

RESILIENT SEATED BUTTERFLY VALVES

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THE INTEGRATED SOLUTION FOR YOUR FLOW CONTROL NEEDS

Combining expertise from eight key infrastructure brands in the McWane family of companies, McWane Plant & Industrial (MPI) provides a singular access point for the essential products and services required for any flow control project.

WHY MPI?

We're a new kind of company formed on the basis of three simple goals:

- To provide a primary source for best-in-class products from time-tested brands
- Offer veteran specialists as resources for any flow control project of any scale
- Increase the ease and efficiency of the planning and completion of our clients' projects

Our dedicated team of dozens of experienced specialists work cooperatively with industry partners to give each project the attention it

deserves, providing unprecedented levels of communication, access and collaboration. Our support teams work within dedicated service regions allowing our experts to apply regionally specific knowledge, including state regulations, codes and environmental specifications. Our nationally certified Associate Design-Build Professionals are a valuable asset to Design-Build projects.

The extended manufacturing capabilities of MPI mean your precise requirements are closer in reach and delivered faster with less legwork from you. We offer products that conform to rigorous industry standards and can work with your team to customize and fulfill unique requests. As part of our commitment to American workers and industries, we're proud of our ability to provide products from domestic facilities and to meet all domestic funding requirements.

**MPI – One Smart Source,
Ready to Work For You.**

DESIGN FEATURES

APPLICATIONS

The Tri-Seal Resilient Seated Butterfly Valves are designed to handle a wide variety of applications such as water treatment, pulp and paper, power, automotive, mining, ethanol, oil, gas and other general service applications where a resilient seated butterfly valve is required.

TOP FLANGE

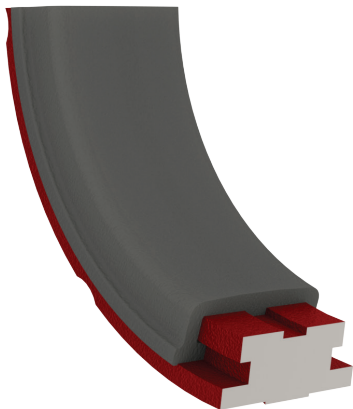
Conforms to industry standard ISO 5211, which allows the flexibility to mount most actuators in the market.

BLOWOUT PROOF STEM

Tri-Seal offers a reliable shaft retention system that meets the blowout proof shaft requirements of API 609.

SLIM DISC DESIGN

The inclusion of dual upper and lower shafts in the design of the valve has resulted in a slim profile disk. This slim disk profile maximizes the valve's CVs (coefficients of flow capacity), which enables more fluid to pass through the valve and eliminates the need for external disc-to-shaft pin connections. This feature is particularly beneficial in applications where high flow rates are required.



TONGUE & GROOVE SEAT

Utilizes 3 tongue and groove connection points to provide a stable, secure connection even under high pressure dead-end or full vacuum service. Aside from locking the seat in place, the center tongue also allows rubber to flex into the center body groove when shutting the valve, which reduces the operating torque.

GENERAL

Lug valves shall be designed for installation between ANSI 125/150 flanges. Wafer valves shall be designed for installation between ANSI 125/150, PN 10, and PN 16 flanges. All valves shall be capable of bi-directional, end of line, bubble tight service to rated pressure. Valves are also rated to full vacuum service. Design Standards: API 609 category A.

PRESSURE/TEMPERATURE RATING

2" - 36" - 230psi to fit between ANSI 125/150 flanges. -20°F - +400°F

BODY

Valve body shall be a 1 piece ductile iron ASTM A-536 (65-45-12) construction with a laying length conforming to the latest revision of ISO 5752 and a flange connection B16.1/B16.5.

DISC

Valve disc shall be CF8M stainless steel. Disc shall be designed to accommodate an upper and lower shaft with a thin center profile giving higher CV values combined with strength.

SHAFT

Valve shaft shall be constructed of heat treated 431 stainless steel. Valve shall be designed to accommodate (2) shafts (1 upper and 1 lower). The upper shaft shall have a positive engagement in the disc utilizing an internal square drive and shall be retained by the body top cap and end cap

SEAT

Seat shall be EPDM, Buna-N or Viton™. Seat design shall consist of 3 tongues (2 located on the side walls and 1 located in the center bore) that engage into 3 grooves in the body. These 3 tongue and groove connection points prevent seat movement in a radial and axial direction. Seats shall be field replaceable.



SHAFT SEALS

Upper shaft seal shall be self-adjusting X-ring type and shall be suitable for pressure or vacuum service. Packing shall be located above the bushing and shall create a positive seal against the top cap. Bottom end cap contains a captive O-ring creating a positive seal against external leakage.

BUSHINGS

Valve shall consist of (2) full length 316 SS/PTFE lined bushings (upper and lower) offering superior protection against friction, corrosion, and impacts providing protection against shaft side loading.

TESTING

All valves shall be leak tested in the factory at their rated pressure per API 598.

