Design

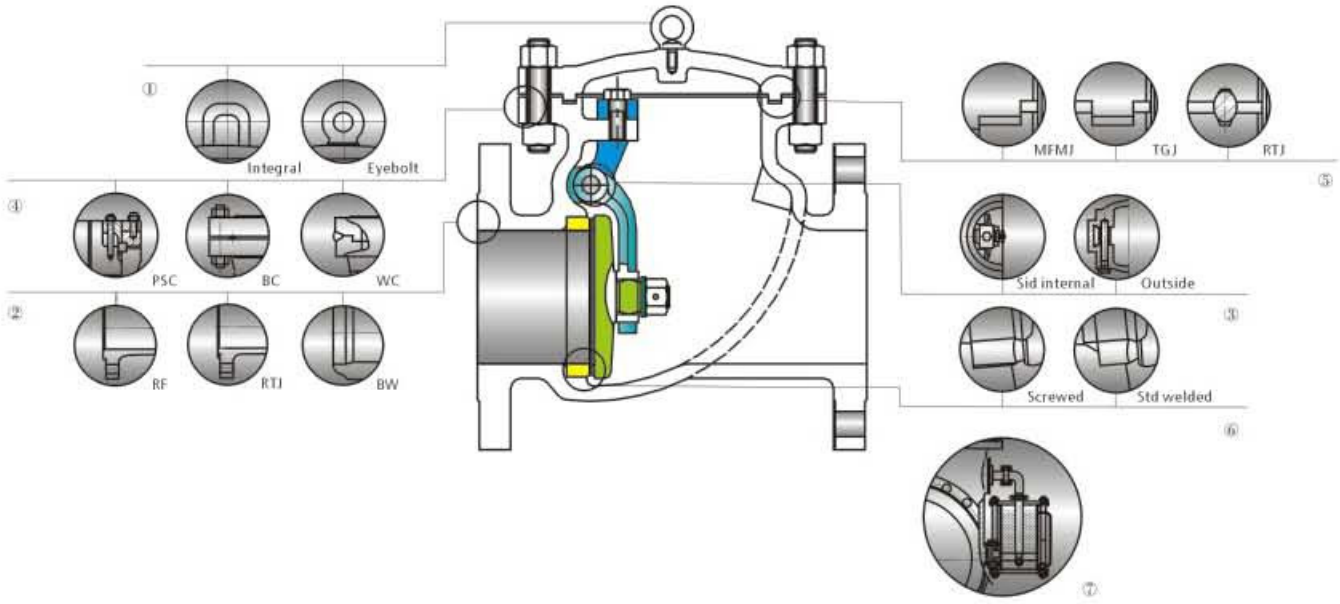
FBK cast steel check valves are designed and manufactured to provide maximum service life and dependability. All check valves are full bore and meet the design requirements of BS 1868 and API 6D. Valves are available in a complete range of body/bonnet materials and trim.

Range of Materials

The major materials of standard body/bonnet are carbon, cryogenic and stainless steel. For some special applications, we can provide others as per customer's requirementes.

Available Modifications

Trim Changes
End Connection Modifications
Packing & Gasket Changes
Pressure Equalizing
Customer's Specified Coatings
Changable Welded-end Bore



①Eyebolt

It is for 150LB-8", 300LB-8", 600LB-6",900LB/1500LB/2500LB & above.

②Ends Connection

RTJ flanged or butt-welded end is for pipe connection.

③Outside Lever And Weight

When swing check valve is 12" or below, the external hinge & pin are required for easy operation.

④Bolted Cover(BC)

Three ways of bolt bonnet connection are optional: bolted cover(BC), welded cover(WC) and pressure sealed cover(PSC). In particular cases like operating in high temperature and high pressure(normally 2500LB above), PSC will be needed.

⑤Body-to-Bonnet Joint

Male & Female Joint(MFJ): 150LB~600LB
Tongue & Groove Joint(TGJ):150LB~600LB
Ring Joint(RTJ): 900LB & above

⑥Seat Ring

Screwed or welded on seat is optional for check valve if being requested by the customer.

⑦HCU Weighted Mechanical Accumulator

HCU Weighted mechanical accumulator is equipped to dampen or assist the disc as hydraulic pressure changing, leading the valve can be opened gradually at a lower speed.

