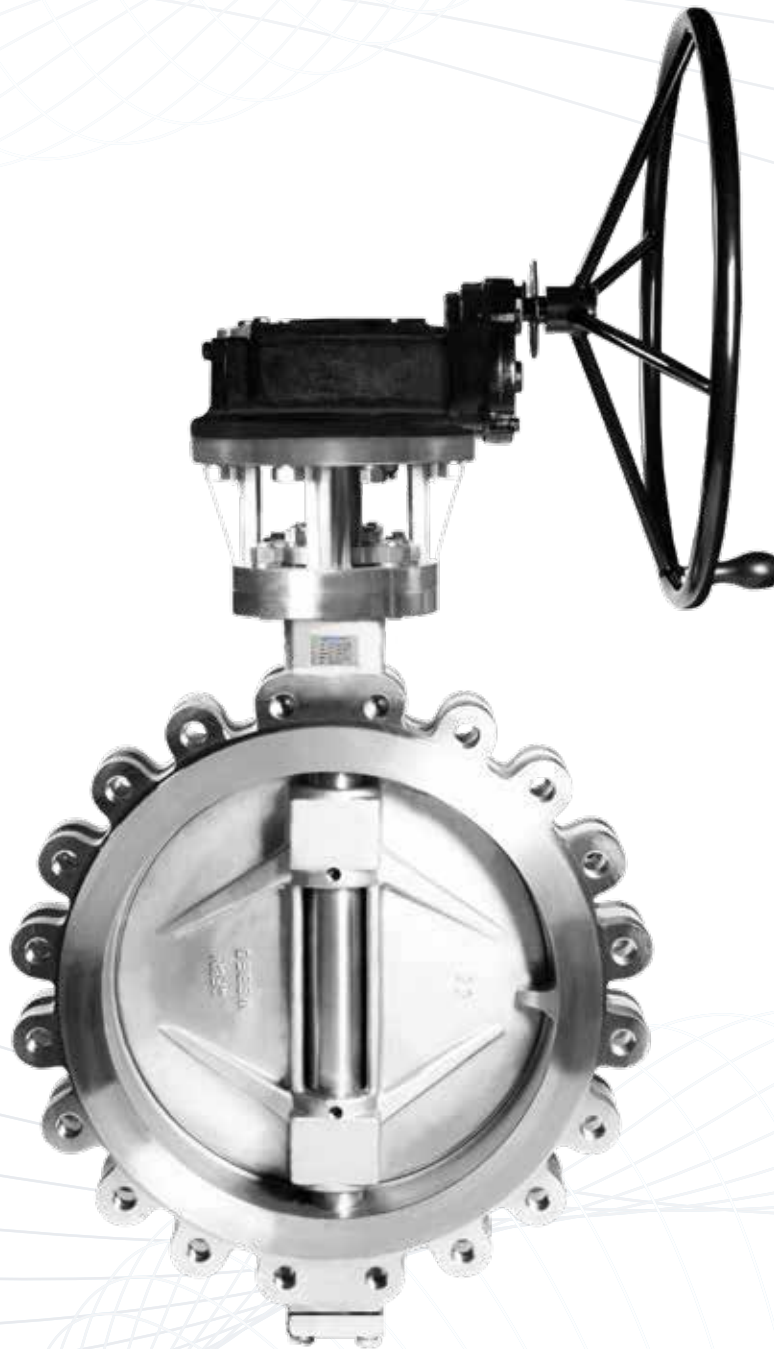




RICHARD

MANUFACTURING INC.



Butterfly valves

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Butterfly valve



Features

- Body design options: wafer, lugged or double flanged.
- Double eccentric/Triple eccentric structure.
- Available in 2 design options. Soft seat, metal seat.
- V-wedge packing, reliable tpacking seals.
- Packing seals & seat ring use imported reliable PTFE material.
- Anti-static design.
- Blow-out proof stem.
- V-packing gland design.
- ISO 5211 mounting pad.
- Zero leakage.
- Available with Handle Lever, Gear Pneumatic, Electric actuator.
- Butterfly valve is cost-effective solution valve, low cost and light weight.

Applications

Chemical and petrochemical processing, seawater treatment etc.

Pressure range

ANSI Class 150LB ~300LB, PN1.0MPa~4.0MPa

Size range

NPS 2"~48", DN50~DN1200

Technical Specifications

Design	API 609,BS
Wall Section	ASME B16.34
End Flange Compatibility	ASME B16.5,EN1092-1,ASME B16.47 Series A
Face to Face	BS EN 558,API 609
Pressure/Temperature Rating	ASME B16.34
Fire Test Certification	API 6FA,API 607
Pressure Testing	BS EN 12266-1,API 598
Material Certification	EN 10204(3.1B)
Factory Quality System	ISO 9001
ISO Top Mounting Flange	ISO 5211

How to Order

Valve type	Operator	Ends connection	Structure	Seat	Pressure	Size
①	②	③	④	⑤	⑥	⑦

① Valve Type

Symbol	Type
D	Butterfly valve

② Operator

Code	Operation
	Handle Lever
3	Worm wheel
6	Pneumatic actuator
9	Electric actuator

③ Ends Connection

Symbol	Connection
4	Double Flanged ends(RF/FF)
6	Welded ends
7	Wafer type(Wafer/Lug)

④ Structure

Symbol	Eccentric type
2	Double eccentric structure
3	Triple eccentric structure

⑤ Seat

F	PTFE/RPTFE
WF	Metal+PTFE/Graphite

⑥ Valve pressure(LB/MPa): 150LB ~300LB, PN1.0MPa~4.0MPa.

