

# ***Wafer, Semi-Lug, Lug and and Double Flanged Type***



BUREAU  
VERITAS



DNV



## Description Product Group 200 Butterfly Valves

The centric replaceable liner butterfly valve is capable of bi-directional flow and bubble tight shut-off at full rated pressure.

### AVAILABLE SERIES

Series 210 Tripple Eccentric Wafer Type Metal Seated Butterfly Valve  
Series 220 Tripple Eccentric Lug Type Metal Seated Butterfly Valve  
Series 240 Tripple Eccentric Double Flanged Type Metal Seated Butterfly Valve  
Series 250 Tripple Eccentric Double Flanged Type Metal Seated Butterfly Valve

### STANDARD COMPLIANCE

Product Group 200 butterfly valves comply in general with the following standards; ISO 5752, API 609, BS 5155, JIS F7480, JIS B2032, JIS B2064, KSV 7490

### PRODUCTION RANGE

Size range DN 50 (2") ~ DN 2000 (80")  
Working Pressure up to 16 barg  
Working Temperature range -20°C to ~ +200°C

### APPLICABLE FLANGE

ASME B16.1 Class 125#  
ASME B16.5 Class 150#  
EN 1092 / DIN 2501, PN 6, PN 10, PN 16  
BS 4504 PN 6, PN 10  
ISO 2084 PN 6, PN 10  
KS / JIS, 5K, 10K, 16K

Wafer Type



Series 210

Semi Lug Type



Series 220

Lug Type



Series 240

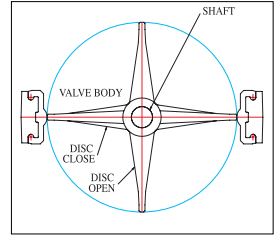
Double Flanged Type



Series 250

## The Concentric Design Principle

- Center of the shaft in Center of the Disc and Valve Seat.
- Applicable for Butterfly Valves with elastomer lining.
- Symmetric disc design ensures favorable flow characteristics and low pressure drop.
- Concentric shaft ensures low operating torque.
- Lining gives a good protection to valve body, and acts as flange gasket.
- Shaft penetrates the valve seat.
- Wide choice of elastomer seating materials.
- Suitable for installation in Low Pressure Systems
- Bi-Directional bubble tight shut off.
- Unique replaceable seat design, comparable with bonded liner seats.



## Classification by Connection

Appearance	Type	General Characteristics
	Series 210 WAFER Type	<p><b>General Applications</b>            Shipbuilding, water works, heating and ventilation, power plants, oil refinery Chemical plants etc.</p> <p>Valve to be installed between flanges using long bolts.            Valve body with centering lugs for easy installation.            Easy handling and light weight.            Easy installation, less bolt quantity and low cost.</p>
	Series 220 SEMI-LUG Type	<p><b>General Applications</b>            Shipbuilding, water works, heating and ventilation, power plants, oil refinery Chemical plants etc.</p> <p>Valve to be installed between flanges, valve body with two pair of threaded lug bolt holes (Top and bottom).            Easy handling and light weight, easy installation.            Suitable for "End of Line" Service.</p>
	Series 240 FULL-LUG Type	<p><b>General Applications</b>            General piping system pump outlets, tank drains, shipbuilding, ship sides etc.</p> <p>To be installed between flanges, valve body with full pattern threaded lug bolt holes.            Suitable for shipside valve.            Available in different flange standards.            Suitable for "End of Line" Service.</p>
	Series 250 DOUBLE FLANGED Type	<p><b>General Applications</b>            Shipperside valves, ballast valves, water works, power plants, etc all piping system.</p> <p>Valve body both ends with complete flanges suitable to connect with pipe flanges.            Available in different flange standards.            Suitable for shipside valve.            Suitable for "End of Line" Service.</p>

## Major Properties

The valve is, closed by a 90° turn clockwise, non jamming and has a resilient elastomer seat for bi-directional zero leakage service. The valve is torque seated and the unique replaceable seat is designed in such a way that it cannot move while operating the valve or during operation (comparable with a bonded liner seat).

## Operations

In general the following operation possibilities are available.

- Manual operation, handlever or gearbox.
- Pneumatic actuators.
- Electric actuators.
- Hydraulic actuators.



