

The 289 Series relief valve is a throttling relief valve used downstream of pressure regulators to protect the downstream system from overpressure. A smooth throttling action minimizes pressure surges in the system during emergency operation. These relief valves are available in 1/4, 3/4, 1, or 2-inch sizes with spring ranges (relief pressure settings) from 5 inches w.c. to 75 psig (0.01 to 5.2 bar).

All sizes above 1/4-inch feature a pitot tube booster (figure 1) for achieving the highest possible relief capacity with a minimum buildup of system pressure. When the valve is opening, high gas velocity through the orifice creates an area of relatively low pressure near the end of the pitot tube. This pitot tube effect forms a partial vacuum above the diaphragm which helps to open the valve.

The relief valve diaphragm functions as a valve disk to control flow in all types except the 289H and 289HH, which use O-ring seats. The nitrile or neoprene seating surfaces pro-

vide tight shutoff. The 289 Series relief valves are ideal for low pressure settings due to the increased sensitivity provided by the large diaphragm area.

Features

- **Throttling Type Relief**—Smooth, sensitive throttling action minimizes pressure surges.
- **High Flow Rates**—As shown by the figure 4 capacity curves, high flow rates can be achieved with minimum pressure buildup due to the boosting system which increases the relief valve opening.
- **Small Size**—The 289 Series relief valves are small and compact, making them suitable for areas limited in space.
- **Reliability Due to Simplicity**—A single internal assembly decreases the possibility of mechanical failure.

