Level Control Valve

with Altitude Pilot

Model: 750-80

- High level reservoirs & water towers
- Energy cost critical systems
- Systems with poor water quality
- Inherent refreshing
- Level sustaining at reservoir outlet

The Model 750-80 Level Control Valve is a hydraulically controlled, diaphragm actuated, control valve that shuts off at pre-set reservoir high level and fully opens in response to an approximately one-meter (three-foot) level drop, as sensed by the 3-way altitude pilot mounted on the main valve.

Features and Benefits

- **Line pressure driven** – Independent operation
- **Bi-level altitude pilot**
  - No float, simple installation
  - On/Off service
  - No cavitation damage
  - Suitable for low quality water
  - Reservoir inherent refreshing
- **Double chamber design**
  - Moderated valve reaction
  - Protected diaphragm
- **External installation**
  - Easy access to valve
  - 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

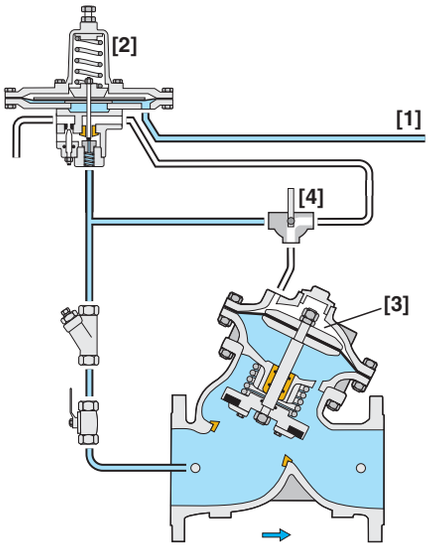
- 2-14 meter Setting Altitude Pilot – **750-80-M6**
- 5-22 meter Setting Altitude Pilot – **750-80-M5**
- 15-35 meter Setting Altitude Pilot – **750-80-M4**
- 25-70 meter Setting Altitude Pilot – **750-80-M8**
- Modulating altitude control – **750-82**
- Pressure sustaining (for 750-80) – **753-80**
- Pressure sustaining (for 750-82) – **753-82**

See relevant BERMAD publications§

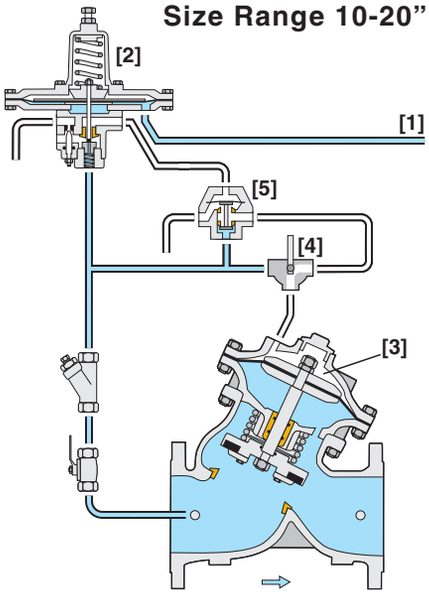
Operation

The Model 750-80 is a pilot controlled valve equipped with an adjustable, 3-way, altitude pilot. The pilot senses the static head of the reservoir level via a tube **[1]** connected to a “still point” at the bottom of the reservoir.
Should static head rise to pilot setting, the pilot **[2]** applies pressure to the upper control chamber **[3]** via cock valve **[4]**, powering the main valve to shut off.
Should static head fall below pilot setting by approximately 1m (3 ft), the pilot vents the upper control chamber, causing the main valve to fully open.
The 3-way cock valve **[4]** enables manual closing of the main valve.
For 10” valves and larger, an accelerator **[5]** quickens valve response.

Size Range 1½-8”



Size Range 10-20”



Engineer Specifications

The Level Control Valve shall shut off at pre-set reservoir high level and fully open in response to an approximately one-meter (three-foot) level drop, as sensed by the 3-way altitude pilot mounted on the main valve.

