

900 Series

TRIPLE OFFSET BUTTERFLY VALVES
3" Through 24" Sizes, Class 150, 300, & 600 Triple Offset Valves

Triple Offset Butterfly Valve

Features & Benefits

Triple Offset Butterfly Valves

Delta T Triple Offset Butterfly Valves are designed for demanding applications. Unique seat and body construction allows for easy configurability and maintenance, without compromising shut off capability or service life.



High Performance Butterfly Valve Exploded View & Bill of Materials

Design Specifications

Valve Design & Pressure Temperature Rating:
API 609 & ASME B16.34

Fire Tested: API 6FA

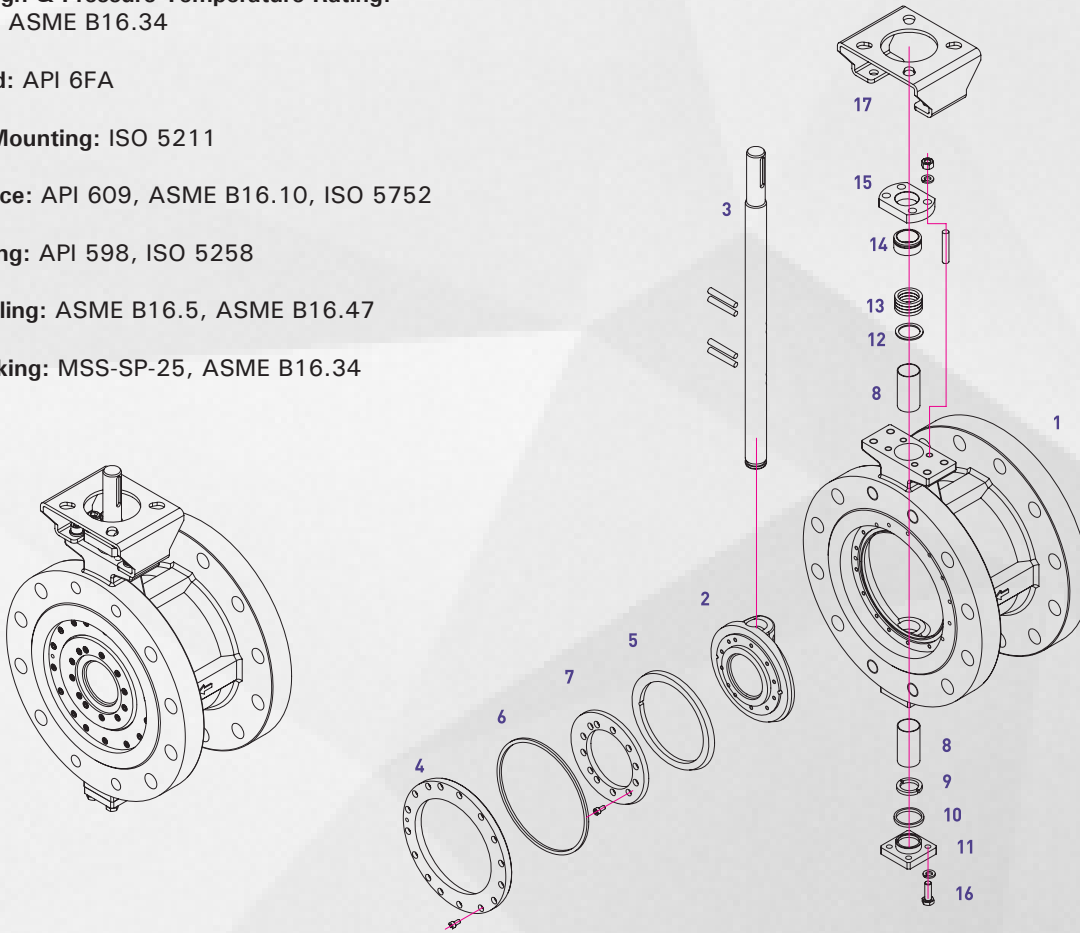
Actuator Mounting: ISO 5211

Face to Face: API 609, ASME B16.10, ISO 5752

