MODEL 18-FR

Pressure Relief Pilot Valve
Drawing A1064A

OVERVIEW:

Model 18-FR is a direct acting, spring and diaphragm-operated relief valve. It is designed to open and close within a preset pressure range.

DESCRIPTION OF OPERATION:

Model 18-FR is a normally-closed valve due to the downward force of Spring (7) on Diaphragm (9).

When the inlet pressure is higher than the spring setpoint, Inner Valve (22) is lifted off its seat, allowing flow. At pressures below the setpoint, the spring returns the inner valve to its initial closed position.

PRESSURE SETTING ADJUSTMENT:

The setpoint of the Model 18-FR can be adjusted to any point within the pressure range indicated on Tag (10).

Adjustment is done by turning Adjusting Screw (20) clockwise or counterclockwise. This varies the force applied to the top of diaphragm by the spring.

Turning the Adjusting Screw (20) clockwise compresses the internal Spring (7), increasing the pressure needed under the diaphragm to open the valve. Turning counterclockwise decreases the pressure needed to open the valve.

When the required setpoint is achieved, Jam Nut (13) is tightened to prevent resetting.

INSTALLATION:

1. Ensure that the valve is as shown in enclosed Drawing A1064A.
2. Note the direction of flow of the system and align with the arrow indicating flow direction on Tag (10).
3. Connect the valve to the inlet and outlet lines ensuring that Adjusting Screw (20) is upward pointing.
4. If required, install gauges in the place of the two Pipe Plugs (12).

DISASSEMBLY AND REASSEMBLY:

1. Loosen Jam Nut (13) and turn Adjusting Screw (20) counterclockwise, completely relieving spring compression.
2. Remove Casing Screws (14), Spring Casing (8) and Spring (7).
3. Remove Plug (19). Hold Inner Valve Assembly (22) with a pair of soft-jawed pilers or vise grips, and remove Nut (21).
4. Remove Upper Clamp Plate (5), O-Ring (16), Diaphragm (9) and Lower Clamp Plate (3).
5. Remove Stem Guide Bushing (2) and Inner Valve Assembly (22).

Reassembly is done by performing the disassembly procedure in reverse. However, a thorough inspection is strongly suggested beforehand, including the following checks:

1. All parts for damage and abrasion
2. Diaphragm for tears
3. Stem for any type of scratching
4. O-rings lubrication and wear

TROUBLESHOOTING COMMON PROBLEMS:

Problem	Probable Cause	Solution
Valve does not open.	Inlet pressure does not reach setpoint pressure.	Turn adjusting screw counterclockwise to lower setpoint.
Valve does not open (with no spring compression).	Obstruction in body or stem damage.	Disassemble valve. Remove obstruction and/or clean stem surface. Replace parts if necessary.
Valve does not close.	Inlet pressure too high for spring setting.	Turn adjusting screw clockwise. To raise setpoint.
Valve does not close (with spring compression).	Obstruction in body.	Disassemble valve and remove obstruction.

NOTE: If the valve still does not open or close under flowing conditions, pressure ranges must be reassessed for the application, and valve suitability reevaluated.