

D.H.C. CONTROL CO., LTD.

Zero leakage triple offset metal seated butterfly valve



HPVSI/P1093-032-1-01
HPVSI/P1093-032-1-02

API 6D-1341
API 609-0079

FIRE SAFETY

ISO 9001
ISO 14001

Most Reliable Business and Technical Partner for the Valve industry.

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Dae Han Control is taking part to become technology advanced country throught high technology and rational management system.



GREETINGS

Based on our vast experiences and continuous research & development, Dae Han Control Co., Ltd. has become one of the leading manufacturers of metal seated valves. Power plant, Cogeneration, Petro-Chemical, Refining, Water and waste water purification, Pulp & Paper, Marine, Steel and other industrial process applications are some of the vast industries that we supply.

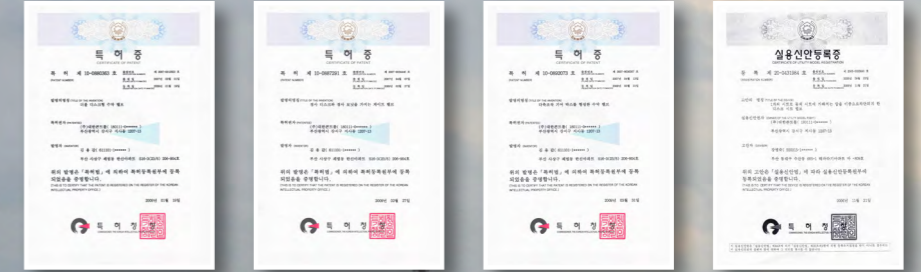
Throughout our history, We have endeavored to produce high quality products at competitive prices that meet and exceed customer's expectations.

Our desire is to make DHC valve a recognized standard in the valve industry. I would like to ensure you that each of our products will be conforming to international standards such as ASME/ANSI, MSS, DIN, BS, JIS. Quality Assurance to ISO9001-2015, CE and API, will ensure we maintain a high level of excellence to you our respected customer. Thank you for your consideration.

President Y.G. Kim
DAE HAN CONTROL CO., LTD.

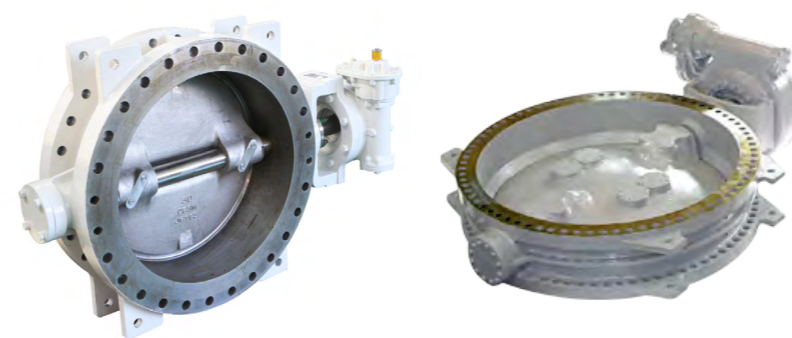
BRIEF HISTORY

- 1995** Established DAEHAN CONTROL.
- 1998** Started manufacturing Customize Special Products.
- 2000** Incorporated the Company, DAEHAN CONTROL Co., Ltd.
ISO9001 Quality Management System Approved
- 2002** Started Export to East Asia & Middle East
- 2005** Registered Vendor List on KEPCO / POSCO / KHNP.
- 2006** Moved into Address at #1207-13, Jisa-Dong, Kangseo-Gu, Busan
- 2007** Fire Safety Test Certificate Approved
- 2008** CE Certificate Approved
- 2009** Patent for Gate valve and Aqua Seal Valve
- 2010** ISO14001 Environmental Management System Approved
- 2012** Registered Vendor to HDEC, GS con.
- 2014** NSF 61 Approved / API 609, API 6D Approved
Registered Vendor to PDVSA
- 2015** Registered Vendor to HYUNDAI STEEL, National Iranian Oil Company (NIOC), SATORP
OHSAS 18001 Management System Approved
- 2016** Moved to New DHC Factory. #39, Gadal 1-Ro, Gangseo-Gu, Busan, Korea
CRN Approved – Butterfly valves
- 2017** Registered Vendor to MHPS / KOSPO / KOWEPO / KOMIPO / EWP / KOSEP
Patent : Butterfly valve(HIP-SEAT TYPE)
- 2018** Patent : Check Valve(CUSHION)
- 2019** Registered Vendor to Achilles(Peru)



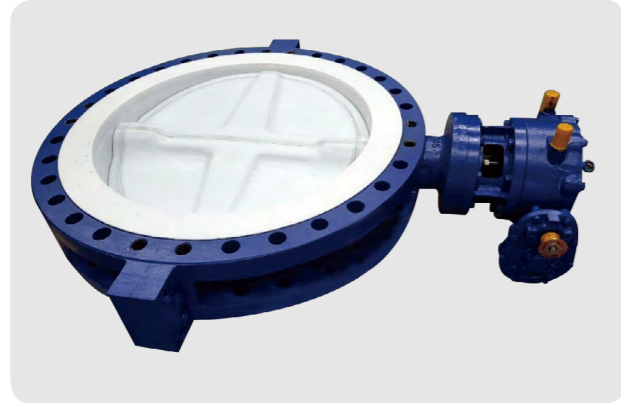
APPROVAL CERTIFICATES

- ISO 9001, 14001
- OHSAS 18001
- CE CERT
- FIRE SAFETY CERT
- API CERT
- NSF61 CERT
- LETTER OF A PATENT
- CERTIFICATE OF UTILITY MODEL REGISTRATION



PRODUCTS | Concentric Butterfly valve

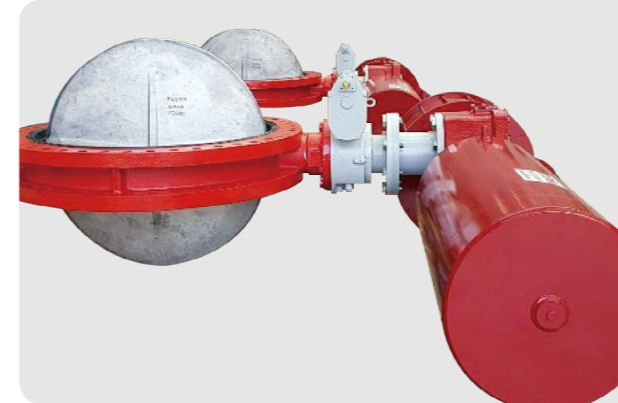
DHC-BTC SERIES



PTFE Lined BFV 3"(80A)~48"(1200A)



Wafer type full bore Concentric BFV Electric control OP' 2"(50A)~100"(2500A)



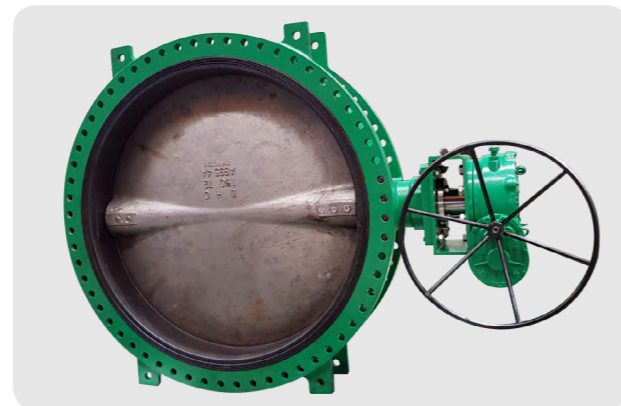
Double flange type Concentric BFV Pneumatic Control OP'



Wafer type Concentric BFV Disc buffing #400, for powder service



PFA moulded design BFV for Acid application



Double Flange type Concentric BFV WORM GEAR OP' 2"(50A)~120"(3000A)



Pneumatic Control Centric BFV for Acid application



Wafer type reduced bore Concentric BFV Manual Gear with hand wheel OP'



Double Flange type Concentric BFV Electric Actuator OP' 4"(100A)~120"(3000A)



Double Flange extension type Concentric BFV Electric Actuator OP' 8"(200A)~100"(2500A)



LUG type Concentric Butterfly valve with Gear OP'



Two Body Concentric Butterfly valve

PRODUCTS | Double Offset Butterfly valve(Eccentric)

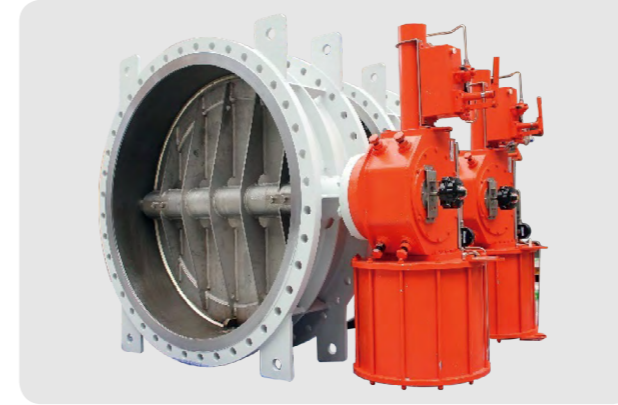
DHC-BTD SERIES



Double Offset Teflon Seat Design Lug Type Butterfly Valve With Worm Gear 3"(80A)~100"(2500A)



Double Offset Teflon Seat Design Double Flange Type Butterfly Valve Worm Gear With Motor 8"(200A)~120"(3000A)



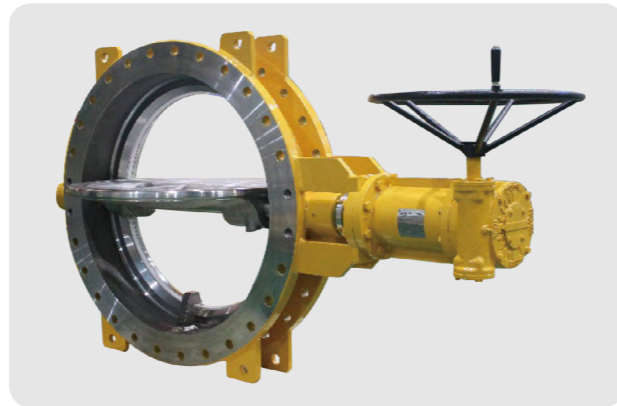
Pneumatic Control Double Offset BFV for Gas application(Viton+PTFE seat)



Oil Free Double Offset PTFE seat BFV for CO2 application



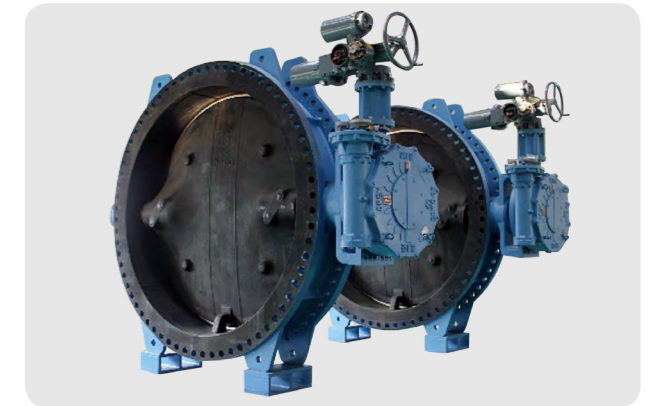
Full Rubber Lined electric OP BFV for Sea Water application 8"(200A)~120"(3000A)



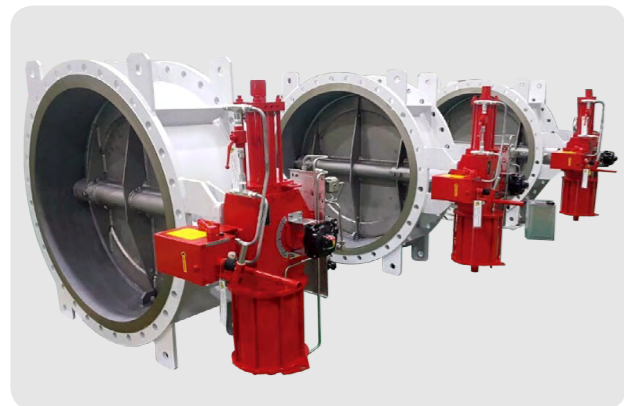
Fabricated design long stem BFV soft seat for COG line 20"(500A)~136"(3400A)



Full Rubber Lined electric OP BFV for Sea Water application



Full Rubber Lined electric OP BFV 96" for Sea Water application



Pneumatic Control Double Offset BFV for Gas application(Viton+PTFE seat) 20"(500A)~120"(3000A)



Control Double Offset BFV for Gas application 20"(500A)~160"(4000A)



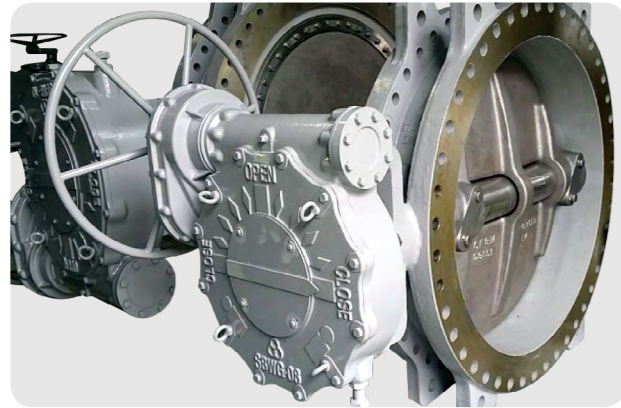
Double Offset Rubber seat design Double Flange Type Butterfly Valve worm gear op'



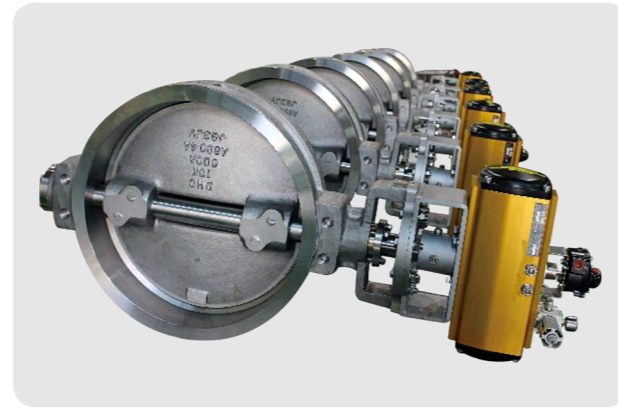
Full Rubber Lined electric OP BFV 96" for Sea Water application

PRODUCTS | Triple Offset Butterfly valve

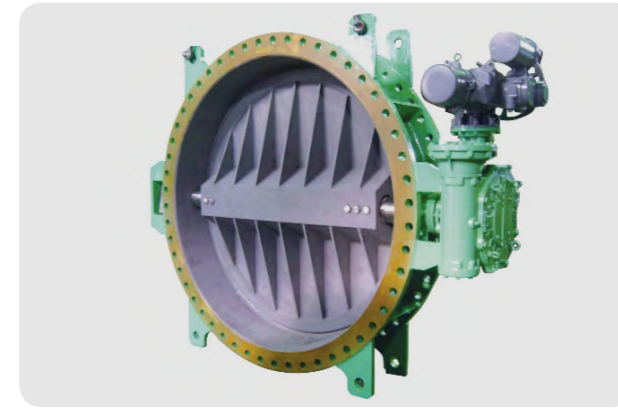
DHC-BTT SERIES



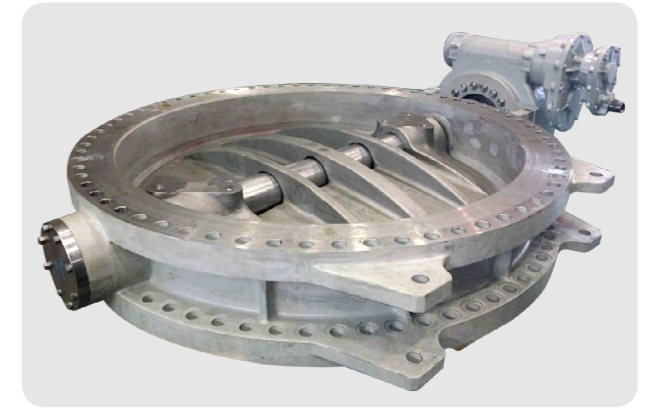
Triple Offset Metal seated BFV 6"(150A)~120"(3000A)



Triple Offset PTFE seat BFV Ammonia 190 ° C application
4"(100A)~100"(2500A)



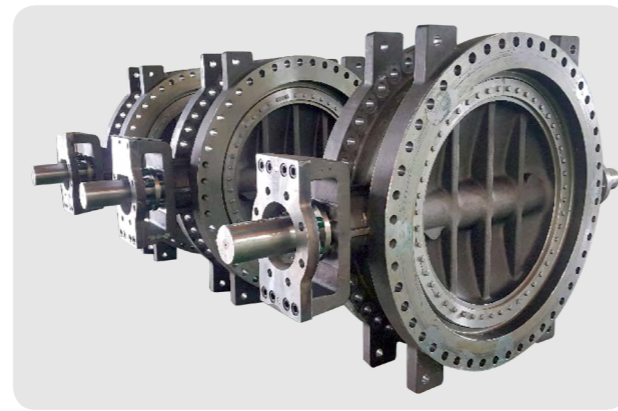
BFG GAS line Triple Offset Metal seat BFV
Zero Leakage Uni-directional 4"~160"



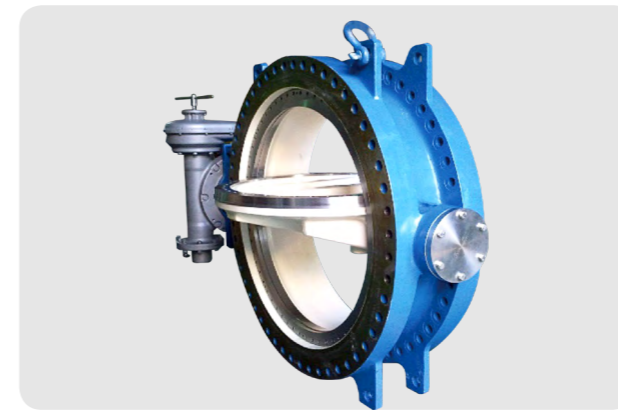
Bi-directional Triple Offset metal seat BFV
Body & Disc Seat replaceable



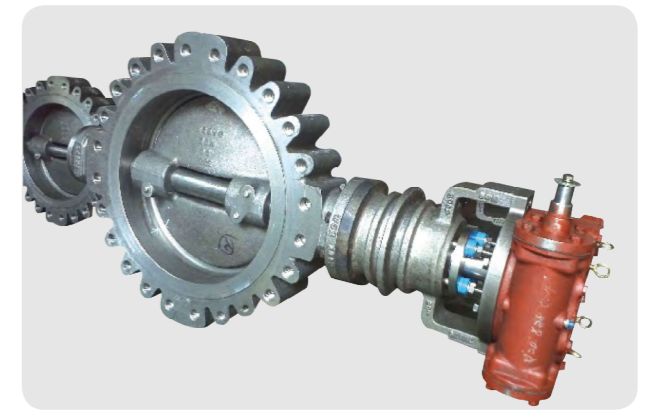
Triple Offset Metal seat Electric OP' BFV
Anti-Cavitation design 6"(150A)~100"(2500A)



Class 300LB Triple Offset Metal seat BFV
Control Hydro actuator for Power Plant 6"(150A)~100"(2500A)



Triple Offset Metal seat Butterfly valve
Zero leak Bi-directional 72"



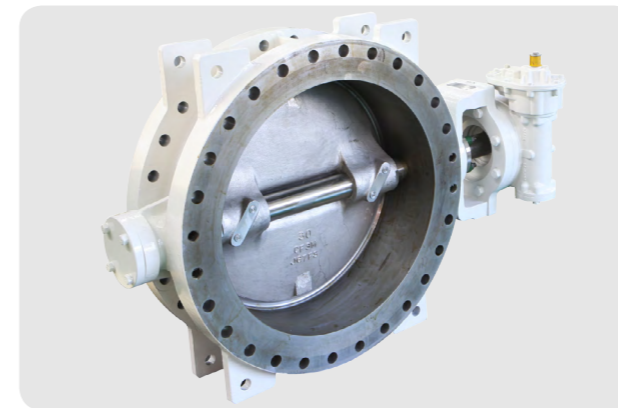
Triple Offset Metal seat Butterfly valve
Design Temp. 550°C



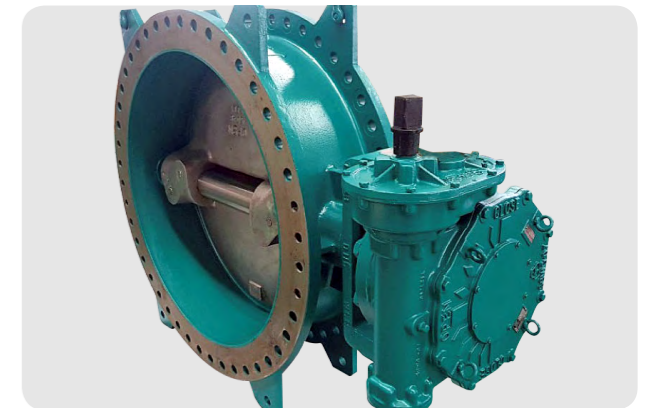
Triple Offset Butterfly valve Hydro Actuator ANSI 150#,
Zero Leak



Zero leakage Triple Offset LUG type BFV
Laminate on Body Seat 6"(150A)~100"(2500A)

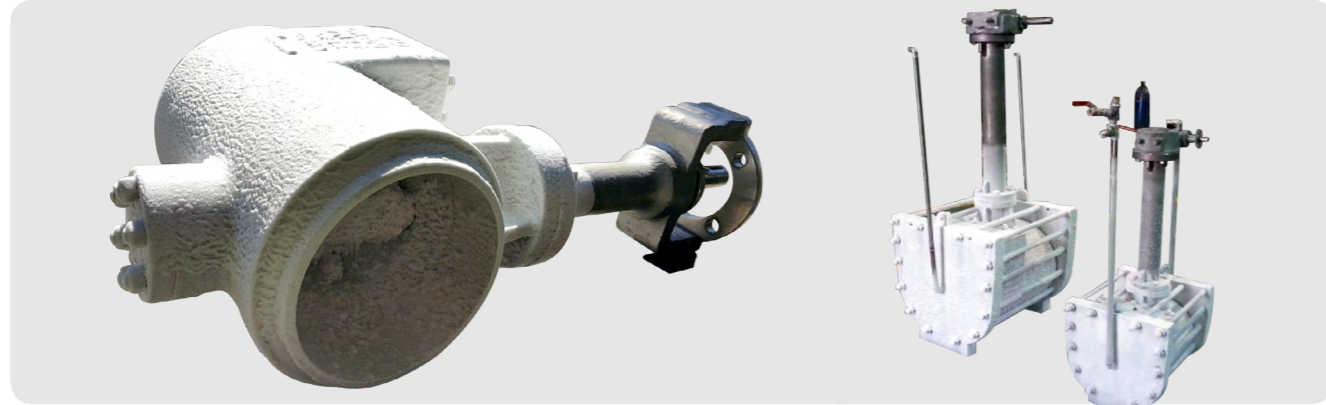


Triple Offset Metal seat butterfly valve
Double Flange type, Zero leakage
Stellite overlay on Body Sealing Face

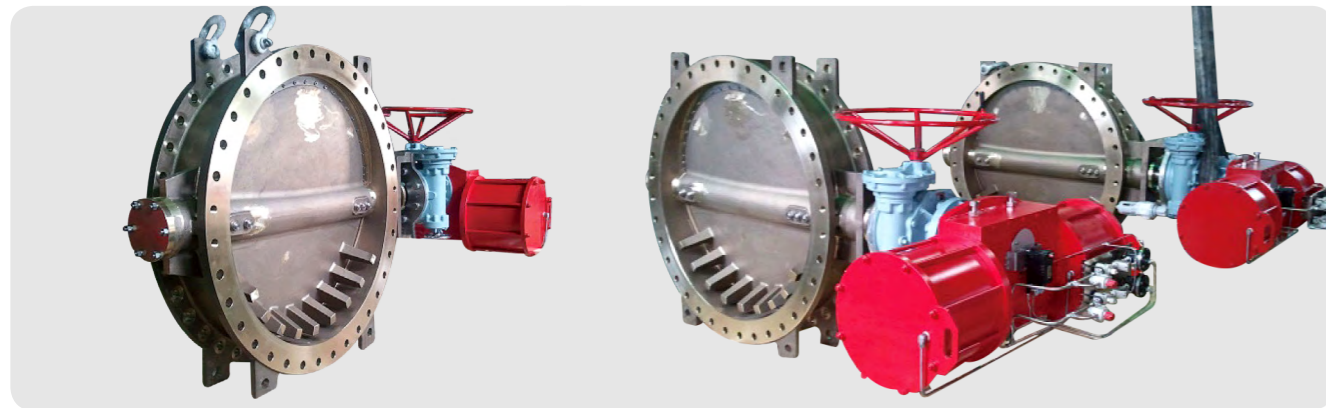


AWWA C504 Triple Offset Butterfly valve
Bi-directional Zero Leak, 4"~96"

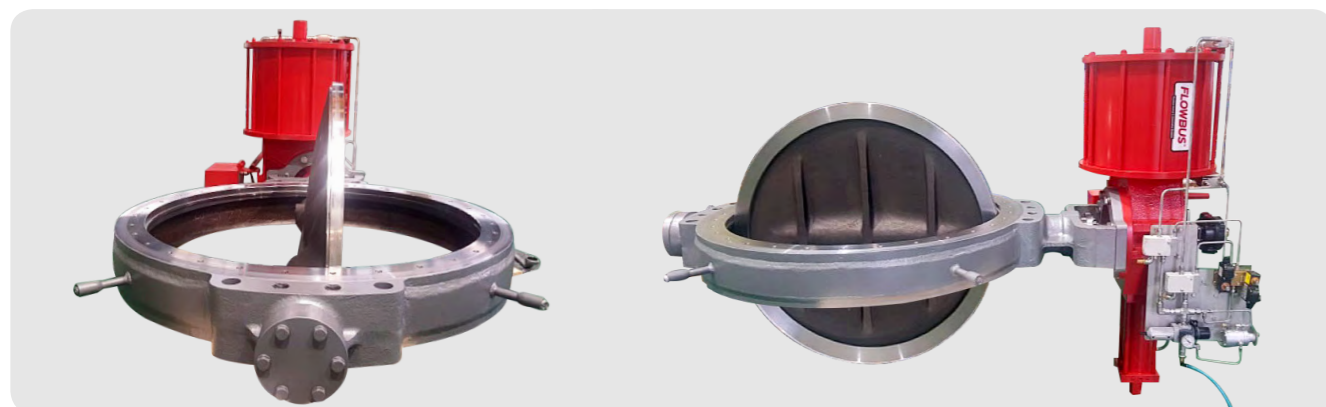
PRODUCTS | Other type of Butterfly valve



BS6364 Top entry Butterfly valve for Cryogenic



Control Butterfly valve with None Cavitation design



JACKETED BUTTERFLY VALVE



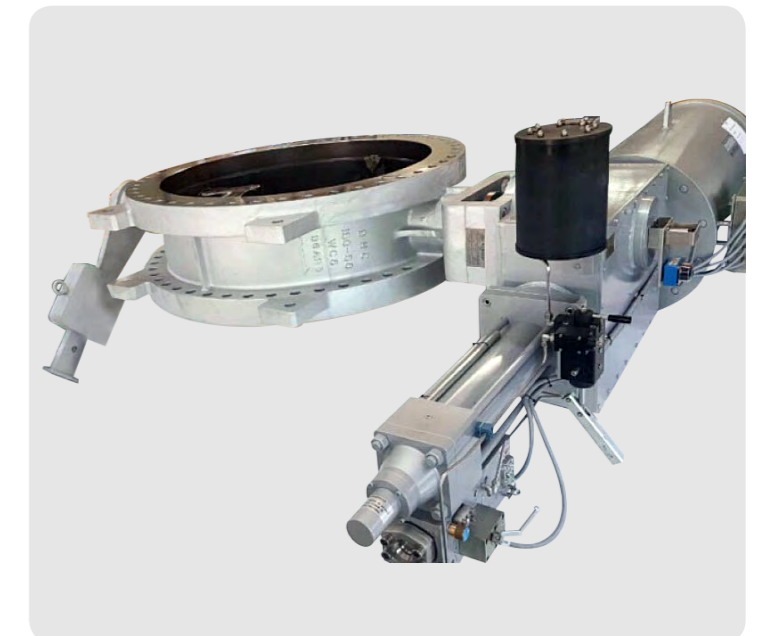
2500LB Control Butterfly valve



3-Way Butterfly Control Valve



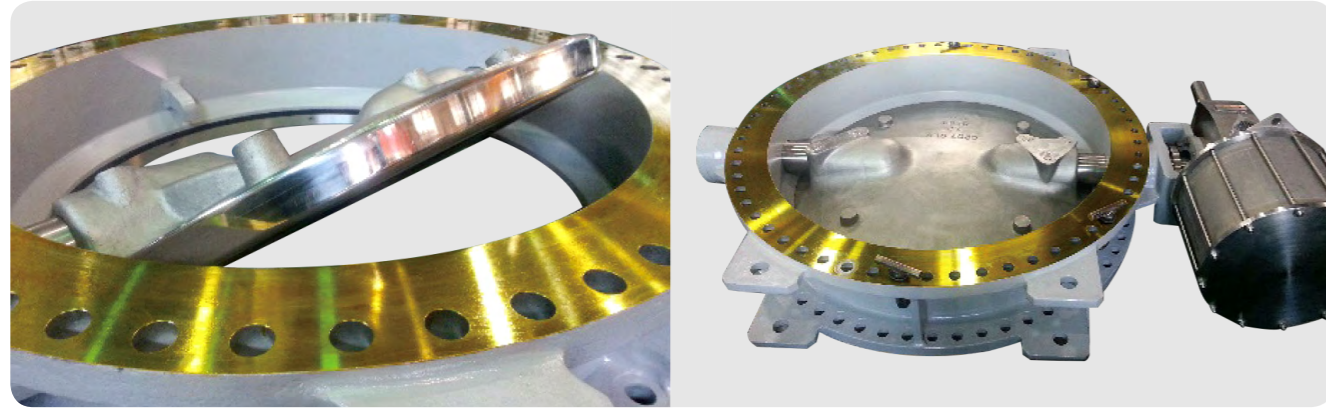
DHC-BTT SERIES, Butt Weld end Butterfly valve
District Heating application



DHC-BTT SERIES, Shut off Butterfly valve
Quick closing(1.6 sec for 66")

PRODUCTS | High Performance Butterfly valve(AWWA)