FLOW COEFFICIENT CV

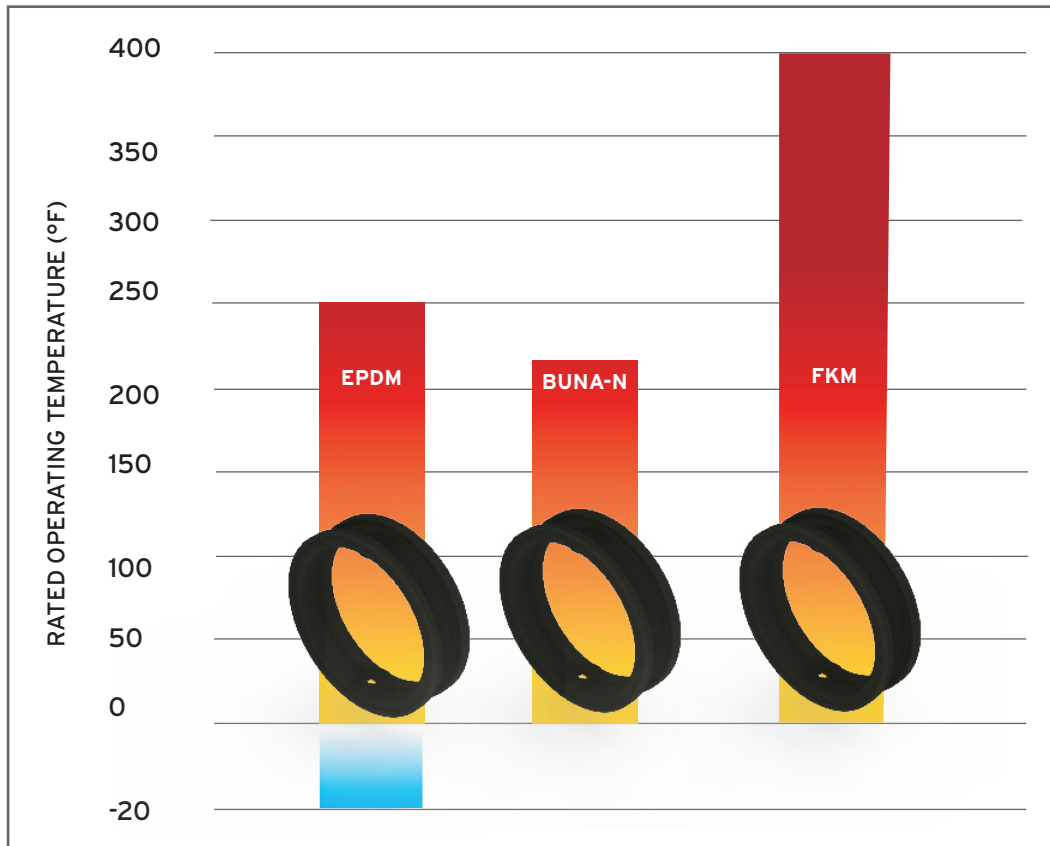
OPENING ANGLE									
SIZE	10°	20°	30°	40°	50°	60°	70°	80°	90°
2	0.1	5	12	24	45	64	90	125	135
2.5	0.2	8	20	37	65	98	144	204	220
3	0.3	12	22	39	70	116	183	275	302
4	0.5	17	36	78	139	230	364	546	600
5	0.8	29	61	133	237	392	620	930	1022
6	2	45	95	205	366	605	958	1437	1579
8	3	89	188	408	727	1202	1903	2854	3136
10	4	151	320	694	1237	2047	3240	4859	5340
12	5	234	495	1072	1911	3162	5005	7507	8250
14	6	338	715	1549	2761	4568	7230	10844	11917
16	8	464	983	2130	3797	6282	9942	14913	16388
18	11	615	1302	2822	5028	8320	13168	19752	21705
20	14	791	1674	3628	6465	10698	16931	25396	27908
24	22	1222	2587	5605	9989	16528	26157	39236	43116
28	36	1813	3639	6636	10000	14949	22769	34898	49500
30	41	2052	4118	7508	11850	17739	27018	41409	58736
32	45	2387	4791	8736	13788	20613	31395	48117	68250
36	60	3021	6063	11055	17449	26086	39731	60895	86375

CV = Flow (gpm) of water at 1psi pressure drop

OPERATING TORQUE

API 609 Resilient Seat Concentric Class 150 Butterfly Valve Torque Table						
SIZE	Tongue and Groove Soft Seat (ibf.in)					
	EPDM		NBR		FKM	
	145	230	145	230	145	230
2	80	89	89	98	107	116
2.5	133	151	151	169	178	195
3	186	231	204	257	239	301
4	328	381	363	416	425	496
5	505	576	558	638	655	753
6	832	912	912	1001	1080	1187
8	1514	1824	1664	2010	1965	2373
10	2337	2647	2567	2912	3036	3444
12	3559	3691	3913	4063	4630	4798
14	4594	6922	5054	7612	5975	9002
16	6701	10834	7373	11914	8710	14082
18	9329	13392	10259	14729	12126	17410
20	12569	16632	13826	18296	16339	21623
24	19260	29943	21190	32935	25040	38927
28	27987	37015	30784	40715	36387	48123
30	35210	47999	38732	52797	45778	62400
32	42432	58984	46672	64878	55160	76677
36	57559	73428	63312	80775	74827	95459

NOTE: 1. Torque above are measured with water media under above-listed pressure.
2. Torque excluding 30% safety factor



EPDM -20°F to 250°F (-29°C to 121°C)

EPDM is the abbreviation for Ethylene Propylene Diene Monomer. This material can sometimes be referred to as ECD, EPT or EPR, and are all the same material. EPDM has excellent resistance to abrasion, good resistance to tearing and higher temperature capabilities than Buna-N seats.

EPDM is an economical seat material that is generally recommended for a wide array of applications such as alcohols, salts, alkaline solutions, beverages, bleach, inorganic acids (diluted), and water (cooling, brackish, brine). EPDM is not suitable for hydrocarbons, petroleum based oils and turpentine. Tri-Seal seats can be certified to NSF-61.

BUNA-N (Black or White) 0°F to 212°F (-18°C to 100°C)

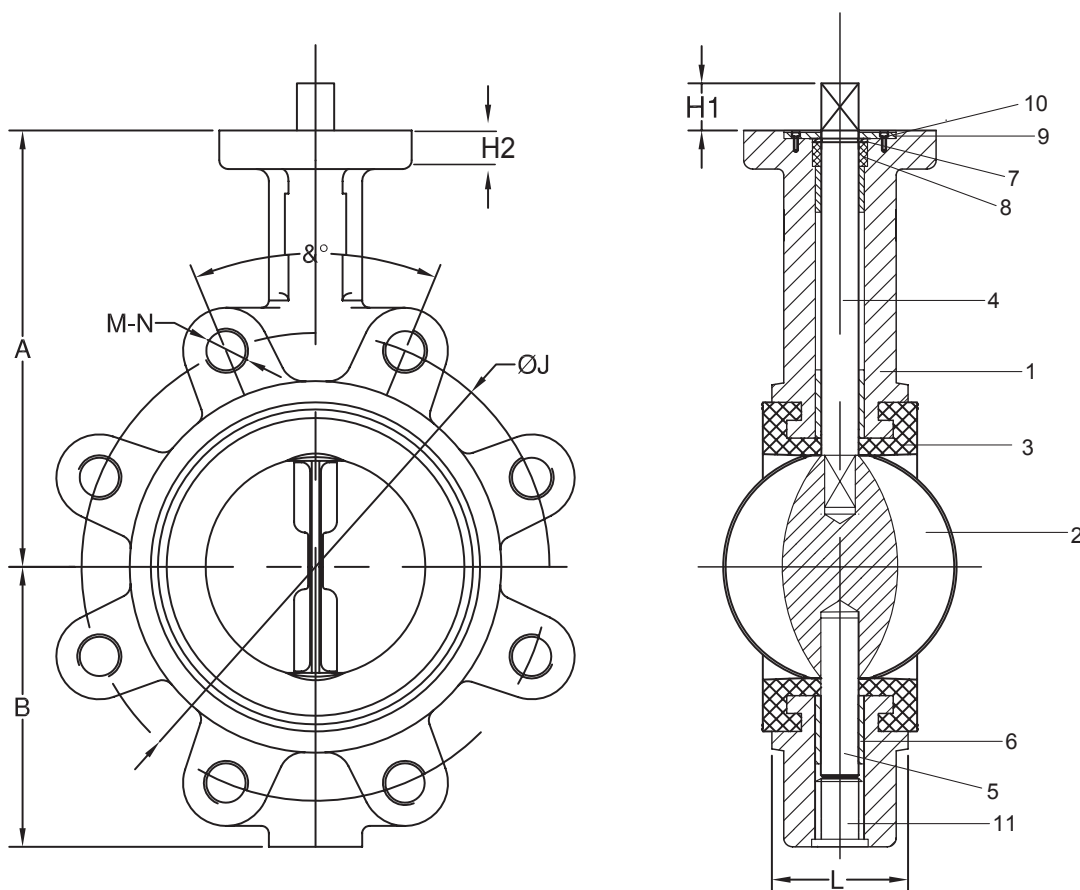
BUNA-N is the commonly used name for nitrile synthetic rubber, and is sometimes referred to as

NBR or Nitrile. BUNA-N has good abrasion resistance and fair tear resistance. Particularly suited for hydrocarbon service, but generally can handle medias such as alcohols, alkaline salets, butane, fuel oil, L-P gases, petroleum oils and greases and propane.

