

Typical Tilting Disc Check Valve

Tilting Disc Check Valves consist of a cylindrical housing, with a pivoted circular disc. The pivots are located just above the center of the disc, and offset from the plane of the body seat. This design gives a bell-crank action to the disc. The seat is of circular bevel type and the disc drops in or out of contact without rubbing or sliding.

Features

Slamming of check valves is the result of failure of the valve disc to reach its closed position before the fluid flow reversal. Tilting disc check valves have to close rapidly since the disc has a shorter distance to travel and therefore arrives at the seat faster...minimizing a slam.

Tilting disc check valves are used to prevent reversal of flow in horizontal or vertical pipe lines. In vertical lines, or for any angle from horizontal to vertical, they can be used for upward flow only.

Tilting check valves are automatically actuated. They are opened by velocity pressure, and closed by gravity. Seating load and tightness is dependent on back pressure. The disc and moving parts may constantly move if the velocity pressure is not sufficient to hold the valve in a wide open and stable position. Premature wear and noisy operation or vibration of the moving parts can be avoided by selecting the size of check valve on the basis of flow conditions. The minimum velocity required to hold a tilting disc check valve wide open and stable can be determined by the formula:

$$v = 80\sqrt{\bar{v}}$$

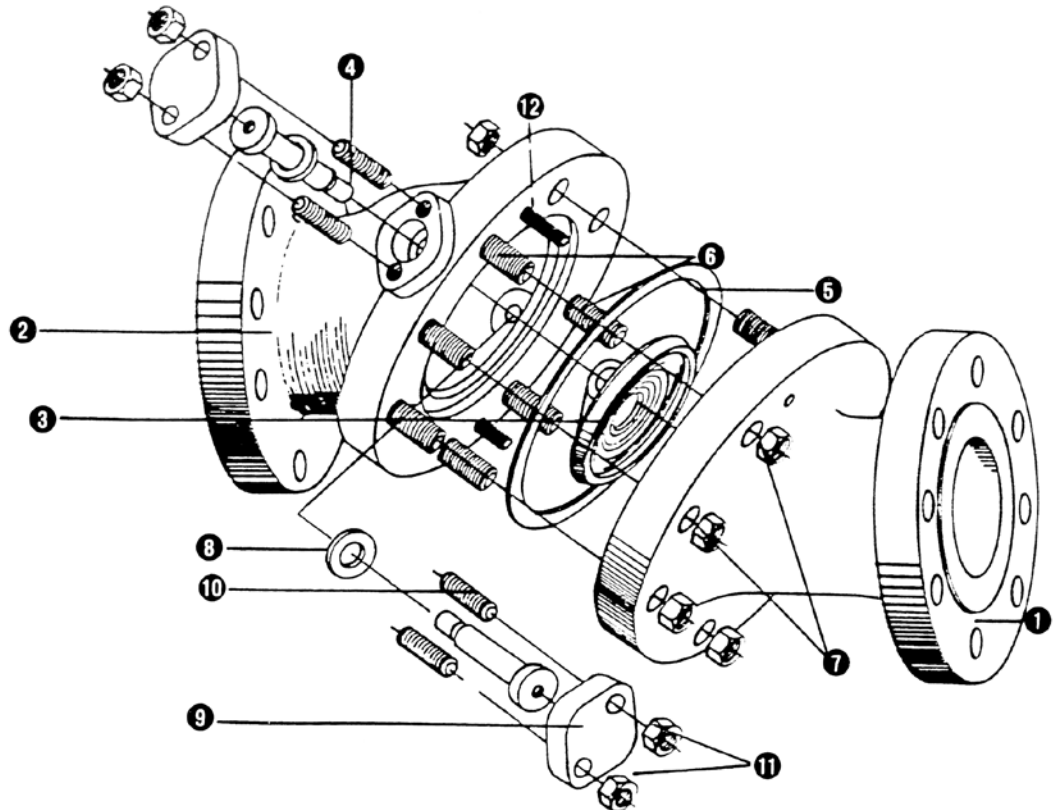
The value for v is equal to flow in feet per second and where \bar{v} is the specific volume of the fluid in cubic feet per pound. Sizing check valves on this basis may often result in the use of valves that are smaller than the pipe in which they are used, necessitating the use of reducers for installation. The pressure drop will not be greater than that of the larger valve that is only partially open, and valve life will be greatly extended. The added bonus, of course, is the lower cost of the smaller valve