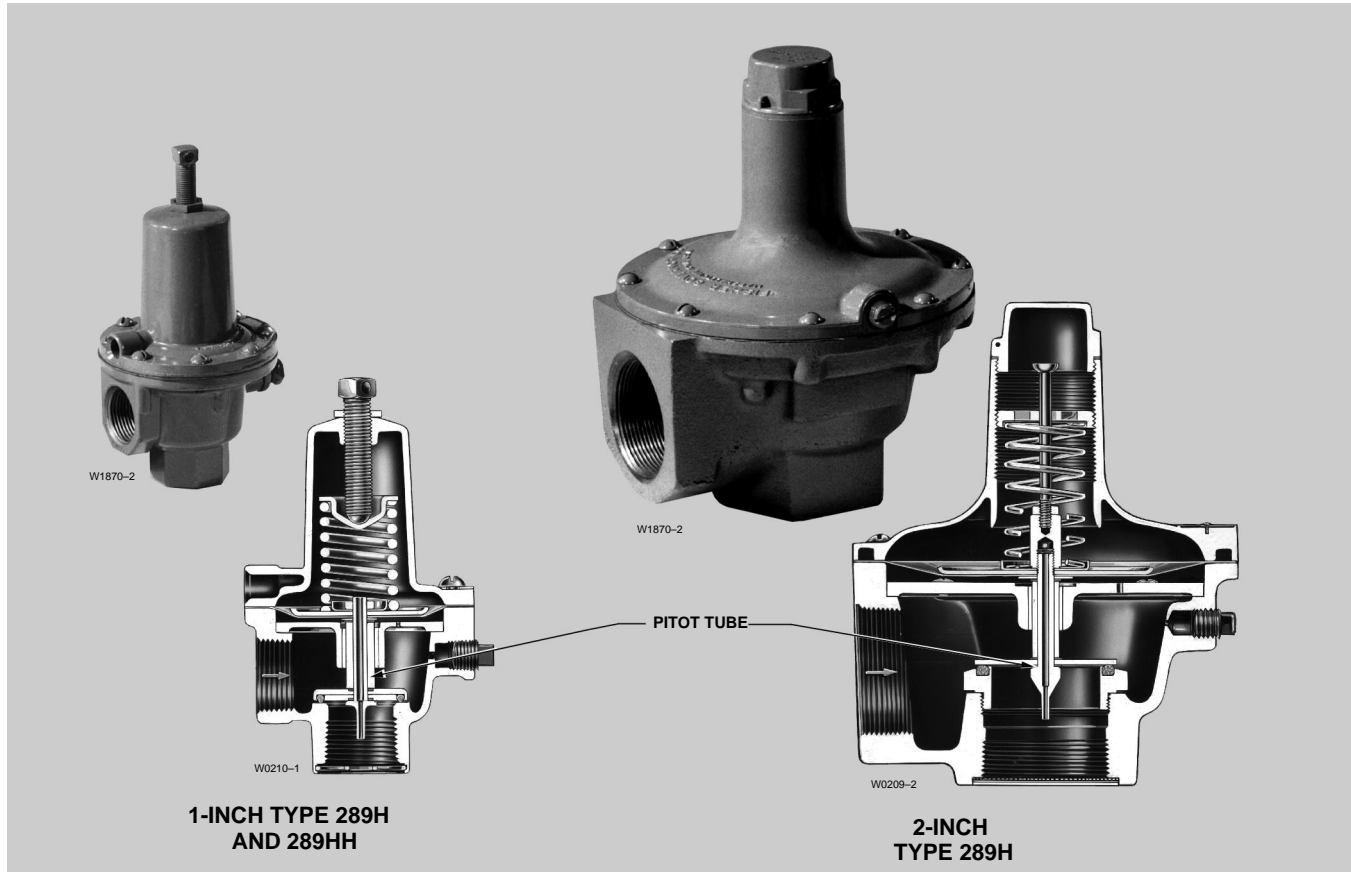


Figure 1. Type 289H and 289HH Relief Valves

Specifications

Available Configurations

Type 289A (figure 2): 1/4-inch spring-loaded relief valve for relief pressure settings of 3 to 22 psig, (0.21 to 1.5 bar) two spring ranges

Type 289H (figure 1): 1 or 2-inch spring-loaded relief valve for relief pressure settings of 1 to 50 psig (0.07 to 3.5 bar) four spring ranges, in the 1-inch size and of 7-inches w.c. to 10 psig, (0.02 to 0.69 bar), four spring ranges, in the 2-inch size

Type 289HH (figure 1): 1-inch spring-loaded relief valve for relief pressure settings of 45 to 75 psig (3.1 to 5.2 bar)

Type 289L (figure 3): 3/4 or 1-inch spring-loaded relief valve for relief pressure settings of 10 to 40-inches w.c., (0.03 to 0.1 bar), two spring ranges

Type 289U (figure 2): 1/4-inch spring-loaded relief valve for relief pressure settings of 5-inches w.c. to 3 psig, (0.01 to 0.21 bar), two spring ranges

Inlet Connections

Type 289L: ■ 3/4 or ■ 1-inch NPT female

Types 289A and 289U: 1/4-inch NPT female

Type 289H: ■ 1 or ■ 2-inch NPT female

Type 289HH: 1-inch NPT female

Outlet (Vent) Connections

Same size as inlet connection

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

See table 1

Capacity Data

See figure 4

Standard Construction Materials

Valve Body and Spring Case

Types 289A and 289U: Zinc

Type 289H (1-inch), 289HH, and 289L: Aluminum

Type 289H (2-inch): Cast iron body with aluminum spring case

Diaphragm

Type 289A: Neoprene

Types 289H and 289HH: ■ Nitrile or ■ fluoroelastomer

All Others: Nitrile

Orifice

Types 289A and 289L: Aluminum

Type 289H (2-inch Only): ■ Brass or ■ stainless steel

O-Ring Seat (Types 289H and 289HH Only):

■ Nitrile or ■ fluoroelastomer⁽²⁾

O-Ring Seat Holder and Washer (1-inch Types 289H and 289HH Only):

Aluminum

Seat Washer (2-inch Type 289H Only):

Stainless steel

Pitot Tube

Types 289H and 289HH (1-inch), and 289L:

Aluminum

Type 289H (2-inch): ■ Brass or ■ stainless steel

Gaskets

Type 289L: Neoprene

All Others: Composition

Spring: Zinc-plated steel

Diaphragm Plate

Types 289A and 289U: Zinc

All Others: Zinc-plated steel

Closing Cap

Type 289L: ■ Plastic, ■ aluminum, or ■ zinc

Type 289H (2-inch): Zinc

Material Temperature Capabilities⁽¹⁾

With Nitrile and Neoprene Elastomers: -20 to +150°F (-29 to 66°C)

With Fluoroelastomers: +20 to +300°F (-7 to 149°C) Available with Types 289H and 289HH only

Approximate Shipping Weight

Types 289A and 289U: 0.75 lb (0.34 kg)

Type 289H:

1-inch Size: 4 lb (1.8 kg)

2-inch Size: 15 lb (6.8 kg)

Type 289HH: 4 lb (1.8 kg)

Type 289L: 1.5 lb (0.7 kg)

Options

■ TFE diaphragm protector (Types 289A and 289U only), and ■ wire-seal on closing cap (1-inch Type 289L only)

