



## **APCO SWING CHECK VALVES AIR CUSHIONED/OIL CONTROLLED**



Series 6000  
6100  
6000B

# APCO Swing Check Valves

## Plain Talk About Plain Swing Check Valves

The advantage "common" variety plain Swing Check Valves offer is a fully unobstructed flow through area. This advantage is accomplished in design by locating the pivot point of the disc well outside its periphery, thus it is possible for the entire disc to lift clear of the flow area. This is a very desirable feature when pumping raw sewage. However, there are better performing check valves.

Many years ago, pumping flow rates of 3 feet per second and pressures of 25 psi were common. Today, these low flow and pressure conditions are rare. Therefore, a plain Swing Check is often misapplied, not adequate and may slam.

**Request Brochure 769, "APCO Check Valve Guide"**

## APCO Cushioned Swing Check Valves

APCO Air Cushion Checks have the full unobstructed flow advantage of the plain Swing Check, but here similarity ends. The Air Cushion Check is a much heavier valve that is designed to withstand shock. The Air Cushion Check Valve utilizes a totally enclosed cushion cylinder externally mounted to the side of the main valve body. In addition, it is designed with a heavy outside lever, positively clamped to an extra large diameter pivot shaft. The weight can be easily moved to various positions on the lever to change the closing time.

It is the outside lever and weight which forces the disc to close immediately upon pump shut down and before reverse flow takes place. In so doing, the weighted lever drives the piston into the cushion chamber, compressing the trapped air and creating the cushion during valve closure.

**CAUTION: Air is infinitely compressible and due to this phenomenon, when pumping conditions result in rapid flow reversal at pump shut-off, the high closing speed of the disc may diminish the effectiveness of the air cushioning. Oil control check valves (Model 6000B) should then be considered.**

## How Cushioned Swing Check Valves Work

(See Diagrams at Right)

1. Discharge velocity head from the pump against disc (10) opens the disc and raises the weighted lever (29) outside of the valve upwards. At the same time the piston inside the cushion cylinder (20) is pulled upwards, drawing free air into the cushion cylinder through the "one way" control check valve (30).
2. When reverse flow occurs against the backside of the disc (10) pressure forces the disc toward the shut-off position against the seat (5) at the same time forcing the cushion cylinder downwards. Moving downwards, the piston compresses the air in the cushion cylinder because the air cannot readily escape through the "one way" control check valve. By restricting the air escape through the adjustable control check (30) air cushioned closing is accomplished.

**Note: Because air is infinitely compressible the disc swings to shut-off with minimal resistance. Therefore the Air Cushion Check Valve is rated one speed fast closing, less than two seconds.**

3. Air Cushioning is "Field Adjustable," starting when the valve disc is approximately 90% closed. Therefore, the disc closes very fast through 90% of its swing. Then, air compression develops to cushion close the remaining 10% of valve shut-off. Factory start-up service is available but not essential.

# Series 6000 - Air Cushion/Side Mounted

## Easily Adjusted To Operating Conditions

### Air Cushion Check

The totally enclosed external air cushion cylinder is adjustable as follows:

Primary control is in the cushion cylinder, by adjusting the flow control valve (30)

Increased cushioning — screw in (clockwise) control valve (30)

Decreased cushioning — screw out (counter clockwise) control valve (30)

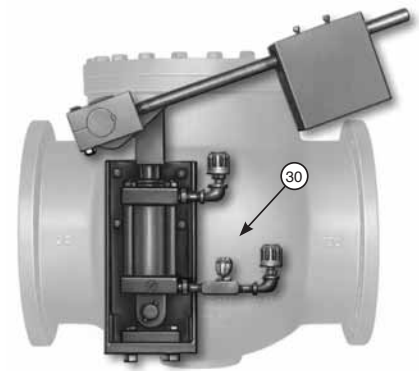
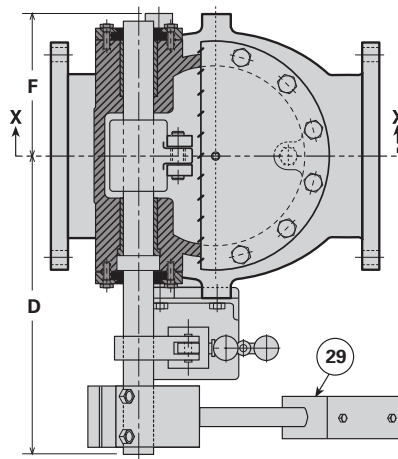
For more rapid disc closure — move the weight towards outer end of the lever.

For less rapid disc closure — move the weight towards pivot shaft.

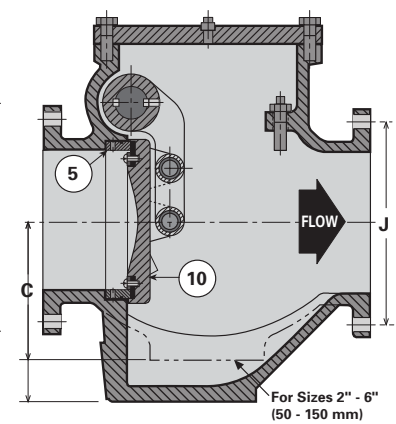
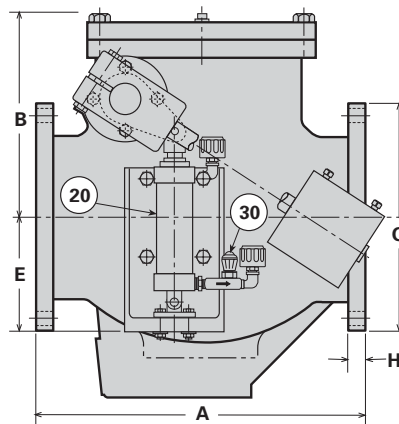
**WARNING: Many Check Valves including Air Cushion Check Valves can experience problems when a Surge/Pressure Tank is being installed on the pipeline in close proximity to the check valves. Contact DeZURIK's Engineering Department for Check Valve recommendations.**

