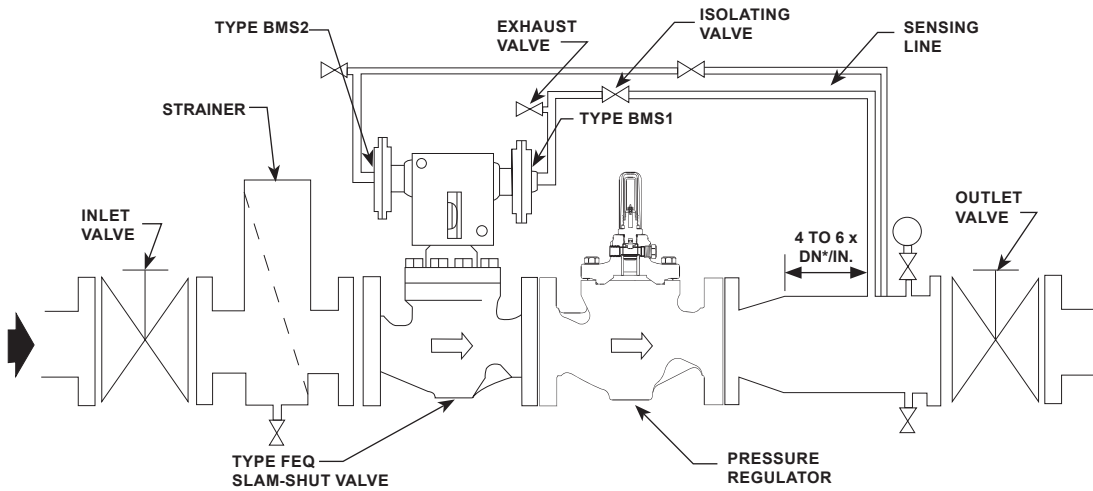
When the Type FEQ has already been mounted on the pipeline and cleaning maintenance or pressure testing in the pipeline is desired, disassembly of the slam-shut valve is necessary.

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* The sensing line should be tapped 4 to 6 nominal pipe diameters downstream of the slam-shut valve.

Figure 5. Overpressure and Underpressure Shutoff using one Manometric Sensing Device (Type BMS1)



* The sensing line should be tapped 4 to 6 nominal pipe diameters downstream of the slam-shut valve.

Figure 6. Overpressure and Underpressure Shutoff using two Manometric Sensing Devices (Types BMS1 and BMS2)

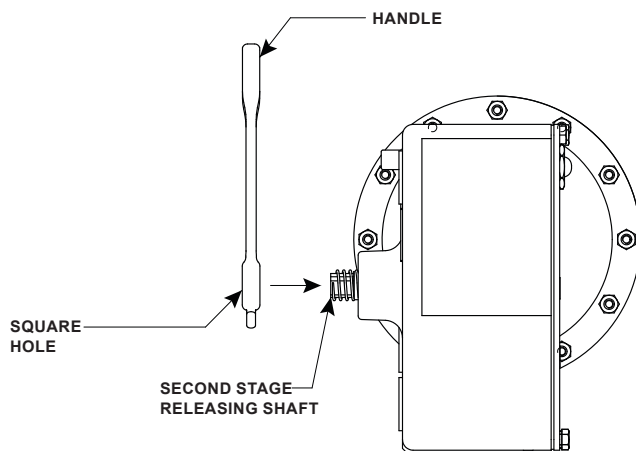


Figure 7. Type FEQ Relatching Position and Direction (Side View)

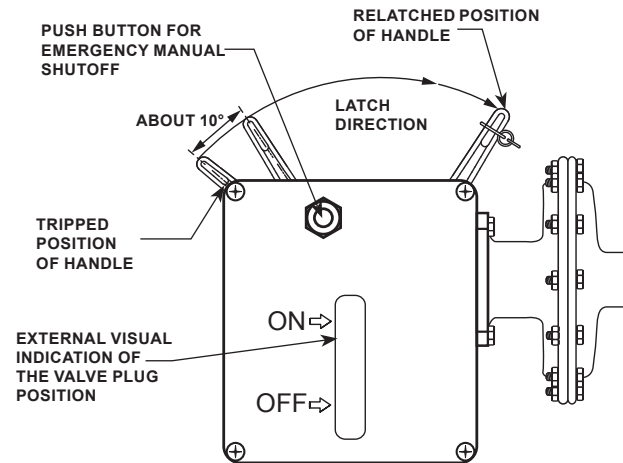


Figure 8. Type FEQ Relatching Position and Direction (Front View)

Commissioning

Startup Procedures

1. Close the inlet and outlet valves.

Note

Verify the absence of pressure between inlet and outlet valves.

2. Close the slam-shut valve plug.
3. Close the sensing line to isolate the valve.
4. Open the exhaust valve.
5. Verify if the set pressure of the Type FEQ is suitable for the pipeline.
6. Verify if the regulator is controlling the correct nominal downstream pressure.

Procedures Before Commissioning

1. Close the exhaust valve.
2. Open the sensing line.
3. Close the slam-shut valve plug.

Commissioning

1. Open inlet valve slowly.
2. Rotate the handle slowly along the latch direction for about 10°. See Figure 8. Wait for the pressure on each side of the valve plug to equalize.

3. Continue turning the handle for this will raise the valve plug. Compress the closing spring and latch the second stage mechanism.
4. Slowly open the inlet and outlet valves until wide open.

Relatching

The Type FEQ Slam-Shut Valve is relatched manually. Before relatching the Type FEQ, check for and correct the cause of the overpressure/underpressure condition. Following are the procedures for relatching:

1. Open inlet valve slowly. Allow upstream pressure to flow then close both the inlet and outlet valves.
2. Close the exhaust valve. Open the sensing line.
3. Place the square hole of the handle on the second stage releasing shaft. See Figure 7.

Note

Never use an extension on the handle.

4. Rotate the handle slowly along the latch direction for about 10°. See Figure 8. Wait for the pressure on each side of the valve plug to equalize. At the same time, observe the downstream pressure if it is within the set pressure range. Proceed to the next step if no irregularities occur.

