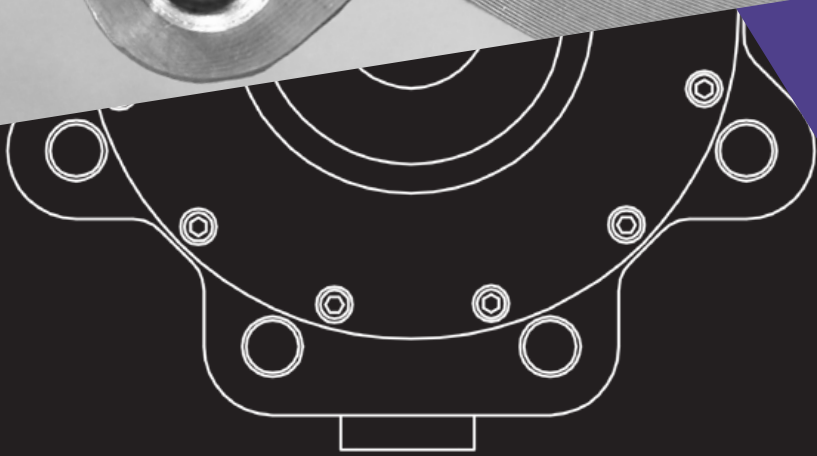




DELTA T PRODUCTS



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



CE Marking

is a mandatory conformity marking for certain products sold within the European Economic Area (EEA) since 1985. The CE marking is also found on products sold outside the EEA that are manufactured in, or designed to be sold in, the EEA. This makes the CE marking recognizable worldwide even to people who are not familiar with the European Economic Area. It is in that sense similar to the FCC Declaration of Conformity used on certain electronic devices sold in the United States. The CE marking is the manufacturer's declaration that the product meets the requirements of the applicable EC directives.



ISO 5211:

This standard defines a standardized interface system between industrial valves and the part turn actuators used operate them. It details the dimensional requirements for both the mounting flanges on both devices as well as the driving and driven components. This standardization simplifies the design of or eliminates the need for interface components between part turn valves and actuators.



ISO 15848-1

Fugitive Emissions

Our valves are equipped with packing arrangements which comply with this standards requirements for fugitive emissions.



The Canadian Registration Number (CRN)

is a number issued by each province or territory of Canada to the design of a boiler, pressure vessel or fitting. The CRN identifies the design has been accepted and registered for use in that province or territory.



USCG / Coast Guard:

Valves designed for use in ship engineering systems must comply with USCG requirements according to industry standards specified in Title 46, Code of Federal Regulations, Part 56 (46 CFR Part 56). Some applications such as pressure-vacuum relief valves for tank vessels or liquefied compressed gas safety relief valves do require additional USCG Type Approval, and must conform to requirements outlined in 46 CFR Part 162, sections 162.017 and 162.018. For equipment or materials to receive USCG Type Approval, they must be demonstrated to comply with the relevant requirements in the regulations, successfully complete the specified tests, and be enrolled in a quality control or follow up program as required.



ABS, the American Bureau of Shipping

offers several different reviews which reduce the amount of analysis required for the use of a product in a specific application related to ABS class vessels. An ABS Product Design Assessment (PDA) is the assessment of a product for use on a variety of ABS-classed ships following a technical evaluation. The PDA reduces the turnaround time for approval on a specific ship. When a specific ship is chosen, ABS technical staff verifies that the product is suitable for use after a review of the PDA. On an even higher level of approval, achieving ABS Type Approval for a product grants that the product can be selected by ship designers, builders and owners to be placed aboard an ABS-classed vessel.

Standards & Compliance on Standard Products

- **API 609** – Designed in full compliance with this governing standard and MSS SP-68
- **API 598 / MSS SP61** – All valves tested in compliance
- **ASME B16.34** – Design compliance
- **API 607** – Designed in compliance with independent 3rd party testing
- **ASME B16.5** – Flange dimension compliance
- **ASME / FCI 70-2** Seat leakage compliance
- **ISO 15848-1** – Fugitive Emissions compliance
- **MSS SP-25** – Marking compliance



API 609

API 609 is the governing standard for butterfly valve design. Our valves are designed in full compliance with this standard and as such, also comply with the other relevant design and testing standards including MSS SP61, SP25, ASME B16.34, API 598, and others.



API 607 Fire-Safe

Our fire safe trim valves have been tested by independent third party laboratories and proven to meet the requirements of the 7th edition of this standard.

Additional regional and/or industry specific approvals and certifications are being added frequently. Please contact Max Air Technology for more information about current approvals status.



Contents



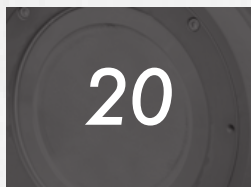
Features & Materials

Features, Benefits, Exploded View, & Materials



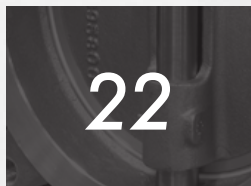
Dimensions

*Wafer, Lug, & Flanged Body Styles
Class 150, 300, & 600 Dimensions*



Technical Data

*Torques, Cv Values, Pressure Temperature
Chart, & Part Number Builder*



Ordering Guideline

Ordering Guideline & Crossover

3-Year Limited Warranty

Max-Air Technology, Inc., hereinafter referred to as "MAX-AIR", provides the following limited 3-year manufacturer's warranty regarding all Delta T brand labeled quarter turn valve products manufactured by MAX-AIR. This warranty includes all valves which are manufactured by MAX-AIR and only applies to those items which are clearly identified as Delta T brand labeled products. The warranty stated herein is expressly in lieu of all other warranties and representations, expressed or implied, or statutory, including, without limitation, the implied warranty of fitness for a particular purpose.

MAX-AIR warrants its products to be free from defects in materials and workmanship when these products are used for the purpose for which they were designed and manufactured. MAX-AIR does not warrant its products against chemical or stress corrosion or against any other failure other than from defects in materials or workmanship. The warranty period is for thirty-six months from the delivery date by MAX-AIR to its customers. Any claims regarding this warranty must be in writing and received by MAX-AIR before the last effective date of the warranty period.

Upon receipt of a warranty claim, MAX-AIR reserves the right to inspect the product(s) in question at either the field location or at a MAX-AIR designated facility. If, after the inspection of the product(s) in question, MAX-AIR determines that the purchaser's claim is covered by this warranty, MAX-AIR's sole liability and the purchaser's sole remedy under this warranty is limited to the refunding of the purchase price or repair or replacement thereof, at the sole discretion of MAX-AIR.

MAX-AIR will not be liable for any repairs, labor, material, or other expenses that are not specifically authorized in writing by MAX-AIR, and in no event shall MAX-AIR be liable for any direct or consequential damages arising out of any defect from any cause whatsoever. If any Delta T brand labeled products are modified or altered in any way, without the expressed written consent of MAX-AIR, the products will not be covered by this warranty.

MAX-AIR shall not be liable for any incidental, consequential or other damages, costs, or economic losses, including, without limitation, any resulting from labor charges, delays, vandalism, negligence, fouling caused by foreign material damage from adverse flow conditions, chemicals, or acts of God, or circumstances that are not controllable or reasonably foreseeable by MAX-AIR.

This warranty shall be invalidated in all circumstances where MAX-AIR, acting reasonably, determines that the product(s) was subject to abuse, misuse, neglect, or improper application, installation, alteration or modification not authorized in writing by MAX-AIR. All claims received by MAX-AIR beyond the warranty period are invalid and shall not be accepted.

Except for the express written warranty contained herein, MAX-AIR does not make any other warranty, condition, guarantee, or indemnity, express or implied, statutory or otherwise, regarding the products including without limitation, to the extent permitted by law, any warranty or merchantability or fitness for a particular purpose. All other warranties, conditions, guarantees and indemnities regarding any products are hereby disclaimed, excluded and overwritten.

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 / API 607

Actuator Mounting: ISO 5211

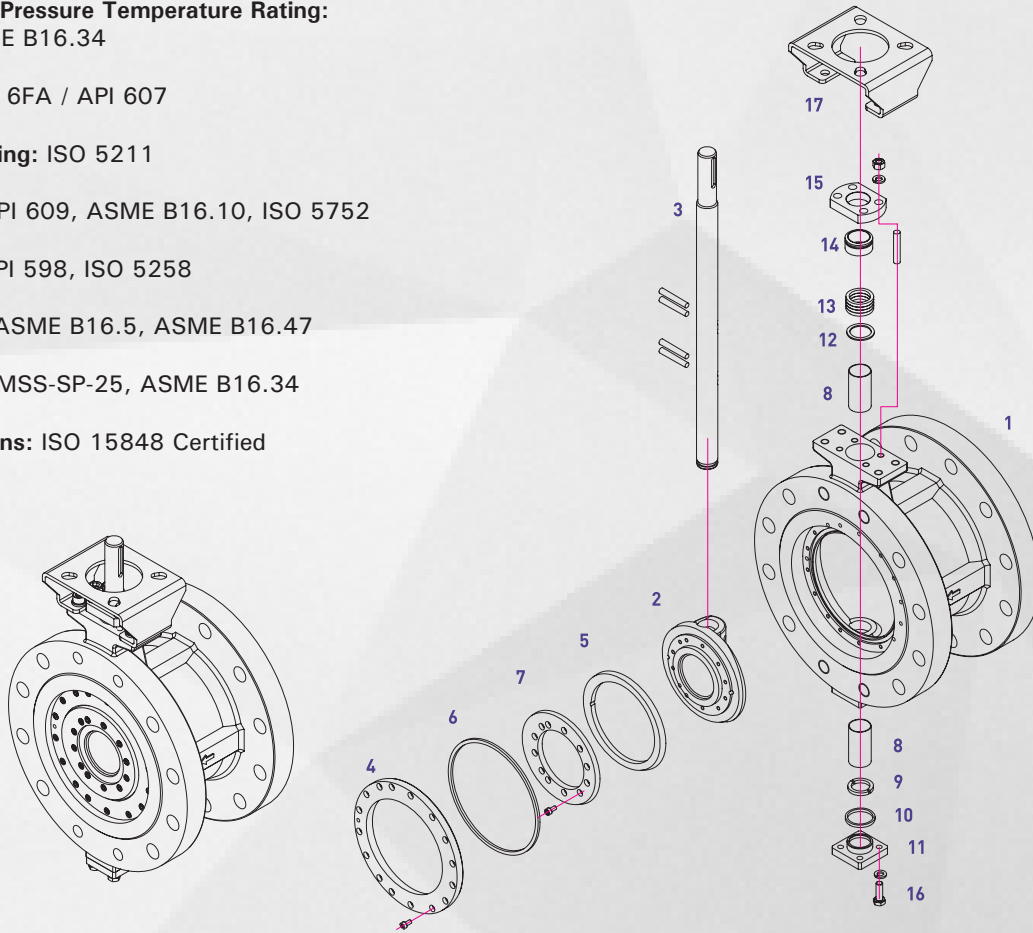
Face to Face: API 609, ASME B16.10, ISO 5752

