

670 Series Panel-Mounted Loading Regulators



W3123-1/IL
**1-GAUGE PANEL
(TYPE 671 AND
670 SERIES)**



W3122-1/IL
**2-GAUGE PANEL
(670 SERIES)**



W0554-2/IL
**2-GAUGE PANEL WITH
CHANGEOVER VALVE
(670 SERIES)**

Figure 1. Typical Panel Layouts

The Types 670, 671, 674, and 675 panel-mounted loading regulators (figures 1, 2, 3, 6, and 7) 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 67R or 67AFR pressure regulator, the Type 671 unit uses the Type 912 pressure regulator, and the Type 674 unit uses the Type 1301F pressure regulator.

The Type 672 unit is a loading panel and does not use regulators. The Type 672 panel has one gauge and a changeover valve.

Three basic panels are available within the product line as shown in figure 1, 6, and 7, 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 20.6 bar (300 psig). 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.



Specifications

Available Configurations

See table 1

End Connections

Inlet: 1/4-inch 18 NPT female

Outlet: Types 670, 672, and 675—1/4-inch 18 NPT female; Type 671—3/8-inch 18 NPT female; Type 674—1/4-inch 18 NPT female

Maximum Allowable Inlet Pressure

Without Changeover Valve: 250 psig (17 bar)

With Changeover Valve: 50 psig (3.4 bar)

Maximum Outlet Pressure and Emergency Outlet Pressure

See table 1

Outlet Pressure Ranges

Types 670 and 675⁽¹⁾: ■ 0.2 to 1.2 bar (3 to 18 psig); ■ 0.3 to 2.1 bar (5 to 30 psig); ■ 2.1 to 3.4 bar (30 to 50 psig); and ■ 2.4 to 5.5 bar (35 to 80 psig) except 2.4 to 3.4 bar (35 to 50 psig) with changeover valve

Type 671: ■ 0 to 0.07 bar (0 to 1 psig); ■ 0 to 0.34 bar (0 to 5 psig)

Type 674: ■ 0.7 to 5.2 bar (10 to 75 psig); ■ 3.4 to 10.3 bar (50 to 150 psig); ■ 6.9 to 15.5 bar (100 to 225 psig)

Pressure Registration

Internal

Construction Materials

Panel Tubing: ■ Copper, ■ PVC-coated copper, ■ aluminum, or ■ S31600 (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

Other Regulator Parts:

Diaphragm: Nitrile

Valve Disk: Nitrile

Diaphragm Plate: Plated steel

Spring: Plated steel

Filter Cartridge (Type 67AFR Regulator Only):

Cellulose (standard), stainless steel, or brass

Material Temperature Capabilities

-29 to 71°C (-20 to 160°F)

Pressure Gauges

Connection: 1/8-inch NPT male 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: 3.2 mm (0.125 inch)

Type 671: Standard--1.8 mm (0.073 inch);

Optional--2.4 mm (0.094 inch)

Type 674: 2 mm (0.078 inch);

Operating Influences⁽²⁾

670 Series: As shown in figure 4, output pressure changes less than 0.34 bar (5 psig) when the input pressure changes between 1.4 and 9.7 bar (20 and 140 psig)

Type 671: As shown in figure 5, output pressure changes less than 2.5 mbar (1 inch w.c.) when the input pressure changes between 1/4 and 0/7 bar (20 and 140 psig)

Regulator Flow Capacity

See appropriate pressure regulator bulletin

Internal Relief for Pressure Regulators

Adequate for relieving only minor buildup 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 67R or 67AFR regulators can be adjusted down to 0 bar or 0 psig.
2. Defined in ISA Standard S51.1-1979.

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 counter-clockwise 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.

