Building Connections That Last™

ASC Engineered Solutions

Series 396 / 397

2"– 72" Resilient Seated Butterfly Valves Datasheet

Series 396
Wafer style

Series 397
Lugged style

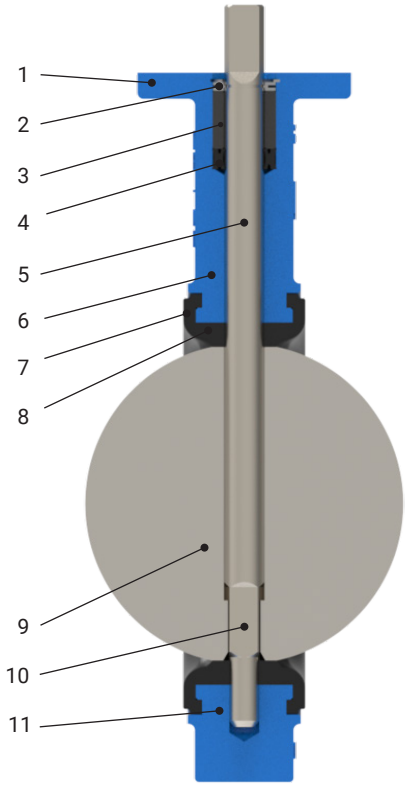
ABZ VALVE
An ASC Engineered Solution

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

Advantages

- Standard one-piece series 396 (wafer) and series 397 (lugged) butterfly valves are suitable for bi-directional service at the full pressure rating of the valve.
- Standard lugged style valves (series 397) are suitable for bi-directional dead-end service at the full pressure rating of the valve

1. High-precision machined bodies ensure component & operator interchangeability, and consistent valve performance.
2. Snap rings and washers retain (blow-out proof) the stem, bushing, and packing (2" to 24").
3. Top bushing, made from corrosion resistant materials, absorbs side loads from actuators and operators.
4. Self-adjusting, double V-shape stem packing protects the stem area.
5. Stems are machined to standard dimensions for interchangeability. 2" to 12" valves have one-piece stems, and 14" to 72" valves have two-piece stems.
6. Extended body necks allow for pipe insulation (2"-12").
7. Valve seats have been designed to be the seal between the valve and standard ASME 125/150 flanges. Flange gaskets are not used during installation.
8. 14" to 24" valve seats are injection molded directly to the body. All other sizes have booted (dovetail) seats that are bonded to the body during assembly.
9. Disc edge is machined and buffed to provide bubble-tight shut-off, lower torque, and longer seat life.
10. Stem design internally drives the disc. The design does not require pins or fasteners and eliminates potential points of failure.
11. Body and stem are fully isolated from the pipeline line media by the primary seal, which is the interference fit between the seat & disc.



Specifications

Design: API 609 Category A, MSS SP67

Testing: API 598, ISO 5208

Standard Construction

Body
Ductile Iron with Aliphatic Acrylic Polyurethane coating (epoxy primer)

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.

Pressure Rating

	Bi-directional	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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2"– 72" Resilient Seated Butterfly Valves
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Valve Torque Data (lbf–in): EPDM & Buna–N Seats

Valve Size	Normal Conditions - psid (differential)						Severe Conditions - psid (differential)					
	Δ P=0	Δ P=50	Δ P=100	Δ P=150	Δ P=200	Δ P=250	Δ P=0	Δ P=50	Δ P=100	Δ P=150	Δ P=200	Δ P=250
2"	221	230	240	250	258	269	373	384	400	406	418	444
2½"	269	283	288	302	317	339	454	464	475	486	507	538
3"	322	341	365	379	400	421	540	568	589	611	647	678
4"	480	514	542	576	602	631	816	848	886	918	955	1,006
5"	653	706	754	806	871	923	1,102	1,162	1,220	1,274	1,327	1,404
6"	907	1,008	1,109	1,210	1,285	1,355	1,529	1,642	1,756	1,868	1,965	2,082
8"	1,512	1,714	1,915	2,112	2,260	2,383	2,549	2,776	3,002	3,229	3,410	3,602
10"	2,318	2,621	2,900	3,224	3,440	3,633	3,910	4,250	4,590	4,931	5,203	5,497
12"	3,125	3,629	4,138	4,637	6,234	6,589	5,270	5,838	6,404	6,971	7,403	7,824
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	-	-	14,602	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	-	-
40"	76,110	89,933	107,063	116,820	-	-	91,332	98,207	117,052	140,184	-	-
42"	81,774	96,205	114,122	144,698	-	-	98,129	107,834	124,952	173,637	-	-
48"	117,263	129,825	154,554	172,575	-	-	140,715	158,799	174,504	207,090	-	-
54"	159,123	179,008	220,356	238,065	-	-	190,948	229,659	256,059	285,678	-	-
60"	237,180	235,912	235,912	309,750	-	-	284,616	288,257	315,945	371,700	-	-
72"	309,750	320,371	320,371	432,765	-	-	371,700	397,370	435,539	611,712	-	-

