DeZURIK
APCO | HILTON

APCO CSD SLANTING DISC CHECK VALVES

Design & Construction

With decades of experience to guarantee reliability and outstanding performance, APCO CSD Slanting Disk Check Valves are ruggedly designed with superior flow characteristics, minimal head loss and maximum slam resistance. Slanting disc check valves are the most reliable and efficient check valves available.

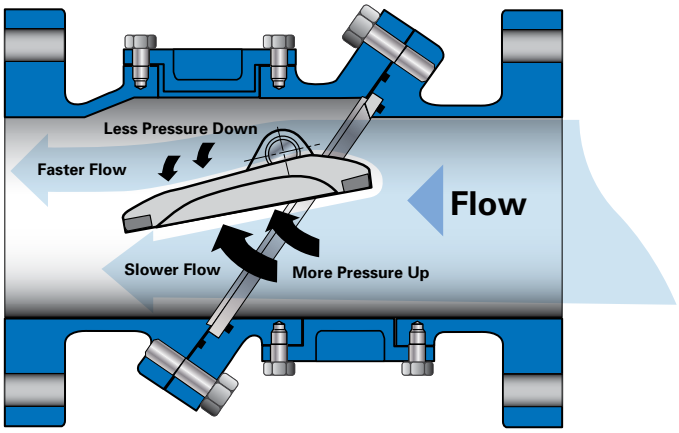
APCO CSD Slanting Disc Check Valves are available in sizes 2-72" (50-1800mm) with ASME 125/150 flanged end connections or 2-48" (50-1200mm) with ASME 250/300 flanges. They are ideally suited for clean municipal/industrial water and other industrial liquid applications.

Superior Flow Characteristics

The APCO Slanting Disc Check Valve, because of its very unique two-piece body design and slanted disc orientation, has superior flow characteristics (lowest head loss) when compared to other check valve designs. The angled body seat allows for a 40% expanded cross sectional flow area, so the area occupied by the mass of the disc is more than compensated for by the expanded flow area. Each body half has an o-ring seal and valves sizes 6" (150mm) and larger have an access cover for internal inspection on each body half.

Slanting Disc Design Offers Minimal Flow Resistance

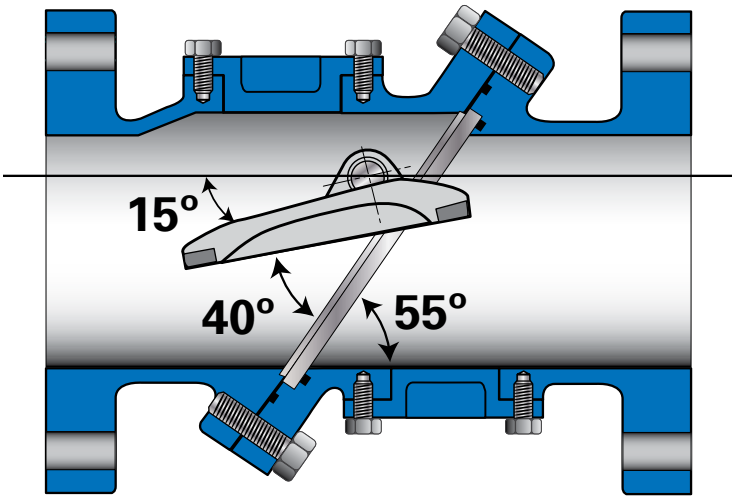
The slanted orientation of the body seat combined with the offset disc design provides the ultimate in check valve performance. The airfoil design of the disc, like the wing on an airplane, offers minimal resistance to flow while lifting and stabilizing in the full open position. Flow characteristics are further improved because the long laying length of the valve body allows water to smoothly enter and pass through without turbulence, eddies or cavitation.



The unbalanced disc weight (heavier below the pivot point) causes the slanting disc to free fall into shut-off position with minimal reverse flow and open with a slight pressure differential. This results in excellent slam resistance combined with lowest head loss.

Off-Set Pivot of Slant Disc Helps Minimize Slam

The off-set pivot of the slant disc provides a distinct advantage. The disc area above the pivot point resists closing because it must close against the reversing water column. This counteracts the closing force to the disc area below the pivot point. The result is no slam or minimal slam depending on how quickly the flow reverses.

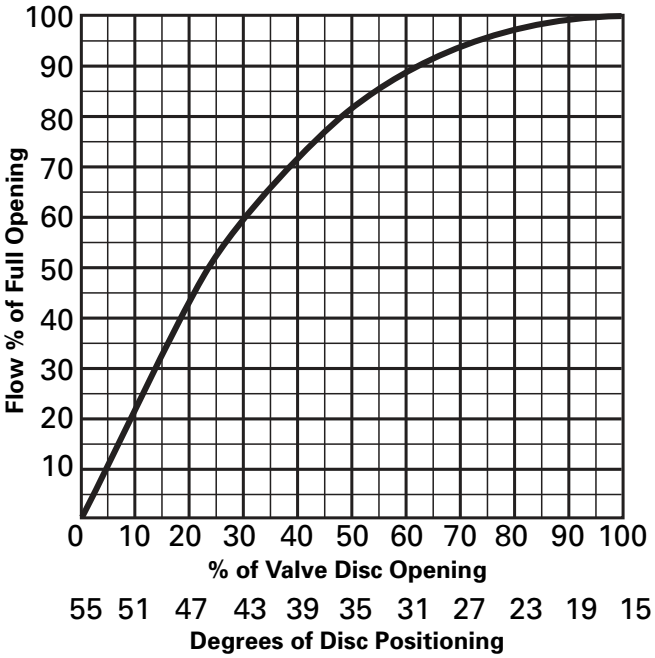


To facilitate opening, the seat is at a 55° angle. The 40° travel to optimum open position (15° from horizontal) puts the disc in a stable position. It offers minimum resistance to flow while minimizing water column reversal and slamming on shut down due to the short distance the slanting disc travels to shut-off position.

Self-Centering, 360° Seating Between Disc Ring and Body Seat

APCO CSD Slanting Disc Check Valves close with precise clearance around pivot pins, ensuring self-centering, 360° seating between the concentric disc and body seat rings. These rings are precisely machined and move together or apart with minimum interference, thus eliminating wearing and leakage for many years of service. This movement allows tight seating to meet AWWA C508 standard for metal-to-metal seated valves and virtually eliminates seat maintenance and replacement. The stainless steel pivot pins and bushings are highly wear resistant.

Flow Characteristic Curve



Choice of Body Materials

Body material options include ductile iron, cast iron, carbon steel and 316 stainless steel. Valve bodies 6" (150mm) and larger include two accessory openings, and are pre-machined to accept top mounted oil dashpot or bottom mounted buffer for field mounting.