Applicable Standards

Design & Manufacture: BS1868/API 6D
Pressure-temperature Rating: ASME B16.34
Face to Face: ASME B16.10
Flange End: ASME B16.5
Butt Welded End: ASME B16.25
Inspection & Test: API 598/API 6D

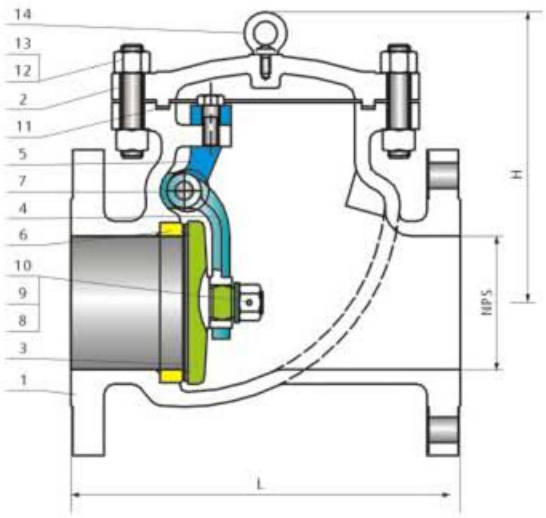
Design Description

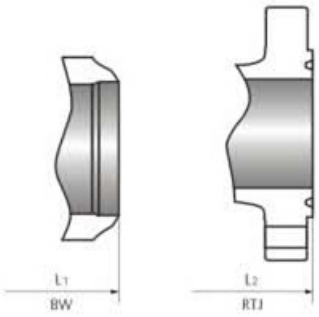
BC, Bolted Cover
Swing or Piston Type
Anti-rotation Disc
Renewable Seat Ring
Non-penetrate Disc Shaft
Horizontal or Vertical Service
Flanged or Butt Welded End

Main Parts Materials

NO	Part Name	ASTM Material		
		Carbon Steel	Stainless Steel	Cryogenic Steel
1	Body	A216-WCB	A351-CF8M	A352-LCB
2	Bonnet Cap	A216-WCB	A351-CF8M	A352-LCB
3	Disc	WCB+CR13	CF8M	LCB+CR13
4	Hinge	A216-WCB	A351-CF8M	A352-LCB
5	Yoke	A216-WCB	A351-CF8M	A352-LCB
6	Seat Ring	A105+CR13	Integral	A350-LF2+CR13
7	Hinge Pin	A276-304	A276-316	A276-304
8	Disc Washer	Carbon Steel	A276-316	Carbon Steel
9	Disc Nut	A194-2H	A194-8M	A194-8
10	Disc Nut Pin	SS304	SS316	SS304
11	Bonnet Gasket	Spiral Wound (Graphite+304 or 316)		
12	Bonnet Stud	A193-B7	A193-B8	A320-L7
13	Bonnet Stud Nut	A194-2H	A194-8	A194-4
14	Eyebolt	Carbon Steel		

Note: Disc and seat ring may either be solid facing material or a base material equal to or better than the body/bonnet material with facing as shown.





Dimensions Data — ANSI Class 150LB

Size	in	2	2½	3	4	6	8	10	12	14	16	18	20	24	26	28	30	32	36
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700	750	800	900
L/L1(RF/BW)	mm	203	216	241	292	356	495	622	698	787	864	978	978	1295	1295	1448	1524	1727	1956
L2(RTJ)	mm	216	229	254	305	368	508	635	711	800	877	911	991	1308	-	-	-	-	-
H	mm	138	160	172	245	280	347	390	435	465	525	580	615	710	840	920	980	1016	1092
Weight	Kg	12	19	24	37	61	115	180	310	400	503	630	791	960	1250	1580	1950	2800	3200

Applicable Standards

Design & Manufacture: BS1868/API 6D
Pressure-temperature Rating: ASME B16.34
Face to Face: ASME B16.10
Flange End: ASME B16.5
Butt Welded End: ASME B16.25
Inspection & Test: API 598/API 6D

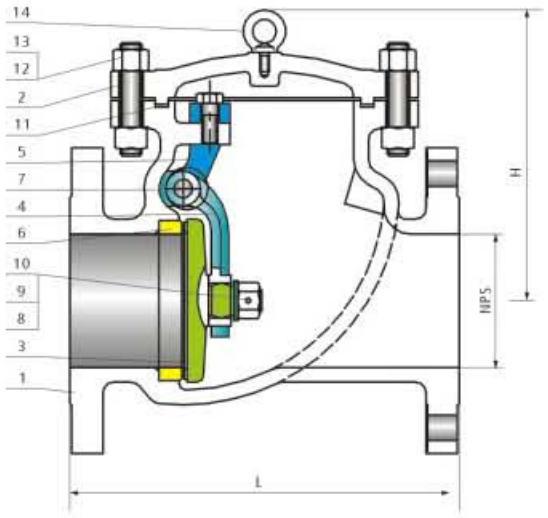
Design Description

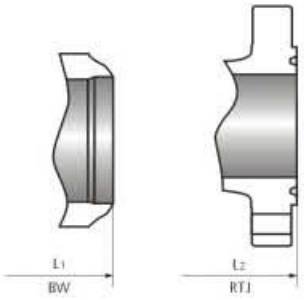
BC, Bolted Cover
Swing or Piston Type
Anti-rotation Disc
Renewable Seat Ring
Non-penetrate Disc Shaft
Horizontal or Vertical Service
Flanged or Butt Welded End