The torque data above (lbf–in) includes a 20% Safety Factor.

Undercut discs (with lower torque & reduced pressure rating) are available as special order.

Torque of Viton seated valves = EPDM torque shown above x 1.20

Severe Conditions:

- Media with solvents, alcohols, or detergents that remove amides, or
- Degreasing, abrasive, or dry (gases, powders, etc) applications, or
- Pipeline media that coats internal valve components with substantial deposits, or
- Infrequently operated valves (i.e. once a year)

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

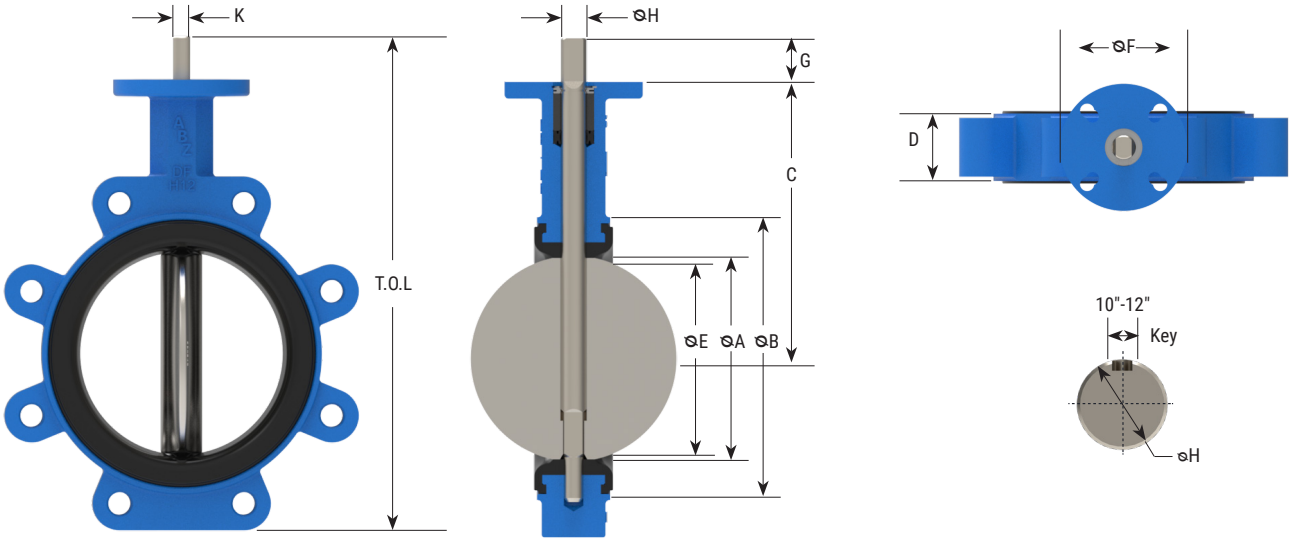
Flow Coefficient (C_v)

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
40"	757	2,971	6,925	11,862	19,307	43,800	50,406	73,990	90,175
42"	788	3,302	7,693	13,370	20,013	50,247	51,037	81,057	99,872
48"	1,023	4,651	10,365	17,010	27,242	55,996	70,431	108,968	132,888
54"	1,300	5,336	12,763	20,189	35,872	63,200	83,264	131,357	167,000
60"	1,480	6,400	14,500	24,500	39,400	70,200	102,000	154,000	190,000
72"	1,900	8,220	18,600	31,500	50,700	81,200	131,000	198,000	244,000