Seat Testing: API 598, ISO 5258

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

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

Fugitive Emissions: ISO 15848 Certified



Bill of Materials

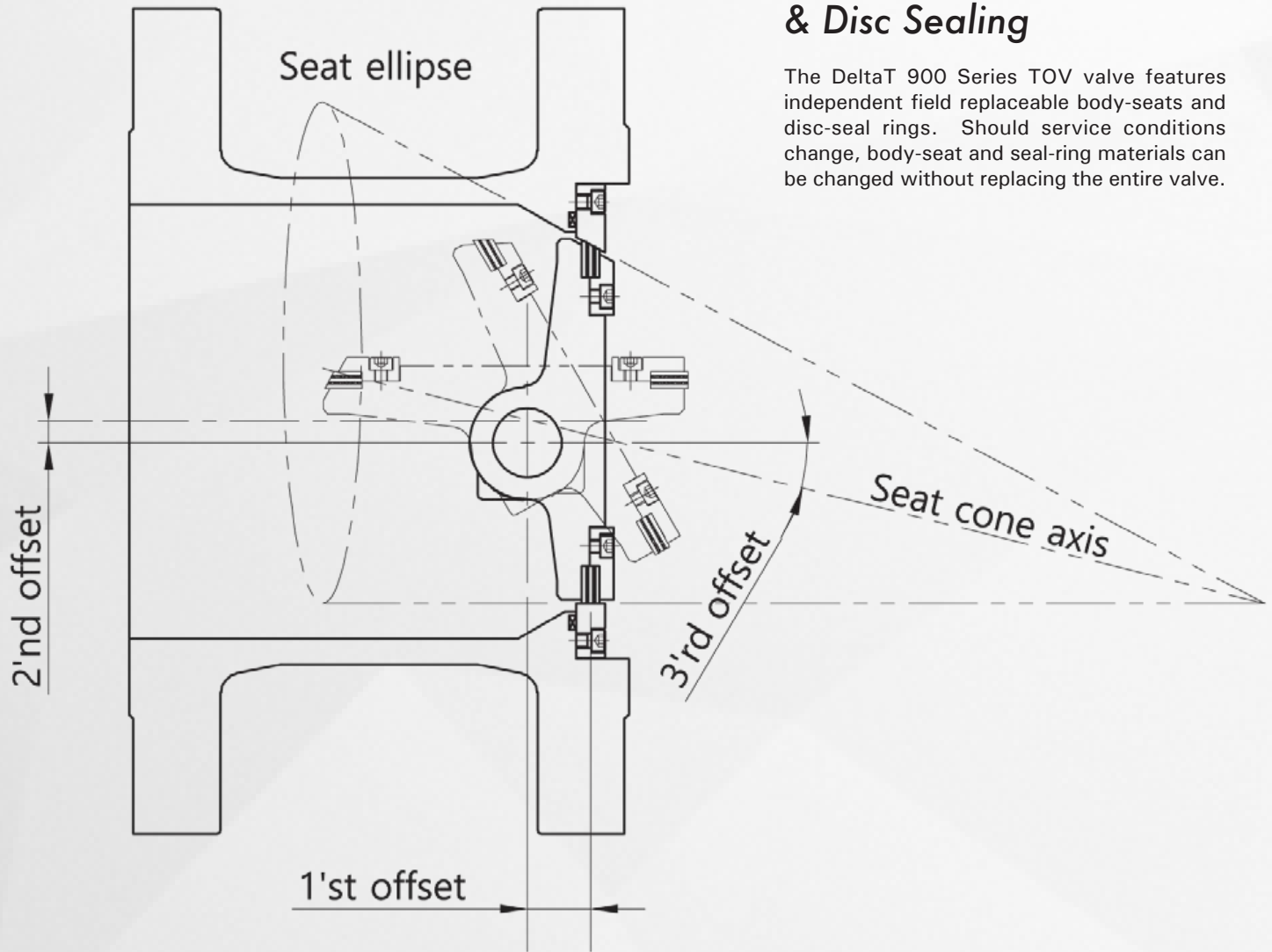
Part	Material	Material standard
1. Body	Carbon steel	WCB, LCB
	Stainless steel	CF8, CF8M, CF3, CF3M
2. Disc	Carbon steel	WCB, LCB
	Stainless steel	SCS13, SCS14, CF8, CF8M
3. Shaft	Stainless steel	304, 316, 316L
	17-4PH	ASTM A564 630
4. Body seat	Stainless steel	304, 316, 316L
	Hard facing	HCR, Stellite#6
5. Disc seat	Stainless steel	316+GRAPHITE Laminated 316+PTFE Laminated
	Spiral gasket	316+Graphite
6. Body seat gasket	Graphite	Graphite Gasket
	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	ASTMA240 316
	PTFE / RTFE - V Packing	
13. Packing	Graphite	
	Stainless steel	304+HCR, 316+HCR
14. Gland	Stainless steel	304, 316
15. Gland bridge	Stainless steel	304, 316
16. Bolt	304 / 316 Stainless steel	
17. Bracket	Carbon steel	ASTMA36

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.



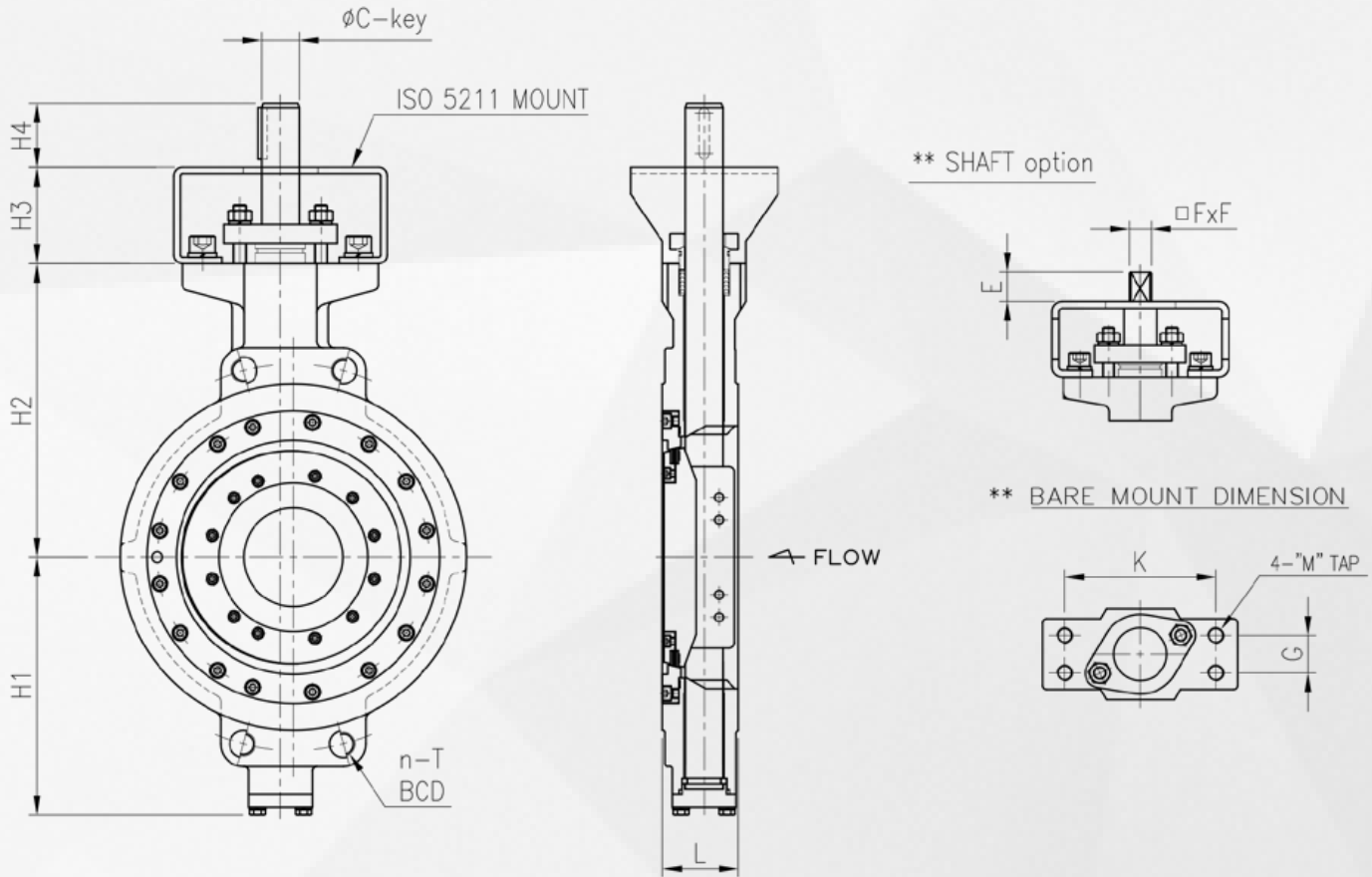
Triple Offset Geometry

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 no rubbing or sliding motion when seating. Triple offset valves can be manufactured in lug, wafer, flanged, and butt-weld configurations.



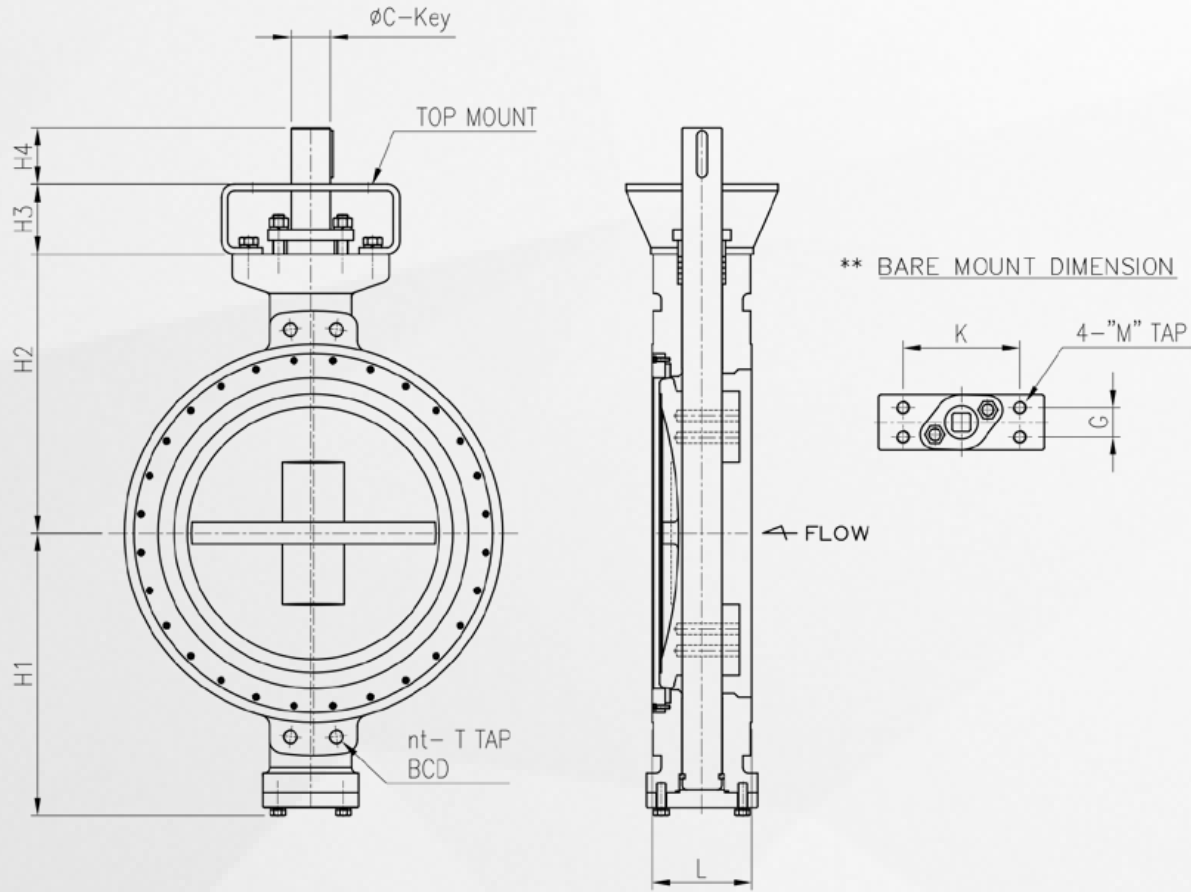
950 (Class 150) Wafer 3" - 24" Dimensions



3" - 24" | 950 Series | Class 150 Wafer (Units in Inches)

SIZE	L	n	BCD	T	H1	H2	H3	H4	K	G	M	C	KEY BASE (mm)	E	FxF (mm)	TOP MOUNT	Weight (lb)
3"	1.89	4	6.00	0.75	4.61	5.12	2.56	1.57	3.46	0.87	M10	0.63	5x5	0.51	11x11	F05-F07	16.1
4"	2.13	4	7.50	0.75	5.63	6.30	2.76	1.65	3.70	0.94	M10	0.79	6x6	0.87	17x17	F07-F10	26.4
5"	2.24	4	8.50	0.87	5.75	6.50	2.76	1.65	3.70	0.94	M10	0.79	6x6	0.87	17x17	F07-F10	32.8
6"	2.24	4	9.50	0.87	6.73	7.28	2.76	1.65	3.70	0.94	M10	0.79	6x6	0.87	17x17	F10-F12	40.3
8"	2.52	4	11.75	0.87	7.80	9.25	2.95	2.05	4.09	1.26	M12	1.02	8x7	1.02	19x19	F10-F12	62.7
10"	2.80	4	14.25	1.00	9.53	10.83	3.15	2.36	5.83	1.42	M16	1.18	10x8	1.26	22x22	F12-F14	89.3
12"	3.19	4	17.00	7/8" UNC	10.51	11.61	3.54	2.36	5.83	1.42	M16	1.38	10x8	1.38	27x27	F12-F14	125.8
14"	3.62	4	18.75	1" UNC	11.61	12.60	3.54	2.36	5.91	1.57	M16	1.38	10x8	1.38	27x27	F12-F14	175.1
16"	4.02	4	21.25	1" UNC	12.80	14.57	4.33	2.95	7.09	1.77	M20	1.57	12x8	1.38	27x27	F14-F16	217.8
18"	4.49	4	22.75	1-1/8" 8UN	14.76	15.75	4.33	2.95	7.32	1.77	M20	1.77	14x9	1.89	36x36	F14-F16	258.9
20"	5.00	4	25.00	1-1/8" 8UN	15.94	17.13	4.72	2.95	7.32	1.97	M20	1.97	16x10	1.89	36x36	F14-F16	328.0
24"	6.06	4	29.50	1-1/4" 8UN	18.50	19.88	5.51	3.94	7.87	2.17	M20	2.56	20x12	1.97	46x46	F14-F16	354.2

