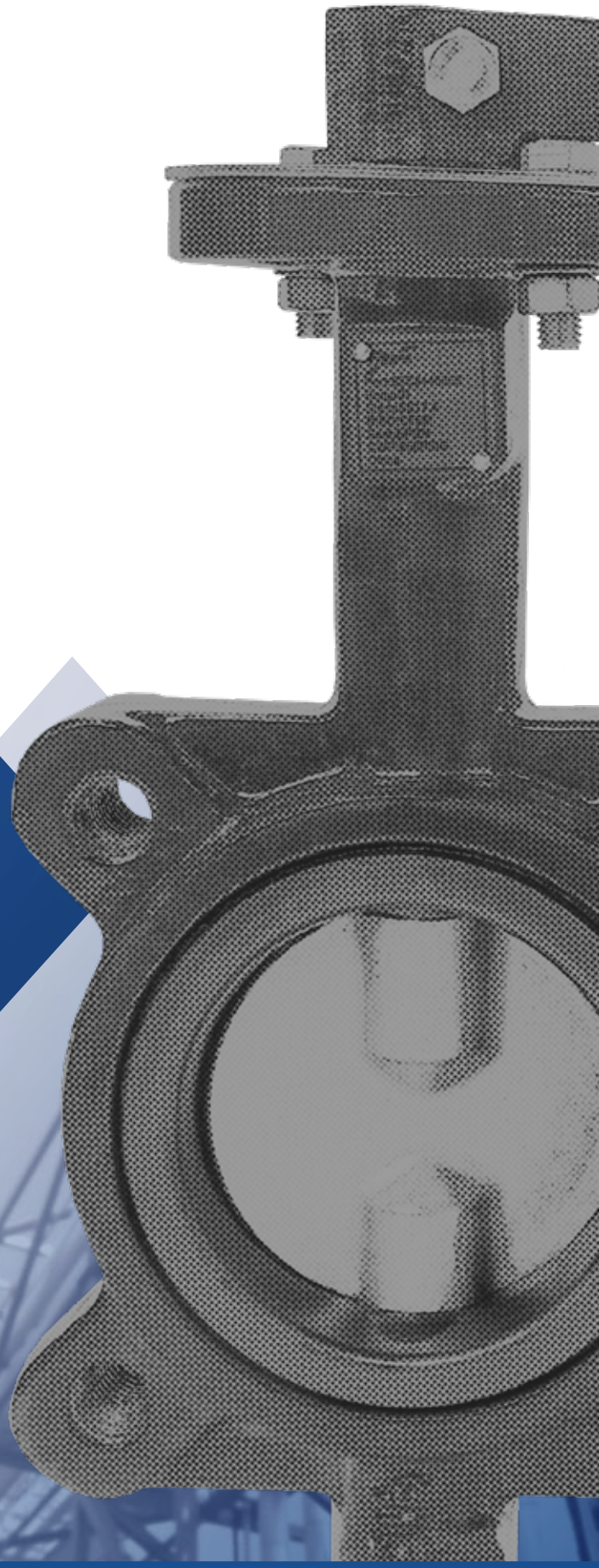
Flow+

Resilient Seated, Split Body and High Performance Butterfly Valves

Carbon and Stainless Steel
Ductile and Cast Iron



ISO 9001 | CRN | 3 YEAR WARRANTY VIEW TERMS & CONDITIONS

RS & HP Butterfly Valves | Table of Contents and Code Index

Resilient Seated Butterfly Valves

BF Series | Lug and Wafer

BFD Series | Flanged

BF Series

High Performance Butterfly Valves

HP Series | Lug and Wafer

Split Body Butterfly Valve

How to Order Butterfly Valves

1 Size	2 Style	3 Material	4 Pressure	5 Disc	6 Shaft	7 Bushing	8 Seat/Liner	9 Actuator
0 6	C	1	5	2	1	3	5	3

1 SIZE

02	2"	04	4"	10	10"
25	2½"	06	6"	12	12"
03	3"	08	8"		

2 BODY STYLE

A	Wafer (ANSI 125/150)**	C	Lug (ANSI 125/150)
B	Wafer (ANSI 125/150) (PN10/PN16)	D	Double Flanged
E	Split Body		

3 BODY MATERIAL

1	Cast Iron (A216B)	3	Carbon Steel (A216WCB)
2	Ductile Iron (A395)	4	316SS (A351 CF8M)

4 PRESSURE RATING

0	232 PSI	2	285 PSI	4	250 PSI	8	125 PSI
1	200/232 PSI	3	275 PSI	5	150 PSI		

5 DISC MATERIAL

2	Nickel Plated Ductile Iron	6	Monel*
3	Aluminum Bronze*	7	Hastelloy C*
4	316SS (A351CF8M)	8	Nylon Coated Ductile Iron*
5	Alloy 20*	9	PTFE Coated 316SS*

6 SHAFT MATERIAL

1	416SS/431SS	5	17-4PH SS
4	316SS		

7 BUSHING MATERIAL

0	Bronze*	3	PTFE	4	RTFE+316†

8 SEAT/LINER

1	Buna-N	7	RTFE
5	EPDM	8	Hypalon*
6	Viton	9	EPDM backed PTFE (125 PSI rated only)

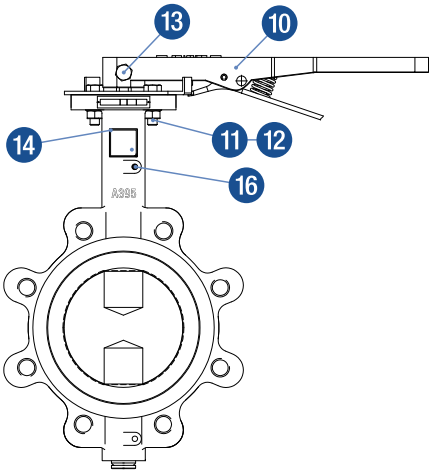
9 ACTUATOR

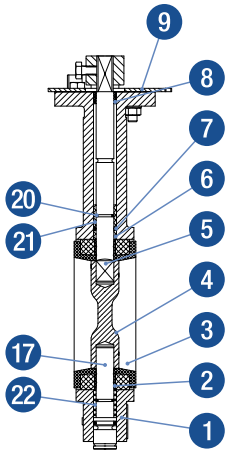
3	Lockable Lever Handle (2"-12")	9	Electric Actuator
5	Gear Operator	C	Buried Gear / 2" Nut*
6	Pneumatic Actuator (Double Acting)	U	Chain Wheel
7	Pneumatic Actuator (Fail Close)	X	Bear Shift
8	Pneumatic Actuator (Fail Open)		

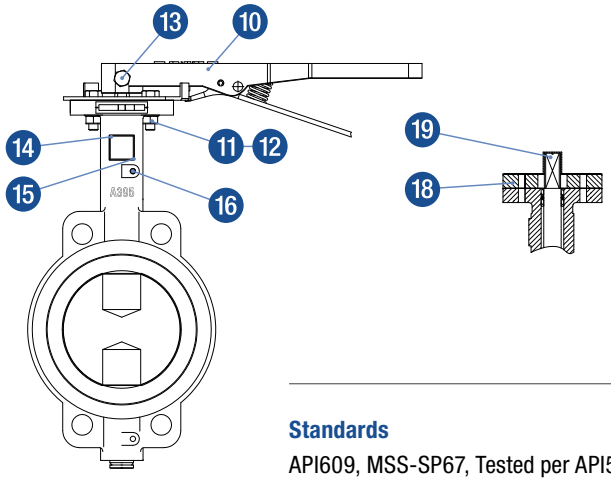
* Special order
** Sizes 14"–24" only
† HP Series butterfly valves only

Lug Style

Wafer Style







Description

250 PSI epoxy coated ductile iron body lug and wafer style industrial butterfly valves are manufactured and used extensively to regulate, stop and start fluid flow in pipelines. Locking lever handle with 10 position notch plate on sizes 2" to 8" – gear operator available on request.