⑦ Valve size(Inch/mm): 2"~48",DN50~DN1200.

Example: 8" Butterfly valve, 150LB ,Wormwheel Op.,Wafer type, Double eccentric,PTFE seat.

Example Part: ①②③④⑤-⑥-⑦ Item code : D372F-150LB-8".

Three Dimensional Diagram of Butterfly valve

Double eccentric HP butterfly valve

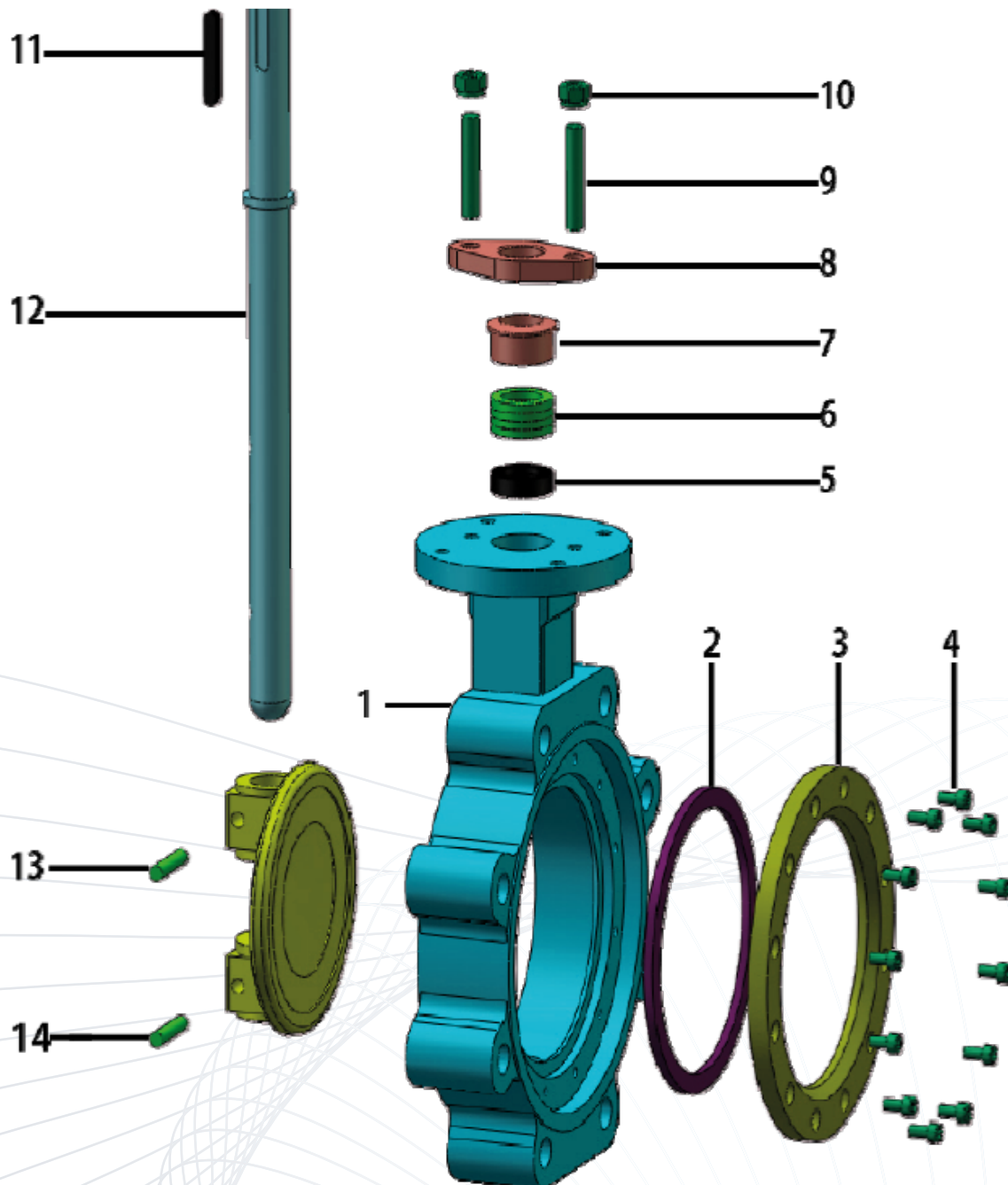


Triple eccentric butterfly valve

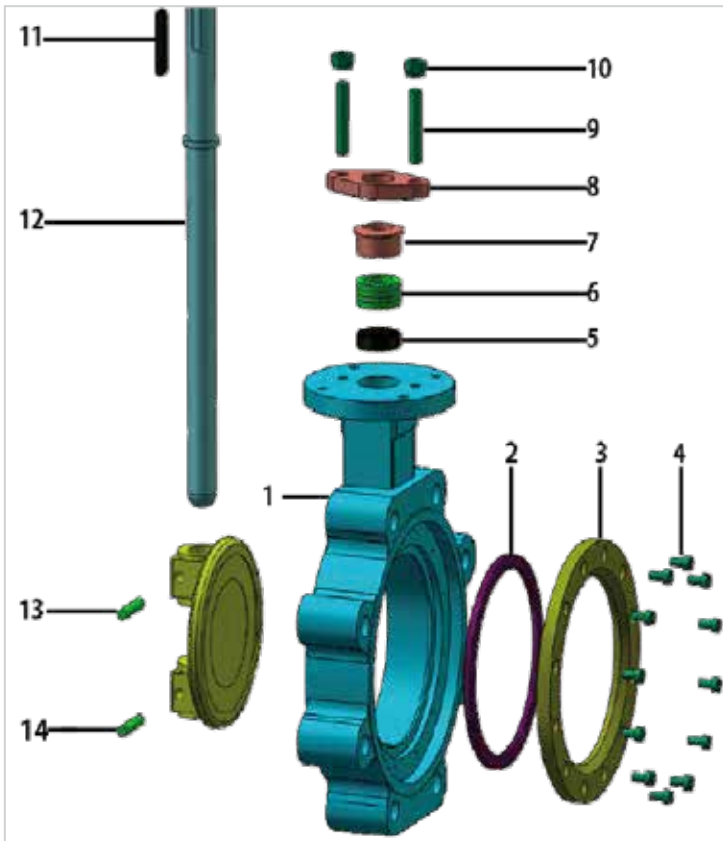


Double eccentric HP Butterfly valve

No	Parts	No	Parts	No	Parts
1	Body	6	Packing	11	Key
2	Seat	7	Stuffing cover	12	Stem
3	Sealing joint	8	Gland flange	13	Pin
4	Screw nail	9	Bolt	14	Disc
5	Packing washer	10	Hex nut		



Exploded view of Double eccentric HP Butterfly valve



No.	Parts	Example: Hastelloy C276 Valve