Horizontal or Vertical Flow Up Installation Available

Standard installation is horizontal; contact DeZURIK if vertical flow up is required. Good pump station design encourages at least three pipe diameters of straight pipe downstream of a check valve (in some cases on the upstream side).

Disc Position Indicator

The disc position indicator is standard on valves 6" (150mm) and larger. The indicator is mounted on the pivot pin cover and provides external indication of disc position. The indicator may be used to trip a micro switch or counting device.

Startup Service Available

DeZURIK factory trained engineers are available for field startup. Field startup services are quoted upon request.

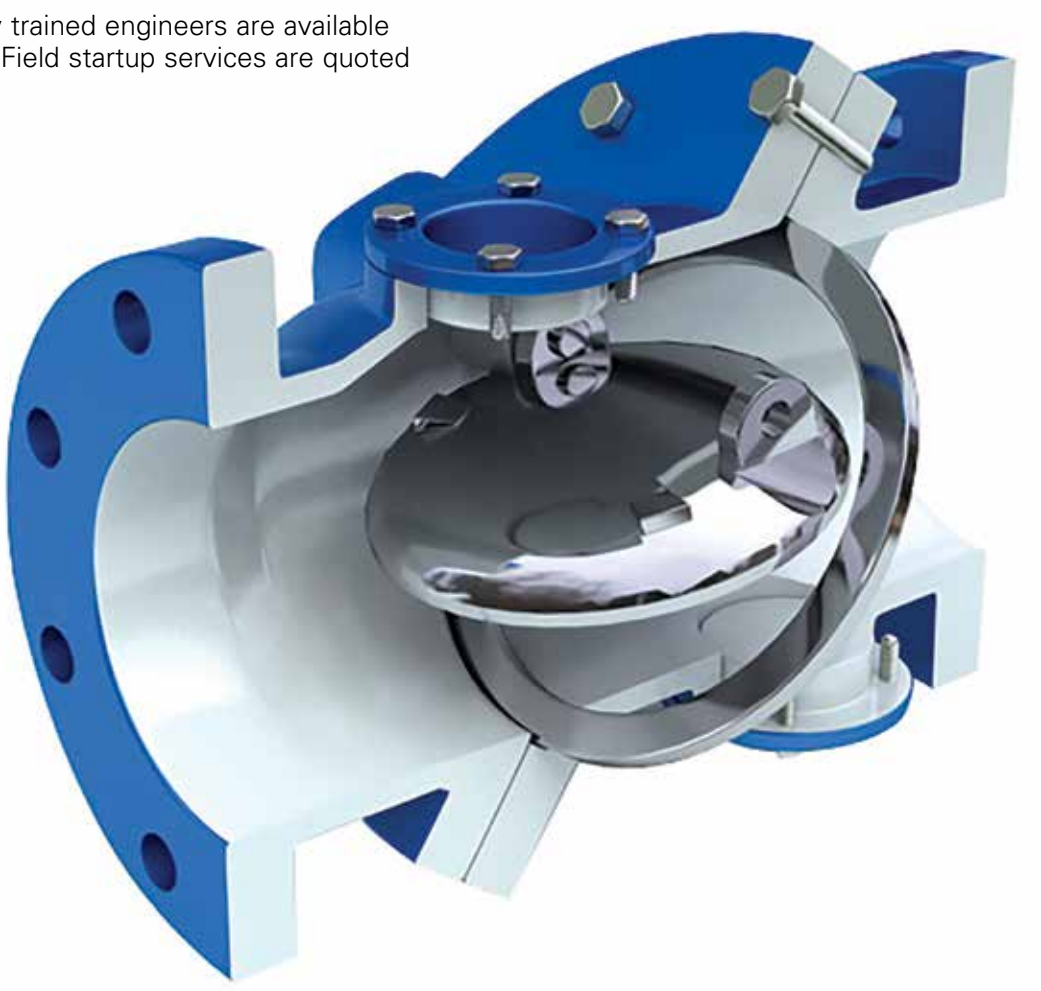
Accessories

Signal Switches

Electrical signal switches are available mounted on the indicator cover to give a local or remote signal indication of valve disc position. As standard, the switch indicates when the valve disc is in the closed position; an adjustable switch to indicate open position is available upon request.

Flow By-Pass

By-pass piping with a manual shutoff is readily available to permit flow around the disc when the Slanting Disc Check Valve is closed (to drain the system, etc.). Flow By-pass is available on valves 6" (150mm) and larger. Options include Flow By-Pass Left, Right or Dual.



High Efficiency Design Saves Pumping Costs

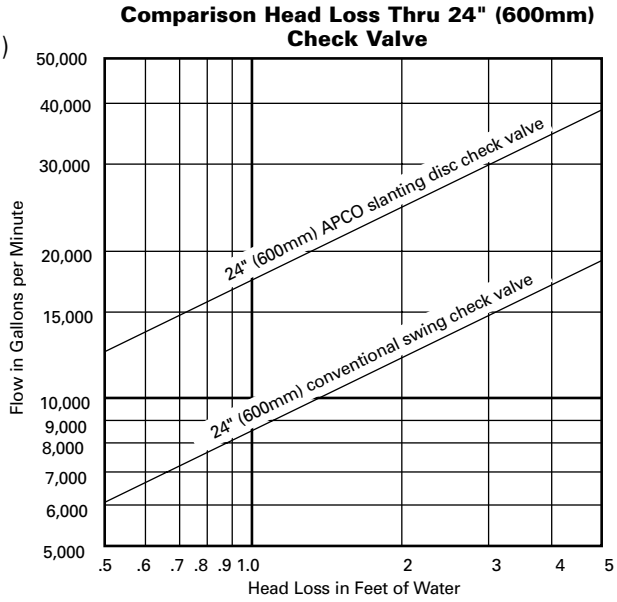
Check Valves selected merely for the lowest initial purchase price can quickly become an extremely expensive choice when compared to Slanting Disc Check Valves which have lower head loss and are extremely efficient. The APCO CSD Slanting Disc Check Valve is inherently high efficiency. The low head loss of the Slanting Disc Design pays for itself many times over in reduced power consumption and greater pumping efficiency.

Energy Cost Saving Evaluation

1. A 24" size pipeline to deliver water (Specific Gravity Sp.Gr.=1) by pump with combined motor and pump efficiency (Ec) of 72% has a first year average delivery of 15,000 GPM and average energy cost of $0.12 per Kilowatt/Hour (cost may vary accordingly to local utility rates).

2. Using a conventional Swing Check Valve, head loss (HL) at 15,000 GPM is 3 feet of water.

3. Using an APCO Slanting Disc Check Valve, head loss (HL) at 15,000 GPM is 0.718 feet of water



Energy cost dispensed for first year of check valve (Py) is:

$$Py = \frac{GPM \times HL \times Sp.\ Gr. \times .746 \times Cost \times 24\ Hour \times 365\ Days}{3960 \times Ec}$$

Since GPM, Sp. Gr., cost/KW-Hr, Ec, are common in the determination of Py for both valves.

