

Soft Seat High Performance Butterfly Valves

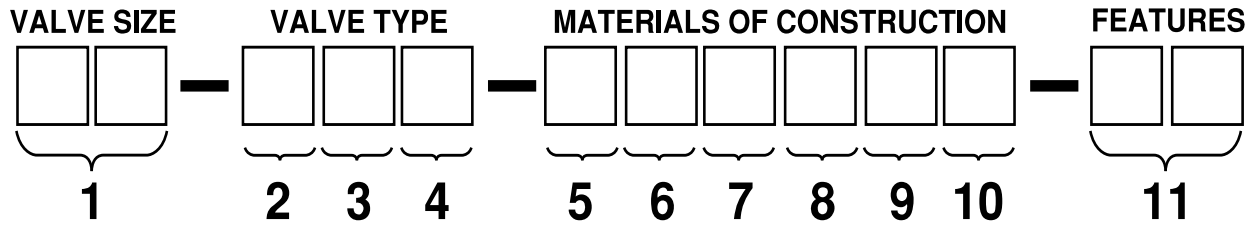


High Quality High Performance

Typical Applications:

- Hydrocarbon Processing
- Chemical/Petrochemical Processing
- Marine and Commercial Shipbuilding
- Power and Utilities
- Pulp and Paper

Soft Seat High Performance Butterfly Ordering Information



1. Size	Code
2"	02
2½"	25
3"	03
4"	04
to 24"	24

2. Body Class	Code
ASME 150	1
ASME 300	3

3. Body Type	Code
Lugged - Double Dead End	7

4. Shaft Design	Code
Straight (2" - 12")	A
Balanced (14" - 24")	C

5. Body Material	Code
Carbon Steel	1
Stainless Steel	2

6. Disc Material	Code
316 SS	2

7. Shaft Material	Code
17-4PH SS	1

8. Seat Material / O-Ring	Code
RTFE / Silicone	R

9. Packing Material	Code
TFE	T

10. Bearing Material	Code
Glass Backed TFE	G

11. Actuator Type	Code
Bare Shaft	BD
Ratchet Handle	HD
Worm Gear	3D
Pneumatic Double Acting	4
Pneumatic SR Fail Close	5
Pneumatic SR Fail Open	6
Electric	8

EXAMPLE: 03-37A-121RTG-HD

This would be the part number for a 3" Class 300, Dead-End Lug Style body, straight shaft design, carbon steel body, 316 SS disc, 17-4PH SS shaft, RTFE/Silicone seat and O-rings, TFE packing, glass-packed TFE bearings, with a ratchet handle.

Soft Seat High Performance Butterfly Components

KEY
Square key valve-to-operator connection provides an externally controlled failure point upon over-torquing.

GLAND FLANGE
Applies load against packing gland to prevent external leakage. Fully adjustable.

PACKING
Chevron design TFE prevents external leakage out valve neck to full ASME hydrostatic shell test pressures (150% of C.W.P.).

WEDGE RING
Stainless steel band wedged between valve body and retainer ring by set screws to lock seat and retainer ring in position on valve sizes 2" through 30". Socket head cap screws are used on valve sizes 36" and larger.

SET SCREWS
Cone point screws force wedge ring outward to lock seat retainer in position on valve sizes 2" through 30". Socket head cap screws are used on valve sizes 36" and larger.

OVERTRAVEL STOP
Prevents disc from rotating into the wrong quadrant.

SOFT-SEAT
Patented bi-directional RTFE seat with encapsulated elastomeric O-ring core for resiliency.

BLOW-OUT PROOF SHAFT
Solid shaft provides alignment and rigid support for disc.

PACKING GLAND
Separate part from gland flange, preventing uneven load distribution against packing.

BEARINGS
Both above and below the disc, bearings are of composite material: PTFE bonded to epoxy-glass filament wound ring. Used to align shaft with high capacity, low wear, and low friction coefficient.

DISC SPACERS
Disc is centered by use of thrust spacers around shaft in sizes 2" to 5". Disc position stops or thrust bolt arrangements are used for larger valve sizes.