950 (Class150) Wafer 26" - 48" Dimensions

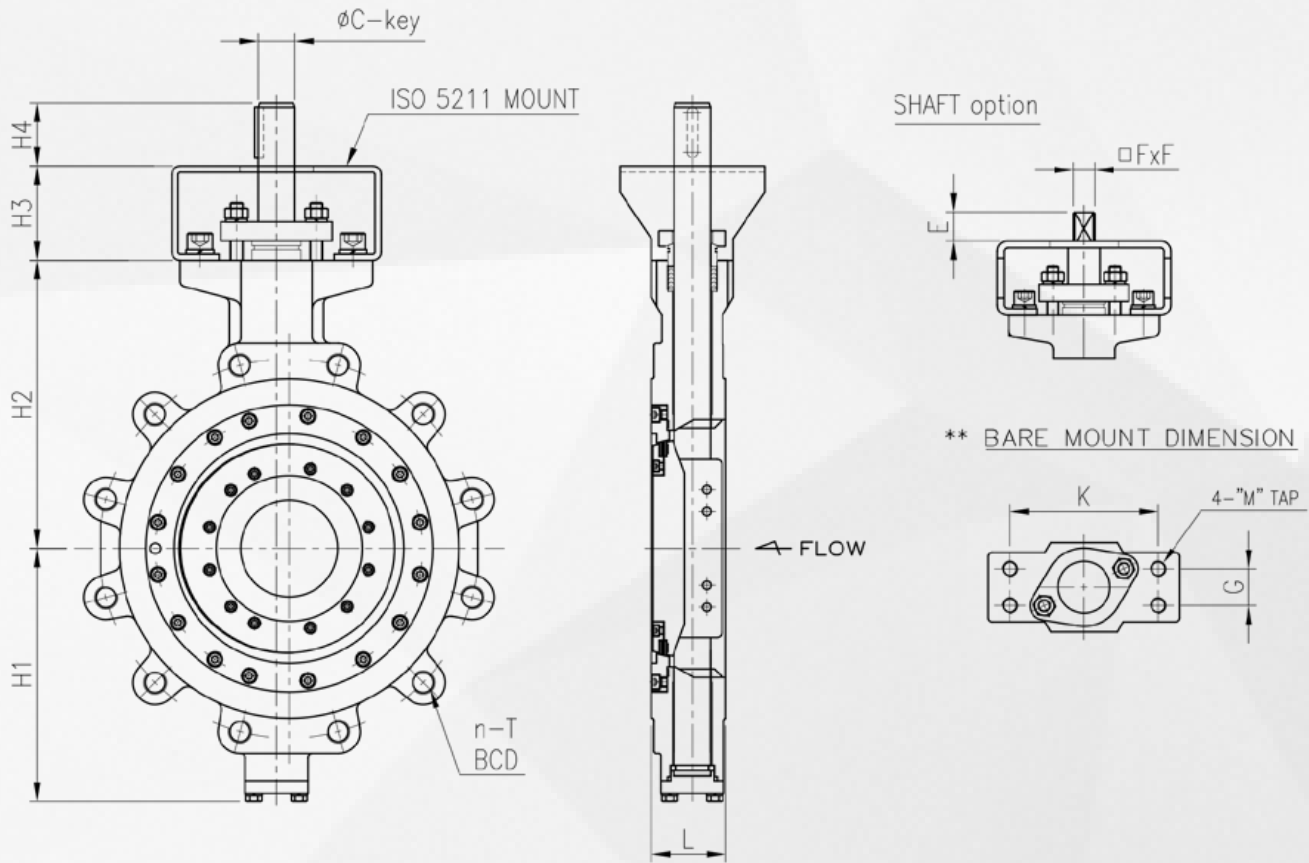


26" - 48" | 950 Series | Class 150 Wafer (Units in Inches)

SIZE	L	n	BCD	T	H1	H2	H3	H4	K	G	M	C	KEY BASE (mm)	TOP MOUNT	Weight (lb)
26"	6.50	4	31.75	1-1/4" 8UN	20.47	20.08	4.72	3.94	7.87	2.17	M20	2.56	20x12	F16-F20	809.6
28"	6.50	4	34.00	1-1/4" 8UN	22.44	21.46	5.51	3.94	8.66	2.36	M20	2.76	20x12	F16-F20	913
30"	7.48	4	36.00	1-1/4" 8UN	23.62	21.85	5.51	3.94	9.06	2.36	M20	2.95	20x12	F20-F25	1150.6
32"	7.48	4	38.50	1-1/2" 8UN	24.80	23.62	5.91	4.33	10.63	2.36	M20	3.15	22x14	F25-F30	1298
34"	7.99	4	40.50	1-1/2" 8UN	25.59	25.20	5.91	4.33	10.63	2.36	M20	3.15	22x14	F25-F30	1537.8
36"	7.99	4	42.75	1-1/2" 8UN	27.17	26.38	5.91	4.33	10.63	3.15	M24	3.35	25x14	F25-F30	1716
40"	8.50	4	47.25	1-1/2" 8UN	28.35	26.57	6.30	4.92	11.02	2.76	M24	3.54	25x14	F25-F30	2288
42"	9.88	4	49.50	1-1/2" 8UN	29.53	27.56	6.30	5.91	11.02	2.76	M24	3.74	25x14	F30-F35	2908.4
48"	10.00	4	56.00	1-1/2" 8UN	33.27	33.86	6.30	6.10	11.81	3.94	M27	4.33	28x16	F30-F35	3836.8



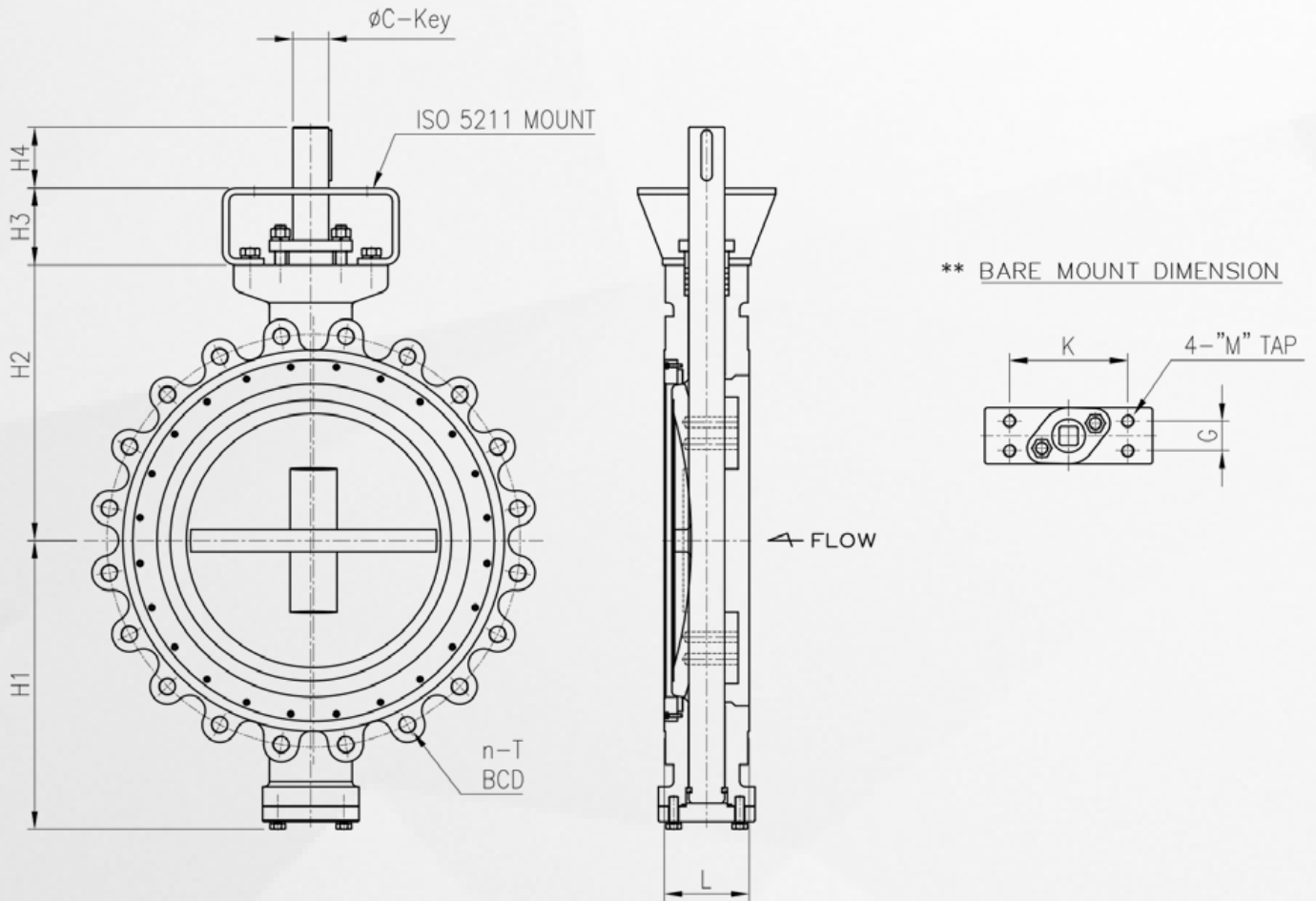
951 (Class 150) Lug 3" - 24" Dimensions



3" - 24" | 951 Series | Class 150 Lug (Units in Inches)

SIZE	L	n	BCD	T	H1	H2	H3	H4	K	G	M	C	KEY BASE (mm)	E	FxF (mm)	TOP MOUNT	Weight (lb)
3"	1.89	4	6.00	5/8" UNC	4.61	5.12	2.56	1.57	3.46	0.87	M10	0.63	5x5	0.51	11x11	F05-F07	17.4
4"	2.13	8	7.50	5/8" UNC	5.63	6.30	2.76	1.65	3.70	0.94	M10	0.79	6x6	0.87	17x17	F07-F10	31.0
5"	2.24	8	8.50	3/4" UNC	5.75	6.50	2.76	1.65	3.70	0.94	M10	0.79	6x6	0.87	17x17	F07-F10	38.3
6"	2.24	8	9.50	3/4" UNC	6.73	7.28	2.76	1.65	3.70	0.94	M10	0.79	6x6	0.87	17x17	F10-F12	47.5
8"	2.52	8	11.75	3/4" UNC	7.80	9.25	2.95	2.05	4.09	1.26	M12	1.02	8x7	1.02	19x19	F10-F12	74.8
10"	2.80	12	14.25	7/8" UNC	9.53	10.83	3.15	2.36	5.83	1.42	M16	1.18	10x8	1.26	22x22	F12-F14	112.0
12"	3.19	12	17.00	7/8" UNC	10.51	11.61	3.54	2.36	5.83	1.42	M16	1.38	10x8	1.38	27x27	F12-F14	144.3
14"	3.62	12	18.75	1" UNC	11.61	12.60	3.54	2.36	5.91	1.57	M16	1.38	10x8	1.38	27x27	F12-F14	200.9
16"	4.02	16	21.25	1" UNC	12.80	14.57	4.33	2.95	7.09	1.77	M20	1.57	12x8	1.38	27x27	F14-F16	227.0
18"	4.49	16	22.75	1-1/8" 8UN	14.76	15.75	4.33	2.95	7.32	1.77	M20	1.77	14x9	1.89	36x36	F14-F16	293.3
20"	5.00	20	25.00	1-1/8" 8UN	15.94	17.13	4.72	2.95	7.32	1.97	M20	1.97	16x10	1.89	36x36	F14-F16	371.6
24"	6.06	20	29.50	1-1/4" 8UN	18.50	19.88	5.51	3.94	7.87	2.17	M20	2.17	20x12	1.97	46x46	F14-F16	440.9

