Level Control Valve

with Bi-Level Vertical Float

- Reservoir filling
  - Very low supply pressure
  - Low noise generation
  - Energy cost critical systems
  - Systems with poor water quality
- Reservoir outlet
  - Distribution routing
  - Sewerage "fill and flush" systems

The Model 750-66-B Level Control Valve with Bi-Level Vertical Float is a hydraulically controlled, diaphragm actuated, double chambered control valve. The valve is hydraulically powered to fully open at pre-set reservoir low level, and to shut off at pre-set high level regardless of valve differential pressure.

Features and Benefits

- **Line pressure driven** – Independent operation
- **Bi-level hydraulic float control**
  - On/Off service
  - Low cavitation damage
  - Suitable for low quality water
  - Inherent reservoir refreshing
- **Double chamber**
  - Full powered opening and closing
  - Decreased pressure loss
  - No throttling noise
  - Non-slam closing characteristic
  - Protected diaphragm
- **External installation**
  - Easy access to valve and float
  - Easy level setting
  - Less wear and tear
- **Balanced seal disk** – High flow capacity
- **In-line serviceable** – Easy maintenance
- **Flexible design** – Easy addition of features

Major Additional Features

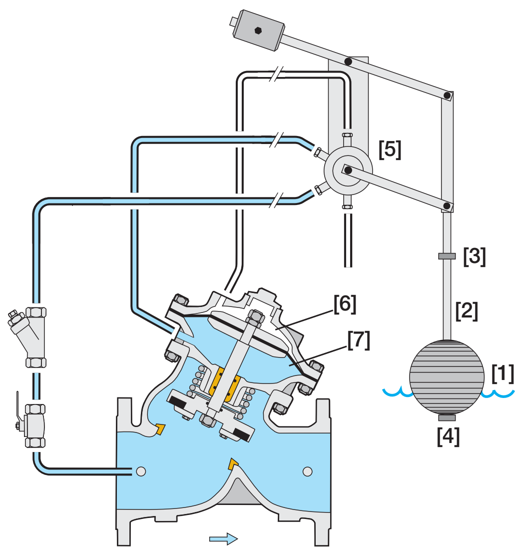
- Pressure sustaining – **753-66**
- Electric float backup – **750-66-65**
- Flow control – **757-66-U**
- Closing surge prevention – **750-66-49**
- Level sustaining – **75A-66**

See relevant BERMAD publications.

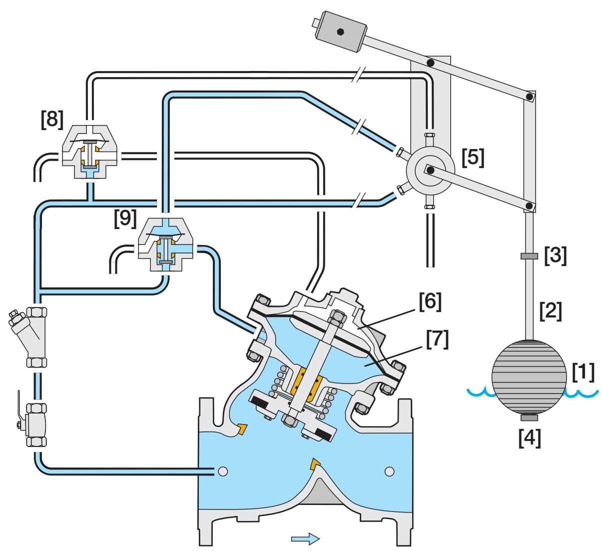
Operation

The Model 750-66-B is a float controlled valve equipped with a 4-Way, “last position”, bi-level float pilot assembly.
The float **[1]** slides along the rod **[2]**. When the float reaches either the adjustable high **[3]** or low **[4]** level stoppers, it either pulls the rod assembly down or pushes it up, switching the float pilot **[5]** position. When the float is between the adjustable stoppers, the main valve remains in its last position.
At high level, the float pilot applies pressure to the upper control chamber **[6]**, and vents the lower control-chamber **[7]**, powerfully shutting off the main valve.
At low level, the float pilot applies pressure to the lower control chamber, and vents the upper control chamber, powerfully opening the main valve.
For 10” valves and larger, two accelerators **[8 & 9]** quicken valve response.

Size range-1½-8”



Size range-10-20”



Engineer Specifications

The Level Control Valve shall be double chambered to power fully open at pre-set low level, and to shut off at pre-set high level regardless of valve differential pressure.