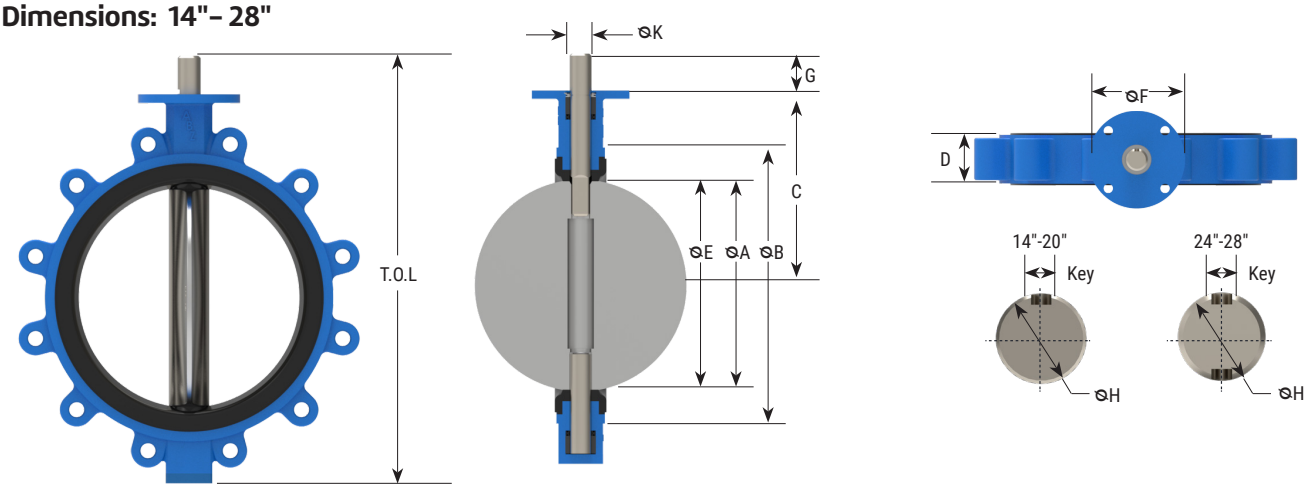
C_V values represent U.S. gallons per minute of 60°F water through a 100% open valve at a pressure drop of 1 psi.
Recommended control angles are between 20°–75° open (22% to 83% open).

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

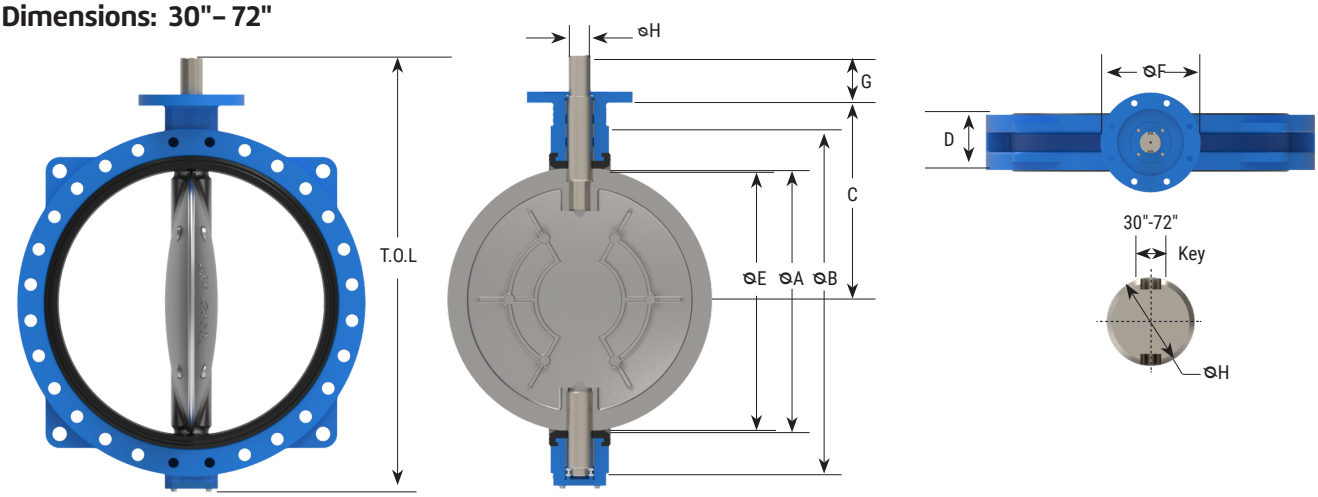
Dimensions: 2"– 12"



