

UV518

UV518 series are metal seated, butterfly valves specially designed to fulfill the requirements of chemical, petrochemical, refining, steel-mills and power plant industries. The unique triple eccentric design eliminates friction between the disc seal ring and the seat in the body, thereby preventing wear and any consequent leakage. The result is a valve with a longer service life.

Features

- Metal seated design.
- Long term tightness.
- Excellent wear resistance.
- Extended life cycle.
- Lower operational torque.
- No seat and disc contact in the open or intermediate position.
- Eliminates wear points at top and bottom of disc.

Technical Data

Normal diameter or bore:
NPS 3"~NPS 72", DN80~DN1800.
Normal pressure or rating:
ASME Class 150~Class 600.
Material: Cast Steel, Stainless Steel,
Duplex steel.
Body seat with hard faced.
Applicable temperature: -75°C~550°C .

Design

Design & manufacture: API 609, ASME B16.34.
Face to face dimension: API 609, ISO 5752.
Connection ends: ASME B16.5, ASME B16.47.
Testing & inspection: API 598, ANSI FCI-70-2.
Fire Test: EN ISO 10497.

UNIVALS METAL SEATED BUTTERFLY VALVE

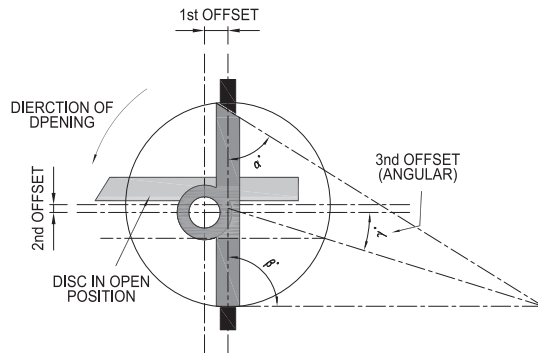


Application

- Power.
- Chemical.
- Hydrogen.
- Steam.
- Pulp and Paper.
- Oil and Gas Processing.
- Oxygen Service.
- Refinery.
- Steel Mill.
- LNG.

Triple Offset Metal Seated Seating Principle

The Unique Univals triple eccentric design eliminates friction between the disc seal ring and the seat body. This geometry ensures that the disc seal contacts the body seat only at the final shut-off position without rubbing, thereby preventing wear and any consequent leakage. It provides a bi-directional tight shut-off. The result is a valve with a longer cycle life service.

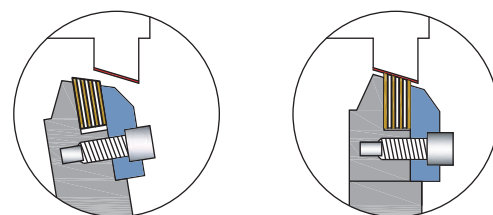


- Offset 1: The shaft is offset behind the seat axis to allow complete sealing contact around the entire seat.
- Offset 2: The shaft centerline is offset from the pipe and valve which provides interference free opening and closing of the valve.
- Offset 3: The seat cone axis is offset from the shaft centerline to eliminate the mechanical friction between disc and seat during closing and opening and to achieve uniform compressive sealing around the entire seat.

Friction Free Sealing Performance

Butterfly valve discs 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 others.

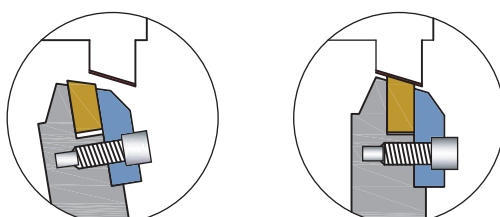
The resilient seal flexes and energizes ring is achieved through the radial compression of the seal ring as torque is applied to the valve shaft. The compression forces equally distributed around the perimeter provides a tight to the bi-directional shut off. The resiliency of the seal allows the valve body and disc to contract or expand, without the risk of jamming due temperature fluctuations (see right figures).