1. The pressure/temperature limits in this bulletin and any applicable standard limitation should not be exceeded.

2. Bubble-tight shutoff can not be attained at settings below 5 psig with fluoroelastomer O-ring seat.

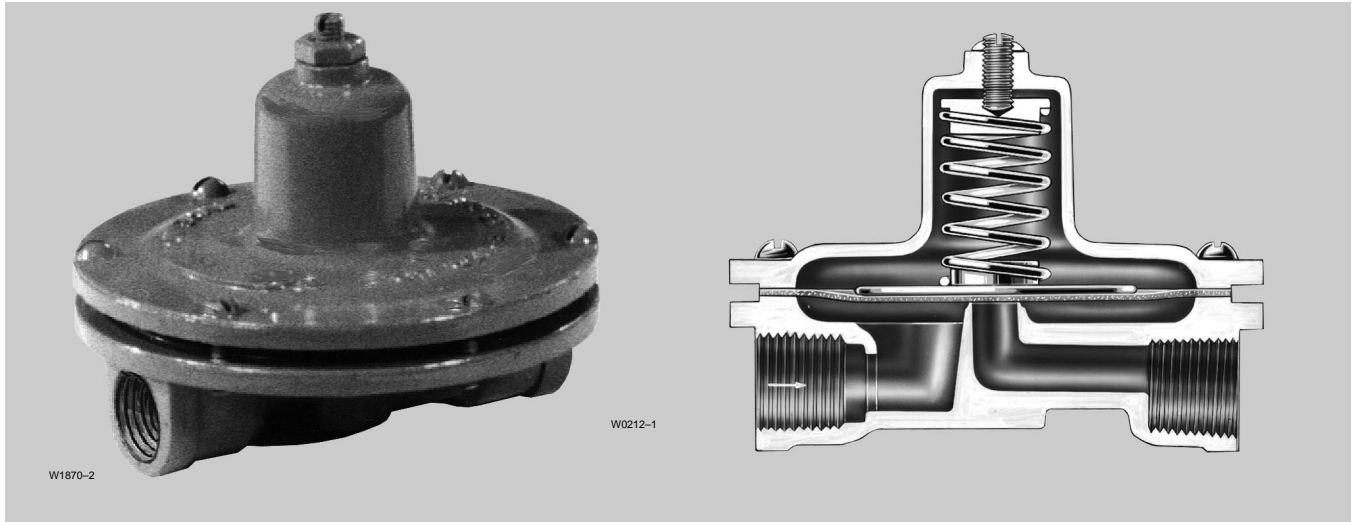


Figure 2. Type 289U Relief Valve (Also Typical of Type 289A Relief Valve)