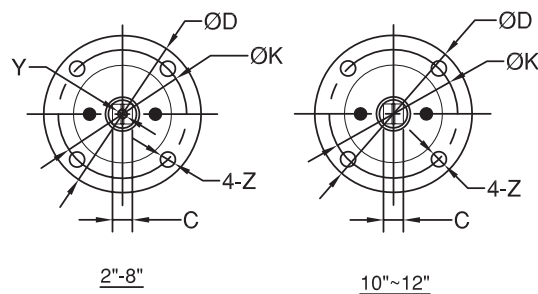
FKM 0°F to 400°F (-18°C to 204°C)

FKM is a Fluorinated Hydrocarbon Elastomers (Fluoroelastomers) similar to Viton™ (DuPont™). FKM has fair abrasion and tearing resistance, but improved acid, oil, and temperature resistance over other seat materials. Generally FKM is recommended for alcohols, some hydrocarbons, mineral acids and phosphoric acid. FKM is not suitable for hot water applications.

DIMENSIONAL DATA - 2"-12" 150# LUG PATTERN



NO.	PART NAME	MATERIAL	NO.
1	BODY	DUCTILE IRON	1
2	DISC	CF8M	1
3	SEAT	EPDM/NBR/FKM	1
4	UPPER SHAFT	SS 431	1
5	LOWER SHAFT	SS 431	1
6	BUSHING	SS316+PTFE	3
7	U-RING	SS304	1
8	X-RING	NBR	1
9	LOCKING PAD	SS304	1
10	SCREW	SS304	2
11	PLUG	A105 Zn Planting	1

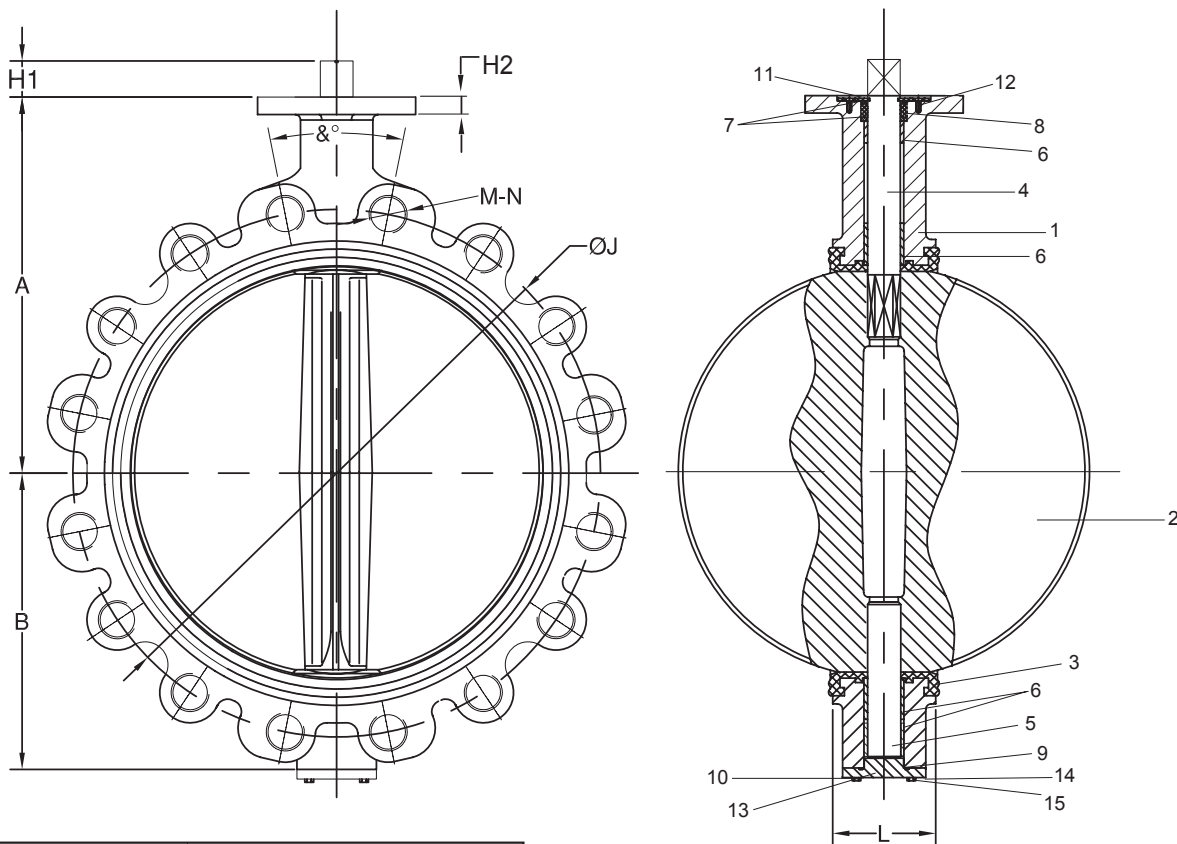


TOP FLANGE

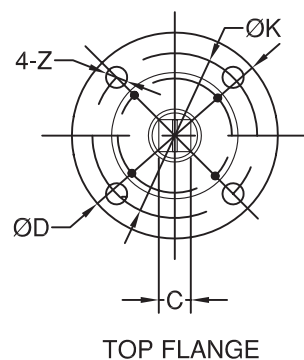
DIMENSIONS (in)

SIZE	A	B	L	Y	C	ISO 5211	ØD	ØK	H1	Z-4	ØJ	M	N	8°	H2
2"	5.512	3.150	1.693	M5	0.433	F07	3.543	2.756	1.102	0.394	4.752	4	5/8" - 11UNC-2B	90	0.551
2.5"	5.906	3.504	1.811	M5	0.433	F07	3.543	2.756	1.102	0.394	5.500	4	5/8" - 11UNC-2B	90	0.551
3"	6.220	3.740	1.811	M5	0.433	F07	3.543	2.756	1.102	0.394	6.000	4	5/8" - 11UNC-2B	90	0.551
4"	6.929	4.488	2.047	M5	0.433	F07	3.543	2.756	1.102	0.394	7.500	8	5/8" - 11UNC-2B	45	0.591
5"	7.480	5.000	2.205	M5	0.551	F07	3.543	2.756	1.102	0.394	8.500	8	3/4" - 10UNC-2B	45	0.591
6"	8.346	5.472	2.205	M5	0.551	F07	3.543	2.756	1.102	0.394	9.500	8	3/4" - 10UNC-2B	45	0.591
8"	9.252	6.890	2.362	M8	0.669	F12	5.906	4.921	1.378	0.551	11.752	8	3/4" - 10UNC-2B	45	0.630
10"	10.433	7.992	2.677	/	0.866	F12	5.906	4.921	1.378	0.551	14.252	12	7/8" - 9UNC-2B	30	0.630
12in	12.008	9.528	3.071	/	0.866	F12	5.906	4.921	1.378	0.551	17.000	12	7/8" - 9UNC-2B	30	0.709