Main Parts Materials

NO	Part Name	ASTM Material		
		Carbon Steel	Stainless Steel	Cryogenic Steel
1	Body	A216-WCB	A351-CF8M	A352-LCB
2	Bonnet Cap	A216-WCB	A351-CF8M	A352-LCB
3	Disc	WCB+CR13	CF8M	LCB+CR13
4	Hinge	A216-WCB	A351-CF8M	A352-LCB
5	Yoke	A216-WCB	A351-CF8M	A352-LCB
6	Seat Ring	A105+CR13	Integral	A350-LF2+CR13
7	Hinge Pin	A276-304	A276-316	A276-304
8	Disc Washer	Carbon Steel	A276-316	Carbon Steel
9	Disc Nut	A194-2H	A194-8M	A194-8
10	Disc Nut Pin	SS304	SS316	SS304
11	Bonnet Gasket	Spiral Wound (Graphite+304 or 316)		
12	Bonnet Stud	A193-B7	A193-B8	A320-L7
13	Bonnet Stud Nut	A194-2H	A194-8	A194-4
14	Eyebolt	Carbon Steel		

Note: Disc and seat ring may either be solid facing material or a base material equal to or better than the body/bonnet material with facing as shown.





Dimensions Data — ANSI Class 300LB

Size	in	2	2½	3	4	6	8	10	12	14	16	18	20	24	26	28	30	32	36
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700	750	800	900
L/L1(RF/BW)	mm	267	292	318	356	444	533	622	711	838	864	978	1016	1346	1346	1499	1594	1727	2083
L2(RTJ)	mm	283	308	333	371	460	549	638	727	854	879	994	1035	1368	1372	1524	1619	-	-
H	mm	150	178	223	255	310	355	445	485	515	560	620	685	760	850	920	1150	1260	1390
Weight	Kg	18	35	37	57	120	194	280	450	587	761	1030	1191	1892	2300	2600	3200	3700	4300

Applicable Standards

Design & Manufacture: BS1868/API 6D
Pressure-temperature Rating: ASME B16.34
Face to Face: ASME B16.10
Flange End: ASME B16.5
Butt Welded End: ASME B16.25
Inspection & Test: API 598/API 6D

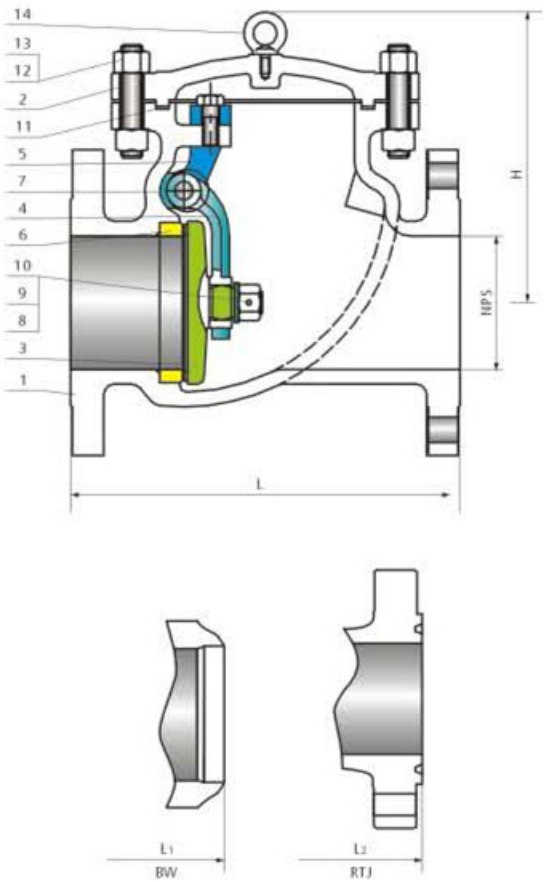
Design Description

BC, Bolted Cover
Swing or Piston Type
Anti-rotation Disc
Renewable Seat Ring
Non-penetrate Disc Shaft
Horizontal or Vertical Service
Flanged or Butt Welded End

Main Parts Materials

NO	Part Name	ASTM Material		
		Carbon Steel	Stainless Steel	Cryogenic Steel
1	Body	A216-WCB	A351-CF8M	A352-LCB
2	Bonnet Cap	A216-WCB	A351-CF8M	A352-LCB
3	Disc	WCB+CR13	CF8M	LCB+CR13
4	Hinge	A216-WCB	A351-CF8M	A352-LCB
5	Yoke	A216-WCB	A351-CF8M	A352-LCB
6	Seat Ring	A105+CR13	Integral	A350-LF2+CR13
7	Hinge Pin	A276-304	A276-316	A276-304
8	Disc Washer	Carbon Steel	A276-316	Carbon Steel
9	Disc Nut	A194-2H	A194-8M	A194-8
10	Disc Nut Pin	SS304	SS316	SS304
11	Bonnet Gasket	Spiral Wound (Graphite+304 or 316)		
12	Bonnet Stud	A193-B7	A193-B8	A320-L7
13	Bonnet Stud Nut	A194-2H	A194-8	A194-4
14	Eyebolt	Carbon Steel		

Note: Disc and seat ring may either be solid facing material or a base material equal to or better than the body/bonnet material with facing as shown.