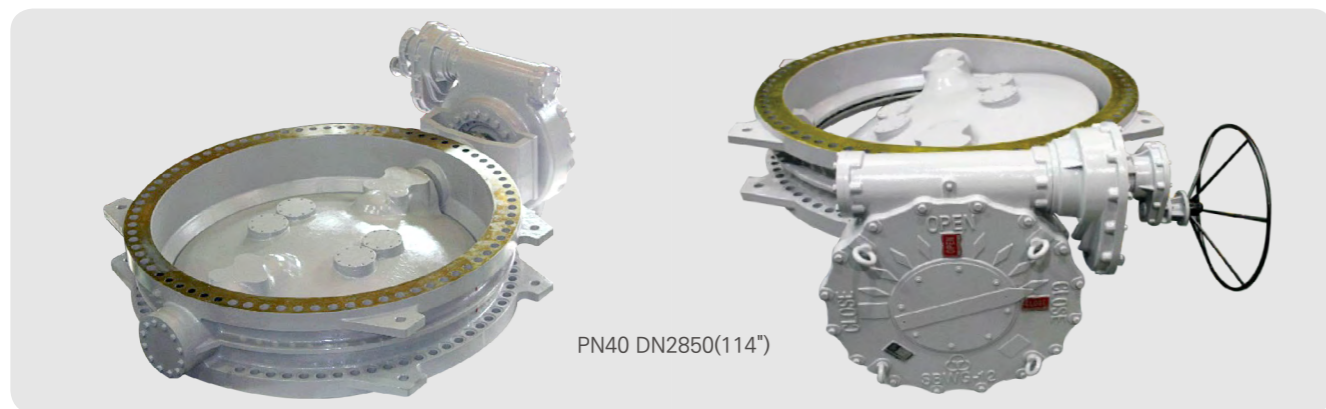
Double & Triple Offset



AWWA Triple Offset Rubber Seat Butterfly valve Stainless Steel Hydro Actuator, Submerged service
18"(450A)~136"(3400A)



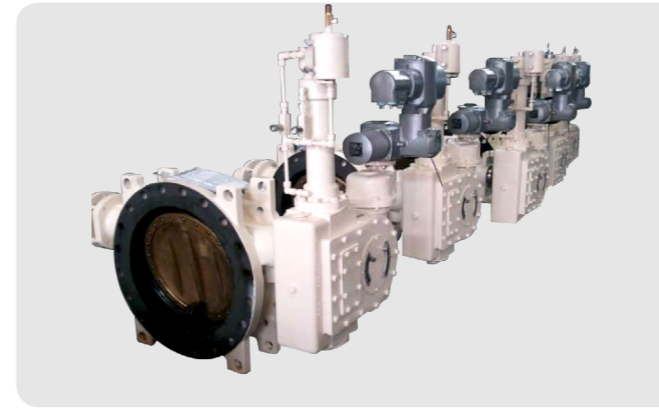
AWWA C504 Butterfly valve with electric control actuator
18"(450A)~136"(3400A)



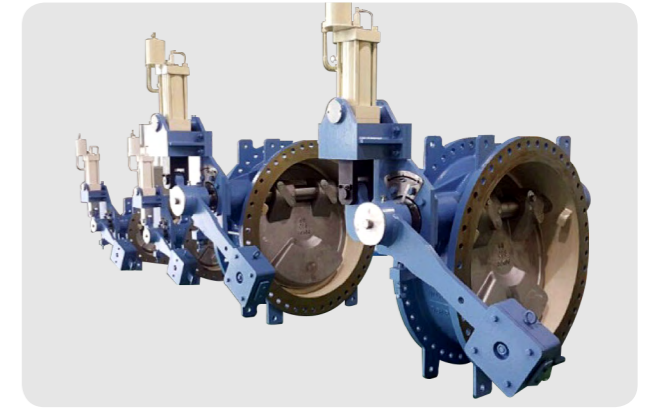
PN40 DN2850(114")

AWWA Double offset Rubber seat BFV
20"(500A)~120"(3000A)

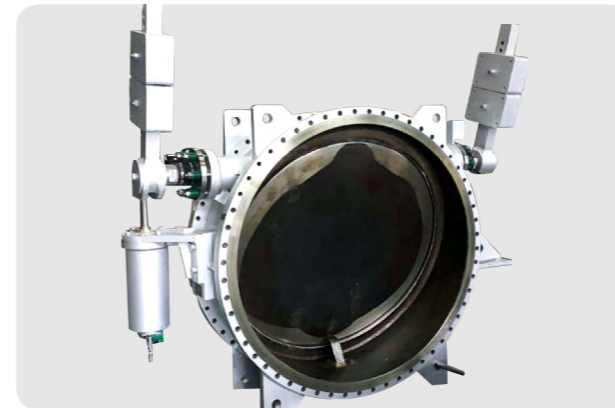
| Check valve



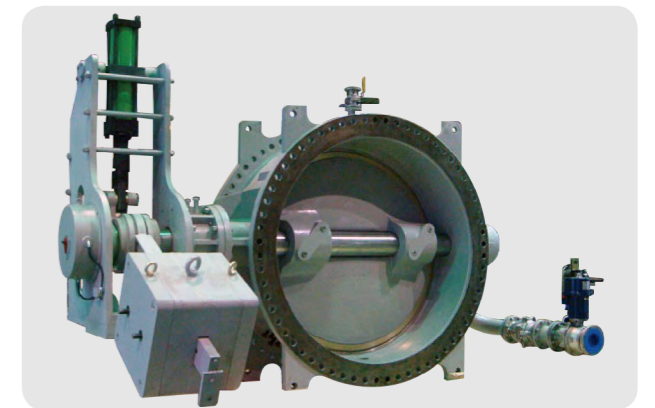
Combined Check valve with Electric actuator/counter weight



Non Slam Check Valve(soft seat for cooling water) With Counter Weight and Hydro Damping System(Two Step Closing)



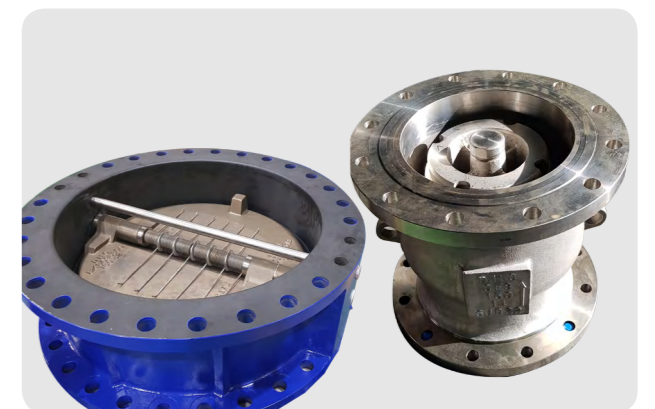
Double damping system Non Slam Check valve



Non Slam Check valve with counter weight and Hydro cylinder



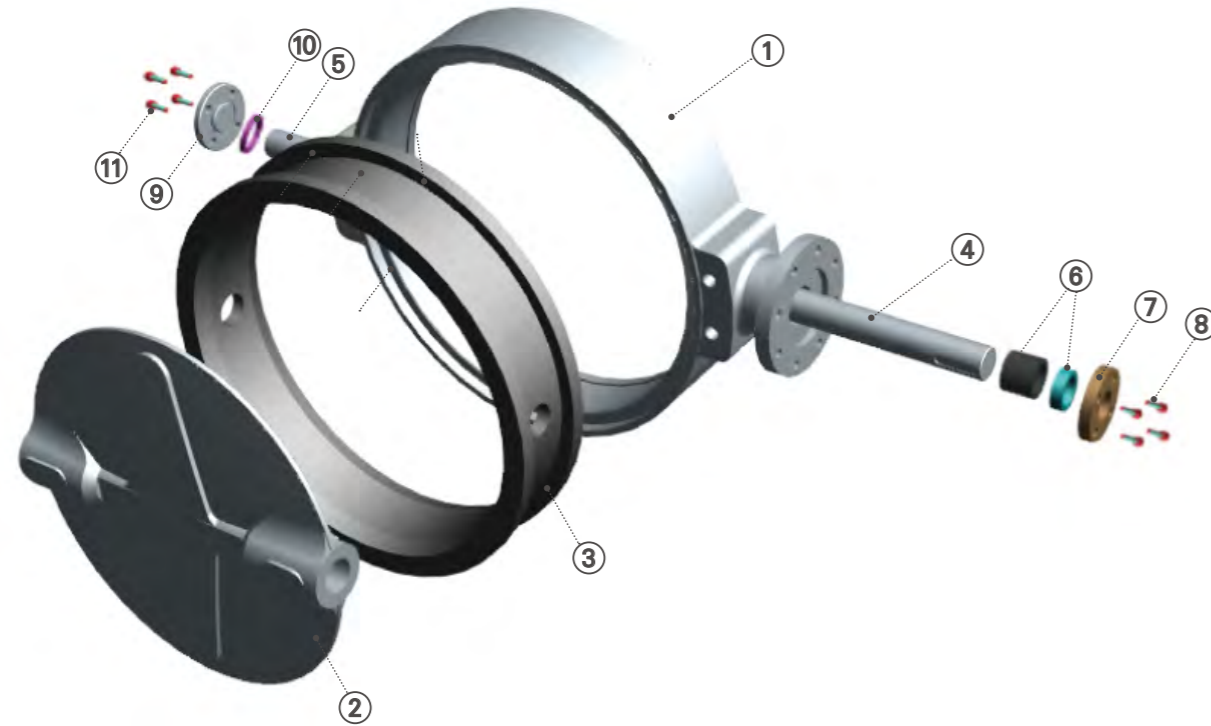
Swing check valve #150-42"



Dual plate check valve

Nozzle check valve

CONCENTRIC BUTTERFLY VALVE (DHC-BTC SERIES)



BASIC MATERIAL SPECIFICATIONS

NO.	DESCRIPTION	MATERIALS	REMARK
1	BODY	DUCTILE IRON, CAST STEEL, STAINLESS STEEL, ALUMINIUM BRONZE, ETC	
2	DISC	STAINLESS STEEL, ALUMINIUM BRONZE, DUPLEX ETC	
3	SEAT	NBR, EPDM, VITON, SILICON, NR, PTFE COATING, ETC	
4	MAIN SHAFT	STAINLESS, DUPLEX, MONEL, ETC	
5	STUB SHAFT	STAINLESS, DUPLEX, MONEL, ETC	
6	PACKING UNIT (UPTO 750A)	O-RING+MC NYLON+STAINLESS STEEL	*OPTION
	PACKING	PTFE, NBR, EPDM,VITON ETC	
7	PACKING PLATE	STEEL PLATE, STAINLESS STEEL	
8	PLATE BOLT	STEEL, STAINLESS STEEL ETC	*OPTION
9	END COVER	DUCTILE IRON, CARBON STEEL, STAINLESS STEEL, ALUMINIUM BRONZE, ETC	PLUG UPTO 16"(WAFER,FLANGE)
10	END COVER GASKET	EPDM, NBR, VITON, PTFE	ACCORDING TO SEAT MATERIAL
11	END COVER BOLT	STEEL, STAINLESS, CARBON STEEL, ETC	

Available material (Duplex, Al-Bronze, Inconel, Monel, etc)

CONCENTRIC BUTTERFLY VALVE SEAT DESIGN (DHC-BTC SERIES)

SEAT DESIGN

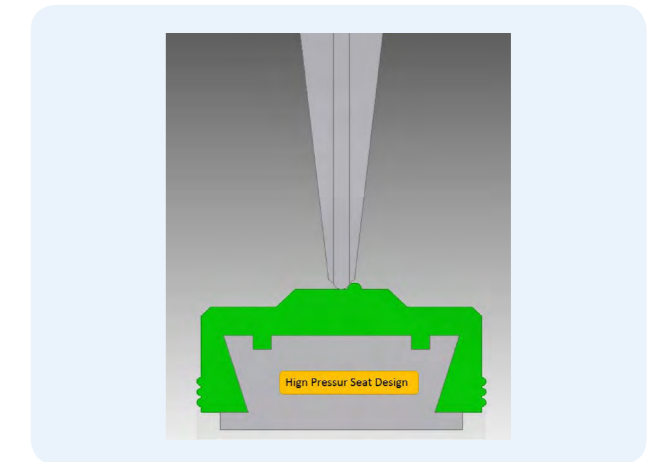


SEAT MATERIALS : NBR, NR, VITON, EPDM, SILICON.

FEATURES : BI-DIRECTIONAL TYPE.

This is a general BI-DIRECTIONAL TYPE butterfly structure and designed for securing a certain amounts of flux and a small cavitation by adopting STEAMLINED DISC.

HIGH PRESSURE SEAT DESIGN



SEAT MATERIALS : NBR, NR, VITON, EPDM, SILICON, WITH PTFE LINED.

FEATURES : Structure for protecting body, disc, and seat from acid fluid.
METAL RING & O-RING attached to the outside of seat protect fluid from leakage.

RUBBER SEAT MATERIAL FEATURE OF RUBBER

Following is general informations and special application shall be referred to the manufacturer's representatives.

Common Name	ASTM Code	Max. Temperature	Abrasion	Aging	Sun Light Resistance	Water Resistance	Oil Resistance	Solvent	Strong Acid	Weak Acid	Strong Alkali	Weak Alkali
Buna-N	NBR	90℃	◎	◎	○	◎	◎	△	X	○	○	◎
Neoprene	CR	90℃	◎	◎	◎	◎	○	X	X	○	○	◎
Natural Rubber	NR	65℃	◎	○	○	◎	X	X	X	○	○	◎
ETP	EPDM (ETP)	120℃	○	◎	◎	◎	X	X	○	◎	◎	◎
Silicon	Si	150℃	○	◎	◎	○	X~○	△	X	○	○	◎
Viton	FPM	150℃	○	◎	◎	◎	◎	○	◎	◎	◎	◎

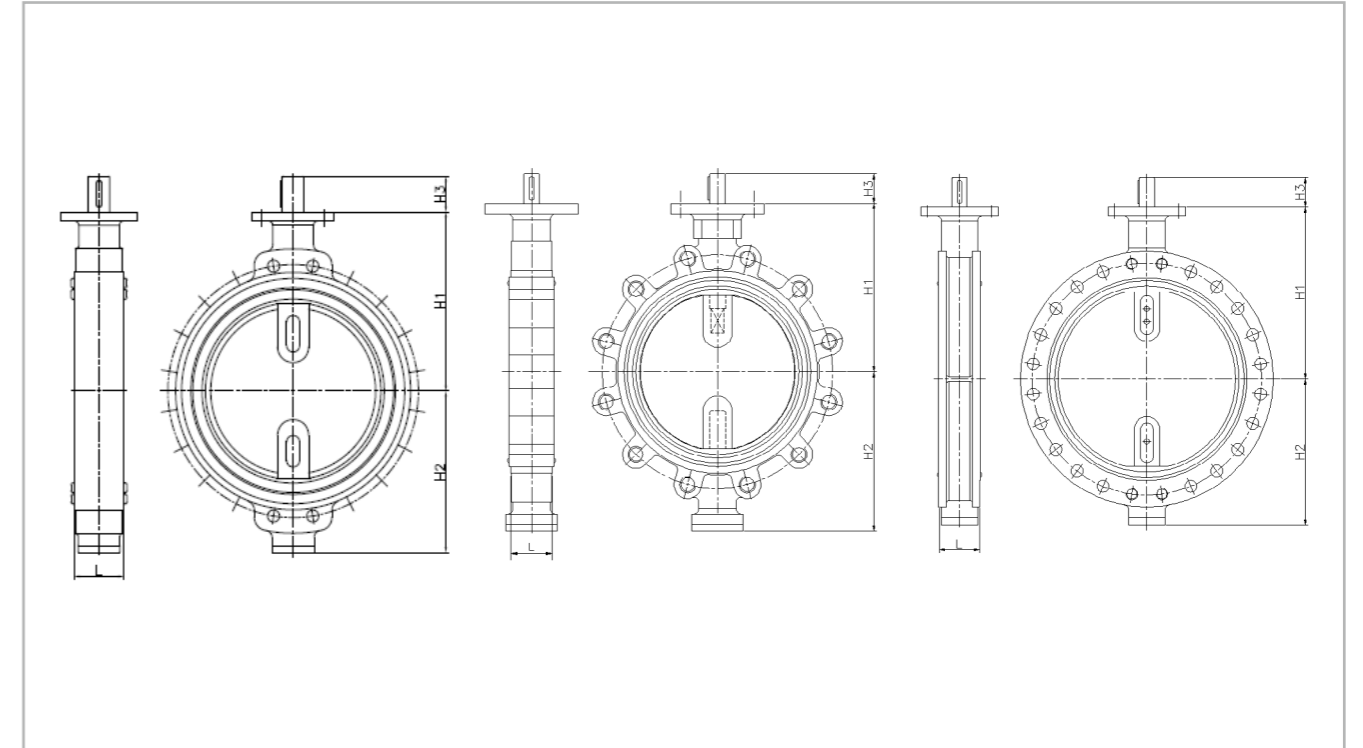
NOTE : ◎ excellent / ○ good / △ fair / X poor

RUBBER SEAT MATERIAL FEATURE OF RUBBER

Fluid	Temperature (°C)	NBR	CR	NR	EPT	SI	FPM
Sea Water	90°C	○	○	○	○	○	○
Sewage	RT	○	○	○	○	-	-
Steam	120°C	△	△	X	○	△	○
Water	90°C	○	○	○	○	○	○
Alcohol	RT	○	○	○	○	○	○
Ammonia Gas	RT	△	○	○	○	-	X
Ammonia Liquid (30%)	RT	○	○	○	○	-	X
Caustic Soda (50%)	RT	○	○	○	○	-	○
Chlorine (dry)	RT	X	X	X	X	X	○
Chlorine (wet)	RT	X	X	X	X	X	△
Hydro chloric Acid (10%)	RT	○	○	○	○	○	○
Nitric Acid (10%)	RT	△	○	X	X	X	○
Sulfuric Acid (10%)	RT	△	○	○	○	○	○
Sulfuric Acid (10%)	65°C	△	○	○	○	○	○
Sulfuric Acid (30%)	RT	△	○	○	○	○	○
Fuel Oil	RT	○	X	X	X	X	○
Gasoline	RT	X	X	X	X	X	△
Heavy Oil	RT	○	X	X	X	X	○
Lubricating Oil	70°C	○	X	X	X	X	○
Naphtha	RT	△	X	X	X	X	○
Tar	RT	X	X	X	X	X	○
Blast Furnace Gas	RT	○	○	X	X	X	○
Carbonic Acid Gas	RT	○	○	○	○	○	○
Coke Oven Gas	RT	X	X	X	X	X	○
Natural Gas	RT	○	○	X	X	X	○
Oxygen	RT	X	△	X	○	○	○
Sulfurous Acid Gas	RT	○	○	X	X	X	○

NOTE : ○ suitable / △ suitable in case / X not suitable

CONCENTRIC BUTTERFLY VALVE DIMENSION TABLE (DHC-BTC SERIES)



150LB CONCENTRIC

SIZE		H1	H2	H3	L	STEM		TOP FLANGE (ISO 5211)
mm	inch					Ød	Key	
50	2	130	90	45	43	14	FL'12	F07
80	3	145	85	45	46	16	FL'12	F07
100	4	165	120	45	52	16	FL'12	F07
125	5	170	130	45	56	19	FL'15	F07
150	6	190	145	45	56	19	FL'15	F07
200	8	235	220	50	60	22	8x7	F10
250	10	265	225	50	68	25	8x7	F10
300	12	315	290	50	78	32	10x8	F12
350	14	340	315	60	78	32	10x8	F12
400	16	385	345	65	102	38	12x8	F14
450	18	405	370	80	114	42	12x8	F14
500	20	430	390	80	127	50	16x10	F16
600	24	530	450	105	154	50	16x10	F16
700	28	565	510	100	165	60	18x11	F20
750	30	580	525	100	165	60	18x11	F20
800	32	645	570	100	200	65	20x12	F25
850	34	640	600	115	190	75	22x14	F25
900	36	700	635	115	200	85	25x14	F25
1000	40	855	725	120	216	85	25x14	F30
1050	42	880	770	120	216	95	28x16	F30
1200	48	910	830	130	254	110	32x18	F30

CONCENTRIC BUTTERFLY VALVE Cv

SIZE	10°	20°	30°	40°	50°	60°	70°	80°	90°	
2	50A	6	13	19	30	48	78	126	193	232
2.5	65A	9	18	28	43	71	114	185	284	340
3	80A	13	27	40	63	103	166	269	413	495
4	100A	24	47	71	111	182	293	475	730	874
5	125A	36	71	108	168	274	442	716	1100	1317
6	150A	52	104	158	246	401	647	1048	1610	1927
8	200A	90	180	272	424	692	1116	1807	2777	3324
10	250A	142	286	431	672	1096	1769	2864	4400	5267
12	300A	192	385	581	906	1478	2386	3863	5934	7104
14	350A	255	512	772	1204	1964	3170	5134	7886	9440
16	400A	317	636	959	1495	2440	3938	6376	9794	11725
18	450A	434	871	1313	2047	3341	5393	8732	13414	16057
20	500A	509	1021	1541	2402	3920	6327	10244	15737	18838
22	550A	623	1251	1887	2941	4801	7748	12545	19271	23069
24	600A	738	1482	2236	3486	5689	9182	14868	22839	27340
26	650A	875	1756	2649	4130	6741	10879	17615	27060	32393
28	700A	1017	2041	3079	4800	7834	12643	20473	31449	37646
30	750A	1173	2354	3551	5536	9035	14581	23610	36269	43417
32	800A	1393	2796	4218	6576	10732	17320	28046	43082	51573
34	850A	1605	3222	4861	7577	12367	19958	32317	49644	59427
36	900A	1799	3612	5449	8495	13864	22375	36231	55656	66624
38	950A	2009	4033	6085	9485	15481	24984	40455	62145	74392
40	1000A	2230	4478	6755	10530	17186	27737	44913	68992	82588
42	1050A	2463	4945	7460	11630	18981	30633	49603	76196	91213
44	1100A	2708	5436	8201	12784	20865	33673	54525	83758	100265
46	1150A	2964	5950	8976	13993	22838	36857	59681	91678	109746
48	1200A	3231	6487	9787	15256	24900	40185	65070	99956	119655

DHC ENGINEERING / TECHNICAL DATA

OPERATED TORQUE TABLE

Table OPERATING TORQUE FOR DAEHAN CONTROL BUTTERFLY VALVE							
SIZE		MAXIMUM PRESSURE DROP(N.m)					
		3	5	7	10	13	16
50A	2"	3.0	5.0	6.5	9.5	11.5	14.5
65A	2 1/2"	3.5	7.5	10.5	9.8	20.2	22.4
80A	3"	6.5	10.0	15.0	22.0	29.0	36.0
100A	4"	9.0	17.5	24.5	35.5	46.5	57.5
125A	5"	16.0	30.0	43.0	62.0	81.0	100.0
150A	6"	25.0	41.0	59.0	87.0	114.0	141.0
200A	8"	55.5	92.0	130.0	187.0	244.0	301.0
250A	10"	107.0	198.0	283.0	410.0	537.0	664.0
300A	12"	168.0	279.0	401.0	585.0	768.0	948.0
350A	14"	236.0	420.0	604.0	879.0	1,154.0	1,430.0
400A	16"	327.0	558.0	797.0	1,157.0	1,516.0	1,876.0
450A	18"	435.0	758.0	1,078.0	1,562.0	2,046.0	2,530.0
500A	20"	558.0	928.0	1,326.0	1,923.0	2,521.0	3,118.0
550A	22"	755.0	1,273.0	1,812.0	2,620.0	3,428.0	4,237.0
600A	24"	898.0	1,496.0	2,137.0	3,099.0	4,061.0	5,023.0
700A	28"	1,375.0	2,357.0	3,345.0	4,828.0	6,310.0	7,793.0
750A	30"	1,678.0	2,807.0	4,008.0	5,809.0	7,610.0	9,141.0
800A	32"	1,968.0	3,334.0	4,700.0	6,749.0	8,798.0	10,848.0
850A	34"	2,465.0	4,055.0	5,808.0	7,896.0	9,878.0	10,200.0
900A	36"	2,689.0	4,398.0	6,222.0	8,959.0	11,696.0	14,433.0
950A	38"	3,155.0	5,105.0	7,679.0	9,249.0	13,205.0	16,508.0
1000A	40"	3,630.0	6,078.0	8,338.0	11,570.0	15,302.0	19,035.0
1100A	44"	5,467.0	7,556.0	10,798.0	15,656.0	20,514.0	25,372.0
1200A	48"	6,505.0	10,550.0	14,981.0	21,628.0	28,274.0	34,921.0

PTFE(TFM) LINED BUTTERFLY VALVE

DESIGN



COMPANY PRESENTATION

ChemValve-Schmid AG is the product of the merger between the valve manufacturing center of ConVey-Schmid AG and the sales company ChemValve-Schmid AG. Our core competence is manufacturing the high quality products of Chemvalve-Schmid AG which are then sold and distributed through a carefully developed network of long-standing partners in more than 40 countries all over the world.

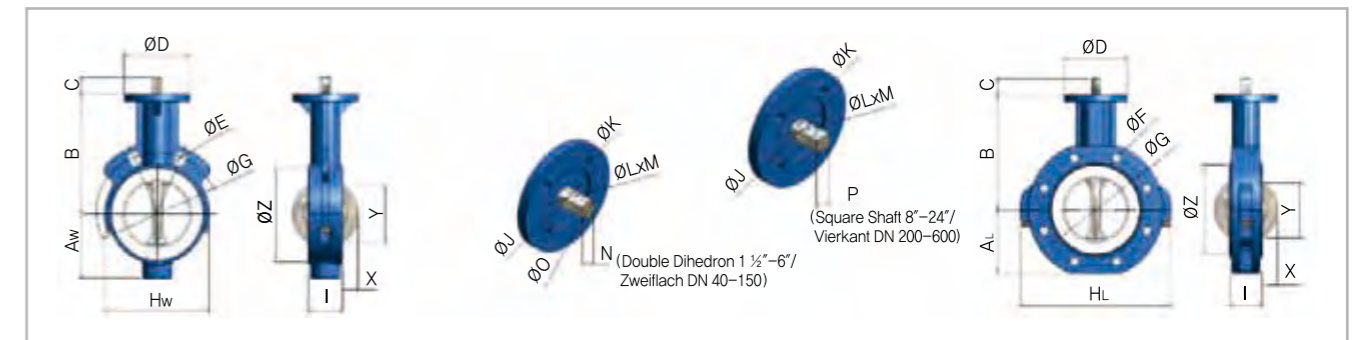
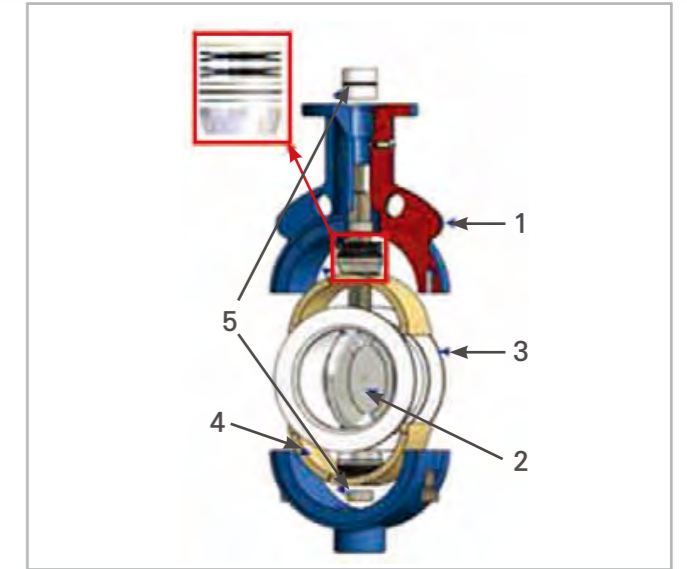
※ DHC is official distributor of Chem Valve-Schmid AG.
Please contact to DHC Sales Team.



SPECIFICATION

POSITION	DESCRIPTION	MATERIAL
1	Split Body	FCD
2	Disc & Shaft	SS, PFA Coated
3	Liner	PTFE or TFM
4	Back-up Ring	Silicon
5	Complete Bearing and Pressure Seal	SS-Viton-Spring steel-POM-PTFE

※ For other materials, please contact to DHC sales team.



