

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: 289 Series Instruction Manual, D100280X012.

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: [D103053X012](#).

TYPE	SIZE		CATEGORY
	DN	NPS	
289A	----	1/4	SEP
289H	25	1	SEP
	50	2	I
289HH	25	1	SEP
289L	20 and 25	3/4 and 1	SEP
289P	25	1	SEP
289U	----	1/4	SEP

Specifications

Available Configurations

See Table 1

Body Sizes and Inlet Connections

Type 289L: 3/4 or 1 NPT

Types 289A and 289U: 1/4 NPT

Type 289H: 1 or 2 NPT

Type 289HH: 1 NPT

Maximum Allowable Relief (Inlet) Pressure⁽¹⁾ and Maximum Relief Set Pressure

See Table 1

Proof Test Pressure

All Pressure Retaining Components have been proof tested per Directive.

Pressure Setting Adjustment

Adjusting screw

Material Temperature Capabilities⁽¹⁾

Nitrile (NBR) and Neoprene (CR) Elastomers:

-29 to 66°C / -20 to 150°F

Fluorocarbon (FKM)⁽²⁾: -7 to 149°C / 20 to 300°F;
available with Types 289H and 289HH only

Option

Up to 25% Hydrogen Blend (By Volume) Construction

- The pressure/temperature limits in this installation guide and any applicable standard or code limitation should not be exceeded.
- Bubble-tight shutoff cannot be attained at settings below 0.34 bar / 5 psig with Fluorocarbon (FKM) O-ring seat.

Installation



WARNING

Only qualified personnel should install or service a backpressure regulator. Backpressure regulators 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.

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Table 1. Maximum Allowable Relief (Inlet) Pressure

AVAILABLE CONFIGURATION	BODY SIZE, NPT	COLOR CODE	SPRING RANGE (RELIEF PRESSURE SETTINGS)		MAXIMUM ALLOWABLE RELIEF (INLET) PRESSURE ⁽¹⁾	
			bar	psig	bar	psig
Type 289A	1/4	Silver Silver	0.21 to 0.90 0.76 to 1.5	3 to 13 11 to 22	3.1	45
Type 289H	1	Pink Red Silver Green	0.07 to 0.31 0.28 to 1.0 0.69 to 1.4 1.0 to 3.5	1 to 4.5 4 to 15 10 to 20 15 to 50	6.9	100
	2	Dark blue Gray Dark green Red Stripe	17 to 45 mbar 0.03 to 0.16 0.12 to 0.48 0.28 to 0.69	7 to 18 in. w.c. 0.5 to 2.25 1.75 to 7 4 to 10	1.7	25
Type 289HH	1	Green	3.1 to 5.2	45 to 75	6.9	100
Type 289L	3/4 or 1	Silver Red Stripe	25 to 45 mbar 30 to 99 mbar	10 to 18 in. w.c. 12 to 40 in. w.c.	0.48	7
Type 289U	1/4	Silver Silver	12 to 62 mbar 50 to 207 mbar	5 to 25 in. w.c. 20 in. w.c. to 3 psig	0.69	10

1. This value indicates the relief pressure setting plus pressure build-up.

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.

For installation of Types 289H, 289HH and 289L backpressure regulators, the vent in the spring case must remain plugged or undrilled in order for the pitot tube to function properly.

Overpressure

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).

Adjustment

To change the outlet pressure, remove closing cap or loosen the locknut and turn the adjusting screw clockwise to increase outlet pressure or counterclockwise to decrease pressure. Monitor the outlet 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)



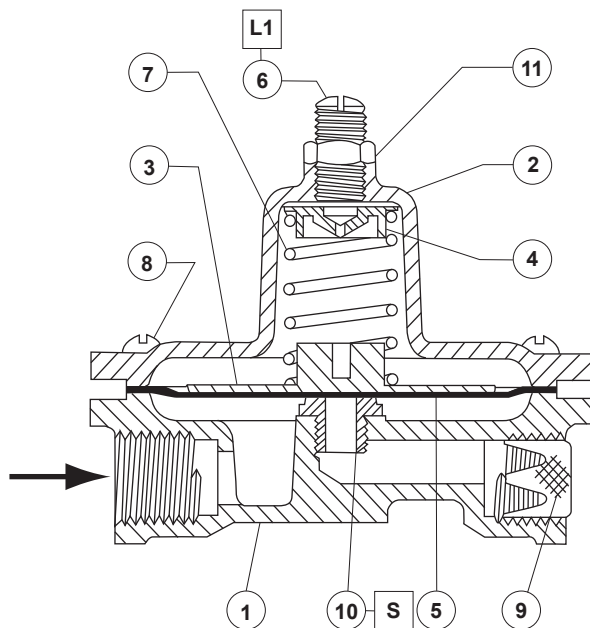
WARNING

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

For the 2 NPT Type 289H backpressure regulators, when changing from one spring range to another, it is recommended that a new spring case be used so that the travel stop drive screw will be positioned correctly for the corresponding spring range.

