

Wafer Type Triple Eccentric Butterfly Valve Metal & Soft Seated



"aira" Offers high performance triple eccentric butterfly valves are complete metal to metal seated valves suitable for both throttling and positive isolation applications. These valves are capable of bi-directional flow control, zero leakage, low fugitive emissions, steam - based applications (up to 550°C) and for cryogenic applications (down to -196° C) Due to the triple offset sealing system, the disc moves smoothly and free of friction at all points along the specially designed body seat & disc seal. This is because the third offset completely eliminates rubbing. When the disc is closed, the seal ring (on the disc) energises the seat (on the body) There by providing a snug - tight high - performance fit. The laminar seal is constructed with grafoil layers sandwiched between metal laminations. This resiliency of the seal flexes and energizes according to the compressive forces generated. and allows for minor body deformations due to temperature fluctuations without the risk of jamming. This provides a uniform wedging effect and ensures "Zero" leakage of the valve.

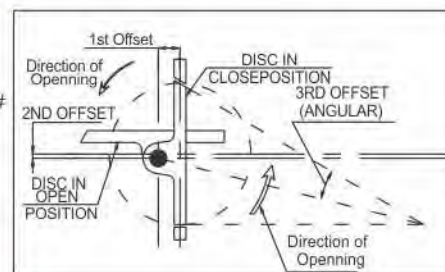
**Size Range : 1.1/2" to 48" (Above 48" On Request)
(40 MM to 1200 MM)**

Standard

- Design And Manufacturer : API 609 Category "B" / BS EN 593
- Valve Face to Face Dimension: API 609 / BS EN 558
- Flange Conformity : ANSI B16.5, 16.47 150# /300# / 600#
- Inspection & Testing : FCI - 70-2 / B16,104 / ISO 5208 / BS EN 12266 - 1
- Pressure Temperature Rating : ASME B 16.34
- Top Mounting Standard : ISO 5211
- Stem Square Drive : ISO 5211
- Leakage Class : IV / V / VI



609 - 0055



600# On Request

Pressure / Temperature Rating

Pressure Rating	150# PN 10 / PN 16 / PN 20 & 300# PN 25 / PN 40
Operating Temperature	NBR : -10 °C to +90 °C / EPDM : -10 °C to +120 °C / Viton : -10 °C to +220 °C / PTFE : -10 °C to +180 °C / RPTFE : -10 °C to +220 °C / TFM : -10 °C to +250 °C / S. S. 304 + Graphoil Laminated 400 °C / S. S. 304 + Inconel 625 Graphite Laminated Above 400 °C

Accessories

- On / OFF Indicator
- NAMUR Standard Solenoid Valve in all Standard Coil Voltage (Flame Proof Solenoid Coil - On Request)
- Pneumatic & Electro-Pneumatic valve positioner
- Declutchable Manual Over - Ride
- Limit Switches for On / Off Indication at Panel Boardn Filter + Regulator Combination with Pressure Gauge
- Air Lock Valve

Cv Value 150#

Valve Size		Cv at 90 °C
MM	Inch	
80	3"	100
100	4"	219
125	5"	426
150	6"	633
200	8"	1511
250	10"	2467
300	12"	4024
350	14"	5200
400	16"	6870
500	20"	11718
600	24"	18621
700	28"	25694
750	30"	30507
800	32"	37570
900	36"	44626
1000	40"	58541
1050	42"	62536
1200	48"	81680

Valve Torque 150#

Valve Size		5 Bar	10 Bar	20 Bar
MM	Inch			
80	3"	24	28	42
100	4"	35	43	69
125	5"	55	78	115
150	6"	76	100	174
200	8"	182	198	353
250	10"	397	447	788
300	12"	590	758	1329
350	14"	510	842	1519
400	16"	754	1090	1900
500	20"	1578	2068	3703
600	24"	1485	2640	4751
700	28"	2818	4838	8779
750	30"	3148	9120	16178
800	32"	3572	9748	17947
900	36"	4922	16882	31199
1000	40"	9034	23653	43468
1050	42"	10342	25299	46711
1200	48"	13639	35789	67626

