

The 67 Series small-volume regulators (figure 1) are typically used to provide constantly controlled reduced pressures to pneumatic and electropneumatic controllers and other instruments. These self-operated regulators are suitable for most air or gas applications and may even be used for liquid service where material compatibility exists. Other applications include providing reduced pressures to air chucks, air jets, spray guns, and liquified petroleum gas (LPG) torches and burners.

Features

- **Compactness**—The small size of the 67 Series regulators makes them particularly useful in installations with space limitations.

- **Ease of Maintenance**—No special tools are required to service these regulators, and they need not be removed from lines when servicing and repair are necessary.

- **Filtering Action**—A Type 67AF, 67AFR, 67AFS, or 67AFSR regulator (figure 2) has an internal filter to help clean impurities from the process fluid, removing particles that might damage the regulator or downstream equipment. The filter has a free area of 12 times the pipe area and can be obtained in glass, resin-impregnated cellulose, or stainless steel.

- **Internal Relief**—Although not designed to provide full overpressure protection, a token-capacity internal relief valve (indicated by an R in the type number as shown in table 1) allows partial reduction of downstream pressure without the necessity of an external relief valve being opened. The internal relief valve seat (figure 2 or 3) has a soft molded diaphragm insert.

- **Panel Mounting**—Some 67 Series regulators are available with either 1-hole or 3-hole panel mounting (figure 3).

- **Tamper Resistant**—To detect tampering with the outlet pressure setting, a Type 67AF or 67AFR regulator may be obtained with the adjusting screw wired to a machine screw or other body part after the outlet pressure is set.

- **Sour Gas Service Capability**—For sour gas, the body, spring case, and trim are available in materials that comply with National Association of Corrosion Engineers (NACE) Standard MR-01-75.

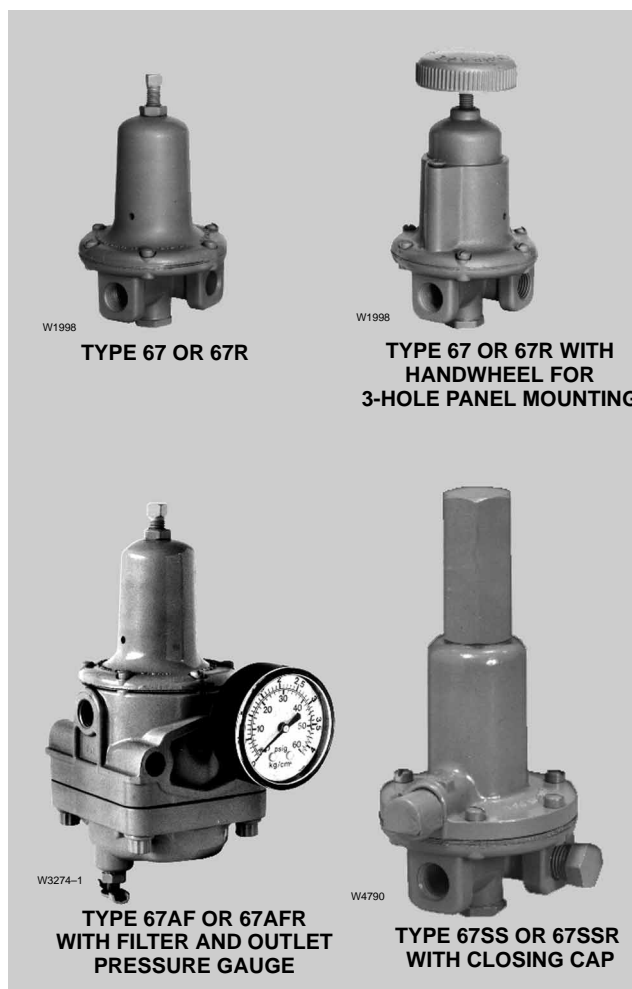


Figure 1. Typical 67 Series Regulators

- **High-Pressure Inlet Capability**—Type 67H/67HR brass or Type 67SS/67SSR stainless steel construction allows inlet pressures of up to 400 psig (27.6 bar).

- **Smooth, Close Regulation and High Stability**—Regulator design (figure 2 or 3) isolates the diaphragm and pressure response chamber from the main flow stream.

- **Second Outlet Pressure Tapping**—Body side outlet connection is standard with the Type 67AFS, 67AFSR, 67SS, and 67SSR regulators and is available with all other types. A pipe plug or pressure gauge may be installed in the side outlet connection, and a Type 67 or 67R regulator additionally may have a tire valve installed in this connection.

