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Type 289P Pilot-Operated Relief Valve

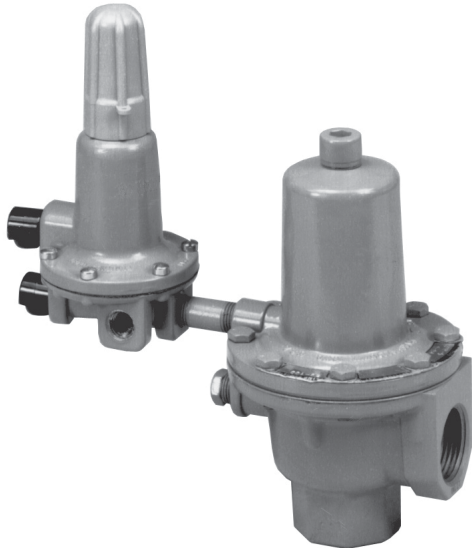


Figure 1. 1 NPT Type 289P Pilot-Operated Relief Valve



Figure 2. 2 NPT Type 289P Pilot-Operated Relief Valve

Introduction

Scope of the Manual

This manual describes and provides instructions and parts lists for the Type 289P pilot-operated relief valve. Instructions and parts lists for any other Fisher™ equipment used with this relief valve will be found in separate manuals.

Product Description

The Type 289P pilot-operated relief valve is used to provide protection from overpressuring a downstream system. This relief valve is suitable for service on natural gas, air, propane or any other operating medium not corrosive to the internal parts. Smooth

opening action minimizes system pressure surges during emergency action. Very little build-up over set pressure is required to completely open the main valve for maximum relief capacity. The external control line provides quick, accurate pressure registration.



WARNING

To avoid injury or damage, install, operate and maintain the Type 289P in accordance with federal, state and local codes; rules and regulations; and these instructions. The Type 289P cannot be used as ASME safety relief valves.

Type 289P

Specifications

Some of the specifications for a given relief valve as it comes from the factory appear on the nameplate attached to the Type 289P main valve spring case. Other specifications appear on the Type 6358B or 6365 pilot spring case.

Body Size and End Connection Style 1 or 2 NPT	Pressure Registration External
Maximum Relief (Inlet) Pressure⁽¹⁾⁽²⁾ 1 NPT: 50 psig / 3.4 bar over relief set pressure or 110 psig / 7.6 bar whichever is lower 2 NPT: 15 psig / 1.0 bar	Pilot Control Line and Vent Connections 1/4 NPT
Relief Set Pressure Ranges See Table 1	Relief Valve Temperature Capabilities⁽²⁾ With Nitrile (NBR): -20 to 180°F / -29 to 82°C With Fluorocarbon (FKM): 0 to 300°F / -18 to 149°C
Pilot Information See Tables 2 and 3	Approximate Weights 1 NPT: 5 lbs / 2.3 kg 2 NPT: 15 lbs / 6.8 kg

1. Relief pressure plus maximum allowable build-up over setting.

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

Only a qualified person must install or service the relief valve. Be certain the main valve nameplate or pilot spring case is updated to accurately indicate any field changes in equipment, materials, service conditions or pressure settings.

If a leak develops in the system, it indicates that service is required. Failure to correct the situation immediately may create a hazardous condition.

Principle of Operation (Figure 3)

Inlet pressure registers on the underside of the main valve diaphragm and underside of the pilot diaphragm. As long as the inlet pressure is below the set pressure, the pilot control spring keeps the pilot valve plug closed. Inlet pressure passes through the pilot restriction and registers as loading pressure on top of the main valve diaphragm, keeping it closed.

When inlet pressure rises above the set pressure, the pressure on the pilot diaphragm overcomes the pilot control spring and opens the pilot valve plug. The pilot exhausts the loading pressure from the top of the main valve diaphragm and plug assembly. While inlet pressure is above the set pressure, the pilot continuously exhausts gas. Inlet pressure unbalance overcomes the main spring force and opens the main valve.

As the inlet pressure drops, the pilot control spring begins to close the pilot valve plug and the exhaust slows. This causes the inlet pressure to build in the main valve diaphragm casing, allowing the control spring to close the main valve. Once the main valve is closed, the pilot valve plug closes and the exhaust stops.

Installation



WARNING

Personal injury or system damage may result if this relief valve is installed where service conditions could exceed the limits given on the pilot spring case or main valve nameplate. Installations should be adequately protected from physical damage.

Overpressuring any portion of this equipment may cause equipment damage, leaks in the relief valve or personal injury due to bursting of pressure-containing parts. System operation within the Specifications section does not eliminate the possibility of damage from external sources or debris in the pipeline. The relief valve should be inspected for damage regularly and after any overpressure condition.

