Types 66R and 66RR Relief Valves

Introduction

Scope of the Manual

This manual describes and provides instructions, installation, and parts list for Type 66R direct-operated relief valve* and for Type 66RR pilot-operated relief valve* complete with Type Y695RR pilot. Instructions and parts list for other Fisher® equipment used with these relief valves are found in separate manuals.

Product Description

Types 66R and 66RR throttling relief valves (Figure 1) are used to help protect a system against overpressure, or to maintain an inlet or backpressure. The Type 66R direct-operated construction is used for set pressure ranges of 2-inches w.c. to 5 psig (5 mbar to 0,34 bar), while the Type 66RR pilot-operated construction with the Type Y695RR pilot is used for set pressure ranges of 4-inches w.c. to 7 psig (10 mbar to 0,48 bar).

Specifications

Refer to Specifications for Types 66R and 66RR constructions listed on page 2. Some specifications for a given relief valve as it originally comes from the factory are stamped on nameplates located on the Type 66R relief valve body or Type 66RR main valve body.

W1935

TYPE 66R RELIEF VALVE

W1908

TYPE 66RR RELIEF VALVE

Figure 1. *Typical Constructions*

Principle of Operation

Type 66R Relief Valve

Refer to Figure 2. Inlet pressure registers under the diaphragm and is opposed by the spring. When the inlet pressure increases above the spring setting, the valve plug opens in a throttling manner and relieves the inlet pressure. As inlet pressure drops back to set pressure, the spring closes the valve plug.

Type 66RR Relief Valve

Refer to Figure 2. Inlet pressure registers on the bottom of the pilot diaphragm through the upstream control line and bleeds through a fixed restriction in the pilot to provide loading pressure that helps the main valve spring keep the main valve plug tightly shut off. When inlet pressure exceeds the setting of the pilot spring, the pilot diaphragm moves upward, opening the pilot valve disk and relieving

*Relief valve defined in ANSI standard B95.1-1972. Not all codes or regulations permit these valves to be used as final overpressure protection devices.

D100248X012

Specifications

Body Sizes and End Connection Styles

NOMINAL SIZE, NPT (DN)	END CONNECTION STYLES AND RATINGS[1]	
	Standard Cast Iron Body	Optional Steel Body
2 (50)	NPT or CL125 FF flanged	NPT, CL150 RF, and CL300 RF flanged
3, 4 (80, 100)	CL125 FF flanged	CL150 RF flanged

Maximum Relief Inlet Pressure[1]
Type 66R: 8 psig (0,55 bar), including build-up
Type 66RR: 10 psig (0,69 bar), including build-up

Relief Set Pressure Ranges[1]
Type 66R: 2-inches w.c. to 5 psig (5 mbar to 0,34 bar) in 7 ranges
Type 66RR: 4-inches w.c. to 7 psig (10 mbar to 0,48 bar) See Table 1

Allowable Emergency Outlet Pressure
Type 66R: 8 psig (0,55 bar)
Type 66RR: 10 psig (0,69 bar)

Port Diameters
NPS 2 (DN 50) Body: 2-inch (51 mm)
NPS 3 (DN 80) Body: 3-inch (76 mm)
NPS 4 (DN 100) Body: 4-inch (102 mm)

Temperature Capabilities
Standard Elastomers: -20° to 180°F (-29° to 82°C)
High-Temperature Elastomers:
0° to 350°F (-18° to 177°C)

Pressure Setting Adjustment
Adjusting screw

Pressure Registration
Type 66R: Internal **(standard)** or external
Type 66RR: External on pilot and internal in main valve

Pressure Connections
Type 66R
Control Line (If Used): 3/4 NPT internal
Spring Case Vent: 3/4 NPT internal with removable Type Y602-10 vent assembly
Type 66RR
Pilot Body: 3/4 NPT internal
Pilot Diaphragm Case: 1/2 NPT internal
Pilot Spring Case: 1/4 NPT internal

Approximate Weights
NPS 2 (DN 50) Body
NPT: 50 pounds (23 kg) for Type 66R or 65 pounds (30 kg) for Type 66RR
Flanged: 55 pounds (25 kg) for Type 66R or 70 pounds (32 kg) for Type 66RR
NPS 3 (DN 80) Body: 100 pounds (45 kg) for Type 66R or 115 pounds (52 kg) for Type 66RR
NPS 4 (DN 100) Body: 155 pounds (70 kg) for Type 66R or 170 pounds (77 kg) for Type 66RR

1. The pressure/temperature limits in this Instruction Manual and any applicable standard or code limitation should not be exceeded.

Table 1. *Type Y695RR Pilot Control Spring Selection*

MAIN VALVE CONSTRUCTION	RELIEF SET PRESSURE RANGE	PILOT CONTROL SPRING			
		Part Number	Color Code	Wire Diameter, NPT (mm)	Free Length, NPT (mm)
Standard	4 to 9-inches w.c. (10 to 22 mbar)[1]	1B653827052	Red	0.085 (2,16)	3.625 (92,1)
	5 to 15-inches w.c. (12 to 37 mbar)[1]	1B653927022	Olive drab	0.105 (2,67)	3.750 (95,3)
	12 to 28-inches w.c. (30 to 70 mbar)[1]	1B537027052	Yellow	0.114 (2,90)	4.188 (106)
	0.9 to 2.5 psig (0,06 to 0,17 bar)	1B537127022	Light green	0.156 (3,96)	4.060 (103)
	1.3 to 4.5 psig (0,09 to 0,31 bar)	1B537227022	Light blue	0.187 (4,75)	3.938 (100)
Special	3.8 to 7 psig (0,26 to 0,48 bar)	1B537327052	Black	0.218 (5,54)	3.980 (101)

1. Published ranges are with the spring case pointed up.

some of the pressure from the top of the main valve diaphragm. At the same time, the inlet pressure increase registers on the bottom of the main valve diaphragm.

The pressure differential acting on the main valve diaphragm moves this diaphragm upward, opening the main valve. Further increases in inlet pressure continue to open the pilot valve disk and the main valve plug. When inlet pressure returns to the pilot control spring setting, the pilot disk closes, allowing inlet pressure to load the top of the main valve diaphragm through the fixed restriction. This equalizes the pressures acting on this diaphragm, and the main valve spring closes the main valve plug.