951 (Class 150) Lug 26" - 48" Dimensions

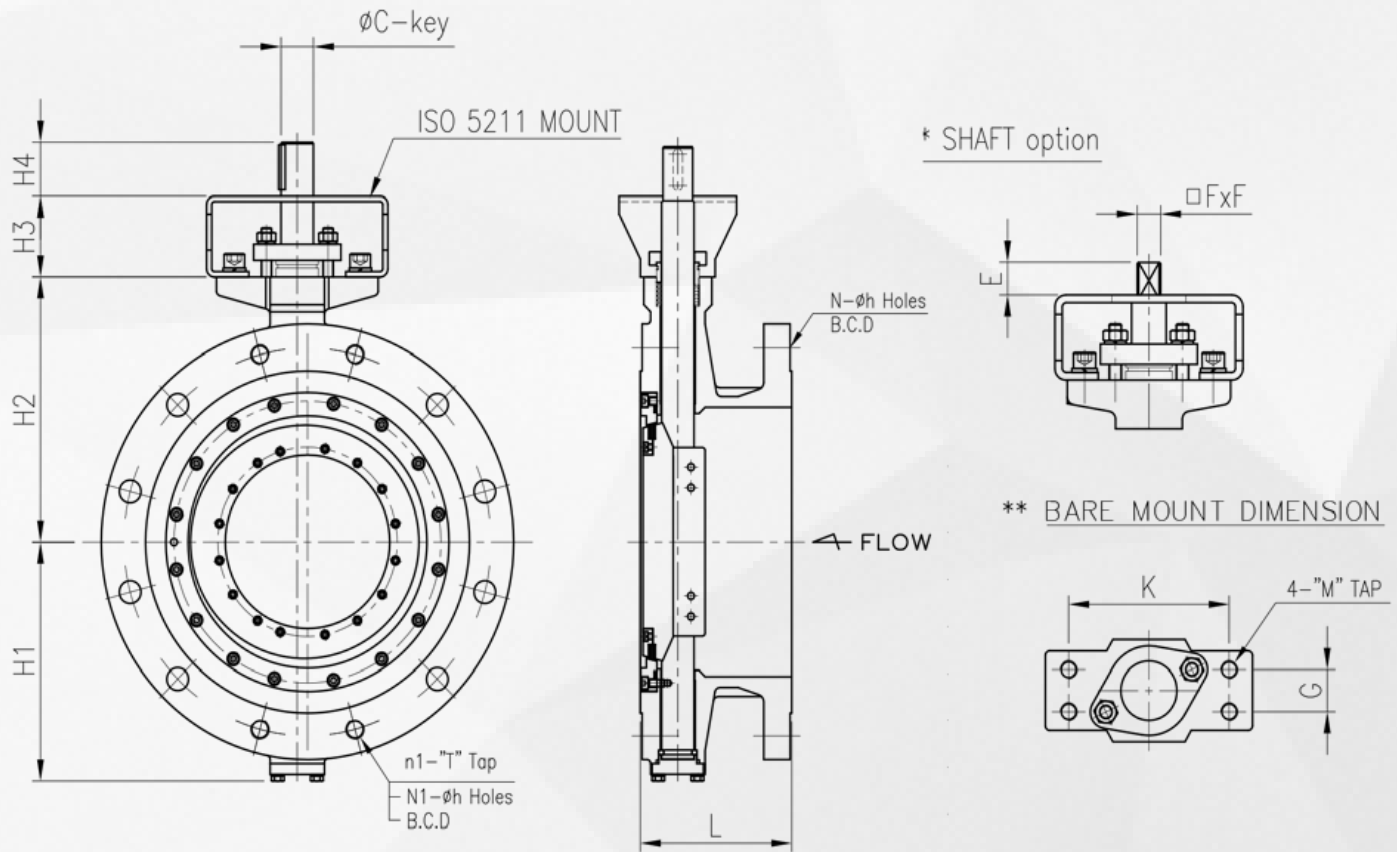


26" - 48" | 951 Series | Class 150 Lug (Units in Inches)

SIZE	L	n	BCD	T	H1	H2	H3	H4	K	G	M	C	KEY BASE (mm)	TOP MOUNT	Weight (lb)
26"	6.50	24	31.75	1-1/4" 8UN	20.47	20.08	4.72	3.94	7.87	2.17	M20	2.56	20x12	F16-F20	970.2
28"	6.50	28	34.00	1-1/4" 8UN	22.44	21.46	5.51	3.94	8.66	2.36	M20	2.76	20x12	F16-F20	1095.6
30"	7.48	28	36.00	1-1/4" 8UN	23.62	21.85	5.51	3.94	9.06	2.36	M20	2.95	20x12	F20-F25	1379.4
32"	7.48	28	38.50	1-1/2" 8UN	24.80	23.62	5.91	4.33	10.63	2.36	M20	3.15	22x14	F25-F30	1557.6
34"	7.99	32	40.50	1-1/2" 8UN	25.59	25.20	5.91	4.33	10.63	2.36	M20	3.15	22x14	F25-F30	1843.6
36"	7.99	32	42.75	1-1/2" 8UN	27.17	26.38	5.91	4.33	10.63	3.15	M24	3.35	25x14	F25-F30	2059.2
40"	8.50	36	47.25	1-1/2" 8UN	28.35	26.57	6.30	4.92	11.02	2.76	M24	3.54	25x14	F25-F30	2745.6
42"	9.88	36	49.50	1-1/2" 8UN	29.53	27.56	6.30	5.91	11.02	2.76	M24	3.74	25x14	F30-F35	3489.2
48"	10.00	44	56.00	1-1/2" 8UN	33.27	33.86	6.30	6.10	11.81	3.94	M27	4.33	28x16	F30-F35	4602.4



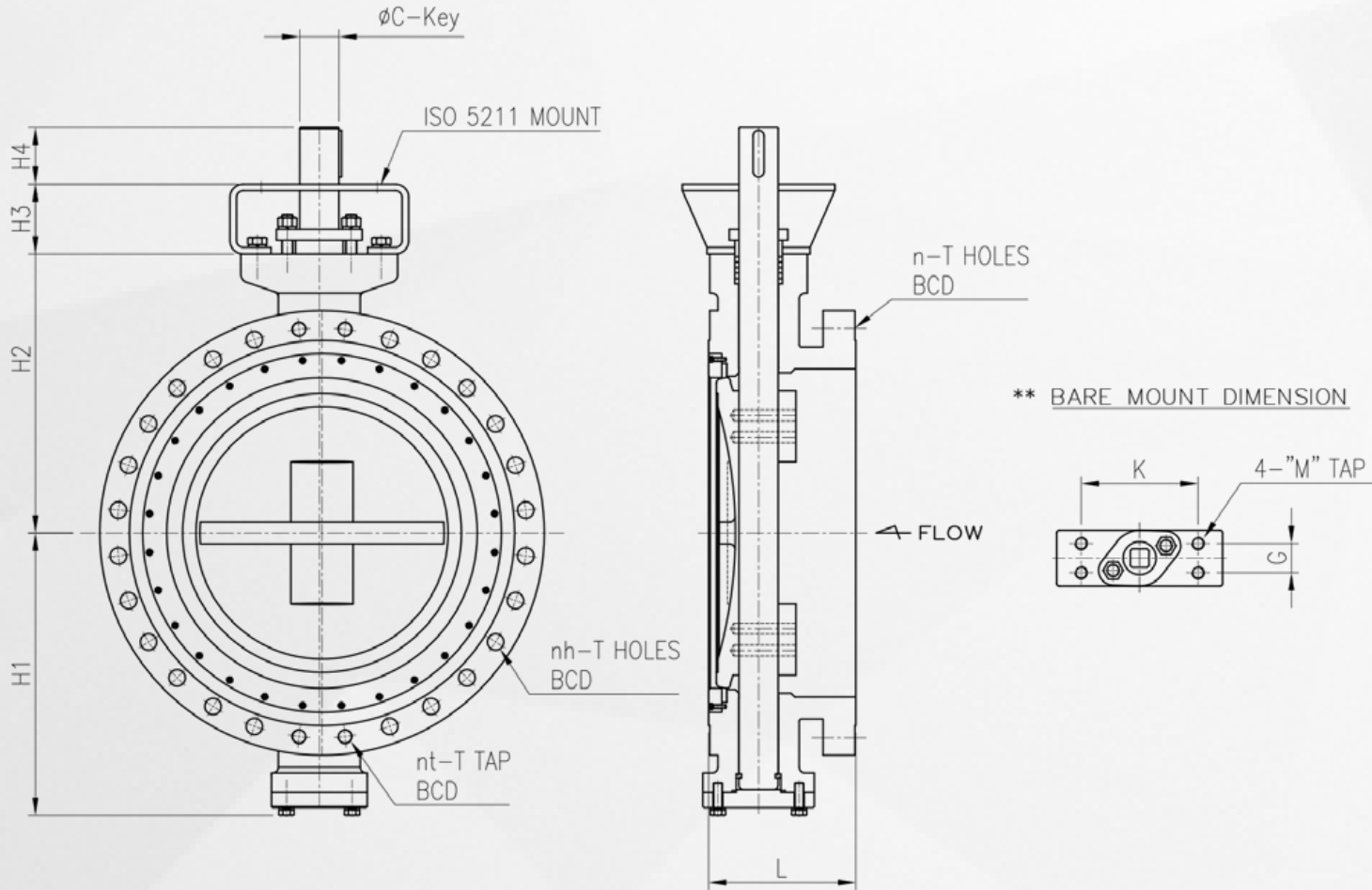
953 (Class 150) Flanged 3" - 24" Dimensions



3" - 24" | 953 Series | Class 150 Flanged (Units in Inches)

SIZE	L	BCD	n1	T	N	N1	h	H1	H2	H3	H4	K	G	M	C	KEY BASE	E	FxF	TOP MOUNT	Weight (lb)
3"	4.49	6.00	4	5/8" UNC	4	-	0.75	4.61	5.12	2.56	1.57	3.46	0.87	M10	0.63	5x5	0.51	11x11	F05-F07	32.3
4"	5.00	7.50	4	5/8" UNC	8	4	0.75	5.63	6.30	2.76	1.65	3.70	0.94	M10	0.79	6x6	0.87	17x17	F07-F10	58.1
5"	5.51	8.50	4	3/4" UNC	8	4	0.87	5.75	6.50	2.76	1.65	3.70	0.94	M10	0.79	6x6	0.87	17x17	F07-F10	70.6
6"	5.51	9.50	4	3/4" UNC	8	4	0.87	6.73	7.28	2.76	1.65	3.70	0.94	M10	0.79	6x6	0.87	17x17	F10-F12	86.9
8"	5.98	11.75	4	3/4" UNC	8	4	0.87	7.80	9.25	2.95	2.05	4.09	1.26	M12	1.02	8x7	1.02	19x19	F10-F12	136.6
10"	6.50	14.25	4	7/8" UNC	12	8	1.00	9.53	10.83	3.15	2.36	5.83	1.42	M13	1.18	10x8	1.26	22x22	F12-F14	187.4
12"	7.01	17.00	4	7/8" UNC	12	8	1.00	10.51	11.61	3.54	2.36	5.83	1.42	M13	1.38	10x8	1.38	27x27	F12-F14	235.6
14"	7.52	18.75	4	1" UNC	12	8	1.12	11.61	12.60	3.54	2.36	5.91	1.57	M13	1.38	10x8	1.38	27x27	F12-F14	356.4
16"	8.50	21.25	4	1" UNC	16	12	1.12	12.80	14.57	4.33	2.95	7.09	1.77	M20	1.57	12x8	1.38	27x27	F14-F16	394.2
18"	8.74	22.75	4	1-1/8" 8UN	16	12	1.25	14.76	15.75	4.33	2.95	7.32	1.77	M20	1.77	14x9	1.89	36x36	F14-F16	505.1
20"	9.02	25.00	4	1-1/8" 8UN	20	16	1.25	15.94	17.13	4.72	2.95	7.32	1.97	M20	1.97	16x10	1.89	36x36	F14-F16	639.8
24"	10.51	29.50	4	1-1/4" 8UN	20	16	1.38	18.50	19.88	5.51	3.94	7.87	2.17	M20	2.56	20x12	1.97	46x46	F14-F16	757.5

953 (Class 150) Flanged 26" - 48" Dimensions

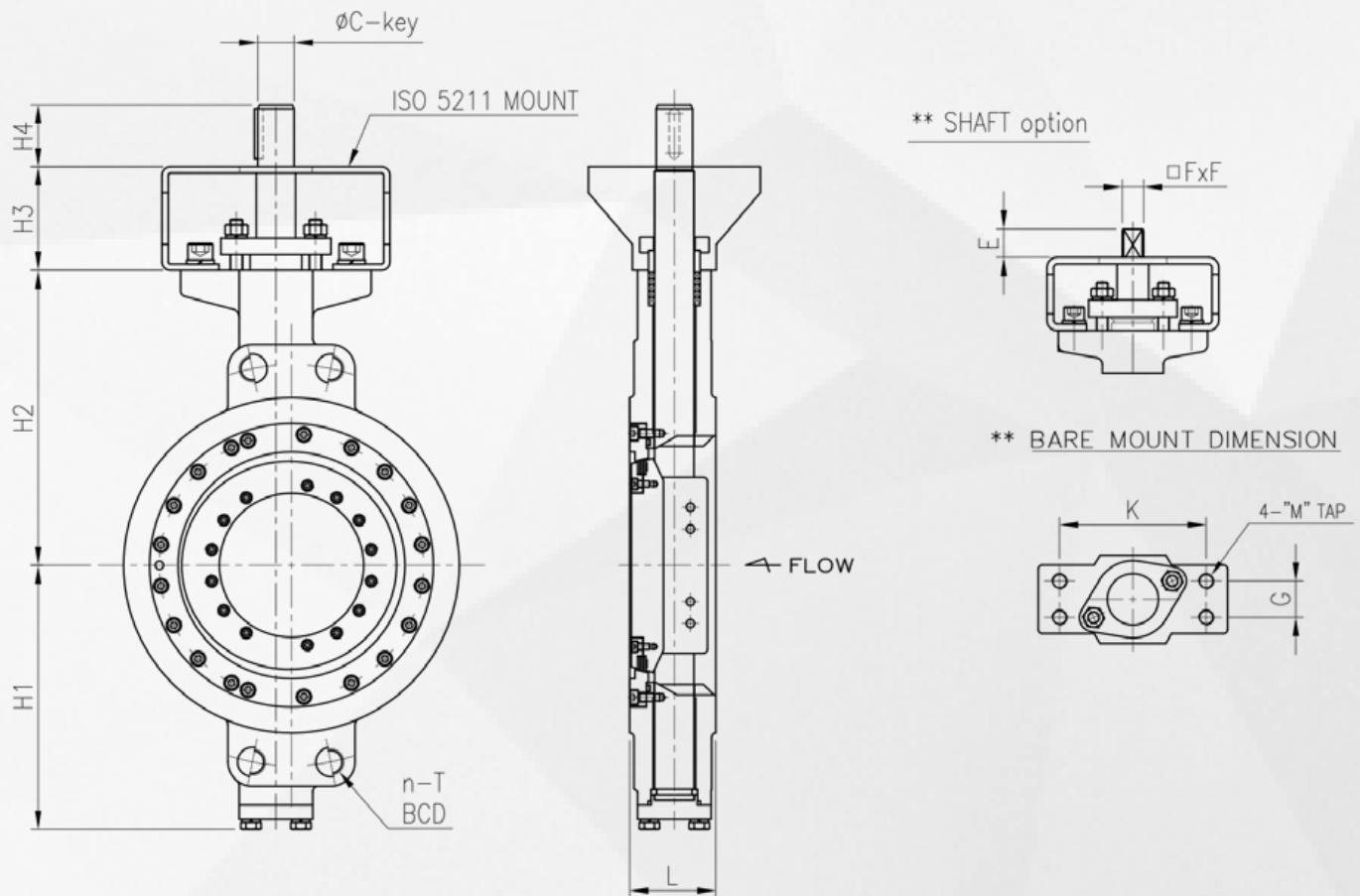


26" - 48" | 953 Series | Class 150 Flanged (Units in Inches)

