English – October 2015

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.

PED/PE(S)R Categories

This product may be used as a safety accessory with pressure equipment in the following categories. It may also be used outside of these Directives using Sound Engineering Practice (SEP) per table below. For information on the current PED/PE(S)R revision, see Bulletin: <u>D103053X012</u>.

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



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.

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

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

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

	DELIEF OFT DD	FOOURE RANGE	PILOT CONTROL INFORMATION							
PILOT TYPE	RELIEF SET PRI	ESSURE RANGE	Maximum Ope	rating 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				

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.
 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.

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 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).

40

16

21

29

36

41

2.8

1.5

2.0

2.5

2.8

40

16

21

29

41

2.8

1.1

1.5

2.0

2.8

				MINIMUM DIFFERENTIAL, PERCENT OF CAGE CAPACITY											
1	AIN VALVE MAIN SPRING PART ODY SIZE NUMBER AND		DIAPHRAGM	FOR 90% CAPACITY							FOR 100% CAPACITY				
DN NPS		COLOR CODE	MATERIAL	100% Trim		60% Trim		30% Trim		100% Trim		60% Trim		30% Trim	
				bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi
		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
25	1	GE12/2/AU12, Black	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	20
		19B0951X012, Yellow(2)	17E68 and 17E88	0.83	12	1.0	15	1.0	15	0.83	12	1.7	25		
		18B2126X012, Green	17E97	1.7	24	1.7	25	1.8	26	1.7	24	2.1	30	2.6	37
50	2	10b2120X012, Green	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
		T14184T0012, Yellow ⁽²⁾	17E68 and 17E88	1.1	16	1.3	19	1.7	24	1.6	23	1.6	23	2.0	29
80	3	19B0781X012, Light Blue	17E97	1.6	23	1.6	23	1.6	23	1.6	23	1.6	23	1.7	25
00	3	1960761X012, Light Blue	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
		T14184T0012, Yellow ⁽²⁾	17E68 and 17E88	0.69	10	0.83	12	0.97	14	1.7	25	1.7	25	1.7	25
100	4	18B8501X012, Green	17E97	1.1	16	1.2	17	1.5	21	2.3	34	2.3	34	2.3	34
100	4	1000001A012, Green	17E68 and 17E88	1.1	16	1.2	17	1.4	20	2.1	30	2.1	30	2.1	30

1.5

0.69

0.69

0.97

1.2

1.6

1.1

1.4

21

10

10

14

17

23

16

20

26

1.7

0.76

0.90

1.5

1.5

2.0

24

11

13

22

21

29

Table 3. Main Valve Minimum Differential Pressures(1)

18B8502X012, Red(3)

19B0364X012, Yellow(2)

19B0366X012, Green

19B0365X012, Red(3)

GE09393X012, Yellow(2)

GE09396X012, Green

GE09397X012, Red(3)

17E88 and 17E97

17E97

17E88

17E97

17E88

17E88 and 17E97

17E97

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

6

150

200

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)

1.8

0.97

0.90

1.5

1.5

2.0

26

14

13

22

21

29

2.8

0.83

0.83

1.3

1.4

2.1

1.3

1.6

2.1

40

12

12

19

30

19

23

30

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.

^{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.