Standard body design configurations

The seat, disc and pivot pins are combined into one subassembly secured to the inlet side of the body with a locking ring in sizes 3" (80 mm) and smaller. This construction avoids the need for extending the pivot pins through the valve body.

The seat formed on the end of the inlet body section by cobalt base alloy hard facing deposit in sizes 4" (100 mm) and larger. The pivot pins supporting the disc are inserted through capped and gasketed bearing bosses in the outlet section of the body.

1. Body Inlet Half
2. Body Outlet Half
3. Disc
4. Pivot Pin
5. Body Gasket
6. Body Studs
7. Body Stud Nuts
8. Bearing Cap Gasket
9. Bearing Cap
10. Bearing Cap Studs
11. Bearing Cap Stud Nuts
12. Dowel Pins



Class 150 • Bolted Cap

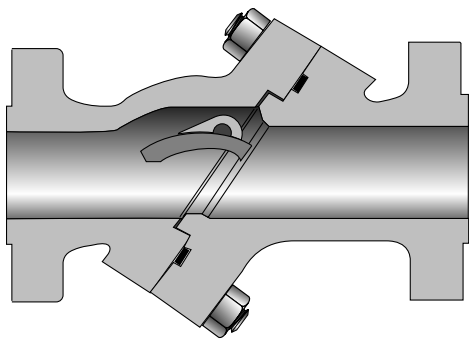


Figure 123

Flanged

Figure 123½

Butt Weld

Size Range:

2 through 36 inches
(50 - 900 mm)

Pressure Temp. Rating

Carbon Steel
ASTM A216 Grade WCB
285 psi @ -20°F to 100°F
(20 bar @ -28°C to 37°C)

Material of Construction*

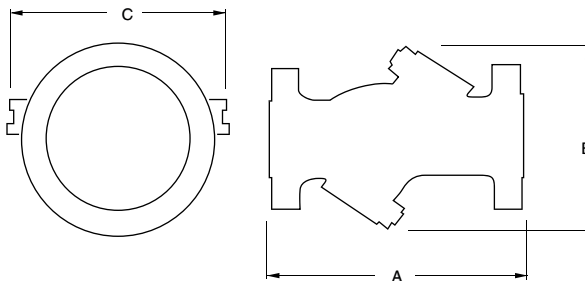
Description	Material
Inlet Body	ASTM A216 WCB
Outlet Body	ASTM A216 WCB
Disc	13% CR Overlay
Pivot Pin	SS
Body Gasket	Stainless Steel spiral wound Graphite
Body Studs	ASTM A193 B7
Body Nuts	ASTM A194 2H
Bearing Cap	Carbon Steel
Bearing Cap Gaskets	Soft Steel
Bearing Cap Studs	ASTM A193 B7
Bearing Cap Nuts	ASTM A194 2H
Dowel Pins	Carbon Steel

NOTE:

*Standard construction: WCB-Trim 8, other options are available.

