



*Double Offset Butterfly Valve  
Replaced Seat, Long Life*

*Bi-directional Zero Leakage For Seal Test  
In Accordance With Api607 Fire Testing*



**MVC FACTORY**

Add: Building 9, District 1, Wanyang Zhongchuang City, Bihu Town,  
Liandu District, Lishui City, Zhejiang Province [www.mvcvalves.com](http://www.mvcvalves.com)  
E-mail: [sales@mvcvalves.com](mailto:sales@mvcvalves.com)

**MVC VALVES**

HQ Add: 1150 NW 72ND AVE TOWER 1 STE 455  
#18087 MIAMI, FL 331261, USA

# DOUBLE OFFSET BUTTERFLY VALVE

## MVC Industrial Valves

In order to efficiently serve our customers, we have opened MVC in USA. All this infrastructure enables us to serve the market of North America, Central America, South America, Europe and Africa

It is fully committed to promoting technological development in the fields of low temperature, high temperature, high pressure air sealing, low torque and minimal leakage.

In 2012, we established factory in China. With extensive application experience and comprehensive capabilities, we provide tailor-made solutions for your valve automation needs.



## Quality System

MVC's management team adheres to strict policies ensuring that no defects occur in the valves used for industrial services. To maintain this discipline, we enforce internal regulations and a robust working process system. Third parties and customers are regularly invited to audit and approve our system.

MVC holds ISO9001, API6D, CE, TS, and other key certifications. All raw materials undergo re-testing for properties and mechanical performance upon arrival at our factory to ensure they meet machining standards. Non-destructive testing (NDE), including UT, MT, PT, and RT, is conducted by our quality control department during or before machining.

Every valve undergoes shell and sealing hydraulic tests, as well as air sealing tests. For valves used in special applications, additional tests such as fugitive emission, high/low temperature cycling, life, fire safety, cryogenic, and cleanliness tests after degreasing are available upon client request.





# Double offset Butterfly Valve

## MVC HOW TO ORDER



### Figure Numbers



MVC figure numbers are designed to cover essential features. When ordering, please show figure number to avoid misunderstanding of your requirements. However a detailed description must accompany with any special orders.

#### ① Valve Size

in	2	2-1/2	3	4	5	6	8	10	12	14
mm	50	65	80	100	125	150	200	250	300	350
i	16	18	20	24	28	30	32	36	40	48
mm	400	450	500	600	700	750	800	900	1000	1200

#### ② Double Offset Butterfly Valve Type

Symbol	Type
TB	Rubber Seat Design
TBT	PTFE Seat Design, Non Fire-Safe
TBF	PTFE+Metal Seat Design, Fire-safe

#### ③ ANSI Class

Code	1	3	6
Class(LB)	150	300	600

#### ④ End Connection

Symbol	Type
TB	Double Flange
TBT	Wafer
TBF	Lug

#### ⑤ Operator

G	Gear operator
M	Motor actuator
P	Pneumatic actuator
H	Hydraulic actuator

#### ⑥ Body Material

Material	ASTM Ref.
C00	A216 Grade WCB
L20	A352 Grade LCB
L21	A352 Grade LCC
S00	A351 Grade CF8
SU1	A351 Grade CF8M
S02	A351 Grade CF3

#### ⑦ Trim Code

First Number	Second Number	Thrid Number	Fourth Number
Stem	Disc	Seat	Packing
Code	Material	Code	Material
Code	Material	Code	Material
4	Monel K500	2	B148 C95200
2	EPDM	2	AA Graphite
5	17-4PH	C	CF8
3	NBR	AB	PTFE
9	F51	4	CF3M
4	BUNA-N	-	-
D	F53	5	MONEL
5	VITON	-	-
G	F55	6	QAL9-4
6	PTFE	-	-
L	A479 431	7	WCB-Ni
7	NEOPRENE	-	-
P	F321H	D	B148 C95800
8	HYPALON	-	-
R	A638 660	H	CF3
J	316+PTFEF	-	-
-	-	V	A995 5A
R	51 + PTFER	-	-
-	-	-	A995 4A
U	PTFE	-	-
-	-	-	-
-	-	-	316L + RPTFE
-	-	-	-

Notes: other materials upon request.



# MVC Double offset Butterfly Valve

Industrial valves normally require wider temperature and pressure ranges, which conventional resilient seat (butterfly valve) cannot comply. This has led to the development of high-performance butterfly valves. MVC Double Offset Series Butterfly Valve is a double-offset design that has the advantages of being light weight, compact in design, cost-effective, and having low operation torque.

## Production Range

<b>Size:</b>	2"~ 120"
<b>Rating:</b>	ANSI Class 150~ Class 600
<b>BodyMaterials:</b>	Carbon steel,Stainless steel, Alloy Steel,Duplex steel
<b>Seat</b>	NBR,EPDM,VITON ,PTFE,RPTFE
<b>End Connection:</b>	Wafer, Lug, Double Flange

## Typical Application:

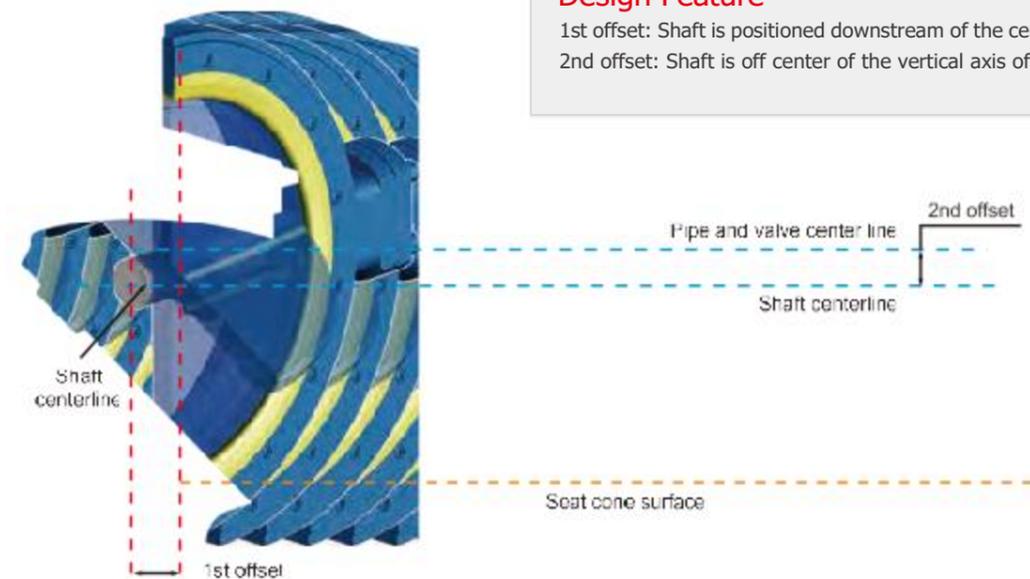
- Petrochemical plant
- Refinery
- Offshore platform
- Power plant
- LNG
- Steel Mills
- Commercial
- Pulp and Paper
- Hydrocarbon Processing
- Industrial

The double offset shaft and disc arrangement provides cammingaction to the disc which disengages from the seat at minimarotation. This design minimizes wear points at the top and bottom of the seat typical with conventional butterfly valves.

## Double Offset Frictionless Design

### Design Feature

- 1st offset: Shaft is positioned downstream of the centerline of the seat.
- 2nd offset: Shaft is off center of the vertical axis of the seat.



## Seat Structure

### 1. Double Offset PTFE Seat Butterfly Valve

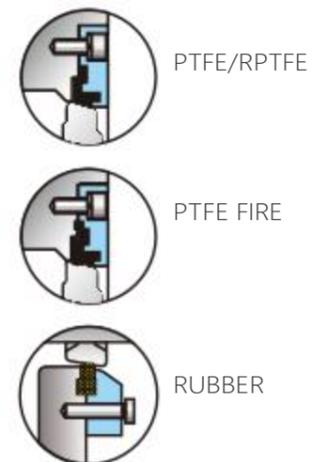
A surplus between PTFE Seat and Disc ensures the seal in low pressure. The force of medium always pushes seat contacting to sealing surface and becomes more reliable in high pressure. The disc surface is a sphere design to reduce frictional force, and the valve seat can be replaced easily.

