

# 670 Series Panel-Mounted Loading Regulators



P1127\_670

**1-GAUGE PANEL  
(671 AND 670 SERIES)**



P1128\_670G-3

**2-GAUGE PANEL  
(670 SERIES)**



P1130\_670GV

**2-GAUGE PANEL WITH  
CHANGEOVER VALVE  
(670 SERIES)**

*Figure 1. Typical Panel Layouts*

## Introduction

The Types 670, 671, 674 and 675 panel-mounted loading regulators (Figures 1, 2, 3 and 6) are compact, rugged units used primarily for manually loading pressure-balanced gas regulators and providing manual control for diaphragm actuator control valves. Applications include remote control of gas pressure to burners in refineries, power plants and various process furnaces. The Types 670 and 675 units use the Type 67CR or 67CFR pressure regulator, the Type 671 unit uses the Type 912 pressure regulator and the Type 674 unit uses the Type 1301F pressure regulator.

Three basic panels are available within the product line as shown in Figures 1 and 6, each having one pressure regulator connected to one or two gauges

or two gauges and a changeover valve. A single gauge typically shows loading pressure to the control valve. With two gauges, one gauge shows the loading pressure and the other gauge can be connected to show downstream control pressure or any other pressure up to 300 psig / 20.7 bar. Manual backup of pneumatic controllers can be handled with those 670 Series units having a changeover valve. With it the operator selects either the automatic controller output (displayed on one gauge) or the manual loader output (displayed on the other gauge and adjusted by the handwheel) as the signal to the control valve actuator.



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# Bulletin 62.3:670

## Specifications

This section lists the specifications for the 670 Series panel-mounted loading regulators. Factory specifications are stamped on the nameplate fastened on the regulator at the factory.

### Available Configurations

See Table 1

### End Connections

**Inlet:** 1/4 NPT internal

**Outlet:** Types 670 and 675—1/4 NPT internal;  
Type 671—3/8 NPT internal;  
Type 674—1/4 NPT internal

### Maximum Allowable Inlet Pressure

**Without Changeover Valve:** 250 psig / 17.2 bar

**With Changeover Valve:** 50 psig / 3.4 bar

### Maximum Outlet Pressure

See Table 1

### Maximum Emergency Outlet Pressure

See Table 1

### Outlet Pressure Ranges

**Types 670 and 675<sup>(1)</sup>:** 3 to 18 psig / 0.21 to 1.2 bar  
5 to 30 psig / 0.34 to 2.1 bar; 30 to 50 psig / 2.1 to 3.4 bar; and 35 to 100 psig / 2.4 to 6.9 bar except 35 to 50 psig / 2.4 to 3.4 bar with change over valve

**Type 671:** 0 to 1 psig / 0 to 0.07 bar; 0 to 5 psig / 0 to 0.34 bar

**Type 674:** 10 to 75 psig / 0.69 to 5.2 bar;  
50 to 150 psig / 3.4 to 10.3 bar;  
100 to 225 psig / 6.9 to 15.5 bar

### Pressure Registration

Internal

### Construction Materials

**Panel Tubing:** Copper, PVC-coated copper, aluminum or 316 (316 Stainless steel)

#### Regulator Body

*Types 670 and 675:* Die-cast aluminum

*Type 671:* Die-cast zinc

*Type 674:* Brass

#### Regulator Spring Case

*Types 670 and 675:* Die-cast zinc/Stainless steel

*Type 671:* Die-cast zinc

*Type 674:* Forged brass or steel

#### Panel

*Types 670, 670F and 671:* Zinc

*Types 670FG, 670G, 670FGV and 670GV:* Steel

*Handwheel:* Die-cast aluminum

### Construction Materials (continued)

#### Other Regulator Parts

*Diaphragm:* Nitrile (NBR)

*Valve Disk:* Nitrile (NBR)

*Diaphragm Plate:* Plated steel

*Spring:* Plated steel

#### Filter Cartridge (Type 67CFR Regulator Only):

Cellulose (**standard**) or Stainless steel or Brass

### Temperature Capabilities

-20 to 180°F / -29 to 82°C

### Pressure Gauges

**Connection:** 1/8 NPT external fitting on back of case

**Ranges:** Standard ranges shown in Table 2 with other ranges available upon request

**Face Colors:** White with black numerals

**Case Color:** Black

**Gauge Identification:** White engraving on black laminated plastic plate below gauge indicates units and function. Up to 16 characters per line, 3 lines, are available.