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.

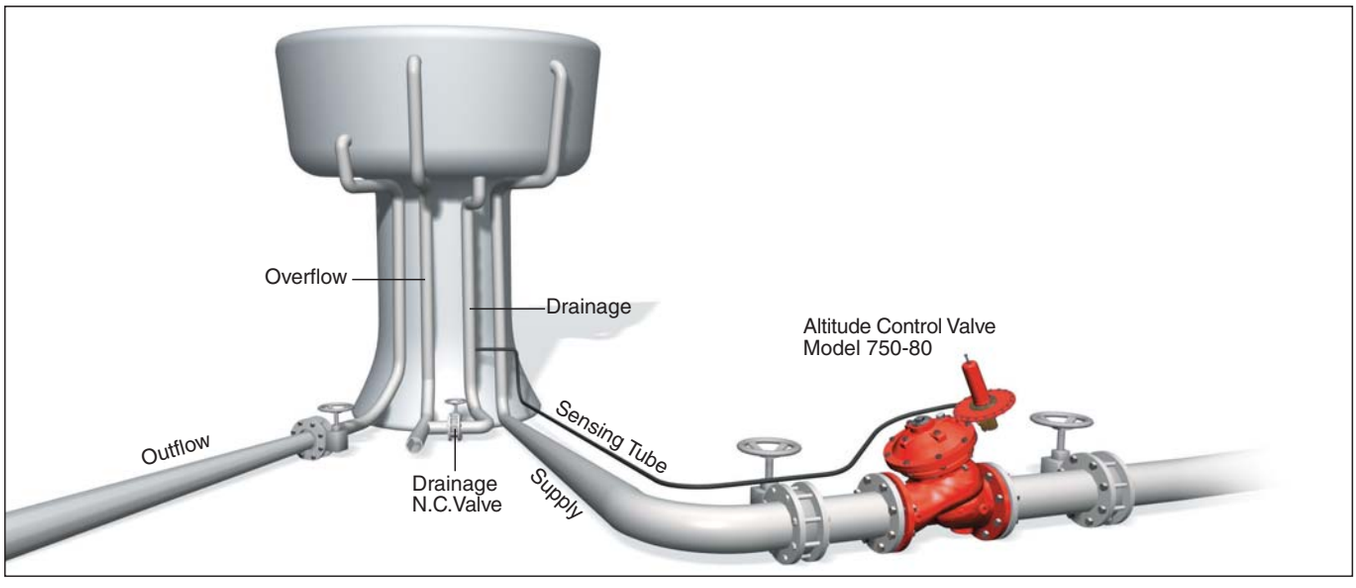
Control System: The control system shall consist of a 3-way, altitude pilot valve with a covered, centered spring and 8” (200 mm) sensing diaphragm, (for 10” and larger valves, an accelerator shall be added to the solenoid), an isolating cock valve, a 3-way cock valve, and a filter. All fittings shall 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 9001 Quality Assurance Standard.

Typical Applications

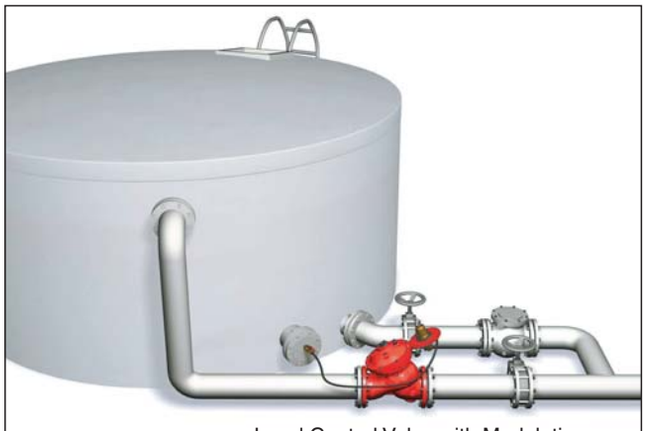
Bi-Level Water Towers

The Model 750-80 senses the static head of the water level in the tank by means of a high sensitivity pilot. To do so accurately, the sensing tube end must be connected to a “still point” at the bottom of the tank. The drainage pipe provides this “still point”, a location not influenced by flow velocity as in filling and outflow pipes.



