MAX SEAL Valves & Controls

Resilient Seated ISO Butterfly Valves

ISO Series

Butterfly Valves Designed for Direct Mount Automation

Models:
Wafer Type 51-I
Lug Type 52-I

Size Range:
1½"–48"

Pressure Ratings:
1½"–12": 200 WOG
14"–24": 175 WOG

ISO 5211

Design Features

- Ease of Automation
- Low Torque Operation
- Wafter Body Features Four Multi-standard Alignment Lugs Compatible with:
  - ASME B16 .5 CLASS150
  - ASME B16 .1 CLASS125
  - EN1092 PN10 or PN16 (DIN)
  - BS 10 Table D Table E
  - JIS B2239 10K,16K
- Phenolic Backed Cartridge Seats
- Ductile Iron Body, standard
- High Flow Capacity
- High Quality Body Coating for Excellent Corrosion Resistance
- 10 Position Locking Handle 1.5"–8"
- Gear operators: 10"–48"

Max-Seal Concentric Butterfly Valves are backed by the resources and experience of over 35 years of process valve and automation experience.

Butterfly Valve - Components/Design Features

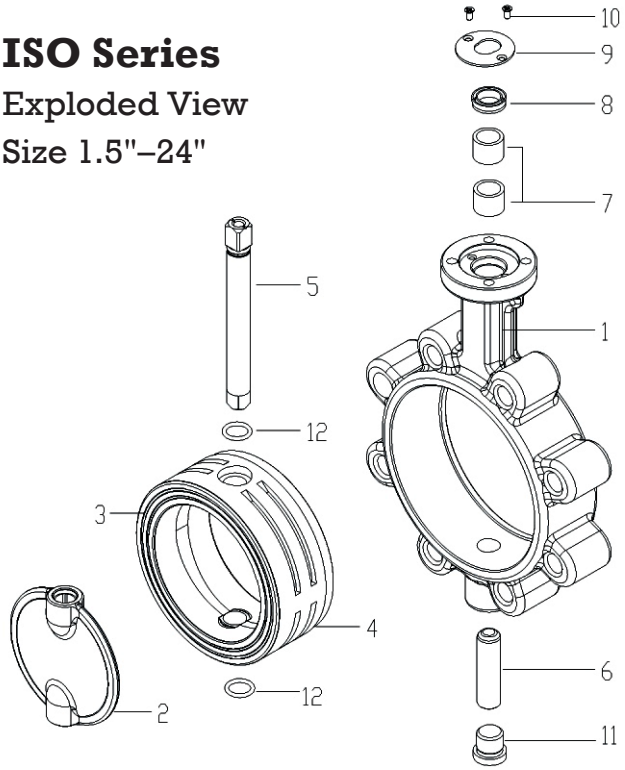
Standard Parts List

No	Part Name	Material	Qty	Code
1	Body	Ductile Iron Cast Iron	1	DI CI
2	Disc	Stainless 316 CF8M Ductile Iron Stainless 304 CF8 Aluminum Bronze	1	SS DI S4 AB
3	Seat	Buna N (NBR) EPDM Viton PTFE	1	N E V T
4	Seat Back Up	Phenolic	1	
5	Upper Shaft	SS420	1	S2
6	Lower Shaft	SS420	1	S2
7	Bushings	RPTFE + Graphite	2	RG
8	Lip Seal	Same as Seat	1	
9	Lock Plate	Stainless Steel	1	
10	Screws	SS304	2	
11	Plug	Steel Zine Plated	1	CS
12	O-Rings	Same as Seat	2	

ISO Series

Exploded View

Size 1.5"–24"

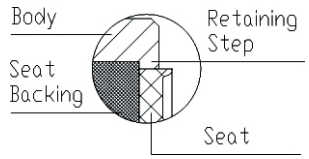


Feature:

- One piece body with long neck allows clearance for flanges and easy installation.
- Primary stem seals are formed by preloaded contact between the disc and seat. A secondary seal is affected by having a stem diameter greater than the stem hole in the resilient seat. These seals provide a non-wetting body and stem, eliminating the need for corrosion resistant body material.
- Field replaceable, phenolic bonded cartridge is blowout-proof, stretch resistant, and non-collapsible, making in an ideal seat design for high velocity or vacuum service. Our resilient seat design eliminates the need for flange gaskets.
- Valve sizes 28" & above are supplied with metal seat back up rings.

Unique Design for Extreme Pressure Applications

Retaining Step machined in valve body prevents a possible seat blowout under extreme pressures.



