

B31 Series Regulator

Light Commercial and Industrial Regulator



Appropriate for light commercial and industrial uses where inches of water column or pounds delivery is desired such as utility services and small to medium sized furnaces and boilers. The rapid response of the B31 is particularly well suited for applications where sudden on/off loads could cause shock problems.

Descriptions

- » B31R – The B31R is the internal relief valve (R) version of the B31 Series. The 1" internal relief valve provides exceptional relief capacity
- » B31N – The B31N is a spring loaded self-operated regulator with no internal relief (N) valve. This model can be used on low or intermediate inlet pressures where an internal relief or other type of over-pressure protection device is not required
- » B31IMN – The B31IMN is equipped with an Internal Monitoring (IM) device and no internal relief valve (N). This version is appropriate for applications where overpressure protection is desired without the relief of gas to the atmosphere
- » B31IMR – The B31IMR is equipped with an Internal Monitoring (IM) device as well as a back-up Internal Relief Valve (R). This version is appropriate for applications where an added level of overpressure protection is desired
- » B31IMRV – The B31IMRV is equipped with an Internal Monitoring (IM) device as well as a back-up Internal Relief Valve® and a Vent (V) hole in the sliding orifice. The Vent hole option allows the relief valve to "weep" gas to the atmosphere and signal

monitor control in the event the main valve fails to control the downstream pressure

- » B31RAS – The B31RAS is equipped with a Low Pressure Shut-off Valve and Internal Relief. The low-pressure shut-off valve will close if the flow through the regulator exceeds its maximum flow rate (See Capacity Table for shut-off flow values). The internal relief valve will open if the downstream pressure rises approximately 7" w.c. above the regulator's set point

Option Designations

- » N – No Internal Relief
- » R – Internal Relief
- » IMN – Internal Monitor with no Internal Relief
- » IMR – Internal Monitor with Internal Relief
- » IMRV – Internal Monitor with Internal Relief and Vent
- » HP – All models for outlet pressures > 0.5 psig
- » RAS – Internal Relief with Low Pressure Shut-off valve

Features

- » Field Interchangeable orifice
- » 27 in² of diaphragm area
- » Spring-loaded internal relief valve assembly
- » Interchangeable adjustment spring
- » Controlled breather orifice size eliminates pulsation and provides normal actuation at low flows
- » Wide range of NPT valve body sizes including mixed inlet and outlet sizes; angle body

Benefits

- » Smooth control at widely varying inlet pressures
- » Rugged construction
- » Fast response protects equipment from shock damage
- » Unmatched overpressure protection with Internal Monitor plus Internal Relief (IMR) option
- » No special tools required for outlet pressure adjustment
- » Designed to meet D.O.T., ANSI, CSA, and AGA-GAMA Safety Standards



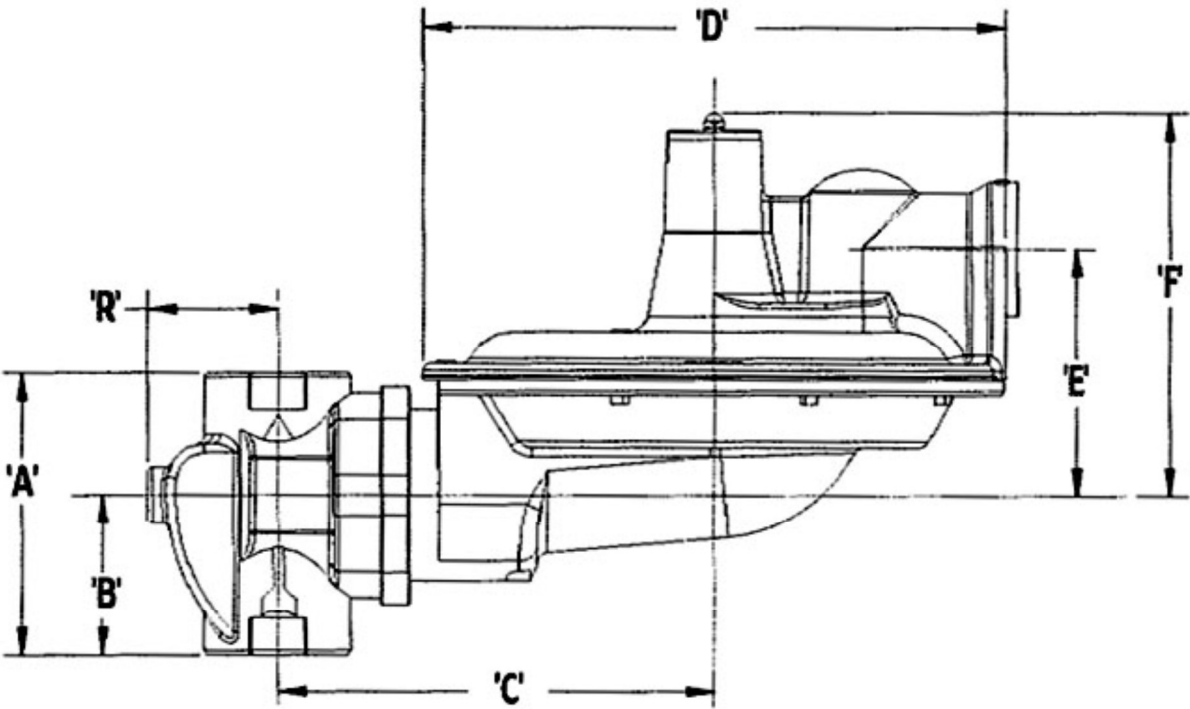
Model B31 Series regulators are certified to B109.4/CSA 6.18, and Z21.80/CSA 6.22 specifications.

