

Introduction

This installation guide provides instructions for installation, startup and adjustment. To receive a copy of the instruction manual, contact your local Sales Office or view a copy at www.fisher.com. For further information refer to: Type EZR Relief Instruction Manual, D102629X012.

P.E.D. Categories

This product may be used as a pressure accessory with pressure equipment in the following Pressure Equipment Directive categories. It may also be used outside of the Pressure Equipment Directive using sound engineering practice (SEP) per table below. For information on the current PED revision see Bulletin: [D103053X012](#).

PRODUCT SIZE	CATEGORIES	FLUID GROUP
DN 25, 50, 80, 100 and 150 / NPS 1, 2, 3, 4 and 6	III	1

Specifications

Main Valve Body Size, End Connection Styles and Body Ratings⁽¹⁾

See Table 1

Maximum Relief (Inlet) Pressure⁽¹⁾

See Tables 2 and 5

Minimum Relief Set Pressure⁽¹⁾

1.4 bar / 20 psig

Set Pressure Control Ranges

See Table 2

Temperature Capabilities⁽¹⁾

See Table 4

Installation

WARNING

Only qualified personnel should install or service a backpressure regulator. Backpressure regulator should be installed, operated and maintained in accordance with international and applicable codes and regulations and Emerson Process Management Regulator Technologies, Inc. instructions.

If using a backpressure regulator on a hazardous or flammable fluid service, personal injury and property damage could occur due to fire or explosion of vented fluid that may have accumulated. To prevent such injury or damage, provide piping or tubing to vent the fluid to a safe, well-ventilated area or containment vessel. Also, when venting a hazardous fluid, the piping or tubing should be located far enough away from any buildings or windows so to not create a further hazard, and the vent opening should be protected against anything that could clog it.

Personal injury, equipment damage or leakage due to escaping fluid or bursting of pressure-containing parts may result if this backpressure regulator is overpressured or is installed where service conditions could exceed the limits given in the Specifications section, or where conditions exceed any ratings of the adjacent piping or piping connections.

To avoid such injury or damage, provide pressure-relieving or pressure-limiting devices (as required by the appropriate code, regulation or standard) to prevent service conditions from exceeding limits.

Additionally, physical damage to the backpressure regulator could result in personal injury and property damage due to escaping fluid. To avoid such injury and damage, install the backpressure regulator in a safe location.

Clean out all pipelines before installation of the backpressure regulator and check to be sure the backpressure regulator has not been damaged or has collected foreign material during shipping. For NPT bodies, apply pipe compound to the external pipe threads. For flanged bodies, use suitable line gaskets and approved piping and bolting practices. Install the backpressure regulator in any position desired, unless otherwise specified, but be sure flow through the body is in the direction indicated by the arrow on the body.

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

Type EZR Relief

Table 1. Main Valve Body Sizes, End Connection Styles and Structural Design Ratings

MAIN VALVE BODY SIZE		MAIN VALVE BODY MATERIAL	END CONNECTION STYLE	STRUCTURAL DESIGN RATING	
DN	NPS			bar	psig
50, 80, 100 and 150	2, 3, 4 and 6	Cast Iron	NPT (NPS 2 / DN 50 only)	27.6	400
			CL125 FF	13.8	200
			CL250 FF	34.5	500
25, 50, 80, 100 and 150	1, 2, 3, 4 and 6	WCC Steel	NPT or SWE (NPS 1 and 2 / DN 25 and 50 only)	102	1480
			CL150 RF	19.7	285
			CL300 RF	51.0	740
			CL600 RF or BWE	102	1480
200	8	LCC Steel	CL150 RF	19.7	285
			CL300 RF	51.0	740
			CL600 RF	102	1480

Table 2. Set Pressure Ranges, Pilot Pressure Ratings and Pilot Information⁽¹⁾

PILOT TYPE	RELIEF SET PRESSURE RANGE		PILOT CONTROL INFORMATION			
			Maximum Operating Pressure		Maximum Emergency Pressure	
	bar	psig	bar	psig	bar	psig
6358 and 6358B	1.4 to 2.8 2.4 to 8.6	20 to 40 35 to 125	10.3	150	10.3	150
6358EB	5.2 to 9.7 9.0 to 13.8 12.4 to 24.1	75 to 140 130 to 200 180 to 350	44.8	650	51.7	750
6358EBH	17.3 to 31.0 27.6 to 41.4 ⁽²⁾	250 to 450 400 to 600				
PRX/182	2 to 8 5 to 20 15 to 42	29 to 116 73 to 290 217 to 609	12.0	609	102	1480
PRX/182-AP	30 to 80	435 to 1160	80.0	1160	102	1480

1. See the Main Valve Body Sizes, End Connections, Structural Design Ratings tables and the Main Valve Diaphragm and Spring Pressure Ratings table for additional pressure ratings.
2. Fluorocarbon (FKM) diaphragms are limited to 31.0 bar / 450 psig.

