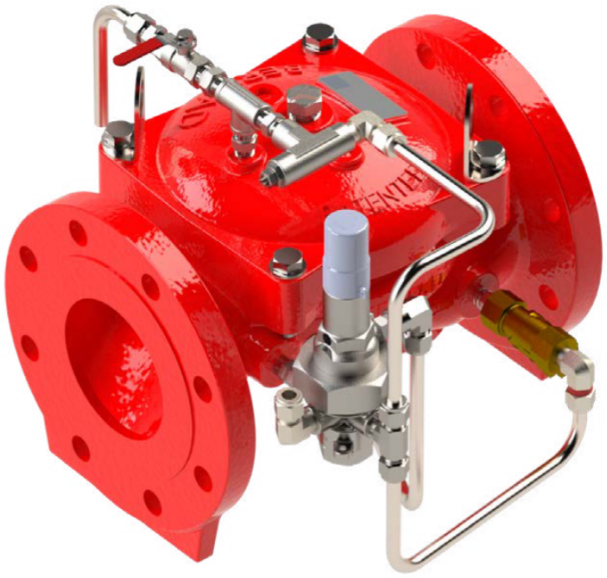
PRESSURE DIFFERENTIAL, FLOW CONTROL VALVE

Model FP-426-02

The BERMAD model FP-426-02 is an elastomeric hydraulic line pressure driven differential limiting valve.
The 426-02 is equipped with an adjustable differential pilot valve and is used to prevent the pressure differential between two points from rising above a set value.
When the differential between the two sensed pressures approaches the pre-set maximum the pilot valve starts to close the main valve, regulating the pressure and preventing the differential from rising further.
The 426-02 is ideal for balanced foam proportioning systems, also as a safeguard for dosing pump flow overload.
As an option the 426-02 can be fitted with a valve position indicator that can include a limit switch suitable for Fire & Gas monitoring systems.



Features & Benefits

- Safety and reliability
  - Time proven, simple design with a fail safe actuation
  - Single piece rugged elastomer, VRSD technology
  - Obstacle-free, uninterrupted flow path
  - No mechanical moving parts
- Quick and easy maintenance
  - In-line serviceable
  - Fast and easy cover removal

Approvals

ABS TYPE APPROVED PRODUCT	ABS American Bureau of Shipping Type Approval
DNV	Det Norske Veritas Type Approval
Lloyd's Register TA	Lloyd's Register Type Approval

Typical Applications

- Pump overload & cavitation protection
- Balanced pressure proportioning systems
- Foam concentrate injection systems
- Pump flow safeguard

Optional Features

- Large control filter
- Valve Position Indicator
- Corrosion resistant zinc based high build epoxy coating

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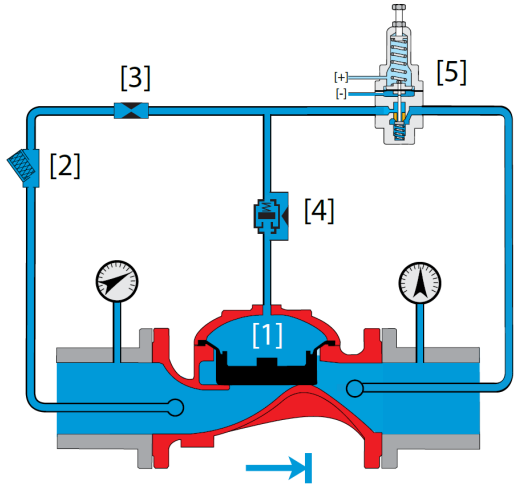
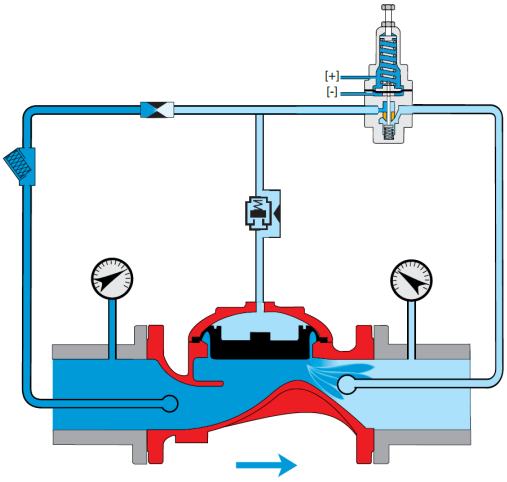
Operation



