TANA

TOPNOTCH MACHINE CO.,LTD.

API Butterfly Valve Series

Use

Butterfly valves are widely used in urban construction, petrochemical, metallurgy, electric power industry medium channels to cut off or regulate medium flows.

Features

The butterfly valve is the best open and closure device in the pipelineand leads the trend of open and closure devise, its main features are;quick open and closure, can easily achieve by rotating 90° enables automated remote control; simple structure, small size, light weight, small installation space; metal seated and soft seate d structure can be used in a variety of conditions, good sealing performance,long service life; fire safe design; full open condiction enables small flow reJIStance, and half open condiction, allows flexible flow control; low operating torque valve, simple and quick operation.

1.Concentric

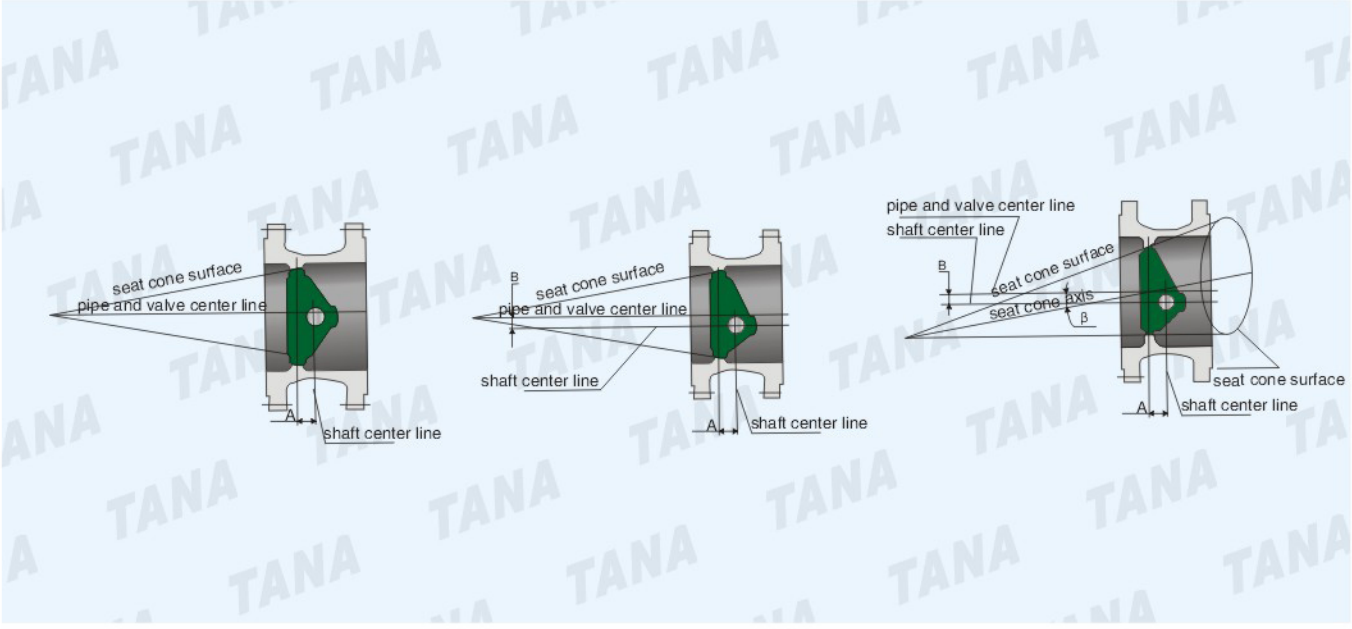
Sealed butterfly valve seat section or the sub–line of plate thickness direction and stem circling centre is relatively eccentric (length A), makes the valve plate gradually become eccentric from the seat sealing surface at the opening process to 20"~ 25" rotation,and enables less mechanical wear and extrusion,thus improves the sealing performance of a butterfly valve. This sealing design relies on flexible eccentricity from the extrusion between the valve plate and seat,so the single eccentric structure applies only to soft butterfly valve seal

2.Double eccentric

On the baJIS of the single–eccentric butterfly valve, the plate circling centre and the channel centerline is relatively bias (length B) that forms cam effect at the opening process of the butterfly valve,and enables valve plate sealing faster eccentricity when plate turns to 8"~12", valve plate completely separates from the sealing surface. This design,greatly lowers the mechanical wear and tear between two sealing surfaces, thus improves the sealing performance.

3.Triple eccentric

On the baJIS of the single–eccentric butterfly valve, the plate circling centre and the channel centerline is relatively bias (length B) that forms eccentric angle (angle β) at the openinig process of the butterfly valve, and enables valve plate sealing complete eccentricity and contact at closure. This unique eccentricity structure fully adopts cam effect and enables complete elimination of mechanical wear and tear between two sealing surfaces and reduce the possibilty of leakage. Turning extrusion sealing into torque sealing by regulating actuator torque valve, achieves sealing pressure ratio regulation, thus improves the sealing performance and increase service lifetime of triple eccentric butterfly valve.