### Regulator Port Diameters

**Types 670 and 675:** 0.125 in. / 3.2 mm

**Type 671:** 0.073 in. / 1.9 mm (**standard**);

0.094 in. / 2.4 mm (optional)

**Type 674:** 0.078 in. / 2.0 mm

### Operating Influences<sup>(2)</sup>

**670 Series:** As shown in Figure 4, output pressure changes less than 5 psig / 0.34 bar when the input pressure changes between 20 to 140 psig / 1.4 to 9.7 bar

**Type 671:** As shown in Figure 5, output pressure changes less than 1 in. w.c. / 2 mbar when the input pressure changes between 20 to 140 psig / 1.4 and 9.7 bar

### Regulator Flow Capacity

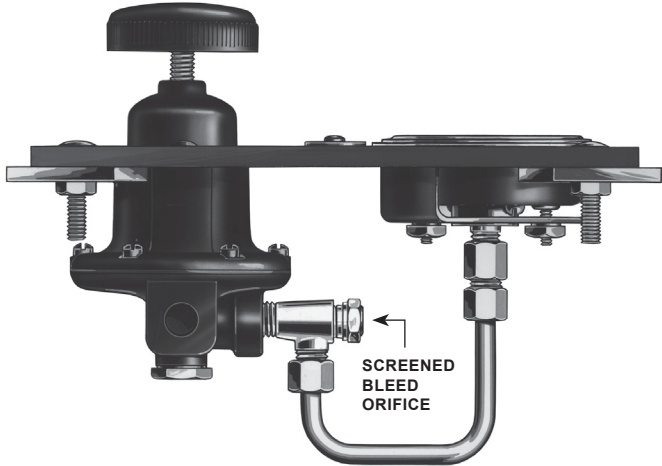
See appropriate pressure regulator bulletin

### Internal Relief for Pressure Regulators

Adequate for relieving only minor build-up situations. Refer to the appropriate pressure regulator bulletin to determine if external relief is required.

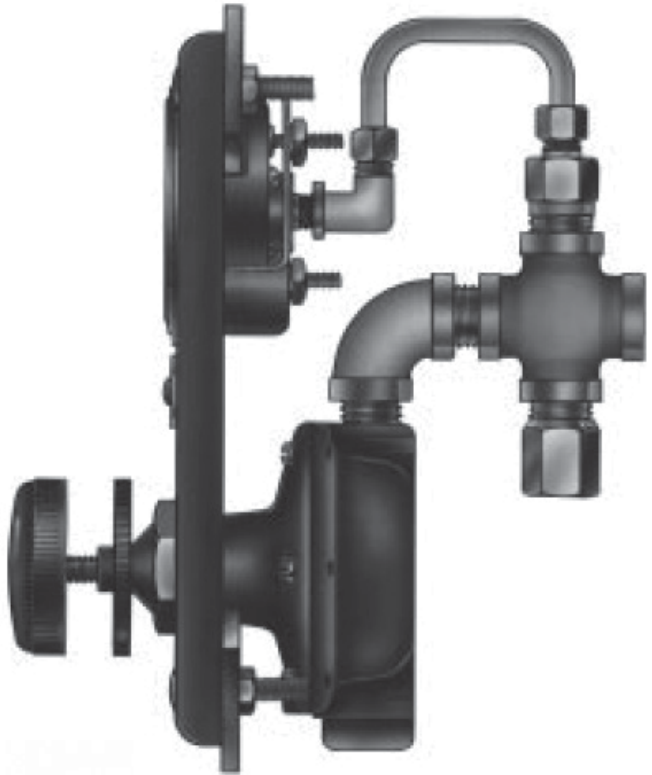
1. These pressure ranges are recommended, but all springs used in the Type 67CR or 67CFR regulators can be adjusted down to 0 psig / 0 bar.