Before seating

After seating

Laminated Disc Seal for Standard



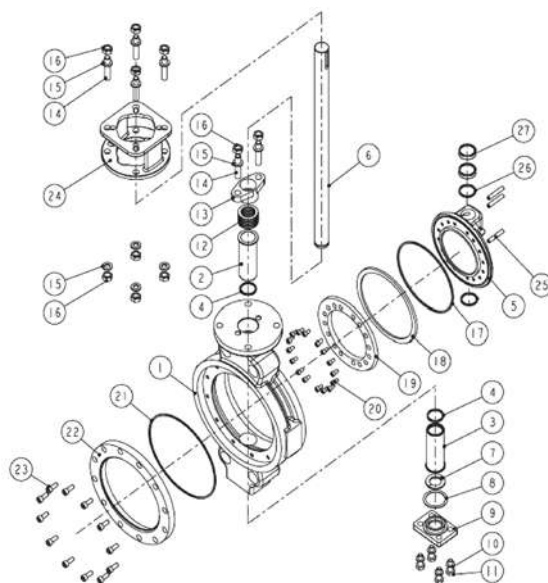
Before seating

After seating

Solid Disc Seal optional

The solid metal seal ring provides superior sealing performance, even under low differential pressure and in the most of difficult service conditions, which be used for those medium with abrasion of solid particle and in a variety of materials to suit your application and for modulation control application as well (see left figures).

Exploded View



Material Parts List

Item	Part Description	Standard Material
1	Body	A216 Gr. WCB / A351 Gr. CF8M
2	Bearing	A182 Gr. F316
3	Bearing	A182 Gr. F316
4	Dust-proof seal	GRAPHITE
5	Disc	A216 Gr. WCB / A351 Gr. CF8M
6	Shaft	A182 Gr. F6a / A479 XM-19
7	Thrust ring	A240 Gr. 316
8	Bottom cover gasket	GRAPHITE
9	Bottom cover	A216 Gr. WCB / A351 Gr. CF8M
10	Spring washer	A240 Gr. 304
11	Bolt	A913 Gr. B8
12	Gland packing	GRAPHITE
13	Gland	A351 Gr. CF8 / A351 Gr. CF8M
14	Stud	A913 Gr. B8
15	Spring washer	A240 Gr. 304
16	Nut	A194 Gr. 8
17	Gasket	GRAPHITE
18a	Solid seal ring	A240 Gr. 316 / INCO 718
18b	Laminated seal ring	UNS S32205 / INCO 718
19	Seal ring retainer	A351 Gr. CF8 / A351 Gr. CF8M
20	Socket head cap bolt	A913 Gr. B8
21	Gasket	GRAPHITE
22	Body seat	A240 Gr. 304+Stellite hard face / A240 Gr. 316+Stellite hard face
23	Socket head cap bolt	A913 Gr. B8
24	Yoke	A536 65-45-12 / A216 Gr. WCB
25	Pin	A182 Gr. F316
26	Dust-proof seal	GRAPHITE
27	Bearing	A182 Gr. F316

Pressure / Temperature Ratings

Temp °C	Body Maximum Working Pressure Rating, in bar					
	ASME Class 150		ASME Class 300		ASME Class 600	
	ASTM A216 Gr. WCB	ASTM A 351 Gr. CF8M	ASTM A216 Gr. WCB	ASTM A 351 Gr. CF8M	ASTM A216 Gr. WCB	ASTM A 351 Gr. CF8M
-29 to 38	19.6	19.0	51.5	49.6	102.1	99.3
100	17.7	16.2	46.6	42.2	93.2	84.8
150	15.8	14.8	45.2	38.5	90.2	77
200	13.8	13.7	43.8	35.7	87.6	71.3
250	12.1	12.1	41.7	33.4	83.9	66.8
300	10.2	10.2	39.8	31.6	79.6	63.2
350	8.4	8.4	37.6	30.3	75.1	60.7
400	6.5	6.5	34.7	29.4	69.4	58.9
450	4.6	4.6	23.0	28.8	46.0	57.7
500	2.8	2.8	11.8	28.2	23.5	56.5
538	1.4	1.4	5.9	25.0	11.8	49.8

Maximum working pressure rating of the valve in accordance with ASME B16.34

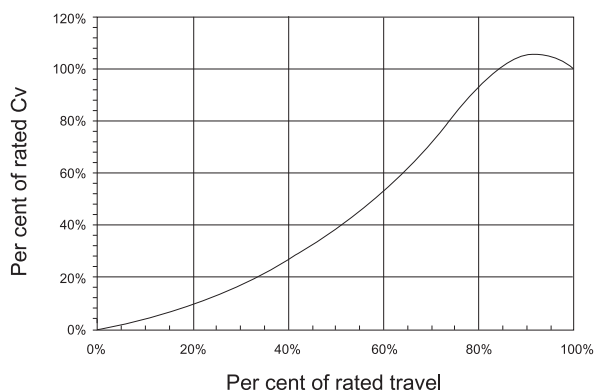
Flow Data

Triple offset butterfly valves' CV table at valve 90° fully open in pressure class ANSI Class 150 and 600.