Dimensions: 14"– 28"



Dimensions: 30"– 72"



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

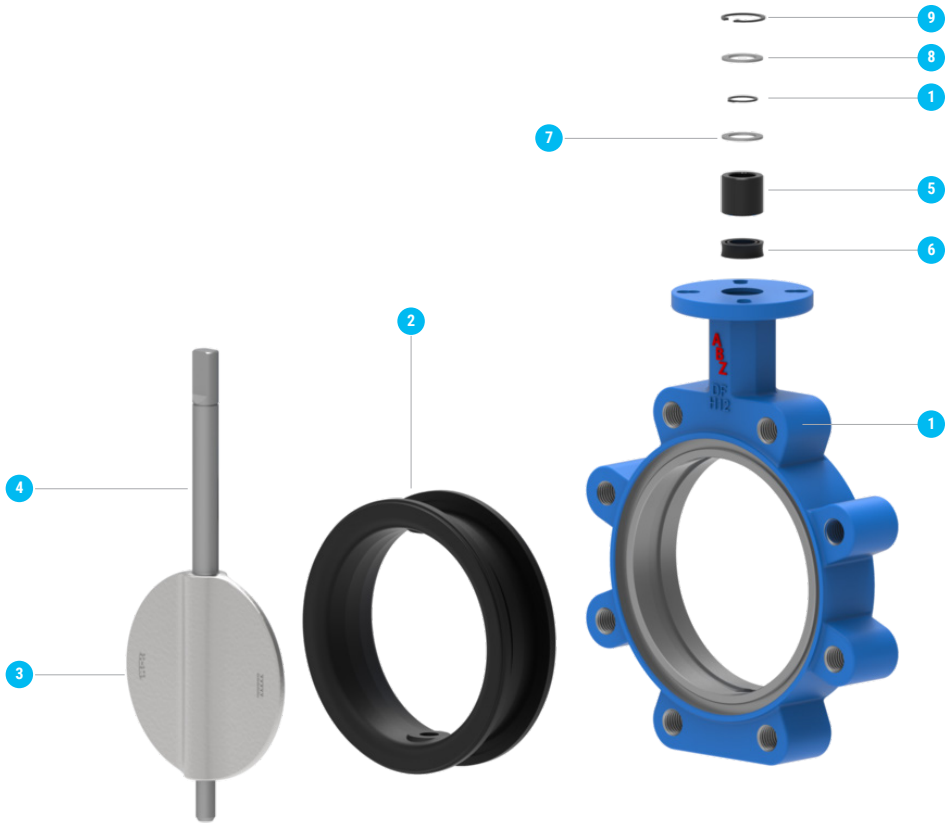
ASC Engineered Solutions

Approximate Dimensions – inches

Valve Size	⌀A	⌀B	C	D	E	⌀F	G	⌀H	K	Key	T.O.L.	Top Plate Drilling			397 Lugged Drilling Pattern			Weight (Pounds)	
												Bolt Circle	No. Holes	Hole Dia.	Bolt Circle	No. Holes	Thread UNC	396	397
2"	2.00	3.54	5.50	1.625	1.43	4.0	1.25	0.562	0.375	N/A	9.23	3.25 & F07	4	7/16	4.75	4	5/8 x11	7	7
2½"	2.45	4.00	6.00	1.75	1.92	4.0	1.25	0.562	0.375	N/A	10.01	3.25 & F07	4	7/16	5.50	4	5/8 x11	8	9
3"	3.02	4.69	6.25	1.75	2.67	4.0	1.25	0.562	0.375	N/A	10.42	3.25 & F07	4	7/16	6.00	4	5/8 x11	9	10
4"	4.04	5.91	7.00	2.00	2.69	4.0	1.25	0.562	0.437	N/A	12.67	3.25 & F07	4	7/16	7.50	8	5/8 x11	12	30
5"	4.83	7.13	7.50	2.125	4.49	4.0	1.25	0.750	0.500	N/A	13.79	3.25 & F07	4	7/16	8.50	8	3/4 x10	19	24
6"	5.92	8.19	8.00	2.125	5.69	4.0	1.25	0.750	0.500	N/A	14.85	3.25 & F07	4	7/16	9.50	8	3/4 x10	20	26
8"	7.89	10.25	9.50	2.50	7.77	6.0	1.25	0.875	0.625	N/A	17.51	5.0 & F12	4	9/16	11.75	8	3/4 x10	35	41
10"	9.76	12.64	10.75	2.50	9.71	6.0	2.00	1.125	N/A	1/4 x 1/4	21.02	5.0 & F12	4	9/16	14.25	12	7/8 x9	52	64
12"	11.40	14.57	12.25	3.00	11.30	6.0	2.00	1.125	N/A	1/4 x 1/4	23.81	5.0 & F12	4	9/16	17.00	12	7/8 x9	68	69
14"	13.00	17.00	12.00	3.00	13.00	6.0	2.25	1.370	N/A	5/16 x 5/16	25.21	5.0 & F12	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	N/A	3/8 x 3/8	27.47	5.0 & F12	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	1.875	N/A	1/2 x 1/2	30.85	6.5 & F16	4	13/16	22.75	16	1 1/8 x 7	180	226