Note

It is important that the backpressure regulator be installed so that the vent hole in the spring case is unobstructed at all times. For outdoor installations, the backpressure regulator should be located away from vehicular traffic and positioned so that water, ice and other foreign materials cannot enter the spring case through the vent. Avoid placing the backpressure regulator beneath eaves or downspouts, and be sure it is above the probable snow level.

direction—up through the center of the cage and down through the cage slots. Change the existing flow arrow if necessary.

Overpressure Protection

Maximum inlet pressures depend upon body materials and temperatures. Refer to the nameplate for the maximum inlet pressure of the valve. The valve should be inspected for damage after any overpressure condition. **Fisher backpressure regulators are NOT ASME safety relief valves.**

Startup

The backpressure regulator is factory set at approximately the midpoint of the spring range or the pressure requested, so an initial adjustment may be required to give the desired results. With proper installation completed and relief valves properly adjusted, slowly open the upstream and downstream shutoff valves (if applicable).



CAUTION

When installing Type EZR trim in an existing Fisher™ E-body, damage can result if flow is not in the correct direction. Look at the body web to confirm that flow is in the correct

Table 3. Main Valve Minimum Differential Pressures⁽¹⁾

MAIN VALVE BODY SIZE		MAIN SPRING PART NUMBER AND COLOR CODE	DIAPHRAGM MATERIAL	MINIMUM DIFFERENTIAL, PERCENT OF CAGE CAPACITY												
				FOR 90% CAPACITY						FOR 100% CAPACITY						
DN	NPS			100% Trim		60% Trim		30% Trim		100% Trim		60% Trim		30% Trim		
		bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	
25	1	19B2400X012, Light Blue	17E68 and 17E88		1.7	24	2.0	29	2.2	31	1.7	24	2.2	31	2.8	40
		GE12727X012, Black	17E97		2.5	35	2.7	38	2.9	42	2.5	35	2.7	39	3.6	52
			17E68 and 17E88		2.1	30	2.4	35	2.7	39	2.1	30	2.5	36	3.6	52
		19B2401X012, Black with White Stripe ⁽³⁾	17E88 and 17E97		3.0	43	3.4	50	3.9	56	3.0	43	3.7	53	4.7	68
50	2	19B0951X012, Yellow ⁽²⁾	17E68 and 17E88		0.83	12	1.0	15	1.0	15	0.83	12	1.7	25	1.4	20
		18B2126X012, Green	17E97		1.7	24	1.7	25	1.8	26	1.7	24	2.1	30	2.6	37
			17E68 and 17E88		1.2	18	1.4	20	1.5	22	1.3	19	1.8	26	1.9	28
		18B5955X012, Red ⁽³⁾ GE05504X012, Purple ⁽³⁾	17E88 and 17E97		2.0	29	2.0	29	2.1	31	2.1	31	2.4	35	3.03	43
80	3	T14184T0012, Yellow ⁽²⁾	17E68 and 17E88		1.1	16	1.3	19	1.7	24	1.6	23	1.6	23	2.0	29
		19B0781X012, Light Blue	17E97		1.6	23	1.6	23	1.6	23	1.6	23	1.6	23	1.7	25
			17E68 and 17E88		1.5	21	1.5	22	1.9	28	1.9	28	1.9	28	2.3	33
		19B0782X012, Black ⁽³⁾	17E88 and 17E97		2.2	32	2.3	33	3.0	43	2.6	38	2.6	38	3.4	50
100	4	T14184T0012, Yellow ⁽²⁾	17E68 and 17E88		0.69	10	0.83	12	0.97	14	1.7	25	1.7	25	1.7	25
		18B8501X012, Green	17E97		1.1	16	1.2	17	1.5	21	2.3	34	2.3	34	2.3	34
			17E68 and 17E88		1.1	16	1.2	17	1.4	20	2.1	30	2.1	30	2.1	30
		18B8502X012, Red ⁽³⁾	17E88 and 17E97		1.5	21	1.7	24	1.8	26	2.8	40	2.8	40	2.8	40
150	6	19B0364X012, Yellow ⁽²⁾	17E97		0.69	10	0.76	11	0.97	14	0.83	12	1.1	16	1.1	16
			17E88		0.69	10	0.90	13	0.90	13	0.83	12	1.5	21	1.5	21
		19B0366X012, Green	17E97		0.97	14	1.5	22	1.5	22	1.3	19	2.0	29	2.0	29
			17E88		1.2	17	1.5	21	1.5	21	1.4	20	2.5	36	2.5	36
		19B0365X012, Red ⁽³⁾	17E88 and 17E97		1.6	23	2.0	29	2.0	29	2.1	30	2.8	41	2.8	41
200	8	GE09393X012, Yellow ⁽²⁾	17E97		1.1	16	----	----			1.3	19	----	----		
		GE09396X012, Green			1.4	20					1.6	23				
		GE09397X012, Red ⁽³⁾			1.8	26					2.1	30				