DIMENSION

inch ANSI	Aw	AL	B	C	ØD	ØE DIN	ØF DIN	ØG DIN	ØH ANSI	ØI ANSI	Hw	HL	I	ØJ	ØK	ØL x m	N	ØO	P	X	Y	Z	ISO	Kgw	kg	DN DIN	
1½"	53*	53	94	19	65	4x18	4xM16	110	2x16	4x½"-13UNC	98.4	142*	142	33	50	36x3.5	9	13		7	34	76	F05	1.5	2.5	40	
2"	56	58	130	19	102	2x18	4xM16	125	2x19	4x⅝"-11UNC	120.6	104	153	43	70	56x3.5	11	14		6	31	85	F07	3.0	5.0	50	
2½"	67	65	146	19	102	2x18	8xM16	145	2x19	4x⅝"-11UNC	139.7	128	173	46	70	56x3.5	11	14		11	48	106	F07	4.0	7.0	65	
3"	84	88	165	19	102	2x18	8xM16	160	2x19	4x⅝"-11UNC	152.4	144	210	46	70	56x3.5	11	14		17	63	122	F07	5.0	8.1	80	
4"	100	102	185	25	102	2x18	8xM16	180	2x19	8x⅜"-11UNC	190.5	164	245	52	70	56x3.5	14	18		27	90	143	F07	6.3	10.8	100	
5"	110	116	202	25	102	2x18	8xM16	210	2x22	8x⅜"-10UNC	215.9	194	272	56	70	56x3.5	14	18		38	118	166	F07	7.7	14.5	125	
6"	125	127	217	30	102	2x18	8xM16	240	2x22	8x⅜"-10UNC	241.3	220	295	56	70	56x3.5	17	22		47	137	193	F07	10.0	15.8	150	
8"	158	160	245	26	152	2x22	8xM20	295	2x22	8x⅜"-10UNC	298.4	274	364	60	102	4x11	71x3.5		24	19	71	189	251	F10	16.5	24.5	200
10"	190	193	270	30	152	2x22	8xM20	350	2x26	12x⅞"-9UNC	361.9	330	431	68	102	4x11	71x3.5		28	22	92	239	301	F10	24.5	33.3	250
12"	225	227	306	30	152	2x22	12xM20	400	2x26	12x⅞"-9UNC	431.8	380	511	78	102	4x11	71x3.5		28	22	112	290	349	F10	37.0	57	300
14"	256*	256	330	37	152	16x22	12xM20	460	12x29	12x1"-8UNC	476.2	571*	571	92	125	4x13	87x3.5		35	27	125	328	414	F12	87*	87	350
16"	292*	292	365	37	152	16x26	16xM24	515	16x29	16x1"-8UNC	539.7	643*	643	102	125	4x13	87x3.5		35	27	146	377	460	F12	107*	107	400
18"	311*	311	400	50	175	20x26	20xM24	565	16x32	16x1½"-7UNC	577.8	684*	584	114	140	4x17	102x4.5		47	36	164	417	515	F14	152*	152	450
20"	340*	340	435	50	175	20x26	20xM24	620	20x32	20x1½"-7UNC	635.0	745*	745	127	140	4x17	102x4.5		47	36	184	477	570	F14	185*	185	500
24"	398*	398	510	54	210	20x30	20xM27	725	20x35	20x1¼"-7UNC	749.3	863*	863	154	165	4x21	132x5.5		58	46	215	560	672	F16	254*	254	600
30"	482*	482	608	90	210				28x53	28x1¼"-7UNC	914.4	1040*	1240	154	165	4x21	132x5.5	**	70	**	289	716	851	F16	300*	300	
36"	573*	573	684	90	300	28x33	28xM30	1050	32x42	32x1½"-6UNC	1085.8	1232*	1232	154	254	8x17	202x5.5	**	70	**	360	860	1016	F25	460*	460	
42"	600*	660	768	90	300				36x42	36x1½"-6UNC	1257.3	1402*	1402	154	254	8x17	202x5.5	**	80	**	434	1009	1170	F25	500*	500	

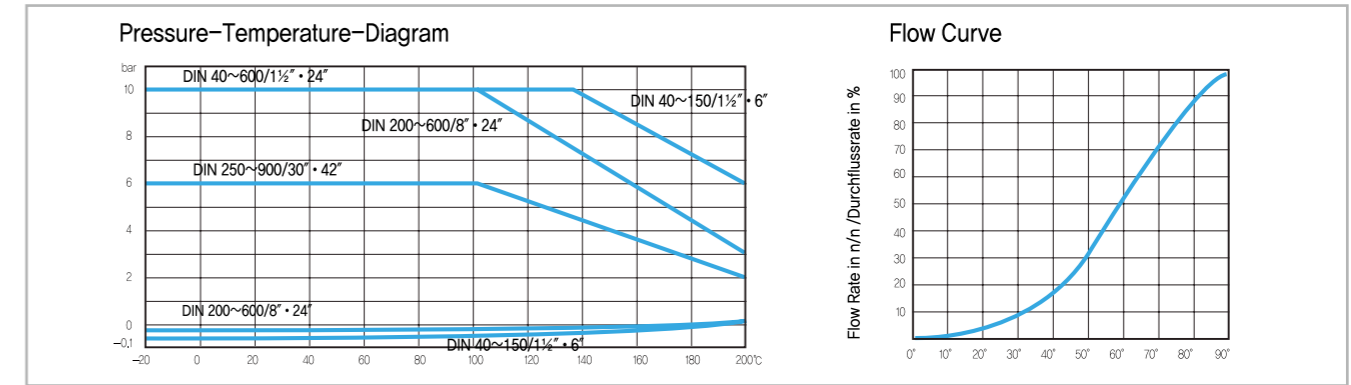
SCOPE OF APPLICATION	Butterfly Valve lined with TFM/PFA for high chemical demands. To shut off and control corrosive and abrasive liquids or gases.
Face to Face	According to ISO5752, Basic range 20 : DIN
Flange	According to EN ISO 5211
Max. Operating Pressure	10 Bar(DN40-600), 6 Bar(DN650-1050), Vacuum -0.1 Bar
Connection Standards	PN10-PN16(DN40-150), PN10(DN200-600), PN6(DN650-1050), ANSI CL 150
Temperature Range	-20°C up to +200°C
In-shop Testing	- Porosity Test of Disc Coating(PFA) and Liner(TFM or PTFE) acc. to DIN EN 60243-1 - Leakage Test acc. To EN 12266-1 / Leakage Rate A
CE 0036	Compliance of the Safety Requirements of the European Pressure Equipment Directive 97/23/EG.
Atex	Atex compliant Version for explosive Surroundings Group II, Zones 0, 1, 2 (and 20, 21, 22 respectively)



ADVANTAGE OF THE TFM LINER

TFM is manufactured with PTFE and a 1% fraction of perfluoropropyl vinyl ether (PPVE). While the properties of conventional PTFE (excellent all-around chemical resistance, application in a wide service temperature range and extreme resistance to embrittlement or aging) will be conserved, the additive PPVE leads to a better allocation of the PTFE particles and thus to a higher density of the molecular structure. The following extra advantages are resulting :

TECHNICAL DATA



Liquid

$$Kv = Q \sqrt{\frac{\rho}{\Delta P}}$$

Gas

$$Kv = \frac{Qn}{514} \sqrt{\frac{\rho_n \cdot T}{\Delta P \cdot P^2}}$$

Description	Symbol	Unit/Einheit	Note
Coefficient of Flow Rate	Kv	m³/h	Valve data sheet of purchase specification
Flow	Q	m³/h	
Flow	Qn	Nm³/h	
Density	ρ	kg/dm³	
Standard Density	ρn	kg/Nm³	
Outlet Pressure	P2	bar	
Pressure Drop	Δp	bar	
Operating Temperature	T	°K	

Inch	Kv	DN
1½"	136	40
2"	193	50
2½"	266	65
3"	392	80
4"	585	100
5"	1,015	125
6"	1,495	150
8"	3,050	200
10"	4,510	250
12"	6,500	300
14"	8,760	350
16"	11,350	400
18"	14,400	450
20"	18,000	500
24"	29,200	600
30"	54,400	
36"	81,016	900
42"	109,100	

TORQUE FOR ACTUATORS

DIN	040	050	065	080	100	125	150	200	250	300	350	400	450	500	600	900		
Inches	1½"	2"	2½"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	42"
Initial Breakaway Torque(NM)	15	30	35	45	60	80	110	190	300	400	450	500	600	650	750	2000	2700	3600
Max. allowable Torque Shaft (NM)	25	61	61	61	179	179	309	309	604	604	1200	1600	1950	2400	3200	8000	12000	12000

HAND LEVER AND GEAR BOX

4.1 Hand Lever and Gear box

Hand Lever

Inches	Ch	W	kg	DN
1½"	46	230	0.8	040
2"-3"	46	230	0.8	050-080
4"-5"	55	270	1.1	100-125
6"	55	325	1.4	150
8"	55	349	1.9	200
10"-12"	55	349	1.9	250-300

Gear box

Inches	Cg	Q	R	S	T	U	V	kg	DN
2"-3"	64	138	125	84	67.5	43.5	45.7	2.0	050-080
4"-5"	64	144	160	84	67.5	43.5	45.7	2.0	100-125
6"	75	201	160	112	81.5	52.5	55	3.9	150
8"	75	203	200	112	81.5	52.5	55	3.9	200
10"	75	203	200	112	81.5	52.5	55	3.9	250
12"	91	261	250	135	115	68.8	72.5	7.7	300
14"-16"	91	266	315	135	115	68.8	72.5	7.7	350-400
18"-20"	87	204	315	138	105	71	83	9.0	450-500
24"	90	227	315	200	126	86	101	14.5	600

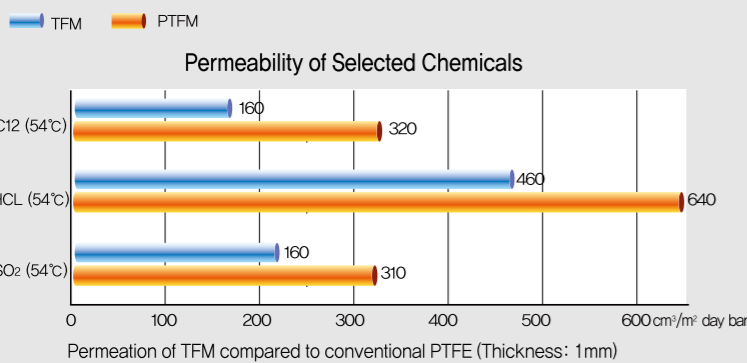
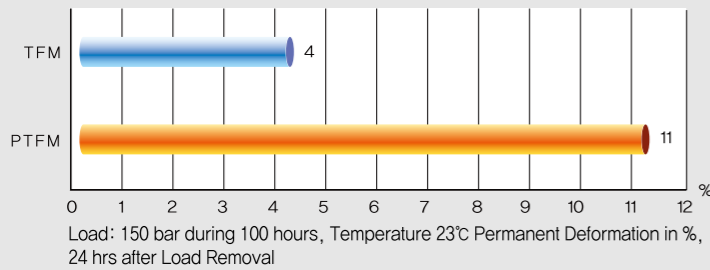
Form	Part	Material	Werkstoff	Bauteil	Art
Hand Lever	Handhold	St. Steel	Edelstahl	Griff	Handhebel
Notched	Plate	St. Steel	Edelstahl	Rasterscheibe	
Gear box	Gearbox Casing	GG 25/ Epoxy	GG 25 / Epoxy	Getriebegehäuse	Getriebe
	Shaft	St. Steel	Edelstahl	Welle	
	Handwheel	Steel / Epoxy	Stahl / Epoxy	Handrad	

Cold flow, measured as deformation under load, is significantly lower for TFM than for conventional PTFE : It is about the same value as conventional PTFE 25% glass fiber.

Reduced Permeation leads to better barrier properties.

The smooth surface provokes only a slight abrasion of the liner and less particles in the medium.

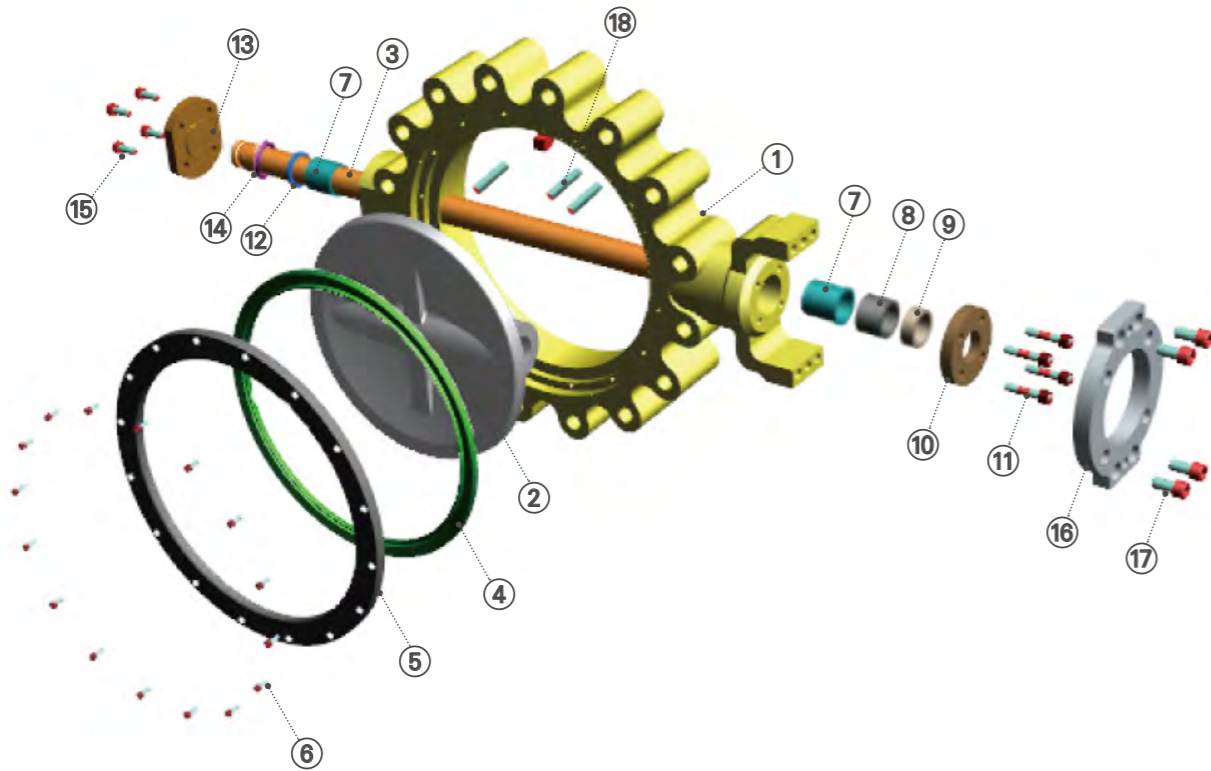
Permanent Deformation after Cyclic Load



Surface Property at 50x Magnification



DOUBLE OFFSET BUTTERFLY VALVE (HIGH PERFORMANCE) (DHC-BTD SERIES)



BASIC MATERIAL SPECIFICATIONS

NO.	DESCRIPTION	MATERIALS	REMARK
1	BODY	DUCTILE IRON, CAST STEEL, STAINLESS STEEL, ALUMINIUM BRONZE, ETC	
2	DISC	DUCTILE IRON, CAST STEEL, STAINLESS STEEL, ALUMINIUM BRONZE, ETC	
3	SHAFT	STAINLESS, DUPLEX, MONEL, ETC	
4	BODY SEAT/DISC SEAT	TEFLON, RUBBER, METAL, ETC	
5	SEAT RETAINER	STAINLESS, DUPLEX, MONEL, ALUMINIUM BRONZE, ETC	
6	RETAINER BOLT	STAINLESS, DUPLEX, MONEL, TITANIUM, ETC	
7	MAIN/STUB BUSH	METALPLAST, BRONZE, OILLESS, STAINLESS+CHROME, ETC	
8	PACKING	PTFE, NBR, EPDM, VITON, GRAPHITE, ETC	
9	PACKING BUSH	STAINLESS, BRONZE, ETC	
10	PACKING GLAND	STAINLESS, DUPLEX, ETC	
11	STUD BOLT & NUT	STAINLESS, DUPLEX, ETC	
12	SHAFT RING	BRONZE, STAINLESS+CHROME, ETC	
13	END COVER	STEEL PLATE, STAINLESS STEEL, ALUMINIUM BRONZE, ETC	
14	END COVER GASKET	SPIRAL WOUND, GRAPHITE, PTFE, NBR, EPDM, ETC	
15	END COVER BOLT	STEEL, STAINLESS, DUPLEX, MONEL, ETC	
16	TOP FLANGE	STEEL PLATE, STAINLESS STEEL, ETC	
17	TOP FLANGE BOLT	STEEL, STAINLESS, ETC	
18	TAPER PIN	STAINLESS, DUPLEX, MONEL, ETC	

Available material (Duplex, Al-Bronze, Inconel, Monel, etc)

HIGH PERFORMANCE BUTTERFLY VALVES

Standard Production Ranges

Rating	ANSI	Class 150	Class 300	Class 600
	ISO	PN 10, 16, 25	PN 25, 40	PN 64
Size	inch	2~48	2~48	4~24
	mm	50~1200	50~1200	80~600
Face-to-Face dimensions	API609/short(DIN3202/K1)		MSS SP-68(1988) / API609 / ISO	
Bonnet flange	ISO 5211/1			
Connection	Wafer, Lug, Double Flange design			
Actuator	Manual	Worm gear, Lever		
	Automatic	Pneumatic Single & Double acting actuator Hydraulic actuator Electric motor		

Main Materials

Rating	ANSI	Class 150	Class 300	Class 600
Body		Carbon steel (A216-WCB) 304 Stainless steel (A351-CF8) 316 Stainless steel (A351-CF8M)		
Disc		A216-WCB/Hard chrome-plated Stellite A351-CF8, A351-CF8M / Hard chrome-plated Stellite		
Shaft		304SS, 316SS, 17-4PH(630SS)		17-4PH(630SS)
Seat		PTFE, R-PTFE* 316SS, Inconel		
Shaft bearing		R-PTFE/316SS 316SS		
Glandpacking		PTFE, Grafoil and Non asbestos		
Seal		R-PTFE, Grafoil		

* R-PTFE=Reinforced PTFE

Seat Materials and working Temperature

Seat materials	Treatment on disc surface	Maximum working temperature °C(°F)
316SS	Hard chrome-plated	Below 300 (572)
Inconel	Hard chrome-plated	Below 350 (662)
Inconel	Stellite	Below 650 (1202)

Seat Leakage

Leakage of metal-seated version is in accordance with the Class V of ANSI B16.104 & FCI-70-2 for permissible leakage rate. (For details see page 12.)

Seat Materials and working Temperature(ASME B16.34)

Seat materials	Maximum working temperature °C(°F)
PTFE	204 (400)
R-PTFE	204 (400)
PCTFE	-198~180

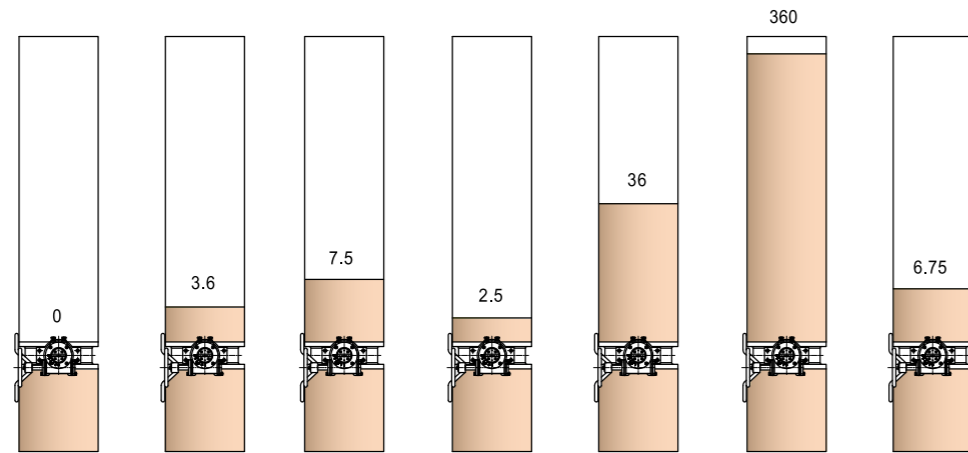
Seat Leakage

Leakage of soft-seated versions(PTFE, R-PTFE, Fire-safe seated) is ZERO.
For high-frequency operating cycles (open/close) and higher sealing capability (i.e. lower leakage rate), please consult with our Sales Dept. or Engineering Dept.

LEAKAGE RATE BY STANDARD (REFERENCE)

● GAS TEST

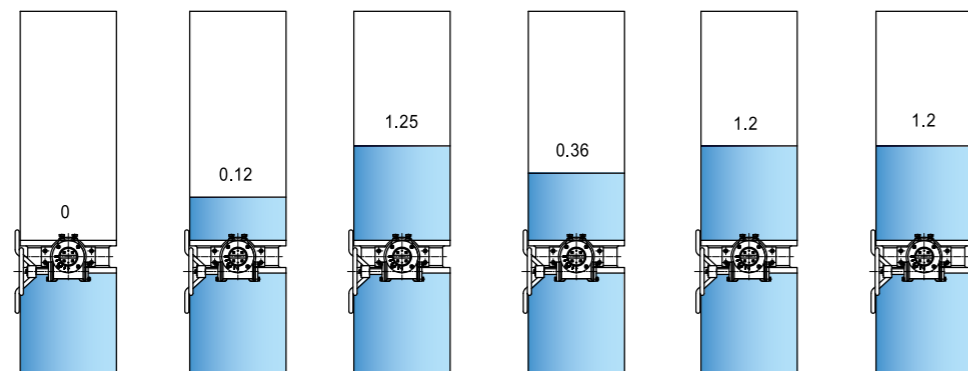
Valve Size : 200mm, Unit : cc/min



Std	ISO 5208 RATE A	ISO 5208 RATE B	API 598	API 598	ISO 5208 RATE C	ISO 5208 RATE D	ANSI B 16, 105 CLASS VI
Press	6±1bar	6±1bar	4~7bar	4~7bar	6±1bar	6±1bar	

● HYDROSTATIC TEST

Valve Size : 200mm, Unit : cc/min

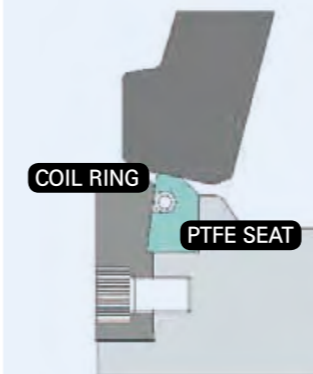


Std	ISO 5208 RATE A	ISO 5208 RATE B	API 598	ISO 5208 RATE C	ISO 5208 RATE D	ANSI B 16, 105 CLASS VI
Press	Max. working Pressure × 1.1	Max. working Pressure × 1.1	Design Pressure × 1.1	Max. working Pressure × 1.1	Max. working Pressure × 1.1	Max. working Pressure(20bar)

HIGH PERFORMANCE BUTTERFLY VALVE DESIGN FEATURE (DHC-BTD SERIES)

SEAT DESIGN

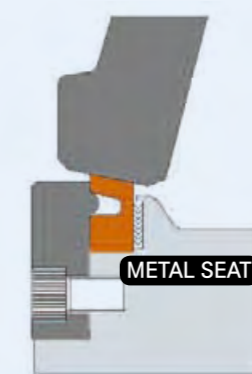
PTFE SEAT (BI-DIRECTIONAL)



SEAT MATERIALS
PEEK, PTFE, R-PTFE(GLASS,CARBON)

FEATURES
BI-DIRECTIONAL TYPE BACK UP COIL SPRING on center of BI-DIRECTIONAL SEAT increases its sealing capacities by protecting seat from distortion.

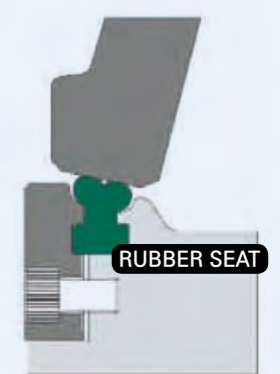
METAL ECCENTRIC (HI/LOW TEMP/PRESSURE)



SEAT MATERIALS
STAINLESS STEEL MONEL, DUPLEX ETC.

FEATURES
POCKET on center of seat can excellently secure mobility by protecting disc from sticking to seat, even in midst of heat expansion of seat by the fluid with high temperature.

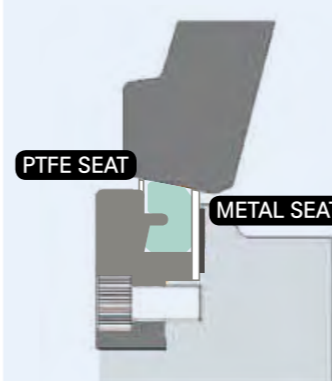
HIP-TYPE RUBBER SEAT (FOR WATER WORKS)



SEAT MATERIALS
NBR, NR, VITON, EPDM, SILICON, ETC

FEATURES
Excellent sealing performance compared to conventional rubber seat by adopting DUAL SPHERICAL SHAPE SEAT STRUCTURE which could shut down the fluid flows with multiple scheme.

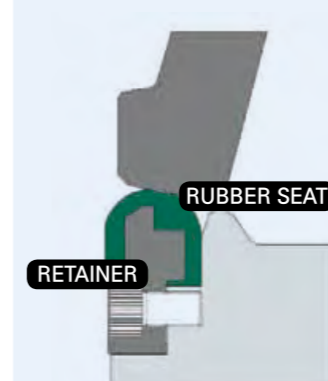
FIRE SAFETY TYPE SEAT



SEAT MATERIALS
PTFE, R-PTFE (GLASS, CARBON) WITH METAL SEAT

FEATURES
FIRE SAFETY TYPE SEAT consisting of dual structures of RESILIENT AND METAL materials can prevent seat from burning out in case of fire.

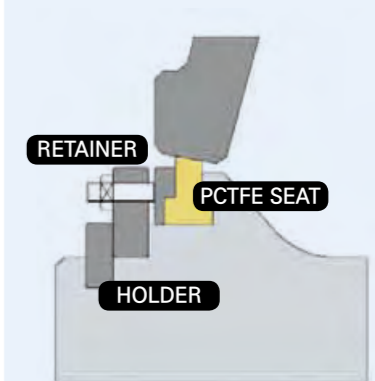
CARGO TYPE SEAT



SEAT MATERIALS
NBR, NR, VITON, PTFE, R-PTFE (GLASS, CARBON) WITH METAL RETAINER

FEATURES
This CARGO TYPE SEAT is suitable for REFINERY LINES by reinforcing strength and sealing capacities of valve by combining retainer and seat.

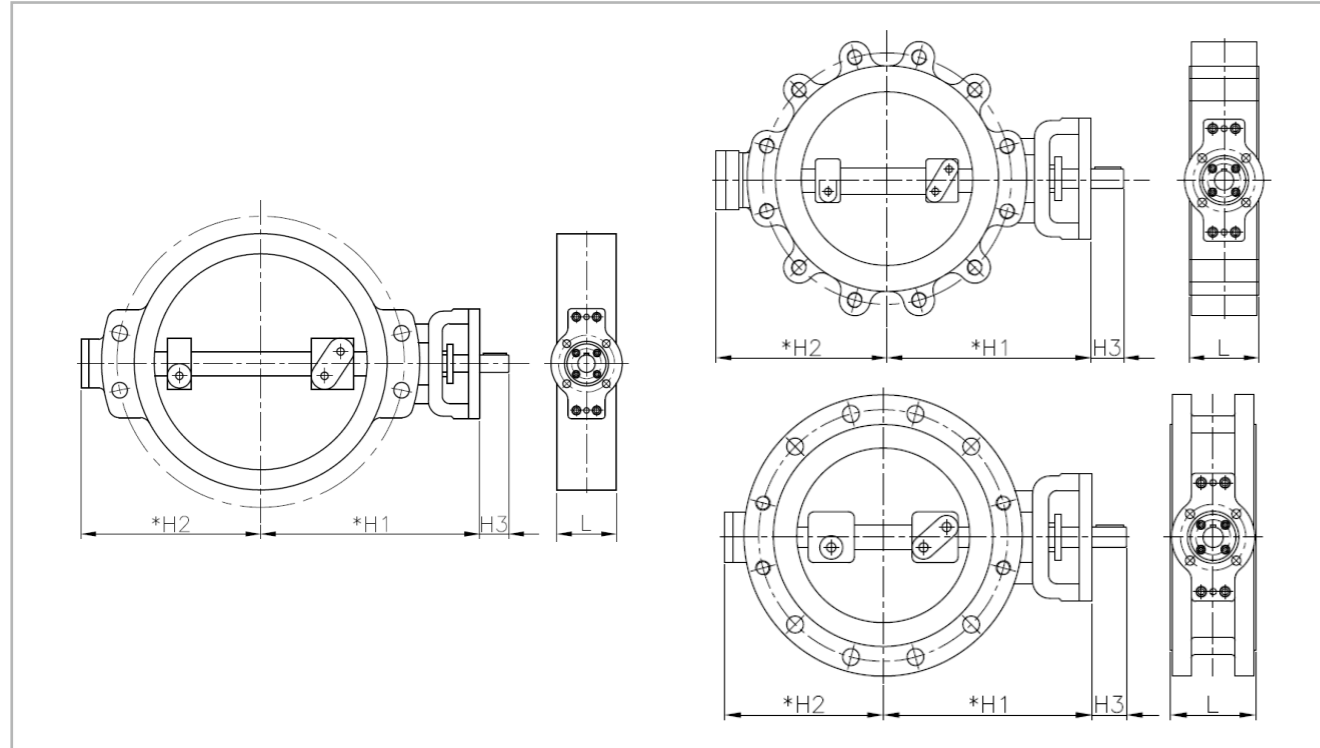
PCTFE SEAT (CRYOGENIC)



SEAT MATERIALS
PCTFE WITH METAL RETAINER

FEATURES
Design for securing the optimal sealing under a extremely low temperature seat adjustable structure to protect disc from the heat distortion.

HIGH PERFORMANCE BUTTERFLY VALVE DIMENSION TABLE (DHC-BTD SERIES)

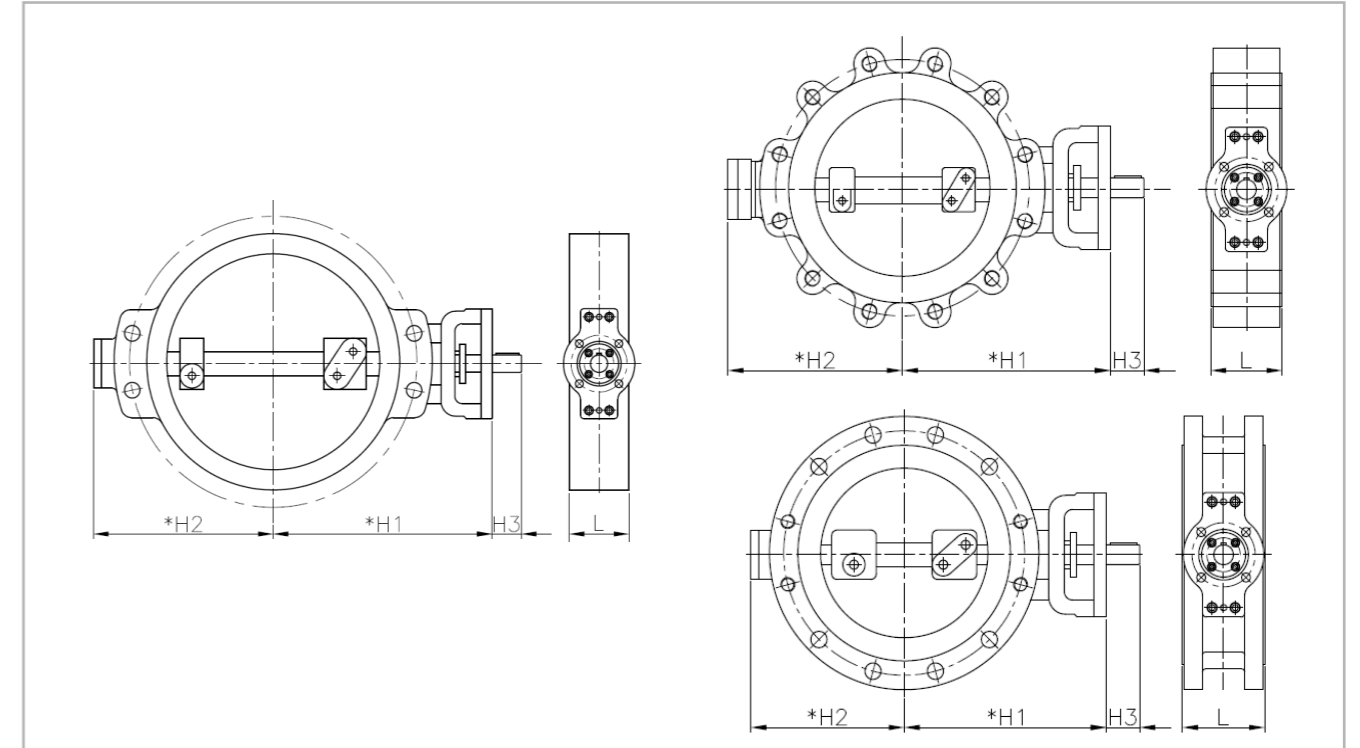


150LB HI-P

SIZE		H1	H2	H3	L		WEIGHT:Kg(Approx.)		
mm	inch				WAFER,LUG	FLANGE	WAFER	LUG	FLANGE
50	2	145	115	45	43	108	6	7	13
80	3	190	140	45	48	114	8	13	24
100	4	220	155	55	54	127	9	19	35
125	5	240	175	50	56	140	15	22	45
150	6	255	180	50	57	140	17	25	50
200	8	300	230	60	64	152	36	49	95
250	10	340	250	60	71	165	50	61	121
300	12	390	290	65	81	178	69	110	200
350	14	400	305	75	92	190	81	152	225
400	16	460	345	80	102	216	112	190	290
450	18	510	360	80	114	222	190	220	350
500	20	530	410	95	127	229	230	255	450
600	24	630	480	110	154	267	310	420	620
650	26	630	500	110	154	292	380	465	820
700	28	680	530	120	165	292	415	545	995
750	30	720	585	120	165	318	460	620	920
800	32	760	600	130	190	318	650	1200	1000
900	36	820	700	150	200	330	770	1250	1650
1000	40	840	740	160	216	410	1000	1430	1970
1050	42	880	755	165	251	410	1190	1540	2400
1200	48	1070	910	200	276	470	1690	2395	2700

- Flange rating : According to ANSI B16.5 / ASME 16.47 series "A" & series "B"/DIN/BS/JIS
- Face to Face dimension : According to API609 & maker standard.
- Other demension also possible.