Specifications

AVAILABLE CONFIGURATIONS	See table 1	CONSTRUCTION MATERIALS	For Type 67AF or 67AFR Filter Regulator: See table 4 For Type 67AFS or 67AFSR Filter Regulator: See table 5 For Type 67 or 67R Regulator Without Filter: See table 6 For Type 67H or 67HR Regulator Without Filter: See table 7 For Type 67SS or 67SSR Regulator Without Filter: See table 8
INLET AND END OUTLET SIZE AND CONNECTION STYLE	1/4-inch NPT screwed ⁽¹⁾		
SIDE OUTLET SIZE AND CONNECTION STYLE (WHEN USED)	1/4-inch NPT screwed ⁽¹⁾		
MAXIMUM INLET PRESSURE (BODY RATING) ⁽²⁾	Type 67H, 67HR, 67SS, or 67SSR Regulator: 400 psig (27.6 bar) All Other Types: 250 psig (17.2 bar)	MATERIAL TEMPERATURE CAPABILITIES ⁽²⁾	With Nitrile Diaphragm and Plug: -20 TO 180°F (-29 to 82°C) With Fluoroelastomer Diaphragm and Plug: 0 to 300°F (-18 to 149°C)
OUTLET PRESSURE RANGES	See table 2	PRESSURE SETTING ADJUSTMENT	Adjustable throughout each Spring range by turning adjusting screw or handwheel
MAXIMUM DIAPHRAGM PRESSURE ⁽²⁾	50 psi (3.4 bar) over outlet pressure setting, or 110 psig (7.6 bar), whichever is greater	PRESSURE REGISTRATION	Internal
INTERNAL RELIEF PERFORMANCE (TYPE 67AFR, 67AFSR, 67HR, 67R, or 67SSR REGULATOR ONLY)	Low capacity for seat leakage only; external relief valve must be provided if inlet pressure can exceed maximum emergency outlet pressure	STANDARD SPRING CASE VENT LOCATION	Over inlet
REGULATOR CAPACITIES	See table 3	SPRING CASE VENT CONNECTION	■ 1/8 inch (3.2 mm) drilled hole or ■ 1/4 inch 18 NPT tapping depending on configuration
REGULATOR PERFORMANCE CURVES	See figure 4	FILTER CAPABILITIES	Free Area: 12 times pipe area Rating <i>Cellulose or Stainless Steel Element:</i> 40 microns <i>Glass Element:</i> 10 microns
PORT DIAMETER	1/8 inch (3.2 mm)	DIMENSIONS	See figure 5 or 6
FLOW COEFFICIENTS	Wide-Open C_g for External Relief Sizing: 8.5 Maximum C_v: 0.28 Representative C₁: 30.4	APPROXIMATE WEIGHT	Up to 1-1/2 pounds (0.7 kg) depending on configuration
		OPTIONS	See table 1

1. End connection for other than ANSI standards can usually be provided; consult the Fisher sales office or sales representative.