Seat Testing: API 598, ISO 5258

Flange Drilling: ASME B16.5, ASME B16.47

Valve Marking: MSS-SP-25, ASME B16.34



Bill of Materials

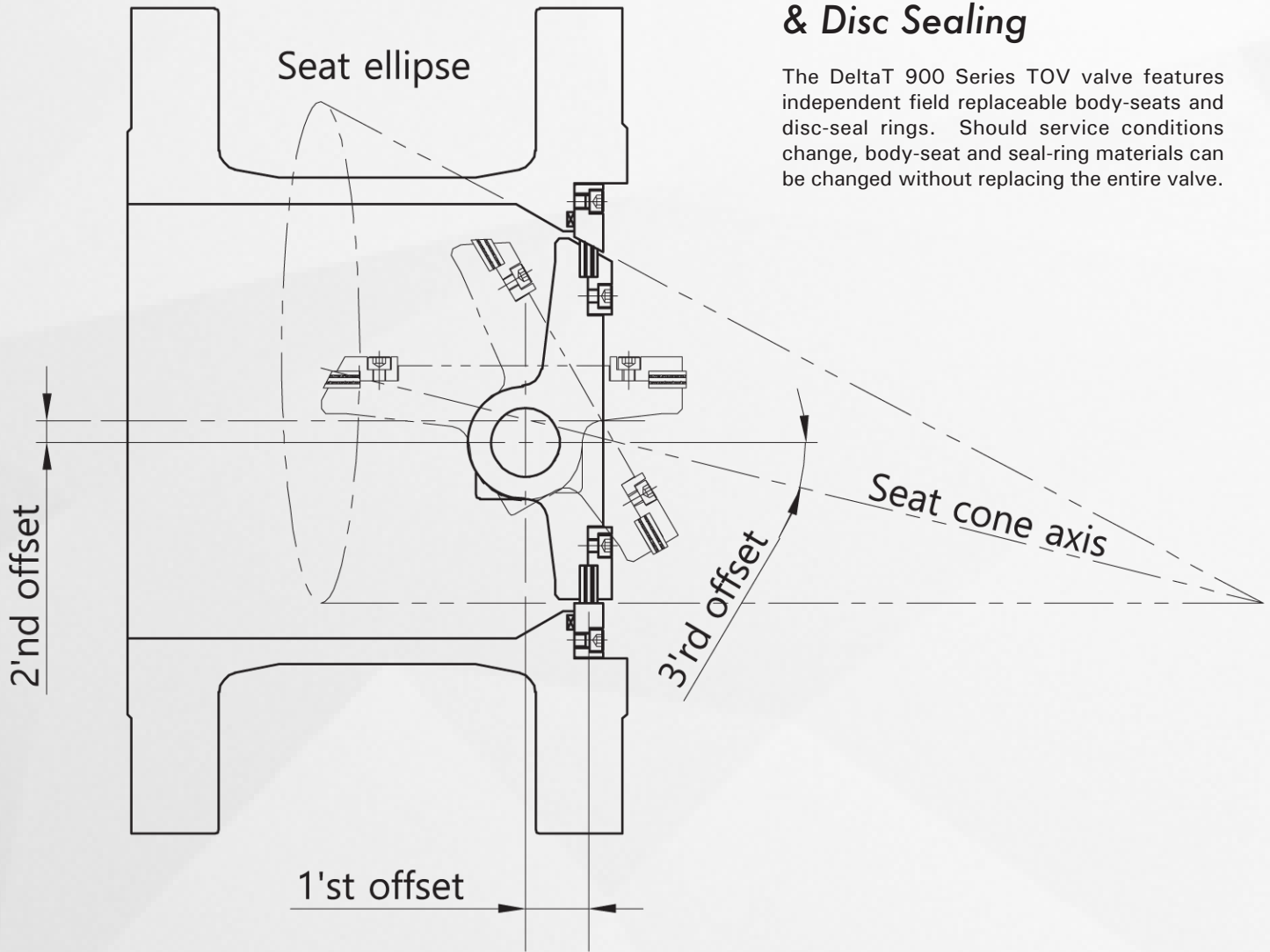
Part	Material	Material standard
1. Body	Carbon steel	WCB, LCB
	Stainless steel	CF8, CF8M, CF3, CF3M
2. Disc	Carbon steel	WCB, LCB
	Stainless steel	SCS13, SCS14, CF8, CF8M
3. Shaft	Stainless steel	304, 316, 316L
	17-4PH	ASTM A564 630
4. Body seat	Stainless steel	304, 316, 316L
	Hard facing	HCR, Stellite#6
5. Disc seat	Stainless steel	316+GRAPHITE Laminated
		316+PTFE Laminated
6. Body seat gasket	Spiral gasket	316+Graphite
	Graphite	Graphite Gasket
7. Disc cover	Stainless steel	304, 316
8. Bush Bearing	316 Stainless steel with TFE	
	316+HCR	

