



TECHSPEC



Type FRM FRM-C, FRM-2

BACK PRESSURE VALVES

This Bulletin No.	TS-FRM
Date Of This Issue	JULY 2000
Supersedes Bulletin No.	TS-FRM
Dated	JULY 1999

It is recommended that Type FRM, FRM-C and FRM-2 valves be installed in the horizontal position with the spring chamber upright. Although installing the valve in a vertical line (valve on its side) or inverted in a horizontal line is not entirely discouraged, there are certain cautions to be considered. The concerns are (1) low pressure settings and (2) a fluctuating pressure in the return line or relief line. In cases where either of these concerns are present and such types of installations are being considered, consult with the factory or its authorized representative before proceeding with the installation.

Other considerations in making a good installation are:

1. The valve should be sized properly for the service conditions.
2. Type FRM Series valves are diaphragm operated valves designed for the continuous operating pressure control of a system. All FRM Series valves are fitted with a diaphragm travel stop to prevent the diaphragms from extending beyond their limit, however, should a diaphragm fail, the valve will fail in the closed position. As a safeguard, it may be desirable to protect the system against damaging high pressures by a safety relief valve or some other type of safety device.

DESCRIPTION

The Types FRM, FRM-C and FRMQ function as automatic pressure limiting regulators, maintaining a desired pressure in a vessel or system by maintaining a predetermined valve inlet pressure and relieving excess pressure into a lower pressure line. These valves are small and compact yet are highly efficient making them suitable for numerous applications that call for a small, accurate back pressure regulator. Types FRM and FRM-2 incorporate the same superior "floating ring" design that is used in the larger FR Series valves to provide smooth even pressure control.

SPECIFICATION DATA

Service: Liquids, air, and gases that are not corrosive to bronze.

Sizes: 1/8", 1/4", 3/8" and 1/2"

Connections: Threaded female inlet and outlet

Body: Bronze

Maximum Temperature:

With Neoprene Diaphragm - 180°F

With Metal (Phosphor Bronze) Diaphragm - 500°F

Pressure Control Range:

FRM and FRM-C: 0-175 psi

FRM-2: 0-250 psi

Capacity: Refer to Bulletin BPV-FR for capacity information.

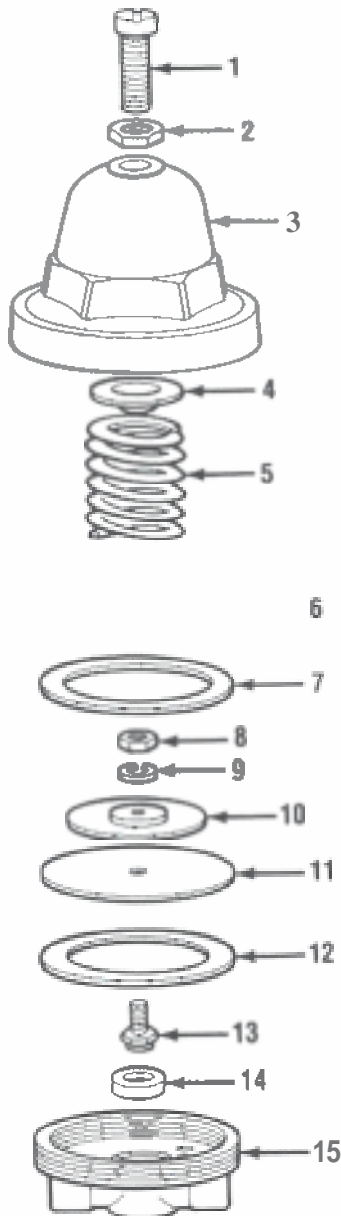
GENERAL INSTALLATION INSTRUCTIONS

FRM Series valves are available with three different body styles for pipe connections to enable it to be adapted to most any system: side inlet-side outlet, side inlet-bottom outlet, 2 opposite side inlets-bottom outlet.

When installing the valve, connect the supply line to the inlet connection. The outlet connection should be connected to the return or bypass line. Valves with 2 opposite side inlets and a bottom outlet may be installed as an angle valve with one inlet plugged, or alternatively used as an in-line valve with regulated pressure on both the inlet and process sides of the valve.

For ease of operation and maintenance, it is suggested that manual shut-off valves be installed upstream and downstream from the valve. Before installing the valve, the piping and valve should be thoroughly flushed out to remove any

foreign material. Use a good pipe joint compound on the male pipe threads and do not over tighten the valve connections.



- | | |
|-----------------------|----------------------|
| 1. Adjusting Screw | 9. Lock Washer |
| 2. Lock Nut | 10. Pressure Plate |
| 3. Spring Chamber | 11. Diaphragm |
| 4. Spring Button | 12. Diaphragm Gasket |
| 5. Pressure Spring | 13. Ball Seat |
| 6. Diaph. Travel Stop | 14. Seat Ring |
| 7. Diaphragm Gasket | 15. Body |

INSTALLATION, MAINTENANCE & REPAIR PARTS INFORMATION

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OPERATING INSTRUCTIONS

Adjusting the Delivery Pressure

The regulator's delivery pressure setting is adjusted by turning the adjusting screw (1) at the top of the spring chamber (3) after loosening the adjusting screw lock nut (2). To obtain a higher pressure setting, turn the adjusting screw clockwise (into the spring chamber). To lower the pressure setting, turn the adjusting screw counter-clockwise (out of the spring chamber). Tighten the adjusting screw locknut after the adjustment has been made.