Parts List

Key	Description
1	Valve Body
2	Spring Case/Spring Case Assembly
3	Diaphragm Head
4	Spring Seat
5*	Diaphragm/Diaphragm Assembly
6	Adjusting Screw
7	Spring
8	Machine Screw, Plated steel
9	Screen, Stainless steel
10*	Orifice
11	Hex Nut
13	Snap Ring
14	Closing Cap
15*	Gasket, Neoprene (CR)
17	Lower Spring Seat, Zinc-plated steel
18	Pitot Tube
19*	Gasket, Composition
20*	O-ring
21	O-ring Holder, Aluminum
22	O-ring Washer
23	Spacer
24	Hex Nut, Plated steel
26	Lower Diaphragm Head, Zinc-plated steel
27	Washer, Aluminum
28	Pipe Plug, Types 289H and 289HH, Carbon steel
29	Machine Screw, Carbon-plated steel (not shown)
30*	O-ring, Types 289H and 289HH
31	Stem Guide Assembly
32	Lifting Lever (not shown), Steel
34*	Diaphragm Protector (not shown), Polytetrafluoroethylene (PTFE) Types 289A
38*	Gasket, Type 289H, 2 NPT body, Neoprene (CR)

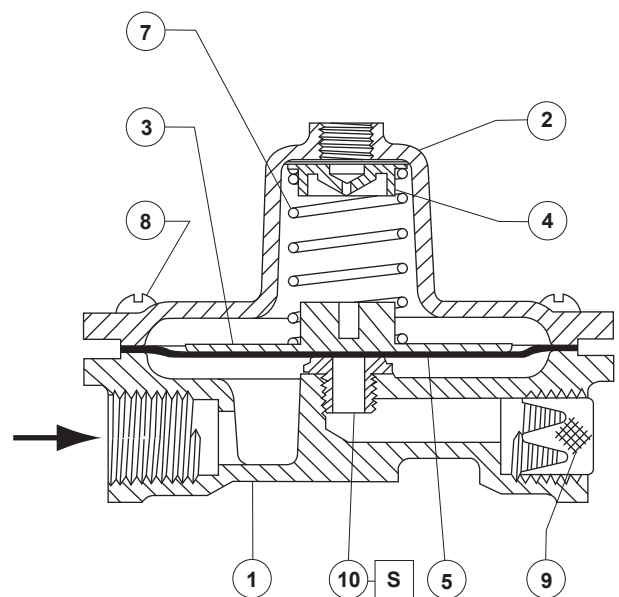


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□ APPLY LUBRICANTS (L) / SEALANT (S)⁽¹⁾:
L1 = ANTI-SEIZE COMPOUND
S = THREAD SEALANT

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

Figure 1. Type 289A Relief Valve

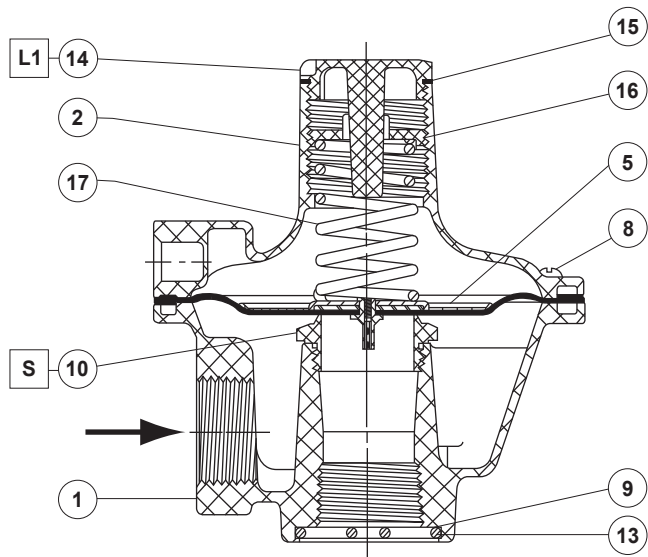


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□ APPLY SEALANT (S)⁽¹⁾:
S = THREAD SEALANT