Part	Material	Material standard
9. Shaft retainer	Stainless steel	316
	Copper Alloy	A271 C83600
10. Bottom packing	PTFE / RTFE	
	Graphite	
11. Bottom	Carbon steel	WCB, LCB
	Stainless steel	CF8, CF8M, CF3, CF3M
12. Packing retainer	Stainless steel	ASTM A240 316
13. Packing	PTFE / RTFE - V Packing	
	Graphite	
14. Gland	Stainless steel	304+HCR, 316+HCR
15. Gland bridge	Stainless steel	304, 316
16. Bolt	304 / 316 Stainless steel	
17. Bracket	Carbon steel	ASTM A36

Triple Offset Design Geometry & Replaceable Body Seat/Disc Seat

Replaceable Body-Seat & Disc Sealing

The DeltaT 900 Series TOV valve features independent field replaceable body-seats and disc-seal rings. Should service conditions change, body-seat and seal-ring materials can be changed without replacing the entire valve.



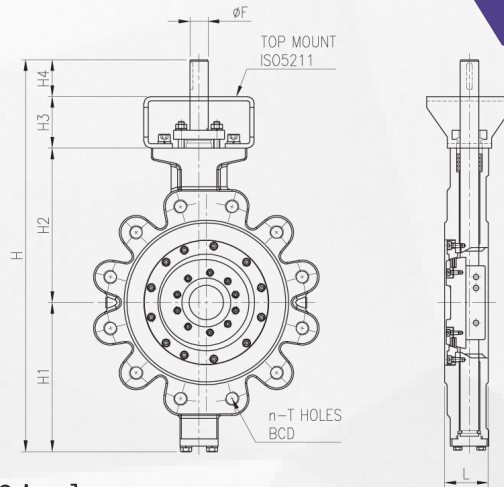
Triple Offset Geometry

The DeltaT 900 Series Triple Offset High Performance Butterfly Valve (TOV) is designed with three offsets so that when the valve starts to close, torque is the primary force to seat the valve. This means that the valve can increase the torque on the sealing surfaces such that a better seal can be realized. The seats are made of a laminate of stainless steel and graphite, and are commonly replaceable when required. The TOV does not function like a normal butterfly valve that is seated by positioning the disc using a lever, gear, or body stop. The TOV are similar to globe valves in that the disc

acts like a cone being torqued into a circular seat. The only method to obtain zero leakage with metal seats is to design a conical surface (cone) into a circle. The three offsets designed into the valve stem and disc alignment allow it to rotate 90 degrees with the last degree of motion being a linear, straight-forward cone movement. The body seat of the valve is not a perfect "cone", but rather it is offset and machined at an angle so the disc will align with not rubbing or sliding motion when seating. Triple offset valves can be manufactured in lug, wafer, flanged, and butt-weld configurations.