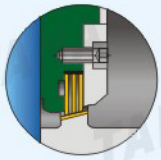


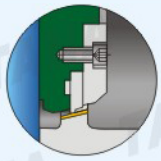
Vice-sealed a variety of structures

1、Triple eccentric


1. Three eccentric metal seal

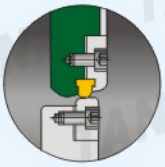

2.Eccentric three-layer composite metal sealing

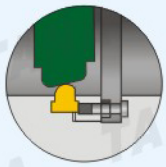

3、Eccentric three-layer composite metal seal


4、Three eccentric metal sealing

2、Double eccentric

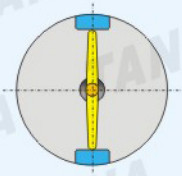

5、Rubber seal (seat body)

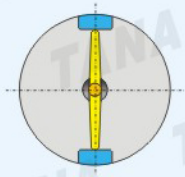

6、The rubber seal(which can replace the valve seat)


7、Rubber seals

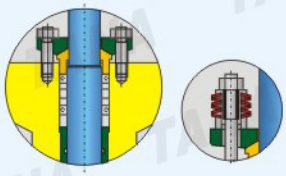

8、PTFE seals

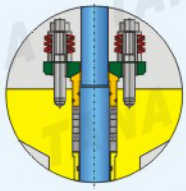
3、Concentric

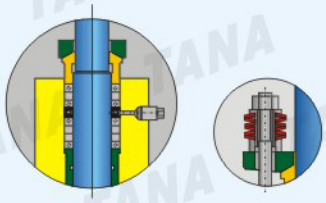

9、Metal seals


10、Sealing the soft (rubber and PTFE)

4、High-performance metal seated structure




The option-live loading


Stem seal

This is a kind of improved high-performance butterfly valve. The valve includes parts of body, plate, the circular groove or beveled edges, stem and seat. At the surrounding areas of the plate there's at least one outer ring edge to provide better clean-up and reduce wear and tear. Stem centre lines with the plate rotating center, but slightly eccentric from valve center line.

Provides predictable and constant packing compression for more than 5000 cycles before adjustment or re-packingdouble packing with leak -off monitoringpurge port. Two sets of packing rings, precom pressed to 27 Mpa(graphite). A ring and leak-off connection allowsremoval of leakage, if any, from bottom packing set.

Standard stem-seal

Provides predictable and constant packing compression for more than 5000 cycles before adjustment or re-packing.
(1) Short and narrow packing ring structure;
(2) Large compression load required; graphite rings precompressed to 27Mpa for effectiveness of all rings. Gland torque must be maintained after installation and in service to levels shown in manuals
(3) Higher finish (3.2 μ m) of packing chamber and stem surface (0.8 μ m) to assure a longer service life.
(4) Stem bearing stem to assure concentric stem rotation, allowing stem packing to provide maximum sealing offectiveness.

5、Fugitive emission stem seals

(1) Ful-guided stem seal Stem bearings in body and gland followers prevent wobbling and packing leakage due to side thrust on stem
(2) Precompressed packing rings to 27MPa;
(3) higher finish (3.2 μ m) of packing chamber and stem (0.8 μ m), to ensure a longer cycle life.
(4) live-loading. Provides constant packing compression and is essential for this packing arrangement.
(5) two-piece flanged gland with spherical mating surfaces to assure an even packing load.
(6) two O-rings in gland follower provide additional stem seal protection to assure tightness.

Features

Triple eccentric design reduces the friction between plate and seat, and increases the valve service life Plate and seat oblique cone design turns the compression seal into torque seal, achieves bi–directional seals. Metals and non–metallic compound seal ring combines the rigidity of the metal, the wear–reJIStance and flexibility of the soft seat, ensures reliable seal and greater preformance. Low opening torque value

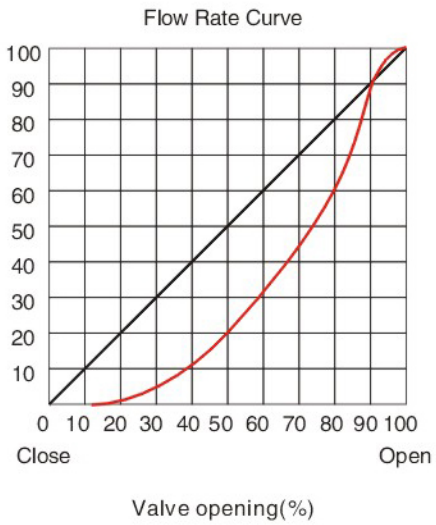
Technical Specification

Working Pressure: CLASS 150~CLASS 300
Working Temperature:
304Seat: –73~+450℃
316Seat: –73~+450℃
Seat: –268~+650℃
Design and manufacture standard: API 609
Flanged End: ASME B16.5 & ASME B16.47
Face–to–Face dimension: API 609 & MSS SP–68
Test and Inspection: API 598
Note: For other ends, please state in the order