DIMENSIONAL DATA - 14"-24" 150# LUG PATTERN

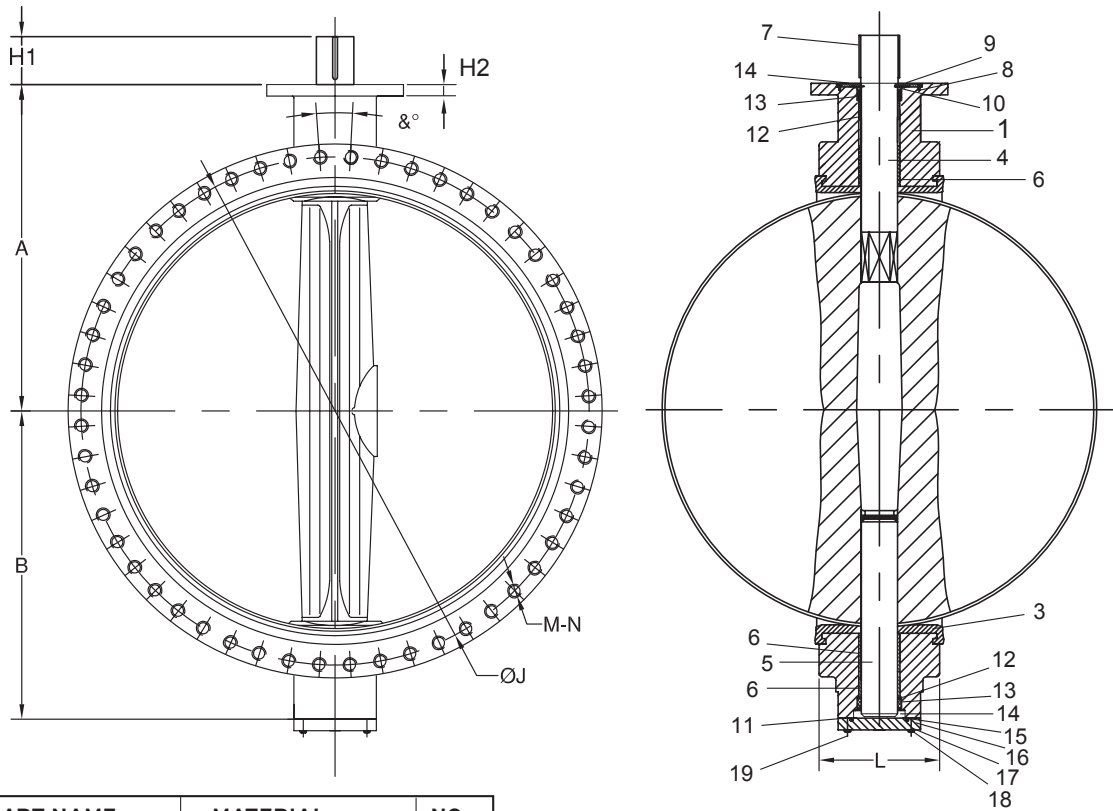


NO.	PART NAME	MATERIAL	NO.
1	BODY	DUCTILE IRON	1
2	DISC	CF8M	1
3	SEAT	EPDM/NBR/FKM	1
4	UPPER SHAFT	SS 431	1
5	LOWER SHAFT	SS 431	1
6	BUSHING	SS316+PTFE	4
7	PACKING PAD	PTFE	2
8	PACKING	NBR	1
9	O-RING	NBR	1
10	SCREW	SS304	4
11	LOCKING PAD	SS304	1
12	SCREW	SS304	4
13	END COVER	DUCTILE IRON	1
14	WASHER	SS304	4
15	SPRING WASHER	SS304	4
16	PLUG (14" ONLY)	A105 Zn Planting	1

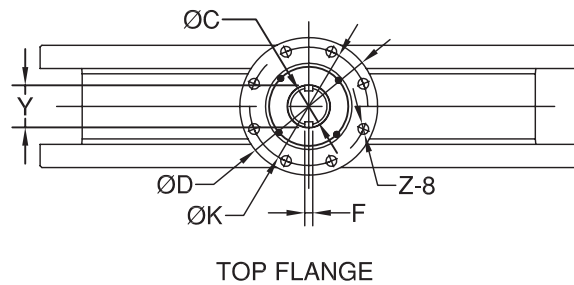


DIMENSIONS (in)														
SIZE	A	B	L	C	ISO 5211	ØD	ØK	H1	Z-4	ØJ	M	N	&°	H2
14	14.488	10.512	3.071	0.866	F12	5.096	4.921	1.378	0.551	18.752	12	1" - UNC-2B	30	0.551
16	15.748	12.165	4.016	1.063	F14	6.890	5.512	1.417	0.709	21.252	16	1" - UNC-2B	22.5	0.551
18	16.614	13.386	4.488	1.063	F14	6.890	5.512	1.417	0.709	22.752	16	1-1/8" - 11UNC-2B	22.5	0.551
20	17.913	14.370	5.000	1.417	F16	8.268	6.496	1.417	0.866	25.000	20	1-1/8" - 11UNC-2B	18	0.591
24	22.244	17.795	6.063	1.417	F16	8.268	6.496	1.811	0.866	29.500	20	1-1/4" - 10UNC-2B	18	0.591

