MODEL 81-02
681-02

Check Valve

- **Simple Proven Design**
- **No-Slam Operation**
- **Drip Tight Shut Off**
- **Dual Speed Control**
- **No Packing Glands or Stuffing Boxes**
- **Available in a Variety of Materials**

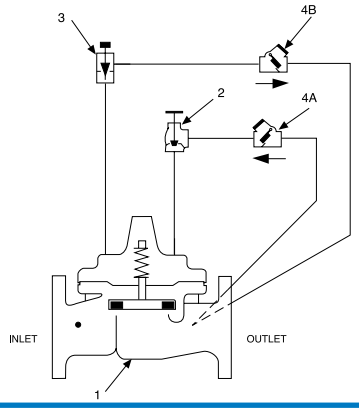
The Cla-Val Model 81-02/681-02 Check Valve is a hydraulically operated No-Slam Check Valve with dual speed controls. This valve opens when the pressure at the inlet exceeds the discharge pressure. A gradual rate of opening prevents sudden opening surges. When a pressure reversal occurs the higher downstream pressure is applied to the cover chamber through the control tube lines, and the valve closes drip tight.

This valve is ideally suited for use where a positive shutoff is required. The rubber disc assures tight sealing even if the fluid contains grit or other small-size particles. The simple packless design insures reliable operation and freedom from leaks.

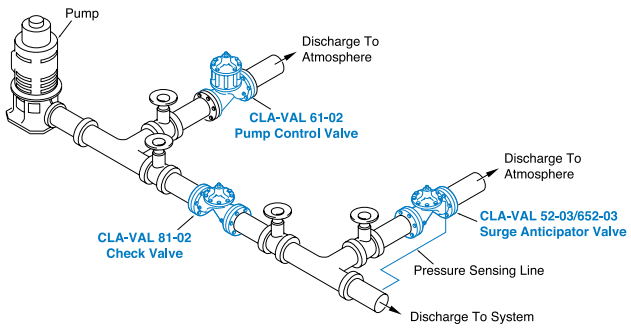
Note: The effectiveness of this valve is related to pipeline velocity. We recommend a maximum flow based on pipeline velocity of 6 feet per second. If pipeline velocities exceed 6 feet per second, consideration should be given to adding a Cla-Val Model 50-01 Pressure Relief Valve or a Cla-Val Model 52 Series Surge Control Valve to the system.

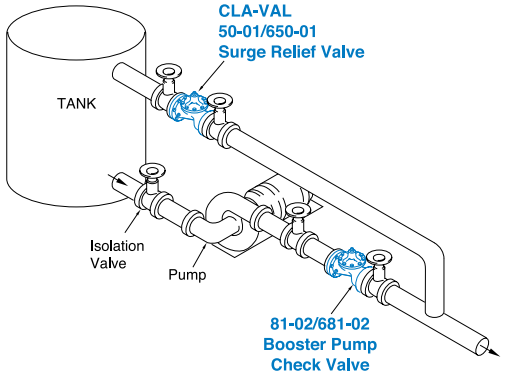
Schematic Diagram

Item	Description
1	Hytrol (Reverse Flow Main Valve)
2	CGA Angle Valve (Closing)
3	CNA Needle Valve (Opening)
4	CSC Swing Check Valve



Typical Applications





Deep Well Pump

This valve should be an integral part of any well designed pumping system. It is used to prevent damaging and sometimes expensive flow reversal.

Booster Pump

Install on the discharge of booster pumps to prevent return flow into tank when pump is off. Relief valve as shown is good practice to minimize surges when pump stops.

Model 81-02 (Uses Basic Valve Model 100-01)

Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class			
		Flanged			Screwed
ANSI Grade	Material	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.