Butterfly Valve Capacity Value -Cv				
Size		ANSI150	ANSI300	ANSI600
inch	mm			
3"	80	100	100	-
4"	100	220	215	205
6"	150	785	760	600
8"	200	1520	1262	1080
10"	250	2570	2383	1700
12"	300	3950	3580	2560
14"	350	5295	4800	4080
16"	400	6890	6440	5400
18"	450	9200	8537	7570
20"	500	11690	11450	9890
24"	600	17950	16550	14980
28"	700	28000	24500	-
30"	750	31500	30300	-
32"	800	36000	32100	-
36"	900	44800	44000	-
40"	1000	57900	-	-
42"	1050	65000	-	-
44"	1100	70500	-	-
48"	1200	51500	-	-

Cv values are at the relative opening 100%

Cv curve



The Cv values represent the flow of water at 16°C Through the valve in gallons per minute at a pressure drop of 1 psi.

Cv = 1.167 KV

Torque Values

Triple eccentric Butterfly valves are designed as low torque valves. The torque chart is a guide for actuator selection. Actuator selection which be done considering factor of safety depending upon service condition, generally selecting a higher size actuator.

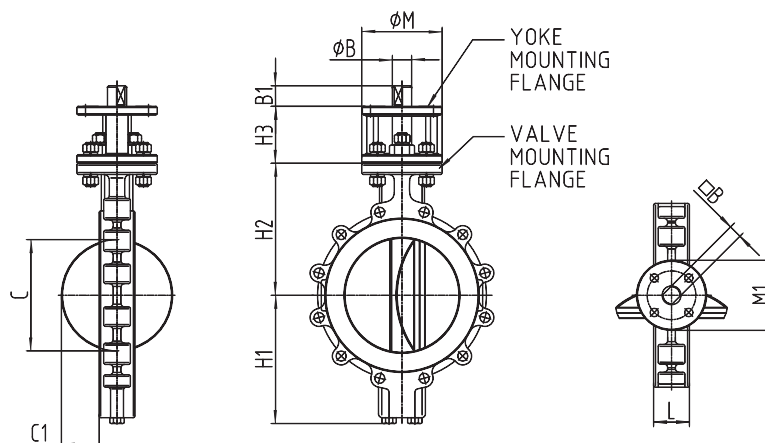
Butterfly Valve Torques in Nm												
Size	Operating Differential Pressure for body Class 150						Operating Differential Pressure for body Class 300					
	6.25 bar		12.5 bar		25 bar		12.5 bar		25 bar		50 bar	
	End to	Start to	End to	Start to	End to	Start to	End to	Start to	End to	Start to	End to	Start to
Inch	Close	Open	Close	Open	Close	Open	Close	Open	Close	Open	Close	Open
3"	79	95	79	95	100	120	134	161	134	161	176	212
4"	108	129	108	129	149	179	188	226	188	226	272	326
6"	187	224	187	224	285	343	358	429	356	429	599	719
8"	205	246	205	246	380	456	420	504	441	529	882	1058
10"	380	456	380	456	691	829	775	930	775	930	1521	1826
12"	541	649	541	649	1030	1237	1097	1317	1128	1354	2256	2707
14"	654	785	688	826	1375	1650	1324	1589	1447	1736	2894	3473
16"	862	1034	943	1132	1886	2263	1749	2098	2406	2887	4813	5775
18"	1097	1316	1247	1497	2495	2994	2216	2659	2784	3340	5567	6681
20"	1192	1430	1464	1757	2927	3513	2399	2879	3554	4264	7107	8529
24"	1730	2075	2406	2886	4811	5774	3459	4151	5484	6582	10969	13162