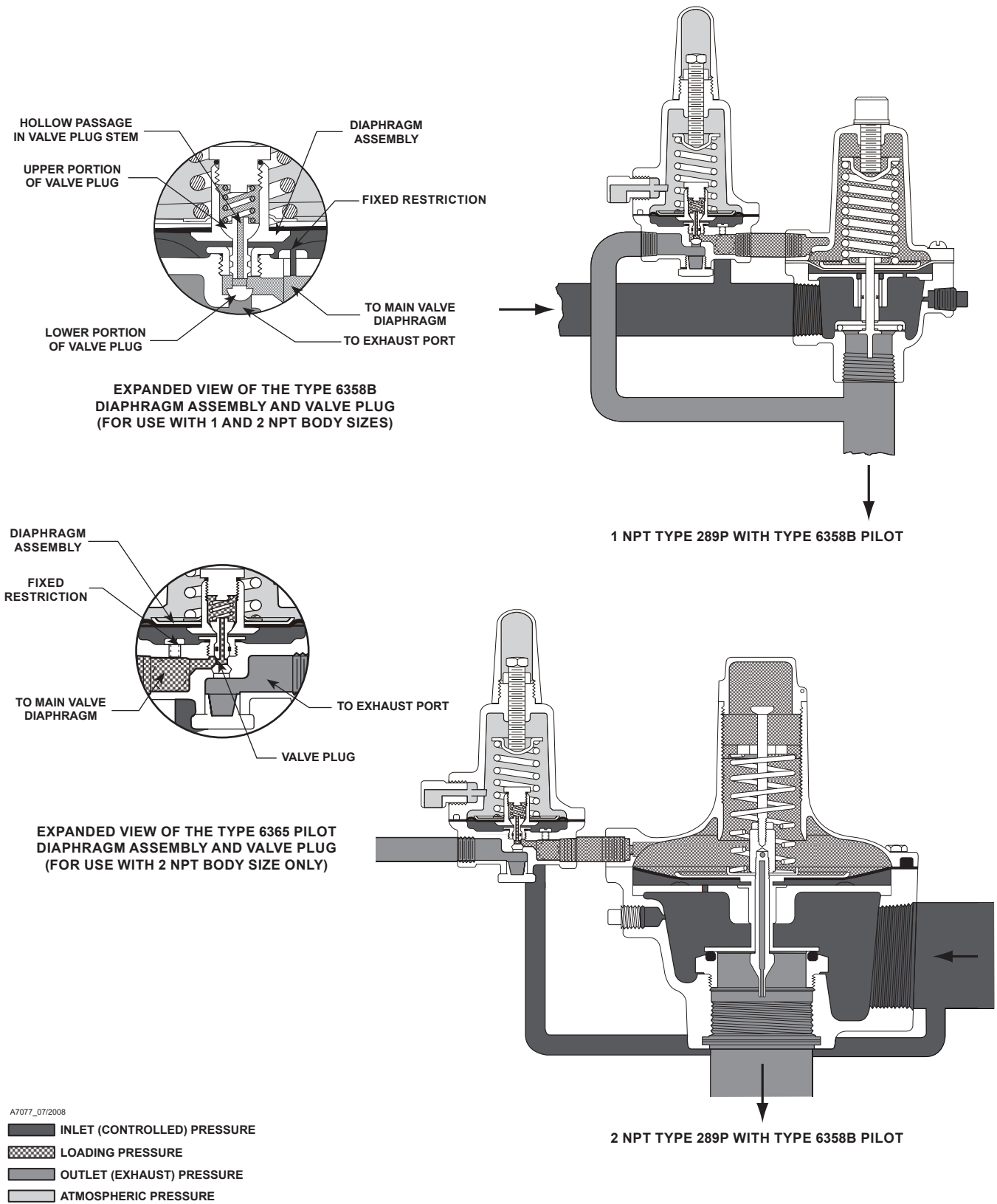


Figure 3. Type 289P Operational Schematics

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Table 1. Relief Set Pressure Ranges and Pilot Control Spring Information

MAIN VALVE BODY SIZE	PILOT TYPE	RELIEF SET PRESSURE RANGE		PILOT CONTROL SPRING INFORMATION					
				Part Number	Color	Wire Diameter		Free Length	
		psig	bar			In.	mm	In.	mm
1 NPT	6358B	10 to 18	0.69 to 1.2	1B986027212	Green	0.120	3.05	2.125	54.0
		18 to 30	1.2 to 2.1	1B788327022	Unpainted	0.142	3.61	2.125	54.0
		30 to 100	2.1 to 6.9	1K748527202	Red	0.187	4.75	2.125	54.0
2 NPT	6365	14 in. w.c. to 2 psig	35 mbar to 0.14 bar	14A9672X012	Yellow	0.070	1.78	2.125	54.0
	6358B	2 to 10	0.14 to 0.69	14A9673X012	Black	0.102	2.59	2.125	54.0

Before installing, inspect the main valve and pilot for any shipment damage and any foreign material. Make sure that the valve is oriented so that pipeline flow enters the port labeled inlet. Apply pipe compound on the pipe threads, but not on the body threads.

The typical pilot mounting position is shown in Figures 1 and 2. To achieve other desired connections, the pilot may be rotated on the pipe nipple.

The Type 289P requires a control line attached to the 1/4 NPT control connection. The control line should be 3/8 in. / 9.5 mm outer diameter pipe or tubing or larger and connected to a straight run of inlet piping. If the pipeline contains dirt, install a filter in the control line and/or upstream piping.

Note

Do not adjust the main valve spring.

Startup and Shutdown

With proper installation complete, slowly open the upstream shutoff valve while using a gauge to monitor inlet pressure to startup the relief valve or backpressure regulator. If set pressure adjustment is necessary, see the Pilot Adjustment section.

To shutdown, slowly close the upstream shutoff valves. Release all pressure from the main valve and pilot by opening a vent valve.