1. See Table 1 for structural design ratings, Table 3 for pilot ratings and Table 6 for maximum pressure ratings.
2. The white and yellow springs are only recommended for inlet pressures under 6.9 bar / 100 psig.
3. The red, black, purple, red stripe and black with white stripe springs are only recommended for applications where the maximum inlet pressure can exceed 34.5 bar / 500 psig.

Table 4. Temperature Capabilities

17E68 NITRILE (NBR)	17E97 ⁽¹⁾ NITRILE (NBR)	17E88 FLUOROCARBON (FKM)
-28 to 66°C / -20 to 150°F	-17 to 66°C / 0 to 150°F	-17 to 121°C / 0 to 250°F ⁽²⁾

1. The DN 150 / NPS 6, 17E97 diaphragm will perform in gas temperatures as low as -29°C / -20°F.
2. For differential pressures above 27.6 bar / 400 psig diaphragm temperature is limited to 66°C / 150°F.

Adjustment

To change the set pressure, remove closing cap or loosen the locknut and turn the adjusting screw clockwise to increase set pressure or counterclockwise to decrease pressure. Monitor the set pressure with a test gauge during the adjustment. Replace closing cap or tighten the locknut to maintain the desired setting.

Taking Out of Service (Shutdown)



WARNING

To avoid personal injury resulting from sudden release of pressure, isolate the backpressure regulator from all pressure before attempting disassembly.

If pressure is introduced first to the main valve before the pilot, the main valve may go wide-open and subject the downstream system to full inlet pressure.

