LEVEL CONTROL VALVE WITH MODULATING HORIZONTAL FLOAT

Model FP-450-65

The Model FP 450-65 Level Control Valve with Bi-Level Electric Float is a hydraulically operated, line pressure driven, diaphragm actuated, control valve. Designed to control reservoir filling in response to an electric float switch signal.
The valve fully opens at a pre-set low level and closes at a pre-set high level.
This valve can operate at a very low supply pressure and with quiet operation.
The On/Off bi-level characteristic ensures an extended operational life.

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
- High performance
  - Main valve with no mechanical moving parts
  - Very high flow efficiency
  - Quiet and Smooth operation
  - Very low opening & closing pressure requirement
- Quick and easy maintenance
  - Designed for high reliability and easy maintenance
  - Fast and easy cover removal
  - In-line serviceable

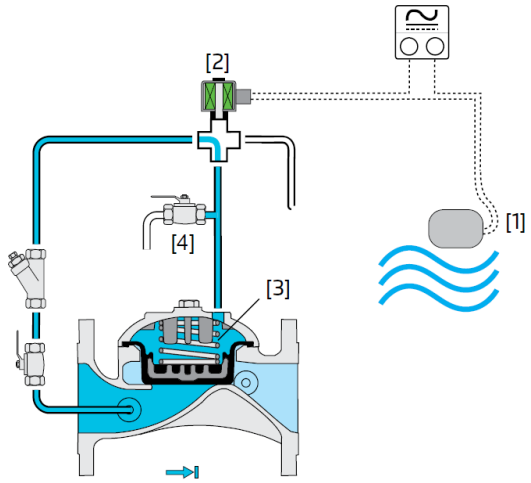
Approvals

DNV	Det Norske Veritas Type Approval Sizes 1½" to 12"
Lloyd's Register TA	Lloyd's Register Type Approval Sizes 1½" - 10"
ABS TYPE APPROVED PRODUCT	ABS American Bureau of Shipping Type Approval Sizes 1½" - 12"

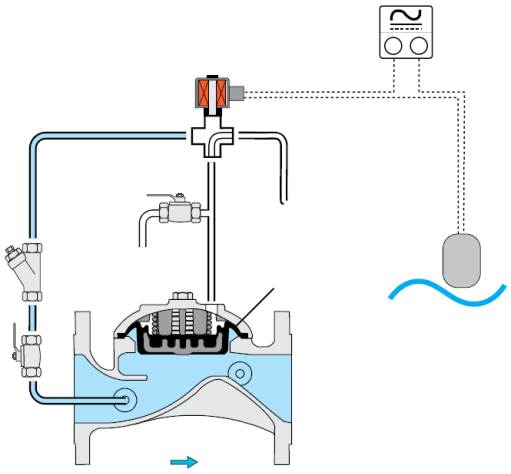
Additional Features

- Large control filter
- Valve position limit switches
- Corrosion resistant zinc based high build epoxy coating
- Hazardous locations solenoid