### Features by APCO

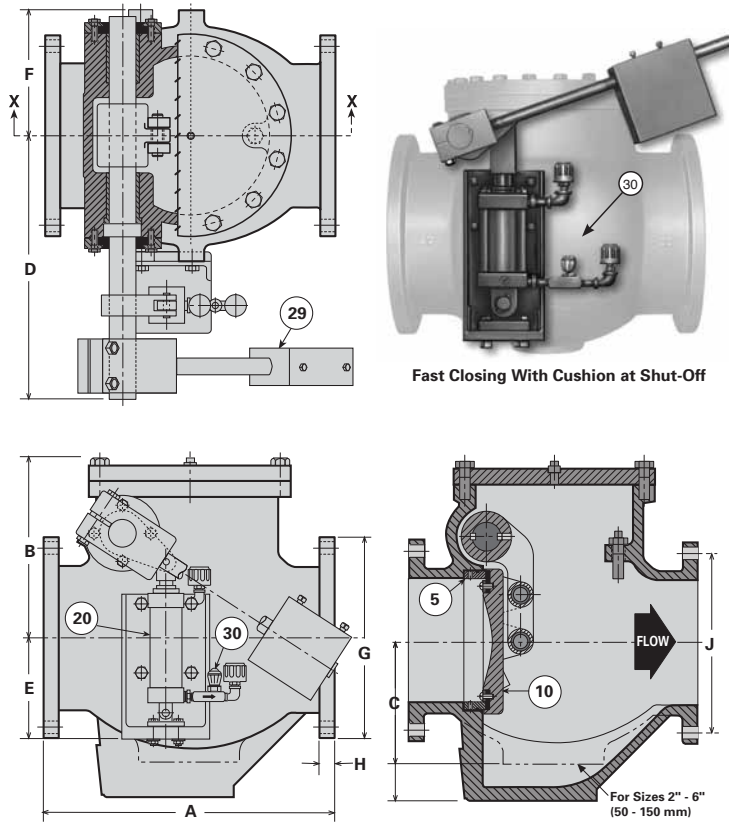
1. Totally enclosed air cylinders are protected from the elements.
2. Micrometer air control valve-coded for ease of adjustment to achieve air cushion closure.
3. Double Clevis, self aligning disc.
4. Convertible valves can be retrofitted in the field to oil control.
5. Centrifugally cast aluminum bronze tough wearing body seat.
6. All internal parts can be easily replaced, including the body seat, in the field!
7. Through shafts to avoid internal axial forces.



Fast Closing With Cushion At Shut-Off



# Series 6000 - Dimensions



		Series 6000																	
Model	Size	125# & 250# Class							125# Class					250# Class					
		A	B	C	D	E	F	No. of C'WT Arms	No. of Cyl.	G	H	J	Dia. of Holes	No. of Holes	G	H	J	Dia. of Holes	No. of Holes
6002	2" 50	9" 229	6" 152	10.25" 260	13.25" 337	10.75" 273	5" 127	1	1	6" 152	.625" 16	4.75" 121	.75" 19	4	6.5" 165	.875" 22	5" 127	.75" 19	8
6002.5	2.5" 65	12" 305	7" 178	10.25" 260	13.5" 343	9.625" 244	5.25" 133	1	1	7" 178	.688" 17	5.5" 140	.75" 19	4	7.5" 191	1" 25	5.875" 149	.875" 22	8
6003	3" 80	12" 305	7" 178	10.25" 260	13.75" 349	10" 254	5.5" 140	1	1	7.5" 191	.75" 19	6" 152	.75" 19	4	8.25" 210	1.125" 29	6.625" 168	.875" 22	8
6004	4" 100	13" 330	7.5" 191	10.25" 260	14" 356	9" 229	6" 152	1	1	9" 229	.938" 24	7.5" 191	.75" 19	8	10" 254	1.25" 32	7.875" 200	.875" 22	8
6006	6" 150	17.5" 445	10" 254	10.5" 267	17" 432	10.375" 264	8.375" 213	1	1	11" 279	1" 25	9.5" 241	.875" 22	8	12.5" 318	1.438" 37	10.625" 270	.875" 22	12
6008	8" 200	18" 457	12" 305	10.25" 260	16.75" 425	8.75" 222	8.5" 216	1	1	13.5" 343	1.125" 29	11.75" 298	.875" 22	8	15" 381	1.625" 41	13" 330	1" 25	12
6010	10" 250	23" 584	14.25" 362	14" 356	21" 533	8.5" 216	10" 254	1	1	16" 406	1.188" 30	14.25" 362	1" 25	12	17.5" 445	1.875" 48	15.25" 387	1.125" 29	16
6012	12" 300	28" 711	16" 406	16" 406	22" 559	8.75" 222	11.5" 292	1	1	19" 483	1.25" 32	17" 432	1" 25	12	20.5" 521	2" 51	17.75" 451	1.25" 32	16
6014	14" 350	33" 838	19.625" 498	18" 457	26" 660	10.75" 273	13.75" 349	1	1	21" 533	1.375" 35	18.75" 476	1.125" 29	12	23" 584	2.125" 54	20.25" 514	1.25" 32	20
6016	16" 400	36" 914	21" 533	22" 559	27.5" 699	9.5" 241	14.5" 368	1	1	23.5" 597	1.438" 37	21.25" 540	1.125" 29	16	25.5" 648	2.25" 57	22.5" 572	1.375" 35	20
6018	18" 450	40" 1016	24" 610	22" 559	29" 737	8.125" 206	16" 406	1	1	25" 635	1.563" 40	22.75" 578	1.25" 32	16	28" 711	2.375" 60	24.75" 629	1.375" 35	24
6020	20" 500	40" 1016	26" 660	24.5" 622	32" 813	8.75" 222	17.5" 445	1	1	27.5" 699	1.688" 43	25" 635	1.25" 32	20	30.5" 775	2.5" 64	27" 686	1.375" 35	24
6024	24" 600	48" 1219	30" 762	26" 660	33.5" 851	5.875" 149	20" 508	1	1	32" 813	1.875" 48	29.5" 749	1.375" 35	20	36" 914	2.75" 70	32" 813	1.625" 41	24
6030	30" 750	56" 1422	38" 965	31" 787	38.5" 978	9.25" 235	24" 610	1	1	38.75" 984	2.125" 54	36" 914	1.375" 35	28	43" 1092	3" 76	39.25" 997	2" 51	28
6036	36" 900	63" 1600	45" 1143	36" 914	41.5" 1054	5" 127	27" 686	2	2	46" 1168	2.375" 60	42.75" 1086	1.625" 41	32	50" 1270	3.375" 86	46" 1168	2.25" 57	32
6042	42" 1100	70" 1778	56" 1422	39" 991	49" 1245	1" 25	33" 838	2	2	53" 1346	2.625" 67	49.5" 1257	1.625" 41	36	57" 1448	3.688" 94	52.75" 1340	2.25" 57	36
6048	48" 1200	78" 1981	50" 1270	41" 1041	60" 1524	6" 152	38" 965	2	2	59.5" 1511	2.75" 70	56" 1422	1.625" 41	44	65" 1651	4" 102	60.75" 1543	2.25" 57	40
6054	54" 1400	87" 2210	63" 1600	39" 1321	65" 1651	16" 406	43" 1092	2	2	66.25" 1683	3" 76	62.75" 1594	2" 51	44	To be Supplied by Customer				
6060	60" 1500	97" 2464	66" 1676	58" 1473	70" 1778	27" 686	46" 1168	2	2	73" 1854	3.125" 79	69.25" 1759	2" 51	52					
6066	66" 1700	108" 2743	68" 1727	64" 1626	76" 1930	39" 991	50.5" 1283	2	2	80" 2032	3.438" 87	76" 1930	2" 51	52					

