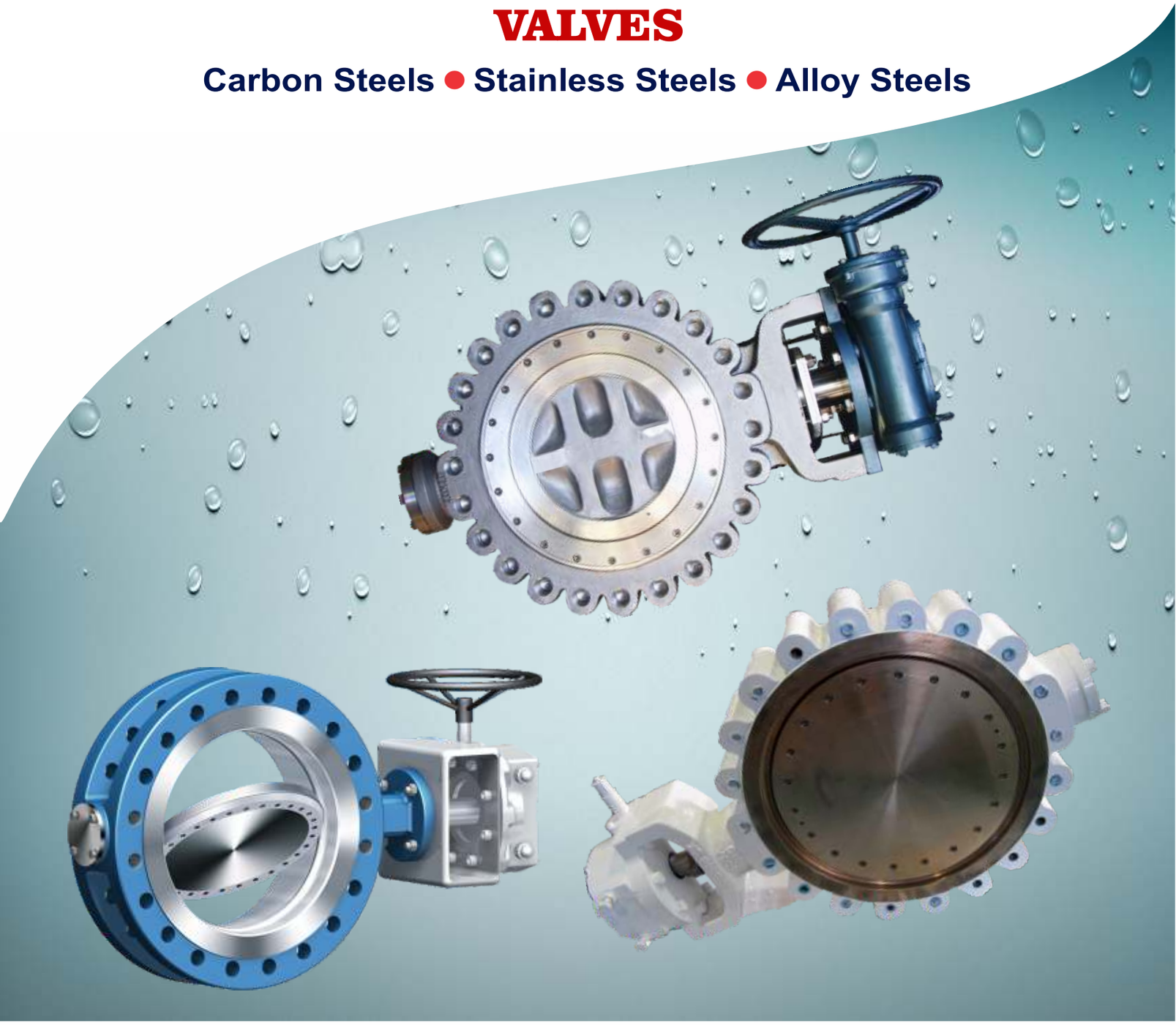
Chemtrols

Technology | Engineering | Manufacturing | Projects

TRIPLE OFFSET BUTTERFLY VALVES

Carbon Steels ● Stainless Steels ● Alloy Steels



CHEMTROLS VALVES : Created to conquer.....!

40+ Glorious Years

About **Chemtrols**

Founded in 1975, Chemtrols industries is the leading solutions provider in process analysis, emission and ambient monitoring, flow metering and custody transfer and for demanding applications of superheat steam. Our commitment in nurturing long term association with our customers and technology partners have helped us in creating impeccable credentials across all the sectors where we operate.