Valve Torque 300#

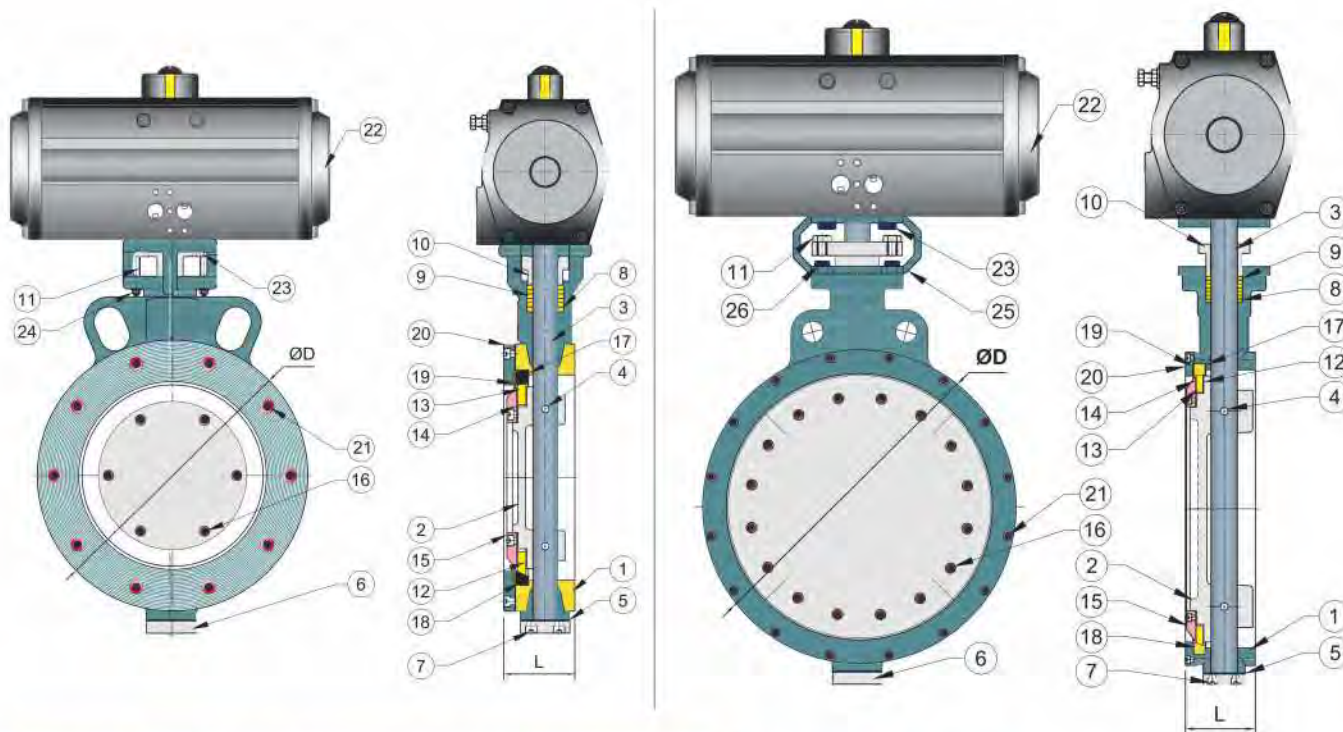
Valve Size		10 Bar	20 Bar	50 Bar
MM	Inch			
80	3"	41	52	89
100	4"	66	88	153
125	5"	140	193	452
150	6"	373	426	1009
200	8"	633	788	1900
250	10"	930	1329	3189
300	12"	1143	1843	4471
350	14"	1886	2791	8783
400	16"	2541	3703	9031
500	20"	3379	5827	13881
600	24"	4833	8780	21624

Tight Shut-off Leakage Class VI

We have successfully carried out proof of design test on these metal seated butterfly valve.