Pilot Adjustment (See Figure 6 or 7)

If outlet pressure adjustment is necessary, monitor relief (inlet) pressure with a gauge during the adjustment procedure. Remove the pilot closing cap (key 12) and loosen the locknut (key 11). Turn the adjusting screw (key 10) into the spring case to increase the set pressure. Turn the adjusting screw out of the spring case to decrease the set pressure. When adjustment is completed, tighten the locknut to lock the adjusting screw in position and replace the pilot closing cap.

Maintenance

Relief valve parts are subject to normal wear and must be inspected and maintained as necessary, depending upon the service conditions.



WARNING

If venting gas will accumulate and be an explosion hazard under enclosed conditions, such as in pit or underground installations, make sure the installation is remotely vented to a safe location.

To avoid possible injury or equipment damage, never adjust the pilot control spring to produce a set pressure higher than the upper limit of the set pressure range for that particular spring.

If it is necessary to vent the unit, install a 3/8 in. / 9.5 mm exhaust line into the 3/8 NPT pilot exhaust connection. This exhaust line may be vented directly into the main valve outlet or separately to atmosphere. In either case, the vent line or stack diameter should be as large as practical with a minimum number of bends or other restrictions.

A vent line or stack must be located to avoid venting gas near buildings, air intakes or any hazardous location. The line or stack opening must be protected against debris, weather, condensation, insects or anything else that might clog it.



WARNING

Avoid personal injury or damage to property from sudden release of pressure or uncontrolled gas or other process fluid. Before starting to disassemble, carefully release all pressures according to the

Table 2. 1 NPT Main Valve Capacities and Type 6358B Pilot Information

MAIN VALVES SPRING, PART NUMBER AND COLOR	SET PRESSURE RANGE		SET PRESSURE ⁽¹⁾		BUILDUP OVER SET PRESSURE TO BEGIN OPENING MAIN VALVE ⁽²⁾		BUILDUP OVER SET PRESSURE TO FULLY OPEN MAIN VALVE ⁽³⁾		PRESSURE DROP BELOW SET PRESSURE TO RESEAT PILOT	
	psig	bar	psig	bar	psig	bar	psig	bar	psig	bar
For set pressures up to 30 psig / 2.1 bar 1F826927052 Pink	10 to 18	0.69 to 1.2	10 15 18	0.69 1.0 1.2	0.8	0.05	1.0	0.07	1.0	0.07
	18 to 30	1.2 to 2.1	18 25 30	1.2 1.7 2.1	0.9	0.06	1.2	0.08	1.0	0.07
For set pressures over 30 psig / 2.1 bar 1D892327022 Red	30 to 100	2.1 to 6.9	30 40 50 60	2.1 2.8 3.4 4.1	1.4	0.10	1.9	0.13	1.0	68.9
			70 80 90 100	4.8 5.5 6.2 6.9	1.6	0.11	2.1	0.14	1.0	68.9

1. Set pressure is defined as the pressure at which the pilot exhaust starts-to-bubble (discharge).
2. Crack pressure is the inlet pressure at which the main valve starts audible flow.
3. Inlet pressure buildup over the set pressure to achieve wide-open capacity.

Table 3. 2 NPT Main Valve Capacities and Types 6365 and 6358B Pilot Information

PILOT TYPE	RELIEF SET PRESSURE RANGE, SPRING PART NUMBER AND COLOR	SET PRESSURE ⁽¹⁾		BUILDUP OVER SET PRESSURE TO FULLY OPEN MAIN VALVE ⁽²⁾		PRESSURE DROP BELOW SET PRESSURE TO RESEAT PILOT	
		psig	bar	psig	bar	psig	bar
6365	14 in. w.c. to 2 psig / 35 mbar to 0.14 bar 14A9672X012 Yellow	0.5 1.0 1.5 2.0	0.03 0.07 0.10 0.14	0.25	0.017	0.25	0.017
6358B	2 to 10 psig / 0.14 to 0.69 bar 14A9673X012 Black	2.0 4.0 6.0 8.0 10.0	0.14 0.28 0.41 0.55 0.69	0.30	0.021	0.30	0.021

1. Set pressure is defined as the pressure at which the pilot exhaust starts-to-bubble (discharge).
2. Inlet pressure buildup over the set pressure to achieve wide-open capacity.

shutdown procedure. Use gauges to monitor inlet, loading and outlet pressures while releasing these pressures.

1 NPT Type 289P Main Valve

This procedure is to be performed if inspecting or replacing main valve parts. Key numbers are referenced in Figure 4.

Note

The main valve body (key 1) may remain in the line during maintenance. Lightly lubricate O-rings before assembly.

Disassembly

- Loosen the set screw (key 6) to remove spring compression.
- Remove the screws (key 8) and remove the spring case (key 2), spring (key 7) and spring seat (key 4).
- Remove the screws (key 29) from the stem guide assembly (key 31). Lift out the diaphragm (key 5) and trim assembly.
- Unscrew the hex nut (key 24) and remove the lower spring guide (key 17), diaphragm head (key 3) and inspect diaphragm (key 5).
- Slide the washer (key 27), gasket (key 19), stem guide assembly (key 31) and bushing (key 23) from the pitot tube (key 18).
- Remove the upper O-ring (key 30), O-ring holder (key 21), O-ring (key 20), O-ring washer (key 22) and lower O-ring (key 30) from around the pitot tube (key 18).
- Inspect and replace parts as necessary.