Operation

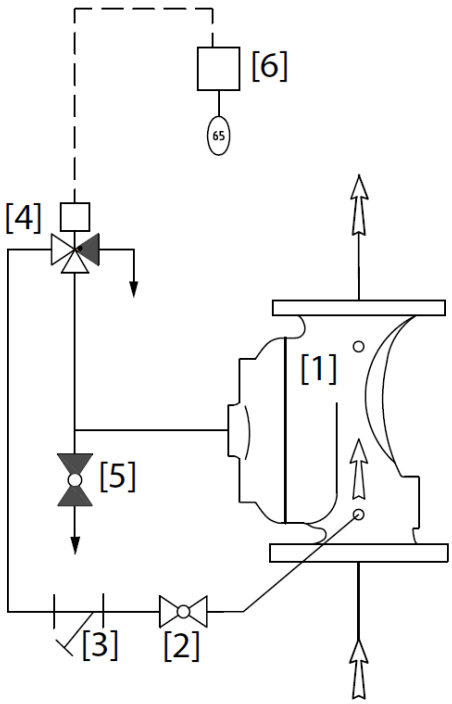


Valve Closed


Valve Open

The Model FP 450-65 is a solenoid controlled valve equipped with a bi-level, electric float switch* and a solenoid pilot**.
The float switch [1] closes at a pre-set low level energizing the solenoid [2], and opens at a pre-set high level, de-energizing the solenoid.
Should the water level drop to the pre-set low level, the float position will close the electric circuit and will energize the solenoid, causing the control chamber [3] to vent and thereby opening the main valve to fill the reservoir.
When the water level has risen to the pre-set high level, the float position will open the electric circuit and de-energize the solenoid, causing pressure to accumulate in the main valve control chamber closing the main valve. For 8" (200 mm) valves and larger, an accelerator quickens valve response.
In accordance with safety requirements an emergency manual override valve [4] is provided.
* Other switching means are available.
** Normally closed, and normally open main valves are available.

System P&ID



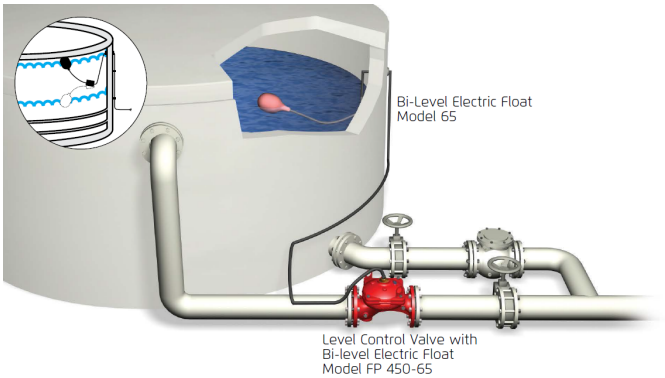
	Components
1	BERMAD 400E Valve
2	Priming Ball Valve
3	Priming Strainer
4	3-Way Solenoid
5	Manual Emergency Release
6	Bi-Level Electric Float Switch

System Installation

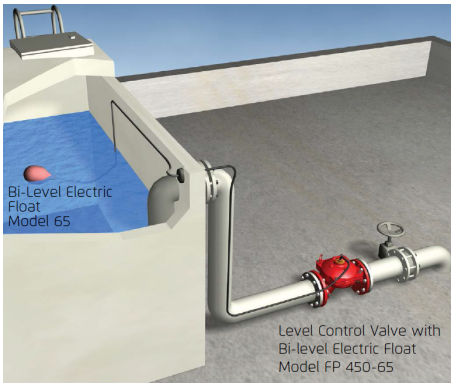
Infrastructure Installation:
Reservoirs vary in their characteristics – location, elevation, filling and emptying flow and pressure, surface area, etc. These various characteristics require various level control valve solutions.
The Model FP 450-65 is the ideal solution for level control in reservoirs – shallow and deep, low and high elevation, rooftop and basement, in water towers, and wherever electric power is available.
Rooftop Reservoirs:
Rooftop reservoir level control is attained by electric control of the basement pumps according to reservoir level. As overflow of a rooftop reservoir can cause costly damage, additional backup protection is recommended. The Model FP 450-65 is suited to this function. When open, it presents minimal interference, but when needed, it shuts off securely. To ensure supply pressure to upper floor consumers or the fire protection system, install the Model FP 420 or 42T Pressure Control Valve upstream from the Model FP 450-65. Bi-Level Electric Float Model 65 Level Control Valve with Bi-level Electric Float Model FP 450-65 Bi-Level Electric Float
Model 65 Level

Large Fire Water Reservoirs

- The valve can be placed in an easily accessible place, remotely operated by the float on the reservoir surface.



