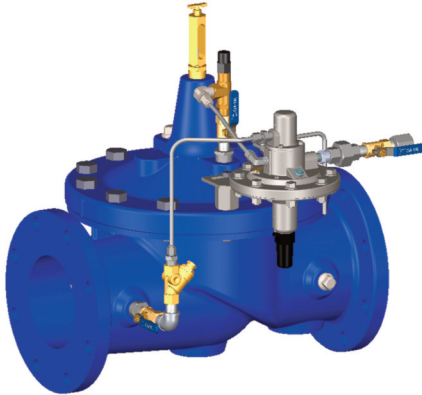




MODEL—611-01 Altitude Valve for One-Way Flow



Schematic Diagram

Item	Description
1	100-20 Hytrol Main Valve
2	CDS7 Altitude Control
3	X101 Valve Position Indicator
4	Bell Reducer
5	CV Flow Control (Closing)
6	CK2 Isolation Valve
7	Union

Optional Features

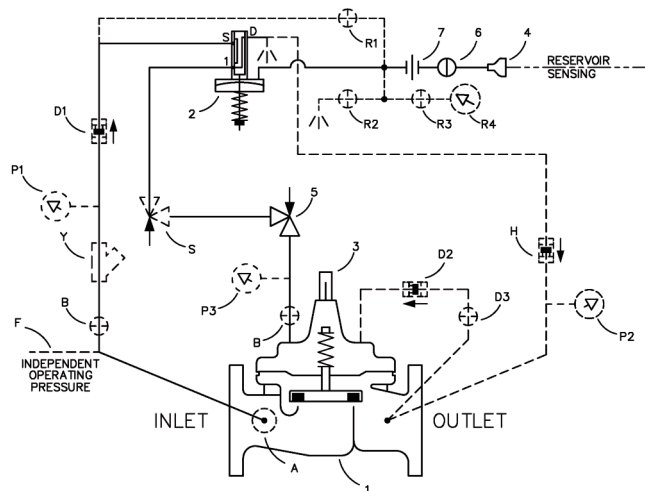
Item	Description
A	X46A Flow Clean Strainer
B	CK2 Isolation Valve
D	Check Valve with Isolation Valve
F	Independent Operating Pressure
H	Dry Drain
P	X141 Pressure Gauge
R	Reservoir Gauge with Tester
S	CV Flow Control (Opening)
Y	X43 "Y" Strainer

- Accurate and Repeatable Level Control
- Drip-Tight Positive Shut-Off
- Reliable Hydraulic Operation
- Easily Adjustable Control
- Completely Automatic Operation

The Cla-Val Model 611-01 Altitude Valve controls the high water level in reservoirs without the need for floats or other devices. It is a non-throttling valve that remains fully open until the shut-off point is reached. This valve is designed for one-way flow only.

This reduced port valve is hydraulically operated and pilot controlled. The pilot control operates on the differential in forces between a spring load and the water level in the reservoir. When the force of the spring is overcome by the force of the reservoir head, the pilot closes the main valve. The desired high water level is set by adjusting the spring force. The pilot control measures the reservoir head through a customer supplied sensing line* connected directly to the reservoir.

This valve can also be furnished with auxiliary controls to meet the need for multiple functions, such as: pressure sustaining, pressure reduction, rate of flow control, solenoid override, etc. For applications requiring delayed opening, please refer to Cla-Val Model 611-03 e-sheet.



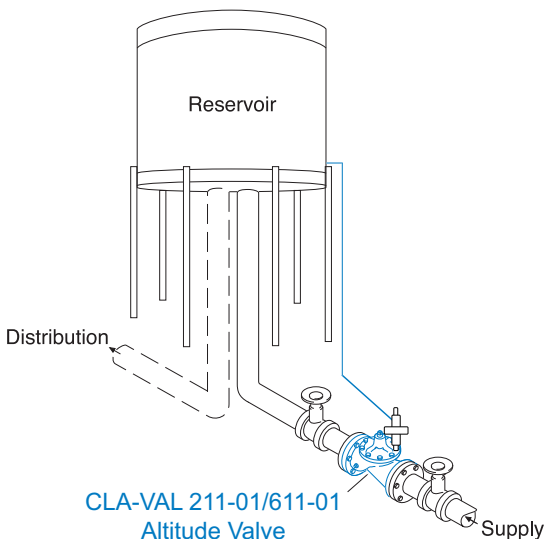
Note: When "D" check feature is ordered, the "H" feature is required.