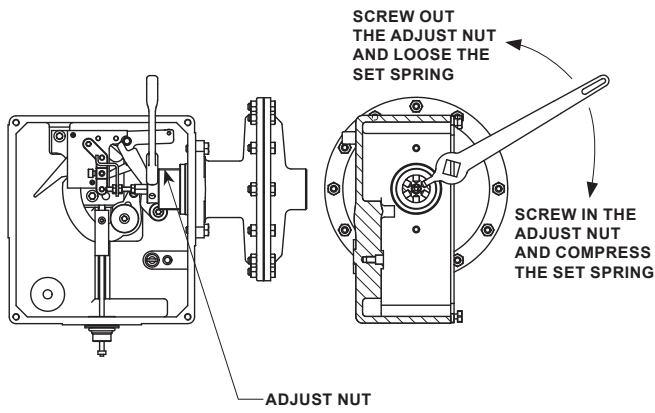


Figure 9. Adjust Nut Rotation Using the Handle

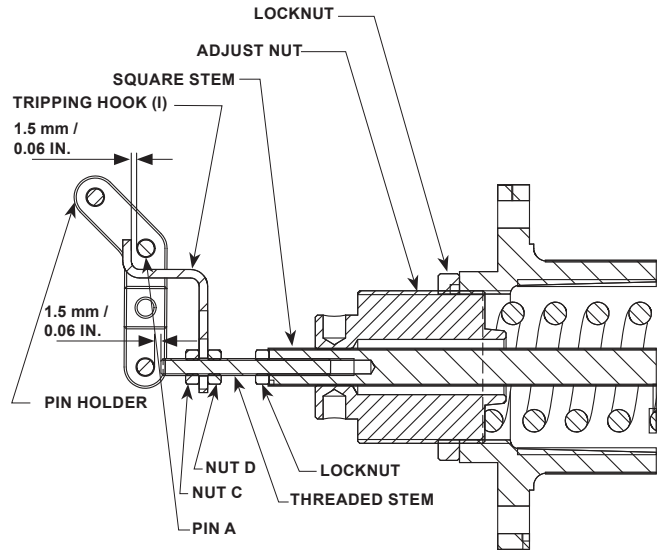


Figure 10. Type BMS1 Construction

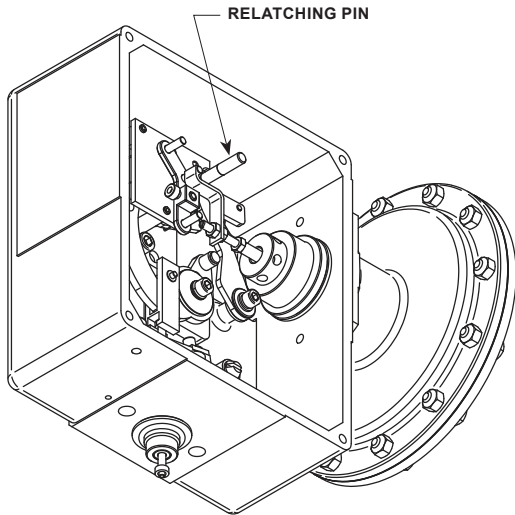


Figure 11. Relatching Pin in Detection Stage

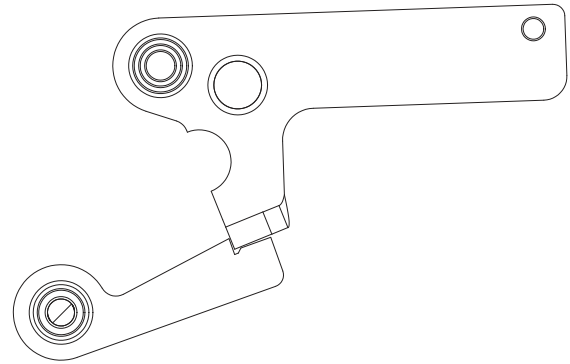


Figure 12. Related Condition of Detection Stage

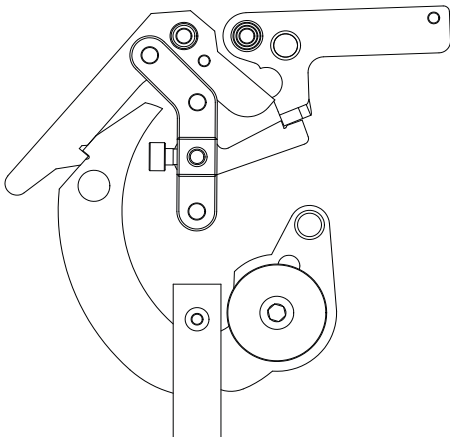


Figure 13. Related Condition of Two Stages

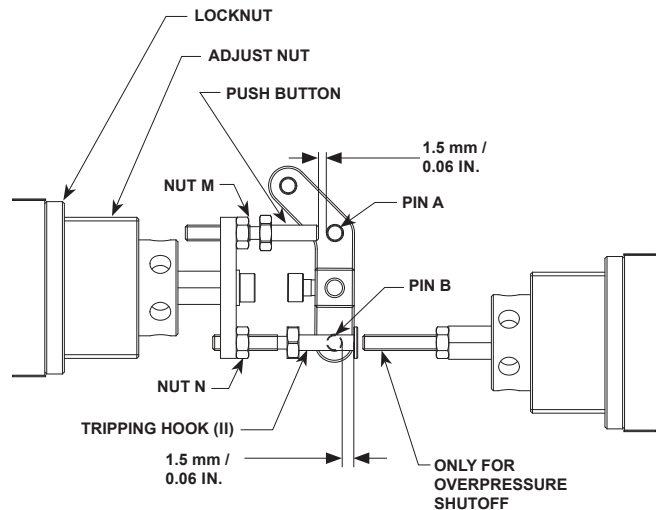


Figure 14. Type BMS2 Construction

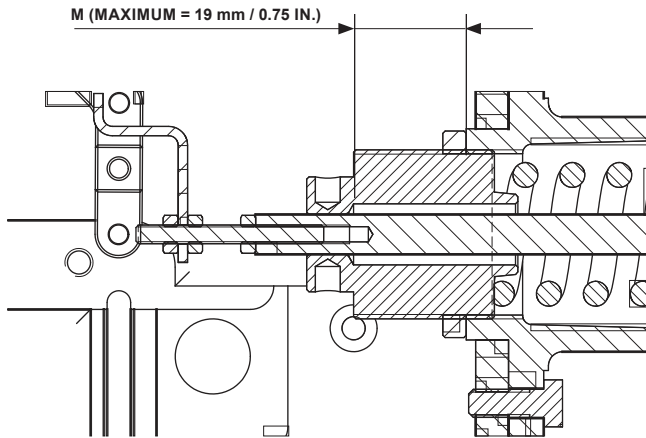


Figure 15. Maximum Length M of the Adjust Nut Screwing Out from Spring Casing

Note

Do not open the valve plug directly when inlet and outlet valves are wide open, or when the pressure on each side of the valve plug is not equalized.

- Turn the handle continuously to raise the valve plug and then latch the second stage mechanism. Make sure that the difference between set pressure and nominal downstream pressure of the regulator will meet the requirement of Table 3.

Note

After relatching, move the handle away from the second stage releasing the shaft to avoid damage if tripping occurs while turning the handle.

- Open the inlet and outlet valves slowly until wide open.

