

For Oil, or Water
4 Springs Ranges

SERIES R BACK PRESSURE RELIEF VALVE

Applications

These are relatively low-cost relief valves that are widely used on original equipment and as replacement valves.

CAUTION: SHOULD NOT BE USED AS EMERGENCY OR SAFETY RELIEF VALVE.

They can be found in the following applications:

- Water Pump Bypass
 - Irrigation
 - Sprinkler Systems on Golf Courses
 - Fountains
 - Fire Protection Systems
- Fuel Oil Pump
 - Bypass on Commercial Systems or Large Residential Systems

Features

- 4 Springs – easily interchanged to cover pressures from 1 to 300 psig
- Simplicity of Design means low maintenance
- Heavy-Duty Bronze Valve Body for long life
- Compact Design
- Fast Response

How It Works

This type of valve is actuated by the system pressure which enters the body beneath the main valve. Valve loading is provided by a spring that can be adjusted within the relief pressure ranges shown on the reverse side of this page. The adjustment is done by removing the cap and adjusting the regulating screw.

The Regulating Spring load tends to close the main valve against the opening force of the upstream (*or relief*) pressure. The main valve will be open at the slightest increase in pressure above the spring set point, and closes when the excess pressure has been relieved.

The higher the system pressurizes above the relief set point pressure, the more flow the valve will pass. It is therefore typical to specify the maximum capacity of a back pressure relief valve at 10% & 20% over set pressure.



SELF CONTAINED
REGULATORS

Installation and Operation

Before installing relief valve, blow out pipe line, removing all dirt, pipe scale and sediment. **THE SERIES R VALVE SHOULD BE INSTALLED IN AN UPRIGHT, VERTICAL POSITION (inlet in bottom).** To adjust set pressure of valve, remove top cap, loosen brass lock nut and adjust pressure with steel set screw. Screw down the screw, increasing compression on spring thereby increasing the set pressure within the limits of the spring range. Reversing the set screw, lowers the set pressure. Tighten the lock nut and replace top cap and gasket when desired set pressure is reached.

Watson McDaniel reserves the right to change the designs and/or materials of its products without notice



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Manufacturers of:

**PRESSURE & TEMPERATURE REGULATORS - RELIEF VALVES - STEAM TRAPS - CLEAN STEAM PRODUCTS
LIQUID DRAINERS - PRESSURE PUMPS - EJECTORS - SPECIALTY PRODUCTS**

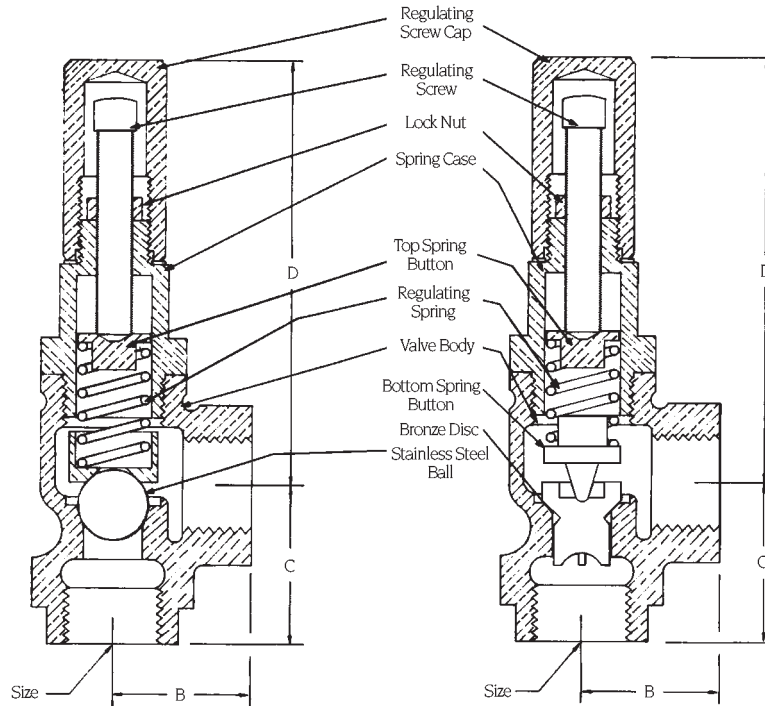


ASME Sect VIII Div I

PR-240

(1/01)