HIGH PERFORMANCE BUTTERFLY VALVE DIMENSION TABLE (DHC-BTD SERIES)

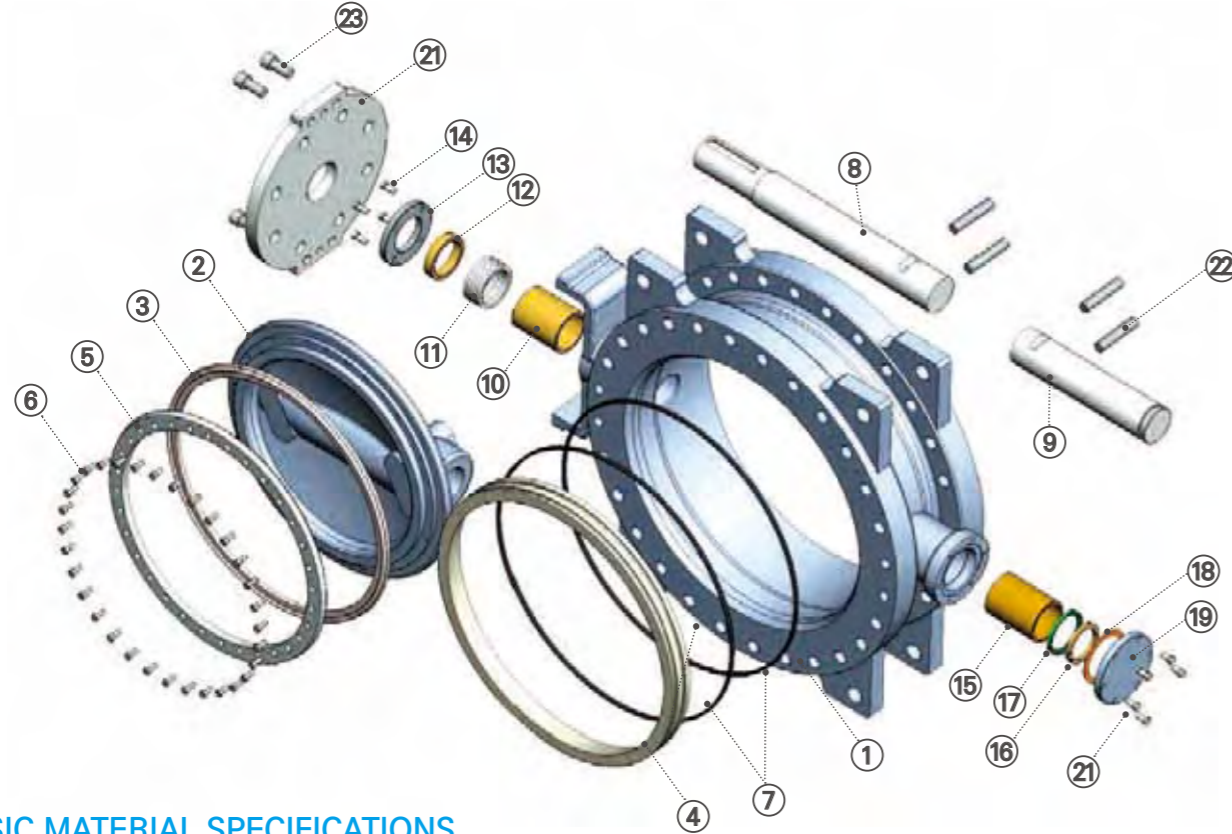


300LB HI-P

SIZE		H1	H2	H3	L		WEIGHT:Kg(Approx.)		
mm	inch				WAFER,LUG	FLANGE	WAFER	LUG	FLANGE
50	2	190	120	45	43	108	7	9	18
80	3	190	140	45	48	114	9	16	32
100	4	230	170	45	54	127	10	24	47
150	6	290	200	50	59	140	20	31	68
200	8	315	235	60	73	152	41	61	128
250	10	360	270	65	83	165	58	76	163
300	12	395	315	65	92	178	79	138	270
350	14	480	345	75	117	190	93	190	304
400	16	505	380	80	133	216	129	238	392
450	18	560	410	100	149	222	219	275	473
500	20	650	560	110	159	229	265	319	608
600	24	680	550	110	181	267	357	525	837
650	26	690	560	115	210	292	437	581	1107
700	28	710	595	115	229	292	477	681	1343
750	30	810	600	120	230	318	529	775	1242
800	32	850	660	125	241	318	748	1500	1350
900	36	880	720	125	241	330	886	1562	2228
1000	40	930	750	130	300	410	1150	1788	2660
1200	48	1190	860	220	350	470	1944	2994	3645
1050	42	880	755	165	251	410	1190	1540	2400
1200	48	1070	910	200	276	470	1690	2395	2700

- Flange rating : According to ANSI B16.5 / ASME 16.47 series "A" & series "B"/DIN/BS/JIS/USER SPEC
- Face to Face dimension : According to maker standard.
- Other demension also possible.

BUTTERFLY VALVE FOR WATER WORKS (DHC-BTD SERIES)



BASIC MATERIAL SPECIFICATIONS

NO.	PART	MATERIALS	REMARK
1	BODY	DUCTILE IRON, CAST STEEL, STAINLESS STEEL, ETC	WITH RUBBER LINED
2	DISC		
3	DISC SEAT	NBR, EPDM, VITON, SILICON, NR, ETC	
4	BODY SEAT	STAINLESS, DUPLEX	
5	DISC SEAT RETAINER	STAINLESS, ALUMINIUM BRONZE, MONEL	
6	RETAINER BOLT	STAINLESS, ALUMINIUM BRONZE, MONEL	
7	O-RING	NBR, EPDM, VITON, SILICON, NR, ETC	
8	MAIN SHAFT	STAINLESS, DUPLEX, MONEL	
9	STUB SHAFT	STAINLESS, DUPLEX, MONEL	
10	MAIN BUSH	ALUMINIUM BRONZE, STAINLESS+CHROME	PTFE
11	PACKING	PTFE, NBR, EPDM, VITON, SILICON, NR, ETC	
12	PACKING BUSH	BRONZ, ALUMINIUM BRONZE, ETC	
13	PACKING GLAND	STEEL PLATE, STAINLESS, ALUMINIUM BRONZE	
14	PACKING BOLT	STEEL, STAINLESS, DUPLEX, MONEL, ETC	STUD
15	STUB BUSH	ALUMINIUM BRONZE, STAINLESS+CHROME	PTFE
16	SHAFT RING	ALUMINIUM BRONZE, STAINLESS, DUPLEX, MONEL	
17	SHAFT RING HOLDER	STAINLESS, DUPLEX, MONEL	
18	COVER GASKET	NBR, EPDM, VITON, SILICON, NR, ETC	
19	END COVER	* STEEL PLATE, STAINLESS, ALUMINIUM BRONZE	
20	COVER BOLT	STEEL, STAINLESS, DUPLEX, MONEL, ETC	
21	TOP FLANGE	STEEL, STAINLESS, DUPLEX, MONEL, ETC	
22	TAPER PIN	STAINLESS, DUPLEX, MONEL	
23	TOP FLANGE BOLT	STEEL, STAINLESS, DUPLEX, MONEL, ETC	

* END COVER MATERIALS : SAME AS BODY MATERIALS.

BUTTERFLY VALVE FOR WATER WORKS



Double flanged butterfly valves

Double flanged butterfly valves are used in water works, and design standards are in accordance with AWWA C504 (KSB2333, BS5155 and JIS B2064).

Specifications

- Size : 200~4,500mm(8"~180")
- Fluid : Water
- Pressure rating : Class 25A,25B,75A,75B,150A,150B,250B

Other ratings are available on request

- End connection : KSD 44309 and any other standard connections(JIS, ASME, etc) are available.
- Installation : Horizontal or Vertical.

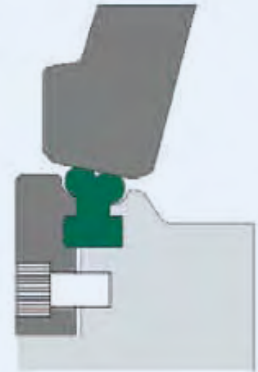
TEST

As per AWWA C504 or related international standard

BUTTERFLY VALVE FOR WATER WORKS

SEAT DESIGN

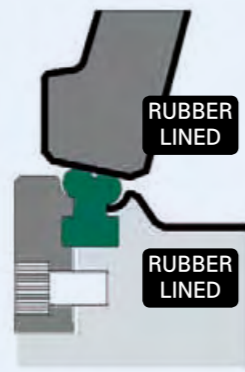
RUBBER BODY SEAT(SMALL) (NORMAL WATER)



SEAT MATERIALS
NBR, NR, VITON, EPDM, SILICON

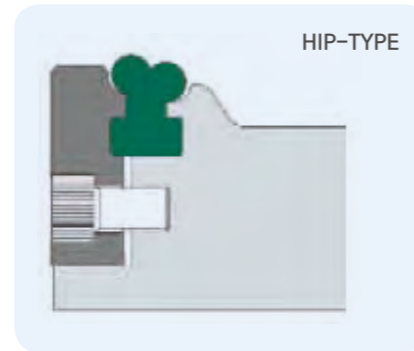
FEATURES
BI-DIRECTIONAL TYPE-This is a general BI-DIRECTIONAL TYPE butterfly structure and designed for securing a certain amounts of flux and a small cavitation by adopting STEAM-LINED DISC.

RUBBER BODY SEAT(SMALL) (FOR SEA WATER APPLICATION)

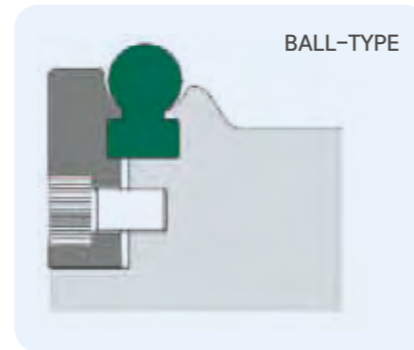


SEAT MATERIALS
NBR, NR, VITON, EPDM, SILICON

FEATURES
BODY & DISC with HARD RUBBER LINED can be protected from direct contact to the ACID FLUID.



HIP-TYPE



BALL-TYPE

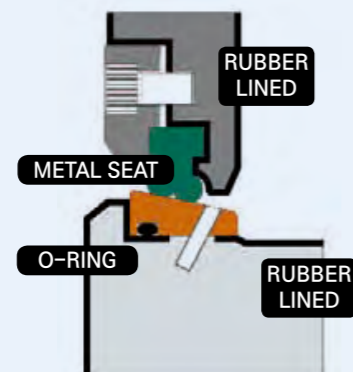
RUBBER DISC SEAT(LARGE) (NORMAL WATER)



SEAT MATERIALS
NBR, NR, VITON, EPDM, SILICON

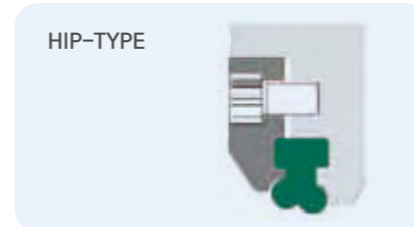
FEATURES
BI-DIRECTIONAL TYPE This is a general BI-DIRECTIONAL TYPE butterfly structure and designed for securing a certain amounts of flux and a small cavitation by adopting STEAM-LINED DISC.

RUBBER DISC SEAT(LARGE) (FOR SEA WATER APPLICATION)

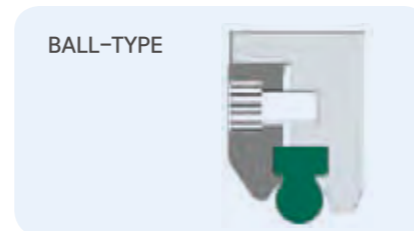


SEAT MATERIALS
NBR, NR, VITON, PTFE, SILICON

FEATURES
BODY & DISC with HARD RUBBER LINED can be protected from direct contact to the ACID FLUID.



HIP-TYPE

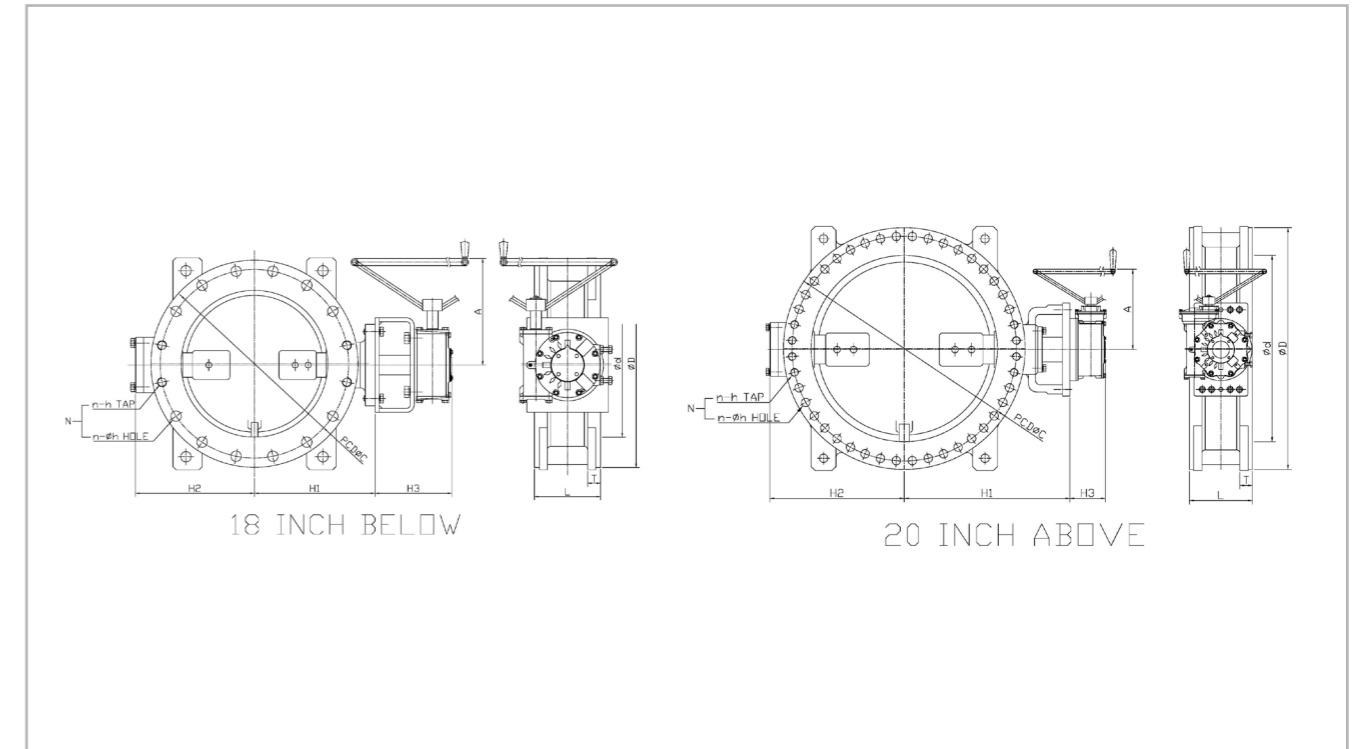


BALL-TYPE



SHEET-TYPE

BUTTERFLY VALVE FOR WATER WORKS(AWWA) DIMENSION TABLE



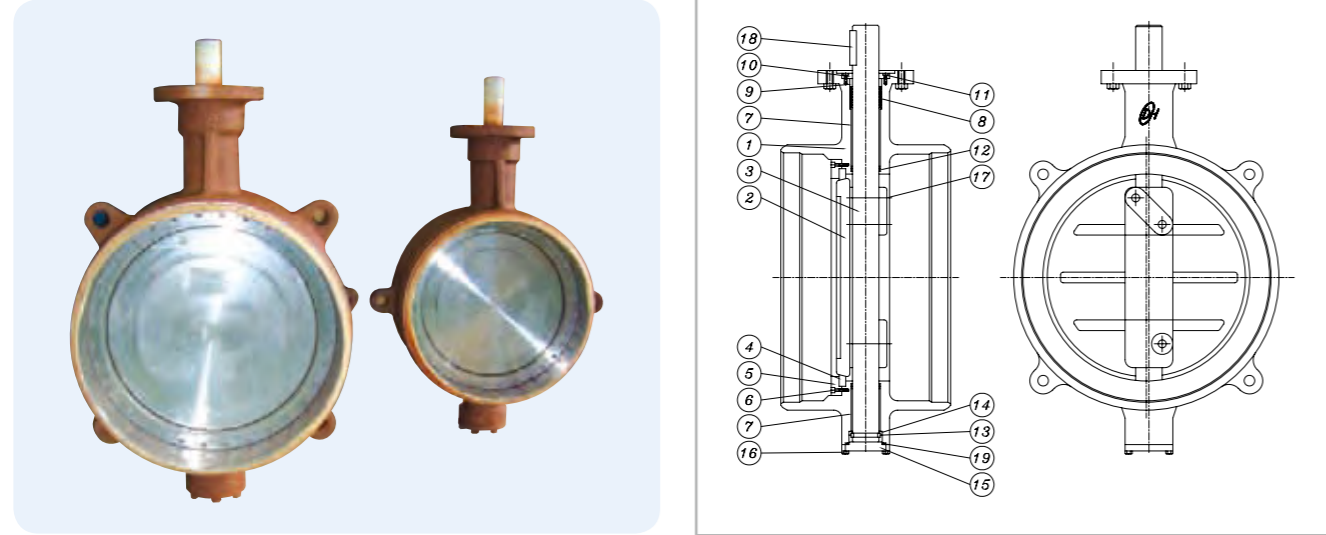
REFERENCE DIMENSION

SIZE	Ød	FLANGE DIMENSION						L	H1	H2	H3	A	
		ØD	PCDØC	N	h HOLE	h TAP	T						
6"	150A	Ø150	Ø279.4	Ø241.3	8	Ø22	3/4"*10UNC	25.4	127	180	190	150	170
8"	200A	Ø200	Ø343	Ø298.5	8	Ø22	3/4"*10UNC	28.4	152	230	230	160	200
10"	250A	Ø250	Ø406.4	Ø362	12	Ø25	7/8"*9UNC	30.2	203	260	250	170	250
12"	300A	Ø300	Ø482.6	Ø431.8	12	Ø25	7/8"*9UNC	31.8	203	300	300	180	280
14"	350A	Ø350	Ø533.4	Ø476.3	12	Ø29	1"*8UN	35	203	330	330	180	280
16"	400A	Ø400	Ø597	Ø539.8	16	Ø29	1"*8UN	36.6	203	360	350	240	330
18"	450A	Ø450	Ø635	Ø577.9	16	Ø32	1 1/8"*8UN	39.6	203	370	370	240	330
20"	500A	Ø500	Ø698.5	Ø635	20	Ø32	1 1/8"*8UN	42.9	203	540	410	125	350
24"	600A	Ø600	Ø812.8	Ø749.3	20	Ø35	1 1/4"*8UN	47.7	203	670	480	140	370
30"	750A	Ø750	Ø984.3	Ø914.4	28	Ø35	1 1/4"*8UN	53.8	305	720	550	140	370
36"	900A	Ø900	Ø1168.4	Ø1085.8	32	Ø41	1 1/2"*8UN	60.4	305	830	650	155	440
42"	1050A	Ø1050	Ø1346.2	Ø1257.3	36	Ø41	1 1/2"*8UN	66.5	305	950	760	165	470
48"	1200A	Ø1200	Ø1511.3	Ø1422.4	44	Ø41	1 1/2"*8UN	69.8	381	1130	810	205	580

* The dimensions and Class can be changed according to the Purchaser's specification.

BUTT WELD ENDS BUTTERFLY VALVE

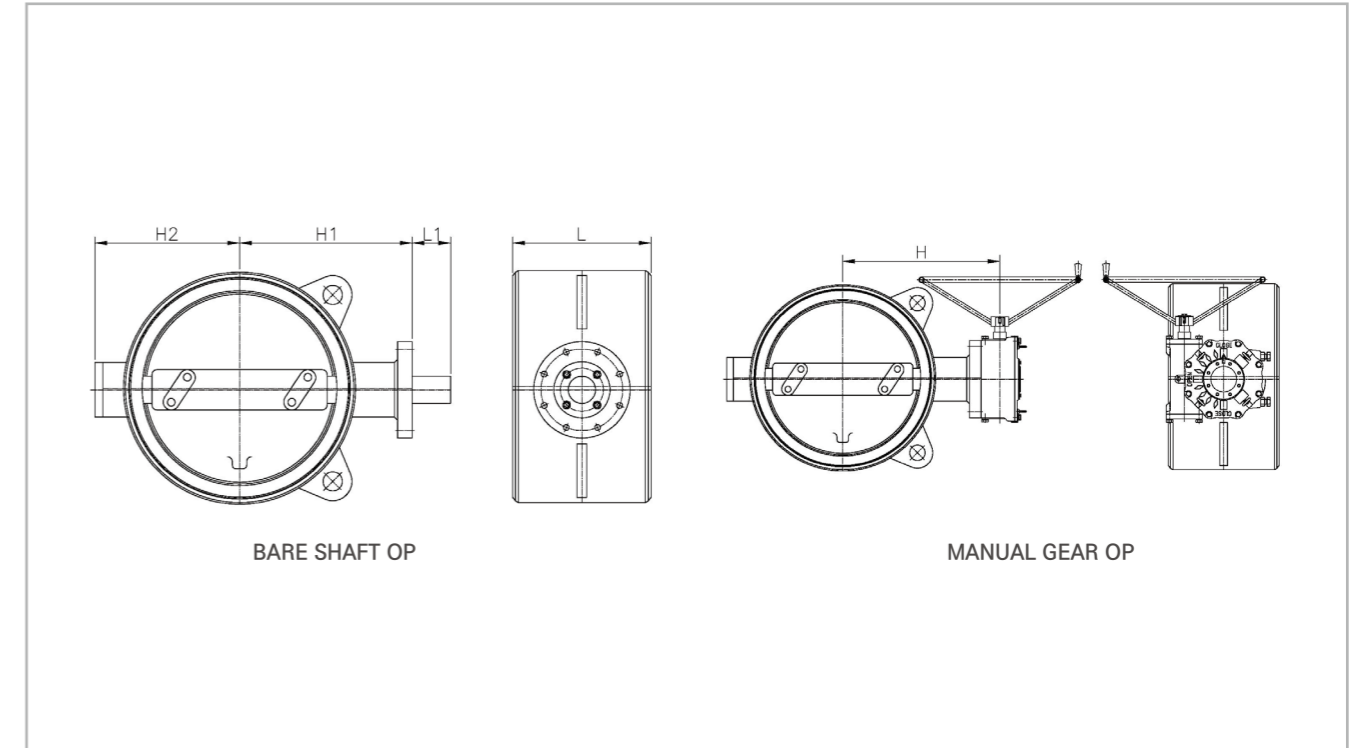
DESIGN



ITEM NO.	PART	STANDARD GENERAL SPEC. CLEAN WATER & SOUR GAS STEAM & ALL NORMAL CONDITION	ALL SCOPE LOW OR HIGH TEMP. FLAJID OF ALL SCOPE & SEA WATER & CORROSIVE MEDIA
1	BODY	A216 WCB / A531 CF8M / A36	BY A PLANT IT SELECTS.
2	DISC	A216 WCB / A351 CF8M / A36	
3	SHAFT	316 / 630 / 420 / 410 / ETC	
4	BODY SEAT / DISC SEAT	LAMINATED / SOLID / NELLYS	
5	SEAT RETAINER	STAINLESS STEEL (304/316/316L)	
6	RETAINER BOLT	STAINLESS STEEL (304/316/316L)	
7	BODY BUSH	B148 / B584 / OIL LESS / STAINLESS	
8	PACKING	GRAPHITE	
9	PACKING BUSH	B148 / B584 / STAINLESS	
10	PACKING GLAND	STAINLESS STEEL (304/316/316L)	
11	PACKING GLAND BOLT	STAINLESS STEEL (304/316/316L)	
12	DUST SEAL	GRAPHITE	
13	SHAFT RING	B148 / B584 / STAINLESS	
14	SHAFT RING HOLDER	STAINLESS STEEL (304/316/316L)	
15	END COVER	CAST CARBON STEEL / STAINLESS STEEL	
16	END COVER BOLT	STAINLESS STEEL (304/316/316L)	
17	LOCK PIN / TAPER PIN	316 / 630 / 420 / 410 / ETC	
18	KEY	STEEL	

※ AVAILABLE MATERIAL (DUPLX, AL-BRONZE, INCONEL, MONEL ETC)

BUTT WELD ENDS BUTTERFLY VALVE DIMENSIONS

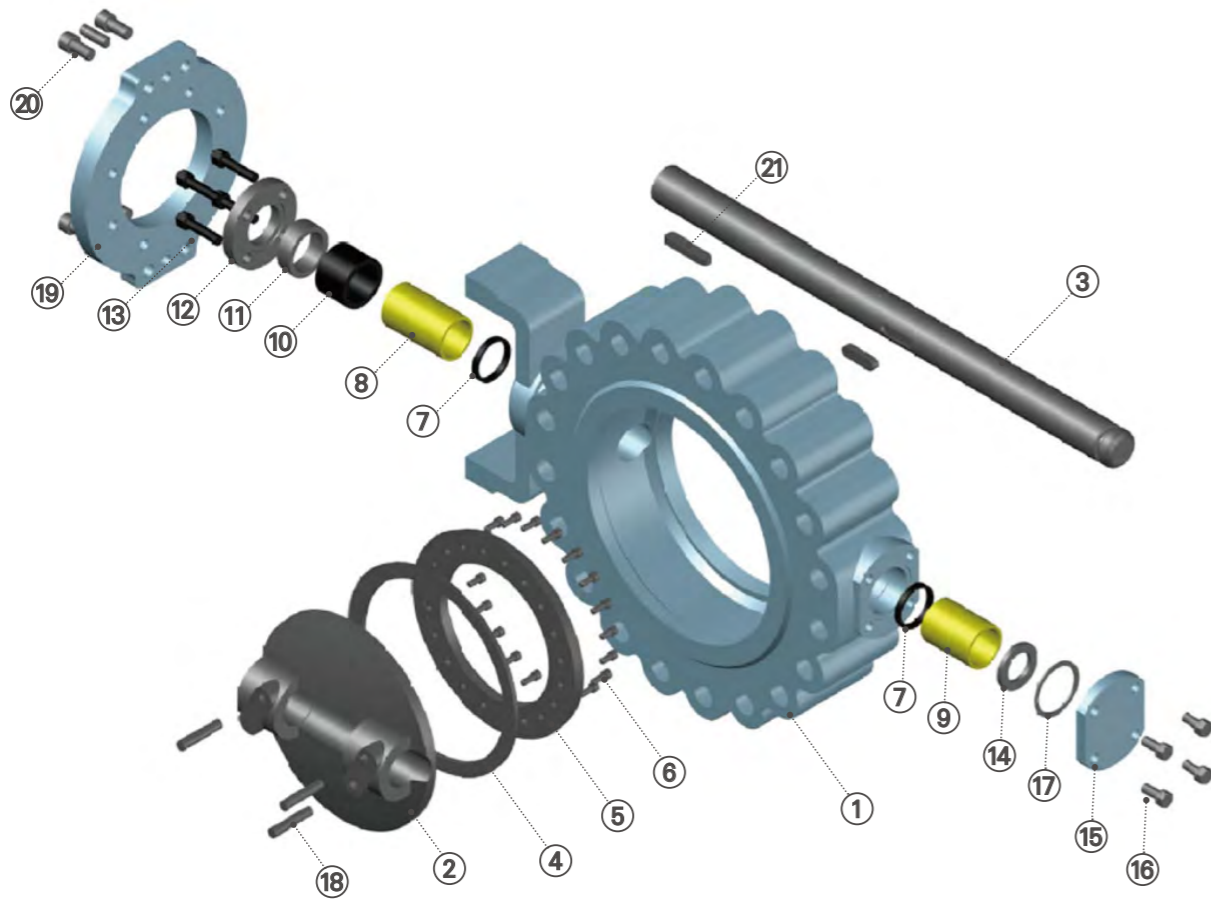


BASIC SPECIFICATIONS

SIZE		H APPROX	H1 APPROX	H2 APPROX	L (FACE TO FACE)	L1
mm	inch					
150	6	240	200	150	210	60
200	8	270	220	165	230	60
250	10	330	270	200	250	65
300	12	370	310	240	270	65
350	14	400	340	260	290	75
400	16	440	380	280	310	80
450	18	470	420	310	330	95
500	20	490	440	350	350	105
600	24	550	490	410	390	110
700	28	610	540	450	430	120
750	30	640	570	480	470	130
800	32	670	600	510	470	130
900	36	750	670	560	510	140
1000	40	830	750	620	550	140
1200	48	1000	880	780	630	165

※ AVAILABLE MATERIAL (DUPLX, AL-BRONZE, INCONEL, MONEL ETC)

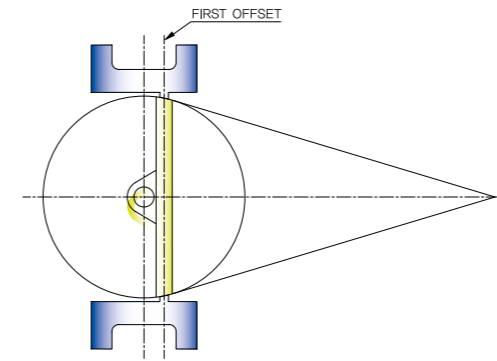
TRIPLE OFFSET BUTTERFLY VALVE (DHC-BTT SERIES)



BASIC MATERIAL SPECIFICATIONS

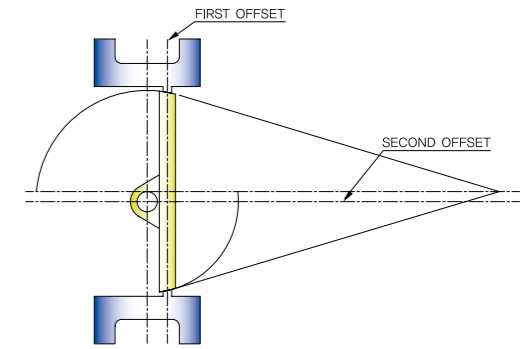
NO.	PART	MATERIALS	REMARK
3	BODY	A216 WCB/A351 CF8M	
	DISC	A216 WCB/A351 CF8M	
4	SHAFT	STAINLESS STEEL(316/ 630 / 420 / 410 / ETC)	
	SEAT	LAMINATED STAINLESS STEEL+GRAPHITE	
5	RETAINER	STAINLESS STEEL(304/ 316/ 316L)	
6	RETAINER BOLT	STAINLESS STEEL(304/ 316/ 316L)	
7	DUST SEAL	GRAPHITE	
8	MAIN BUSH	B148/ B584/ OILLESS/ STAINLESS	
9	STUB BUSH	B148/ B584/ OILLESS/ STAINLESS	
10	PACKING	GRAPHITE	
11	PACKING BUSH	B148/ B584/ STAINLESS	
12	PACKING GLAND	STAINLESS STEEL(304/ 316/ 316L)	
13	GLAND BOLT&NUT	STAINLESS STEEL(304/ 316/ 316L)	
14	SHAFT RING	B148/ B584/ STAINLESS	
15	END COVER	CAST CARBON STEEL/ STAINLESS STEEL	
16	END COVER BOLT	STAINLESS STEEL(304/ 316/ 316L)	
17	END COVER GASKET	GRAPHITE/ SPIRAL WOUND GASKET	
18	TAPER PIN	STAINLESS STEEL(316/ 630 / 420 / 410 / ETC)	
19	TOP FLANGE	CARBON STEEL	
20	TOP FLANGE BOLT	STAINLESS STEEL(304/ 316/ 316L)	
21	KEY	STEEL	

TRIPLE OFFSET BUTTERFLY VALVE DESIGN



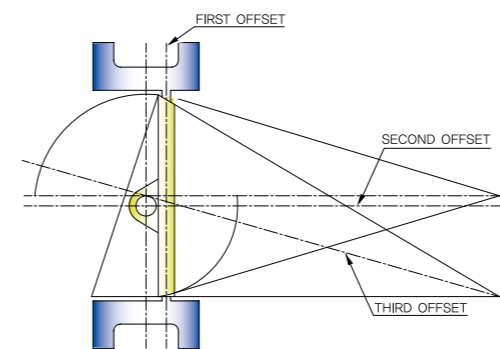
SINGLE OFFSET

The center of rotation is moved back from the centerline of the valve disc. The seat and seal are designed conically and on center. This design relies on a frictional, interference seal and so is applicable only to soft seated valves.