- High strength, square drive (1.5"–24") ensures a positive shaft to disc connection.
- Square drive offers direct ISO 5211 mounting of gear operator and automation equipment.
- Disc floats inside the seat for positive sealing and extended seat life.
- No pins or bolts exposed to flow.
- A lock plate and two screws mechanically retain the shaft in the body ensuring a blowout-proof stem design.

Max-Seal Performance Series Butterfly Valve Model Number Codes

Model	Body Material		Disc Material		Stem Material		Seat Material		Operator		Size	
Wafer-51-I	Ductile Iron	DI	Ductile Iron	DI	Stinless 420	S6	EPDM	E	Lever	L	2	50
	Cast Iron	CI	Stainless 316	SS	Stainless 316	SS	Buna-N	B	Gear	G	3	80
	Stainless	SS	Stainless 304	S4	Stainless 410	S0	Viton	V	Bare stem	N	4	100
Lug-52-I					17-4PH	S7	Teflon	T	Actuator	A	6	150
											8	200
											10	250

Ordering Example by Part Number

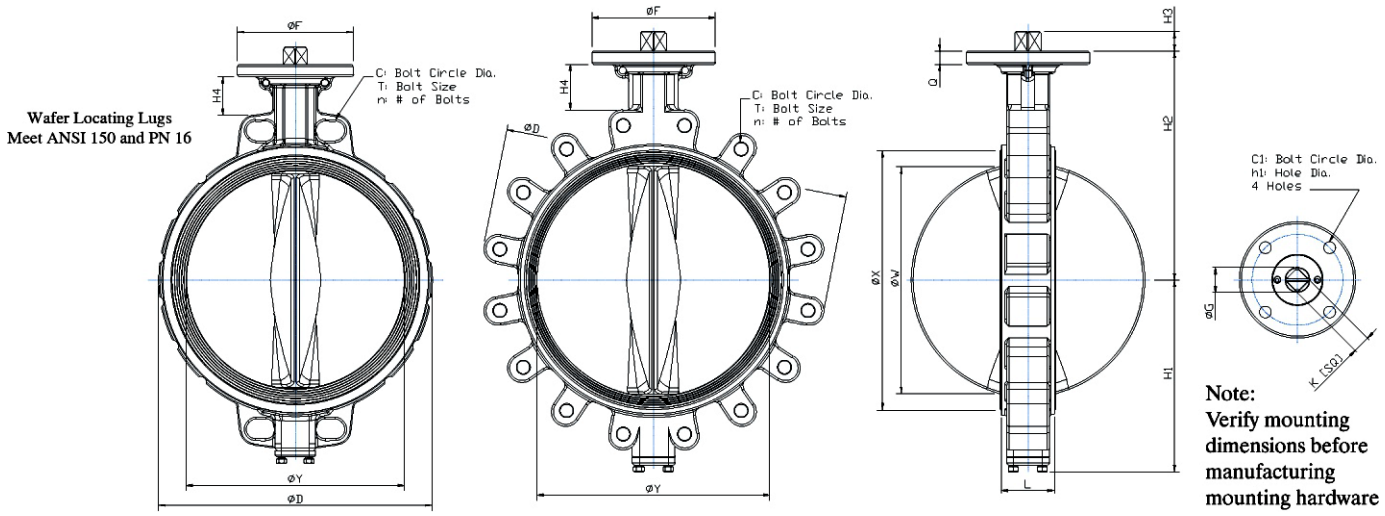
Wafer	Ductile Iron	Stainless 316	Stainless 420	EPDM	Lever	4"
Model	Body	Disc	Stem	Seat	Operator	Size
51-I -	DI -	SS -	SS -	E -	L -	100

Performance / Design

Accurate and smooth machined profile of disc edge requires minimal deformation of the resilient elastomer liner to achieve a positive seal. The low deformation results in low torque, less wear of the seat liner and increased operational life.

Max-Seal ISO Series Valves Are Bidirectionally Bubble Tight. They Are Marked With An Arror Indicating The Preferred High Pressure Side.