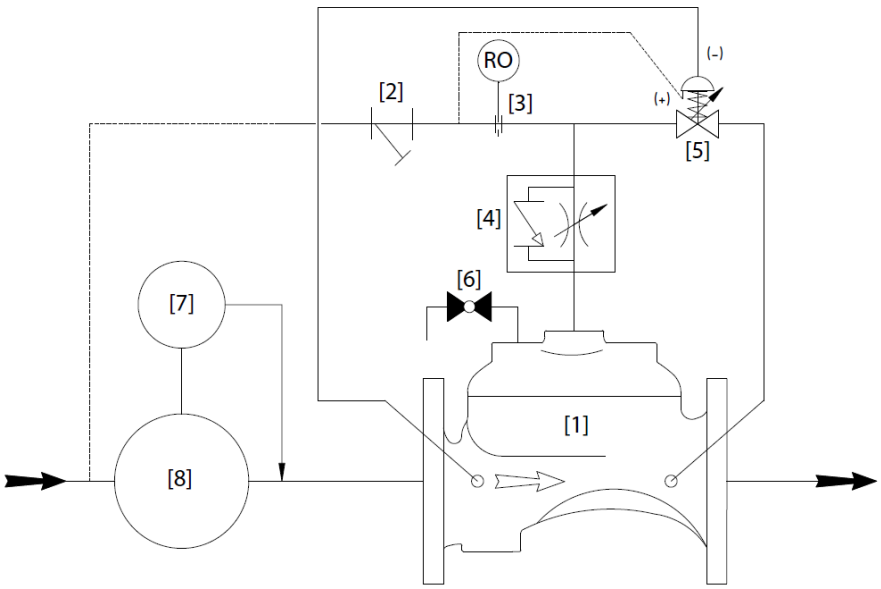
Valve Closed (normal conditions)



Valve Open (fire conditions)

The BERMAD model 426-02 is held closed by inlet pressure in the control chamber [1] supplied via the pilot line filter [2] and the restriction orifice [3]. To open the valve the pressure in the control chamber must be released to the outlet by way of the pilot [5] opening. The pilot senses two pressures, a higher pressure (+) and a lower pressure (-). Should the differential between these two pressures approach the set maximum (determined by the pilot adjusting screw) the pilot will tend to close, thus allowing pressure to accumulate in the valve control chamber causing the main valve to throttle. This regulates the pressure in the downstream pipeline keeping the differential pressure below the set maximum. Should the differential pressure fall, the pilot will open, releasing pressure in the valve control chamber thereby causing the main valve to open and maintain the differential pressure. The adjustable opening speed control device [4] restricts the flow of water exiting the valve control chamber thereby slowing the valve opening speed, preventing any momentary excessive flow.

System P&ID



	Components
1	BERMAD 400 Valve
2	Control filter
3	Restriction orifice
4	Opening speed control device
5	Differential sensing pilot
6	Manual Override
7	Foam concentrate
8	Stationary proportioner

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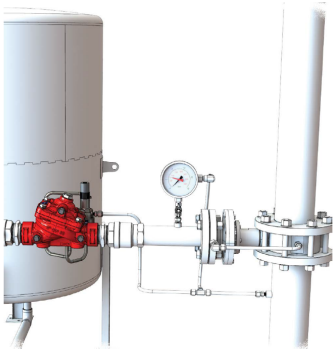
System Installation

A typical installation of the BERMAD model 426-02 features valve actuation via pilot control to regulate the flow in response to an increase in differential pressure between two points. The 426-02 is ideally suited for regulation in balanced pressure proportioning systems or foam dosing applications.

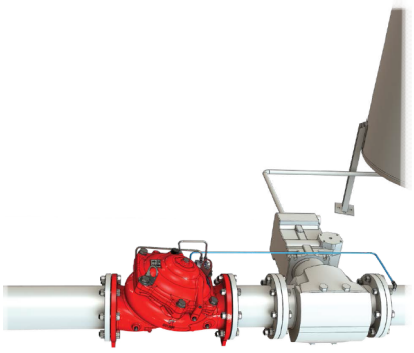
Balanced Pressure Proportioning System

- A typical installation is in a Balanced Pressure Proportioning System, where the BERMAD 426-02 is installed on the foam concentrate supply pipe, and is used to maintain the correct pressure differential between the firewater system pressure and the foam supply pressure.



Foam Concentrate Dosing System

- By sensing the differential pressure across the dosing pump the 426-02 tends to throttle when the maximum allowable flow rate for the dosing pump has been reached, regulating and preventing the flow from exceeding the recommended maximum for the dosing pump, avoiding dangerous pump overload.



Suggested Specifications

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 removal of the entire control trim.
The valve shall be inline serviceable, and shall not require removal of the valve from the pipeline
The valve and its entire control trim shall be supplied pre-assembled and hydraulically tested by a factory certified to ISO 9000 and 9001 standards.