WEDGE PINS
Provide positive mechanical attachment of disc to shaft.

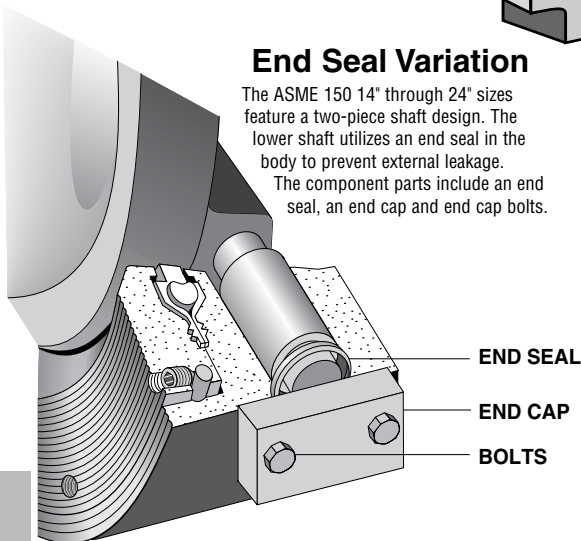
BODY
ASME B16.34 design in either wafer or lug configuration.

DISC
360° uninterrupted spherical edge for sealing. Profile is designed for maximum flow and equal percentage control.

RETAINER RING
Retains seat in valve. Standard surface finish is 125 to 200 AARH and is compatible with both standard gaskets and spiral wound gasket designs. Outside diameter is recessed within gasket sealing surface to prevent external leakage.

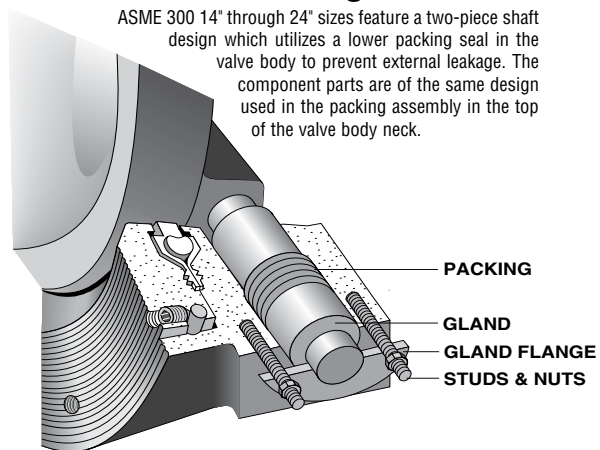
End Seal Variation

The ASME 150 14" through 24" sizes feature a two-piece shaft design. The lower shaft utilizes an end seal in the body to prevent external leakage. The component parts include an end seal, an end cap and end cap bolts.



Lower Packing Variation

ASME 300 14" through 24" sizes feature a two-piece shaft design which utilizes a lower packing seal in the valve body to prevent external leakage. The component parts are of the same design used in the packing assembly in the top of the valve body neck.



Soft Seat High Performance Materials and Specifications

STANDARD MATERIALS OF CONSTRUCTION

Carbon Steel Construction

COMPONENTS	-20°F to 450°F 121RTG CONSTRUCTION
BODY	Carbon Steel A216 Gr WCB, or A105
DISC	316 Stainless Steel A351 CF8M
SHAFT & PINS	17-4 PH Stainless Steel A564 Gr 630
SEAT	Reinforced TFE
PACKING	TFE
BEARINGS	Glass-Backed TFE

Stainless Steel Construction

COMPONENTS	-20°F to 450°F 221RTG CONSTRUCTION
BODY	Stainless Steel A351 CF8M
DISC	316 Stainless Steel A351 CF8M
SHAFT & PINS	17-4 PH Stainless Steel A564 Gr 630
SEAT	Reinforced TFE
PACKING	TFE
BEARINGS	Glass-Backed TFE

TYPICAL SOFT SEAT SPECIFICATION

1.0 Scope

This specification covers the design and testing of high pressure offset seat butterfly valves.