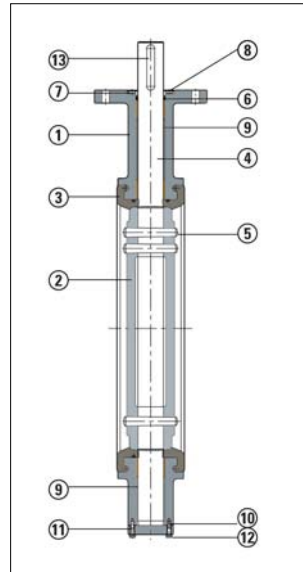
## Approvals, Certification

PG 200 butterfly valves have the following approvals, certification.

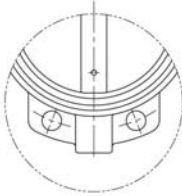
- CE / PED.
- ABS certificate of design assesment.
- BV, DNV, LRS and KRS type approvals.



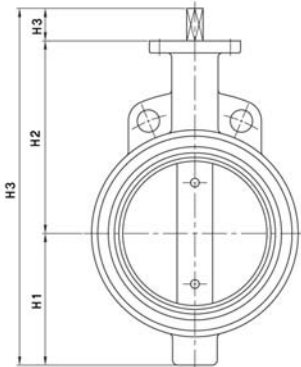
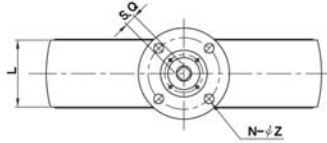
P.NO.	PART NAME	MATERIAL
1	BODY	CAST IRON / DUCTILE IRON STAINLESS STEEL / CARBON STEEL ALUMINUM BRONZE
2	DISC	STAINLESS STEEL / ALLOY STEEL ALUMINUM BRONZE
3	SEAT	NBR / EPDM / SILICON / VITON
4	STEM	STAINLESS STEEL(SS304, 316, 410, 420, 17-4PH)
5	DISC PIN	STAINLESS STEEL
6	O-RING	RUBBER SAME AS SEAT MATERIAL
7	PACKING GLAND	BRONZE
8	GLAND BOLT	STAINLESS STEEL
9	BEARING	PTFE + pb
10	O-RING	RUBBER SAME AS SEAT MATERIAL
11	BOTTOM COVER	CARBON STEEL / STAINLESS STEEL / AL-BRONZE / MILD STEEL
12	BOLT & WASHER	STEEL / STAINLESS STEEL
13	KEY	CARBON STEEL



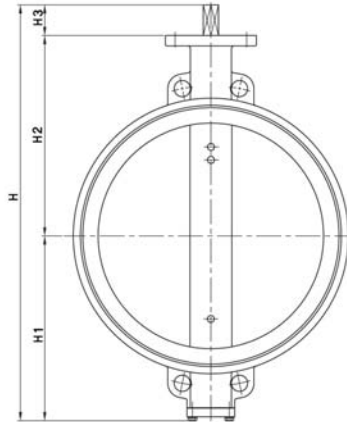
## Dimensions Series 210 Wafer



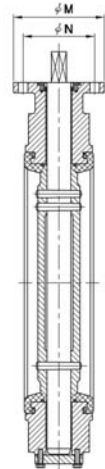
ND 250(10") ~ 350(14")



