

Building connections that last™



Series 396/397

2" - 72" Resilient Seated
Butterfly Valves Datasheet



2"-72" Resilient Seated Butterfly Valves

Series 396/397



Series 396
Wafer style body

Series 397
Full lug style body

Standard Construction Specifications

Body

Ductile Iron

Disc

316 Stainless Steel, Aluminum Bronze, Nylon 11 Coated Ductile Iron, Nickel Plated Ductile Iron

Stem

416 Stainless Steel, 316 Stainless Steel

Resilient Seat

EPDM, Buna-N, Viton

Stem Bushing

Teflon® - Graphite Impregnated

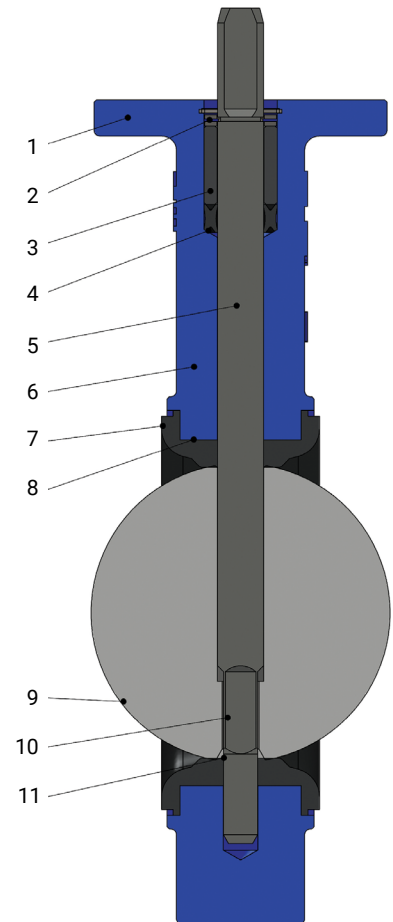
Stem Packing

Buna-N

Additional materials are available for a wide selection of applications.

Features and Benefits

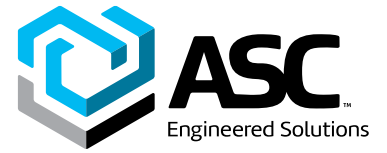
- All bodies are machined to tight tolerances which guarantees standard dimensions for interchangeability of parts and operators
- Series of snap rings and washers hold the stem, bushing and packing in and acts as a blowout proof engagement on 2" to 24" valves
- Top bushing protects the stem from side thrust of operators. They are made of impact and corrosion resistant materials
- Special double V-shape of stem packing seal self-adjusts to protect the stem area
- 2" to 12" valves utilize one piece stems and 14" to 48" valves utilize two piece stems. Stems are machined to standard dimensions for interchangeability
- Long neck in 2" to 12" valves allows for insulation requirements
- Seat forms a seal against all standard ASME 125/150 flanges eliminating separate gasket requirements
- 2" to 24" valves' seats are bonded to the body. These are rated for full dead end pressure and vacuum service. 26" and larger valves have booted seats
- Disc edge is individually processed through machining and buffing for a smooth edge. This provides a bubble tight shut-off and maximizes the life of the seat
- The stem to disc engagement is an internally driven design
- Stem and body are isolated from the line media by the interference fit of the primary seal created between the disc and seat



Pressure Rating

	Bi-directional	Dead-End Service (Lug Style, Series 397)
2" - 6"	250 PSI (416 SS stem) 200 PSI (316 SS stem)	250 PSI (416 SS stem) 200 PSI (316 SS stem)
8"-12"	200 PSI (250 PSI with option HP)	200 PSI (250 PSI with option HP)
14" & larger	150 PSI	150 PSI

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Torque Chart – Series 396/397