Pub. On : October, 2018 (Rev :-01)

Wafer Type Triple Eccentric Butterfly Valve Metal & Soft Seated



No.	Description	Material
1	Body	WCB / CF8 / CF8M / CF3M
2	Disc	WCB / CF8 / CF8M / CF3M
3	Shaft	S. S. 304 / 316 / 410 / S17-4PH / Monel / Inconel
4	Disc Pin	S. S. 304 / S. S. 316 / S. S. 410
5	Steam Square Gasket	S. S. 304 / 316 / Inconel 625 + Graphite
6	Steam Square	CF8 / CF8M / CF3M
7	L. N. Bolt Steam Square	Alloy Steel
8	Flange Side Washer	S. S. 304 / 316 / 410
9	Seal Set	Graphoil / Graphite / PTFE / EPDM
10	Gland Pata	CF8 / CF8M / CF3M
11	Hex Bolt Gland Pata	Alloy Steel
12	Disc Seal Ring Gasket	S. S. 304, S. S. 316, Inconel 625 + Graphite / Asbasetose
13	Disc Seal Ring	S. S. 304, 316 + Graphoil Laminated / NBR / EPDM / Viton / PTFE / CFT / GFT / RPTFE
14	Retainer Gasket	S. S. 304, S. S. 316, Inconel 625 + Graphite / Asbasetose
15	Retainer	CF8 / CF8M / CF3M
16	L. N. Bolt Retainer	Alloy Steel
17	Body Seat Ring Gasket	S. S. 304, S. S. 316, Inconel 625 + Graphite / Asbasetose
18	Body Seat Ring	CF8 / CF8M / CF3M
19	Body Clamping Ring Gasket	S. S. 304, S. S. 316, Inconel 625 + Graphite / Asbasetose
20	Body Clamping Ring	CF8 / CF8M / CF3M
21	L. N. Bolt Body Clamping Ring	Alloy Steel
22	Actuator	Std.
23	Hex Bolt Actuator	Alloy Steel
24	Locking Hex Bolt Nut	Alloy Steel
25	Bracket	WCB / CF8 / CF8M / CF3M
26	Hex Bolt Bracket	Alloy Steel

600# On Request

Dimensions : 150# & 300#

Valve Model	Valve Size		150#		300#		150# Weight Approx.
	MM	Inch	L	ØD	L	ØD	
TOB-40	40	1.1/2"	42	82	---	---	3,200
TOB-50	50	2"	45	95.5	45	92	4,050
TOB-65	65	2.1/2"	48	104	48	104.8	4,700
TOB-80	80	3"	48	126	48	127	5,650
TOB-100	100	4"	54	158	54	157.2	8,800
TOB-125	125	5"	57	186	59	185.7	11,100
TOB-150	150	6"	57	216	59	215.9	15,950
TOB-200	200	8"	64	270	73	269.9	24,850
TOB-250	250	10"	72	325	83	323.8	39,700
TOB-300	300	12"	81	381	92	381	58,472
TOB-350	350	14"	92	412	117	412.8	86,650
TOB-400	400	16"	102	472	133	469.9	145,750
TOB-450	450	18"	114	532	149	533.4	175,470
TOB-500	500	20"	127	584	159	584.2	294,960
TOB-600	600	24"	154	692.2	181	692.2	268,600
TOB-650	650	26"	165	749.3			313,170
TOB-700	700	28"	165	800			338,880
TOB-750	750	30"	190	857			465,610
TOB-800	800	32"	190	915			497,920
TOB-850	850	34"	205	965.2			542,420
TOB-900	900	36"	205	1022			585,060
TOB-1000	1000	40"	300	1124			846,080
TOB-1050	1050	42"	300	1194			964,300
TOB-1200	1200	48"	350	1359			1323,460

(All Dimensions are in mm)

Note : 40mm to 500mm Valve with Actuator Weight & Above without Actuator Weight.

Pub. On : October, 2018 (Rev :-01)

Double Flange Triple Eccentric Butterfly Valve Metal & Soft Seated

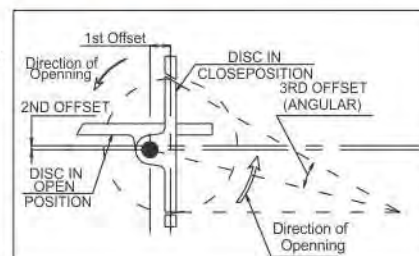


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**Size Range : 1.1/2" to 48" (Above 48" On Request)
(40 MM to 1200 MM)**