Dimensions Data — ANSI Class 600LB

Size	in	2	2½	3	4	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600
L/L1(RF/BW)	mm	292	330	356	432	559	660	787	838	889	991	1092	1194	1397
L2(RTJ)	mm	295	333	359	435	562	664	791	841	892	994	1095	1200	1407
H	mm	170	178	225	275	385	445	500	570	590	650	778	970	1100
Weight	Kg	28	35	41	88	181	357	500	650	889	1285	1800	2150	3200

Applicable Standards

Design & Manufacture: BS1868/API 6D
Pressure-temperature Rating: ASME B16.34
Face to Face: ASME B16.10
Flange End: ASME B16.5
Butt Welded End: ASME B16.25
Inspection & Test: API 598/API 6D

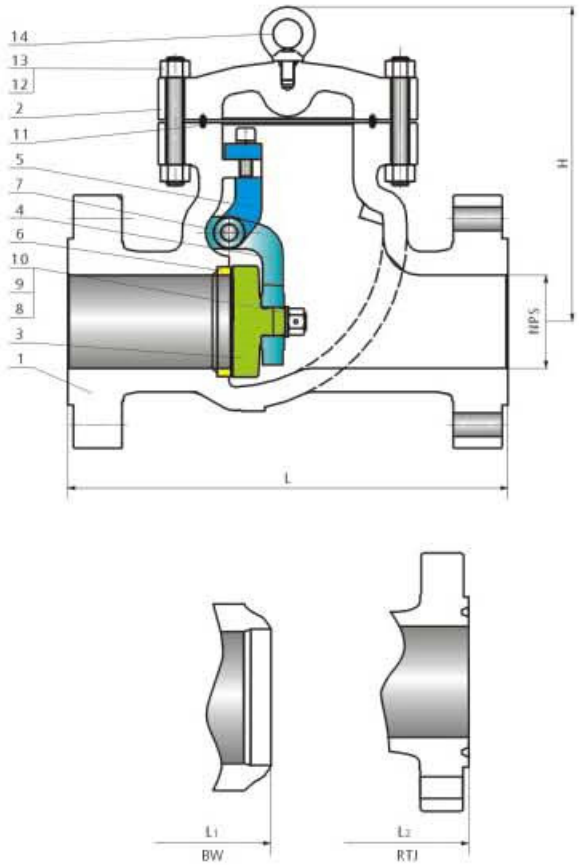
Design Description

BC, Bolted Cover
Swing or Piston Type
Anti-rotation Disc
Renewable Seat Ring
Non-penetrate Disc Shaft
Horizontal or Vertical Service
Flanged or Butt Welded End

Main Parts Materials

NO	Part Name	ASTM Material		
		Carbon Steel	Stainless Steel	Cryogenic Steel
1	Body	A216-WCB	A351-CF8M	A352-LCB
2	Bonnet Cap	A216-WCB	A351-CF8M	A352-LCB
3	Disc	A216-WCB+CR13	A351-CF8M	A352-LCB+CR13
4	Hinge	A216-WCB	A351-CF8M	A352-LCB
5	Yoke	A216-WCB	A351-CF8M	A352-LCB
6	Seat Ring	A105+HF	Integral+HF	A350-LF2+CR13
7	Hinge Pin	A276-304	A276-316	A276-304
8	Disc Washer	Carbon Steel	A276-316	Carbon Steel
9	Disc Nut	A194-2H	A194-8M	A197-8
10	Disc Nut Pin	SS304	SS316	SS304
11	Bonnet Gasket	Steel Ring	SS316 Ring	SS304 Ring
12	Bonnet Stud	A193-B7	A193-B8	A320-L7
13	Bonnet Stud Nut	A194-2H	A194-8	A194-4
14	Eyebolt	Carbon Steel		

Note: Disc and seat ring may either be solid facing material or a base material equal to or better than the body/bonnet material with facing as shown.



