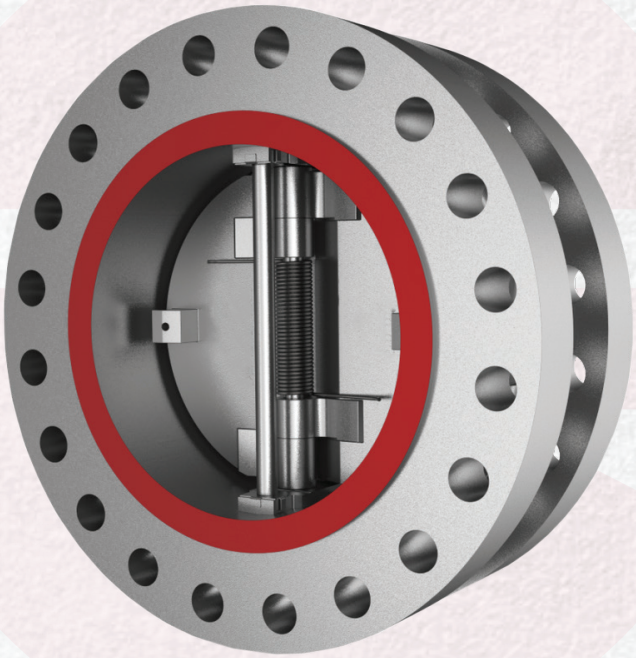
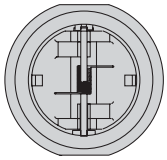


Dual Plate Check Valves

evo valves

Standard Manufacturing Programme

WAFER TYPE

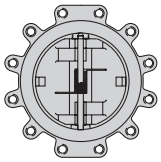


- Retainerless Design
- Face-to-face dimension as per API 594
- Suitable for ANSI B16.5 flanges, (DN 50-600) (NPS 2″-24″)
- Suitable for ANSI B16.47 Series A flanges for DN 650 (NPS 26″) & larger sizes

SIZE RANGE – WAFER TYPE

ASME CLASS	150	300	600	900	1500	2500
SIZE (DN)	50-1200	50-1200	50-1000	50-600	50-600	50-300
SIZE (PN)	2″-48″	2″-48″	2″-40″	2″-24″	2″-24″	2″-12″

SOLID LUG TYPE

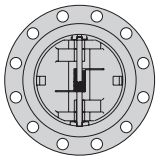


- Retainerless Design
- Face-to-face dimension as per API 594
- Suitable for ANSI B16.5 flanges, (DN 50-600) (NPS 2″-24″)
- Suitable for ANSI B16.47 Series A flanges for DN 650 (NPS 26″) and larger sizes

SIZE RANGE – SOLID LUG TYPE

ASME CLASS	150	300	600	900	1500	2500
SIZE (DN)	50-1200	50-1200	50-1000	50-600	50-600	50-300
SIZE (PN)	2″-48″	2″-48″	2″-40″	2″-24″	2″-24″	2″-12″

FLANGED END – DOUBLE FLANGED



- Retainerless Design
- Face-to-face dimension as per API 594
- Suitable for ANSI B16.5 flanges, (DN 50-600) (NPS 2″-24″)
- Suitable for ANSI B16.47 Series A flanges for DN 650 (NPS 26″) and larger sizes