ND 200(8") and BELOW



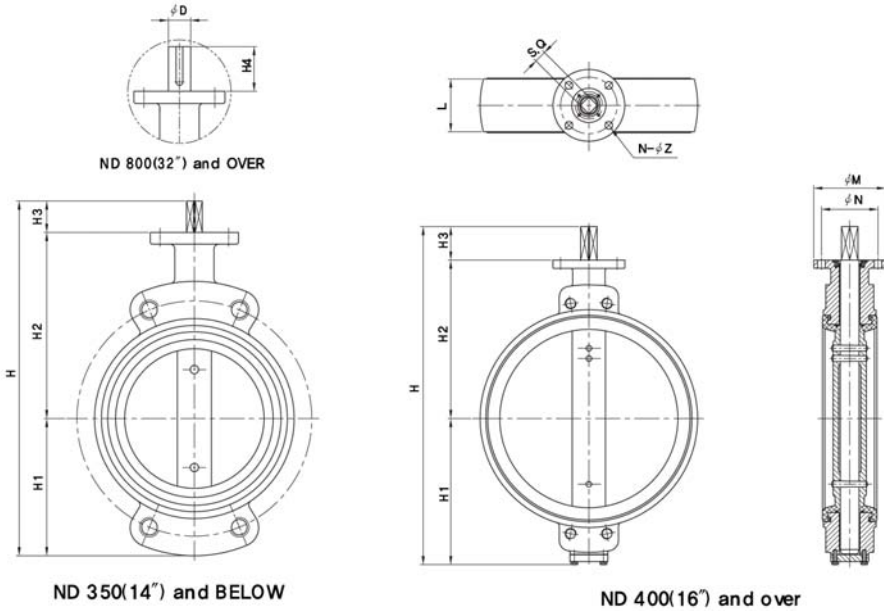
ND 400(16") and OVER



### Dimensions [mm]

SIZE		d	L	H	H1	H2	H3	t	W	STEM		TOP FLANGE			WEIGHT (APPROX) (kg)
inch	mm									SQ	TYPE	N	M	N-Z	
2'	50	50	43	216	55	128	33	10	21	9	F07	70	90	4-9	3
2.5'	65	65	46	239	66	140	33	10	43	9	F07	70	90	4-9	4
3'	80	81	46	258	75	150	33	11	65	9	F07	70	90	4-9	5
4'	100	103	52	293	95	165	33	12	87	12	F07	70	90	4-9	5
5'	125	127	56	326	115	178	33	13	113	12	F07	70	90	4-9	7
6'	150	147	56	353	130	190	33	13	136	12	F07	70	90	4-9	8
8'	200	199	60	435	155	230	50	14	189	17	F10	102	125	4-12	13
10'	250	247	68	535	215	270	50	14	236	17	F10	102	125	4-12	20
12'	300	296	78	611	251	310	50	18	284	22	F10	102	125	4-12	31
14'	350	336	78	655	270	335	50	18	326	27	F10	102	125	4-12	43
16'	400	379	102	755	325	370	60	20	365	27	F14	140	175	4-18	70
18'	450	432	114	797	347	390	60	20	415	27	F14	140	175	4-18	86
20'	500	486	127	883	383	420	80	24	468	36	F16	165	210	4-22	128