Features

- ISO5211 mounting flange allows for easy actuation.
- Blowout Proof Shafts.
- A395 ductile iron body.
- Bubble tight and bi-directional up to 250 PSI.
- Cartridge seat with a phenolic backing provides a dimensionally stable seating surface, minimal seat wear and extends seat life.
- Two molded in primary shaft seals on upper and lower seal bore I.D.
- Three additional shaft seals.
- Two upper and one lower F4 bushing to provide additional support.
- Available in wafer or lug body.
- Consult supplier for vacuum service.
- Standard dead-end service for lug style with downstream flange removed.
- Compatible with ASME 125/150 flanges.
- Applicable standards: API609, MSS-SP67, tested per API598, CRN
- Seats are field replaceable.

Standards

API609, MSS-SP67, Tested per API598, CRN

Materials

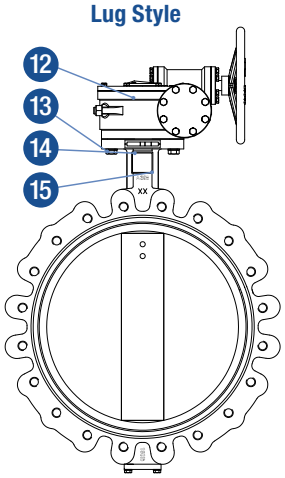
No.	Part	Material	Standard
1	Body	Ductile Iron	ASTM A395 60-40-18
2	Down Bearing	–	F4
3	Seat	EPDM/NBR/PTFE/ Viton	–
4	Disc	DI/CF8M/C954	–
5	Up Shaft	416/316/431/17-4PH	–
6	Bearing	–	F4
7	O-Ring	EPDM/NBR/Viton	–
8	Bearing		F4
9	Angle Plate	Carbon Steel	–
10	Lever	–	–
11	Bolt	Stainless Steel	A2-70
12	Nut	Stainless Steel	A2-70
13	Bolt	Stainless Steel	A2-70
14	Name Plate	Stainless Steel	AL/304
16	Retaining Pin	Stainless Steel	SS304
17	Down Shaft	Stainless Steel	416/316/431/17-4PH
18	Spacer	Cast Iron	HT250
19	Insert	Stainless Steel	SS410
20	O-Ring	EPDM/NBR/Viton	–
21	Bearing	PTFE	–
22	Bearing	PTFE	–

BFL & BFW Series

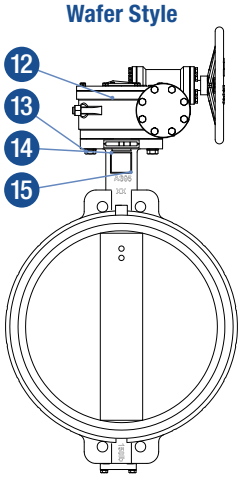
Resilient Seated Butterfly Valve | 14"–24"

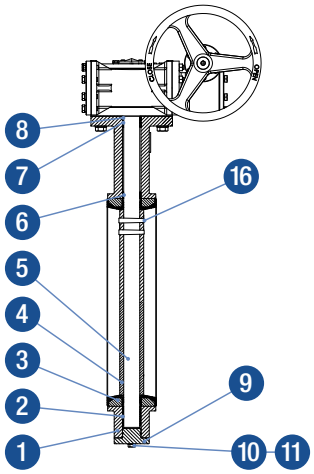
Ductile Iron Body | Class 150 | Lug and Wafer Style

Lug Style



Wafer Style





Description

250 PSI epoxy coated ductile iron body lug and wafer style industrial butterfly valves are manufactured and used extensively to regulate, stop and start fluid flow in pipelines. Gear operator with hand-wheel.

Features

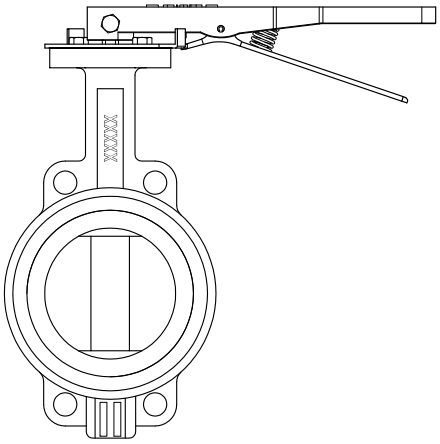
- Available in wafer or lug body.
- Bubble tight and bi-directional to 250 PSI.
- Consult supplier for vacuum service.
- Standard dead-end service for lug style with downstream flange removed.
- Compatible with ASME 125/150 flanges.
- Applicable standards; API 609, MSS-SP67, tested per API-598, CRN.
- Phenolic backed seat provides a dimensionally stable seat sealing surface, minimal seat wear and extends seat life.
- Blow-out proof design.
- ISO 5211 mounting flange allowing easy actuation.
- Actuation available to suit any requirement.

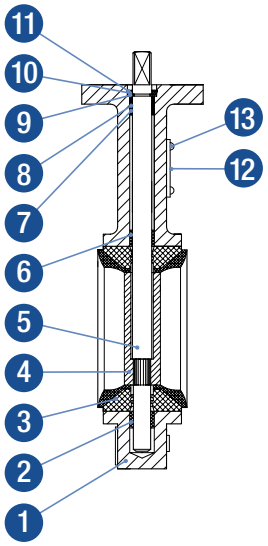
Standards

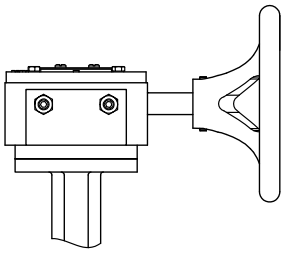
API609, MSS-SP67, tested per API-598, CRN.

Materials			
No.	**Part**	**Material**	**Standard**
1	Body	Ductile Iron	ASTM A395 60-40-18
2	Down Bearing	–	F4
3	Seat	Buna/EPDM/Viton/ PTFE	–
4	Disc	NI/316SS	–
5	Shaft	SS416/17-41PH	–
6	Bush	–	F4
7	O-Ring	EPDM/NBR	EPDM/NBR
8	Bush	–	F4
9	Cover	Carbon Steel	HT250
10	Gasket	Stainless Steel	304
11	Bolt	Stainless Steel	304
12	Gear Box	–	–
13	Bolt	Stainless Steel	304
14	Name Plate	AL/304	–
15	Pin	Aluminum	AL
16	Pin	Stainless Steel	416/17-4

Wafer Style







Description

200 PSI cast iron body wafer style butterfly valves are manufactured with nickel plated ductile iron disc, 416SS stem and Buna seat, lever operated 2"–12". Gear boxes are optional.

Features

- Cartridge seat with a phenolic backing provides a dimensionally stable seating surface, minimal seat wear and extends seat life.
- Two molded in primary shaft seals on upper and lower seal bore I.D. with three additional shaft seals (seats are field replaceable).
- Blow-out proof design.
- Compatible with ASME 125/150 flanges.