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

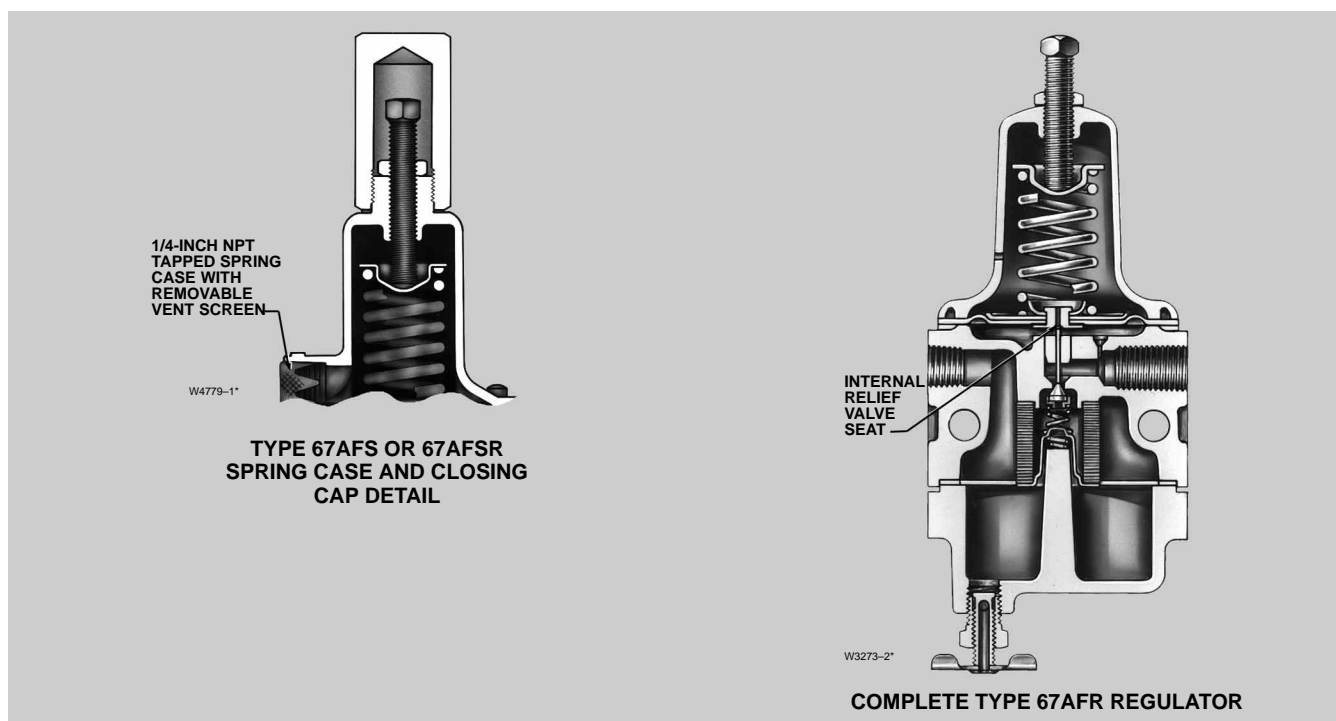


Figure 2. Filter Regulator Construction Features

Table 1. Available Configurations

CONSTRUCTION FEATURE		TYPE NUMBER									
		67	67AF	67AFR	67AFS	67AFSR	67H	67HR	67R	67SS	67SSR
Standard	Aluminum body & spring case	X	X	X					X		
	Brass body & spring case						X	X			
	Stainless steel body & spring case				X	X				X	X
	Filter		X	X	X	X					
	Internal relief			X		X		X	X		X
	NACE-qualified materials	X	X	X	X	X			X		
Optional	Aluminum/alloy 400 (UNS N04400) inlet screen	X	X	X			X	X	X		
	Steel/stainless steel inlet screen				X	X				X	X
	Pressure gauge ⁽¹⁾ in side outlet	X	X	X	X	X	X	X	X	X	X
	Tire valve in side outlet	X							X		
	Type H800 relief valve ⁽¹⁾ in end outlet connection for outlet pressure settings of 35 psig (2.4 bar) or less	X	X	X	X	X	X	X	X	X	X
	■ Plain or ■ chrome-plated handwheel adjusting screw	X	X	X			X	X	X		
	Spring case with handwheel adjusting screw	X	X	X			X	X	X		
	TFE diaphragm protector for liquid ammonia service	X									
	Extra-thick diaphragm						X				
	Adjusting screw safety wiring		X	X							
	Spring case for mounting Type 661 remote control drive unit (can't be ordered with handwheel or 1/4-inch 18 NPT vent tapping)	X	X	X					X		