Industry Standards

All materials comply with ASME B16.34



Dimensions and Weights

Inches (millimeters) - pounds (kilograms)

Valves	2 (50)	2 ½ (65)	3 (80)	4 (100)	5 (125)	8 (200)	10 (250)	12 (300)	14 (350)	16 (400)	18 (450)	20 (500)	24 (600)	30 (750)	36 (900)
A	8.00 (203)	8.50 (216)	9.50 (241)	11.50 (292)	13.00 (330)	19.50 (495)	24.50 (622)	27.50 (698)	31.00 (787)	30.00 (762)	33.00 (838)	32.50 (825)	38.00 (965)	49.50 (1257)	59.50 (1511)
B	7 (177)	9 (229)	9 (229)	10 (254)	11 (279)	16 (406)	19 (482)	21 (533)	22 (558)	25 (635)	28 (711)	31 (787)	36 (914)	44 (1117)	50 (1270)
C	8 (203)	9 (229)	9 (229)	13 (330)	16 (406)	21 (533)	25 (635)	28 (711)	29 (736)	34 (863)	36 (914)	39 (990)	45 (1143)	54 (1371)	60 (1524)
Wt. (123)	38 (17)	51 (23)	59 (26)	102 (46)	139 (63)	293 (132)	488 (221)	690 (312)	823 (373)	1070 (485)	1435 (650)	1825 (827)	2887 (1309)	4790 (2172)	6795 (3082)
Wt. (123½)	22 (9)	38 (17)	42 (19)	75 (34)	108 (48)	240 (108)	400 (181)	570 (258)	690 (312)	885 (401)	1213 (550)	1760 (798)	2265 (1027)	4025 (1825)	5755 (2610)

Tilting Disc Check Valve

Figures 323
323½



Class 300 • Bolted Cap

Material of Construction*

Description	Material
Inlet Body	ASTM A216 WCB
Outlet Body	ASTM A216 WCB
Disc	13% CR Overlay
Pivot Pin	SS
Body Gasket	Stainless Steel spiral wound Graphite
Body Studs	ASTM A193 B7
Body Nuts	ASTM A194 2H
Bearing Cap	Carbon Steel
Bearing Cap Gaskets	Soft Steel
Bearing Cap Studs	ASTM A193 B7
Bearing Cap Nuts	ASTM A194 2H
Dowel Pins	Carbon Steel

NOTE:

*Standard construction: WCB-Trim 8, other options are available.

Figure 323

Flanged

Figure 323½

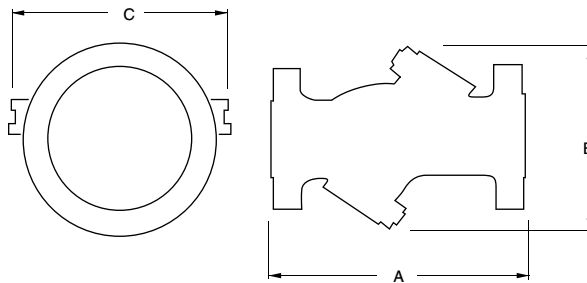
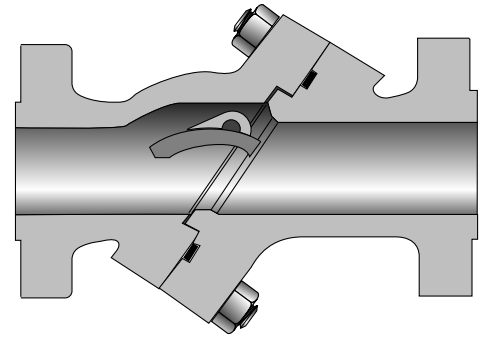
Butt Weld

Size Range:

2 through 36 inches
(50 - 900 mm)

Pressure Temp. Rating

Carbon Steel
ASTM A216 Grade WCB
740 psi @ -20°F to 100°F
(51 bar @ -28°C to 37°C)



Industry Standards

All materials comply with ASME B16.34

Dimensions and Weights

Inches (millimeters) - pounds (kilograms)