Standards

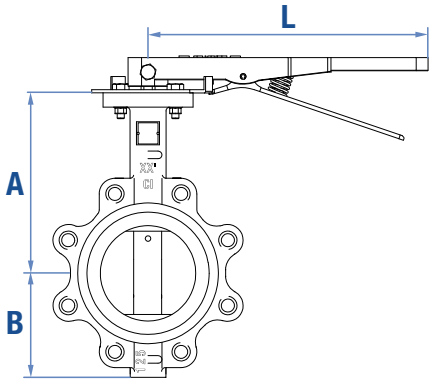
API609, MSS-SP67, tested per API-598, CRN.

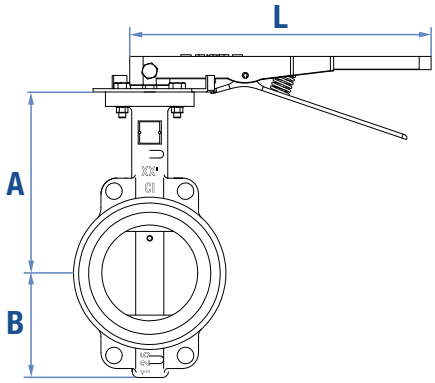
Materials			
No.	**Part**	**Material**	**Standard**
1	Body	Cast Iron	ASTM A126 B
2	Lower Bushing	PTFE	–
3	Seat Ring	NBR	–
4	Disc	NI/DI	–
5	Stem	Stainless Steel	ASTM A582 TYPE 416
6	Bushing I	PTPE	–
7	Bushing II	PTPE	–
8	O-Ring	NBR	–
9	Retaining Ring I	Carbon Steel	–
10	Washer	Stainless Steel	SS304
11	Retaining Ring II	Carbon Steel	–
12	Name Plate	AL/304	–
13	Rivet	AL	–

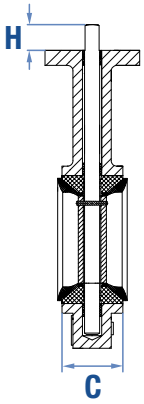
Dimensions & Weight

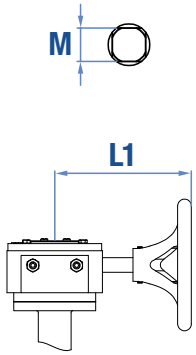
Resilient Seated Butterfly Valve | 2"–12"

Cast & Ductile Iron Body | Class 125 | Lug and Wafer Style









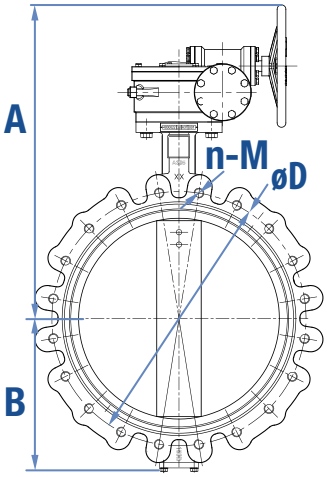
Metric Dimensions

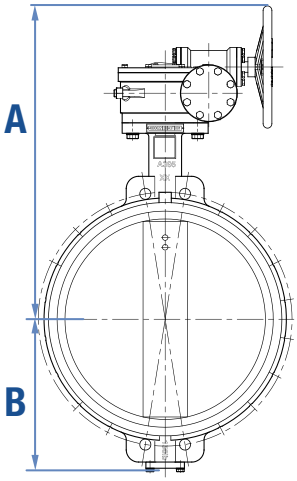
Size	A	B	C	H	M	L	L1	Weight – Lug Style		Weight – Wafer Style	
								Lever	Gear	Lever	Gear
mm	mm	mm	mm	mm	mm	mm	mm	kg	kg	kg	kg
50.8	161.0	80.0	42.9	32.0	10.9	261.1	152.9	4.2	7.7	3.5	6.9
63.5*	175.0	88.9	46.0	32.0	10.9	261.1	152.9	5.0	8.5	4.4	7.9
76.2	181.1	95.0	46.0	32.0	10.9	261.1	152.9	5.4	8.8	4.7	8.1
101.6	199.9	114.0	52.1	32.0	14.0	261.1	152.9	8.4	11.8	5.7	9.1
127.0*	213.1	127.0	55.9	32.0	14.0	364.0	235.0	10.8	17.6	9.7	11.7
152.4	226.1	140.0	55.9	32.0	17.0	364.0	235.0	14.5	21.6	11.3	12.7
203.2	260.1	175.0	59.9	84.1	22.1	364.0	235.0	19.7	26.3	16.1	19.1
254.0	292.1	220.0	68.1	84.1	22.1	540.0	235.0	22.9	33.2	20.1	29.8
304.8	337.1	255.0	78.0	85.1	22.1	540.0	230.9	36.7	46.0	32.8	42.8

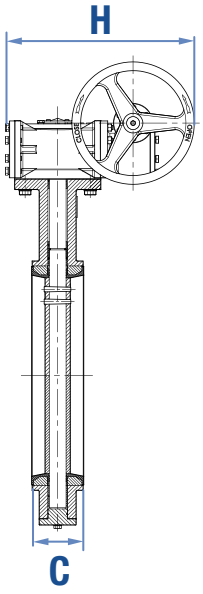
Imperial Dimensions

Size	A	B	C	H	M	L	L1	Weight – Lug Style		Weight – Wafer Style	
								Lever	Gear	Lever	Gear
inch	inch	inch	inch	inch	inch	inch	inch	lbs	lbs	lbs	lbs
2	6.3	3.2	1.7	1.3	0.4	10.3	6.0	9.3	17.0	7.7	15.2
2½*	6.9	3.5	1.8	1.3	0.4	10.3	6.0	11.1	18.7	9.6	17.4
3	7.1	3.7	1.8	1.3	0.4	10.3	6.0	11.9	19.4	10.4	17.9
4	7.9	4.5	2.1	1.3	0.6	10.3	6.0	18.6	26.0	12.6	20.1
5*	8.4	5.0	2.2	1.3	0.6	14.3	9.3	23.7	38.7	21.5	25.8
6	8.9	5.5	2.2	1.3	0.7	14.3	9.3	31.9	47.6	24.9	27.9
8	10.2	6.9	2.4	3.3	0.9	14.3	9.3	43.5	58.0	35.4	42.1
10	11.5	8.7	2.7	3.3	0.9	21.3	9.3	50.4	73.2	44.3	65.7
12	13.3	10.0	3.1	3.4	0.9	21.3	9.1	80.9	101.4	72.3	94.4

*Non-stocking item. Available as a special order.