Valve Size	Normal Conditions					Severe Conditions				
	Δ P=0	Δ P=50	Δ P=100	Δ P=150	Δ P=200	Δ P=0	Δ P=50	Δ P=100	Δ P=150	Δ P=200
2"	221	230	240	250	258	373	384	400	406	418
2½"	269	283	288	302	317	454	464	475	486	507
3"	322	341	365	379	400	540	568	589	611	647
4"	480	514	542	576	602	816	848	886	918	955
5"	653	706	754	806	871	1,102	1,162	1,220	1,274	1,327
6"	907	1,008	1,109	1,210	1,285	1,529	1,642	1,756	1,868	1,965
8"	1,512	1,714	1,915	2,112	2,260	2,549	2,776	3,002	3,229	3,410
10"	2,318	2,621	2,900	3,224	3,440	3,910	4,250	4,590	4,931	5,203
12"	3,125	3,629	4,138	4,637	6,234	5,270	5,838	6,404	6,971	7,403
14"	5,160	6,120	7,080	8,040	-	7,740	8,700	9,660	10,620	-
16"	7,680	8,040	9,480	10,920	-	9,900	11,340	12,780	14,220	-
18"	8,280	10,440	12,600	14,760	-	12,432	14,580	16,020	18,900	-
20"	10,200	13,200	16,200	19,200	-	14,604	19,500	21,300	24,300	-
24"	18,000	18,513	20,400	22,200	-	23,400	24,066	26,520	30,000	-
30"	30,120	32,760	40,920	43,200	-	39,120	49,140	53,196	56,160	-
36"	46,800	48,747	57,600	81,600	-	60,840	63,600	74,880	106,080	-

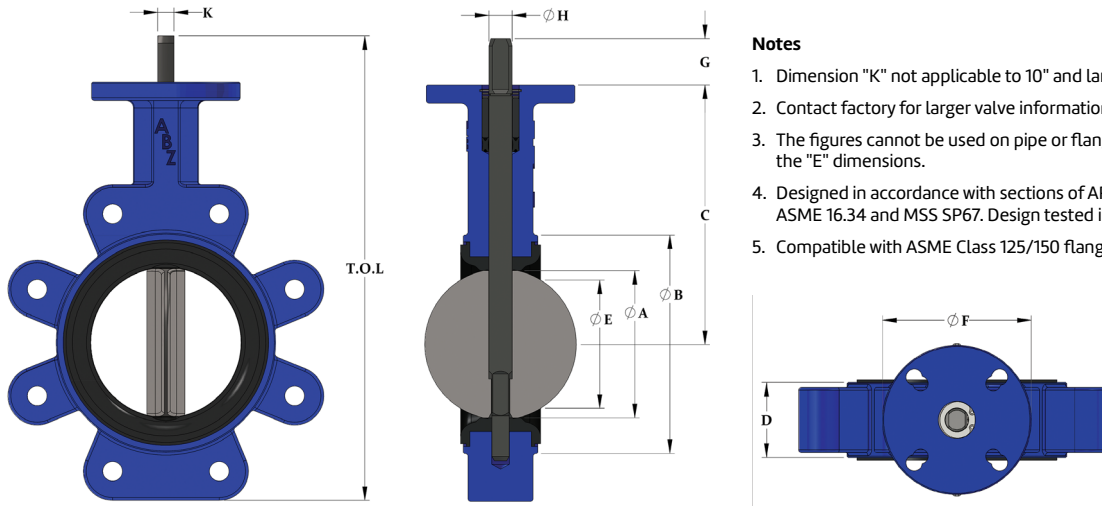
All torques shown in lbf-in. A 20% Safety Factor has been included.
Undercut disc available as special order.

Flow Coefficient (Cv) – Series 396/397

Valve Size	Angle of Disc Opening								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
2"	1.67	7.7	17	29	48	74	115	145	195
2½"	2.50	11.0	25	44	69	109	174	237	307
3"	3.33	15.7	37	64	105	165	276	377	487
4"	5.00	27.7	63	110	177	278	472	671	827
5"	8.33	43.7	99	177	276	443	752	1,083	1,325
6"	13.33	58.7	136	242	385	616	1,075	1,521	1,883
8"	20.00	107.3	247	434	687	1,094	1,821	2,671	3,239
10"	31.67	174.0	394	696	1,092	1,770	2,983	4,288	5,210
12"	47.00	251.7	578	1,002	1,665	2,654	4,398	6,466	8,026
14"	61.3	326	765	1,373	2,183	3,395	5,713	8,337	10,179
16"	81.7	426	1,000	1,783	2,816	4,494	7,556	10,981	13,322
18"	106	549	1,294	2,279	3,614	5,779	9,755	14,148	17,738
20"	124	684	1,598	2,862	4,579	7,181	12,178	17,906	22,113
24"	233	1,009	2,329	4,081	6,587	10,347	17,078	25,218	31,051
30"	364.7	1,537	3,757	6,571	10,568	16,861	27,767	39,752	50,783
36"	575	2,498	5,495	9,437	15,261	24,002	39,806	56,834	74,958

Cv values represent U.S. gallons per minute of 60°F water through a 100% open valve at a pressure drop of 1 psi.
Recommended control angles are between 20°-75° open.