Adjustment

The set pressure of Type FEQ is usually determined in the factory according to the user's requirement. If the user wants to change the set pressure of the pipeline in site, Type FEQ's set pressure should also be changed correspondingly. Also make sure to change the nameplate to indicate the new pressure setting.

Note

All adjustments on Type FEQ should only be performed by qualified and trained personnel.

Note

- Before any adjustment, check that the spring range installed corresponds to the required set pressure.
- Loosen the locknut. Then, by using the handle, rotate the adjust nut, see Figure 9. When high-pressure gas is in the manometric sensing device (BMS), it is difficult to rotate the adjust nut by the handle. Do not use an extension or apply a great force on the handle, this will cause damage to some parts. First, release or exhaust the pressure of the BMS. Screw in or out the adjust nut once the pressure has been exhausted. Then, pressurize the BMS to the desired trip pressure. Check the pressure value at the trip point and adjust if necessary.
- Do not compress the adjust spring to its minimum working length when tightening the adjust nut.
- The maximum length of M is 19 mm / 0.75 in. This is used to screw the adjust nut out from the spring casing. See Figure 15.

Do not exceed this length. Otherwise, Type FEQ will not be able to relatch using the handle during shutoff.

Adjustment of the Threaded Stem (Overpressure)

- Push the relatching pin to relatch the detection stage (first stage) only. See Figures 11 and 12.
- Release or exhaust the pressure of the BMS, then screw in the adjust nut. Compress the spring until the distance between the threaded stem and pin B does not increase. See Figure 10.
- Allow flow of the nominal downstream regulator pressure into BMS slowly.
- Adjust the threaded stem with a distance of 1.5 mm / 0.06 in. from pin B.
- Tighten threaded stem locknut.

Usually, adjustment of the threaded stem is done in the factory.

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Adjustment of the Tripping Hook (I) for Underpressure Shutoff

1. Push the relatching pin to relatch the detection stage (first stage) only, see Figures 11 and 12.
2. Allow flow of the nominal downstream regulator pressure into manometric sensing device (BMS) slowly.
3. Put the tripping hook (I) into position and adjust tripping hook (I) locknuts (C and D) until the hook (I) has a distance of 1.5 mm / 0.06 in. from pin A.
4. Tighten tripping hook (I) locknuts.

Adjustment for Overpressure Shutoff Only

1. Allow flow of the nominal downstream regulator pressure into BMS slowly.
2. Relatch the two stages one at a time by using the handle. See Figure 13.
3. Increase the pressure of the gas in BMS slowly until tripping occurs.
4. Observe the value of the gas pressure in the BMS at the moment of tripping.
5. Screw adjust nut in or out if necessary (screw in to raise the set pressure, screw out to reduce set pressure).
6. Repeat steps 2 to 4 six times. The set value is the arithmetic mean of the six actual values. Then, tighten the locknut of adjust nut.

Adjustment for Underpressure Shutoff Only

1. Allow flow of the nominal downstream regulator pressure into BMS slowly.
2. Relatch two stages one at a time by using the handle. See Figure 13.
3. Reduce the pressure of the gas in BMS slowly until tripping occurs.
4. Observe the value of the gas pressure in the BMS at this moment of tripping.

5. Screw adjust nut in or out if necessary (screw in to raise the set pressure, screw out to reduce set pressure).
6. Repeat steps 2 to 4 six times. The set value is the arithmetic mean of the six actual values. Then, tighten the locknut of adjust nut.

For overpressure and underpressure shutoff, adjust overpressure set pressure first according to **Adjustment for Overpressure Shutoff Only**, and tighten the locknut of the adjust nut. Then, adjust the position of tripping hook (I) to set the pressure of underpressure shutoff.

Adjustment of BM with Two Manometric Sensing Devices (Type BMS1 or BMS2)

Note

At this time, the Type BMS1 can only be used for overpressure shutoff.

Adjustment of Type BMS2 is the same as Type BMS1. See Figure 14. First, verify the position of push button for overpressure. Screw the adjust nut in to raise the set pressure and screw it out to reduce the pressure. Next, tighten the locknut of adjust nut. Then, adjust the position of tripping hook (II) to set the pressure of underpressure shutoff.

Shutdown



To avoid personal injury or property damage due to explosion or damage to shut-off device, regulator or downstream components during shutdown, release downstream pressure to prevent an overpressure condition on the regulator diaphragm.

Installation arrangements may vary, but in any installation it is important that the valves be opened or closed slowly. The shutdown procedures below apply to typical installations.

1. Slowly close the downstream shut-off valve.
2. Slowly close the upstream shut-off valve.
3. Slowly open vent valves downstream of the slam shut.
4. Slowly open vent valves upstream of the slam shut.

Maintenance

The downstream pressure is transformed into a displacement by a manometric sensing device (BMS) mounted on the mechanism box (BM). This displacement is used to activate the detection stage of the BM in case of overpressure, over and underpressure, or underpressure condition.

General Rule of Maintenance

1. Before maintenance, close the inlet and outlet valves and exhaust the gas pressure in the valve body and BMS.
2. When removing or replacing the valve plug or valve plug disk, be careful not to damage the round-shaped groove.
3. Verify that all movements are agile after reassembly.
4. After reassembly, it is necessary to commission again according to the procedures of Commissioning and perform external tightness test.

Emerson Process Management Regulator Technologies, Inc. provides training for maintenance personnel. For other information, contact your local Sales Office.

Depending on operating conditions, user can confirm a maintenance cycle for themselves. The following are recommended maintenance frequency cycles.

Weekly Maintenance

1. Inspect appearance for obvious damage and external tightness.
2. Verify if the value of gauge pressure of downstream pressure is in the right range. If the value is unwanted, check Type FEQ thoroughly.

Monthly/Periodic Maintenance

1. Inspect appearance for obvious damage and external tightness.
2. Verify if the value of gauge pressure of downstream pressure is in the right range. If the value is unwanted, check Type FEQ thoroughly.

3. Make sure set pressures of Type FEQ meet the pipeline requirement.
4. Push button for **Emergency Manual Shutoff** to verify the movement of parts in Type FEQ is functioning well. If not, lubricate those parts.

Quarterly Maintenance

It is recommended that for every three months, or depending on operating conditions, user confirms a maintenance cycle.

1. Make sure set pressures of Type FEQ meet the pipeline requirement.
2. Inspect internal tightness.
 - a. Close inlet and outlet valves slowly.
 - b. Push button for **Emergency Manual Shutoff** to let Type FEQ shut off and exhaust the pressure of outlet.
 - c. Observe the outlet pressure. If the outlet pressure increases continuously, it is necessary to clean the orifice and valve plug disk for dirt and debris that probably cause clogging, or to change O-rings and other elastomer parts for damage.
3. It is recommended to clean parts every 3 to 6 months for parts such as diaphragm, valve plug and O-ring. Other O-rings are needed to be checked and to be replaced from time to time. Check lubrication of moving parts and make sure that moving parts are tightly connected.