Standard

- Design And Manufacturer : API 609 Category "B" / BS EN 593
- Valve Face to Face Dimension : API 609 / BS EN 558
- Flange Conformity : ANSI B16.5, 16.47 150# / 300# / 600#
- Inspection & Testing : FCI - 70-2 / B16,104 / ISO 5208 / BS EN 12266 - 1
- Pressure Temperature Rating : ASME B 16.34
- Top Mounting Standard : ISO 5211
- Stem Square Drive : ISO 5211
- Leakage Class : IV / V / VI



609 - 0055

Fire Safe Design Available On Request

600# On Request

Pressure / Temperature Rating

Pressure Rating	150# PN 10 / PN 16 / PN 20 & 300# PN 25 / PN 40
Operating Temperature	NBR : -10 °C to +90 °C / EPDM : -10 °C to +120 °C / Viton : -10 °C to +220 °C / PTFE : -10 °C to +180 °C / RPTFE : -10 °C to +220 °C / TFM : -10 °C to +250 °C / S. S. 304 + Graphoil Laminated 400 °C / S. S. 304 + Inconel 625 Graphite Laminated Above 400 °C

Accessories

- On / OFF Indicator
- NAMUR Standard Solenoid Valve in all Standard Coil Voltage (Flame Proof Solenoid Coil - On Request)
- Pneumatic & Electro-Pneumatic valve positioner
- Declutchable Manual Over - Ride
- Limit Switches for On / Off Indication at Panel Boardn Filter + Regulator Combination with Pressure Gauge
- Air Lock Valve

Cv Value 150#		
Valve Size		Cv at 90 °C
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80	3"	100
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700	28"	25694
750	30"	30507
800	32"	37570
900	36"	44626
1000	40"	58541
1050	42"	62536
1200	48"	81680

Valve Torque 150#					
Valve Size		5 Bar	10 Bar	20 Bar	
MM	Inch				
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125	5"	55	78	115	
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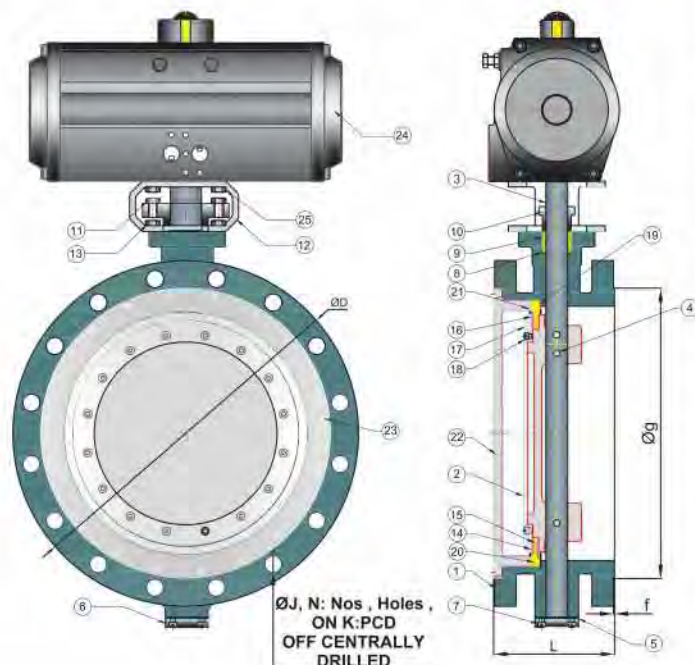
Valve Torque 300#					
Valve Size		10 Bar	20 Bar	50 Bar	
MM	Inch				
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Tight Shut-off Leakage Class VI

We have successfully carried out proof of design test on these metal seated butterfly valve.

Pub. On : October, 2018 (Rev :-01)

Double Flange Triple Eccentric Butterfly Valve Metal & Soft Seated



600# On Request

Dimensions : (150# & 300#)