2.0 Applicable Standards

The following standards shall apply

- ASME B16.5: Pipe Flanges and Flanged Fittings (24" size and smaller).
- ASME B16.34: Valves-Flanged and Buttwelding End.
- MSS SP-25: Standard Marking System for Valves, Fittings, Flanges and Unions.
- MSS SP-61: Pressure Testing of Steel Valves.
- MSS SP-68: High Pressure-Offset Seat Butterfly Valves.
- API 609: Butterfly Valves, Lug-Type and Wafer-Type.
- PED Pressure Equipment Directive Section H.

3.0 Design Requirement

- 3.1 Valves shall be High Performance Butterfly with offset seat and eccentric shaft. They shall be capable of sealing against full differential pressure in either flow direction.
- 3.2 Valve seat shall be both self and pressure energized with an elastomeric core. The self energizing member shall be isolated from the line media.

- 3.3 Valves shall have retained top and bottom low friction bearings.

- 3.4 Shaft design shall be single piece through 12".

- 3.5 Retainer rings must be recessed in the body so that the line gasket prevents any potential external leakage.

- 3.6 Valves shall have internal stop to prevent disc over-travel.

- 3.7 Valves shall be Stockham or approved equal.

4.0 Materials

- 4.1 Valves shall be constructed of new material.
- 4.2 Carbon steel valves shall be constructed from materials below:
 - 4.2.1 Body-ASTM A105 or A216 Gr. WCB.
 - 4.2.2 Disc-ASTM A182 F316 or A351 Gr. CF8M.
- 4.3 Shafts shall be ASTM A564 type 630 H 1150 or 316 SS.

5.0 Inspection and Test

- 5.1 Valves shall be hydrostatically shell tested per ASME B16.34 and MSS SP-61.
- 5.2 Valves shall be seat tested per MSS SP-61. No leakage is permitted for resilient seated valves.
- 5.3 API 598 testing available upon request.

Soft Seat High Performance Pressure / Temperature Ratings

PRESSURE/TEMPERATURE RATINGS

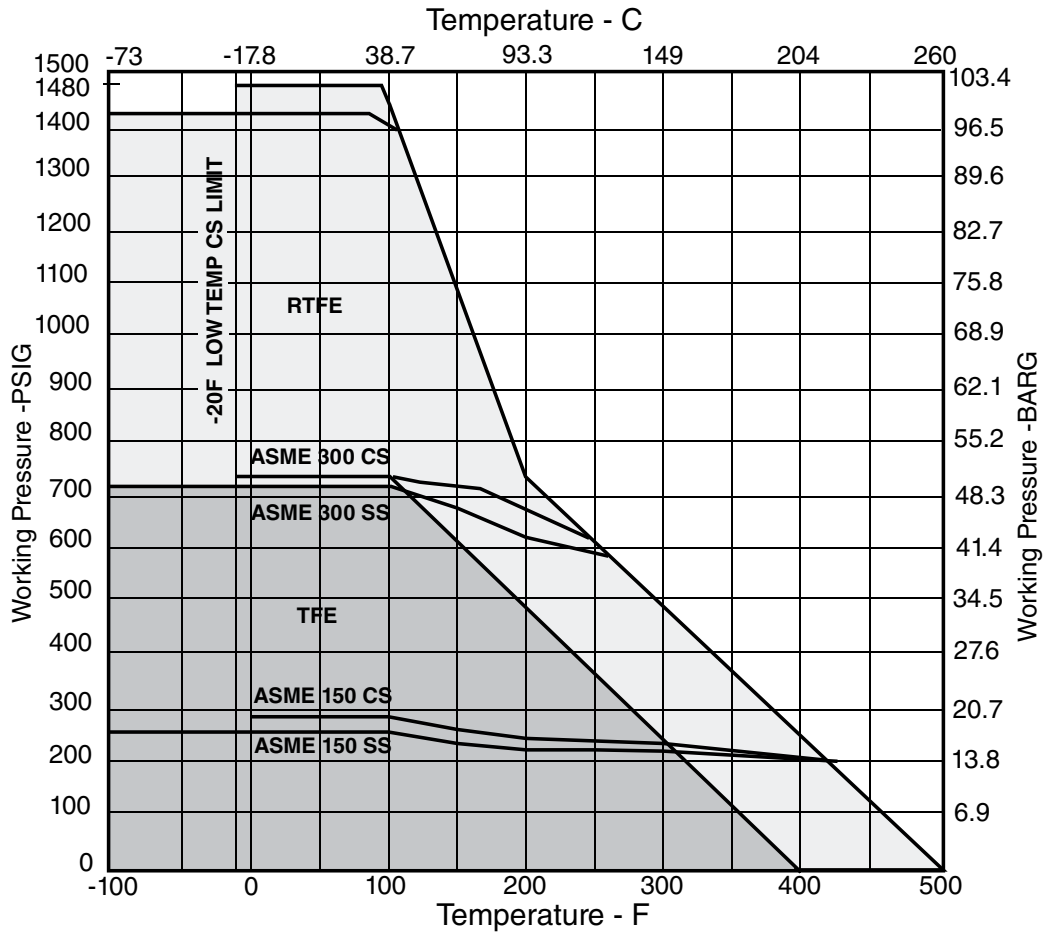
As temperature increases, the pressure retaining capability of materials decreases. The graph below illustrates the pressure/temperature ratings of the Stockham ASME Class 150 and Class 300.