1	Body	A494 CW12MW
2	Seat	PTFE
3	Sealing joint	A494 CW12MW
4	Screw nail	B574 N10276
5	Packing washer	B574 N10276
6	Packing	PTFE
7	Stuffing cover	A182 F304
8	Gland flange	A351 CF8
9	Bolt	A193 B8
10	Hex nut	A194 8
11	Key	UNS G10450
12	Stem	B574 N10276
13	Pin	B574 N10276
14	Disc	A494 CW12MW

Notes:

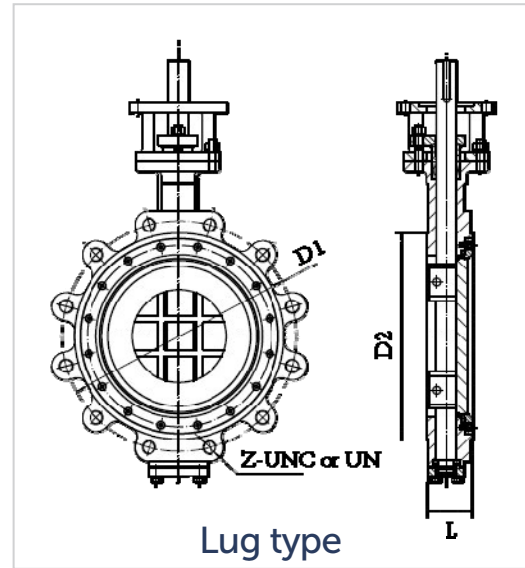
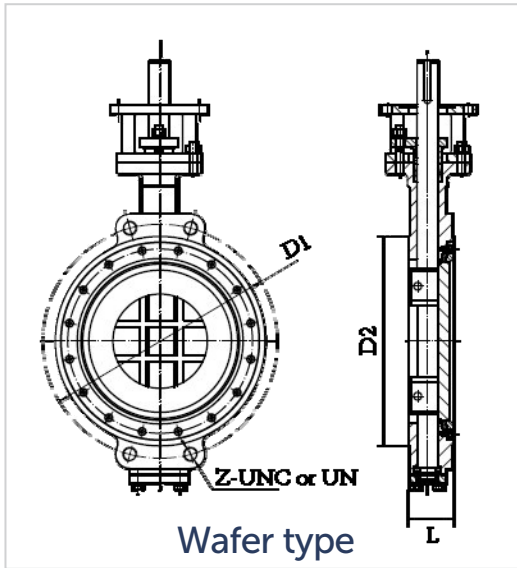
Above view for size ≤ 6 " valves.

Size ≥ 8 " valves body have additional bottom cover, other structure same as above view.

Richard Valve butterfly valve material specification: Titanium alloy, Nickel alloy, Zirconium, Duplex SS, Stainless steel, Ni-Al-Br C95800 etc.(Pls check the detail Material list in Page 15& Page 16)