Type EZR Relief

Table 5. Main Valve Maximum Pressure Ratings

BODY SIZE		DIAPHRAGM MATERIAL	MAXIMUM OPERATING INLET PRESSURE ⁽⁴⁾		MAXIMUM OPERATING DIFFERENTIAL PRESSURE ⁽⁴⁾		MAXIMUM EMERGENCY INLET AND DIFFERENTIAL PRESSURE		MAIN SPRING COLOR CODE	DIAPHRAGM DESIGNATION
DN	NPS		bar	psig	bar d	psid	bar d	psid		
25	1	17E68 Nitrile (NBR) Low temperature	6.9	100	6.9	100	6.9	100	Light Blue	130
			31.7	460	27.6	400	31.7	460	Black	
		17E97 Nitrile (NBR) High pressure and/or erosion resistance	34.5	500	34.5	500	72.4	1050	Black	
			72.4	1050	55.2	800	72.4	1050	Black with White Stripe ⁽²⁾	
		17E88 Fluorocarbon (FKM) High aromatic hydrocarbon content resistance	6.9	100	6.9	100	6.9	100	Light Blue	
			34.5	500	34.5 ⁽³⁾	500	51.7	750	Black	
		51.7	750	34.5 ⁽³⁾	500	51.7	750	Black with White Stripe ⁽²⁾		
50	2	17E68 Nitrile (NBR) Low temperature	6.9	100	6.9	100	6.9	100	Yellow	
			31.7	460	27.6	400	31.7	460	Green	
		17E97 Nitrile (NBR) High pressure and/or erosion resistance	34.5	500	34.5	500	72.4	1050	Green	
			72.4	1050	55.2	800	72.4	1050	Red ⁽²⁾ or Purple ⁽²⁾	
		17E88 Fluorocarbon (FKM) High aromatic hydrocarbon content resistance	6.9	100	6.9	100	6.9	100	Yellow	
			34.5	500	34.5 ⁽³⁾	500	51.7	750	Green	
		51.7	750	34.5 ⁽³⁾	500	51.7	750	Red ⁽²⁾ or Purple ⁽²⁾		
80	3	17E68 Nitrile (NBR) Low temperature	6.9	100	6.9	100	6.9	100	Yellow	
			24.8	360	20.7	300	34.5	500	Light Blue	
		17E97 Nitrile (NBR) High-pressure and/or erosion resistance	34.5	500	34.5	500	72.4	1050	Light Blue	
			72.4	1050	55.2	800	72.4	1050	Black ⁽²⁾	
		17E88 Fluorocarbon (FKM) High aromatic hydrocarbon content resistance	6.9	100	6.9	100	6.9	100	Yellow	
			34.5	500	34.5 ⁽³⁾	500	51.7	750	Light Blue	
		51.7	750	34.5 ⁽³⁾	500	51.7	750	Black ⁽²⁾		
100	4	17E68 Nitrile (NBR) Low temperature	6.9	100	6.9	100	6.9	100	Yellow	
			24.8	360	20.7	300	34.5	500	Green	
		17E97 Nitrile (NBR) High pressure and/or erosion resistance	34.5	500	34.5	500	72.4	1050	Green	
			72.4	1050	55.2	800	72.4	1050	Red ⁽²⁾	
		17E88 Fluorocarbon (FKM) High aromatic hydrocarbon content resistance	6.9	100	6.9	100	6.9	100	Yellow	
			34.5	500	34.5 ⁽³⁾	500	51.7	750	Green	
		51.7	750	34.5 ⁽³⁾	500	51.7	750	Red ⁽²⁾		
150	6	17E97 Nitrile (NBR) High pressure and/or erosion resistance	6.9	100	6.9	100	6.9	100	Yellow	
			34.5	500	34.5	500	72.4	1050	Green	
			72.4	1050	55.2	800	72.4	1050	Red ⁽²⁾	
		17E88 Fluorocarbon (FKM) High aromatic hydrocarbon content resistance	6.9	100	6.9	100	6.9	100	Yellow	
			34.5	500	34.5 ⁽³⁾	500	51.7	750	Green	
			51.7	750	34.5 ⁽³⁾	500	51.7	750	Red ⁽²⁾	
200	8	17E97 Nitrile (NBR) High pressure and/or erosion resistance	6.9	100	6.9	100	6.9	100	Yellow	
			34.5	500	34.5	500	72.4	1050	Green	
			72.4	1050	55.2	800	72.4	1050	Red ⁽²⁾	

1. See Table 1 for main valve structural design ratings and Table 3 for pilot ratings.
 2. The red, black, purple, red stripe and black with white stripe springs are only recommended for applications where the maximum inlet pressure can exceed 34.5 bar / 500 psig.
 3. For differential pressures above 27.6 bar d / 400 psid diaphragm temperatures are limited to 66°C / 150°F.
 4. These are recommendations that provide the best regulator performance for a typical application. Please contact your local Sales Office for further information if a deviation from the standard recommendations is required.