Installation

WARNING

Installing Types 66R and 66RR relief valve where its capabilities can be exceeded may cause leakage, part damage, or personal injury due to bursting of pressure-containing parts or explosion of accumulated gas. To avoid this, install a Type 66R or 66RR relief valve where:

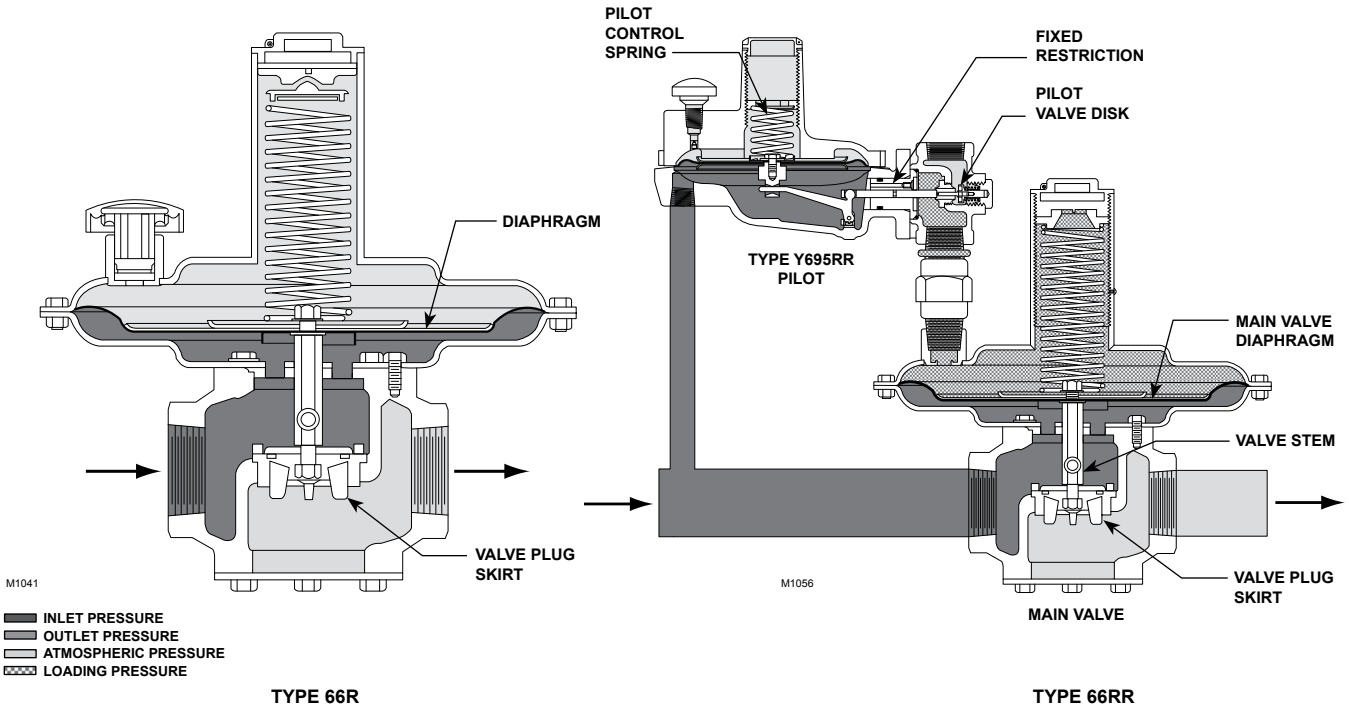


Figure 2. *Operational Schematics*

- **Service conditions are within unit capabilities (including those given in the Specifications section),**
- **Service conditions are within applicable local, state, or federal codes or regulations, and**
- **The unit is protected from exposure to physical damage and/or corrosive substances.**

1. Use qualified personnel when installing, operating, and maintaining these relief valves. Before installing, inspect the relief valve, and pilot if used, for any damage or foreign material that may have collected.
2. Make certain the body interior is clean and that pipelines are free of foreign material. Apply pipe compound to only the male pipeline threads with an NPT body, or use suitable line gaskets and acceptable bolting practices with a flanged body.
3. Install a Type 66R or 66RR relief valve in a horizontal pipeline with the diaphragm casings above the body. Other orientations will change the relief set pressure and set pressure range due to the weight of the internal parts. The flow through the relief valve must comply with the flow arrow on the body.
4. An upstream control line is not required for a standard Type 66R relief valve with internal registration through a stem guide (key 41, Figure 6). However, for an optional Type 66R relief valve with sealing diaphragm (key 14, Figure 6), connect a control line to the 3/4-inch NPT tapped connection boss on the diaphragm case (key 3, Figure 6) as shown in Figure 3.
5. For a Type 66RR relief valve used in a relief application, connect an upstream control line to the 1/2 NPT connection on the pilot diaphragm case (key 4, Figure 8). For other typical applications, piping arrangements are shown in Figures 4 and 5. Regardless of Type 66RR installation, the pipe plug (key 78, not shown) will have to be removed from the vent of the Type Y695RR pilot spring case (key 3, Figure 8).
6. On backpressure or bypass applications, install a three-valve isolating bypass, and vent valves immediately upstream and downstream of the unit, if system operation is necessary during maintenance.

⚠ WARNING

Relief valves vent gas from the main valve outlet and from the exhaust of the pilot if used. In hazardous gas service, personal injury and equipment damage may occur due to fire or explosion of vented gas that has accumulated. To prevent such injury and damage, provide piping or tubing to vent the gas to a safe location. Protect the vent opening against anything that could clog it.

7. The standard Type 66R spring case (key 2, Figure 6) has a Type Y602-10 vent assembly (key 30, Figure 6) installed in the 3/4 NPT spring case tapping. The vent may be removed and obstruction-free piping or tubing installed for remote piping of the spring case or for pressure loading of the spring case as shown in Figure 5. If kept in the spring case, the vent must be protected against clogging.

8. Each unit is factory-set for the set pressure specified on the order. If no setting is specified, set pressure is factory set at the mid-range of the Type 66R spring (key 6, Figure 6) or the Type 66RR pilot control spring (key 6, Figure 8). The set pressure of a unit is adjusted by changing the compression of the appropriate spring. Check and verify the spring setting to make sure that it is correct for the application.
9. Set pressure for a Type 66RR relief valve is defined as the pressure at which the main valve starts-to-discharge. Type 66RR units have been designed so that either a 1-inch w.c. (2,50 mbar) build-up or a 5 percent build-up (whichever is greater) above this set pressure will open the main valve and permit it to yield full open capacity.

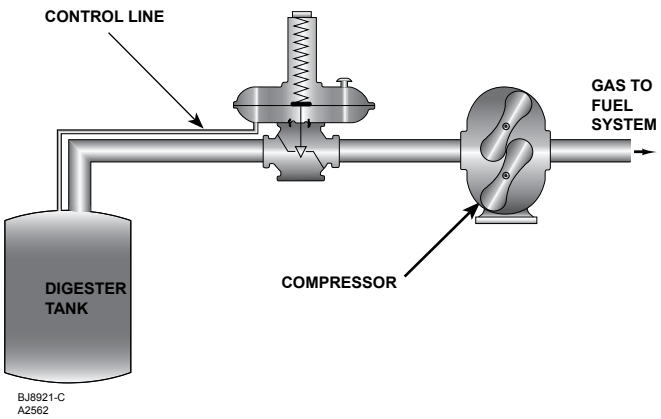


Figure 3. *Type 66R Relief Valve Installation at Outlet of Sewage Treatment Plant Digester Tank*