DIMENSIONAL DATA - 28"-36" 150# LUG PATTERN

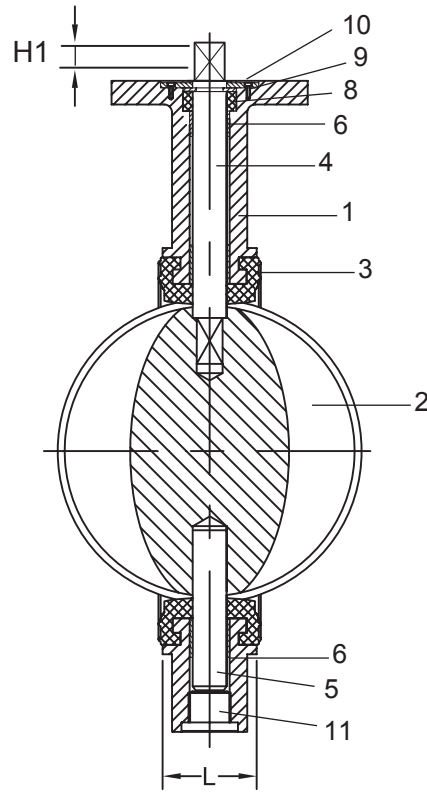
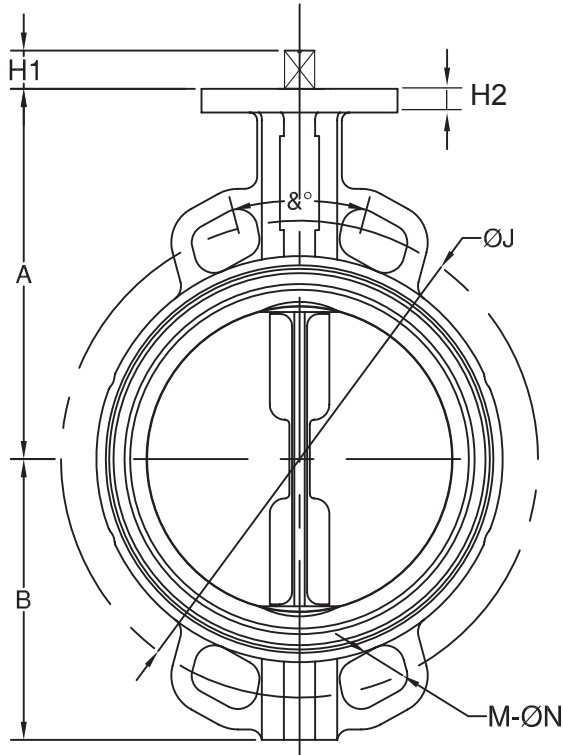


NO.	PART NAME	MATERIAL	NO.
1	BODY	DUCTILE IRON	1
2	DISC	CF8M	1
3	SEAT	EPDM / NBR / FKM	1
4	UPPER SHAFT	SS 431	1
5	LOWER SHAFT	SS 431	1
6	BUSHING	SS316+PTFE	4
7	KEY	ASTM 1045	2
8	BOLTS	SS304	4
9	GASKET	ASTM A36	1
10	LOCKING PAD	ASTM A36	1
11	BOLTS	SS304	4
12	PACKING PAD	PTFE	2
13	PACKING	NBR	1
14	PACKING GLAND	ASTM A36	2
15	O-RING	NBR	1
16	END COVER	DUCTILE IRON	1
17	WASHER	SS304	4
18	SPRING WASHER	SS304	4
19	SCREW	SS304	4

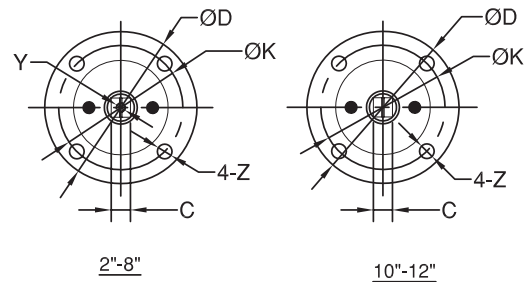


DIMENSIONS (in)																
SIZE	A	B	L	ØC	F	ISO 5211	ØD	ØK	H1	Z-8	ØJ	Y	N	&°	M	H2
28	24.567	20.472	6.496	2.559	0.709	F25	110811	10.000	4.331	0.709	34.000	2.905	1-1/4" -BUN-2B	12.85	28	1.378
30	25.591	20.079	6.496	2.559	0.709	F25	11.811	10.000	4.331	0.709	36.000	2.905	1-1/4" -BUN-2B	12.85	28	1.378
32	26.457	22.835	7.480	2.559	0.709	F25	11.811	10.000	4.331	0.709	38.500	2.905	1-1/2" -BUN-2B	12.85	28	1.378
36	28.346	25.039	7.874	2.952	0.787	F30	13.780	11.72	5.118	0.866	42.748	3.338	1-1/2" -BUN-2B	11.25	32	1.772

DIMENSIONAL DATA - 2"-12" 150# WAFER PATTERN



NO.	PART NAME	MATERIAL	NO.
1	BODY	DUCTILE IRON	1
2	DISC	CF8M	1
3	SEAT	EPDM/NBR/FKM	1
4	UPPER SHAFT	SS 431	1
5	LOWER SHAFT	SS 431	1
6	BUSHING	SS316+PTFE	3
7	U-RING	SS304	1
8	X-RING	NBR	1
9	LOCKING PAD	SS304	1
10	SCREW	SS304	2
11	PLUG	A105 Zn Planting	1

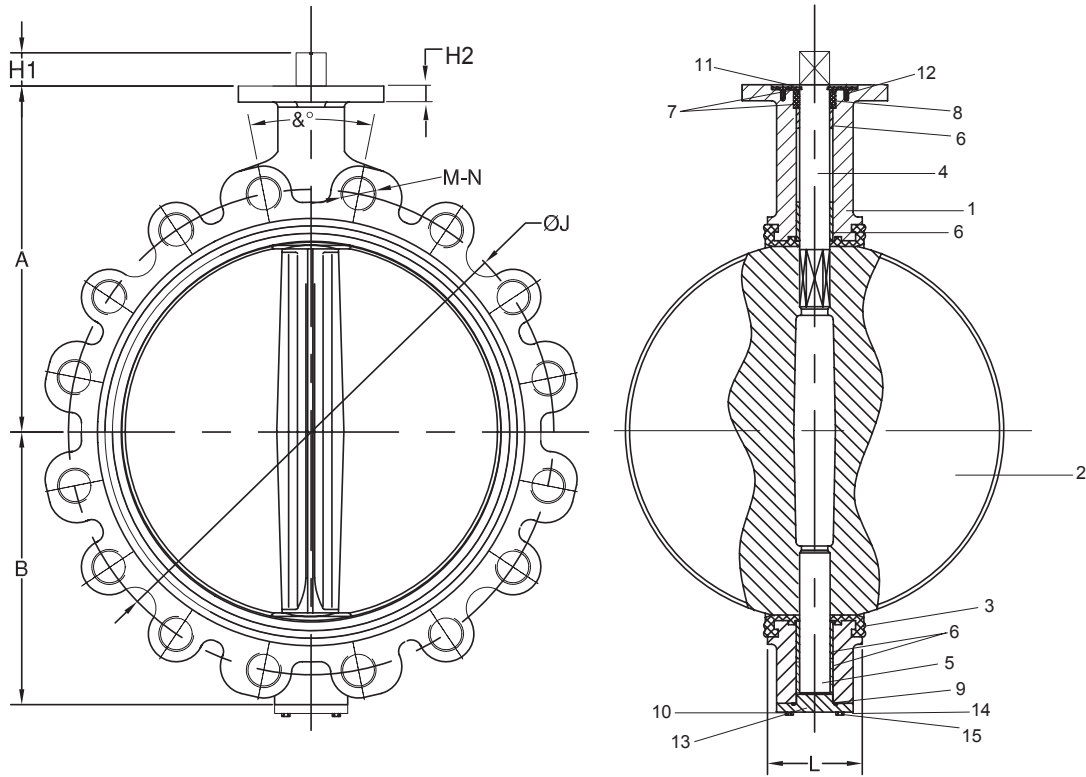


TOP FLANGE

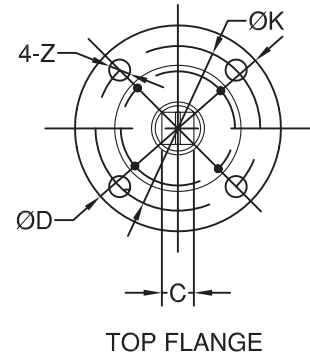
DIMENSIONS (in)

