



# MODEL 81-18 Check Valve



- Simple Proven Design
- No-Slam Operation
- Drip-Tight Shut-Off
- No Packing Glands or Stuffing Boxes
- Easy to Install & Maintain

The Cla-Val Model 81-18 Check Valve is a hydraulically operated No-Slam Check Valve. 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.

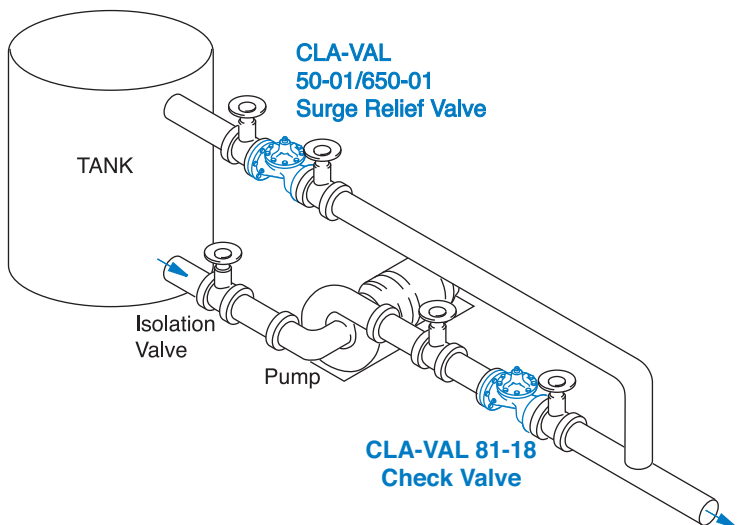
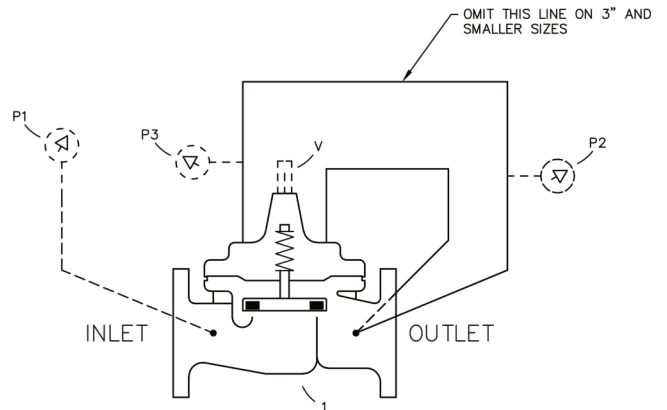
Note: The effectiveness of this valve is related to pipeline velocity. We recommend a maximum flow based on pipeline velocity of 6 feet per second.

## Schematic Diagram

Item	Description
1	100-01 Hytrol Main Valve

## Optional Features

Item	Description
P	X141 Pressure Gauge
V	X101 Valve Position Indicator



## Typical Applications

Smaller sizes of this valve are used in pilot control systems in Cla-Val Automatic Control valves. This valve can also be used in any piping system where one-way flow is desired.

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 81-18 (Uses 100-01 Hytrol Main Valve)

### Pressure Ratings (Recommended Maximum Pressure - psi)

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

Note: \* ANSI standards are for flange dimensions only.  
 Flanged valves are available faced but not drilled.  
 ‡ End Details machined to ANSI B2.1 specifications.  
**Valves for higher pressure are available; consult factory for details**

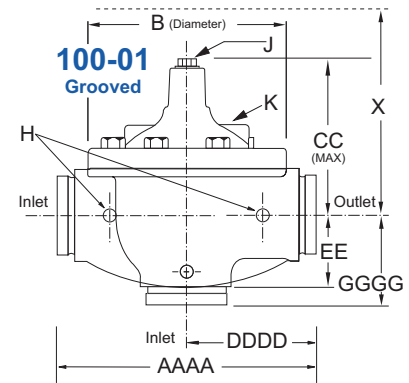
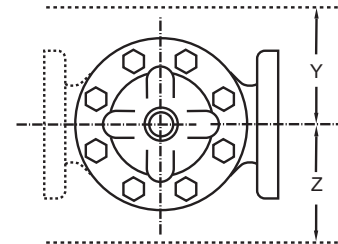
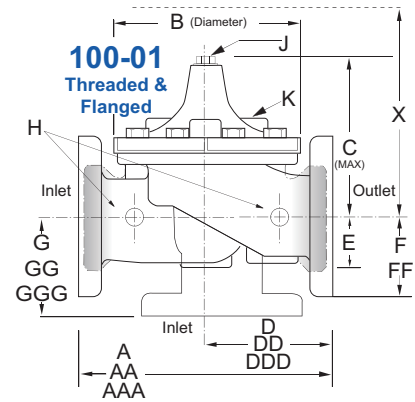
### Materials

Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes(inches)	2" - 24"	2" - 24"	2" - 24"
Available Sizes (mm)	50 - 600 mm	50 - 600 mm	50 - 600 mm
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze
Trim: Disc Guide, Seat & Cover Bearing	Bronze is Standard Stainless Steel is Optional		
Disc	Buna-N® Rubber		
Diaphragm	Nylon Reinforced Buna-N® Rubber		
Stem, Nut & Spring	Stainless Steel		

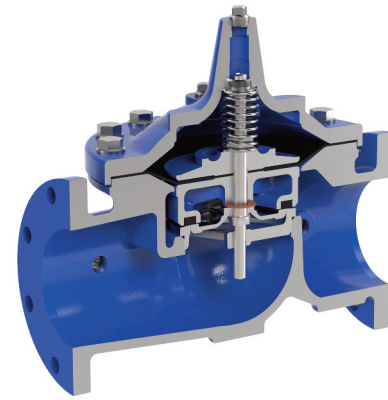
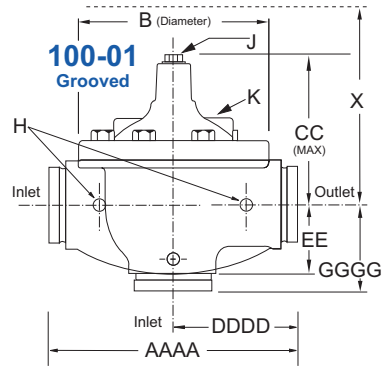
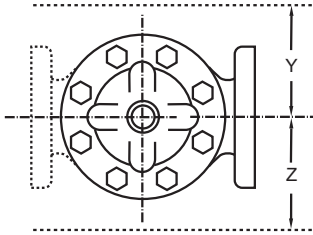
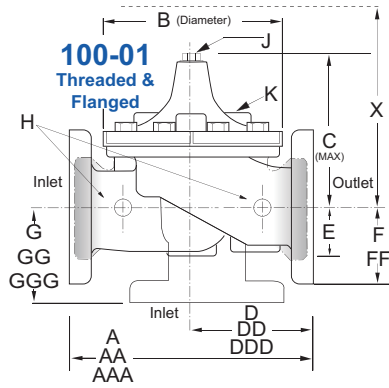
For material options not listed, consult factory.  
 Cla-Val manufactures valves in more than 50 different alloys.

### Model 81-18 Dimensions (inches)

Valve Size (Inches)	2	2½	3	4	6	8	10	12	14	16	18	20	24
A Threaded	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	46.00	52.00	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	47.64	53.62	63.24
AAAA Grooved End	9.00	11.00	12.50	15.00	20.00	25.38	—	—	—	—	—	—	—
B Diameter	6.62	8.00	9.12	11.50	15.75	20.00	23.62	28.00	32.75	35.50	41.50	45.00	53.16
C Maximum	6.50	7.56	8.19	10.62	13.38	16.00	17.12	20.88	24.19	25.00	39.06	41.90	43.93
CC Maximum Grooved End	5.75	6.88	7.25	9.31	12.12	14.62	—	—	—	—	—	—	—
D Threaded	4.75	5.50	6.25	—	—	—	—	—	—	—	—	—	—
DD 150 ANSI	4.75	5.50	6.00	7.50	10.00	12.69	14.88	17.00	19.50	20.81	—	—	30.75
DDD 300 ANSI	5.00	5.88	6.38	7.88	10.50	13.25	15.56	17.75	20.25	21.62	—	—	31.62
DDDD Grooved End	4.75	—	6.00	7.50	—	—	—	—	—	—	—	—	—
E	1.50	1.69	2.06	3.19	4.31	5.31	9.25	10.75	12.62	15.50	12.95	15.00	17.75
EE Grooved End	2.50	2.88	3.12	4.25	6.00	7.56	—	—	—	—	—	—	—
F 150 ANSI	3.00	3.50	3.75	4.50	5.50	6.75	8.00	9.50	10.50	11.75	15.00	16.50	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	15.00	16.50	19.25
G Threaded	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	—	—	22.06
GGG 300 ANSI	3.50	4.31	4.38	5.31	6.50	8.50	9.31	14.50	15.62	16.50	—	—	22.90
GGGG Grooved End	3.25	—	4.25	5.00	—	—	—	—	—	—	—	—	—
H NPT Body Tapping	0.375	0.50	0.50	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
J NPT Cover Center Plug	0.50	0.50	0.50	0.75	0.75	1.00	1.00	1.25	1.50	2.00	1.00	1.00	1.00
K NPT Cover Tapping	0.375	0.50	0.50	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Stem Travel	0.60	0.70	0.80	1.10	1.70	2.30	2.80	3.40	4.00	4.50	5.10	5.63	6.75
Approx. Ship Weight (lbs)	35	50	70	140	285	500	780	1165	1600	2265	2982	3900	6200
Approx. X Pilot System	13	14	15	17	29	31	33	36	40	40	43	47	68
Approx. Y Pilot System	9	10	11	12	20	22	24	26	29	30	32	34	39
Approx. Z Pilot System	9	10	11	12	20	22	24	26	29	30	32	34	39