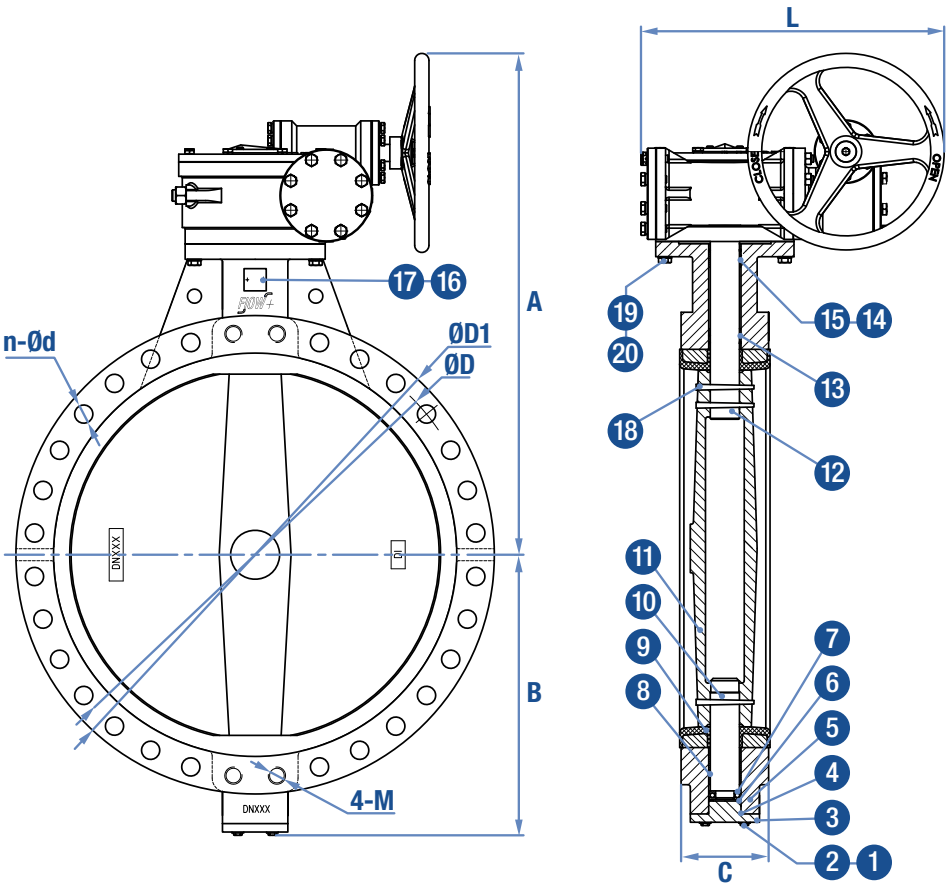


Metric Dimensions						
Size	A	B	C	H	øD	n-M
mm	mm	mm	mm	mm	mm	
14	577	267	78	308	460	12-1- 8UN-2B
16	674	324	102	426	515	16-1-BUN-2B
18	696	343	114	426	565	16-11/8- 8UN-2B
20	753	375	127	426	620	20-11/8-BUN-2B
24	847	435	154	479	725	20-11/4 -BUN-2B

Imperial Dimensions						
Size	A	B	C	H	øD	n-M
inch	inch	inch	inch	inch	inch	
14	22.72	10.51	3.07	12.13	18.11	12-1- 8UN-2B
16	26.54	12.76	4.02	16.77	20.28	16-1-BUN-2B
18	27.40	13.50	4.49	16.77	22.24	16-11/8- 8UN-2B
20	29.65	14.76	5.00	16.77	24.41	20-11/8-BUN-2B
24	33.35	17.13	6.06	18.86	28.54	20-11/4 -BUN-2B

BFD Series | 28"–48" | Resilient Seated Butterfly Valve

Ductile Iron Body | Class 125/150 | Flanged Style



Description

ANSI 150# ductile iron body flanged style industrial butterfly valves are manufactured and used extensively to regulate, stop and start fluid flow in pipelines.

Features

- U type flange body style fits between a FF or a RF flange PTFE bushing to ensure the maximum shaft support and centralized alignment.
- 360° polished disc assures positive shut-off hard back cartridge seat one piece shaft, pinned and splined disc.
- Universal ISO5211 mounting pad.
- Max pressure rating 150 PSI.
- Compatible with ASME 125/150 flanges.

Standards

API609, MSS-SP67, Tested per API598, CRN.

Materials			
No.	**Part**	**Material**	**Standard**
1	Body	Ductile Iron	ASTM A536
2	O-Ring	EPDM/BUNA	-
3	Bushing	PTFE	-
4	Pin	Stainless Steel	AISI 316
5	Shaft	Stainless Steel	AISI 316
6	Disc	Stainless Steel	AISI 316
7	Seat	EPDM/BUNA	-

Metric / Imperial Dimensions																			
Size		**A**		**B**		**C**		**H**		**ØD**		**ØD1**		**n-Ød1**		**ØC**		**Weight**	
mm	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**kg**	**lbs**
711	28"	624	24.57	505	19.88	165	6.50	66	2.60	895	35.24	840	33.07	24-30	24-1.18	63	2.48	-	-
762	30"	672	26.46	565	22.24	190	7.48	66	2.60	1130	44.50	1022	40.25	28-35	28-1.38	63	2.48	-	-
914	36"	720	28.35	637	25.08	203	7.99	118	4.65	1168	46	1086	42.75	32-41	32-1.62	75	2.95	-	-
1067	42"	800	31.50	700	27.56	216	8.50	142	5.59	1346	53	1257	49.5	32-41	36-1.62	85	3.35	-	-
1219	48"	940	37.01	844	33.23	254	10	160	6.30	1511	59.90	1422	56	44-41	44-1.62	105	4.13	-	-

Cv Values (US-GPM@Δ1P)									
Size	10°	20°	30°	40°	50°	60°	70°	80°	90°
2"	0.1	5	12	15	27	44	70	105	115
2½"	0.2	8	20	25	45	75	119	178	196
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"	2.0	45	95	205	366	605	958	1437	1579
8"	3.0	89	188	408	727	1202	1903	2854	3136
10"	4.0	151	320	694	1237	2049	3240	4859	5430
12"	5.0	234	495	1072	1911	3162	5005	7507	8250
14"	6.0	338	715	1549	2761	4568	7230	10844	11917
16"	8.0	464	983	2130	3797	6282	9942	14913	16388
18"	11.0	615	1302	2822	5028	8320	13168	19752	21705
20"	14.0	791	1647	3628	6465	10698	16931	25396	27908
22"	16.8	949	1976	4353	7758	12837	20317	30475	33576
24"	t22.0	1222	2587	5605	9989	16528	26157	39236	43116

Valve Seating Torques (ΔP :PSI) (N-m)						
Valve Size	ΔP=50	ΔP=75	ΔP=100	ΔP=150	ΔP=200	ΔP=250
	WET/DRY	WET/DRY	WET/DRY	WET/DRY	WET/DRY	WET/DRY
2"	12.3/19.7	12.7/20.2	13/20.8	13.9/22.1	15.1/24.2	27.1/43.4
2½"	13/24.6	13.4/25.4	13.8/26.1	15.4/29.2	17.2/32.7	33.9/54.2
3"	19.8/37.5	20.4/38.7	21/39.9	21.7/41.1	23.1/43.7	40.7/65.1
4"	31.2/57.1	33.1/60.5	34.9/63.8	37.1/67.8	39.8/72.8	54.2/86.7
5"	48.9/85.1	51.4/89.3	53.8/93.8	57.9/101	61.9/108	94.9/151.8
6"	75.9/134	80.2/141	84.5/149	93.9/165	102/174	149.1/238.6
8"	137/236	145/250	154/264	173/297	192/330	257.6/412.2
10"	215/365	232/394	249/423	286/486	323/549	406.7/650.7
12"	314/512	343/559	371/605	429/699	490/799	583/932.8
14"	401/601	434/650	466/699	550/825	625/969	813.5/1627
16"	499/748	565/848	632/947	755/1133	846/1307	1084.6/2169.2
18"	653/1002	742/1113	831/1246	1012/1518	1131/1787	1423.6/2847.2
20"	837/1256	965/1447	1093/1639	1350/2025	1431/2288	1762.5/2525
24"	1308/1963	1494/2241	1679/2519	2111/3166	2301/3711	1965.9/3931.8
28"	2639/4235	2825/4375	3010/4515	3272/4908	-	-
30"	3200/4800	3344/5016	3487/5231	3768/5650	-	-
32"	3663/5813	3813/5958	3963/6103	4308/6462	-	-
36"	4590/6885	4752/7127	4913/7369	5257/7886	-	-
40"	7788/11682	8078/12116	8367/12550	8926/13389	-	-
42"	7881/11821	8157/12335	8433/12649	9024/13536	-	-
48"	10915/16449	11324/17025	11733/17600	12555/18833	-	-