SIZE	A	B	L	Y	C	ISO 5211	ØD	ØK	H1	Z-4	M	CLASS 150			PN10/PN16			
												ØJ	ØN	ξ°	ØJ	ØN	ξ°	H2
2"	5.512	3.150	1.693	M5	0.433	F07	3.543	2.756	1.102	0.394	4	4.752	0.748	90	4.921	0.748	90	0.551
2-1/2"	5.906	3.504	1.811	M5	0.433	F07	3.543	2.756	1.102	0.394	4	5.500	0.748	90	5.709	0.748	90	0.551
3"	6.220	3.740	1.811	M5	0.433	F07	3.543	2.756	1.102	0.394	4	6.000	0.748	90	6.299	0.748	45	0.551
4"	6.929	4.488	2.047	M5	0.433	F07	3.543	2.756	1.102	0.394	4	7.500	0.748	45	7.087	0.748	45	0.591
5"	7.480	5.000	2.205	M5	0.551	F07	3.543	2.756	1.102	0.394	4	8.500	0.866	45	8.268	0.748	45	0.591
6"	8.346	5.472	2.205	M5	0.551	F07	3.543	2.756	1.102	0.394	4	9.500	0.866	45	9.449	0.906	45	0.591
8"	9.291	6.890	2.362	M8	0.669	F12	5.906	4.921	1.378	0.551	4	11.752	0.866	45	11.614	0.906	45/30	0.630
10"	10.433	7.992	2.677		0.866	F12	5.906	4.921	1.378	0.551	4	14.252	1.024	30	13.780/13.976	0.906/1.002	30	0.630
12"	12.008	9.528	3.071		0.866	F12	5.906	4.921	1.378	0.551	4	17.000	1.024	30	15.748/16.142	0.906/1.002	30	0.709

DIMENSIONAL DATA - 14"-24" 150# WAFER PATTERN

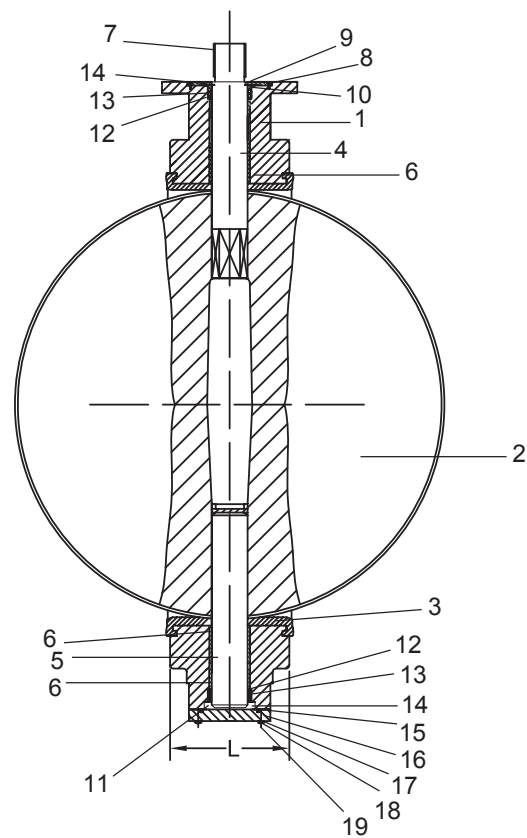
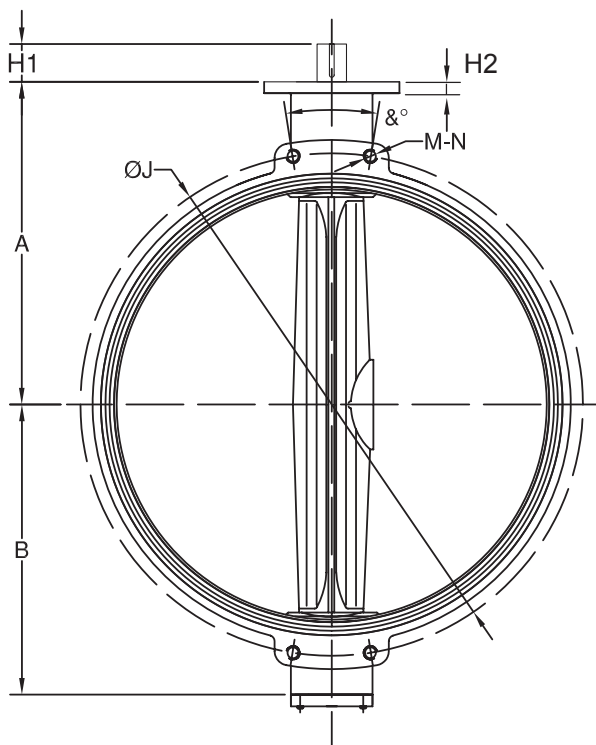


NO.	PART NAME	MATERIAL	NO.
1	BODY	DUCTILE IRON	1
2	DISC	CF8M	1
3	SEAT	EPDM/NBR/FKM	1
4	UPPER SHAFT	SS 431	1
5	LOWER SHAFT	SS 431	1
6	BUSHING	SS316+PTFE	4
7	PACKING PAD	PTFE	2
8	PACKING	NBR	1
9	O-RING	NBR	1
10	SCREW	SS304	4
11	LOCKING PAD	SS304	1
12	SCREW	SS304	4
13	END COVER	DUCTILE IRON	1
14	WASHER	SS304	4
15	SPRING WASHER	SS304	4
16	PLUG (14" ONLY)	A105 Zn Planting	1

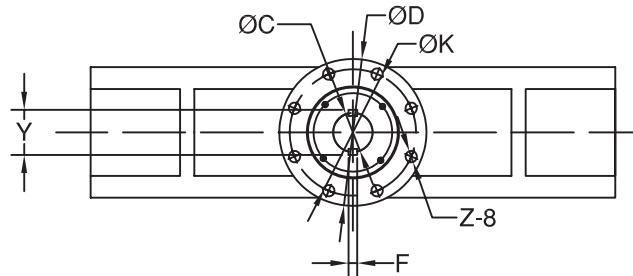


DIMENSIONS (in)

