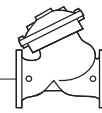


Engineering Data

# BERMAD Mining

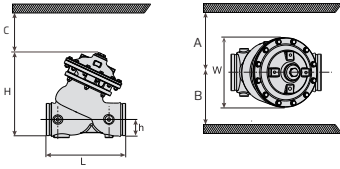
## Hydraulic Control Valves



## US/Imperial

### Grooved

#### 700 Y Pattern

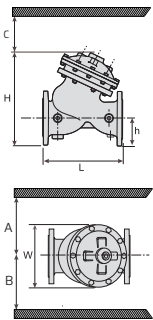


	inch	1½"	2"	2½"	3"	4"	6"	8"
L		8.07	8.07	8.46	9.84	12.60	16.34	19.69
W		4.80	4.80	4.80	6.02	7.87	11.22	15.35
h		1.30	1.30	1.56	2.36	2.91	3.74	4.92
H		7.64	7.87	7.91	10.43	12.80	17.36	21.06
Weight (lb)		13	14	14	37	64	128	225

C = Half of H      A, B = Twice of W

### Flanged

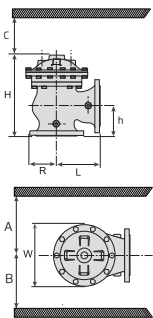
#### 700 Y Pattern



	inch	1½"	2"	2½"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
ANSI 150	L	8.08	8.27	8.75	9.85	12.61	16.35	19.70	23.84	28.57	28.88	39.01	39.40	43.34	57.13
	W	6.11	6.50	7.01	7.88	8.79	12.61	15.37	18.91	21.67	29.16	29.16	29.16	29.16	33.29
	h	3.07	3.27	3.74	3.94	4.53	5.63	6.78	8.04	9.53	10.56	11.82	12.57	13.91	18.52
	H	9.42	9.61	18.01	12.02	14.42	19.38	23.01	28.53	33.10	34.12	43.66	44.40	45.98	50.39
	Weight (lb)	20	23	29	49	82	165	276	478	816	840	1,865	2,083	2,121	2,844
ANSI 300	L	8.08	8.27	8.75	10.40	13.99	17.06	20.65	25.10	30.02	30.22	40.35	40.58	44.76	59.10
	W	6.11	6.50	7.29	8.16	9.85	12.61	15.37	18.91	21.67	22.46	29.16	29.16	29.55	33.29
	h	3.07	3.27	3.74	4.14	5.00	6.26	7.53	8.79	10.28	11.62	12.81	14.07	15.33	18.52
	H	9.42	9.61	10.13	8.43	10.95	20.02	23.72	29.23	33.84	35.18	44.64	45.90	47.16	50.39
	Weight (lb)	22	27	33	55	95	187	322	540	904	957	1,984	2,132	2,174	3,289

C = Half of H      A, B = Twice of W

#### 700 Angle Pattern



	inch	1½"	2"	2½"	3"	4"	6"	8"	10"	12"	14"	16"	18"
ANSI 150	L	4.89	4.89	5.87	5.99	7.49	8.87	10.44	12.61	15.60	15.76	17.73	17.73
	W	6.11	6.11	7.01	7.88	8.75	12.61	15.37	18.91	21.67	21.67	29.16	29.16
	R	3.07	3.27	3.74	3.94	4.53	5.63	6.78	8.04	9.77	10.40	11.78	12.61
	h	3.35	3.35	4.29	4.02	5.00	5.99	8.00	8.63	10.76	10.99	14.54	14.58
	H	8.94	8.94	9.89	11.07	13.47	17.38	21.47	24.94	30.61	30.77	42.63	42.63
	Weight (lb)	21	22	27	44	77	157	260	452	772	816	1,764	1,808
ANSI 300	L	4.89	4.89	5.87	6.26	7.88	9.22	10.91	13.24	16.35	16.51	18.40	18.40
	W	6.50	6.50	7.29	8.16	9.85	12.61	15.37	18.91	21.67	21.67	29.16	29.16
	R	3.07	3.35	3.74	4.14	5.00	6.26	7.53	8.79	10.28	11.54	12.81	14.11
	h	3.35	3.35	4.29	4.29	5.32	6.50	8.51	9.30	11.58	11.78	15.21	15.21
	H	8.94	8.94	9.89	11.31	13.79	17.89	21.99	25.57	31.36	31.56	43.30	43.30
	Weight (lb)	24	25	30	51	90	18	304	514	860	937	1,885	1,918

