

Pressure Relief Valve with Electric Override

Model 43T-59

The BERMAD model FP 43T-59 is an elastomeric hydraulic line pressure operated relief valve, combining pressure relief with a pre-opening feature. It has been specifically designed for advanced fire protection systems and the latest industry standards.

The 43T-59 Pressure Relief Valve prevents damage from overpressure in piping systems, ensuring a preset upstream pressure limit regardless of pressure peaks and fluctuating conditions. Due to exceptional reliability and low pressure loss it is ideal for the relief of fire pump discharge.

The 43T-59 includes a pre-opening feature, whereby full opening of the valve can be achieved by electric command. This function may be used to relieve and quell anticipated surge such as might occur during pump start-up.

After the anticipated surge has passed, signal termination returns the valve to normal pressure relief duty.

As an option the 43T-59 can be fitted with a valve position indicator that can include a limit switch suitable for Fire & Gas monitoring systems.



(for illustration only)

Benefits and Features

- **Safety and reliability**
 - Time proven, simple, fail-safe actuation
 - Single piece, rugged elastomeric diaphragm seal - VRSD technology
 - Obstacle-free, uninterrupted flow path
 - No mechanical moving parts
 - Continues to act as relief valve upon electric failure
- **High performance**
 - Very high flow efficiency
 - Straight through flow Y- type body
 - Quick response with minimal power requirement
 - Rated up to 25 bar (365 psi)
- **Quick and easy maintenance**
 - In-line serviceable
 - Fast and easy cover removal

Typical Applications

- Fire pump relief
- Surge prevention on pump start up.
- Centralized thermal pressure relief
- Zonal safety relief

Approvals



ABS
American Bureau of Shipping
Type Approval



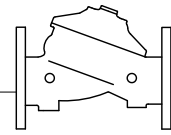
Lloyd's Register
Type Approval



Det Norske Veritas
Type Approval

Additional Features

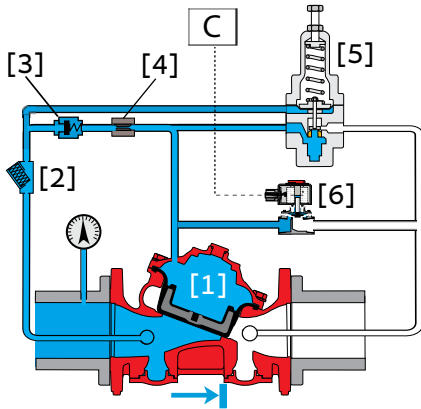
- Sea water compatibility
- Hazardous locations solenoid
- Large control filter
- Linear limit switch



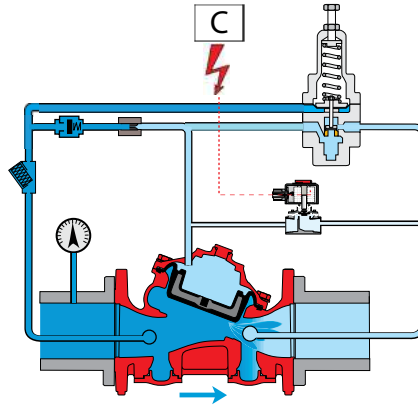
Operation

(for Illustration Only)

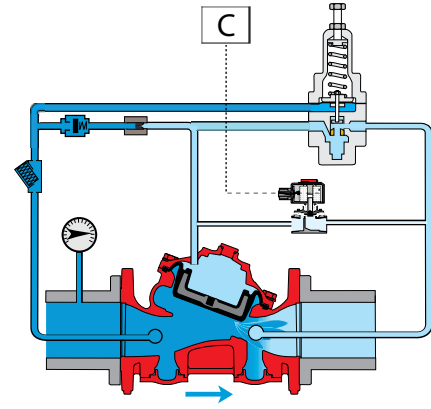
The BERMAD model FP 43T-59 is equipped with two parallel control systems to provide both pressure relief (via the relief pilot valve) and anticipated surge relief during pump start up (via the solenoid valve).