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Notes

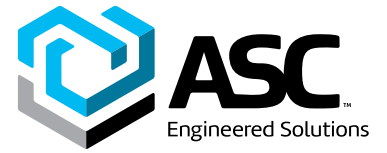
1. Dimension "K" not applicable to 10" and larger sizes. The stem is round with a keyway.
2. Contact factory for larger valve information not show.
3. The figures cannot be used on pipe or flange with an inside diameter less than the "E" dimensions.
4. Designed in accordance with sections of API 609 Category A, ASME 16.1/16.5, ASME 16.34 and MSS SP67. Design tested in accordance with API 595.
5. Compatible with ASME Class 125/150 flange standards.

Dimensional Chart – Series 396/397

Valve Size Inches	Approximate Valve Dimensions - inches											Top Plate Drilling			397 Tapped Lug Data			Weight (Pounds)	
	ØA	ØB	C	D	E	ØF	G	ØH	K	Key	T.O.L.	Bolt Circle	No. Holes	Hole Dia.	Bolt Circle	No. Holes	Tap	396	397
	2"	2.00	3.54	5.50	1.625	1.43	4.0	1.25	0.562	0.375	—	9.23	3.25 & F07	4	7/16	4.75	4	5/8 X 11	7
2-1/2"	2.45	4.00	6.00	1.75	1.92	4.0	1.25	0.562	0.375	—	10.01	3.25 & F07	4	7/16	5.50	4	5/8 X 11	8	9
3"	3.02	4.69	6.25	1.75	2.67	4.0	1.25	0.562	0.375	—	10.42	3.25 & F07	4	7/16	6.00	4	5/8 X 11	9	10
4"	4.04	5.91	7.00	2.00	3.69	4.0	1.25	0.625	0.437	—	12.67	3.25 & F07	4	7/16	7.50	8	5/8 X 11	13	20
5"	4.83	7.13	7.50	2.125	4.49	4.0	1.25	0.750	0.500	—	13.79	3.25 & F07	4	7/16	8.50	8	3/4 X 10	19	24
6"	5.92	8.19	8.00	2.125	5.69	4.0	1.25	0.750	0.500	—	14.85	3.25 & F07	4	7/16	9.50	8	3/4 X 10	20	26
8"	7.89	10.24	9.50	2.50	7.77	6.0	1.25	0.875	0.625	—	17.51	5.0 & F12	4	9/16	11.75	8	3/4 X 10	35	41
10"	9.76	12.64	10.75	2.50	9.71	6.0	2.00	1.125	—	1/4 X 1/4	21.02	5.0 & F12	4	9/16	14.25	12	7/8 X 9	52	64
12"	11.40	14.57	12.25	3.00	11.30	6.0	2.00	1.125	—	1/4 X 1/4	23.81	5.0 & F12	4	9/16	17.00	12	7/8 X 9	68	89
14"	13.00	17.00	12.00	3.00	13.00	6.0	2.25	1.370	—	5/16 X 5/16	25.21	5.0	4	9/16	18.75	12	1 X 8	95	110
16"	15.10	19.62	13.00	4.00	14.88	6.0	2.25	1.622	—	3/8 X 3/8	27.47	5.0	4	9/16	21.25	16	1 X 8	146	180
18"	17.10	21.42	14.50	4.25	16.88	8.0	3.00	1.872	—	1/2 X 1/2	30.85	6.5	4	13/16	22.75	16	1-1/8 X 7	180	226
20"	19.10	23.78	15.87	5.00	18.74	8.0	3.00	2.122	—	1/2 X 1/2	33.45	6.5	4	13/16	25.00	20	1-1/8 X 7	262	340
24"	23.20	28.50	22.24	6.00	22.65	8.0	3.00	2.122	—	* 1/2 X 1/2	41.98	6.5	4	13/16	29.50	20	1-1/4 X 7	416	508
30"	29.50	38.80	23.20	6.54	29.25	11.8	4.00	2.500	—	* 5/8 X 5/8	48.02	10.0	8	0.71	36.00	28	1-1/4 X 7	886	886
36"	35.60	46.00	28.30	7.95	35.25	13.8	4.50	3.150	—	* 7/8 X 5/8	58.24	11.73	8	0.91	42.75	32	1-1/2 X 6	1376	1376
40"	38.35	50.75	31.10	8.50	38.00	13.8	5.31	3.500	—	* 1.0 X 3/4	64.96	11.73	8	0.91	47.25	32	1-1/2 X 6	2042	2042
42"	41.31	53.00	32.10	9.88	40.80	13.8	5.31	3.500	—	* 1.0 X 3/4	67.20	11.73	8	0.91	49.50	36	1-1/2 X 6	2363	2363
48"	47.24	59.50	36.20	10.87	46.75	16.3	5.98	4.330	—	* 1-1/4 X 7/8	75.20	14.02	8	1.30	56.00	44	1-1/2 X 6	3230	3230