Inch  
Millimeter

# Series 6000B - Oil Control/Bottom Buffer

## How 6000B Series Oil Control/Bottom Buffer Valves Work

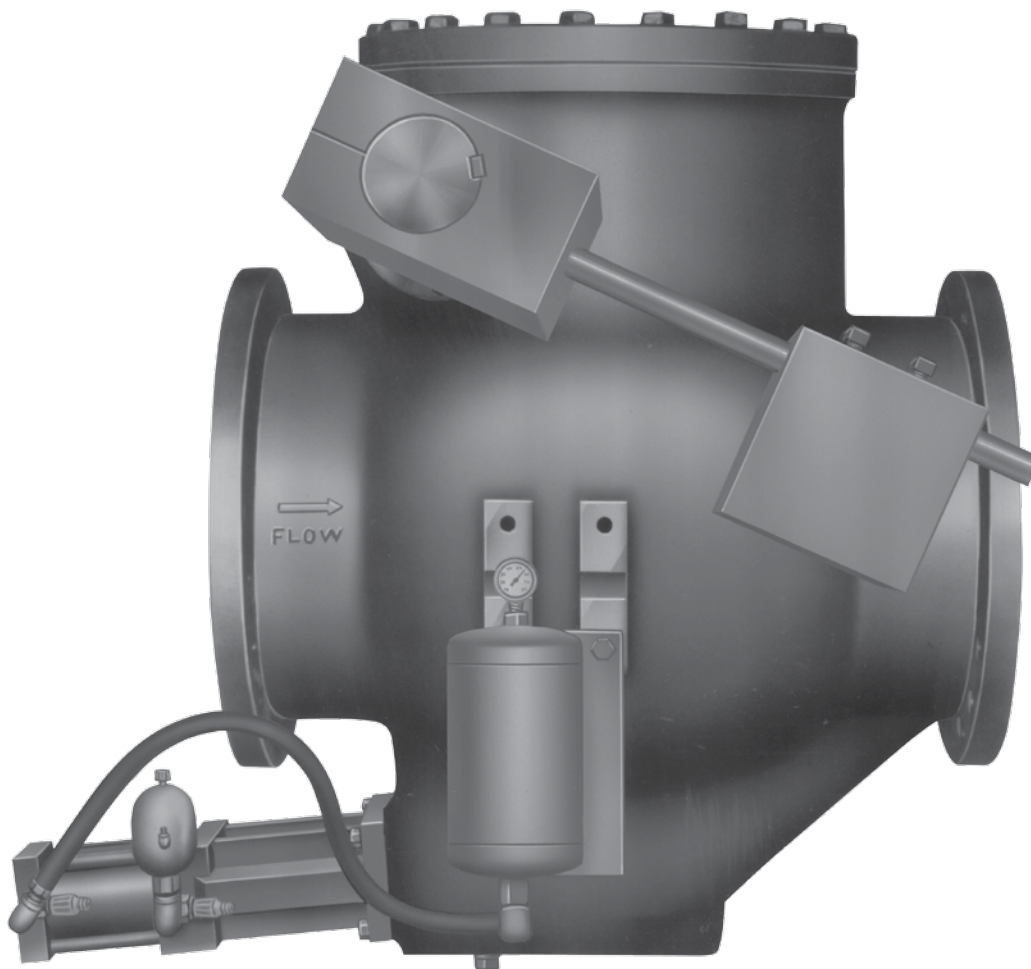
(See Diagrams at Left)

1. Discharge velocity head from the pump causes the disc (10) to open and raises the outside weighted lever (29).

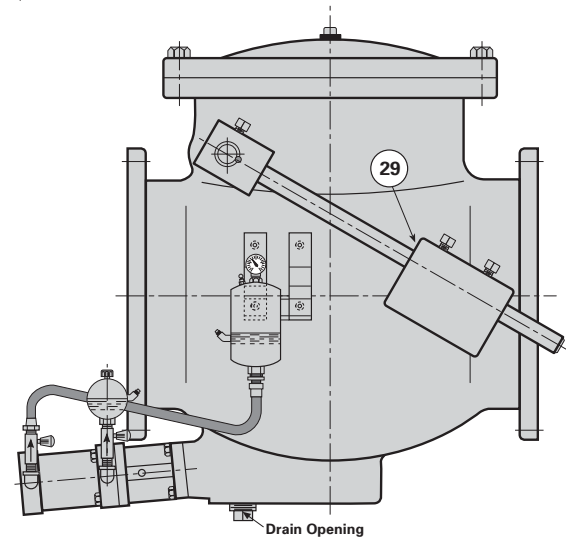
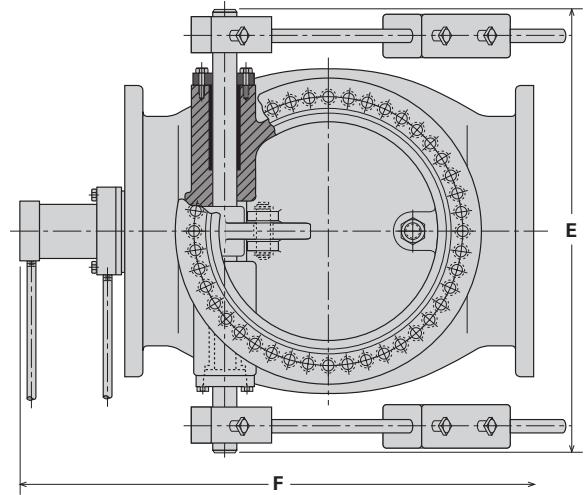
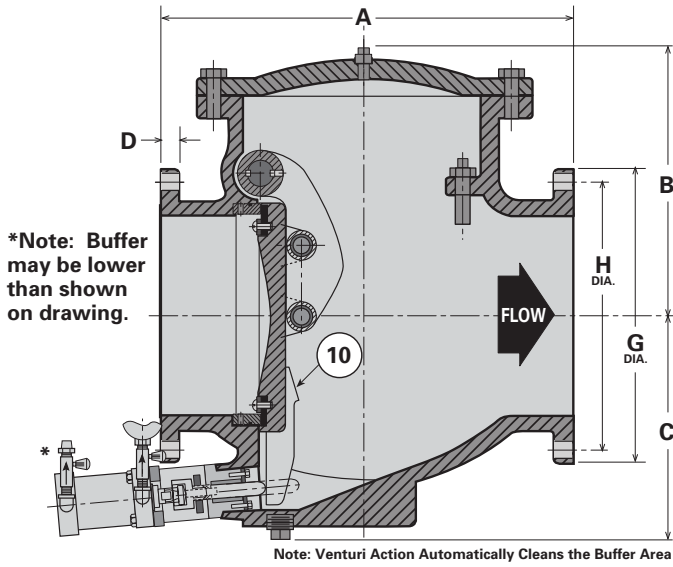
**Note: The disc freely swings open.**

2. Conversely when pumping stops the outside weighted lever (29), together with the reversing flow, forces the disc (10) downward towards shut off rapidly and freely until the disc tail comes in contact with the buffer rod. Controlled closure takes place during the final (approximately) 10% of disc movement.