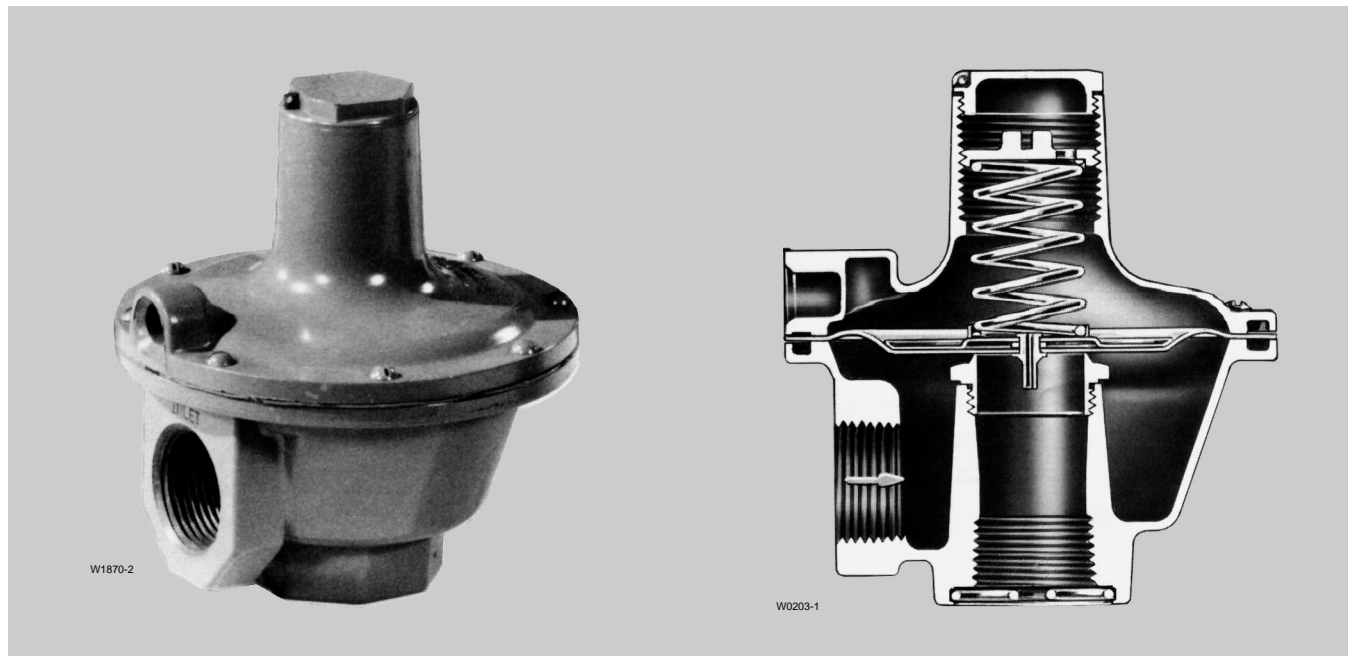
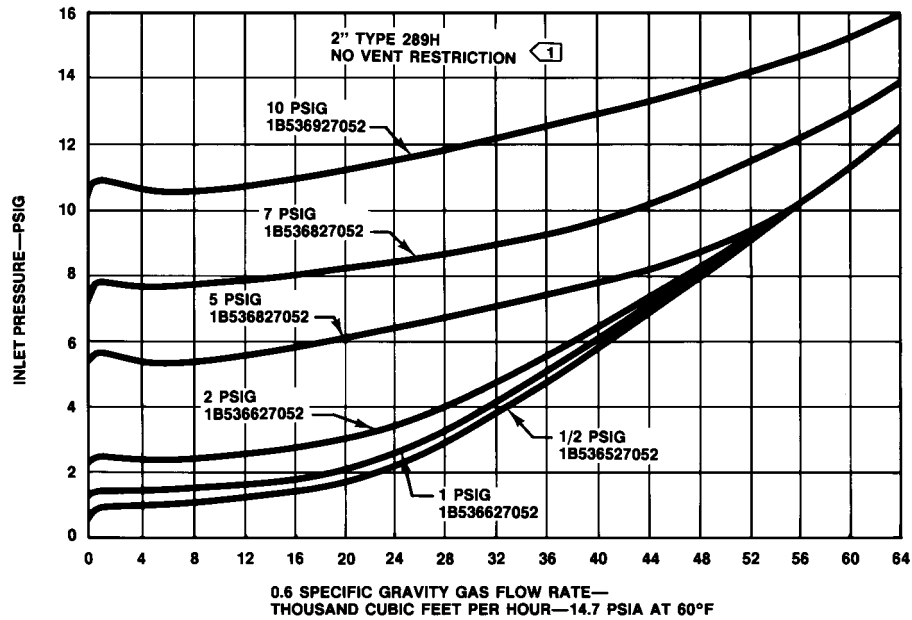
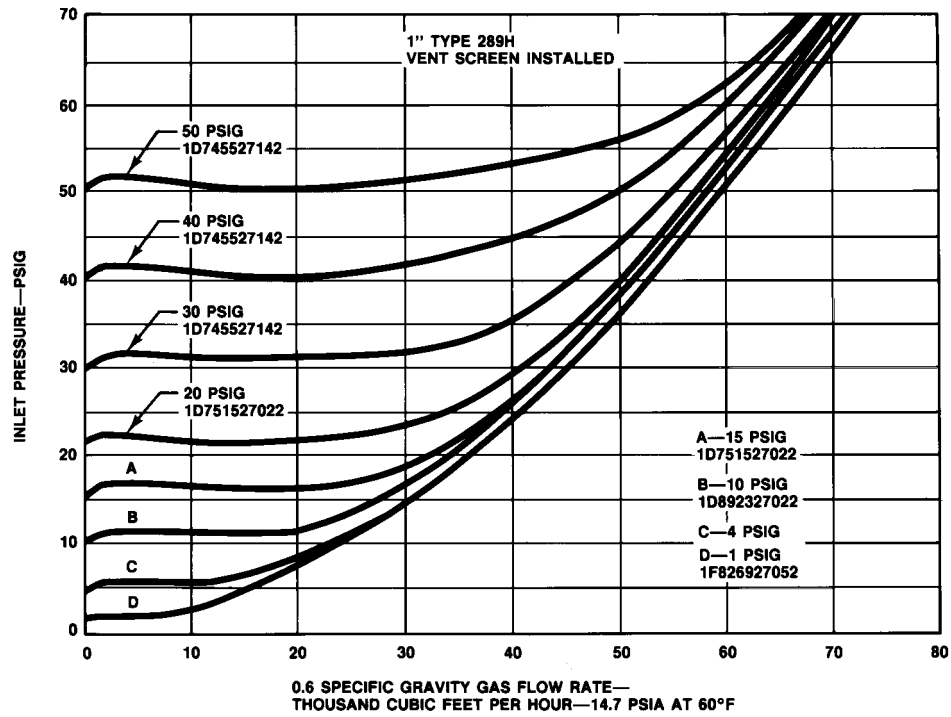