Valve Model	Valve Size		150#							Weight (Approx.)	300#						
	MM	Inch	L	ØD	Øg	f	ØJ	N	K:PCD		L	ØD	Øg	f	ØJ	N	K:PCD
TOB-40-FD	40	1.1/2"	106	125	73	2	15.9	4	98.4	6.208	---	---	---	---	---	---	
TOB-50-FD	50	2"	108	150	92.1	2	19.05	4	120.7	7.450	150	165	92.1	2	19.05	8	127
TOB-65-FD	65	2.1/2"	112	180	104.8	2	19.05	4	139.7	10.970	170	190	104.8	2	22.2	8	149.2
TOB-80-FD	80	3"	114	190	127	2	19.05	4	152.4	13.247	180	210	127	2	22.2	8	168.3
TOB-100-FD	100	4"	127	230	157.2	2	19.05	8	190.5	20.128	190	255	157.2	2	22.2	8	200
TOB-125-FD	125	5"	140	255	185.7	2	22.2	8	215.9	26.053	200	280	185.7	2	22.2	8	235
TOB-150-FD	150	6"	140	280	215.9	2	22.2	8	241.3	33.854	210	320	215.9	2	22.2	12	269.9
TOB-200-FD	200	8"	152	345	269.9	2	22.2	8	298.5	52.321	230	380	269.9	2	25.4	12	330.2
TOB-250-FD	250	10"	165	405	323.8	2	25.4	12	362	76.649	250	445	323.8	2	28.6	16	387.4
TOB-300-FD	300	12"	178	485	381	2	25.4	12	431.8	115.770	270	520	381	2	31.75	16	450.8
TOB-350-FD	350	14"	190	535	412.8	2	28.6	12	476.3	155.450	290	585	412.8	2	31.75	20	514.4
TOB-400-FD	400	16"	216	595	469.9	2	28.6	16	539.8	226.300	310	650	469.9	2	34.9	20	571.5
TOB-450-FD	450	18"	222	635	533.4	2	31.75	16	577.9	268.520	330	710	533.4	2	34.9	24	628.6
TOB-500-FD	500	20"	229	700	584.2	2	31.75	20	635	408.740	350	775	584.2	2	34.9	24	685.8
TOB-600-FD	600	24"	267	815	692.2	2	34.9	20	749.3	422.520	390	915	692.2	2	41.3	24	812.8
TOB-650-FD	650	26"	292	785	711	2	22.2	36	744.5	380.970							
TOB-700-FD	700	28"	292	835	762	2	22.2	40	795.3	425.980							
TOB-750-FD	750	30"	318	885	813	2	22.2	44	846.1	541.540							
TOB-800-FD	800	32"	318	940	864	2	22.2	48	900.1	576.320							
TOB-850-FD	850	34"	324	1005	921	2	25.4	40	957.3	658.820							
TOB-900-FD	900	36"	330	1055	972	2	25.4	44	1009.3	711.520							
TOB-1000-FD	1000	40"	410	1175	1080	2	28.6	44	1120.8	997.500							
TOB-1050-FD	1050	42"	410	1225	1130	2	28.6	48	1171.6	1129.20							
TOB-1200-FD	1200	48"	470	1390	1289	2	31.8	44	1335.1	1150.90							

(All Dimensions are in mm)

Note : 40mm to 500mm Valve with Actuator Weight & Above without Actuator Weight.

Pub. On : October, 2018 (Rev :-01)

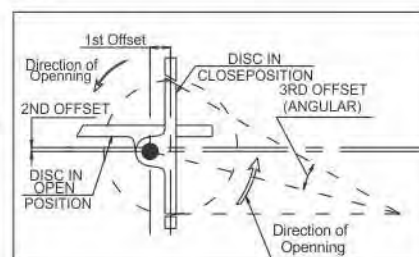


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Size Range : 1.1/2" to 24" (Above 24" On Request) (40 MM to 600 MM)

Standard

- Design And Manufacturer : API 609 Category "B" / BS EN 593
- Valve Face to Face Dimension : API 609 / BS EN 558
- Flange Conformity : ANSI B16.5, 16.47 150# / 300# / 600#
- Inspection & Testing : FCI - 70-2 / B16,104 / ISO 5208 / BS EN 12266 - 1
- Pressure Temperature Rating : ASME B 16.34
- Top Mounting Standard : ISO 5211
- Stem Square Drive : ISO 5211
- Leakage Class : IV / V / VI