SIZE	L	n	nt	nh	BCD	TAP	HOLES	H1	H2	H3	H4	K	G	M	C	KEY BASE	TOP MOUNT	Weight (lb)
26"	11.50	24	4	20	31.75	1-1/4" 8UN	1.38	20.47	20.08	4.72	3.94	7.87	2.17	M20	2.56	20x12	F16-F20	1918.4
28"	11.50	28	4	24	34.00	1-1/4" 8UN	1.38	22.44	21.46	5.51	3.94	8.66	2.36	M20	2.76	20x12	F16-F20	2068
30"	12.52	28	4	24	36.00	1-1/4" 8UN	1.38	23.62	21.85	5.51	3.94	9.06	2.36	M20	2.95	20x12	F20-F25	2285.8
32"	12.52	28	4	24	38.50	1-1/2" 8UN	1.63	24.80	23.62	5.91	4.33	10.63	2.36	M20	3.15	22x14	F25-F30	2824.8
34"	12.99	32	4	28	40.50	1-1/2" 8UN	1.63	25.59	25.20	5.91	4.33	10.63	2.36	M20	3.15	22x14	F25-F30	2912.8
36"	12.99	32	4	28	42.75	1-1/2" 8UN	1.63	27.17	26.38	5.91	4.33	10.63	3.15	M24	3.35	25x14	F25-F30	3075.6
40"	16.14	36	4	32	47.25	1-1/2" 8UN	1.63	28.35	26.57	6.30	4.92	11.02	2.76	M24	3.54	25x14	F25-F30	4316.4
42"	16.14	36	4	32	49.50	1-1/2" 8UN	1.63	29.53	27.56	6.30	5.91	11.02	2.76	M24	3.74	25x14	F30-F35	4666.2
48"	18.50	44	4	40	56.00	1-1/2" 8UN	1.63	33.27	33.86	6.30	6.10	11.81	3.94	M27	4.33	28x16	F30-F35	7213.8



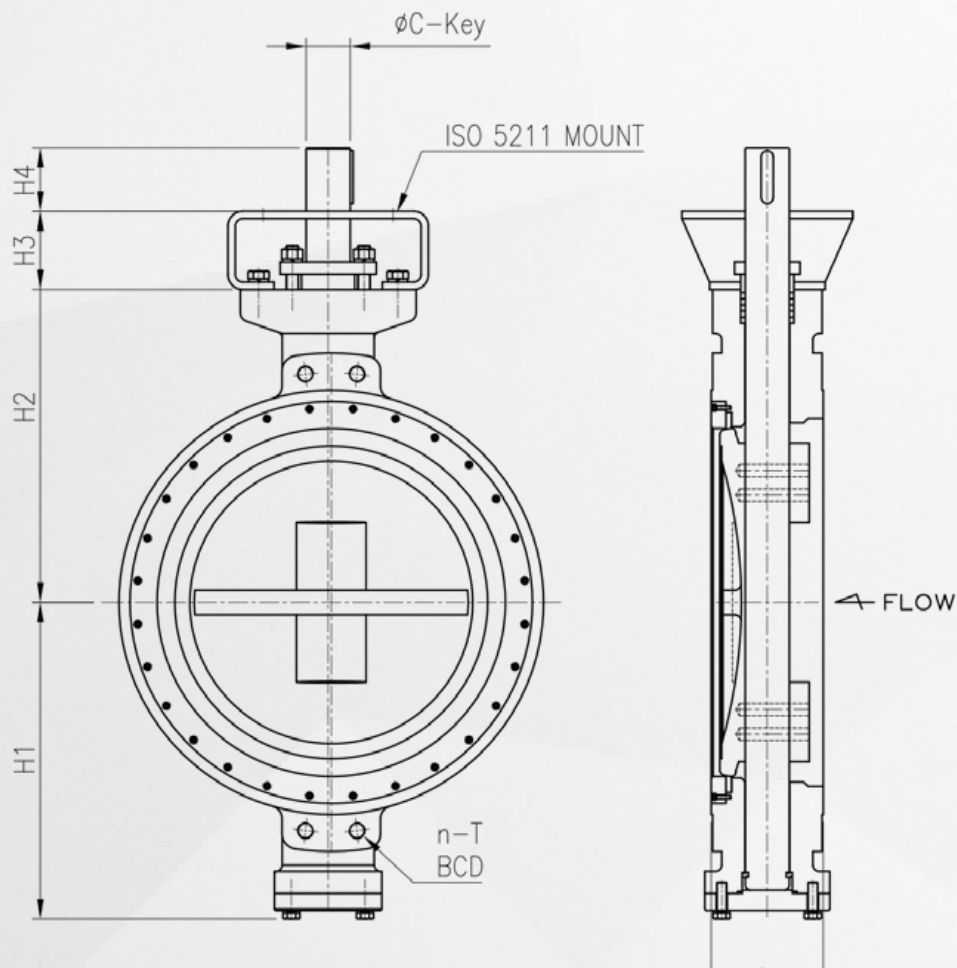
960 (Class 300) Wafer 3" - 24" Dimensions



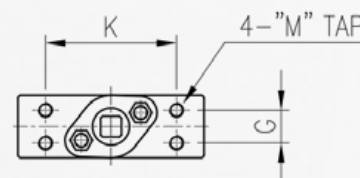
3" - 24" | 960 Series | Class 300 Wafer (Units in Inches)

SIZE	L	n	BCD	T	H1	H2	H3	H4	K	G	M	C	KEY BASE	E	FxF	TOP MOUNT	Weight (lb)
3"	1.89	4	6.63	0.87	4.61	5.12	2.56	1.57	3.46	0.87	M10	0.63	5x5	0.51	11x11	F05-F07	18.9
4"	2.13	4	7.87	0.87	5.63	6.30	2.76	1.65	3.70	0.94	M10	0.79	6x6	0.87	17x17	F07-F10	27.7
5"	2.24	4	9.25	3/4" UNC	5.75	6.50	2.76	1.65	3.70	0.94	M10	0.79	6x6	0.87	17x17	F07-F10	40.5
6"	2.32	4	10.63	3/4" UNC	7.99	8.27	2.76	1.65	3.70	0.94	M10	0.87	8x7	1.02	19x19	F10-F12	48.2
8"	2.87	4	13.00	7/8" UNC	9.17	9.65	3.15	2.36	4.49	1.42	M12	1.18	10x8	1.26	22x22	F10-F12	82.1
10"	3.27	4	15.25	1" UNC	10.04	11.22	3.54	2.36	5.91	1.57	M16	1.38	10x8	1.38	27x27	F12-F14	117.7
12"	3.62	4	17.75	1-1/8" 8UN	11.42	12.99	3.94	2.95	6.61	1.81	M16	1.57	12x8	1.38	27x27	F14-F16	163.7
14"	4.61	4	20.25	1-1/8" 8UN	13.19	14.57	4.33	2.95	5.91	1.57	M16	1.77	14x9	1.89	36x36	F14-F16	201.1
16"	5.24	4	22.50	1-1/4" 8UN	14.37	16.34	4.72	2.95	7.32	1.81	M20	1.97	16x10	1.89	36x36	F14-F16	324.9
18"	5.87	4	24.76	1-1/4" 8UN	16.54	18.50	5.12	3.54	8.86	2.99	M20	2.36	18x11	1.97	46x46	F16-F20	376.9
20"	6.26	4	27.00	1-1/4" 8UN	18.11	19.69	5.51	4.33	8.86	2.99	M20	2.56	20x12	1.97	46x46	F20-F25	515.7
24"	7.13	4	32.00	1-1/2" 8UN	20.67	23.23	6.30	4.33	11.02	3.23	M24	3.15	25x14	-	-	F25-F30	798.2

960 (Class 300) Wafer 26" - 48" Dimensions



** BARE MOUNT DIMENSION

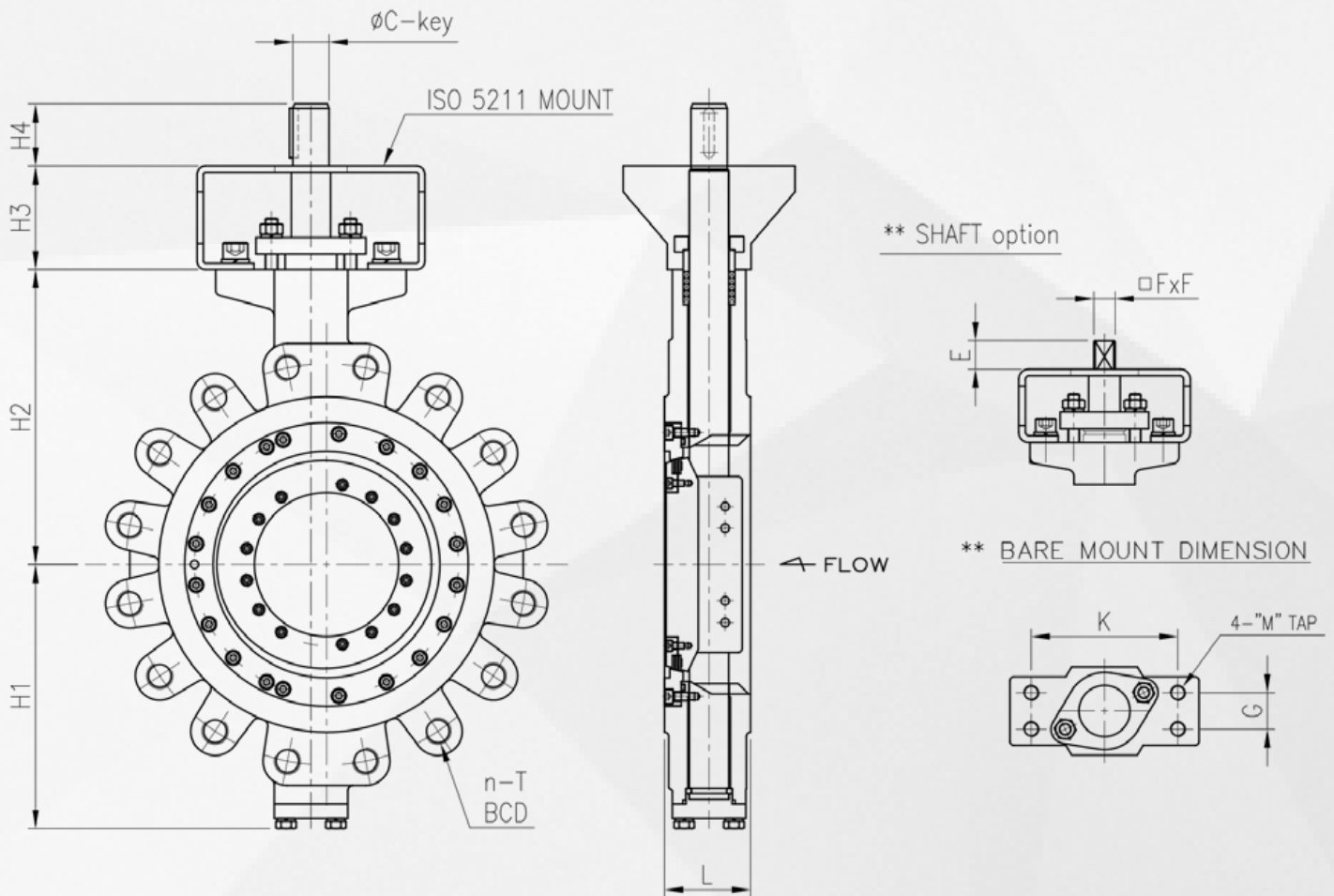


26" - 48" | 960 Series | Class 300 Wafer (Units in Inches)