1. Sealant must be selected such that it meets the temperature requirements.

Figure 2. Type 289U Relief Valve

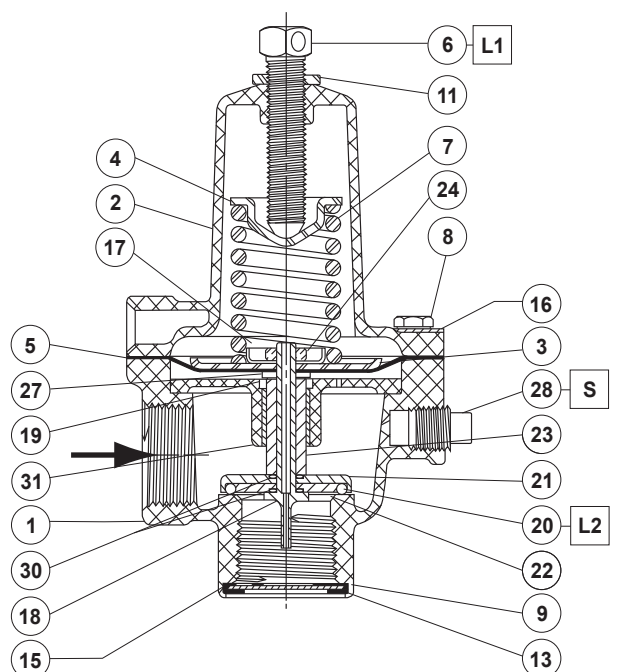


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□ APPLY LUBRICANTS (L) / SEALANT (S)⁽¹⁾:
L1 = ANTI-SEIZE COMPOUND
S = THREAD SEALANT

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

Figure 3. Type 289L Relief Valve



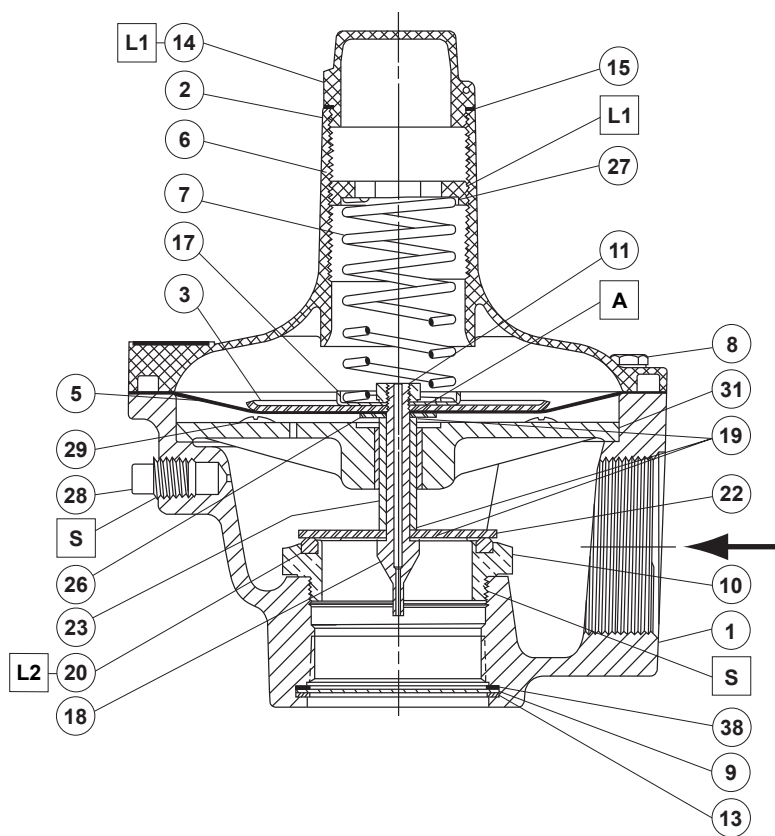
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□ APPLY LUBRICANTS (L) / SEALANT (S)⁽¹⁾:
L1 = ANTI-SEIZE COMPOUND
L2 = PTFE GREASE
S = THREAD SEALANT

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

Figure 4. Types 289HH and 1 NPT 289H Relief Valves

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- ☐ APPLY LUBRICANTS (L) / SEALANT (S) / ADHESIVE (A)⁽¹⁾:
L1 = ANTI-SEIZE COMPOUND
L2 = PTFE GREASE
S = THREAD SEALANT
A = ADHESIVE

1. Lubricants, sealant and adhesive must be selected such that they meet the temperature requirements.

Figure 5. 2 NPT Type 289H Relief Valve

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For further information on the current
PED/PE(S)R revision see Bulletin: D103053X012
or scan the QR code.

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