The bottom buffer principal of control closure has been used for decades on slanting disc check valves... it works and it's reliable.



# Series 6000B - Dimensions



- Note:**
- Sizes 8", 10" and 12" (200, 250, 300 mm) have only one counterweight. (right side)
  - Lever arm extends beyond outlet flange on some sizes.
  - Specify if other than horizontal installation because angle of weight lever and oil reservoir must be changed.
  - We recommend the bottom mount 6000B for vertical flow up installations.
  - The bottom mount is far superior to the side mount in larger sized valves and maintains a full ANSI rating.

Additional Information: APCO 6000B Found on Page 9

Series 6000B																
Model	Size	125# & 250# Class					125# Class					250# Class				
		A	B	C	E	F	G	H	D	Dia. of Holes	No. of Holes	G	H	D	Dia of Holes	No. of Holes
6008B	8"	18"	12"	10.25"	25"	28"	14"	11.75"	1.125"	.875"	8	15"	13"	1.625"	1"	12
	200	457	305	260	635	711	356	298	29	22		381	330	41	25	
6010B	10"	23"	14.25"	13.75"	30"	33.5"	16"	14.25"	1.188"	1"	12	17.5"	15.25"	1.875"	1.125"	16
	250	584	362	349	762	851	406	362	30	25		445	387	48	29	
6012B	12"	28"	16"	17.5"	30.5"	42"	19"	17"	1.25"	1"	12	20.5"	17.75"	2"	1.25"	16
	300	711	406	445	775	1067	483	432	32	25		521	451	51	32	
6014B	14"	33"	19.75"	21"	46"	48"	21"	18.75"	1.375"	1.125"	12	23"	20.25"	2.125"	1.25"	20
	350	838	502	533	1168	1219	533	476	35	29		584	514	54	32	
6016B	16"	36"	24"	21.25"	46"	50"	23.5"	21.25"	1.438"	1.125"	16	25.5"	22.5"	2.25"	1.375"	20
	400	914	610	540	1168	1270	597	540	37	29		648	572	57	35	
6018B	18"	40"	24"	22"	58"	56"	25"	22.75"	1.563"	1.25"	16	28"	24.75"	2.375"	1.375"	24
	450	1016	610	559	1473	1422	635	578	40	32		711	629	60	35	
6020B	20"	40"	26"	24"	64"	60"	27.5"	25"	1.688"	1.25"	20	30.5"	27"	2.5"	1.375"	24
	500	1016	660	610	1626	1524	699	635	43	32		775	686	64	35	
6024B	24"	48"	30"	26"	67"	65"	32"	29.5"	1.875"	1.375"	20	36"	32"	2.75"	1.625"	24
	600	1219	762	660	1702	1651	813	749	48	35		914	813	70	41	
6030B	30"	56"	37.875"	31"	77"	76"	38.75"	36"	2.125"	1.375"	28	43"	39.25"	3"	2"	28
	750	1422	962	787	1956	1930	984	914	54	35		1092	997	76	51	
6036B	36"	63"	45"	36"	83"	86"	46"	42.75"	2.375"	1.625"	32	50"	46"	3.375"	2.25"	32
	900	1600	1143	914	2108	2184	1168	1086	60	41		1270	1168	86	57	
6042B	42"	70"	56"	39"	98"	95"	53"	49.5"	2.625"	1.625"	36	57"	52.75"	3.688"	2.25"	36
	1100	1778	1422	991	2489	2413	1346	1257	67	41		1448	1340	94	57	
6048B	48"	78"	50"	41"	115"	108"	59.5"	56"	2.75"	1.625"	44	65"	60.75"	4"	2.25"	40
	1200	1981	1270	1041	2921	2743	1511	1422	70	41		1651	1543	102	57	
6054B	54"	87"	63"	52"	130"	120"	66.25"	62.75"	3"	2"	44	To be Supplied by Customer				
	1400	2210	1600	1321	3302	3048	1683	1594	76	51						
6060B	60"	97"	66"	58"	140"	130"	73"	69.25"	3.125"	2"	52					
	1500	2464	1676	1473	3556	3302	1854	1759	79	51						
6066B	66"	108"	68"	64"	152"	140"	80"	76"	3.438"	2"	52					
	1700	2743	1727	1626	3861	3556	2032	1930	87	51						

# Series 6100 (125# Class) - Oil Control/Side Mounted

## How 6100 Series Valves Work

### 1. Opening

Discharge velocity head from the pump causes the disc (10) to open and raises the outside weighted lever. (29) Except for frictional resistance, the disc is free opening.

### 2. Three Stages of Controlled Closure

The cylinders provide two stages and a third stage is developed by the Timing Valve (45). The Timing Valve is most important because it allows very fast closure of the disc from full open to any degree of closure. This feature greatly reduces the volume of backflow and flow reversal that occurs with only 2 stage closure valves (by others) on the market.

The three-stage closure function is as follows:

- 1st stage: Rapid closure from full open to any degree of closing. (45- Timing Valve)
- 2nd stage: Variable speed towards final closure. (30- Flow Control Valve)
- 3rd stage: Variable speed closure to shut-off. (20- Internal Cushion Adjustment of the Cylinder)

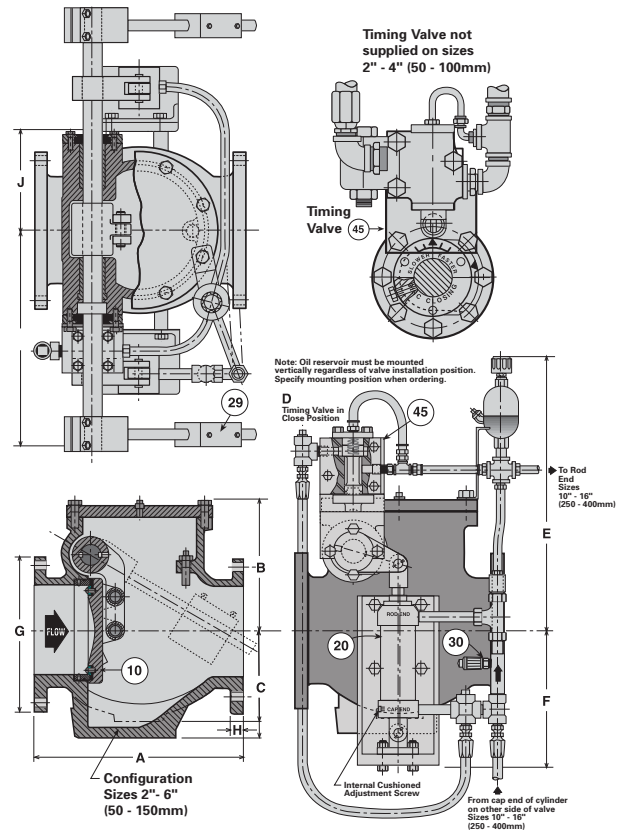
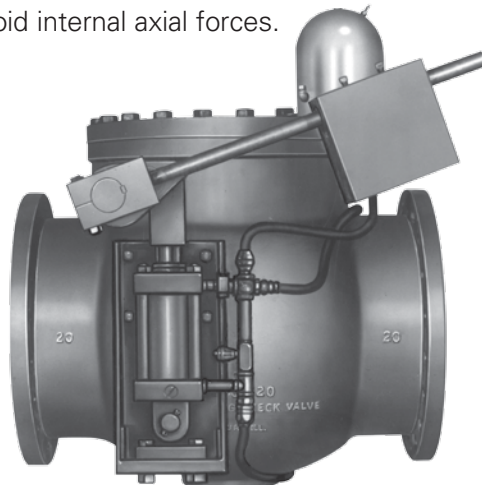
Each stage is independently adjustable.