C = Half of H      A, B = Twice of W

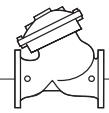
#### Notes:

Dimensions and weights tables refer to basic valves.

Envelope dimensions vary according to valve model.

Control loop and control accessories adds approximately 2.5 lb to the weight of a basic valve.



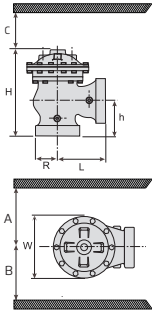


**US**

**US/Imperial**

**Threaded**

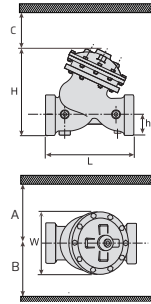
**700 Angle Pattern**



	inch	2"	2½"	3"
BSP ; NPT	L	4.77	5.52	6.26
	W	4.81	4.81	6.42
	R	1.58	1.89	2.17
	h	3.27	4.02	4.53
	H	8.87	9.53	11.58
	Weight (lb)	12	15	33

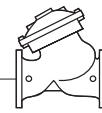
C = Half of H      A, B = Twice of W

**700 Y Pattern**







	inch	1½"	2"	2½"	3"
BSP ; NPT	L	6.11	6.11	8.35	9.85
	W	4.81	4.81	4.81	6.42
	h	1.58	1.58	1.89	2.21
	H	7.92	7.96	8.23	10.40
	Weight (lb)	12	12	18	37

C = Half of H      A, B = Twice of W



US

US/Imperial

		inch	1½"	2"	2½"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
700 Y-Pattern Flat Disc 	Cv	49	58	64	133	230	530	940	1,440	2,140	2,300	3,820	3,960	4,100	4,100	4,100
	K	2.3	3.9	9.2	4.9	3.9	3.7	3.8	3.9	3.7	5.9	3.7	5.5	7.8	7.8	7.8
	Leq-feet	14.2	33.8	109.5	70.8	75.6	123.0	176.9	229.5	280.8	524.5	369.6	671.9	1,062.3	1,062.3	1,062.3
700 Y-Pattern V-Port 	Cv	41	49	54	113	200	450	800	1,230	1,820	1,950	3,250	3,370	3,490	3,490	3,490
	K	3.1	5.4	12.8	6.7	5.4	5.2	5.2	5.4	5.1	8.2	5.1	7.6	10.8	10.8	10.8
	Leq-feet	19.7	46.8	151.6	97.9	104.6	170.2	244.8	317.6	388.6	725.9	511.6	930.0	1,470.3	1,470.3	1,470.3
700 Angle Pattern Flat Disc 	Cv	53	64	70	146	250	580	1,040	1,590	2,350	2,530	4,210	4,360	N/A	N/A	N/A
	K	1.9	3.2	7.6	4.0	3.2	3.1	3.1	3.2	3.1	4.9	3.0	4.5	N/A	N/A	N/A
	Leq-feet	11.7	28.0	90.5	58.5	62.5	101.6	146.2	189.7	232.0	433.4	305.5	555.3	N/A	N/A	N/A
700 Angle Pattern V-Port 	Cv	45	54	59	124	220	500	880	1,350	2,000	2,150	3,580	3,710	N/A	N/A	N/A
	K	2.6	4.5	10.6	5.6	4.5	4.3	4.3	4.5	4.2	6.8	4.2	6.2	N/A	N/A	N/A
	Leq-feet	16.3	38.7	125.3	80.9	86.5	140.7	202.4	262.5	321.2	599.9	422.8	768.6	N/A	N/A	N/A

