

SEJIN VALVE

TRIPLE, DOUBLE-OFFSET BUTTERFLY VALVES

Double-Flanged Lug-type Wafer-type
ASME Class 150, 300, 600



SEJIN VALVE

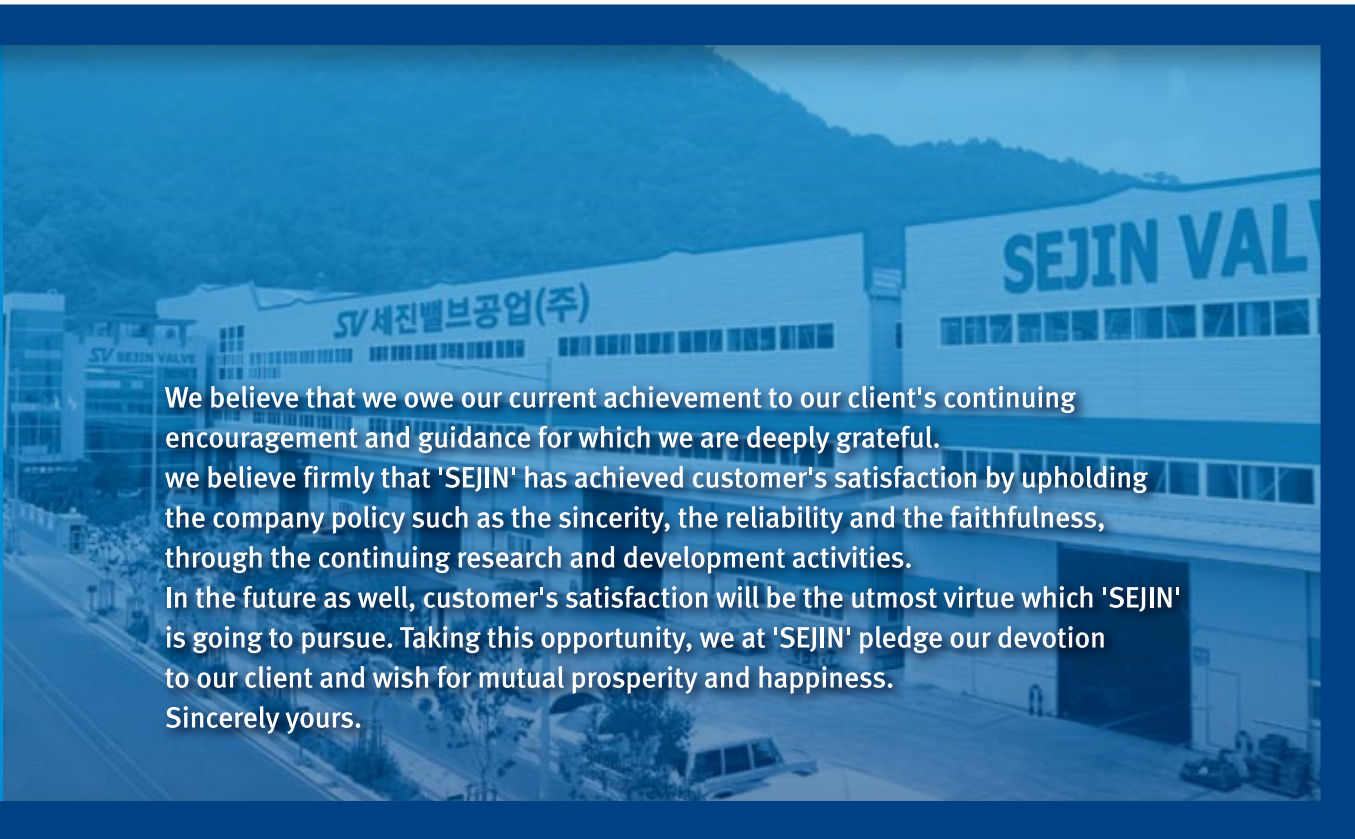
We are indeed pleased to take this opportunity to introduce SEJIN VALVE INDUSTRIAL CO., LTD. and its business activities to you.

We are Proud of our clients recognition of its quality and high performance, as reflected in our valves being widely used in service water and in power plant and the others plants as well.



HISTORY

- 1999 Established SEJIN VALVE CO.
 Converted to Corporation, SEJIN VALVE IND. CO., LTD.
 Obtained Licence of Trading Business (The First Grade)
 Acquired ISO 9001 Certificate from KS
- 2000 Subscription of a Member of Korea Valve Industry Corporation
 Registered as One of Supplying Vendors for Korea Electric Power Corporation (KEPCO).
 R-Class / 120" and smaller.
 Developed Valve for Ultralow Temperature for LNG (-196°C)
 Developed Dual Plate Check Valve
- 2002 Acquired Certificate of KS (KSB 2333)
- 2003 Acquired Certificate of KS (KSB 2813)
 Registered as One of Supplying Vendors for Korea Hydro & Nuclear Power Corporation.
 NUCLEAR R-Class / 120" and smaller.
- 2004 Developed Valve for Triple Eccentric type Butterfly Valve.
- 2005 Moved New Factory to Songjeong-dong, Kangseo-gu, Busan, Korea.
 Acquired Certificate of CE (BUREAU VERITAS)
- 2006 Up-grade as One of Supplying Vendors for Korea Hydro & Nuclear Power Corporation.
 NUCLEAR T-Class / 120" and Smaller.
- 2010 Moved New Factory to Hwajeon-dong, Kangseo-gu, Busan, Korea.
- 2014 Acquired ISO 14001 Certificate from KS
- 2015 Moved New Factory to Noksan Industrial Complex.



We believe that we owe our current achievement to our client's continuing encouragement and guidance for which we are deeply grateful. we believe firmly that 'SEJIN' has achieved customer's satisfaction by upholding the company policy such as the sincerity, the reliability and the faithfulness, through the continuing research and development activities. In the future as well, customer's satisfaction will be the utmost virtue which 'SEJIN' is going to pursue. Taking this opportunity, we at 'SEJIN' pledge our devotion to our client and wish for mutual prosperity and happiness. Sincerely yours.

Our company endeavor ceaselessly to develop new products and for quality improvement.

Technological Know-how of SEJIN VALVE

- KS Q 9001 : 2009 / ISO 9001 : 2008
- KS (Korean Industrial Standards) - KS B 2333 /2002
- KS (Korean Industrial Standards) - KS B 2813 /2003
- Practical Use Registration - Butterfly Valve /2003
- KS I ISO 14001 : 2009 / ISO 14001 : 2004
- Registered as Supplying Vendors for Korea
-Hydro & Nuclear Power corporation (Nuclear T/R-class)
- Registered as Supplying Vendors for Korea
-Electric Power Coporation (Kepco T/R-class)
- Acquired Certificate of CE (BUREAU VERITAS)

TRIPLE - OFFSET BUTTERFLY VALVES

ASME Class 150, 300, 600

BFO-TDF Series



DOUBLE FLANGE TYPE

6~9P

STANDARD FEATURES

Triple-offset Disc Rotation
ASME Class 150, 300, 600
SIZE : 3"~60" (Short, Long Pattern)
END CONNECTION : Raised Face
One-Piece Shaft Design
Hard Faced Seat
MATERIALS : Carbon steel, Stainless steel
Manual Gear Operation

FEATURES UPON REQUEST

ASME Class 900,1500
SIZE : 66"~144"
END CONNECTION : RTJ
Fire Safe Design
Cryogenic Type Design
MATERIALS : Nickel Alloys
Actuators(Pneumatic,Hydraulic,Electric)

BFO-TLF Series



LUG TYPE

10~13P

STANDARD FEATURES

Triple-offset Disc Rotation
ASME Class 150, 300, 600
SIZE : 3"~60"
END CONNECTION : Raised Face
One-Piece Shaft Design
Hard Faced Seat
MATERIALS : Carbon steel, Stainless steel
Manual Gear Operation

FEATURES UPON REQUEST

ASME Class 900,1500
SIZE : 66"~144"
END CONNECTION : RTJ
Fire Safe Design
Cryogenic Type Design
MATERIALS : Nickel Alloys
Actuators(Pneumatic,Hydraulic,Electric)

BFO-TWF Series



WAFER TYPE

14~17P

STANDARD FEATURES

Triple-offset Disc Rotation
ASME Class 150, 300, 600
SIZE : 3"~60"
END CONNECTION : Wafer Flat Face
One-Piece Shaft Design
Hard Faced Seat
MATERIALS : Carbon steel, Stainless steel
Manual Gear Operation

FEATURES UPON REQUEST

ASME Class 900,1500
SIZE : 66"~144"
END CONNECTION : RTJ
Fire Safe Design
Cryogenic Type Design
MATERIALS : Nickel Alloys
Actuators(Pneumatic,Hydraulic,Electric)

DOUBLE - OFFSET BUTTERFLY VALVES

ASME Class 150, 300

BFO-DDF Series



DOUBLE FLANGE TYPE

18~21P

STANDARD FEATURES

Double-offset Disc Rotation
ASME Class 150, 300
SIZE : 3"~60" (Short, Long Pattern)
END CONNECTION : Raised Face
SEAT : Rubber
MATERIALS : Carbon steel, Stainless steel
Manual Gear Operation

FEATURES UPON REQUEST

SIZE : 66"~144"
SEAT : EPDM, Teflon, Metal
MATERIALS : Nickel Alloys
Actuators(Pneumatic,Hydraulic,Electric)

BFO-DLF Series



LUG TYPE

22~25P

STANDARD FEATURES

Double-offset Disc Rotation
ASME Class 150, 300
SIZE : 3"~60" (Short, Long Pattern)
END CONNECTION : Raised Face
SEAT : Rubber
MATERIALS : Carbon steel, Stainless steel
Manual Gear Operation

FEATURES UPON REQUEST

SIZE : 66"~144"
SEAT : EPDM, Teflon, Metal
MATERIALS : Nickel Alloys
Actuators(Pneumatic,Hydraulic,Electric)

BFO-DWF Series



WAFER TYPE

26~29P

STANDARD FEATURES

Double-offset Disc Rotation
ASME Class 150, 300
SIZE : 3"~60" (Short, Long Pattern)
END CONNECTION : Raised Face
SEAT : Rubber
MATERIALS : Carbon steel, Stainless steel
Manual Gear Operation

FEATURES UPON REQUEST

SIZE : 66"~144"
SEAT : EPDM, Teflon, Metal
MATERIALS : Nickel Alloys
Actuators(Pneumatic,Hydraulic,Electric)

BUTTERFLY VALVES TRIPLE-OFFSET

Double-Flanged Type ASME Class 150, 300, 600

Standard Specification

STANDARD DESIGN	API 609
FACE-TO-FACE DIMENSIONS	API 609
END FLANGE DIMENSIONS	ASME B16.5 / B16.47 Series A
PRESSURE AND TEMPERATURE RATINGS BODY THICKNESS	ASME B16.34, API 609
TEST & INSPECTION	API 609, API 598
MATERIAL	ASTM Material Specifications as per ASME B16.34



Design Features

TRIPLE-OFFSET DISC ROTATION	FIRE SAFE DESIGN
ONE-PIECE SHAFT DESIGN	CRYOGENIC TYPE DESIGN (OPTION)
HARD FACED SEAT	SPECIAL FLANGS OR END CONNECTIONS
METAL-TO-METAL SEAT SEALING	ACTUATORS (PNEUMATIC, HYDRAULIC, ELECTRIC)
SHORT, LONG PATTERN DESIGN	

Product Range

ASME B16.5 / B16.47 Series A, Class 150, 300	3" ~ 60" (SHORT PATTERN)
ASME B16.5 / B16.47 Series A, Class 600	3" ~ 24" (SHORT PATTERN)
ASME B16.5 / B16.47 Series A, Class 150, 300, 600	3" ~ 36" (LONG PATTERN)

Materials (Applicable ASTM Specification)

Cabon Steel	A105, A216 WCB, A216 WCC
Low Temperature Cabon Steel	A350 LF2, A352 LCB, A352 LCC
Austenitic Stainless Steel	A182 F304, A182 F316, A351 CF8, A351 CF8M
Duplex Stainless Steel	A182 F51 (UNS S31803), A182 F53 (UNS S32750), A182 F55 (UNS S32760)
Nickel Alloys	Inconel 625 (UNS N06625), Monel 400 (UNS N04400)

Pressure Testing (Working & Test Pressure at Ambient Temperature)

CLASS	Working Pressure		Hydrostatic Shell Test		Hydrostatic Seat Test		Air Seat Test		Duration of Required Test Pressure (API 598 Standard)	
	bar	psi	bar	psi	bar	psi	bar	psi		
ASME 150	19	275	29	413	21	303	6	100	size (NPS) 2" ~ 6"	Test Time (sec) 60
ASME 300	50	720	75	1080	56	792	6	100	8" ~ 12"	120
ASME 600	99	1440	149	2160	109	1584	6	100	≥14	120