### 2. Double offset Fire Safe PTFE Butterfly Valve

Fire Safe valve Seat with dual seal including primary PTFE seat insert and metal seat. in the event that the PTFE insert is destroyed, the secondary metal seat provides effective shut-off. The DOV fire safe certificate approved by Lloyd's Register.

### 3. Double offset Rubber Seat Butterfly Valve

A variety of rubber seats meet the needs of a larger size. The disc surface is designed into sphere type to reduce contacting area and frictional force which extends the usage life. Valve seat can be replaced or recharged easily.



Externally retained

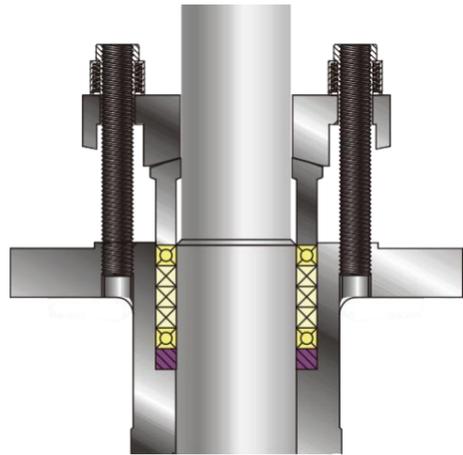
## Shaft Retention

Externally retained, double blowout proof stem design as per API 609.

External: Shaft is designed with an integral collar and blowout prevented by gland follower.

## Zero Leakage

Disc-Seat sealing is achieved by torque force evenly loaded on disc laminated sealedge, which has resilient function to assure Zero Leakage in both hydrostatic or air test as per API 598.



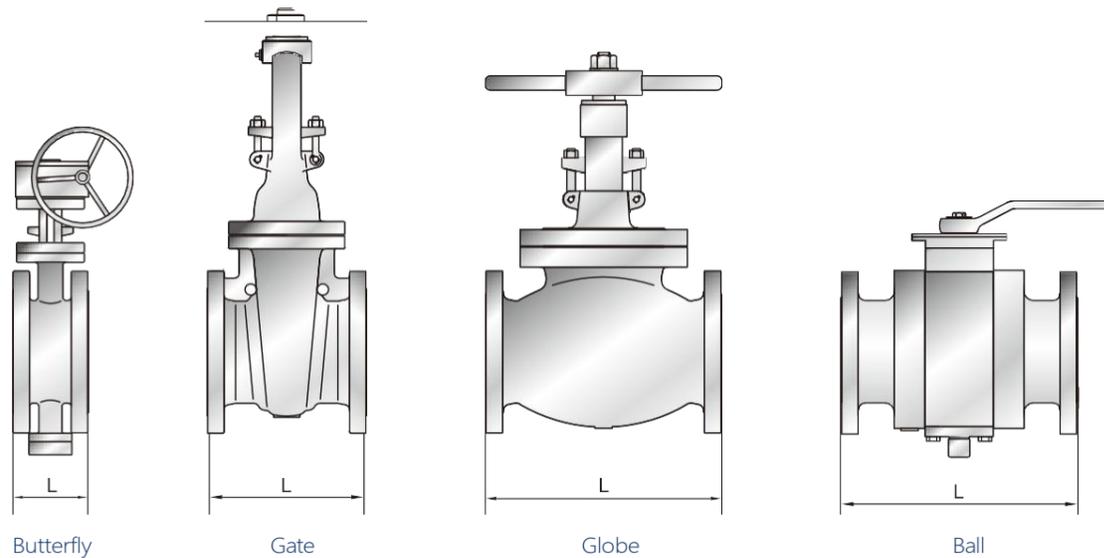
### Low Emission Shaft Seal

- a.) Shaft is fully guided by shaft bearing & gland follower to avoid any side load due to line pressure thrust.
- b.) The packing set is pre-compressed and is a combination of braided graphite rings top and bottom with die formed flexible graphite rings between.
- c.) Controlled Ra0.4 ~ Ra0.8 finish on the shaft and Ra1.6 on the stuffing box provides optimum packing and shaft sealing performance. Optional Live Loaded gland flange is available to provide.
- d.) Constant packing compression to reduce fugitive emission from shaft seal. Optional shaft seal design as per Shell MESC 77/312 & TA-Lute.) is also available upon request.

### Compact & light Design

MVC Double offset butterfly valve is designed as per API 609, due to its compact & light design, it is an economical substitute for gate, globe and ball valves. Below is a comparison table based on a MVC 6" valve.

Class	150				300				600			
Valve Type	Butterfly	Gate	Globe	Ball	Butterfly	Gate	Globe	Ball	Butterfly	Gate	Globe	Ball
Face to Face (mm)	140	267	406	394	140	403	445	403	210	559	559	559
Weight (kg)	21	77	100	190	34	144	168	211	87	234	284	248



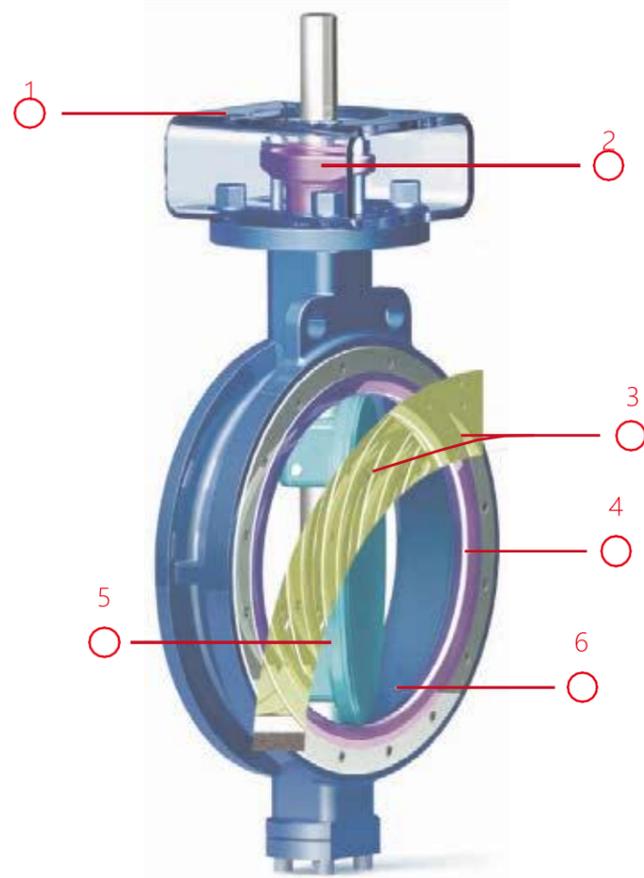
### Double offset Butterfly Valve APPLICATION

Double Offset High Performance Butterfly Valves are widely used in industrial applications, especially in situations where control of high pressure, high frequency, and corrosive medium is required. Compared to traditional butterfly valves, the double offset design offers higher sealing performance and longer service life.