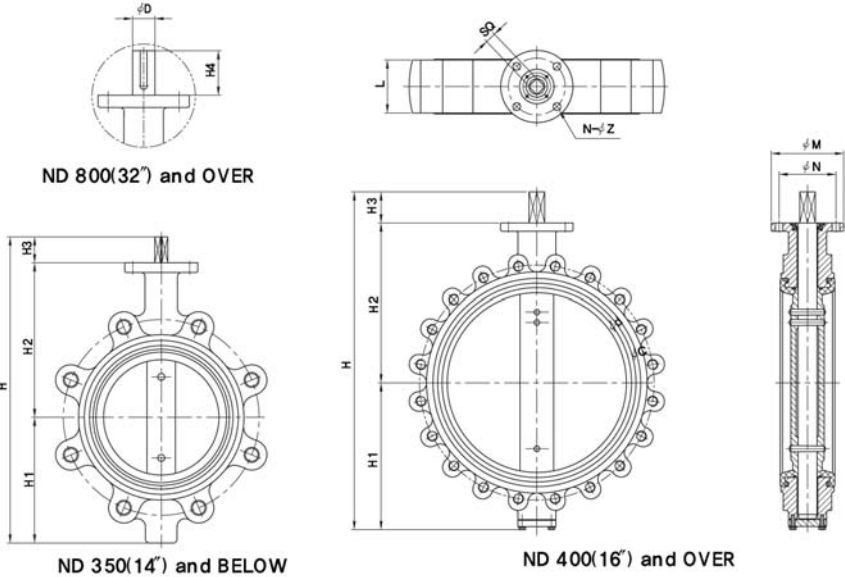
## Dimensions Series 220 Semi-Lug



### Dimensions [mm]

SIZE		STEM									TOP FLANGE				WEIGHT (APPROX) (kg)			
inch	mm	d	L	H	H1	H2	H4	t	W	D	KEY SIZE	SQUARE		TYPE		N	M	N-Z
												SO	H4					
2'	50	51	43	216	55	128	-	10	21	-	-	9	33	F07	70	90	4-9	3
2.5	65	65	46	239	66	140	-	10	43	-	-	9	33	F07	70	90	4-9	4
3'	80	81	46	258	75	150	-	11	65	-	-	9	33	F07	70	90	4-9	5
4'	100	103	52	293	95	165	-	12	87	-	-	12	33	F07	70	90	4-9	8
5'	125	127	56	326	115	178	-	13	113	-	-	12	33	F07	70	90	4-9	9
6'	150	148	56	353	130	190	-	13	136	-	-	12	33	F07	70	90	4-9	10
8'	200	199	60	435	155	230	-	14	189	-	-	17	50	F10	102	125	4-12	19
10'	250	247	68	535	215	270	-	14	236	-	-	17	50	F10	102	125	4-12	27
12'	300	296	78	611	251	310	-	18	284	-	-	22	50	F10	102	125	4-12	40
14'	350	336	78	655	270	335	-	18	326	-	-	27	50	F10	102	125	4-12	46
16'	400	380	102	755	325	370	-	20	365	-	-	27	60	F14	140	175	4-18	77
18'	450	432	114	797	347	390	-	20	415	-	-	27	60	F14	140	175	4-18	95
20'	500	486	127	883	383	420	-	24	468	-	-	36	80	F16	165	210	4-22	135
22'	550	520	154	967	425	462	-	24	495	-	-	36	80	F16	165	210	4-22	195
24'	600	569	154	1028	453	495	-	25	546	-	-	50	80	F16	165	210	4-22	240
26'	650	619	165	1095	490	525	-	26	595	-	-	50	80	F16	165	210	4-22	285
28'	700	669	165	1150	515	555	-	28	647	-	-	50	80	F16	165	210	4-22	305
30'	750	719	190	1230	550	590	-	30	692	-	-	50	90	F16	165	210	4-22	362
32'	800	764	190	1352	592	640	120	32	738	80	22 x 14	-	-	F25	254	300	8-18	442
34'	850	816	210	1382	612	650	120	33	787	80	22 x 14	-	-	F25	254	300	8-18	505
36'	900	864	203	1488	658	700	130	33	838	80	22 x 14	-	-	F25	254	300	8-18	620
40'	1000	966	216	1645	725	770	150	35	940	95	25 x 14	-	-	F30	298	350	8-23	735

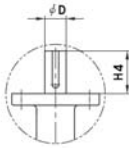
## Dimensions Series 240 Lug



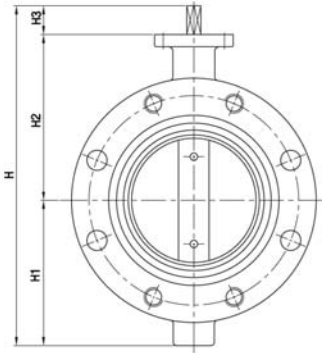
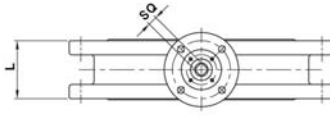
### Dimensions [mm]

SIZE		d	L	H	H1	H2	H4	t	W	STEM				TOP FLANGE			WEIGHT (APPROX.) (kg)	
inch	mm									D	KEY SIZE	SQUARE SQ	H4	TYPE	N	M		N-Z
2'	50	50.5	43	21.6	55	12.8	-	10	21	-	-	9	33	F07	70	90	4-9	3
2.5'	65	65	46	23.9	66	14.0	-	10	43	-	-	9	33	F07	70	90	4-9	4
3'	80	81	46	25.8	75	15.0	-	11	65	-	-	9	33	F07	70	90	4-9	5
4'	100	103	52	29.3	95	16.5	-	12	87	-	-	12	33	F07	70	90	4-9	9
5'	125	127	56	32.6	115	17.8	-	13	113	-	-	12	33	F07	70	90	4-9	10
6'	150	147	56	35.3	130	19.0	-	13	136	-	-	12	33	F07	70	90	4-9	12
8'	200	199	60	43.5	155	23.0	-	14	189	-	-	17	50	F10	102	125	4-12	19
10'	250	247	68	53.5	215	27.0	-	14	236	-	-	17	50	F10	102	125	4-12	34
12'	300	296	78	61.1	251	31.0	-	18	284	-	-	22	50	F10	102	125	4-12	42
14'	350	336	78	65.5	270	33.5	-	18	326	-	-	27	50	F10	102	125	4-12	75
16'	400	379	102	75.5	325	37.0	-	20	365	-	-	27	60	F14	140	175	4-18	113
18'	450	432	114	79.7	347	39.0	-	20	415	-	-	27	60	F14	140	175	4-18	148
20'	500	486	127	88.3	383	42.0	-	24	468	-	-	36	80	F16	165	210	4-22	165
22'	550	519	154	96.7	425	46.2	-	24	495	-	-	36	80	F16	165	210	4-22	234
24'	600	569	154	102.8	453	49.5	-	25	546	-	-	50	80	F16	165	210	4-22	270
26'	650	619	165	109.5	490	52.5	-	26	595	-	-	50	80	F16	165	210	4-22	309
28'	700	669	165	115.0	515	55.5	-	28	647	-	-	50	80	F16	165	210	4-22	350
30'	750	719	190	123.0	550	59.0	-	30	692	-	-	50	90	F16	165	210	4-22	450
32'	800	764	190	135.2	592	64.0	120	32	738	80	22 x 14	-	-	F25	254	300	8-18	485
34'	850	816	210	138.2	612	65.0	120	33	787	80	22 x 14	-	-	F25	254	300	8-18	540
36'	900	864	203	148.8	65.8	70.0	130	33	838	80	22 x 14	-	-	F25	254	300	8-18	635
40'	1000	966	216	164.5	72.5	77.0	150	35	940	95	25 x 14	-	-	F30	298	350	8-23	750