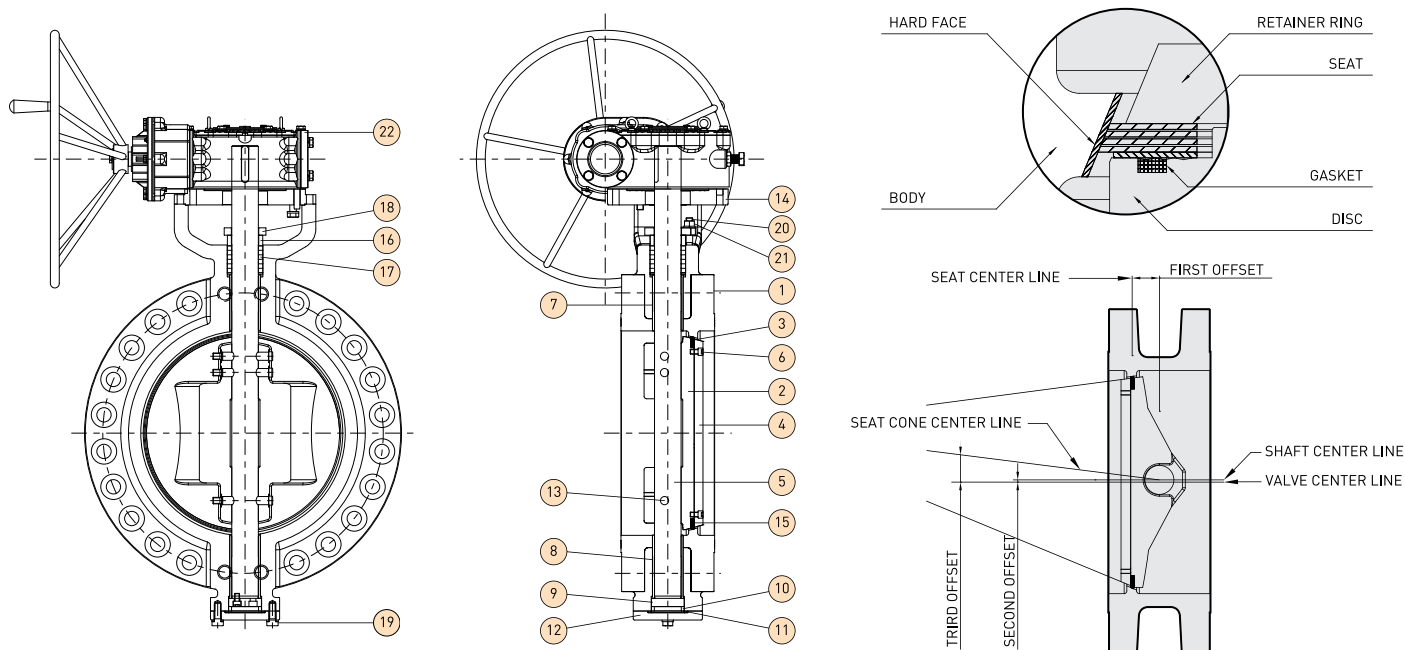
Double-Flanged Type

ASME Class 150, 300, 600

BUTTERFLY VALVES

TRIPLE-OFFSET

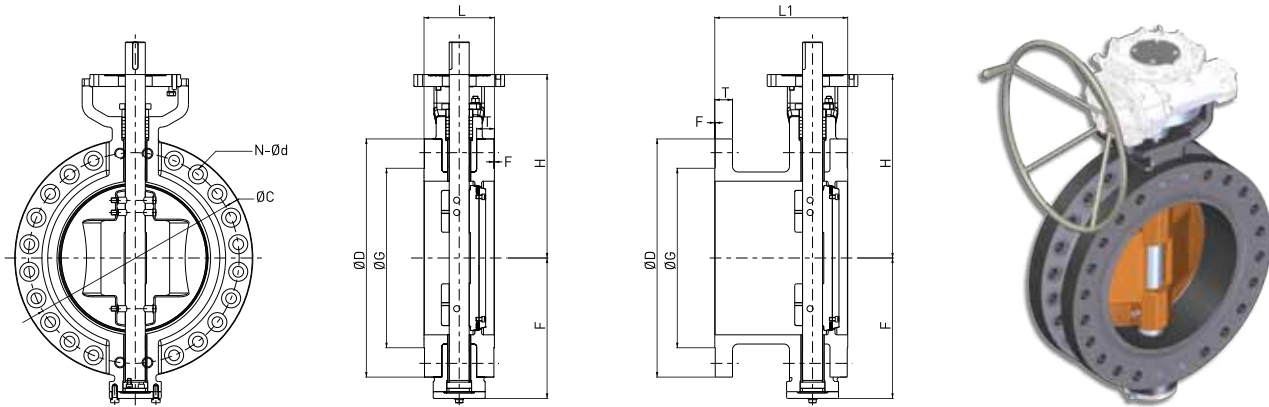
BFO-TDF Series



TRIPLE-OFFSET GEOMETRY

Parts List	No.	Parts Name	Standard Materials Specification		
			Carbon Steel	Austenitic Stainless Steel	Duplex Stainless Steel
	1	BODY	A216 WCB	A351 CF8M	A995 4A(S31803)
	2	DISC	A351 CF8	A351 CF8M	A995 4A(S31803)
	3	SEAT	SS316+GRAPHITE	SS316+GRAPHITE	DUPLEX + GRAPHITE
	4	SHAFT	A276 304A	A276 316	A182 F51
	5	RETAINER	240 304	A240 316	S31803
	6	SOCKET BOLT	A197 B8	A320 B8M	A320 B8M
	7	BUSING-TOP	A276 304	A276 316	A182 F51
	8	BUSING-BOTTOM	A276 304	A276 316	A182 F51
	9	THRUST BEARING	A276 304	A276 316	A182 F51
	10	COLLER	A276 304	A276 316	A182 F51
	11	GASKET-COVER	SS316+GRAPHITE	SS316+GRAPHITE	DUPLEX + GRAPHITE
	12	COVER	A36	A240 316	A182 F51
	13	DISC PIN	A276 304	A276 316	A182 F51
	14	FLANGE-TOP	A36	A240 316	A240 316
	15	GASKET-SEAT	SS316+GRAPHITE	SS316+GRAPHITE	DUPLEX + GRAPHITE
	16	GLAND BUSING	A276 304	A276 316	A182 F51
	17	PACKING	GRAPHITE	GRAPHITE	GRAPHITE
	18	PACKING GLAND	A276 304	A276 316	A240 316
	19	BOLT-COVER	A193 B8	A320 B8M	A193 B8M
	20	BOLT-GLAND	A193 B7	A320 B8M	A193 B8M
	21	NUT-GLAND	A194 2H	A320 8M	A194 8M
	22	GEAR BOX	-	-	-

BFO-TDF Series (Short, Long Pattern)



Dimensions and Weights	SIZE		CLASS	DIMENSIONS (mm)								Diameter of Bolt Circle (ΦC)	Number of Bolt (N)	Diameter of Bolt Holes (Φd)	Diameter of Bolt	Bolt Length	Approx Weight (kg)	
	DN	NPS		L	L1	F	H	ΦD	ΦG	T	F							
				(Short)	(Long)												Short	Long
80	3"		150	114	203	137	208	190	127	23.9	2	152.4	4	19	5/8"	105	32	
			300	180	282	139	208	210	127	28.4	2	168.3	8	23	3/4"	121	36	
			600	180	356	143	208	210	127	31.8	7	168.3	8	23	3/4"	127	43	
100	4"		150	127	229	155	213	230	157.2	23.9	2	190.5	8	19	5/8"	105	37	
			300	190	305	166	233	255	157.2	31.8	2	200	8	23	3/4"	127	46	
			600	190	432	182	275	275	157.2	38.1	7	215.9	8	26	7/8"	150	69	
150	6"		150	140	267	170	263	280	215.9	25.4	2	241.3	8	23	3/4"	115	48	
			300	210	403	203	293	320	215.9	36.6	2	269.9	12	23	3/4"	140	76	
			600	210	559	222	300	355	215.9	47.8	7	292.1	12	29	1"	175	135	
200	8"		150	152	292	210	308	345	269.7	28.4	2	298.5	8	23	3/4"	121	89	
			300	230	418	240	330	380	269.7	41.1	2	330.2	12	26	7/8"	155	93	
			600	230	660	248	350	420	269.7	55.6	7	349.2	12	32	1-1/8"	200	162	
250	10"		150	165	330	230	340	405	323.9	30.2	2	362	12	26	7/8"	127	112	
			300	250	457	264	375	445	323.9	47.8	2	387.4	16	29	1"	175	164	
			600	250	787	325	436	508	323.9	63.5	7	431.8	16	35	1-1/4"	220	268	
300	12"		150	178	356	280	394	483	381	31.8	2	431.8	12	26	7/8"	135	161	
			300	270	502	299	419	521	381	50.8	2	450.8	16	32	1-1/8"	185	222	
			600	270	838	348	455	559	381	66.5	7	489	20	35	1-1/4"	230	369	
350	14"		150	190	381	308	435	533	412.8	35.1	2	476.3	12	29	1"	150	228	
			300	290	762	349	485	584	412.8	53.8	2	514.4	20	32	1-1/8"	195	298	
			600	290	889	378	485	603	412.8	69.9	7	527	20	38	1-3/8"	235	364	
400	16"		150	216	406	345	480	597	469.9	36.6	2	539.8	16	29	1"	150	303	
			300	310	838	389	499	648	469.9	57.2	2	571.5	20	35	1-1/4"	210	357	
			600	310	991	425	515	686	469.9	76.2	7	603.2	20	42	1-1/2"	260	632	
450	18"		150	222	432	383	517	635	533.4	39.6	2	577.9	16	32	1-1/8"	160	364	
			300	330	914	430	530	711	533.4	60.5	2	628.6	24	35	1-1/4"	215	499	
			600	330	1092	458	552	743	533.4	82.6	7	654	20	45	1-5/8"	275	739	
500	20"		150	229	457	393	543	699	584.2	42.9	2	635	20	32	1-1/8"	175	499	
			300	350	991	471	597	775	584.2	63.5	2	685.8	24	35	1-1/4"	230	621	
			600	350	1194	500	658	813	584.2	88.9	7	723.9	24	45	1-5/8"	290	879	
600	24"		150	267	508	470	622	813	692.2	47.8	2	749.3	20	35	1-1/4"	185	699	
			300	390	1143	553	695	914	692.2	69.9	2	812.8	24	42	1-1/2"	260	910	
			600	390	1397	560	725	940	692.2	101.6	7	838.2	24	51	1-7/8"	335	1423	

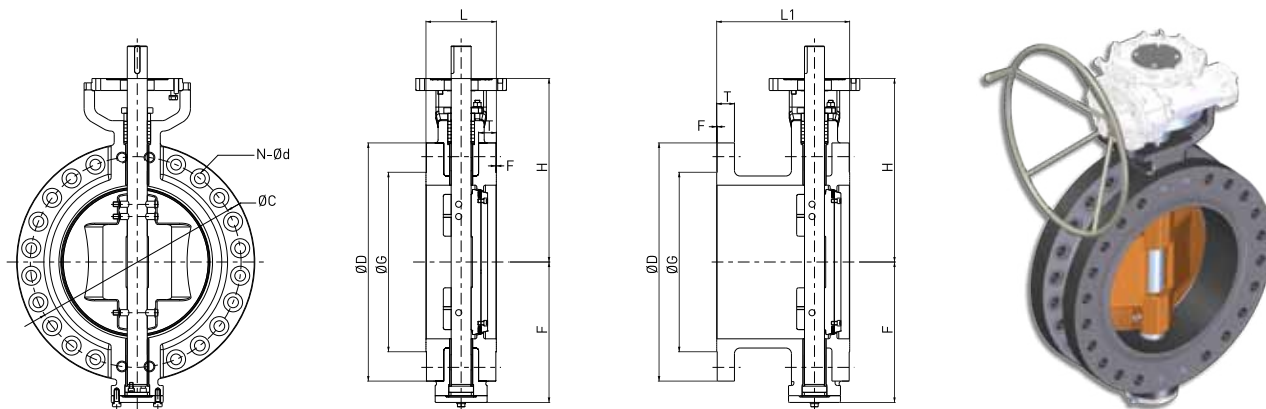
Double-Flanged Type

ASME B16.47 Series-A Class 150, 300, 600

BUTTERFLY VALVES

TRIPLE-OFFSET

BFO-TDF Series (Short, Long Pattern)