Py = 4125.606 x HL

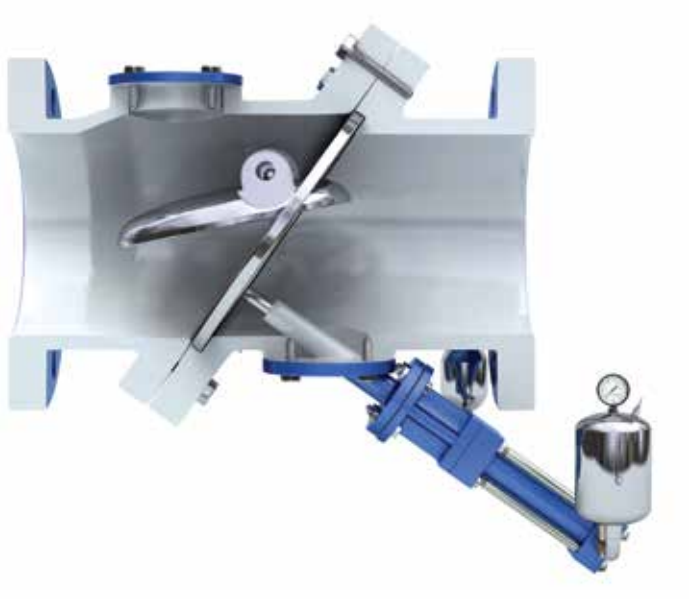
$12,376.82 - Energy cost using Conventional Swing Check Valve end of first year
$2,962.19 - Energy cost using APCO Slanting Disc Check Valve end of first year
$9,414.63 - Energy cost saving using APCO Slanting Disc Check Valve end of first year

Average service life for an APCO Valve is 30 years and projecting a 2% future increase for water demand and energy cost will reflect estimated savings as follows:

Year	Yearly Savings	Cumulative Savings
1st	$9,414.63	$9,414.63
5th	$11,030.74	$51,033.47
10th	$13,446.41	$113,242.98
20th	$19,980.66	$281,516.09
30th	$29,690.22	$531,561.08

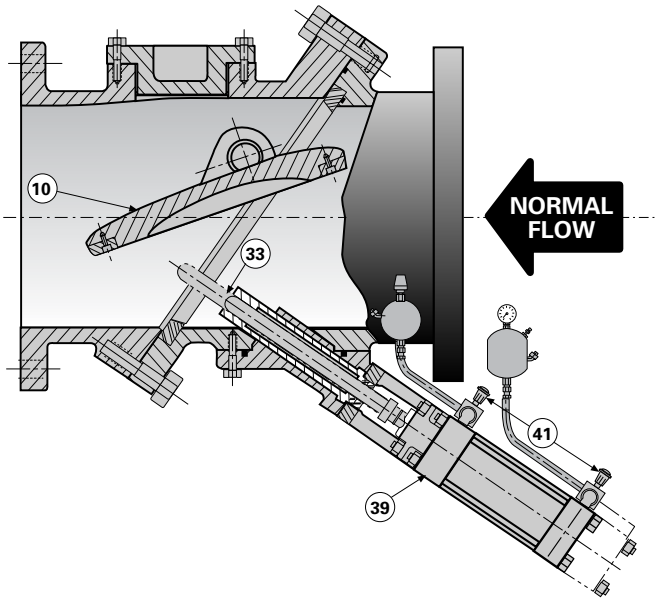
Closure Control Devices

Bottom Mounted Buffer (BMB) Provides Free Opening & Controlled Closing



Bottom Mounted Buffers have been used successfully for decades to minimize slamming of the valve disc and resultant water hammer. Bottom Mounted Buffers are recommended where rapid flow reversal (caused by a hydro-pneumatic surge tank or a critical slope of discharge pipeline) is so fast that a free closing check valve cannot shut prior to flow reversal and therefore slams. The buffer will stop the disc at approximately 90% of closure and will allow the disc to slowly close/shut off without slam. This is accomplished with minimal pressure rise. The buffer system is self-contained. Auxiliary equipment is not required. The Bottom Mounted Buffer may be added to a valve in the field.

The unique buffer arrangement allows the valve disc (10) to open fully without interference and to close freely for approximately 90% of its stroke. After the disc is 90% closed, it comes in contact with the buffer rod (33) that controls the speed of closure for the last 10%. The flow control valve (41) on the cylinder (39) is easily adjusted to suit pipeline conditions. This prevents or minimizes slamming which greatly reduces pressure surges. Food grade oil is available as an option.



Top Mounted Oil Dashpot (TMD) Provides Slow Opening and Controlled Closing

The Top Mounted Oil Dashpot system is highly recommended when slow opening and full control closure of the disc is essential. Slow gradual opening and controlled closing of the valve disc will minimize slamming and resultant surge pressures (water hammer) that can cause damage to the pipeline each time the pump starts, stops or if a power failure occurs.

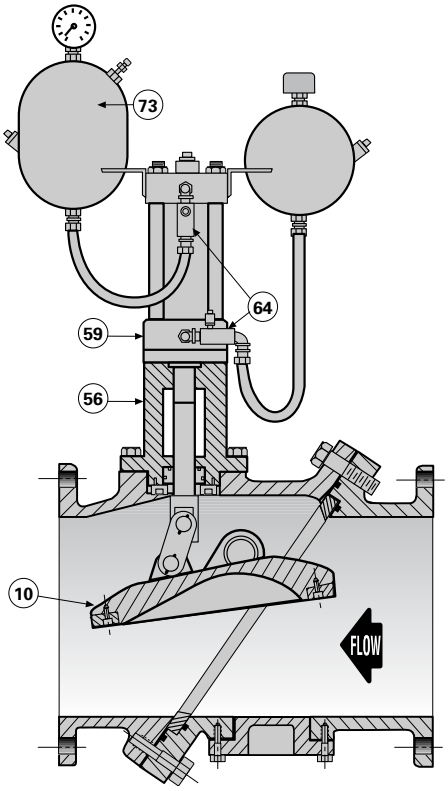
Slow gradual opening is accomplished as the piston inside the cylinder (59) moves upward pushing oil through the upper control valve (64).

Full Control Closing occurs in two stages. During the first stage, the piston moves downward pushing oil through the lower flow control valve (64). The second stage occurs as the piston approaches the bottom of the cylinder and enters the internal cushion chamber, built into the cap of the cylinder.

By simply regulating each flow control valve (64), a slow gradual opening of the disc (10) can be achieved as well as variable control closing of the disc. Closing time adjustments can be made to best suit the installation. Once correct open and close times have been set, the flow control valves can be locked in position. A slightly pressurized hydro-pneumatic tank (73) serves as power to start the disc closing immediately when the pump stops.