Double eccentric HP Butterfly valve

ASME Class 150LB



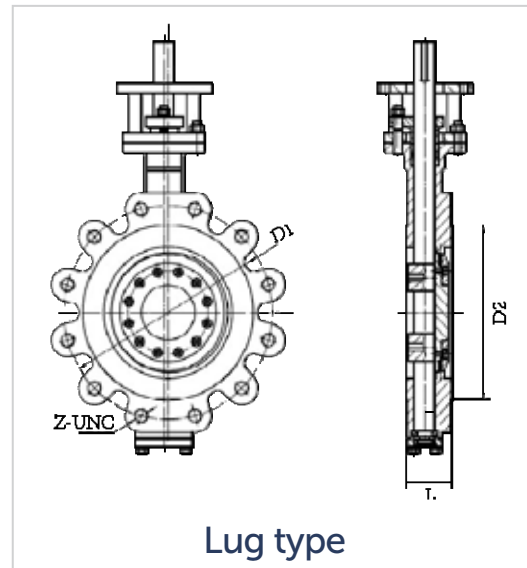
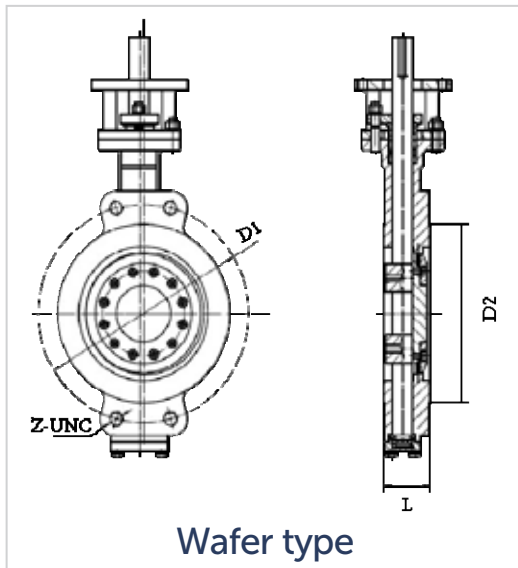
Main Dimensions

Size		L mm	D1 mm	D2 mm	Z-UNC or UN
Inch	mm				
2"	50	43	120.5	92	4-UNC5/8"
2-1/2"	65	46	139.5	105	4-UNC5/8"
3"	80	48	152.5	127	4-UNC5/8"
4"	100	54	190.5	157	8-UNC5/8"
5"	125	57	216	186	8-UNC5/8"
6"	150	57	241.5	216	8-UNC5/8"
8"	200	64	298.5	270	8-UNC5/8"
10"	250	71	362	324	12-UNC5/8"
12"	300	81	432	381	12-UNC5/8"
14"	350	92	476	413	12-UN1"
16"	400	102	540	470	16-UN1"
18"	450	114	578	533	16-UN1-1/8"
20"	500	127	635	584	20-UN1-1/8"
22"	550	127	692	641	20-UN1-1/4"
24"	600	154	749.5	692	20-UN1-1/8"
28"	700	165	863.5	800	28-UN1-1/4"
30"	750	241	914.5	857	28-UN1-1/4"
32"	800	241	978	914.5	28-UN1-1/2"
36"	900	241	1086	1022	32-UN1-1/2"
40"	1000	300	1200	1124	36-UN1-1/2"
42"	1050	300	1257.5	1194	36-UN1-1/2"
48"	1200	350	1422	1359	44-UN1-1/2"

Notes: Size $\geq 8"$ valves body with bottom cover.