Dimensions and Weights	SIZE		CLASS	DIMENSIONS (mm)								Diameter of Bolt Circle (ΦC)	Number of Bolt (N)	Diameter of Bolt Holes (Φd)	Diameter of Bolt	Bolt Length	Approx Weight (kg)	
	DN	NPS		L	L1	F	H	ΦD	ΦG	T	F						Short	Long
				(Short)	(Long)													
650	26"		150	292	559	490	635	870	749	68.7	2	806.5	24	35	1-1/4"			
			300	410	1245			970	749	84.6	2	876.3	28	45	1-5/8"			
			600		1448			1015	749	132.5	7	914.4	28	51	1-7/8"			
700	28"		150	292	610	555	686	925	800	71.9	2	863.6	28	35	1-1/4"		860	
			300	430	1346			1035	800	90.9	2	939.8	28	45	1-5/8"		1417	
			600		1549			1075	800	137.8	7	965.2	28	54	2"			
750	30"		150	318	610	580	711	985	857	75.1	2	914.4	28	35	1-1/4"		1085	
			300	450	1397			1090	857	95.7	2	997	28	48	1-3/4"		1715	
			600		1651	705	815	1130	857	146.7	7	1022.4	28	54	2"			
800	32"		150	318	660	620	760	1060	914	81.4	2	977.9	28	42	1-1/2"		1241	
			300	470	1524			1150	914	100.5	2	1054.1	28	51	1-7/8"		1957	
			600		1778	725	870	1195	914	154.7	7	1079.5	28	61	2-1/4"			
850	34"		150	318		660	800	1110	965	83	2	1028.7	32	42	1-1/2"			
			300					1205	965	105.2	2	1104.9	28	51	1-7/8"			
			600					1245	965	161	7	1130.3	28	61	2-1/4"			
900	36"		150	330	711	676	845	1170	1022	90.9	2	1085.9	32	42	1-1/2"		1716	
			300	510	1727			1270	1022	111.6	2	1168.4	32	54	2"		2590	
			600		2083			1315	1022	169	7	1193.8	28	67	2-1/2"			
950	38"		150	410		712	870	1240	1073	87.8	2	1149.4	32	42	1-1/2"			
			300	530				1170	1029	108.4	2	1092.2	32	42	1-1/2"			
			600					1270	1054	162	7	1162	28	61	2-1/4"			
1000	40"		150	410		757	915	1290	1124	90.9	2	1200.2	36	42	1-1/2"		2208	
			300	550				1240	1086	114.8	2	1155.7	32	45	1-5/8"		2585	
			600					1320	1111	169	7	1212.9	32	61	2-1/4"			
1050	42"		150	410		784	920	1345	1194	97.3	2	1257.3	36	42	1-1/2"		2488	
			300	570				1290	1137	119.5	2	1206.5	32	45	1-5/8"		2849	
			600					1405	1168	178.5	7	1282.7	28	67	2-1/2"			
1100	44"		150	470		824	975	1405	1245	102.1	2	1314.5	40	42	1-1/2"			
			300					1355	1194	124.3	2	1263.7	32	48	1-3/4"			
			600					1455	1226	184.8	7	1333.5	32	67	2-1/2"			
1200	48"		150	470		862	1052	1510	1359	108.4	2	1422.4	44	42	1-1/2"		3440	
			300	630				1465	1302	133.8	2	1371.6	32	51	1-7/8"		4106	
			600					1595	1334	202.3	7	1460.5	32	74	2-3/4"			

* Please contact the sales office.

BUTTERFLY VALVES

TRIPLE-OFFSET

Lug Type

ASME Class 150, 300, 600

Standard Specification

STANDARD DESIGN	API 609
FACE-TO-FACE DIMENSIONS	API 609
END FLANGE DIMENSIONS	ASME B16.5 / B16.47 Series A
PRESSURE AND TEMPERATURE RATINGS	ASME B16.34, API 609
BODY THICKNESS	
TEST & INSPECTION	API 609, API 598
MATERIAL	ASTM Material Specifications as per ASME B16.34



Design Features

TRIPLE-OFFSET DISC ROTATION	FIRE SAFE DESIGN
ONE-PIECE SHAFT DESIGN	CRYOGENIC TYPE DESIGN (OPTION)
HARD FACED SEAT	SPECIAL FLANGS OR END CONNECTIONS
METAL-TO-METAL SEAT SEALING	ACTUATORS (PNEUMATIC, HYDRAULIC, ELECTRIC)

Product Range

ASME B16.5 / B16.47 Series A, Class 150	3" ~ 48"
ASME B16.5 / B16.47 Series A, Class 300	3" ~ 36"
ASME B16.5 / B16.47 Series A, Class 600	3" ~ 24"

Materials (Applicable ASTM Specification)

Carbon Steel	A105, A216 WCB, A216 WCC
Low Temperature Carbon Steel	A350 LF2, A352 LCB, A352 LCC
Austenitic Stainless Steel	A182 F304, A182 F316, A351 CF8, A351 CF8M
Duplex Stainless Steel	A182 F51 (UNS S31803), A182 F53 (UNS S32750), A182 F55 (UNS S32760)
Nickel Alloys	Inconel 625 (UNS N06625), Monel 400 (UNS N04400)

Pressure Testing (Working & Test Pressure at Ambient Temperature)

CLASS	Working Pressure		Hydrostatic Shell Test		Hydrostatic Seat Test		Air Seat Test		Duration of Required Test Pressure (API 598 Standard)	
	bar	psi	bar	psi	bar	psi	bar	psi		
ASME 150	19	275	29	413	21	303	6	100	size (NPS) 2" ~ 6"	Test Time (sec) 60
ASME 300	50	720	75	1080	56	792	6	100	8" ~ 12"	120
ASME 600	99	1440	149	2160	109	1584	6	100	≥14	120

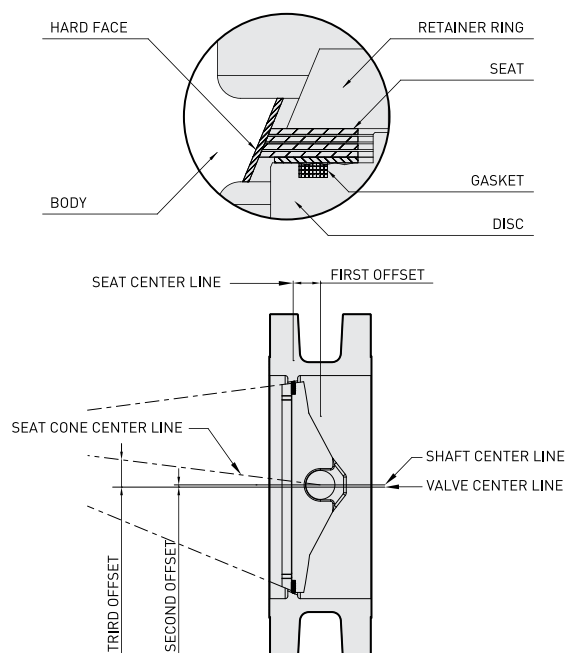
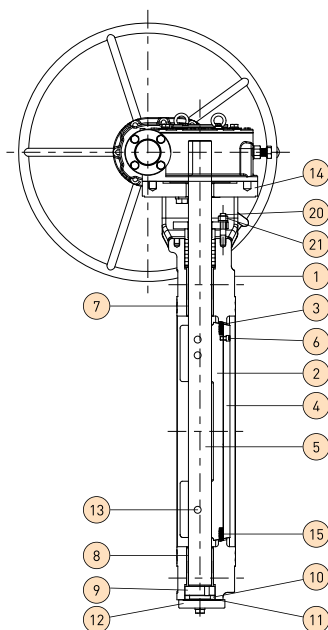
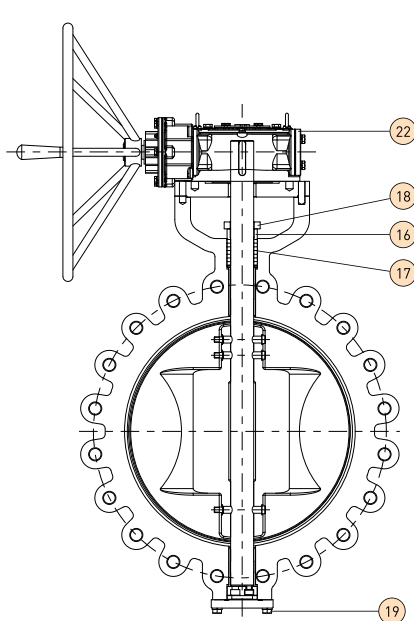
Lug Type

ASME Class 150, 300, 600

BUTTERFLY VALVES

TRIPLE-OFFSET

BFO-TLF Series



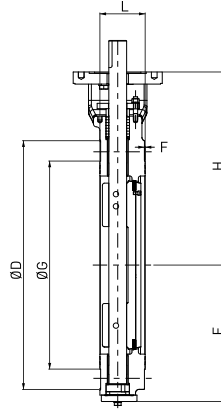
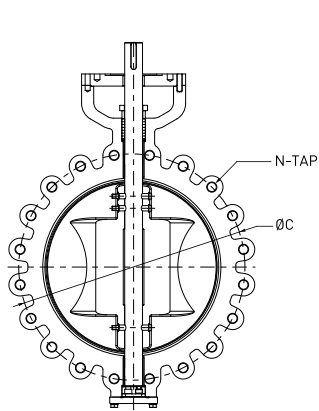
TRIPLE-OFFSET GEOMETRY

Parts List	No.	Parts Name	Standard Materials Specification		
			Carbon Steel	Austenitic Stainless Steel	Duplex Stainless Steel
	1	BODY	A216 WCB	A351 CF8M	A995 4A(S31803)
	2	DISC	A351 CF8	A351 CF8M	A995 4A(S31803)
	3	SEAT	SS316+GRAPHITE	SS316+GRAPHITE	DUPLEX + GRAPHITE
	4	SHAFT	A276 304	A276 316	A182 F51
	5	RETAINER	A240 304	A240 316	S31803
	6	SOCKET BOLT	A197 B8	A320 B8M	A320 B8M
	7	BUSING-TOP	A276 304	A276 316	A182 F51
	8	BUSING-BOTTOM	A276 304	A276 316	A182 F51
	9	THRUST BEARING	A276 304	A276 316	A182 F51
	10	COLLER	A276 304	A276 316	A182 F51
	11	GASKET-COVER	SS316+GRAPHITE	SS316+GRAPHITE	DUPLEX + GRAPHITE
	12	COVER	A36	A240 316	A182 F51
	13	DISC PIN	A276 304	A276 316	A182 F51
	14	FLANGE-TOP	A36	A240 316	A240 316
	15	GASKET-SEAT	SS316+GRAPHITE	SS316+GRAPHITE	DUPLEX + GRAPHITE
	16	GLAND BUSING	A276 304	A276 316	A182 F51
	17	PACKING	GRAPHITE	GRAPHITE	GRAPHITE
	18	PACKING GLAND	A276 304	A276 316	A240 316
	19	BOLT-COVER	A193 B8	A320 B8M	A193 B8M
	20	BOLT-GLAND	A193 B7	A320 B8M	A193 B8M
	21	NUT-GLAND	A194 2H	A320 8M	A194 8M
	22	GEAR BOX	-	-	-

BUTTERFLY VALVES TRIPLE-OFFSET

Lug Type ASME B16.5 Class 150, 300, 600

BFO-TLF Series



Dimensions and Weights	SIZE		CLASS	DIMENSIONS (mm)							Diameter of Bolt Circle (ΦC)	Number of Bolt (N)	Diameter of Bolt Holes (Φd)	Diameter of Bolt	Bolt Length	Approx Weight (kg)
	DN	NPS		L	F	H	ΦD	ΦG	T	F						
80	3"		150	48	137	208	190	127		2	152.4	4	19	5/8"	105	
			300	48	139	208	210	127		2	168.3	8	23	3/4"	121	
			600	54	143	208	210	127		7	168.3	8	23	3/4"	127	
100	4"		150	54	155	213	230	157.2		2	190.5	8	19	5/8"	105	
			300	54	166	233	255	157.2		2	200	8	23	3/4"	127	
			600	64	182	275	275	157.2		7	215.9	8	26	7/8"	150	
150	6"		150	57	170	263	280	215.9		2	241.3	8	23	3/4"	115	
			300	59	203	293	320	215.9		2	269.9	12	23	3/4"	140	
			600	78	222	300	355	215.9		7	292.1	12	29	1"	175	
200	8"		150	64	210	308	345	269.7		2	298.5	8	23	3/4"	121	
			300	73	240	330	380	269.7		2	330.2	12	26	7/8"	155	
			600	102	248	350	420	269.7		7	349.2	12	32	1-1/8"	200	
250	10"		150	71	230	340	405	323.9		2	362	12	26	7/8"	127	
			300	83	264	375	445	323.9		2	387.4	16	29	1"	175	
			600	117	325	436	508	323.9		7	431.8	16	35	1-1/4"	220	
300	12"		150	81	280	394	483	381		2	431.8	12	26	7/8"	135	
			300	92	299	419	521	381		2	450.8	16	32	1-1/8"	185	
			600	140	348	455	559	381		7	489	20	35	1-1/4"	230	
350	14"		150	92	308	435	533	412.8		2	476.3	12	29	1"	150	
			300	117	349	485	584	412.8		2	514.4	20	32	1-1/8"	195	
			600	155	378	485	603	412.8		7	527	20	38	1-3/8"	235	
400	16"		150	102	345	480	597	469.9		2	539.8	16	29	1"	150	
			300	133	389	499	648	469.9		2	571.5	20	35	1-1/4"	210	
			600	178	425	515	686	469.9		7	603.2	20	42	1-1/2"	260	
450	18"		150	114	383	517	635	533.4		2	577.9	16	32	1-1/8"	160	
			300	149	430	530	711	533.4		2	628.6	24	35	1-1/4"	215	
			600	200	458	552	743	533.4		7	654	20	45	1-5/8"	275	
500	20"		150	127	393	543	699	584.2		2	635	20	32	1-1/8"	175	
			300	159	471	597	775	584.2		2	685.8	24	35	1-1/4"	230	
			600	216	500	658	813	584.2		7	723.9	24	45	1-5/8"	290	
600	24"		150	154	470	622	813	692.2		2	749.3	20	35	1-1/4"	185	
			300	181	553	695	914	692.2		2	812.8	24	42	1-1/2"	260	
			600	232	560	725	940	692.2		7	838.2	24	51	1-7/8"	335	