Parts List

Type EZR Main Valve

Key	Description
1	Valve Body
2	Bonnet Assembly
3	Cap Screw
4	Hex Nut
5	Top Plug
6*	O-ring
7	Cage
8*	Cage O-ring
9*	Diaphragm
10*	O-ring
11	Bottom Plug
12	Main Spring
13	Flanged Locknut
14*	Top Plug O-ring
15	Stem
16	Backup Ring
17	Upper Spring Seat
18*	O-ring
19	Indicator Fitting or Indicator Plug
20	Indicator Washer
21	Indicator Cover
22	Indicator Protector
23	Inlet Strainer or Strainer Replacement Shim
24	Nameplate
25	Flow Arrow
26	Drive Screw (5 required) DN 200 / NPS 8 body (6 required)
28*	O-ring
47	Nut (DN 200 / NPS 8 only)
63	Pilot Supply Pipe Plug
64	Bonnet Pipe Plug
70*	O-ring
71	Restrictor Plate
72	E-ring, for Restricted Trim DN 25 to 100 / NPS 1 to 4 bodies
79	Washer (DN 150 / NPS 6 body only)
83	Machine Screw (DN 50 / NPS 2 only)
121*	O-ring DN 150 / NPS 6 body only
126	Cap Screw (DN 150 / NPS 6 body only)
129	Socket Head Screw (DN 25 / NPS 1 only)
130	Lock Washer (DN 25 / NPS 1 only)
133*	O-ring, (DN 200 / NPS 8 only)
136	Stud, Steel (DN 200 / NPS 8 only)
137	Lower Spring Seat (DN 200 / NPS 8 only)
140	Bushing (DN 150 and 200 / NPS 6 and 8 only)

6358 Series Pilots

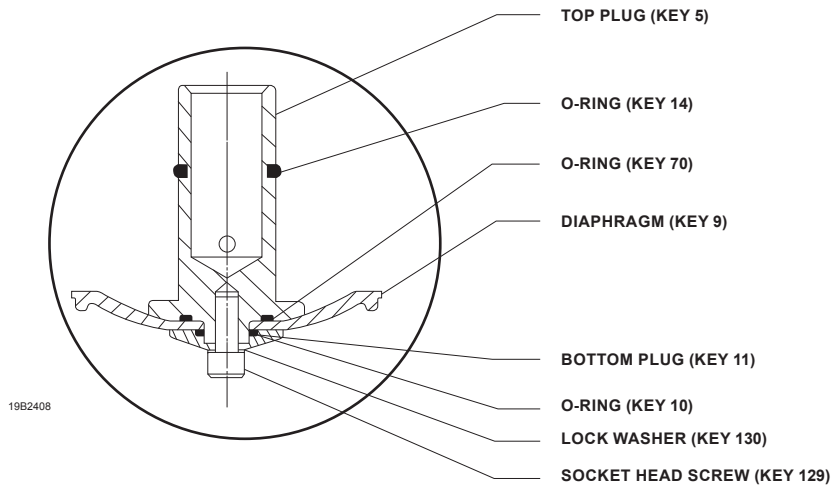
Key	Description
1	Pilot Body
2	Spring Case
3	Body Plug
4*	Valve Plug
5*	Diaphragm Assembly
6	Connector Cap
7	Control Spring
8	Spring Seat
9	Stem Guide
10	Adjusting Screw
11	Locknut
12	Closing Cap
13*	Body Plug O-ring
14	Valve Spring
15*	O-ring (Type 6358EBH only)
16	Vent Assembly, Type Y602X1-A12
17	Machine Screw
18*	O-ring (Types 6358EB and 6358EBH)
19*	Closing Cap Gasket (Types 6358 and 6358B)
20	Restriction or Restriction Plug
36*	Connector Cap Gasket
37	Stem O-ring
38	Lower Spring Seat, Types 6358EB and 6358EBH
40	Diaphragm Limiter for Type 6358EB at 12.4 to 24.1 bar / 180 to 350 psig