Valves	2 (50)	2½ (65)	3 (80)	4 (100)	5 (125)	8 (200)	10 (250)	12 (300)	14 (350)	16 (400)	18 (450)	20 (500)	24 (600)	30 (750)	36 (900)
A	10.50 (266)	11.50 (292)	12.50 (317)	14.00 (355)	15.75 (400)	21.00 (533)	24.50 (622)	28.00 (711)	30.00 (762)	33.00 (838)	36.00 (914)	39.00 (990)	45.00 (1143)	54.00 (1371)	60.00 (1524)
B	8 (203)	10 (254)	10 (254)	11 (279)	13 (330)	17 (431)	20 (508)	24 (609)	25 (635)	28 (711)	31 (787)	33 (838)	38 (965)	45 (1143)	57 (1447)
C	9 (229)	10 (254)	10 (254)	14 (355)	16 (406)	22 (558)	25 (635)	30 (762)	30 (762)	36 (914)	40 (1016)	41 (1041)	45 (1143)	54 (1371)	68 (1727)
Wt. (323)	38 (17)	51 (23)	59 (26)	102 (46)	139 (63)	293 (132)	488 (221)	690 (312)	823 (373)	1070 (485)	1435 (650)	1825 (827)	2887 (1309)	4790 (2172)	6795 (3082)
Wt. (323½)	22 (9)	38 (17)	42 (19)	75 (34)	108 (48)	240 (108)	400 (181)	570 (258)	690 (312)	885 (401)	1213 (550)	1760 (798)	2265 (1027)	4025 (1825)	5755 (2610)

Class 600 • Bolted Cap

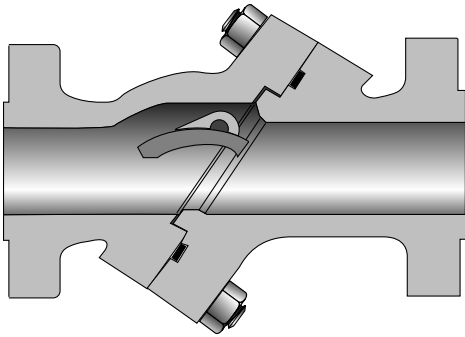


Figure 623

Flanged

Figure 623½

Butt Weld

Size Range:

2 through 30 inches
(50 - 750 mm)

Pressure Temp. Rating

Carbon Steel
ASTM A216 Grade WCB
1480 psi @ -20°F to 100°F
(102 bar @ -28°C to 37°C)

Material of Construction*

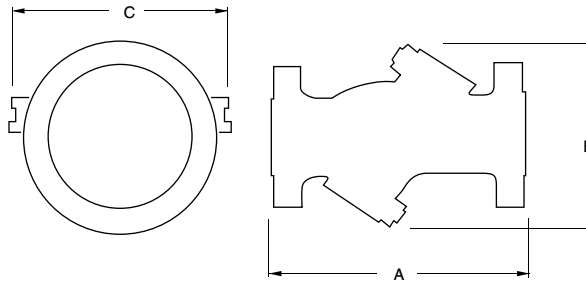
Description	Material
Inlet Body	ASTM A216 WCB
Outlet Body	ASTM A216 WCB
Disc	13% CR Overlay
Pivot Pin	SS
Body Gasket	Stainless Steel spiral wound Graphite
Body Studs	ASTM A193 B7
Body Nuts	ASTM A194 2H
Bearing Cap	Carbon Steel
Bearing Cap Gaskets	Soft Steel
Bearing Cap Studs	ASTM A193 B7
Bearing Cap Nuts	ASTM A194 2H
Dowel Pins	Carbon Steel

NOTE:

*Standard construction: WCB-Trim 8, other options are available.