20"	19.10	23.78	15.78	5.00	18.74	8.0	3.00	2.122	N/A	1/2 x 1/2	33.45	6.5 & F16	4	13/16	25.00	20	1 1/8 x 7	262	340
24"	23.20	28.50	22.24	6.00	22.65	8.00	3.00	2.122	N/A	1/2 x 1/2	41.98	6.5 & F16	4	13/16	29.50	20	1 1/4 x 7	416	508
28"	26.38	34.22	22.05	6.5	25.83	11.8	4.00	2.500	N/A	7/8 x 5/8	46.14	10 & F25	8	0.71	34.0	28	1 1/4 x 7	584	708
30"	29.50	38.80	23.20	6.54	29.25	11.8	4.00	2.500	N/A	7/8 x 5/8	48.02	10 & F25	8	0.71	36.00	28	1 1/4 x 7	886	886
36"	35.60	46.00	28.30	7.95	32.35	13.8	4.50	3.150	N/A	1 x 3/4	58.24	11.73 x F30	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	N/A	1 x 3/4	64.96	11.73 x F30	8	0.91	47.25	36	1 1/2 x 6	2042	2042
42"	41.31	53.00	32.10	9.88	40.80	13.8	5.31	3.500	N/A	1 x 3/4	67.20	11.73 x F30	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	N/A	1 1/4 x 3/4	75.20	14.20 & F35	8	1.30	56.00	44	1 1/2 x 6	3230	3230
54"	53.96	66.34	40.35	15.00	52.16	16.34	6.50	5.510	N/A	1 1/2 x 1	83.81	14.20 & F35	8	1.30	62.75	44	1 3/4 x 5	4132	4132
60"	58.15	72.99	44.29	15.00	56.79	18.7	6.50	6.500	N/A	1 3/4 x 1 1/4	90.94	15.98 & F40	8	1.57	69.25	52	1 3/4 x 5	5574	5574
72"	68.80	86.42	50.39	17.99	67.24	22.1	10.00	7.500	N/A	2 x 1 3/8	108.15	19.02 & F48	8	1.57	82.52	60	1 3/4 x 5	9424	9424

Notes

1. Design in accordance with API 609 Category A and MSS SP67.
2. Valves cannot be installed in pipe or with flanges that have an inside diameter less than the "E" dimension.
3. 2"–24" Flange Connection: ASME B16.1 Class 125 & ASME B16.5 Class 150.
4. 26" & larger Flange Connection: ASME B16.1 Class 125