Oil Dashpot System Offers Reliable Performance

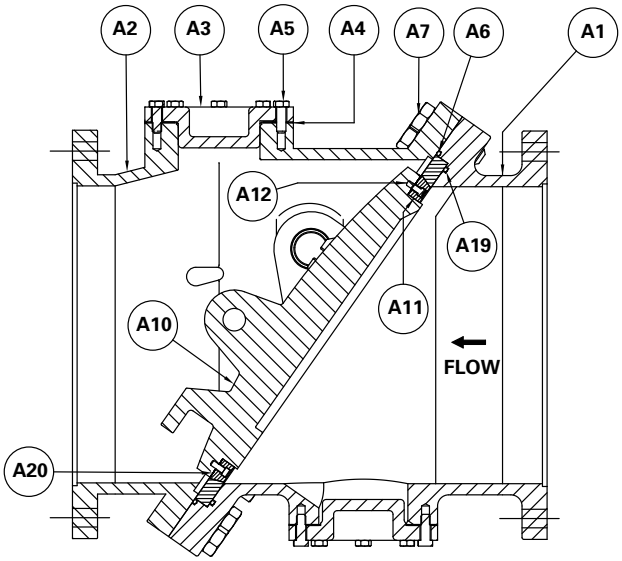
The oil operated system has been found to be relatively trouble free and easier to maintain than water dashpot systems. Oil is used to create an independent and closed system, completely separated from the main line media by a positive air gap spacer (56). Therefore, the risk of oil contaminating potable water in the main line is eliminated. Oil also prevents problems such as corrosion, electrolysis, silt or mineral deposits from fouling up the cylinder and controls. Food grade oil is available as an option. Top Mounted Oil Dashpots should not be used with surge tanks.

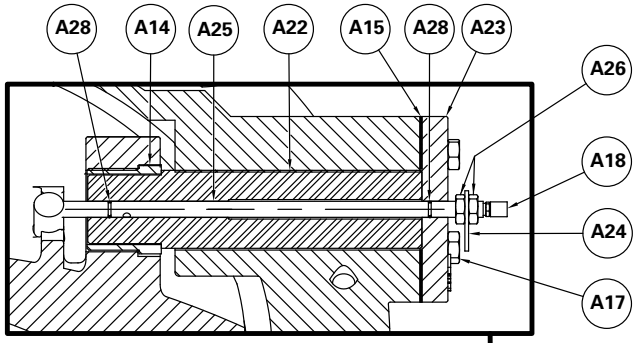


Materials of Construction

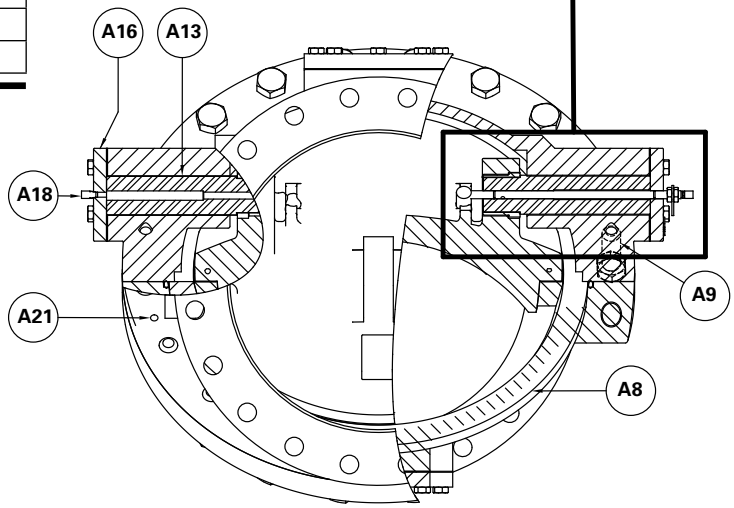
Item	Description	Material
A1	Seat Body Half	Cast Iron, ASTM A126, Grade B
		Ductile Iron, ASTM A536, Gr 65-45-12
		Carbon Steel, ASTM A216 Gr. WCB
		316 Stainless Steel, ASTM A351 CF8M
A2	Pivot Body Half	Same as Seat Body Half
A3	Inspection Hole Cover	Same as Seat Body Half
A4	Inspection Hole Gasket	NBR, Acrylonitrile-Butadiene
A5	Inspection Hole Bolts	Steel, ASTM A449, Grade 5
A6	Diagonal Flange Seal	NBR, Acrylonitrile-Butadiene
A7	Diagonal Flange Bolts	Steel, ASTM A449, Grade 5
A8	Seat Ring	Bronze, ASTM B271, Alloy C92200
		316 Stainless Steel, ASTM A351 CF8M
A9	Diagonal Flange Bolts	Steel, ASTM A449, Grade 5
A10	Disc	Bronze, Alloy C90700, 2-10" (50-250mm)
		Ductile Iron, ASTM A536, 12" (300mm) & larger
		316 Stainless Steel, ASTM A351 CF8M
		Carbon Steel, ASTM A216 Gr. WCB
A11	Disc Ring	Bronze, ASTM B271, Alloy C92200
		316 Stainless Steel, ASTM A351 CF8M
A12	Disc Ring Screws	Stainless Steel, ASTM A276, Type 304
A13	Pivot Pin	Stainless Steel, ASTM A562, Type 303
A14	Pivot Pin Bushing	Stainless Steel, ASTM A276, Type 304
A15	Pivot Pin Gasket	Nonasbestos with Butadiene Rubber Binder
A16	Pivot Pin Cover	Cast Iron, ASTM A126, Grade B or Steel
A17	Pivot Pin Cover Bolts	Steel, ASTM A449, Grade 5
A18	Grease Fitting	Steel, Zinc Plated
A19	Seat Ring Seal	NBR, Acrylonitrile-Butadiene
A20	Disc Ring Gasket	Nonasbestos with Butadiene Rubber Binder
A21	Locating Pin	Steel, Zinc Plated
A22	Indicator Pivot Pin	Stainless Steel, ASTM A276, Type 304
A23	Indicator Pivot Cover	Iron or Steel
A24	Indicator Arm	1018 Steel
A25	Indicator Shaft	Stainless Steel A276, Type 316
A26	Indicator Jam Nuts	Steel, A449, Grade 5
A28	Indicator Shaft Seal	NBR, Acrylonitrile - Butadiene

1. Items A11, A12, A14 and A20 are not required for sizes 10" and smaller valves because of the solid, single piece disc.
2. Items A15 and A17 are not required on 6" valve size
3. Items A3, A21-28 and A18 are not available on sizes 2-4" (50-100mm)





DETAIL A



Valve Selection

Valve Maximum Working Pressure (Ambient Temperature CWP)