Table 1. Available Configurations

Type Number	Number of Gauges	Description	Regulator Type Number	Maximum Inlet Pressure	Maximum Outlet Pressure	Maximum Emergency Outlet Pressure
670	1	Basic 1-gauge panel	67R	17.2 Bar (250 Psig)	6.9 Bar (100 Psig)	7.6 Bar (110 Psig)
670F	1	1-gauge panel; regulator has filter	67AFR			
670FG	2	2-gauge panel; regulator has filter	67AFR			
670FGV	2	2-gauge panel with 3-way changeover valve; regulator has filter	67AFR	3.5 Bar (50 psig)	3.5 Bar (50 Psig)	3.8 Bar (55 Psig)
670G	2	Basic 2-gauge panel	67R	17.2 Bar (250 psig)	6.9 Bar (100 Psig)	7.6 Bar (110 Psig)
670GV	2	2-gauge panel with 3-way or 4-way changeover valve	67R	3.5 Bar (50 Psig)	3.5 Bar (50 Psig)	3.8 Bar (55 Psig)
671	1	Basic 1-gauge panel	912N	17.2 Bar (250 Psig)	0.4 Bar (5 Psig)	0.7 Bar (10 Psig)
672V	1	Basic 1-gauge panel with 3-way changeover valve	—	---	---	---
674G	2	Basic 2-gauge panel	1301F	414 Bar (6000 Psig)	15.5 Bar (225 Psig)	17.2 Bar (250 Psig)
675G	2	Basic 2-gauge panel	67R	17.2 Bar (250 Psig)	6.9 Bar (100 Psig)	7.6 Bar (110 Psig)

Table 2. Pressure Gauge Ranges - Triple Scale

Bar	Psig	Pa
0 to 0.6	0 to 10	0 to 0.6k
0 to 2	0 to 30	0 to 0.2M
0 to 4	0 to 60	0 to 0.4M
0 to 11	0 to 160	0 to 1.1M
0 to 20	0 to 300	0 to 2M

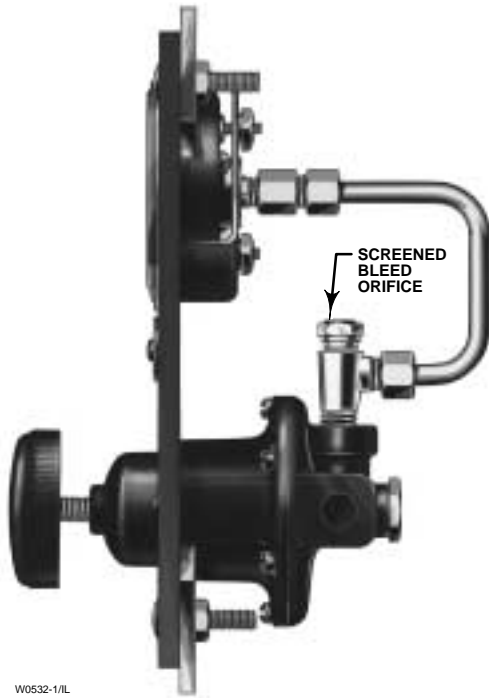
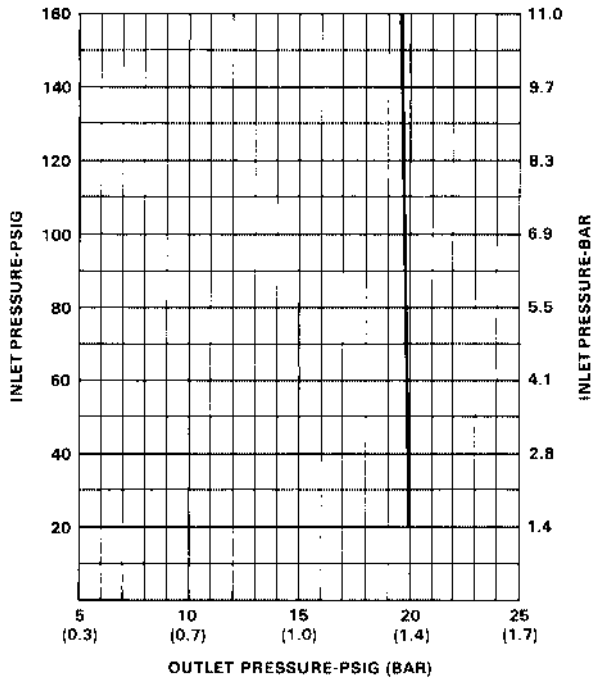