Manufacturing Facilities :-

- **State-of-the art production facilities in Kundaim, Goa and in Pune, Maharashtra; spread over a lakh of sq. feet in aggregate.**
- **ISO, 9001-2008 certified operations.**
- **Facility accredited under CE marking, ASME, U,PP and R Stamps as well as PED**
- **Facility and products approved by Global Engineering Consultants and Contracting companies.**
- **Well-equipped testing and inspection facilities.**
- **World class finishing and packaging processes.**
- **Well documented and appropriately preserved inventories.**
- **And above all competent and caring human resources.**

CHEMTROLS RANGE

Ball Valves

Floating ball Valves: Carbon steels, stainless steels and variety of alloy steels. Two piece and three piece designs. Soft seated and metal seated; 150, 300 & 600 lbs in cast version, 800 lbs in Forged Bar. Full Bore and reduced bore; sizes ½ "to 8".

Trunnion-mounted Ball Valves

Carbon steels, stainless steels and variety of Alloy steels. Two piece and three piece designs. Soft seated and metal seated. 150, 300 & 600 lbs in cast version- in forged Sizes: 3 "to 24"

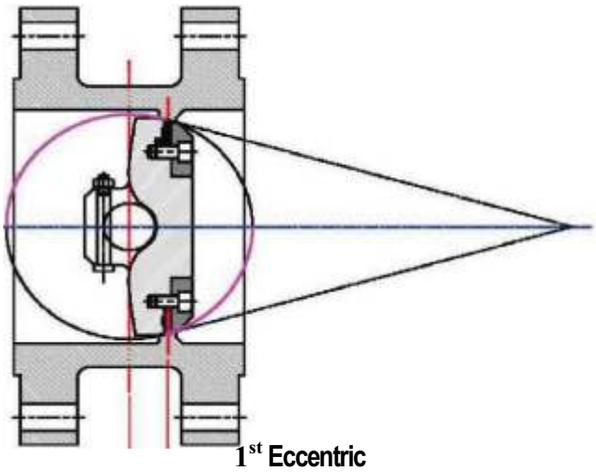
Butterfly Valves

Wafer, Lugged & Flanged: - Cast iron, Cast Steel and Stainless Steel Body; Moulded seat, Pressure classes 125 lbs and 150 lbs.
Sizes: 3 "to 24"
Triple-offset, Metal seated: - Carbon steels, Stainless Steels and variety of Alloy steels, Pressure classes 150, 300 & 600 lbs
Sizes: 3 "to 24"

Gate, Globe & Check Valves

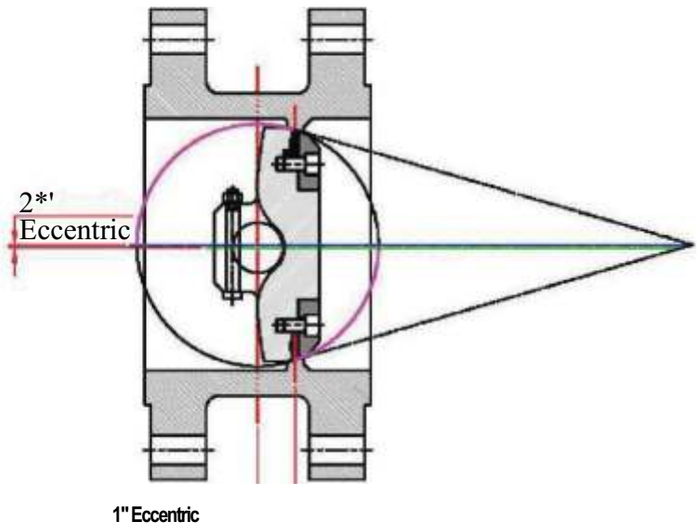
In cast version: Carbon Steels and Stainless Steels, 150, 300 & 600 lbs
sizes ½"to 12"
In Forged: Carbon Steels, Stainless Steels and Alloy Steels, 150 to 2500 lbs
sizes ½" to 2"