SIZE	L	n	BCD	T	H1	H2	H3	H4	K	G	M	C	KEY BASE	TOP MOUNT	Weight (lb)
26"	8.27	4	34.50	1-5/8" 8UN	22.83	23.23	6.30	4.33	10.63	2.36	M20	3.15	22x14	F20-F25	1174.8
28"	9.02	4	37.00	1-5/8" 8UN	25.20	25.98	6.30	4.33	10.63	2.36	M20	3.15	22x14	F20-F25	1322.2
30"	9.06	4	39.25	1-3/4" 8UN	27.17	27.17	6.30	4.33	10.63	3.15	M24	3.35	25x14	F20-F25	1667.6
32"	9.49	4	41.50	1-7/8" 8UN	28.35	28.35	6.30	4.92	11.02	2.76	M24	3.54	25x14	F25-F30	1885.4
34"	9.49	4	43.50	1-7/8" 8UN	29.92	29.53	6.30	5.12	11.81	3.15	M27	3.94	28x16	F25-F30	2230.8
36"	10.67	4	46.00	2" 8UN	30.71	30.71	7.09	5.12	11.81	3.94	M27	4.72	32x18	F25-F30	2486
40"	11.81	4	45.50	1-5/8" 8UN	31.50	31.89	7.09	5.91	12.60	4.33	M30	5.31	36x20	F25-F30	3315.4
42"	11.81	4	47.50	1-5/8" 8UN	33.07	34.25	7.09	5.91	12.60	4.33	M30	5.31	36x20	F30-F35	4219.6
48"	12.60	4	54.00	1-7/8" 8UN	37.40	38.19	7.09	7.09	13.78	4.72	M30	6.30	40x22	F30-F35	5566



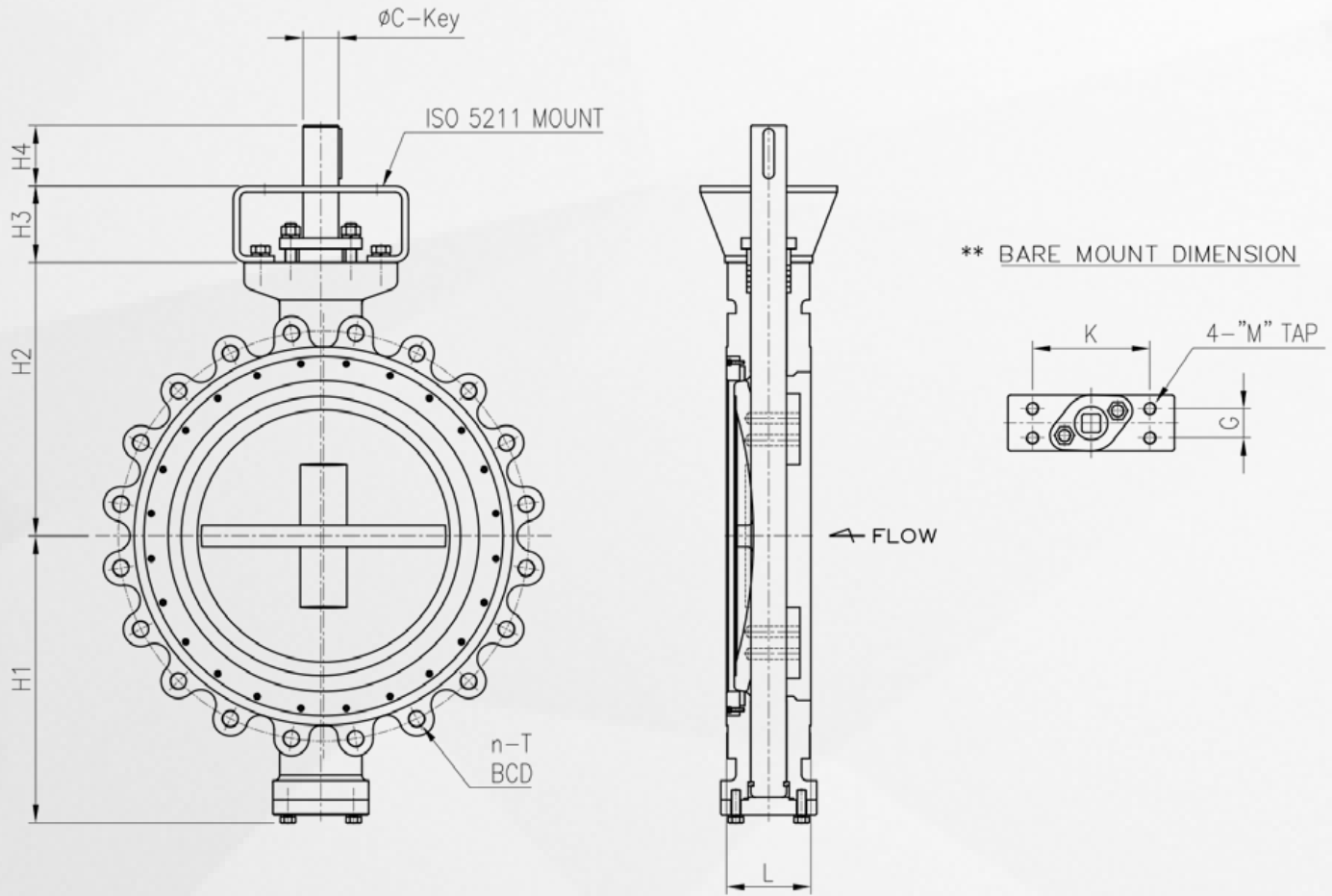
961 (Class 300) Lug 3" - 24" Dimensions



3" - 24" | 961 Series | Class 300 Lug (Units in Inches)

SIZE	L	n	BCD	T	H1	H2	H3	H4	K	G	M	C	KEY BASE	E	FxF	TOP MOUNT	Weight (lb)
3"	1.89	8	6.63	3/4" UNC	4.61	5.12	2.56	1.57	3.46	0.87	M10	0.63	5x5	0.51	11x11	F05-F07	22.2
4"	2.13	8	7.87	3/4" UNC	5.63	6.30	2.76	1.65	3.70	0.94	M10	0.79	6x6	0.87	17x17	F07-F10	38.1
5"	2.24	8	9.25	3/4" UNC	5.75	6.50	2.76	1.65	3.70	0.94	M10	0.79	6x6	0.87	17x17	F07-F10	61.8
6"	2.32	12	10.63	3/4" UNC	7.99	8.27	2.76	1.65	3.70	0.94	M10	0.87	8x7	1.02	19x19	F10-F12	67.5
8"	2.87	12	13.00	7/8" UNC	9.17	9.65	3.15	2.36	4.49	1.42	M12	1.18	10x8	1.26	22x22	F10-F12	103.8
10"	3.27	16	15.25	1" UNC	10.04	11.22	3.54	2.36	5.91	1.57	M16	1.38	10x8	1.38	27x27	F12-F14	171.8
12"	3.62	16	17.75	1-1/8" 8UN	11.42	12.99	3.94	2.95	6.61	1.81	M16	1.57	12x8	1.38	27x27	F14-F16	242.0
14"	4.61	20	20.25	1-1/8" 8UN	13.19	14.57	4.33	2.95	5.91	1.57	M16	1.77	14x9	1.89	36x36	F14-F16	473.9
16"	5.24	20	22.50	1-1/4" 8UN	14.37	16.34	4.72	2.95	7.32	1.81	M20	1.97	16x10	1.89	36x36	F14-F16	557.5
18"	5.87	24	24.76	1-1/4" 8UN	16.54	18.50	5.12	3.54	8.86	2.99	M20	2.36	18x11	1.97	46x46	F16-F20	672.5
20"	6.26	24	27.00	1-1/4" 8UN	18.11	19.69	5.51	4.33	8.86	2.99	M20	2.56	20x12	1.97	46x46	F20-F25	946.9
24"	7.13	24	32.00	1-1/2" 8UN	20.67	23.23	6.30	4.33	11.02	3.23	M24	3.15	25x14	-	-	F25-F30	1526.6

961 (Class 300) Lug 26" - 48" Dimensions

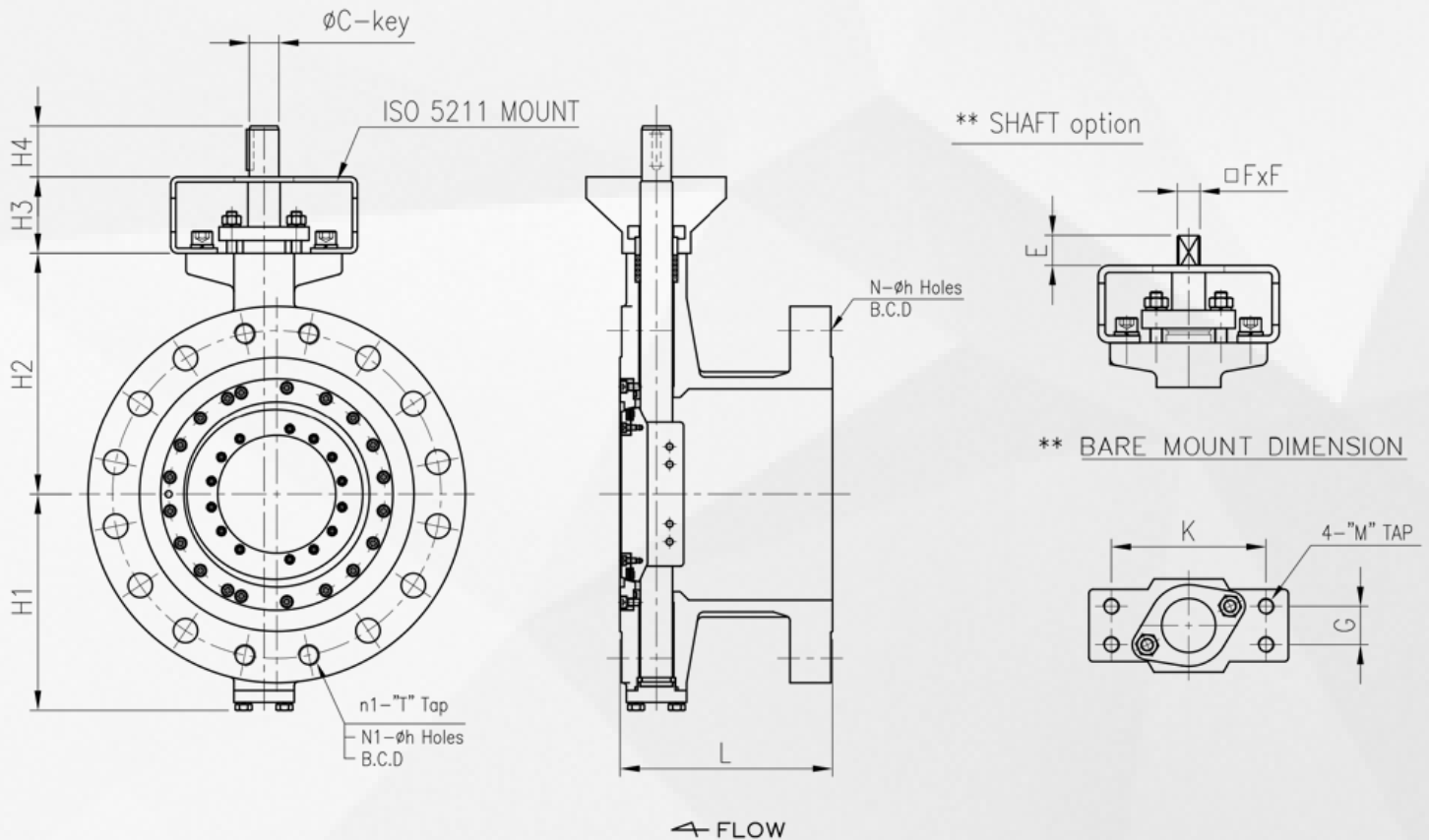


26" - 48" | 961 Series | Class 300 Lug (Units in Inches)