Lug Type

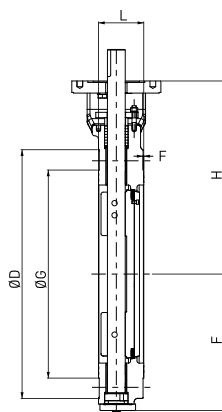
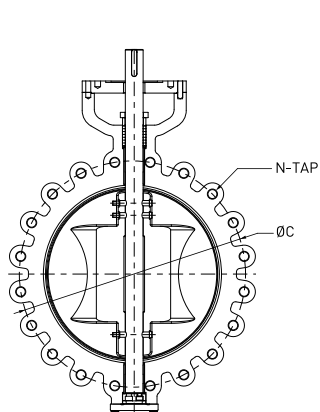
ASME B16.47 Series-A Class 150, 300, 600

BUTTERFLY VALVES

TRIPLE-OFFSET

Lug Type

BFO-TLF Series



Dimensions and Weights	SIZE		CLASS	DIMENSIONS (mm)						Diameter of Bolt Circle (ΦC)	Number of Bolt (N)	Diameter of Bolt Holes (Φd)	Diameter of Bolt	Bolt Length	Approx Weight (kg)
	DN	NPS		L	F	H	ΦD	ΦG	T						
650	26"	150	165	490	635	870	749		2	806.5	24	35	1-1/4"		
		300	209	640	800	970	749		2	876.3	28	45	1-5/8"		
		600				1015	749		7	914.4	28	51	1-7/8"		
700	28"	150	165	555	686	925	800		2	863.6	28	35	1-1/4"		
		300	209	660	810	1035	800		2	939.8	28	45	1-5/8"		
		600				1075	800		7	965.2	28	54	2"		
750	30"	150	165	580	711	985	857		2	914.4	28	35	1-1/4"		
		300	241	690	825	1090	857		2	997	28	48	1-3/4"		
		600		705	815	1130	857		7	1022.4	28	54	2"		
800	32"	150	190	620	760	1060	914		2	977.9	28	42	1-1/2"		
		300	241	720	860	1150	914		2	1054.1	28	51	1-7/8"		
		600		725	870	1195	914		7	1079.5	28	61	2-1/4"		
850	34"	150	190	660	800	1110	965		2	1028.7	32	42	1-1/2"		
		300	241	740	920	1205	965		2	1104.9	28	51	1-7/8"		
		600				1245	965		7	1130.3	28	61	2-1/4"		
900	36"	150	200	676	845	1170	1022		2	1085.9	32	42	1-1/2"		
		300	300	750	930	1270	1022		2	1168.4	32	54	2"		
		600				1315	1022		7	1193.8	28	67	2-1/2"		
950	38"	150	200	712	870	1240	1073		2	1149.4	32	42	1-1/2"		
		300				1170	1029		2	1092.2	32	42	1-1/2"		
		600				1270	1054		7	1162	28	61	2-1/4"		
1000	40"	150	216	757	915	1290	1124		2	1200.2	36	42	1-1/2"		
		300				1240	1086		2	1155.7	32	45	1-5/8"		
		600				1320	1111		7	1212.9	32	61	2-1/4"		
1050	42"	150	251	784	920	1345	1194		2	1257.3	36	42	1-1/2"		
		300				1290	1137		2	1206.5	32	45	1-5/8"		
		600				1405	1168		7	1282.7	28	67	2-1/2"		
1100	44"	150	251	824	975	1405	1245		2	1314.5	40	42	1-1/2"		
		300				1355	1194		2	1263.7	32	48	1-3/4"		
		600				1455	1226		7	1333.5	32	67	2-1/2"		
1200	48"	150	276	862	1052	1510	1359		2	1422.4	44	42	1-1/2"		
		300				1465	1302		2	1371.6	32	51	1-7/8"		
		600				1595	1334		7	1460.5	32	74	2-3/4"		

* Please contact the sales office.

BUTTERFLY VALVES

TRIPLE-OFFSET

Wafer Type

ASME Class 150, 300, 600

Standard Specification

STANDARD DESIGN	API 609
FACE-TO-FACE DIMENSIONS	API 609
END FLANGE DIMENSIONS	ASME B16.5 / B16.47 Series A
PRESSURE AND TEMPERATURE RATINGS	ASME B16.34, API 609
BODY THICKNESS	
TEST & INSPECTION	API 609, API 598
MATERIAL	ASTM Material Specifications as per ASME B16.34



Design Features

TRIPLE-OFFSET DISC ROTATION	FIRE SAFE DESIGN
ONE-PIECE SHAFT DESIGN	CRYOGENIC TYPE DESIGN (OPTION)
HARD FACED SEAT	SPECIAL FLANGS OR END CONNECTIONS
METAL-TO-METAL SEAT SEALING	ACTUATORS (PNEUMATIC, HYDRAULIC, ELECTRIC)

Product Range

ASME B16.5 / B16.47 Series A, Class 150	3" ~ 48"
ASME B16.5 / B16.47 Series A, Class 300	3" ~ 36"
ASME B16.5 / B16.47 Series A, Class 600	3" ~ 24"

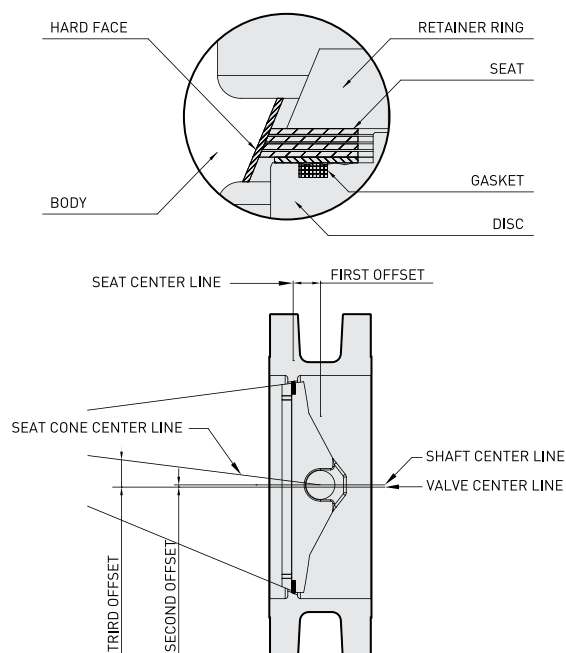
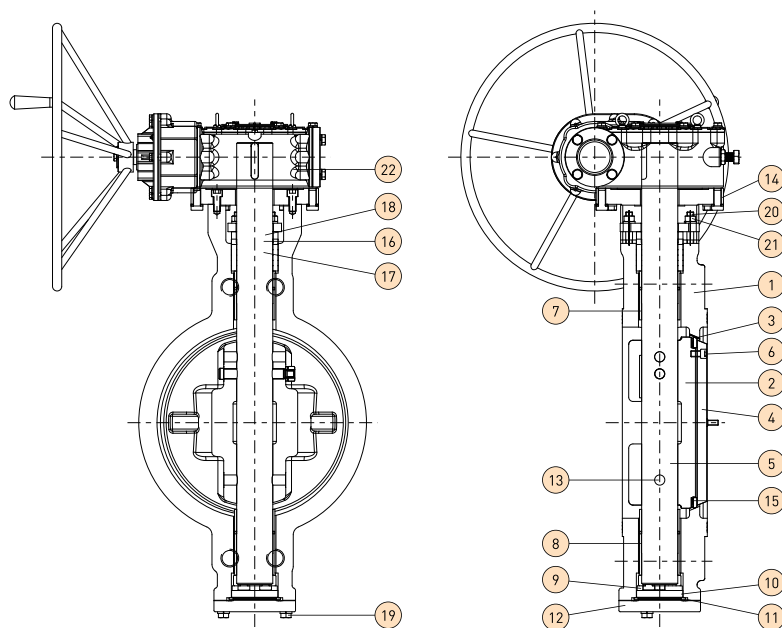
Materials (Applicable ASTM Specification)

Cabon Steel	A105, A216 WCB, A216 WCC
Low Temperature Cabon Steel	A350 LF2, A352 LCB, A352 LCC
Austenitic Stainless Steel	A182 F304, A182 F316, A351 CF8, A351 CF8M
Duplex Stainless Steel	A182 F51 (UNS S31803), A182 F53 (UNS S32750), A182 F55 (UNS S32760)
Nickel Alloys	Inconel 625 (UNS N06625), Monel 400 (UNS N04400)

Pressure Testing (Working & Test Pressure at Ambient Temperature)

CLASS	Working Pressure		Hydrostatic Shell Test		Hydrostatic Seat Test		Air Seat Test		Duration of Required Test Pressure (API 598 Standard)	
	bar	psi	bar	psi	bar	psi	bar	psi	size (NPS)	Test Time (sec)
ASME 150	19	275	29	413	21	303	6	100	2" ~ 6"	60
ASME 300	50	720	75	1080	56	792	6	100	8" ~ 12"	120
ASME 600	99	1440	149	2160	109	1584	6	100	≥14	120

BFO-TWF Series



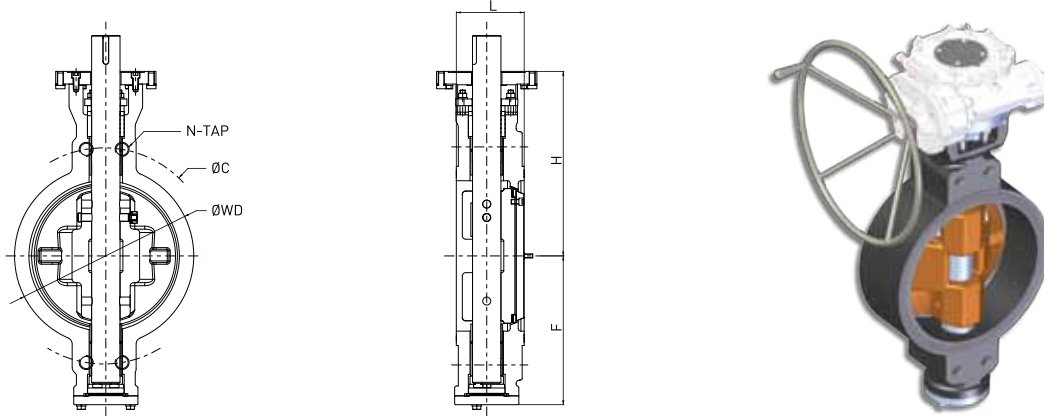
TRIPLE-OFFSET GEOMETRY

Parts List	No.	Parts Name	Standard Materials Specification		
			Carbon Steel	Austenitic Stainless Steel	Duplex Stainless Steel
	1	BODY	A216 WCB	A351 CF8M	A995 4A(S31803)
	2	DISC	A351 CF8	A351 CF8M	A995 4A(S31803)
	3	SEAT	SS316+GRAPHITE	SS316+GRAPHITE	DUPLEX + GRAPHITE
	4	SHAFT	A276 304	A276 316	A182 F51
	5	RETAINER	A240 304	A240 316	S31803
	6	SOCKET BOLT	A197 B8	A320 B8M	A320 B8M
	7	BUSING-TOP	A276 304	A276 316	A182 F51
	8	BUSING-BOTTOM	A276 304	A276 316	A182 F51
	9	THRUST BEARING	A276 304	A276 316	A182 F51
	10	COLLER	A276 304	A276 316	A182 F51
	11	GASKET-COVER	SS316+GRAPHITE	SS316+GRAPHITE	DUPLEX + GRAPHITE
	12	COVER	A36	A240 316	A182 F51
	13	DISC PIN	A276 304	A276 316	A182 F51
	14	FLANGE-TOP	A36	A240 316	A240 316
	15	GASKET-SEAT	SS316+GRAPHITE	SS316+GRAPHITE	DUPLEX + GRAPHITE
	16	GLAND BUSING	A276 304	A276 316	A182 F51
	17	PACKING	GRAPHITE	GRAPHITE	GRAPHITE
	18	PACKING GLAND	A276 304	A276 316	A240 316
	19	BOLT-COVER	A193 B8	A320 B8M	A193 B8M
	20	BOLT-GLAND	A193 B7	A320 B8M	A193 B8M
	21	NUT-GLAND	A194 2H	A320 8M	A194 8M
	22	GEAR BOX	-	-	-