Eccentric Design Data



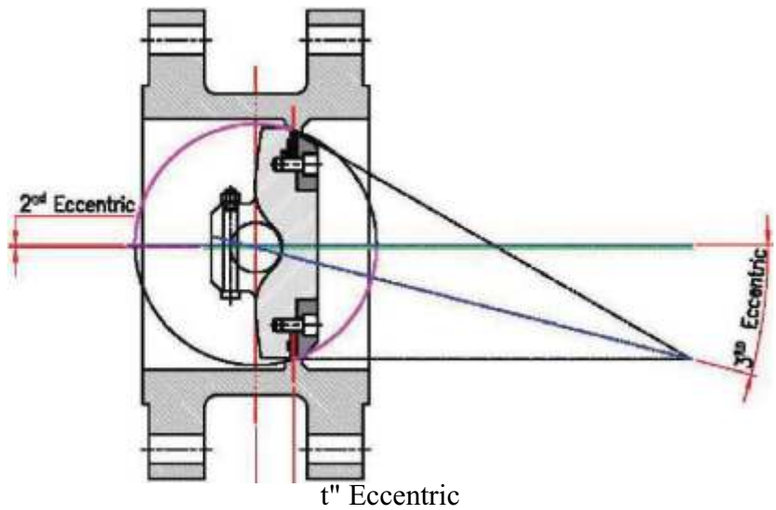
Single Eccentric

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



Double Eccentric

1) The center of rotation is moved back from centerline of the valve disc.
2) The seat and seal are designed conically and on centre.
3) This design again relies on a frictional, interference seal, but the length of rotation over which this friction occurs is reduced, allowing a large range of process resistant seat material to be used. However these materials must be relatively soft or highly elastic to prevent "jamming" .



Triple Eccentric

1) The centerline of the cone is rotated away from the valve centerline resulting in an ellipsoidal profile and providing the triple eccentric. With this geometry, seat seal interference is completely eliminated ensuring long sealing life.
2) The result is a torque seated, process pressure aid frictionless seal.
3) The geometry allows the body seat to be used as the closed limit stop, aiding operator adjustment.
4) The triple eccentric design is ideally suited to metal seated valves providing bubble tight performance on high temperature, high pressure and fire safe application

APPLICATIONS

Chemtrols Designs and manufacturing high performance valve for exacting markets as diverse as.

- Oil and gas
- Petrochemicals
- Power plant
- Sea water
- Exhaust gas
- Acids & Alkalis
- Steel
- Hydro carbon
- Sour services
- Oxygen services
- Slurries
- Fertilizers
- Petrochemical
- Food & Beverages

BASIC DESIGN STANDARDS:-

Pressure Temperature Rating	ASMEB 16.34
Design Standard	API 609
Testing Standard	API 598
Fire Testing	API 607
Flange Details (up to 24")	ASMEB 16.5
Flange Details (26" & above)	ASMEB 16.47
Visual Inspection	MSS SP – 55
Face to face	API 609, ISO 5752

SIZE RANGE:-

- 3" – 24" Class 150
- 3" – 24" Class 300

BODY STYLES PROVIDED:-

- Wafer
- Lug
- Double flange
- Butt – weld
- Special execution on request

OPTIONS:-

- Live loaded shaft seal
- Extended bonnet for low temperature and Cryogenic Applications
- High temperature configuration
- Stem jacketing

VALVE VARIATION :-

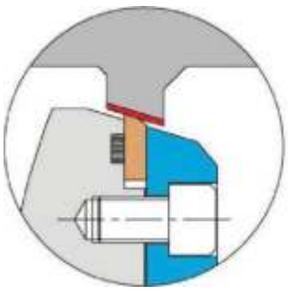
- Double eccentric
- Triple eccentric

TRIPLE ECCENTRIC BUTTERFLY VALVE FEATURES

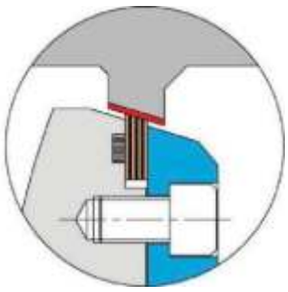
Seat cone center is offset from the valve centerline; completely eliminate the mechanical friction between disc and seat. It is a torque seated, process pressure aided frictionless seal valve, and this feature enables it to be suitable for,

- High Temperature and High Pressure.
- Metal Seated Valve
- Reduced torque compared to other conventional valves
- Fire Safe applications.

Seat Construction



Solid SeatZ

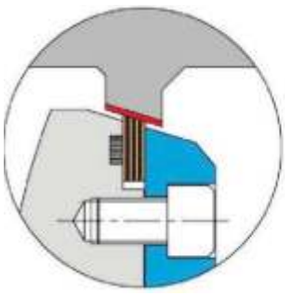


Laminated Seat

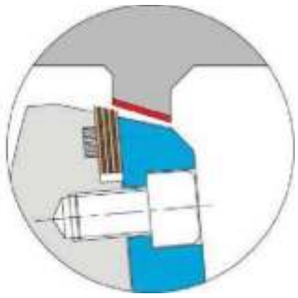
There are two seat variations available depending upon the application and the service requirements. The valve disc include a resilient, laminated metal seal ring, composed of alternating layers of corrosion- resistant alloy and composite graphite.

Each individual lamination provides an independent seal, unaffected by damage to the others. While improving long-term sealing properties, the resilience of the laminated design also allows lower operating torques.

For High temperature and severe applications Non Laminated, hardened solid seats are also made available on request. The hard facing provides larger service life.



After seating



Before seating

Zero Leakage

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

Low Emission Stem Seal

Adjustable shaft packing with multiple graphite rings sandwiched between two anti-extrusion rings control fugitive emission and gives longer packing life. Gland packing with live loading is available as an option.