Dimensions Data — ANSI Class 900LB

Size	in	2	2½	3	4	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600
L/L1(RF/BW)	mm	368	419	381	457	610	737	838	965	1029	1130	1219	1321	1549
L2(RTJ)	mm	371	422	384	460	613	740	841	968	1039	1140	1232	1334	1568
H	mm	183	220	280	315	390	460	540	640	680	780	845	1050	1200
Weight	Kg	72	75	80	127	260	410	754	818	1180	1909	2500	2960	4600

Applicable Standards

Design & Manufacture: BS1868/API 6D
Pressure-temperature Rating: ASME B16.34
Face to Face: ASME B16.10
Flange End: ASME B16.5
Butt Welded End: ASME B16.25
Inspection & Test: API 598/API 6D

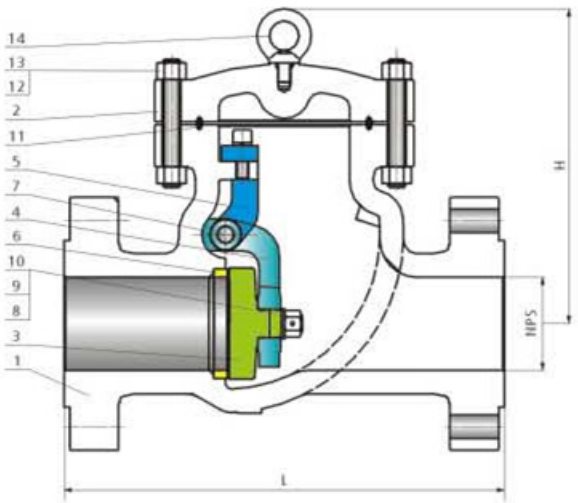
Design Description

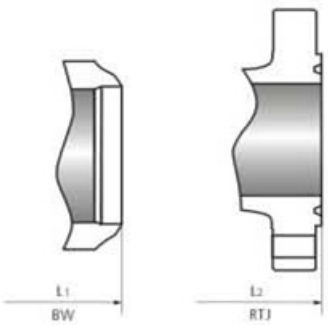
BC, Bolted Cover
Swing or Piston Type
Anti-rotation Disc
Renewable Seat Ring
Non-penetrate Disc Shaft
Horizontal or Vertical Service
Flanged or Butt Welded End

Main Parts Materials

NO	Part Name	ASTM Material		
		Carbon Steel	Stainless Steel	Cryogenic Steel
1	Body	A216-WCB	A351-CF8M	A352-LCB
2	Bonnet Cap	A216-WCB	A351-CF8M	A352-LCB
3	Disc	A216-WCB+CR13	A351-CF8M+HF	A352-LCB+CR13
4	Hinge	A216-WCB	A351-CF8M	A352-LCB
5	Yoke	A216-WCB	A351-CF8M	A352-LCB
6	Seat Ring	A105+HF	Integral+HF	A350-LF2+HF
7	Hinge Pin	A276-304	A276-316	A276-304
8	Disc Washer	Carbon Steel	A276-316	Carbon Steel
9	Disc Nut	A194-2H	A194-8M	A194-8
10	Disc Nut Pin	SS304	SS316	SS304
11	Bonnet Gasket	Steel Ring	SS316 Ring	SS304 Ring
12	Bonnet Stud	A193-B7	A193-B8	A320-L7
13	Bonnet Stud Nut	A194-2H	A194-8	A194-4
14	Eyebolt	Carbon Steel		

Note: Disc and seat ring may either be solid facing material or a base material equal to or better than the body/bonnet material with facing as shown.





Dimensions Data — ANSI Class 1500LB

Size	in	2	2½	3	4	6	8	10	12	14	16	18	20
	mm	50	65	80	100	150	200	250	300	350	400	450	500
L/L1(RF/BW)	mm	368	419	470	546	705	832	991	1130	1257	1384	1537	1664
L2(RTJ)	mm	371	422	473	549	711	841	1000	1146	1276	1407	1559	1686
H	mm	265	240	303	340	430	500	605	785	830	950	1080	1145
Weight	Kg	72	75	110	205	450	634	1140	1939	2000	2700	3960	4400

Applicable Standards

Design & Manufacture: BS1868/API 6D
Pressure-temperature Rating: ASME B16.34
Face to Face: ASME B16.10
Flange End: ASME B16.5
Butt Welded End: ASME B16.25
Inspection & Test: API 598/API 6D

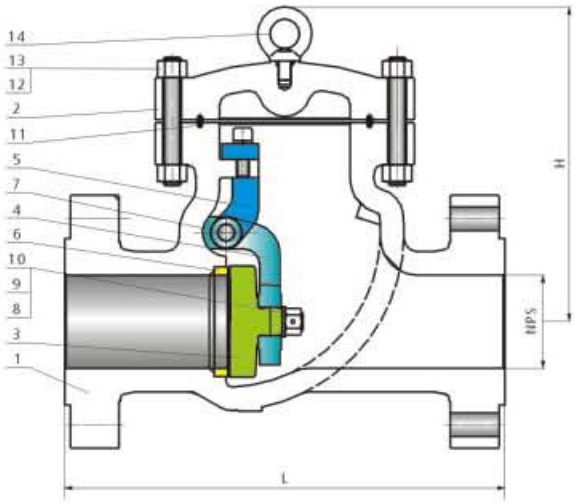
Design Description

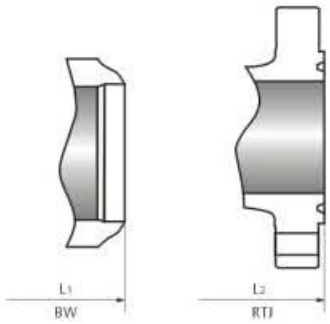
BC, Bolted Cover
Swing or Piston Type
Anti-rotation Disc
Renewable Seat Ring
Non-penetrate Disc Shaft
Horizontal or Vertical Service
Flanged or Butt Welded End