BUTTERFLY VALVES TRIPLE-OFFSET

Wafer Type ASME B16.5 Class 150, 300, 600

BFO-TWF Series



Dimensions and Weights	SIZE		CLASS	DIMENSIONS (mm)						Diameter of Bolt Circle (ΦC)	Number of Bolt (N)	Diameter of Bolt Holes (Φd)	Diameter of Bolt	Bolt Length	Approx Weight (kg)
	DN	NPS		L	F	H	ΦWD	ΦG	T	F					
80	3"	150	48	137	208						152.4	4	19	5/8"	
		300	48	139	208						168.3	4	23	3/4"	
		600	54	143	208						168.3	4	23	3/4"	
100	4"	150	54	155	213						190.5	4	19	5/8"	
		300	54	166	233						200	4	23	3/4"	
		600	64	182	275						215.9	4	26	7/8"	
150	6"	150	57	170	263						241.3	4	23	3/4"	
		300	59	203	293						269.9	4	23	3/4"	
		600	78	222	300						292.1	4	29	1"	
200	8"	150	64	210	308						298.5	4	23	3/4"	
		300	73	240	330						330.2	4	26	7/8"	
		600	102	248	350						349.2	4	32	1-1/8"	
250	10"	150	71	230	340						362	4	26	7/8"	
		300	83	264	375						387.4	4	29	1"	
		600	117	325	436						431.8	4	35	1-1/4"	
300	12"	150	81	280	394						431.8	4	26	7/8"	
		300	92	299	419						450.8	4	32	1-1/8"	
		600	140	348	455						489	4	35	1-1/4"	
350	14"	150	92	308	435						476.3	4	29	1"	
		300	117	349	485						514.4	4	32	1-1/8"	
		600	155	378	485						527	4	38	1-3/8"	
400	16"	150	102	345	480						539.8	4	29	1"	
		300	133	389	499						571.5	4	35	1-1/4"	
		600	178	425	515						603.2	4	42	1-1/2"	
450	18"	150	114	383	517						577.9	4	32	1-1/8"	
		300	149	430	530						628.6	4	35	1-1/4"	
		600	200	458	552						654	4	45	1-5/8"	
500	20"	150	127	393	543						635	4	32	1-1/8"	
		300	159	471	597						685.8	4	35	1-1/4"	
		600	216	500	658						723.9	4	45	1-5/8"	
600	24"	150	154	470	622						749.3	4	35	1-1/4"	
		300	181	553	695						812.8	4	42	1-1/2"	
		600	232	560	725						838.2	4	51	1-7/8"	

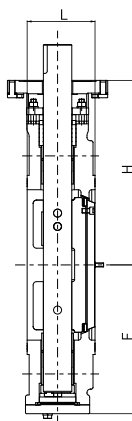
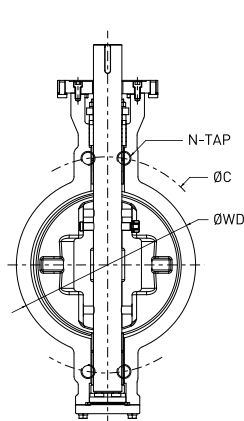
Wafer Type

ASME B16.47 Series-A Class 150, 300, 600

BUTTERFLY VALVES

TRIPLE-OFFSET

BFO-TWF Series



Dimensions and Weights	SIZE		CLASS	DIMENSIONS (mm)						Diameter of Bolt Circle (ΦC)	Number of Bolt (N)	Diameter of Bolt Holes (Φd)	Diameter of Bolt	Bolt Length	Approx Weight (kg)
	DN	NPS		L	F	H	ΦWD	ΦG	T	F					
650	26"	150	165	490	635						806.5	4	35	1-1/4"	
		300	209	640	800						876.3	4	45	1-5/8"	
		600									914.4	4	51	1-7/8"	
700	28"	150	165	555	686						863.6	4	35	1-1/4"	
		300	209	660	810						939.8	4	45	1-5/8"	
		600									965.2	4	54	2"	
750	30"	150	165	580	711						914.4	4	35	1-1/4"	
		300	241	690	825						997	4	48	1-3/4"	
		600		705	815						1022.4	4	54	2"	
800	32"	150	190	620	760						977.9	4	42	1-1/2"	
		300	241	690	825						1054.1	4	51	1-7/8"	
		600		725	870						1079.5	4	61	2-1/4"	
850	34"	150	190	660	800						1028.7	4	42	1-1/2"	
		300	241	740	920						1104.9	4	51	1-7/8"	
		600									1130.3	4	61	2-1/4"	
900	36"	150	200	676	845						1085.9	4	42	1-1/2"	
		300	300	750	930						1168.4	4	54	2"	
		600									1193.8	4	67	2-1/2"	
950	38"	150	200	712	870						1149.4	4	42	1-1/2"	
		300									1092.2	4	42	1-1/2"	
		600									1162	4	61	2-1/4"	
1000	40"	150	216	757	915						1200.2	4	42	1-1/2"	
		300									1155.7	4	45	1-5/8"	
		600									1212.9	4	61	2-1/4"	
1050	42"	150	251	784	920						1257.3	4	42	1-1/2"	
		300									1206.5	4	45	1-5/8"	
		600									1282.7	4	67	2-1/2"	
1100	44"	150	251	824	975						1314.5	4	42	1-1/2"	
		300									1263.7	4	48	1-3/4"	
		600									1333.5	4	67	2-1/2"	
1200	48"	150	276	862	1052						1422.4	4	42	1-1/2"	
		300									1371.6	4	51	1-7/8"	
		600									1460.5	4	74	2-3/4"	

* Please contact the sales office.

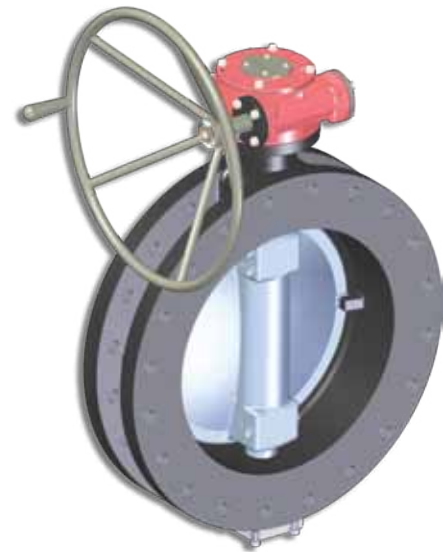
BUTTERFLY VALVES DOUBLE-OFFSET

Double-Flanged Type

ASME Class 150, 300

Standard Specification

STANDARD DESIGN	API 609
FACE-TO-FACE DIMENSIONS	API 609
END FLANGE DIMENSIONS	ASME B16.5 / B16.47 Series A
PRESSURE AND TEMPERATURE RATINGS BODY THICKNESS	ASME B16.34, API 609
TEST & INSPECTION	API 609, API 598
MATERIAL	ASTM Material Specifications as per ASME B16.34



Design Features

DOUBLE-OFFSET DISC ROTATION	SHORT, LONG PATTERN DESIGN
ONE-PIECE SHAFT DESIGN	SPECIAL FLANGS OR END CONNECTIONS
HARD FACED SEAT (OPTION)	ACTUATORS (PNEUMATIC, HYDRAULIC, ELECTRIC)
TEFLON, METAL-TO-METAL SEAT SEALING (OPTION)	

Product Range

ASME B16.5 / B16.47 Series A, Class 150, 300	3" ~ 60" (SHORT PATTERN)
ASME B16.5 / B16.47 Series A, Class 150, 300	3" ~ 36" (LONG PATTERN)

Materials (Applicable ASTM Specification)

Cabon Steel	A105, A216 WCB, A216 WCC
Low Temperature Cabon Steel	A350 LF2, A352 LCB, A352 LCC
Austenitic Stainless Steel	A182 F304, A182 F316, A351 CF8, A351 CF8M
Duplex Stainless Steel	A182 F51 (UNS S31803), A182 F53 (UNS S32750), A182 F55 (UNS S32760)
Nickel Alloys	Inconel 625 (UNS N06625), Monel 400 (UNS N04400)

Pressure Testing (Working & Test Pressure at Ambient Temperature)

CLASS	Working Pressure		Hydrostatic Shell Test		Hydrostatic Seat Test		Air Seat Test		Duration of Required Test Pressure (API 598 Standard)	
	bar	psi	bar	psi	bar	psi	bar	psi		
ASME 150	19	275	29	413	21	303	6	100	size (NPS) 2" ~ 6"	Test Time (sec) 60
ASME 300	50	72	75	1080	56	792	6	100	8" ~ 12"	120
									≥14	120

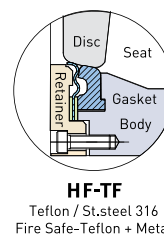
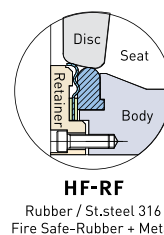
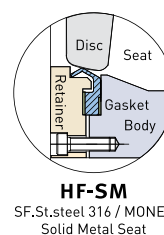
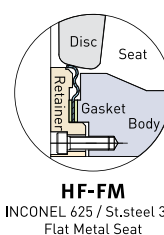
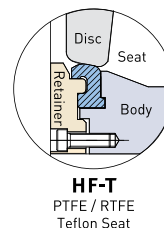
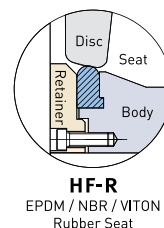
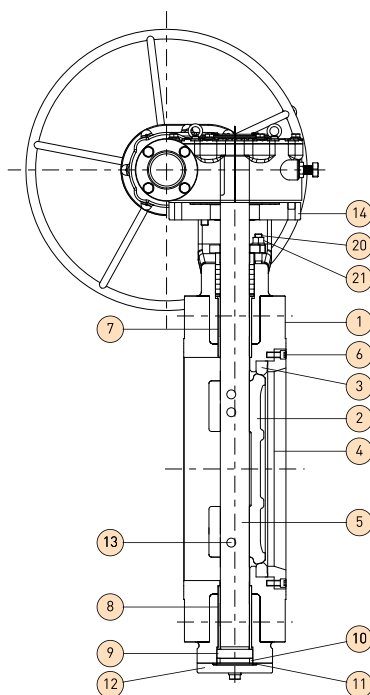
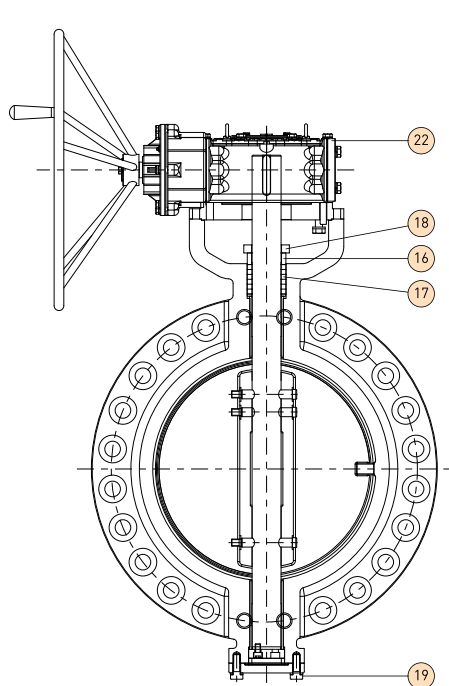
Double-Flanged Type

ASME Class 150, 300

BUTTERFLY VALVES

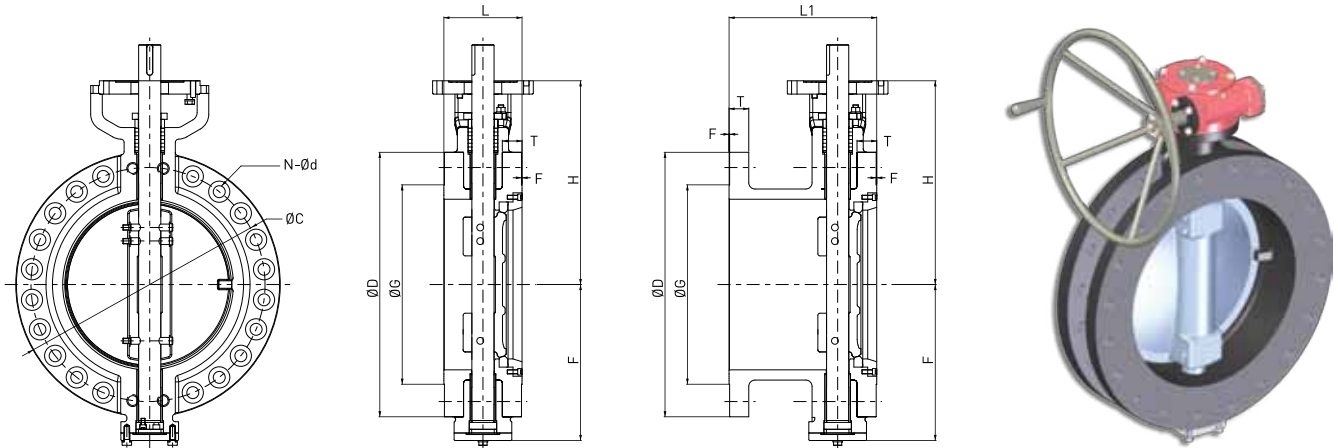
DOUBLE-OFFSET

BFO-DDF Series



Parts List	No.	Parts Name	Standard Materials Specification		
			Carbon Steel	Austenitic Stainless Steel	Duplex Stainless Steel
	1	BODY	A216 WCB	A351 CF8M	A995 4A(S31803)
	2	DISC	A351 CF8	A351 CF8M	A995 4A(S31803)
	3	SEAT	SS316+GRAPHITE	SS316+GRAPHITE	DUPLEX + GRAPHITE
	4	SHAFT	A276 304	A276 316	A182 F51
	5	RETAINER	A240 304	A240 316	S31803
	6	SOCKET BOLT	A197 B8	A320 B8M	A320 B8M
	7	BUSING-TOP	A276 304	A276 316	A182 F51
	8	BUSING-BOTTOM	A276 304	A276 316	A182 F51
	9	THRUST BEARING	A276 304	A276 316	A182 F51
	10	COLLER	A276 304	A276 316	A182 F51
	11	GASKET-COVER	SS316+GRAPHITE	SS316+GRAPHITE	DUPLEX + GRAPHITE
	12	COVER	A36	A240 316	A182 F51
	13	DISC PIN	A276 304	A276 316	A182 F51
	14	FLANGE-TOP	A36	A240 316	A240 316
	15	GASKET-SEAT	-	-	-
	16	GLAND BUSING	A276 304	A276 316	A182 F51
	17	PACKING	GRAPHITE	GRAPHITE	GRAPHITE
	18	PACKING GLAND	A276 304	A276 316	A240 316
	19	BOLT-COVER	A193 B8	A320 B8M	A193 B8M
	20	BOLT-GLAND	A193 B7	A320 B8M	A193 B8M
	21	NUT-GLAND	A194 2H	A320 8M	A194 8M
	22	GEAR BOX	-	-	-