Valve Closed – Inlet pressure below set relief pressure



Valve Open 1 - Relief opening by way of electric command, regardless of inlet pressure



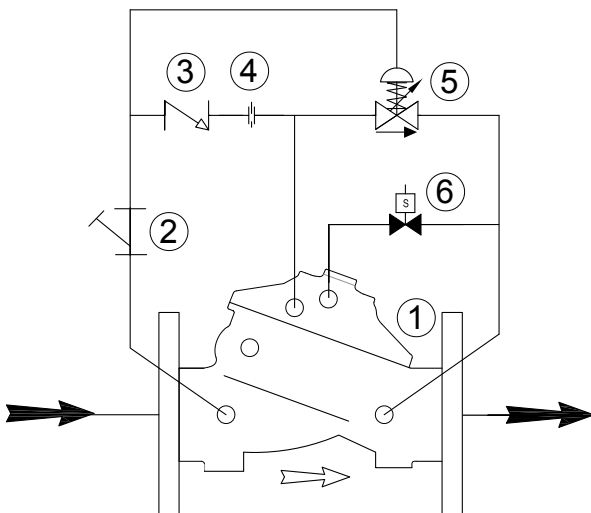
Valve Open 2 - Inlet pressure above set relief pressure, regulation by way of the pilot valve

Valve Closed – Pressure Relief – When the inlet pressure is below the set relief pressure the BERMAD model FP 43T-59 is held closed by inlet pressure fed to the control chamber [1] supplied via the pilot line filter [2] a check valve [3] and a restriction orifice [4] and is held in the control chamber by the closed solenoid [6] and the closed relief pilot valve [5]

Valve Open 1 – Surge Anticipating – Activated simultaneously with the pump start up, the open solenoid bypasses the relief pilot valve to forcibly release pressure from the valve control chamber opening the main valve. The valve will fully open releasing surge overpressure. When the solenoid is deactivated the valve will return to pressure relief duty.

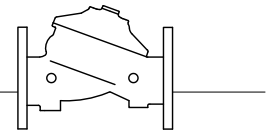
Valve Open 2 – Pressure Relief – When the anticipated surge has passed and the solenoid has been deactivated the valve returns to a normal pressure relief function. When inlet pressure reaches the set pressure, the relief pilot valve will open releasing pressure from the control chamber and opening the main valve, relieving upstream overpressure.

System P&ID



Components

- 1 BERMAD 400Y Valve
- 2 Priming strainer
- 3 Check Valve
- 4 Restriction orifice
- 5 Pressure Relief Pilot Valve
- 6 2-Way Override Solenoid



System Installation

A typical installation of the BERMAD model FP 400Y-43T-59 valve features a pilot valve for fast reaction and the automatic and accurate maintenance of a constant preset maximum upstream pressure, regardless of fluctuating demand.

When overpressure or surge is anticipated as in a fire pump start-up, the electric override can be used to momentarily fully open the 43T-59 valve simultaneously with the pump start-up, preempting and preventing potential surge damage. The valve will return to normal pressure relief mode when the electric override command is turned off via the timer.

Components

1. Fire pump
2. BERMAD FP 43T-59
3. Control panel
4. Check valve
5. Pressure gauge

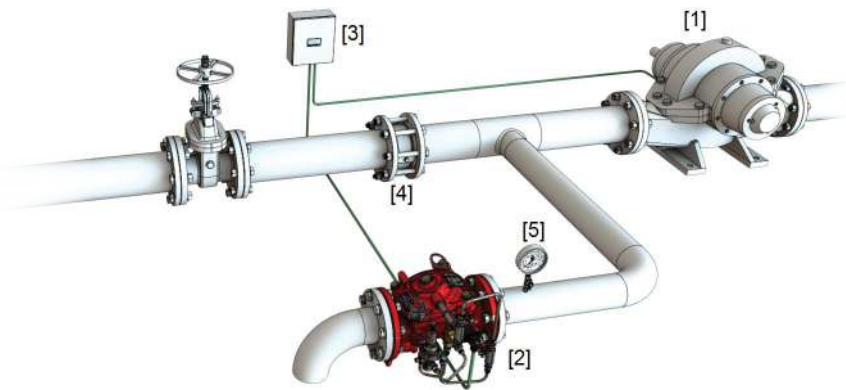


Illustration for demonstrational purposes only

Engineering Specifications

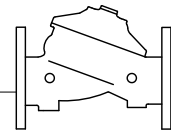
The relief valve shall be a 25-bar/365-psi rated, straight-through, Y-type-body valve.