Dimensions/Technical Data



ANSI Class 125 Concentric Butterfly Valves

Size	D		F	G	H1	H2	H3	H4		K	L	Q	W	X	Y	Flange Dimensions			Mounting Base			Weight Lbs	
	51-I	52-I						51-I	52-I							C	T	n	C1	h1*	ISO	51-I	52-I
2"	4.02	4.84	2.56	0.56	2.99	4.96	0.531	1.77	2.16	0.433	1.69	0.39	1.38	3.33	2.08	4.75	5/8-11unc	4	1.97	0.28	F05	4.4	7.3
2.5"	4.57	5.39	2.56	0.56	3.23	5.28	0.531	1.68	2.19	0.433	1.81	0.39	1.85	3.80	2.50	5.50	5/8-11unc	4	1.97	0.28	F05	5.7	9.0
3"	5.20	7.09	2.56	0.56	3.76	6.18	0.531	2.23	3.02	0.433	1.81	0.39	2.76	4.29	3.15	6.00	5/8-11unc	4	1.97	0.28	F05	7.3	10.8
4"	6.18	7.83	3.54	0.71	4.47	6.57	0.689	1.98	1.97	0.551	2.05	0.51	3.43	5.37	3.90	7.50	5/8-11unc	8	1.97/ 2.76	0.28	F05+ F07	11	18.5
5"	7.68	8.90	3.54	0.71	5.08	7.09	0.689	1.72	2.12	0.551	2.20	0.51	4.61	6.65	4.99	8.50	3/4-10unc	8	2.76	0.35	F07	14.1	19.2
6"	8.58	10.31	3.54	0.87	5.59	7.99	0.728	1.76	2.33	0.669	2.20	0.51	5.67	7.48	5.95	9.50	3/4-10unc	8	2.76	0.35	F07	17.2	24.5
8"	10.67	12.40	4.92	1.11	6.77	8.98	0.965	1.78	2.19	0.866	2.36	0.59	7.52	9.53	7.78	11.75	3/4-10unc	8	2.76	0.43	F10	26.9	39.0
10"	12.95	14.96	4.92	1.11	8.39	10.47	0.965	1.81	2.05	0.866	2.68	0.59	9.49	11.65	9.72	14.25	7/8-9unc	12	4.02	0.43	F10	41.9	67.5
12"	15.04	16.89	5.91	1.43	9.53	11.46	1.043	1.65	1.72	1.063	3.07	0.59	11.46	13.65	11.73	17.00	7/8-9unc	12	4.02/ 4.92	0.47/ 0.55	F10+ F12	57.3	97.7
14"	16.61	19.41	6.89	1.43	10.75	13.07	1.181	2.19	2.61	1.063	3.07	0.75	12.95	15.00	13.35	18.75	1-8unc	12	4.92/ 5.51	0.55/ 0.71	F12+ F14	90.4	128
16"	19.06	21.89	6.89	1.90	12.48	14.29	1.181	2.01	1.97	1.063	4.02	0.79	14.80	17.25	15.26	21.25	1-8unc	16	4.92/ 5.51	0.55/ 0.71	F12+ F14	127.8	192
18"	21.34	25.08	8.27	1.90	13.70	15.63	1.535	2.16	2.13	1.417	4.49	0.98	16.73	19.24	17.24	22.75	1 1/8-7unc	16	5.51/ 6.50	0.71/ 0.87	F14+ F16	176.3	240.3
20"	23.50	27.80	8.27	2.43	15.47	16.73	1.929	1.98	1.87	1.811	5.00	0.98	18.70	21.25	19.24	25.00	1 1/8-7unc	20	5.51/ 6.50	0.71/ 0.87	F14+ F16	213.8	293.2
24"	27.87	32.72	11.81	2.43	17.83	19.61	1.929	2.40	2.10	1.811	6.06	1.18	22.56	25.26	23.19	29.50	1 1/4-7unc	20	6.50/ 10.00	0.87/ 0.71*	F16+ F25	372.5	527.8

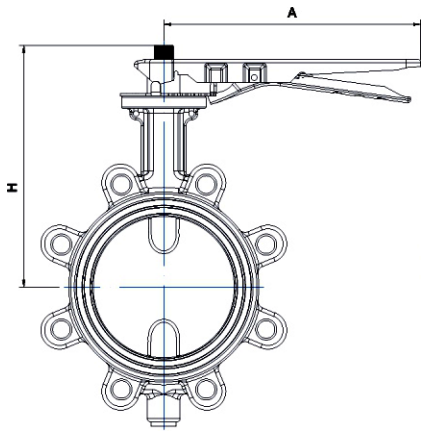
*** 8 holes on the F25 pattern**

- Larger sizes available through 120", consult factory
- **Pressure Ratings:**
  1.5"–12" 200 psi; **14"–24"** 175 psi
- **Lug Body for Dead End Service**
  1.5"–6" 150 psi; 8"–24" 125 psi
- **Higher Pressure Option:**
  280 WOG, **Sizes 2"–6"**; 230 or 280 WOG, Sizes 8"–24" with disc modification & 17-4PH stem
- **Vaccum Service up to 28" Hg**
- **Max-Seal valves are designed for bubble tight shutoff in either direction of flow. Each valve is factory tested to 110% of their pressure rating.**
- Blowout-proof stem design
- A heavy duty butterfly valve, designed for ANSI Class 125/150 flanges. These valves comply with MSS-SP25, MSS-SP67 & the requirements of MIL-V-22133C (ship) Type 1, Class A-D
- Valve sizes up to 16" meet API 609; Sizes 18"–24" meet API 609 also with fine thread drilling.
- Positive Valve Position: When the handle is perpendicular to the pipe, the valve is shut. When the handle is parallel to the pipe, the valve is fully open. The orientation of disc is indicated by a groove at the shaft end that is in line with the disc.