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		
	17E68 Nitrile (NBR)		6.9	100	6.9	100	6.9	100	Light Blue	
	Low temperature	Low temperature	31.7	460	27.6	400	31.7	460	Black	
		17E97 Nitrile (NBR)	34.5	500	34.5	500	72.4	1050	Black	
25	1	High pressure and/or erosion resistance	72.4	1050	55.2	800	72.4	1050	Black with White Stripe ⁽²⁾	
		17EQQ Elvers corb on (EKM)	6.9	100	6.9	100	6.9	100	Light Blue	
		17E88 Fluorocarbon (FKM) High aromatic hydrocarbon	34.5	500	34.5(3)	500	51.7	750	Black	
		content resistance	51.7	750	34.5(3)	500	51.7	750	Black with White Stripe ⁽²⁾	
		17E68 Nitrile (NBR)	6.9	100	6.9	100	6.9	100	Yellow	
		Low temperature	31.7	460	27.6	400	31.7	460	Green	
		17E97 Nitrile (NBR)	34.5	500	34.5	500	72.4	1050	Green	
50	2	High pressure and/or erosion resistance	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	
		content resistance	51.7	750	34.5(3)	500	51.7	750	Red ⁽²⁾ or Purple ⁽²⁾	
		17E68 Nitrile (NBR)	6.9	100	6.9	100	6.9		Yellow	
		Low temperature	24.8	360	20.7	300	34.5	500	Light Blue	
		17E97 Nitrile (NBR) High-pressure and/or	34.5	500	34.5	500	72.4	1050	Light Blue	
80	3 erosion resistance] 0 !	72.4	1050	55.2	800	72.4	1050	Black ⁽²⁾	130
		17E88 Fluorocarbon (FKM)	6.9	100	6.9	100	6.9	100	Yellow	
		High aromatic hydrocarbon	34.5	500	34.5(3)	500	51.7	750	Light Blue	
		content resistance	51.7	750	34.5(3)	500	51.7	750	Black ⁽²⁾	
		17E68 Nitrile (NBR)	6.9	100	6.9	100	6.9	100	Yellow	
		Low temperature	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	
100	4		72.4	1050	55.2	800	72.4	1050	Red ⁽²⁾	
		17E88 Fluorocarbon (FKM)	6.9	100	6.9	100	6.9	100	Yellow	
		High aromatic hydrocarbon	34.5	500	34.5(3)	500	51.7	750	Green	
		content resistance	51.7	750	34.5(3)	500	51.7	750	Red ⁽²⁾	
		17E97 Nitrile (NBR)	6.9	100	6.9	100	6.9	100	Yellow	
		High pressure and/or	34.5	500	34.5	500	72.4	1050	Green	
150	6	erosion resistance	72.4	1050	55.2	800	72.4	1050	Red ⁽²⁾	
		17E88 Fluorocarbon (FKM)	6.9	100	6.9	100	6.9	100	Yellow	
		High aromatic hydrocarbon content resistance	34.5	500	34.5(3)	500	51.7	750	Green	
		CONTENT TESISTATICE	51.7	750	34.5(3)	500	51.7	750	Red ⁽²⁾	
00-		17E97 Nitrile (NBR)	6.9	100	6.9	100	6.9	100	Yellow	
200	8	High pressure and/or erosion resistance	34.5	500	34.5	500	72.4	1050	Green	
		CIUSIUII (ESISIAIICE	72.4	1050	55.2	800	72.4	1050	Red ⁽²⁾	

See Table 1 for main valve structural design ratings and Table 3 for pilot ratings.
 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.
 For differential pressures above 27.6 bar d / 400 psid diaphragm temperatures are limited to 66°C / 150°F.
 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

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

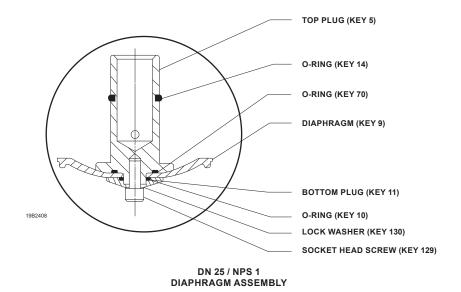
- Pilot Body
- Spring Case
- Body Plug
- Valve Plug 4*
- Diaphragm Assembly
- Connector Cap
- Control Spring
- Spring Seat 8
- Stem Guide 9
- 10 Adjusting Screw
- 11 Locknut
- 12 Closing Cap
- Body Plug O-ring 13*
- Valve Spring 14
- O-ring (Type 6358EBH only) 15*
- Vent Assembly, Type Y602X1-A12
- Machine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