Figure 3. Type 289L Relief Valve

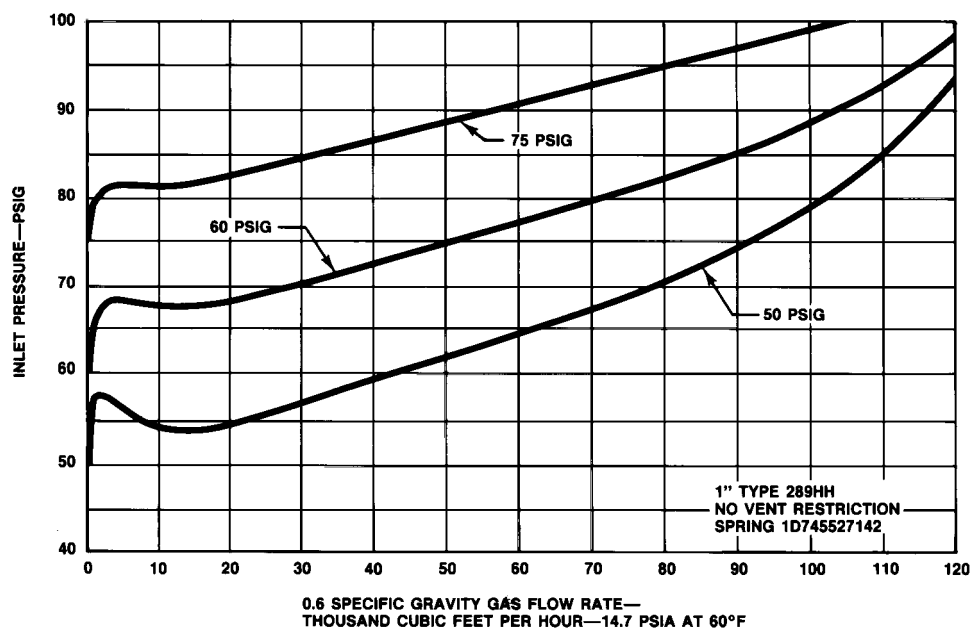
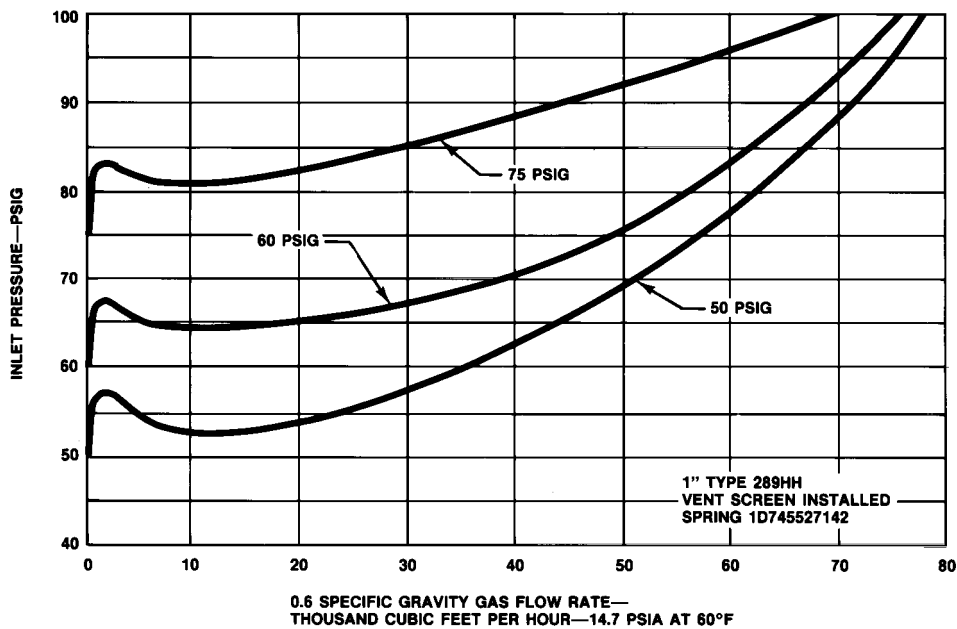


NOTE:

- ① LESS THAN A 5% CAPACITY LOSS CAN BE EXPECTED WITH THE VENT SCREEN INSTALLED ON THE 2-INCH TYPE 289H AT MAXIMUM FLOW.
2. WHEN SELECTING ANY RELIEF VALVE FOR INSTALLATION DOWNSTREAM OF A REGULATOR, THE CAPACITY OF THE RELIEF VALVE SHOULD BE COMPARED WITH THE WIDE-OPEN CAPACITY OF THE REGULATOR.
3. BUBBLE POINT RELIEF SETTING AND SPRING PART NUMBER ARE NOTED ON EACH CURVE.
4. TO CONVERT TO EQUIVALENT CAPACITIES OF OTHER GASES, MULTIPLY VALUES OBTAINED FROM CURVE BY THE FOLLOWING FACTORS: AIR—0.78, PROPANE—0.628, BUTANE—0.548, NITROGEN—0.789.

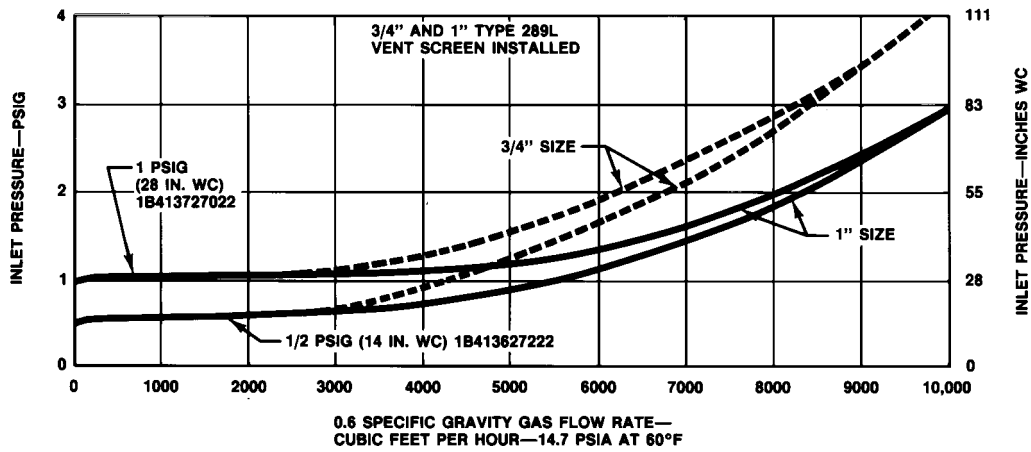
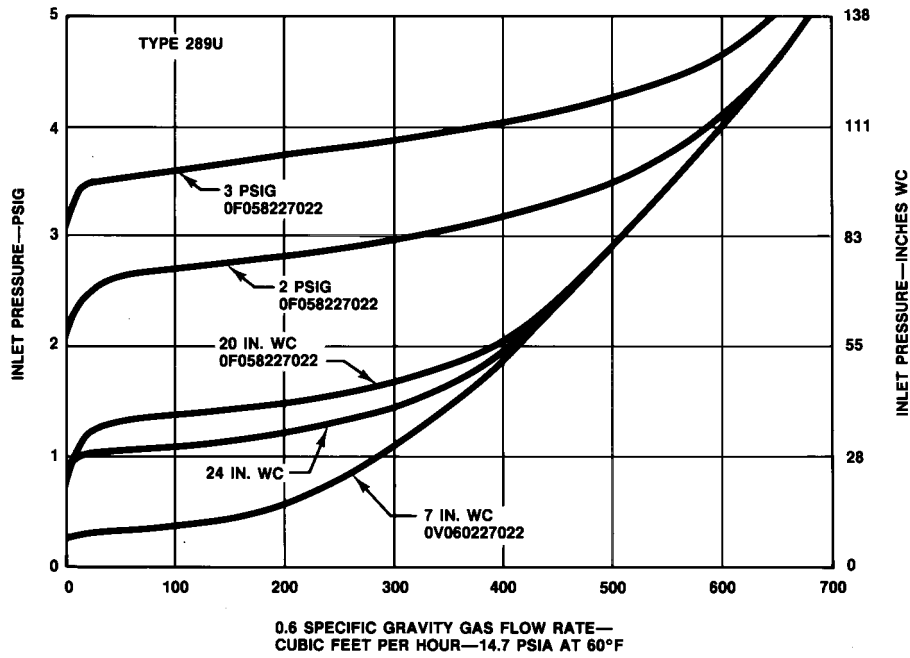
52309