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Assembly

1. Replace the O-ring (key 37). Slide the lower O-ring (key 30), O-ring washer (key 22), O-ring (key 20), O-ring holder (key 21), upper O-ring (key 30), bushing (key 23), stem guide assembly (key 31), gasket (key 19) and washer (key 27) on to the pitot tube (key 18).
 2. Slide the diaphragm head (key 3) and lower spring guide (key 17) into the pitot tube. Tighten the hex nut (key 24).
 3. Replace machine screws (key 29).
 4. Position the diaphragm (key 5) so the holes line up with those in the body (key 1).
 5. Replace the spring (key 7), spring seat (key 4) and spring case (key 2).
 6. Compress the spring slightly with the adjusting screw (key 6) to ensure there are no wrinkles in the diaphragm.
 7. Tighten the screws (key 8) in a crisscross pattern. Tighten the adjusting screw (key 6) until it is snug.
5. Inspect the parts removed in step 4. If part replacement is necessary, unscrew the hex nut (key 11) and separate the parts one piece at a time.
 6. Assemble the parts using new gaskets (key 19). Also replace the diaphragm (key 5), if necessary. During assembly, use lubricants or sealants on the parts indicated in Figure 5. The following parts are listed in the order with which they are placed on the pitot tube (key 18):
 - One gasket (key 19)
 - O-ring washer (key 22)
 - Another gasket (key 19)
 - Stem guide assembly (key 31) secured with screws (key 29)
 - The third gasket (key 19)
 - Lower diaphragm plate (key 26)
 - Diaphragm (key 5), install pattern side up, toward the spring (key 7)
 - Diaphragm plate (key 3)
 - Lower spring seat (key 17)
 - Hex nut (key 11), tighten the hex nut.

2 NPT Type 289P Main Valve

This procedure is to be performed if inspecting, cleaning or replacing the main valve parts. Key numbers and thread lubrication requirements are indicated in Figure 5.

Note

The body (key 1) may remain in the pipeline during maintenance. The pilot control line and, if used, the remote vent piping must be removed before removing the main valve spring case.

1. Remove the closing cap (key 14) and loosen the adjusting screw (key 6) to remove spring compression.
2. Unscrew the cap screws (key 8) and remove the spring case (key 2) and spring (key 7).
3. Lift the edges of the diaphragm (key 5) and remove the machine screws (key 29), securing the stem guide assembly (key 31).
4. Remove the stem guide assembly. The diaphragm assembly (keys 3, 17, 5 and 26) and the pitot tube (key 18) and associated parts (keys 19, 22, 23, 11 and 25) will lift out with the stem guide assembly.
7. Inspect the O-ring (key 20) and orifice (key 10). To replace the orifice, remove the O-ring and unscrew the orifice from the body (key 1). If only the O-ring (key 20) is to be replaced, leave the orifice in the body (key 1). Coat the threads of the orifice with sealant and screw it into the body. Coat the O-ring with a lubricant and place the O-ring in the orifice.
8. Position the diaphragm assembly and stem guide assembly in the valve body (key 1) so that the O-ring washer sits squarely on the O-ring and so that the machine screw holes in the stem guide assembly match the holes in the valve body. Insert and tighten the machine screws (key 29).
9. Turn the diaphragm to line up with the spring case cap screw holes.
10. Place the spring case (key 2) on the valve body. Insert and tighten the cap screws (key 8).
11. Place the spring (key 7) on the lower spring seat.
12. Coat the adjusting screw (key 6) threads with a suitable anti-seize compound. Thread the screw into the spring case until top of adjusting screw is 1 in. / 25 mm above the spring case.

Type 6358B Pilot

Key numbers are referenced in Figure 6. The pilot may remain on the pipe nipple (key 29) during maintenance.

Disassembly

1. Remove the closing cap (key 12), loosen the locknut (key 11) and back out the adjusting screw (key 10) to remove the spring (key 7) tension.
2. Remove the machine screws (key 17). Separate the spring case (key 2) and body (key 1). Remove the control spring seat (key 8) and the control spring (key 7).
3. Lift out the diaphragm assembly (key 5) and valve plug (key 4). Check the stem guide (key 9) and restriction (key 20) for damage or plugging.
4. If necessary to replace the diaphragm assembly (key 5), the valve plug (key 4), the valve spring (key 14) or the stem O-ring (key 37), remove the connector cap (key 6) and gasket (key 36) from the top of the diaphragm assembly.

Assembly

1. If removed, install the body plug gasket (key 13) over the body plug (key 3) and install the body plug into the body (key 1).
2. Install the stem guide (key 9), if removed, and make sure to install the gasket (key 36) between the body (key 1) and the stem guide.

Note

In step 3, if installing a different size restriction, be sure to remove the code letter on the bottom of the pilot and indicate the new letter.

3. If the restriction (key 20) was removed, coat the threads with lubricant and install it.
4. If replacing the stem O-ring (key 37), sparingly apply lubricant and install the O-ring over the valve plug (key 4).
5. If removed, install the valve plug (key 4) and valve spring (key 14) into the diaphragm assembly (key 5). Place a new gasket (key 36) on the diaphragm assembly and secure with the connector cap (key 6).
6. Install the diaphragm assembly (key 5) and push down on it to see if the valve plug (key 4) moves smoothly. The diaphragm assembly should stroke approximately 1/16 in. / 1.6 mm after the valve plug contacts the port.