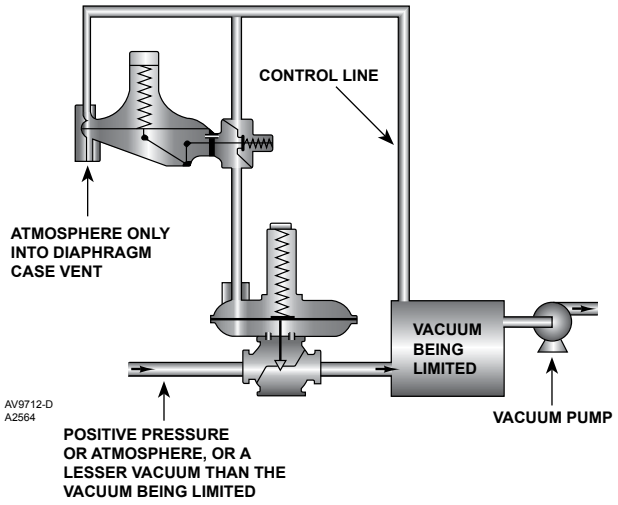


Figure 4. *Type 66RR Relief Valve Installation in Vacuum Breaker System*

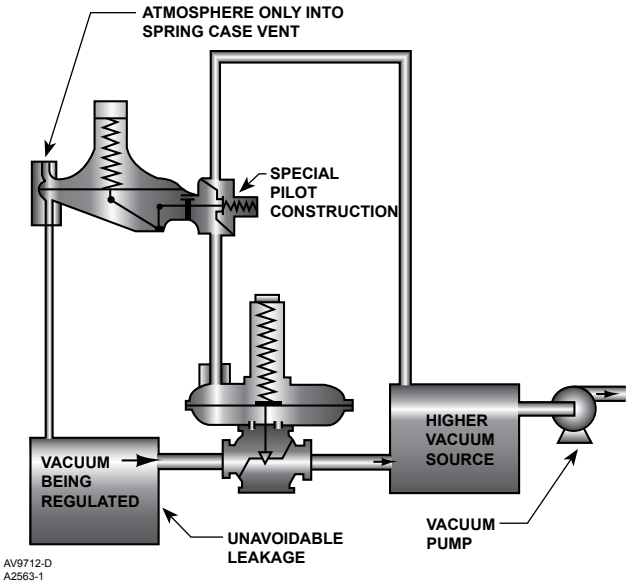


Figure 5. *Type 66R Relief Valve Installation in Vacuum Regulation System*

Startup

Key numbers are referenced in Figure 6 for the Type 66R relief valve, in Figure 7 for the Type 66RR main valve, and in Figure 8 for the Type 66RR relief valve pilot.

With proper installation and adjustment completed, slowly open the upstream shutoff valve while using gauges to monitor pressure. To monitor inlet pressure, remove the pipe plug (key 31, not shown) on the side of the body opposite the flow arrow, and then temporarily install a gauge.

On backpressure or bypass applications using an isolating bypass, also open the downstream shutoff valve and close the bypass valve.

If set pressure adjustment is necessary, monitor inlet pressure with a gauge during the adjustment procedure. Adjust a Type 66R relief valve by removing the closing cap (key 27) if necessary, loosening the locknut (key 45) if used, and turning the adjusting screw (key 25) clockwise to increase or counterclockwise to decrease the set pressure. After adjustment, tighten the locknut or install the closing cap. To adjust a Type 66RR relief, remove the Type Y695RR pilot closing cap (key 22), turn the adjusting screw (key 35) clockwise to increase or counterclockwise to decrease the set pressure, and then install the closing cap.

Shutdown

Relief Installations

Slowly close the upstream shutoff valve. Release all pressure from the relief valve, and pilot if used, by opening the upstream vent valve.

Backpressure or Bypass Installations

Slowly close the upstream shutoff valve, while opening the bypass valve if an isolating bypass is used. Then, close the downstream shutoff valve, and open both vent valves to release all pressure from the relief valve (and pilot if used).

Maintenance

Relief valve parts are subject to normal wear and must be inspected and replaced as necessary. The frequency of inspection and replacement of parts depends upon the severity of service conditions and the requirements of local, state, and federal regulations.

WARNING

Avoid personal injury or property damage from sudden release of pressure or explosion of accumulated gas. Before starting to disassemble:

- **Isolate the relief valve from line pressure,**
- **Release trapped pressure from the body, and**
- **Vent any trapped loading pressure.**

Type 66R Relief Valve or Type 66RR Main Valve Body

This section gives procedures for complete disassembly and assembly of the relief valve or main valve body. Disassemble the valve only as far as required to gain access to the necessary parts. Then, begin the "Assembly" procedure at the appropriate step. Key numbers for the Type 66R relief valve are referenced in Figure 6 and, for the Type 66RR main valve, in Figure 7.

Note

All disassembly and assembly steps in this section may be performed with the relief valve in the main line. If used, the pilot and its mounting parts (keys 60 through 65, and 67, Figure 7) may remain on the spring case (key 2) unless the pilot body is to be removed or the entire pilot replaced as a unit.

Disassembly

1. With a Type 66RR relief valve, disconnect the pilot control and/or vent lines.
2. Loosen the locknut (key 45) if used, and remove the closing cap (key 27) and closing cap gasket (key 26).
3. In order to facilitate resetting spring compression during assembly, be sure to note the position of the adjusting screw (key 25) before removing it. Then, turn the screw out of the spring case (key 2) to remove spring compression, and remove the upper spring seat (key 24), spring (key 6), cap screws and nuts (keys 21 and 22), and spring case.
4. Unscrew the stem nut (key 23) from the top of the stem (key 13). To keep the stem from twisting, lift the diaphragm (key 5) and attached parts far enough to hold the stem with an open-end wrench. Or, remove the pipe plug (key 31, not shown) from the side of the body opposite the arrow, and insert a 5/16-inch (7,94 mm) or smaller rod through the pipe plug hole and the hole in the stem.
5. Remove the spring seat washer (key 36) if used, lower spring seat (key 17), stiffener plate (key 39) if used, upper diaphragm plate (key 4), diaphragm (key 5), lower diaphragm plate (key 15), stem gasket (key 18), diaphragm spacer (key 16) if used, and another stem gasket and lower diaphragm plate if used. With a high-temperature fluorocarbon (FKM) diaphragm, remove the diaphragm gasket (key 66, not shown) that goes between the diaphragm and diaphragm case (key 3).
6. Remove the cap screws (key 20) and washers (key 34) that attach the diaphragm case to the body (key 1).
7. Remove the diaphragm case and diaphragm case gasket (key 35). Depending on construction, remove either the stem guide (key 41) or the sealing diaphragm (key 14) and last lower diaphragm plate (key 15) and stem gasket (key 18). If used, remove the rod from the stem and the pipe plug hole in the body.
8. Lift out the stem and attached parts.
9. Unscrew the stem nut (key 23) from the bottom of the stem, and remove the valve plug skirt (key 10), O-ring (key 8), O-ring retainer (key 9), and seal washer (key 37).
10. Slide a seat ring puller, T-wrench, or other suitable tool over the seat ring (key 11). Engage the tool with the seat ring lugs. Unscrew the seat ring.
11. If necessary to replace the bottom flange gasket (key 19), remove the cap screws (key 20), bottom flange (key 7), and gasket.

Assembly

1. Apply pipe compound to the threads of the seat ring (key 11). Screw in the seat ring, using a seat ring puller or similar device. Wipe off any excess pipe compound.
2. Place the seal washer (key 37), O-ring retainer (key 9), O-ring (key 8), and valve plug skirt (key 10) on the stem (key 13) in the order shown in Figure 6 or 7.
3. Secure the stem nut (key 23) to the stem. Install the stem and attached parts into the body.
4. If necessary, install a new bottom flange gasket (key 19) and the bottom flange (key 7) on the valve body. Secure the flange with the cap screws (key 20).
5. Depending on construction, either install the stem guide (key 41) on the body, or install the stem gasket (key 18), lower diaphragm plate (key 15), and the sealing diaphragm (key 14) on the stem. Make sure that on a sealing diaphragm, the diaphragm holes are aligned with the body flange holes.