Opening Torque Value

NPS(mm)	Max. Differential Pressure △P(MPa)	
	2.0	5.0
2	168	252
2–1/2	239	360
3	276	410
4	372	550
5	592	960
6	672	1000
8	938	1400
10	1450	2160
12	3000	4500
14	3600	5400
16	4870	7200
18	7440	11160
20	14630	12800
24	20760	27680
28	31764	–
32	38724	–
36	47860	–
40	75600	–

Flow Features



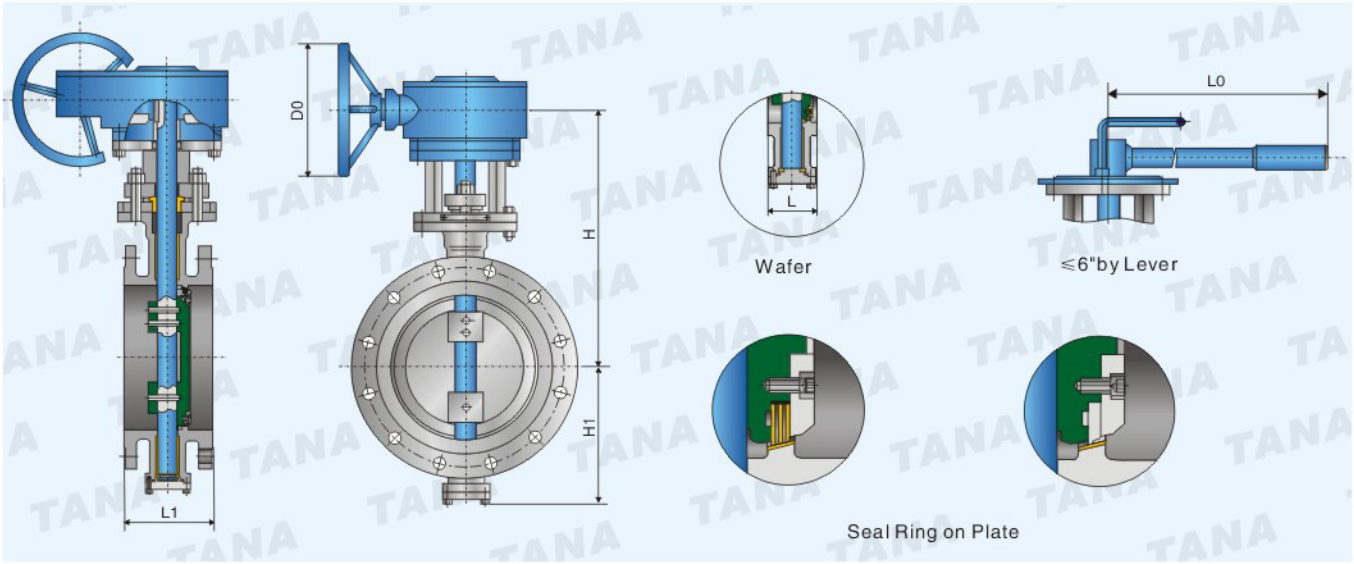
Triple eccentric design features

On the baJIS of double eccentric design, the centreline of the plate seal surface and seat centreline forms angle (γ 0, and enables slight wedge effect when the plate contacts the) flexible metal seat, and slight move and radial deformaion of the seat ring along with the plate, average compression around the seat ring thus achieves complete sealing. This unique triple eccentric design fully applies Cam effect in the valve, greatly reduces the friction at the contact area, possiblity of leakage and also the opening torque value, increases longer service life, achieves easy and convenient operation.

Flow rate

Cv value is calculated on the standard condition while the pressure on both sides falls below 0.007MPa

DN(mm)	2	2–1/2	3	4	5	6
Cv	102	102	242	423	423	1160
DN(mm)	8	10	12	14	16	18
Cv	2016	3066	4568	6325	8152	11023
DN(mm)	20	24	28	32	36	40
Cv	13780	20486	31586	35612	47860	71460