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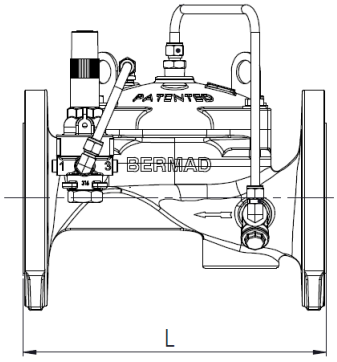
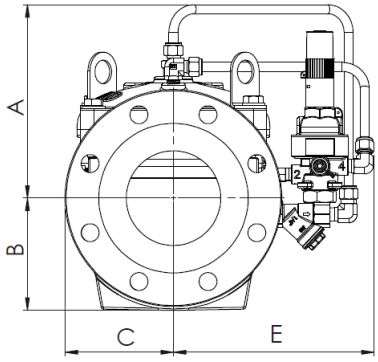
Technical Data

Available Sizes:
Flanged- 1½, 2, 2½, 3, 4, 6, 8, 10 & 12"
Grooved- 2, 3, 4, 6, & 8"

Pressure Rating:
ANSI#150 - 17.2 bar | 250 psi
Setting range: 0.5 - 3 bar | 7 - 43 psi

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





Valve Size	L #150 mm | in	L Grooved mm | in	L #300 mm | in	A mm | in	B mm | in	C mm | in	⌀D in	E mm | in	F mm | in	G mm | in	Weight #150 kg | lb	Weight #300 kg | lb
DN40 | 1½"	205 | 8.1	-	-	159 | 6.2	64 | 2.5	64 | 2.5	-	168 | 6.6	-	-	11 | 25	-
DN50 | 2"	205 | 8.1	205 | 8.1	-	159 | 6.3	78 | 3.1	78 | 3.1	-	168 | 6.6	-	-	12 | 27	-
DN65 | 2½"	205 | 8.1	-	-	158 | 6.2	92 | 3.6	89 | 3.5	-	195 | 7.7	-	-	14 | 31	-
DN80 | 3"	257 | 10.1	250 | 9.8	-	177 | 7	97 | 3.8	96 | 3.8	-	200 | 7.9	-	-	23 | 51	-
DN100 | 4"	320 | 12.6	320 | 12.6	-	328 | 12.9	119 | 4.7	115 | 4.5	-	212 | 8.3	-	-	33 | 73	-
DN150 | 6"	415 | 16.3	415 | 16.3	-	276 | 10.8	145 | 5.7	145 | 5.7	-	238 | 9.4	-	-	77 | 170	-
DN200 | 8"	500 | 19.7	500 | 19.7	-	327 | 12.9	174 | 6.9	187 | 7.4	-	272 | 10.7	-	-	139 | 306	-
DN250 | 10"	605 | 23.8	-	-	324 | 12.8	210 | 8.3	204 | 8	-	285 | 11.2	-	-	156 | 343	-
DN300 | 12"	725 | 28.5	-	-	440 | 17.3	248 | 9.8	304 | 12	-	380 | 15	-	-	250 | 550	-

IMPORTANT: Dimensions for the trim envelope or extents refer to a horizontal orientation and may vary with specific component positioning -Apart from the "L" dimension, allow a tolerance of at least ±15%

Valve Code Designations

FP | 6" | 426 | 02 | V | C | A5 | ER | NN | e | N6n

Category	Code
Standard	FP
Seawater	FS
Foam	FC

Valve Size	
1½"	40 mm
2"	50 mm
2½"	60 mm
3"	80 mm
4"	100 mm
6"	150 mm
8"	200 mm
10"	250 mm
12"	300 mm

Notes:
(1) Other materials available see engineering data
(2) Coated internally and externally
(3) Supplied loose
(4) Consult BERMAD for availability
(5) For valves up to and including 10"

Additional Feature	Code
Closing Speed Control	01
Opening Speed	02
Opening & Closing Speed Control	03
None	-

Installation	Code
Vertical	V
Horizontal	H

Material Body & Cover (1)	Code
Ductile Iron A356 (2)	C
Steel ASTM A216 WCB (2)	S
Stainless Steel 316	N
Nickel Al Bronze C95800	U
Super Duplex Grade 5A	D

End Connections	Code
ANSI#150RF	A5
ANSI#150FF	a5
ISO PN16	16
Grooved ANSI C606	VI

Coating	Code
High Build Epoxy	ER
Zinc Based High Build Epoxy (5)	ZR
Uncoated	UC

Tubing &	Code
Stainless	NN
Monel 400	MM
Super Duplex	DD

Factory Supplied Additional Items	Code
General Purpose NEMA-4 Pressure Switch	P
Ex Proof NEC, Div.1 Pressure Switch (3)	P7
Ex d ATEX Pressure Switch (3)	P9
Ex d Pressure Switch, SS316 Enclosure (3)	P9Jn
Ex d Pressure Switch, SS316 Enclosure, Monel Sensor (3)	P9mJn
Single Limit Switch, General Purpose	S
Single Ex d Proximity limit Switch	S9
Double Ex d Proximity Limit Switch	SS9
Double Ex d Proximity Limit Switch with SS316 Junction Box	SS9Jn
Pressure Gauge Assembly (3)	6
S.S Glycerin Pressure Gauge Assembly (3)	6n
Monel Pressure Gauge Assembly (3)	6m
Special Elastomer (4)	E
Large Control Filter	F
Valve Position Indicator	I
S.S 316 Trim Accessories	N
Pressure Transmitter (3)	Q

*More options available – consult BERMAD

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