DOUBLE OFFSET

The center of rotation is moved from the centerline of the valve body. The seat and seal design remains conical and on center. This design again relies on a frictional, interference seal, but the length of rotation over which this friction occurs is reduced, allowing a larger range of process resistant seat materials to be used. However these materials must be relatively soft or highly elastic to prevent "jamming".



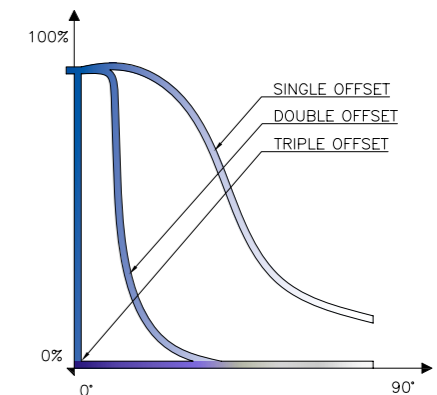
TRIPLE OFFSET

The centerline of the cone is rotated away from the valve centerline resulting in an ellipsoidal profile and providing the third offset.

With this geometry, seat seal interference is completely eliminated ensuring long sealing life. The result is a torque seated, process pressure aided FRICTIONLESS seal.

The geometry allows the body seat to be used as the closed limit stop, aiding operator adjustment.

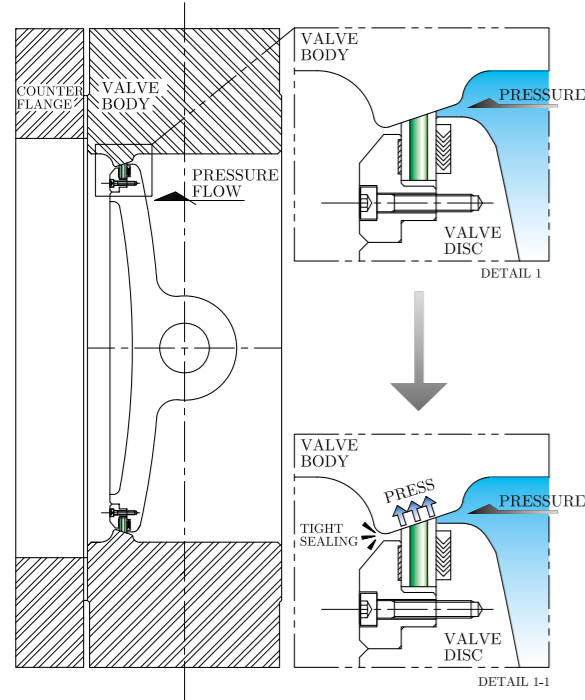
The Triple Offset design is ideally suited to metal seated valves providing bubble-tight performance on high temperature, high pressure and firesafe applications.



FRICTION RATE

- Triple offset and ellipsoidal sealing geometry
- Bi-Directional bubble tight shut-off
- Inherently Firesafe by design
- Developed Geometry results in
 - Zero Seat/Seal Friction
 - Low Torques
 - Extended Service Life
 - Continued Seal through Thermal Cycling
 - Torque Seating
- Excellent flow and throttling characteristics covering services from Cryogenic to high temperature
- Excellent control of Fugitive Emission by virtue of Rotary stem movement and advanced packing materials
- Less than 50ppm on Fugitive Emission Test to cover EPA21

UNI-DIRECTION DESIGN



1. As you see the detail 1, this is the structure of inserting seal into disc. There is few changing of seal in the high pressure, and low torque due to small sealing surface.

2. As you see the detail 1-1, the seal in the disc is stuck on body seat surface under the pressure condition.

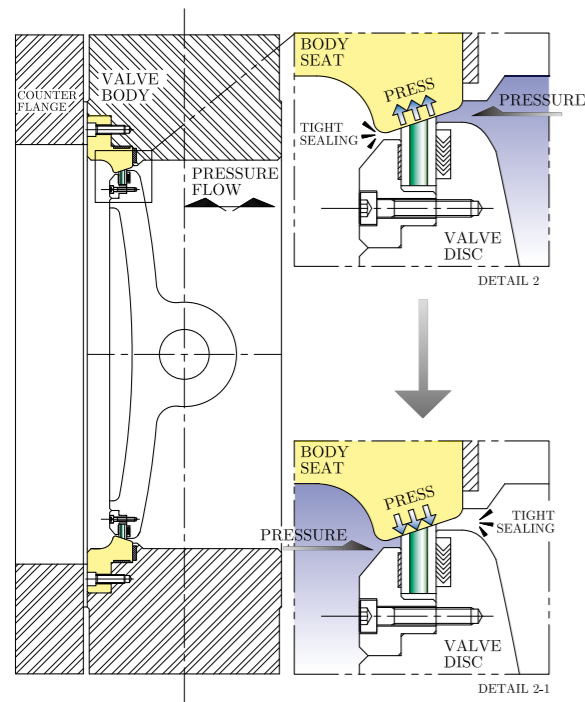
Features

- Zero leakage
- Metal seated
- Bi-directional
- Inherently Firesafe
- Low operating torques
- Torque seated
- Continued sealing through thermal cycling
- Zero seat/seal friction
- Extended service life
- Excellent flow and throttling characteristics
- Excellent control of fugitive emissions
- Quarter turn operation

Design Standard Specifications

- Design : ASME / ANSI B16. 34, API 609, BS 5155, DIN 3840, JIS
- Fire safe : API 607, API 6FA, BS 6755
- Pressure Temperature ratings : ASME/ANSI B16.34
- Body & Seat Pressure Test : API Std. 598, API 6D, ISO 5208
- Seat leakage test: ANSI B16.104 class VI
- Flange drilling : ANSI B16.5, ANSI B16.47, MSS SP-44, DIN, JIS, BS
- Face to Face : ISO 5752, ANSI B16.10, API 609, BS 5155
- Marking : MSS SP-25

BI-DIRECTION DESIGN

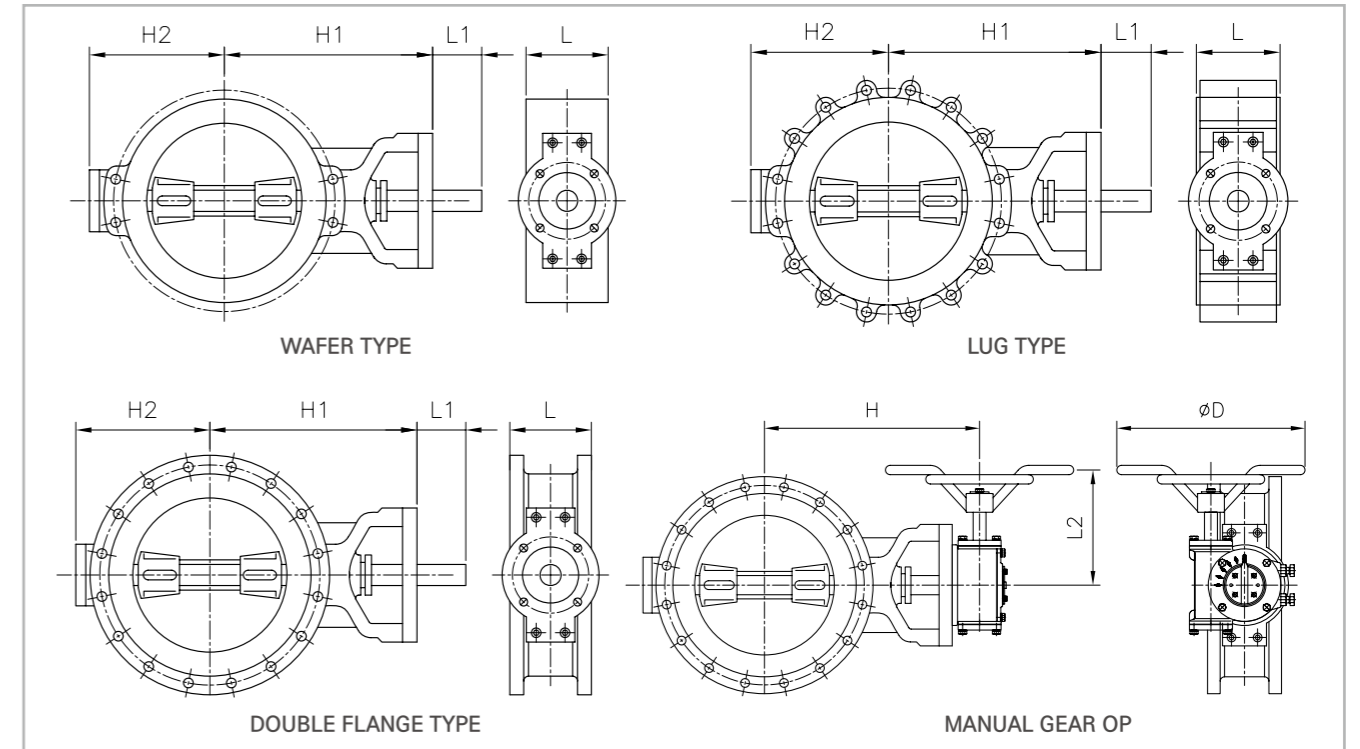


1. As you see the detail 2, this structure has seats both body and disc. This tight sealing can be ensured by the very close contact between the body seat and disc seat, under a flow direction pressure.

2. As you see the detail 2-1, the tight sealing can be ensured by the very close contact between the body seat and disc seat, under a reverse flow direction pressure.

TRIPLE OFFSET BUTTERFLY VALVE(DHC-BTT SERIES)

DIMENSION TABLE(mm)



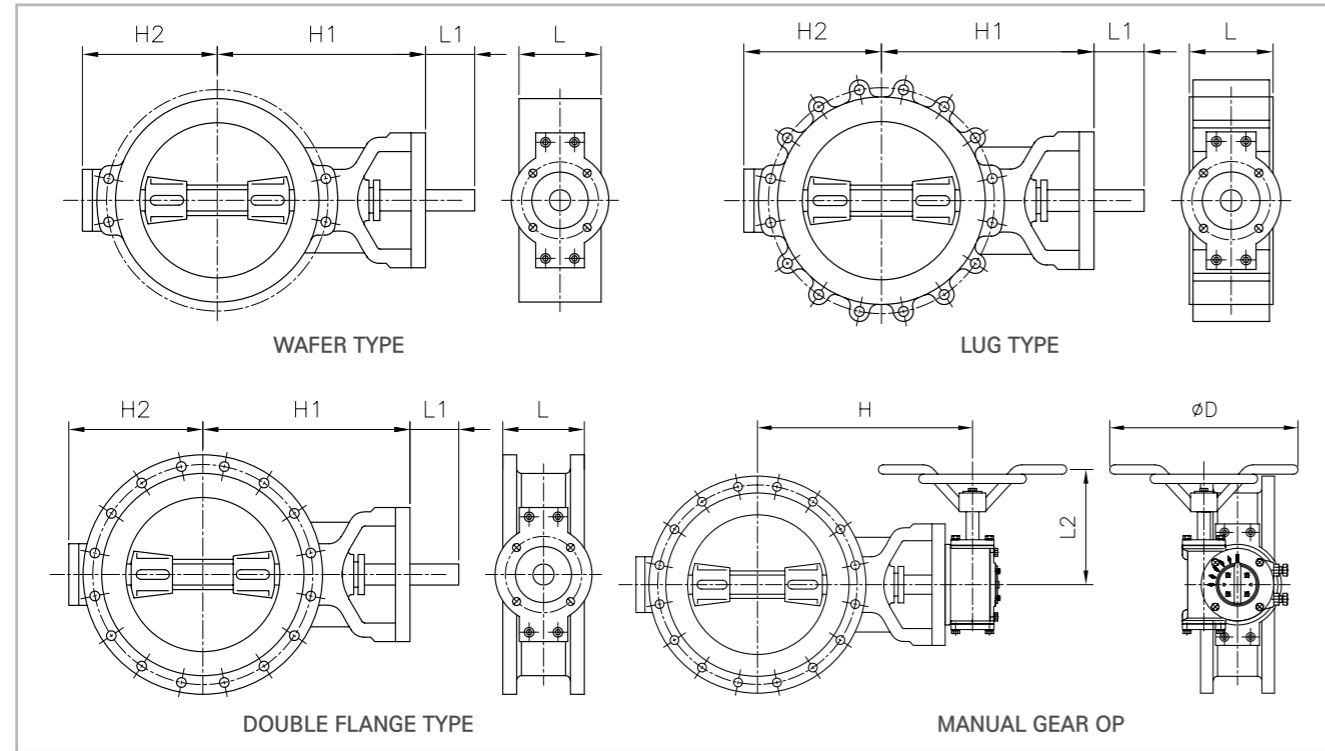
150LB MANUAL GEAR OPERATING TYPE

SIZE		H APPROX	H1 APPROX	H2 APPROX	L1	※ L (F TO F)			L2	φD	※ WEIGHT:Kg(Approx.)		
mm	inch					WAFER	LUG	FLANGE			WAFER	LUG	FLANGE
80	3		165	127	35	48	48	114	206	300	20	21	32
100	4		200	150	35	54	54	127	206	300	20	21	37
150	6	300	245	180	35	57	57	140	206	300	20	22	48
200	8	310	260	195	35	64	64	152	206	300	45	47	89
250	10	335	285	225	65	71	71	165	206	300	57	61	112
300	12	390	335	265	80	81	81	178	230	400	85	91	161
350	14	420	365	290	80	92	92	190	230	400	133	142	228
400	16	500	435	340	80	102	102	216	279	450	186	199	303
450	18	515	452	360	80	114	114	222	279	450	213	229	364
500	20	565	500	395	80	127	127	229	312	560	334	364	499
600	24	635	570	465	110	154	154	267	312	560	455	492	699
700	28	775	685	570	130	165	165	292	371	630	718	777	860
750	30	785	695	600	130	165	165	318	371	630	864	934	1085
800	32	840	750	630	130	190	190	318	425	710	1090	1119	1241
900	36	910	820	690	160	200	200	330	425	710	1418	1553	1716
1000	40	925	835	720	175	216	216	410	425	710	1743	1943	2208
1050	42	980	860	750	175	251	251	410	513	800	2108	2343	2488
1200	48	1140	1020	845	200	276	276	470	513	800	3004	3284	3440

FLANGE RATING-ACCORDING TO ASME B 16.5/ASME 16.47 SERIES "A"&"B"/DIN/BS/JIS/USER SPEC
※ 1 FACE TO FACE DIMENSION - ACCORDING TO MAKER STANDARD.
※ 2 EXCEPT ACTUATOR

TRIPLE OFFSET BUTTERFLY VALVE(DHC-BTT SERIES)

DIMENSION TABLE(mm)



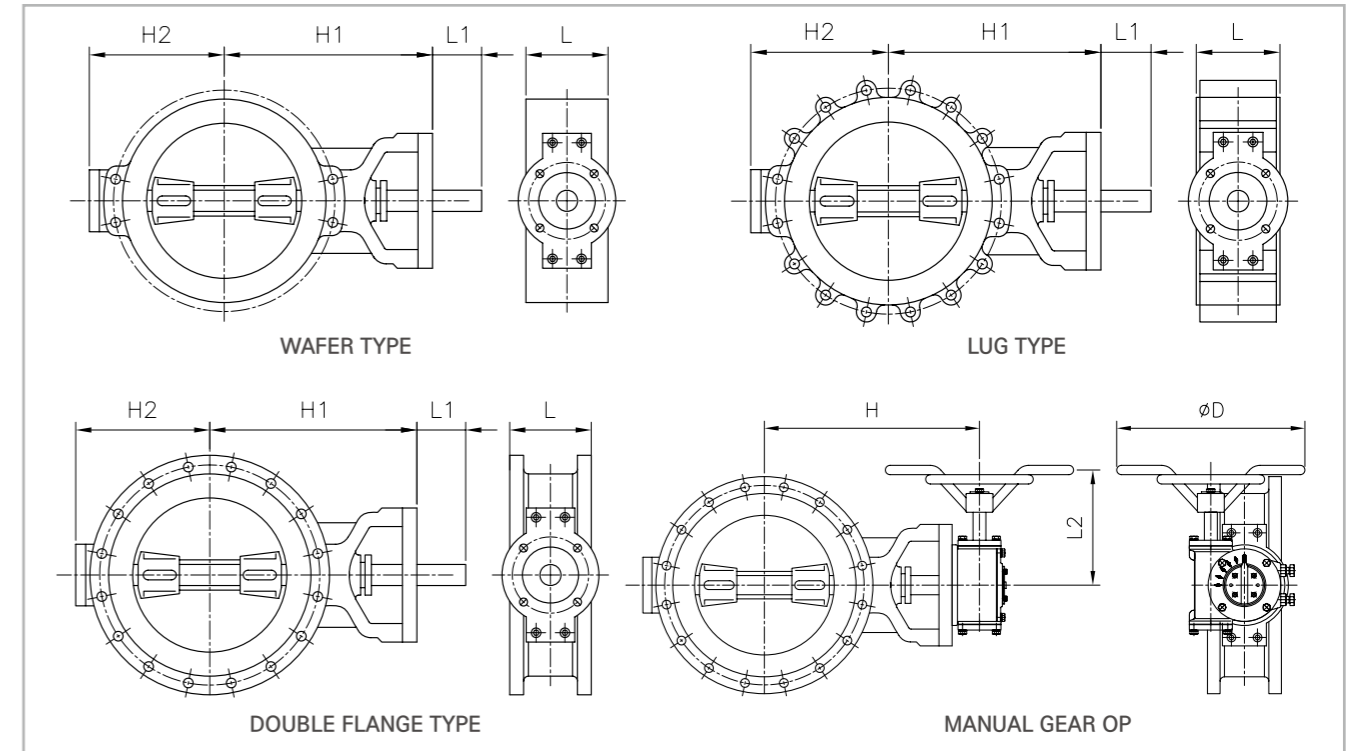
300LB MANUAL GEAR OPERATING TYPE

SIZE		H APPROX	H1 APPROX	H2 APPROX	L1	※ L (F TO F)			L2	ØD	※ WEIGHT:Kg(Approx.)		
mm	inch					WAFLER	LUG	FLANGE			WAFLER	LUG	FLANGE
80	3		165	127	35	40	48	114	206	300	20	21	36
100	4		200	151	35	54	54	127	206	300	20	21	46
150	6	330	280	199	65	59	59	140	206	300	36	39	76
200	8	350	295	218	80	73	73	152	230	400	51	56	93
250	10	395	340	251	80	83	83	165	230	400	100	112	164
300	12	450	395	296	80	92	92	178	230	400	134	150	222
350	14	490	425	331	80	117	117	190	279	450	196	229	298
400	16	545	480	377	110	133	133	216	279	450	232	277	357
450	18	605	540	410	110	149	149	222	312	560	360	433	499
500	20	645	580	440	130	159	159	229	312	560	457	549	621
600	24	740	650	515	130	181	181	267	371	630	670	805	916
700	28	910	820	640	200	229	229	292	371	630	1193	1363	1417
750	30	940	850	690	200	241	241	318	425	710	1463	1658	1715
800	32	970	880	720	200	241	241	318	425	710	1661	1856	1957
900	36	1050	960	780	200	260	260	330	425	710	1981	2211	2290
1000	40	1110	990	800	200	300	300	410	513	800	2214	2425	2585
1050	42	1160	1050	840	200	300	300	410	513	800	2439	2649	2849
1200	48	1270	1150	950	200	320	320	470	536	900	3384	3684	4106

FLANGE RATING-ACCORDING TO ASME B 16.5/ASME 16.47 SERIES "A"&"B"/DIN/BS/JIS/USER SPEC
※ 1 FACE TO FACE DIMENSION - ACCORDING TO MAKER STANDARD.
※ 2 EXCEPT ACTUATOR

TRIPLE OFFSET BUTTERFLY VALVE(DHC-BTT SERIES)

DIMENSION TABLE(mm)



600LB MANUAL GEAR OPERATING TYPE

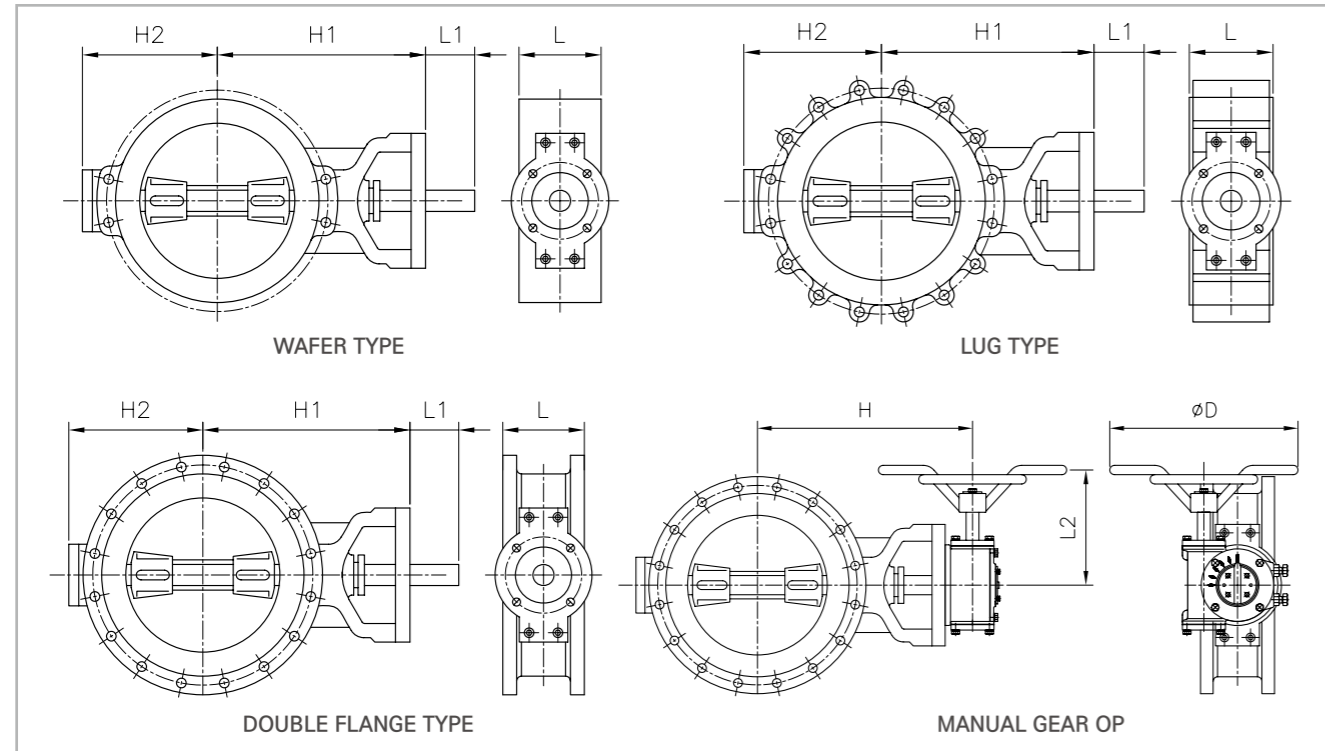
SIZE		H APPROX	H1 APPROX	H2 APPROX	L1	※ L (F TO F)			L2	ØD	※ WEIGHT:Kg(Approx.)		
mm	inch					WAFLER	LUG	FLANGE			WAFLER	LUG	FLANGE
100	4		215	166	45	64	64	190	230	400	28	30	69
150	6	365	310	238	80	78	78	210	230	400	65	72	135
200	8	380	325	248	80	102	102	230	230	400	92	102	162
250	10	465	400	316	80	117	117	250	279	450	134	187	268
300	12	520	455	349	110	140	140	270	312	560	224	259	369
350	14	535	470	374	110	155	155	290	312	560	285	329	364
400	16	675	585	474	130	178	178	310	371	630	455	520	632
450	18	715	625	476	130	200	200	330	371	630	555	635	739
500	20	760	670	504	130	216	216	350	425	710	694	804	879
600	24	840	750	55	180	232	232	390	425	710	1093	1243	1423
700	28												
750	30												
800	32												
900	36												
1000	40												
1050	42												
1200	48												

PLEASE CONTACT THE SALES OFFICE.