PRX Series Pilots

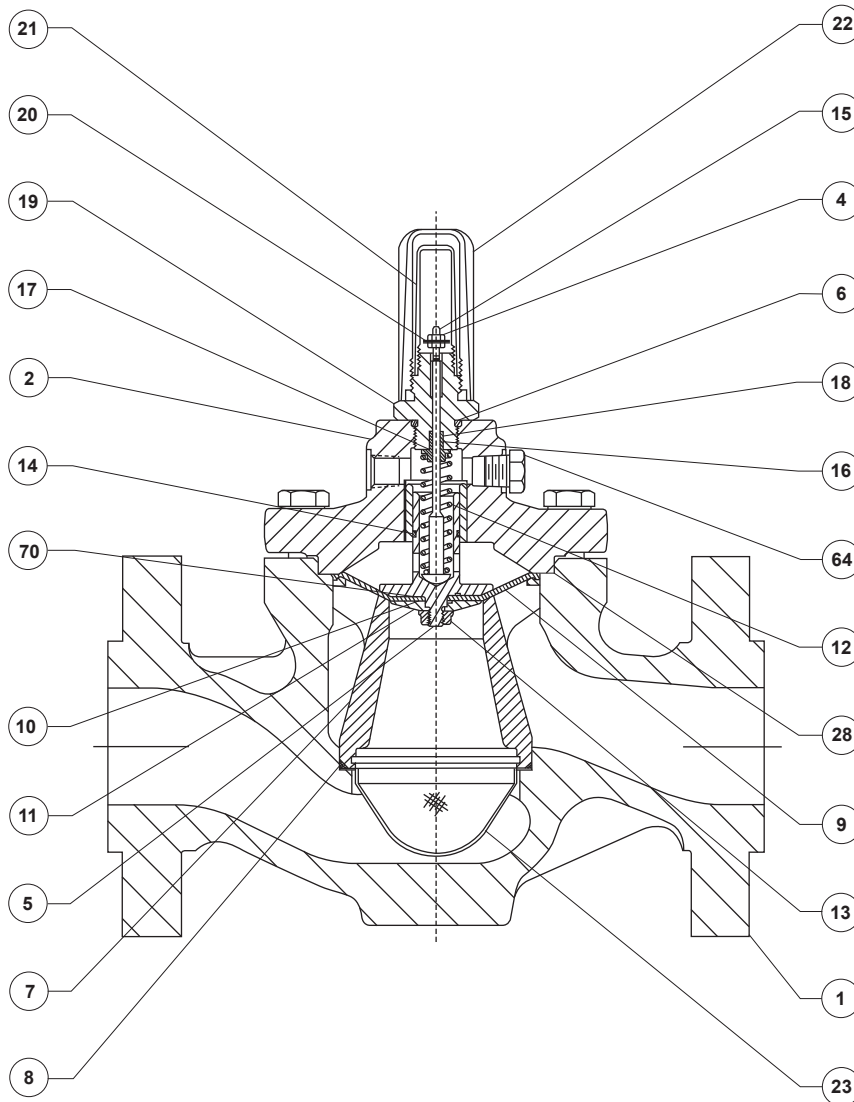
Key	Description
1	Adjusting Screw
2	Locknut
3	Cap
4*	Spring Case O-ring
5*	O-ring
6	Upper Spring Seat
7	Spring
8	Spring Case
9	Lower Spring Seat
10	Machine Screw
11	Washer
12	Filter
13	Diaphragm Plate
14*	Diaphragm
15	Diaphragm Plate
16	Body
17*	Orifice O-ring
18*	Lower Cover O-ring
19	Seat
20	Nut
21	Lower Cover
22*	Disk Holder
23	Stem
24	Nameplate
25*	Stem O-ring
26	Upper Diaphragm Nut
28*	Restrictor/Damper O-ring,
29	Nameplate
31	Nameplate Screw
33	Restrictor Plug
34	Pipe Plug
35	Spring Barrel Extension for AP