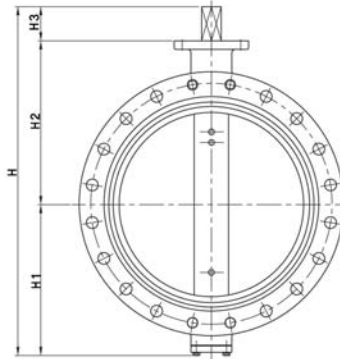
## Dimensions Series 250 Double Flanged



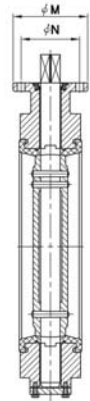
ND 800(32") and OVER



ND 80(3") ~ 350(14")



ND 400(16") and OVER

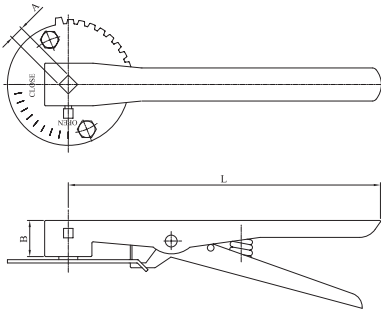


### Dimensions [mm]

SIZE		d	L	H	H1	H2	H4	t	W	STEM				TOP FLANGE			WEIGHT (APPROX) (kg)	
inch	mm									D	KEY SIZE	SQUARE		TYPE	N	M		N-Z
												SQ	H4					
2	50	50.5	40	24.9	88	12.8	-	10	27	-	-	9	33	F07	70	90	4-9	6
2.5	65	65	40	27.1	98	14.0	-	10	49	-	-	9	33	F07	70	90	4-9	7
3	80	81	60	28.8	105	15.0	-	11	51	-	-	9	33	F07	70	90	4-9	9
4	100	103	60	31.8	120	16.5	-	12	82	-	-	12	33	F07	70	90	4-9	12
5	125	127	100	35.1	140	17.8	-	13	74	-	-	12	33	F07	70	90	4-9	17
6	150	147	100	38.8	165	19.0	-	13	106	-	-	12	33	F07	70	90	4-9	22
8	200	199	100	47.0	190	23.0	-	14	170	-	-	17	50	F10	102	125	4-12	34
10	250	247	110	53.5	215	27.0	-	14	219	-	-	17	50	F10	102	125	4-12	50
12	300	296	110	61.1	251	31.0	-	18	273	-	-	22	50	F10	102	125	4-12	73
14	350	336	120	65.5	270	33.5	-	18	312	-	-	27	50	F10	102	125	4-12	99
16	400	379	130	75.5	325	37.0	-	20	355	-	-	27	60	F14	140	175	4-18	113
18	450	432	150	79.7	34.7	39.0	-	20	403	-	-	27	60	F14	140	175	4-18	14.8
20	500	486	160	88.3	38.3	42.0	-	24	458	-	-	36	80	F16	165	210	4-22	165
22	550	519	170	96.7	42.5	46.2	-	24	489	-	-	36	80	F16	165	210	4-22	234
24	600	569	170	10.28	45.3	49.5	-	25	54.1	-	-	50	80	F16	165	210	4-22	270
26	650	619	170	10.95	49.0	52.5	-	26	59.4	-	-	50	80	F16	165	210	4-22	30.9
28	700	669	180	11.50	51.5	55.5	-	28	64.2	-	-	50	80	F16	165	210	4-22	35.0
30	750	719	190	12.30	55.0	59.0	-	30	69.2	-	-	50	90	F16	165	210	4-22	39.5
32	800	764	200	13.52	59.2	64.0	12.0	32	73.5	80	22 x 14	-	-	F25	254	300	8-18	48.5
34	850	816	210	13.82	61.2	65.0	12.0	33	78.9	80	22 x 14	-	-	F25	254	300	8-18	54.0
36	900	864	230	14.88	65.8	70.0	13.0	33	83.1	80	22 x 14	-	-	F25	254	300	8-18	66.0
40	1000	966	250	16.45	72.5	77.0	15.0	35	91.4	95	25 x 14	-	-	F30	298	350	8-23	78.0
44	1100	1059	280	17.40	76.0	83.0	15.0	35	101.9	95	25 x 14	-	-	F30	298	350	8-23	89.0
48	1200	1160	300	18.80	84.0	89.0	15.0	35	109.3	95	25 x 14	-	-	F30	298	350	8-23	95.0
52	1300	1290	300	20.48	93.8	95.0	16.0	35	125.3	115	32 x 18	-	-	F30	298	350	8-23	105.0
56	1400	1355	330	21.29	94.9	100.0	18.0	35	131.2	130	32 x 18	-	-	F35	356	415	8-33	150.0
60	1500	1475	330	22.59	102.4	105.5	18.0	35	143.6	140	36 x 20	-	-	F35	356	415	8-33	14.10
64	1600	1521	360	24.50	112.0	115.0	18.0	50	147.5	140	36 x 20	-	-	F35	356	415	8-33	15.80
72	1800	1736	360	27.01	122.1	127.0	21.0	50	169.6	160	40 x 22	-	-	F35	356	415	8-33	21.10