2. Defined in ISA Standard S51.1-1979.



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Figure 2. Type 670 Panel Loader



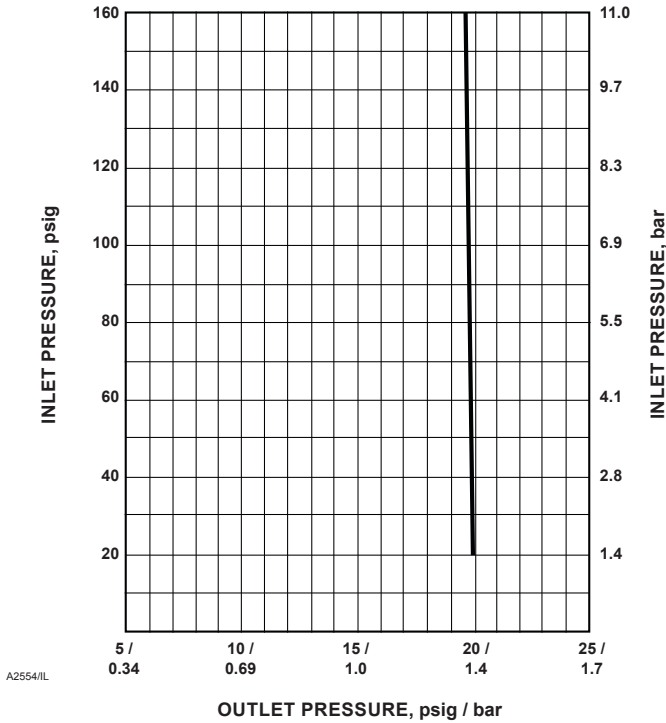
W6110-1/IL

Figure 3. Side View of Type 671 Panel Loader Using Type 912 Regulator

## Features

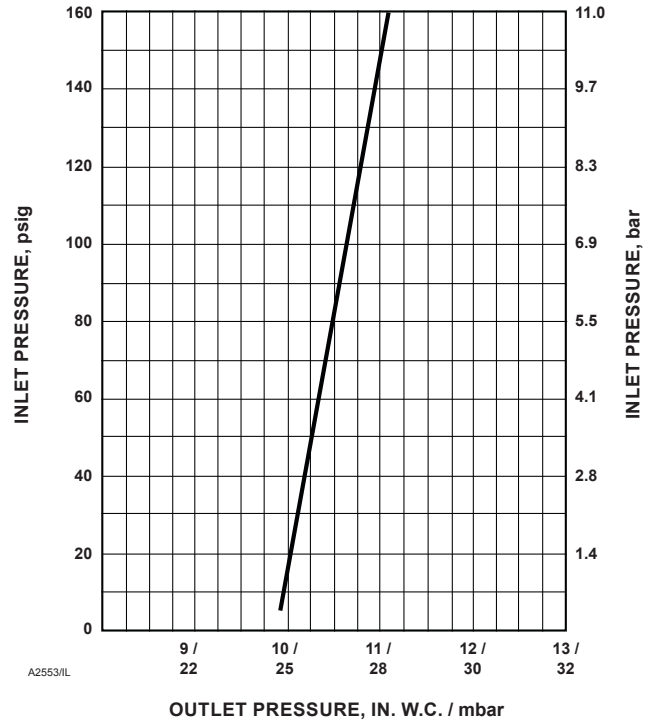
- **Control Flexibility**—With a changeover valve, the operator can deliver pressure to the control valve from the manual loader, a controller or bypass the panel completely.
- **Gauge Identification**—Big, clear, white-on-black labels (see Figure 1) show gauge function and units at a glance.
- **Convenient Fingertip Control**—Turn the panel-mounted handwheel clockwise to increase or counterclockwise to decrease pressure to the control valve while watching the high visibility black-on-white gauges.
- **Easy Connections**—Unit comes with all the hardware necessary to connect the loading pressure gauge to the pressure regulator.
- **Versatility**—Pressure regulators are suitable for a variety of gaseous fluids including natural gas, propane and air.
- **Compact Size**—The slim profiles of the regulators are ideal for installations where space behind the panel is limited.