Additional closing adjustments:

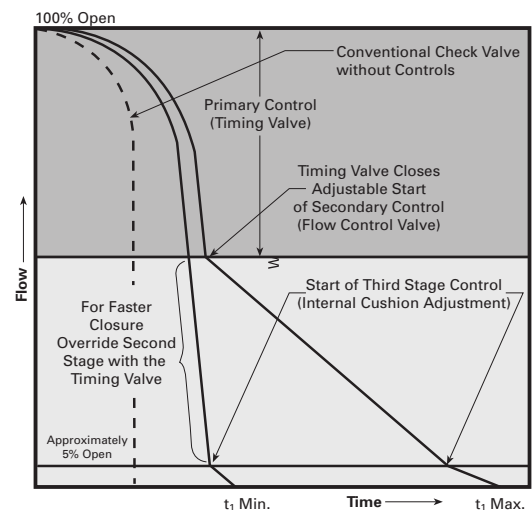
- Faster disc closing — move weight towards outer end of lever
- Slower disc closing — move weight towards pivot shaft

## Features by APCO

1. Three stage closure with fail safe oil accumulator system.
2. Totally enclosed oil cylinders protected from the elements.
3. Timing valve.
4. Centrifugally cast aluminum bronze tough non-wearing body seat.
5. Double clevis self aligning disc.
6. All internal parts can be easily replaced, including body seat, in the field without removing the valve from the line.
7. Through shafts to avoid internal axial forces.



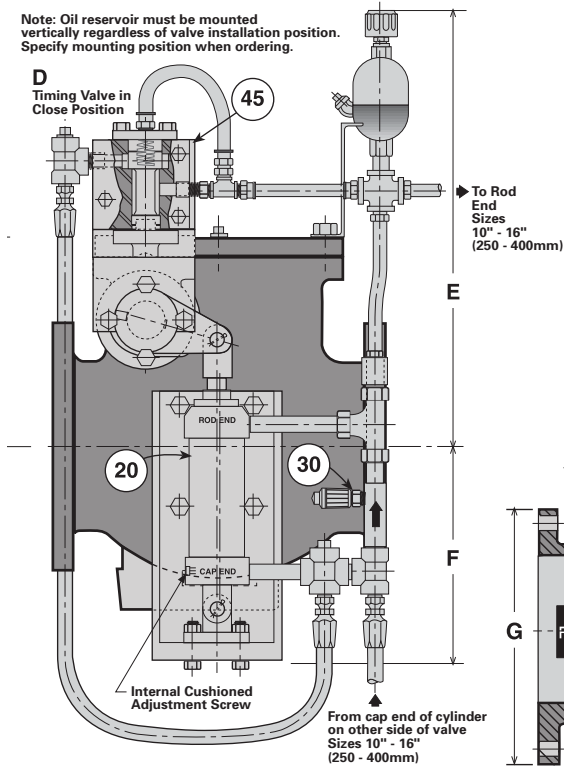
## Series 6100 Three Stage Closing Characteristics



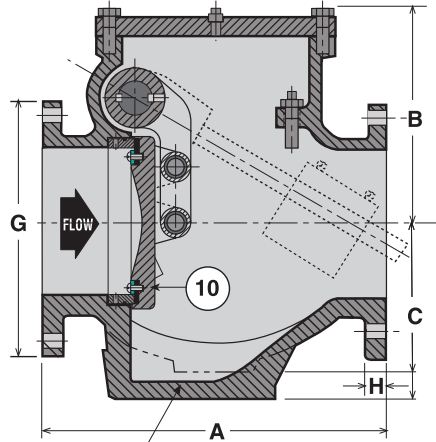
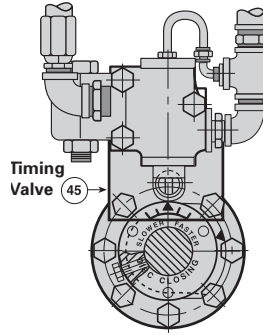
Control closing is achieved by the Oil Dashpot/Timing Valve System. This will minimize damaging water hammer. Adjusting the Timing Valve/Oil Dashpot System is easily accomplished to suit each application. The graph shows flow rate as a function of closing time and illustrates clearly the superiority of the APCO three stage Oil Control Check Valves.

# Series 6100 (125# Class) - Dimensions

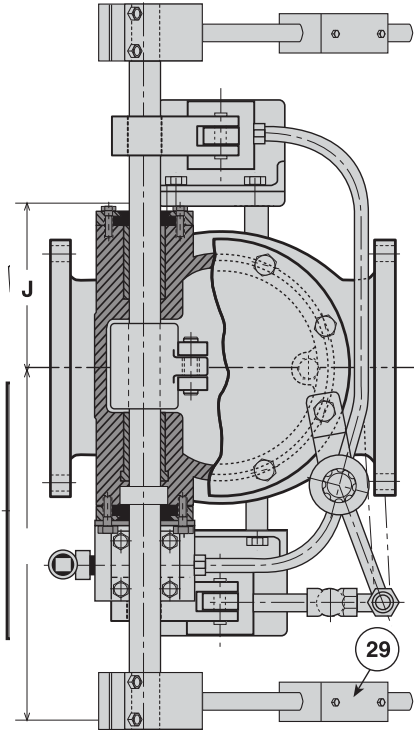
Note: Oil reservoir must be mounted vertically regardless of valve installation position. Specify mounting position when ordering.



Timing Valve not supplied on sizes 2" - 4" (50 - 100mm)



Configuration Sizes 2" - 6" (50 - 150mm)



Note: For 250# class or larger sizes depending on pressure differential across disc and flow, contact factory, or use 6000B. Contact factory for application.