Main Parts Materials

NO	Part Name	ASTM Material		
		Carbon Steel	Stainless Steel	Cryogenic Steel
1	Body	A216-WCB	A351-CF8M	A352-LCB
2	Bonnet Cap	A216-WCB	A351-CF8M	A352-LCB
3	Disc	A216-WCB+CR13	A351-CF8M+HF	A352-LCB+CR13
4	Hinge	A216-WCB	A351-CF8M	A352-LCB
5	Yoke	A216-WCB	A351-CF8M	A352-LCB
6	Seat Ring	A105+HF	Integral+HF	A350-LF2+HF
7	Hinge Pin	A276-304	A276-316	A276-304
8	Disc Washer	Carbon Steel	A276-316	Carbon Steel
9	Disc Nut	A194-2H	A194-8M	A194-8
10	Disc Nut Pin	SS304	SS316	SS304
11	Bonnet Gasket	Steel Ring	SS316 Ring	SS304 Ring
12	Bonnet Stud	A193-B7	A193-B8	A320-L7
13	Bonnet Stud Nut	A194-2H	A194-8	A194-4
14	Eyebolt	Carbon Steel		

Note: Disc and seat ring may either be solid facing material or a base material equal to or better than the body/bonnet material with facing as shown.





Dimensions Data — ANSI Class 2500LB

Size	in	2	2½	3	4	6	8	10	12
	mm	50	65	80	100	150	200	250	300
L/L1(RF/BW)	mm	451	508	578	673	914	1022	1270	1422
L2(RTJ)	mm	454	514	584	683	927	1038	1292	1444
H	mm	285	305	350	410	540	620	705	855
Weight	Kg	93	100	196	440	868	970	1700	2080

Applicable Standards

Design & Manufacture: API 594
Pressure-temperature Rating: ASME B16.34
Face to Face: ASME B16.10
Flange End: ASME B16.5
Butt Welded End: ASME B16.25
Inspection & Test: API 598/API 6D

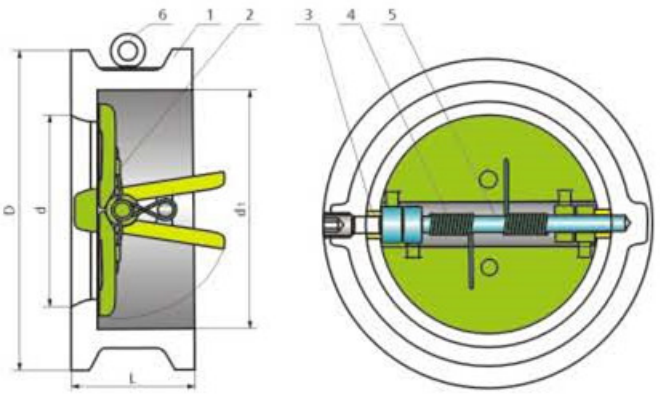
Design Description

One Piece Body
Butterfly Swing Type
Dual-plate Disc, Long-pattern
Renewable Split Disc
Horizontal or Vertical Service
Wafer End
Available with Flanged or Lug Type

Main Parts Materials

NO	Part Name	ASTM Material		
		Carbon Steel	Stainless Steel	Cryogenic Steel
1	Body	A216-WCB	A351-CF8M	A352-LCB
2	Plate	A216-WCB+CR13	A351-CF8M+HF	A352-LCB+CR13
3	Stop Pin	A276-420	A276-304	A276-420
4	Back Spring	A313-304	A313-316	A313-304
5	Hinge Pin	A276-420	A276-304	A276-420
6	Eyebolt[1]	Carbon Steel		

Note: 1) NPS 8" & above.