*Recommended Spare Part

Type EZR Relief



**DN 25 / NPS 1
DIAPHRAGM ASSEMBLY**



MAIN VALVE ASSEMBLY FOR DN 25, 50, 80 AND 100 / NPS 1, 2, 3 AND 4 BODY SIZES

Figure 1. Type EZR Main Valve with Travel Indicator

Type EZR Relief

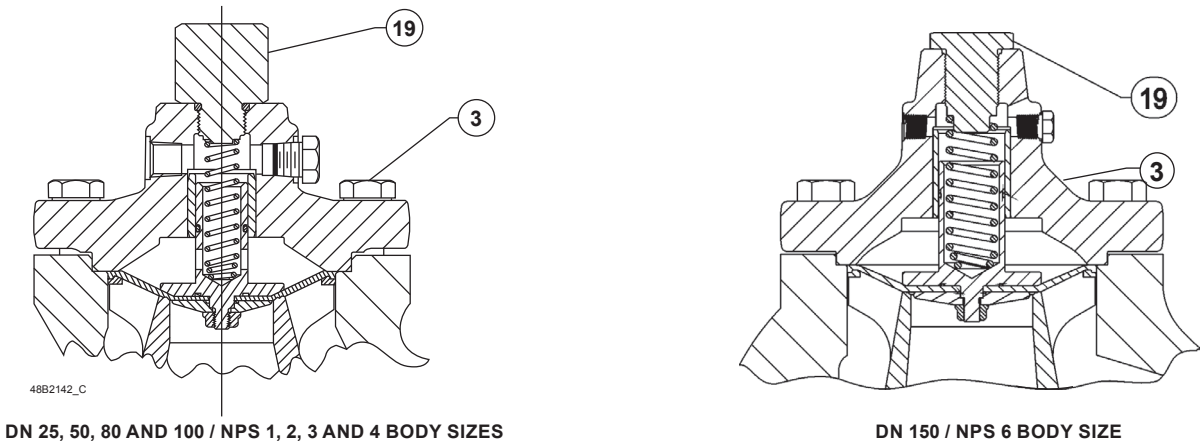