Parts Ordering

When corresponding with your local Sales Office about this equipment, always refer to the equipment serial number. When ordering replacement parts, be sure to include the 11-character part number from the Parts list.

Type FEQ

Table 4. Troubleshooting Guide

FAILURES	POSSIBLE CAUSES	ACTIONS
Internal pressure leaks after shutoff.	<ol style="list-style-type: none"> O-ring 52 in valve plug (key 52 in Figure 22) lost its efficacy or was damaged. There may be some presence of dirt on the orifice. Movement of valve plug was blocked. O-ring in internal bypass lost its efficacy or was damaged. 	<ol style="list-style-type: none"> Change O-ring 52. Remove dirt from orifice. Lubricate the active pieces and change the damaged parts. Change internal bypass assembly.
Movement is not agile.	<ol style="list-style-type: none"> Some fasten bolts have loosened up. There are more friction. O-ring in stem assembly lost its efficacy or was damaged. 	<ol style="list-style-type: none"> Check and fasten bolts. Lubricate the active pieces. Change the stem assembly.
Mechanism box (BM) cannot be relatched.	<ol style="list-style-type: none"> Pressure in manometric sensing device (BMS) exceeded the range of set pressures. Nominal downstream regulator pressure is too close to mechanism sensing set pressure. Some parts of the mechanism box (BM) were damaged. Tripping hook (I) touched the pin holder assembly (see Figure 10). 	<ol style="list-style-type: none"> Exhaust pressure to the suitable pressure range. Change set pressure or nominal downstream regulator pressure. Change damaged parts. Adjust tripping hook (I) to correct position. Tighten its locknuts. Let pin holder assembly move freely.
Type FEQ does not shut off.	<ol style="list-style-type: none"> Diaphragm in manometric sensing device (BMS) broke. The sensing line leaks. Type FEQ's set pressure is not correct. Valve plug was blocked. 	<ol style="list-style-type: none"> Change the diaphragm. Seal the leak point. Adjust set pressure. Check valve plug and segments.
Tripping pressure is not correct.	<ol style="list-style-type: none"> Set pressures are wrong. Some fasten bolts or locknuts in mechanism box (BM) have loosened up. 	<ol style="list-style-type: none"> Adjust set pressure. Tighten fasten bolts or locknuts.

Table 5. Approximate Weights

BODY SIZE		APPROXIMATE SHIPPING WEIGHTS OF TYPE FEQ	
DN	In.	kg	lbs
25	1	23	51
50	2	36	79
80	3	64	141
100	4	101	223
150	6	204	450

Note: These data belong to Type FEQ with manometric sensing device (BMS) Type A, WCC body.

Parts List

Key	Description	Part Number	Key	Description	Part Number
	Spare Parts Kit for Main Valve of Type FEQ		31	Stem assembly	ERAA30330A0
	For DN 25 / 1 in. body size, include keys 32, 46, 49, 50, 52 and 53	JJJJ49BX010	32	Cushion	JJJJ56CXM03
	For DN 50 / 2 in. body size, include keys 32, 46, 49, 50, 52 and 53	JJJJ56BX030	33	Couple (I) DN 25 / 1 in. DN 50, 80, 100, 150 / 2, 3, 4, 6 in.	JJJJ49CX009 JJJJ56CX005
	For DN 80 / 3 in. body size, include keys 32, 46, 49, 50, 52 and 53	JJJJ57BX030	34	Bonnet DN 25 / 1 in. DN 50 / 2 in. DN 80 / 3 in. DN 100 / 4 in. DN 150 / 6 in.	ERAA33694A0 ERAA33706A0 ERAA33770A0 ERAA33771A0 ERAA33772A0
	For DN 100 / 4 in. body size, include keys 32, 46, 49, 50, 52 and 53	JJJJ58BX030	35	Couple (II) DN 25 / 1 in. DN 50 / 2 in. DN 80 / 3 in. DN 100 / 4 in. DN 150 / 6 in.	JJJJ49CX007 JJJJ56CX007 JJJJ57CX007 JJJJ58CX007 JJJJ59CX007
	For DN 150 / 6 in. body size, include keys 32, 46, 49, 50, 52 and 53	JJJJ59BX030	36	Spring DN 25 / 1 in. DN 50 / 2 in. DN 80 / 3 in. DN 100 and 150 / 4 and 6 in.	JJJJ49CXT01 JJJJ56CXT01 JJJJ57CXT02 JJJJ58CXT01
1	Tripping hook kit (II)	JJJJ56BX024	37	Valve body For DN 25 / 1 in. CL150 RF CL300 RF CL600 RF For DN 50 / 2 in. CL150 RF CL300 RF CL600 RF For DN 80 / 3 in. CL150 RF CL300 RF CL600 RF For DN 100 / 4 in. CL150 RF CL300 RF CL600 RF For DN 150 / 6 in. CL150 RF CL300 RF CL600 RF	GE11583X012 GE11607X012 GE11608X012 GE10676X012 GE10678X012 GE10679X012 GE10699X012 GE10700X012 GE10701X012 GE10835X012 GE10839X012 GE10842X012 GE11447X012 GE11449X012 GE11451X012
2	Tripping hook kit (I)	JJJJ56BX017	38	Valve plug DN 25 / 1 in. DN 50 / 2 in. DN 80 / 3 in. DN 100 / 4 in. DN 150 / 6 in.	JJJJ49CX010 JJJJ56CX008 JJJJ57CX010 JJJJ58CX010 JJJJ59CX010
3	Square stem	JJJJ56CX059	39	Internal bypass DN 25 / 1 in. DN 50, 80, 100, 150 / 2, 3, 4, 6 in.	JJJJ49BX004 JJJJ56BX004
4	Adjust nut	JJJJ56CX058	40	Segment DN 25 / 1 in. DN 50 / 2 in. DN 80 / 3 in. DN 100 / 4 in. DN 150 / 6 in.	JJJJ49CXM01 JJJJ56CX010 JJJJ57CX011 JJJJ58CX011 JJJJ59CX011
5	Locknut	JJJJ56CX057	41	Valve plug disk DN 50 / 2 in. DN 80 / 3 in. DN 100 / 4 in. DN 150 / 6 in.	JJJJ56CX009 JJJJ57CX012 JJJJ58CX012 JJJJ59CX012
6	Spring casing	JJJJ56CX055			
7	Spring Purple Orange Red Yellow Green Blue Gray Brown Black	JJJJ56CXT07 JJJJ56CXT08 JJJJ56CXT09 JJJJ56CXT10 JJJJ56CXT11 JJJJ56CXT12 JJJJ56CXT13 JJJJ56CXT14 JJJJ56CXT15			
8	Nut	J1E2000M10			
9	Plate	JJJJ56CX054			
10	Diaphragm	ERAA33621A0			
11	Assembly screw	JJJJ56CX056			
12	Pressure case	JJJJ56CX052			
13	Spring casing	JJJJ56CX062			
14	Plate	JJJJ56CX063			
15	Diaphragm	ERAA33397A0			
16	Pressure case	JJJJ56CX060			
17	Square stem	JJJJ56CX070			
18	Spring casing	JJJJ56CX068			
19	Spring seat	JJJJ56CX069			
20	Guide plate	JJJJ56CX067			
21	Piston case	JJJJ56CX065			
22	O-ring	J1321355028			
23	O-ring	J1321355A37			
24	Piston	JJJJ56CX066			
25	Cover	JJJJ56CX064			
26	Mechanism box (BM) For Type BMS1 For Types BMS1 and BMS2	JJJJ56BX035 JJJJ56BX037			
27	Handle	JJJJ56CX074			
28	Manometric sensing device (BMS) Type A Type B Type C Type D	JJJJ56BX910 JJJJ56BX911 JJJJ56BX012 JJJJ56BX038			
29	Travel stop	JJJJ56CX020			
30	Amortisseur	JJJJ56CX021			