Class 150, 300, & 600 Lug 3" - 24" Dimensions



Dimension [ASME B16.5 Class150, Lug]

[unt: mm, inch]

SIZE		L	n	BCD	T	H	H1	H2	H3	H4	F	TOP MOUNT
inch	mm											
3	80	48	4	Ø152.4	5/8"	352	117	130	65	40	Ø16-5x5	ISO5211 F10, F12
4	100	54	8	Ø177.8	5/8"	413	143	160	70	40	Ø22-8x7	ISO5211 F10, F12
6	150	57	8	Ø241.3	3/4"	466	171	185	70	40	Ø22-8x7	ISO5211 F10, F12
8	200	64	8	Ø298.5	3/4"	573	198	235	90	50	Ø29-8x7	ISO5211 F10, F12
10	250	71	12	Ø362.0	7/8"	667	242	275	90	60	Ø35-10x8	ISO5211 F12, F14
12	300	81	12	Ø431.8	7/8"	712	267	295	90	60	Ø38-12x8	ISO5211 F12, F14
14	350	92	12	Ø476.3	1"	775	295	320	100	60	Ø38-12x8	ISO5211 F12, F14
16	400	102	16	Ø539.8	1"	890	325	370	120	75	Ø47-14x9	ISO5211 F14, F16
18	450	114	16	Ø577.9	1 1/8"	970	375	400	120	75	Ø52-16x10	ISO5211 F14, F16
20	500	127	20	Ø635.0	1 1/8"	1,035	405	435	120	75	Ø54-16x10	ISO5211 F14, F16
24	600	154	20	Ø749.3	1 1/4"	1,245	480	515	140	110	Ø70-20x12	ISO5211 F14, F16

▶ Dimension are subject to change without notice. ▶ Body type also offers wafer and double flanged type.

Dimension [ASME B16.5 Class300, Lug]

[unt: mm, inch]

SIZE		L	n	BCD	T	H	H1	H2	H3	H4	F	TOP MOUNT
inch	mm											
3	80	48	8	Ø168.3	3/4"	352	117	130	65	40	Ø16-5X5	ISO5211 F10, F12
4	100	54	8	Ø200.0	3/4"	413	143	160	70	40	Ø22-8x7	ISO5211 F10, F12
6	150	59	12	Ø269.9	3/4"	533	203	210	70	50	Ø25-8x7	ISO5211 F10, F12
8	200	73	12	Ø330.2	7/8"	645	225	270	90	60	Ø35-10x8	ISO5211 F12, F14
10	250	83	16	Ø387.4	1"	700	255	285	100	60	Ø38-12x8	ISO5211 F12, F14
12	300	92	16	Ø450.8	1 1/8"	800	290	330	120	60	Ø42-12x8	ISO5211 F14, F16
14	350	117	20	Ø514.4	1 1/8"	900	335	370	120	75	Ø52-16x10	ISO5211 F14, F16
16	400	133	20	Ø571.5	1 1/4"	1,000	365	415	130	90	Ø60-18x11	ISO5211 F25 / F30
18	450	149	24	Ø628.8	1 1/4"	994	420	470	14	90	Ø65-20x12	ISO5211 F25 / F30
20	500	159	24	Ø685.8	1 1/4"	1,210	460	500	140	110	Ø70-20x12	ISO5211 F25 / F30
24	600	181	24	Ø812.8	1 1/2"	1,385	525	590	160	110	Ø85-22x14	ISO5211 F35 / F40

▶ Dimension are subject to change without notice. ▶ Body type also offers wafer and double flanged type.