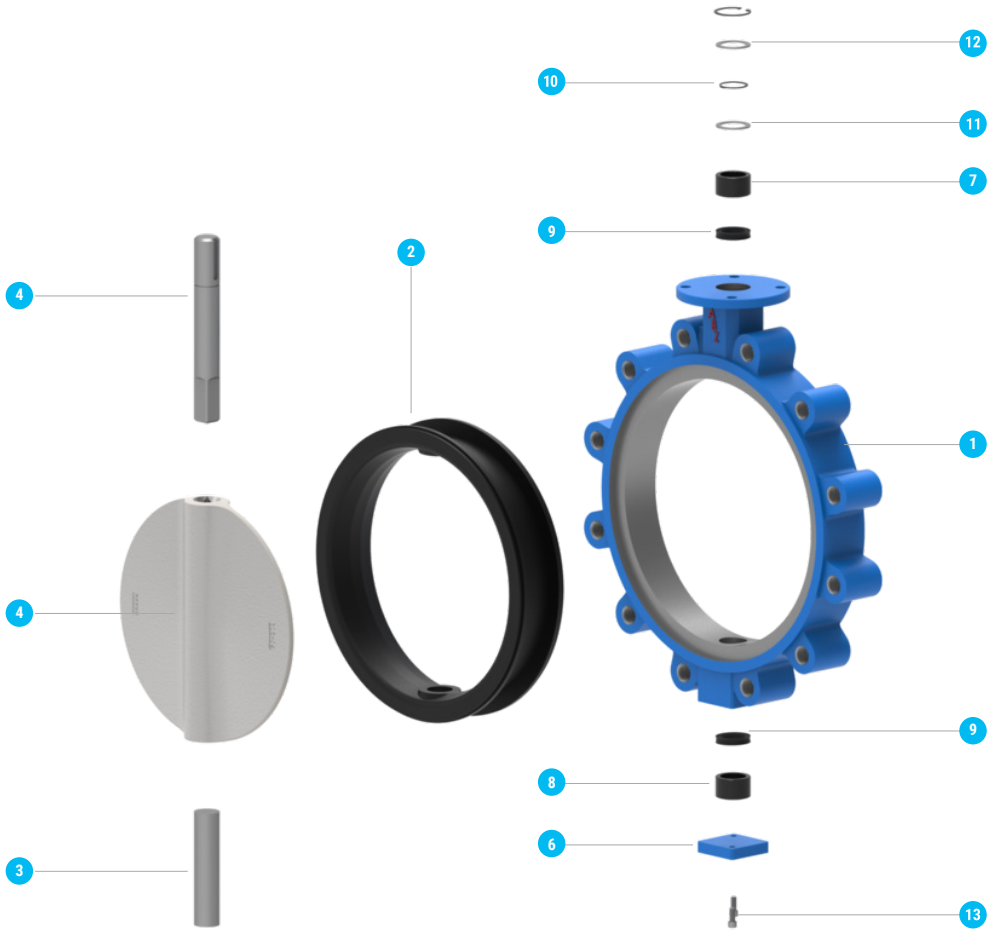


2"–12" Parts List and Standard Materials

No.	Part Name	QTY	Material
1	Body	1	Ductile Iron (DI)
2	Seat	1	EPDM, Buna-N*, or Viton*
3	Disc	1	316SS, DI+ENP, DI+Nylon, or C95400 (AL-Bronze)
4	Stem	1	416SS, or 316SS
5	Bushing	1	PTFE + Graphite
6	V-packing	1	Buna-N*
7	Gasket	2	Carbon Steel
8	Stem Retaining Ring	1	Carbon Steel
9	Body Retaining Ring	1	Carbon Steel

*Nitrile rubber, also known as nitrile butadiene rubber, NBR, Buna–N, or acrylonitrile butadiene rubber.
Viton a brand of Chemours, also known as FKM, fluorine rubber, or fluoro–rubber.