## Differential Pressure Calculation

Valve flow coefficient, Kv or Cv  $Kv(Cv) = Q \sqrt{\frac{Gf}{\Delta P}}$   
 Where:

Kv = Valve flow coefficient (flow in m³/h at 1bar ΔP)

Cv = Valve flow coefficient (flow in gpm at 1psi ΔP)

(Cv = 1.155 Kv)

Q = Flow rate (m³/h ; gpm)

ΔP = Differential pressure (bar ; psi)

Gf = Liquid specific gravity (Water = 1.0)

Practical formulas for water:

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

Flow resistance or Head loss coefficient,  $K = \Delta H \frac{2g}{V^2}$   
 Where:

K = Flow resistance or Head loss coefficient (dimensionless)

ΔH = Head loss (m ; feet)

V = Nominal size flow velocity (m/sec ; feet/sec.)

g = Acceleration of gravity (9.81 m/sec² ; 32.18 feet/sec²)

Practical formula:

$$\Delta H = K \frac{V^2}{2g}$$

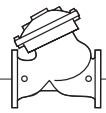
## Equivalent Pipe Length - Leq

In order to simplify system head loss calculation, add the Leq value to the pipe length of the relevant size

Note:

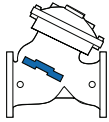
The Leq values given are for general consideration only.

Actual Leq may vary somewhat with each of the valve sizes.

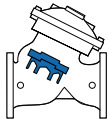
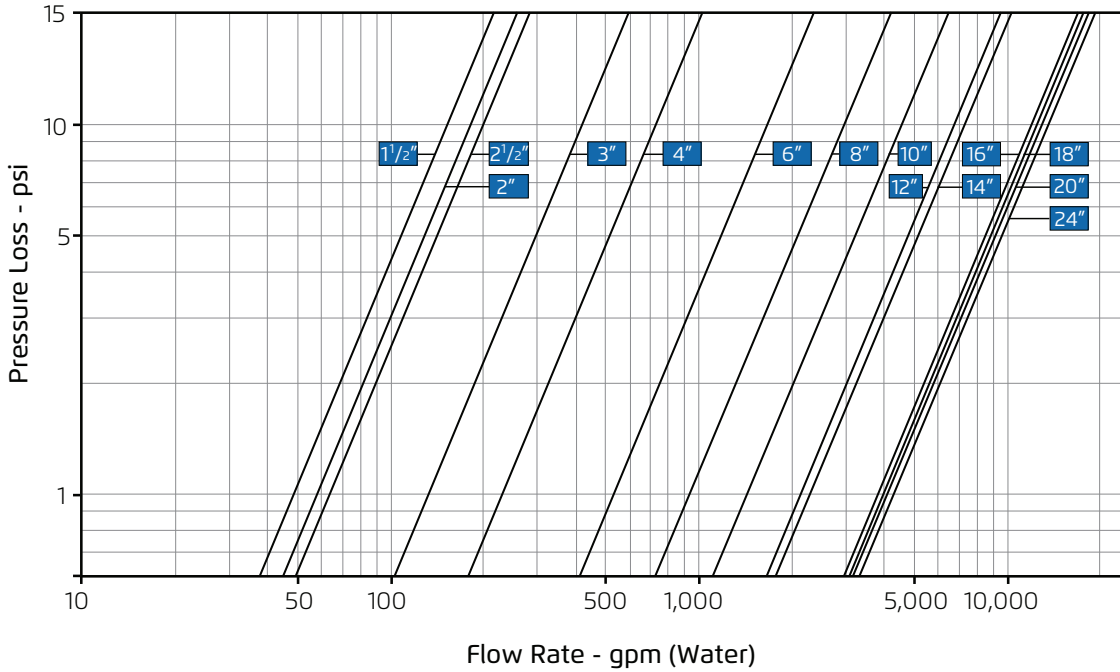