SIZE	L	n	BCD	T	H1	H2	H3	H4	K	G	M	C	KEY BASE	TOP MOUNT	Weight (lb)
26"	6.50	28	34.50	1-5/8" 8UN	20.47	20.08	6.30	4.33	10.63	2.36	M20	3.15	22x14	F20-F25	1878.8
28"	6.50	28	37.00	1-5/8" 8UN	22.44	21.46	6.30	4.33	10.63	2.36	M20	3.15	22x14	F20-F25	2072.4
30"	7.48	28	39.25	1-3/4" 8UN	23.62	21.85	6.30	4.33	10.63	3.15	M24	3.35	25x14	F20-F25	2455.2
32"	7.48	28	41.50	1-7/8" 8UN	24.80	23.62	6.30	4.92	11.02	2.76	M24	3.54	25x14	F25-F30	2554.2
34"	7.99	32	43.50	1-7/8" 8UN	25.59	25.20	7.09	5.12	11.81	3.15	M27	3.94	28x16	F25-F30	3009.6
36"	7.99	32	46.00	2" 8UN	27.17	26.38	7.09	5.12	11.81	3.94	M27	4.72	32x18	F25-F30	3385.8
40"	8.50	36	45.50	1-5/8" 8UN	28.35	26.57	7.09	5.91	12.60	4.33	M30	5.31	36x20	F25-F30	4466
42"	9.88	36	47.50	1-5/8" 8UN	29.53	27.56	7.09	5.91	12.60	4.33	M30	5.31	36x20	F30-F35	5728.8
48"	10.00	44	54.00	1-7/8" 8UN	33.27	33.86	7.09	7.09	13.78	4.72	M30	6.30	40x22	F30-F35	7906.8



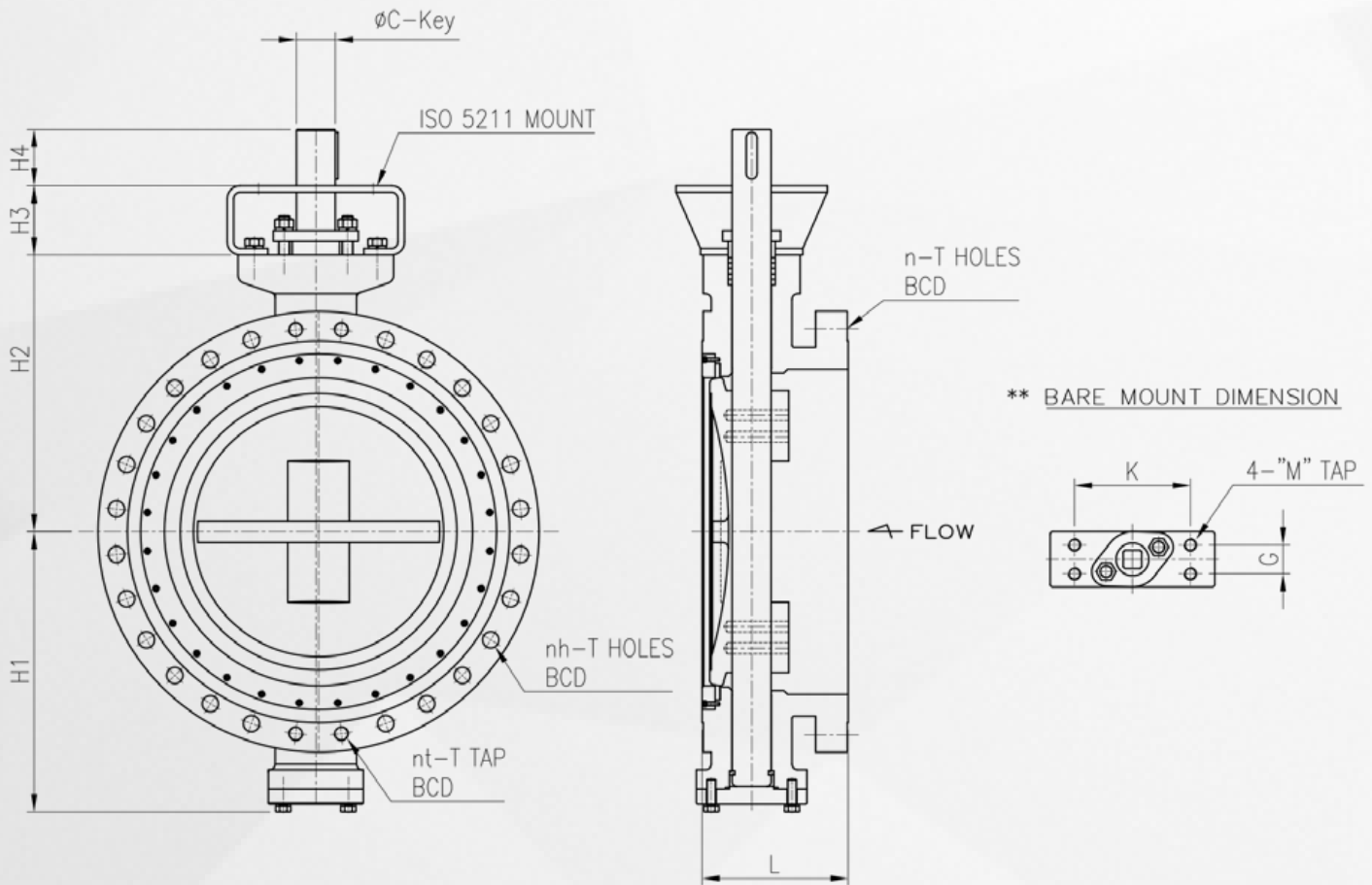
963 (Class 300) Flanged 3" - 24" Dimensions



3" - 24" | 963 Series | Class 300 Flanged (Units in Inches)

SIZE	L	BCD	n1	T	N	N1	h	H1	H2	H3	H4	K	G	M	C	KEY BASE	E	FxF	TOP MOUNT	Weight (lb)
3"	7.09	6.63	4	3/4" UNC	8	4	0.87	4.61	5.12	2.56	1.57	3.46	0.87	M10	0.63	5x5	0.51	11x11	F05-F07	60.3
4"	7.48	7.87	4	3/4" UNC	8	4	0.87	5.63	6.30	2.76	1.65	3.70	0.94	M10	0.79	6x6	0.87	17x17	F07-F10	77.7
5"	8.27	9.25	4	3/4" UNC	8	4	0.87	5.75	6.50	2.76	1.65	3.70	0.94	M10	0.79	6x6	0.87	17x17	F07-F10	96.4
6"	8.27	10.63	4	3/4" UNC	12	8	0.87	7.99	8.27	2.76	1.65	3.70	0.94	M10	0.87	8x7	1.02	19x19	F10-F12	117.3
8"	9.06	13.00	4	7/8" UNC	12	8	1.00	9.17	9.65	2.95	2.36	4.49	1.42	M12	1.18	10x8	1.26	22x22	F10-F12	199.3
10"	9.84	15.25	4	1" UNC	16	12	1.12	10.04	11.22	3.15	2.36	5.91	1.57	M16	1.38	10x8	1.38	27x27	F12-F14	308.7
12"	10.63	17.75	4	1-1/8" 8UN	16	12	1.25	11.42	12.99	3.54	2.95	6.61	1.81	M16	1.57	12x8	1.38	27x27	F14-F16	452.5
14"	11.42	20.25	4	1-1/8" 8UN	20	16	1.25	13.19	14.57	3.54	2.95	5.91	1.57	M16	1.77	14x9	1.89	36x36	F14-F16	642.2
16"	12.20	22.50	4	1-1/4" 8UN	20	16	1.38	14.37	16.34	4.33	2.95	7.32	1.81	M20	1.97	16x10	1.89	36x36	F14-F16	944.7
18"	12.99	24.76	4	1-1/4" 8UN	24	20	1.38	16.54	18.50	4.33	3.54	8.86	2.99	M20	2.36	18x11	1.97	46x46	F16-F20	1052.0
20"	13.78	27.00	4	1-1/4" 8UN	24	20	1.38	18.11	19.69	4.72	4.33	8.86	2.99	M20	2.56	20x12	1.97	46x46	F20-F25	1346.2
24"	15.35	32.00	4	1-1/2" 8UN	24	20	1.62	20.67	23.23	5.51	4.33	11.02	3.23	M24	3.15	25x14	-	-	F25-F30	1771.0

963 (Class 300) Flanged 26" - 48" Dimensions

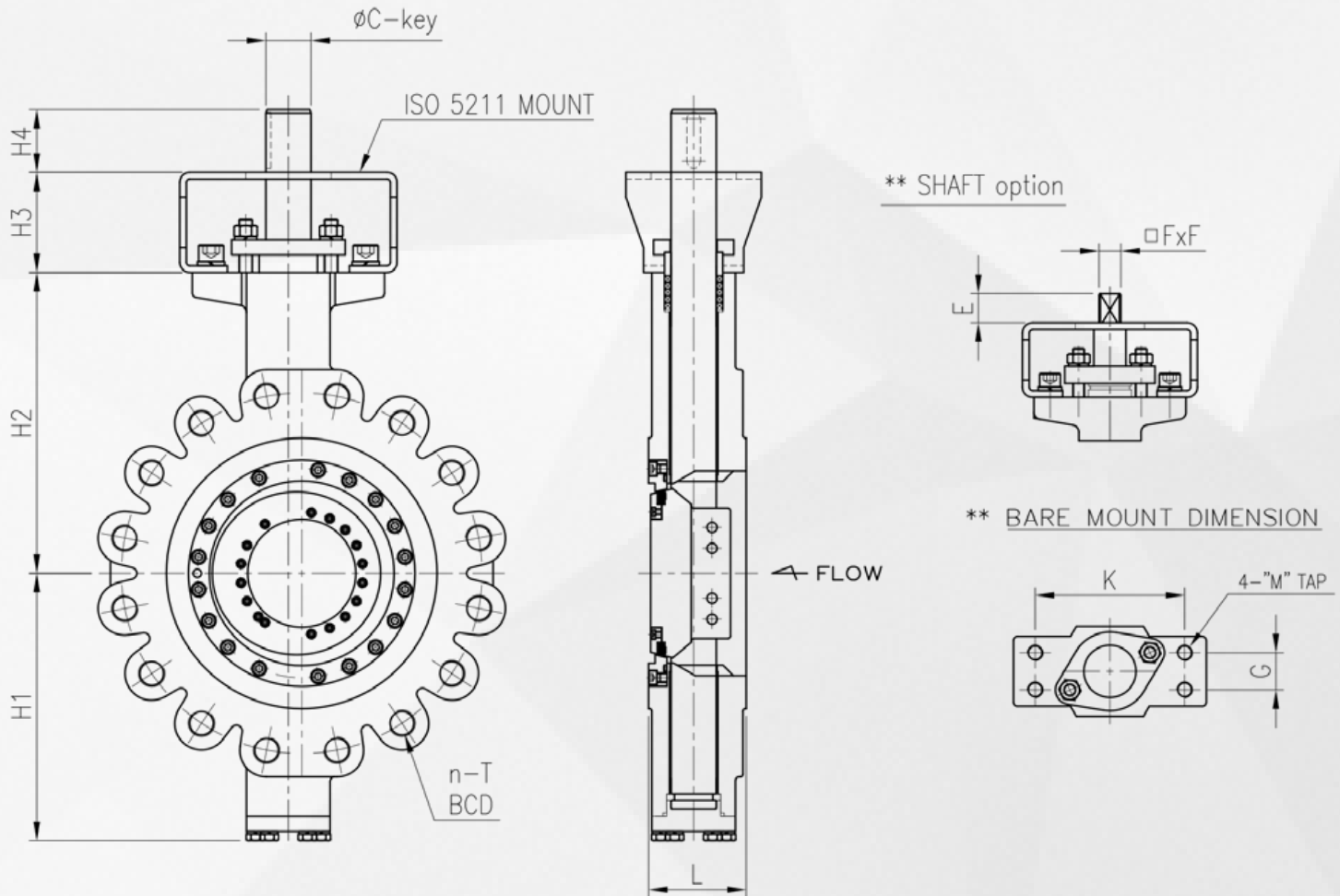


26" - 48" | 963 Series | Class 300 Flanged (Units in Inches)

SIZE	L	n	nt	nh	BCD	TAP	HOLES	H1	H2	H3	H4	K	G	M	C	KEY BASE	TOP MOUNT	Weight (lb)
26"	16.14	28	4	24	34.50	1-5/8" 8UN	1.75	20.47	20.08	4.53	3.94	7.87	2.17	M20	2.56	20x12	F16-F20	2877.6
28"	16.93	28	4	24	37.00	1-5/8" 8UN	1.75	22.44	21.46	5.51	3.94	8.66	2.36	M20	2.76	20x12	F16-F20	3104.2
30"	17.72	28	4	24	39.25	1-3/4" 8UN	1.87	23.62	21.85	5.51	3.94	9.06	2.36	M20	2.95	20x12	F20-F25	3429.8
32"	18.50	28	4	24	41.50	1-7/8" 8UN	2.00	24.80	23.62	5.91	4.33	10.63	2.36	M20	3.15	22x14	F25-F30	4237.2
34"	20.08	28	4	24	43.50	1-7/8" 8UN	2.00	25.59	25.20	5.91	4.33	10.63	2.36	M20	3.15	22x14	F25-F30	4371.4
36"	20.08	32	4	28	46.00	2" 8UN	2.13	27.17	26.38	5.91	4.33	10.63	3.15	M24	3.35	25x14	F25-F30	4611.2
40"	21.65	32	4	28	45.50	1-5/8" 8UN	1.75	28.35	26.57	6.30	4.92	11.02	2.76	M24	3.54	25x14	F25-F30	6472.4
42"	22.44	32	4	28	47.50	1-5/8" 8UN	1.75	29.53	27.56	6.30	5.91	11.02	2.76	M24	3.74	25x14	F30-F35	7000.4
48"	24.80	32	4	28	54.00	1-7/8" 8UN	2.00	33.27	33.86	6.30	6.10	11.81	3.94	M27	4.33	28x16	F30-F35	10821.8