Figure 4. Capacity for 0.6 Specific Gas at 14.7 Psia and 60° F



- NOTES:
1. WHEN SELECTING ANY RELIEF VALVE FOR INSTALLATION DOWNSTREAM OF A REGULATOR, THE CAPACITY OF THE RELIEF VALVE SHOULD BE COMPARED WITH THE WIDE-OPEN CAPACITY OF THE REGULATOR.
 2. BUBBLE POINT RELIEF SETTING AND SPRING PART NUMBER ARE NOTED ON EACH CURVE.
 3. TO CONVERT TO EQUIVALENT CAPACITIES OF OTHER GASES, MULTIPLY VALUES OBTAINED FROM CURVE BY THE FOLLOWING FACTORS: AIR—0.78, PROPANE—0.628, BUTANE—0.548, NITROGEN—0.789.
- B2310

Figure 4. Capacity for 0.6 Specific Gas at 14.7 Psia and 60° F (Continued)



- NOTES:**
1. WHEN SELECTING ANY RELIEF VALVE FOR INSTALLATION DOWNSTREAM OF A REGULATOR, THE CAPACITY OF THE RELIEF VALVE SHOULD BE COMPARED WITH THE WIDE-OPEN CAPACITY OF THE REGULATOR.
 2. BUBBLE POINT RELIEF SETTING AND SPRING PART NUMBER ARE NOTED ON EACH CURVE.
 3. TO CONVERT TO EQUIVALENT CAPACITIES OF OTHER GASES, MULTIPLY VALUES OBTAINED FROM CURVE BY THE FOLLOWING FACTORS: AIR—0.78, PROPANE—0.628, BUTANE—0.548, NITROGEN—0.789.

B2311

Figure 4. Capacity for 0.6 Specific Gas at 14.7 Psia and 60° F (Continued)

Table 1. Spring Ranges and Maximum Allowable Relief (Inlet) Pressures

BODY SIZE, INCHES	TYPE	SPRING RANGE (RELIEF PRESSURE SETTINGS)		SPRING PART NUMBER	MAXIMUM ALLOWABLE RELIEF SETTING ⁽¹⁾		MAXIMUM ALLOWABLE RELIEF (INLET) PRESSURE ⁽²⁾	
		W.C. or Psig	Bar		W.C. or Psig	Bar	Psig	Bar
1/4	289U	5 to 25-inches w.c. 20-inches w.c. to 3 psig	0.01 to 0.06 0.05 to 0.21	0V0602 27022 0F0582 27022	3 psig	0.21	10	0.69
	289A	3 to 13 psig 11 to 22 psig	0.21 to 0.9 0.76 to 1.5	0Z0563 27022 1B2682 27022	22 psig	1.52	45	3.1
3/4 or 1	289L	3 to 8-inches w.c. 5 to 18-inches w.c. 10 to 18-inches w.c. 12 to 40-inches w.c.	0.07 to 0.02 0.01 to 0.04 0.03 to 0.04 0.03 to 0.1	1B4135 27222 1N3112 X0012 13A7917 X012 13A7916 X012	40-inches w.c.	0.1	7	0.52
1	289H	1 to 4.5 psig 4 to 15 psig 10 to 20 psig 15 to 50 psig	0.07 to 0.3 0.3 to 1.0 0.69 to 1.4 1.0 to 3.5	1F8269 27052 1D8923 27022 1D7515 27022 1D7455 27142	50 psig	3.5	100	7
2	289H	7 to 18-inches w.c. 0.5 to 2.25 psig 1.75 to 7 psig 4 to 10 psig	0.02 to 0.04 0.03 to 0.16 0.12 to 0.52 0.28 to 0.69	1B5365 27052 1B5366 27052 1B5368 27052 1B5369 27052	10 psig	0.69	25	1.7
1	289HH	45 to 75 psig	3.1 to 5.17	1D7455 27142	75 psig	5.17	100	7

1. With highest spring range available.
2. Maximum relief pressure setting plus buildup.

Installation

The 289 Series relief valves may be installed in any position. However, the outlet connection must be protected against the entrance of rain, snow, insects, or any other foreign material that may plug the outlet or affect the opening and closing of the valve (see figure 5). If it is necessary to pipe away the outlet, remove the outlet screen (if one is present).

Flow through the valve must be as indicated by the flow direction arrow on the body (inlet connection is marked on some sizes).

The spring case vent on the 2-inch Type 289H is tapped and plugged. This vent opening must remain plugged to allow the pitot tube booster to function.

Overpressure

Overpressure conditions in a regulating system may cause personal injury or equipment damage due to bursting of

pressure-containing parts or explosion of accumulated gas. Check the system for damage if any of the maximum allowable relief (inlet) pressure ratings in table 1 are exceeded.