Externally Retained Blow-Out Proof Design

Engineered gland design gives shaft blow out proof protection externally, conforming to the requirements of API 609. In addition, two screws provided at the bottom retain the shaft against blowout.

Inherent Fire Safe

Chemtrols triple offset butterfly valves are all metal construction and sealing with No elastomeric seals and it is inherently fire safe by design. Fire safe tests to API 607 were successfully performed at XXX with in-house fire safe test facility.

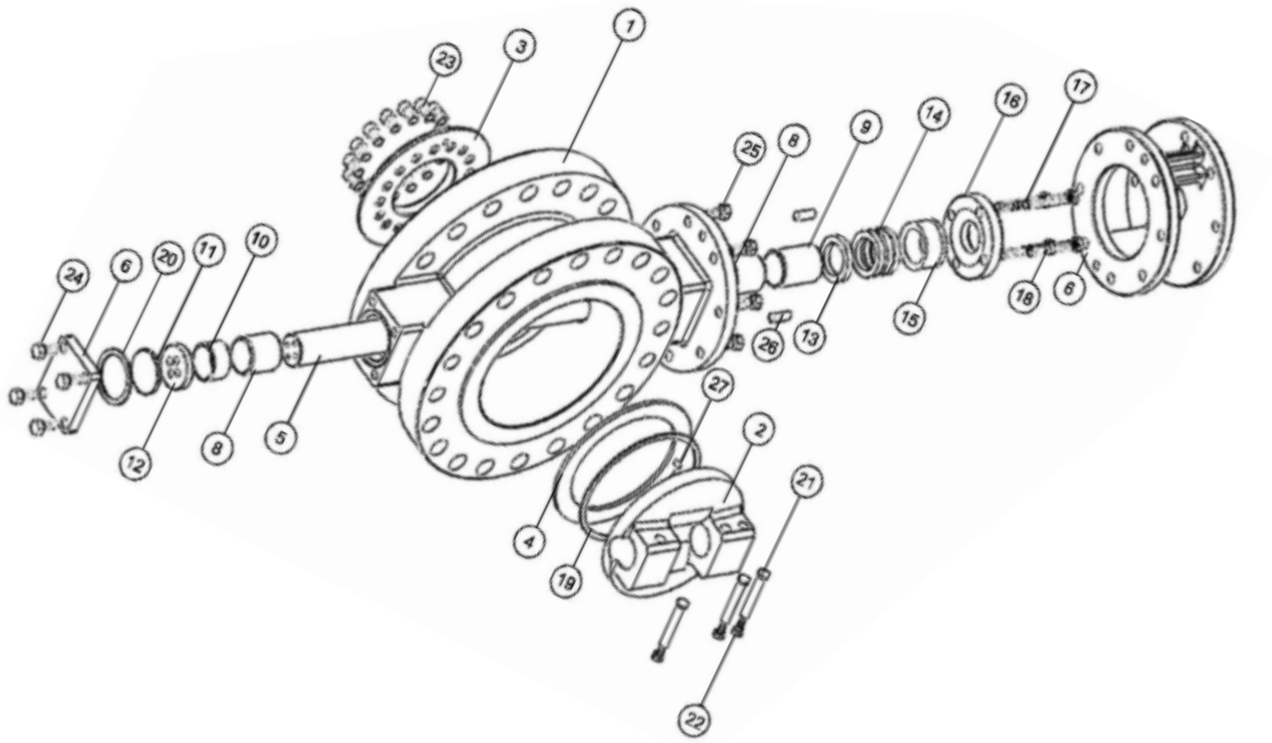
Bearing Protection

Graphite ring encased in bearing ensures protection against ingress of line media in to the bearing surface and thus avoids jamming of shaft.

LIVE LOADING (OPTIONAL)

Provides constant packing compression and is essential for this low emission packing arrangement which provides predictable and constant packing compression