Parts List

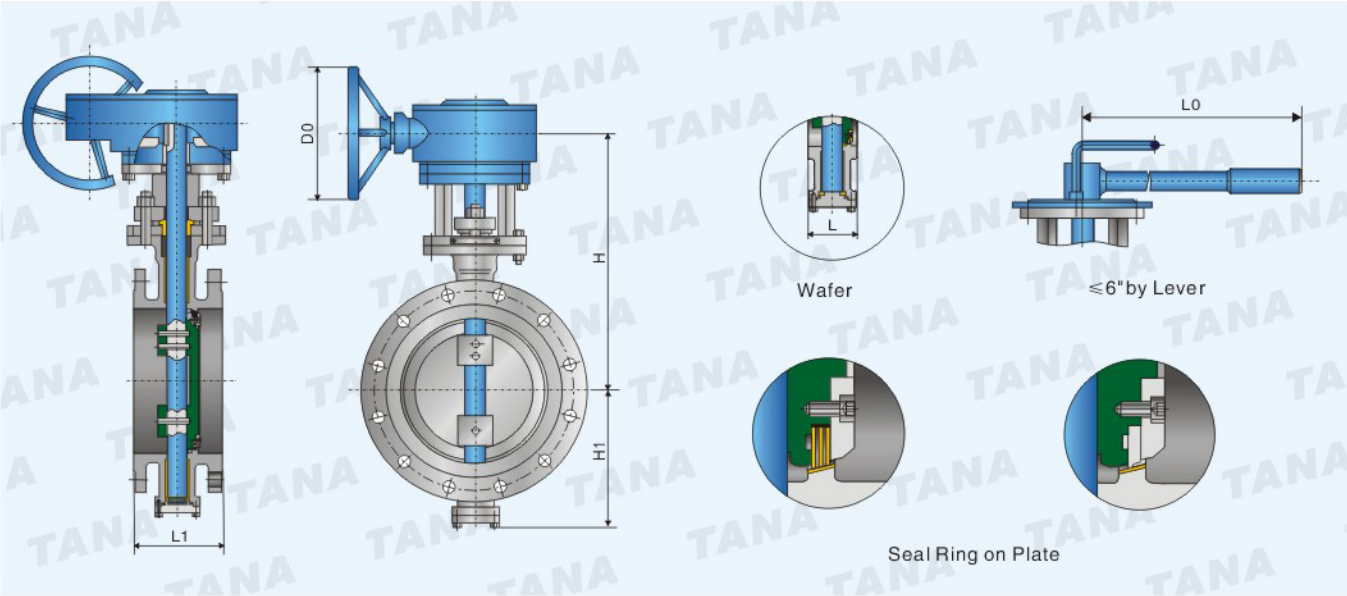
Part Name	Material
Body	ASTM A216 Gr.WCB
Seal Ring	304 S.S.+Gr.WCB
Plate	ASTM A216 Gr.WCB
Seal Surface	304 s.s.
Stem	ASTM A182 F304
bushing	ASTM A276 410
Thrust Washer	304 S.S.+Graphite
Packing	Flexible Graphite

Note:
≤6" operating by the Lever
Face-to-Face dimension: API 609 & MSS SP-68
Flanged End: ASME B16.5 & ASME B16.47
For other ends, please state in the order

Dimensions & Weights

NPS(in)	L(mm)	L1(mm)	H1(mm)	H(mm)	D0(mm)	L0(mm)	WT(Kg)		
							wafer	Lug	Short Pattem
2	43	108	110	135	–	150	10	11	20
3	48	114	125	155	–	180	11	13	29
4	54	127	147	162	–	200	13	16	33
6	57	140	166	240	–	300	26	28	74
8	64	152	215	375	180	–	36	43	86
10	71	165	238	396	180	–	53	64	142
12	81	178	283	446	180	–	74	86	167
14	92	190	302	472	315	–	110	127	218
16	102	216	338	555	350	–	138	159	275
18	114	222	381	605	400	–	180	211	315
20	127	229	408	638	480	–	196	225	395
24	154	267	495	738	480	–	400	462	580
28	165	292	561	976	480	–	560	655	657
30	190	318	590	1016	610	–	685	812	717
32	190	318	650	1160	610	–	726	868	880
36	203	330	700	1205	480	–	920	1056	1042
40	216	410	750	1294	480	–	1283	1470	1760
42	229	410	780	1350	480	–	1488	1723	1820
48	254	470	892	1523	480	–	1645	1895	2660

Class 300 Triple eccentric, metal to metal seat, Wafer or flanged ends



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Dimensions & Weights

NPS(in)	L(mm)	L1(mm)	H1(mm)	H(mm)	D0(mm)	L0(mm)	WT(Kg)		
							wafer	Lug	Short Pattem
3	48	180	125	155	–	180	13	15	29
4	54	190	147	162	–	200	18	21	35
6	59	210	166	240	–	300	29	33	81
8	73	230	215	375	180	–	38	42	94
10	83	250	238	396	180	–	58	63	156
12	92	270	283	446	180	–	91	86	183
14	117	290	302	472	315	–	121	131	239
16	133	310	338	555	350	–	153	165	302
18	149	330	381	605	400	–	197	211	346
20	159	350	408	638	480	–	215	238	434
24	181	390	495	738	480	–	443	465	638