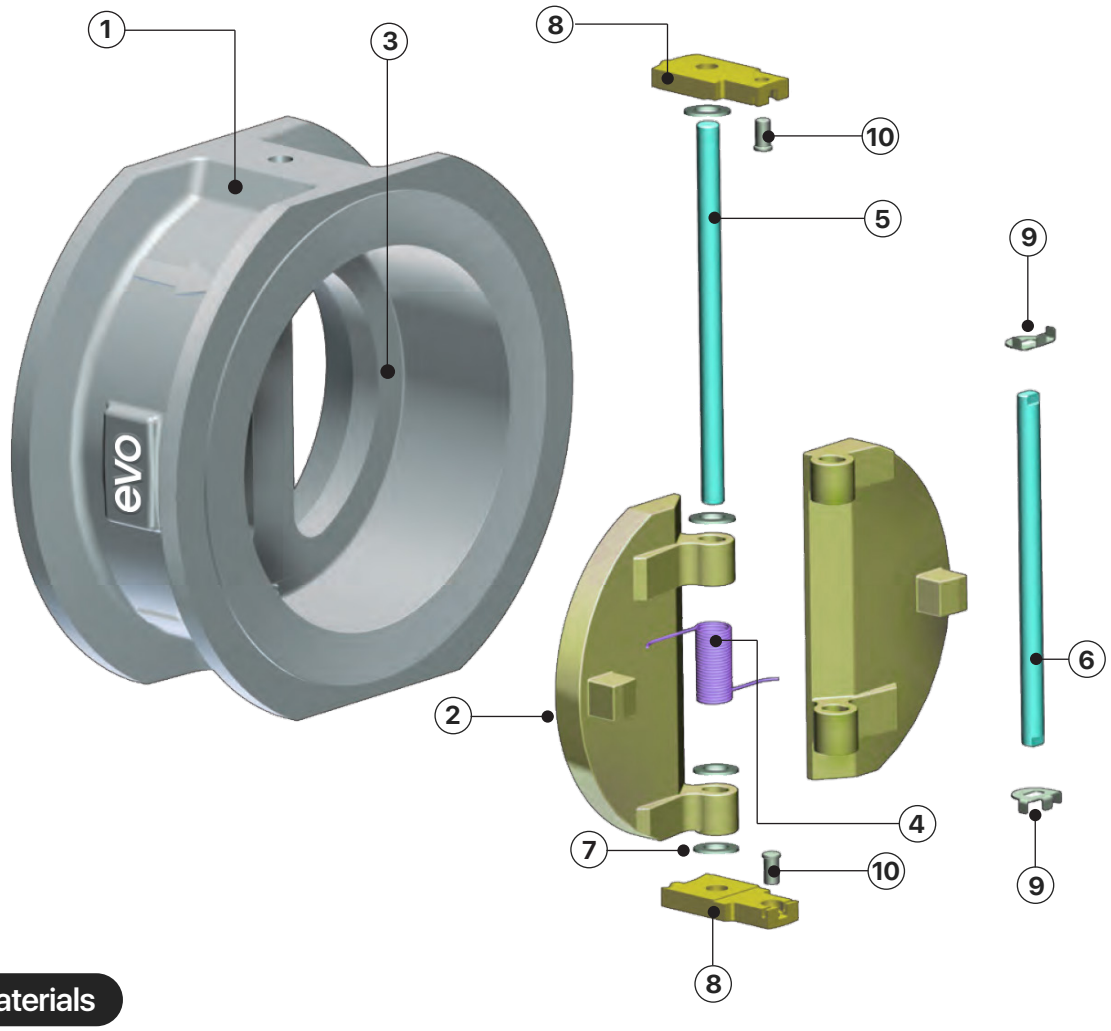
SIZE RANGE – DOUBLE FLANGED TYPE

ASME CLASS	150	300	600	900
SIZE (DN)	50-1200	50-1200	50-1000	50-600
SIZE (PN)	2″-48″	2″-48″	2″-40″	2″-24″

Design Standards

Design Standard	API 594
Pressure-temperature ratings	ASME B16.34
Valve Testing Standard	API 598
Face-to-face dimensions	API 594 Also complies with API 6D, ISO 14313, ASMEB B16.10
Flange Dimensions	ASME B16.5 for NPS 2-24 (DN 50-600) ASME B16.47 series A for NPS 26 (DN 600) and larger
Materials	ASTM Standards

