CLA-VAL™

MODEL 136-03 636-03

Solenoid Control Valve

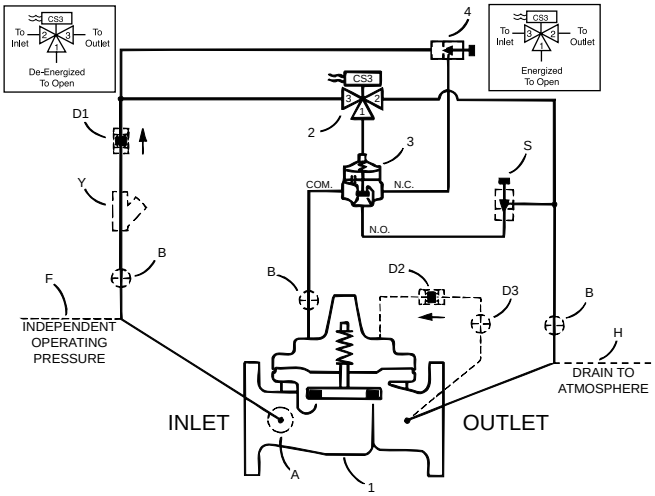
- **Fast Acting Solenoid Control**
- **Drip Tight Shut-off**
- **Simple Design, Proven Reliable**
- **Optional Check Feature**
- **Easy Installation & Maintenance**

The Cla-Val Model 136-03/636-03 Solenoid Control Valve is an on-off control valve which either opens fully or closes drip tight upon receiving an electrical signal to the solenoid pilot control. This valve consists of a Hytrol main valve, a three way solenoid and a high capacity three way pilot valve. The solenoid control operates the three way valve which alternately applies pressure to or relieves pressure from the diaphragm chamber of the main valve. It is furnished either normally open (de-energize solenoid to open) or normally closed (energize solenoid to open).

If the check feature option is added and a pressure reversal occurs, the downstream pressure is admitted into the main valve cover chamber and the valve closes to prevent return flow.

Schematic Diagram

Item	Description
1	Hytrol (Main Valve)
2	CS3 Solenoid Control
3	102C-3H Three-Way Valve
4	CNA Needle Valve (Closing)

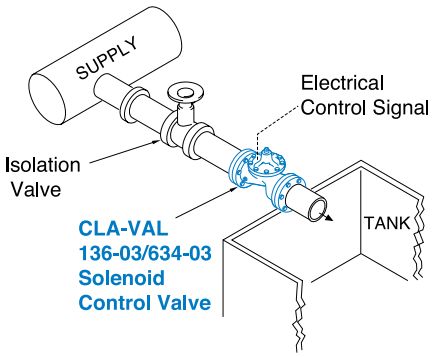


Valves 6" and larger with a "D" feature must be installed with the main valve stem in a vertical position

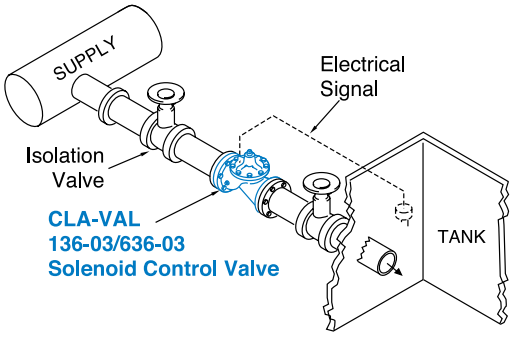
Optional Features

Item	Description
A	X46 Flow Clean Strainer
B	CK2 Cock (Isolation Valve)
D	Check Valves With Cock
F	Independent Operating Pressure
H	Atmospheric Drain
S	CNA Needle Valve (Opening)
Y	X43 "Y" Strainer

Typical Applications



Industrial uses for the solenoid control valve are many and include accurate control of process water for batching, mixing, washing, blending or other on-off type uses.



Liquid level control can be provided by using a float switch or electrode probe which sends an electrical signal to open or close the valve as needed.

CLA-VAL™

Model 136-03 (Uses Basic Valve Model 100-01)

Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class			
		Flanged			Screwed
Grade	Material	ANSI Standards*	150 lb.	300 lb.	End** Details
ASTM A536	Ductile Iron	B16.42	250	400	400
ASTM A216-WCB	Cast Steel	B16.5	285	400	400
ASTM B62	Bronze	B16.24	225	400	400
ASTM A743	Stainless Steel	B16.5	285	400	400
356-T6	Aluminum	B16.1	275	—	—

Note: *ANSI standards are for flange dimensions only.
Flanged valves are available faced but not drilled.
** End Details machined to ANSI B2.1 specifications.