Fire Safe Design Available On Request



600# On Request

Pressure / Temperature Rating

Pressure Rating	150# PN 10 / PN 16 / PN 20 & 300# PN 25 / PN 40
Operating Temperature	NBR : -10 °C to +90 °C / EPDM : -10 °C to +120 °C / Viton : -10 °C to +220 °C / PTFE : -10 °C to +180 °C / RPTFE : -10 °C to +220 °C / TFM : -10 °C to +250 °C / S. S. 304 + Graphoil Laminated 400 °C / S. S. 304 + Inconel 625 Graphite Laminated Above 400 °C

Accessories

- On / OFF Indicator
- NAMUR Standard Solenoid Valve in all Standard Coil Voltage (Flame Proof Solenoid Coil - On Request)
- Pneumatic & Electro-Pneumatic valve positioner
- Declutchable Manual Over - Ride
- Limit Switches for On / Off Indication at Panel Boardn Filter + Regulator Combination with Pressure Gauge
- Air Lock Valve

Valve Size		Cv at 90 °C
MM	Inch	
80	3"	100
100	4"	219
125	5"	426
150	6"	633
200	8"	1511
250	10"	2467
300	12"	4024
350	14"	5200
400	16"	6870
500	20"	11718
600	24"	18621

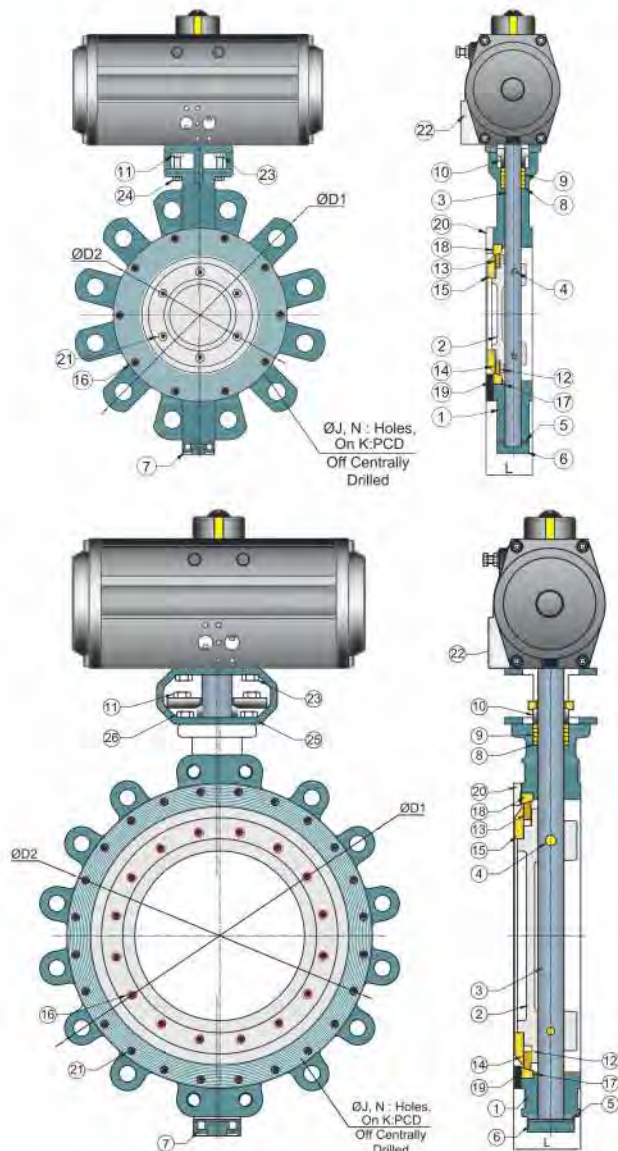
Valve Size		5 Bar	10 Bar	20 Bar
MM	Inch			
80	3"	24	28	42
100	4"	35	43	69
125	5"	55	78	115
150	6"	76	100	174
200	8"	182	198	353
250	10"	397	447	788
300	12"	590	758	1329
350	14"	510	842	1519
400	16"	754	1090	1900
500	20"	1578	2068	3703
600	24"	1485	2640	4751

Valve Size		10 Bar	20 Bar	50 Bar
MM	Inch			
80	3"	41	52	89
100	4"	66	88	153
125	5"	140	193	452
150	6"	373	426	1009
200	8"	633	788	1900
250	10"	930	1329	3189
300	12"	1143	1843	4471
350	14"	1886	2791	8783
400	16"	2541	3703	9031
500	20"	3379	5827	13881
600	24"	4833	8780	21624