Note

In step 7, if installing a control spring of a different set pressure range, be sure to remove the set pressure range on the spring case and indicate the new range.

7. Place the control spring (key 7) and the control spring seat (key 8) on the diaphragm assembly (key 5).
8. Install the spring case (key 2) on the body (key 1) with the vent assembly (key 16) oriented to prevent clogging or entrance of moisture. Install the machine screws (key 17) and tighten in a crisscross pattern, using 5 to 7 ft-lbs / 7 to 9 N•m of torque.
9. Replace the closing cap gasket (key 19) if necessary, and install the closing cap (key 12).

Type 6365 Pilot

Key numbers are referenced in Figure 7. The pilot may remain on the pipe nipple (key 29) during maintenance.

Disassembly

1. If necessary to check the outlet end of the body cavity and the seating surfaces for moisture or debris, remove the body plug (key 3) and body plug gasket (key 13) from the body assembly (key 1).
2. Remove the closing cap (key 12), loosen the locknut (key 11) and back out the adjusting screw (key 10) to remove control spring (key 7) tension.
3. Remove the machine screws (key 17). Separate the spring case (key 2) and body assembly (key 1). Remove the control spring seat (key 8) and the control spring (key 7).
4. Remove the diaphragm assembly (key 5) and plug/stem assemblies (key 4). Make sure the plug/stem guide (key 9) and the registration hole in the pilot restriction (key 20), are not damaged or plugged.
5. To replace the diaphragm assembly, the plug/stem assembly, the plug/stem spring (key 14), remove the connector cap and connector cap gasket (keys 6 and 36) from the top of the diaphragm assembly.

Assembly

1. If removed, put the body plug gasket (key 13) over the body plug (key 3). Place the body plug in the body.
2. Install the plug/stem guide (key 9) if it was removed.
3. Install the restriction plug (key 20) if it was removed.

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4. If removed, install the plug/stem assembly (key 4) and plug/stem spring (key 14) into the diaphragm assembly (key 5). Install a replacement connector cap gasket (key 36) on the diaphragm assembly connector, and secure with the connector cap (key 6).
5. Install the diaphragm assembly (key 5) and push down on it to see if the plug/stem assembly (key 4) strokes smoothly. The diaphragm assembly should stroke approximately 1/16 in. / 1.6 mm after the valve plug contacts the port.

Note

In step 6, if installing a control spring of a different range from the one that was removed, be sure to delete the spring range originally appearing on the spring case and indicate the new spring range.

6. Stack the control spring (key 7) and control spring seat (key 8) onto the diaphragm assembly (key 5).
7. Install the spring case (key 2) on the body (key 1) with the vent assembly (key 16) oriented to prevent clogging or entrance of moisture. Install the machine screws (key 17) and using a crisscross pattern, torque them to 5 to 7 ft-lbs / 7 to 9 N•m.
8. Tighten the locknut (key 11), replace the closing cap gasket (key 19) if necessary, and install the closing cap (key 12).

Parts Ordering

When corresponding with a local Sales Office concerning this relief valve, include the type number and all other pertinent information stamped on the pilot spring and main valve nameplate. Specify the eleven-character part number when ordering new parts from the following parts list.

Parts List

1 NPT Type 289P Main Valve (Figure 4)

Key	Description	Part Number
	Parts Kit (Includes keys 5, 9, 15, 19, 20 and 30), Nitrile (NBR)	R289HX00012
1	Body, Aluminum	3U888208012
2	Spring Case, Aluminum	2P901508012
3	Diaphragm Head, Aluminum	1D666428982
4	Spring Seat, Cadmium plated steel	1D667125072

Key	Description	Part Number
5*	Diaphragm, Nitrile (NBR)	24B5622X012
6	Adjusting Screw, Steel	1F710532982
7	Spring, Steel	
	10 to 30 psig / 0.69 to 2.1 bar	1F826927022
	30 to 100 psig / 2.1 to 6.9 bar	1D892327022
8	Machine Screw, Steel (8 required)	1A391724052
9*	Screen, Monel®	1E564843122
11*	Gasket, Copper (2 required)	0Y008915042
13	Snap Ring, Carbon steel	13A9938X012
15*	Gasket, Composite	13A9929X012
16	Nameplate, Aluminum	-----
17	Lower Spring Guide, Cadmium plated steel	1D666625072
18	Pitot tube, Aluminum	17A8789X012
19*	Gasket, Composite	1F826804022
20*	O-ring, Nitrile (NBR)	1F269206992
21	O-ring Holder, Aluminum	1F826409012
22	O-ring Washer, Aluminum	1F826509012
23	Spacer, 303 Stainless steel	14A9683X022
24	Hex Nut, Cadmium plated steel	1A499724122
27	Washer, Aluminum	1F826709012
28	Pipe Plug, Cadmium plated steel	T13718T0012
29	Machine Screw, Steel (2 required) (not shown)	1H526928982
30*	O-ring, Synthetic rubber (2 required)	1D687506992
31	Stem Guide Assembly	
	Zinc with 303 Stainless steel	1F8272X0012
	Zinc with Brass	1F8272000A2
36	Pitot Tube Plug	1B561428982
37	O-ring, Nitrile (NBR)	1E216306992