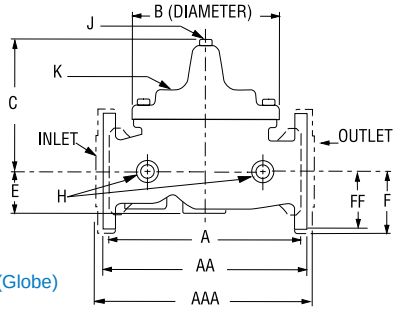
2" Globe, Screwed

4" Globe, Flanged

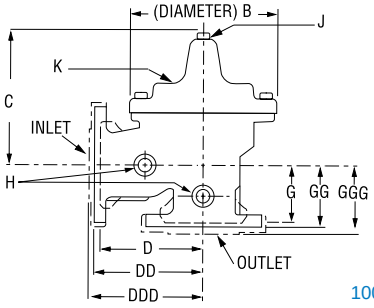
4" Angle, Flanged

Materials

Component	Material Options				
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum
Available Sizes	2" - 16", 24"	2" - 16", 24"	2" - 16"	2" - 16"	2" - 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				



100-01 (Globe)



100-01 (Angle)

Model 81-02 Dimensions (In inches)

Valve Size (Inches)	**2**	**2 ½**	**3**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**24**
A Screwed	9.38	11.00	12.50	—	—	—	—	—	—	—	—
AA 150 ANSI	9.38	11.00	12.00	15.00	20.00	25.38	29.75	34.00	39.00	41.38	61.50
AAA 300 ANSI	10.00	11.62	13.25	15.62	21.00	26.38	31.12	35.50	40.50	43.50	63.24
B Dia.	6.62	8.00	9.12	11.50	15.75	20.00	23.62	28.00	32.75	35.50	53.16
C Max.	6.50	7.56	8.19	10.62	13.38	16.00	17.12	20.88	24.19	25.00	43.93
D Screwed	4.75	5.50	6.25	—	—	—	—	—	—	—	—
DD 150 ANSI	4.75	5.50	6.00	7.50	10.00	12.75	14.88	17.00	19.50	20.81	—
DDD 300 ANSI	5.00	5.88	6.38	7.88	10.50	13.25	15.56	17.75	20.25	21.62	—
E	1.50	1.69	2.06	3.19	4.31	5.31	9.25	10.75	12.62	15.50	17.75
F 150 ANSI	3.00	3.50	3.75	4.50	5.50	6.75	8.00	9.50	10.50	11.75	19.25
FF 300 ANSI	3.25	3.75	4.13	5.00	6.25	7.50	8.75	10.25	11.50	12.75	—
G Screwed	3.25	4.00	4.50	—	—	—	—	—	—	—	—
GG 150 ANSI	3.25	4.00	4.00	5.00	6.00	8.00	8.62	13.75	14.88	15.69	—
GGG 300 ANSI	3.50	4.31	4.38	5.31	6.50	8.50	9.31	14.50	15.62	16.50	—
H NPT Body Tapping	⅜	½	½	¾	¾	1	1	1	1	1	1
J NPT Cover Center Plug	½	½	½	¾	¾	1	1	1 ¼	1 ½	2	1½
K NPT Cover Tapping	⅜	½	½	¾	¾	1	1	1	1	1	1
Valve Stem Internal Thread UNF	10-32	10-32	¼-28	¼-28	⅜-24	⅜-24	⅜-24	⅜-24	⅜-24	½-20	3/4-16
Stem Travel	0.6	0.7	0.8	1.1	1.7	2.3	2.8	3.4	4.0	4.5	6.50
Approx. Ship Wt. Lbs.	35	50	70	140	285	500	780	1165	1600	2265	6200

Model 681-02 (Uses Basic Valve Model 100-20)

Pressure Ratings (Recommended Maximum Pressure - psi)