**Model 81-18 Metric Dimensions** - (Uses 100-01 Hytrol Main Valve)



**Model 100-01 Full Port Hytrol Main Valve**



Valve Size (mm)	50	65	80	100	150	200	250	300	350	400	450	500	600
A Threaded	238	279	318	—	—	—	—	—	—	—	—	—	—
AA 150 ANSI	238	279	305	381	508	645	756	864	991	1051	1168	1321	1562
AAA 300 ANSI	254	295	337	397	533	670	790	902	1029	1105	1210	1326	1606
AAAA Grooved End	228	279	318	381	508	645	—	—	—	—	—	—	—
B Diameter	168	203	232	292	400	508	600	711	832	902	1054	1143	1350
C Maximum	165	192	208	270	340	406	435	530	614	635	992	1064	1116
CC Maximum Grooved End	146	175	184	236	308	371	—	—	—	—	—	—	—
D Threaded	121	140	159	—	—	—	—	—	—	—	—	—	—
DD 150 ANSI	121	140	152	191	254	322	378	432	495	528	—	—	781
DDD 300 ANSI	127	149	162	200	267	337	395	451	514	549	—	—	803
DDDD Grooved End	121	—	152	191	—	—	—	—	—	—	—	—	—
E	38	43	52	81	110	135	235	273	321	394	329	381	451
EE Grooved End	64	73	79	108	152	192	—	—	—	—	—	—	—
F 150 ANSI	76	89	95	114	140	171	203	241	267	298	381	419	489
FF 300 ANSI	83	95	105	127	159	191	222	260	292	324	381	419	489
G Threaded	83	102	114	—	—	—	—	—	—	—	—	—	—
GG 150 ANSI	83	102	102	127	152	203	219	349	378	399	—	—	560
GGG 300 ANSI	89	110	111	135	165	216	236	368	397	419	—	—	582
GGGG Grooved End	83	—	108	127	—	—	—	—	—	—	—	—	—
H NPT Body Tapping	0.375	0.50	0.50	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
J NPT Cover Center Plug	0.50	0.50	0.50	0.75	0.75	1.00	1.00	1.25	1.50	2.00	1.00	1.00	1.00
K NPT Cover Tapping	0.375	0.50	0.50	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Stem Travel	15	18	20	28	43	58	71	86	102	114	130	143	171
Approx. Ship Weight (kgs)	16	23	32	64	129	227	354	528	726	1027	1353	1769	2812
Approx. X Pilot System	331	356	381	432	737	788	839	915	1016	1016	1093	1194	1728
Approx. Y Pilot System	229	254	280	305	508	559	610	661	737	762	813	864	991
Approx. Z Pilot System	229	254	280	305	508	559	610	661	737	762	813	864	991

81-18 Valve Selection	100-01 Pattern: Globe (G), Angle (A), End Connections: Threaded (T), Grooved (GR), Flanged (F) Indicate Available Sizes													
	Inches	2	2 ½	3	4	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600
Main Valve 100-01	Pattern	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G	G	G, A
	End Detail	T, F, Gr	T, F, Gr*	T, F, Gr	T, F, Gr	T, F, Gr*	T, F, Gr*	F	F	F	F	F	F	F
Suggested Flow (gpm)	Maximum	63	90	138	240	550	950	1475	2100	2600	3400	4200	5200	7700
Suggested Flow (Liters/Sec)	Maximum	4.0	5.7	8.7	15.1	34.7	60	93	132	164	214	265	328	485

**100-01 Series is the full internal port Hytrol.** \*Globe Grooved Only

Flowrates shown are for a velocity of 6 fps (1.8 m/s).

Velocities can be increased to 10 fps (3.05 m/s) if required, and the installation of a surge valve in the system is recommended in velocities above 6 ft/sec. (1.8 m/sec)

## Pilot System Specifications

### Temperature Rating

Water: to 180°F / 82°C Maximum

### Speed Controls

For valves with opening and closing speed controls order Model 81-02

### Materials

#### Standard Pilot System Materials

Fittings: Brass  
Tubing: Copper

#### Optional Pilot System Materials

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

## When Ordering, Please Specify

1. Catalog No. 81-18
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Threaded or Flanged
6. Desired Options
7. When Vertically Installed

## Valve Options



X101 Valve  
Position Indicator



X141 Pressure  
Gauge



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