Main Valve: The main valve shall be a center guided, diaphragm actuated globe valve of either oblique (Y) or angle pattern design. The body shall have a replaceable, raised, stainless steel seat ring. The valve shall have an unobstructed flow path, with no stem guides, bearings, or supporting ribs. The body and cover shall be ductile iron. All external bolts, nuts, and studs shall be Duplex® coated. All valve components shall be accessible and serviceable without removing the valve from the pipeline.

Actuator: The actuator assembly shall be double chambered with an inherent separating partition between the lower surface of the diaphragm and the main valve. The entire actuator assembly (seal disk to top cover) shall be removable from the valve as an integral unit. The stainless steel valve shaft shall be center guided by a bearing in the separating partition. The replaceable radial seal disk shall include a resilient seal and shall be capable of accepting a V-Port Throttling Plug by bolting.

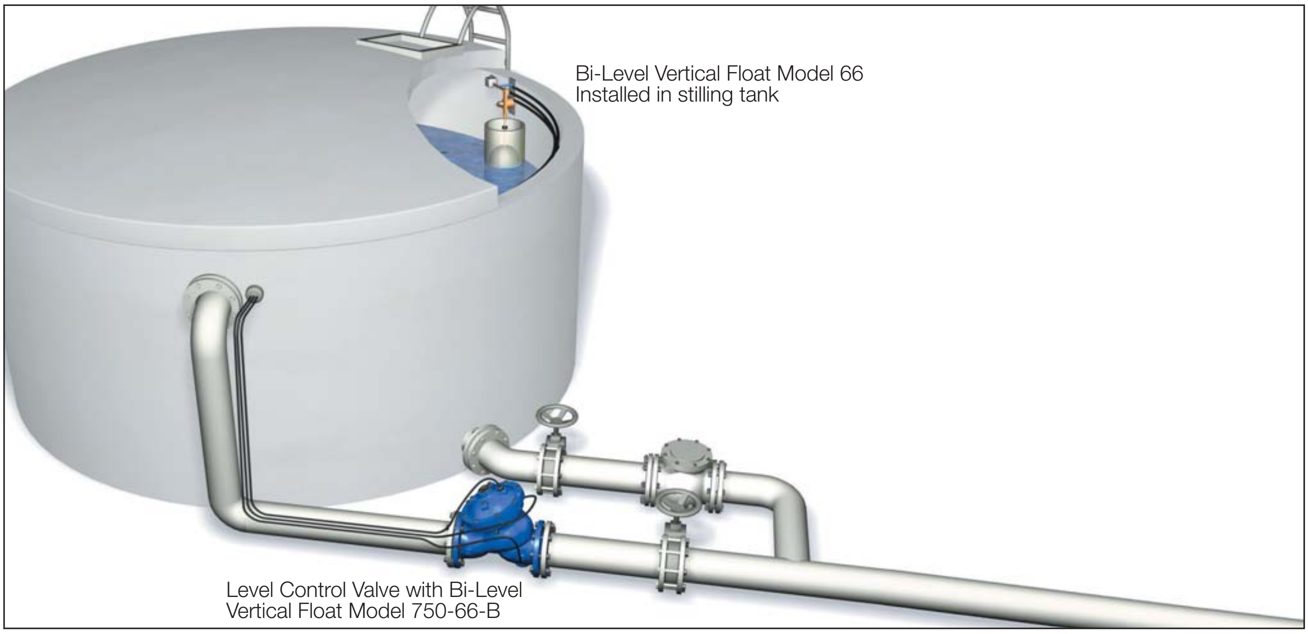
Control System: The control system shall consist of a 4-Way, “last position”, adjustable bi-level, hydraulic float pilot assembly, an isolating cock valve, (for 10” valves and larger: two accelerators), and a filter. All fittings shall be forged brass or stainless steel. The assembled valve shall be hydraulically tested.

Quality Assurance: The valve manufacturer shall be certified according to the ISO 9001 Quality Assurance Standard. The main valve shall be certified as a complete drinking water valve according to NSF, WRAS, and other recognized standards.