Series R Specifications



Valve Materials List

Body, 1/2" to 3"	Bronze
Main Valve, 1/2" to 1 1/2"	Stainless Steel*
Main Valve, 2" to 3"	Bronze
Spring	Cadmium-plated Steel

* 1/2" - 1" available with soft seat for tight shut off (#10691)

Maximum Operating Pressures & Temperatures

Bronze (screwed)	300 psig at 180°F
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Series "R" Relief Pressure Spring Ranges

psig	Spring #/Color Code
1 to 6	4/black (1/2" - 1 1/2")
5 to 35	3/silver
25 to 100	2/blue
75 to 300	1/red

Series "R" – Stainless Steel Ball (Main Valve)

Size	B	C	D	Shipping Weight (lbs)
1/2"	1 1/8"	1 1/2"	3 5/8"	1.5
3/4"	1 3/8"	1 3/4"	5 1/2"	2
1"	1 5/8"	2 1/4"	6"	3
1 1/4"	1 7/8"	2 3/8"	6"	6
1 1/2"	2 3/16"	2 5/8"	6 7/8"	8

Series "R" – Bronze Disc (Main Valve)

Size	B	C	D	Shipping Weight (lbs)
2"	2 1/2"	3 5/16"	8 3/4"	10
2 1/2"	3 5/16"	3 7/8"	10 3/8"	18
3"	3 7/8"	4 1/8"	10 7/8"	25

Series R Relief Valve Capacities – gal/min (GPM)

Valve Size	Set Pressure (psig)	1/2"		3/4"		1"		1 1/4"		1 1/2"		2"		2 1/2"		3"	
		At 10% Over Set Pressure	At 20% Over Set Pressure	At 10% Over Set Pressure	At 20% Over Set Pressure	At 10% Over Set Pressure	At 20% Over Set Pressure	At 10% Over Set Pressure	At 20% Over Set Pressure	At 10% Over Set Pressure	At 20% Over Set Pressure	At 10% Over Set Pressure	At 20% Over Set Pressure	At 10% Over Set Pressure	At 20% Over Set Pressure	At 10% Over Set Pressure	At 20% Over Set Pressure
1 – 6	3	1.2	2.2	2.2	3.4	3.2	4.6	4.3	5.8	5.4	7.1						
5 – 35	10	0.3	0.6	0.4	0.8	0.4	1.1	0.5	1.3	0.5	1.4	0.6	1.8	0.6	1.9	0.7	2.2
5 – 35	20	0.6	1.4	0.7	1.9	0.8	2.4	1.0	3.0	1.1	3.4	1.3	4.1	1.4	4.4	1.6	4.8
25 – 100	50	1.0	1.8	1.3	2.0	1.6	3.1	1.8	3.8	2.2	4.4	2.6	5.4	4.3	5.8	5.0	6.4
25 – 100	75	1.4	2.3	1.9	3.2	2.3	4.0	2.8	4.8	3.4	5.6	4.0	6.9	4.6	7.2	5.0	8.1
75 – 300	100	1.9	3.6	2.5	4.2	3.2	5.0	3.8	6.3	4.6	7.0	5.4	7.3	6.3	8.1	6.9	8.9
75 – 300	200	3.4	6.5	4.4	7.6	5.8	9.0	6.9	11.2	8.2	12.4	9.7	13.1	11.2	14.4	12.3	16.0

The Series R Relief Valve water capacities at both 10% and 20% over "Set Pressure" are tabulated in the above table. Enter the chart at the desired "Set Pressure" in the left-hand column and read the capacity in GPM to determine proper Valve Size. Select a spring with a relief range that includes the "Set Pressure" required. Example: A 1" valve set at 50 psig will pass 3.1 GPM if the system pressure exceeds the set point by 20%