BFO-DDF Series (Short, Long Pattern)



Dimensions and Weights	SIZE		CLASS	DIMENSIONS (mm)								Diameter of Bolt Circle (ϕC)	Number of Bolt (N)	Diameter of Bolt Holes (ϕd)	Diameter of Bolt	Bolt Length	Approx Weight (kg)	
	DN	NPS		L (Short)	L1 (Long)	F	H	ϕD	ϕG	T	F						Short	Long
80	3"	150	114	203	137	208	190	127	23.9	2	152.4	4	19	5/8"	105	32		
		300	180	282	139	208	210	127	28.4	2	168.3	8	23	3/4"	121	36		
100	4"	150	127	229	155	213	230	157.2	23.9	2	190.5	8	19	5/8"	105	37		
		300	190	305	166	233	255	157.2	31.8	2	200	8	23	3/4"	127	46		
150	6"	150	140	267	170	263	280	215.9	25.4	2	241.3	8	23	3/4"	115	48		
		300	210	403	203	293	320	215.9	36.6	2	269.9	12	23	3/4"	140	76		
200	8"	150	152	292	210	308	345	269.7	28.4	2	298.5	8	23	3/4"	121	89		
		300	230	418	240	330	380	269.7	41.1	2	330.2	12	26	7/8"	155	93		
250	10"	150	165	330	230	340	405	323.9	30.2	2	362	12	26	7/8"	127	112		
		300	250	457	264	375	445	323.9	47.8	2	387.4	16	29	1"	175	164		
300	12"	150	178	356	280	394	483	381	31.8	2	431.8	12	26	7/8"	135	161		
		300	270	502	299	419	521	381	50.8	2	450.8	16	32	1-1/8"	185	222		
350	14"	150	190	381	308	435	533	412.8	35.1	2	476.3	12	29	1"	150	228		
		300	290	762	349	485	584	412.8	53.8	2	514.4	20	32	1-1/8"	195	298		
400	16"	150	216	406	345	480	597	469.9	36.6	2	539.8	16	29	1"	150	303		
		300	310	838	389	499	648	469.9	57.2	2	571.5	20	35	1-1/4"	210	357		
450	18"	150	222	432	383	517	635	533.4	39.6	2	577.9	16	32	1-1/8"	160	364		
		300	330	914	430	530	711	533.4	60.5	2	628.6	24	35	1-1/4"	215	499		
500	20"	150	229	457	393	543	699	584.2	42.9	2	635	20	32	1-1/8"	175	499		
		300	350	991	471	597	775	584.2	63.5	2	685.8	24	35	1-1/4"	230	621		
600	24"	150	267	508	470	622	813	692.2	47.8	2	749.3	20	35	1-1/4"	185	699		
		300	390	1143	553	695	914	692.2	69.9	2	812.8	24	42	1-1/2"	260	910		

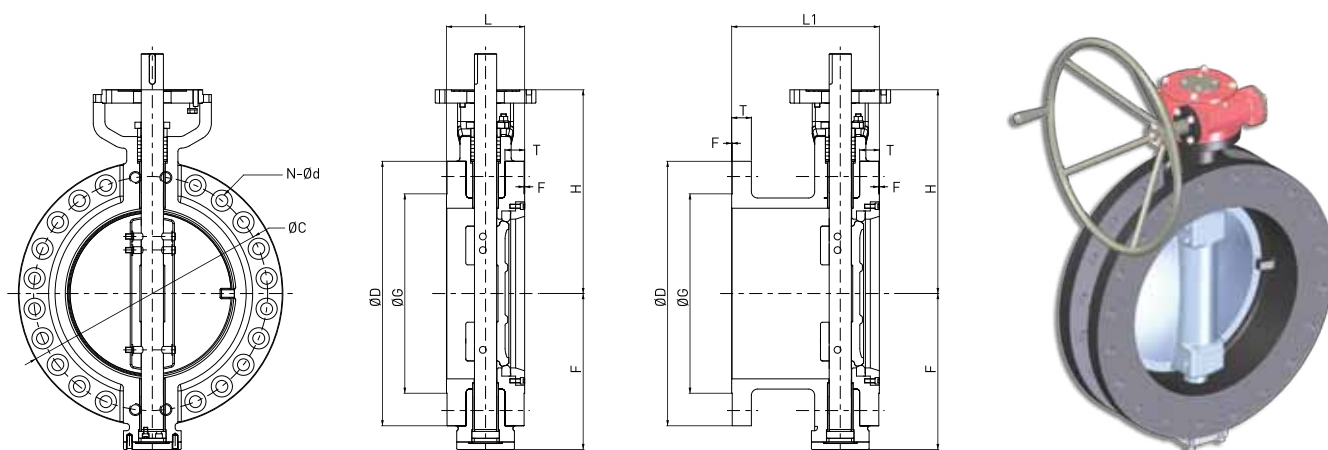
Double-Flanged Type

ASME B16.47 Series-A 150, 300

BUTTERFLY VALVES

DOUBLE-OFFSET

BFO-DDF Series (Short, Long Pattern)



Dimensions and Weights	SIZE		CLASS	DIMENSIONS (mm)								Diameter of Bolt Circle (ØC)	Number of Bolt (N)	Diameter of Bolt Holes (Ød)	Diameter of Bolt	Bolt Length	Approx Weight (kg)	
	DN	NPS		L	L1	F	H	ØD	ØG	T	F						Short	Long
				(Short)	(Long)													
650	26"		150	292	559	490	635	870	749	68.7	2	806.5	24	35	1-1/4"			
			300	410	1245			970	749	84.6	2	876.3	28	45	1-5/8"			
700	28"		150	292	610	555	686	925	800	71.9	2	863.6	28	35	1-1/4"		860	
			300	430	1346			1035	800	90.9	2	939.8	28	45	1-5/8"		1417	
750	30"		150	318	610	580	711	985	857	75.1	2	914.4	28	35	1-1/4"		1085	
			300	450	1397			1090	857	95.7	2	997	28	48	1-3/4"		1715	
800	32"		150	318	660	620	760	1060	914	81.4	2	977.9	28	42	1-1/2"		1241	
			300	470	1524			1150	914	100.5	2	1054.1	28	51	1-7/8"		1957	
850	34"		150	318		660	800	1110	965	83	2	1028.7	32	42	1-1/2"			
			300					1205	965	105.2	2	1104.9	28	51	1-7/8"			
900	36"		150	330	711	676	845	1170	1022	90.9	2	1085.9	32	42	1-1/2"		1716	
			300	510	1727			1270	1022	111.6	2	1168.4	32	54	2"		2590	
950	38"		150	410		712	870	1240	1073	87.8	2	1149.4	32	42	1-1/2"			
			300	530				1170	1029	108.4	2	1092.2	32	42	1-1/2"			
1000	40"		150	410		757	915	1290	1124	90.9	2	1200.2	36	42	1-1/2"		2208	
			300	550				1240	1086	114.8	2	1155.7	32	45	1-5/8"		2585	
1050	42"		150	410		784	920	1345	1194	97.3	2	1257.3	36	42	1-1/2"		2488	
			300	570				1290	1137	119.5	2	1206.5	32	45	1-5/8"		2849	
1100	44"		150	470		824	975	1405	1245	102.1	2	1314.5	40	42	1-1/2"			
			300					1355	1194	124.3	2	1263.7	32	48	1-3/4"			
1200	48"		150	470		862	1052	1510	1359	108.4	2	1422.4	44	42	1-1/2"		3440	
			300	630				1465	1302	133.8	2	1371.6	32	51	1-7/8"		4106	

* Please contact the sales office.

BUTTERFLY VALVES

DOUBLE-OFFSET

Lug Type

ASME Class 150, 300

Standard Specification

STANDARD DESIGN	API 609
FACE-TO-FACE DIMENSIONS	API 609
END FLANGE DIMENSIONS	ASME B16.5 / B16.47 Series A
PRESSURE AND TEMPERATURE RATINGS BODY THICKNESS	ASME B16.34, API 609
TEST & INSPECTION	API 609, API 598
MATERIAL	ASTM Material Specifications as per ASME B16.34

Design Features

DOUBLE-OFFSET DISC ROTATION	TEFLON, METAL-TO-METAL SEAT SEALING (OPTION)
ONE-PIECE SHAFT DESIGN	SPECIAL FLANGS OR END CONNECTIONS
HARD FACED SEAT (OPTION)	ACTUATORS (PNEUMATIC, HYDRAULIC, ELECTRIC)



Product Range

ASME B16.5 / B16.47 Series A, Class 150	3" ~ 48"
ASME B16.5 / B16.47 Series A, Class 300	3" ~ 36"

Materials (Applicable ASTM Specification)

Cabon Steel	A105, A216 WCB, A216 WCC
Low Temperature Cabon Steel	A350 LF2, A352 LCB, A352 LCC
Austenitic Stainless Steel	A182 F304, A182 F316, A351 CF8, A351 CF8M
Duplex Stainless Steel	A182 F51 (UNS S31803), A182 F53 (UNS S32750), A182 F55 (UNS S32760)
Nickel Alloys	Inconel 625 (UNS N06625), Monel 400 (UNS N04400)

Pressure Testing (Working & Test Pressure at Ambient Temperature)

CLASS	Working Pressure		Hydrostatic Shell Test		Hydrostatic Seat Test		Air Seat Test		Duration of Required Test Pressure (API 598 Standard)	
	bar	psi	bar	psi	bar	psi	bar	psi		
ASME 150	19	275	29	413	21	303	6	100	size (NPS) 2" ~ 6"	Test Time (sec) 60
ASME 300	50	720	75	1080	56	792	6	100	8" ~ 12"	120
									≥14	120

Lug Type

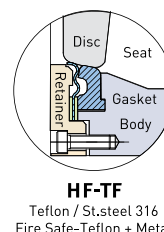
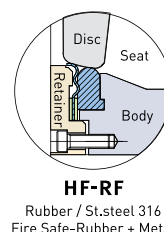
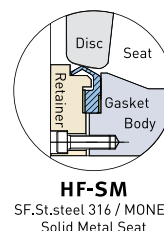
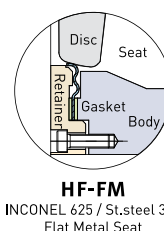
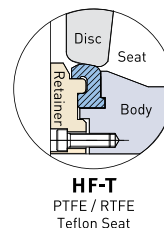
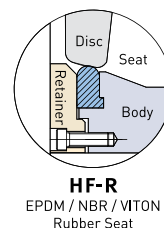
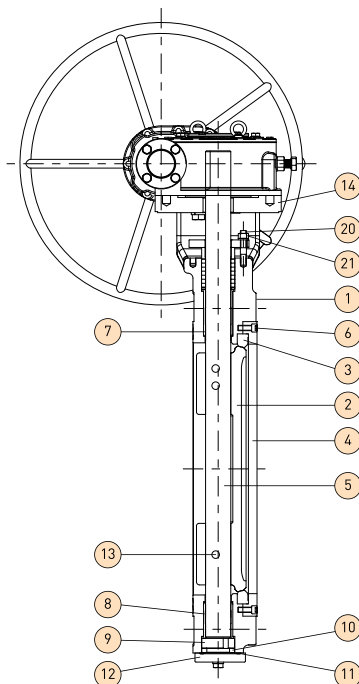
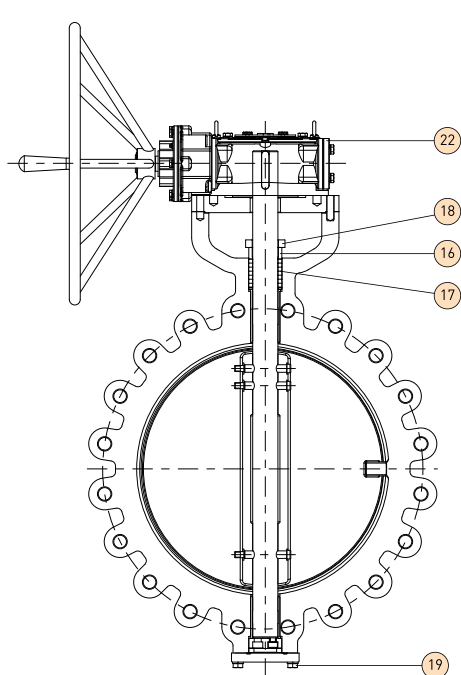
ASME Class 150, 300