Typical Applications

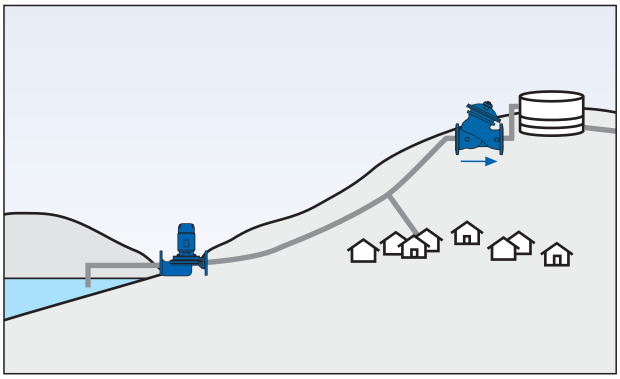
Infrastructure Reservoirs

Optimal design of reservoir systems requires specifying a level control valve that reduces pumping costs by minimizing the extra pumping pressure required to operate standard valves.
Even at very low pressure, the Model 750-66-B ensures full opening, maximum flow capacity, and secure closing.
It should be included during the system design phase or with changing needs.



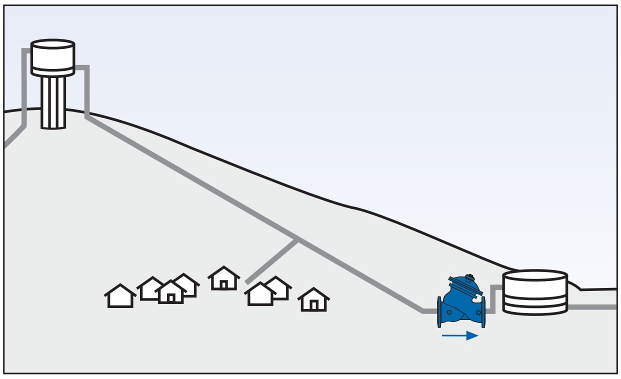
Pumping to Uphill Reservoir

In a reservoir system where a **pump provides pressure**, consumers are prioritized over reservoir filling by installing the **Model 753-66** Level Control and Pressure Sustaining Valve.



Gravity Filling a Downhill Reservoir

Where a **reservoir provides pressure** to consumers and fills a low lying reservoir, the consumers should be prioritized over filling the lower reservoir.
Defining the pressure set point for the standard level control and pressure sustaining valve is usually impossible, as there is only a very small potential differential pressure to operate the valve.
The solution: Rather than controlling the pressure during filling, control the filling flow ensuring sufficient pressure for consumers.
Install the **Model 757-66-U** Level and Flow Control Valve.