6. Install the diaphragm case gasket (key 35) and diaphragm case (key 3) on either the body flange or sealing diaphragm, making sure the gasket and case holes are aligned with the body flange holes.

7. Secure the diaphragm case with the washers (key 34) and cap screws (key 20), tightening the cap screws with an even crisscross pattern. With a high-temperature fluorocarbon (FKM) diaphragm, use a new case gasket (key 66, not shown), and install it on top of the diaphragm case.

8. With a sealing diaphragm construction, place another lower diaphragm plate on the sealing diaphragm so that the cupped side of the plate faces up, followed by another stem gasket (key 18) and the diaphragm spacer (key 16) if used.

9. Place a stem gasket (key 18) on the stem or diaphragm spacer, followed by the lower diaphragm plate (key 15), diaphragm (key 5), upper diaphragm plate (key 4), stiffener plate (key 39) if used, lower spring seat (key 17), and spring seat washer (key 36) if used.

10. To keep the stem (key 13) from rotating, insert a 5/16-inch (7,9 mm) or smaller rod into the pipe plug hole and through the hole in the stem, or reach far enough under the diaphragm with an open-end wrench to hold the stem. Install the other stem nut (key 23) on the stem.

11. Remove the rod (if used) from the pipe plug hole, and install the pipe plug (key 31, not shown) in the body.

WARNING

When changing from one spring to another, a new spring case with set screw in a different location must be matched to the replacement spring. Installing an incorrect spring case when changing from one spring to another may cause the spring to go solid and restrict the full opening of the valve plug. This could keep the relief valve from full-capacity performance and thus cause personal injury or equipment damage. To avoid this, order a replacement spring case according to the "Parts List".

12. Install the spring case (key 2) on the diaphragm, and secure with the cap screws and nuts (keys 21 and 22), finger-tightening only at this point.

13. Install the spring (key 6), upper spring seat (key 24), adjusting screw (key 25), and new closing cap gasket (key 26). With some constructions, the closing cap (key 27) will have to be installed before the adjusting screw.

14. Compress the spring slightly with the adjusting screw to ensure proper slack in the diaphragm. Tighten the nuts and cap screws alternately in equal increments to avoid crushing the diaphragm.

15. Turn a Type 66RR adjusting screw into the spring case to the position noted in "Disassembly" step 3. If this position was not marked, turn the adjusting screw until the valve begins to open when inlet pressure just exceeds 2-inches w.c. (5 mbar).

16. Complete the relief valve adjustment according to the "Startup" section.

Type 66RR Relief Valve Pilot

Body Area

This procedure is for gaining access to the disk assembly, orifice, and body seal O-ring. All pressure must be released from the regulator, before the following steps can be performed. Key numbers are referenced in Figure 8.

1. To inspect and replace the disk assembly (key 13) remove the body cap assembly (key 43).

2. Remove the disk assembly (key 13) from the disk spacer (key 44) and replace if necessary.

3. To inspect the orifice (key 5), remove the cap screws (key 2) and separate the diaphragm case assembly (key 4) from the body (key 1).

4. Remove and inspect the body seal O-ring (key 11) and the backup ring (key 49). Replace if damaged.

5. Inspect and replace the orifice (key 5) if necessary. Lightly lubricate the threads of the replacement orifice. Install with 29 to 37 foot pounds (39 to 50 N•m) of torque.

6. Install the backup ring (key 49) into the body (key 1). Next place the body seal O-ring (key 11) into the body. See Figure 8.

7. Replace the diaphragm casing (key 4) on the body (key 1) and secure with the cap screws (key 2) using 7 to 9 foot pounds (9,50 to 12 N•m) of torque.

8. Secure the disk assembly (key 13) to the disk spacer (key 44). Place the back disk spring (key 41) and a new back body seal O-ring (key 42) on the back body cap (key 43).

9. Lightly lubricate the threads when replacing the body cap assembly.

Diaphragm and Spring Case Area

This procedure is for gaining access to the control spring, diaphragm, and lever assembly stem. All pressure must be released from the diaphragm case assembly before performing the following steps. Key numbers are referenced in Figure 8.

To Change the Control Spring:

1. Remove the closing cap (key 22), and turn the adjusting screw (key 35) counterclockwise to remove all compression from the control spring (key 6).
2. Remove the adjusting screw (key 35) and change the control spring to match the desired spring range.
3. Install the adjusting screw (key 35) and refer to the Startup section for adjustment.
4. Install a replacement closing cap gasket (key 25), if necessary, and reinstall the closing cap (key 22).
5. If the spring range was changed, be sure to change the stamped spring range on the spring case nameplate.

To Disassemble and Reassemble Diaphragm Parts:

1. Remove the closing cap (key 22) and the adjusting screw (key 35).
2. Remove the hex nuts (key 23, not shown) and cap screws (key 24), lift off the spring case assembly (key 3) and remove the control spring (key 6).
3. Remove the diaphragm (key 10) plus attached parts by tilting them so that the pusher post (key 8) slips off the lever assembly (key 16). To separate the diaphragm assembly (key 10) from the attached parts, unscrew the diaphragm plate cap screw (key 38) from the pusher post (key 8). If the only further maintenance is to replace the diaphragm parts, skip to step 7.
4. To replace the lever assembly (key 16), remove the machine screws (key 17). To replace the stem (key 14), perform Body Area Maintenance procedure step 3, and pull the stem (key 14) out of the guide insert (key 18).
5. Install the stem (key 14) into the guide insert (key 18) and perform Body Area Maintenance procedure steps 6 and 7 as necessary.
6. Install the lever assembly (key 16) into the stem (key 14) and secure the lever assembly (key 16) with the machine screws (key 17).
7. Reassemble the diaphragm parts as follows:
   - Pusher post (key 8)
   - Diaphragm head gasket (key 45)
   - Diaphragm head (key 7)
   - Diaphragm (key 10)
   - Diaphragm head (key 7)
   - Lower spring seat (key 50)
   - Washer (key 36)
   - Diaphragm plate cap screws (key 38)

   Secure using 5 to 6 foot-pounds (7 to 8 N•m) of torque.
8. Install the pusher post (key 8) plus attached diaphragm parts onto the lever assembly (key 16).
9. Install the spring case (key 3) on the diaphragm casing (key 4) so that the vent assembly (key 26) is correctly oriented, and secure it with the cap screws (key 24) and hex nuts (key 23, not shown) fingertight.
10. Install the control spring (key 6) and the adjusting screw (key 35) in the spring case (key 3). Turn the adjusting screw (key 35) clockwise until there is enough control spring (key 6) force to provide proper slack to the diaphragm (key 10). Using a crisscross pattern, finish tightening the cap screws (key 24) and hex nuts (key 23, not shown) to 160 to 190 inch-pounds (18 to 21 N•m) of torque. To adjust the outlet pressure to the desired setting, refer to the Startup and Adjustment section.
11. Install a replacement closing cap gasket (key 25) if necessary, and then install the closing cap (key 22).