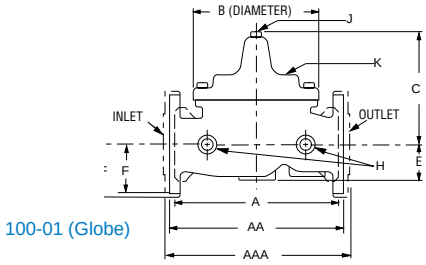
Cover Capacity

Liquid Volume Displaced from Diaphragm Chamber When Valve Opens			
Valve Size	Displacement	Valve Size	Displacement
4"	.169 gal	12"	4.00 gal
6"	.531 gal	14"	6.50 gal
8"	1.26 gal	16"	9.57 gal
10"	2.51 gal	24"	29.00 gal

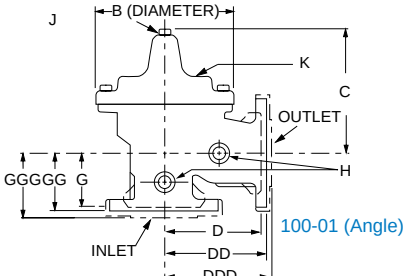
Materials

Component	Material Options				
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum
Available Sizes	4" - 16", 24"	4" - 16", 24"	4" -16"	4" - 16"	4" - 16"
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze	Stainless Steel	Aluminum
Trim: Disc Guide, Seat & Cover Bearing	Bronze is standard. Stainless Steel is optional.			Stainless Steel is standard.	
Disc	Buna-N® Rubber				
Diaphragm	Nylon Reinforced Buna-N® Rubber				
Stem, Nut & Spring	Stainless Steel				

4" Globe, Flanged



100-01 (Globe)



100-01 (Angle)

4" Angle, Flanged

Model 136-03 Dimensions (In inches)

Valve Size (Inches)	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**24**
A Screwed	—	—	—	—	—	—	—	—
AA 150 ANSI	15.00	20.00	25.38	29.75	34.00	39.00	41.38	61.50
AAA 300 ANSI	15.62	21.00	26.38	31.12	35.50	40.50	43.50	63.24
B Dia.	11.50	15.75	20.00	23.62	28.00	32.75	35.50	53.16
C Max.	10.62	13.38	16.00	17.12	20.88	24.19	25.00	43.93
D Screwed	—	—	—	—	—	—	—	—
DD 150 ANSI	7.50	10.00	12.75	14.88	17.00	19.50	20.81	—
DDD 300 ANSI	7.88	10.50	13.25	15.56	17.75	20.25	21.62	—
E	3.19	4.31	5.31	9.25	10.75	12.62	15.50	17.75
F 150 ANSI	4.50	5.50	6.75	8.00	9.50	10.50	11.75	19.25
FF 300 ANSI	5.00	6.25	7.50	8.75	10.25	11.50	12.75	—
G Screwed	—	—	—	—	—	—	—	—
GG 150 ANSI	5.00	6.00	8.00	8.62	13.75	14.88	15.69	—
GGG 300 ANSI	5.31	6.50	8.50	9.31	14.50	15.62	16.50	—
H NPT Body Tapping	¾	¾	1	1	1	1	1	1
J NPT Cover Center Plug	¾	¾	1	1	1 ¼	1 ½	2	1½
K NPT Cover Tapping	¾	¾	1	1	1	1	1	1
Valve Stem Internal Thread UNF	¼-28	⅜-24	⅜-24	⅜-24	⅜-24	⅜-24	½-20	3/4-16
Stem Travel	1.1	1.7	2.3	2.8	3.4	4.0	4.5	6.50
Approx. Ship Wt. Lbs.	140	285	500	780	1165	1600	2265	6200

Model 636-03 (Uses Basic Valve Model 100-20)

Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class		
		Flanged		
Grade	Material	ANSI Standards*	150 lb.	300 lb.
ASTM A536	Ductile Iron	B16.42	250	400
ASTM A216-WCB	Cast Steel	B16.5	285	400
ASTM B62	Bronze	B16.24	225	400
ASTM A743	Stainless Steel	B16.5	285	400
356-T6	Aluminum	B16.1	275	—

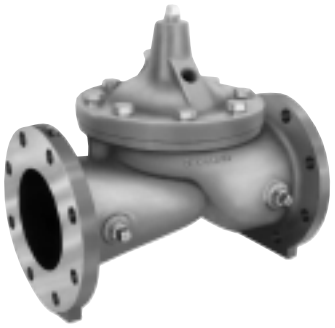
Note: *ANSI standards are for flange dimensions only.
Flanged valves are available faced but not drilled.