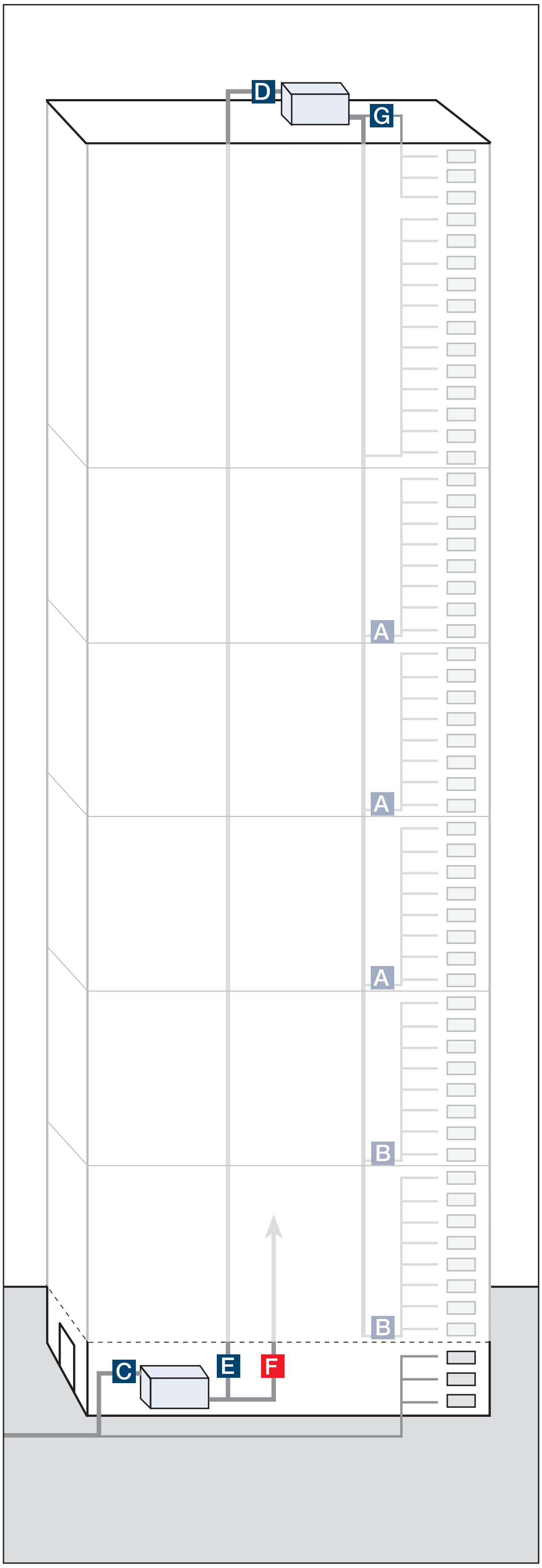


Typical Level Control Systems in High-Rise Buildings

Water supply system design requirements for high-rise buildings present unique issues:

- Supply cut-off is unacceptable and single source supply is common.
- Reservoir overflow might be extremely expensive and even dangerous.
- Reservoirs are often located next to prestigious residential and office space. Extraneous noise and maintenance activities are to be avoided.
- Most of the occupants of high-rise buildings are completely dependent on the reservoir system of the building for their water needs: potable water, firewater, air conditioning system, flushing, etc.
- Pressure for upper floor consumers and for fire protection systems must be prioritized during reservoir filling.
- As reservoir systems are designed to meet maximum (emergency) consumption, although actual consumption is usually far less, there is a risk of stagnant reservoir water.

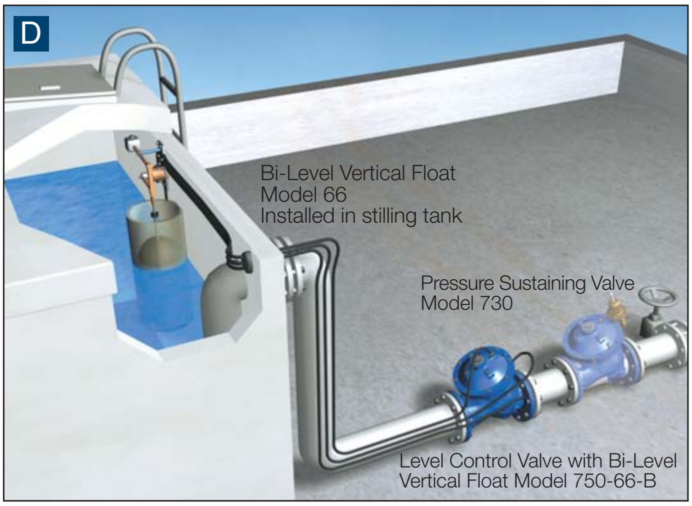
The Model 750-66-B backed by BERMAD'S accumulated know-how, addresses these issues and presents appropriate solutions.



A Higher zone pressure reducing system installation
B Lower zone pressure reducing system (two-stage) installation
C Bottom reservoir level control system
D Roof reservoir level control system
E Potable water pumping system
F Fire protection pumping system
G Upper floors pumping system

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, hydraulic backup protection is recommended.
The Model 750-66-B is suited to this function. When open, it presents minimal interference, but when needed, it shuts off securely.
To prioritize pressure to upper floor consumers or fire protection system, install the Model 730 Pressure Sustaining Valve upstream from the Model 750-66-B.