Dimensions Data — ANSI Class 150LB

Size	in	2	2½	3	4	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600
L	mm	60	67	73	73	98	127	146	181	184	191	203	219	222
D	mm	103	122	135	173	220	277	337	407	448	512	547	604	715
d	mm	51	65	80	102	152	203	254	305	350	400	450	500	600
d_1	mm	56	73	88	108	160	210	266	310	355	405	455	505	605
Weight	Kg	2	3	4	6	13	25	39	54	80	117	138	163	331

Dimensions Data — ANSI Class 300LB

Size	in	2	2½	3	4	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600
L	mm	60	67	73	73	98	127	146	181	222	232	264	292	318
D	mm	110	128	147	179	249	305	359	420	483	537	594	652	772
d	mm	51	65	80	102	152	203	254	305	350	400	450	500	600
d_1	mm	58	73	88	108	160	210	266	310	355	405	455	505	608
Weight	Kg	3	4	6	8	18	31	51	77	117	190	200	265	410

Applicable Standards

Design & Manufacture: API 594
Pressure-temperature Rating: ASME B16.34
Face to Face: ASME B16.10
Flange End: ASME B16.5
Inspection & Test: API 598/API 6D

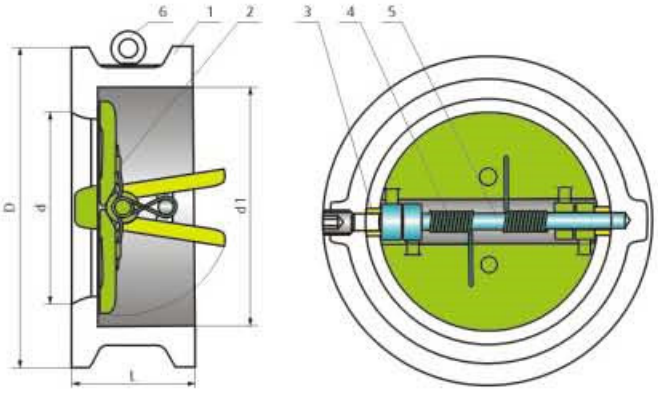
Design Description

One Piece Body
Butterfly Swing Type
Dual-plate Disc, Long-pattern
Renewable Split Disc
Horizontal or Vertical Service
Wafer End
Available with Flanged or Lug Type

Main Parts Materials

NO	Part Name	ASTM Material		
		Carbon Steel	Stainless Steel	Cryogenic Steel
1	Body	A216-WCB	A351-CF8M	A352-LCB
2	Plate	A216-WCB+CR13	A351-CF8M+HF	A352-LCB+CR13
3	Stop Pin	A276-420	A276-304	A276-420
4	Back Spring	A313-304	A313-316	A313-304
5	Hinge Pin	A276-420	A276-304	A276-420
6	Eyebolt[1]	Carbon Steel		

Note: 1) NPS 8" & above.



Dimensions Data — ANSI Class 600LB

Size	in	2	2½	3	4	6	8	10	12	14	16
	mm	50	65	80	100	150	200	250	300	350	400
L	mm	60	67	73	79	136	165	213	229	273	305
D	mm	110	128	147	191	264	318	398	455	490	562
d	mm	51	65	80	102	152	200	250	305	337	387
d_1	mm	58	73	88	108	162	212	266	312	355	400
Weight	Kg	4	5	8	11	26	55	95	140	223	360

Dimensions Data — ANSI Class 900LB

Size	in	2	2½	3	4	6	8	10	12	14	16
	mm	50	65	80	100	150	200	250	300	350	400
L	mm	70	83	83	102	159	206	241	292	356	384
D	mm	140	162	165	204	286	356	432	495	518	572
d	mm	51	65	80	102	150	200	250	305	337	387
d_1	mm	58	73	88	108	162	212	266	312	355	400
Weight	Kg	8	11	14	20	42	84	145	220	350	470

Applicable Standards

Design & Manufacture: API 602
Pressure-temperature Rating: ASME B16.34
Face to Face: ASME B16.10/Manufacturer Standard
Flange End: ASME B16.5
Butt Welded End: ASME B16.25
Socket Welded End: ASME B16.11
Threaded End: ASME B1.20.1
Inspection & Test: API 598

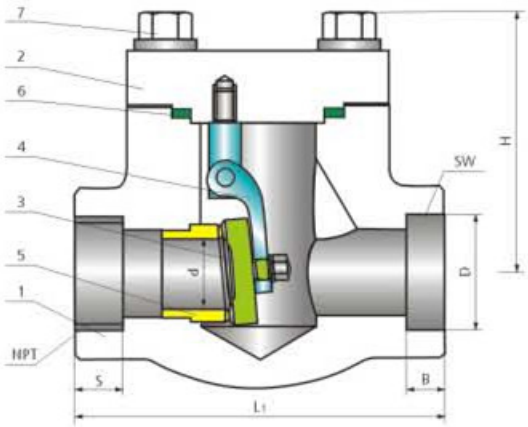
Design Description

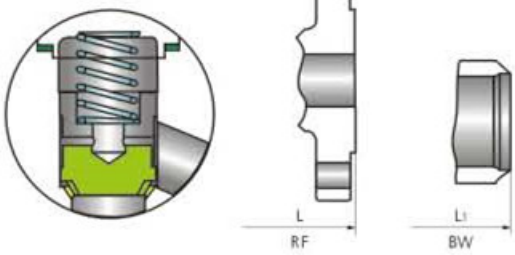
BC, Bolted Cover
Choice of WB, Welded Bonnet
Lift or Swing Type
Seat Ring Integral with Body of Lift
Horizontal or Vertical Service
SW, Screwed Welded End
NPT, Threaded End
Flanged End