2 NPT Type 289P Main Valve (Figure 5)

Key	Description	Part Number
	Parts Kits (Includes keys 5, 9, 15, 19, 20 and 38), Nitrile (NBR)	R289HX00022
1	Valve Body, Cast iron	31B1992X012
2	Spring Case, Aluminum	3K129444022
3	Diaphragm Head, Plated steel	0W020225072
5*	Diaphragm, Nitrile (NBR)	24B6447X012
6	Adjusting Screw, Zinc	1B537944012
7	Spring, Plated steel	
	14 in. w.c. to 2 psig /	
	35 mbar to 0.14 bar, White	1B536427152
	2 to 10 psig / 0.14 to 0.69 bar, Dark Blue	1B536527052
8	Cap Screw, Plated carbon steel (8 required)	1A407824052
9*	Screen	11B1994X012
10*	Orifice, Brass	1E702613012
11	Hex Nut, Zinc-plated steel	1A309324122
13	Snap Ring	10B9241X012
14	Closing Cap, Zinc	T11069X0012
15*	Gasket, Neoprene (CR)	1P753306992
17	Spring Seat, Zinc-plated steel	1D779925062
18	Stem, Brass	17A8788X012
19*	Gasket, Composition (3 required)	1D779804022
20*	O-ring, Nitrile (NBR)	1P336106992
22	O-ring Washer, Stainless steel	1E702136072
23	Spacer, Brass	1E702214172
24	Hex Nut, Plated carbon steel	1B228228982
26	Lower Diaphragm Head, Plated steel	1E703125072
27	Washer, Aluminum	1C680511032
28	Pipe Plug, Plated carbon steel	T13718T0012
29	Machine Screw, Plated carbon steel (4 required)	1F386528992
31	Stem Guide Assembly, Cast iron plate	1E7028000A2
38*	Gasket	11B1993X012

*Recommended spare part.
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Parts List (continued)

Type 6358B Pilot (Figure 6)

Key	Description	Part Number
	Parts Kit (includes keys 4, 5, 13, 14, 19, 36 and 37) Type 6358B for 1 NPT Type 289P with Nitrile (NBR) trim	R6358X00032
	Type 6358B for 2 NPT Type 289P with Nitrile (NBR) trim	R6358X00042
1	Pilot Body, Aluminum	39A0138X012
2	Spring Case, Aluminum	25A6220X012
3	Body Plug, Aluminum	1B797509032
4*	Valve Plug and Stem Assembly Nitrile (NBR) plug with Stainless steel stem	14B6372X012
	Fluorocarbon (FKM) plug with Stainless steel stem	16A2924X012
5*	Diaphragm Assembly Nitrile (NBR)	15A6216X072
	Fluorocarbon (FKM)	15A6216X172
6	Connector Cap, Stainless steel	16A2921X012
7	Spring 10 to 18 psig / 0.69 to 1.2 bar, Green	1B986027212
	18 to 30 psig / 1.2 to 2.1 bar, Unpainted	1B788327022
	30 to 60 psig / 2.1 to 4.1 bar, Red	1B798525062
8	Spring Seat, Zinc-plated steel	1B798525062
9	Stem Guide, Stainless steel	16A2923X012
10	Adjusting Screw	10B7192X012
11	Locknut	1A946324122
12	Closing Cap	23B9152X012
13*	Body Plug Gasket or O-ring Nitrile (NBR)	1C495704022
	Fluorocarbon (FKM)	1N463906382
14	Valve Spring	17A2328X012
16	Vent Assembly, Y602X1-A12 (2 required)	27A5515X012
17	Machine Screw (6 required)	10B6189X022
19*	Closing Cap Gasket	15A6218X012
20	Restriction High gain	17A7270X012
36*	Stem Guide Gasket, Fluorocarbon (FKM) (2 required)	1U1716X0012
37*	Stem O-ring Nitrile (NBR)	16A2920X012
	Fluorocarbon (FKM)	16A2920X022

Type 6365 Pilot (Figure 7)

Key	Description	Part Number
	Parts Kit (includes keys 4, 5, 13, 14, 19 and 36) 0.5 to 10 psig / 34.5 mbar to 0.69 bar	R6365X00012
1	Body Assembly, Aluminum	39A0138X012
2	Spring Case, Aluminum	25A6220X012
3	Body Plug, Aluminum	1B797509032
4*	Plug/Stem Assembly Nitrile (NBR) plug with Stainless steel stem	19A0137X012
5*	Diaphragm Assembly (includes heat-treated 416 Stainless steel diaphragm plate)	15A6216X182
6	Connector Cap, 18-8 Stainless steel	16A2921X012
7	Control Spring, Zinc-plated steel spring wire 14 in. w.c. to 2 psig / 35 mbar to 0.14 bar	14A9672X012
8	Spring Seat, Steel	1B798525062
9	Plug/Stem Guide, Stainless steel	16A2923X012
10	Adjusting Screw, Plated steel	10B3692X012
11	Locknut, Zinc-plated steel	1A946324122
12	Closing Cap, Aluminum	23B9152X012
13*	Body Plug Gasket, Composition	1C495704022
14*	Plug/Stem Spring, Inconel® X750	17A2328X012
16	Type Y602-12 Vent Assembly, Plastic	27A5516X012
17	Machine Screw, Carbon steel (6 required)	10B6189X022
19*	Closing Cap Gasket, Composition	15A6218X012
20	Restriction, Plated carbon steel No. 70 drill size or 0.028 in. / 0.71 mm diameter, standard (indicated by H for high gain stamped on pilot body and yellow color code)	17A7279X012
36*	Connector Cap Gasket, Fluorocarbon (FKM)	1U1716X0012