Max-Seal ISO Series offers longer service life, greater reliability, ease of parts replacement, and interchangeability of components.

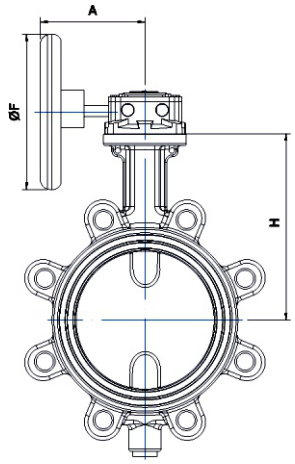
Tech Bulletin 492-22

Handle and Gear Operator Dimensions



ISO Series

Die Cast Aluminum Handles



Level Lock 10 Position Type Handle

Size	2"	2.5"	3"	4"	5"	6"	8"	10"	12"
H	6.44	6.75	6.91	8.05	8.68	9.59	10.57	12.32	13.31
A	8.66	8.66	8.66	8.66	10.24	10.24	10.24	14.57	14.57

Gear Operator

Size	2"	2.5"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
H	5.98	6.30	6.46	7.64	8.15	9.06	10.47	11.97	12.95	14.72	16.26	17.60	18.70	21.57
F	3.94	3.94	3.94	4.72	4.72	4.72	11.81	11.81	11.81	11.81	15.75	19.69	19.69	19.69
A	3.90	3.90	3.90	4.53	4.53	4.53	8.66	8.66	8.66	8.15	10.91	14.06	14.06	15.04

Valve Flow Coefficients & Technical Data

Max-Seal Valves are Ideally Suited for Actuated Applications

Seat Temperature Range

Material	Temperature Range
EPDM-H	5°–245°
NBR	15°–175°
Natural Rubber	-20°–175°
Hypalon	-4°–165°
Silicone	-40°–335°
FPM	-4°–335°
PTFE	-40°–355°

Actuator Mounting

Max-Seal offers a broad line of automation systems for precise proportioning of on-off control in either pneumatic or electrically powered units.
Cast mounting flange conforms with ISO-5211. Many actuator sizes can be directly mounted to valve top flange without the need of a bracket.

Max-Seal Models 51-I, 52-I Cv Value

Size		Angle of Opening								
Inch	mm	10°	20°	30°	40°	50°	60°	70°	80°	90°
1½	40	1	1	5	14	20	37	53	62	72
2	50	1	1	6	16	34	55	83	114	125
2½	65	1	2	13	32	58	90	142	200	249
3	80	4	7	33	36	106	163	249	351	471
4	100	6	16	67	126	204	306	471	693	932
5	125	7	32	98	182	289	449	728	1113	1446
6	150	8	60	151	261	424	668	1140	1791	2251
8	200	26	133	267	468	746	1188	2048	3361	4066
10	250	39	200	390	740	1132	1786	3093	5138	6714
12	300	57	292	572	1079	1652	2604	4510	7750	10302
14	350	138	351	736	1320	2238	3596	5792	10368	12029
16	400	179	459	962	1725	2925	4696	7564	13541	15712
18	450	228	581	1217	2183	3699	5944	9581	17139	19887
20	500	280	718	1503	2695	4566	7337	11819	21158	24551
24	600	403	1033	2162	3881	6576	10566	17020	30469	35354

ISO Series Torque Values

These wet seating valve torques are figured for wet services defined as lubricated with clean nonabrasive line media.

Size		Pressure Differential				
Inch	mm	0 psi	50 psi	100 psi	150 psi	200 psi
1½	04	97	97	106	115	124
2	50	106	106	115	124	133
2½	65	159	177	186	195	204
3	80	212	230	248	265	283
4	100	327	372	389	407	425
5	125	522	602	628	655	681
6	150	841	841	885	929	973
8	200	1239	1268	1332	1416	
10	250	2212	2301	2345	2748	
12	300	2566	2655	2743	2848	
14	350	5398	5929	6991	7611	
16	350	6637	7788	8407	10177	
18	450	7611	8407	10177	11504	
20	500	19956	20885	21770	22655	
24	600	27434	30000	32301	35398	

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