TRIPLE ECCENTRIC BUTTERFLY VALVE

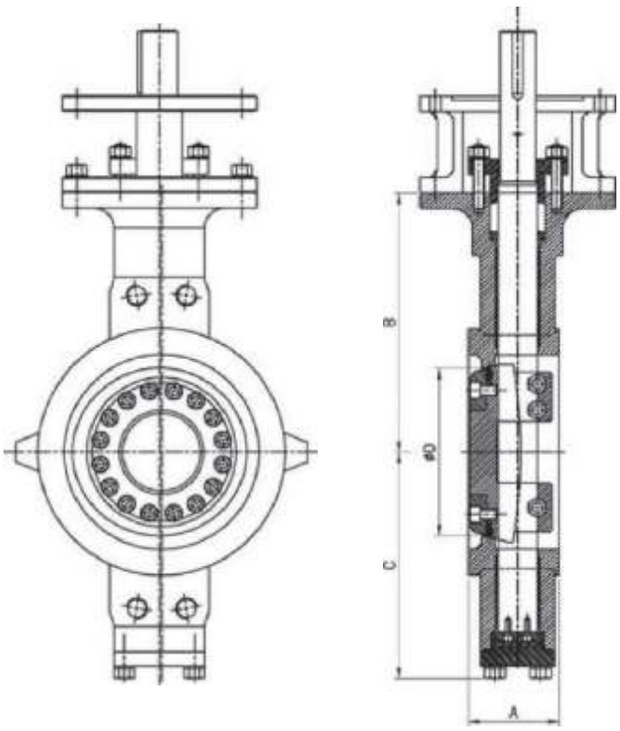


Item	Description	Materials	Item	Description	Materials
1	Body	A216 WCB AV CC/A3 51 CF8/CF8M	15	Gland	F6a / XM19 / 17.4 PH / Inconel 718
2	Disc	A216 WCB AV CC/A3 51 CF8/CF8M	16	Gland flange	ASTM A105 / A182 F304 / F316 / F51
3	Retainer	ASTM A105 / A182 F304 / F316 / F51	17	Gland Stud	A193 B7 / B7M / B8 / B8M
4	Disc Seat	SS316+graphite / Duplex + graphite	18	Gland Nut	A194 2H/2HM/8/8M
5	Stem	F6a / XM19 / 17.4 PH / Inconel 718	19	Retainer Gasket	Graphite / SS316 + Graphite
6	Yoke	A216 WCB	20	Gasket	Graphite / SS316 + Graphite
7	Bottom Cover	A216 WCBAV CC/A351 CF8/CF8M	21	Taper Pin	XM19 / 17.4 PH / Inconel 718
8	Bearing	SS316 + Nitrided / SS316 + PTFE	22	Hex Nut	A194 2H/2HM/8/8M
9	Upper Spacer	SS316 + Nitrided	23	Cap Screw	A193 B7/B7M/B8/B8M
10	Bottom Spacer	SS316 + Nitrided	24	Cap Screw	A193 B7/B7M/B8/B8M
11	Thrust pad	SS316 + Nitrided	25	Hex Bolt	A193 B7/B7M/B8/B8M
12	Thrust Bearing	F316/F51/F55	26	Dowel	F6a/F316/F51
13	Anti extrusion Ring	F6a / XM19 / 17.4 PH / Inconel 718	27	Pin	F6a/F316/F51
14	Gland Packing	Braided Graphite	28	Key	CI 045

SEAT LEAKAGE COMPARISON:

	Hydro Seat Testing (Drops per minute)		Gas Seat Testing (Bubbles per minute)	
Valve Size	Triple Offset Butterfly Valve	Metal Seated Valve (Gate & Ball)	Triple Offset Butterfly Valve	Metal Seated Valve (Gate & Ball)
< 2"	0	0	0	0
2 1/2" – 6"	0	12	0	24
8" – 12"	0	28	0	48
> 14"	0	2/NPS	0	4/NPS

TRIPLE ECCENTRIC BUTTERFLY VALVE



#150								
SIZE (Inch)	Dimensions in mm					Weight (Kg)		
	A		B	C	OD	Wafer	Lug	Double Flange
	Lug & wafer	Double Flange						
3”	48	114	184	115	58	12	17	29
4”	54	127	192	120	78	19	24	38
6”	57	140	231	150	128	25	32	55
8”	64	152	318	220	178	40	50	80
10”	71	165	358	250	228	56	70	110
12”	81	178	327	265	278	92	115	170
14”	92	190	448	275	328	116	145	210
16”	102	216	494	345	369	152	190	240
18”	114	222	539	370	419	192	240	280
20”	127	229	580	400	469	248	310	360
24”	154	267	625	440	567	360	450	510

#300								
SIZE (Inch)	Dimensions in mm					Weight (Kg)		
	A		B	C	OD	Wafer	Lug	Double flange
	Lug & wafer	Double flange						
3”	48	114	184	115	58	19	24	35
4”	54	127	192	120	78	24	30	45
6”	59	140	294	195	128	44	55	90
8”	73	152	329	220	178	72	90	120
10”	83	165	358	250	228	104	130	145
12”	92	178	391	265	278	136	170	220
14”	117	190	477	320	328	204	255	345
16”	133	216	525	345	369	312	390	435
18”	149	222	565	385	419	436	545	580
20”	159	229	643	430	469	464	580	675
24”	181	267	683	480	567	728	910	980

■Face to face dimension 'A' up to 24" are as per API 609 and ASME B16.10 for long pattern. A Gear operator mandatory for size 6" and above. ■ please specify the working pressure, Temperature & service condition. A Valve can be supplied to suit ASME/BS/DIN flanges.

