

— MODEL — 90-01KO
(Full Internal Port)

Anti-Cavitation Pressure Reducing Valve



Schematic Diagram

Item	Description
1	Hytrol (100-01KO Main Valve)
2	X38 Restriction Fitting
3	CRD Pressure Reducing Control

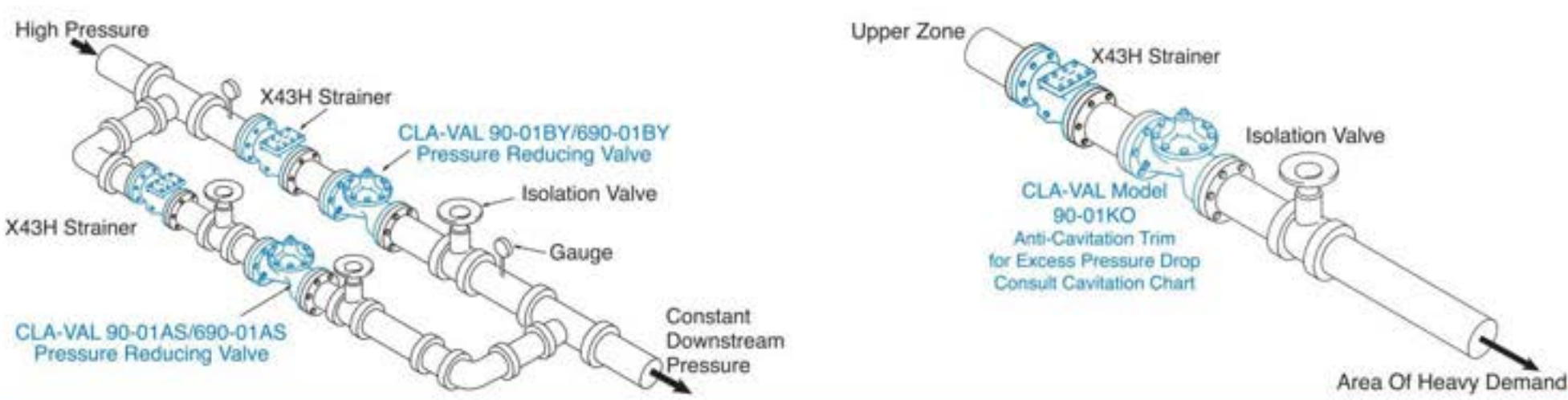
Optional Features

Item	Description
A	X46A Flow Clean Strainer
B	CK2 (Isolation Valve)
C	CV Flow Control (Closing)*
D	Check Valves with Isolation
Valve	
P	X141 Pressure Gauge
S	CV Speed Control (Opening)
V	X101 Valve Position Indicator
Y	X43 "Y" Strainer
-	X43 H Style Strainer

*The closing speed control (optional) on this valve should always be open at least three (3) turns off its seat.