### Double offset Butterfly Valve PRODUCT

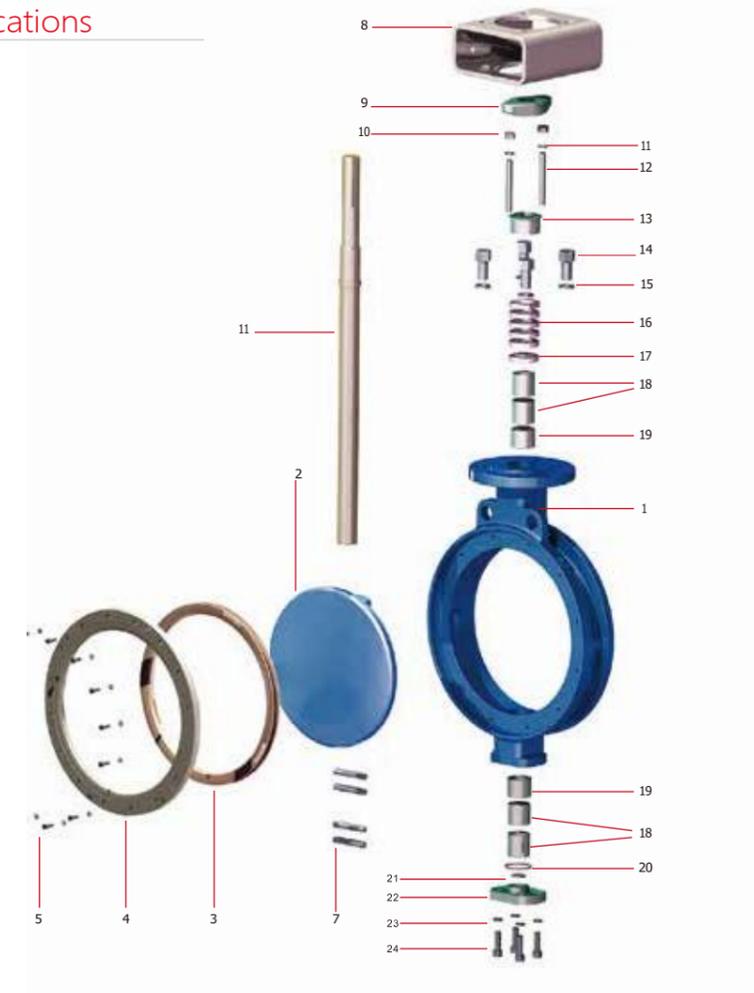


# MVC Double Offset Butterfly Valve



- 1 ISO 5211 Top Flange.
- 2 In addition to durable, standard V-ring packing, you can also choose from optional graphite high-temperature packing or emissions control design.
- 3 Bi-Directional, Shut off performance.
- 4 Optional seat: Rubber, PTFE, RPTFE, Fire Safe PTFE.
- 5 Long life durability of double offset operating principle minimize seat wear & lower operating torques.
- 6 Positive sealing which is mechanically achieved and does not rely on line pressure assistant.

## Material Specifications



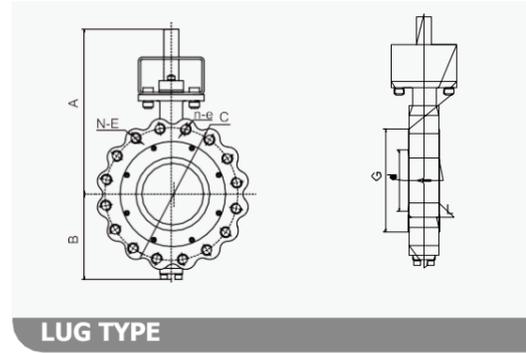
No.	Part	Standard	Stainless steel
1	Body	ASTM A216-WCB	ASTM A351-CF8M
2	Disc	ASTM A351-CF8M	ASTM A351-CF8M
3	Seat	PTFE/RPTFE/ NBR	PTFE/ RPTFE /NBR / EPDM
4	Retaining Ring	ASTM A105N	ASTM A182-F316
5	Screw	S.S.	S.S.
6	Shaft	17.4PH	F51
7	Disc Pin	17-4PH	F51
8	Bracket	Carbon Steel	Carbon Steel
9	Gland Flange	ASTM A216.WCB	ASTM A351-CF8
10	Nut	ASTM A194-2H	ASTM A194-8
11	Washer	Carbon Steel	S.S.
12	Gland Bolt	ASTM A193-B7	ASTM A193-B8

No.	Part	Standard	Stainless steel
13	Gland	ASTM A182-F316	ASTM A182-F316
14	Bolt	ASTM A193-B7	ASTM A193-B8
15	Washer	Carbon Steel	S.S.
16	Packing	PTFE   Graphite / NBR	PTFE   Graphite / NBR
17	Spacer Ring	ASTM A182-F316	ASTM A182-F316
18	Bearing	ASTM A182-F316L with PTFE / Graphite	ASTM A182-F316L with PTFE / Graphite
19	Disc Washer	ASTM A182-F316	ASTM A182-F316
20	Gasket	PTFE / Graphite / NBR	PTFE   Graphite / NBR
21	Disc Spring	PTFE/316	PTFE/316
22	End Cover	ASTM A105N.	ASTM A182-F316
23	Washer	Carbon Steel	S.S.
24	Screw	ASTM A193-B7	ASTM A193-B8



## LUG TYPE

### Double offset Butterfly Valve Dimensions & Weights



LUG TYPE

## Class 150

Size		d		G		C		N	E	n	e	L		A		B		Weight	
in	mm	mm	in	mm	in	mm	in					mm	in	mm	in	mm	in	Kg	Lbs
2	50	51	2.01	92	3.62	120.7	4.75	4	5/8-11	*	*	43	1.69	194	7.64	62.50	2.46	6	12.79
3	80	86	3.39	127	5.00	152.5	6.00	4	5/8-11	*	*	48	1.89	182	7.16	80	3.15	9	19.40
4	100	110	4.33	157	6.18	190.5	7.50	8	5/8-11	*	*	54	2.13	200	7.80	100	3.94	12	26.01
5	125	131	5.16	186	7.32	216	8.50	8	3/4-10	*	*	57	2.24	252	9.92	119	4.69	6	34.83
6	150	156	6.14	216	8.50	241.5	9.51	8	3/4-10	*	*	57	2.24	280	11.02	135	5.31	14	30.86
8	200	203	7.99	270	10.63	298.5	11.75	8	3/4-10	*	*	64	2.52	310	12.20	190	7.48	32	69.44
10	250	254	10.00	324	12.76	362	14.25	12	7/8-9	*	*	71	2.80	354	13.94	250	9.84	48	104.72
12	300	305	12.01	381	15.00	432	17.01	12	7/8-9	*	*	81	3.19	373	14.68	290	11.42	70	153.22
14	350	337	13.27	413	16.26	476	18.74	12	1-8	*	*	92	3.62	525	20.67	300	11.81	102	224.87
16	400	387	15.24	470	18.50	539.5	21.24	16	1-8	*	*	102	4.02	550	21.65	340	13.39	144	317.46
18	450	438	17.24	533	20.98	578	22.76	16	1-1/8-8	*	*	114	4.49	637	25.08	380	14.96	188	414.46
20	500	489	19.25	584	22.99	635	25.00	16	1-1/8-8	4	1-1/8-8	127	5.00	720	28.35	390	15.35	244	537.92
24	600	591	23.27	692	27.24	749.5	29.51	16	1-1/4-8	4	1-1/4-8	154	6.06	797	31.38	470	18.50	378	833.33
28	700	692	27.24	762	30.00	795	31.30	36	3/4-10	4	3/4-10	165	6.50	875	34.45	470	18.50	486	1071.43
30	750	743	29.25	813	32.01	846	33.31	37	3/4-10	7	3/4-10	190	7.48	945	37.20	517	20.35	655	1444.00
32	800	781	30.75	864	37.95	900	35.43	41	3/4-10	7	3/4-10	190	7.48	1000	39.37	537	21.14	755	1664.46
36	900	876	34.49	972	38.27	1010	39.76	39	7/8-9	5	7/8-9	203	7.99	1051	41.38	610	24.02	820	1807.76
40	1000	976	38.42	1080	42.52	1120.5	44.11	40	1-8	4	1-8	216	8.50	1074	42.28	684	26.93	1054	2324.07
48	1200	1168	45.98	1289	50.74	1335	52.56	39	1-1/8-8	5	1-1/8-8	254	10.00	1247	49.09	800	31.50	1849	4077.05