Conversion

1N-m = 8.85 in-lbs = 0.738 ft-lbs

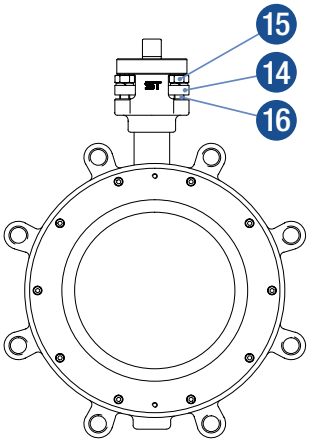
Kv Values (m³/h ΔP)									
Size	10°	20°	30°	40°	50°	60°	70°	80°	90°
2"	0.09	4.28	10.28	12.85	23.14	37.70	59.98	89.97	98.54
2½"	0.17	6.86	17.14	21.42	38.56	64.27	101.97	152.53	167.95
3"	0.26	10.28	18.85	33.42	59.98	99.40	156.81	235.65	258.78
4"	0.43	14.57	30.85	66.84	119.11	197.09	311.91	467.87	514.14
5"	0.69	24.85	52.27	113.97	203.08	335.90	531.28	796.92	875.75
6"	1.71	38.56	81.41	175.66	313.62	518.42	820.91	1231.36	1353.04
8"	2.57	76.26	161.10	349.61	622.96	1029.99	1630.68	2445.59	2687.23
10"	18.00	129.39	274.21	594.69	1059.98	1755.78	2776.35	4163.67	4652.96
12"	36.00	200.51	424.16	918.59	1637.53	2709.51	4288.77	6432.73	7069.41
14"	112.00	289.63	612.68	1327.34	2365.90	3914.31	6195.37	9292.20	10211.65
16"	159.00	397.60	842.33	1825.19	3253.64	5383.03	8519.28	12778.92	14042.84
18"	200.00	526.99	1115.68	2418.17	4308.48	7129.39	11283.63	16925.45	18598.97
20"	260.00	677.81	1411.31	3108.83	5539.85	9167.10	14508.14	21761.78	23914.31
22"	301.00	813.20	1693.23	3730.08	6647.81	11000.00	17409.60	26113.97	28771.21
24"	345.00	1047.13	2216.80	4802.91	8559.55	14162.81	22413.88	33621.25	36946.02

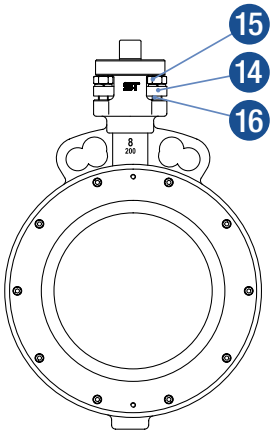
Seat/Liner	Temperature (both in °F and °C)
Buna-N	0 - 180 °F • (-18) - 80 °C
Viton	0 - 400 °F • (-18) - 204 °C
PTFE Lined EPDM (125 PSI Rated Only)	0 - 250 °F • (-18) - 121 °C
EPDM	(-30) - 275 °F • (-35) - 135 °C

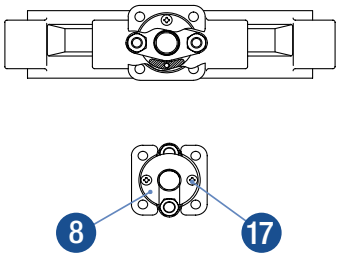
NOTE: Neither Flow+ or its affiliated entities assumes responsibility for the selection, use and maintenance of any product. Responsibility for the selection, use, and maintenance of any listed product remains with the purchaser and end-user.

Lug Style

Wafer Style

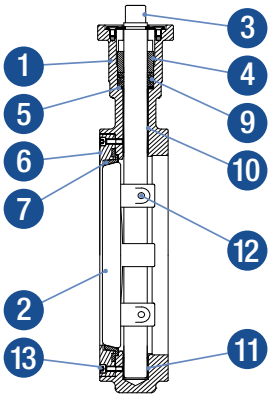






SQUARE TYPE STEM

KEY TYPE STEM



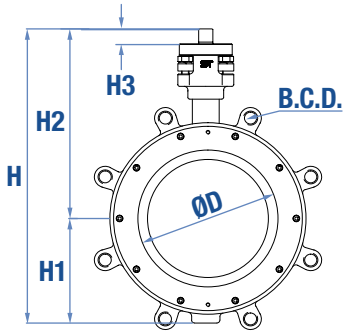
Description

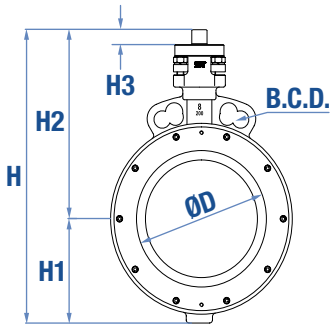
One-piece carbon steel (285 PSI maximum working pressure) and stainless steel (275 PSI maximum working pressure) body, lug and wafer style high performance butterfly valves with RTFE seat are manufactured and used extensively to regulate, stop and start fluid flow in pipelines. Double off set configuration with tight shut off design.

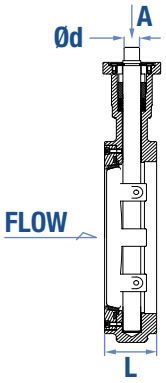
Features

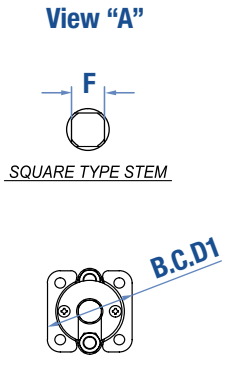
- Gland Flange preventing uneven load distribution against packing.
- Double off-set configuration with conical angled disc design. Maximize flow and minimize resistance providing high Cv.
- Internal travel stop design to prevent over travel of the disc. Minimizing possible seat damage.
- Retainer ring surface finish is 125 to 200 AARH and is compatible with both standard gasket and spiral wound gasket designs. Outside diameter is recessed within gasket sealing surface to prevent external leakage.
- The heavy duty handle and 10 position notch plates allow for positioning the valve disc to very precise angle stops. Gear operated 6" and larger.
- Universal ISO5211 mounting pad.
- Compatible with ASME 125/150 flanges.