*Recommended spare part.
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Type 289P

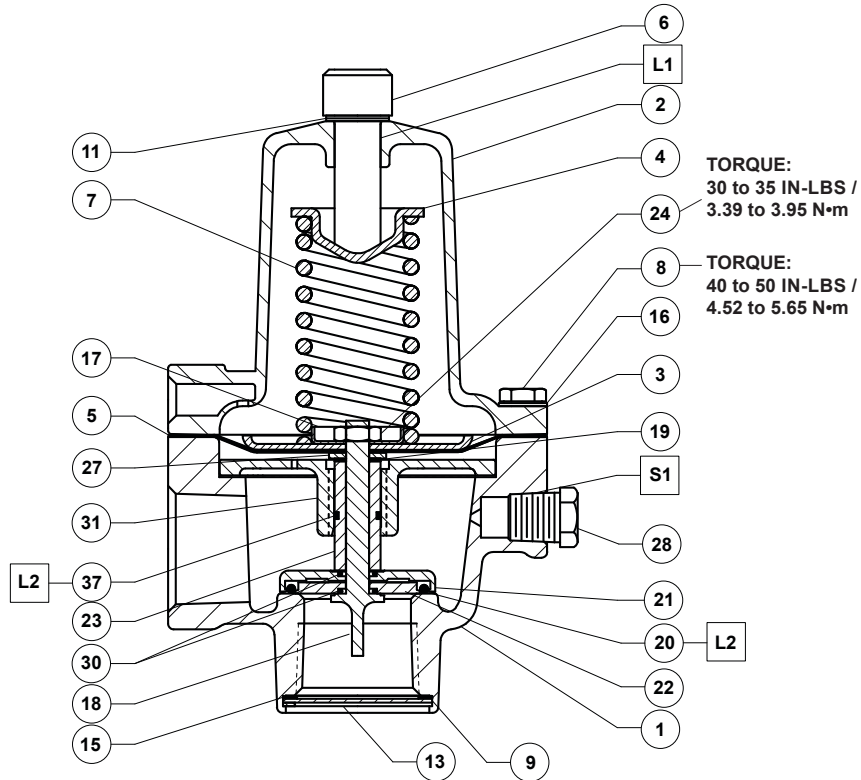
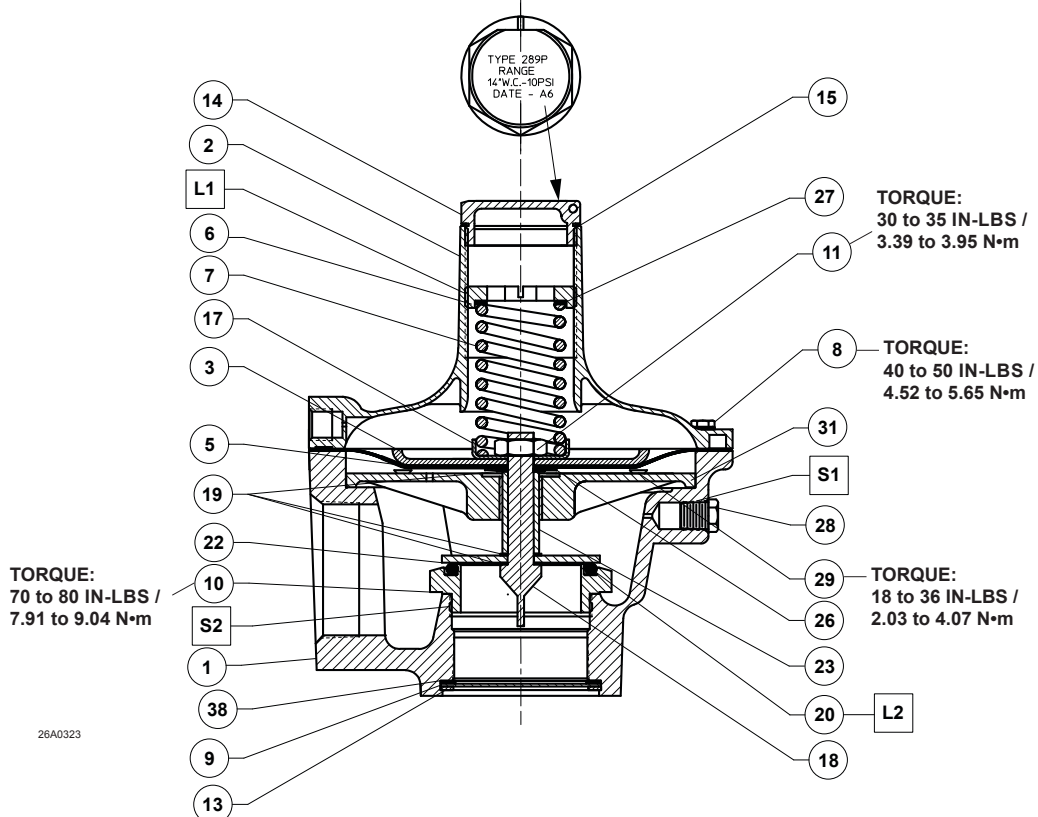