Ordering Information

When ordering, specify:

1. Type number and size
2. Relief pressure range and setting desired
3. Type of gas (natural gas, air, etc.); list any factors such as impurities in the gas that may affect compatibility of the gas with valve trim parts
4. Temperature and specific gravity of the gas
5. Maximum relief (inlet) pressure and flow rate desired
6. Line size and end connection size of adjacent piping
7. For Types 289H and 289HH, specify material of diaphragm and O-ring seat; for 2-inch Type 289H, specify material of orifice and pitot tube
8. Options desired, if any

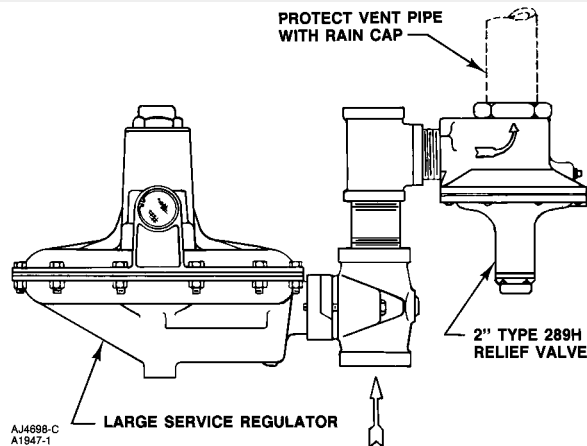


Figure 5. Typical Installation of a 289 Series Relief Valve

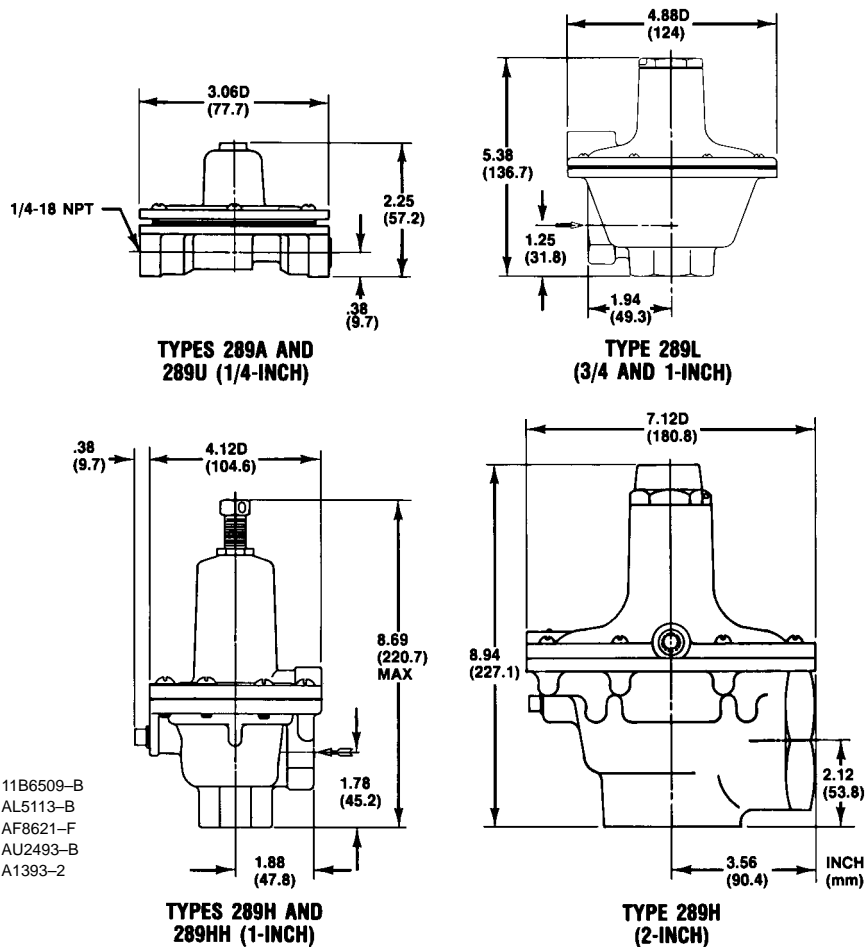


Figure 6. Dimensions

While this information is presented in good faith and believed to be accurate, Fisher Controls does not guarantee satisfactory results from reliance upon such information. *Nothing contained herein is to be construed as a warranty or guarantee, express or implied, regarding the performance, merchantability, fitness*

or any other matter with respect to the products, nor as a recommendation to use any product or process in conflict with any patent. Fisher Controls reserves the right, without notice, to alter or improve the designs or specifications of the products described herein.



Fisher Controls

For information, contact Fisher Controls:
Marshalltown, Iowa 50158 USA
Cernay 68700 France

Sao Paulo 05424 Brazil
Singapore 2158