Double eccentric HP Butterfly valve

ASME Class 300LB



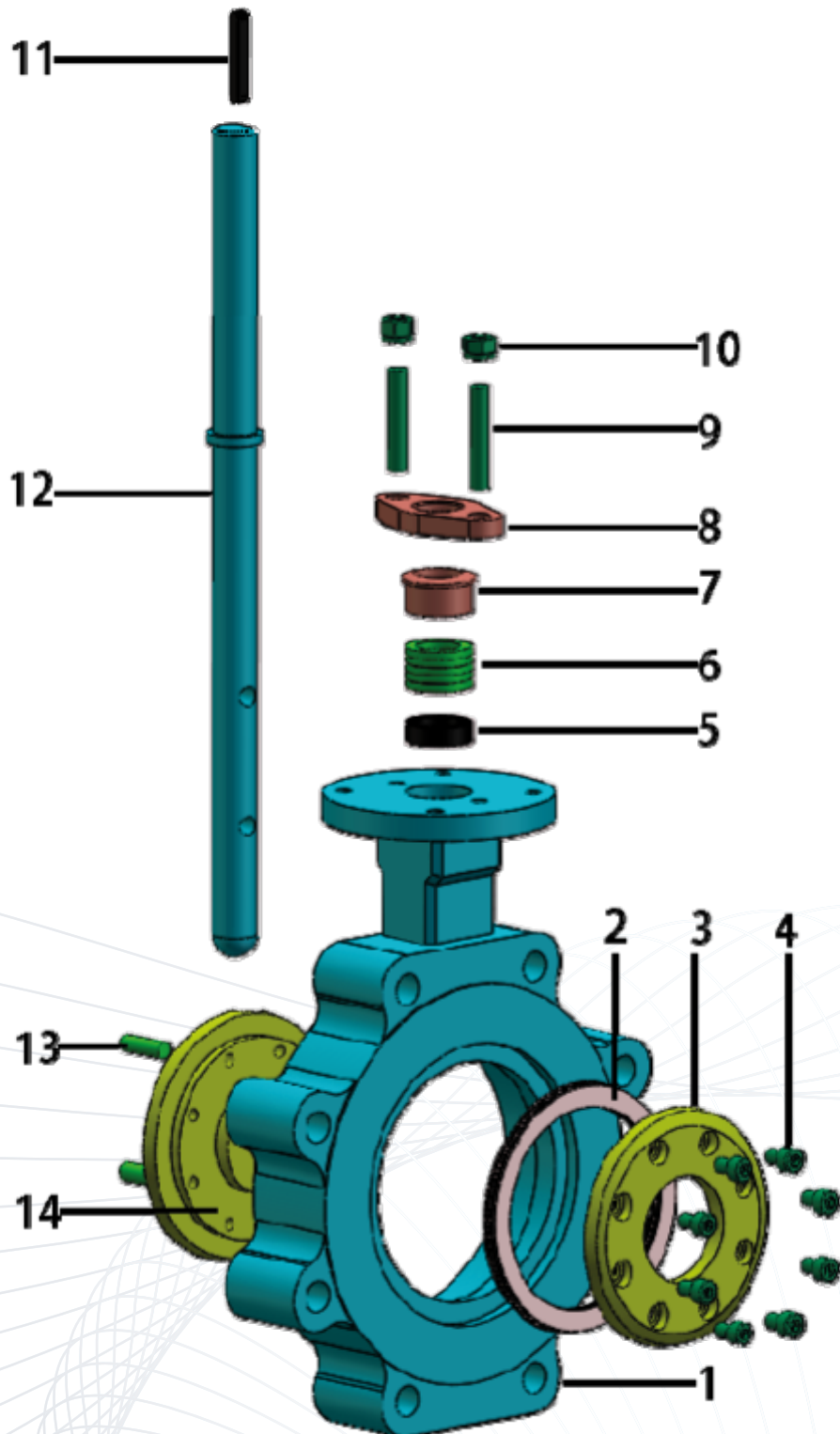
Main Dimensions

Size		L mm	D1 mm	D2 mm	Z-UNC or UN
Inch	mm				
2"	50	43	120.5	92	4-UNC5/8"
2-1/2"	65	46	139.5	105	8-UNC3/4"
3"	80	48	152.5	127	8-UNC3/4"
4"	100	54	190.5	157	8-UNC3/4"
5"	125	59	216	186	8-UNC3/4"
6"	150	59	241.5	216	12-UNC3/4"
8"	200	73	298.5	270	12-UNC7/8"
10"	250	83	362	324	16-UN1"
12"	300	92	432	381	16-UN1-1/8"
14"	350	117	476	413	20-UN1-1/8"
16"	400	133	540	470	20-UN1/8"
18"	450	149	578	533	24-UN1-1/4"
20"	500	159	635	584	24-UN1-1/4"
22"	550	159	743	641	24-UN1-1/2"
24"	600	181	749.5	692	24-UN1-1/2"
30"	750	273	914.5	857	28-UN1-3/4"
36"	900	286	1086	1022	32-UN2"

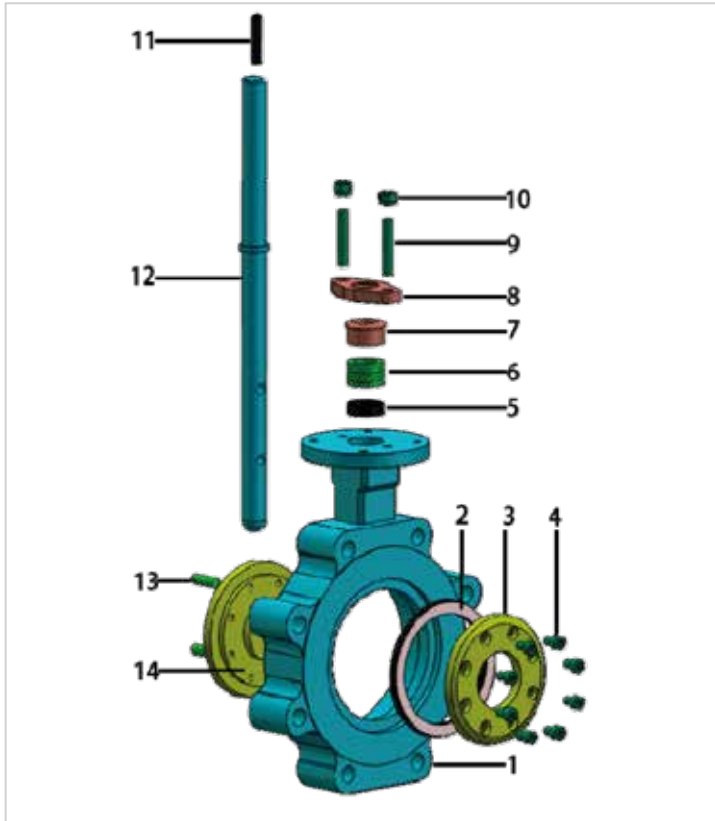
Notes: Size ≥ 8 " valves body with bottom cover.

Triple eccentric Butterfly valve

No	Parts	No	Parts	No	Parts
1	Body	6	Packing	11	Key
2	Seat	7	Stuffing cover	12	Stem
3	Sealing joint	8	Gland flange	13	Pin
4	Screw nail	9	Bolt	14	Disc
5	Packing washer	10	Hex nut		



Exploded view of Triple eccentric Butterfly valve



No.	Parts	Example: Hastelloy C276 Valve
1	Body	B367 Gr C2
2	Seat	Ti+Graphite
3	Sealing joint	B381 Gr F2
4	Screw nail	B348 Gr 2
5	Packing washer	B381 Gr F2
6	Packing	PTFE
7	Stuffing cover	A182 F304
8	Gland flange	A351 CF8
9	Bolt	A193 B8
10	Hex nut	A194 8
11	Key	UNS G10450
12	Stem	B381 Gr F2
13	Pin	B348 Gr 5
14	Disc	B367 Gr C2