“Always Full” - Shallow Reservoirs

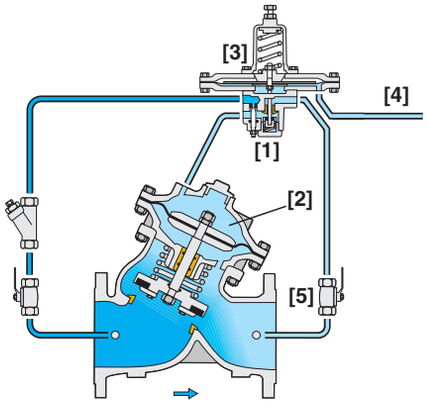
In these reservoirs, the water level should be kept as constant as possible.
The Level Control Valve with modulating altitude pilot Model 750-82 is well suited to fulfill this requirement.
The altitude pilot is highly sensitive to changes and accurately maintains level within a few centimeters.
To do so, the sensing tube end must be connected to a “still point” at the bottom of the reservoir.



Level Control Valve with Modulating Altitude Pilot Model 750-82

Level Control Valve with Modulating Altitude Pilot Model 750-82

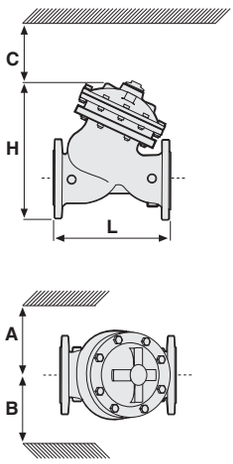
The Model 750-82 modifies the Model 750-80 “on-off” feature into a modulating feature to maintain an “always full” reservoir.
The needle valve **[1]** continuously allows flow from valve inlet into the upper control chamber **[2]**. The pilot **[3]** senses static head via sensing tube **[4]**.
Should the static head rise towards pilot setting, the pilot throttles, causing the main valve to throttle closed, reducing filling rate, eventually closing drip tight. The downstream cock valve **[5]** enables manual control closing.



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

Main Valve

Valve Patterns: "Y" (globe) & angle
Size Range: 1½–32" (40-800 mm)
Connection Standard
- **Flanged:** ANSI B16.42 Ductile Iron, B16.5 Steel & Stainless Steel, B16.24 Bronze, ISO PN16 & PN25
- **Threaded:** NPT or BSP 2, 2½ & 3"

Pressure Rating
- Max. for Class #150/PN16: 250 psi (17 bar)
- Max. for Class #300/PN25: 400 psi (28 bar)

Working Temperature:
Water up to 80°C (180°F)
Standard Materials:
Body & Actuator: Ductile Iron
Internals:
Stainless Steel, Bronze & coated Steel
Diaphragm:
NBR (Buna N) Nylon fabric-reinforced
Seals: NBR (Buna N)
Coating:
Fusion Bonded Epoxy, RAL 3000 (Red) or Electrostatic Polyester Powder, RAL 3000 (Red)

Control System

Standard Materials:
Accessories:
Bronze, Brass, Stainless Steel & NBR
Tubing: Copper or Stainless Steel
Fittings: Forged Brass or Stainless Steel
Pilot Standard Materials:
Body & cover: Brass, Bronze or Stainless Steel
Elastomers: NBR (Buna N)
Springs: Galvanized Steel or Stainless Steel
Internals: Stainless Steel
Diaphragm covers: Fusion bonded epoxy coated Steel or Stainless Steel

Altitude Adjustment Range

Code	meter	feet
M6	2-14	7-46
M5	5-22	17-72
M4	15-35	49-115
M8	25-70	82-230

- Shut-off level repeatability: 10 cm (4")
- Re-opening level: approx. 1m (3 ft) below shut-off level