## Lever Operators

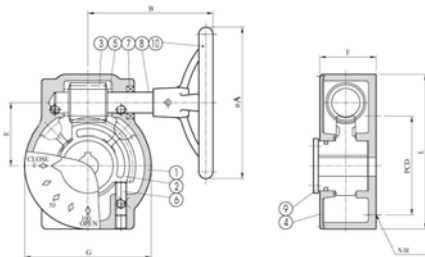
General Characteristic	Handlever with intermediate position lock plate Suitable for nominal sizes up to and including DN 150
Features	For quarter turn valves, spring loaded lever with 10 positions interval lock plate Handle indicates valve position



Model No.	Valve size	A	B	L
L-1	50.65.80	9	30	265
L-2	100~150	12	30	265

STANDARD MATERIALS		
1	Handle	Mild Steel
2	Lever	Mild Steel
3	Pin	Mild Steel
4	Spring	SS Steel
5	Screws	Mild Steel
6	Indicator	Mild Steel

## Gear Operators



Use	General purpose manual operator for on / off or throttling duties.
Features	Heavy duty, weather proof type
Options	Limit switch, Chainwheel, Locking device Handwheel extension shafts

MODEL NO.	Application SIZE	RAT O	A	E	G	B	F	L	ISO 5211		
									TYPE	PCD	N-M
WG-01	50A-150A	24:1	145	45	102	155	59	123	F07	70	4-MB
WG-02	200A-350A	32:1	195 250	65	138	235	71	167	F10	102	4-M10
WG-03	400A-450A	42:1	315	80	208	280	91	220	F14	140	4-M16
WG-04	500A-650A	53:1	400	120	244	340	126	305	F16	165	4-M20
WG-05	700A-850A	212:1	400	120	244	370	126	305	F16	165	4-M20

Item No.	Part name	Material
1	Housing	Cast Iron
2	Worm wheel	SS. Steel
3	Worm	Cast Iron
4	Cover	Cast Iron
5	Bush	Bronze
6	Adjust bolt	SS. Steel
7	Oil seal	Rubber
8	Worm shaft	SS. Steel
9	Indicator	Mild steel
10	Handle	Cast Iron

## Basic Formulas Cv-Value

Rated flow coefficient (Cv) is a number which represents a valve's ability to pass flow.

The bigger the Cv, the more flow can pass through the valve at a given pressure drop. The Cv value means the volume of water in US gallons per minute that passes through a given valve opening with a pressure drop of 1 pound square inch (Water at 60°F)

A Cv of 1900 means a valve will pass 1900 US gpm water of 60°F at a Dp of 1 PSI.

Formula 1

FLOW RATE LBS/HR(Steam or Water)

$$dp = \left( \frac{F\sqrt{v}}{63,5 Cv} \right)^2 \text{ or } Cv = \frac{F\sqrt{v}}{63,5\sqrt{dp}}$$

Where :

dp = pressure drop in PSI

F = flow rate in lbs /hr.