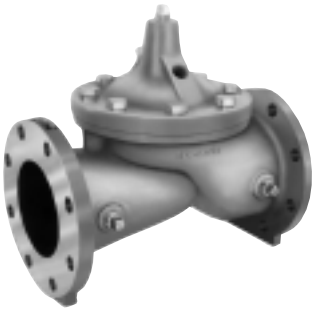
Valve Body & Cover		Pressure Class		
		Flanged		
Grade	Material	ANSI Standards*	150 lb.	300 lb.
ASTM A536	Ductile Iron	B16.42	250	400
ASTM A216-WCB	Cast Steel	B16.5	285	400
ASTM B62	Bronze	B16.24	225	400
ASTM A743	Stainless Steel	B16.5	285	400
356-T6	Aluminum	B16.1	275	—

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

3" Globe, Flanged

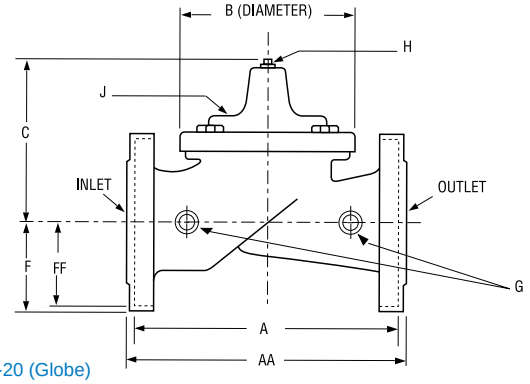
Materials

Component	Material Options				
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum
Available Sizes	3"-30"	3"-30"	3"-16"	3"-16"	3"-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				

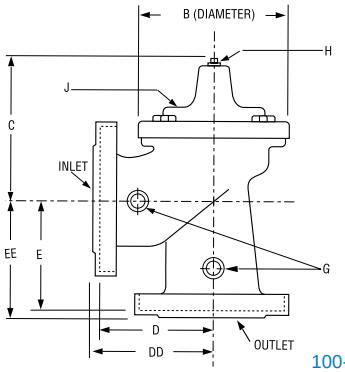


6" Globe, Flanged

6" Angle, Flanged



100-20 (Globe)



100-20 (Angle)

Model 681-02 Dimensions (In inches)

VALVE SIZE (Inches)	**3**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**18**	**20**	**24**	**30**
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
AA 300 ANSI	11.00	14.50	18.62	22.38	27.38	31.50	—	36.62	43.63	49.62	49.75	—
B DIA.	6.62	9.12	11.50	15.75	20.00	23.62	28.00	28.00	35.44	35.44	35.44	53.19
C MAX.	7.00	8.62	11.62	15.00	17.88	21.00	20.88	25.75	25.00	31.00	31.00	43.94
D 150 ANSI	—	6.94	8.88	10.69	—	—	—	—	—	—	—	—
DD 300 ANSI	—	7.25	9.38	11.19	—	—	—	—	—	—	—	—
E 150 ANSI	—	5.50	6.75	7.25	—	—	—	—	—	—	—	—
EE 300 ANSI	—	5.81	7.25	7.75	—	—	—	—	—	—	—	—
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
FF 300 ANSI	4.12	5.00	6.25	7.50	8.75	10.25	—	12.75	15.88	16.06	19.00	—
G NPT Body Tapping	⅜	½	¾	¾	1	1	1	1	1	1	1	1
H NPT Cover Center Plug	½	½	¾	¾	1	1	1¼	1¼	2	2	2	2
J NPT Cover Tapping	⅜	½	¾	¾	1	1	1	1	1	1	1	1
Valve Stem Internal Thread UNF	10-32	¼-28	¼-28	⅜-24	⅜-24	⅜-24	⅜-24	⅜-24	½-20	½-20	½-20	¾-16
Stem Travel	0.6	0.8	1.1	1.7	2.3	2.8	3.4	3.4	4.5	4.5	4.5	6.5
Approx Ship Wt. Lbs.	45	85	195	330	625	900	1250	1380	2733	2551	2733	6500