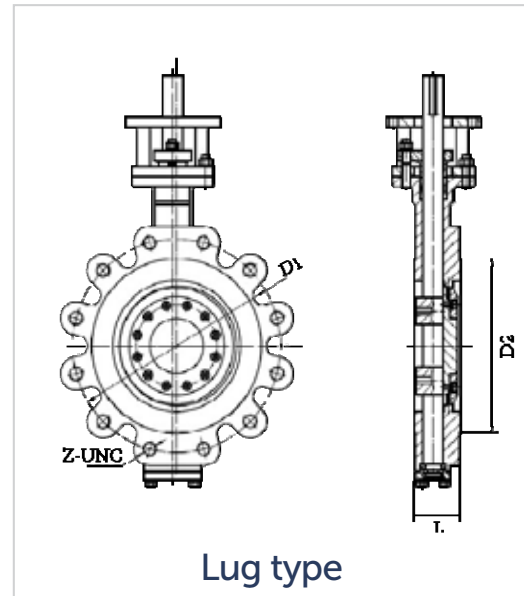
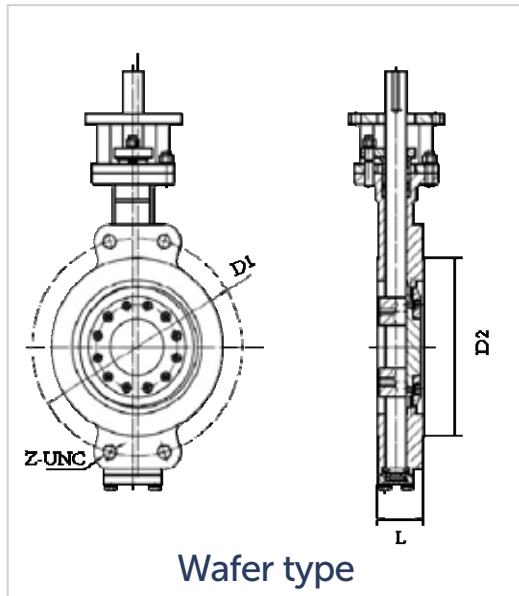
Notes:

Above view for size ≤ 6 " valves.

Size ≥ 8 " valves body have additional bottom cover, other structure same as above view.

Richard Valve butterfly valve material specification: Titanium alloy, Nickel alloy, Zirconium, Duplex SS, Stainless steel, Ni-Al-Br C95800 etc.(Pls check the detail Material list in Page 15& Page 16)

Triple eccentric Butterfly valve



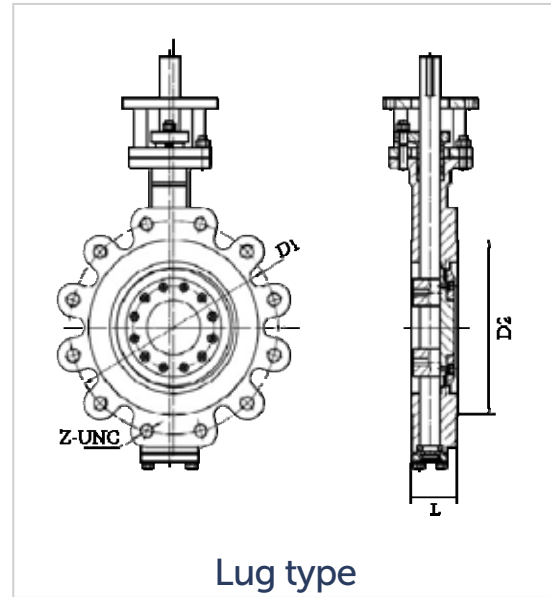
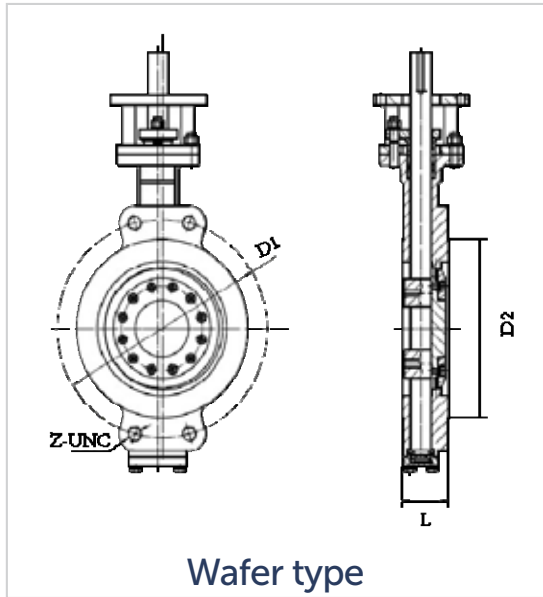
Main Dimensions

Size		L	D1	D2	Z-UNC or UN
Inch	mm	mm	mm	mm	
3"	80	48	152.5	127	4-UNC5/8"
4"	100	54	190.5	157	8-UNC5/8"
5"	125	57	216	186	8-UNC3/4"
6"	150	57	241.5	216	8-UNC3/4"
8"	200	64	298.5	270	8-UNC3/4"
10"	250	71	362	324	12-UNC7/8"
12"	300	81	432	381	12-UNC7/8"
14"	350	92	476	413	12-UN1"
16"	400	102	540	470	16-UN1"
18"	450	114	578	533	16-UN1-1/8"
20"	500	127	635	584	20-UN1-1/4"
24"	600	154	749.5	692	20-UN1-1/4"
28"	700	165	863.5	800	28-UN1-1/4"
30"	750	191	914.5	857	28-UN1-1/4"
32"	800	191	975	914.5	28-UN1-1/2"
36"	900	203	1086	1022	32-UN1-1/2"
40"	1000	229	1200	1124	36-UN1-1/2"
42"	1050	246	1257.5	1194	36-UN1-1/2"
48"	1200	276	1422	1359	44-UN1-1/2"

Notes: Size \geq 8" valves body with bottom cover.