FLANGE RATING-ACCORDING TO ASME B 16.5/ASME 16.47 SERIES "A"&"B"/DIN/BS/JIS/USER SPEC
※ 1 FACE TO FACE DIMENSION - ACCORDING TO MAKER STANDARD.
※ 2 EXCEPT ACTUATOR

TRIPLE OFFSET BUTTERFLY VALVE(DHC-BTT SERIES)

DIMENSION TABLE(mm)



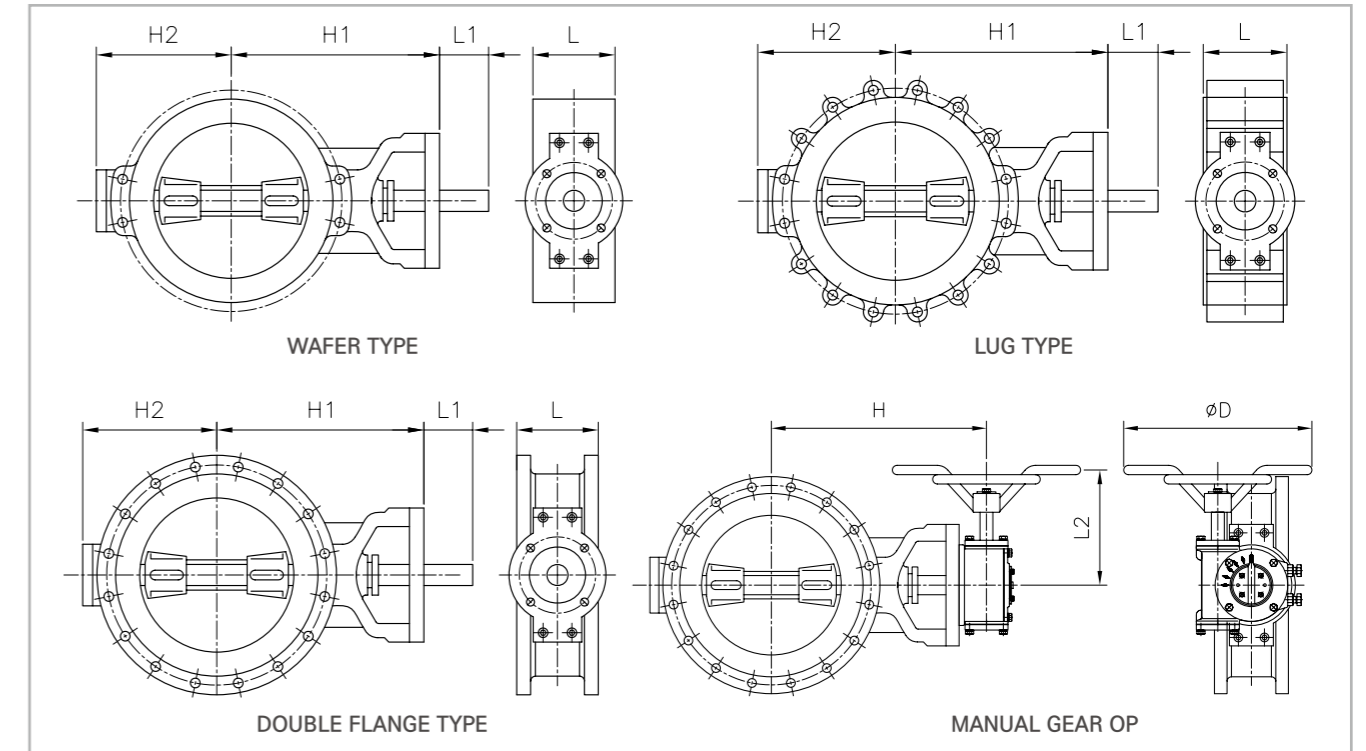
900LB MANUAL GEAR OPERATING TYPE

SIZE		H APPROX	H1 APPROX	H2 APPROX	L1	※ L (F TO F)			L2	ØD	※ WEIGHT:Kg(Approx.)		
mm	inch					WAFLER	LUG	FLANGE			WAFLER	LUG	FLANGE
150	6	400	335	238	80	104	104	250	279	450	89	100	184
200	8	445	380	281	80	112	112	310	312	560	134	151	256
250	10	500	435	358	110	135	135	350	312	560	224	256	425
300	12	590	500	383	110	170	170	380	371	630	298	352	496
350	14	635	545	419	130	173	173	400	371	630	376	440	834
400	16	730	640	455	130	210	210	430	425	710	570	663	1044
450	18	780	690	503	180	228	228	460	425	710	691	824	1273
500	20	830	710	550	180	250	250	490	513	800	905	1069	2506
600	24	950	820	656	200	275	275	530	513	800	1317	1704	
700	28	PLEASE CONTACT THE SALES OFFICE.											
750	30												
800	32												
900	36												
1000	40												
1050	42												
1200	48												

FLANGE RATING-ACCORDING TO ASME B 16.5/ASME 16.47 SERIES "A"&"B"/DIN/BS/JIS/USER SPEC
※ 1 FACE TO FACE DIMENSION - ACCORDING TO MAKER STANDARD.
※ 2 EXCEPT ACTUATOR

TRIPLE OFFSET BUTTERFLY VALVE(DHC-BTT SERIES)

DIMENSION TABLE(mm)



1500LB MANUAL GEAR OPERATING TYPE

SIZE		H APPROX	H1 APPROX	H2 APPROX	L1	※ L (F TO F)			L2	ØD	※ WEIGHT:Kg(Approx.)		
mm	inch					WAFLER	LUG	FLANGE			WAFLER	LUG	FLANGE
150	6	435	370	257	110	160	160	290	312	560	124	175	207
200	8	520	430	307	110	180	180	330	371	630	202	237	406
250	10	630	540	371	130	200	200	390	371	630	282	379	646
300	12	665	575	414	130	230	230	430	425	710	360	605	842
350	14	740	650	493	180	250	250	470	425	710	589	849	1163
400	16	820	700	530	200	265	265	510	513	800	614	955	1476
450	18	920	800	591	200	300	300	550	513	800	992	1478	1968
500	20	975	850	664	200	340	340	630	536	900	1597	2248	2782
600	24	1125	1000	780	250	400	400	710	536	900	1792	3021	4288
700	28	PLEASE CONTACT THE SALES OFFICE.											
750	30												
800	32												
900	36												
1000	40												
1050	42												
1200	48												

FLANGE RATING-ACCORDING TO ASME B 16.5/ASME 16.47 SERIES "A"&"B"/DIN/BS/JIS/USER SPEC
※ 1 FACE TO FACE DIMENSION - ACCORDING TO MAKER STANDARD.
※ 2 EXCEPT ACTUATOR

TRIPLE OFFSET BUTTERFLY VALVE TORQUE TABLE

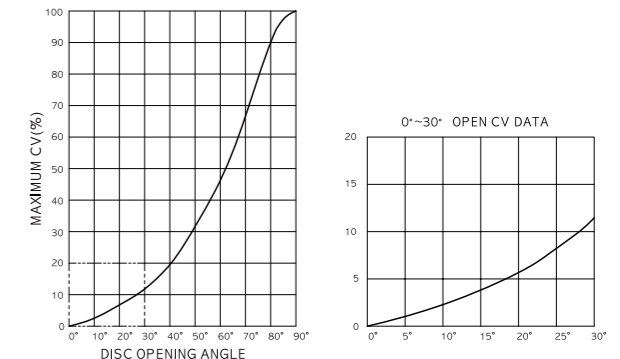
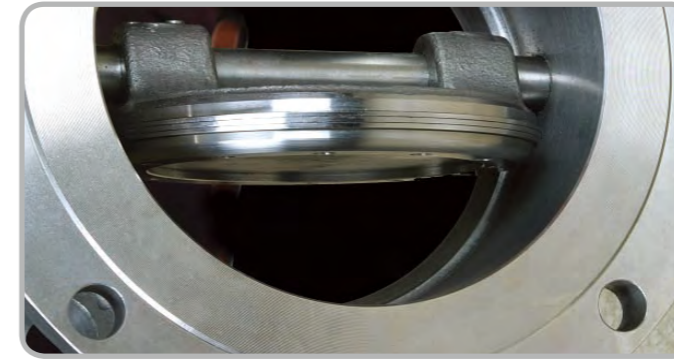
VALVE SIZE	UNSEATING (N.m)	SEATING (N.m)	UNSEATING (N.m)	SEATING (N.m)	UNSEATING (N.m)	SEATING (N.m)	UNSEATING (N.m)	SEATING (N.m)	UNSEATING (N.m)	SEATING (N.m)
	CLASS 150LB (20 BAR G)		CLASS 300LB (52 BAR G)		CLASS 600LB (100 BAR G)		CLASS 900LB (150 BAR G)		CLASS 1500LB (255 BAR G)	
2	60	50	96	80	-	-	-	-	-	-
3	95	79	260	217	-	-	-	-	-	-
4	162	135	412	351	878	732	-	-	-	-
5	253	211	658	548	-	-	-	-	-	-
6	364	304	1028	857	2132	1777	3432	2860	-	-
8	737	614	1972	1643	4069	3390	6518	5432	11080	7233
10	1187	989	3307	2756	6791	5659	10835	9029	18417	15348
12	1835	1524	5088	4240	10404	8670	16539	13782	28112	23427
14	2670	2225	7369	6141	15012	12510	23786	19822	40430	33692
16	3712	3094	10205	8504	20719	17266	32733	27278	55635	46364
18	4984	4153	13699	11375	27630	23025	43537	36281	73997	61664
20	6506	5422	17759	14799	35850	29875	56354	46962	95777	79814
24	10389	8658	28189	23491	56634	47195	88654	73879	150660	125550
28	15535	12946	-	-	-	-	-	-	-	-
30	18636	15530	-	-	-	-	-	-	-	-
32	22119	18433	-	-	-	-	-	-	-	-
36	30319	25265	-	-	-	-	-	-	-	-
40	40311	33592	-	-	-	-	-	-	-	-
42	46035	38363	-	-	-	-	-	-	-	-
48	66393	55327	-	-	-	-	-	-	-	-

- Contact the sales office for torque figures not shown above.
- DHC suggests a minimum of 20% Safety Factor on the above torques.
- Although the valves are suitable for Bi-Directional use, the offset geometry creates a Preferred direction of flow which if used (for uni-directional flow) can show a torque and actuator size reduction.
- Run torques are 40% of the Preferred direction Opening torque.
- Torques shown are valid for temperatures of -100°C(-148°F) to + 538°C (+1000°F)
- Torques shown assume a maximum liquid velocity (pipe line) of 5 m/s. For higher liquid velocity, where hydrodynamic torque may need to be considered, consult DHC.
- Please ensure that any actuator chosen to operate the DHC valve is capable of supplying overtravel and has mechanical limit stops controlling the closed position.
- Note that operators must be dowelled to the valve mounting plate. Dowels will be supplied with bare shaft valves but it is the purchasers responsibility to ensure separately purchased operators and mounting kits are machined to accommodate these dowels.
- If in doubt, contact the sales office.

TORQUE CONVERSION FACTORS

N m	kN m	kgf m	lbf in	lbf ft
1	0.001	0.102	8.85	0.738
1000	1	101.972	8851	737.6
9.807	.0098	1	86.8	7.233
0.113	1.13 x 10 ⁻⁴	0.01155	1	0.083
1.356	0.0014	0.138	12	1

TRIPLE OFFSET BUTTERFLY VALVE 'CV' VALUES



150LB MANUAL GEAR OPERATING TYPE

SIZE		5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	
mm	inch																			
80	3	1	6	14	23	31	39	47	54	62	71	82	96	112	128	143	156	163	165	
100	4	2	12	26	42	57	72	85	98	113	130	150	176	205	234	262	285	299	302	
150	6	16	31	45	59	76	101	134	178	233	297	369	448	531	616	698	758	796	800	
200	8	30	57	82	108	150	185	246	327	427	544	676	821	974	1130	1280	1390	1460	1460	
250	10	52	99	142	187	242	320	426	566	739	942	1170	1420	1690	1960	2220	2410	2530	2530	
300	12	78	147	212	279	362	478	636	846	1100	1410	1750	2120	2520	2920	3310	3600	3780	3780	
350	14	106	201	289	380	493	651	866	1150	1500	1920	2380	2890	3430	3980	4510	4890	5140	5140	
400	16	165	313	451	594	769	1020	1350	1800	2350	2990	3720	4510	5350	6210	7040	7640	8020	8020	
450	18	217	413	594	782	1010	1340	1780	2370	3090	3940	4890	5940	7050	8180	9270	10100	10600	10600	
500	20	268	509	733	965	1250	1650	2200	2920	3820	4860	6040	7340	8710	10100	11400	12400	13000	13000	
600	24	386	734	1060	1390	1800	2380	3170	4210	5500	7000	8700	10600	12500	14500	16500	17900	18800	18800	
700	28	559	1060	1530	2010	2610	3450	4590	6100	7960	10100	12600	15300	18200	21100	23900	25900	27200	27200	
750	30	630	1200	1720	2270	2940	3880	5160	6870	8960	11400	14200	17200	20400	23700	28900	29200	30700	30700	
800	32	719	1370	1970	2590	3360	4440	5900	7840	10200	13000	16200	19700	23300	27100	30700	33300	35000	35000	
900	36	884	1680	2420	3180	4120	5450	7250	9630	12600	16000	19900	24200	28700	33300	37700	40900	43000	43000	
1000	40	1170	2220	3190	4210	5450	7210	9580	12700	16600	21200	26300	31900	37900	44000	49800	54100	56900	56900	
1050	42	1230	2340	3370	4440	5760	7610	10100	13400	17600	22400	27800	33700	40000	46500	52600	57100	60000	60000	
1200	48	1640	3120	4490	5920	7670	10100	13500	17900	23400	29800	37000	45000	53400	61900	70100	76100	80000	80000	

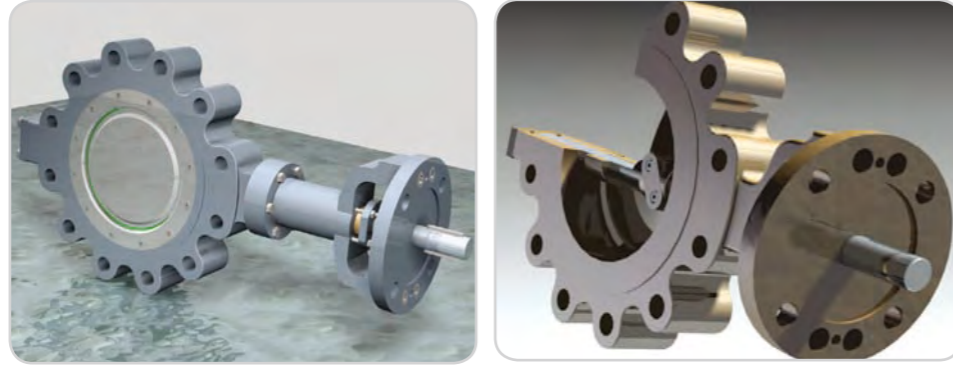
300LB MANUAL GEAR OPERATING TYPE

SIZE		5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	
mm	inch																			
80	3	1	6	14	23	31	39	47	54	62	71	82	96	112	128	143	156	163	165	
100	4	2	12	26	42	57	72	85	98	113	130	150	176	205	234	262	285	299	302	
150	6	6	25	41	54	69	91	121	162	212	268	334	407	482	559	634	689	725	725	
200	8	11	45	74	98	126	166	222	298	389	492	613	746	884	1030	1160	1260	1330	1330	
250	10	19	82	135	178	229	301	402	540	705	891	1110	1350	1600	1860	2110	2290	2410	2410	
300	12	29	122	202	266	342	450	601	807	1050	1330	1660	2020	2400	2780	3150	3420	3600	3600	
350	14	39	167	274	363	466	613	818	1100	1430	1810	2260	2750	3260	3780	4290	4660	4900	4900	
400	16	58	248	408	539	692	910	1220	1630	2130	2690	3360	4090	4840	5610	6370	6920	7280	7280	
450	18	77	326	537	710	911	1200	1600	2150	2810	3550	4420	5380	6380	7400	8390	9110	9590	9590	
500	20	95	403	663	876	1130	1480	1980	2650	3460	4380	5460	6640	7880	9130	10400	11300	11800	11800	
600	24	136	580	955	1260	1620	2130	2850	3820	4990	6310	7860	9570	11300	13100	14900	16200	17100	17100	
700	28	199	844	1390	1840	2360	3100	4150	5560	7260	9190	11400	13900	16500	19100	21700	23600	24800	24800	
750	30	232	986	1620	2150	2750	3620	4840	6490	8480	10700	13400	16300	19300	22400	25400	27500	29000	29000	
800	32	261	1110	1830	2420	3100	4080	5450	7310	9550	12100	15000	18300	21700	25200	28600	31000	32600	32600	
900	36	332	1410	2320	3070	3940	5190	6930	9300	12100	15400	19100	23300	27600	32000	36300	39400	41500	41500	
1000	40	399	1700	2790	3690	4740	6230	8330	11200	14600	18400	23000	28000	33200	38400	43600	47400	49900	49900	
1050	42	457	1940	3200	4230	5430	7140	9540	12800	16700	21100	26300	32000	38000	44000	50000	54200	57100	57100	
1200	48	480	2040	3360	4440	5700	7500	10000	13400	17500	22200	27700	33700	39900	46300	52500	57000	60000	60000	

CRYOGENIC/HIGH TEMP BUTTERFLY VALVE DESIGN FEATURES

PRODUCT

- RESILIENT SEAT BUTTERFLY
- METAL SEAT BUTTERFLY
- TRIPLE OFFSET TYPE
- HI-PERFORMANCE TYPE
- FLANGE, LUG, WAFER, WELDED
- API609 RESISTRATION
- ALL BUTTERFLY VALVES



SIZE RANGE

- 2"~78"

TEMPERATURE

- FROM -196°C TO 800°C
(FROM -320.8°F TO 1472°F)

PRESSURE RATING

- ANSI150LB-900LB
- DIN/BS PN6~PN100
- ETC

CRYOGENIC TESTER

DAEHAN CONTROL's equipments for EXTREMELY LOW TEMPERATURE can maximize its test abilities by detecting various kinds of distortions and leakages of valves in condition of extremely low temperature through the real time data from external monitor.

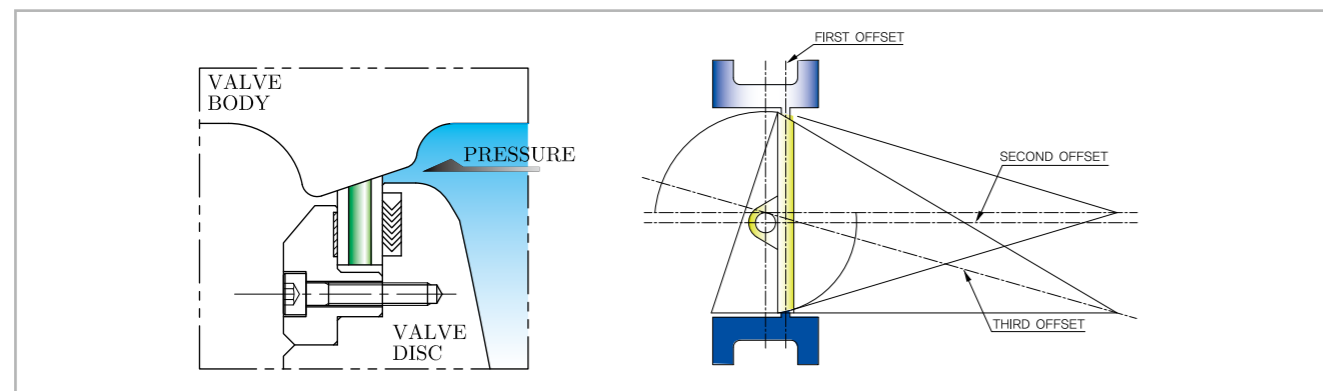


QUALITY ASSURANCE SYSTEM

- ISO9001
- APIQ1

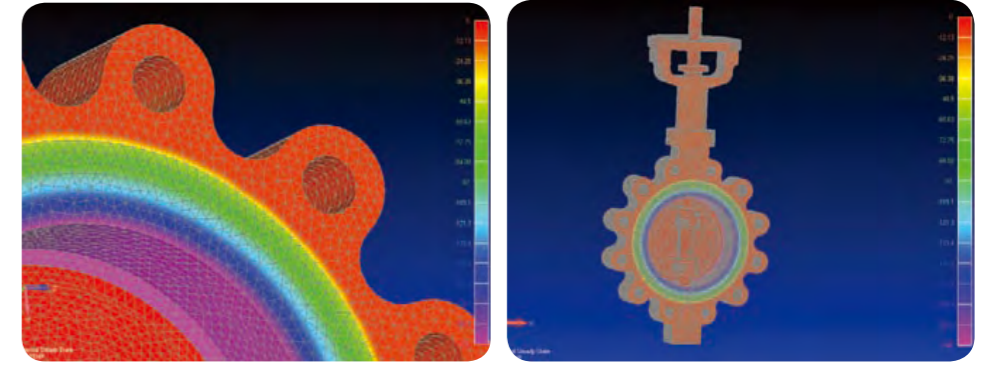
TRIPLE OFFSET SEAT (CRYOGENIC/HIGH TEMP)

CRYOGENIC PCTFE LAMINATED SEAT type triple offset valve can secure its sealing from leakage in sealing parts by its resilient adjustment of CRYOGENIC PCTFE LAMINATED SEAT in case of contractions in EXTREMELY LOW TEMPERATURE.



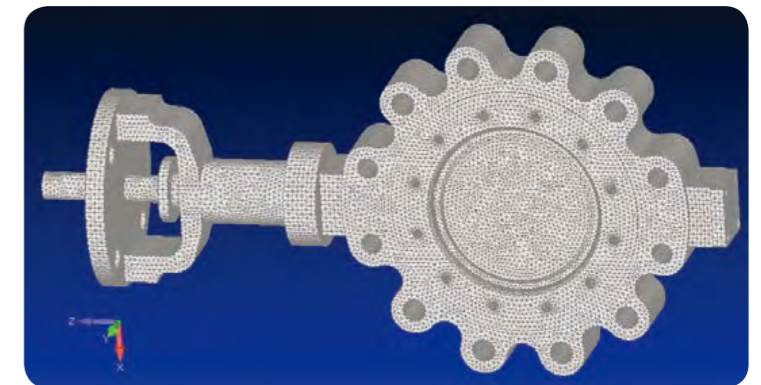
ANALYSIS(CRYOGENIC/ HIGH TEMP) FEMAP WITH NX NASTRAN (TMG)

The destruction and leakages caused by heat distortion could be shut off by analytical researches of heat distribution and distortion, which is accompanied by various simulations resembled real situation.



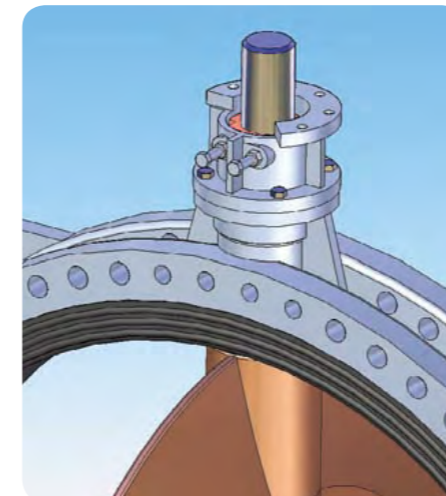
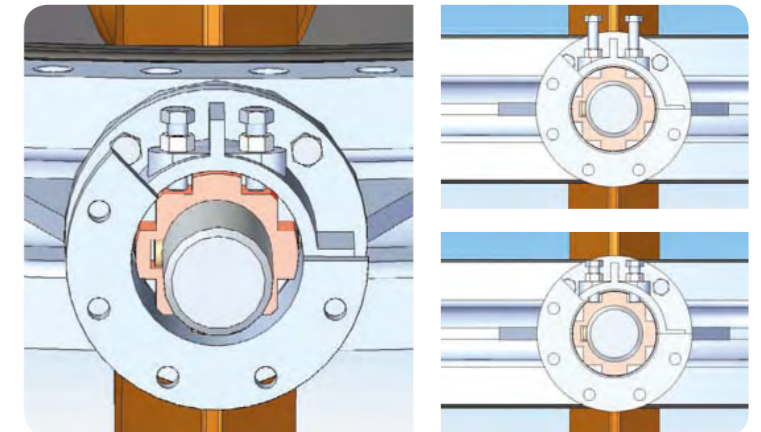
DESIGN FEATURE

CRYOGENIC / HIGH TEMP VALVES are designed to satisfy customer's needs for valve of EXTREME WORKING CONDITION by our experienced engineers



CAVITATION FREE

It is needed to stop fluid flows when installing or separating an actuator at its open position. However, valve with CAVITATION HOLDER can remove vibrations of valve in its open position. It is possible to attach this device to almost all valves with small installation spaces.



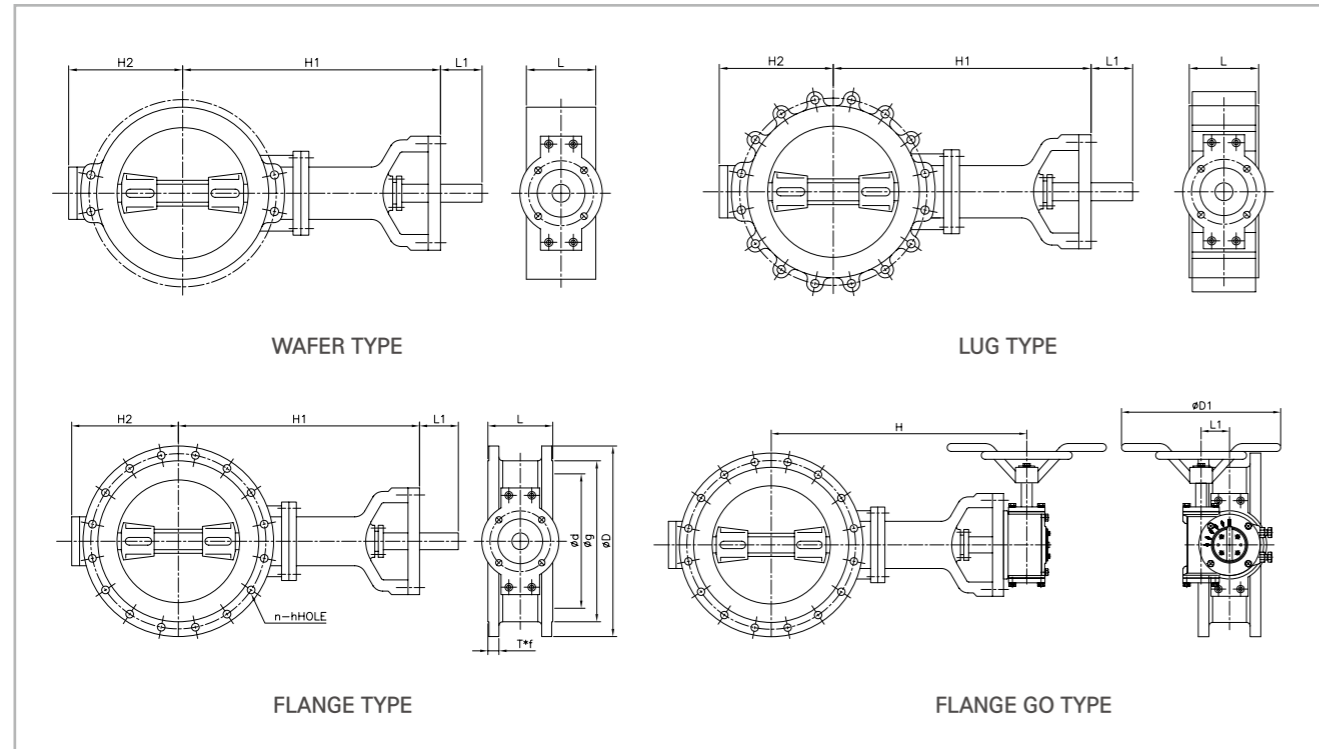
CAVITATION HOLDER CONNECTING DIMENSION

- VALVE SIZE(1050A~4000A)
- FASTENING AREAS OF VALVE : ISO5210/5211 STANDARD
- FASTENING AREAS OF ACTUATOR : ISO5210/5211 STANDARD
- Changeable if required.

※ CONCENTRIC BUTTERFLY VALVE WITH CAVITATION HOLDER.

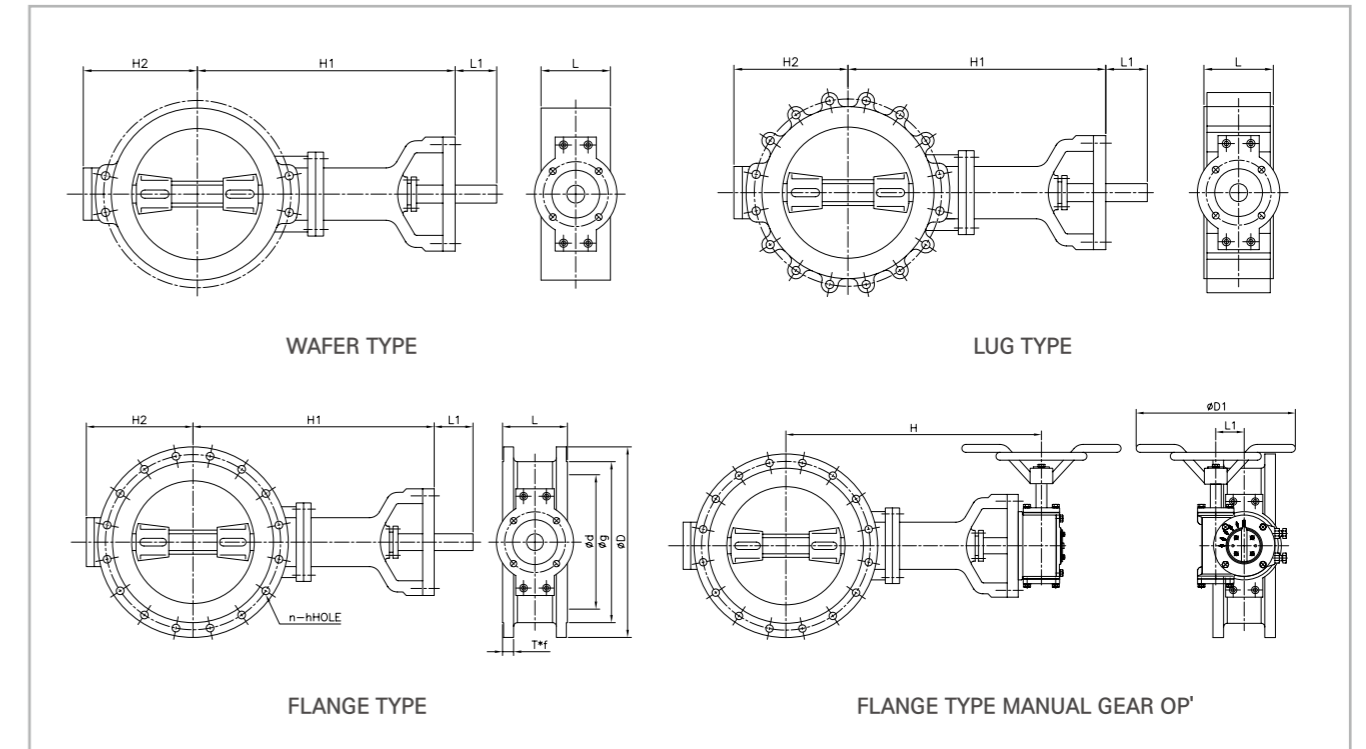
CRYOGENIC/HIGH TEMP BUTTERFLY VALVE

DIMENSION TABLE(mm)



CRYOGENIC/HIGH TEMP BUTTERFLY VALVE

DIMENSION TABLE(mm)



150LB MANUAL GEAR OPERATING TYPE

SIZE	mm	inch	d	FLANGE							H1	H2	H	※ L (F TO F)			L1	L2	D1	MINIMUM BODY WALL THICKNESS
				PCD C	a	h HOLE h TAP	t x f	g	D	WEFER				LUG	FLANGE					
80	3	80	152.5	4	19 ³ / ₈	22.3×1.6	127	190	315	127	370	48	48	114	35	206	300	5.6		
100	4	100	190.5	8	19 ⁵ / ₈	22.3×1.6	157	229	350	150	405	54	54	127	35	206	300	6.4		
150	6	150	241.5	8	22 ³ / ₄	23.8×1.6	216	279	395	180	450	57	57	140	35	206	300	7.1		
200	8	200	298.5	8	22 ³ / ₄	27×1.6	270	343	440	195	490	64	64	152	35	206	300	7.9		
250	10	250	362.0	12	25 ⁷ / ₈	28.6×1.6	324	406	465	225	515	71	71	165	65	206	300	8.6		
300	12	300	432.0	12	25 ⁷ / ₈	30.2×1.6	381	483	635	265	590	81	81	178	80	230	400	9.7		
350	14	350	476.5	12	29 ¹ / ₈	33.4×1.6	413	533	565	290	620	92	92	190	80	230	400	10.7		
400	16	400	539.5	16	29 ¹ / ₈	35×1.6	470	597	635	340	700	102	102	216	80	279	450	11.4		
450	18	450	578.0	16	32 ¹ / ₈	38.1×1.6	533	635	702	360	765	114	114	220	80	279	450	12.2		
500	20	500	635.0	20	32 ¹ / ₈	41.3×1.6	584	698	750	395	825	127	127	229	80	312	560	13		
600	24	600	749.5	20	35 ¹ / ₄	46.1×1.6	692	813	820	465	885	154	154	267	110	312	560	14.7		
700	28	700	863.5	28	35 ¹ / ₄	69.8×1.6	800	927	1035	570	1125	165	165	292	130	371	630	16.3		
750	30	750	914.5	28	35 ¹ / ₄	73.1×1.6	857	984	1045	600	1135	165	165	318	130	371	630	17		
800	32	800	978.0	28	41 ¹ / ₂	79.4×1.6	914	1060	1100	630	1190	190	190	330	130	425	710	18		
900	36	900	1086.0	32	41 ¹ / ₂	88.8×1.6	1022	1168	1170	690	1260	200	200	410	160	425	710	19.6		
1000	40	1000	1200.0	36	41 ¹ / ₂	88.8×1.6	1024	1289	1335	720	1425	216	216	410	175	425	710	21.3		
1050	42	1050	1257.5	36	41 ¹ / ₂	95.2×1.6	1194	1346	1360	750	1480	251	251	470	175	513	800	22.1		
1200	48	1200	1422.5	44	41 ¹ / ₂	106.4×1.6	1359	1511	1520	845	1640	276	276	470	200	513	800	24.6		
1250	50	1250	1428.8	44	48 ³ / ₄	111.3×1.6	1409.7	1568.5	1665	895	1850	350	350	470	200	513	900	25.4		
1300	52	1300	1479.6	44	48 ³ / ₄	115.8×1.6	1460.5	1625.6	1695	925	1880	350	350	470	200	513	900	26.2		
1350	54	1350	1549.4	44	48 ³ / ₄	120.7×1.6	1511.3	1682.8	1850	950	2035	350	350	470	200	513	900	27.2		
1400	56	1400	1600.2	48	48 ³ / ₄	124×1.6	1574.8	1746.3	1875	985	2070	390	390	530	210	605	1000	28.2		
1450	58	1450	1651	48	48 ³ / ₄	128.5×1.6	1625.6	183.4	1900	1015	2095	390	390	530	210	605	1000	29		
1500	60	1500	1701.8	52	48 ³ / ₄	131.8×1.6	1676.4	1854.2	1930	1040	2125	390	390	530	210	605	1000	30		

FLANGE RATING—ACCORDING TO ASME B 16.5/ASME 16.47 SERIES "A"&"B"/DIN/BS/JIS/USER SPEC
※ 1 FACE TO FACE DIMENSION—ACCORDING TO MAKER STANDARD.