TECHNICAL DATA

TORQUE VALUE

SIZE (Inch)	CLASS 150		CLASS 300	
	OPENING	CLOSING	OPENING	CLOSING
3”	92	82	156	134
4”	124	116	222	185
6”	192	164	466	352
8”	386	258	1012	618
10”	672	484	1614	1032
12”	1048	738	2596	1516
14”	1466	982	3608	1784
16”	2062	1456	5714	2962
18”	2848	1644	7716	3668
20”	3536	1952	9898	4324
24”	5994	2706	15966	6420

Cv VALUE

SIZE (Inch)	CLASS 150	CLASS 300
3”	162	162
4”	290	290
6”	790	724
8”	1456	1328
10”	2202	2108
12”	3784	3490
14”	5148	4610
16”	6942	6290
18”	9510	8580
20”	12990	11506
24”	18780	16188

Flow co-efficient Cv of the valve is rate of cold water in gallon per minute with a pressure drop of 1 psig across the valve.

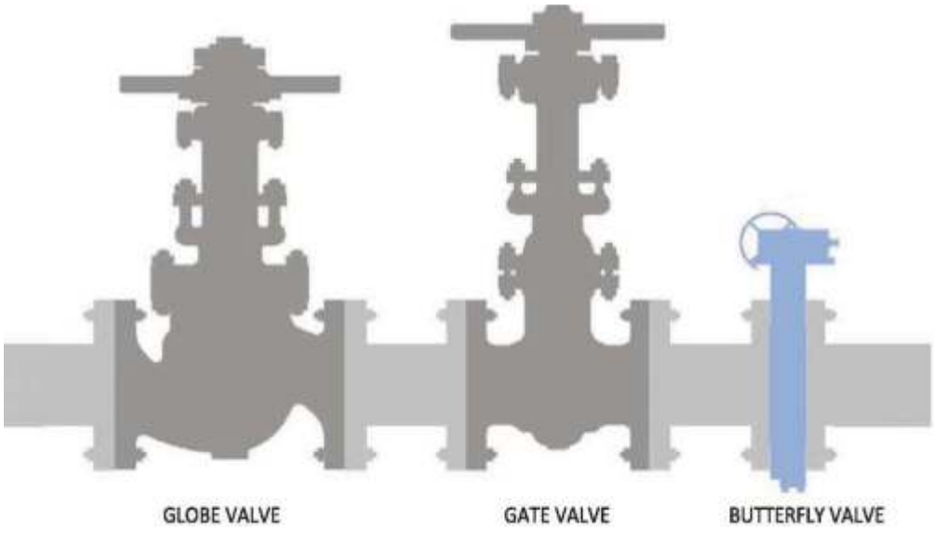
TECHNICAL DATA

BODY MATERIAL				
MATERIAL	ASTM REFERENCE	RECOMMENDED TEMPERATURE LIMITS		APPLICATIONS
		°C	°F	
WCB	ASTM A216 WCB	-29 to 425	-20 to 800	Steam, water oil, oil vapor, gas and general service
LCB	ASTM A352 LCB	- 46 to 350	- 50 to 650	Low Temperature Applications
LCC	ASTM A352 LCC	- 46 to 350	- 50 to 650	
CF8M	ASTM A351 CF8M	-196 to 537	-320 to 1000	High and low temperature corrosion resistance Cryogenic service is also available upon request
CF8	ASTM A3 51 CF8	-196 to 537	-320 to 1000	
CF3M	ASTM A351 CF3M	-196 to 537	-320 to 1000	
CF3	ASTM A3 51 CF3	-196 to 537	-320 to 1000	