Triple eccentric Butterfly valve

ASME Class 150LB



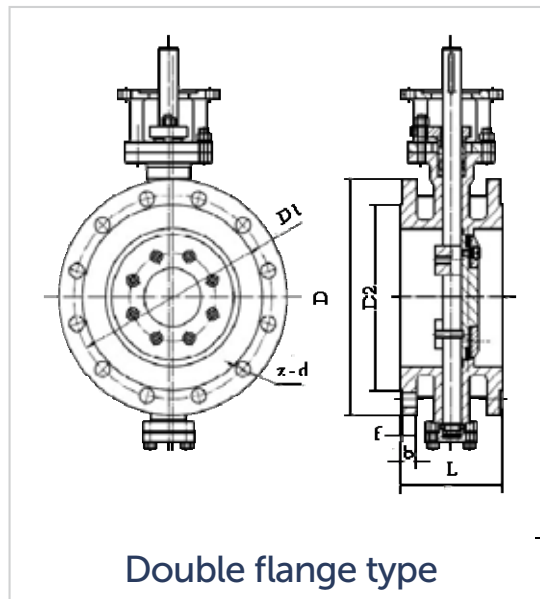
Main Dimensions

Size		L	D1	D2	Z-UNC or UN
Inch	mm	mm	mm	mm	
3"	80	48	168	127	8-UNC3/4"
4"	100	54	200	157	8-UNC3/4"
5"	125	59	235	186	8-UNC3/4"
6"	150	59	270	216	12-UNC3/4"
8"	200	73	330	270	12-UNC7/8"
10"	250	83	387.5	324	16-UN1"
12"	300	92	451	381	16-UN1-1/8"
14"	350	117	514.5	413	20-UN1-1/8"
16"	400	133	571.5	470	20-UN1-1/4"
18"	450	149	628.5	533	24-UN1-1/4"
20"	500	159	686	584	24-UN1-1/4"
24"	600	181	813	692	24-UN1-1/2"
28"	700	229	940	800	28-UN1-5/8"
30"	750	241	997	857	28-UN1-3/4"
32"	800	241	1054	914	28-UN1-7/8"
36"	900	241	1168.5	1022	32-UN2"

Notes: Size \geq 8" valves body with bottom cover.

Triple eccentric Butterfly valve

ASME Class 300LB



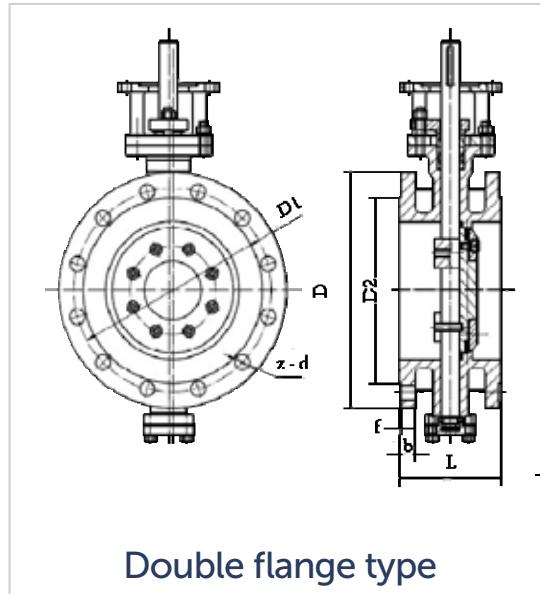
Main Dimensions

Size		L	D	D1	D2	f	b	z-d
Inch	mm	mm	mm	mm	mm	mm	mm	
3"	80	114	190	152.5	127	19	1.6	4-φ19
4"	100	127	229	190.5	157	24	1.6	8-φ19
5"	125	140	254	216	186	24	1.6	8-φ22
6"	150	140	279	241.5	216	26	1.6	8-φ22
8"	200	152	343	298.5	270	29	1.6	8-φ22
10"	250	165	406	362	324	31	1.6	12-φ25
12"	300	178	483	432	381	32	1.6	12-φ25
14"	350	190	533	476	413	35	1.6	12-φ29
16"	400	216	957	540	470	37	1.6	16-φ29
18"	450	222	635	578	533	40	1.6	16-φ32
20"	500	229	698	635	584	43	1.6	20-φ32
24"	600	267	813	749.5	692	48	1.6	20-φ35
28"	700	292	925	863.5	800	71.5	1.6	28-φ35
30"	750	318	985	914.5	857	74.5	1.6	28-φ35
32"	800	318	1060	978	914.5	81	1.6	28-φ41
36"	900	330	1170	1086	1022	90.5	1.6	32-φ41
40"	1000	410	1290	1200	1124	90.5	1.6	36-φ41
42"	1050	410	1345	1257.5	1194	97	1.6	36-φ41
48"	1200	470	1510	1422	1359	108	1.6	44-φ41

Notes: Size $\geq 8"$ valves body with bottom cover.