Dimension [ASME B16.5 Class600, Lug]

[unt: mm, inch]

SIZE		L	n	BCD	T	H	H1	H2	H3	H4	F	TOP MOUNT
inch	mm											
4	100	64	8	Ø215.9	7/8"	485	160	195	80	50	Ø29-8x7	ISO5211 F10, F12
6	150	78	12	Ø292.1	1"	625	215	250	100	60	Ø38-12x8	ISO5211 F12, F14
8	200	102	12	Ø349.2	1 1/8"	715	245	275	120	75	Ø45-14x9	ISO5211 F12, F14
10	250	117	16	Ø431.8	1 1/4"	900	385	320	120	75	Ø54-16x10	ISO5211 F14, F16
12	300	140	20	Ø489.0	1 1/4"	920	330	370	130	90	Ø65-20x12	ISO5211 F25 / F30
14	350	155	20	Ø527.0	1 3/8"	924	380	420	14	110	Ø70-20x12	ISO5211 F25 / F30
16	400	178	20	Ø603.2	1 1/2"	1180	430	500	140	110	Ø85-22x14	ISO5211 F25 / F30
18	450	200	20	Ø654.0	1 5/8"	1205	450	485	160	110	Ø90-25x14	ISO5211 F35 / F40
20	500	216	24	Ø723.9	1 5/8"	1290	500	510	160	120	Ø100-28-16	ISO5211 F35 / F40
24	600	232	24	Ø838.2	1 7/8"	1565	605	630	180	150	Ø125-32x18	ISO5211 F35 / F40

▶ Dimension are subject to change without notice. ▶ Body type also offers wafer and double flanged type.

Seating Torques

Class 150/300/600

Torque Value

[unit: N.m]

Class150		Operating differential pressure (bar)							
		10 bar				20 bar			
SIZE		Shaft side(preferd)		Disc side(Reverse)		Shaft side(preferd)		Disc side(Reverse)	
inch	mm	to OPEN	to CLOSE	to OPEN	to CLOSE	to OPEN	to CLOSE	to OPEN	to CLOSE
3	80	150	150	65	160	150	150	88	175
4	100	170	160	80	180	170	160	100	200
6	150	210	190	110	247	210	190	126	280
8	200	380	340	190	425	395	340	236	525
10	250	745	710	400	888	765	710	457	1,015
12	300	959	880	530	1,100	995	880	638	1,330
14	350	1,382	1,268	810	1,648	1,500	1,300	888	1,850
16	400	2,067	1,862	1,190	2,421	2,430	1,910	1,344	2,800
18	450	2,716	2,447	1,570	3,181	3,075	2,510	1,848	3,850
20	500	3,344	3,040	2,000	3,852	3,950	3,200	2,525	5,260
24	600	4,230	3,744	2,440	4,942	3,980	3,820	3,489	7,930

[unit: N.m]

Class300		Operating differential pressure (bar)							
		25 bar				50 bar			
SIZE		Shaft side(preferd)		Disc side(Reverse)		Shaft side(preferd)		Disc side(Reverse)	
inch	mm	to OPEN	to CLOSE	to OPEN	to CLOSE	to OPEN	to CLOSE	to OPEN	to CLOSE
3	80	175	162	98	195	200	180	117	260
4	100	205	186	119	238	230	200	136	340
6	150	231	220	151	335	440	420	226	645
8	200	448	400	342	759	1,005	800	442	1,380
10	250	930	830	592	1,286	1,580	1,220	768	1,920
12	300	1,562	1,395	869	1,811	2,820	1,860	1,412	3,070
14	350	1,873	1,673	1,086	2,262	3,650	2,230	1,885	3,770
16	400	3,284	2,933	1,843	3,480	6,530	3,910	3,302	7,680
18	450	4,103	3,664	2,330	4,855	9,320	4,885	4,370	9,710
20	500	5,460	4,875	3,350	6,980	11,170	6,500	5,585	11,635
24	600	8,595	7,163	5,785	11,810	18,900	9,550	9,840	19,680

[unit: N.m]