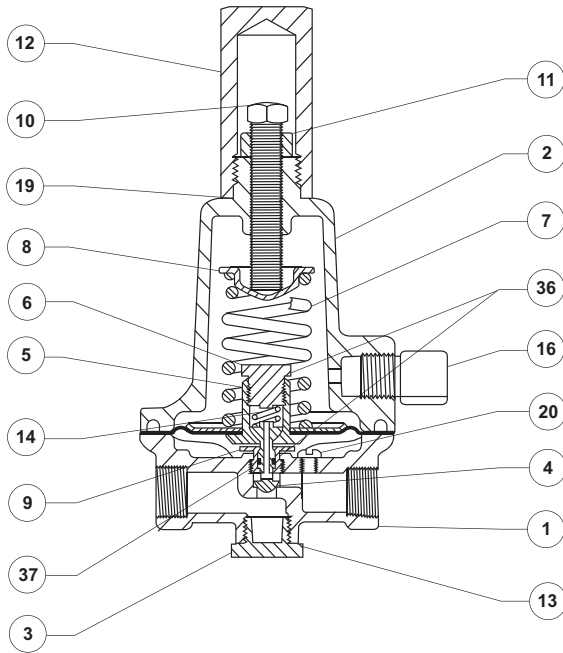
Figure 4. 1 NPT Type 289P Main Valve Assembly



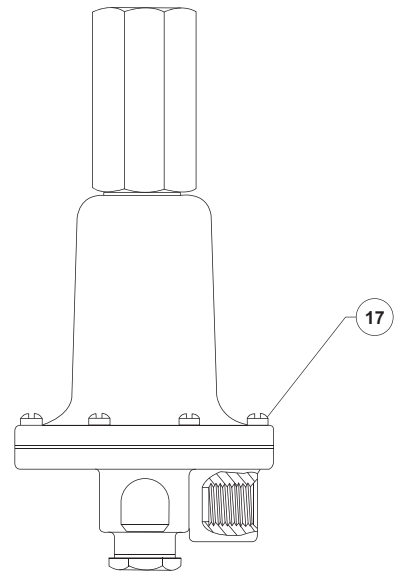
- APPLY LUBRICANT (L) / SEALANT (S)⁽¹⁾:
- L1 = ANTI-SEIZE COMPOUND (LUBRICANT)
 - L2 = MULTI-PURPOSE PTFE LUBRICANT (LUBRICANT)
 - S1 = MULTI-PURPOSE PTFE THREAD SEALANT (SEALANT)
 - S2 = ZINC BASED ANTI-SEIZE COMPOUND (SEALANT)

1. Lubricant and sealant must be selected such that they meet the temperature requirements.

Figure 5. 2 NPT Type 289P Main Valve Assembly



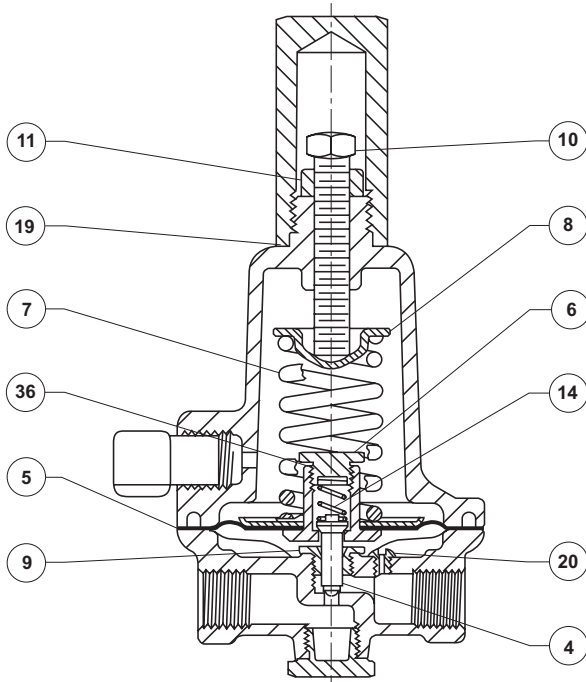
TYPE 6358B PILOT INTERIOR VIEW



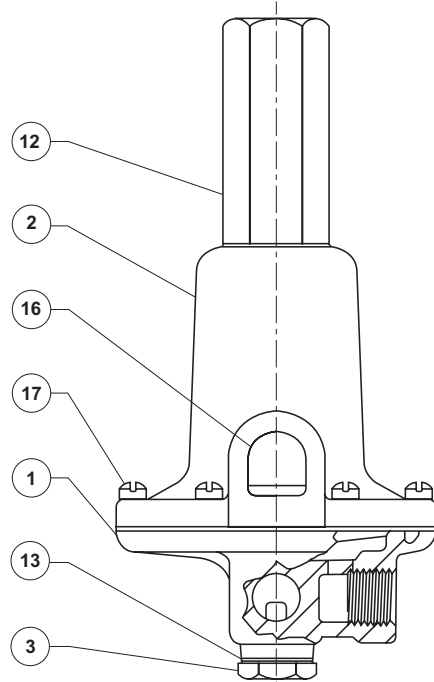
B2619-1

TYPE 6358B PILOT EXTERIOR VIEW

Figure 6. Type 6358B Pilot Assembly



TYPE 6365 PILOT INTERIOR VIEW



TYPE 6365 PILOT EXTERIOR VIEW

Figure 7. Type 6365 Pilot Assembly

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