Series 6100															
Model	Size	A	B	C	D	E	F	G	H	Flange Holes			No. of C'WT. Arm	No. of Cyl.	J
										No.	Dia.	B.C.D.			
6102	2"	9"	5.75"	3.5"	13.25"	19"	10.75"	6"	.625"	4	.75"	4.75"	1	1	5"
	50	229	146	89	337	483	273	152	16						
6102.5	2.5"	12"	6.875"	4"	13.5"	20.5"	10.25"	7"	.688"	4	.75"	5.5"	1	1	5.5"
	65	305	175	102	343	521	260	178	17						
6103	3"	12"	7"	4.125"	13.75"	21"	10"	7.5"	.75"	4	.75"	6"	1	1	5.75"
	80	305	178	105	349	533	254	191	19						
6104	4"	13"	7.5"	5"	14"	21"	10.5"	9"	1.938"	8	.75"	7.5"	1	1	6.25"
	100	330	191	127	356	533	267	229	49						
6106	6"	17.5"	10"	6.5"	17"	22.5"	14"	11"	1"	8	.875"	9.5"	1	1	8.75"
	150	445	254	165	432	572	356	279	25						
6108	8"	18"	12"	10.25"	16.75"	24"	12.5"	13.5"	1.125"	8	.875"	11.75"	1	1	8.75"
	200	457	305	260	425	610	318	343	29						
6110	10"	23"	14.25"	14"	21"	28"	12"	16"	1.188"	12	1"	14.25"	2	2	—
	250	584	362	356	533	711	305	406	30						
6112	12"	28"	16"	16"	22"	29.5"	12"	19"	1.25"	12	1"	17"	2	2	—
	300	711	406	406	559	749	305	483	32						
6114	14"	33"	19.625"	18"	26"	33"	14.25"	21"	1.375"	12	1.125"	18.75"	2	2	—
	350	838	498	457	660	838	362	533	35						
6116	16"	36"	22"	22"	27.5"	35.5"	15.5"	23.5"	1.438"	16	1.125"	21.25"	2	2	—
	400	914	559	559	699	902	394	597	37						
6118	18"	40"	24"	22"	30"	44"	16.5"	25"	1.563"	16	1.25"	22.75"	2	2	—
	450	1016	610	59	762	1118	419	635	40						
6120	20"	40"	26"	24.5"	32"	46"	17"	27.5"	1.688"	20	1.25"	25"	2	2	—
	500	1016	660	622	813	1168	432	699	43						

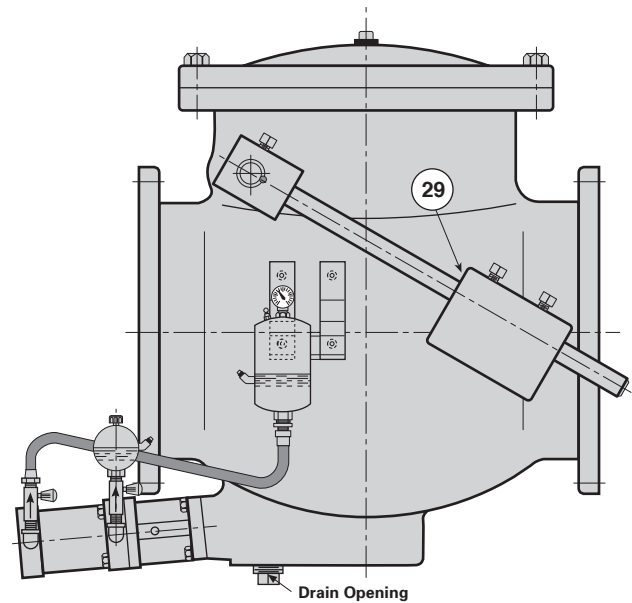
Inch  
Millimeter

# Additional Information: Bottom Mounted Buffer (Free Opening and Controlled Closing)

This 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 then comes in contact with the buffer rod (33). At this point, speed of closing of the last 10% is established.

The flow control valve (41) on the cylinder (39) is easily adjusted to allow a closing time adjustment to suit pipeline flow conditions. Slamming is prevented and pipeline pressure surges are greatly reduced.

- We recommend the Bottom Mounted Buffer for vertical upward flow installations and whenever there is a hydro pneumatic surge tank in close proximity to the pump discharge.
- The Bottom Mounted Buffer is far superior to a side mounted oil control for larger sized valves. With the Bottom Mounted Buffer the larger size valves still maintain a full ANSI rating.



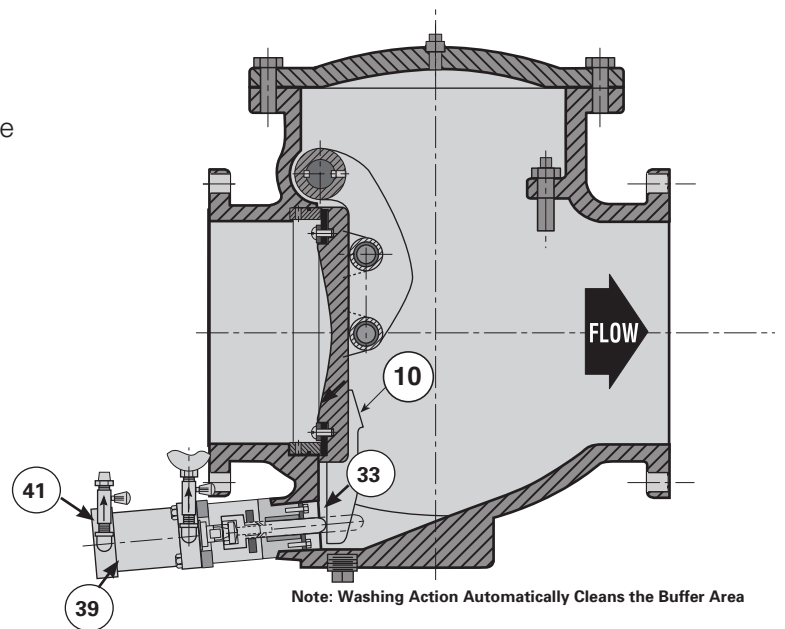
## Did you know?

- Any APCO (convertible) controlled movement valve can be modified in the field to meet your specific conditions.
- Good pump station design suggests at least 3 pipe diameters of straight pipe on the down stream side of a check valve and in some cases the upstream side.
- The APCO buffer may be added to a convertible check valve in the field.
- DeZURIK offers factory trained engineers for field start up.

## About the Buffer

Bottom Mounted Buffers have been used successfully for decades to eliminate slamming of the valve disc and resultant water hammer.

Recommended where instantaneous flow reversal caused by a Hydro-Pneumatic Surge Tank or Open Line Discharge is so fast a free closing check valve cannot shut prior to reverse flow and therefore slams. With the buffer, the disc will stop at approximately 90% (adjustable) of closure and closure is controlled to shut-off without slamming and with minimal pressure rise.