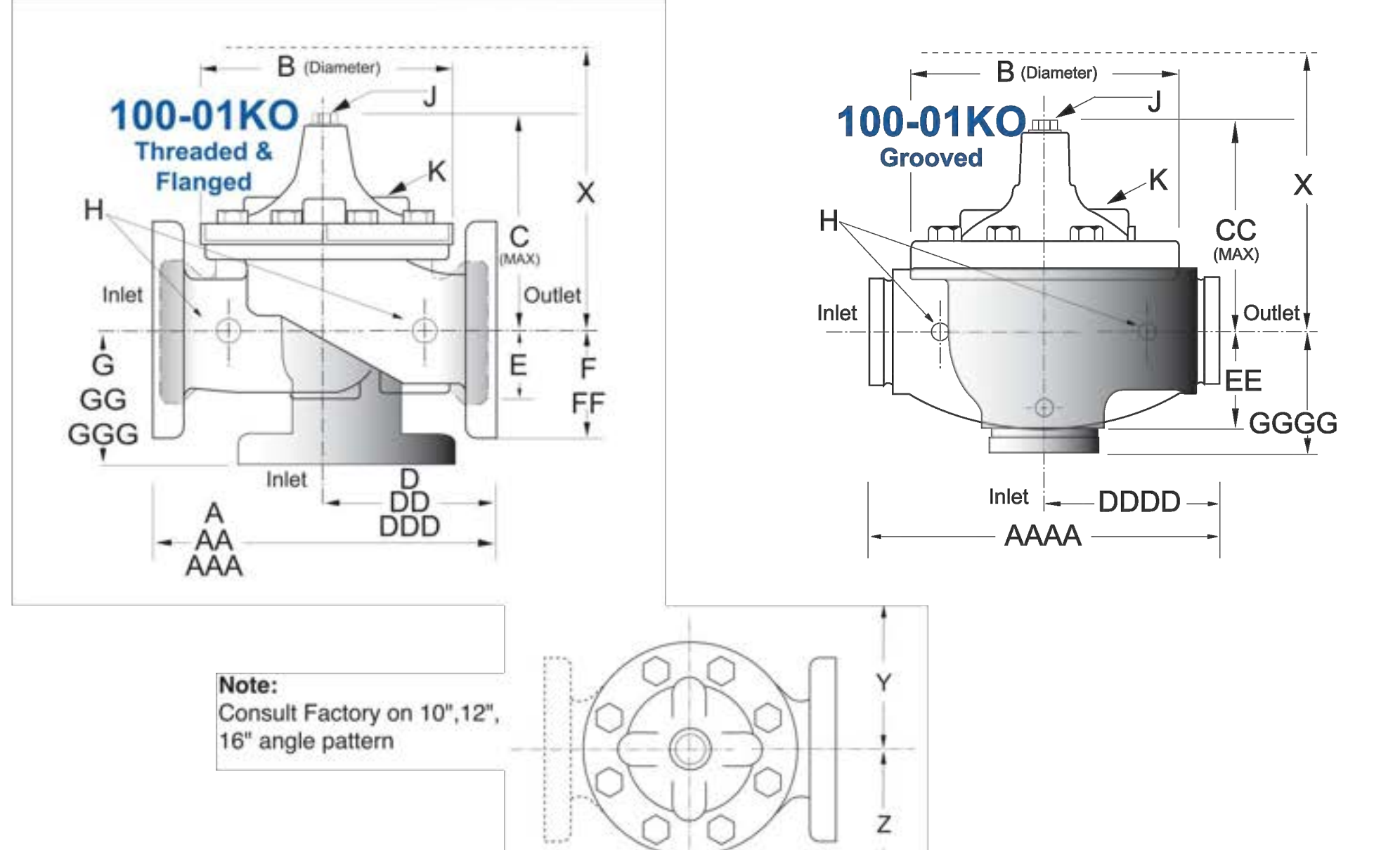
Typical Applications

Typical applications include pressure reducing valve station using Model 90-01BYKO and Model 90-01ASKO in parallel to handle wide range of flow rates. Larger Model 90-01BYKO valve meets requirements of peak loads and smaller Model 90-01ASKO handles low flows.



Cla-Val Model 90-01KO Pressure Reducing Valve with Anti-Cavitation Trim provides for optimum downstream pressure control while reducing noise and eliminating damage associated with cavitation. See Cavitation Guide to determine if the valve is a candidate for the KO Anti-Cavitation Trim.

Model 100-01KO Dimensions (Full Internal Port) (In Inches)