1. Construction covered more fully in separate bulletin.

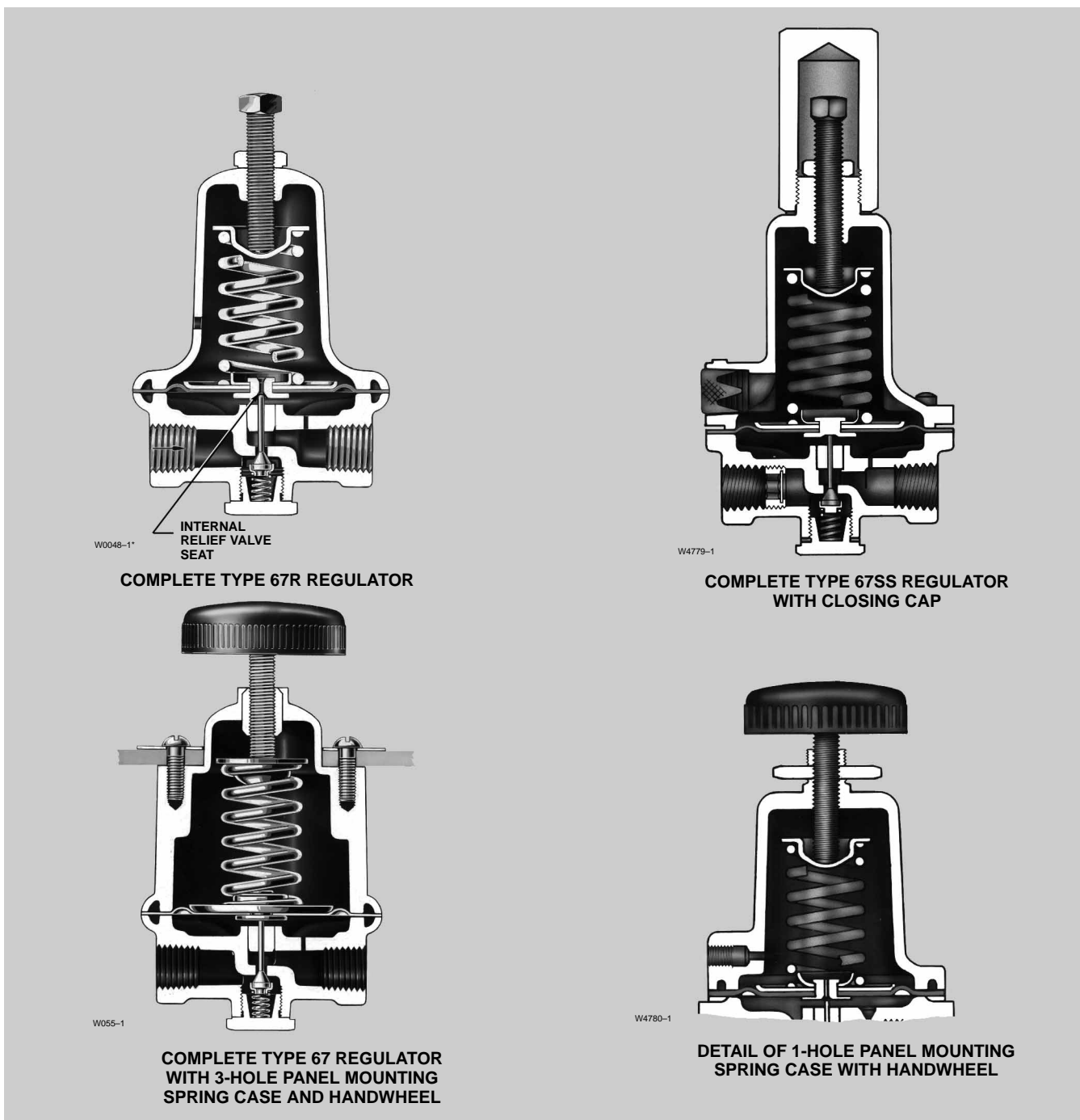


Figure 3. Construction Features of Regulators Without Filters

Table 2. Outlet Pressure Ranges

OUTLET PRESSURE RANGE				CONTROL SPRING DATA		
U.S. Units, Psig		Metric Units, Bar				
With 1-Hole Panel-Mounting Spring Case	With All Other Spring Cases	With 1-Hole Panel-Mounting Spring Case	With All Other Spring Cases	Part Number	Color Code	Material
— —	5 to 35 30 to 60	— —	0.34 to 2.4 2.1 to 4.1	19A2852 X012 19A2854 X012	Cad plated Blue	Inconel ⁽¹⁾ for sour gas service
3 to 18 5 to 30 30 to 50 35 to 80	3 to 20 5 to 35 30 to 60 35 to 100	0.21 to 1.2 0.34 to 2.1 2.1 to 3.4 2.4 to 5.5	0.21 to 1.4 0.34 to 2.4 2.1 to 4.1 2.4 to 6.9	1B9860 27212 1B7883 27022 1B7884 27022 1K7485 27202	Green Cad plated Blue Red	Plated steel for other service
1. Trademark of International Nickel Co.						

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Air Capacity Information

Regulating capacities at selected inlet pressures and outlet pressure settings are given in table 3, and typical performance curves are shown in figure 4. Flows are in scfh (60°F and 14.7 psia) of air at 60°F. To determine the equivalent capacities for other gases, multiply the table capacity by the following appropriate conversion factor: 1.29 for 0.6 specific gravity natural gas, 0.810 for propane, 0.707 for butane, or 1.018 for nitrogen. For gases of other specific gravities, multiply the given capacity by 0.775, and divide by the square root of the appropriate specific gravity.

Then, if capacity is desired in normal cubic meters per hour at 0°C and 1.01325 bar, multiply scfh by 0.0168.