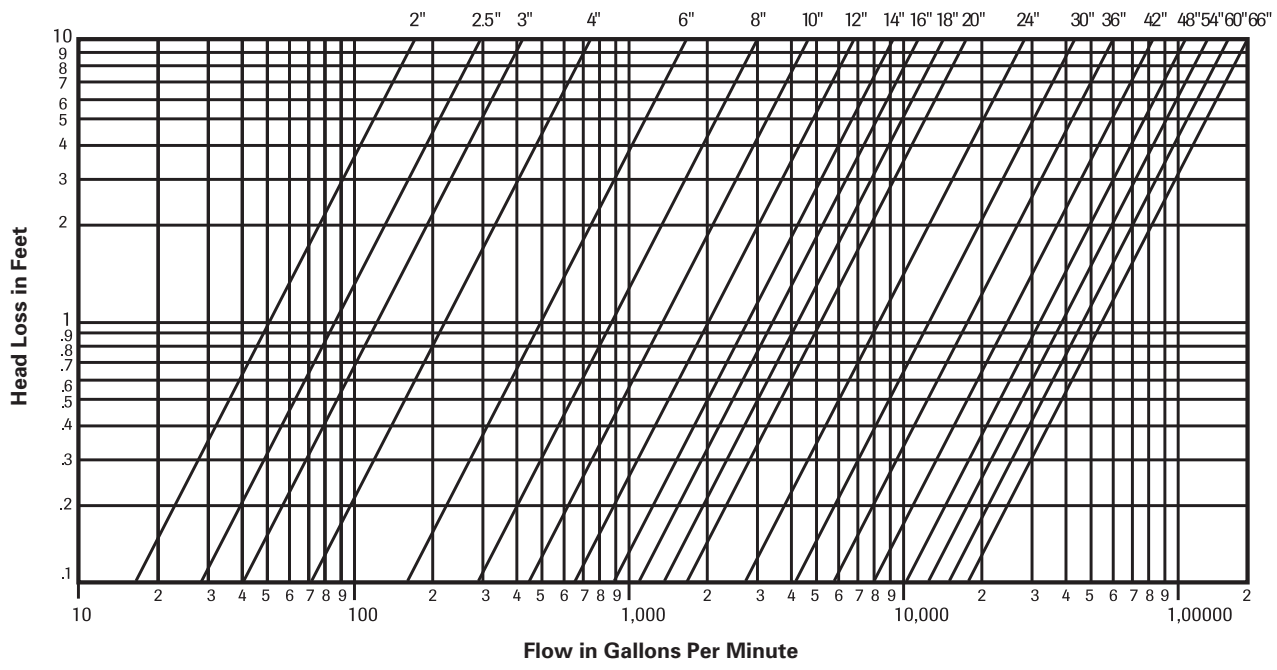


Valve Size		2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	42"	48"	54"	60"	66"	
Shaft Dia.		1" 25	1" 25	1" 25	1.125" 29	1.375" 35	1.75" 44	2.125" 54	2.5" 64	3" 76	3.5" 89	3.75" 95	4" 102	3" 76	3.75" 95	4" 102	5" 127	5.5" 140	5.5" 140	6" 152	6" 152	
Model Number	6000	Stainless Steel T303																				
	6000B	Not Available						Stainless Steel T303														
	6100	Stainless Steel 17-4PH												For Full ANSI Rating Use Series 6000B								
Yield Strength: Stainless Steel 17-4PH = 165,000 PSI; Stainless Steel T303 = 40,000 PSI																						

Inch  
Millimeter

**Note:** Above shaft diameters and materials are designed for maximum torque. A superior grade 17-4PH Stainless Steel shaft material is used on Oil Control Check Valves. This material is approximately 4 times stronger than T303, T304 or T316 stainless steel.

### Head Loss Characteristics for Swing Check Valves



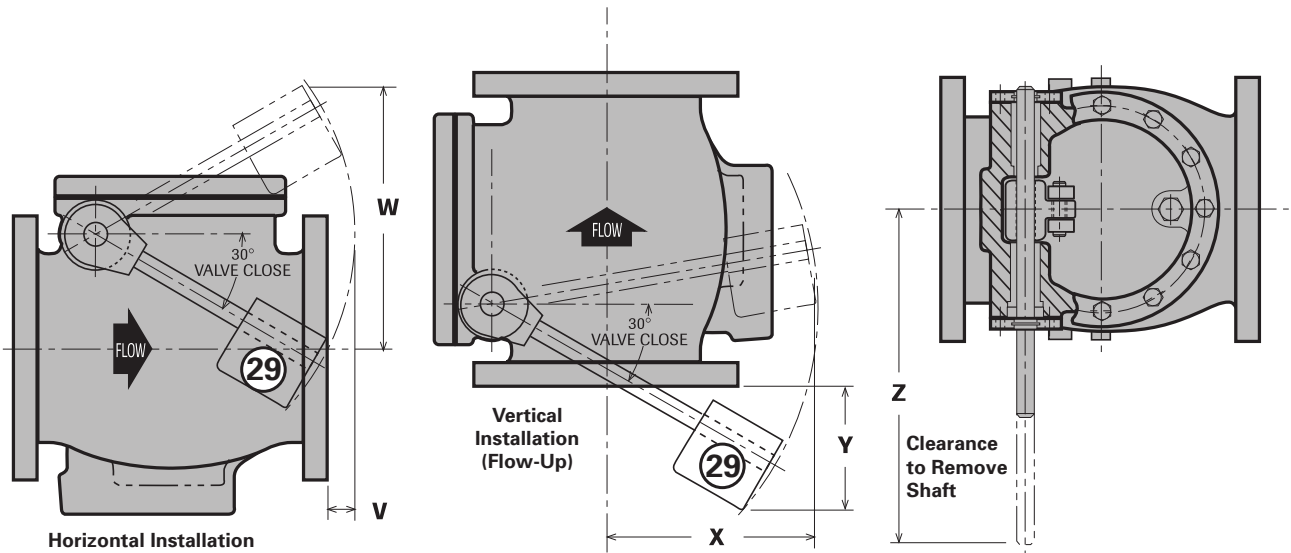
# How to Install

APCO Cushion Swing Check Valves may be installed horizontally or vertically on the discharge side of the pump to suit available space in the pump station.

The lever weight arm is fitted with a movable weight No. 29. This weight acts as the force to hold the disc No. 10 against the seat to keep the valve closed. Occasionally the weight is not required and can be removed (or additional weights may be required at minimum cost).

Each valve comes with installation instructions fixed to the weight.