14"– 28" Resilient Seated Butterfly Valves
Series 396 / 397



14"–28" Parts List and Standard Materials

No.	Part Name	QTY	Material
1	Body	1	Ductile Iron (DI)
2	Seat	1	EPDM, Buna-N*, or Viton*
3	Disc	1	316SS, DI+ENP, DI+Nylon, or C95400 (AL-Bronze)
4	Upper Stem	1	416SS, or 316SS
5	Lower Stem	1	same as upper stem
6	End Cap	1	Ductile Iron (DI)
7	Bushing	2	PTFE + Graphite
8	Bushing	1	PTFE + Graphite
9	V-packing	2	Buna-N*
10	Gasket	2	Carbon Steel
11	Stem Retaining Ring	1	Carbon Steel
12	Body Retaining Ring	1	Carbon Steel
13	Bolt	1 Set	Carbon Steel

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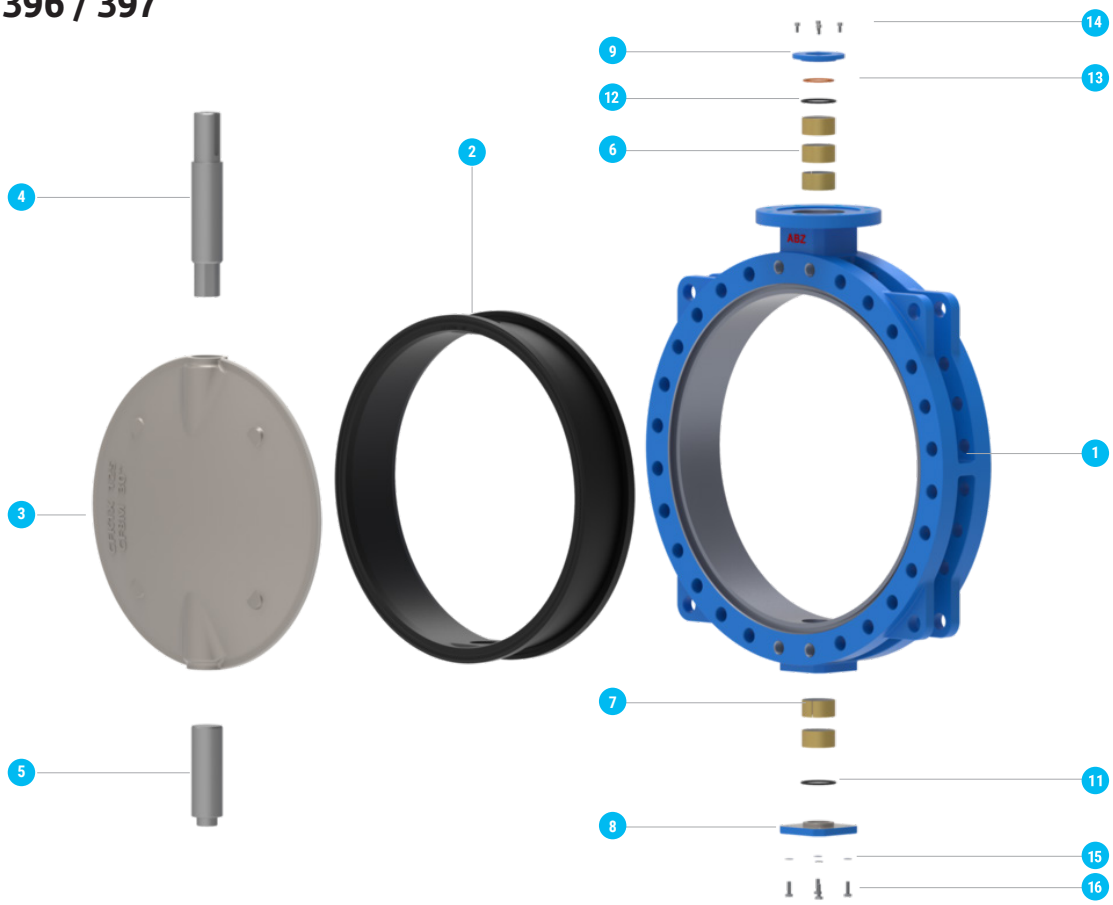
30"– 72" Resilient Seated Butterfly Valves
Series 396 / 397