## Class 300

Size		d		G		C		N	E	n	e	L		A		B		Weight	
in	mm	mm	in	mm	in	mm	in					mm	in	mm	in	mm	in	Kg	Lbs
2	50	44	1.73	92	3.62	127	5.00	8	5/8-11	*	*	43	1.69	151	5.94	80	3.15	10	21.60
3	80	86	3.39	127	5.00	168.5	6.63	8	3/4-10	*	*	48	1.89		7.44	88	3.86	13	28.22
4	100	110	4.33	157	6.18	200	7.87	8	3/4-10	*	*	54	2.13		8.19	110	4.33	16	34.83
5	125	127	5.00	186	7.32	235	9.25	8	3/4-10	*	*	59	2.32	233	9.17	128	5.04	19	40.78
6	150	152	5.98	216	8.50	269.9	10.63	12	7/8-9	*	*	59	2.32		9.92	149	5.87	24	51.81
8	200	203	7.99	270	10.63	330	12.99	12	7/8-9	*	*	73	2.87	321	12.64	235	9.25	45	98.10
10	250	254	10.00	324	12.76	387	15.24	12	1-8	4	1-8	83	3.27	393	15.47	290	11.42	49	108.02
12	300	305	12.01	381	15.00	451	17.76	12	1-1/8-8	4	1-1/8-8	92	3.62	433	17.04	305	12.01	74	163.14
14	350	337	13.27	413	16.26	514.5	20.26	16	1-1/8-8	4	1-1/8-8	117	4.61	622	24.49	348	13.70	194	427.69
16	400	388	15.28	470	18.50	571.5	22.50	16	1-1/4-8	4	1-1/4-8	133	5.24	718	28.27	365	14.37	245	540.12
18	450	432	17.01	533	20.98	628.5	24.74	20	1-1/4-8	4	1-1/4-8	149	5.87	745	29.33	415	16.34	393	866.40
20	500	483	19.02	584	22.99	686	27.01	20	1-1/4-8	4	1-1/4-8	159	6.26	864	34.02	430	16.93	490	1080.25
24	600	584	22.99	692	27.24	813	32.01	20	1-1/2-8	4	1-1/2-8	181	7.13	929	36.58	501	19.72	834	1838.62

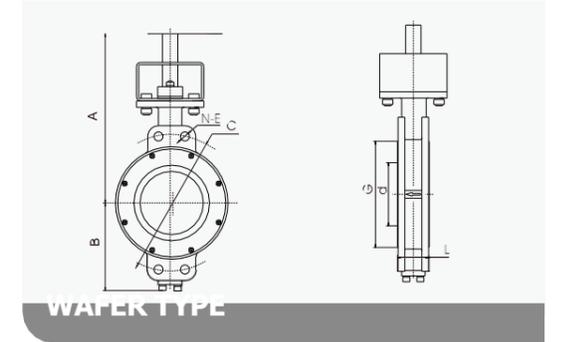
Note: 1. Flange Dimensions of 26" and large size are according to ASME B16.47 B Series.

## Class 600

Size		d		G		C		N	E	n	e	L		A		B		Weight	
in	mm	mm	in	mm	in	mm	in					mm	in	mm	in	mm	in	Kg	Lbs
3	80	88	3.46	127	5.00	168	6.61	8	3/4-10	*	*	54	2.05	231	9.09	102	4.02	14	30.87
4	100	114	4.49	157	6.18	216	8.50	8	7/8-9	*	*	68	2.52	269	10.59	124	4.88	35	77.18
6	150	164	6.46	216	8.50	292	11.50	10	1-8	2	1-8	78	3.07	394	15.51	166	6.54	70	154.35
8	200	200	7.87	270	10.63	349	13.74	8	1-1/8-8	4	1-1/8-8	102	4.02	529	20.83	256	10.08	90	198.45
10	250	248	9.76	324	12.76	432	17.01	12	1-1/4-8	4	1-1/4-8	117	4.61	611	24.06	309	12.17	162	357.21
12	300	298.5	11.75	381	15.00	489	19.25	16	1-1/4-8	4	1-1/4-8	140	5.51	675	26.57	348	13.70	218	480.69

## WAFER TYPE

### Double offset Butterfly Valve Dimensions & Weights



WAFER TYPE

## Class 150

Size		d		G		C		N	E	L	A		B		Weight				
in	mm	mm	in	mm	in	mm	in			mm	in	mm	in	mm	in	Kg	Lbs		
2	50	51	2.01	92	3.62	120.7	4.75	2	ϕ19	43	1.69	160	6.30	80	3.15	4	8.38		
3	80	86	3.39	127	5.00	152.5	6.00	2	ϕ19	48	1.89	180	7.09	80	3.15	7	14.99		
4	100	110	4.33	157	6.18	190.5	7.50	2	ϕ19	54	2.13	200	7.87	100	3.94	10	21.60		
5	125	131	5.16	186	7.32	216	8.50	2	ϕ22	57	2.24	235	9.25	119	4.69	14	30.42		
6	150	156	6.14	216	8.50	241.5	9.51	2	ϕ22	57	2.24	252	9.92	135	5.31	11	24.25		
8	200	203	7.99	270	10.63	298.5	11.75	2	ϕ22	64	2.52	293	11.54	190	7.48	25	54.01		
10	250	254	10.00	324	12.76	362	14.25	2	ϕ25	71	2.80	337	13.27	250	9.84	39	84.88		
12	300	305	12.01	381	15.00	432	17.01	2	ϕ25	81	3.19	373	14.69	290	11.42	51	111.33		
14	350	337	13.27	413	16.26	476	18.74	2	ϕ29	92	3.62	521	20.51	340	11.81	80	176.37		
16	400	387	15.24	470	18.50	539.5	21.24	4	ϕ29	102	4.02	555	21.85	380	13.39	104	229.28		
18	450	438	17.24	533	20.98	578	22.76	4	ϕ32	114	4.49	620	24.41	380	14.96	153	337.30		
20	500	489	19.25	584	22.99	635	25.00	4	1-1/8	127	5.00	673	26.50	390	15.35	192	423.28		
24	600	591	23.27	692	27.24	749.5	29.51	4	1-1/4-8	154	6.06	772	30.39	470	18.50	288	634.92		
28	700	692	27.24	762	30.00	795	31.30	4	ϕ22	165	6.50	935	36.81	485	19.09	340	749.56		
								4	3/4-10										
30	750	743	29.25	813	32.01	846	33.31	2	ϕ22	190	7.48	993	39.09	517	20.35	510	1124.34		
								6	3/4-10										
32	800	781	30.75	864	37.95	900	35.43	1	ϕ22	190	7.48	1000	39.37	537	21.14	595	1311.73		
								7	3/4-10										
36	900	876	34.49	972	38.27	1010	39.76	8	7/8-9	203	7.99	1113	43.80	610	24.02	680	1499.12		
40	1000	976	38.42	1080	42.52	1120.5	44.11	4	ϕ29	216	8.50	1220	48.03	684	26.93	1054	1973.48		
								4	1-8										
								3	ϕ32										
48	1200	1168	45.98	1289	50.74	1335	52.56	5	1-1/8-8	254	10.00	1370	53.94	800	31.50	1849	3397.91		

Note: 1. Flange Dimensions of 26" and large size are according to ASME B16.47 B Series.

## Class 300

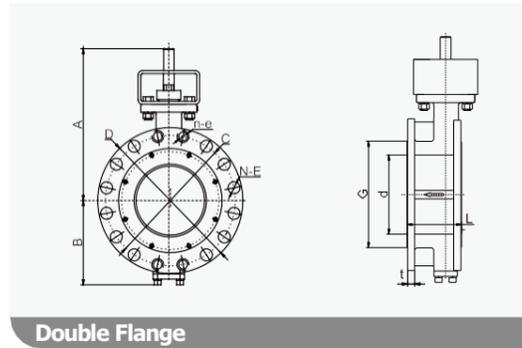
Size	d		G		C		N E		L		A		B		Weight		
in mm	mm	in	mm	in	mm	in			mm	in	mm	in	mm	in	Kg	Lbs	
2	50	44	1.73	92	3.62	127	5.00	2	19	43	1.69	151	5.94	80	3.15	6	12.79
3	80	86	3.39	127	5.00	168.5	6.63	2	22	48	1.89		7.44	88	3.86	9	20.17
4	100	110	4.33	157	6.18	200	7.87	2	22	54	2.13		8.19	110	4.33	11	25.24
5	125	127	5.00	186	7.32	235	9.25	2	22	59	2.32	233	9.17	128	5.04	14	29.78
6	150	152	5.98	216	8.50	269.9	9.51	2	22	59	2.32		9.92	149	5.87	18	38.58
8	200	203	7.99	270	10.63	330	12.99	4	25	73	2.87	321	12.64	235	9.25	33	71.65
10	250	254	10.00	324	12.76	387	15.24	4	1-8	83	3.27	393	15.47	290	11.42	26	57.32
12	300	305	12.01	381	15.00	451	17.76	4	1-1/8-8	92	3.62	433	17.04	305	12.01	40	88.18
14	350	337	13.27	413	16.26	514.5	20.26	4	1-1/8-8	117	4.61	622	24.49	348	13.70	125	275.57
16	400	388	15.28	470	18.50	571.5	22.50	4	1-1/4-8	133	5.24	718	28.27	365	14.37	139	306.44
18	450	432	17.01	533	20.98	628.5	24.74	4	1-1/4-8	149	5.87	745	29.33	415	16.34	252	555.56
20	500	483	19.02	584	22.99	686	27.01	4	1-1/4-8	159	6.26	864	34.02	430	16.93	284	626.10
24	600	584	22.99	692	27.24	813	32.01	4	1-1/2-8	181	7.13	929	36.58	501	19.72	509	1122.13