Materials			
No.	**Part**	**C.S. Body**	**S.S. Body**
1	Body	A216WCB	A351 CF8M
2	Disc	A351 CF8M	A351 CF8M
3	Stem	A 564 Gr. 630	A 564 Gr. 630
4	Gland Flange	A216WCB	A351CF8M
5	Packing Retainer	A276 Tp 316	A276 Tp 316
6	Retainer Ring	A351 CF8M	A351 CF8M
7	Seat	RTFE	RTFE
8	Top Retainer	A283D-A36	A276 Tp 316
9	Grand Packing	GRAPHITE	GRAPHITE
10	Upper Bearing	R.TFE + 316SS	R.TFE + 316SS
11	Lower Bearing	R.TFE + 316SS	R.TFE + 316SS
12	Disc Pin	A276 Tp316	A276 Tp316
13	Hex Socket Bolt	A283D A36	A276 316SS
14	Spring Washer	A283D A36	A276 316SS
15	Hex Nut	A283D A36	A276 316SS
16	Stud Bolt	A283D A36	A276 316SS
17	Flat Head Screw	A283D A36	A276 316SS



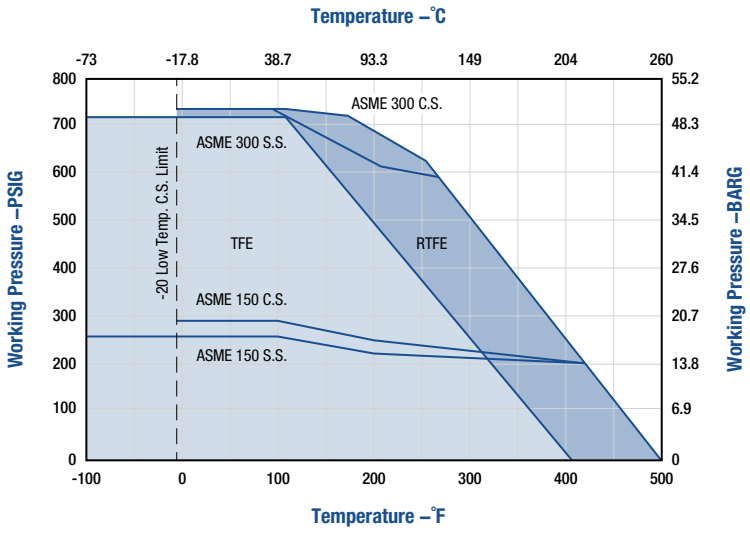






Imperial / Metric Dimensions																			
Size		H		H1		H2		H3		Ød		F		ØD		B.C D 1		L	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
2"	50	8.63	219.2	2.36	60.0	6.27	159.2	0.60	15.2	0.51	13	0.43	11	1.65	42.0	2.76	70	1.73	44
½"	65	9.54	242.0	2.76	70.0	6.78	172.2	0.60	15.2	0.63	16	0.55	14	2.40	61.0	2.76	70	1.81	46
3"	80	9.85	250.2	3.01	76.5	6.84	173.7	0.60	15.2	0.63	16	0.55	14	2.91	74.0	2.76	70	1.89	48
4"	100	11.07	281.2	3.54	90.0	7.53	191.2	0.70	17.7	0.63	16	0.55	14	3.70	94.0	2.76	70	2.13	54
5"	125	12.55	318.7	4.09	104.0	8.45	214.7	0.70	17.7	0.71	18	0.55	14	4.65	118.0	2.76	70	2.24	57
6"	150	13.62	346.0	4.53	115.0	9.09	231.0	0.75	19.0	0.87	22	0.67	17	5.51	140.0	2.76	70	2.28	58
8"	200	15.91	404.0	5.65	143.5	10.26	260.5	0.81	20.5	0.87	22	0.67	17	7.40	188.0	2.76	70	2.52	64
10"	250	18.44	468.5	6.69	170.0	11.75	298.5	0.81	20.5	1.10	28	0.87	22	9.39	238.5	4.02	102	2.81	71.5
12"	300	20.63	524.1	7.76	197.0	12.88	327.1	0.95	24.1	1.10	28	0.87	22	11.02	280.0	4.02	102	2.81	81
14"	350	26.87	682.5	11.00	279.5	15.87	403.0	2.76	70.0	1.50	38	-	-	T.B.A.	T.B.A.	5.51	140	3.62	92
16"	400	31.66	804.1	12.54	318.5	19.12	485.6	3.48	88.5	1.77	45	-	-	T.B.A.	T.B.A.	6.50	165	4.02	102
18"	450	33.73	856.7	13.31	338.2	20.41	518.5	3.48	88.5	2.17	55	-	-	T.B.A.	T.B.A.	6.50	165	4.49	114
20"	500	34.59	878.5	14.17	360.0	20.41	518.5	3.48	88.5	2.17	55	-	-	T.B.A.	T.B.A.	6.50	165	5.00	127
24"	600	39.76	1009.78	16.70	424.26	23.05	585.5	3.68	93.5	2.56	65	-	-	T.B.A.	T.B.A.	6.50	165	6.06	154

HP Series Torque Data		
Size	Class 150, Actual Torque: lbf.inch Teflon Seat	
inch	150 PSIG	285 PSIG
2"	200	270
2½"	200	270
3"	200	270
4"	225	470
5"	540	680
6"	540	680
8"	910	1620
10"	1620	2530
12"	2530	3600
14"	3720	5970
16"	5530	9180
18"	6840	11900
20"	10020	16970
24"	18330	32290



The torques listed are applicable to sea water, lubricating type of hydro carbons and most media at temperature 0-82°C (32-180 °F).
The operating speed of the actuator must be considered in order to avoid water hammer when the valve is closed in junction with liquid.

Product Specifications

Split Body Butterfly Valve

Ductile Iron Body | Class 150 | Lug & Wafer Style

- The Flow+ Split Body Butterfly Valve is available with both wafer and lug style bodies. Standard materials of construction for the body are epoxy coated ductile iron and CF8M (316 SS) steel.
- This valve is ideally suited for industrial applications, specifically processes with strong chemical compositions. Both body and disc are carefully manufactured through castings, final machined to tight tolerances.
- Lug style body provides a drip tight dead-end service. These Split Body Butterfly Valves also, provide excellent proportion control.
- The unique shape of the interface between the disc and seat provides a long-lasting, tight seal that self-adjusts through the use of spring washers as the components wear. This live-loaded, self-adjusting seal provides superior life expectancy, increasing the time between maintenance. There are no encapsulated elastomer O-rings to swell, or metal hoops to corrode.
- Installation is simple and mistake proof. The seat is field replaceable, saving time and money in expensive repairs.
- The disc material comes standard as a high polish CF8M (316 SS). The upper and lower stems are fully welded to the disc then machined to size. The crevice-free assembly ensures a long life free from corrosion.
- Flow+ offers a wide range of actuator options, including lever, gear, nut, pneumatic, and electric. We also offer associated accessories such as pressure regulators and positioners.

Design Features

Mounting Pad: Drilled to accommodate both ISO 5211 and Keystone Imperial bolting patterns. Both Flow+ and competitor actuators can be mounted directly, without the need of a special mounting bracket.

Shaft: Machined from 316 SS material, the shaft is split into an upper and lower portion. Each half is welded directly to the disc, then finish machined to size.

Bearings: PTFE sleeves act as a journal bearings, ensuring a smooth turning valve. The PTFE material matches the seats, making it impervious to nearly all chemical attacks, prolonging the life of the valve.