30"–72" Parts List and Standard Materials

No.	Part Name	QTY	Material
1	Body	1	Ductile Iron (DI)
2	Seat	1	EPDM, Buna-N*, or Viton*
3	Disc	1	316SS, DI+ENP, DI+Nylon, or C95400 (AL-Bronze)
4	Upper Stem	1	416SS, or 316SS
5	Lower Stem	1	same as upper stem
6	Upper Bushing	1 Set	Copper + PTFE
7	Lower Bushing	1 Set	Copper + PTFE
8	Lower End Cap	1	1020 Steel
9	Upper End Cap	1	1020 Steel
10	Trust Ball Bearing	1	Bearing Steel
11	Lower End Cap O-ring	1 Set	Buna-N*
12	Upper End Cap O-ring	1 Set	Buna-N*
13	Wear Ring	1	Copper
14	Upper End Cap Bolt	1 Set	Carbon Steel
15	Washer	1 Set	Carbon Steel
16	Lower End Cap Bolt	1 Set	Carbon Steel

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How to order Series 396 / 397 Butterfly Valves

Example: **4" 397 815 NSF GO**

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: 4" 397 815 NSF GO.

4" | **397** | **815** | | **NSF GO**

Size

416 SS Stem: 250 PSI Rated, 250 PSI Dead-End ‡ 316 SS Stem: 200 PSI Rated, 200 PSI Dead-End‡	150 PSI Rated, 150 PSI Dead-End ‡
2"	14"
2.5"	16"
3"	18"
4"	20"
5"	24"
6"	26"
200 PSI Rated (1) 200 PSI Dead-End ‡(1)	28"
	30"
8"	32"
10"	36"
12"	40" ‡
	42"
	48"
‡ Series 397, single flange lug-design only.	54" ‡
	60" ‡
	72" ‡

Series

396	Wafer
397	Lug
398	Double Flanged *

* Contact Factory.

Trim

XXX

Version

B 26" & Larger

Suffixes / Options

<blank>	Bare Stem
HP	High Pressure (1)
NSF	NSF certified (2)
SF	Silicone Free
UC	Undercut Disc
HDL	Handle (2"-12" only)
GO	Gear Operator
CWGO	Go with Chainwheel

(1) 250 PSI bi-directional & dead-end service rating (8" – 12") with 416 SS stem and HP option.

(2) Select NSF suffix if Trim Code is 575, 806, 807, 815, 816.

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 (2)				EPDM	Teflon + Graphite	815 (2)
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
806 (2)	Ductile Iron	316 SS	316 SS	EPDM	Teflon + Graphite	806 (2)
809				Buna	Teflon + Graphite	809
816 (2)	Ductile Iron	Aluminum Bronze	416 SS	EPDM	Teflon + Graphite	816 (2)
819				Buna	Teflon + Graphite	819
574	Ductile Iron	Ductile Iron, Nylon 11 covered	416 SS	Buna	Teflon + Graphite	574
575 (2)				EPDM	Teflon + Graphite	575 (2)

Additional materials and options are available, please contact us with your requirement

Note:

Responsibility for proper selection, use and maintenance of any product remains solely with the purchaser and end user.

Note:

We reserve the right to modify or improve the designs or specifications of any product at any time without notice.

ABZ VALVE
An ASC Engineered Solution

About ASC Engineered Solutions

ASC Engineered Solutions connects high-quality products with advanced technology, service, and support. With nearly 2,000 employees, the company's extensive portfolio of precision-engineered piping support, valves and connections provides products to professionals across industries, such as commercial and residential construction, industrial, fire protection, and oil and gas. Its portfolio of leading brands includes ABZ Valve®, AFCON®, Anvil®, Anvil EPS, Basic-PSA, Beck®, Catawissa, Cooplet®, FlexHead®, FPPI®, Gruvlok®, J.B. Smith, Merit®, NAP®, Quadrant®, SCI®, Sharpe®, SPF®, SprinkFLEX®, Trenton Pipe, VEP, and WARDFlex®. With headquarters in Oak Brook, IL, ASC also has ISO 9001:2015 certified production facilities in PA, TN, IL, TX, AL, KS, and RI.

asc-es.com

Building Connections That Last™

ASC® Engineered Solutions

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