*24" & larger valves have two keyways.

2"-72" Resilient Seated Butterfly Valves Series 396/397



How to order Series 396/397 Butterfly Valves

Example: A 4" single flange lug-design, with ductile iron body, cast CF8M (316 SS) Stainless Steel disc, 416 SS stem, EPDM seat, NSF, and gear operator, is: **397 040 815 NSF GO**.

397		040		815	NSF GO		
Series		Size		Trim	Variations / Options		
396	Wafer	416 SS Stem: 250 PSI Rated, 250 PSI Dead-End ‡ 316 SS Stem: 200 PSI Rated, 200 PSI Dead-End ‡		XXX	001	Undercut disc	
397	Lug				150 PSI Rated, 150 PSI Dead-End ‡		HP
398	Double Flanged*				NSF	NSF certified	
*Contact Factory.		2"	020	14"	140	SF	Silicone Free
		2.5"	025	16"	160	GO	Gear Operator
		3"	030	18"	180	GO/CHAIN	GO with Chainwheel
		4"	040	20"	200	GO/EXT	GO with Extension
		5"	050	24"	240	HDL	Handle
		6"	060	26"	260	§ 250 PSI bi-directional & dead-end service rating (8" - 12") with 416 SS stem and HP option.	
		200 PSI Rated, 200 PSI Dead-End ‡§		28"	280		
		8"	080	32"	300		
		10"	100	36"	320		
		12"	120	40"	360		
				42"	400‡		
				44"	420		
				46"	440		
				48"	460		
				50"	480		
				52"	500‡		
				54"	520‡		
				56"	540‡		
				58"	560‡		
				60"	580‡		
				62"	600‡		
				64"	620‡		
				66"	640‡		
				68"	660‡		
				70"	680‡		
				72"	700‡		

‡ Series 397, single flange lug-design only.

Trim Code	Body Material	Disc Material	Stem Material	Seat Material	Bushing Material	Trim Code
Most Popular - Trim Codes						
812	Ductile Iron	316 SS	416 SS	Viton	Teflon + Graphite	812
815				EPDM	Teflon + Graphite	815
818				Buna	Teflon + Graphite	818
Popular - Trim Codes						
722	Ductile Iron	Ductile Iron, Nickel Plated	416 SS	EPDM	Teflon + Graphite	722
723				Buna	Teflon + Graphite	723
Common - Trim Codes						
803	Ductile Iron	316 SS	316 SS	Viton	Teflon + Graphite	803
806				EPDM	Teflon + Graphite	806
809				Buna	Teflon + Graphite	809
804	Ductile Iron	Aluminum Bronze	316 SS	Viton	Teflon + Graphite	804
807				EPDM	Teflon + Graphite	807
810				Buna	Teflon + Graphite	810
813	Ductile Iron	Aluminum Bronze	416 SS	Viton	Teflon + Graphite	813
816				EPDM	Teflon + Graphite	816
819				Buna	Teflon + Graphite	819
846	Ductile Iron	Ductile Iron, Nickel Plated	316 SS	EPDM	Teflon + Graphite	846
848				Buna	Teflon + Graphite	848
574				Buna	Teflon + Graphite	574
575	Ductile Iron	Ductile Iron, Nylon 11 covered	416 SS	EPDM	Teflon + Graphite	575
694				EPDM	Teflon + Graphite	694

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