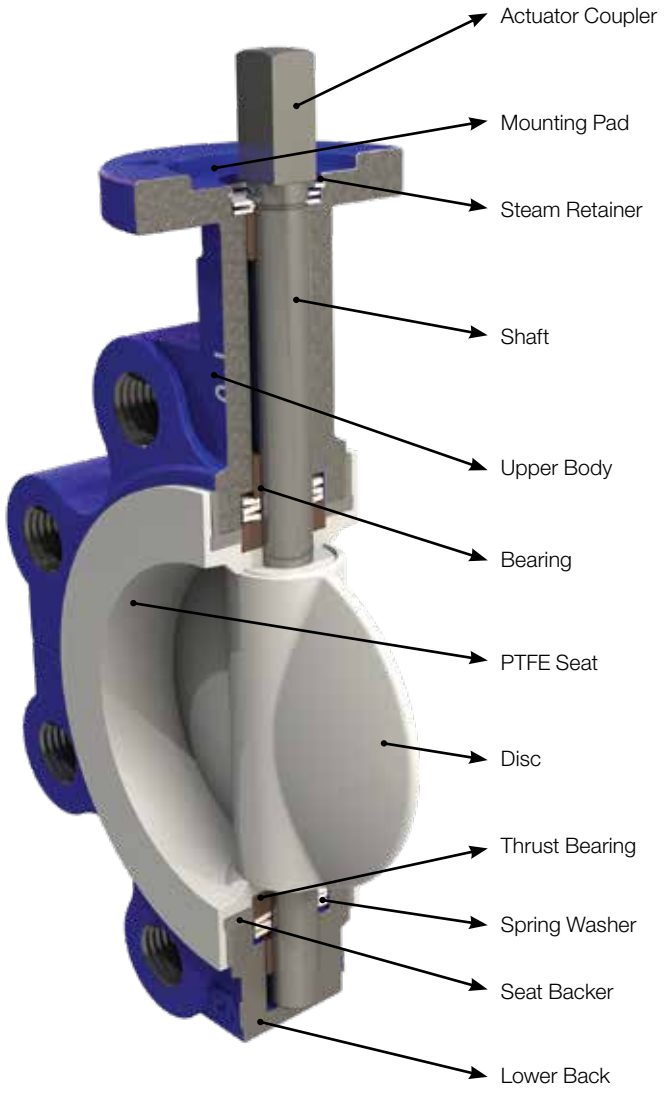
PTFE Seat: PTFE coated seats withstand the most severe chemical attack. Seats are flexible and can be replaced in the field as a maintenance item.

Disc: CF8M disc material is carefully welded to the upper and lower stem halves, eliminating any crevices where corrosive action can occur. The surface of the disc comes standard as polished steel or PTFE coated.

Thrust Bearings: PTFE washers act as thrust bearings, both positioning the seat and transmitting the live thrust force of the spring washers to the seal.

Spring Washers: The primary seal between the disc and seat is a labyrinthine lip seal. The constant force of spring washers keeps the stationary seat component in tight contact, even as the seal surfaces wear from usage.

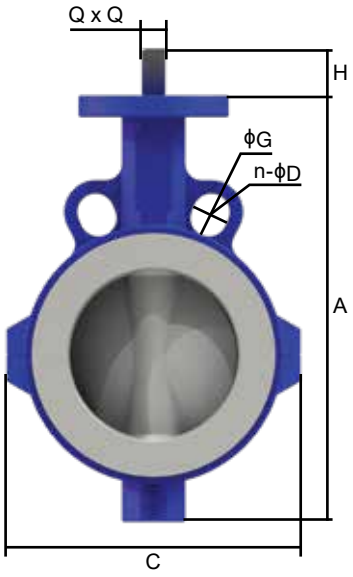
Seat Backer: The backer provides structural support to the seat. Available in BUNA, EPDM, and Viton to limit adverse effects from accidental contact with the process media.

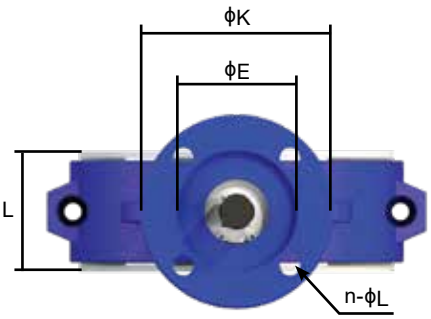


Material and Dimensions

Split Body Butterfly Valve

Ductile Iron Body | Class 150 | Lug & Wafer Style





No.	Name	Material
1	Body	Ductile Iron / CF8M
2	Disc	PTFE / 316 SS
3	Shaft	316 SS
4	Seat	PTFE
5	Seat Backer	BUNA / EPDM / VITON
6	Bearings	PTFE
7	Thrust Bearings	PTFE
8	Spring Washers	Spring Steel

Technical Specification / Product Features	
Design specifications	API 609
Specifications Model	2"–24"
Nominal pressure	2"- 6"=232psi / 8"-12"=150psi / 14"-24"=125psi
Applicable medium	Sulfuric acid, hydrofluoric acid, phosphoric acid, chlorine, alkali, aqua regia, etc.
Operating temperature	-20 °C to 180 °C
Drive Type	Lever / Gear / Pneumatic / Electric
Thrust Bearings	PTFE
Spring Washers	Spring Steel

Dimensions

Size (in)	A	B	C	L	H	Upper Flange			Q x Q	ANSI 150	
						K	E	N-ϕL		ϕG	N-ϕd
2	2.4	5.4	4.4	1.9	1.9	2.6	1.97	4-0.26	0.35	4.74	4-5/8"
2.5	2.8	5.4	5.0	2.0	2.0	2.6	1.97	4-0.26	0.35	5.49	4-5/8"
3	3.1	5.5	5.6	2.0	2.0	2.6	1.97	4-0.26	0.35	6.00	4-5/8"
4	4.1	6.2	6.6	2.2	2.2	3.5	2.76	4-0.41	0.43	7.50	8-5/8"
5	4.8	7.1	9.4	2.3	2.3	3.5	2.76	4-0.41	0.55	8.50	8-3/4"
6	5.3	7.3	10.4	2.3	2.3	3.5	2.76	4-0.41	0.55	9.51	8-3/4"
8	6.5	9.2	12.6	2.5	2.5	4.9	4.02	4-0.57	0.67	11.75	8-3/4"
10	7.6	10.7	15.2	2.9	2.9	4.9	4.02	4-0.57	0.87	14.25	12-7/8"
12	8.8	11.9	17.7	3.2	3.2	4.9	4.02	4-0.58	0.87	17.01	12-7/8"
14	10.2	12.6	19.7	3.2	3.2	4.9	4.02	4-0.58	–	18.75	12-1"
16	11.7	16.1	23.0	3.6	3.6	6.9	5.51	4-0.71	–	21.26	16-1"
18	12.4	16.6	24.3	4.6	4.6	6.9	5.51	4-0.71	–	22.75	16-1.1/8"
20	14.0	18.9	27.0	5.1	5.1	8.3	6.50	4-0.87	–	25.00	20-1.1/8"
24	17.3	22.1	32.2	6.2	6.2	8.3	6.50	4-0.87	–	29.50	20-1.1/4"

Terms and Conditions

1) **CANCELLATIONS and RESTOCKING POLICY:** Purchase orders once placed by Buyer and accepted by Seller can be cancelled only with Seller's written consent and upon terms which will save Seller from loss. No orders may be cancelled subsequent to delivery and/or shipment, whichever occurs first. As estimated actual damages, Buyer agrees to pay Seller the greater of Seller's actual costs incurred prior to cancellation plus a reasonable profit, or the following minimum cancellation charges: a) 20% of Order value if cancelled thirty (30) or more days prior to the original delivery/shipment date; b) 50% of the Order value if cancelled thereafter; or, c) 100% of the Order value of any non-standard items, which are items not built for stock or built to Buyer's specifications.

2) **RETURNED PRODUCT:** All sales are final; all custom products (non-stocking) are not subject to return, credit or refund. The return of obsolete and used Products shall not be permitted. The Purchaser shall not return Products without first obtaining Seller's written permission and shall be subject to a restocking charge. Products must be returned within 10 days after the date that written permission has been given. All transportation charges for any returned Products shall be paid by the Purchaser. Request to return Products must be accompanied by relevant customer order and Seller's invoice number(s). Final acceptance of returned Products is subject to examination and/or testing. Products will not be accepted for return or credit later than six (6) months after invoicing.

3) **PRICES:** Possession of price lists will not be accepted by the Seller as an obligation, or offer, to sell any goods listed therein. All prices contained in published price lists are subject to change without notice and supersede those of all previous lists. Prices quoted are based on current exchange rates; Seller reserves the right to adjust pricing to reflect the exchange rate in effect at the product receipt date to Seller's facility.