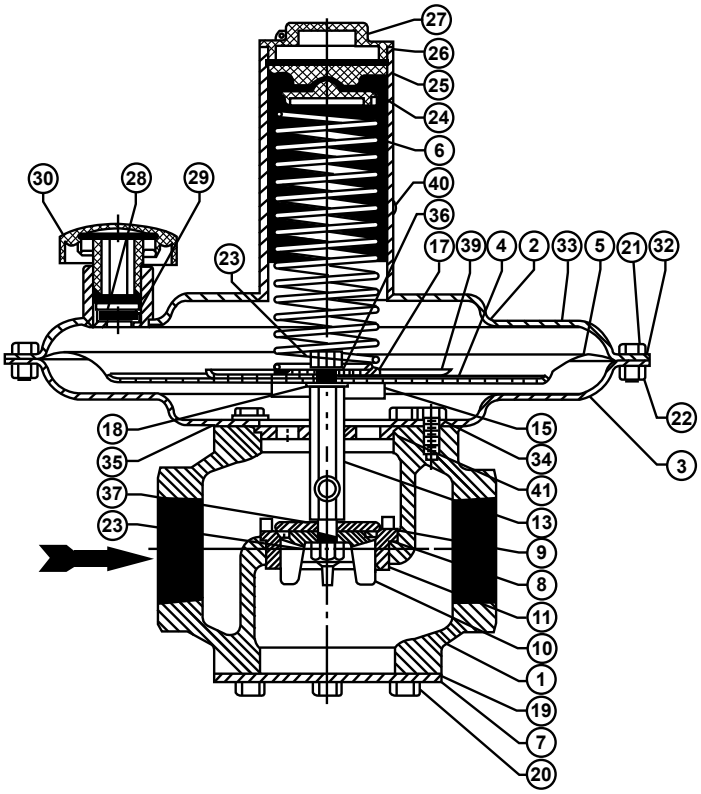
Parts Ordering

A Type 66R or 66RR relief valve has a serial number stamped on a nameplate attached to the diaphragm case. When corresponding with your local Sales Office, always refer to this serial number. Also, when ordering replacement parts, give the complete 11-character part number of each needed part as found in the following parts list.

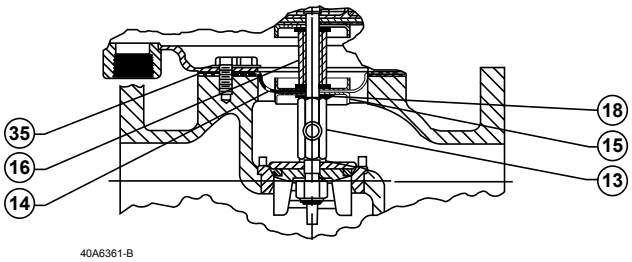
Parts List

Type 66R Relief Valve (Figure 6) or Type 66RR Main Valve Body (Figure 7)

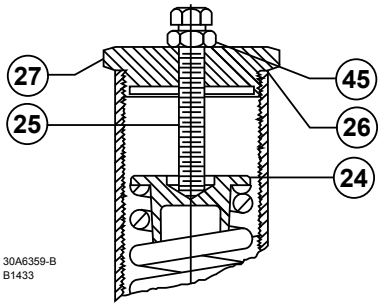
Key	Description	Part Number
1	Body	
	Cast iron (not for use with sealing diaphragm)	
	2 NPT	2K556819012
	CL125 FF flanged	
	NPS 2 (DN 50)	2K557019012
	NPS 3 (DN 80)	2K557219012
	NPS 4 (DN 100)	2K557419012
	Cast iron for use with sealing diaphragm (Type 66R only)	
	2 NPT	2K556719012
	CL125 FF flanged	
	NPS 2 (DN 50)	2K5569X0012
	NPS 3 (DN 80)	2K557119012
	NPS 4 (DN 100)	2K557319012
	WCC Steel (not for use with sealing diaphragm)	
	2 NPT	2L3505X0012
	CL150 RF flanged	
	NPS 2 (DN 50)	2J840122012
	NPS 3 (DN 80)	2P936022012
	NPS 4 (DN 100)	2N850022012
	NPS 2 (DN 50) CL300 RF flanged	2L4426X0012
2	Spring Case, Steel (complete with SST drive screw)	See following table



COMPLETE STANDARD ASSEMBLY WITH INTERNAL REGISTRATION



DETAIL OF OPTIONAL CAST IRON CONTRUCTION WITH SEALING DIAPHRAGM AND TAPPED DIAPHRAGM CASE



CLOSING CAP AND ADJUSTING SCREW DETAIL FOR 3 TO 5 PSIG (0,21 to 0,34 bar) CONSTRUCTION

Figure 6. *Type 66R Relief Valve*

Key	Description	Part Number
3	Diaphragm Case, Steel	
	Standard	
	NPS 2 (DN 50) body	3D478728992
	NPS 3 (DN 80) body	3D478928992
	NPS 4 (DN 100) body	3D479128992
	Optional 3/4 NPT tapped (for Type 66R with sealing diaphragm only)	
	NPS 2 (DN 50) body	1F4421000A2
	NPS 3 (DN 80) body	1F4419000A2
	NPS 4 (DN 100) body	1F1319000A2
4	Upper Diaphragm Plate, Zinc-plated steel	
	NPS 2 (DN 50) body	
	2-inches w.c. to 2 psig (5 mbar to 0,14 bar) set pressures for Type 66R or 3-inches w.c. to 3.25 psig (7 mbar to 0,22 bar) set pressures for Type 66RR	1D255625072
	1.5 to 5 psig (0,10 to 0,34 bar) set pressures for Type 66R or 3.25 to 7 psig (0,22 to 0,48 bar) set pressures for Type 66RR	1D555725012
	NPS 3 (DN 80) body	1D477328992
	NPS 4 (DN 100) body	1D477425062
5*	Diaphragm	
	Nitrile (NBR)	
	NPS 2 (DN 50) body	1D477002072
	NPS 3 (DN 80) body	1D477102072
	NPS 4 (DN 100) body	1D477202072
	Fluorocarbon (FKM)	
	NPS 2 (DN 50) body	1D477002332
	NPS 3 (DN 80) body	1D477102332
	NPS 4 (DN 100) body	1D477202332
6	Spring, Zinc-plated steel	See following table
7	Bottom Flange, Steel	
	NPS 2 (DN 50) body	1D477825062
	NPS 3 (DN 80) body	17A9250X012
	NPS 4 (DN 100) body	1D478025062
8*	O-Ring	
	Nitrile (NBR)	
	NPS 2 (DN 50) body	1D785306992
	NPS 3 (DN 80) body	1D785406992
	NPS 4 (DN 100) body	1D785506992
	Fluorocarbon (FKM)	
	NPS 2 (DN 50) body	1N115606382
	NPS 3 (DN 80) body	1N115706382
	NPS 4 (DN 100) body	1D2658X0022
9	O-Ring Retainer	
	Brass	
	NPS 2 (DN 50) body	1D475814012
	NPS 3 (DN 80) body	1D475914012
	NPS 4 (DN 100) body	1D476014012
	316 SST	
	NPS 2 (DN 50) body	1D475835072
	NPS 3 (DN 80) body	1D475935072
	NPS 4 (DN 100) body	1D476035072
10	Valve Plug Skirt	
	Brass	
	NPS 2 (DN 50) body	1D476112012
	NPS 3 (DN 80) body	1D476212012
	NPS 4 (DN 100) body	1D476312012
	316 SST	
	NPS 2 (DN 50) body	1D476133092
	NPS 3 (DN 80) body	1D476233092
	NPS 4 (DN 100) body	1D476333092

*Recommended spare part.