To determine wide-open flow capacities for relief sizing, use the following formula:

$$Q = \sqrt{\frac{520}{GT}} C_g P_1 \sin \left(\frac{3417}{C_1} \sqrt{\frac{\Delta P}{P_1}} \right) \text{ DEG}$$

where,

- C_g = gas sizing coefficient, or 8.5 from Specifications table
- C_1 = C_g/C_v , or 30.4 from Specifications table
- G = gas specific gravity (air = 1.0)
- P_{1abs} = inlet pressure, psia (add 14.7 psi to gauge inlet pressure to obtain absolute inlet pressure)
- Q = flow rate, scfh
- T = absolute temperature in °R of air at inlet

Table 3. 67 Series Regulator Capacities at 10 Percent Droop

OUTLET PRESSURE	SPRING PART NUMBER (SEE TABLE 2 FOR RANGE)	INLET PRESSURE		CAPACITY SCFH OF AIR ⁽¹⁾
		Psig	Bar	
15 psig (1.0 bar)	1B9860 27212	50	3.4	400
		75	5.2	600
		100	6.9	750
		150	10.3	1000
		250	17.2	1400
25 psig (1.7 bar)	19A2852 X012 or 1B7883 27022	50	3.4	400
		75	5.2	550
		100	6.9	750
		150	10.3	1000
		250	17.2	1400
40 psig (2.8 bar)	19A2854 X012 or 1B7884 27022	50	3.4	150
		75	5.2	500
		100	6.9	500
		150	10.3	700
		250	17.2	1400
80 psig (5.5 bar)	1K7485 27202	100	6.9	400
		150	10.3	650
		250	17.2	1000

1. See Gas Capacity Information section for conversion to equivalent capacities of other gases and/or normal m³/hr.

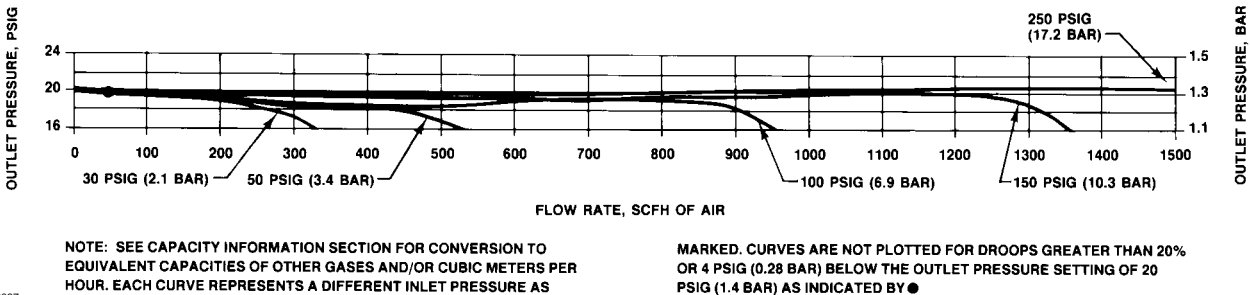


Figure 4. 67 Series Regulator Performance Curves for Cadmium Plated Spring 1B7883 27022

Overpressure Protection

Like most pressure-reducing regulators, 67 Series regulators have outlet pressure ratings that are different from their inlet pressure ratings. A pressure relieving or pressure limiting device — such as a Type H800 relief valve for an outlet pressure setting of 35 psig (2.4 bar) or less — is needed if inlet pressure can exceed the outlet pressure rating. A Type 67AFR, 67AFSR, 67HR, 67R, or 67SSR regulator, because of its low-capacity internal relief, does provide very limited downstream overpressure protection, but this internal relief should not be considered complete protection against overpressure.

Overpressuring any portion of a regulator or associated equipment may cause personal injury, leakage, or property damage due to bursting of pressure-containing parts or explosion of accumulated gas. Regulator operation within ratings does not prevent the possibility of damage from external sources or from debris in the pipeline.

Refer to the Capacity Information section and the relief sizing coefficient in the specifications table to determine the required relief valve capacity.