Industry Standards

All materials comply with ASME B16.34



Dimensions and Weights

Inches (millimeters) - pounds (kilograms)

Valves	2 (50)	2½ (65)	3 (80)	4 (100)	5 (125)	6 (150)	8 (200)	10 (250)	12 (300)	14 (350)	16 (400)	18 (450)	20 (500)	24 (600)	30 (750)
A	11.50 (292)	13.00 (330)	14.00 (355)	17.00 (431)	20.00 (508)	22.00 (558)	26.00 (660)	31.00 (787)	33.00 (838)	35.00 (889)	39.00 (990)	43.00 (1092)	47.00 (1193)	55.00 (1397)	59.00 (1498)
B	8 (203)	10 (254)	10 (254)	13 (330)	15 (381)	16 (406)	19 (482)	22 (558)	26 (660)	27 (685)	30 (762)	34 (863)	38 (965)	44 (1117)	49 (1244)
C	9 (229)	10 (254)	10 (254)	16 (406)	19 (482)	20 (508)	24 (609)	28 (711)	31 (787)	33 (838)	36 (914)	43 (1092)	46 (1168)	53 (1346)	60 (1524)
Wt. (623)	68 (30)	110 (49)	115 (52)	222 (100)	327 (148)	432 (195)	725 (328)	1035 (469)	1470 (666)	1830 (830)	2550 (1156)	3570 (1619)	4805 (2179)	7190 (3261)	6925 (3141)
Wt. (623½)	60 (27)	70 (31)	85 (38)	164 (74)	267 (121)	295 (133)	435 (197)	820 (371)	1055 (478)	1335 (605)	1965 (891)	2010 (911)	4545 (2061)	5850 (2653)	7715 (3499)

Tilting Disc Check Valve

Figures 923
923½



Class 900 • Bolted Cap

Material of Construction*

Description	Material
Inlet Body	ASTM A216 WCB
Outlet Body	ASTM A216 WCB
Disc	13% CR Overlay
Pivot Pin	SS
Body Gasket	Stainless Steel spiral wound Graphite
Body Studs	ASTM A193 B7
Body Nuts	ASTM A194 2H
Bearing Cap	Carbon Steel
Bearing Cap Gaskets	Soft Steel
Bearing Cap Studs	ASTM A193 B7
Bearing Cap Nuts	ASTM A194 2H
Dowel Pins	Carbon Steel

NOTE:

*Standard construction: WCB-Trim 8, other options are available.

Figure 923

Flanged

Figure 923½

Butt Weld

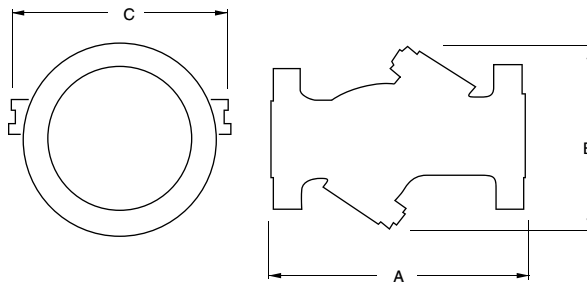
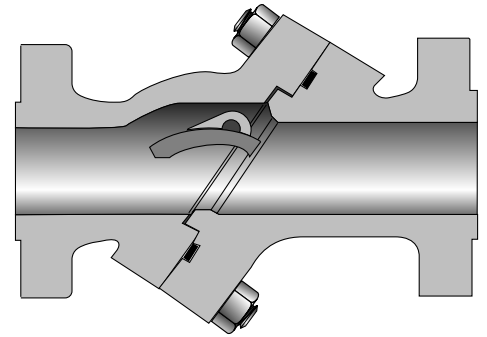
Size Range:

3 through 18 inches
(80 - 450 mm)

Pressure Temp. Rating

Carbon Steel

ASTM A216 Grade WCB
2220 psi @ -20°F to 100°F
(153 bar @ -28°C to 37°C)



Industry Standards

All materials comply with ASME B16.34

Dimensions and Weights

Inches (millimeters) - pounds (kilograms)