WEIGHT AND DIMENSION COMPARISON

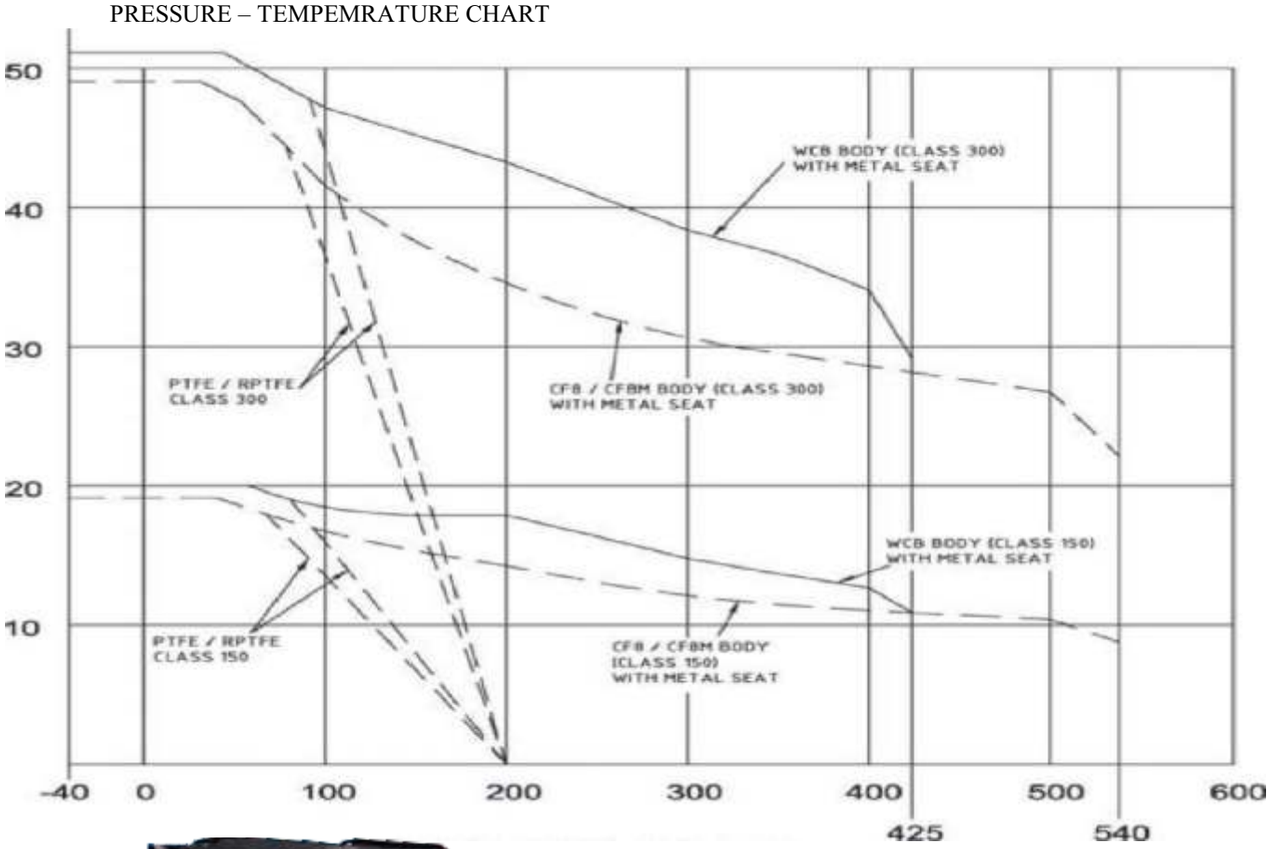
Chemtrols Butterfly valves are designed as per API 609, it is light and compact and can be a easy replacement for Gate and Globe valves. The below comparison table is with 8" class 300 valve lugged design

	GATE	GLOBE	BUTTERFLY
Face to Face (mm)	292	496	73
Weight (Kg)	135	165	90
Max Temperature	Up to 700°C	Up to 700°C	Up to 700°C
Sealing Performance	API 598	API 598	Tight Shutoff
Seat Sealing Friction	High	Yes	Low
Sealing Life	Fair	Fair	Excellent
Stem Movement	Liner-Multiturn	Liner-Multiturn	Rotary-Quarter turn
Fire Safe	Yes	Yes	Yes
Ease of maintenance	Fair	Fair	Excellent
Material Cost	High	High	Low
Fright Cost	High	High	Low
Installation Cost	High	High	Low
Pipe support	High	High	Low