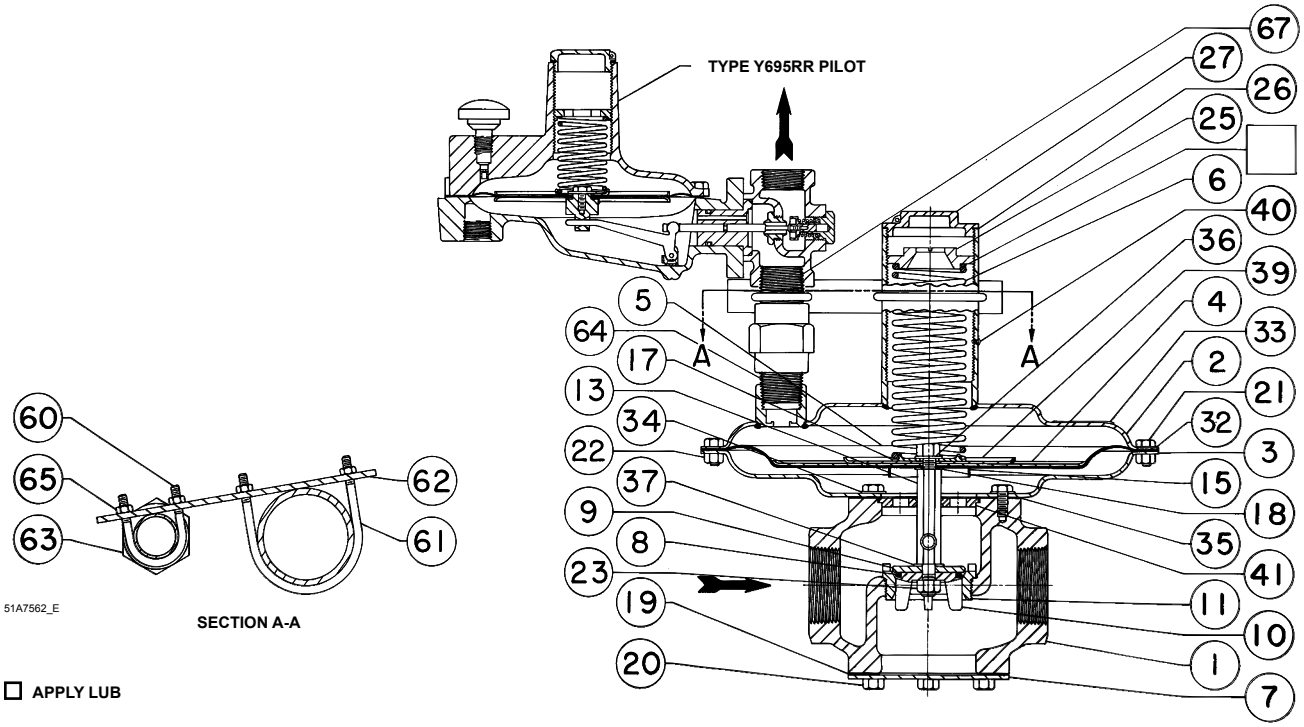


Figure 7. *Type 66RR Main Valve and Pilot Mounting Parts*

Key	Description	Part Number
11	Seat Ring	
	Bronze	
	NPS 2 (DN 50) body	1D783012022
	NPS 3 (DN 80) body	1D783112022
	NPS 4 (DN 100) body	1D783212022
	316 SST	
	NPS 2 (DN 50) body	1D783033092
	NPS 3 (DN 80) body	1D783133092
	NPS 4 (DN 100) body	1D783233092
13	Valve Stem	
	For use without sealing diaphragm	
	Brass	
	NPS 2 (DN 50) body	1D752914012
	NPS 3 (DN 80) body	
	Cast iron body	1D754514012
	Steel body	1N4455X0012
	NPS 4 (DN 100) body	1D759614012
	316 SST	
	NPS 2 (DN 50) body	1D752935072
	NPS 3 (DN 80) body	
	Cast iron body	1D754535072
	Steel body	1N445535072
	NPS 4 (DN 100) body	1D759635072
	For use with sealing diaphragm	
	Brass	
	NPS 2 (DN 50) body	1J820214012
	NPS 3 (DN 80) body	1J259114012
	NPS 4 (DN 100) body	1J130814012
	For use with sealing diaphragm	
	316 SST	
	NPS 2 (DN 50) body	1J820235072
	NPS 3 (DN 80) body	1J259135072
	NPS 4 (DN 100) body	1J130835072

Key	Description	Part Number
14*	Sealing Diaphragm (for Type 66R with tapped diaphragm case only)	
	Nitrile (NBR)	
	NPS 2 (DN 50) body	1H737002042
	NPS 3 (DN 80) body	1J198102042
	NPS 4 (DN 100) body	1H727502042
	Fluorocarbon (FKM)	
	NPS 2 (DN 50) body	1H7370X0012
	NPS 3 (DN 80) body	1J1981X0012
	NPS 4 (DN 100) body	1H7275X0012
15	Lower Diaphragm Plate, Zinc-plated steel (1 required without and 3 required with sealing diaphragm)	
	NPS 2 (DN 50) body	1D475725062
	NPS 3 (DN 80) body	1D479325062
	NPS 4 (DN 100) body	1D479425062
16	Diaphragm Spacer (for Type 66R with sealing diaphragm only), Zinc-plated steel	
	NPS 2 (DN 50) body	1J820326092
	NPS 3 (DN 80) body	1J259226092
	NPS 4 (DN 100) body	1J130926092
17	Lower Spring Seat	
	Type 66R thru 3 psig (0,21 bar) set pressures and all Type 66RR, Aluminum	0X014744012
	Type 66R for 3 to 5 psig (0,21 to 0,34 bar) set pressures, Brass	1J331314012
18*	Stem Gasket, Composition (1 required without and 3 required with sealing diaphragm)	
	NPS 2 or 3 (DN 50 or 80) body	1D255304022
	NPS 4 (DN 100) body	1D478404022

*Recommended spare part.