## Class 600

Size	d		G		C		N E		L		A		B		Weight		
in mm	mm	in	mm	in	mm	in			mm	in	mm	in	mm	in	Kg	Lbs	
3	80	88	3.16	127	5.00	6.61	6.61	4	3/4-10	64	2.52	231	9.09	102	4.02	19	24.26
4	100	114	4.49	157	6.18	8.50	8.50	4	7/8-9	64	2.52	269	10.59	124	4.88	20	44.10
6	150	164	6.46	216	8.50	11.50	11.50	4	1-8	78	3.07	394	15.51	156	6.54	50	110.25
8	200	200	7.87	270	10.63	13.74	13.74	4	1-1/8-8	102	4.02	529	20.83	256	10.08	70	154.35
10	250	248	9.76	324	12.76	17.01	17.01	4	1-1/4-8	117	4.61	611	24.06	308	12.13	112	246.96
12	300	298.5	11.75	381	15.00	19.25	19.25	4	1-1/4-8	140	5.51	675	26.57	348	13.70	163	359.42

### Double Flange

### Double offset Butterfly Valve Dimensions & Weights



## Class 150

Size	d		D		G		C		N E		n e		L		t		A		B		Weight			
in mm	mm	in	mm	in	mm	in							mm	in	mm	in	mm	in	mm	in	mm	in	kg	Lbs
2	50	51	2.01	150	5.91	92	3.62	120.7	4.75	4	19	*	*	108	4.25	19	0.75	194	7.64	62.50	2.46	8	17.20	
3	80	86	3.39	190	7.48	127	5.00	152.5	6.00	4	19	*	*	114	4.49	24	0.94	182	7.16	80	3.15	12	26.01	
4	100	110	4.33	230	9.06	157	6.18	190.5	7.50	4	19	4	5-8/11	127	5.00	24	0.94	200	7.80	100	3.94	16	34.61	
5	125	131	5.16	255	10.04	186	7.32	216	8.50	4	22	4	3-4110	140	5.51	24	0.94	252	9.92	119	4.69	21	46.08	
6	150	156	6.14	280	11.02	216	8.50	241.5	9.51	4	22	4	3-4/10	140	5.51	25.4	1.00	280	11.02	135	5.31	21	46.30	
8	200	203	7.99	345	13.58	270	10.63	298.5	11.75	4	22	4	3-4/10	152	5.98	28.6	1.13	310	12.20	190	7.48	54	117.95	
10	250	254	10.00	405	15.94	324	12.76	362	14.25	8	25	4	7/8-9	165	6.50	30	1.18	354	13.94	250	9.84	82	181.00	
12	300	305	12.01	485	19.09	381	15.00	432	17.01	8	25	4	7/8-9	178	7.01	32	1.26	373	14.68	290	11.42	136	298.94	
14	350	337	13.27	535	21.06	413	16.26	476	18.74	8	29	4	1-8	190	7.48	35	1.38	525	20.67	300	11.81	151	332.23	

## Class 150

Size	d		D		G		C		N E		n e		L		t		A		B		Weight			
in mm	mm	in	mm	in	mm	in							mm	in	mm	in	mm	in	mm	in	mm	in	kg	Lbs
16	400	387	15.24	595	23.43	470	18.50	539.5	21.24	12	29	4	1-8	216	8.50	36.6	1.44	550	21.65	340	13.39	213	469.80	
18	450	438	17.24	635	25.00	533	20.98	578	22.76	12	32	4	1-1/8-8	222	8.74	39.7	1.56	637	25.08	380	14.96	313	690.04	
20	500	489	19.25	700	27.56	584	22.99	635	25.00	16	32	4	1-1/8-8	229	9.02	43	1.69	720	28.35	390	15.35	386	850.97	
24	600	591	23.27	815	32.09	692	27.24	749.5	29.51	16	35	4	1-1/4-8	267	10.51	47.7	1.88	797	31.38	470	18.50	552	1216.93	
28	700	692	27.24	837	32.95	762	30.00	795	31.30	43	22	6	1/4	292	11.50	44.5	1.75	875	34.45	470	18.50	578	1274.25	
30	750	743	29.25	887	34.92	813	32.01	846	33.31	37	22	7	3/4-10	318	12.52	44.5	1.75	945	37.20	517	20.35	798	1759.26	
32	800	781	30.75	941	37.05	864	37.95	900	35.43	40	22	8	3/4-10	318	12.52	46	1.81	1000	39.37	537	21.14	929	2048.06	
36	900	876	34.49	1057	41.61	972	38.27	1010	39.76	39	25	5	7/8-9	330	12.99	52	2.05	1247	41.38	610	24.02	1015	2237.65	
40	1000	976	38.42	1175	46.25	1080	42.52	1120.5	44.11	37	29	7	1-8	410	16.14	55.6	2.19	1051	42.28	684	26.93	1441	3177.41	
48	1200	1168	45.98	1392	54.81	1289	50.74	1335	52.56	40	32	4	1-1/8-8	470	18.50	65	2.56	1074	49.09	800	31.50	2502	5516.91	

## Class 300

Size	d		D		G		C		N E		n e		L		t		A		B		Weight			
in mm	mm	in	mm	in	mm	in							mm	in	mm	in	mm	in	mm	in	mm	in	kg	Lbs
3	80	86	3.39	210	8.27	127	5.00	168.5	6.63	4	22	4	3/4-10	114	4.49	28.5	1.12		7.44	88	3.86	17	37.48	
4	100	110	4.33	280	10.04	157	6.18	200	7.87	4	22	4	3/4-10	127	5.00	31.8	1.25		8.19	110	4.33	21	46.08	
5	125	127	5.00	255	11.02	186	7.32	235	9.25	4	22	4	3/4-10	140	5.51	35	1.38	233	9.17	128	5.04	28	60.63	
6	150	152	5.98	320	12.60	216	8.50	269.9	9.51	8	25	4	3/4-10	140	5.51	36.6	1.44		9.92	149	5.87	34	74.96	
8	200	203	7.99	380	14.96	270	10.63	330	12.99	8	29	4	7/8-9	152	5.98	41.2	1.62	321	12.64	235	9.25	63	138.45	
10	250	254	10.00	445	17.52	324	12.76	387	15.24	12	29	4	1-8	165	6.50	47.8	1.88	393	15.47	290	11.42	73	160.27	
12	300	305	12.01	520	20.47	381	15.00	451	17.76	12	32	4	1-1/8-8	178	7.01	50.8	2.00	433	17.04	305	12.01	108	237.21	
14	350	337	13.27	584	22.99	413	16.26	514.5	20.26	16	32	4	1-1/8-8	190	7.48	53.9	2.12	622	24.49	348	13.70	264	581.13	
16	400	388	15.28	648	25.51	470	18.50	571.5	22.50	16	35	4	1-1/4-8	216	8.50	57.2	2.25	718	28.27	365	14.37	335	739.20	
18	450	432	17.01	711	27.99	533	20.98	628.5	24.74	20	35	4	1-1/4-8	222	8.74	60.5	2.38	745	29.33	415	16.34	533	1173.94	
20	500	483	19.02	775	30.51	584	22.99	686	27.01	20	35	4	1-1/4-8	229	9.02	63.5	2.50	864	34.02	430	16.93	674	1485.01	
24	600	584	22.99	914	35.98	692	27.24	813	32.01	20	41	4	1-1/2-8	267	10.51	69.9	2.75	929	36.58	501	19.72	1121	2471.34	