Typical Applications

Used on reservoirs where the water is withdrawn through a separate line or through a bypass equipped with a check valve. The valve opens to refill the reservoir when the water lowers below the shut-off level. For more information see data sheet E-CDS7.

Notes:

- The reservoir pressure sensing line should be $\frac{3}{4}$ " minimum I.D. installed with a 2° slope from valve to reservoir to avoid air pockets.
- The sensing line should not be installed in the flowing line between the valve and the reservoir or into a turbulent flow area. These locations do not reflect the true static head of the reservoir.
- We recommend protecting tubing and valve from freezing temperatures.



Model 611-01 (Uses 100-20 Hytrol Main Valve)

Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class			
		Flanged			
Grade	Material	ANSI Standards*	150 Class	300 Class	Threaded
ASTM A536	Ductile Iron	B16.42	250	400	End† Details
ASTM A216-WCB	Cast Steel	B16.5	285	400	400
UNS 87850	Bronze	B16.24	225	400	400

Note: * ANSI standards are for flange dimensions only.
 Flanged valves are available faced but not drilled.
Valves for higher pressure are available; consult factory for details

Materials

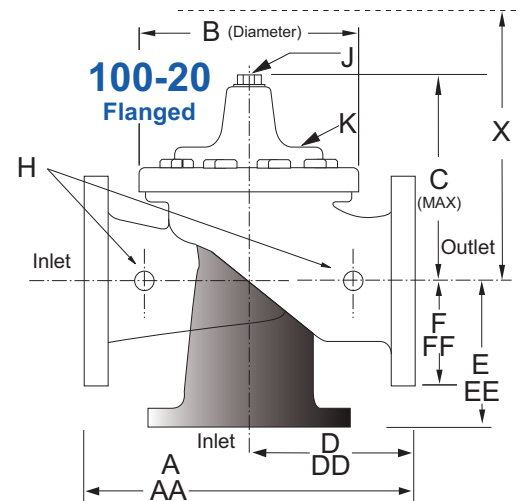
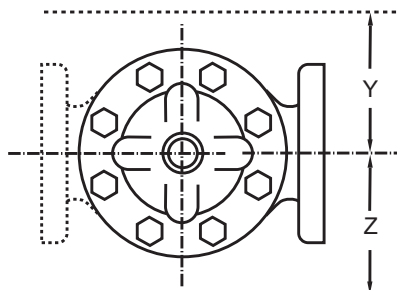
Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
100-20 Available Sizes	3" - 48"	3" - 16"	3" - 16"
	80 - 1200mm	80 - 400mm	80 - 400mm
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze
Trim: Disc Guide, Seat & Cover Bearing	Bronze is Standard		
Disc	Buna-N® Rubber		
Diaphragm	Nylon Reinforced Buna-N® Rubber		
Stem, Nut & Spring	Stainless Steel		

For material options not listed, consult factory.
 Cla-Val manufactures valves in more than 50 different alloys.

Cover Capacity

Liquid Volume Displaced from Diaphragm Chamber When Valve Opens or Closes

Valve Size	Displacement (gallons)	Displacement (liters)
3"	0.32	0.12
4"	0.80	0.30
6"	0.17	0.64
8"	0.53	2.00
10"	1.26	4.80
12"	2.51	9.50
14"	4.00	15.10
16"	4.00	15.10
18"	9.60	36.20
20"	9.60	36.20
24"	9.60	36.20
30"	29.00	110.00
36"	42.00	197.00
48"	90.00	340.00