Body Material	End Connection Code			
	F1		F2	
	Valve Sizes		Valve Sizes	
	2-12" (50-300mm)	14-72" (350-1800mm)	2-12" (50-300mm)	14-48" (350-1200mm)
Cast Iron (CI)	200 psi (1380 kPa)	150 psi (1030 kPa)	350 psi (2410 kPa)	300 psi (2070 kPa)
Ductile Iron (DI)	250 psi (1720 kPa)		640 psi (4410 kPa)	450 psi (3100 kPa)
Carbon Steel (CS)	285 psi (1960 kPa)		740 psi (5100 kPa)	500 psi (3450 kPa)
316 Stainless Steel (S2)	275 psi (1900 kPa)		720 psi (4960 kPa)	500 psi (3450 kPa)

Bottom Mounted Buffer (BMB) Maximum Shutoff Pressure Differential*

Valve Size	Maximum Shutoff Pressure Differential*
6-20" (150-500mm)	150 psig (1030 kPag)
24" & Larger	Contact Factory

Top Mounted Dashpot (TMD) Maximum Shutoff Pressure Differential*

Valve Size	Maximum Shutoff Pressure Differential*
6-24" (150-600mm)	250 psig (1720 kPag)
30-60" (750-1500mm)	150 psig (1030 kPag)
72" (1800mm)	Contact Factory

*Maximum Pressure rating for standard configuration. Contact factory if higher pressure rating is required.

Valve Weights

Valve Size	ASME Class 125/150	ASME Class 250/300
2" / 50mm	50 / 23	55 / 25
3" / 80mm	55 / 25	65 / 29
4" / 100mm	82 / 37	93 / 42
6" / 150mm	164 / 74	199 / 90
8" / 200mm	265 / 120	357 / 162
10" / 250mm	510 / 231	573 / 260
12" / 300mm	650 / 294	693 / 314
14" / 350mm	1044 / 473	1179 / 535
16" / 400mm	1050 / 476	1600 / 726
18" / 450mm	1535 / 696	1890 / 857
20" / 500mm	1685 / 764	2100 / 953
24" / 600mm	2650 / 1202	3300 / 1497
30" / 750mm	5850 / 2653	6800 / 3084
36" / 900mm	7600 / 3447	8300 / 3765
42" / 1100mm	9000 / 4082	10500 / 4763
48" / 1200mm	14000 / 6350	N/A
54" / 1400mm	16000 / 7257	
60" / 1500mm	28241 / 12809	
72" / 1800mm	44000 / 19958	

Pounds
Kilograms

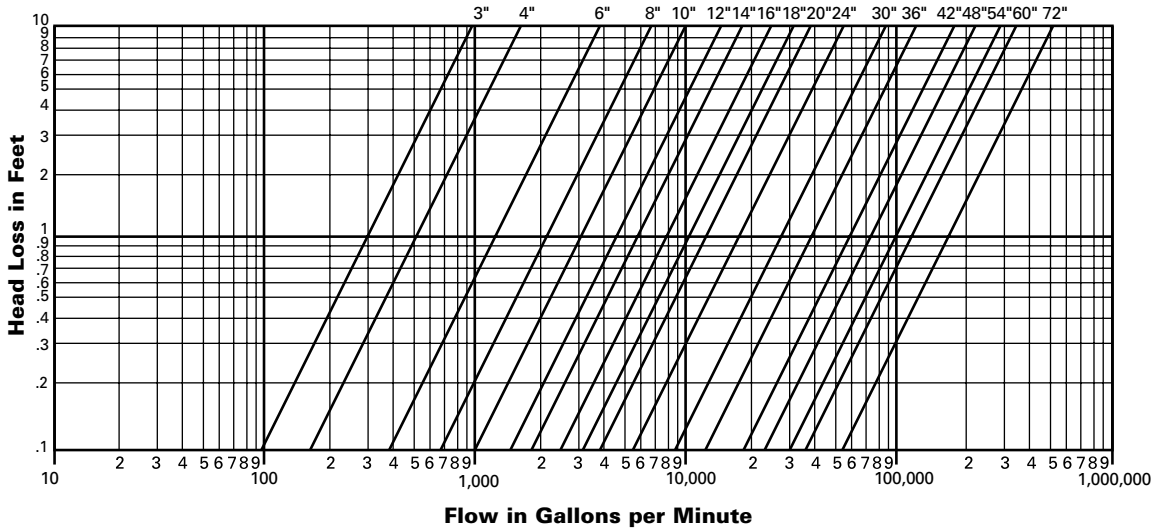
Applicable Standards

APCO CSD Slanting Disc Check Valves have been designed and/or tested to meet the following standards:	
ASME B16.34	Pressure/Temperature Ratings, Class 150 through 20" and Class 300 through 14" (350mm)
ASME B16.1	Gray Iron Pipe Flanges and Flanged Fittings
ASME B16.42	Ductile Iron Pipe Flanges and Flanged Fittings
ASME B16.5	Conforms to Bolt Pattern and Drilling. Ductile iron body valves are flat faced flange as standard. Carbon steel and stainless steel body valves have raised face flanges.
AWWA C508	Metal-to-Metal Seat Leakage
MIL-V-18436F	Conforms to Slanting Disc Check Valves with Bottom Mounted Buffer with Cast Iron or Carbon Steel body materials, with the exception of face-to-face dimensions

Temperature Ratings

Maximum operating temperature is a function of the materials used in the valve. All valves are rated to 250°F (121°C). Contact application engineering if the valve is required to operate above this temperature.