# Bulletin 62.3:670



NOTE:  
TEST CONDUCTED USING A CONSTANT FLOW RATE OF  
50 STANDARD CUBIC FEET PER HOUR AT 60°F AND  
14.7 psia (1.3 NORMAL CUBIC METERS PER HOUR AT 0°C  
AND 1.01325 bar, ABSOLUTE)

Figure 4. Pressure Variation of Type 67CR Regulator



NOTE:  
TEST CONDUCTED USING A CONSTANT FLOW RATE OF  
50 STANDARD CUBIC FEET PER HOUR AT 60°F AND  
14.7 psia (1.3 NORMAL CUBIC METERS PER HOUR AT 0°C  
AND 1.01325 bar, ABSOLUTE)

Figure 5. Pressure Variation of Type 912 Regulator

Table 1. Available Configurations

TYPE NUMBER	NUMBER OF GAUGE	DESCRIPTION	REGULATOR TYPE NUMBER	MAXIMUM INLET PRESSURE	MAXIMUM OUTLET PRESSURE	MAXIMUM EMERGENCY OUTLET PRESSURE
670	1	Basic 1-gauge panel	67CR	250 psig / 17.2 bar	100 psig / 6.9 bar	110 psig / 7.6 bar
670F	1	1-gauge panel; regulator has filter	67CFR			
670FG	2	2-gauge panel; regulator has filter	67CFR			
670FGV	2	2-gauge panel with 3-way changeover valve; regulator has filter	67CFR	50 psig / 3.4 bar	50 psig / 3.4 bar	55 psig / 3.8 bar
670G	2	Basic 2-gauge panel	67CR	250 psig / 17.2 bar	100 psig / 6.9 bar	110 psig / 7.6 bar
670GV	2	2-gauge panel with 3-way or 4-way changeover valve	67CR	50 psig / 3.4 bar	50 psig / 3.4 bar	55 psig / 3.8 bar
671	1	Basic 1-gauge panel	912N	250 psig / 17.2 bar	5 psig / 0.34 bar	10 psig / 0.69 bar
674G	2	Basic 2-gauge panel	1301F	6000 psig / 414 bar	225 psig / 15.5 bar	250 psig / 17.2 bar
675G	2	Basic 2-gauge panel	67CR	250 psig / 17.2 bar	100 psig / 6.9 bar	110 psig / 7.6 bar

Table 2. Pressure Gauge Ranges - Triple Scale

psig	Pa	bar
0 to 10	0 to 0.6 K	0 to 0.69
0 to 30	0 to 0.2 M	0 to 2.1
0 to 60	0 to 0.4 M	0 to 4.1
0 to 160	0 to 1.1 M	0 to 11.0
0 to 300	0 to 2 M	0 to 20.7