US

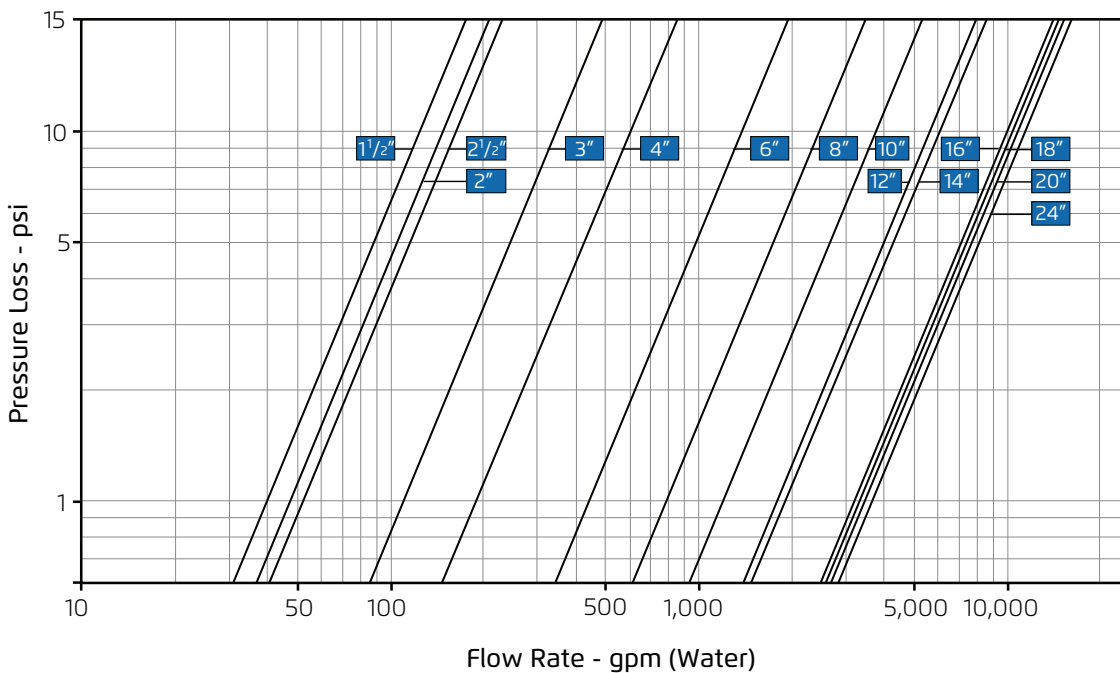
US/Imperial

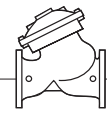


### 700 Y Pattern, Flat Disc



### 700 Y Pattern, Throttling Plug (V-Port)



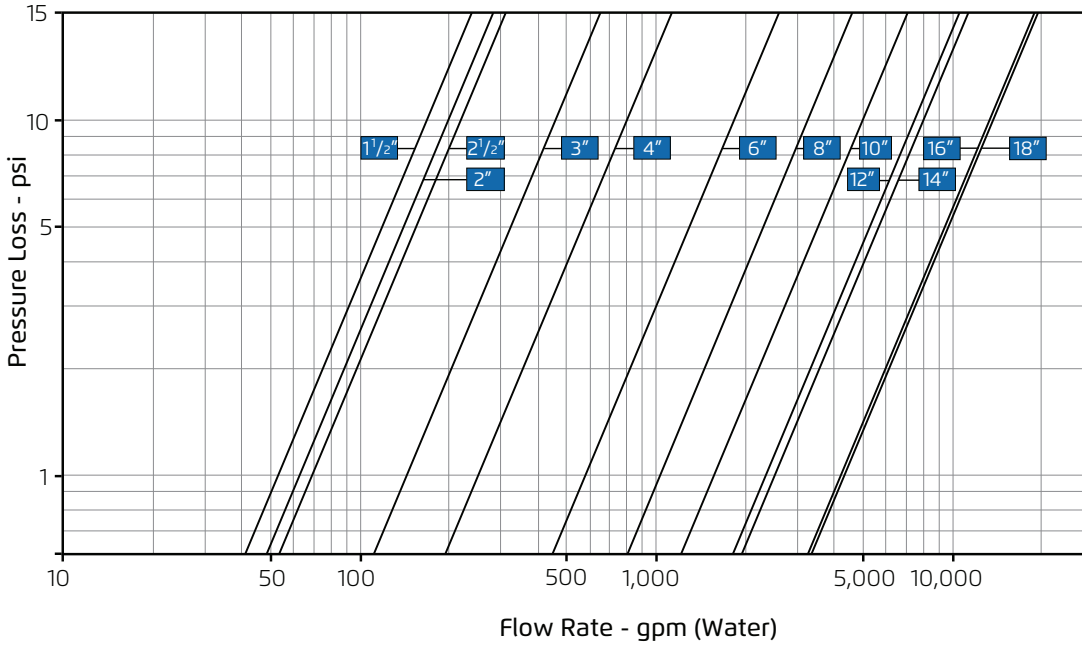