Triple eccentric Butterfly valve

ASME Class 150LB



Main Dimensions

Size		L	D	D1	D2	f	b	z-d
Inch	mm	mm	mm	mm	mm	mm	mm	
3"	80	180	210	168	127	29	1.6	8-φ22
4"	100	190	254	200	157	32	1.6	8-φ22
5"	125	210	279	235	186	35	1.6	8-φ22
6"	150	210	318	270	216	37	1.6	12-φ22
8"	200	230	381	330	270	41	1.6	12-φ25
10"	250	250	444	387.5	324	48	1.6	16-φ29
12"	300	270	521	451	381	51	1.6	16-φ32
14"	350	290	584	514.5	413	54	1.6	20-φ32
16"	400	310	648	571.5	470	57	1.6	20-φ35
18"	450	330	711	628.5	433	60	1.6	24-φ35
20"	500	350	775	686	584	64	1.6	24-φ35
24"	600	390	914	813	692	70	1.6	24-φ41
28"	700	430	940	1035	800	86	1.6	28-φ45
30"	750	450	997	1090	857	92	1.6	28-φ48
32"	800	470	1054	1150	914	98.5	1.6	28-φ51
36"	900	510	1270	1270	1022	105	1.6	32-φ54

Notes: Size $\geq 8"$ valves body with bottom cover.

EXOTIC ALLOY MATERIAL SERIES

Common	Forging	Casting	Service Application
Designation	Spec	Spec	

TITANIUM MATERIALS & SERVICE APPLICATIONS

Titanium Gr2	B381 Gr F2	B367 Gr C2	Good resistance to corrosion together with low specific weight. Widely applied in the chlor-alkali industry, soda industry, the pharmaceutical industry, fertilizer industry, nitric acid industry fields etc. Best choose for paper and pulp application.
Titanium Gr3	B381 Gr F3	B367 Gr C3	
Titanium Gr5	B381 Gr F5	B367 Gr C5	
Titanium Gr6	B381 Gr F6	B367 Gr C6	
Titanium Gr12	B381 Gr F12	B367 Gr C12	
Titanium Pd7B	B381 Gr F7	B367 Pd7B	

NICKEL ALLOY MATERIALS & SERVICE APPLICATIONS

Nickel 200	B160 N02200	A494 CZ100	Used in high temperature thick alkali corrosive medium condition.
Nickel 201	B160 N02201		
Monel 400	B564 N04400	A494 M35-1/ M35-C	For corrosive service such as acids, alkalis, salt solutions. Mainly used in hydrogen fluoride gas and hydrofluoric acid solution condition.
Monel K500	B865 N05500		
Inconel 600	B564 N06600	A494 CY40	For high temperature service, Used for nuclear applications.
Inconel 625	B564 N06625	A494 CW6MC	
Incoloy 800	B564 N08800	A351 CT15C	
Incoloy 825	B564 N08825	A494 CU5MCuC	
Hastelloy B	B335 N10001	A494 N12MV	Hastelloy super alloys is that of effective survival under high-temperature, high-stress service in a moderately to severely corrosive, and/or erosion-prone environment where more common and less expensive iron-based alloys would fail, including the pressure vessels of some nuclear reactors, chemical reactors, distillation equipment, and pipes and valves in chemical industry.
Hastelloy B-2	B462 N10665	A494 N7M	
Hastelloy C276	B564 N10276	A494 CW12- MW/ CW6M	
Hastelloy C-22	B564 N06022	A494 CX2MW	
Hastelloy C-4	B574 N06455	A494 CW2Mt	
Hastelloy G	B462 N06007		
Hastelloy G30	B462 N06030		

ZIRCONIUM MATERIALS & SERVICE APPLICATIONS

Zirconium 702	B493 R60702	B752 702C	Outstanding corrosion resistance to hydrochloric acid and sulfuric acid, acetic acid, applicable for any density alkaline solution.
Zirconium 705	B493 R60705	B752 705C	

IRON BASE ALLOY MATERIAL SERIES			
Common	Forging	Casting	Service Application
Designation	Spec	Spec	
DUPLEX SS MATERIALS & SERVICE APPLICATIONS			
Duplex S31803	A182 F51	A890/A995 4A	Very high strength, resistance to corrosion, pitting and stress corrosion in chloride media.
Super Duplex S32750	A182 F53	A890/A995 5A	
Super Duplex S32760	A182 F55	A890/A995 6A	
AUSTENITIC SS MATERIALS & SERVICE APPLICATIONS			
904L	A182 F904L		Chemical processes for highly concentrated chloride, flue gas desulfurization, acid and alkali reactor, salt manufacturing processes and seawater desalination.
254SMO	A182 F44	A351 CK3MCuN	
AL-6XN	B462 NO8367	A351 CN3MN	
ALLOY 20	B462 NO8020	A351 CN7M	
AUSTENITIC STAINLESS STEEL MATERIALS & SERVICE APPLICATIONS			
304	A182 F304	A351 CF8	Stainless steel is used where both the properties of steel and resistance to corrosion are required.
304L	B381 Gr F2	A351 CF3	
316	A182 F316	A351 CF8M	
316L	A182 316L	A351 CF3M	
316Ti	A182 F316Ti		
317	A182 F317	A351 CG8M	
317L	A182 F317L	A351CG3M	
347	A182 F347	A351 CF8C	
310	A182 F310	A351 CK20	
310S	A182 F310S	A351 CK20	
COPPER ALLOY MATERIALS & SERVICE APPLICATION			
B148 C95800		B148 C95800	General sea water-related service Oil and petrochemical industries Specialized anti-corrosive applications.

Note: These charts are for reference only. Richard Valve recommends customer engineers to analyze service requirements and specify the materials they consider applicable.



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