Type FEQ

Parts List (continued)

Key	Description	Part Number
42	Orifice DN 25 / 1 in. DN 50 / 2 in. DN 80 / 3 in. DN 100 / 4 in. DN 150 / 6 in.	JJJJ49CX006 JJJJ56CX201 JJJJ57CX021 JJJJ58CX021 JJJJ59CX021
43	Screw	J11A1060016
44	Screw	J11AD080020
45	Washer	J11J3000008
46	O-ring	J1321265018
47	Screw DN 25 / 1 in. DN 50 / 2 in. DN 80 / 3 in. DN 100 / 4 in. DN 150 / 6 in.	1R281124052 1A453324052 J11HP000001 1A381024052 1A524824052
49	O-ring DN 25 / 1 in. DN 50 / 2 in. DN 80 / 3 in. DN 100 / 4 in. DN 150 / 6 in.	J1321355A92 J1321355136 J1321355175 J1321355200 J1321530300
50	O-ring DN 25 / 1 in. DN 50 / 2 in. DN 80 / 3 in. DN 100 / 4 in. DN 150 / 6 in.	19B2838X012 18B2124X012 18B8514X012 18B2140X012 19B0359X012
51	Pin	J11JB003020
52	O-ring DN 25 / 1 in. DN 50 / 2 in. DN 80 / 3 in. DN 100 / 4 in. DN 150 / 6 in.	J1321355028 J1321530A47 J1321530A77 J1321530A97 J1321530175
53	O-ring	J1321180019
54	O-ring DN 25 / 1 in. DN 50 / 2 in. DN 80 / 3 in. DN 100 / 4 in. DN 150 / 6 in.	14A5713X012 10B4428X012 10B4366X012 10B4373X012 1H862306992
82	Piston Case	JJJJ56CX121
83	Piston	JJJJ56CX122
84	O-ring	J1321355018

Remote Alert (Only for Close Position)

Key	Description	Part Number
55	Remote Alert (Only for Close Position, No Cable Gland)	JJJJ56BX033
56	Remote Alert (Only for Close Position, with Cable Gland)	JJJJ56BX019

Remote Alert (For Open Position and Close Position)

Key	Description	Part Number
57	Remote Alert (For Open Position and Close Position, No Cable Gland) Assembly of this kind of remote alert for DN 25 / 1 in. Assembly of this kind of remote alert for DN 50 / 2 in. Assembly of this kind of remote alert for DN 80 / 3 in. Assembly of this kind of remote alert for DN 100 / 4 in. Assembly of this kind of remote alert for DN 150 / 6 in.	JJJJ49BX007 JJJJ56BX025 JJJJ57BX020 JJJJ58BX021 JJJJ59BX003
58	Remote Alert (For Open Position and Close Position, with Cable Gland) Assembly of this kind of remote alert for DN 25 / 1 in. Assembly of this kind of remote alert for DN 50 / 2 in. Assembly of this kind of remote alert for DN 80 / 3 in. Assembly of this kind of remote alert for DN 100 / 4 in. Assembly of this kind of remote alert for DN 150 / 6 in.	JJJJ49BX009 JJJJ56BX034 JJJJ57BX024 JJJJ58BX024 JJJJ59BX024