**Note: APCO Swing Checks are recommended for raw sewage.**



Valve Size	2" 50	2.5" 65	3" 80	4" 100	6" 150	8" 200	10" 250	12" 300	14" 350	16" 400	18" 450	20" 500	24" 600	30" 750	36" 900	42" 1100	48" 1200	54" 1400	60" 1500	66" 1700
<b>V</b>	4.5" 114	3.25" 83	3.25" 83	2.75" 70	7.5" 191	7" 178	7.75" 197	7.75" 197	7.25" 184	7" 178	8.25" 210	8.25" 210	10" 254	5" 127	2" 51	15" 381	17" 432	18" 457	8.5" 216	3.5" 89
<b>W</b>	9" 229	9.5" 241	9.5" 241	10.75" 273	16.5" 419	18" 457	20.5" 521	25" 635	29" 737	30.75" 781	35" 889	36" 914	43.75" 1111	48" 1219	51" 1295	65" 1651	75" 1905	84" 2134	88.5" 2248	91" 2311
<b>X</b>	9.5" 241	8.5" 216	8.5" 216	8" 203	14.25" 362	13" 330	13.5" 343	18" 457	20" 508	20" 508	24.5" 622	23.5" 597	28" 711	24" 610	21" 533	41" 1041	47.5" 1207	50.5" 1283	46" 1168	43" 1092
<b>Y</b>	6" 152	4" 102	4" 102	4.5" 114	10" 254	10" 254	9.25" 235	11" 279	13.5" 343	14" 356	15" 381	15" 381	18" 457	15.5" 394	15" 381	26" 660	29.25" 743	39.5" 1003	41" 1041	33.5" 851
<b>Z</b>	32" 813	33" 838	34" 864	35" 889	43" 1092	43" 1092	52" 1321	56" 1422	66" 1676	71" 1803	75" 1905	82" 2083	88" 2235	102" 2591	111" 2819	132" 3353	159" 4039	174" 4420	187" 4750	204" 5182

Inch  
Millimeter

**APCO Air Cushion or Oil Control Check Valves operate equally well in the vertical position.  
For vertical installation the angle of the lever must be changed.**

# Specifications

## Series 6000 Cushion Swing Check Valve - Air Cushion Side Mounted

Air Cushion Swing Check Valve body shall be cast iron per AWWA C508 having integral (not wafer) flanges.

The seat shall be centrifugally cast bronze with an o-ring seal and be locked in place with stainless steel lock screws and be field replaceable without the use of special tools.

The shaft shall be single and continuous stainless steel, extending both sides of the body with a lever and weight, using an air cushion cylinder side mounted.

The air cushion cylinder shall be constructed of corrosion-resistant material and the piston shall be totally enclosed within the cylinder and not open at one end.

The cushion cylinder assembly shall be externally attached to either or both sides of the valve body and will permit adjustability to cushion the closure of the valve. Cushioning shall be air trapped in the cushion cylinder which shall be fitted with a one way adjustable control check valve to cushion disc contact to the seat at the shut-off point. The bottom cylinder head shall be swivel mounted and not rigid to follow the change of force angles as the lever raises or lowers to open or close the check valve.

This valve shall prevent backflow of the media on normal pump shut-off or power failure, and be water tight.

The disc shall be cast iron utilizing a double clevis connected to a ductile iron disc arm. The disc arm assembly shall be suspended from a stainless steel shaft which passes through a seal retainer on both sides of the valve body. (Specify if other than horizontal installation.)

Valve exterior to be painted with universal metal primer paint as accepted by the FDA for use in contact with potable water.

Materials shall be certified to the following ASTM specifications:

Body, Cover, Disc	Cast Iron	ASTM A126 GR.B
Disc Arm	Ductile Iron	ASTM A536
Seat	Aluminum Bronze or Stainless Steel	ASTM B148 ASTM A276
Disc seat	Buna-N or Metal	To suit
Cylinder	Corrosion-Resistant Material	Commercial

# Specifications

## Series 6000B Swing Check Valve - Oil Controlled Bottom Buffer

The Oil Control Bottom Buffer Swing Check Valve body shall be cast iron per AWWA C508 having integral flanges (not wafer) and have a centrifugally cast bronze body seat.

The body shall have a flush and drain hole. The seat shall be locked in place with stainless steel lock screws and be field replaceable without the use of special tools. The shaft shall be one piece T303 steel, extending through both sides of the body with a lever and weight mounted on each side. Except 8", 10", and 12".

The disc shall be ductile iron, utilizing a double clevis and be connected to a ductile iron disc arm. The disc seat shall be Buna-N (replaceable) to provide water tight shut-off. The disc arm assembly shall be suspended from the stainless steel shaft.

The valve must have a bottom hydraulic buffer to permit free open and positive non-slam control closure of the disc. The hydraulic buffer shall make contact with the disc during the last 10% of closure to instantly control the valve disc until shut-off in a manner to prevent slam and water hammer. The last 10% of closure shall be externally adjustable and variable to suit operating conditions. The hydraulic buffer and oil system shall be separate from the main line media. (Specify if other than horizontal installation.)

Materials shall be certified to the following ASTM specifications:

Body/cover	Cast Iron	ASTM A126, GR.B
Disc arm/disc	Ductile Iron	ASTM A536
Seat	Aluminum Bronze or Stainless Steel	ASTM B148 or ASTM A276 (Engineer select one)
Shaft	Stainless Steel	ASTM A582 T303
Disc seat	Buna-N or Metal	To suit
Buffer cylinder	Steel	Per N.F.P.A. Standards
Buffer rod	Stainless Steel	ASTM A582 T303
Exterior paint	Universal Metal Primer	FDA Approved For Potable Water Contact

# Specifications

## Series 6100 Swing Check Valve - Oil Control Side Mounted

The Oil Controlled Swing Check Valve body shall be cast iron per AWWA C508 with integral flanges (not wafer) and have a centrifugally cast bronze body seat. The seat shall be locked in place with stainless steel lock screws and be field replaceable without the use of special tools.

The shaft shall be one piece hi-strength Type 17-4PH stainless, extending through both sides of the valve body.

Oil control side mounted hydraulic cylinders shall provide three stage control closing for the prevention of surge and water hammer. The cylinder must have two stages of control during the closing cycle and a third stage by means of a timing valve to permit rapid closure of the disc from full open to any degree of closure on pump stop. Typically as follows:

- 1st stage: Rapid closure to any degree
- 2nd stage: Variable slow closure towards final closure
- 3rd stage: Variable closure to shut-off

Each stage shall be independently adjustable and the oil system self-contained and separate from the main line media.

The valve shall control close while flow reverses in the pipeline during normal pump shut-off or power failure in a time sequence to prevent or minimize water hammer. Each stage closure shall be field adjustable. (Specify if other than horizontal installation.)

The disc shall have a double clevis connected to a ductile iron disc arm. The disc arm assembly shall be suspended from the stainless steel shaft. The disc seat shall be Buna-N (replaceable) to provide water tight shut-off.

Materials shall be certified to the following ASTM specifications:

Body & cover	Cast Iron	ASTM A126, GR.B
Disc	Cast or Ductile Iron	ASTM A126, GR.B OR ASTM A536
Disc arm	Ductile Iron	ASTM A536
Body seat ring	Aluminum Bronze or Stainless Steel	ASTM A148 or ASTM A226 (Engineer to select one)
Disc seat	Buna-N or Metal	to suit
Dashpot cylinder	Steel	Per N.F.P.A. Standards
Pivot shaft	Stainless Steel	Type 17-4PH
Exterior paint	Universal Metal Primer	FDA Approved For Potable Water Contact



## **Sales and Service**

For information about our worldwide locations, approvals, certifications and local representative:

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