BUTTERFLY VALVES

DOUBLE-OFFSET

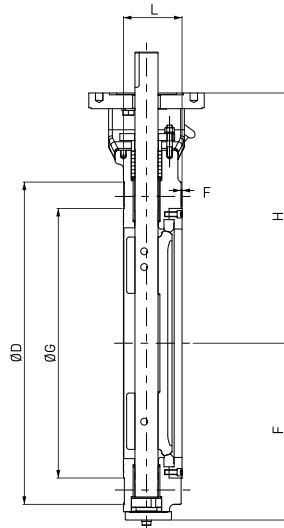
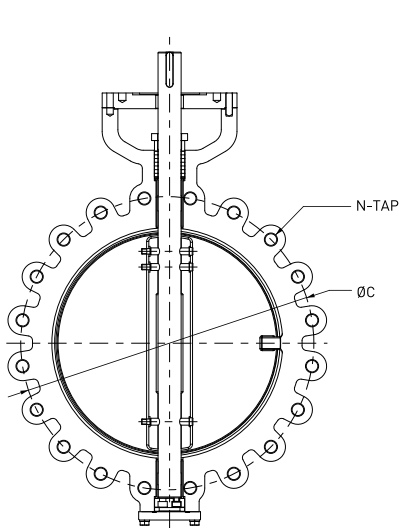
Lug Type

BFO-DLF Series



Parts List	No.	Parts Name	Standard Materials Specification		
			Carbon Steel	Austenitic Stainless Steel	Duplex Stainless Steel
	1	BODY	A216 WCB	A351 CF8M	A995 4A(S31803)
	2	DISC	A351 CF8	A351 CF8M	A995 4A(S31803)
	3	SEAT	SS316+GRAPHITE	SS316+GRAPHITE	DUPLEX + GRAPHITE
	4	SHAFT	A276 304	A276 316	A182 F51
	5	RETAINER	A240 304	A240 316	S31803
	6	SOCKET BOLT	A197 B8	A320 B8M	A320 B8M
	7	BUSING-TOP	A276 304	A276 316	A182 F51
	8	BUSING-BOTTOM	A276 304	A276 316	A182 F51
	9	THRUST BEARING	A276 304	A276 316	A182 F51
	10	COLLER	A276 304	A276 316	A182 F51
	11	GASKET-COVER	SS316+GRAPHITE	SS316+GRAPHITE	DUPLEX + GRAPHITE
	12	COVER	A36	A240 316	A182 F51
	13	DISC PIN	A276 304	A276 316	A182 F51
	14	FLANGE-TOP	A36	A240 316	A240 316
	15	GASKET-SEAT	-	-	-
	16	GLAND BUSING	A276 304	A276 316	A182 F51
	17	PACKING	GRAPHITE	GRAPHITE	GRAPHITE
	18	PACKING GLAND	A276 304	A276 316	A240 316
	19	BOLT-COVER	A193 B8	A320 B8M	A193 B8M
	20	BOLT-GLAND	A193 B7	A320 B8M	A193 B8M
	21	NUT-GLAND	A194 2H	A320 8M	A194 8M
	22	GEAR BOX	-	-	-

BFO-DLF Series



Dimensions and Weights	SIZE		CLASS	DIMENSIONS (mm)						Diameter of Bolt Circle (φC)	Number of Bolt (N)	Diameter of Bolt Holes (φd)	Diameter of Bolt	Bolt Length	Approx Weight (kg)
	DN	NPS		L	F	H	φD	φG	T	F					
80	3"	150	48	130	190	190	127	23.9	2	152.4	4	19	5/8"	105	
		300	48			210	127	28.4	2	168.3	8	23	3/4"	121	
100	4"	150	54	149	209	230	157.2	23.9	2	190.5	8	19	5/8"	105	
		300	54	160	230	255	157.2	31.8	2	200	8	23	3/4"	127	
150	6"	150	57	175	260	280	215.9	25.4	2	241.3	8	23	3/4"	115	
		300	59	203	288	320	215.9	36.6	2	269.9	12	23	3/4"	140	
200	8"	150	64	213	298	345	269.7	28.4	2	298.5	8	23	3/4"	121	
		300	73	240	330	380	269.7	41.1	2	330.2	12	26	7/8"	155	
250	10"	150	71	247	342	405	323.9	30.2	2	362	12	26	7/8"	127	
		300	83	275	375	445	323.9	47.8	2	387.4	16	29	1"	175	
300	12"	150	81	289	394	483	381	31.8	2	431.8	12	26	7/8"	135	
		300	92	313		521	381	50.8	2	450.8	16	32	1-1/8"	185	
350	14"	150	92	321	426	533	412.8	35.1	2	476.3	12	29	1"	150	
		300	117	349		584	412.8	53.8	2	514.4	20	32	1-1/8"	195	
400	16"	150	102	357	462	597	469.9	36.6	2	539.8	16	29	1"	150	
		300	133	390	510	648	469.9	57.2	2	571.5	20	35	1-1/4"	210	
450	18"	150	114	383	498	635	533.4	39.6	2	577.9	16	32	1-1/8"	160	
		300	149	427		711	533.4	60.5	2	628.6	24	35	1-1/4"	215	
500	20"	150	127	418	533	699	584.2	42.9	2	635	20	32	1-1/8"	175	
		300	159	457	592	775	584.2	63.5	2	685.8	24	35	1-1/4"	230	
600	24"	150	154	481	596	813	692.2	47.8	2	749.3	20	35	1-1/4"	185	
		300	181	535	680	914	692.2	69.9	2	812.8	24	42	1-1/2"	260	

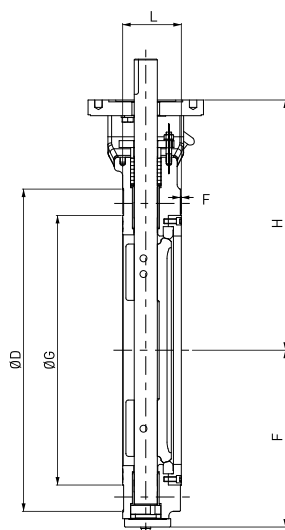
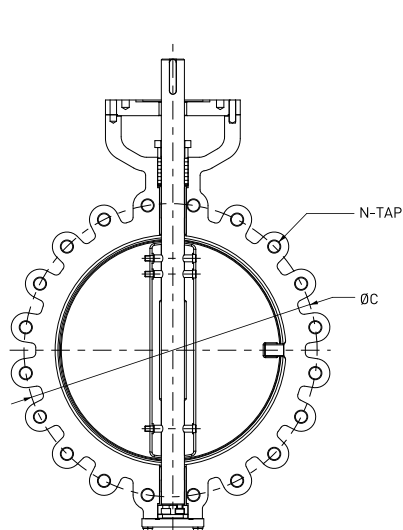
Lug Type

ASME B16.47 Series-A Class 150, 300

BUTTERFLY VALVES

DOUBLE-OFFSET

BFO-DLF Series



Dimensions and Weights	SIZE		CLASS	DIMENSIONS (mm)						Diameter of Bolt Circle (φC)	Number of Bolt (N)	Diameter of Bolt Holes (φd)	Diameter of Bolt	Bolt Length	Approx Weight (kg)
	DN	NPS		L	F	H	φD	φG	T	F					
650	26"	150	165	490	635	870	749	68.7	2	806.5	24	35	1-1/4"		
			300	209	640	800	970	749	84.6	2	876.3	28	45	1-5/8"	
700	28"	150	165	555	686	925	800	71.9	2	863.6	28	35	1-1/4"		
			300	209	660	810	1035	800	90.9	2	939.8	28	45	1-5/8"	
750	30"	150	165	580	711	985	857	75.1	2	914.4	28	35	1-1/4"		
			300	241	690	825	1090	857	95.7	2	997	28	48	1-3/4"	
800	32"	150	190	620	760	1060	914	81.4	2	977.9	28	42	1-1/2"		
			300	241	690	825	1150	914	100.5	2	1054.1	28	51	1-7/8"	
850	34"	150	190	660	800	1110	965	83	2	1028.7	32	42	1-1/2"		
			300	241	740	920	1205	965	105.2	2	1104.9	28	51	1-7/8"	
900	36"	150	200	676	845	1170	1022	90.9	2	1085.9	32	42	1-1/2"		
			300	300	750	930	1270	1022	111.6	2	1168.4	32	54	2"	
950	38"	150	200	712	870	1240	1073	87.8	2	1149.4	32	42	1-1/2"		
			300			1170	1029	108.4	2	1092.2	32	42	1-1/2"		
1000	40"	150	216	757	915	1290	1124	90.9	2	1200.2	36	42	1-1/2"		
			300			1240	1086	114.8	2	1155.7	32	45	1-5/8"		
1050	42"	150	251	784	920	1345	1194	97.3	2	1257.3	36	42	1-1/2"		
			300			1290	1137	119.5	2	1206.5	32	45	1-5/8"		
1100	44"	150	251	824	975	1405	1245	102.1	2	1314.5	40	42	1-1/2"		
			300			1355	1194	124.3	2	1263.7	32	48	1-3/4"		
1200	48"	150	276	862	1052	1510	1359	108.4	2	1422.4	44	42	1-1/2"		
			300			1465	1302	133.8	2	1371.6	32	51	1-7/8"		

* Please contact the sales office.

BUTTERFLY VALVES

DOUBLE-OFFSET

Wafer Type

ASME Class 150, 300

Standard Specification

STANDARD DESIGN	API 609
FACE-TO-FACE DIMENSIONS	API 609
END FLANGE DIMENSIONS	ASME B16.5 / B16.47 Series A
PRESSURE AND TEMPERATURE RATINGS	ASME B16.34, API 609
BODY THICKNESS	
TEST & INSPECTION	API 609, API 598
MATERIAL	ASTM Material Specifications as per ASME B16.34



Design Features

DOUBLE-OFFSET DISC ROTATION	TEFLON, METAL-TO-METAL SEAT SEALING (OPTION)
ONE-PIECE SHAFT DESIGN	SPECIAL FLANGES OR END CONNECTIONS
HARD FACED SEAT (OPTION)	ACTUATORS (PNEUMATIC, HYDRAULIC, ELECTRIC)

Product Range

ASME B16.5 / B16.47 Series A, Class 150	3" ~ 48"
ASME B16.5 / B16.47 Series A, Class 300	3" ~ 36"

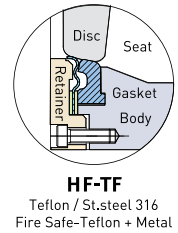
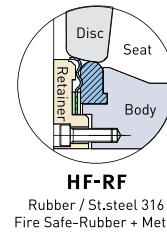
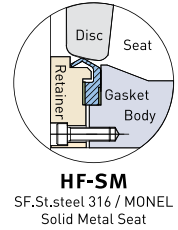
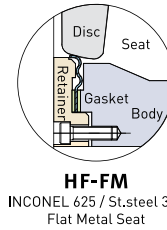
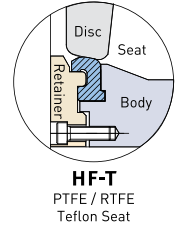
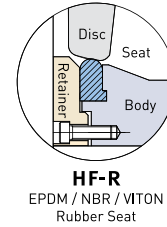
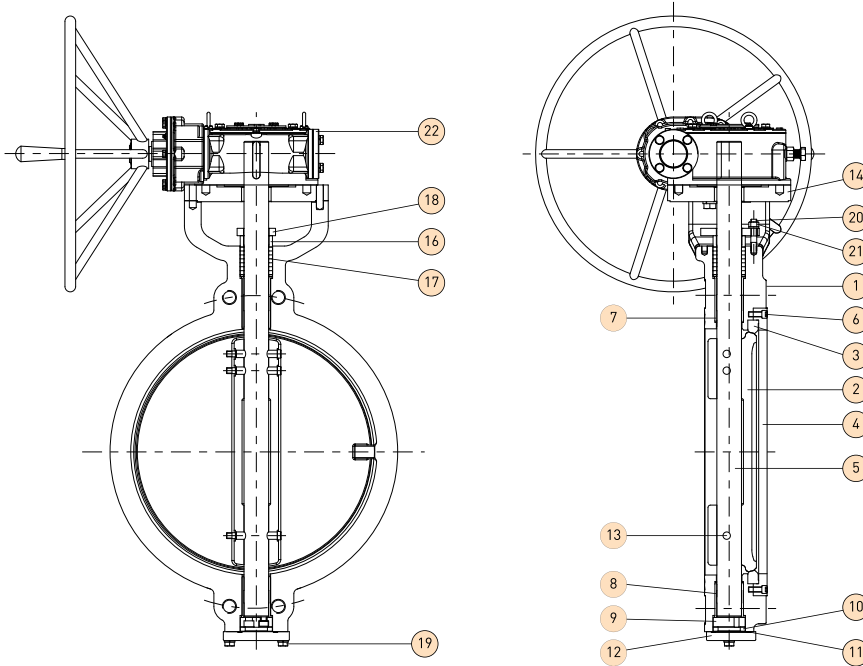
Materials (Applicable ASTM Specification)

Cabon Steel	A105, A216 WCB, A216 WCC
Low Temperature Cabon Steel	A350 LF2, A352 LCB, A352 LCC
Austenitic Stainless Steel	A182 F304, A182 F316, A351 CF8, A351 CF8M
Duplex Stainless Steel	A182 F51 (UNS S31803), A182 F53 (UNS S32750), A182 F55 (UNS S32760)
Nickel Alloys	Inconel 625 (UNS N06625), Monel 400 (UNS N04400)