971 (Class 600) Lug 4" - 24" Dimensions



4"-24" | 971 Series | Class 600 Lug (Units in Inches)

SIZE	L	n	BCD	T	H1	H2	H3	H4	K	G	M	C	KEY BASE	E	FxF	TOP MOUNT	Weight (lb)
4"	2.52	8	8.50	7/8" UNC	7.09	8.66	3.54	1.77	4.49	1.42	M12	0.98	8x7	1.02	19x19	F10-F12	40.5
6"	3.07	12	11.50	1" UNC	8.58	9.84	3.54	2.36	5.75	1.57	M12	1.38	10x8	1.38	27x27	F12-F14	173.4
8"	4.02	12	13.75	1-1/8" 8UN	9.65	10.83	3.94	2.95	6.14	2.05	M16	1.57	12x8	1.38	27x27	F14-F16	237.8
10"	4.61	16	17.00	1-1/4" 8UN	12.60	14.17	4.33	2.95	7.28	2.05	M20	1.97	16x10	1.89	36x36	F14-F16	374.4
12"	5.51	20	19.25	1-1/4" 8UN	12.99	14.57	4.72	3.54	7.87	2.13	M22	2.36	18x11	1.97	46x46	F16-F20	574.4
14"	6.10	20	20.75	1-3/8" 8UN	14.96	16.54	5.12	3.54	8.86	2.99	M22	2.56	20x12	1.97	46x46	F20-F25	738.5
16"	7.01	20	23.75	1-1/2" 8UN	16.93	19.09	5.51	4.33	11.02	3.23	M24	3.15	25x14	-	-	F20-F25	901.6
18"	7.87	20	25.75	1-5/8" 8UN	17.72	19.69	6.30	4.33	11.02	3.23	M24	3.35	25x14	-	-	F25-F30	1137.4
20"	8.50	24	28.50	1-5/8" 8UN	19.69	20.08	6.30	4.72	11.81	3.54	M27	3.74	28x16	-	-	F30-F35	1487.2
24"	9.13	24	33.00	1-5/8" 8UN	23.82	24.80	6.30	5.12	13.78	3.94	M30	4.72	32x18	-	-	F35-F40	2117.5

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	648	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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Ordering Guideline

Example Part Number & Builder

Example Part Number

A-SIZE	-	B-CODE	-	C-BODY	D-DISC	E-STEM	F-SEAT	-	G-OPERATOR	-	H-SPECIAL
040		950		C	S	O	P		BST		

Part Number Builder

A-SIZE	B-CODE	C-BODY
030-3" 280-28"	950 - CLASS 150 - ANSI WAFER	A - ALLOY 20 UNS N08020
040-4" 300-30"	95M - CLASS 150 - DIN WAFER	B - ALUMINUM BRONZE ASTM B148 C95800
050-5" 320-32"	951 - CLASS 150 - ANSI LUG	C - CARBON STEEL ASTM A216 WCB (BODY, DISC)
060-6" 360-36"	952 - CLASS 150 - DIN LUG	D - DUPLEX STAINLESS STEEL UNS S32205
080-8" 400-40"	953 - CLASS 150 - ISO 5752 FLANGED (SHORT)	E - SUPER DUPLEX STAINLESS STEEL UNS S32750
100-10" 420-42"	954 - CLASS 150 - B16.10 FLANGED (LONG)	F - 316 STAINLESS STEEL + HF STELLITE
120-12" 480-48"	955 - CLASS 150 - AWWA FLANGED	G - SMO 254 UNS S31254
140-14" 540-52"	960 - CLASS 300 - ANSI WAFER	H - HASTELLOY C-276 UNS N10276
160-16" 560-56"	96M - CLASS 300 - DIN WAFER	I - INCONEL 625 UNS N06625
180-18" 600-60"	961 - CLASS 300 - ANSI LUG	J - INCONEL 718 UNS N07718
200-20" 640-64"	962 - CLASS 300 - DIN LUG	K - MONEL K500 UNS N05500
240-24" 720-72"	963 - CLASS 300 - ISO 5752 FLANGED (SHORT)	L - CARBON STEEL ASTM A352 LCB (BODY, DISC)
	964 - CLASS 300 - B16.10 FLANGED (LONG)	M - MONEL 400 UNS N04400
	970 - CLASS 600 - ANSI WAFER	N - XM-19 NITRONIC 50 UNS S20910
	97M - CLASS 600 - DIN WAFER	O - 316 STAINLESS STEEL UNS S31600
	971 - CLASS 600 - ANSI LUG	S - STAINLESS STEEL ASTM A351 CF8M (BODY, DISC)
	972 - CLASS 600 - DIN LUG	T - TITANIUM ASTM B367 GRADE C2 (BODY, DISC)
	973 - CLASS 600 - ISO 5752 FLANGED (SHORT)	V - STAINLESS STEEL ASTM A182 F53
	974 - CLASS 600 - B16.10 FLANGED (LONG)	W - STAINLESS STEEL ASTM A351 CF8
	980 - CLASS 900 - ANSI WAFER	Z - CUSTOM SEE SPECIALS
	98M - CLASS 900 - DIN WAFER	
	981 - CLASS 900 - ANSI LUG	
	982 - CLASS 900 - DIN LUG	
	983 - CLASS 900 - ISO 5752 FLANGED (SHORT)	
	984 - CLASS 900 - B16.10 FLANGED (LONG)	

D-DISC
A - ALLOY 20 UNS N08020
B - ALUMINUM BRONZE ASTM B148 C95800
C - CARBON STEEL ASTM A216 WCB (BODY, DISC)
D - DUPLEX STAINLESS STEEL UNS S32205
E - SUPER DUPLEX STAINLESS STEEL UNS S32750
F - 316 STAINLESS STEEL + HF STELLITE
G - SMO 254 UNS S31254
H - HASTELLOY C-276 UNS N10276
I - INCONEL 625 UNS N06625
J - INCONEL 718 UNS N07718
K - MONEL K500 UNS N05500
L - CARBON STEEL ASTM A352 LCB (BODY, DISC)
M - MONEL 400 UNS N04400
N - XM-19 NITRONIC 50 UNS S20910
O - 316 STAINLESS STEEL UNS S31600
R - 316 STAINLESS STEEL + .003" ENP (DISC)
S - STAINLESS STEEL ASTM A351 CF8M (BODY, DISC)
T - TITANIUM ASTM B367 GRADE C2 (BODY, DISC)
U - CARBON STEEL + ENP (DISC)
V - STAINLESS STEEL ASTM A182 F53
W - STAINLESS STEEL ASTM A351 CF8
X - ASTM A351 CF8M + HARD CHROME PLATED (DISC)
Z - CUSTOM SEE SPECIALS

E-STEM
A - ALLOY 20 UNS N08020
B - ALUMINUM BRONZE ASTM B148 C95800
D - DUPLEX STAINLESS STEEL UNS S32205
E - SUPER DUPLEX STAINLESS STEEL UNS S32750
F - 316 STAINLESS STEEL + HF STELLITE
G - SMO 254 UNS S31254
H - HASTELLOY C-276 UNS N10276
I - INCONEL 625 UNS N06625
J - INCONEL 718 UNS N07718
K - MONEL K500 UNS N05500
M - MONEL 400 UNS N04400
N - XM-19 NITRONIC 50 UNS S20910
O - 316 STAINLESS STEEL UNS S31600
P - 17-4PH STAINLESS STEEL ASTM A564 TYPE 630 (STEM)
Q - AISI 4140 UNS 41400 (STEM)
V - STAINLESS STEEL ASTM A182 F53
W - STAINLESS STEEL ASTM A351 CF8
Z - CUSTOM SEE SPECIALS



F-SEAT

P - PTFE
R - RTFE
T - TFM 1600
U - UHMWPE
M - METAL SEATED SAME AS DISC
N - INCONEL 625+STELLITE 21 BODY SEAT,
INCONEL 625+GRAPHITE LAMINATE DISC SEAL
F - RTFE + 316SS FIRE SAFE
G - RTFE + INCONEL 600 FIRE SAFE
H - TFM 1600 + 316SS FIRE SAFE
I - TFM 1600 + INCONEL 600 FIRE SAFE
J - 316SS + GRAPHITE LAMINATED DISC / 316SS + HF BODY
K - 2205SS + GRAPHITE LAMINATED DISC / 316SS + HF BODY
L - XM-19 NITRONIC 50 DISC / 316SS + HF BODY (NO GRAPHITE)
Z - CUSTOM SEE SPECIALS

G-OPERATOR

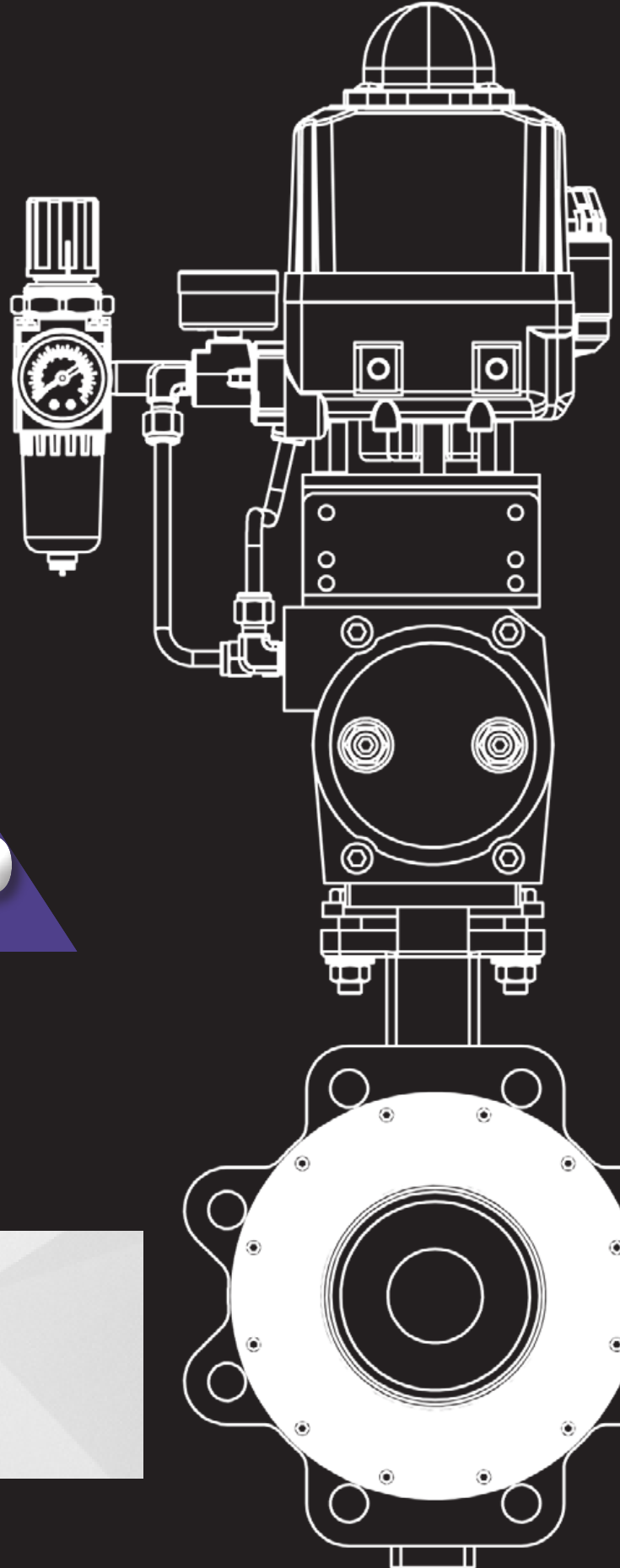
BST - BARE STEM
HND - LEVER HANDLE
GOP - GEAR OPERATOR
Cxx - CHAINWHEEL OPERATOR, "xx" LENGTH
("xx" = LENGTH)

H-SPECIAL

BLANK - (NONE)
XS - EXTENDED BONNET/STEM
HC - HARD CHROME COATED DISC
EN - ENP COATED DISC
HF - HARD FACE STELLITED DISC
O2 - CLEANED AND BAGGED FOR OXYGEN SERVICE
SF - SILICONE FREE CLEANED
VS - VACUUM SERVICE
FF - CUSTOM FACE TO FACE DIMENSION
J0 - CUSTOM BY CUSTOMER
CRYOGENIC SERVICE, INCLUDES EXTENDED BONNET, O2
CLEANING & BAGGING



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THE BRAND
BY WHICH
ALL OTHERS ARE
MEASURED