Tight Shut-off Leakage Class VI

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Lug Type Triple Eccentric Butterfly Valve Metal & Soft Seated



No.	Description	Material
1	Body	WCB / CF8 / CF8M / CF3M
2	Disc	WCB / CF8 / CF8M / CF3M
3	Shaft	S. S. 304 / 316 / 410 / 17-4PH / Monel / Inconel
4	Disc Pin	S. S. 304 / 316 / 410
5	Steam Square Gasket	S. S. 304 / 316 / Inconel 625 + Graphite
6	Steam Square	CF8 / CF8M / CF3M
7	L. N. Bolt For Steam Square	Alloy Steel
8	Flange Side Washer	S. S. 304 / 316 / 410
9	Seal Set	Graphoil / Graphite / PTFE / EPDM
10	Gland Pata	CF8 / CF8M / CF3M
11	Hex Bolt For Gland Pata	Alloy Steel
12	Disc Seal Ring Gasket	S. S. 304 / 316 / Inconel 625 + Graphite
13	Disc Seal Ring	S S 304 / 316 + Graphoil Laminated / NBR / EPDM / Viton / PTFE / RPTFE / CFT / GFT
14	Disc Retainer Gasket	S. S. 304 / 316 / Inconel 625 + Graphite
15	Disc Ratainer	CF8 / CF8M / CF3M
16	L. N. Bolt For Ratainer	Alloy Steel
17	Body Seat Ring Gasket	S. S. 304 / 316 / Inconel 625 + Graphite
18	Body Seal Ring	CF8 / CF8M / CF3M
19	Body Clamping Ring Gasket	S. S. 304 / 316 / Inconel 625 + Graphite
20	Body Clamping Ring	CF8 / CF8M / CF3M
21	L. N. Bolt For Body Clamping Ring	Alloy Steel
22	Actuator	Std.
23	Hex Bolt For Actuator	Alloy Steel
24	Nut For Gland Pata	Alloy Steel
25	Bracket	WCB / CF8 / CF8M / CF3M
26	Hex Bolt For Bracket	Alloy Steel

600# On Request

Dimensions :

Valve Model	Valve Size		150#						300#					
	MM	Inch	L	ØD1	ØD2	ØJ	N	K.PCD	L	ØD1	ØD2	ØJ	N	K.PCD
TOB-40-LT	40	1.1/2"	42	125	82	15	4	99	---	---	---	---	---	---
TOB-50-LT	50	2"	45	150	95.5	19.05	4	120.7	45	165	92	19.05	8	127
TOB-65-LT	65	2.1/2"	48	180	104	19.05	4	139.7	48	190	104.8	22.2	8	149.2
TOB-80-LT	80	3"	48	190	126	19.05	4	152.4	48	210	127	22.2	8	168.3
TOB-100-LT	100	4"	54	230	158	19.05	8	190.5	54	255	157.2	22.2	8	200
TOB-125-LT	125	5"	57	255	186	22.2	8	215.9	59	280	185.7	22.2	8	235
TOB-150-LT	150	6"	57	280	216	22.2	8	241.3	59	320	215.9	22.2	12	269.9
TOB-200-LT	200	8"	64	345	270	22.2	8	298.5	73	380	269.9	25.4	12	330.2
TOB-250-LT	250	10"	72	405	325	25.4	12	362	83	445	323.8	28.6	16	387.4
TOB-300-LT	300	12"	81	485	381	25.4	12	431.8	92	520	381	31.75	16	450.8
TOB-350-LT	350	14"	92	535	412	28.6	12	476.3	117	585	412.8	31.75	20	514.4
TOB-400-LT	400	16"	102	595	472	28.6	16	539.8	133	650	469.9	34.9	20	571.5
TOB-450-LT	450	18"	114	635	532	31.75	16	577.9	149	710	533.4	34.9	24	628.6
TOB-500-LT	500	20"	127	700	584	31.75	20	635	159	775	584.2	34.9	24	685.8
TOB-600-LT	600	24"	154	815	692.2	34.9	20	749.3	181	915	692.2	41.3	24	812.8

(All Dimensions are in mm)

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