Table 4. Construction Materials for Type 67AF and 67 AFR Filter Regulators

Part	Material
Body, filter, cap, and drain valve	Aluminum
Body bushing	■ Brass or ■ 303 stainless steel, except ■ 316 stainless steel for sour gas service
Filter element	■ Cellulose (standard), ■ glass, or ■ 18-8 stainless steel
Filter cap gasket	Neoprene
Spring case, closing cap if used, and plug spring seat	■ Aluminum, except ■ zinc for 3-hole panel mounting spring case
Control spring	■ Plated steel spring wire, except ■ alloy X750 (UNS N07750) for sour gas service
Control spring seat	■ Zinc-plated steel, except ■ heat-treated steel for sour gas service
Plug spring and filter element retractor spring	■ 302 stainless steel, except ■ alloy X750 (UNS N07750) for sour gas service
Plug and diaphragm	■ Nitrile or ■ fluoroelastomer
Stem	■ Brass or ■ 304 stainless steel, except ■ 316 stainless steel for sour gas service
Diaphragm plate	■ Plated steel, except ■ heat-treated steel for sour gas service
Pusher post (Type 67AF only)	■ Aluminum, except ■ 316 stainless steel for sour gas service
Relief valve seat (Type 67AFR only)	■ Brass or ■ 303 stainless steel, except ■ 316 stainless steel for sour gas service
Bolting and other metal parts	Steel and stainless steel

Table 5. Construction Materials for Type 67AFS and 67 AFSR Filter Regulators

Part	Material
Body, body bushing, filter cap, and drain valve	316 stainless steel
Filter element	■ Cellulose (standard) , ■ glass, or ■ 18-8 stainless steel
Filter cap gasket	Neoprene
Spring case and closing cap	316 stainless steel
Control spring, plug spring, and filter element retainer spring	Alloy X750 (UNS N07750)
Plug and diaphragm	■ Nitrile or ■ fluoroelastomer
Stem, plug spring seat, diaphragm plate, and pusher post (Type 67AFS) or relief valve seat (Type 67AFSR)	316 stainless steel
Bolting and other metal parts	Steel and stainless steel

Table 6. Construction Materials for Type 67 and 67R Regulators Without Filter

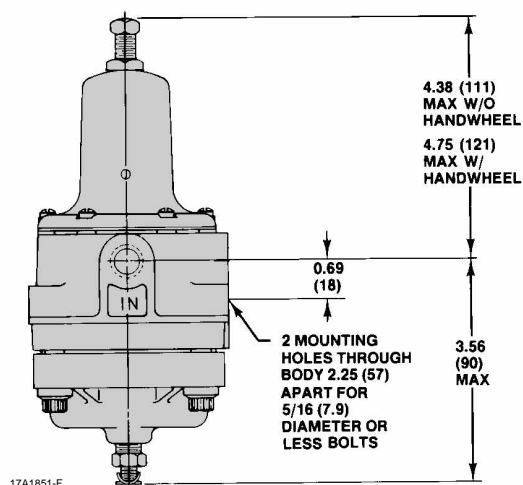
Part	Material
Body and body plug	Aluminum
Body bushing	■ Brass or ■ 303 stainless steel, except ■ 316 stainless steel for sour gas service
Body plug gasket	Composition
Spring case, closing cap if used, and plug spring seat	■ Aluminum, except ■ zinc for 3-hole panel mounting spring case
Control spring	■ Plated steel spring wire, except ■ alloy X750 (UNS N07750) for sour gas service
Control spring seat	■ Zinc-plated steel, except ■ heat-treated steel for sour gas service
Plug spring	■ 302 stainless steel, except ■ alloy X750 (UNS N07750) for sour gas service
Plug and diaphragm	■ Nitrile or ■ fluoroelastomer
Stem	■ Brass or ■ 304 stainless steel, except ■ 316 stainless steel for sour gas service
Diaphragm plate	■ Plated steel, except ■ heat-treated steel for sour gas service
Pusher post (Type 67 only)	■ Aluminum, except ■ 316 stainless steel for sour gas service
Relief valve seat (Type 67R only)	■ Brass or ■ 303 stainless steel, except ■ 316 stainless steel for sour gas service
Bolting and other metal parts	Steel and stainless steel