Spare Parts Kit for Type A Sensing Device - ERAA47442A0

Key	Description	Part Number
10	Diaphragm	ERAA33621A0

Spare Parts Kit for Type B Sensing Device - ERAA47443A0

Key	Description	Part Number
15	Diaphragm	ERAA33397A0

Spare Parts Kit for Type C Sensing Device - ERAA47444A0

Key	Description	Part Number
22	O-ring	J1321355028
23	O-ring	J1321355A37

Spare Parts Kit for Type D Sensing Device - ERAA47445A0

Key	Description	Part Number
23	O-ring	J1321355A37
84	O-ring	J1321355018

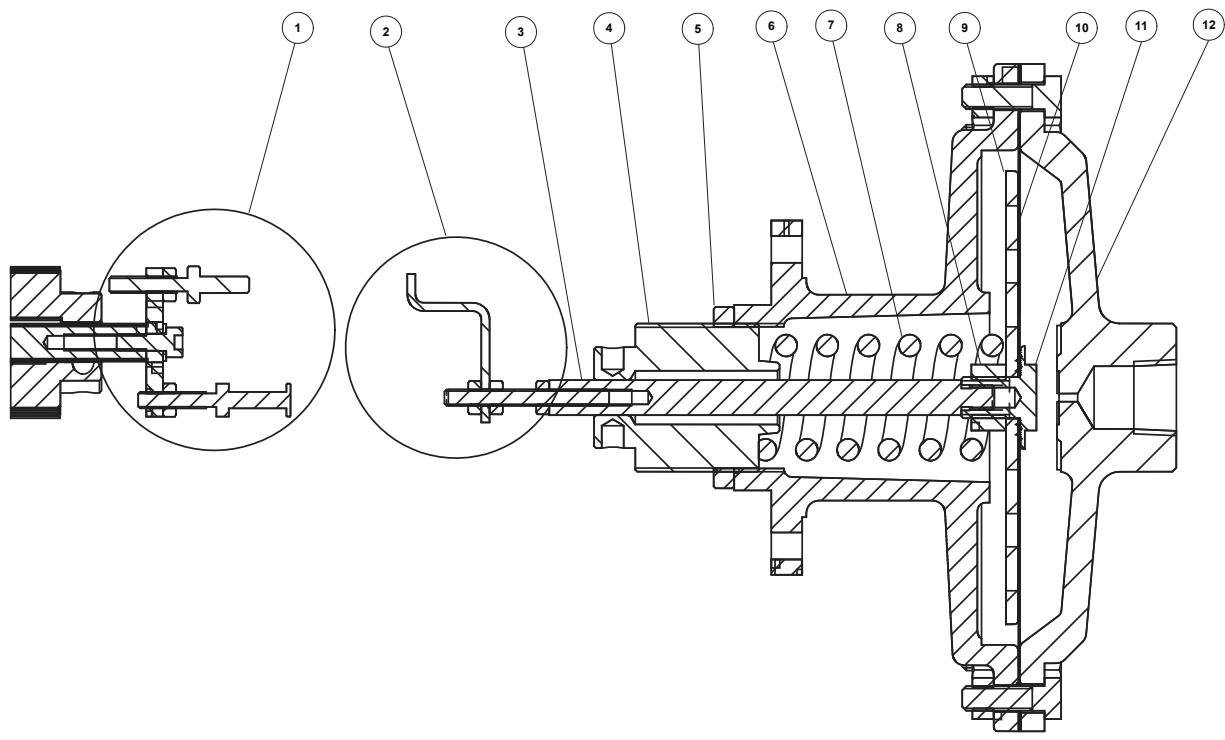


Figure 16. Type A Manometric Sensing Device (BMS)

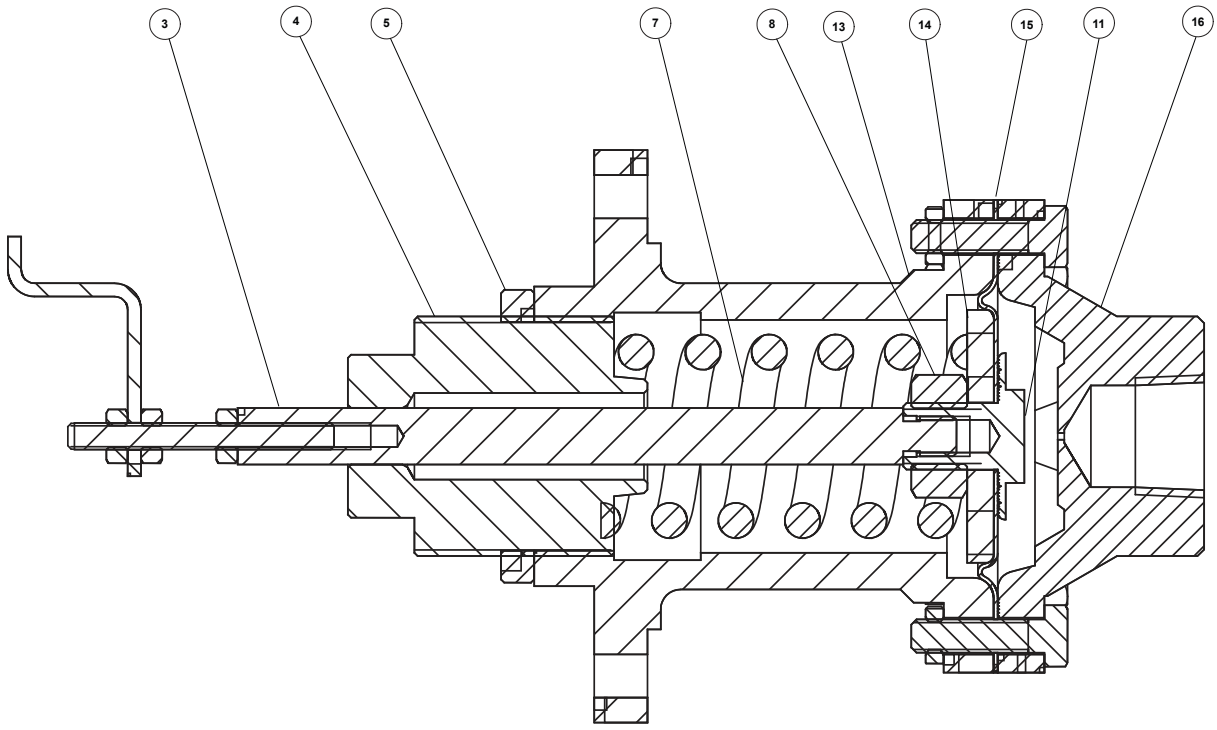


Figure 17. Type B Manometric Sensing Device (BMS)

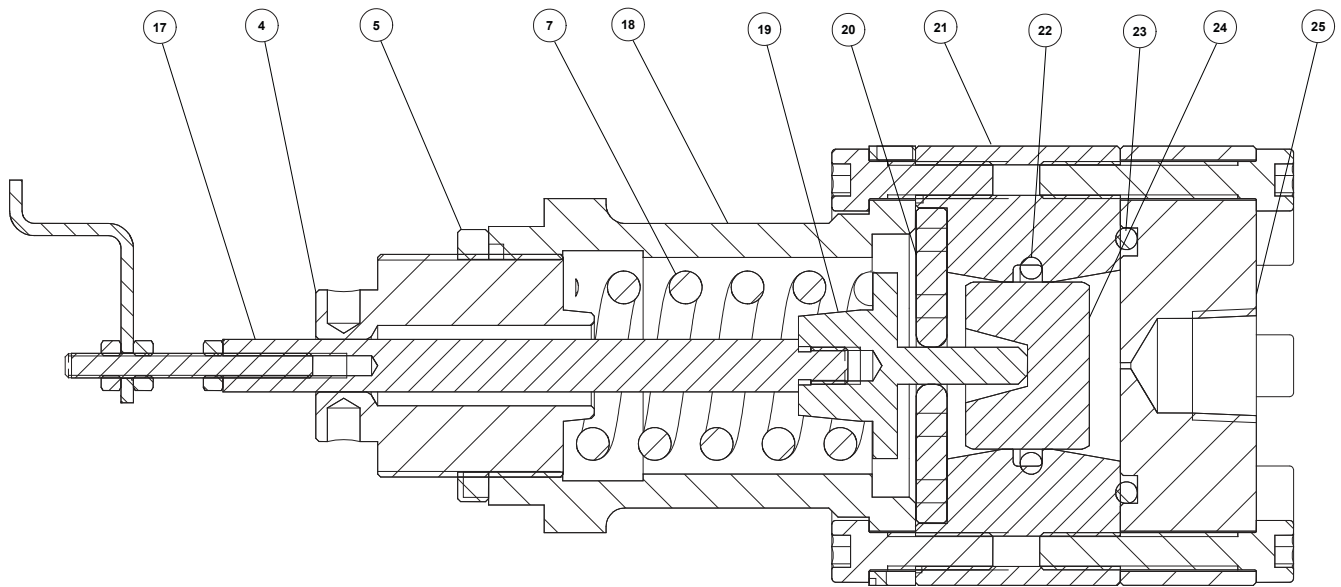


Figure 18. Type C Manometric Sensing Device (BMS)