Butterfly Valve Torque in Nm						
Size	Operating Differential Pressure for body Class 600					
	27.5 bar		55 bar		110 bar	
	End to	Start to	End to	Start to	End to	Start to
Inch	Close	Open	Close	Open	Close	Open
3"	214	256	214	256	380	456
4"	382	458	387	464	774	929
6"	700	840	898	1077	1795	2154
8"	1333	1599	1378	1654	2758	3309
10"	2142	2571	2397	2876	4793	5752
12"	2775	3330	3424	4109	6847	8217
14"	3622	4346	4142	4971	8285	9942
16"	5010	6010	7925	9510	15850	19020
18"	6339	7607	10030	12037	20061	24073
20"	8448	10138	13079	15695	26159	31390
24"	8931	11536	17310	20773	34621	41545

Notes:

- 1) The torque required to open and close butterfly valves can be calculated using the data in the tables. An actuator should be selected that provides the same or greater output torque which than the calculated for the valve. A safety factor of 1.3 – 1.5 is recommended for actuator sizing.
- 2) Torque values shown are based on the normal pressure of valves at normal temperature which be with flow direction from shaft side.
- 3) Torque may be changed according to different temperature ranges and different medium and trim material as well.

Dimensions, Wafer/Lug Type, ASME Class150/300/600



Approximate Dimensions mm – ASME Class150, 3"– 36" (DN80 – DN900mm)

Size		Dimensions						Mounting Flange ISO5211				Shaft end			
								Valve		Yoke					
inch	mm	L	H1	H2	H3	C	C1	Type	ØM	Type	M1	ØB	B1	Key	□B
3	80	47	137	145	60	52	12	F07	90	F07/F05	70	14	18	-	11
4	100	53	140	155	60	79	23	F07	90	F07/F05	70	14	18	-	11
6	150	56	177	200	70	129	40	F10	125	F10/F07	102	18	24	-	14
8	200	63	204	225	70	174	65	F10	125	F10/F07	102	25	28	-	19
10	250	69	252	270	80	220	85	F12	150	F12/F10	125	28	28	-	22
12	300	79	281	300	100	262	100	F14	175	F14/F12	140	35	37	-	27
14	350	79/92	317	355	100	318	124	F14	175	F14/F12	140	41.7	55	12*8	-
16	400	102	351	385	120	359	141	F16	210	F16/F14	165	44.7	55	12*8	-
18	450	114	376	415	120	404	161	F16	210	F16/F14	165	49.7	65	16*10	-
20	500	127	411	455	120	441	169	F16	210	F16/F14	165	54.7	65	16*10	-
24	600	154	476	540	150	537	207	F25	300	F16	300	64.7	80	18*12	-
26	650	165	479	543	150	578	229	F25	300	F25	300	69.7	110	18*12	-
28	700	165	534	590	150	636	247	F25	300	F25	300	74.7	110	20*12	-
30	750	190	574	620	150	664	258	F25	300	F25	300	79.5	110	24*16	-
32	800	190	598	655	150	713	281	F25	300	F25	300	89.5	110	25*14	-
36	900	203	641	695	150	816	327	F30	350	F30	350	99.3	150	28*16	-

Approximate Dimensions mm – ASME Class300, 3" – 24" (DN80 – DN600mm)