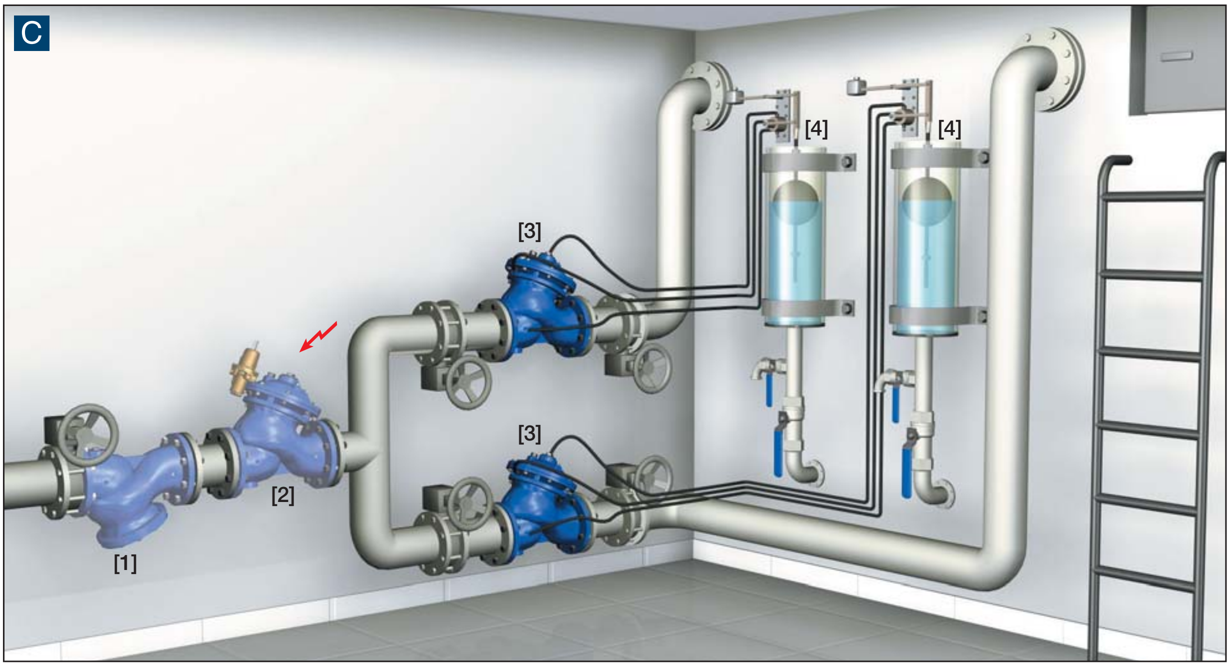


Basement Reservoirs

Basement reservoir design requires consideration of specific issues:
- Supply cut-off is unacceptable.
- Reservoir overflow might damage expensive equipment.
- Noise level* and duration should be limited.
- Municipal supply pressure might be low.

The Model 750-66-B, as part of the system shown, fulfills these requirements and more.

* For other measures that might be needed to further reduce system noise, see relevant BERMAD publications.



In addition to the Model 750-66-B, BERMAD recommends these systems include:
[1] Strainer Model 70F: To prevent debris from damaging valve operation.
[2] Pressure Sustaining Valve Model 730-65: To ensure municipal supply to lower floors & provide electric backup.
[3] Parallel Redundant Branch Model 750-66-B: To ensure uninterrupted supply.
[4] Float Assembly: To allow out-of-tank installation.

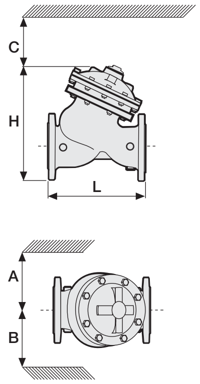
BERMAD Waterworks

700 Series
Model 750-66-B

Technical Data

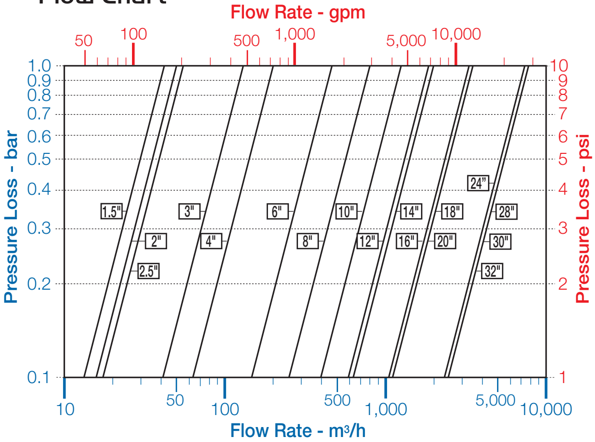
Dimensions and Weights

Size		A, B		C		L		H		Weight	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	kg	lbs
40	1½"	350	14	180	7	205	8.1	239	9.4	9.1	20
50	2	350	14	180	7	210	8.3	244	9.6	10.6	23
65	2½"	350	14	180	7	222	8.7	257	10.1	13	29
80	3"	370	15	230	9	250	9.8	305	12.0	22	49
100	4"	395	16	275	11	320	12.6	366	14.4	37	82
150	6"	430	17	385	15	415	16.3	492	19.4	75	165
200	8"	475	19	460	18	500	19.7	584	23.0	125	276
250	10"	520	21	580	23	605	23.8	724	28.5	217	478
300	12"	545	22	685	27	725	28.5	840	33.1	370	816
350	14"	545	22	685	27	733	28.9	866	34.1	381	840
400	16"	645	26	965	38	990	39.0	1108	43.6	846	1865
450	18"	645	26	965	38	1000	39.4	1127	44.4	945	2083
500	20"	645	26	965	38	1100	43.3	1167	45.9	962	2121