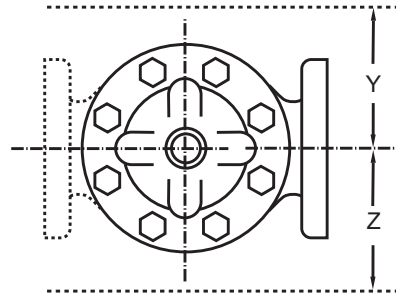
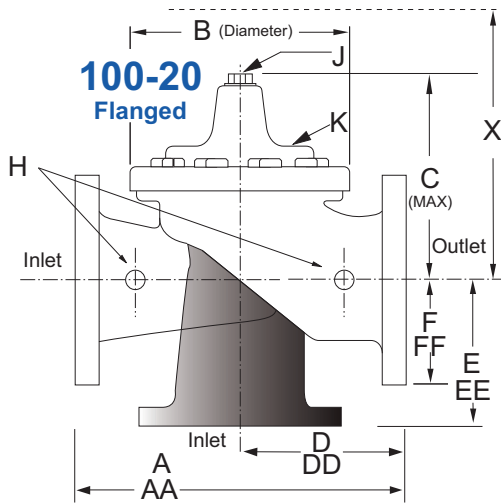
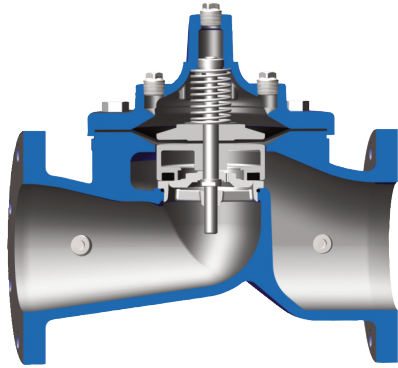


Model 611-01 Dimensions (In Inches)

Valve Size (Inches)	3	4	6	8	10	12	14	16	18	20	24	30	36	48
A 150 ANSI	10.25	13.88	17.75	21.38	26.00	30.00	34.25	35.00	42.12	48.00	48.00	63.25	65.00	88.0
AA 300 ANSI	11.00	14.50	18.62	22.38	27.38	31.50	35.75	36.62	43.63	49.62	49.75	63.75	67.00	90.62
B Diameter	6.62	9.12	11.50	15.75	20.00	23.62	27.47	28.00	35.44	35.44	35.44	53.19	56.00	66.00
C Maximum	7.00	8.62	11.62	15.00	17.88	21.00	20.88	25.75	25.00	31.50	31.50	43.94	54.75	59.00
D 150 ANSI	—	6.94	8.88	10.69	CF*	17.00	CF*	CF*	CF*	CF*	21.06	—	—	—
DD 300 ANSI	—	7.25	9.38	11.19	CF*	17.75	CF*	CF*	CF*	CF*	CF*	—	—	—
E 150 ANSI	—	5.50	6.75	7.25	CF*	13.75	CF*	CF*	CF*	CF*	15.94	—	—	—
EE 300 ANSI	—	5.81	7.25	7.75	CF*	14.75	CF*	CF*	CF*	CF*	CF*	—	—	—
F 150 ANSI	3.75	4.50	5.50	6.75	8.00	9.50	11.00	11.75	15.88	14.56	17.00	19.88	25.50	34.00
FF 300 ANSI	4.12	5.00	6.25	7.50	8.75	10.25	11.50	12.75	15.88	16.06	19.00	22.00	27.50	38.50
H NPT Body Tapping	0.375	0.50	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
J NPT Cover Center Plug	0.50	0.50	0.75	0.75	1.00	1.00	1.25	2.00	2.00	2.00	2.00	2.00	2.00	2.00
K NPT Cover Tapping	0.375	0.50	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
Stem Travel	0.60	0.80	1.10	1.70	2.30	2.80	3.40	4.50	4.50	4.50	6.50	7.50	7.50	8.50
Approx. Ship Weight (lbs)	45	85	195	330	625	900	1250	1380	2365	2551	2733	6500	8545	13100
Approx. X Pilot System	13	15	27	30	33	36	36	41	40	46	55	68	79	86
Approx. Y Pilot System	10	11	18	20	22	24	26	26	30	30	30	39	40	47
Approx. Z Pilot System	10	11	18	20	22	24	26	26	30	30	30	39	42	49

Model 611-01 Metric Dimensions (Uses 100-20 Hytrol Main Valve)

Model 100-20 Reduced Port Hytrol Main Valve



Model 611-01 Dimensions (In mm)