Exploded View & Materials Of Construction List

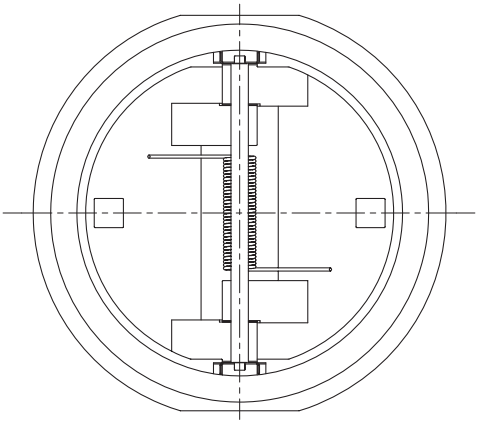


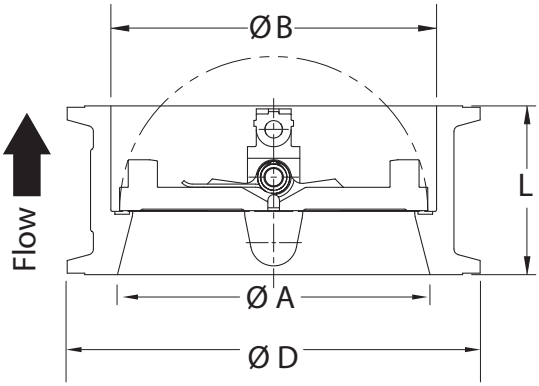
Bill of Materials

Part Code	Description	Qty	Materials
01	BODY	01	A217 WCB, A352 LCC, A217 WC6, A217 WC9, A351 CF8, A351 CF8M, A351 CF3, A351 CF3M, A890 Grade 4A, A890 Grade 5A, B148 C95500, B148 C95800, UNS N05500
02	DISC	02	A217 WCB, A352 LCC, A217 WC6, A217 WC9, A351 CF8, A351 CF8M, A351 CF3, A351 CF3M, A890 Grade 4A, A890 Grade 4A, A890 Grade 5A, B148 C95500, B148 C95800, UNS N05500
03	SEAT	01	Metal-to-Metal, EPDM, VITON, BUNA-N, NEOPRENE, PTFE
04	SPRING	01	AISI 316L, Inconel X718, Inconel X750
05	HINGE PIN	01	AISI 304, AISI 316, 17-4PH, F55, Inconel 625, NES 833
06	STOP PIN	01	AISI 304, AISI 316, 17-4PH, F55, Inconel 625, NES 833
07	BEARING	04	AISI 304, AISI 316, 17-4PH, F55, Inconel 625, NES 833
08	HOLDER	02	A351 CF8, A351 CF8M, A351 CF3, A351 CF3M, A890 Grade 4A, A890 Grade 5A
09	LOCK WASHER	02	AISI 304, AISI 316, Duplex 4A-5A-6A
10	RETAINER PIN	02	AISI 304, AISI 316, 17-4PH, F55, Inconel 625, NES 833

WAFER TYPE

ANSI B16.5 / ANSI B16.47 SERIES A





INSTALLATION DIMENSIONS

Valve Size		Class 150				
In INCH	In MM	L	ØA	ØB	ØD	WT APPX
2″	50	60	51	65	101	3
2½″	65	67	65	76	120	5
3″	80	73	80	92	132	5
4″	100	73	100	113	173	8
5″	125	86	127	135	193	11
6″	150	98	152	163	218	14
8″	200	127	203	204	275	26
10″	250	146	254	262	337	44
12″	300	181	305	315	407	80
14″	350	184	350	363	449	86
16″	400	191	400	407	512	112
18″	450	203	450	465	547	136
20″	500	219	500	510	604	172
24″	600	222	600	610	715	238