Cover Capacity

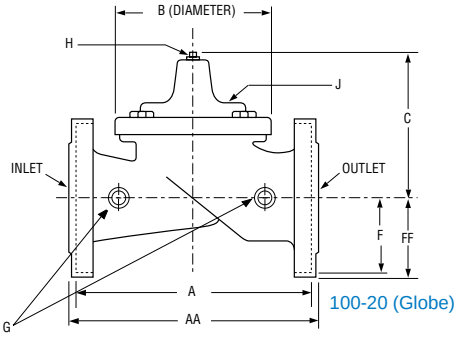
Liquid Volume Displaced from Diaphragm Chamber When Valve Opens			
Valve Size	Displacement	Valve Size	Displacement
6"	.169 gal	16"	4.00 gal
8"	.531 gal	20"	9.57 gal
10"	1.26 gal	24"	9.57 gal
12"	2.51 gal	30"	29.00 gal

Materials

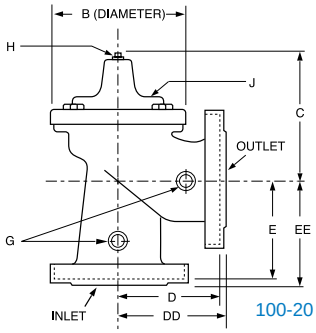
Component	Material Options				
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum
Available Sizes	6"-30"	6"-30"	6"-16"	6"-16"	6"-16"
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze	Stainless Steel	Aluminum
Trim: Disc Guide, Seat & Cover Bearing	Bronze is standard. Stainless Steel is optional.			Stainless Steel is standard.	
Disc	Buna-N® Rubber				
Diaphragm	Nylon Reinforced Buna-N® Rubber				
Stem, Nut & Spring	Stainless Steel				



6" Globe, Flanged



100-20 (Globe)



100-20 (Angle)

6" Angle, Flanged

Model 636-03 Dimensions (In inches)

VALVE SIZE (Inches)	**6**	**8**	**10**	**12**	**14**	**16**	**18**	**20**	**24**	**30**
A 150 ANSI	17.75	21.38	26.00	30.00	34.25	35.00	42.12	48.00	48.00	63.25
AA 300 ANSI	18.62	22.38	27.38	31.50	—	36.62	43.63	49.62	49.75	—
B DIA.	11.50	15.75	20.00	23.62	28.00	28.00	35.44	35.44	35.44	53.19
C MAX.	11.62	15.00	17.88	21.00	20.88	25.75	25.00	31.00	31.00	43.94
D 150 ANSI	8.88	10.69	—	—	—	—	—	—	—	—
DD 300 ANSI	9.38	11.19	—	—	—	—	—	—	—	—
E 150 ANSI	6.75	7.25	—	—	—	—	—	—	—	—
EE 300 ANSI	7.25	7.75	—	—	—	—	—	—	—	—
F 150 ANSI	5.50	6.75	8.00	9.50	11.00	11.75	15.88	14.56	17.00	19.88
FF 300 ANSI	6.25	7.50	8.75	10.25	—	12.75	15.88	16.06	19.00	—
G NPT Body Tapping	¾	¾	1	1	1	1	1	1	1	1
H NPT Cover Center Plug	¾	¾	1	1	1¼	1¼	2	2	2	2
J NPT Cover Tapping	¾	¾	1	1	1	1	1	1	1	1
Valve Stem Internal Thread UNF	¼-28	⅜-24	⅜-24	⅜-24	⅜-24	⅜-24	½-20	½-20	½-20	¾-16
Stem Travel	1.1	1.7	2.3	2.8	3.4	3.4	4.5	4.5	4.5	6.5
Approx Ship Wt. Lbs.	195	330	625	900	1250	1380	2733	2551	2733	6500