Note:
Consult Factory on 10", 12", 16" angle pattern

Valve Size (Inches)	1	1 1/4	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	30	36
A Threaded	7.25	7.25	7.25	9.38	11.00	12.50	—	—	—	—	—	—	—	—	—	—	—	—
AA 150 ANSI	—	—	—	8.50	9.38	11.00	12.00	15.00	20.00	25.38	29.75	34.00	41.38	46.00	52.00	61.50	63.00	72.75
AAA 150 ANSI	—	—	—	9.00	10.00	11.62	13.25	15.62	21.00	26.38	31.12	35.50	43.50	47.84	53.62	63.24	64.50	74.75
AAAA Grooved End	—	—	—	8.50	9.00	11.00	12.50	15.00	20.00	25.38	—	—	—	—	—	—	—	—
B Diameter	5.62	5.62	5.62	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	56.00	66.00
C Maximum	5.50	5.50	5.50	6.50	7.56	8.19	10.62	13.38	16.00	17.12	20.88	24.19	25.00	30.06	41.90	43.93	54.60	59.00
CD Maximum Grooved End	—	—	—	4.75	5.75	6.98	7.25	9.31	12.12	14.62	—	—	—	—	—	—	—	—
D Threaded	3.25	3.25	3.25	4.75	5.50	6.25	—	—	—	—	—	—	—	—	—	—	—	—
DD 150 ANSI	—	—	—	4.00	4.75	5.50	6.00	7.50	10.00	12.69	14.88	17.00	20.81	—	—	—	—	—
DDD 300 ANSI	—	—	—	4.25	5.00	5.88	6.38	7.88	10.50	13.25	15.56	17.75	20.25	21.62	—	—	—	—
DDDD Grooved End	—	—	—	4.75	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E	1.12	1.12	1.12	1.50	1.89	2.06	3.19	4.31	5.31	6.25	10.75	12.62	15.50	12.66	15.00	17.75	21.31	24.58
EE Grooved End	—	—	—	2.00	2.50	2.88	3.12	4.25	6.00	7.50	—	—	—	—	—	—	—	—
F 150 ANSI	—	—	—	2.50	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	28.50
FF 300 ANSI	—	—	—	3.06	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	24.00
G Threaded	1.68	1.68	1.68	3.25	4.00	4.50	—	—	—	—	—	—	—	—	—	—	—	—
GG 150 ANSI	—	—	—	4.00	3.25	4.00	4.00	5.00	6.00	6.50	8.62	13.75	14.88	15.69	—	—	—	—
GGG 300 ANSI	—	—	—	4.25	3.50	4.31	4.38	5.31	6.50	8.50	9.31	14.50	15.62	16.50	—	—	—	—
GGGG Grooved End	—	—	—	3.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—
H NPT Body Tapping	0.375	0.375	0.375	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	2.00	2.00
J NPT Cover Center Plug	0.25	0.25	0.25	0.50	0.50	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
K NPT Cover Tapping	0.375	0.375	0.375	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	2.00	2.00
L Stem Travel	0.40	0.40	0.40	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	7.50	8.50
M Approx. Ship Weight (lbs)	15	15	15	35	50	70	140	285	500	780	1165	1600	2265	2962	3900	6200	7703	11720
N Approx. X Pilot System	11	11	11	11	15	17	28	31	33	36	40	43	47	48	79	85	136	165
O Approx. Y Pilot System	9	9	9	9	10	11	12	20	22	24	26	29	30	32	34	39	40	45
P Approx. Z Pilot System	9	9	9	9	10	11	12	20	22	24	26	29	30	32	34	39	42	47

Cla-Val Control Valves with KO ANTI-CAVITATION Trim operate with maximum efficiency when mounted in horizontal piping with the main valve cover Up. We recommend isolation valves be installed on inlet and outlet for maintenance. Adequate space above and around the valve for service personnel should be considered essential. A regular maintenance program should be established based on the specific application data. However, we recommend a thorough inspection be done at least once a year. Consult factory for specific recommendations.

Specifications

Pattern	Globe	Angle	Grooved End
Size	1" - 36"	1 1/4" - 16" & 24"	1 1/4" - 8"

Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover	Pressure Class			
	Flanged	Grooved	Threaded	Ends Details
Grade	Material	ANSI Standards	150 Class	300 Class
ASTM A536	Ductile Iron	B16.42	250	400
ASTM A216-WCB	Cast Steel	B16.5	285	400
ASTM B62	Bronze	B16.24	225	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