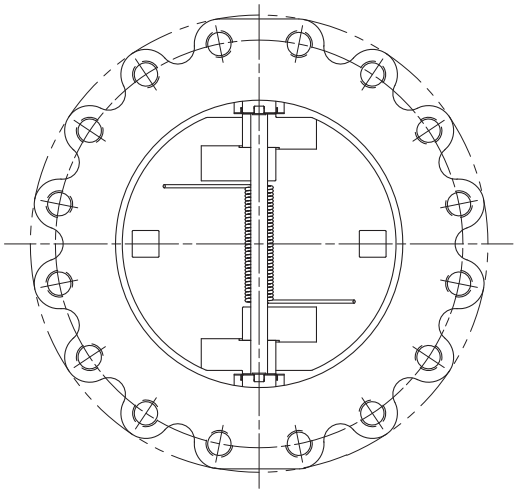
Valve Size		Class 300				
In INCH	In MM	L	ØA	ØB	ØD	WT APPX
2″	50	60	51	65	108	3
2½″	65	67	65	76	127	5
3″	80	73	80	92	149	6
4″	100	73	100	113	178	8
5″	125	86	127	135	213	11
6″	150	98	152	163	248	18
8″	200	127	203	204	305	32
10″	250	146	254	262	359	52
12″	300	181	305	315	419	79
14″	350	222	350	363	483	123
16″	400	232	400	407	537	159
18″	450	264	450	465	594	233
20″	500	292	500	510	651	295
24″	600	318	600	610	772	476

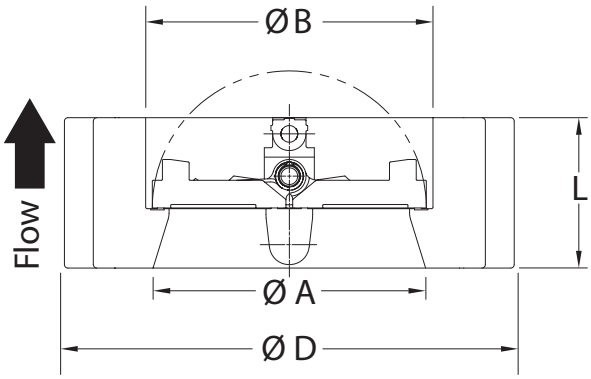
Valve Size		Class 600				
In INCH	In MM	L	ØA	ØB	ØD	WT APPX
2″	50	60	51	65	111	3
2½″	65	67	65	76	130	5
3″	80	73	80	92	149	6
4″	100	79	100	113	194	11
5″	125	86	127	135	213	16
6″	150	137	152	163	267	28
8″	200	165	203	204	321	49
10″	250	213	254	262	400	93
12″	300	229	305	316	452	125
14″	350	273	350	363	492	180
16″	400	305	400	407	565	259
18″	450	362	450	465	613	354
20″	500	368	500	510	683	463
24″	600	438	600	610	791	780

Note:
- Installation Dimensions are in MM, Unless Specified and Weights are in Kg.
- Higher Sizes and Pressure Class on request.

SOLID LUG TYPE

ANSI B16.5 / ANSI B16.47 SERIES A





INSTALLATION DIMENSIONS

Valve Size		Class 150						
In INCH	In MM	L	ØA	ØB	ØD	No.	PCD (LUG)	WT APPX
2″	50	60	51	65	101	4	120.6	4
2½″	65	67	65	76	120	4	139.7	6
3″	80	73	80	92	132	4	152.4	8
4″	100	73	100	113	173	8	190.5	15
5″	125	86	127	135	193	8	215.9	19
6″	150	98	152	163	218	8	241.3	24
8″	200	127	203	204	275	8	298.4	41
10″	250	146	254	262	337	12	362.0	73
12″	300	181	305	315	407	12	431.8	132
14″	350	184	350	363	449	12	476.2	152
16″	400	191	400	407	512	16	539.8	200
18″	450	203	450	465	547	16	577.8	236
20″	500	219	500	510	604	20	635.0	322
24″	600	222	600	610	715	20	749.3	388