Data is for Y-pattern, flanged, PN16 valves
Weight is for PN16 basic valves
"C" enables removing the actuator in one unit
"L", ISO standard lengths available
For more dimensions and weights tables, refer to Engineering Section

Flow Chart



Data is for Y-pattern, flat disk valves
For more flow charts, refer to Engineering Section

Main Valve

Valve Patterns: "Y" (globe) & angle
Size Range: 1½–32" (40-800 mm)
End Connections (Pressure Ratings):
Flanged: ISO PN16, PN25
(ANSI Class 150, 300)
Threaded: BSP or NPT
Others: Available on request
Working Temperature:
Water up to 80°C (180°F)
Standard Materials:
Body & Actuator: Ductile Iron
Internals:
Stainless Steel, Bronze & coated Steel
Diaphragm:
NBR Nylon fabric-reinforced
Seals: NBR
Coating:
Fusion Bonded Epoxy, RAL 5005 (Blue)
NSF & WRAS approved or Electrostatic
Polyester Powder, RAL 6017 (Green)

Control System

Standard Materials:
Accessories:
Bronze, Brass, Stainless Steel & NBR
Tubing: Copper or Stainless Steel
Fittings: Forged Brass or Stainless Steel
Float Standard Materials
Pilot body: Brass
Seals: NBR
Internals: Stainless Steel & Brass
Lever system: Brass
Float: Plastic
Float rod: Stainless Steel
Base plate: Fusion bonded epoxy coated Steel
Optional materials: Stainless Steel metal parts and float, FPM (Viton®) seals

- Minimum level differential: 15 cm (6")
- Maximum level differential: 54 cm (21")
- Each extension rod adds 56 cm (22"), one extension rod supplied
- Extra counterweight required if second extension rod used
- See BERMAD float installation recommendations
- If inlet pressure is below 0.7 bar (10 psi) or above 10 bar (150 psi), consult factory

How to Order

Please specify the requested valve in the following sequence: (for more options, refer to Ordering Guide)

Sector	Size	Primary Feature	Additional Feature		Pattern	Body Material	End Connections	Coating	Voltage & Position	Tubing & Fittings	Additonal Attributes
WW	6"	750	66	–	Y	C	16	EB	–	CB	BVI

Sector: Waterworks — WW

Size: 1½ - 32"

Primary Feature: Level Control — 750

Additional Feature:

Closing Surge Prevention	49
Modulating Horizontal Float	60
Bi-Level Electric Float	65
Bi-Level Vertical Float	66
Modulating Vertical Float	67
Altitude Pilot	80
Modulating Altitude Pilot	82
Sustaining Altitude Pilot	83
Bi-Level Altitude Control	86
2-14 Meter Setting Altitude Pilot	M6
5-22 Meter Setting Altitude Pilot	M5
15-35 Meter Setting Altitude Pilot	M4
25-70 Meter Setting Altitude Pilot	M8

Multiple choices permitted

Pattern:

Oblique (up to 20")	Y
Angle (up to 18")	A
Globe (24-32" only)	G

Body Material:

Ductile Iron Standard	C
Cast Steel	S
St. Steel 316	N
Nickel Alumin. Bronze	U

End Connections:

ISO-16	16
ISO-25	25
ANSI-150	A5
ANSI-300	A3
JIS-16	J6
JIS-20	J2

Coating:

Epoxy FB Blue	EB
Polyester Green	PG
Polyester Blue	PB
Uncoated	UC

Voltage & Position:

24VAC/50Hz - N.C.	4AC
24VAC/50Hz - N.O.	4AO
24VDC - N.C.	4DC
24VDC - N.O.	4DO
24VDC - L.P.	4DP
220VAC/50-60Hz N.C.	2AC
220VAC/50-60Hz N.O.	2AO

Use when additional electric control feature is selected

Tubing & Fittings:

Copper Tubing & Brass Fittings	CB
Plastic Tubing & Brass Fittings	PB
St. St. 316 Tubing & Fittings	NN

Additonal Attributes:

Double Chambered	B
Valve Position Indicator	I
Large Control Filter	F
V-Port Throttling Plug	V
Orifice Assembly	U
Electric Limit Switch	S
St. St. 316 Control Accessories	N
St. St. 316 Internal Trim (Closure & Seat)	T
St. St. 316 Actuator Internal Assembly	D
Delrin Bearing	R
Viton Elastomers for Seals & Diaphragm	E

Multiple choices permitted