Actual Flow Test For Head Loss Characteristics



Velocity

Size of Pipe		3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	42"	48"	54"	60"	72"
Area Sq. In.		7.07	12.57	28.27	50.27	78.54	113.1	153.9	201.1	254.5	314.2	452.4	705.9	1017.9	1385.4	1809.6	2290.2	2827.4	4071.5
Area Sq. Ft.		.0491	.0873	.1964	.3491	.5454	.785	1.069	1.396	1.767	2.182	3.142	4.909	7.069	9.621	12.566	15.904	19.63	28.27
U.S. G.P.M.	C.F.S.	Velocity Ft./Sec.																	
60	.13	2.7	1.5	.07	0.4														
120	.27	5.4	3.1	1.4	0.8	0.5													
240	.53	10.9	6.1	2.7	1.5	1.0	0.7												
360	.80	16.3	9.2	4.1	2.3	1.5	1.02	.08											
480	1.07	21.8	12.3	5.5	3.1	2.0	1.4	1.0											
600	1.34	27.2	15.3	6.8	3.8	2.5	1.7	1.3	1.0										
900	2.01		23.0	10.2	5.7	3.7	2.6	1.9	1.4	1.1									
1200	2.78		30.6	13.6	7.7	4.9	3.4	2.5	1.9	1.5	1.2								
1800	4.01			20.4	11.5	7.4	5.1	3.8	2.9	2.3	1.8	1.3							
2400	5.35			27.2	15.3	9.8	6.8	5.0	3.8	3.0	2.5	1.7	1.1						
3000	6.69			34.0	19.2	12.3	8.5	6.3	4.8	3.8	3.1	2.1	1.4						
3600	8.02				23.0	14.7	10.2	7.5	5.7	4.5	3.7	2.5	1.6	1.1					
4200	9.36				26.8	17.2	11.9	8.8	6.7	5.3	4.3	3.0	1.9	1.3					
4800	10.70				30.6	19.6	13.6	10.0	7.7	6.1	4.9	3.4	2.2	1.5	1.1				
5400	12.03					22.1	15.3	11.3	8.6	6.8	5.5	3.8	2.5	1.7	1.3				
6000	13.37					24.5	17.0	12.5	9.6	7.6	6.1	4.3	2.7	1.9	1.4	1.1			
7200	16.05					29.4	20.4	15.0	11.5	9.1	7.4	5.1	3.3	2.3	1.7	1.3			
8400	18.72					34.3	23.8	17.5	13.4	10.6	8.6	6.0	3.8	2.6	1.9	1.5			
9600	21.39						27.2	20.0	15.3	12.1	9.8	6.8	4.4	3.0	2.2	1.7			
10800	24.07						30.6	22.5	17.2	13.6	11.0	7.7	4.9	3.4	2.5	1.9			
12000	26.74						34.1	25.0	19.2	15.1	12.3	8.5	5.4	3.8	2.8	2.1			
18000	40.11							37.5	28.7	22.7	18.4	12.8	8.2	5.7	4.2	3.2	2.6		
24000	53.49								38.3	30.3	24.5	17.0	10.9	7.6	5.6	4.3	3.5	2.7	
30000	66.86									37.8	30.6	21.3	13.6	9.5	6.9	5.3	4.4	3.4	
36000	80.23										36.8	25.5	16.3	11.4	8.3	6.4	5.0	4.1	2.8
42000	94.00													13.2	9.7	7.4	5.9	4.8	3.3
48000	108.00													15.1	11.1	8.5	6.7	5.4	3.8
54000	103.00													17.0	12.5	9.5	7.5	6.1	4.2
60000	133.60														13.9	10.6	8.7	6.8	4.7

Size of Pipe (mm)		80	100	150	200	250	300	350	400	450	500	600	750	900	1100	1200	1400	1500	1800
Area cm²		46	81	182	324	507	730	993	1297	1642	2027	2919	4554	6567	8938	11675	14775	18241	26268
Area m²		.0046	.0081	.0182	.0324	.0507	.0730	.0993	.1297	.1642	.2027	.2919	.4554	.6567	.8938	1.1675	1.4775	1.8241	2.6268
L.P.M.	m³/s	Velocity - Metres Per Second																	
227	.004	.82	.46	.02	.12														
454	.008	1.6	.94	.43	.24	.15													
908	.015	3.3	1.9	.82	.46	.30	.21												
1363	.023	5.0	2.8	1.2	.70	.46	.31	.02											
1817	.030	6.6	3.7	1.7	.94	.61	.43	.30											
2271	.038	8.3	4.7	2.1	1.2	.76	.52	.40	.30										
3407	.057		7.0	3.1	1.7	1.1	.79	.58	.43	.34									
4542	.076		9.3	4.1	2.3	1.5	1.0	.76	.58	.46	.37								
6814	.114			6.2	3.5	2.3	1.6	1.2	.88	.70	.55	.40							
9085	.151			8.3	4.7	3.0	2.1	1.5	1.2	.91	.76	.52	.34						
11356	.189			10.4	5.9	3.7	2.6	1.9	1.5	1.2	.94	.64	.43						
13627	.227				7.0	4.5	3.1	2.3	1.7	1.4	1.1	.76	.49	.34					
15899	.265				8.2	5.2	3.6	2.7	2.0	1.6	1.3	.91	.58	.40					
18170	.303				9.3	6.0	4.1	3.0	2.3	1.9	1.5	1.0	.67	.46	.34				
20441	.341					6.7	4.7	3.4	2.6	2.1	1.7	1.2	.76	.52	.40				
22712	.379					7.5	5.2	3.8	2.9	2.3	1.9	1.3	.82	.58	.43	.34			
27255	.454					9.0	6.2	4.6	3.5	2.8	2.3	1.6	1.0	.70	.52	.40			
31797	.530					10.5	7.3	5.3	4.1	3.2	2.6	1.8	1.2	.79	.58	.46			
36340	.606						8.3	6.1	4.7	3.7	3.0	2.1	1.3	.91	.67	.52			
40882	.681						9.3	6.9	5.2	4.1	3.4	2.3	1.5	1.0	.76	.58			
45425	.757						10.4	7.6	5.9	4.6	3.7	2.6	1.6	1.2	.85	.64			
68137	1.136							11.4	8.7	6.9	5.6	3.9	2.5	1.7	1.3	.98	.79		
90850	1.514								11.7	9.2	7.5	5.2	3.3	2.3	1.7	1.3	1.1	.82	
113562	1.893									11.5	9.3	6.5	4.1	2.9	2.1	1.6	1.3	1.0	
136275	2.271										11.2	7.8	5.0	3.5	2.5	2.0	1.5	1.2	.85
158987	2.650													4.0	3.0	2.3	1.8	1.5	1.0
181700	3.028													4.6	3.4	2.6	2.0	1.6	1.2
204412	3.407													5.2	3.8	2.9	2.3	1.9	1.3
227125	3.785														4.2	3.2	2.7	2.1	1.4

Ordering

To order, simply complete the valve order code from information shown.
An ordering example is shown for your reference.

Valve Style
Give valve style code as follows:

CSD	=	Slanting Disc Check Valves

Valve Size
Give valve size code as follows:

2	=	2"	(50mm)	20	=	20"	(500mm)
3	=	3"	(80mm)	24	=	24"	(600mm)
4	=	4"	(100mm)	30	=	30"	(750mm)
6	=	6"	(150mm)	36	=	36"	(900mm)
8	=	8"	(200mm)	42	=	42"	(1100mm)
10	=	10"	(250mm)	48	=	48"	(1200mm)
12	=	12"	(300mm)	54	=	54"	(1400mm)
14	=	14"	(350mm)	60	=	60"	(1500mm)
16	=	16"	(400mm)	72	=	72"	(1800mm)
18	=	18"	(450mm)				

Body Style
Give body style code as follows:

800	=	Series 800 Slanted Disc Check Valves

End Connection
Give end connection code as follows:

F1	=	Flanged ASME 125/150
F2	=	Flanged, ASME 250/300 (2-48")

Body Material
Give body material code as follows:

DI	=	Ductile Iron (standard for 2-54")
CI	=	Cast Iron (standard for 60-72")
CS	=	Carbon Steel (8-24")
S2	=	316 Stainless Steel (8-24")