SIZE	A	B	L	C	ISO 5211	ØD	ØK	H1	Z-4	M	CLASS 150			PN10/PN16			
											ØJ	ØN	8°	ØJ	ØN	8°	H2
14"	14.488	10.630	3.071	0.866	F12	5.096	4.921	1.378	0.551	4	18.752	1.142	22.5	18.504	1.102	22.5	0.748
16"	15.748	12.205	4.016	1.063	F14	6.890	5.512	1.417	0.709	4	21.252	1.142	22.5	20.669	1.220	22.5	0.984
18"	16.614	13.386	4.488	1.063	F14	6.890	5.512	1.417	0.709	4	22.752	1.260	18	23.031	1.220	18	0.984
20"	17.402	14.370	5.000	1.417	F16	8.268	6.496	1.417	0.866	4	25.000	1.260	18	25.591	1.339	18	1.063
24"	22.244	17.795	6.063	1.417	F16	8.268	6.496	1.811	0.866	4	29.500	1.378	18	30.315	1.457	18	1.260



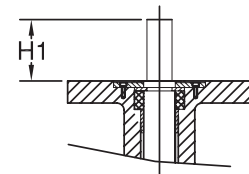
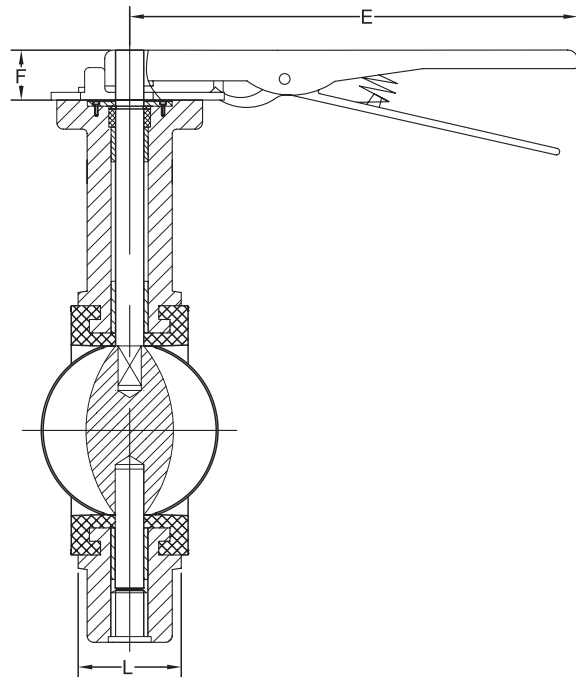
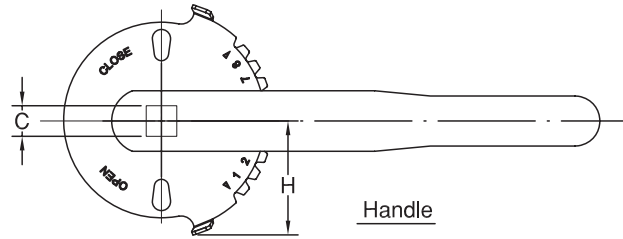
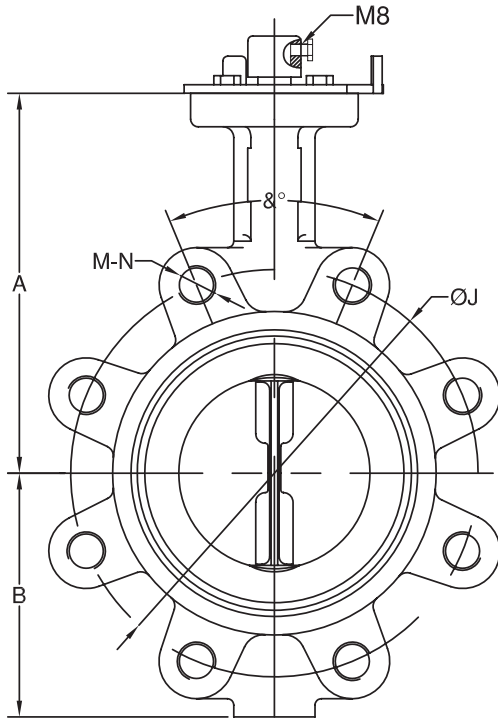
NO.	PART NAME	MATERIAL	NO.
1	BODY	DUCTILE IRON	1
2	DISC	CF8M	1
3	SEAT	EPDM / NBR / FKM	1
4	UPPER SHAFT	SS 431	1
5	LOWER SHAFT	SS 431	1
6	BUSHING	SS316+PTFE	4
7	KEY	ASTM 1045	2
8	BOLTS	SS304	4
9	GASKET	ASTM A36	1
10	LOCKING PAD	ASTM A36	1
11	BOLTS	SS304	4
12	PACKING PAD	PTFE	2
13	PACKING	NBR	1
14	PACKING GLAND	ASTM A36	2
15	O-RING	NBR	1
16	END COVER	DUCTILE IRON	1
17	WASHER	SS304	4
18	SPRING WASHER	SS304	4
19	SCREW	SS304	4



TOP FLANGE

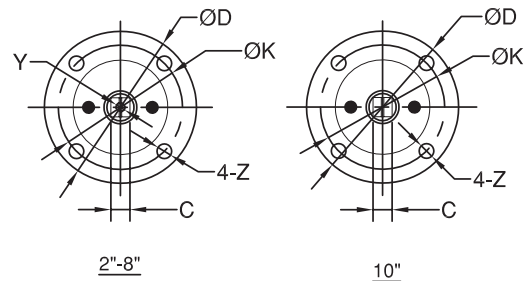
DIMENSIONS (in)