US

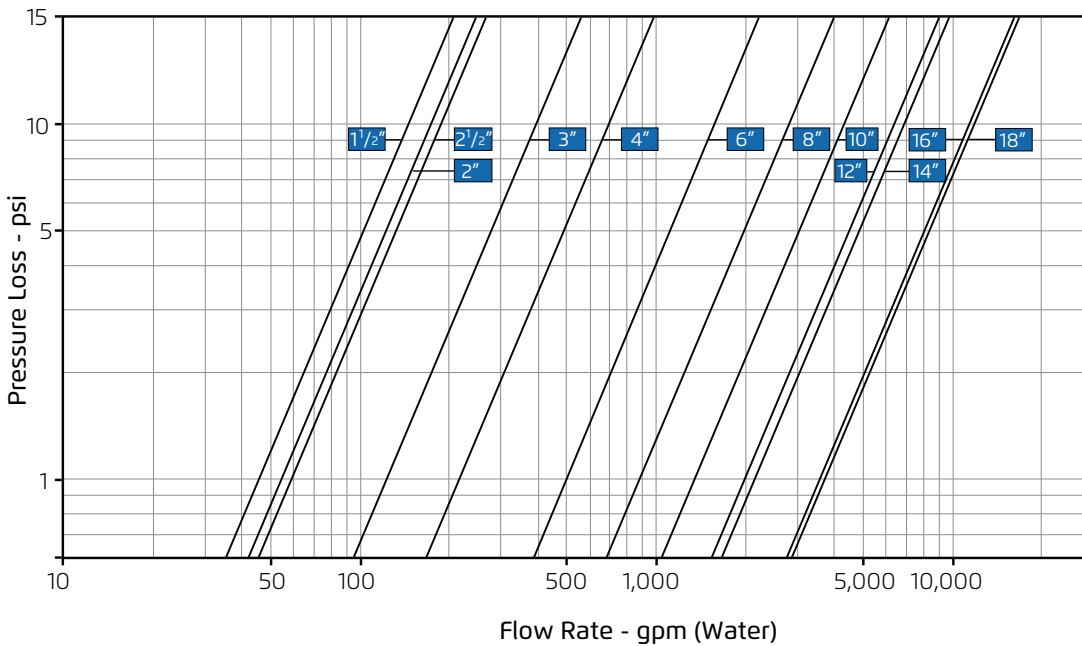
US/Imperial

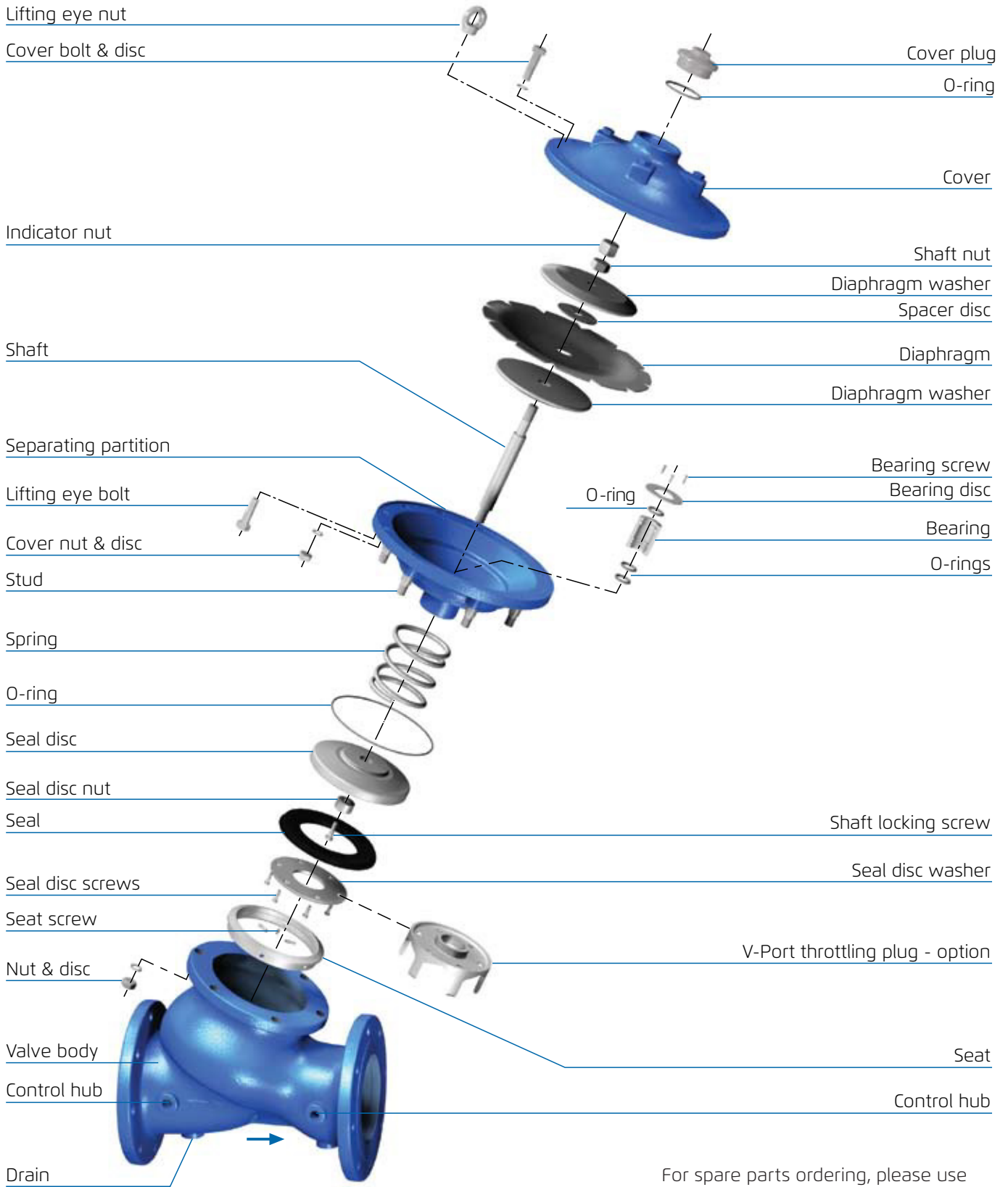
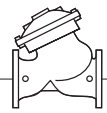


### 700 Angle Pattern, Flat Disc



### 700 Angle Pattern, Throttling Plug (V-Port)





For spare parts ordering, please use BERMAD "Spare Parts Ordering Guide."





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