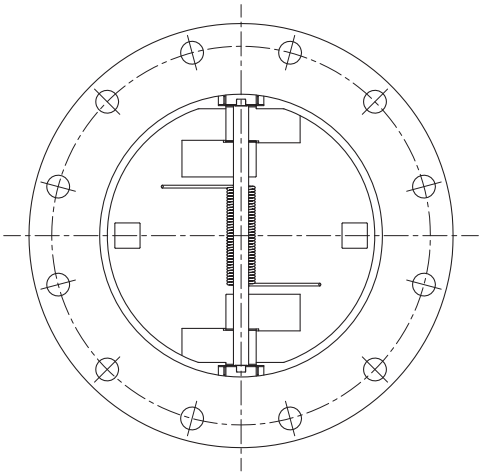
Valve Size		Class 300						
In INCH	In MM	L	ØA	ØB	ØD	No.	PCD (LUG)	WT APPX
2″	50	60	51	65	108	8	127.0	6
2½″	65	67	65	76	127	8	149.4	8
3″	80	73	80	92	149	8	186.1	11
4″	100	73	100	113	178	8	200.2	16
5″	125	86	127	135	213	8	235.0	24
6″	150	98	152	163	248	12	269.7	31
8″	200	127	203	204	305	12	330.2	52
10″	250	146	254	262	359	16	387.4	100
12″	300	181	305	315	419	16	450.8	170
14″	350	222	350	363	483	20	514.4	286
16″	400	232	400	407	537	20	571.5	352
18″	450	264	450	465	594	24	628.6	490
20″	500	292	500	510	651	24	685.8	651
24″	600	318	600	610	772	24	812.8	839

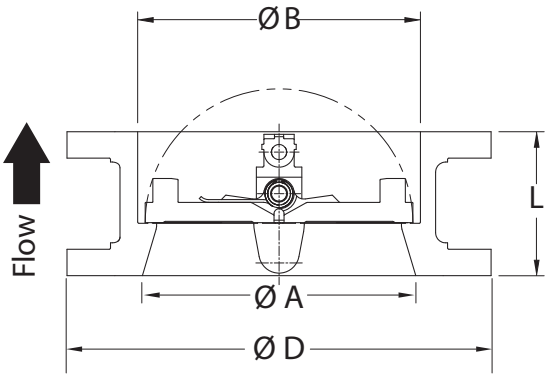
Class 600						
L	ØA	ØB	ØD	No.	PCD (LUG)	WT APPX
60	51	65	111	8	127.0	6
67	65	76	130	8	149.4	8
73	80	92	149	8	168.1	11
79	100	113	194	8	215.9	16
86	127	135	213	8	266.7	24
137	152	163	267	12	292.1	55
165	203	204	321	12	349.2	93
213	254	262	400	16	431.8	173
229	305	316	452	20	489.0	256
273	350	363	492	20	539.8	356
305	400	407	565	20	603.2	510
362	450	465	613	20	654.0	710
368	500	510	683	24	723.9	862
438	600	610	791	24	838.2	1361

Note:
- Installation Dimensions are in MM, Unless Specified and Weights are in Kg.
- Higher Sizes and Pressure Class on request.

DOUBLE FLANGE TYPE

ANSI B16.5 / ANSI B16.47 SERIES A





INSTALLATION DIMENSIONS

Valve Size		Class 150						
In INCH	In MM	L	ØA	ØB	ØD	No.	PCD (LUG)	WT APPX
2″	50	60	51	65	101	4	120.6	4
3″	80	73	80	92	132	4	152.4	8
4″	100	73	100	113	173	8	190.5	15
6″	150	98	152	163	218	8	241.3	24
8″	200	127	203	204	275	8	298.4	41
10″	250	146	254	262	337	12	362.0	73
12″	300	181	305	324	483	12	431.8	132
14″	350	184	350	356	533	12	476.2	152
16″	400	191	400	406	597	16	539.8	200
18″	450	203	450	457	635	16	577.8	236
20″	500	219	500	508	699	20	635.0	322
24″	600	222	600	610	813	20	749.3	388

Valve Size		Class 300						
In INCH	In MM	L	ØA	ØB	ØD	No.	PCD (LUG)	WT APPX
2″	50	60	51	65	108	8	127.0	6
3″	80	73	80	92	149	8	186.1	11
4″	100	73	100	113	178	8	200.2	16
6″	150	98	152	163	248	12	269.7	31
8″	200	127	203	204	305	12	330.2	52
10″	250	146	254	262	359	16	387.4	100
12″	300	181	305	324	521	16	450.8	170
14″	350	222	350	356	584	20	514.4	286
16″	400	232	400	406	648	20	571.5	352
18″	450	264	450	457	711	24	628.6	490
20″	500	292	500	508	775	24	685.8	651
24″	600	318	600	610	914	24	812.8	839