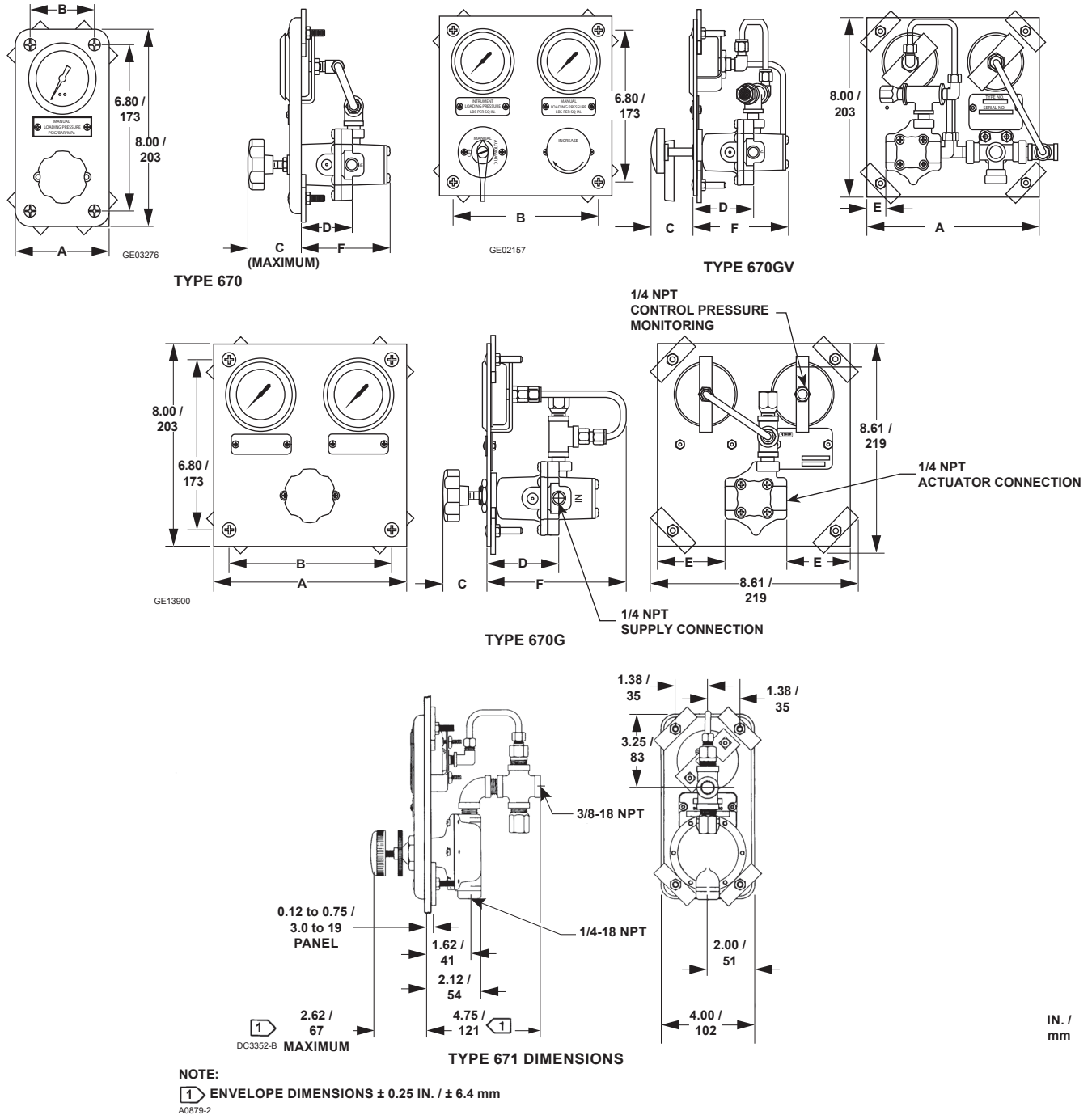


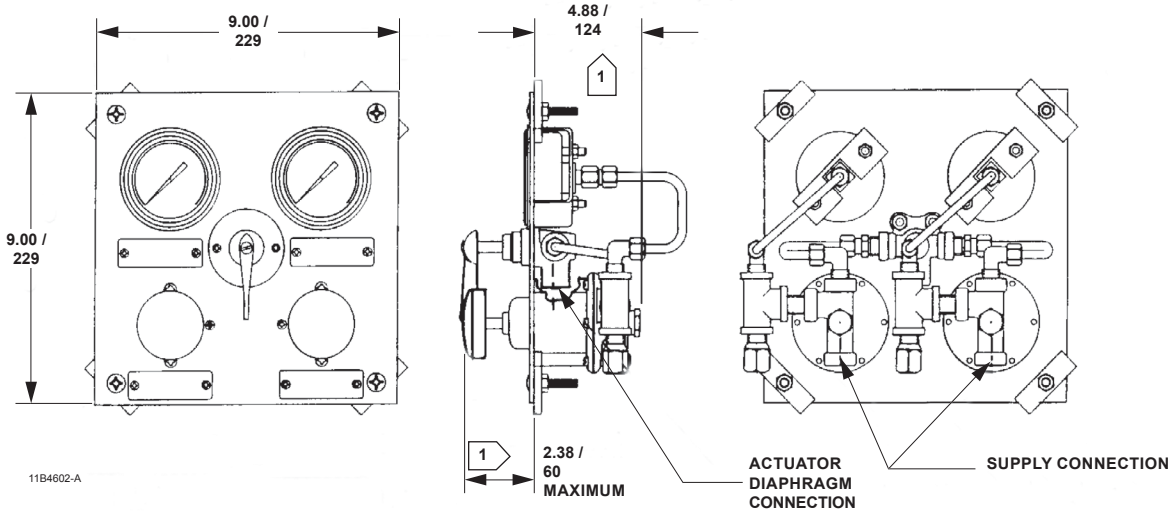
Figure 6. Dimensions

Table 3. Dimension Table

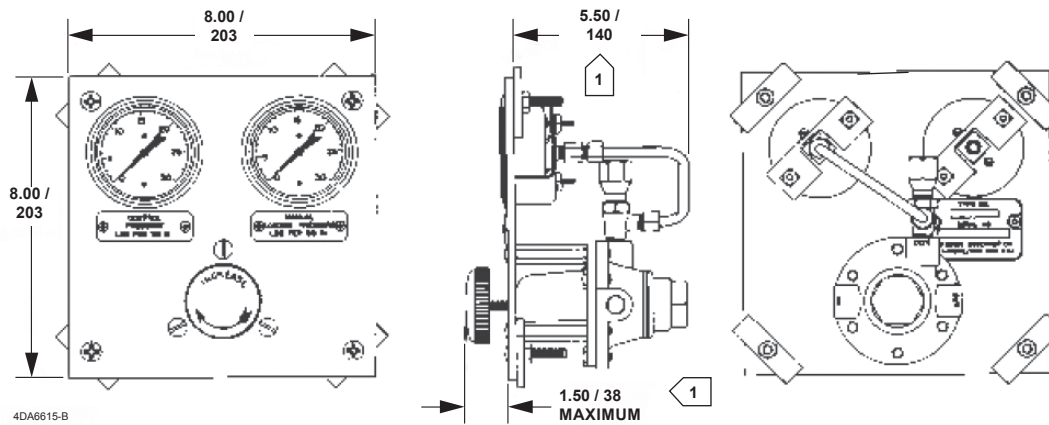
TYPE NUMBER	DIMENSION													
	A		B		C		D		E		F <sup>(1)</sup>		Panel Count	
	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
670	4.00	102	2.80	71	2.55	65	2.15	55	0.72	18	3.66	93	3.25 x 7.25	83 x 184
670F	4.00	102	2.80	71	2.70	69	2.00	51	----	----	6.00	152	3.25 x 7.25	83 x 184
670G	8.00	203	6.80	173	2.01	51	2.69	68	2.72	69	5.73	146	7.25 x 7.25	184 x 184
670FG	8.00	203	6.80	173	2.40	61	2.40	61	----	----	7.10	180	7.25 x 7.25	184 x 184
670GV	8.00	203	6.80	173	2.01	51	2.69	68	0.72	18	4.20	107	7.25 x 7.25	184 x 184
670FGV	8.00	203	6.80	173	2.40	61	2.40	61	----	----	7.10	180	7.25 x 7.25	184 x 184
671	4.00	102	2.80	71	2.60	66	2.10	53	----	----	----	----	3.25 x 7.25	83 x 184

1. Dimension F refers to the depth to which those regulators with filters extend behind the panel.

# Bulletin 62.3:670



TYPE 675G DIMENSIONS



TYPE 674G DIMENSIONS

NOTE:  
 ENVELOPE DIMENSIONS ± 0.25 IN. / ± 6.4 mm

B2405/IL

IN. /  
mm

Figure 6. Dimensions (continued)

**Installation**

Dimensions for installation clearances are shown in Figure 6.