Valves	3 (80)	4 (100)	5 (125)	6 (150)	8 (200)	10 (250)	12 (300)	14 (350)	16 (400)	18 (450)
A	15.00 (381)	18.00 (457)	22.00 (558)	24.00 (609)	29.00 (736)	33.00 (838)	38.00 (965)	40.50 (1028)	44.50 (1130)	48.00 (1219)
B	11 (279)	12 (304)	14 (355)	16 (406)	20 (508)	25 (635)	28 (711)	31 (787)	37 (939)	41 (1041)
C	16 (406)	19 (482)	22 (558)	24 (609)	28 (711)	35 (889)	35 (889)	42 (1066)	45 (1143)	50 (1270)
Wt. (923)	177 (80)	273 (123)	438 (198)	604 (273)	1050 (476)	1770 (802)	2415 (1095)	-	-	-
Wt. (923½)	107 (48)	164 (74)	286 (129)	464 (210)	760 (344)	1440 (653)	1610 (730)	2010 (911)	2260 (1025)	2515 (1140)

Class 1500 • Bolted Cap

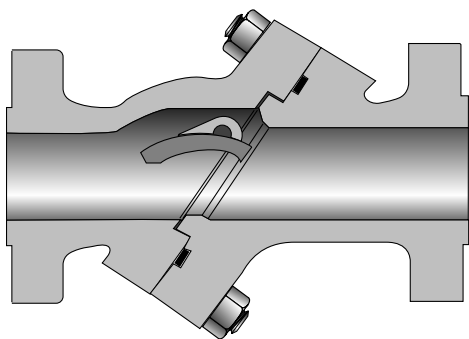


Figure 1523

Flanged

Figure 1523½

Butt Weld

Size Range:

2 through 10 inches
(50 - 250 mm)

Pressure Temp. Rating

Carbon Steel
ASTM A216 Grade WCB
3705 psi @ -20°F to 100°F
(256 bar @ -28°C to 37°C)

Material of Construction*

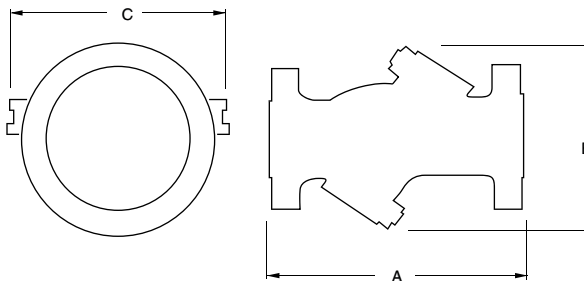
Description	Material
Inlet Body	ASTM A216 WCB
Outlet Body	ASTM A216 WCB
Disc	13% CR Overlay
Pivot Pin	SS
Body Gasket	Stainless Steel spiral wound Graphite
Body Studs	ASTM A193 B7
Body Nuts	ASTM A194 2H
Bearing Cap	Carbon Steel
Bearing Cap Gaskets	Soft Steel
Bearing Cap Studs	ASTM A193 B7
Bearing Cap Nuts	ASTM A194 2H
Dowel Pins	Carbon Steel

NOTE:

*Standard construction: WCB-Trim 8, other options are available.

Industry Standards

All materials comply with ASME B16.34



Dimensions and Weights

Inches (millimeters) - pounds (kilograms)

Valves	2 (50)	2½ (65)	3 (80)	4 (100)	6 (150)	8 (200)	10 (250)
A	14.50 (368)	16.50 (419)	18.50 (469)	21.50 (546)	27.75 (704)	32.75 (831)	39.00 (990)
B	12 (304)	12 (304)	12 (304)	15 (381)	19 (482)	22 (558)	29 (736)
C	17 (431)	17 (431)	17 (431)	21 (533)	24 (609)	30 (762)	38 (965)
Wt. (1523)	177 (80)	273 (123)	438 (198)	604 (273)	1050 (476)	1770 (802)	2415 (1095)
Wt. (1523½)	107 (48)	164 (74)	286 (129)	464 (210)	760 (344)	1440 (653)	1610 (730)