The valve shall have an unobstructed flow path, with no stem guide or supporting ribs.

Valve actuation shall be accomplished by a single-piece, rolling diaphragm bonded with a rugged radial seal disk. The diaphragm assembly shall be the only moving part.

Removing the valve cover for inspection or maintenance shall not require removing the control trim.

The deluge valve and its entire control trim shall be supplied pre-assembled and hydraulically tested by a factory certified to ISO 9000 and 9001 standards.



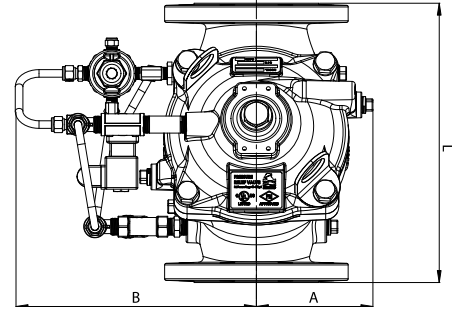
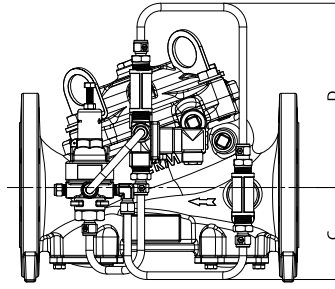
Technical Data

Available Sizes (inch)

- Flanged - 1½, 2, 3, 4, 6, 8, 10, 12, 14 & 16"
- Grooved - 1½, 2, 3, 4, 6 & 8"
- Threaded - 1½ & 2"

Pressure Rating

- ANSI#150 - 16 bar / 235psi
- ANSI#300 - 1½" to 10" 25 bar/365 psi
12" to 16" 20 bar/300 psi
- Grooved/Threaded - See in code designations table below
- Pressure Settings: Class #150 / PN16: 4 – 16 bar (60 – 235 psi)
Class #300 / PN25: 7 – 25 bar (100 – 365 psi)