Key 2, Spring Case Assembly
Key 6, Spring

BODY SIZE, NPS (DN)	CONSTRUCTION	RELIEF SET PRESSURE RANGE	SPRING CASE ASSEMBLY PART NUMBER	SPRING PART NUMBER
2 (50)	Type 66R	2 to 8-inches w.c. (5 to 20 mbar)	1D7614X0012	1D765427012
	Type 66RR	3 to 8-inches w.c. (7 to 20 mbar)	12A6056X012	
	Type 66R only	6 to 16-inches w.c. (15 to 40 mbar) 11-inches w.c. to 1 psig (27 mbar to 0,07 bar) 0.75 to 1.5 psig (0,05 to 0,10 bar) 1 to 2 psig (0,07 to 0,14 bar) 1.5 to 3 psig (0,10 to 0,21 bar) 3 to 5 psig (0,21 to 0,34 bar)	1D7614X0022 1D7614X0032 1D7614X0042 1D7614X0052 1D7614X0062 1D4792000A2	1D765527012 1D765627032 1D765727032 1D765827032 1D962627032 1N506427142
3 (80)	Type 66R	2 to 8-inches w.c. (5 to 20 bar)	1D7614X0072	1D770727012
	Type 66RR	3 to 8-inches w.c. (7 to 20 mbar)	12A6057X012	
	Type 66R only	6 to 16-inches w.c. (15 to 40 mbar) 11-inches w.c. to 1 psig (27 mbar to 0,07 bar) 0.75 to 1.5 psig (0,05 to 0,10 bar) 1 to 2 psig (0,07 to 0,14 bar) 1.5 to 3 psig (0,10 to 0,21 bar) 3 to 5 psig (0,21 to 0,34 bar)	1D7614X0082 1D7614X0092 1D7614X0102 1D7614X0112 1D7614X0122 1D5391000A2	1D770827032 1D765727032 1D765827032 1D770927032 1E204427032 1N506527142
4 (100)	Type 66R	2 to 8-inches w.c. (5 to 20 mbar)	1D7614X0132	1D771027012
	Type 66RR	3 to 8-inches w.c. (7 to 20 mbar)	12A6058X012	
	Type 66R only	6 to 16-inches w.c. (15 to 40 mbar) 11-inches w.c. to 1 psig (27 mbar to 0,07 bar) 0.75 to 1.5 psig (0,05 to 0,10 bar) 1 to 2 psig (0,07 to 0,14 bar) 1.5 to 3 psig (0,10 to 0,21 bar)	1D7614X0142 1D7614X0152 1D7614X0162 1D7614X0172 1D7614X0182	1D771127032 1D527627032 1D771227032 1D771327032 1E204527032

Key	Description	Part Number
19*	Bottom Flange Gasket, Composition	
	NPS 2 (DN 50) body	1D476404022
	NPS 3 (DN 80) body	1D476504022
	NPS 4 (DN 100) body	1D476604022
20	Cap Screw, Zinc-plated steel	
	NPS 2 (DN 50) body	
	Cast iron body (13 required)	1C631224052
	Steel body (12 required)	1C275224052
	NPS 3 (DN 80) body (17 required for cast iron or 16 for steel body)	1D529824052
	NPS 4 (DN 100) body (17 required for cast iron or 16 for steel body)	1D530824052
21	Cap Screw, Zinc-plated steel	
	[16 required for NPS 2 (DN 50), 20 for NPS 3 (DN 80), or 24 for NPS 4 (DN 100) body]	1D529624052
22	Hex Nut, Zinc-plated steel	
	[16 required for NPS 2 (DN 50), 20 for NPS 3 (DN 80), or 24 for NPS 4 (DN 100) body]	1A309324122
23	Stem Nut (2 required)	
	Brass	
	NPS 2 or 3 (DN 50 or 80) body	1D529718992
	NPS 4 (DN 100) body	1D530918992
	SST	
	NPS 2 or 3 (DN 50 or 80) body	1D5297X0022
	NPS 4 (DN 100) body	1D5309X0052
24	Upper Spring Seat	
	Type 66R for 3 to 5 psig (0,21 to 0,34 bar) set pressures, Brass	
	NPS 2 or 3 (DN 50 or 80) body	1J331214012
	NPS 4 (DN 100) body	1E271114012

Key	Description	Part Number
25	Adjusting Screw	
	Type 66R thru 2 psig (0,14 bar) set pressures and all Type 66RR, Aluminum	1L928608012
	Type 66R for 1.5 to 3 psig (0,10 to 0,21 bar) set pressures, Brass	1V9069X0012
	Type 66R for 3 to 5 psig (0,21 to 0,34 bar) set pressures [except NPS 4 (DN 100) body], Zinc-plated steel	
	NPS 2 (DN 50) body	1A279128982
	NPS 3 (DN 80) body	1N506624102
26*	Closing Cap Gasket	
	Neoprene	1N446206992
27	Closing Cap	
	Type 66R thru 3 psig (0,21 bar) set pressures and all Type 66RR, Die-cast zinc	1A589544022
	Type 66R for 3 to 5 psig (0,21 to 0,34 bar) set pressures, Brass	1H798714012
28	Flapper Valve (for Type 66R only), Brass	1C901715072
29	Snap Ring (for Type 66R only), Bronze	1D178016012
30	Type Y602-10 Vent Assembly, SST/Zinc/Monel®	EMY602X1-A10
31	Pipe Plug (not shown)	
	Cast iron	1A361919012
	Steel	1A369224492

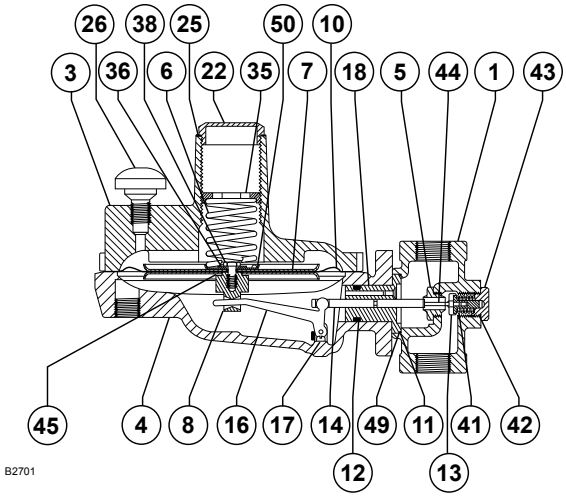
*Recommended spare part.
Monel® is a mark owned by Special Metals Corporation