$\sqrt{v}$  = square root of specific volume ft.<sup>3</sup> /lb.  
 (downstream of valve)

Formula 2

FLOW RATE GPM(Water or Other Liquids)

$$dp = \left( \frac{Q}{Cv} \right)^2 \text{ or } Cv = \frac{Q}{\sqrt{dp}}$$

Where :

dp = pressure drop in PSI

Sg = specific gravity

Qv = Flow rate in GPM

The relation between Cv and Kv, expressed in the above mentioned unit of measure are as follows

$$Cv = 1.16kv$$

Cv values Product Group 200 Butterfly Valves

VALVE SIZE		DISC OPEN NG							
inch	mm	20°	30°	40°	50°	60°	70°	80°	90°
		Cv	Cv	Cv	Cv	Cv	Cv	Cv	Cv
2"	50	11.6	17.5	27.3	44.6	72	116	179	214
2.5"	65	19.6	29.6	46	75	122	197	302	362
3"	80	29.7	44.8	70	114	184	298	458	548
4"	100	45	70	109	178	289	466	715	856
5"	125	73	109	171	278	449	728	1118	1338
6"	150	104	158	246	401	650	1048	1610	1927
8"	200	186	280	437	713	1155	1863	2862	3426
10"	250	290	438	682	1114	1805	2911	4472	5353
12"	300	418	630	983	1604	2599	4192	6439	7708
14"	350	569	858	1338	2183	3523	5705	8764	10491
16"	400	743	1121	1747	2852	4620	7452	11447	13703
18"	450	940	1418	2211	3609	5847	9431	14488	17343
20"	500	1161	1751	2730	4456	7219	11644	17886	21411
22"	550	1405	2119	3303	5391	8701	14089	21642	25907
24"	600	1672	2522	3931	6416	10395	16767	25756	30832
26"	650	1962	2960	4614	7530	12152	19678	30227	36184
28"	700	2275	3432	5351	8733	14094	22821	35057	41966
30"	750	2612	3940	6142	10025	16242	26198	40244	48175
32"	800	2972	4483	6989	11406	18408	29807	45788	54812
34"	850	3355	5061	7890	12876	20781	33650	51691	61878
36"	900	3761	5674	8845	14436	23389	37725	57951	69371
38"	950	4191	6322	9888	16084	25958	42033	64569	77293
40"	1000	4643	7005	10920	17822	28763	46674	71544	85644
42"	1050	5119	7723	12176	19649	31711	51348	78877	94422
44"	1100	5618	8476	13213	21565	34803	56355	86568	103629
46"	1150	6141	9264	14441	23570	38039	61594	94617	113264
48"	1200	6683	10087	15725	25664	41419	67067	103024	123327

## Torque figures

Torque figures as mentioned in the torque table below are;

- Initial break away values in Nm (Newton Meters)
- Excluding** any safety factor
- For valves that are operated at least once per month
- Temperature 0 to 50 degr. C

### Safety factor (sf)

For sizing and safe operation purposes the specified torque values need to be multiplied with the following minimum safety factors;

- For liquid and lubricant media **sf = 1.20**
- For powdery (non-lubricant) media **sf = 1.55**
- For dry gasses and high viscous media **sf = 1.45**

### Service

For assistance in sizing and dimensioning actuator-valve combinations please contact our Engineers. We have wide experience in sizing Pneumatic, Electric and Hydraulic actuators.