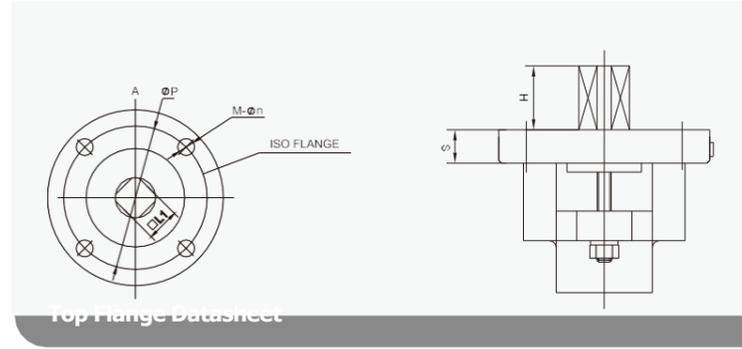
Note: 1. Flange Dimensions of 26" and large size are according to ASME B16.47 B Series.

## Class 600

Size	d		D		G		C		N E		n e		L		t		A		B		Weight			
in mm	mm	in	mm	in	mm	in							mm	in	mm	in	mm	in	mm	in	mm	in	kg	Lbs
3	80	88	3.46	210	8.27	127	5.00	127	5.00	4	22	4	3/4-10	180	7.09	38.2	1.50	231	9.09	102	4.02	24	52.92	
4	100	114	4.49	273	10.75	157	6.18	157	6.18	8	25	*	*	190	7.48	44.5	1.75	269	10.59	124	4.88	49	108.05	
6	150	164	6.46	356	14.02	216	8.																	

## Top Flange Datasheet

### Engineering Data



## Class 150

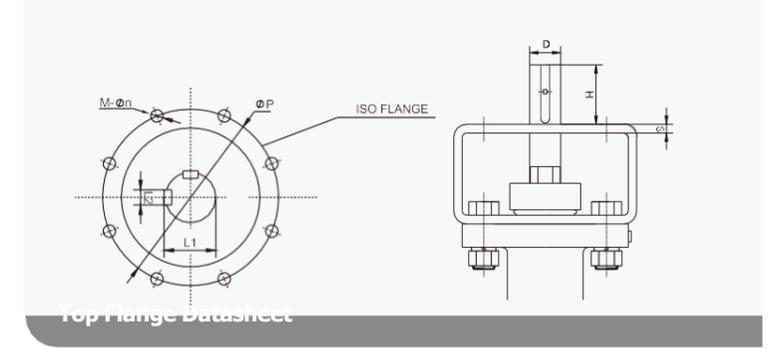
Size		H		S		ISO	L1		P		M-n
in	mm	mm	in	mm	in		mm	in	mm	in	
2	50	19	0.74	11	0.43	F07	11	0.43	70	2.76	4-9.5
3	80	19	0.74	13	0.51	F10	14	0.55	102	4.02	411
4	100		0.75	13	0.51	F10	17	0.67	102	4.02	411
5	125	21	0.83	13	0.51	F10	19	0.75	102	4.02	4.11
6	150	21	0.83	13	0.51	F10	19	0.75	102	4.02	4.11
8	200	24	0.94	15	0.59	F12	22	0.87	125	4.92	414
10	250	29	1.14	15	0.59	F12	27	1.06	125	4.92	414
12	300	29	1.14	20	0.79	F14	27	1.06	140	5.51	4-18

## Class 300

Size		H		S		ISO	L1		P		M-n
in	mm	mm	in	mm	in		mm	in	mm	in	
3	80	16	0.63	13	0.51	F10	14	0.55	102	4.02	411
4	100	20	0.79	13	0.51	F10	17	0.67	102	4.02	411
5	125	25	0.98	13	0.51	F10	19	0.75	102	4.02	4-11
6	150	25	0.98	13	0.51	F10	19	0.75	No	4.02	411
8	200	35	1.38	15	0.59	F12	27	1.06	125	4.92	4-14
10	250	35	1.38	25	0.98	F16	32	1.26	165	6.50	4-22
12	300	40	1.57	25	0.98	F16	36	1.42	165	6.50	4-22

## Top Flange Datasheet

### Engineering Data



## Class 150

Size		D		H		S		L1		L2		ISO	P		M-n
in	mm	mm	in	mm	in	mm	in	mm	in	mm	in		mm	in	
14	350	35	1.38	99	3.90	10	0.39	38	1.50	10	0.39	F16	165	6.50	4-22
16	400	40	1.57	99	3.90	10	0.39	43	1.69	12	0.47	F16	165	6.50	4-22
18	450	46	1.81	99	3.90	10	0.39	49.5	1.95	14	0.55	F25	254	10.00	8-18
20	500	50	1.97	115	4.53	12	0.47	53.5	2.11	14	0.55	F25	254	10.00	8-18
24	600	60	2.36	130	5.12	12	0.47	64	2.52	18	0.71	F25	254	10.00	8-18
26	700	75	2.95	185	7.28	12	0.47	79.5	3.13	20	0.79	F30	298	11.73	8-22
30	750	80	3.15	185	7.28	12	0.47	85	3.35	22	0.87	F30	298	11.73	8-22
32	800	85	3.35	185	7.28	12	0.47	90	3.54	22	0.87	F30	298	11.73	8-22
36	900	90	3.54	190	7.48	40	1.57	95	3.74	25	0.98	F35	356	14.02	8-33
40	1000	100	3.94	210	8.27	40	1.57	106	4.17	28	1.10	F35	356	14.02	8-33
48	1200	120	4.72	235	9.25	50	1.97	127	5.00	32	1.26	F40	406	15.98	8-39

## Class 300

Size		D		H		S		L1		L2		ISO	P		M-n
in	mm	mm	in	mm	in	mm	in	mm	in	mm	in		mm	in	
14	350	50	1.97	84	3.31	12	0.47	53.5	2.11	14	0.55	F25	254	10.00	8-18
16	400	55	2.17	118	4.65	12	0.47	59	2.32	16	0.63	F25	254	10.00	8-18
18	450	60	2.36	125	4.92	12	0.47	64	2.52	18	0.71	F25	254	10.00	8-18
20	500	70	2.76	160	6.30	12	0.47	74.5	2.93	20	0.79	F30	298	11.73	8-22
24	600	80	3.15	185	7.28	12	0.47	85	3.35	22L	0.87	F30	298	11.73	8-22

## Class 600

Size		D		H		S		L1		L2		ISO	P		M-n
in	mm	mm	in	mm	in	mm	in	mm	in	mm	in		mm	in	
3	80	25	0.98	30	1.18	8	0.31	28	1.10	8	0.31	F10	102	4.02	4-11
4	100	28	1.10	40	1.57	8	0.31	31	1.22	8	0.31	F10	102	4.02	4-11
6	150	35	1.38	60	2.36	10	0.39	38	1.50	10	0.39	F12	125	4.92	4-14
8	200	40	1.57	95	3.74	10	0.39	43	1.69	12	0.47	F16	165	6.50	4-22
10	250	50	1.97	105	4.13	12	0.47	53.5	2.11	14	0.55	F16	165	6.50	4-22
12	300	60	2.36	125	4.92	12	0.47	64	2.52	18	0.71	F25	254	10.00	8-18