MAINTENANCE INSTRUCTIONS

The following procedures are provided for servicing the Types FRM, FRM-C and FRM-2 back pressure relief valves. Repair parts can easily be installed without removing the valve from the line.

CAUTION: Before attempting to replace any spare parts be sure to shut off all pressure connections to the valve. Before proceeding with any valve service be certain to relieve the pressure from BOTH sides of the valve.

Refer to the Type FRM exploded view for parts identification.

Servicing the Pressure Spring (5), Diaphragm(s) (11), Ball Seat (13) and Seat Ring (14)

1. Loosen the lock nut (2) 1/4 turn and turn the adjusting screw (1) counter-clockwise until the pressure spring (5) is no longer under tension.

NOTE: When installing the adjusting screw during reassembly, turn the screw clockwise until the lock nut just touches the spring chamber. When the valve is placed in service the pressure setting should be very close to the original setting.

2. Unscrew the spring chamber (3) from the valve body (15). During reassembly, tighten the spring chamber securely.
3. Remove the spring button (4), pressure spring (5), diaphragm stop (6), and the upper diaphragm gasket (7) (if fitted) from the valve body.
4. The Diaphragm assembly, consisting of the pressure plate nut (8), lock washer (9), pressure plate (10), diaphragm(s) (11), and ball seat (13) can now be lifted off the body (15). Disassemble the parts by unscrewing the diaphragm plate nut (8) from the ball seat (13). Inspect all parts and replace if necessary. If there is a diaphragm gasket (12), below the diaphragm it should be replaced when new diaphragm(s) (11) are installed.

IMPORTANT: Exercise care to ensure that the surface of the ball seat (13) is not scratched, marred or damaged during disassembly and reassembly.

5. Once the diaphragm assembly has been removed, the seat ring (14), which is sitting loosely in a recess of the valve body, can be removed.

IMPORTANT: Handle the seat ring carefully to avoid damage to the seat ring surface which contacts the ball seat (13) and body.

6. Inspect all parts and replace if necessary. Reassemble in reverse order. After placing the valve back in service, adjust the delivery pressure setting as detailed under Operating Instructions.

REPAIR PARTS INFORMATION

Refer to the Type FRM exploded view for parts identification.

SPECIFICATIONS

Each Type FRM, FRM-C and FRM-2 back pressure valve is supplied with a pressure spring selected to provide the desired pressure setting. The range of adjustment or satisfactory "working range" of individual springs is shown below for each valve size. Each valve has the "set" pressure and range of adjustment stamped on a tag fastened to the valve.

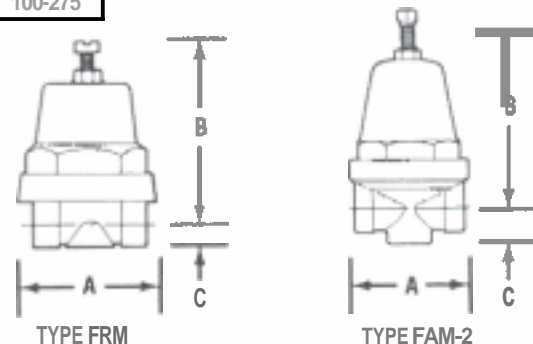
SPRING RANGES

VALVE TYPE	SPRING ADJUSTMENT RANGES (psi)						
FRM, FRM-C	0-2	2-15	2-30	10-50	40-90	40-125	75-175
FRM-2		0-30		20-50	40-80	75-150	100-275

* 200-400 psi range available for FRM-2. Consult factory.

DIMENSIONS

VALVE TYPE	VALVE SIZE	DIMENSIONS			SHIP. WT. (lbs.)
		A	B	C	
FRM, FRM-C	1/8"	3-3/8"	2-1/4"	2-1/4"	1-1/8
	1/4"	3-3/8"	2-1/4"	2-1/4"	1-1/8
	3/8"	3-3/8"	2-1/4"	2-1/4"	1-1/8
FRM-2	1/4"	4-1/2"	2-11/16"	2-11/16"	2-1/2
	3/8"	4-1/2"	2-11/16"	2-11/16"	2-1/2
	1/2"	4-1/2"	2-7/8"	2-7/8"	3-1/2



HOW TO ORDER

When ordering repair parts, refer to the exploded view of the Type FRM to identify the part required. When ordering, please use the part names listed and provide the valve serial number stated on the identification tag. Also state the following:

'Repair Parts for Type FRM, FRM-C or FRM-2' and provide:

1. Valve size
2. Service (water, air, oil, etc.)
3. Inlet pressure

4. Outlet or delivery pressure range and setting
5. Part description
6. Quantity of each part
7. Valve assembly or serial number stated on the metal identification tag attached to the valve.



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