Class600		Operating differential pressure (bar)							
		55 bar				100 bar			
SIZE		Shaft side(preferd)		Disc side(Reverse)		Shaft side(preferd)		Disc side(Reverse)	
inch	mm	to OPEN	to CLOSE	to OPEN	to CLOSE	to OPEN	to CLOSE	to OPEN	to CLOSE
4	100	330	300	125	385	420	370	175	700
6	150	650	540	240	9,215	1,100	900	425	1,680
8	200	1,350	960	740	1,650	2,300	1,595	1,350	3,000
10	250	2,500	1,800	1,030	2,860	4,100	2,930	1,870	5,200
12	300	3,700	2,800	1,690	4,260	5,920	4,000	2,820	7,100
14	350	5,400	3,500	2,200	6,188	8,100	4,700	4,000	9,100
16	400	7,200	4,200	3,470	8,710	11,600	8,000	5,600	14,050
18	450	10,500	6,500	6,000	12,238	19,400	12,000	10,330	21,100
20	500	14,200	9,000	8,405	15,565	26,700	16,950	15,200	28,300
24	600	20,600	12,000	13,250	21,725	38,200	22,200	24,500	39,500

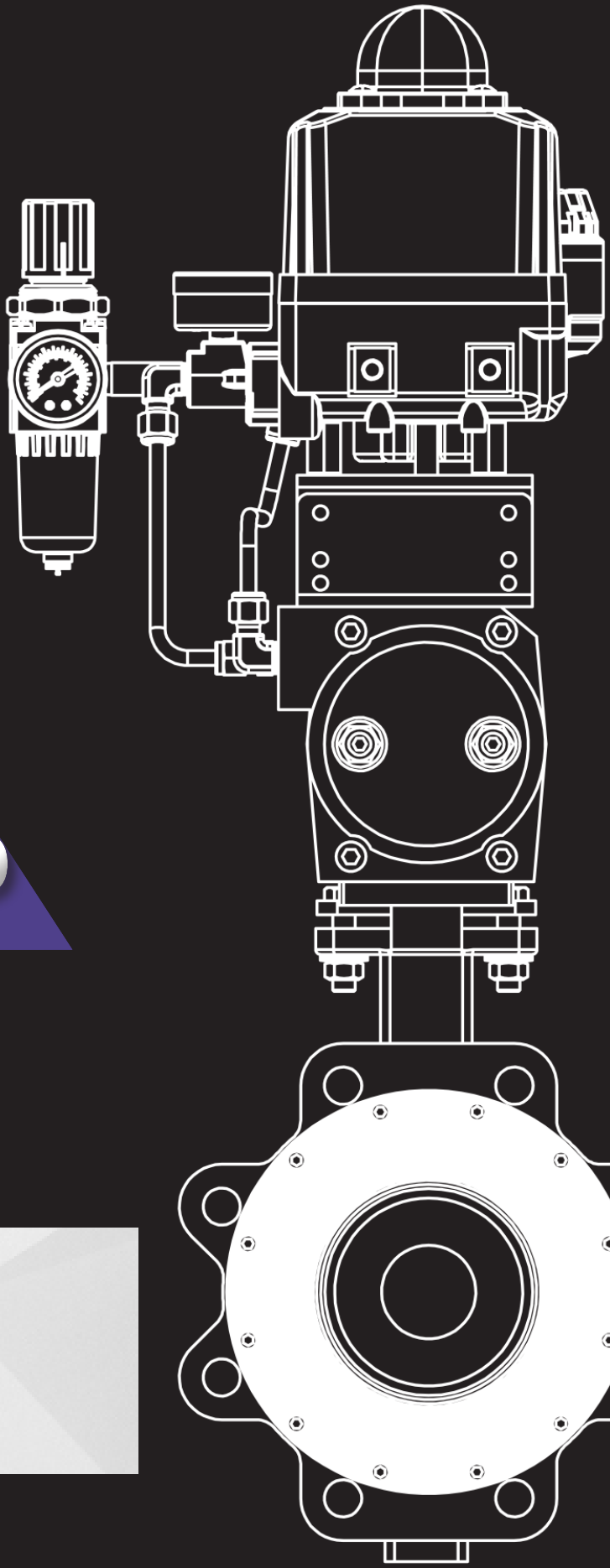
► Torque dose not include 'safety factor'.



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