Trim Combination

Disc Material
Give disc material code as follows:

BRZ	=	Bronze Solid (2-10")
S2	=	316 Stainless Steel (8-24")
DI	=	Ductile Iron (12" & larger)
CS	=	Carbon Steel (8-24")

Seat Material
Give seat material code as follows:

BRZ	=	Bronze
S2	=	316 Stainless Steel

Options
Give options code as follows:

BMB	=	Bottom Mounted Buffer, (6-72")
BPD	=	Flow By-Pass Dual (6-72")
BPL	=	Flow By-Pass Left (6-72")
BPR	=	Flow By-Pass Right (6-72")
DTR	=	DeZURIK Standard Certified Production Hydrostatic Shell & Seat Test Report
FG	=	Food Grade Oil for BMB or TMD
SB16	=	316 Stainless Steel Bolting
TMD	=	Top Mounted Oil Dashpot, (6-72")

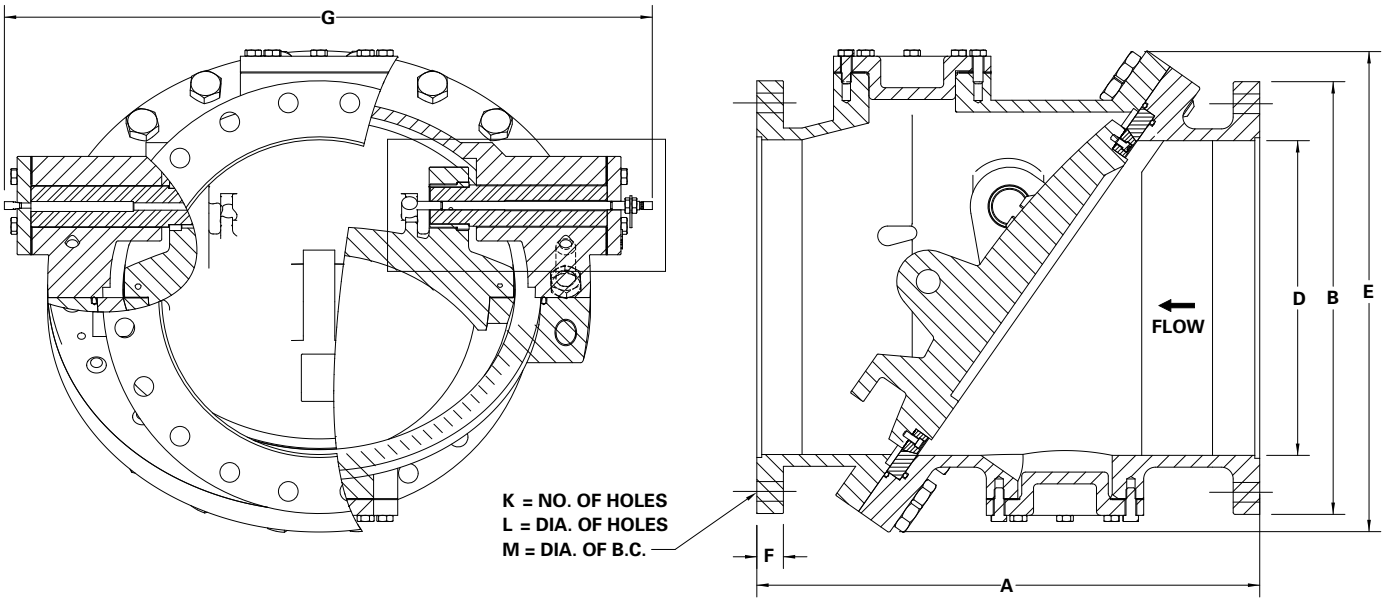
Accessories
Give accessory code as follows:

SEL22	=	(1) Limit Switch - DPDT
SEL30	=	(1) Proximity Switch - SPDT
SEL32	=	(1) Proximity Switch - DPDT

Ordering Example

CSD,6,800,F1,DI,BRZ-BRZ*BMB-FG*SEL30

Dimensions



Valve Size	ASME Class 125/150 (F1)									ASME Class 250/300 (F2)								
	A	B	D	E	F	G	K	L	M	A	B	D	E	F	G	K	L	M
2" 50mm	9.50 241	6.00 152	2.00 51	7.38 187	0.63 16	8.50 216	4	0.75 19	4.75 121	9.50 318	6.50 210	2.00 76	7.38 216	0.88 29	8.50 229	8	0.75 22	5.63 143
3" 80mm	9.50 241	7.50 191	3.00 76	8.50 216	0.75 19	9.00 229	4	0.75 19	6.00 152	12.50 318	8.25 210	3.00 76	8.50 216	1.17 29	9.00 229	8	0.88 22	5.63 143
4" 100mm	11.50 292	9.00 229	4.00 102	9.75 248	0.94 24	11.00 279	8	0.75 19	7.50 191	11.50 292	10.00 254	4.00 102	9.75 248	1.25 32	11.00 279	8	0.88 22	7.88 200
6" 150mm	15.00 381	11.00 279	6.00 152	13.75 349	1.00 25	17.50 445	8	0.88 22	9.50 241	15.00 381	12.50 318	6.00 152	13.25 337	1.44 37	17.50 445	12	0.88 22	10.63 270
8" 200mm	19.50 495	13.50 343	8.00 203	15.50 394	1.13 29	22.00 559	8	0.88 22	11.75 298	19.50 495	15.00 381	8.00 203	15.50 394	1.83 41	22.00 559	12	1.00 25	13.00 330
10" 250mm	24.50 622	16.00 406	10.00 254	18.00 457	1.19 30	25.50 648	12	1.00 25	14.25 362	24.50 622	17.50 445	10.00 254	18.00 457	1.88 48	25.50 648	16	1.13 29	15.25 387
12" 300mm	24.00 610	19.00 483	12.00 305	21.00 533	1.25 32	27.00 686	12	1.00 25	17.00 432	24.00 610	20.50 521	12.00 305	21.00 533	2.00 51	27.00 686	16	1.25 32	17.75 451
14" 350mm	30.00 762	21.00 533	14.00 356	25.00 635	1.38 35	33.00 838	12	1.13 29	18.75 476	30.00 762	23.00 584	14.00 356	25.00 635	2.13 54	33.00 838	20	1.25 32	20.25 514
16" 400mm	30.00 762	23.50 597	16.00 406	28.00 711	1.44 37	36.00 914	16	1.17 30	21.25 540	30.00 762	25.50 648	16.00 406	28.00 711	2.25 57	36.00 914	20	1.38 35	22.50 572
18" 450mm	33.00 838	25.00 635	18.00 457	30.00 762	1.56 40	38.00 965	16	1.25 32	22.75 578	33.00 838	28.00 711	18.00 457	30.00 762	2.38 60	38.00 965	24	1.38 35	24.75 629
20" 500mm	32.00 813	27.50 699	20.00 508	31.50 800	1.69 43	41.00 1041	20	1.25 32	25.00 635	32.00 813	30.50 775	20.00 508	31.50 800	2.50 64	41.00 1041	24	1.38 35	27.00 686
24" 600mm	38.00 965	32.00 813	24.00 610	36.50 927	1.88 48	48.00 1219	20	1.38 35	29.50 749	38.00 965	36.00 914	24.00 610	36.50 927	2.75 70	48.00 1219	24	1.63 41	32.00 813
30" 750mm	52.00 1321	38.75 984	30.00 762	46.50 1181	2.13 54	57.00 1448	28	1.38 35	36.00 914	52.00 1321	43.00 1092	30.00 762	46.50 1181	3.00 76	57.00 1448	28	2.00 51	39.25 997
36" 900mm	59.50 1511	46.00 1168	36.00 914	51.00 1295	2.38 60	62.50 1588	32	1.83 46	42.75 1086	59.50 1511	50.00 1270	36.00 914	51.00 1295	3.38 86	62.50 1588	32	2.25 57	46.00 1168
42" 1100mm	62.50 1588	53.00 1346	42.00 1067	58.00 1473	2.63 67	63.00 1600	36	1.63 41	49.50 1257	62.50 1588	57.00 1448	42.00 1067	58.00 1473	3.69 94	63.00 1600	36	2.25 57	52.75 1340
48" 1200mm	65.00 1651	59.50 1511	48.00 1219	67.50 1715	2.75 70	72.00 1829	44	1.63 41	56.00 1422	65.00 1651	65.00 1651	48.00 1219	67.50 1715	4.00 102	72.00 1829	40	2.25 57	60.75 1543
54" 1400mm	78.00 1981	66.25 1683	54.00 1372	71.00 1803	3.00 76	77.00 1956	44	2.00 51	62.75 1594									
60" 1500mm	87.00 2210	73.00 1854	60.00 1524	84.00 2134	3.13 79	90.00 2286	52	2.00 51	69.25 1759									
72" 1800mm	106.00 2692	86.50 2197	72.00 1829	102.00 2591	3.50 89	125.00 3175	60	2.00 51	82.50 2096									