Figure 2. Type EZR Travel Indicator Plug Option

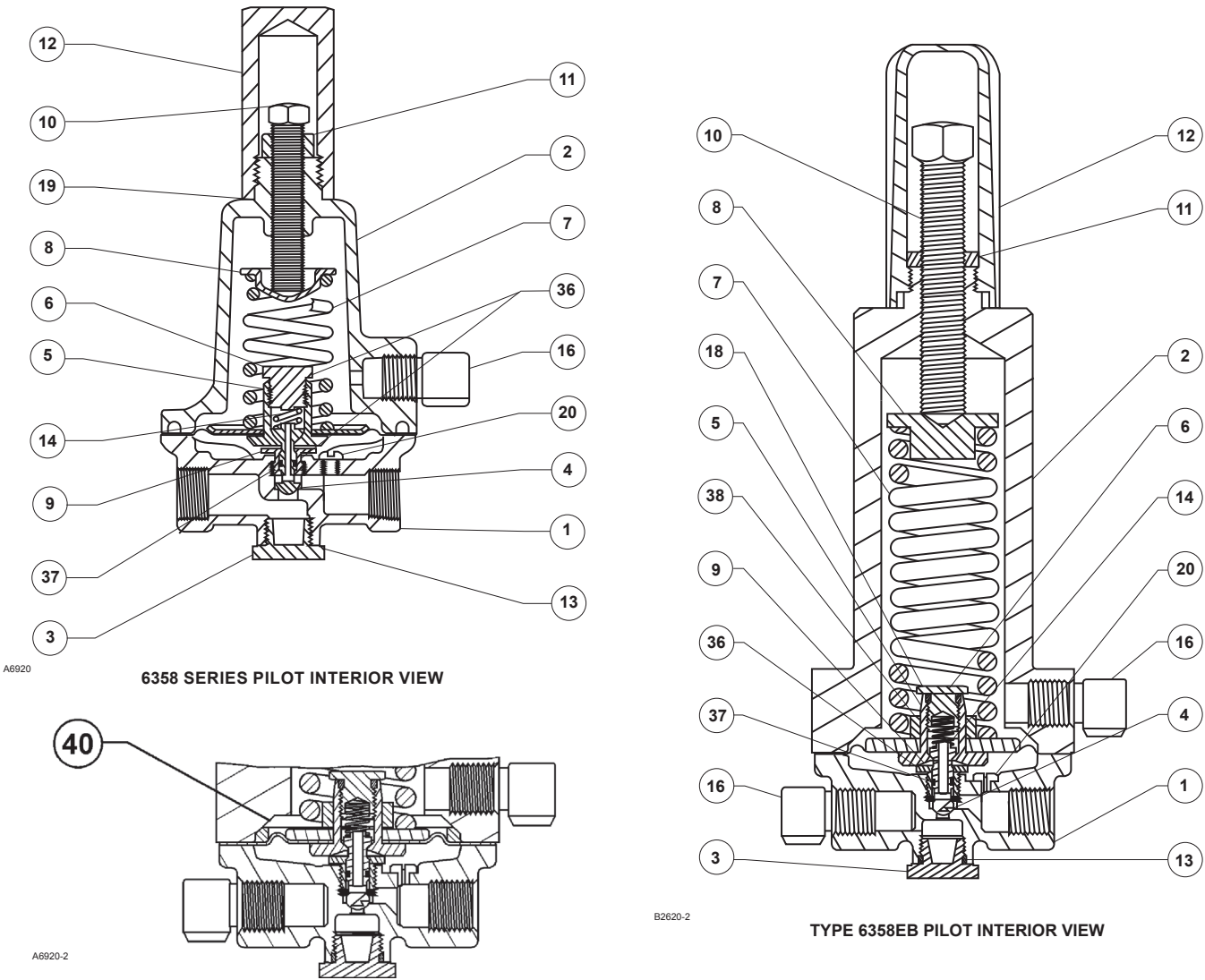


Figure 3. Types 6358 and 6358EB Pilots

Type EZR Relief

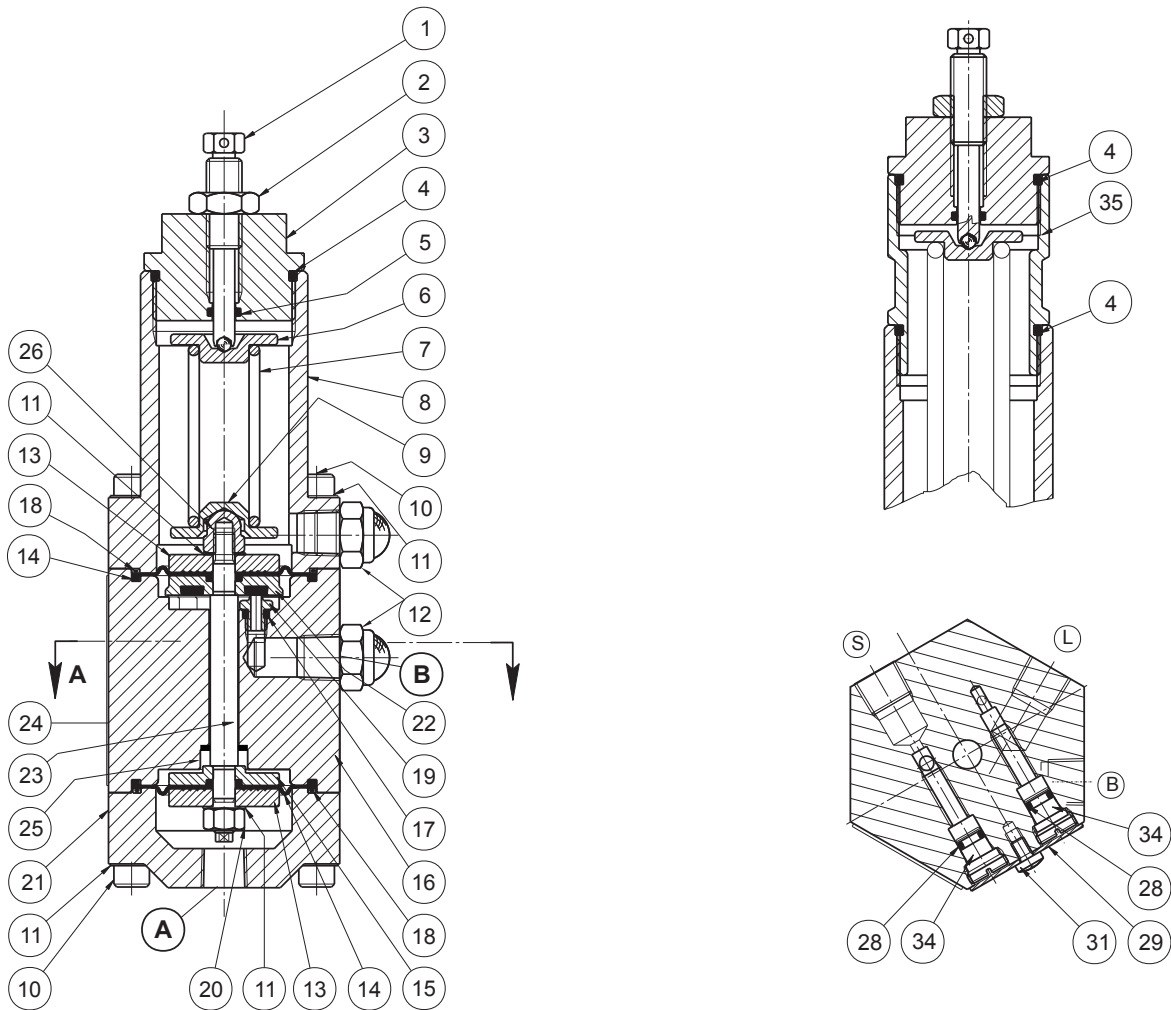


Figure 4. Type PRX/182 Pilot Schematics

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