Figure 2. Side View of 670 Series Panel Loader Using Type 67R Regulator



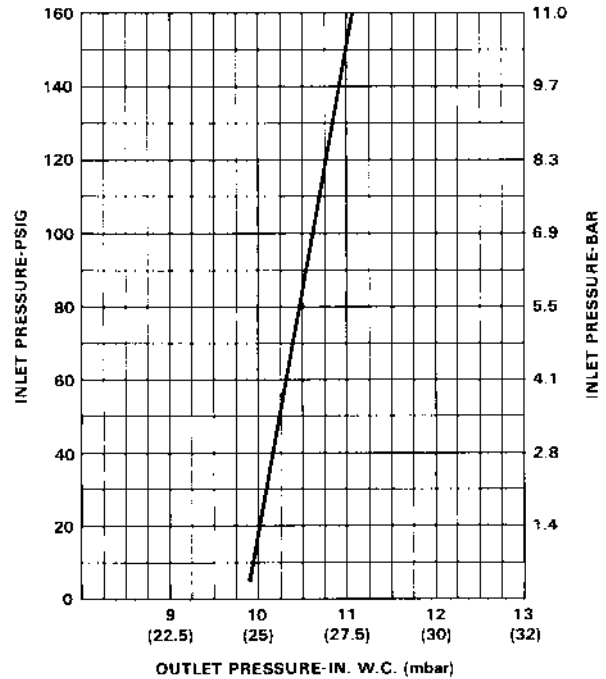
Figure 3. Side View of Type 671 Panel Loader Using Type 912 Regulator



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)

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Figure 4. Pressure Variation of Type 67R 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)

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Figure 5. Pressure Variation of Type 912 Regulator

Installation

Note: Fisher does not assume responsibility for the selection, use or maintenance of any product. Responsibility for proper selection, use and maintenance of any Fisher product remains solely with the purchaser and end-user.

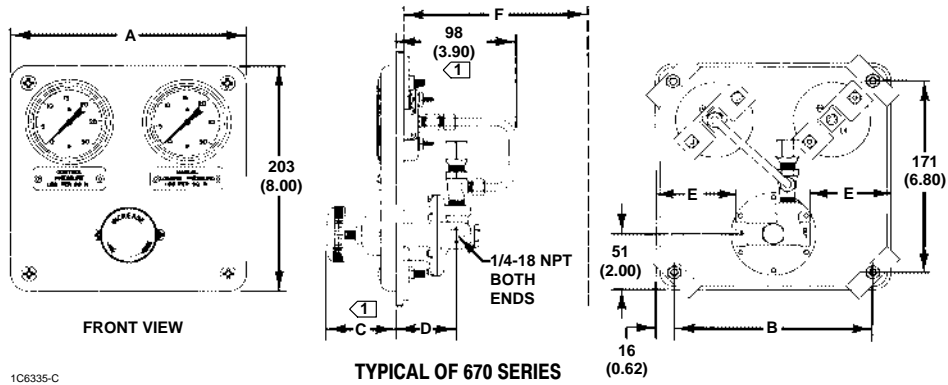
Dimensions for installation clearances are shown in figures 6 and 7 and table 3.

Ordering Information

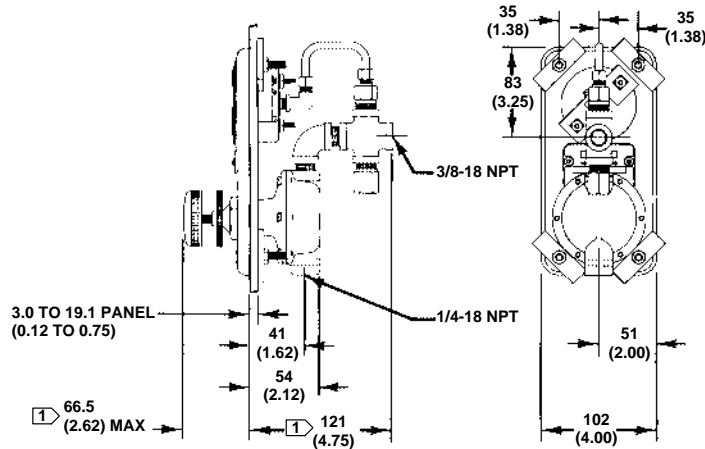
Carefully review the specification table and indicate your choice wherever a selection is offered, including:

1. Range of pressure gauge(s)
2. Whether a changeover valve is desired (670 Series only)

670 Loading Regulators



1C6335-C



DC3352-B

TYPE 671 DIMENSIONS

mm
(INCH)

NOTE:
1 ENVELOPE DIMENSIONS +/-6.4 mm (+/-0.25 INCH)