Valve Size (mm)	80	100	150	200	250	300	350	400	450	500	600	750	900	1200
A 150 ANSI	260	353	451	543	660	762	870	889	1070	1219	1219	1607	1651	2235
AA 300 ANSI	279	368	473	568	695	800	908	930	1108	1260	1263	1619	1702	2302
B Diameter	168	232	292	400	508	600	698	711	900	900	900	1351	1422	1676
C Maximum	178	219	295	381	454	533	530	654	635	800	800	1116	1391	1499
D 150 ANSI	—	176	226	272	CF*	432	CF*	CF*	CF*	CF*	535	—	—	—
DD 300 ANSI	—	184	238	284	CF*	451	CF*	CF*	CF*	CF*	CF*	—	—	—
E 150 ANSI	—	140	171	184	CF*	349	CF*	CF*	CF*	CF*	405	—	—	—
EE 300 ANSI	—	148	184	197	CF*	368	CF*	CF*	CF*	CF*	CF*	—	—	—
F 150 ANSI	95	114	140	171	203	241	279	289	403	370	432	505	648	864
FF 300 ANSI	105	127	159	191	222	260	292	324	403	408	483	559	699	978
H NPT Body Tapping	0.375	0.50	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
J NPT Cover Center Plug	0.50	0.50	0.75	0.75	1.00	1.00	1.25	2.00	2.00	2.00	2.00	2.00	2.00	2.00
K NPT Cover Tapping	0.375	0.50	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00
Stem Travel	15	20	28	43	58	71	86	86	114	114	114	165	191	216
Approx. Ship Weight (kgs)	20	39	89	150	284	409	568	627	681	1157	1249	2951	3876	5942
Approx. X Pilot System	331	381	686	762	839	915	915	1042	1016	1169	1397	1728	2007	2185
Approx. Y Pilot System	254	280	458	508	559	610	661	661	762	762	762	991	1016	1194
Approx. Z Pilot System	254	280	458	508	559	610	661	661	762	762	762	991	1067	1245

611-01 Valve Selection	100-20 Pattern: Globe (G), Angle (A), End Connections: Flanged (F) Indicate Available Sizes															
	Inches	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48
	mm	80	100	150	200	250	300	350	400	450	500	600	750	900	1000	1200
Main Valve 100-20	Pattern	G	G, A	G, A	G, A	G	G	G	G	G	G	G	G	G	G	G
	End Detail	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
Suggested Flow (gpm)	Maximum	260	580	1025	2300	4100	6400	9230	9230	16500	16500	16500	28000	33500	33500	33500
Suggested Flow (Liters/Sec)	Maximum	16	37	65	145	258	403	581	581	1040	1040	1040	1764	2115	2115	2115

100-20 Series is the reduced internal port size version of the 100-01 Series.

Pilot System Specifications

Adjustment Ranges

5 - 40 ft. / 1 - 12m - Standard
10 - 150 ft. / 3 - 45m - Optional

Temperature Range

Water: to 180°F

If flowing line pressure is less than 10 psi, consult factory for full details.

If inlet pressure is above 150 psi, consult factory for recommendations.

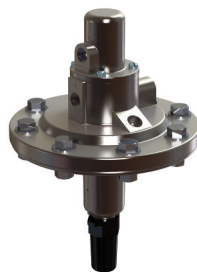
Materials

Standard Pilot System Materials

Pilot Control: 303 Stainless Steel
Trim: Stainless Steel Type 303
Rubber: Buna-N® Synthetic Rubber

Valve position indicator is standard.

Altitude Pilot Control Overview



- **Very Accurate and Reliable**
- **Low Maintenance**
- **Stainless Steel Wetted Parts**

The Cla-Val Model CDS7 Altitude Pilot Control is a spring-loaded, three-way, diaphragm-actuated control that provides high-level shut-off for Cla-Val 611 Series Altitude Control Valves. The CDS7 controls the high water level in a reservoir or tank without the need for floats or other devices. It is a non-throttling pilot that remains fully open until the reservoir reaches the high level shutoff point. High accuracy is assured by remotely sensing the pressure head of the reservoir or tank. The single adjusting screw can be easily set in the field to close the main valve when liquid level reaches the desired high level set-point within standard adjustment range.

The CDS7 operating principle uses a differential in forces between the spring load and the hydraulic head of the fluid level in the reservoir or tank to activate the pilot valve of the control. When the force of the spring setting (or the desired high level shutoff point) is overcome by the force of the reservoir head, the pilot valve shifts positions automatically and closes the main valve. When the reservoir head is eight to ten inches less than the spring setting, the pilot valve shifts to open the main valve.

When Ordering, Specify

1. Catalog No. 611-01
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Threaded, Flanged or Grooved
6. Materials Desired
7. Adjustment Range
8. Desired Options
9. When Vertically Installed

**For a comprehensive overview of Cla-Val
Altitude Control Valves, please
visit www.cla-val.com.**



E-611-01 (R-02/2019)

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