4) **LIQUIDATED DAMAGES:** Liquidated damages will not be accepted in the event of order placement.

5) **SALES TAXES, ETC.:** The Purchaser shall pay and be responsible for all proviFlow+al, local or federal sales, use or other taxes (including general sales or value added taxes) and customs duties now or hereinafter enacted which may be applicable to the sale of the Products or the importation of the Products to the destination specified by the Purchaser and which duties and taxes shall be the responsibility of the Purchaser.

6) **CREDIT APPROVAL:** Orders are accepted subject to satisfactory credit approval. Pending credit approval, delivery may be delayed without liability to Seller.

7) **TERMS OF PAYMENT:** The terms of payment for Products purchased pursuant to this Agreement are (I) upon acceptance of the purchase order a deposit in such amount as may be set out in the Seller's written acceptance notice and (II) the balance within 30 days from the date of invoice. Any invoice amount which is not paid when due shall bear interest at the rate of one and one-half (1 ½%) percent per month until paid in full.

   The Purchaser agrees that it will not have any rights of set off against or deduction from the purchase price for the Products payable by the Purchaser pursuant to this Agreement. The Purchaser grants to Seller a purchase money security interest in all Products delivered pursuant to this Agreement and all proceeds thereof (whether cash or non-cash and including, without limitation, accounts, instruments and chattel paper). Any failure by the Purchaser to pay the purchase price in full as provided in this Agreement shall constitute an event of default for purposes of said security interest. Upon the occurrence of any such default, Seller shall have all rights of a secured party after default under applicable law. Any repossession and removal of any Products shall be without prejudice to any of Seller's other remedies at law or in equity. The Purchaser agrees, without further consideration, at any time, to do or cause to be done, to execute and deliver, all such further acts and instruments (including, without limitation, finaFlow+ng statements approved for filing) as Seller may reasonably request in order to perfect Seller's security interest.

8) **DELIVERY DATE:** Seller will utilize reasonable best efforts to meet the delivery schedules stipulated in this Agreement. In the event the provisions of Section 14 hereof shall apply, the delivery date shall be extended by a number of days that is equal to the duration of the event or condition that is responsible for such delay.

9) **TITLE AND SHIPMENT:** All quotations and sales are FCA Loaded Truck ValvSource Warehouse (Inco Terms 2010) unless otherwise specified in writing and agreed by both parties. Seller's responsibility ceases upon delivery to carrier and title shall transfer and risk of loss shall be borne by Buyer at that point. Any expedited or other premium transportation charges requested by Buyer will be for the account of Buyer. Prices include domestic packing, blocked and strapped to open pallets and wrapped in Poly. No claims for price adjustments will be honored unless presented within six (6) months from date of invoice. All quotations are subject to change without notice and prior to sale of goods.

10) **INSPECTION BY PURCHASER:** All Products must be inspected by the Purchaser upon receipt and the Purchaser and Seller, collectively, agree to file appropriate claims with the carrier when there is evidence of shipping damage, either concealed or external. Claims for shortage or error in shipment or for damage other than shipping damage must be made within 5 days after receipt of shipment, failing which the Purchaser shall be deemed to have accepted the shipment.

11) **LIMITED WARRANTY:** Purchaser acknowledges that the Products are provided to the Purchaser subject only to the limited warranties provided by the manufacturer of the Products and are subject to all of the conditions, limitations and exclusions set out therein, all of which are hereby accepted by the Purchaser. The warranty exclusions include, without limitation, (I) any defects caused by faulty installation performed by Purchaser or third parties, (II) any damage caused by the contractors or tradesman of the Purchaser, (III) any damage caused by improper use or misuse, including exposure to excessive temperatures, moisture or cleaning agents and solvents and (IV) any damage caused during transportation or improper storage. Claims for warranty repairs and replacements must be made within the applicable time period described in the manufacturer's limited warranty. In no event shall Seller be liable for other than the repair or replacement of any defective Products. In no event shall Seller be liable for any damages, direct or indirect, special or consequential, including, without limitation, damages for lost profits, business interruption, or economic loss arising out of defects in the Products.

12) **EXCLUSION OF WARRANTIES:** Except as expressly set forth herein seller disclaims all warranties with regard to the products including, without limitation, all implied warranties of merchantability and fitness for a particular purpose.

13) **CATALOGUE AND OTHER PRINTED MATTER:** Seller's illustrations are representations of a certain size of each line of Product, but do not necessarily represent all sizes and materials in detail. Similarly, dimensions, weights and material information have been prepared with care, but their correctness is not guaranteed. Seller reserves the right to vary the designs and dimensions without notice.

14) **FORCE MAJEURE:** Any delay or failure of performance by Seller shall be excused if and to the extent caused, directly or indirectly, events beyond Seller's control including, without limitation, fire, flood earthquake, lightning, hurricane, explosion, accident or breakdown, acts of God, embargo, strike, labour dispute, labour trouble, lockout, shortage or control of power supply, shortage of supplies or raw materials, or any causes whether of the same kind as the causes enumerated before or not. Subject to any express provisions of this Agreement, any such causes of delay shall extend the time of performance by the length of delay occasioned thereby.

15) **NO WAIVER:** No waiver by Seller of any right hereunder or of any right granted in connection with a failure to perform or breach by the Purchaser shall be deemed as a waiver of any other right hereunder or of any right granted in connection with any other failure or breach by the Purchaser, whether of a similar nature or otherwise.

16) **NOTICE:** Any notice made under or in relation to this Agreement shall be sent to the addresses first above written or such other address as the intended recipient shall have previously designated by written notice, by postage prepaid registered mail or by telegram including telex, followed by a confirmation letter by postage prepaid and return receipt requested registered mail. The notice shall be deemed to be made on the fifth day following the date of mailing.

17) **ENTIRE AGREEMENT:** This Agreement contains the entire agreement and understanding of the parties hereto with respect to the subject matter of this Agreement, and supersedes all prior discussions, agreements, understandings of any and every nature, whether written or oral, between the parties with respect to the subject matter of this Agreement, and no condition, definition, warranty or representation other than those expressly provided for in this Agreement with respect to the subject matter of this Agreement shall be binding upon either party hereto.

18) **AMENDMENTS IN WRITING:** Any amendment, modification, change or alteration of this Agreement shall be made in writing which expressly refers to this Agreement and which is signed by a duly authorized officer or representative of each of the parties hereto.

19) **SEVERABILITY:** All provisions of this Agreement are severable and this Agreement shall be interpreted and enforced as if all completely invalid or unenforceable provisions were not contained herein. All partially valid and enforceable provisions shall be enforced to the extent they are valid and enforceable.

20) **NO AGENCY OR PARTNERSHIP:** Nothing herein contained shall be deemed or construed to constitute either party the agent or partner of the other. Neither party shall have any right, title or authority to enter into any contract, agreement or commitment on behalf of the other or to bind the other in any manner whatsoever.

21) **GOVERNING LAW:** This agreement shall be governed by and construed in accordance with the laws of the jurisdiction from which the products are shipped by the seller to the purchaser and the parties hereby attorn to the courts of such jurisdiction.

22) **ENUREMENT:** This Agreement shall enure to the benefit of and be binding upon the parties hereto and on their successors and permitted assigns.

23) **SELLER DEFINED:** For the purposes hereof, Seller means the Corporation listed as such on the front page of the Invoice or acceptance notice of which these terms and conditions of sale form a part.

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