Main Parts Materials

NO	Part Name	ASTM Material		
		Carbon Steel	Stainless Steel	Alloy Steel
1	Body	A105	A182-F316	A182-F11
2	Bonnet	A105	A182-F316	A182-F11
3	Disc	A182-F6a	A182-F316	A182-F6a+HF
4	Hinge	A276-410	A276-316	A276-410
5	Seat[1]	A276-410	A182-F316+HF	A276-410+HF
6	Bonnet Gasket[2]	Graphite+304	Graphite+316	Graphite+304
7	Bonnet Stud	A193-B7	A193-B8M	A193-B16

Note: 1) Lift type check valve seat ring integral with body;
2) Spiral wound construction.





Dimensions Data — ANSI Class 150LB/300LB/600LB/800LB

Size		L1[1]	Flange Ends			d	B		NPT	H	Weight[2] (kg)	
			150LB	300LB	600LB		D	SW	S			
in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	Bolted	Welded
3/8	10	79	102	152	165	9	17.6	9.6	13.6	61	3.8	2.8
1/2	15	79	108	152	165	10	21.8	9.6	13.6	61	5.6	3.4
3/4	20	92	117	178	190	13	27.1	12.7	13.9	61	7.8	4.7
1	25	111	127	203	216	17.5	33.8	12.7	17.3	78	12.5	9.2
1 1/4	32	120	140	216	229	23	42.6	12.7	18	84	17	10.5
1 1/2	40	120	165	229	241	30	48.7	12.7	18.4	3.98	23.5	13.3
2	50	140	203	267	292	35	61.1	15.9	19.2	120	38.8	18.9

Note: 1) 150LB-800LB-BW, SW or NPT; 2) 600LB-RF, 800LB-BW/SW/NPT.

Applicable Standards

Design & Manufacture: API 602
Pressure-temperature Rating: ASME B16.34
Face to Face: ASME B16.10/Manufacturer Standard
Flange End: ASME B16.5
Butt Welded End: ASME B16.25
Socket Welded End: ASME B16.11
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Design Description

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NPT, Threaded End
BW, Butt Welded End
Flanged End

Main Parts Materials

NO	Part Name	ASTM Material		
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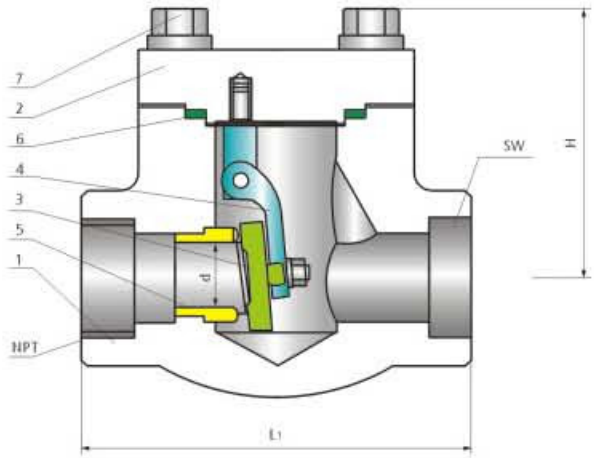
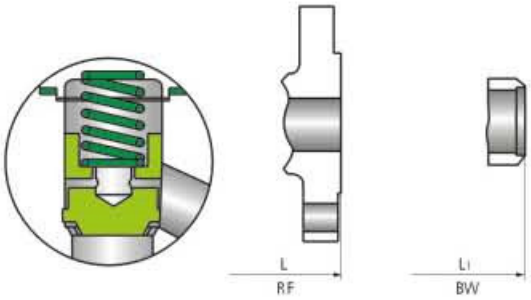
2	Cover	A105	A182-F316	A182-F11
3	Disc	A182-F6a	A182-F316	A182-F6a+HF
4	Hinge	A276-410	A276-316	A276-410
5	Seat[1]	A276-410	A182-F316	A276-410+HF
6	Gasket[2]	Graphite+304	Graphite+316	Graphite+304
7	Stud	A193-B7	A193-B8M	A193-B16

Note: 1) Lift type check valve seat ring integral with body;
2) Spiral wound construction.





Dimensions Data — ANSI Class 900LB/1500LB

Size		L	L1	H(Open)	Weight(kg)
in	mm	mm	mm	mm	
3/8	10	-	95	79	3.1
1/2	15	216	111	79	3.0
3/4	20	229	111	79	3.6
1	25	254	120	97	4.3
1 1/4	32	279	120	105	6.1
1 1/2	40	305	140	120	8.8
2	50	368	178	140	12.6