B31 SERIES LIGHT COMMERCIAL AND INDUSTRIAL REGULATOR SHIPPING WEIGHT

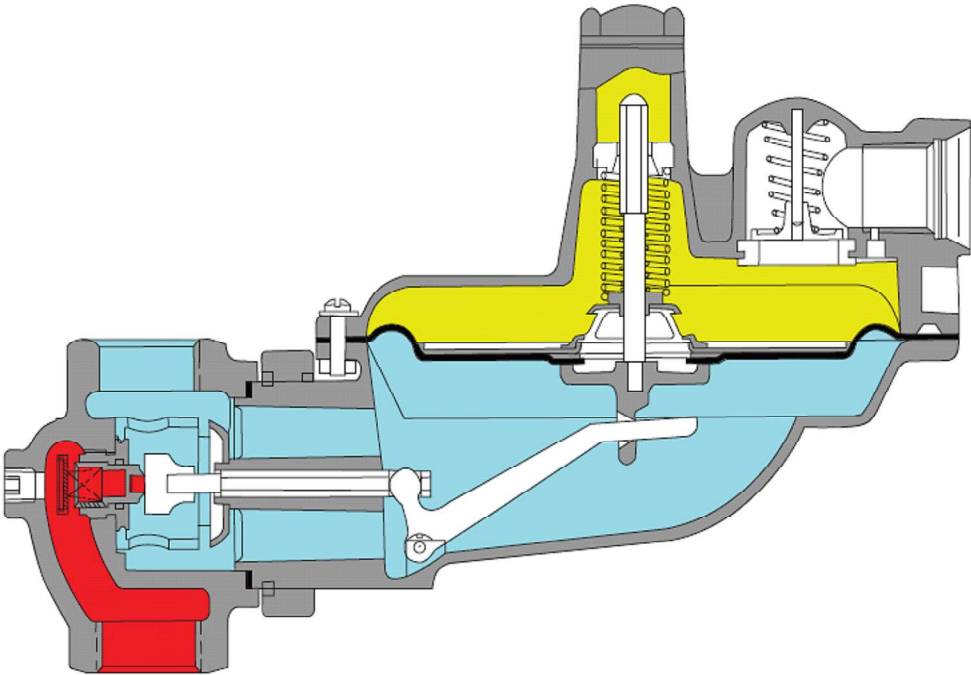
Eight regulators per box Box weight: 52 lbs.

B31 DIMENSIONS (INCHES)

Dimensions (inches)							
Valve Body	A	B	C	D	E	F	R
3/4 & 1	3-3/4	2-1/8	5-13/16	7-13/16	3-1/4	4-7/8	2-1/4
1-1/4	4	2-1/8	5-13/16	7-13/16	3-1/4	4-7/8	2-1/4
3/4 x 1 90° Angle Body	1	1-5/8	5-13/16	7-13/16	3-1/4	4-7/8	2-1/4



OPERATIONAL SCHEMATIC



- Inlet Pressure
- Atmospheric Pressure
- Outlet Pressure

Note Valve shown in closed position.