Rooftop Reservoirs



Suggested Specifications

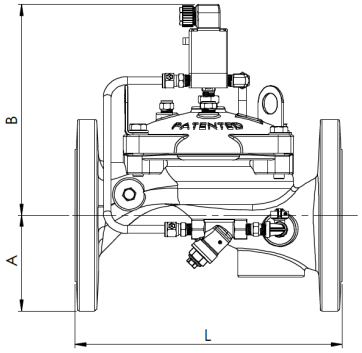
The Level Control Valve shall control reservoir filling in response to an electric float switch signal, opening at preset low level and shutting at pre-set high level.
Main Valve: The main valve shall be an elastomeric type globe (or angle) valve with a rolling-diaphragm. The valve shall have an unobstructed flow path, with no stem guide or supporting ribs. The body and cover construction material shall be ductile iron. All external bolts and nuts shall be of Stainless Steel 316. All valve components shall be accessible and serviceable without removing the valve from the pipeline.
Actuation: Valve actuation shall be accomplished by a fully peripherally supported, one-piece balanced rolling-diaphragm, vulcanized with a rugged radial seal disk. The diaphragm assembly shall be the only moving part.
Control System: The control system shall consist of an electrical level sensor, a solenoid pilot (for 8" and larger valves, an accelerator shall be added to the solenoid), an isolating cock valve, and a filter. All fittings shall be forged brass or stainless steel. The assembled valve shall be hydraulically tested.
Quality Assurance: The valve manufacturer shall be certified according to the ISO 9000 and 9001 Quality Assurance Standard.

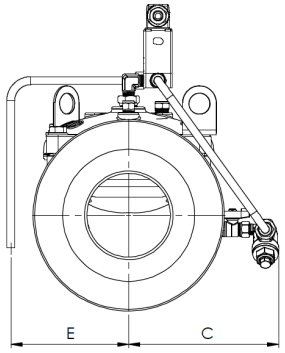
Technical Data

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
Grooved - 17.2 bar | 250 psi

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





Valve Size	L #150 mm | in	L Grooved mm | in	A mm | in	B mm | in	C mm | in	øD in	E mm | in	F mm | in	G mm | in	Weight #150 kg | lb
DN40 | 1½"	205 | 8.1	-	64 | 2.5	204 | 8	178 | 7	-	94 | 3.7	-	-	14 | 31
DN50 | 2"	205 | 8.1	205 | 8.1	78 | 3	204 | 8	177 | 7	-	108 | 6.3	-	-	15 | 33
DN65 | 2½"	205 | 8.1	-	89 | 3.5	216 | 8.5	189 | 7.4	-	119 | 4.7	-	-	17 | 37
DN80 | 3"	257 | 10.1	250 | 9.8	257 | 10.2	100 | 3.9	200 | 7.9	-	130 | 5.1	-	-	26 | 57
DN100 | 4"	320 | 12.6	320 | 12.6	115 | 4.5	260 | 10.2	212 | 8.3	-	145 | 5.7	-	-	38 | 84
DN150 | 6"	415 | 16.3	415 | 16.3	140 | 5.5	335 | 13.1	253 | 10	-	170 | 6.7	-	-	82 | 181
DN200 | 8"	500 | 19.7	-	172 | 6.8	386 | 15.2	282 | 11.1	-	202 | 8	-	-	145 | 320
DN250 | 10"	605 | 23.8	-	204 | 8	386 | 15.2	303 | 11.9	-	234 | 9.2	-	-	161 | 354
DN300 | 12"	725 | 28.5	-	242 | 9.5	503 | 19.8	405 | 15.9	-	272 | 10.7	-	-	249 | 549

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

Valve Code Designations

FP | 3" | 450-65 | V | C | A5 | ER | 4DC | NN | N6n

Category	Code
Standard	FP

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

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

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

Coating	Code
High Build Epoxy	ER
Zinc Based High Build Epoxy [5]	ZR

Voltage - Main Valve	Code
24VDC - N.C.	4DC
24VDC - N.O.	4DO
110VDC - N.C.	5DC
110VDC - N.O.	5DO
110 - 120/AC - N.C.	5AC
110 - 120/AC - N.O.	5AO
220 - 240/AC - N.C.	2AC

* NC refers to the main valve status when the Solenoid is de-energized

Tubing & Fittings	Code
Stainless Steel 316	NN

Factory Supplied Additional Items	Code
General Purpose NEMA-4 Pressure Switch	P
Pressure Gauge Assembly [3]	6
Single Limit switch, General Purpose	S
Ex Proof NEC Class 1 Div 1 Solenoid	7
Ex. d ATEX/IECEX Solenoid	9
Stainless steel 316 Solenoid Valve	K
Special Elastomer [4]	E
Large Control Filter	F
Valve Position Indicator	I
S.S 316 Trim Accessories	N

*More options available – consult BERMAD

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"

www.bermad.com

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