Operating Temp. Range

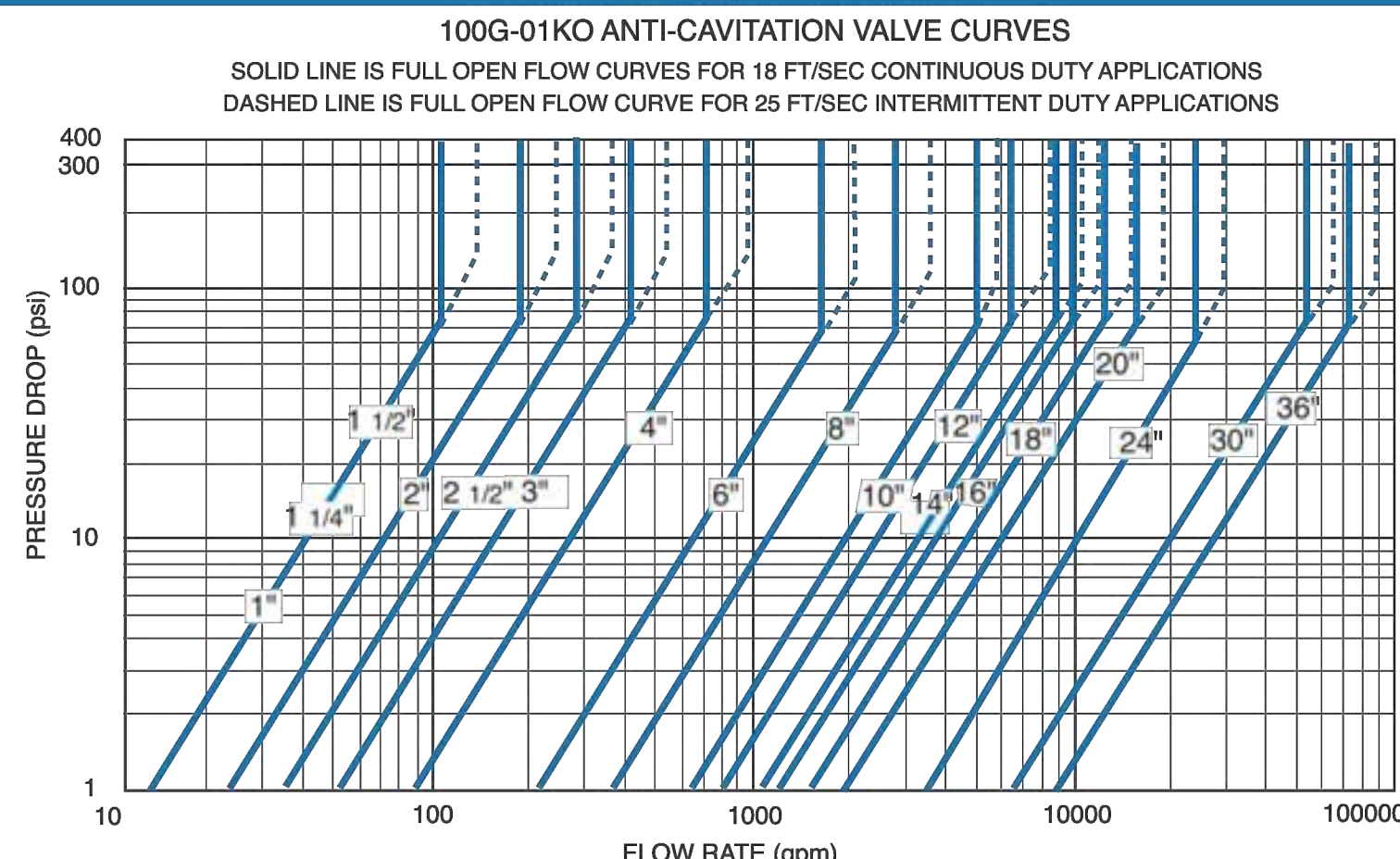
Fluids	Temp. Range
Water	-40° to 180° F



Model 100-01KO

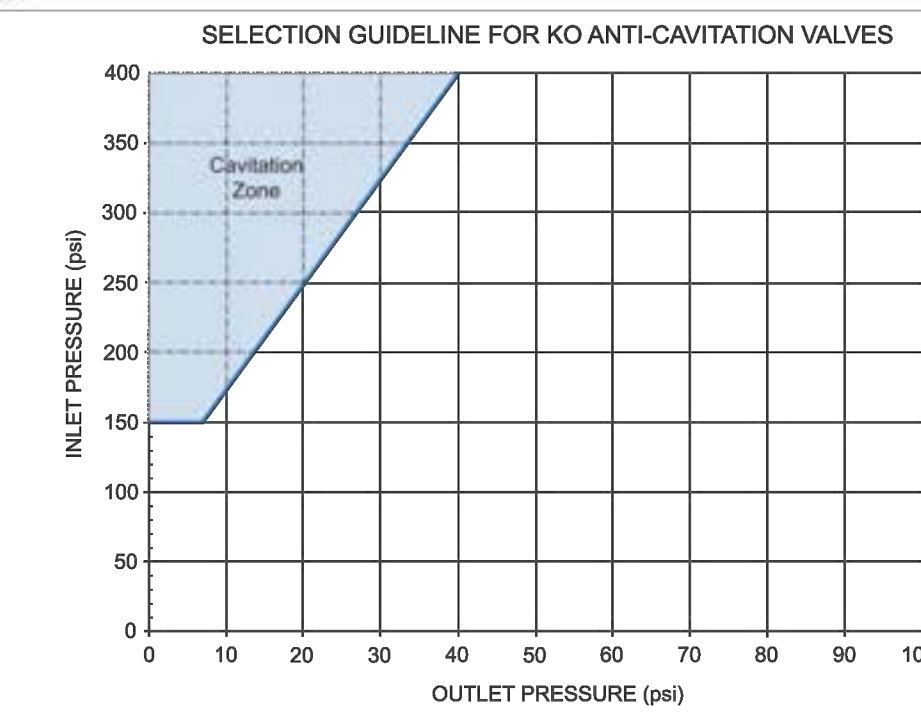
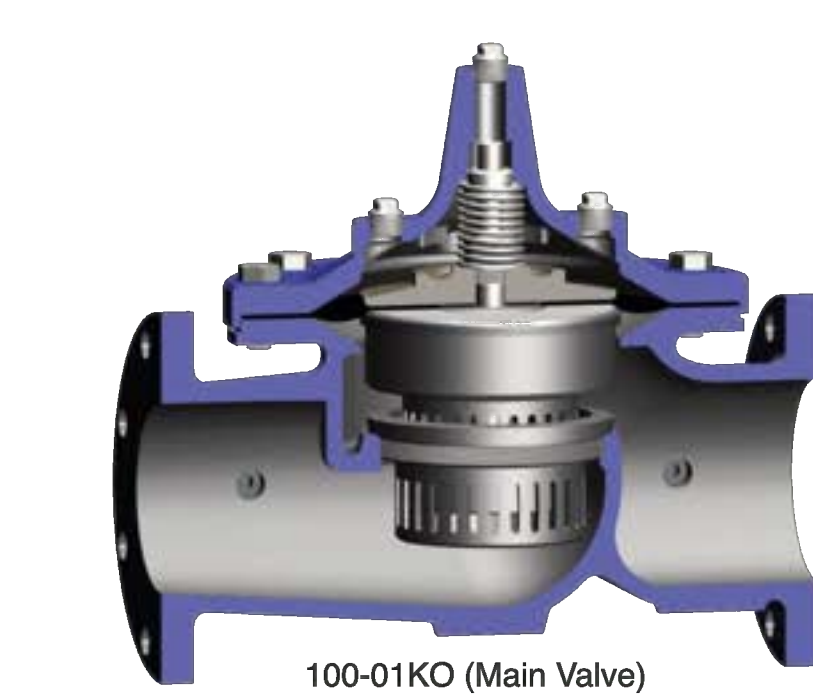
Materials

Valve Body & Cover	Component		Standard Material Combinations		
	Body & Cover	100-01KO Available Sizes	Ductile Iron	Cast Steel	Bronze
ASTM A536	Ductile Iron	1" - 36"	3" - 16"	3" - 16"	—
ASTM A216-WCB	Cast Steel	16" - 24"	—	—	—
ASTM B62	Bronze	16" - 24"	—	—	—



Notes: On Operating Differential

- For atmospheric discharge, the maximum inlet pressure cannot exceed 150 psi.
- For pressure differentials greater than 300 psi, the maximum flow velocity should not exceed 18 ft/sec.
- Flow velocities greater than 25 ft/sec are not recommended.
- Recommended minimum flow velocity is 1 ft/sec.
- Consult factory for conditions exceeding these recommendations.