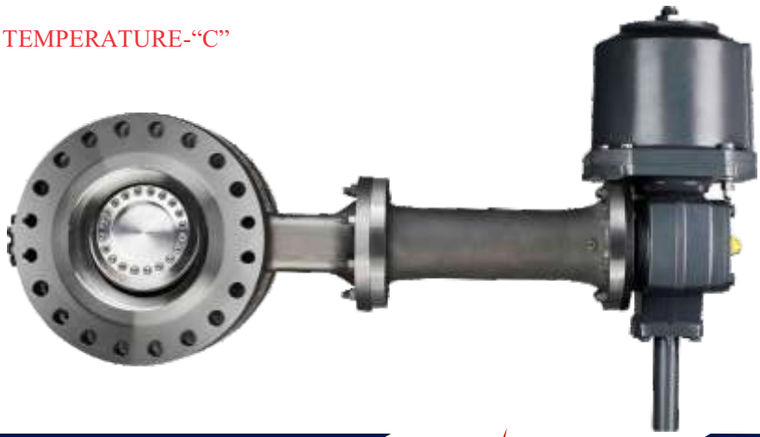


TECHNICAL DATA

PRESSURE – TEMPEMRATURE CHART

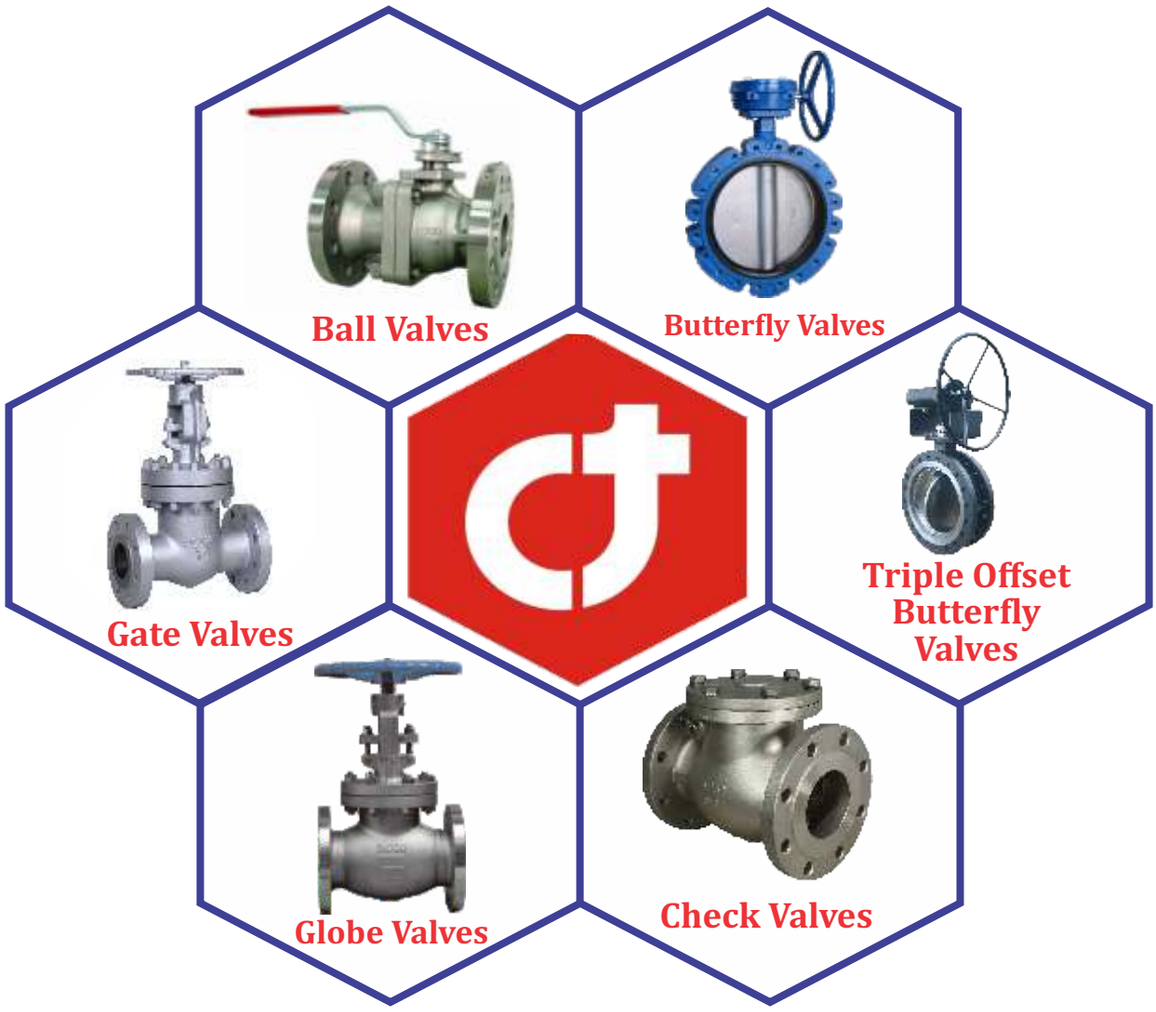


TEMPERATURE-"C"



Chemtrols

The Chemtrols Range of Valves



Chemtrols Industries Pvt. Ltd.
Plot No.140/141, Sector No.7, PCNDT,
Next to Vishveshwar Chowk, MIDC, Bhosari, Pune, 411 026
Tel: +91-22-6715 1200
Fax: +91-22-2857 1913
Cell: +91 9422548331
Email: valves@chemtrols.com
Network Offices:
Mumbai, Vadodara, Benguluru, Chennai, Delhi,
Vizag, Guwahati, Kolkatta, Secunderabad, Nagpur & Dubai

Regd. Office: Chemtrols Industries Pvt. Ltd., 910, Tulsiani Chambers, 212, Nariman Point, Mumbai - 400 021 INDIA
Tel.: +91-22-2283 0636, Fax: +91-22-2287 3573 www.chemtrols.com