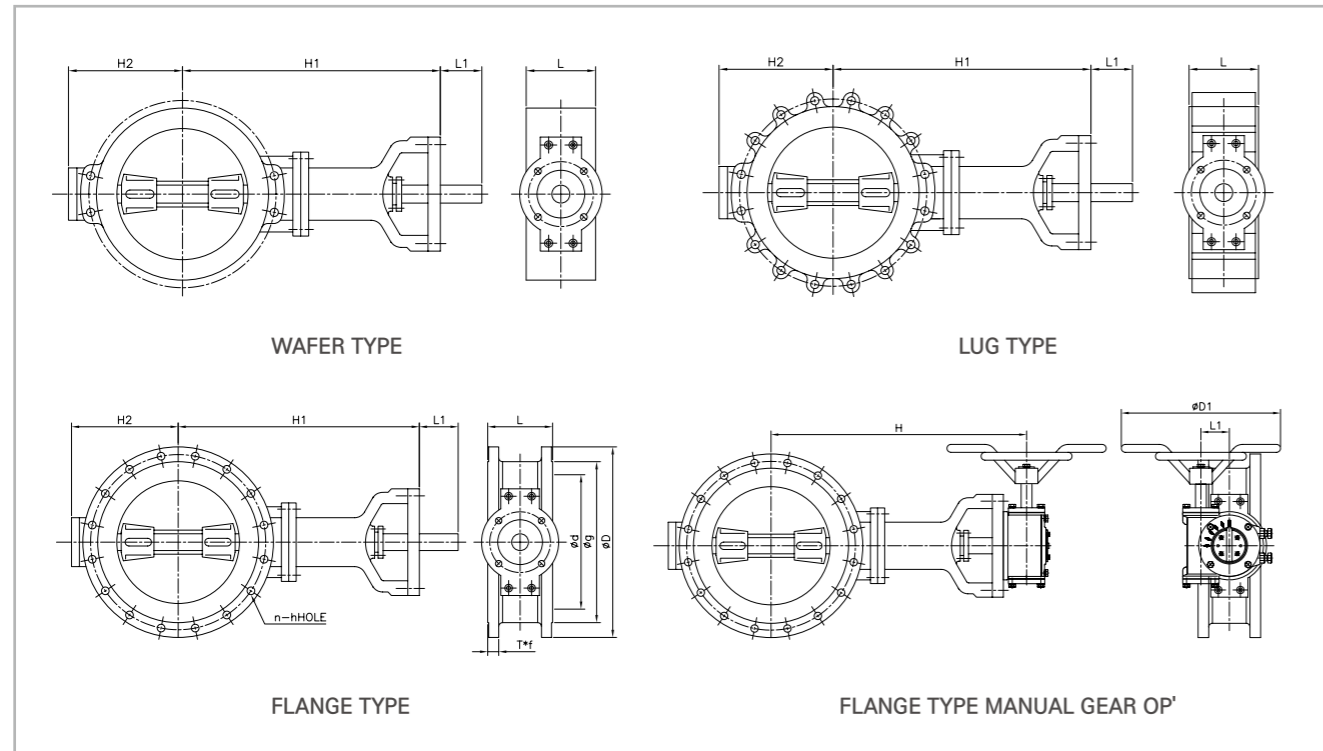
300LB MANUAL GEAR OPERATING TYPE

SIZE	mm	inch	d	FLANGE							H1	H2	H	※ L (F TO F)			L1	L2	D1	MINIMUM BODY WALL THICKNESS
				PCD C	a	h HOLE h TAP	t x f	g	D	WEFER				LUG	FLANGE					
80	3	80	168	8	22 ³ / ₄	27×1.6	127	210	315	127	370	48	48	114	65	206	300	7.11		
100	4	100	200	8	22 ³ / ₄	30.2×1.6	157	254	350	150	405	54	54	127	65	206	300	7.9		
150	6	150	270	12	22 ³ / ₄	35×1.6	216	318	430	180	430	59	59	140	65	206	300	9.7		
200	8	200	350	12	25 ⁷ / ₈	39.7×1.6	270	381	475	195	530	73	73	152	80	230	400	11.2		
250	10	250	387	16	29 ¹ / ₈	45.8×1.6	324	444	520	225	575	83	83	165	80	230	400	12.7		
300	12	300	451	16	32 ¹ / ₈	49.2×1.6	381	521	595	265	650	92	92	178	80	230	400	14.2		
350	14	350	514.5	20	32 ¹ / ₈	52.4×1.6	413	584	625	290	690	117	117	190	80	279	450	16.5		
400	16	400	571.5	20	35 ¹ / ₈	55.6×1.6	470	648	680	340	745	133	133	216	110	279	450	18		
450	18	450	628.5	24	32 ¹ / ₄	58.8×1.6	533	711	790	360	855	149	149	220	110	312	560	19.8		
500	20	500	686	24	32 ¹ / ₄	61.9×1.6	584	775	830	395	895	159	159	229	130	312	560	21.3		
600	24	600	813	24	41 ¹ / ₄	68.3×1.6	692	914	900	465	990	181	181	267	130	371	630	24.6		
700	28	700	940	28	44.5 ⁵ / ₈	84.3×1.6	800	1035	1170	570	1260	229	229	292	200	371	630	28		
750	30	750	997	28	48 ³ / ₄	90.3×1.6	857	1092	1200	600	1290	241	241	318	200	425	710	29.7		
800	32	800	1054	28	51 ⁷ / ₈	96.9×1.6	914	1149	1230	630	1320	241	241	318	200	425	710	31.2		
900	36	900	1168.5	32	54 ²	103×1.6	1022	1270	1310	690	1400	260	260	330	200	425	710	34.8		
1000	40	1000	1156	32	44.5 ⁵ / ₈	112.7×1.6	1086	1238	1490	720	1610	300	300	410	200	513	800	38.1		
1050	42	1050	1206.5	32	44.5 ⁵ / ₈	117.5×1.6	1136	1289	1550	750	1660	300	300	410	200	513	800	39.6		
1200	48	1200	1327	32	51 ⁷ / ₈	131.7×1.6	1301	1467	1650	845	1770	320	320	470	250	536	900	44.7		
1250	50	1250	1428.8	32	54 ²	139.7×1.6	1358.9	1530.4	1665	895	1860	350	350	470	210	625	1000	46.5		
1300	52	1300	1479.6	32	54 ²	144.5×1.6	1409.7	1581.2	1695	925	1890	350	350	470	210	625	1000	48.3		
1350	54	1350	1549.4	28	60.5 ⁵ / ₄	152.4×1.6	1466.9	1657.4	1850	950	2045	350	350	470	210	625	1000	50.0		
1400	56	1400	1600.2	28	60.5 ⁵ / ₄	154×1.6	1517.7	1708.2	1875	985	2080	390	390	530	220	718	1000	51.8		
1450	58	1450	1651	32	60.5 ⁵ / ₄	158.8×1.6	1574.8	1759	1900	1015	2105	390	390	530	220	718	1000	53.6		
1500	60	1500	1701.8	32	60.5 ⁵ / ₄	163.6×1.6	1625.6	1809.8	1930	1040	2135	390	390	530	220	718	1000	55.4		

FLANGE RATING—ACCORDING TO ASME B 16.5/ASME 16.47 SERIES "A"&"B"/DIN/BS/JIS/USER SPEC
※ 1 FACE TO FACE DIMENSION—ACCORDING TO MAKER STANDARD.

CRYOGENIC/HIGH TEMP BUTTERFLY VALVE

DIMENSION TABLE(mm)



600LB MANUAL GEAR OPERATING TYPE

SIZE		d	FLANGE						H1	H2	H	※ L (F TO F)			L1	L2	D1	MINIMUM BODY WALL THICKNESS
mm	inch		PCD C	a	h HOLE h TAP	t x f	g	D				WEFER	LUG	FLANGE				
80	3	80	168	8	34 ³ / ₈	31.7×4	127	210	360	154	415	54	54	180	80	230	400	7.9
100	4	100	200	8	35 ⁷ / ₈	38.1×4	157	273	365	166	420	64	64	190	80	230	400	9.7
150	6	150	292	12	28.5'	47.8×4	216	356	460	238	515	78	78	210	80	230	400	12.7
200	8	200	349.5	12	32' 1/4	55.6×4	270	419	505	248	560	102	102	230	80	230	400	16
250	10	250	432	16	35' 1/4	63.5×4	324	508	580	316	645	117	117	250	80	279	450	19.6
300	12	300	489	20	35' 1/4	66.5×4	381	559	655	349	720	140	140	270	110	312	560	23.4
350	14	350	527	20	38' 3/8	69.8×4	413	603	670	374	735	155	155	290	110	312	560	26.2
400	16	400	603	20	41' 1/2	76.2×4	470	686	785	474	875	178	178	310	130	371	630	30
450	18	450	654	20	44.5' 5/8	82.6×4	533	743	875	476	965	200	200	330	130	371	630	33.3
500	20	500	724	24	44.5' 5/8	88.9×4	584	813	920	504	1010	216	216	350	130	425	710	37
600	24	600	838.5	24	51' 7/8	101.6×4	692	940	1000	550	1090	232	232	390	180	425	710	43.7

FLANGE RATING—ACCORDING TO ASME B 16.5/ASME 16.47 SERIES "A" & "B"/DIN/BS/JIS/USER SPEC
※ 1 FACE TO FACE DIMENSION—ACCORDING TO MAKER STANDARD.

CHECK VALVE

Check Valves are designed to automatically protect back-flow in systems where it is desirable to permit flow in one direction and prevent flow in the opposite direction. DHC's Check valves are classified shape and intended use.

(Fast – shut off type)

Swing Check Valve

Swing Check Valve has a disc inside that covers the opening of the valve. That opening have to be clear in order for anything to pass through. The disc is attached to a hinge, so the disc can swing open or closed when liquid hits the disc. When liquid is traveling in the desired direction, the pressure of the flow pushes the door open, allowing liquid to pass through. Turbulence and pressure drop within the valve are very low.

Tilting Check Valve

The tilting-disc moves the same way as the swing, except that the pivot arm runs right through the disc instead of being above the disc. The overall motion of the disc is thus less, and the motion is more rotational than translational. The pivot must still be offset a certain distance from the center of forces acting on the disc for the disc to open, but the distance is much less in the tilting-disc.

The center of mass of the disc is much closer to the pivot point, and in fact is normally located even closer to the pivot point than the center of opening forces. This means that the tilting-disc opens more easily (with less resistance to flow and consequent pressure loss) than the swing check.

Dual Check Valve

The dual Plate Check Valve is an all purpose non return valve that is much stronger, lighter in weight and smaller in size compared to a conventional swing check valve or lift check valve.

The Dual Plate Check Valve design is the result of attempts to solve the problems associated with swing check valve and lift check valve. The Dual Plate Check Valve employs two spring-loaded plates hinged on a central hinge pin. When the flow decreases, the plates close by torsion spring action without requiring reverse flow. This design offers the twin advantages of No Water Hammer and Non Slam simultaneously.

Nozzle Check Valve (Non Slam)

Trim design allows for a streamlined flow path around disc and diffuser providing the pressure recovery, thereby minimizing pressure drop across the valve. This efficient design combined with the highly responsive non-slam operation make this valve ideal for high head, critical pump application.

(Slow – shut off type)

Butterfly Check Valve (Non Slam)

The Non-slam check valve (Butterfly Type) can be equipped with a counterweight and hydraulic damper cylinder. The closing time of the valve can be controlled, with limits, by metering the hydraulic flow in a damper unit. The unidirectional oil flow control valve on the hydraulic / damper cylinder can be set from full open to full closed by adjusting the throttle valve. If required it is possible to furnish an auxiliary unidirectional oil flow metering valve which be used to adjust the opening time.

SWING TYPE CHECK VALVE(DHC-SWC SERIES-200)

CHECK VALVES

A standard check valve actuated by counter flow. The valve can be used with by-pass valve or counter-weight. On request, dashpots check valves equipped with dashpots could preclude sudden closure in event of counter flow.

SPECIFICATIONS (standard)

1. SIZE - Swing check valve : 80mm - 1,500mm
2. WORKING PRESSURE - Max. 10kgf/cm²
3. END FLANGE(KSD 3578, 4309)
4. FLUID - Service Water

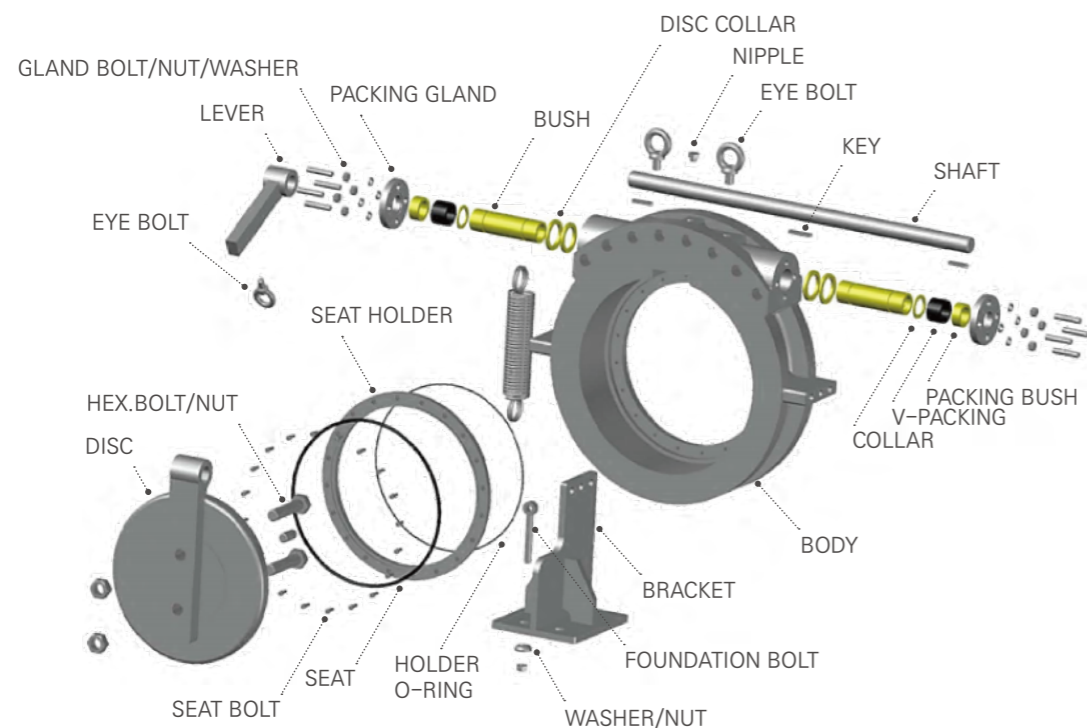
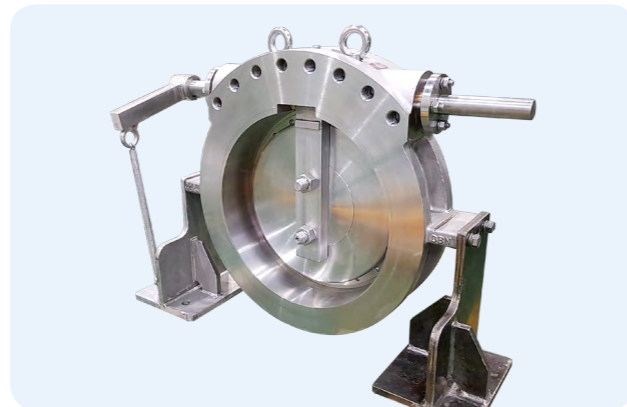
5. TEST PRESSURE

- Leakage test : Working Pressure x 1,1
- Shell test : Working Pressure x 1.5

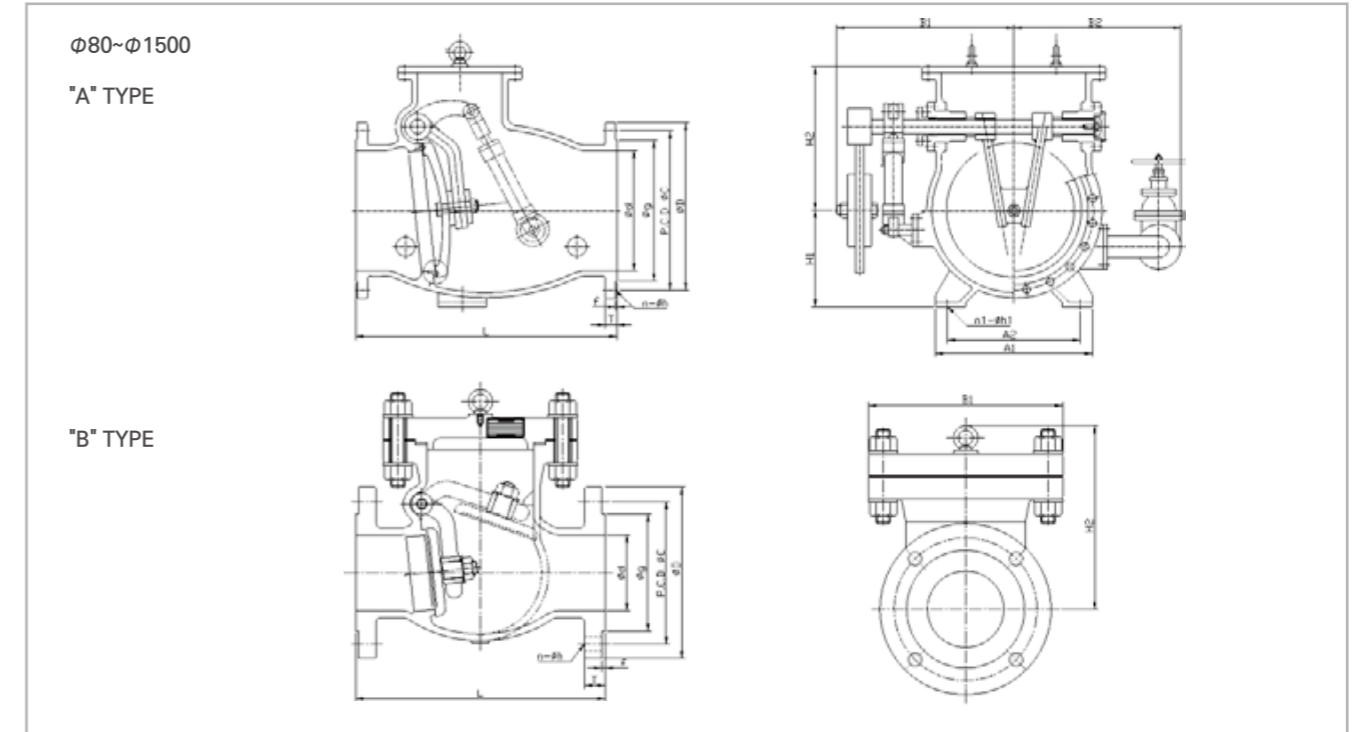
6. MAIN MATERIAL

- Body : Ductile Cast Iron
Steel Casting
- Disc : Ductile Cast Iron
Steel Casting
- Stem : Stainless steel
- Seat : Bronze Casting
Stainless Steel

The other materials are available on request.



DIMENSIONS OF SWING CHECK VALVES



DIMENSION TABLE

DN (φd)	F TO F (L)	FLANGE					H1	H2	B1	B2	FOOT			MODEL	
		φD	φg	φC	T x f	n-φh					A1	A2	n1-φh1		
80	240	185	126	150	18x2	8-19		150	φ200						B-Type
100	290	210	151	175	18x2	8-19		175	φ240						
150	410	280	212	240	22x2	8-23		260	φ330						
200	500	330	262	290	22x2	12-23		330	φ330						
250	560	400	324	355	24x2	12-25	240	370	420	290	400	350	2-25		
300	700	445	368	400	24x3	16-25	250	425	470	340	450	350	2-25	A-TYPE	
350	790	490	413	445	26x3	16-25	310	475	520	420	480	400	2-25		
400	830	560	475	510	28x3	16-27	340	500	580	470	540	440	2-25		
450	950	620	530	565	30x3	20-27	370	545	700	550	600	500	2-25		
500	1070	675	585	620	30x3	20-27	400	615	750	600	650	550	2-28		
600	1200	795	690	730	32x3	24-33	450	755	800	650	750	650	2-28		
700	1300	905	800	840	34x3	24-33	500	870	900	700	680	760	2-35		
800	1450	1020	905	950	36x3	28-33	560	910	1000	800	980	880	2-35		
900	1600	1120	1005	1050	38x3	28-33	640	1040	1100	900	1100	980	2-35		
1000	1800	1235	1110	1160	40x3	28-39	700	1050	1160	980	1160	1000	2-42		
1100	2000	1345	1220	1270	42x3	28-39	750	1100	1250	1050	1260	1060	2-42		
1200	2200	1465	1325	1380	44x3	32-39	800	1170	1350	1150	1400	1200	2-42		
1350	2500	1630	1480	1540	48x3	36-45	900	1300	1550	1350	1600	1350	2-42		
1500	2800	1795	1635	1700	50x3	40-45	1000	1450	1800	1600	1750	1500	2-42		

※ NOTE : 1. FLANGE RATING IS KS D4309 STANDARD, BUT OTHER STANDARDS ARE AVAILABLE ON REQUEST.
2. FACE TO FACE OF VALVE IS THE DIMENSION OF KS B 2333 STANDARDS, BUT OTHER STANDARDS ARE AVAILABLE ON REQUEST.

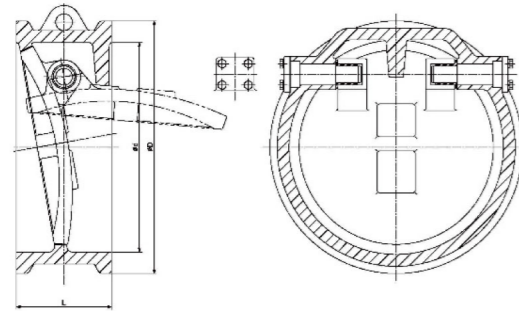
TILTING CHECK VALVE(DHC-TTC SERIES)

FEATURE

The angle of tilting is small compared to two body type, however the first required expense is cheap and easy for maintenance.

DESCRIPTION

- SERVICE TEMP' : -20°C~+150°C
- SERVICE CONDITION : SEA WATER, OIL, SLUDGE, WATER, ETC
- FLANGE RATING : ANSI, AWWA, DIN, JIS(KS), ETC
- SIZE : 50A(2")~1200A(48")
- FLANGE TYPE : FLANGE, WAFER, WELDING TYPE



Material	
BODY	CAST STEEL / CAST IRON / DUCTILE IRON / STAINLESS ALUMINIUM BRONZE / ETC
DISC	CAST STEEL / CAST IRON / DUCTILE IRON / STAINLESS ALUMINIUM BRONZE / ETC
SEAT	STAINLESS ALUMINIUM BRONZE EPDM, NBR, NR, FPM, ETC
STEM	STAINLESS / MONEL / INCONEL / ETC
PACKING	PTFE / NBR / FPM / GRAPHITE / ETC

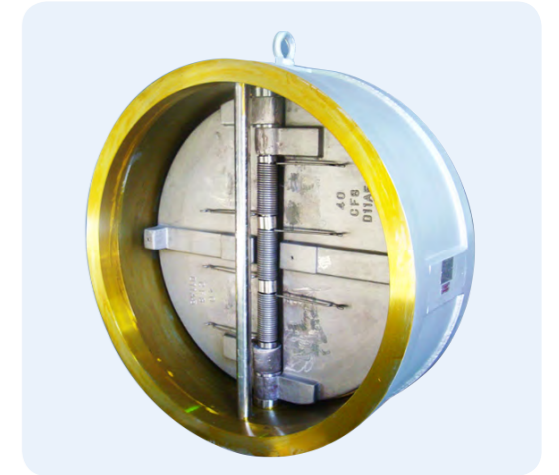
10K(JIS,KS)				20K(JIS,KS)			
SIZE	d	B	L	SIZE	d	D	L
50	55	96	43	50	55	96	43
60	70	116	46	65	70	116	46
80	85	126	75	80	85	132	75
100	105	151	80	100	105	160	80
125	130	182	120	125	130	195	120
150	155	212	125	150	155	230	125
200	205	262	125	200	205	275	125
250	255	325	140	250	255	345	140
300	305	370	150	300	305	395	150
350	340	415	165	350	340	440	165
400	390	480	180	400	390	495	180
450	440	530	200	450	440	560	200
500	495	585	220	500	495	615	220
600	595	690	240	600	590	720	240

※ OTHER STANDARD ARE AVAILIABLE ON REQUEST.(FLANGE RATING, FACE TO FACE DIMENSION, ETC)
※ MODEL NO. : DHC-TC SERIESE (ACC. TO FIGURE NO CORDING CHART)

DUAL CHECK VALVES(DHC-DUC SERIES)

SPECIFICATIONS

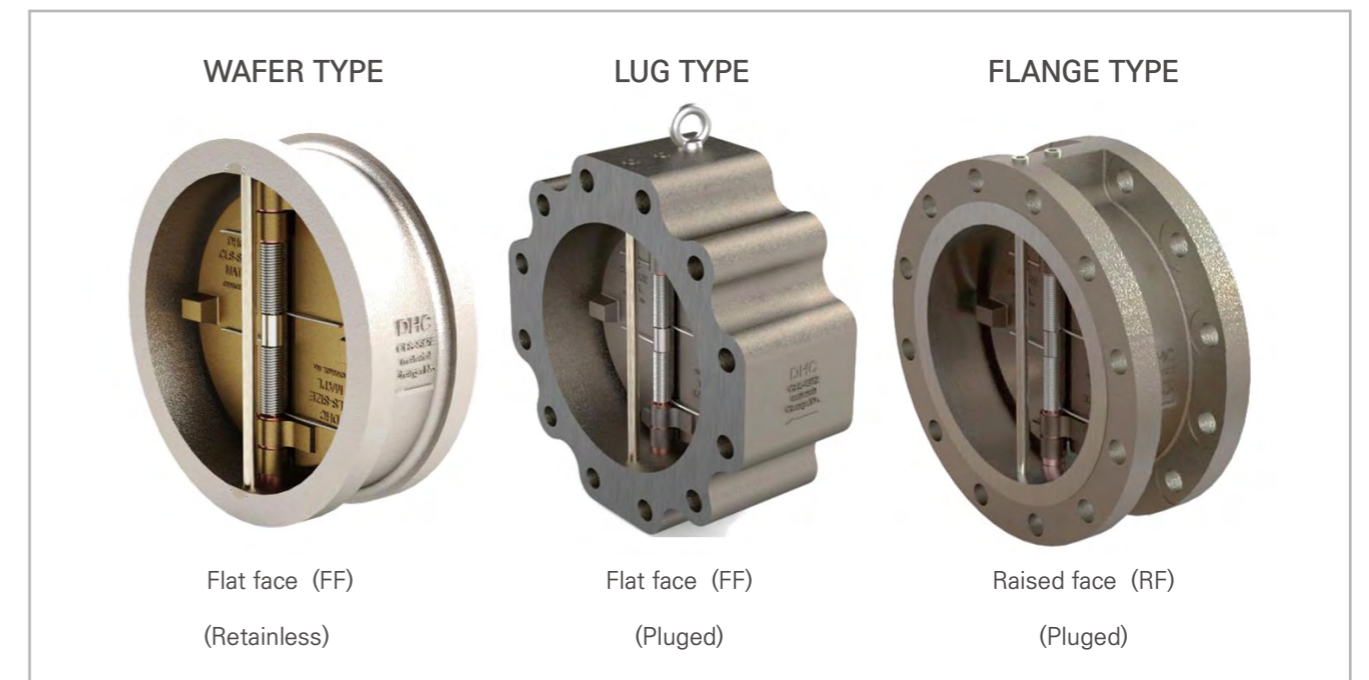
- SIZE**
50A(2")~1800(72")
- CONNECTION**
- Wafered / Lugged / Flanged
- SERVICE TEMP. RANGES**
- 20°C~300°C
- MATERIALS**
- Body : A536 65-45-12
A216-WCB
A351-CF8
- Disc : A351-CF8
A351-CF8M
- SEAL**
- Metal to Metal
- Rubber Lined
- Teflon
- SEAT LEAKAGE**
- soft seat : Zero Leakage
- metal seat : 3cc/inch (api 598)
- SPRING**
- inconel x750
- sus 304,316
- monel (special)



Materials	Max temp.	Fluid	Spring type
316 Stainless steel	120°C	Gas	Low torque spring
Inconel	320°C	Liquid(below 80m head)	Standard torque spring
Inconel-X	540°C	Liquid(above 80m head)	High torque spring

CLASSIFICATION OF PRODUCTS

Classification according to product outline and connection method.