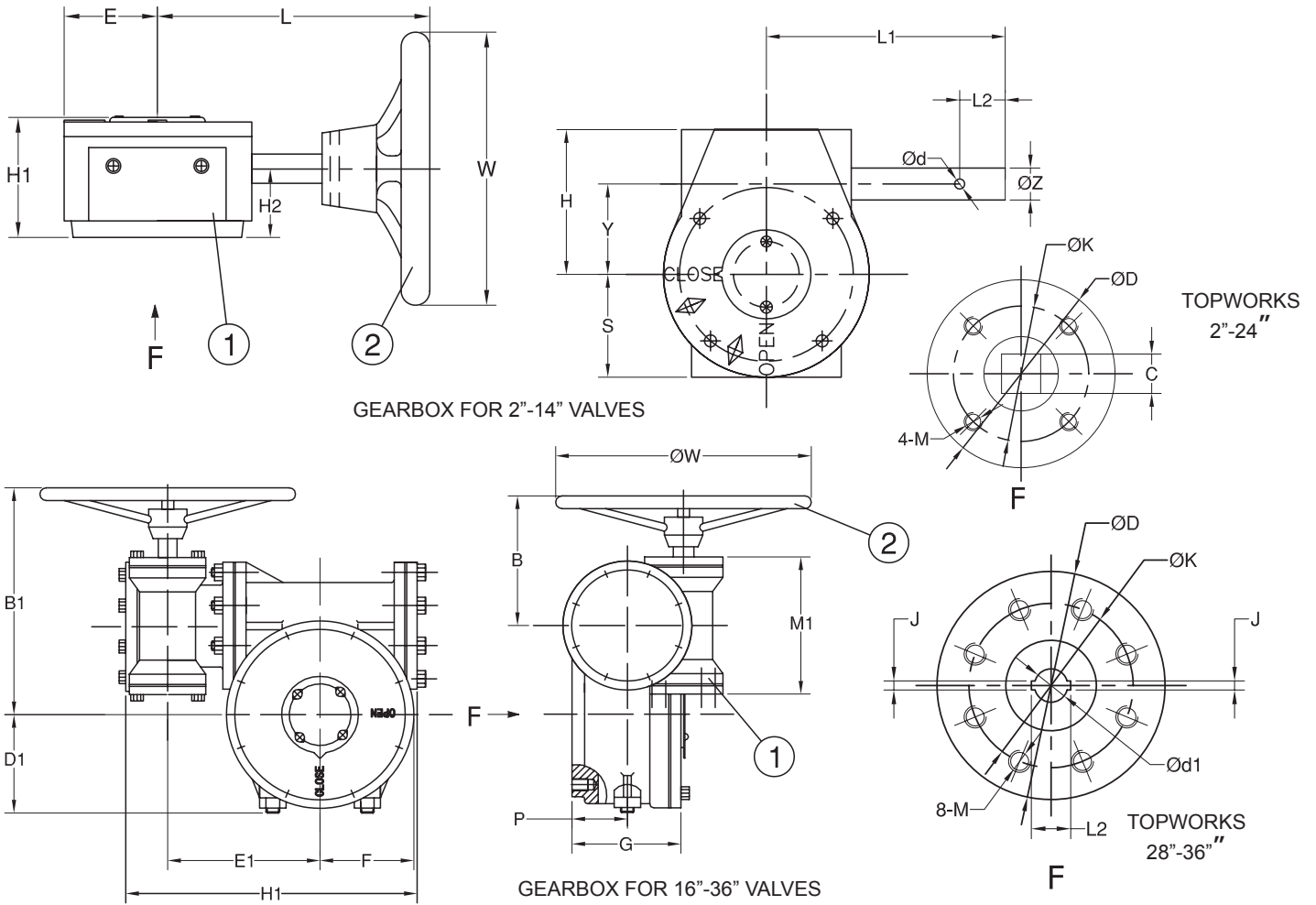
SIZE	A	B	L	ØC	F	ISO 5211	ØD	ØK	H1	Z-4	ØJ	Y	N	&°	M	H2
28"	24.567	20.079	6.496	2.559	0.709	F25	11.811	10.000	4.331	0.709	34.000	2.905	1-1/4"-BUN-2B	12.85	4	1.378
30"	25.591	20.079	6.496	2.559	0.709	F25	11.811	10.000	4.331	0.709	36.000	2.905	1-1/4"-BUN-2B	12.85	4	1.378
32"	26.457	22.835	7.480	2.559	0.709	F25	11.811	10.000	4.331	0.709	38.500	2.905	1-1/2"-BUN-2B	12.85	4	1.378
36"	28.346	25.039	7.874	2.952	0.787	F30	13.780	11.732	5.118	0.866	42.748	3.338	1-1/2"-BUN-2B	11.25	4	1.772



Bare Shaft

Hand Lever Actuator			
Valve Size	Dimensions (inch)		
	E	F	H
2"-16"	10.236	1.102	2.457
8"-10"	14.173	1.378	3.468





DIMENSIONS (in)												
SIZE	H	H1	H2	L	E	Y	S	W	L2	ØD	L1	Øz
2"	2.768	2.480	1.260	6.083	2.067	1.764	2.114	5.748	0.866	0.197	4.587	0.630
2-1/2"	2.768	2.480	1.260	6.083	2.067	1.764	2.114	5.748	0.866	0.197	4.587	0.630
3"	2.768	2.480	1.260	6.083	2.067	1.764	2.114	5.748	0.866	0.197	4.587	0.630
4"	2.768	2.480	1.260	6.083	2.067	1.764	2.114	5.748	0.866	0.197	4.587	0.630
5"	2.768	2.480	1.260	6.083	2.067	1.764	2.114	5.748	0.866	0.197	4.587	0.630
6"	2.768	2.480	1.260	6.083	2.067	1.764	2.114	5.748	0.866	0.197	4.587	0.630
8"	3.760	3.091	1.496	2.795	2.795	2.402	2.815	11.614	1.181	0.236	7.638	0.748
10"	3.760	3.091	1.496	2.795	2.795	2.402	2.815	11.614	1.181	0.236	7.638	0.748
12"	4.291	3.150	1.496	3.071	3.071	3.327	3.110	11.614	1.181	0.236	7.638	0.748
14"	4.291	3.150	1.496	3.071	3.071	3.327	3.110	11.614	1.181	0.236	7.638	0.748

DIMENSIONS (in)										
SIZE	W	B	G	H1	B1	P	D1	E1	F	M1
16"	11.811	6.024	4.134	12.402	9.724	2.087	4.725	6.496	4.055	5.512
18"	11.811	6.024	4.134	12.402	9.724	2.087	4.725	6.496	4.055	5.512
20"	11.811	6.024	4.134	12.402	9.724	2.087	4.725	6.496	4.055	5.512
24"	11.811	6.890	4.921	14.567	11.811	2.441	5.512	7.368	5.157	6.811
28"	17.717	8.268	5.354	16.929	13.780	2.560	6.299	8.780	5.749	7.677
30"	17.717	8.268	5.354	16.929	13.780	2.560	6.299	8.780	5.749	7.677
32"	17.717	8.268	5.354	16.929	13.780	2.560	6.299	8.780	5.749	7.677
36"	17.717	8.268	5.354	18.307	14.666	3.426	6.693	9.371	6.693	7.677

1	2	3	4	5	6	7	8
GSTL	1	080	9	9	9	9	7

EXAMPLE:

The above example is for a General Service Resilient Seated BFV - Lug pattern (GSTL), ASME Class 150 (1), 8" size (080), Ductile Iron Body (9), CF8M Disc (9), 431 SS Shaft (9), EPDM Seat (9) and a gear operator with hand wheel (7)

Sign 1	Model
GSTL	Lug
GSTW	Wafer

Sign 2	Class
1	Class 150

Sign 3	Size
020	2"
025	2.5"
030	3"
040	4"
050	5"
060	6"
080	8"
100	10"
120	12"
140	14"
160	16"
180	18"
200	20"
240	24"
300	30"
360	36"

Sign 4	Body
9	Ductile Iron

Sign 5	Disc
9	CF8M

Sign 6	Shaft
9	SS 431

Sign 7	Seat
9	EPDM
8	NBR
7	VITON

Sign 8	Operator
9	Bare Stem
8	Lever Kit
7	Gear w/ Handwheel
6	IP68 Gear (Buried Service)



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