TORQUE TABLE

SIZE		CONCENTRIC TYPE									
mm	inch	3bar		5bar		10bar		13bar		16bar	
		kg-m	Nm	kg-m	Nm	kg-m	Nm	kg-m	Nm	kg-m	Nm
50A	2	0.64	6.27	0.80	7.84	1.00	9.80	1.20	11.76	1.40	13.72
65A	2½	0.80	7.84	1.00	9.80	1.40	13.72	1.68	16.46	1.95	19.11
80A	3	1.04	10.19	1.30	12.74	1.80	17.64	2.16	21.17	2.45	24.01
100A	4	1.20	11.76	1.50	14.70	2.00	19.60	2.40	23.52	2.55	24.99
125A	5	1.84	18.03	2.30	22.54	3.00	29.40	3.60	35.28	4.00	39.20
150A	6	2.24	21.95	2.80	27.44	3.80	37.24	4.56	44.69	4.95	48.51
200A	8	5.70	55.86	7.13	69.83	16.35	160.23	19.62	192.28	25.40	248.92
250A	10	11.20	109.76	14.80	145.04	25.70	251.86	30.84	302.23	38.50	377.30
300A	12	19.60	192.08	24.50	240.10	35.00	343.00	42.00	411.60	48.50	475.30
350A	14	32.80	321.44	41.00	401.80	58.00	568.40	69.60	682.08	72.50	710.50
400A	16	40.80	399.84	51.00	499.80	72.00	705.60	86.40	846.72	85.00	833.00
450A	18	52.60	515.48	63.70	624.26	98.50	965.30	118.20	1158.36	151.00	1479.80
500A	20	67.60	662.48	84.50	828.10	138.00	1352.40	165.60	1622.88	185.00	1813.00
550A	22	75.68	741.66	94.60	927.08	155.00	1519.00	186.00	1822.80	215.00	2107.00
600A	24	108.00	1058.40	135.00	1323.00	199.00	1950.20	238.80	2340.24	275.00	2695.00
650A	26	143.20	1403.36	179.00	1754.20	255.00	2499.00	306.00	2998.80	330.00	3234.00
700A	28	172.00	1685.60	215.00	2107.00	311.00	3047.80	373.20	3667.36	415.00	4067.00
750A	30	208.00	2038.40	260.00	2548.00	378.00	3704.40	453.60	4445.28	495.00	4851.00
800A	32	252.00	2469.60	315.00	3087.00	445.00	4361.00	534.00	5233.20	585.00	5733.00
850A	34	284.00	2783.20	355.00	3479.00	515.00	5047.00	618.00	6056.40	680.00	6664.00
900A	36	348.00	3410.40	435.00	4263.00	640.00	6280.80	769.00	7536.98	840.00	8232.00
1000A	40	528.00	5174.40	660.00	6468.00	970.00	9506.00	1164.00	11407.20	1275.00	12495.00
1100A	44	640.00	6272.00	800.00	7840.00	1150.00	11270.00	1380.00	13524.00	1550.00	15190.00
1200A	48	968.00	9486.40	1210.00	11858.00	1760.00	17248.00	2112.00	20697.60	2210.00	21658.00
1350A	54	1135.00	11123.00	1400.00	13720.00	2024.00	19835.20				
1600A	64	1660.00	16268.00	1890.00	18424.00	2640.00	25872.00				
1800A	72	1970.00	19306.00	2260.00	22148.00	2780.00	27244.00				

## General Guid Elastomers

The following chart should be used as a general guide.

Application suggested derives from recommendation given by elastomer manufacturer.

The resistance can be affected by type of fluid, concentration, temperature, pressure, flow rate or evaporation of the medium.

The final choice is to be taken by the customer, based on characteristics and specific application.

MATERIAL	GENERAL APPLICATION	SERVICE TEMPERATURE	NOT RECOMMENDED FOR
EPDM	Fresh Water Sea Water Brine Esters Alkalis Ozone Alcohols Brake Fluid Treated Water With Caustic Soda	-15°C to +120°C (for intermittent opration) 0°C ~ 100°C (Allowable temperature in continuous use)	Hydrocarbons Oils Fats Greases
NBR	Fresh Water Sea Water Treated Water With Caustic Soda Hydrocabons Natural Gas Oil and Fat Air Gasoline	-10°C to +80°C (Allowable temperature in continuous use) 0°C ~ 70°C (L-NBR -50°C to +70°C)	Solvents Benzene Xylol
SBR	Acids and Alkalis	-20°C to +80°C	
VITON	Acids, Oils Hydrocarbon	-10°C to +230°C	Steam, Ester Freon22, Alkalis Solvents, Ketones
S LICONE	Food Beverage	-20°C to +140°C	Steam Solvents Hydrocarbons
TEFLON	Solvents Corrosive Products Ketones	-50°C to +230°C (PTFE -196°C to +230°C)	Fluid Containing Powders Alkaline Gaseous Fluorine
NEOPRENE	Acid, Ozone, Oils Fats Greases Solvents	-18°C to +90°C	Ketones, Thinners Concentrated Acids

**Product Group 100**  
**Bonded Rubber Liner Butterfly Valves**

**Product Group 200**  
**Replaceable Rubber Liner Butterfly Valves**

**Product Group 300**  
**Cassette Type Rubber Liner Butterfly Valves**

**Product Group 400**  
**Double Eccentric Replaceable Seat Ring  
Type Butterfly Valves**

**Product Group 500**  
**High Performance Butterfly Valves**

**Product Group 600**  
**Tripple Eccentric Metal Seated Butterfly Valves**

**Product Group 700**  
**Disc Seated Butterfly Valves**

**Product Group 800**  
**Cryogenic Butterfly Valves (LPG, LNG)**

**Product Group 900**  
**Damper Butterfly Valves**



Please contact us for further information