**Ordering Information**

When ordering, complete the ordering guide on this page. Refer to the Specifications section on page 2. Review the description to the right of each specification and the information in each referenced table or figure. Specify your choice whenever a selection is offered.

**Ordering Guide**

**Type (See Table 1 for Construction details)**

(Select One)

- 670
- 670F
- 670FG
- 670FGV
- 670G
- 670GV
- 671
- 674G
- 675G

- 0 to 10 psig / 0 to 0.6 kPa / 0 to 0.69 bar
- 0 to 30 psig / 0 to 0.2 MPa / 0 to 2.1 bar
- 0 to 60 psig / 0 to 0.4 MPa / 0 to 4.1 bar
- 0 to 160 psig / 0 to 1.1 MPa / 0 to 11.0 bar
- 0 to 300 psig / 0 to 2 MPa / 0 to 20.7 bar

**Changeover Valve**

- Yes
- No

**Outlet Pressure Range (Select One)**

**Types 670 and 675**

- 3 to 18 psig / 0.21 to 1.2 bar
- 5 to 30 psig / 0.34 to 2.1 bar
- 30 to 50 psig / 2.1 to 3.4 bar
- 35 to 100 psig / 2.4 to 6.9 bar except 35 to 50 psig / 2.4 to 3.4 bar with change over valve

**Type 671**

- 0 to 1 psig / 0 to 0.07 bar
- 0 to 5 psig / 0 to 0.34 bar

**Type 674**

- 10 to 75 psig / 0.69 to 5.2 bar
- 50 to 150 psig / 3.4 to 10.3 bar
- 100 to 225 psig / 6.9 to 15.5 bar

**Pressure Gauge Ranges<sup>(1)</sup> (Select One)**

1. Other ranges available upon request.

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