Valve Selection

		These Symbols and Indicate Available Sizes										
	Inches	4	6	8	10	12	14	16	18	20	24	30
	mm	100	150	200	250	300	350	400	450	500	600	750
	End Detail	Flanged										
Model 136-03	Basic Valve 100-01 Globe											
	Basic Valve 100-01 Angle											
	Suggested Flow (GPM) Max. Continuous	800	1800	3100	4900	7000	8400	11000			25000	
	Suggested Flow (GPM) Max. Intermittent	24	42	68	120	160	10540	13700			31300	
	Suggested Flow (Liters/sec) Max. Continuous	50	113	195.3	308.7	441	529	693			1575	
	Suggested Flow (Liters/sec) Max. Intermittent	1.5	2.6	4.3	7.6	10	664	863			1972	
Model 636-03	Basic Valve 100-20 Globe											
	Basic Valve 100-20 Angle											
	Suggested Flow (GPM) Max. Continuous		1025	2300	4100	6400	9230	9230	16500	16500	16500	28000
	Suggested Flow (Liters/sec) Max. Continuous		65	145	258	403	581	581	1040	1040	1040	1764

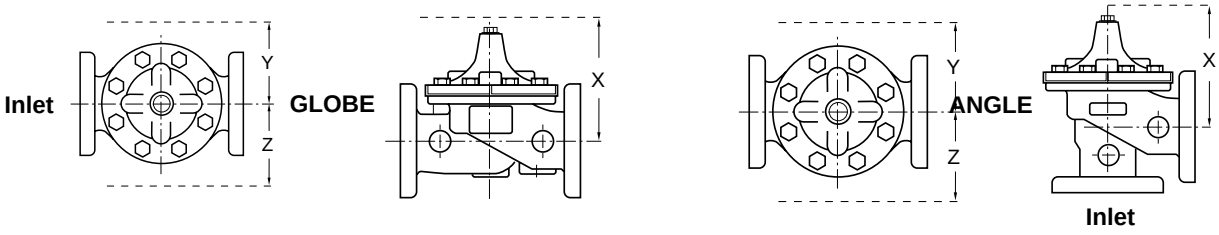
*** 636-03 is the reduced internal port size version of the 136-03.**

For 100-01 basic valves suggested flow calculations were based on flow through Schedule 40 Pipe. Maximum continuous flow is approx. 20 ft/sec (6.1 meters/sec) & maximum intermittent is approx. 25 ft/sec (7.6 meters/sec). For 100-20 basic valves suggested flow calculations were based on flow through the valve seat. Approx. 26 ft/sec (7.9 meters/sec) is used for maximum continuous flow. Maximum continuous flow through the valve seat for the valve seat for the 30" 100-20 is approx. 20 ft/sec (6.1 meters/sec).

Pilot System Dimensions (In Inches)

We recommend providing adequate space around valve for maintenance work

VALVE SIZE		4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"
X	Max.	15.00	16.00	17.00	18.00	22.00	26.00	28.00	28.00	31.00	50.00	50.00
Y	Max.	6.00	8.00	10.25	12.00	14.25	16.75	18.00	18.00	18.00	30.00	30.00
Z	Max.	8.50	10.50	13.00	15.00	16.00	19.00	20.00	20.00	22.00	32.00	32.00



Pilot System Specifications

Temperature Range

Water: to 180°F

Fluids

Air, water, light oils

Rubber Parts:

Buna-N® Synthetic Rubber

Solenoid Control

Body:

Brass ASTM B283

Enclosure:

NEMA Type 1,2,3,3S,4,4X general purpose watertight*

NEMA Type 6,6P,7,9 watertight Explosion Proof available at extra cost

Voltages:

110, 220 - 50Hz AC

24, 120, 240, 480 - 60Hz AC

6, 12, 24, 120, 240 - DC

Others available at extra cost

Max. operating pressure differential:

200 psi*

Coil:

Insulation molded Class	F
Watts AC	6
AC Volt Amps Inrush	30
AC Volt Amps Holding	16
Watts DC	10.6

Manual operator available at extra cost.

*Supplied unless otherwise specified

When Ordering, Please Specify

1. Catalog No. 136-03 or No. 636-03
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Screwed or Flanged
6. Materials Desired
7. Energized or de-energized to open Main Valve
8. Solenoid Enclosure, Voltage & Hertz, Coil Insulation, and Max. Operating Pressure Differential
9. Desired Options
10. When Vertically Installed

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E-136-03/636-03 (R-11/01)