Table 7. Construction Materials for Type 67H and 67HR Regulators Without Filter

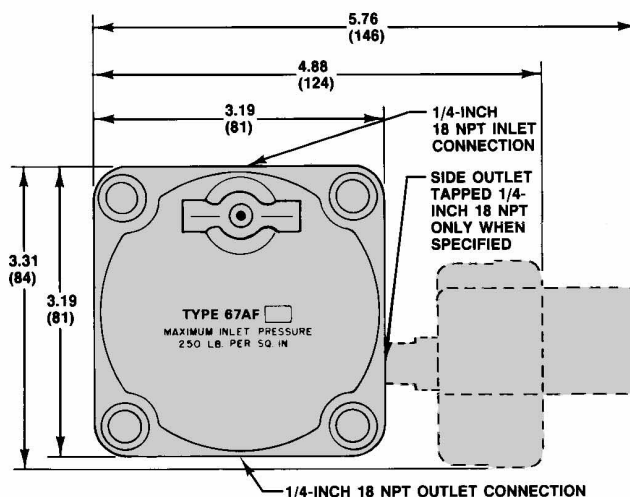
Part	Material
Body, body plug, and body bushing	Brass
Body plug gasket	Composition
Spring case, and closing cap if used	■ Brass, except ■ aluminum for 1-hole panel mounting spring case or ■ zinc for 3-hole panel mounting spring case
Control spring	Plated steel spring wire
Control spring seat	Zinc-plated steel
Plug spring	302 stainless steel
Plug and diaphragm	■ Nitrile or ■ fluoroelastomer
Stem and plug spring seat	Brass
Diaphragm plate	Plated steel
Pusher post (Type 67H) or relief valve seat (Type 67HR)	Brass
Bolting and other metal parts	Steel and stainless steel

Table 8. Construction Materials for Type 67SS and 67SSR Regulators Without Filter

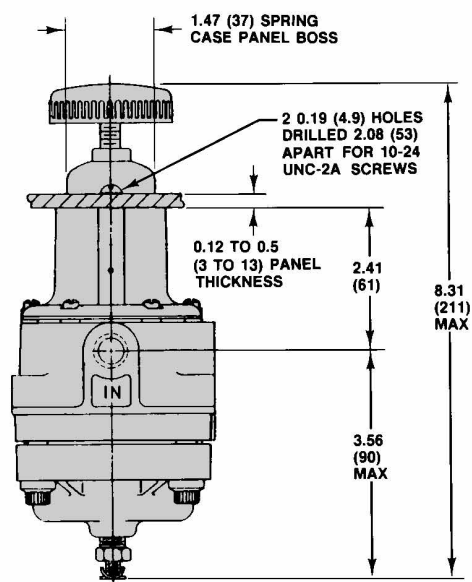
Part	Material
Body, body plug, and body bushing	316 stainless steel
Spring case, closing cap if used, and plug spring seat	316 stainless steel
Closing cap gasket if used	Composition
Control spring	Plated steel spring wire
Control spring seat	Zinc-plated steel
Plug, diaphragm, and body plug O-ring	■ Nitrile (except composition for body plug O-ring) or ■ fluoroelastomer
Plug spring	302 stainless steel
Stem	304 stainless steel
Diaphragm plate	Plated steel
Pusher post (Type 67SS) or relief valve seat (Type 67SSR)	303 stainless steel
Bolting and other metal parts	Steel and stainless steel



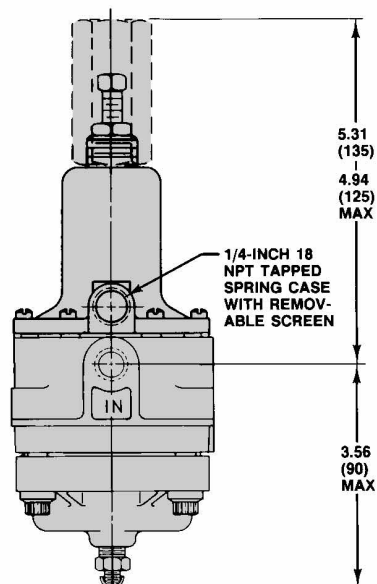
**TYPE 67AF OR
67AFR END VIEW**



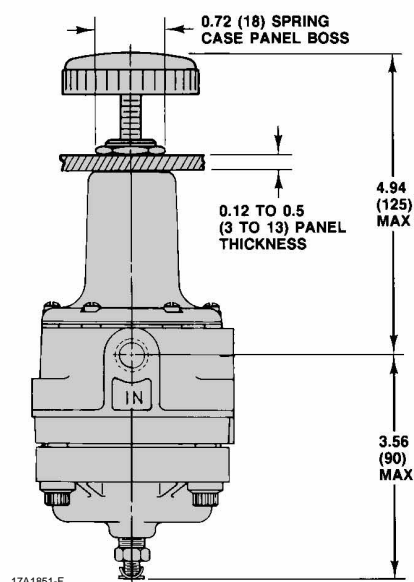
BOTTOM DIMENSIONS



**END VIEW WITH 3-HOLE
PANEL MOUNTING SPRING CASE**



**TYPE 67AFS OR 67AFSR
END VIEW (ALSO TYPICAL
OF TYPE 67AF OR 67AFR
WITH CLOSING CAP)**



**END VIEW WITH 1-HOLE PANEL
MOUNTING SPRING CASE**

INCH
(mm)