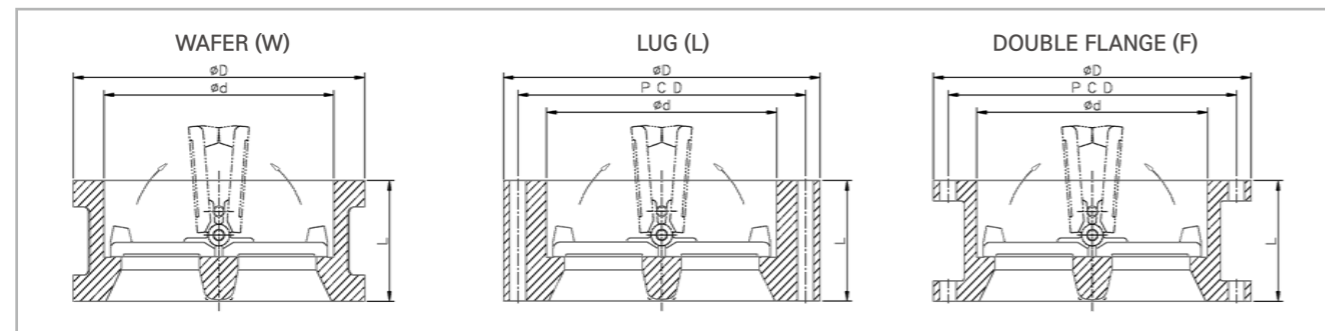
DUAL CHECK VALVE SPECIFICATION

WAFER TYPE / FLAT FACE / RETAINLESS

LUG TYPE / FLAT FACE / PLUGED



DIMENSION TABLE(mm)



JIS B 2220 10K

SIZE in.(mm)	FACING	F TO F(L)	ød	øD			PCD	HOLE NO.
				W	L	F		
2"(50)	RF	60	60	101	155	-	120	4
3"(80)	RF	73	89	131	185	-	150	8
4"(100)	RF	73	114	156	210	-	175	8
6"(150)	RF	98	168	217	280	-	240	8
8"(200)	RF	127	219	267	330	330	290	12
10"(250)	RF	146	273	330	400	400	355	12
12"(300)	RF	181	324	375	445	445	400	16
14"(350)	RF	184	356	420	490	490	445	16
16"(400)	RF	191	406	483	560	560	510	16
18"(450)	RF	203	457	538	620	620	565	20
20"(500)	RF	219	508	593	675	675	620	20
24"(600)	RF	222	610	697	795	795	730	24

ASME B 16.5 CLASS 150

SIZE in.(mm)	FACING	F TO F(L)	ød	øD			PCD	HOLE NO.
				W	L	F		
2"(50)	RF	60	60	105	150	-	120.7	4
3"(80)	RF	73	89	137	190	-	152.4	4
4"(100)	RF	73	114	175	230	-	190.5	8
6"(150)	RF	98	168	222	280	-	241.3	8
8"(200)	RF	127	219	279	345	345	298.5	8
10"(250)	RF	146	273	340	405	405	362	12
12"(300)	RF	181	324	410	485	485	431.8	12
14"(350)	RF	184	356	451	535	535	476.3	12
16"(400)	RF	191	406	514	595	595	539.8	16
18"(450)	RF	203	457	549	635	635	577.9	16
20"(500)	RF	219	508	606	700	700	635	20
24"(600)	RF	222	610	718	815	815	749.3	20

ASME B 16.5 CLASS 300

SIZE in.(mm)	FACING	F TO F(L)	ød	øD			PCD	HOLE NO.
				W	L	F		
2"(50)	RF	60	60	111	165	-	127	8
3"(80)	RF	73	89	149	210	-	168.3	8
4"(100)	RF	73	114	181	255	-	200	8
6"(150)	RF	98	168	256	320	-	269.9	12
8"(200)	RF	127	219	308	380	380	330.2	12
10"(250)	RF	146	273	362	445	445	387.4	16
12"(300)	RF	181	324	422	520	520	450.8	16
14"(350)	RF	222	356	486	585	585	514.4	20
16"(400)	RF	232	406	540	650	650	571.5	20
18"(450)	RF	264	457	597	710	710	628.6	24
20"(500)	RF	292	508	654	775	775	685.8	24
24"(600)	RF	318	610	775	915	915	812.8	24

ASME B 16.5 CLASS 600

SIZE in.(mm)	FACING	F TO F(L)	ød	øD			PCD	HOLE NO.
				W	L	F		
2"(50)	RF/RTJ	60	60	111	165	-	127	8
3"(80)	RF/RTJ	73	89	149	210	-	168.3	8
4"(100)	RF/RTJ	79	114	194	275	-	215.9	8
6"(150)	RF/RTJ	137	168	267	355	-	292.1	12
8"(200)	RF/RTJ	165	219	321	420	420	349.2	12
10"(250)	RF/RTJ	213	273	400	510	510	431.8	16
12"(300)	RF/RTJ	229	324	457	560	560	489	20
14"(350)	RF/RTJ	273	356	492	605	605	527	20
16"(400)	RF/RTJ	305	406	565	685	685	603.2	20
18"(450)	RF/RTJ	362	457	613	745	745	654	20
20"(500)	RF/RTJ	368	508	683	815	815	723.9	24
24"(600)	RF/RTJ	438	610	791	940	940	838.2	24

NOZZLE CHECK VALVE(DHC-NZC SERIES)

PICTURES



DIMENSION TABLE

NPS	DN	Class	Flange face	A mm	type ZCM standard FTF		type RSZC API 594		type ZC, RZC API 6D FTF			HOLE P.C.D	HOLE DIA. mm	STUD SELECTION (ref.)		
					B mm	Weight kg	B mm	Weight kg	B mm RF	B mm RJ	Weight kg			No.	DIA. inch	Length mm
3	80	150	RF	191	120	13	-	-	241	-	16	152.4	19.1	4	5/8	110
		300	RF	210	150	18	-	-	318	-	26	168.3	22.2	8	3/4	130
		600	RF / RJ-31	210	150	20	-	-	356	359	30	168.3	22.2	8	3/4	155
		900	RF / RJ-31	241	190	32	-	-	381	384	43	190.5	25.4	8	7/8	170
		1500	RF / RJ-35	267	220	45	-	-	470	473	65	203.2	31.8	8	1 1/8	200
		2500	RF / RJ-32	305	270	83	-	-	578	584	119	228.6	34.9	8	1 1/4	250
4	100	150	RF	229	140	20	-	-	292	-	28	190.5	19.1	8	5/8	110
		300	RF	254	170	31	-	-	356	-	41	200.0	22.2	8	3/4	135
		600	RF / RJ-37	273	170	40	-	-	432	435	63	215.9	25.4	8	7/8	175
		900	RF / RJ-37	292	210	53	-	-	457	460	73	235.0	31.8	8	1 1/8	195
		1500	RF / RJ-39	311	240	69	-	-	546	549	107	241.3	34.9	8	1 1/4	220
		2500	RF / RJ-38	356	310	131	-	-	673	683	273	273.0	41.3	8	1 1/2	290

NPS	DN	Class	Flange face	A mm	type ZCM standard FTF		type RSZC API 594		type ZC, RZC API 6D FTF			HOLE P.C.D	HOLE DIA. mm	STUD SELECTION (ref.)		
					B mm	Weight kg	B mm	Weight kg	B mm RF	B mm RJ	Weight kg			No.	DIA. inch	Length mm
5	125	150	RF	255	-	-	-	-	-	-	-	215.9	22.2	8	3/4	120
		300	RF	280	-	-	-	-	-	-	-	235.0	22.2	8	3/4	140
		600	RF / RJ-41	330	-	-	-	-	-	-	-	266.7	28.6	8	1	190
		900	RF / RJ-41	350	-	-	-	-	-	-	-	279.4	34.9	8	1 1/4	220
		1500	RF / RJ-44	375	-	-	-	-	-	-	-	292.1	41.3	8	1 1/2	285
		2500	RF / RJ-42	420	-	-	-	-	-	-	-	323.8	47.6	8	1 3/4	335
6	150	150	RF	279	210	38	-	-	356	-	44	241.3	22.2	8	3/4	120
		300	RF	318	210	55	-	-	445	-	80	269.9	22.2	12	3/4	145
		600	RF / RJ-45	356	210	82	-	-	559	562	137	292.1	28.6	12	1	200
		900	RF / RJ-45	318	230	107	-	-	610	613	171	317.5	31.8	12	1 1/8	220
		1500	RF / RJ-46	394	310	160	-	-	705	711	231	317.5	38.1	12	1 3/8	295
		2500	RF / RJ-47	483	430	324	-	-	914	927	487	269.3	54.0	8	2	380
8	200	150	RF	343	280	71	-	-	495	-	90	298.5	22.2	8	3/4	125
		300	RF	381	280	91	-	-	533	-	120	330.2	25.4	12	7/8	160
		600	RF / RJ-49	419	280	135	-	-	660	664	213	349.2	31.8	12	1 1/8	220
		900	RF / RJ-49	470	280	189	-	-	737	740	307	393.7	38.1	12	1 3/8	250
		1500	RF / RJ-50	483	350	269	-	-	832	841	390	393.7	44.5	12	1 5/8	325
		2500	RF / RJ-51	552	460	480	-	-	1022	1038	743	438.2	54	12	2	425
10	250	150	RF	406	350	120	146	78	622	-	151	362.0	25.4	12	7/8	140
		300	RF	445	350	150	146	84	622	-	184	387.4	28.6	16	1	180
		600	RF / RJ-53	508	350	252	213	180	787	791	380	431.8	34.9	16	1 1/4	245
		900	RF / RJ-53	546	350	303	241	260	838	841	461	469.9	38.1	16	1 3/8	265
		1500	RF / RJ-54	584	400	461	248	273	991	1000	710	482.6	50.8	12	1 7/8	370
		2500	RF / RJ-55	673	580	952	254	290	1270	1292	1442	539.8	66.7	12	2 1/2	535
12	300	150	RF	483	420	204	181	119	699	-	341	431.8	25.4	12	7/8	150
		300	RF	521	420	250	181	136	711	-	400	450.8	31.8	16	1 1/8	205
		600	RF / RJ-57	559	455	352	229	232	838	841	623	489.0	34.9	20	1 1/4	255
		900	RF / RJ-57	610	455	470	292	493	965	968	966	533.4	38.1	20	1 3/8	285
		1500	RF / RJ-58	673	490	860	305	500	1130	1146	1638	571.5	54.0	16	2	415
		2500	RF / RJ-60	762	610	1350	305	533	1422	1445	2975	619.1	73.0	12	1 3/4	585

BUTTERFLY CHECK VALVES

	Material
BODY	CAST STEEL / CAST IRON / DUCTILE IRON / STAINLESS / ALUMINIUM BRONZE / ETC
DISC	CAST STEEL / CAST IRON / DUCTILE IRON / STAINLESS / ALUMINIUM BRONZE / ETC
SEAT	STAINLESS / EPDM, NBR, NR, FPM, ETC
STEM	STAINLESS / MONEL / INCONEL / ETC
PACKING	PTFE / NBR / FPM / ETC
PACKING GLAND	CAST STEEL / CAST IRON / DUCTILE IRON / STAINLESS / ALUMINIUM BRONZE / ETC
STEM HOLDER	BRONZE / ALUMINIUM BRONZE / STAINLESS / MONEL
END COVER	CAST STEEL / CAST IRON / DUCTILE IRON / STAINLESS / ALUMINIUM BRONZE / ETC

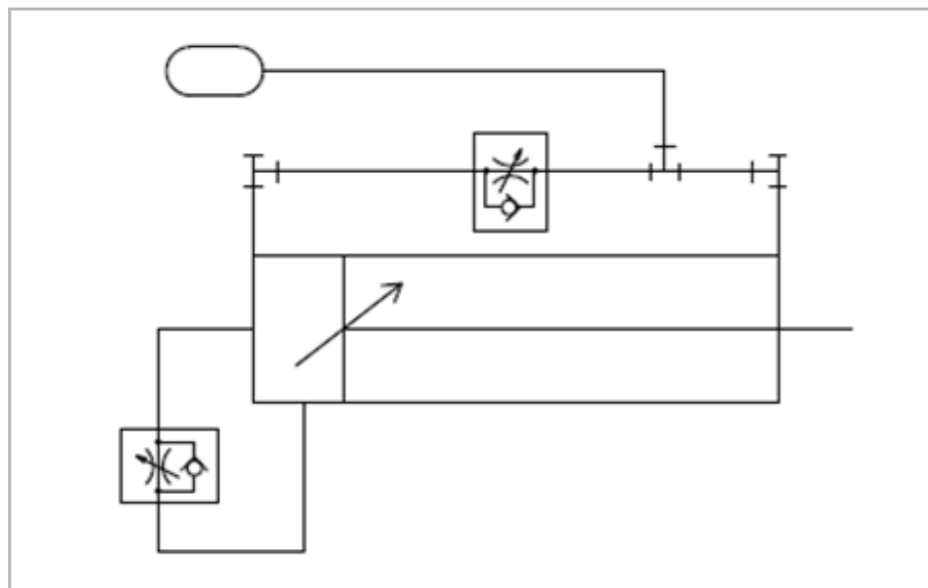
DESCRIPTION

1. SERVICE CONDITION : SEA WATER, OIL, ETC
2. FLANGE RATING : ANSI, AWWA, DIN, JIS(KS), ETC
3. SIZE : 300A(12") ~ 1800A(72")
4. FLANGE TYPE : FLANGE, BUTTER WELDING, WAFER
5. ACTUATOR : HYDRAULIC CYLINDER, MOTOR, ETC

BUTTERFLY CHECK VALVE-NON-RETURN

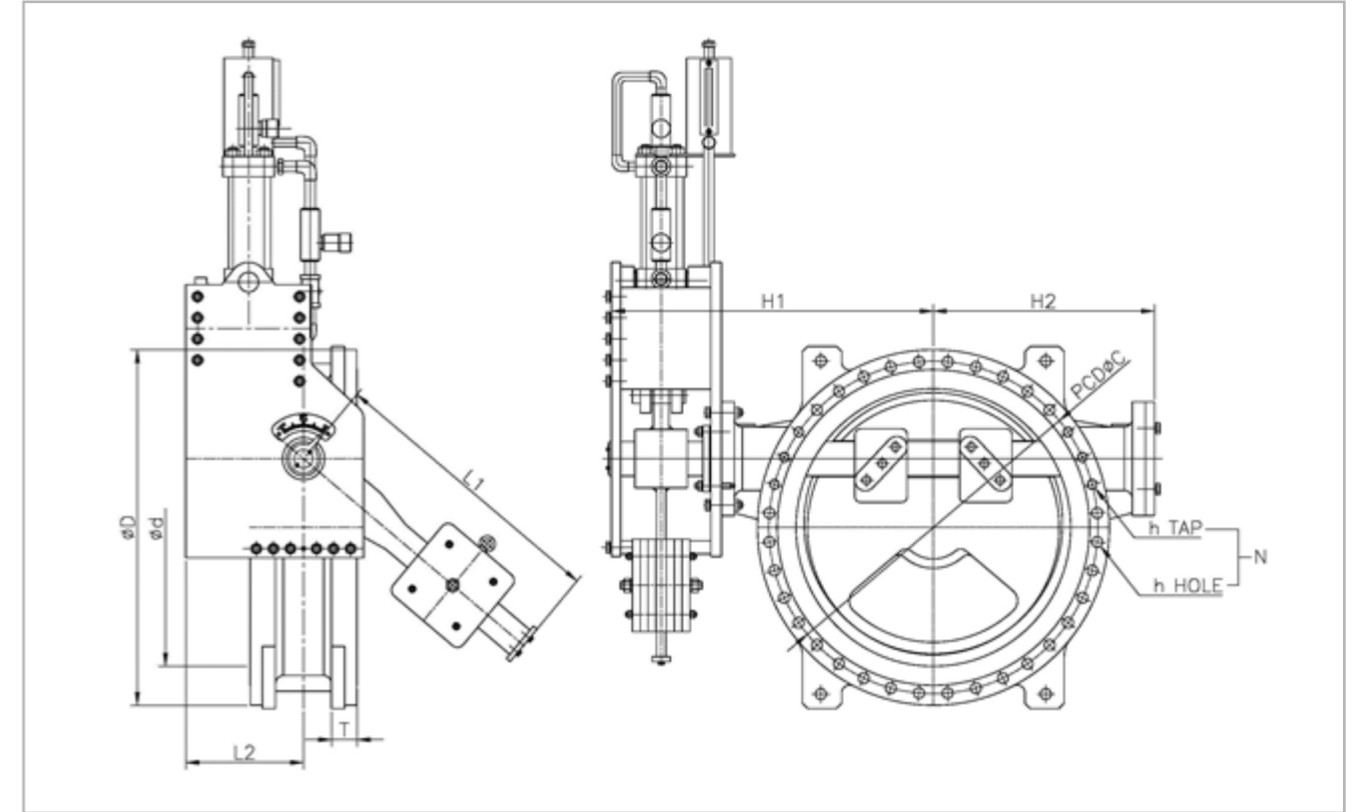
This valve is opened and closed by the fluid with using hydraulic cylinder & weight.

This valve is opened by the regular fluid pressure, closed by backward fluid pressure. Owing to short distance of Face to Face installation of this valve is easy. No WATER HAMMER occur.



Schematic Diagram of Hydraulic cylinder

DIMENSIONS



REFERENCE DIMENSION

Size	Ød	FLANGE							L	H1	H2	H3	L1
		ØD	PCDØC	N	h HOLE	h TAP	T						
12"	300A	Ø300	Ø485	Ø431.8	12	Ø25	7/8"×9UNC	30.2	178	510	310	450	270
14"	350A	Ø350	Ø535	Ø476.3	12	Ø29	1"×8UN	33.4	190	540	340	500	290
16"	400A	Ø400	Ø595	Ø539.8	16	Ø29	1"×8UN	35	216	560	360	560	330
18"	450A	Ø450	Ø635	Ø577.9	16	Ø32	1 1/8"×8UN	38.1	222	650	460	560	340
20"	500A	Ø500	Ø700	Ø635	20	Ø32	1 1/8"×8UN	41.3	229	690	480	670	350
22"	550A	Ø550	Ø750	Ø692.2	20	Ø35	1 1/4"×8UN	44.5	229	720	510	670	350
24"	600A	Ø600	Ø815	Ø749.3	20	Ø35	1 1/4"×8UN	46.1	267	830	560	870	400
28"	700A	Ø700	Ø925	Ø863.6	28	Ø35	1 1/4"×8UN	69.9	292	910	600	890	440
30"	750A	Ø750	Ø985	Ø914.4	28	Ø35	1 1/4"×8UN	73.1	318	930	660	930	480
32"	800A	Ø800	Ø1060	Ø977.9	28	Ø41	1 1/2"×8UN	79.4	318	940	670	930	480
36"	900A	Ø900	Ø1170	Ø1085.8	32	Ø41	1 1/2"×8UN	88.9	330	1070	720	930	500
40"	1000A	Ø1000	Ø1290	Ø1200.2	36	Ø41	1 1/2"×8UN	88.9	410	1130	780	1100	615
42"	1050A	Ø1050	Ø1345	Ø1257.3	36	Ø41	1 1/2"×8UN	95.3	410	1250	850	1100	615
48"	1200A	Ø1200	Ø1510	Ø1422.4	44	Ø41	1 1/2"×8UN	106.4	470	1300	910	1100	710

※ NOTE : 1. The dimensions and Class can be changed according to the Purchaser's specification.

BUTTERFLY CHECK VALVES WITH CYLINDER/SPRING/WEIGHT

SPECIFICATIONS

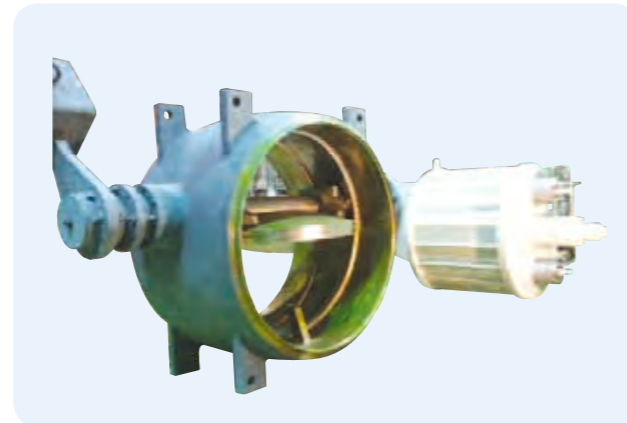
1. SIZE
 - 200A(8") ~ 3000A(120")
2. CONNECTION
 - WAFER / FLANGE / WELDING ENDS
3. RATING
 - ANSI / ASME 150LB~600LB
 - AWWA 75A/B, 150A/B, 250B
 - DIN / BS PN10~40
 - KS / JIS 10K~40K

4. MATERIAL

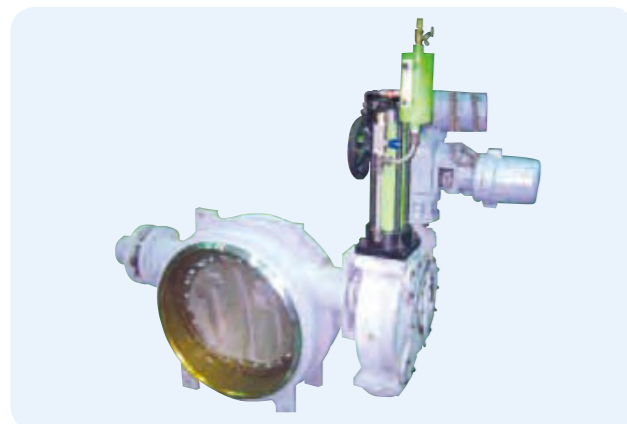
- BODY : A216WCB, A351 CF8/8M,
DUPLEX, TITANIUM, ALBC, ETC.
- DISC : A216WCB, A351 CF8/8M,
DUPLEX, TITANIUM, ALBC, ETC.
- SEAT
 - *RESILIENT : NBR, EPDM, VITON,
PTFE SILICON, R-PTFE, PCTFE.
 - *METAL : STAINLESS, DUPLEX, INCONEL
TITANIUM, STELLITE, ETC.



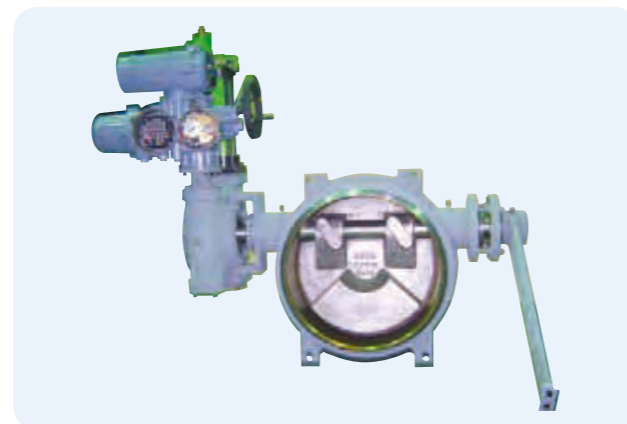
- COMBINED CHECK VALVE DASH-POT WITH COUNTER WEIGHT.



- NON-SLAM CHECK VALVE DASH-POT WITH COUNTER WEIGHT
LAMINATED METAL TRIPLE OFFSET SEAT.



- MOTOR OPERATED TYPE LAMINATED METAL TRIPLE OFFSET SEAT.



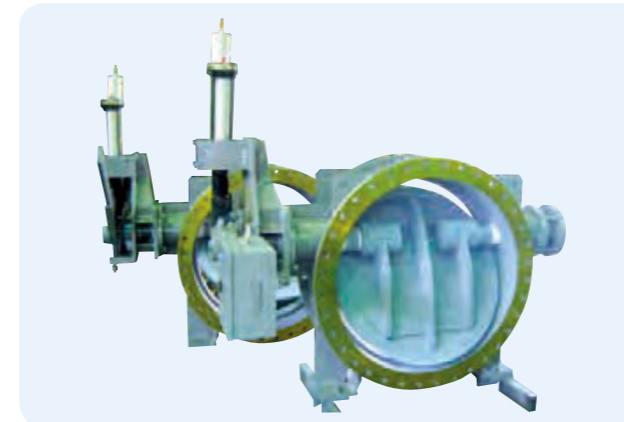
- MOTOR OPERATED TYPE LAMINATED METAL TRIPLE OFFSET SEAT.



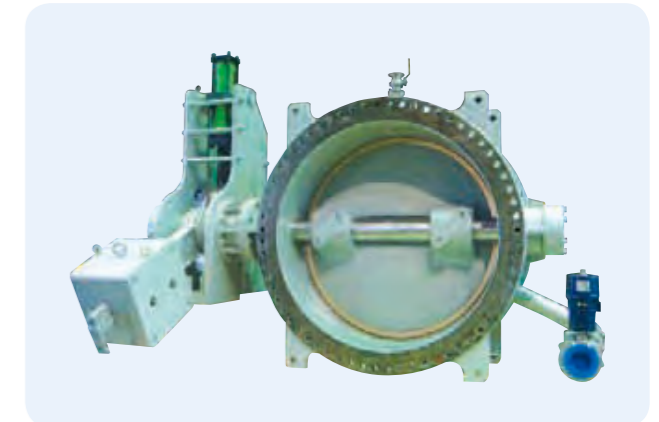
- NON-SLAM CHECK VALVE
- DOUBLE DASHPOT TYPE 1



- NON-SLAM CHECK VALVE
- DOUBLE DASHPOT TYPE 2

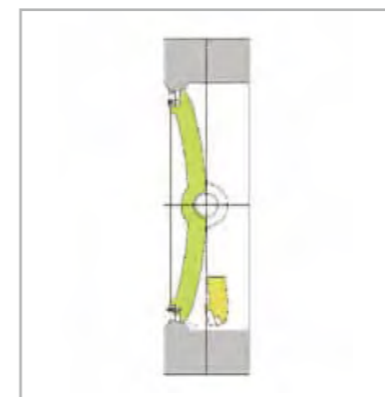


- NON-SLAM CHECK VALVE TILTING TYPE DISC
- DASH-POT WITH COUNTER WEIGHT
- LAMINATED METAL TRIPLE OFFSET SEAT.

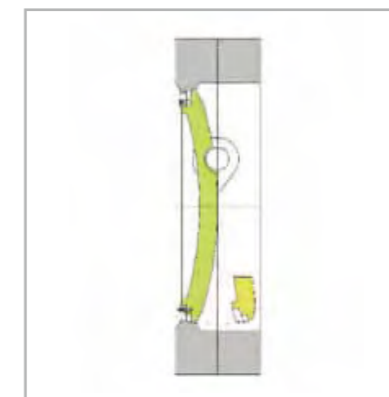


- NON-RETURN BUTTERFLY CHECK VALVE WITH HYDRAULIC
OPERATOR & COUNTER WEIGHT BY PASS BALL VALVE.

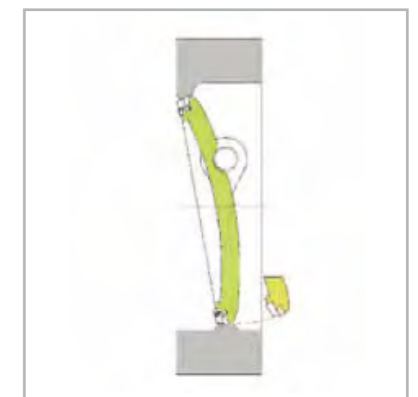
TYPE OF BUTTERFLY CHECK VALVE



- BUTTERFLY CHECK VALVE



- CHECK VALVE



- TILTING CHECK VALVE

D.H.C FIGURE NUMBER CODING CHART

FIGURE NUMBER CODING CHART												
VALVES	RATING		FLANGE CONNECTION		SEAT MATERIAL		CONNECTION TYPE			OPERATOR		
					BODY	DISC	BODY	DISC	BODY	DISC		
BTT Butterfly Triple	C0	CL.75	FL	FLANGE	IT	INTEGRAL	1	SEAT RING	SEALING FACE	BA	BARE	
BTD Butterfly Double	C1	CL.125			SL	STAINLESS LAMINATED				LE	LEVER (HANDEL)	
BTC Butterfly Concentric	C2	CL.150			IL	INCONEL LAMINATED						
NSC Non-Slam Cylinder	C3	CL.250	WA	WAFER	TL	TITANIUM LAMINATED	2	SEALING FACE	SEAT RING	GE	GEAR BOX	
	C4	CL.300			ML	MONEL LAMINATED						
	C5	CL.400			DL	DUPLEX LAMINATED						
NSS Non-Slam Spring (SERIES 200)	C6	CL.600			SS	STAINLESS SOLID	3	SEAT RING	SEAT RING	PC	PNEUMATIC CYLINDER	
	C7	CL.900			IS	INCONEL SOLID						
NRV Non-Return (Combine)	C8	CL.1500	LU	LUG	TS	TITANIUM SOLID	4	SEALING FACE	SEALING FACE	HC	HYDRAULIC CYLINDER	
	C9	CL.2500			MS	MONEL SOLID						
TTC Tilting Check	1J	1K	BU	BUTT WELD	DS	DUPLEX SOLID	5	NONE	NONE	EH	ELECTRIC HYD.	
DUC Dual Check	2J	2K			H1	STELLITE OVERLAY						
SWC Swing Check	3J	5K			H2	STAINLESS OVERLAY						
	4J	10K	H3	INCONEL OVERLAY								
NZC Nozzle Check	5J	16K			FS	FIRE SAFETY				DP	DASH POT	
	6J	20K			PT	PTFE						
BAF Ball Floating	7J	30K	SP	SPECIAL	RT	R-PTFE				NN	NONE	
	8J	40K			CT	C-PTFE						
BAT Ball Trunnion	9J	63K			PC	PCTFE						
	1B	PN2.5			UH	UHMWPE						
KNG Knife Gate	2B	PN6			MC	MC NYLON						
	3B	PN10			EP	EPDM						
GAT Gate(Wedge.Parrel)	4B	PN16			NB	NBR						
	5B	PN25			VI	FPM (VITON)						
DST Damper Swing Through	6B	PN40			SI	SILICON						
	7B	PN63			CE	CERAMIC						
DSS Damper Step Seat	8B	PN100			NN	NONE						
	CB	CL.B			SP	SPECIAL						
DAS Damper Air Seal	CD	CL.D										
	CE	CL.E										
WTS Water Seal	CF	CL.F										
	SP	SPECIAL										

ex1) Butterfly valve Triple Offset ASME CL.300 Flange Type
Stainless Laminated Body Seat / Sealing Face Stellite #6 Overlay
Gear Operation, Valve Size 6"

BTT C4 - FL - SLH1 1 - GE - 150

ex2) Dual Plate check valve JIS 10K Wafer Type
Epdm Rubber Seat
Valve Size 300A

DUC 4J - WA - EPIT 1 - NN - 300

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