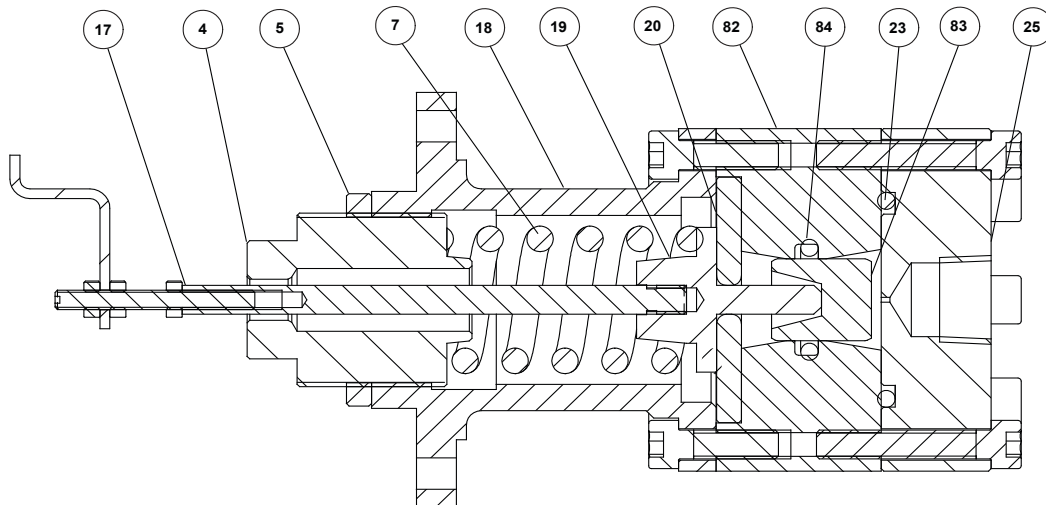


Figure 19. Type D Manometric Sensing Device (BMS)

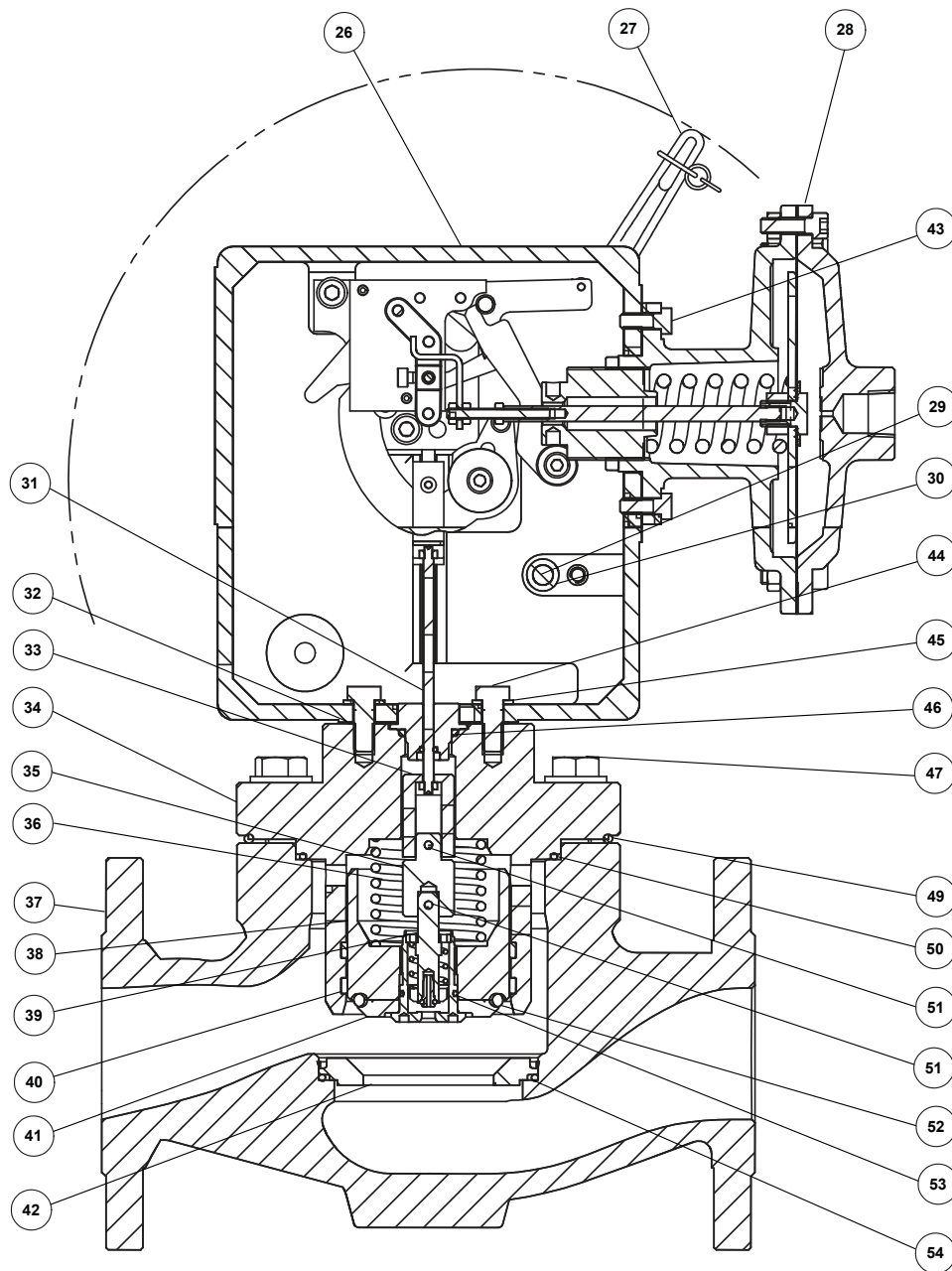


Figure 20. Type FEQ Slam-Shut Valve

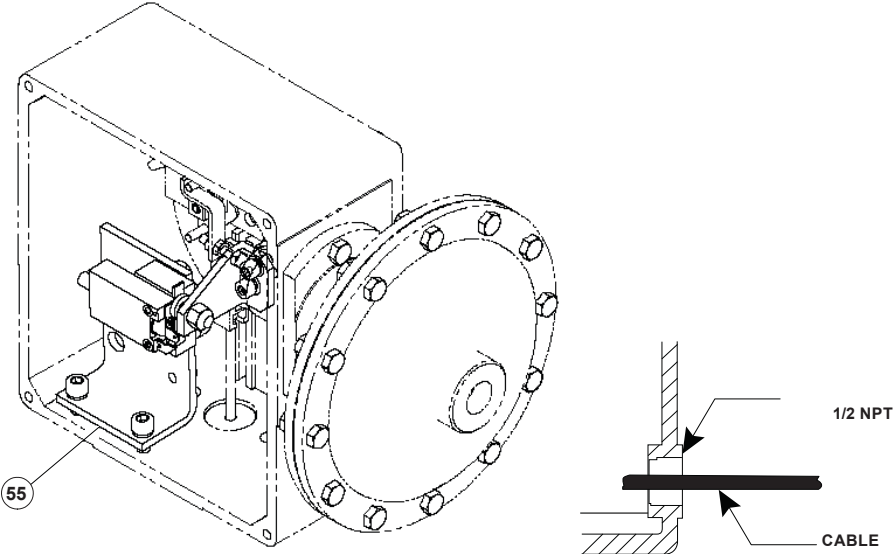


Figure 21. Remote Alert (Only for Close Position, No Cable Gland)