90-01KO

Valve Selection

Inches	100-01KO Pattern: Globe (G), Angle (A), End Connections: Threaded (T), Grooved (GR), Flanged (F) Indicate Available Sizes																	
	1	1 1/4	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	30	36
Basic Valve	25	32	40	50	65	80	100	150	200	250	300	350	400	500	600	750	900	—
100-01KO	Pattern	C	G	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A
End Detail	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
Suggested Flow (gpm)	Max. Continuous	84	84	115	190	270	410	710	1620	2810	4420	6280	7590	9920	12550	14900	22600	37700
	Max. Intermittent	120	120	160	260	370	580	990	2250	3900	6150	8720	10540	13700	17500	21700	31300	48000
	Min. Continuous	10	10	10	15	20	30	50	115	200	300	400	500	650	800	1073	1577	2650
Suggested Flow (Liters/Sec)	Max. Continuous	5.3	5.3	7.3	12	17	26	45	102	177	279	397	479	694	792	940	1427	2379
	Max. Intermittent	7.6	7.6	10	16	23	37	62	142	246	387	549	664	963	1104	1369	1972	3028
	Min. Continuous	0.6	0.6	0.6	0.9	1.3	1.9	3.2	7.2	13	19	25	32	41	41	57	110	132

100-01KO Series is the full internal port Hytrol.

For Lower Flows Consult Factory

*Globe Grooved Only

Functional Data

Valve Size	Inches																	
	1	1 1/4	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	30	36
Cv Factor	25	32	40	50	65	80	100	150	200	250	300	350	400	450	500	600	750	900
	Globe Pattern	14	14	14	25	37	52	90	219	362	650	810	1100	1200	1550	1950	3900	6100
	Angle Pattern	3.4	3.4	3.4	6.0	8.9	12.5	21.6	52	87	159	194	264	288	360	469	936	1466
Equivalent Length of Pipe	Feet (ft.)	15	15	15	26	39	55	95	232	388	678	790	1075	1175	—	—	—	—
	Meters (m.)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Feet (ft.)	196	196	196	237	277	416	672	858	1315	2444	2118	1937	3022	3537	4199	4532	3897
K Factor	Feet (ft.)	60	60	60	72	84	127	174	262	401	745	646	590	921	1078	1280	1381	1188
	Meters (m.)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Feet (ft.)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
L Factor	Feet (ft.)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Meters (m.)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Feet (ft.)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Liquid Displaced from Cover Chamber When Valve Opens	U.S. Gal.	0.2	0.2	0.2	0.3	0.4	0.6	1.7	5.3	1.26	2.5	4.0	6.5	9.6	11	12	29	65
	Liters	0.8	0.8	0.8	1.2	1.6	3.0	6.4	2.0	4.8	9.5	15.1	25.6	36.2	41.6	45.4	110	246

For assistance in selecting appropriate valve options or valves manufactured with special design requirements, please contact our Regional Sales Office or Factory.

Cv Factor

Formulas for computing Cv Factor, Flow (Q) and Pressure Drop (ΔP):

$$C_v = \frac{Q}{\sqrt{\Delta P}} \quad Q = C_v \sqrt{\Delta P} \quad \Delta P = \left(\frac{Q}{C_v} \right)^2$$

K Factor (Resistance Coefficient)

The Value of K is calculated from the formula: $K = \frac{894d^4}{C_v^2}$

Equivalent Length of Pipe

Equivalent lengths of pipe (L) are determined from the formula: $L = \frac{Kd}{12f}$

Fluid Velocity

Fluid velocity can be calculated from the following formula: $V = \frac{4085 Q}{d^2}$

Pilot System Specifications

Adjustment Ranges

- 2 to 30 psi
- 15 to 75 psi
- 30 to 105 psi
- 20 to 300 psi*

*Supplied unless