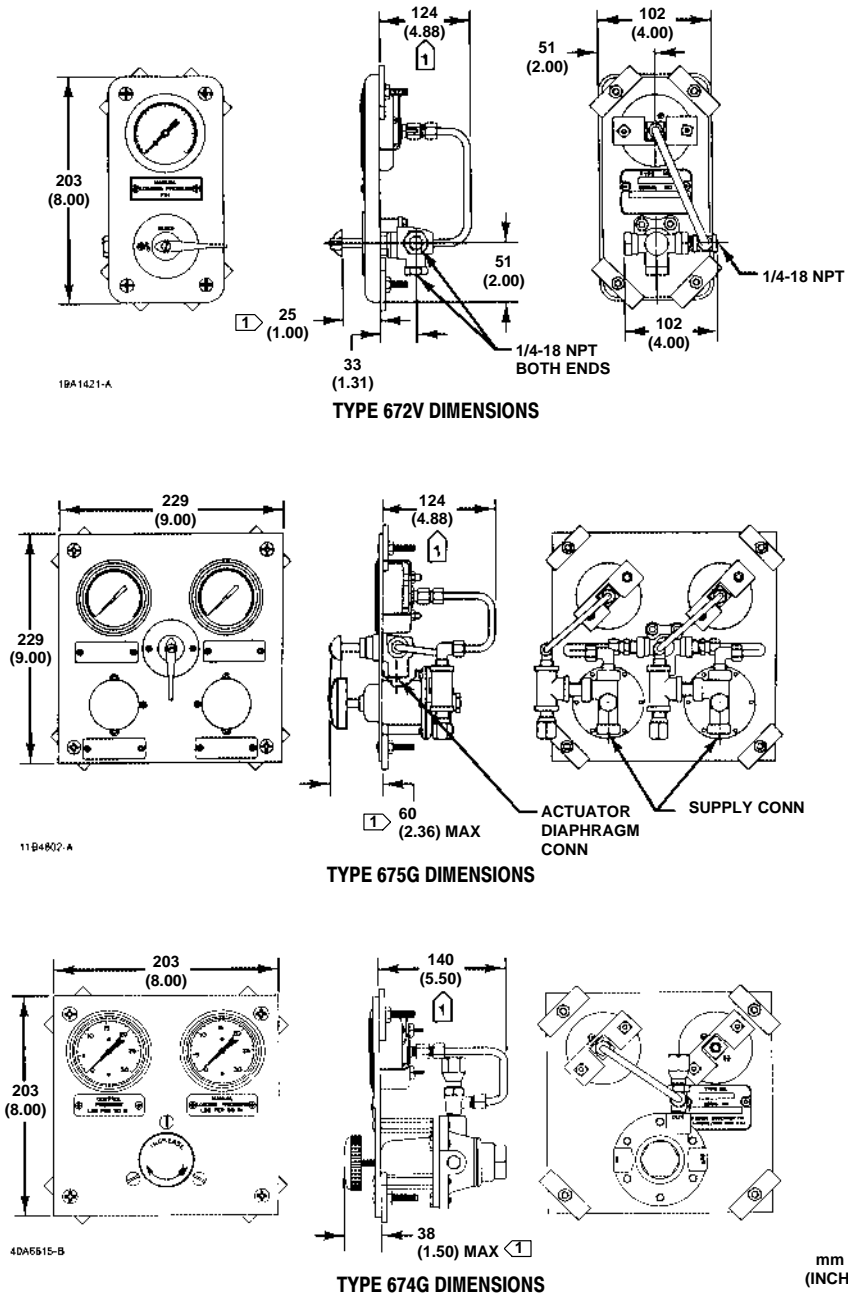
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Figure 6. Dimensions (Also See Table 3)

Table 3. Dimensions

TYPE NUMBER	DIMENSION													
	A		B		C		D		E		F ⁽¹⁾		Panel Cutout	
	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch
670	102	4.00	71	2.80	71	2.80	51	2.00	19	0.75	—	—	83 x 184	3.25 x 7.25
670F	102	4.00	71	2.80	69	2.70	51	2.00	—	—	150	6.00	83 x 184	3.25 x 7.25
670G	203	8.00	171	6.80	61	2.40	61	2.40	70	2.75	—	—	184 x 184	7.25 x 7.25
670FG	203	8.00	171	6.80	61	2.40	61	2.40	—	—	181	7.10	184 x 184	7.25 x 7.25
670GV	203	8.00	171	6.80	61	2.40	61	2.40	19	0.75	—	—	184 x 184	7.25 x 7.25
670FGV	203	8.00	171	6.80	61	2.40	61	2.40	—	—	181	7.10	184 x 184	7.25 x 7.25
671	102	4.00	71	2.80	66	2.60	53	2.10	—	—	—	—	83 x 184	3.25 x 7.25

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



NOTE:
 1 ENVELOPE DIMENSIONS ± 6.4 mm (± 0.25 INCH)

Figure 7. Dimensions for Types 672V, 675G, and 674G (Also See Table 3)

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