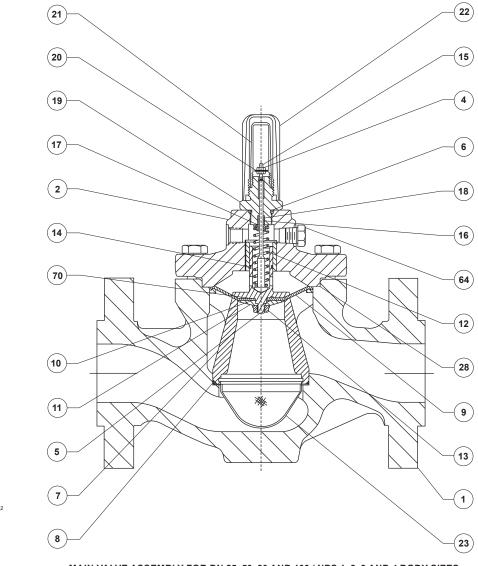
PRX Series Pilots

Description

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

^{*}Recommended Spare Part





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

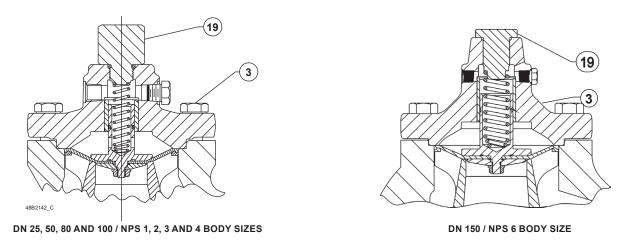
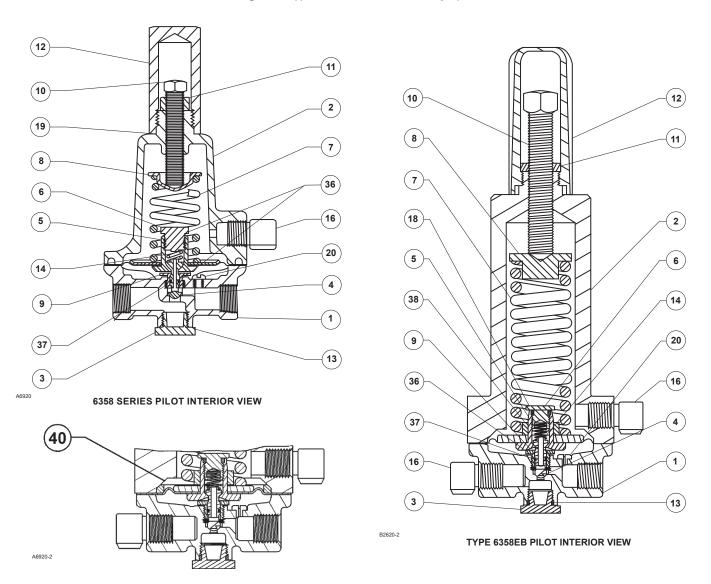
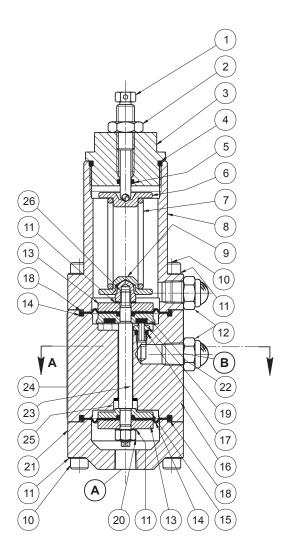


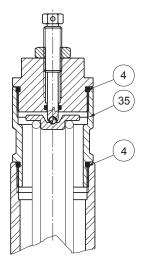
Figure 2. Type EZR Travel Indicator Plug Option



DETAIL OF TYPE 6358EB PILOT DIAPHRAGM LIMITER FOR 12.4 TO 24.1 bar / 180 TO 350 psig SET PRESSURE RANGE INTERIOR VIEW

Figure 3. Types 6358 and 6358EB Pilots





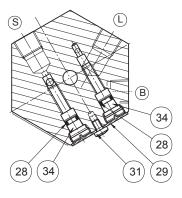


Figure 4. Type PRX/182 Pilot Schematics

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