Figure 5. Dimensions for Regulator with Filter

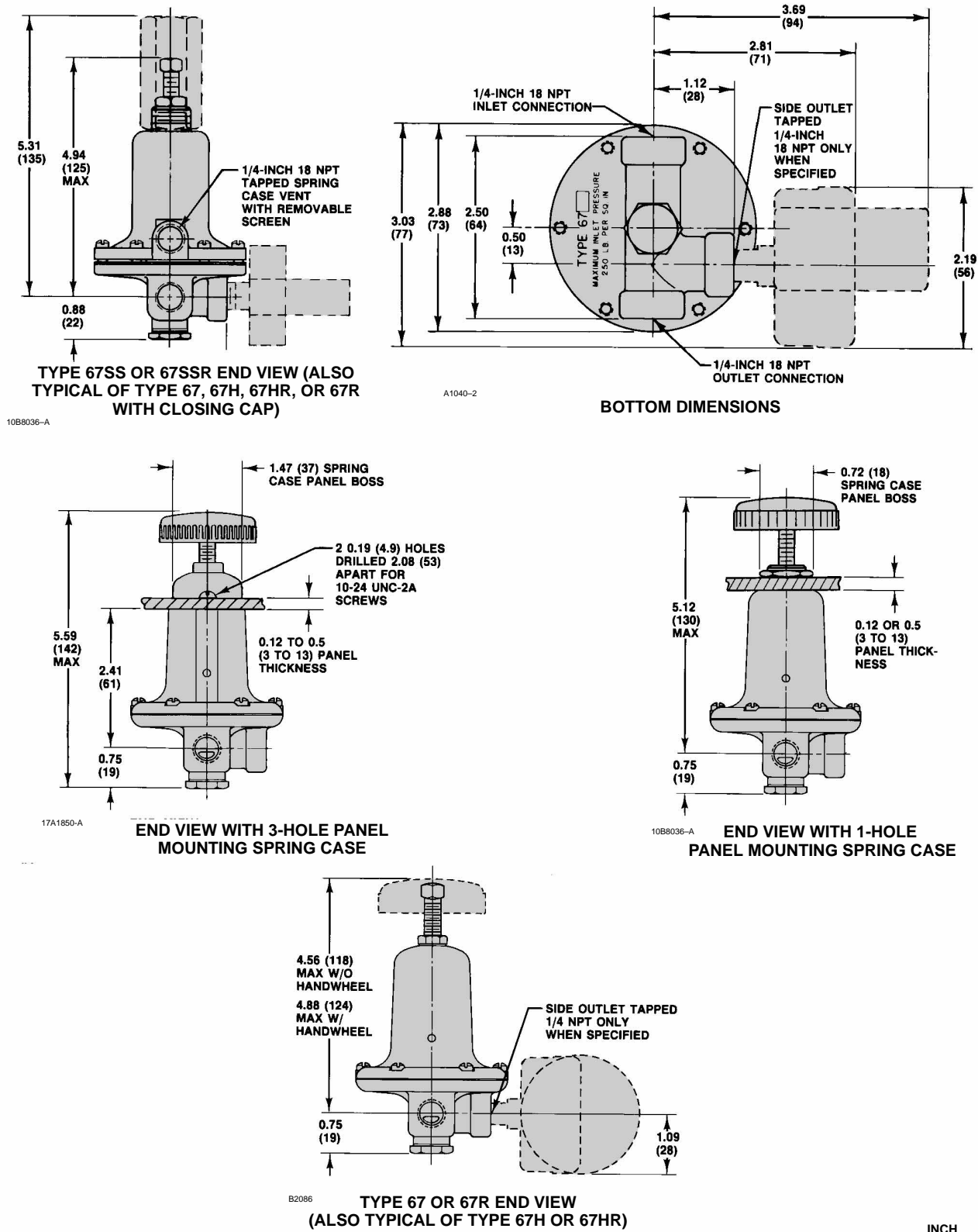


Figure 6. Dimensions for Regulator Without Filter

Ordering Information

When ordering, specify:

Application Information

1. Type of regulator
2. Body, spring case, and trim materials
3. Control spring range in psig (bar)

Regulator Information

Refer to the Specifications table 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. Always specify the regulator type number as identified in table 1, as well as the type number(s) of an associated gauge or relief valve.