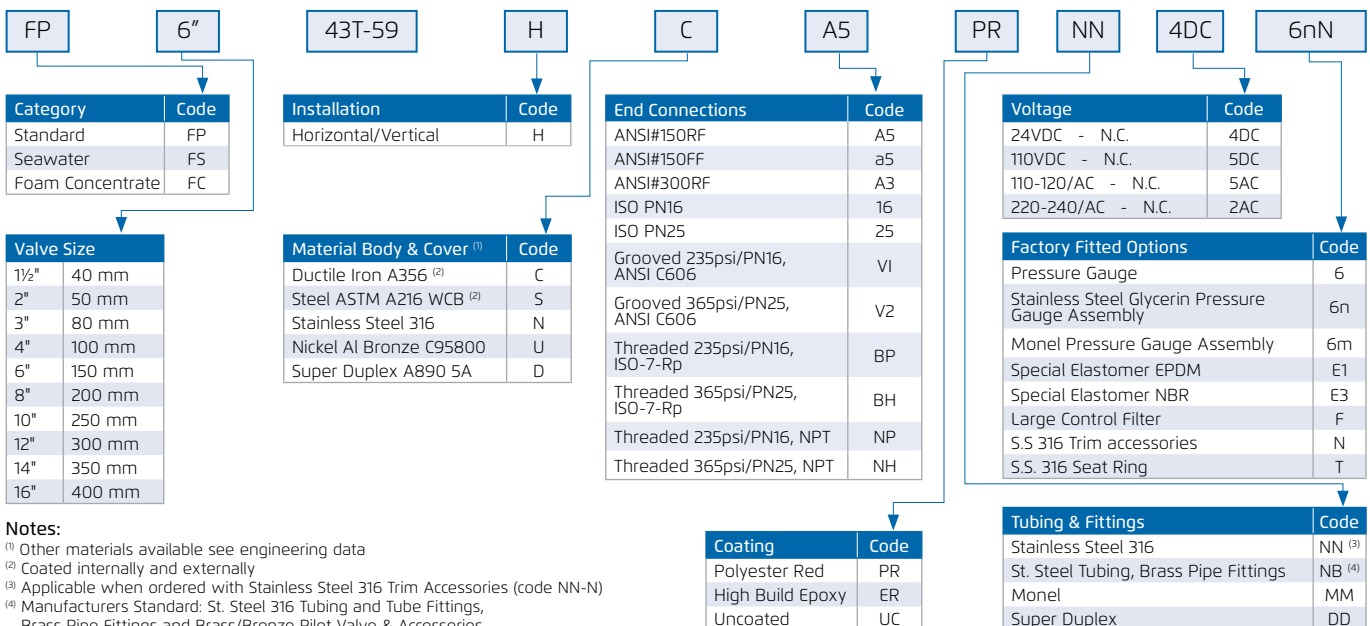
Elastomer

- HTNR - Fabric Reinforced High Temperature Compound - See engineering data

Valve Size	1½"		2"		3"		4"		6"		8"		10"		12"		14"		16"	
	DN40		DN50		DN80		DN100		DN150		DN200		DN250		DN300		DN350		DN400	
Unit	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
L ⁽¹⁾	230	9.1	230	9.1	310	12.2	350	13.8	480	18.9	600	23.6	730	28.7	850	33.5	980	38.6	1100	43.3
L ⁽²⁾	230	9.1	238	9.4	326	12.8	368	14.5	506	19.9	626	24.6	730	28.7	888	35	980	38.6	1100	43.3
A	77.5	3	77.5	3	100	3.94	115	4.53	140	5.51	172	6.77	204	8	242	9.53	242	9.53	242	9.53
B	155	6.1	155	6.1	251	9.88	266	10.47	372	14.65	490	19.29	490	19.29	656	25.83	656	25.83	656	25.83
C	64	2.52	77	3.03	106	4.17	121	4.76	140	5.51	172	6.77	204	8.03	247	9.72	272	10.71	316	12.44
D	120	4.69	120	4.69	146	5.75	158	6.22	228	9	295	11.65	296	11.65	441	17.36	441	17.36	415	16.3
Kv / Cv ⁽⁴⁾	68 / 79		80 / 92		190 / 219		345 / 398		790 / 912		1160 / 1340		1355 / 1565		2370 / 2737		2850 / 3292		3254 / 3758	
Leq ⁽³⁾ : m/ft	2 / 7		5 / 16		7 / 23		9 / 30		15 / 49		27 / 89		62 / 203		52 / 171		59 / 194		88 / 289	
Kg/lb flanged#150/ISO16	17.9 / 39.4		19.3 / 42.5		34 / 74.8		44 / 95.8		87.3 / 192		150 / 331		180 / 397		323 / 712		356 / 784		403 / 886	

- Notes: ⁽¹⁾ Refers to the length dimensions for Raised Face ANSI #150, ISO 16 Flanged, Threaded and Grooved valves
⁽²⁾ Refers to the length dimensions for Raised Face ANSI #300 and ISO 25 Flanged valves
⁽³⁾ Leq (Equivalent Pipe Length) refers to a fully opened valve with turbulent flow in new steel pipe schedule 40, values given for general consideration only
⁽⁴⁾ Kv/Cv values given for a fully opened valve
⁽⁵⁾ Exact dimensions for the trim envelope may vary with specific component positioning

Valve Code Designations



- Notes: ⁽¹⁾ Other materials available see engineering data
⁽²⁾ Coated internally and externally
⁽³⁾ Applicable when ordered with Stainless Steel 316 Trim Accessories (code NN-N)
⁽⁴⁾ Manufacturers Standard: St. Steel 316 Tubing and Tube Fittings, Brass Pipe Fittings and Brass/Bronze Pilot Valve & Accessories