Pounds
Kilograms

Dimensions

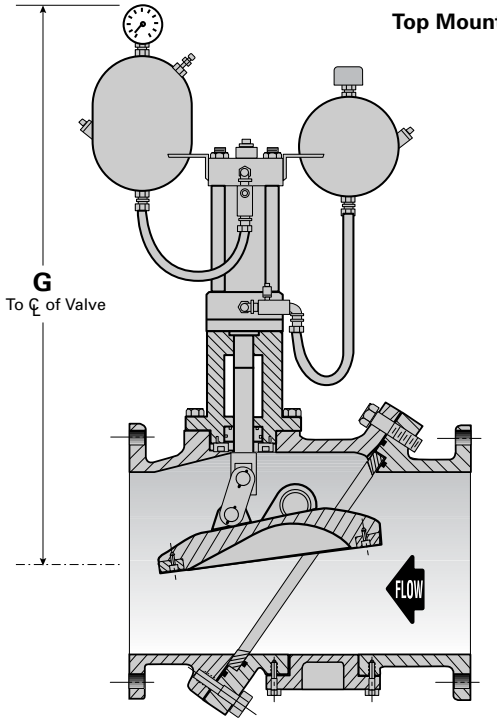
Top Mounted Oil Dashpot (TMD) & Bottom Mounted Buffer (BMB)

Valve Size	TMD	BMB			
	G	H	N	J	P
6" 150mm	21.38 543	13.38 340	8.63 219	2.75 70	11.50 292
8" 200mm	28.63 727	14.75 375	7.75 197	3.63 92	11.00 279
10" 250mm	30.63 778	16.50 419	5.00 127	4.13 105	9.00 229
12" 300mm	31.88 810	17.88 454	7.13 181	5.13 130	11.00 279
14" 350mm	35.88 911	19.75 502	4.75 121	5.38 137	9.00 229
16" 400mm	43.50 105	21.63 549	4.63 117	5.25 133	9.00 229
18" 450mm	44.88 1140	23.50 597	2.88 73	5.50 140	7.00 178
20" 500mm	48.25 1226	26.25 667	5.25 133	7.13 181	12.00 305
24" 600mm	60.88 1546	28.38 721	1.69* 43	6.00 152	3.00 76
30" 750mm	69.63 1768	34.50 876	2.06 52	8.25 210	5.00 127
36" 900mm	79.19 2011	39.25 997	8.75* 222	7.75 197	2.00* 51
42" 1100mm	91.00 2311	46.50 1181	9.75 248	3.50 89	2.00* 51
48" 1200mm	102.00 2591	50.00 1270	.50* 13	2.50 64	2.00 51
54" 1400mm	122.00 3099	60.00 1524	3.25* 83	7.00 178	.75* 19
60" 1500mm	124.00 3150	62.50 1588	11.38* 289	8.00 203	4.00* 102
72" 1800mm	147.00 3734	73.00 1854	8.00* 203	3.50 89	3.00 76

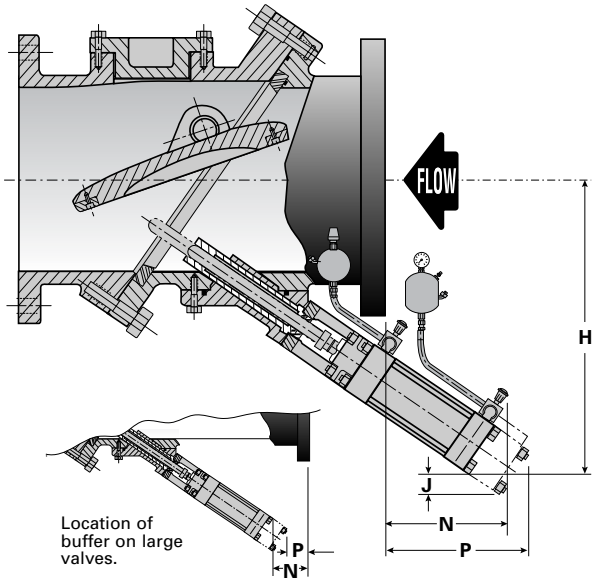
Pounds
Kilograms

* Protrudes beyond the inlet flange

Top Mounted Oil Dashpot (TMD)



Bottom Mounted Buffer (BMB)



Sales and Service

For information about our worldwide locations, approvals, certifications and local representative:
Web Site: www.dezurik.com E-Mail: info@dezurik.com

DeZURIK
APCO | HILTON

250 Riverside Ave. N. Sartell, Minnesota 56377 • Phone: 320-259-2000 • Fax: 320-259-2227

Printed in the U.S.A.