Valve Selection

		These Symbols ◆ and ◆ Indicate Available Sizes													
	Inches	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	30
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600	750
	End Detail	Screwed & Flanged			Flanged										
Model 81-02	Basic Valve 100-01 — Globe	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆			◆	
	Basic Valve 100-01 — Angle	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆			◆	
	Suggested Flow (GPM) — Max. Continuous	63	90	138	240	550	950	1475	2100	2600	3400			7700	
	Suggested Flow (Liters/sec) — Max. Continuous	4.0	5.7	8.7	15.1	34.7	60	93	132	164	214			485	
Model 681-02	Basic Valve 100-20 — Globe			◆*	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
	Basic Valve 100-20 — Angle				◆	◆	◆								
	Suggested Flow (GPM) — Max. Continuous			60	138	240	550	950	1475	2100	2100	3800	3800	3800	8400
	Suggested Flow (Liters/sec) — Max. Continuous			3.8	8.7	15.1	35	60	93	132	132	239	239	239	529

* **681-02 is the reduced internal port size version of the 81-02.**

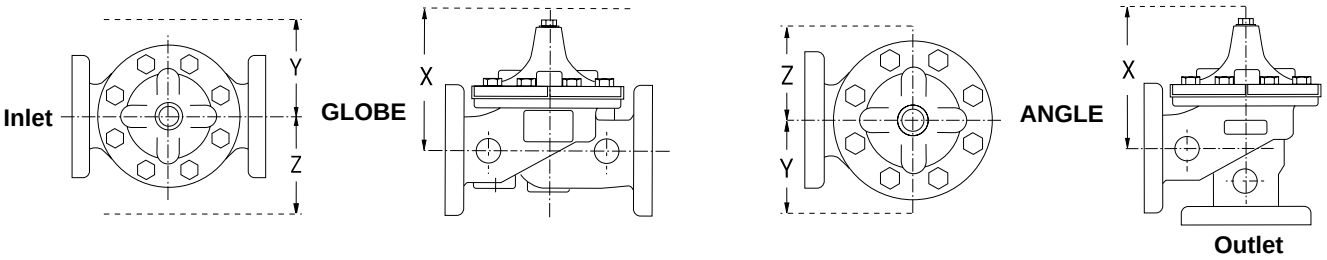
Maximum continuous flow is approx. 6ft/sec (1.8 meters/sec).
For 100-01 basic valves suggested flow calculations were based on flow through Schedule 40 Pipe.
For 100-20 basic valves suggested flow calculations were based on flow through the valve seat.
Installation of a surge control valve is recommended.

*Flanged End Detail Only

Pilot System Dimensions (In Inches)

We recommend providing adequate space around valve for maintenance work

VALVE SIZE		1¼" & 1½"	2"	2½"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"
X	Max.	—	10.50	11.00	11.00	12.00	13.00	15.00	18.00	21.00	25.00	27.00	27.00	31.00	50.00	50.00
Z	Max.	—	4.00	4.50	5.00	6.00	8.00	10.25	12.00	14.25	16.75	18.00	18.00	18.00	30.00	30.00
Y	Max.	—	4.00	4.50	5.00	6.00	8.00	10.25	12.00	14.25	16.75	18.00	18.00	18.00	30.00	30.00



Pilot System Specifications

Temperature Rating

Water: to 180°F. Max.

Speed Controls

Opening and closing speed controls are standard on the 81-02 and 681-02 Model.

* **Note:** Advise factory when ordering if valve will not be installed with the main valve stem in a vertical position.

Materials

Standard Pilot System Materials

Fittings: Brass
Tubing: Copper

Optional PIlot System Materials

Pilot Systems are available with optional stainless steel or Monel materials at extra cost.

When Ordering, Please Specify

1. Catalog No. 81-02 or No. 681-02
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Screwed or Flanged
6. When Vertically Installed *

CLA-VAL®

E-81-02/681-02 (R-11/01)

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