Pressure Testing (Working & Test Pressure at Ambient Temperature)

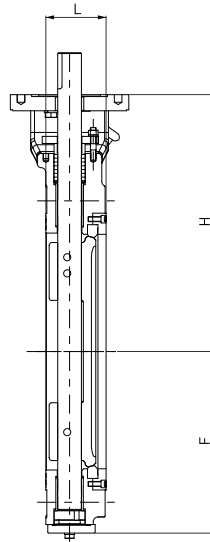
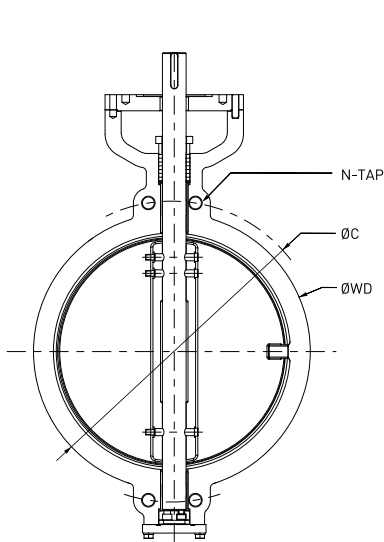
CLASS	Working Pressure		Hydrostatic Shell Test		Hydrostatic Seat Test		Air Seat Test		Duration of Required Test Pressure (API 598 Standard)	
	bar	psi	bar	psi	bar	psi	bar	psi	size (NPS)	Test Time (sec)
ASME 150	19	275	29	413	21	303	6	100	2" ~ 6"	60
ASME 300	50	720	75	1080	56	792	6	100	8" ~ 12"	120
									≥14	120

BFO-DWF Series



Parts List	No.	Parts Name	Standard Materials Specification		
			Carbon Steel	Austenitic Stainless Steel	Duplex Stainless Steel
	1	BODY	A216 WCB	A351 CF8M	A995 4A(S31803)
	2	DISC	A351 CF8	A351 CF8M	A995 4A(S31803)
	3	SEAT	SS316+GRAPHITE	SS316+GRAPHITE	DUPLEX + GRAPHITE
	4	SHAFT	A276 304	A276 316	A182 F51
	5	RETAINER	A240 304	A240 316	S31803
	6	SOCKET BOLT	A197 B8	A320 B8M	A320 B8M
	7	BUSING-TOP	A276 304	A276 316	A182 F51
	8	BUSING-BOTTOM	A276 304	A276 316	A182 F51
	9	THRUST BEARING	A276 304	A276 316	A182 F51
	10	COLLER	A276 304	A276 316	A182 F51
	11	GASKET-COVER	SS316+GRAPHITE	SS316+GRAPHITE	DUPLEX + GRAPHITE
	12	COVER	A36	A240 316	A182 F51
	13	DISC PIN	A276 304	A276 316A	A182 F51
	14	FLANGE-TOP	A36	240 316	A240 316
	15	GASKET-SEAT	-	-	-
	16	GLAND BUSING	A276 304	A276 316	A182 F51
	17	PACKING	GRAPHITE	GRAPHITE	GRAPHITE
	18	PACKING GLAND	A276 304	A276 316	A240 316
	19	BOLT-COVER	A193 B8	A320 B8M	A193 B8M
	20	BOLT-GLAND	A193 B7	A320 B8M	A193 B8M
	21	NUT-GLAND	A194 2H	A320 8M	A194 8M
	22	GEAR BOX	-	-	-

BFO-DWF Series



Dimensions and Weights	SIZE		CLASS	DIMENSIONS (mm)						Diameter of Bolt Circle (φC)	Number of Bolt (N)	Diameter of Bolt Holes (φd)	Diameter of Bolt	Bolt Length	Approx Weight (kg)
	DN	NPS		L	F	H	φWD	φG	T	F					
80	3"	150	48	130	190						152.4	4	19	5/8"	105
		300	48								168.3	8	23	3/4"	121
100	4"	150	54	149	209						190.5	8	19	5/8"	105
		300	54	160	230						200	8	23	3/4"	127
150	6"	150	57	175	260						241.3	8	23	3/4"	115
		300	59	203	288						269.9	12	23	3/4"	140
200	8"	150	64	213	298						298.5	8	23	3/4"	121
		300	73	240	330						330.2	12	26	7/8"	155
250	10"	150	71	247	342						362	12	26	7/8"	127
		300	83	275	375						387.4	16	29	1"	175
300	12"	150	81	289	394						431.8	12	26	7/8"	135
		300	92	313							450.8	16	32	1-1/8"	185
350	14"	150	92	321	426						476.3	12	29	1"	150
		300	117	349							514.4	20	32	1-1/8"	195
400	16"	150	102	357	462						539.8	16	29	1"	150
		300	133	390	510						571.5	20	35	1-1/4"	210
450	18"	150	114	383	498						577.9	16	32	1-1/8"	160
		300	149	427							628.6	24	35	1-1/4"	215
500	20"	150	127	418	533						635	20	32	1-1/8"	175
		300	159	457	592						685.8	24	35	1-1/4"	230
600	24"	150	154	481	596						749.3	20	35	1-1/4"	185
		300	181	535	680						812.8	24	42	1-1/2"	260

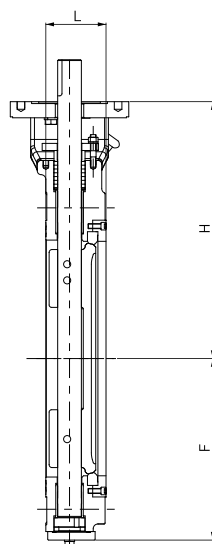
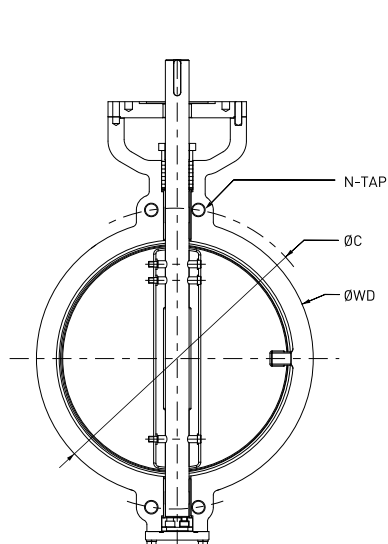
Wafer Type

ASME B16.47 Series-A Class 150, 300

BUTTERFLY VALVES

DOUBLE-OFFSET

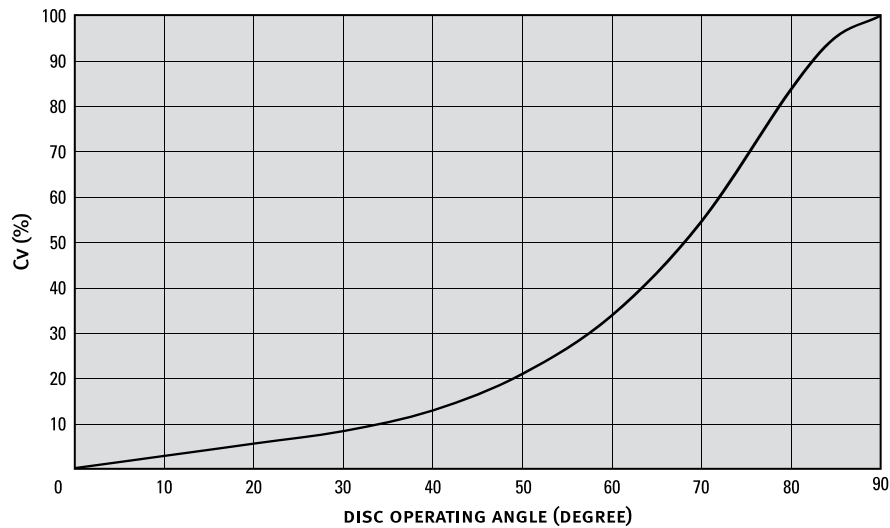
BFO-DWF Series



Dimensions and Weights	SIZE		CLASS	DIMENSIONS (mm)							Diameter of Bolt Circle (φC)	Number of Bolt (N)	Diameter of Bolt Holes (φd)	Diameter of Bolt	Bolt Length	Approx Weight (kg)
	DN	NPS		L	F	H	φWD	φG	T	F						
650	26"		150	165	490	635					806.5	24	35	1-1/4"		
			300	209	640	800					876.3	28	45	1-5/8"		
700	28"		150	165	555	686					863.6	28	35	1-1/4"		
			300	209	660	810					939.8	28	45	1-5/8"		
750	30"		150	165	580	711					914.4	28	35	1-1/4"		
			300	241	690	825					997	28	48	1-3/4"		
800	32"		150	190	620	760					977.9	28	42	1-1/2"		
			300	241	690	825					1054.1	28	51	1-7/8"		
850	34"		150	190	660	800					1028.7	32	42	1-1/2"		
			300	241	740	920					1104.9	28	51	1-7/8"		
900	36"		150	200	676	845					1085.9	32	42	1-1/2"		
			300	300	750	930					1168.4	32	54	2"		
950	38"		150	200	712	870					1149.4	32	42	1-1/2"		
			300								1092.2	32	42	1-1/2"		
1000	40"		150	216	757	915					1200.2	36	42	1-1/2"		
			300								1155.7	32	45	1-5/8"		
1050	42"		150	251	784	920					1257.3	36	42	1-1/2"		
			300								1206.5	32	45	1-5/8"		
1100	44"		150	251	824	975					1314.5	40	42	1-1/2"		
			300								1263.7	32	48	1-3/4"		
1200	48"		150	276	862	1052					1422.4	44	42	1-1/2"		
			300								1371.6	32	51	1-7/8"		

* Please contact the sales office.

FLOW COEFFICIENTS(Cv) & CURVE



SIZE	DN	80	100	150	200	250	300	350	400	450	500	600	700	750	800	900	1000	1050	1200
	NPS	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	30"	32"	36"	40"	42"	48"
CLASS	150	95	220	625	1495	2415	3998	5124	6815	9142	11452	17654	25247	30321	36544	44135	57955	61985	81256
	300	92	210	620	1311	2245	3572	4786	6384	8562	11325	16241	23875	29156	35624	43526			
	600	90	195	585	1010	1625	2460	3395	4658	5986	8259	12235							

TORQUES Triple-Offset Butterfly Valves

Torques Triple-Offset Butter Valves	SIZE		CLASS 150				CLASS 300				CLASS 600			
	DN	NPS	Torques (Nm)	6 bar	10 bar	20 bar	Torques (Nm)	10 bar	20 bar	50 bar	Torques (Nm)	20 bar	50 bar	100 bar
	80	3"	42	25	30	34	43	26	31	34	45	27	32	36
	100	4"	52	31	37	42	55	33	40	44	58	35	42	46
	150	6"	88	53	63	70	105	63	76	84	125	75	90	100
	200	8"	135	81	97	108	195	117	140	156	236	142	170	189
	250	10"	223	134	161	178	305	183	220	244	725	435	522	580
	300	12"	345	207	248	276	495	297	356	396	1205	723	868	964
	350	14"	532	319	383	426	756	454	544	605	1763	1058	1269	1410
	400	16"	925	555	666	740	1153	692	830	922	3125	1875	2250	2500
	450	18"	1325	795	954	1060	1625	975	1170	1300	3958	2375	2850	3166
	500	20"	2242	1345	1614	1794	2845	1707	2048	2276	6125	3675	4410	4900
	600	24"	3520	2112	2534	2816	4562	2737	3285	3650	9564	5738	6886	7651
	700	28"	7980	4788	5746	6384	9865	5919	7103	7892				
	750	30"	10552	6331	7597	8442	12645	7587	9104	10116				
	800	32"	11956	7174	8608	9565	14256	8554	10264	11405				
	850	34"	13256	7954	9544	10605	16584	9950	11940	13267				
	900	36"	15255	9153	10984	12204	18623	11174	13409	14898				
	1000	40"	21865	13119	15743	17492								
	1050	42"	25863	15518	18621	20690								
	1100	44"	29540	17724	21269	23632								
	1200	48"	36254	21752	26103	29003								

BUTTERFLY VALVES FOR JOB REFERENCE

PROJECT SHUAIBAH PH.3 IWPP (POWER AND DESALINATION STATION)



CLIENT SWEC (SAUDI ARABIA) / DOOSAN

ITEM & SIZE TOM Series for DN 1300, 1100, 900

PROJECT JEBEL ALI POWER AND DESALINATION STATION 'L' - PHASE II



CLIENT DUBAI ELECTRICITY & WATER AUTHORITY / HYUNDAI

ITEM & SIZE TOM Series for DN 2200, 1600

PROJECT SHANGHAI - BASF



CLIENT KLAUS UNION (GERMANY)

ITEM & SIZE TOM Series for DN 450

PROJECT NAMJEJOO DIESEL POWER PLANT



CLIENT KOREA SOUTHERN POWER CO.,LTD.

ITEM & SIZE TOM Series for DN 200

PROJECT YONGHUNG #3,4 POWER PLANT



CLIENT KOREA SOUTH-EAST POWER CO.,LTD.

ITEM & SIZE HFA Series for DN 3000

SEJIN VALVE

Our company endeavor
ceaselessly to develop
new products and
for quality improvement.



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