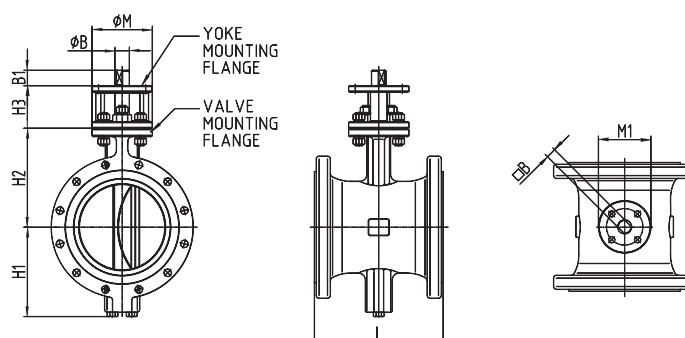
Size		Dimensions						Mounting Flange ISO5211				Shaft end		
								Valve		Yoke				
inch	mm	L	H1	H2	H3	C	C1	Type	ØM	Type	M1	ØB	B1	Key
3"	80	48	137	145	60	59	16	F07	90	F07/F05	90	15.9	30	5*5
4"	100	54	174	167	70	72	20	F10	125	F07/F10	102	18.9	30	6*6
6"	150	61	204	210	70	124	40	F10	125	F07/F10	102	24.85	45	8*8
8"	200	75	239	240	80	169	58	F12	150	F10/F12	125	31.85	55	8*8
10"	250	83	272	310	100	221	80	F14	175	F14/F12	140	37.7	60	10*8
12"	300	94	312	335	120	258	97	F16	210	F16/F14	165	44.7	80	12*8
14"	350	117	352	368	120	295	94	F16	210	F16/F14	165	49.7	80	16*10
16"	400	133	385	410	120	344	125	F16	210	F16/F14	165	59.7	80	18*12
18"	450	149	406	450	120	386	138	F16	210	F16/F14	165	64.7	90	18*12
20"	500	159	451	485	150	412	140	F25	300	F25	300	74.7	110	20*12
24"	600	181	518	568	180	522	191	F30	350	F30	350	79.5	130	24*16

Approximate Dimensions mm – ASME Class600, 4" – 24" (DN100 – DN600mm)

Size		Dimensions						Mounting Flange ISO5211				Shaft end		
								Valve		Yoke				
inch	mm	L	H1	H2	H3	C	C1	Type	ØM	Type	M1	ØB	B1	Key
4"	100	64	181	200	80	69	17	F12	150	F12/F10	125	27.85	55	8*8
6"	150	78	246	240	100	123	35	F14	175	F14/F12	140	31.85	65	8*8
8"	200	102	259	310	120	153	42	F16	210	F16/F14	165	41.7	70	12*8
10"	250	117	306	355	120	202	60	F16	210	F16/F14	165	44.7	80	12*8
12"	300	140	341	405	150	244	72	F25	300	F25	300	59.7	110	18*12
14"	350	155	375	450	150	277	80	F30	350	F30	350	69.7	110	18*12
16"	400	178	409	495	180	324	99	F35	415	F35	415	79.5	150	24*16
18"	450	200	446	520	180	369	114	F35	415	F35	415	89.5	180	25*14
20"	500	216	489	581	200	411	107	F40	475	F40	475	99.3	180	28*16
24"	600	232	566	620	200	503	166	F40	475	F40	475	119.3	200	32*18

Dimensions, Flanged Type – ASME Class150

3" – 48 (DN80 – DN1200mm)



Size		Dimensions				Mounting flange (ISO5211)				Shaft end			
						Valve		Yoke					
inch	mm	L	H1	H2	H3	Type	ØM	Type	M1	ØB	B1	Key	□B
3"	80	180	137	145	60	F07	90	F07/F05	70	14	18	-	11
4"	100	190	140	155	60	F07	90	F07/F05	70	14	18	-	11
6"	150	210	177	200	70	F10	125	F10/F07	102	18	24	-	14
8"	200	230	204	225	70	F10	125	F10/F07	102	25	28	-	19
10"	250	250	252	270	80	F12	150	F12/F10	125	28	28	-	22
12"	300	270	281	300	100	F14	175	F14/F12	140	35	37	-	27
14"	350	290	317	355	100	F14	175	F14/F12	140	41.7	55	12*8	-
16"	400	310	351	385	120	F16	210	F16/F14	165	44.7	55	12*8	-
18"	450	330	376	415	120	F16	210	F16/F14	165	49.7	65	16*10	-
20"	500	350	411	455	120	F16	210	F16/F14	165	54.7	65	16*10	-
24"	600	390	476	540	150	F25	300	F16	300	64.7	80	18*12	-
26"	650	430	479	543	150	F25	300	F25	300	69.7	110	18*12	-
28"	700	430	534	590	150	F25	300	F25	300	74.7	110	20*12	-
30"	750	470	574	620	150	F25	300	F25	300	79.5	110	24*16	-
32"	800	470	598	655	150	F25	300	F25	300	89.5	110	25*14	-
36"	900	510	641	695	150	F30	350	F30	350	99.3	150	28*16	-
40"	1000	550	720	820	180	F35	415	F35	415	104.3	180	28*16	-
42"	1050	570	740	850	180	F35	415	F35	415	114.3	180	32*18	-
44"	1100	630	755	880	180	F35	415	F35	415	114.3	180	32*18	-
48"	1200	630	814	930	180	F35	415	F35	415	119.3	180	32*18	-