Class 600						
L	ØA	ØB	ØD	No.	PCD (LUG)	WT APPX
60	51	65	111	8	127.0	6
73	80	92	149	8	168.1	11
79	100	113	194	8	215.9	16
137	152	163	267	12	292.1	55
165	203	204	321	12	349.2	93
213	254	262	400	16	431.8	173
229	305	324	559	20	489.0	256
273	350	356	603	20	539.8	356
305	400	406	686	20	603.2	510
362	450	457	743	20	654.0	710
368	500	508	813	24	723.9	862
438	600	610	940	24	838.2	1361

Note:
- Installation Dimensions are in MM, Unless Specified and Weights are in Kg.
- Higher Sizes and Pressure Class on request.

ENGINEERING DATA

Valve Coefficients (Cv)

Valve Size		Class 150 - 600	
NPS	NPS	Cvt	Kv
2″	2″	75	64
2½″	2½″	98	83
3″	3″	185	157
4″	4″	375	319
5″	5″	492	418
6″	6″	830	705
8″	8″	1585	1347
10″	10″	2925	2486
12″	12″	4478	3806
14″	14″	5880	4998
16″	16″	8698	7394
18″	18″	10950	9308
20″	20″	14259	12120
24″	24″	23250	19763

Valve Cracking Pressure

Valve Size		Class 150 - 600	
NPS	NPS	psi	mbar
2″	2″	0.16	11
2½″	2½″	0.15	10
3″	3″	0.17	12
4″	4″	0.18	13
5″	5″	0.13	09
6″	6″	0.11	08
8″	8″	0.18	13
10″	10″	0.23	16
12″	12″	0.20	14
14″	14″	0.13	09
16″	16″	0.15	10
18″	18″	0.15	10
20″	20″	0.16	11
24″	24″	0.23	16

Table 1 Note:

Evo Valves has explored these Cv results through a series of tests conducted at both in-house and associated test facilities, which have been combined with calculations to provide extrapolated test results.

Table 2 Note:

The valve cracking pressure is the minimum upstream pressure required to lift the discs off the body seating surface. The above table identifies the minimum pressure required for Class 150 dual-plate check valves with Inconel X-750 springs. Dual-plate check valves with low torque springs cannot be used as relief valves.

DATA FOR CALCULATION OF FLOW

NOTE: K_v is the metric equivalent of Cv.

$$K_V = C_V \times 0.85$$

FOR LIQUIDS

$$(1)\quad Q_L = C_V\sqrt{\frac{\Delta P}{G_L}}$$

$$(2)\quad \Delta P = G_L\left(\frac{Q_L}{C_V}\right)^2$$

WHERE:

Q_L = Flow in U.S. gallons per minute.

ΔP = (P1–P2) Pressure drop in psi

G_L = Specific gravity of liquid (water = 1 at 60°F)

FOR GASES

$$(3)\quad Q_g = 1360\ C_v\sqrt{\frac{\Delta P}{G_g T}}\bullet\sqrt{\frac{P_1 + P_2}{2}}$$

$$(4)\quad \Delta P = P_1 - \sqrt{P_1^2 - 2G_g T\left(\frac{Q_g}{1360 C_v}\right)^2}$$

WHERE:

Q_g = Volumetric Flow of Gas (SCFH)

G_g = Specific gravity of gas standard conditions (air at atmosphere and 60°F = 1)

T = Absolute temperature of gas (°F +460)

INDUSTRIES WE SERVE


Power Generation


Chemical


Petrochemicals


Paper & Pulp


Marine


HVAC


Water & Wastewater


Mining


Offshore


Sugar


Cement


Food & Beverages


Agriculture

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