## Class 150

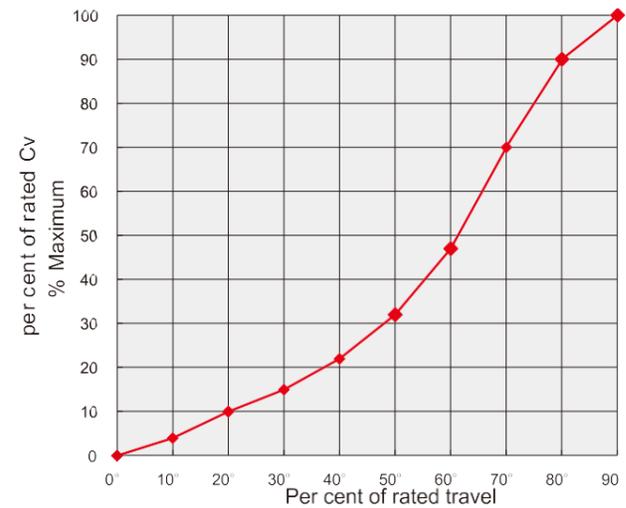
Valve Size	Disc Opening Angle									
	Inch mm	10°	20°	30°	40°	50°	60°	70°	80°	90°
3	80	3	13	21	30	47	68	68	137	182
4	100	7	30	49	69	110	159	159	319	425
6	150	17	75	124	176	278	402	402	809	1078
8	200	33	144	237	336	531	768	768	1545	2060
10	250	62	272	446	632	1001	1447	1447	2910	3880
12	300	89	388	637	903	1429	2066	2066	4155	5540
14	350	113	496	814	1154	1827	2641	2641	5310	7080
16	400	136	595	979	1386	2193	3171	3171	6375	8500
18	450	183	799	1313	1861	2946	4260	4260	8565	11420
20	500	253	1106	1817	2575	4076	5893	5893	11850	15800
24	600	355	1554	2553	3619	5728	8281	8281	16650	22200
28	700	472	2065	3393	4809	7611	11004	11004	22125	29500
30	750	621	2717	4464	6328	10016	14480	14480	29115	38820
32	800	691	3024	4968	7042	11146	16114	16114	32400	43200
36	900	845	3696	6072	8606	13622	19694	19694	39600	52800
40	1000	1098	4802	7889	11182	17699	25588	25588	51450	68600
42	1050	1408	6160	10120	14344	22704	32824	32824	66000	88000
48	1200	1728	7560	12420	17604	27864	40284	40284	81000	108000

## Class 300

Valve Size	Disc Opening Angle									
	Inch mm	10°	20°	30°	40°	50°	60°	70°	80°	90°
3	80	6	16	24	36	52	76	113	146	162
4	100	15	37	55	80	117	172	256	329	365
6	150	39	98	147	215	313	460	685	880	978
8	200	65	163	245	359	522	766	1141	1467	16301
10	250	124	310	465	682	992	1457	2170	2790	3100
12	300	182	456	684	1003	1459	2143	3192	4104	4560
14	350	205	512	768	1126	1638	2406	3584	4608	5120
16	400	269	672	1008	1478	2150	3158	4704	6048	6720
18	450	352	880	1320	1936	2816	4136	6160	7920	8800
20	500	460	1150	1725	2530	3680	5405	8050	10350	11500
24	600	647	1618	2427	3560	5178	7605	11326	14562	16180
26	650	936	2340	3510	5148	7488	10998	16380	21060	23400
28	700	1172	2930	4395	6446	9376	13771	20510	26370	29300
30	750	1564	3910	5865	8602	12512	18377	27370	35190	39100
32	800	1852	4630	6945	10186	14816	21761	32410	41670	46300
36	900	1852	4630	6945	10186	14816	21761	32410	41670	46300
40	1000	2064	5160	7740	11352	16512	24252	36120	46440	51600
42	1050	2616	6540	9810	14388	20928	30738	45780	58860	65400
48	1200	3344	8360	12540	18392	26752	39292	58520	75240	83600

## Class 600

Valve Size	Disc Opening Angle									
	Inch mm	10°	20°	30°	40°	50°	60°	70°	80°	90°
3	80	6	16	23	34	50	73	109	140	156
4	100	10	26	39	57	82	121	180	231	257
6	150	29	72	108	159	231	340	506	651	723
8	200	53	132	199	291	424	622	927	1192	1324
10	250	81	201	302	443	644	946	1409	1812	2013
12	300	112	279	418	614	892	1311	1952	2510	2789
14	350	159	399	598	877	1276	1873	2790	3587	3986
16	400	201	502	753	1105	1607	2361	3516	4521	5023
18	450	225	562	843	1237	1799	2642	3935	5059	5621
20	500	317	793	1190	1745	2538	3727	5551	7137	7930
24	600	461	1152	1728	2534	3686	5414	8064	10368	11520



### Notes:

1) Definition:

Cv: The volume of water in gpm at 15°C that will pass through a valve with differential pressure of 1 PSI

Kv: The volume of water in m<sup>3</sup>/hr at 15°C that will pass through a valve with differential pressure of 1 bar.

2) Cv= 1.155 Kv

Torque for series TBT with PTFE seat and shaft down stream at specified pressure

TBT Type  
Operating Torque

## Class 150 (Shaft Downstream)

Size		100psi (0.7Mpa)		150psi (1.0Mpa)		200psi (1.4Mpa)		285psi(1.97Mpa)	
NPS	DN	N.M	Ft-lbs	N.M	Ft-lbs	N.M	Ft-lbs	N.M	Ft-lbs
2	50	8	6	11	8	15	11	15	10
2-1/2	65	14	10	16	11	18	13	21	16
3	80	21	16	25	19	31	23	40	29
4	100	36	26	44	32	55	41	71	53
5	125	52	38	62	45	74	55	93	69
6	150	68	50	82	60	100	74	128	94
8	200	163	121	206	152	263	100	349	258
10	250	296	219	378	279	487	263	650	480
12	300	442	326	565	447	730	487	976	721
14	350	569	420	725	535	932	730	1243	917
16	400	633	467	775	572	964	932	1248	921
18	450	1005	742	1255	926	1588	964	2088	1541
20	500	1196	883	1451	1071	1791	1322	2302	1699
22	550	1543	1139	1870	1380	2305	1701	2958	2183
24	600	2474	1826	3104	2291	3945	2911	5205	3842
26	650	2612	1928	3155	2329	3880	2864	4967	3666
28	700	3188	2353	3826	2824	4677	3452	5953	4393
30	750	3913	2888	4724	3486	5805	4284	7427	5481
32	800	4706	3473	5643	4165	6892	5087	8765	6469
34	850	5595	4129	6701	4946	8175	6034	10387	7667
36	900	6157	4544	7391	5455	9036	6669	11504	8490
40	1000	7973	5885	9556	7053	11667	8611	14834	10948
42	1050	8830	6517	10622	7840	13012	9603	16596	12249
48	1200	13473	9944	16152	11921	19724	14557	25081	18512

## Class 300

Size		220psi (1.5Mpa)		290psi (2.0Mpa)		435psi (3.0Mpa)		580psi (4.0Mpa)		740psi (5.1Mpa)	
NPS	DN	N.M	Ft-lbs								
2	50	11	8	13	10	17	13	21	15	24	19
2-1/2	65	18	14	21	16	27	20	32	24	39	29
3	80	33	24	40	29	54	40	69	51	85	63
4	100	58	43	71	53	99	73	126	93	157	116
5	125	71	53	87	64	119	88	151	111	186	138
6	150	104	77	127	94	173	129	219	162	269	200
8	200	299	220	373	275	521	387	669	494	832	618
10	250	584	431	730	539	1020	758	1311	968	1631	1212
12	300	639	471	774	571	1045	776	1315	971	1613	1198
14	350	905	668	1088	803	1454	1080	1820	1343	2222	1651
16	400	1285	948	1553	1147	2091	1554	2629	1941	3221	2393
18	450	1733	1279	2099	1549	2830	2103	3562	2629	4366	3244
20	500	2424	1789	2923	2158	3921	2913	4919	3630	6016	4470
22	550	3093	2282	3733	2755	5014	3725	6295	4646	7704	5724
24	600	3884	2867	4694	3464	6312	4690	7930	5853	9710	7214

## Class 600 (Shaft Downstream)

Size		220psi (1.5Mpa)		290psi (2.0Mpa)		435psi (3.0Mpa)		580psi (4.0Mpa)		740psi (5.1Mpa)	
NPS	DN	N.M	Ft-lbs								
3	80	56	42	65	48	75	55	93	69	112	82
4	100	98	72	116	85	133	98	168	124	204	150
5	125	225	166	261	193	297	219	369	272	441	325
6	150	278	205	326	241	375	277	472	348	569	420
8	200	589	435	691	510	794	586	1000	738	1205	889
10	250	1194	881	1391	1027	1589	1173	1983	1464	2378	1755
12	300	1959	1446	2294	1693	2628	1940	3297	2433	3965	2927
14	350	2541	1876	2987	2205	3433	2534	4325	3192	5216	3850
16	400	3272	2415	3841	2835	4410	3255	5547	4094	6685	4934
18	450	4689	3461	5506	4064	6323	4667	7957	5873	9591	7078
20	500	5976	4411	7068	5217	8160	6023	10344	7635	12528	9247
24	600	9684	7148	11501	8489	13318	9830	16952	12512	20586	15194

NOTE: The above data are calculated in normal temperature, need a safe factor of 1.5 to select driver.