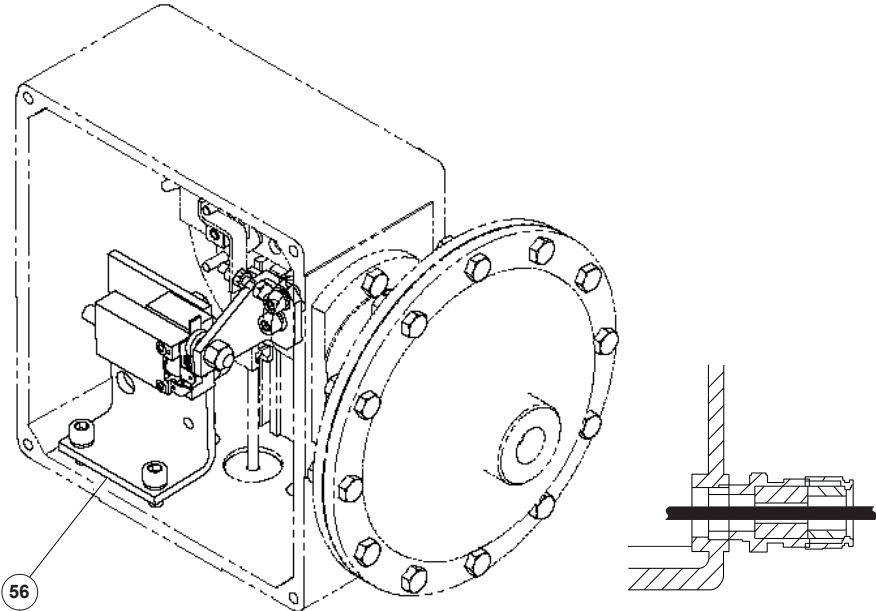


Figure 22. Remote Alert (Only for Close Position, with Cable Gland)

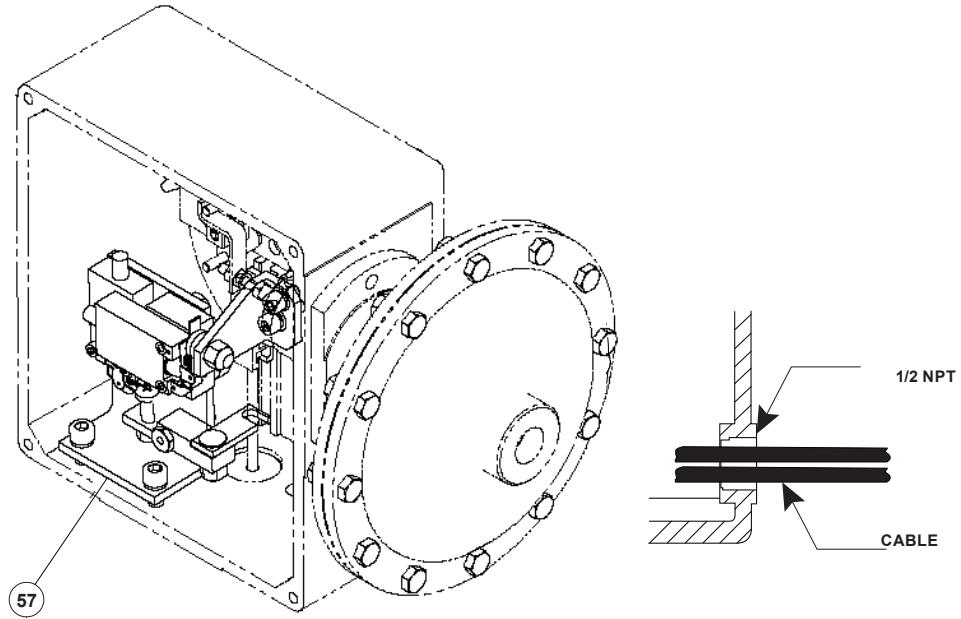


Figure 23. Remote Alert (For Open Position and Close Position, No Cable Gland)

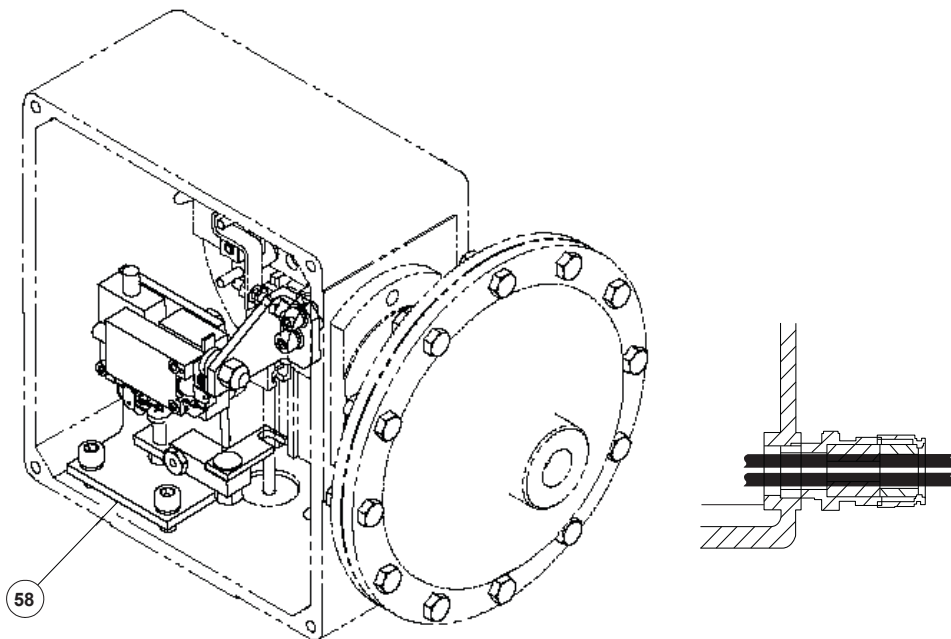


Figure 24. Remote Alert (For Open Position and Close Position, with Cable Gland)

Type FEQ

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