SPRING DATA, SPRING COLOR OUTLET PRESSURE RANGE*

Spring Color	Outlet Pressure Range Models N, R, & RAS		Outlet Pressure Range Models IMN & IMR	
Spring Data, Model B31	inches w.c.	mbar	inches w.c.	mbar
Brown	4.5 to 5.5	11.2 to 13.7	4.5 to 5.5	11.2 to 13.7
Dark green	5.0 to 6.5	12.4 to 16.7	5.5 to 6.0	13.7 to 14.9
Gray	4.0 to 9.0	9.9 to 22.4	4.5 to 8.5	11.2 to 21.1
Light Green	5.5 to 8.0	11.2 to 19.9	6.0 to 7.5	14.9 to 18.6
Black	7.3 to 11.0	18.1 to 27.3	6.0 to 9.0	14.9 to 22.4
Blue	8.0 to 12.0	19.9 to 29.8	7.5 to 11.5	18.6 to 28.6
Silver	11.0 to 16.0	27.3 to 39.8	8.0 to 14.5	19.9 to 36.1
Model B31HP**	PSIG	mbar	PSIG	mbar
Red/gray	0.75 to 1.1	51.7 to 75.8	0.5 to 1.0	34.5 to 68.9
Yellow	0.9 to 1.4	62.0 to 96.5	1.0 to 1.5	68.9 to 103.0
Red	1.3 to 2.0	89.6 to 137.9	1.3 to 1.9	89.6 to 131.0
White	1.75 to 2.5	121.0 to 172.0	1.5 to 2.5	68.9 to 172.0

*Spring Ranges are approximate and may vary by application.

**Warning Springs are not interchangeable between B31 and B31HP.

ORIFICE DATA, WIDE OPEN FLOW COEFFICIENTS AND MAXIMUM PRESSURES

Orifice Size (inches)	K- Factor	Maximum Operating Inlet Pressure				Maximum Emergency Inlet Pressure All Outlet All Models		Maximum Emergency Outlet Pressure (Gas Containment)			
		in. w.c. Delivery Pressure		PSIG Delivery Pressure				in. w.c. Delivery Pressure		PSIG Delivery Pressure	
		PSIG	mbar	PSIG	mbar	PSIG	mbar	PSIG	mbar	PSIG	mbar
1/8	30	125	8.6	175	12.1	300	20.6	18	1.2	60	4.1
1/8 IM	35	125	8.6	175	12.1	300	20.6				
3/16	71	125	8.6	175	12.1	300	20.6				
3/16 IM	68	125	8.6	175	12.1	300	20.6				
1/4	127	125	8.6	125	8.6	300	20.6				
1/4 IM	112	125	8.6	125	8.6	300	20.6				
5/16	193	100	6.9	100	6.9	150	10.3				
5/16 IM	138	100	6.9	100	6.9	150	10.3				
3/8	290	65	4.5	60	4.1	150	10.3				
1/2	500	40	2.8	40	2.8	100	6.9				

OPERATING TEMPERATURE RANGE

» -20°F to 150°F

» Silicone valve seats available for applications below -20°F

ADDITIONAL SPECIFICATIONS

Available Vent Sizes:	1/4", 3/8", 3/4", and 1"
Other Available Options	Seal wire to indicate unapproved tampering
	1/8" pipe plug tap on upstream side of valve body
	Tamper-proof (Torx head) diaphragm case screws

CONSTRUCTION

ROOTS Regulators takes pride in delivering products with the utmost concern for safety, quality, and customer satisfaction.

Construction materials

Valve body	High tensile strength cast iron (ASTM A-126, Class A)
Orifice	Aluminum, standard brass, optional (ASTM B16, Alloy 360)
Valve seat	Buna-N or silicone (for temperature below -20°F)
Valve stem	Aluminum
Lever pin	Stainless steel (Type 303)
Lever	Zinc and dichromate plated steel (AISI C1010)
Upper diaphragm plate	Zinc and dichromate plated steel (14-gauge steel)
Lower diaphragm plate	Die cast aluminum (ASTM B85 Alloy SC84A)
Diaphragm	Buna-N and nylon reinforcing fabric
Vent valve/seat	Neoprene
Vent screen	Stainless steel (16 mesh)
Adjustment ferrule	Delrin; die cast aluminum for HP ver. (ASTM CS43A)
Seal cap	Die cast aluminum (ASTM CS34A) or ABS plastic
Diaphragm case	Die cast aluminum (ASTM B85 Alloy SC84A)
Internal monitor orifice	Brass (ASTM B16 Alloy 360)

VALVE BODY SIZES

Inlet (inches)	Outlet (inches)	90° Angle	Straight
3/4	3/4	X	X
3/4	1	X	X
3/4	1 - 1/4	-	X
1	1	X	X
1	1 - 1/4	-	X
1 - 1/4	1 - 1/4	-	X

Note X indicates that the valve body is available in that configuration.

For more information please contact our local sales representative and agency.



ERFAN ENTERPRISE & ENGINEERING

38/A WEST NAKHALPARA (BONOFUL ROAD) • TEJGAON • DHAKA-1215 • BANGLADESH
Phone: +880 2 9124972 • Mobile: +880 1711812846 • E-mail: khan.arfanali@gmail.com