Dimension, Flanged Type – ASME Class 300, 3" – 36 (DN80 – DN900mm)

Size		Dimensions				Mounting flange (ISO 5211)				Shaft end		
						Valve		Yoke				
inch	mm	L	H1	H2	H3	Type	ØM	Type	M1	ØB	B1	Key
3"	80	180	137	145	60	F07	90	F07/F05	70	15.9	30	5*5
4"	100	190	174	167	70	F10	125	F07/F10	102	18.9	30	6*6
6"	150	210	204	210	70	F10	125	F07/F10	102	24.85	45	8*8
8"	200	230	239	240	80	F12	150	F10/F12	125	31.85	55	8*8
10"	250	250	272	310	100	F14	175	F14/F12	140	37.7	60	10*8
12"	300	270	312	335	120	F16	210	F16/F14	165	44.7	80	12*8
14"	350	290	352	368	120	F16	210	F16/F14	165	49.7	80	16*10
16"	400	310	385	410	120	F16	210	F16/F14	165	59.7	80	18*12
18"	450	330	406	450	120	F16	210	F16/F14	165	64.7	90	18*12
20"	500	350	451	485	150	F25	300	F25	300	74.7	110	20*12
24"	600	390	518	568	180	F30	350	F30	350	79.5	130	24*16
26"	650	410	552	660	150	F30	350	F30	350	99.3	130	28*16
28"	700	430	583	690	180	F35	415	F35	415	104.3	180	28*16
30"	750	450	635	735	180	F35	415	F35	415	114.3	180	32*18
32"	800	470	690	750	200	F40	475	F40	475	119.3	200	32*18
36"	900	510	709	780	200	F40	475	F40	475	134.3	200	36*20

Dimensions, Flanged Type - ASME Class600, 6" – 24" (DN150 – DN600mm)

Size		Dimensions				Mounting flange (ISO 5211)				Shaft end		
						Valve		Yoke				
inch	mm	L	H1	H2	H3	Type	ØM	Type	M1	ØB	B1	Key
6"	150	403	246	240	100	F14	175	F14/F12	140	31.85	65	8*8
8"	200	419	256	310	120	F16	210	F16/F14	165	41.7	70	12*8
10"	250	457	306	355	120	F16	210	F16/F14	165	44.7	80	12*8
12"	300	502	341	405	150	F25	300	F25	300	59.7	110	18*12
14"	350	572	375	450	150	F30	350	F30	350	69.7	110	18*12
16"	400	610	407	495	180	F35	415	F35	415	79.5	150	24*16
18"	450	660	446	520	180	F35	415	F35	415	89.5	180	25*14
20"	500	711	484	581	200	F40	475	F40	475	99.3	180	28*16
24"	600	787	553	645	200	F40	475	F40	475	119.3	200	32*18

How to Order

To specify UV518 butterfly valves. Simply determine the proper size, body type, and material, use figure numbers of to ensure prompt and accurate of your order. A detailed description must accompany any special orders.

Example: 518-F0815WACLPWVG

	1.	2.	3.	4.	5.	6.
518	F	08	15	W	A	L

	Model		
518	Univals Triple Eccentric Disc Valve		
1.	Connections		
W	Wafer Type		
L	Lug Type		
F	Flange Type		
2.	Valve Size		
03	3"(80mm)	14	14"(350mm)
04	4"(100mm)	16	16"(400mm)
06	6"(150mm)	18	18"(450mm)
08	8"(200mm)	20	20"(500mm)
10	10"(250mm)	24	24"(600mm)
12	12"(300mm)		

3.	Body Class		
15	ASME 150 / PN25		
30	ASME 300 / PN40		
60	ASME 600 / PN100		
4.	Body Material		
W	WCB	S	CF8M
X	Special material on request		
5.	Disc Material		
A	A351 Gr. CF8M		
Y	Special material on request		
6.	Disc Seal Ring		
L	UNS S32205/INCO 718		
S	Solid seal ring		

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