Key	Description	Part Number
34	Washer, Zinc-plated steel	
	NPS 2 (DN 50) body (7 required for cast iron or 6 for steel body)	1D793624152
	NPS 3 (DN 80) body (9 required for cast iron or 8 for steel body)	1D716228982
	NPS 4 (DN 100) body (9 required for cast iron or 8 for steel body)	1D716328982
35*	Diaphragm Case Gasket, Neoprene	
	Cast iron body	
	NPS 2 (DN 50)	1D843604082
	NPS 3 (DN 80)	1D843704082
	NPS 4 (DN 100)	1D843804082
	Steel body	
	NPS 2 (DN 50)	1D753004082
	NPS 3 (DN 80)	1D754704082
	NPS 4 (DN 100)	1D843804082
36	Spring Seat Washer [for use only with NPS 2 or 3 (DN 50 or 80) body], Zinc-plated steel	1H723125072
37	Seal Washer	
	NPS 2 or 3 (DN 50 or 80) body, Steel	1F990428982
	NPS 4 (DN 100) body, Brass	1H720799012
39	Stiffener Plate, Steel	
	2-inches w.c. to 2 psig (5 mbar to 0,14 bar) set pressures for Type 66R or 3-inches w.c. to 3.25 psig (7 mbar to 0,22 bar) set pressures for Type 66RR	
	NPS 2 or 3 (DN 50 or 80) body	1D753125062
	NPS 4 (DN 100) body	1D760725072
	1.5 to 5 psig (0,10 to 0,34 bar) set pressures for Type 66R or 3.25 to 7 psig (0,22 to 0,48 bar) set pressures for Type 66RR [not used with NPS 2 (DN 50) body]	
	NPS 3 (DN 80) body	1E204325012
	NPS 4 (DN 100) body	1A355325012
40	Drive Screw, 18-8 SST	1A368228982
41	Stem Guide (not for use with sealing diaphragm)	
	Steel	
	NPS 2 (DN 50) body	1D752824092
	NPS 3 (DN 80) body	1D754625032
	NPS 4 (DN 100) body	1D759725032
	SST	
	NPS 2 (DN 50) body	1D752835132
	NPS 3 (DN 80) body	1D754635132
	NPS 4 (DN 100) body	1D759735072
45	Locknut for 3 to 5 psig (0,21 to 0,34 bar) set pressure Type 66R only, Zinc-plated steel	1A352424122
60	U-Bolt (for Type 66RR only), Steel	11A7488X012
61	U-Bolt (for Type 66RR only), Steel	11A7489X012
62	Mounting Bar (for Type 66RR only), Steel	
	NPS 2 (DN 50) body	11A7490X012
	NPS 3 (DN 80) body	11A8938X012
	NPS 4 (DN 100) body	11A8939X012
63	Pipe Union (for Type 66RR only), Malleable iron	1B540621992
64	Pipe Nipple (for Type 66RR only), Steel	1K994226012
65	Hex Nut (for Type 66RR only), Zinc-plated steel (4 required)	1A345724122
66*	Diaphragm Gasket (for Fluorocarbon (FKM) diaphragm only), Fluorocarbon (FKM) (not shown)	
	NPS 2 (DN 50) body	1U6985X0012
	NPS 3 (DN 80) body	1U6986X0012
	NPS 4 (DN 100) body	1U6989X0012
67	Pipe Nipple (for Type 66RR), Steel	1B539126012

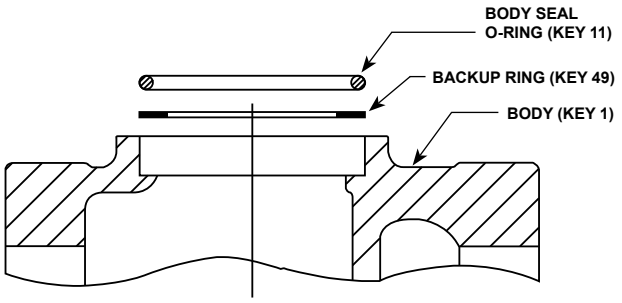
Type Y695RR Pilot

Key	Description	Part Number
1	Body, Ductile iron	17B9020X012
2	Cap Screw (2 required), Steel	1C856228992
3	Spring Case Assembly, Ductile iron/SST	13B0109X042
4	Diaphragm Casing, Ductile iron	47B3063X012
5	Orifice, 316 SST	
	7/16-inch (11 mm)	0L0832X0012
6	Spring	See Table 1
7	Diaphragm Head 304 SST	17B9723X032
8	Pusher Post, 316 SST	18B3465X012
10	Diaphragm	
	Nitrile (NBR)	37B9720X012
	Fluorocarbon (FKM)	23B0101X052
11	Body Seal O-Ring	
	Nitrile (NBR)	1H993806992
	Fluorocarbon (FKM)	1H9938X0012
12	Insert Seal O-Ring	
	Nitrile (NBR)	1B885506992
	Fluorocarbon (FKM)	1B8855X0012
13	Disk Assembly	
	Nitrile (NBR)	1E9848X0042
	Fluorocarbon (FKM)	1E9848X0032
14	Stem, 316 SST	17B5278X012
16	Lever Assembly, 302 SST	1B5375000B2
17	Machine Screw (2 required)	19A7151X022
18	Guide Insert, 316 SST	27B4028X022
22	Closing Cap	
	Plastic (standard)	T11069X0012
	Steel	1E422724092
23	Hex Nut (8 required), Steel	1A352724122
24	Cap Screw (8 required), Steel	1A352524052
25	Gasket, (Steel closing cap only), Neoprene	1P753306992
26	Vent, Type Y602-1 (spring case up)	17A6570X012
35	Adjusting Screw, Cast Zinc	1B537944012
36	Washer, Steel	18B3440X012
38	Cap Screw, Steel	1B290524052
41	Back Disk Spring, 302 SST	1E984637022
42	Back Body Seal O-Ring	
	Nitrile (NBR)	13A1584X012
	Fluorocarbon (FKM)	13A1584X022
43	Back Body Cap, 316 SST	1F2737X0012
44	Disk Spacer, 316 SST	1E9861X0012
45	Lower Head Gasket, Composition	18B3450X012
49	Backup Ring, 302 SST	18B3446X012
50	Lower Spring Seat, Steel	1B636325062

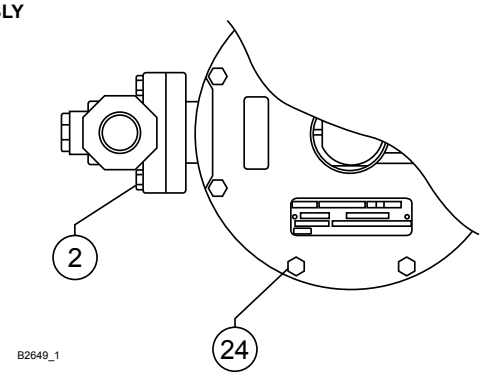
*Recommended spare part.



PILOT INTERIOR ASSEMBLY



EXPANDED VIEW OF THE BODY AREA SHOWING THE BODY SEAL O-RING AND BACKUP RING PLACEMENT



PILOT EXTERIOR ASSEMBLY

Figure 8. *Type Y695RR Pilot Assembly*

Industrial Regulators

Emerson Process Management
Regulator Technologies, Inc.

USA - Headquarters
McKinney, Texas 75069-1872 USA
Tel: 1-800-558-5853
Outside U.S. 1-972-548-3574

Asia-Pacific
Shanghai, China 201206
Tel: +86 21 2892 9000

Europe
Bologna, Italy 40013
Tel: +39 051 4190611

Middle East and Africa
Dubai, United Arab Emirates
Tel: +971 4811 8100

Natural Gas Technologies

Emerson Process Management
Regulator Technologies, Inc.

USA - Headquarters
McKinney, Texas 75069-1872 USA
Tel: 1-800-558-5853
Outside U.S. 1-972-548-3574

Asia-Pacific
Singapore, Singapore 128461
Tel: +65 6777 8211

Europe
Bologna, Italy 40013
Tel: +39 051 4190611
Gallardon, France 28320
Tel: +33 (0)2 37 33 47 00

TESCOM

Emerson Process Management
Tescom Corporation

USA - Headquarters
Elk River, Minnesota 55330-2445 USA
Tel: 1-763-241-3238

Europe
Selmsdorf, Germany 23923
Tel: +49 (0) 38823 31 0

For further information visit www.fisherregulators.com