Torque for series TBF with PTFE Pre safe seat and shaft down stream at spec'ed pressure.

TBT Type  
Operating Torque

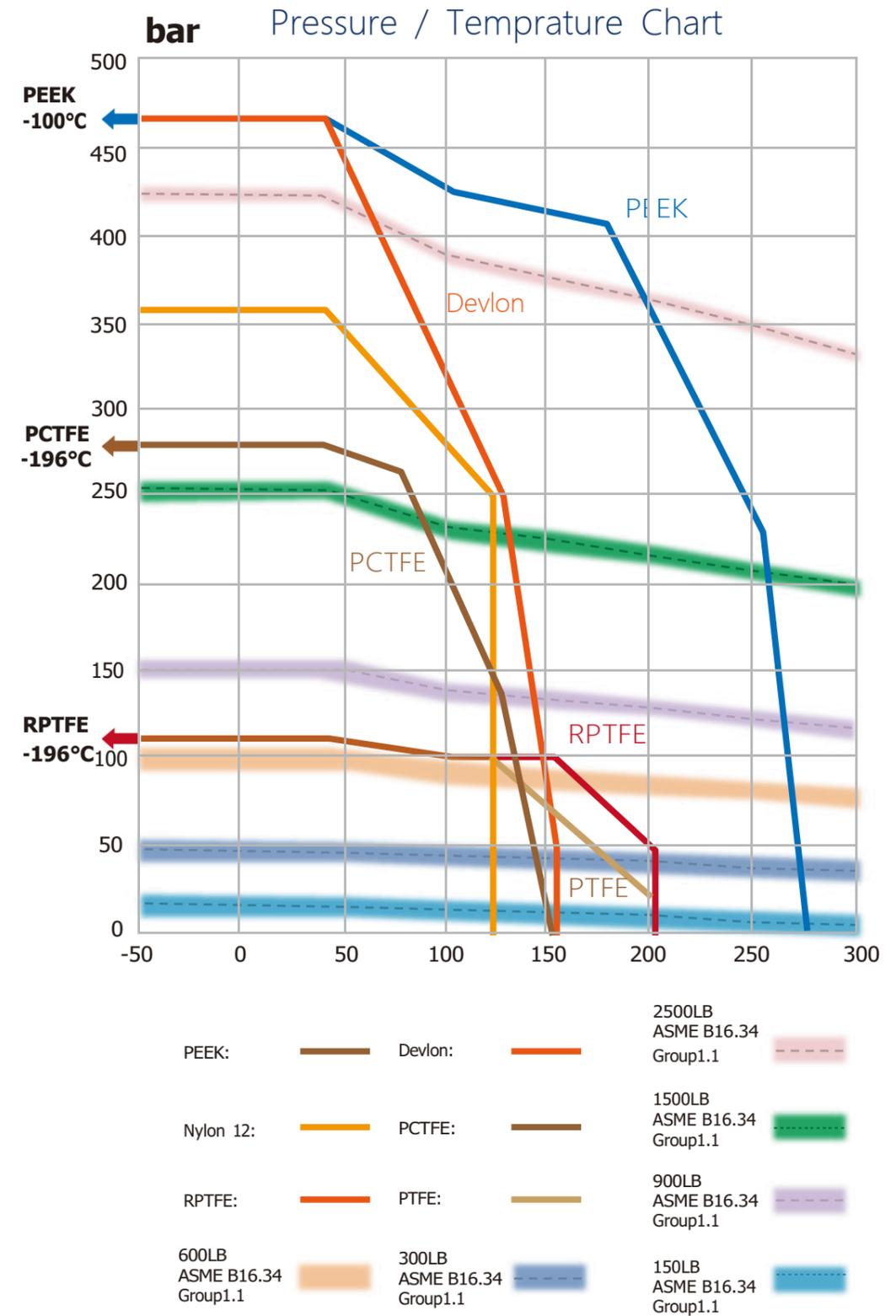
Class 150 (Shaft Downstream)

Size		100psi (0.7Mpa)		150psi (1.0Mpa)		200psi (1.4Mpa)		285psi(1.97Mpa)	
NPS	DN	N.M	Ft-lbs	N.M	Ft-lbs	N.M	Ft-lbs	N.M	Ft-lbs
2	50	11	8	12	9	14	10	16	12
2-1/2	65	20	15	22	16	24	18	27	20
3	80	27	20	31	23	37	27	46	34
4	100	43	32	51	38	62	46	79	58
5	125	65	48	75	55	87	64	106	78
6	150	80	59	94	69	112	83	140	103
8	200	183	135	226	167	283	209	369	272
10	250	326	240	407	301	516	381	680	502
12	300	477	352	600	443	765	565	1012	747
14	350	612	452	768	567	975	720	1286	949
16	400	689	509	831	614	1021	753	1305	963
18	450	1079	797	1329	981	1662	1227	2162	1596
20	500	1309	966	1564	1155	1905	1406	2415	1782
22	550	1680	1240	2007	1481	2442	1802	3095	2284
24	600	2636	1946	3267	2411	4107	3032	5368	3962
26	650	2858	2110	3402	2511	4126	3046	5213	3848
28	700	3472	2563	4110	3034	4961	3662	6237	4603
30	750	4236	3126	5047	3725	6128	4523	7750	5720
32	800	5199	3837	6136	4529	7385	5451	9259	6833
34	850	6148	4537	7254	5354	8728	6442	10940	8075
36	900	6710	4952	7944	5863	9589	7077	12057	8898
40	1000	8644	6380	10227	7549	12339	9107	15505	11444
42	1050	9397	6936	11189	8258	13579	10022	17163	12667
48	1200	14278	10538	16957	12515	20528	15151	25886	19106

Class 300 (Shaft Downstream)

Size		220psi (1.5Mpa)		290psi (2.0Mpa)		435psi (3.0Mpa)		580psi (4.0Mpa)		740psi (5.1Mpa)	
NPS	DN	N.M	Ft-lbs								
2	50	14	10	16	12	20	15	24	18	28	21
2-1/2	65	24	18	27	20	SE	24	38	28	45	33
3	80	39	29	46	34	60	44	75	55	91	67
4	100	65	48	79	58	106	78	134	99	164	121
5	125	79	58	95	70	127	94	159	117	194	143
6	150	116	86	139	103	185	137	231	171	282	208
8	200	324	239	398	294	546	403	695	513	857	633
10	250	633	467	778	574	1069	789	1360	1003	1679	1239
12	300	710	524	845	624	1116	823	1386	1023	1684	1243
14	350	1018	751	1201	886	1567	1156	1933	1426	2335	1723
16	400	1421	1049	1690	1247	2228	1644	2766	2042	3358	2478
18	450	1896	1399	2262	1669	2993	2209	3724	2749	4529	3342
20	500	2671	1971	3170	2340	4168	3076	5165	3812	6263	4622
22	550	3375	2491	4016	2964	5297	3909	6578	4855	7987	5895
24	600	4208	3106	5017	3703	6635	4897	8253	6091	10033	7405

Note: 1.The above datas are calculated in normal temperature,it need a safe factor of 1.3~1.5 to select driver



Note: Other materials are available upon request.  
If the operating condition is beyond the range above, please contact MVC's technical team.  
MVC reserves the right to update without notice.