The heavy lines define the carbon steel valve body (or "shell") in conformance to ASME B16.34. The shaded areas define the ratings of the TFE and RTFE Seat materials.

Seat ratings are based on differential pressure with the disc in the fully closed position.

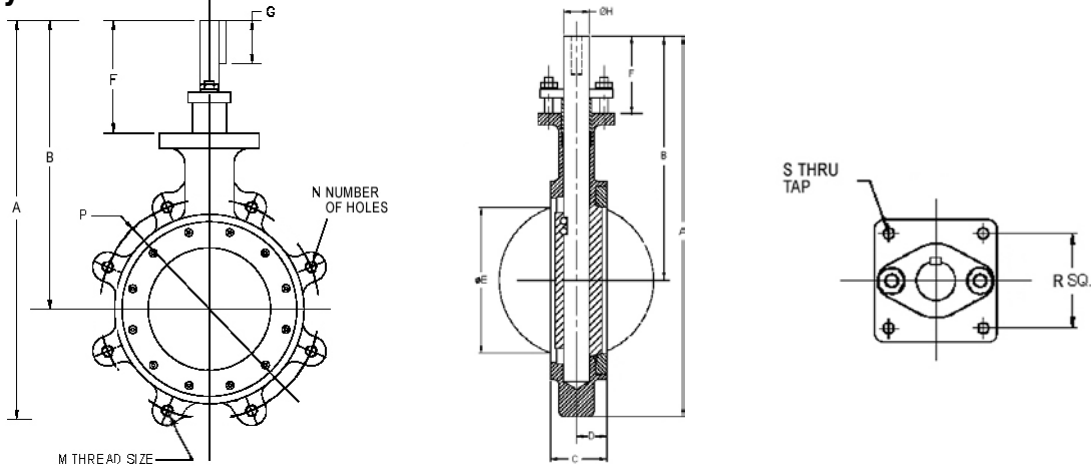
NOTE: Soft seated valves are not recommended for steam service.

ASME B16.34 Body and Stockham Soft Seat Pressure - Temperature Ratings



Figures 17A/C-121RTG, 17A/C-221RTG, 37A/C-121, 37A/C-221RTG Soft Seat High Performance Lug Body Dimensions

Lug Body Dimensions



ASME Class 150 Valves

Valve Size	A	B	C	D	E	F	G	H	M	N	P	R	S	Weight (LBS.)
2"	10.59	7.59	1.75	1.06	1.72	3.34	3/16	.500	5/8-11	4	4.750	2.25	3/8-16	11
2 1/2"	10.30	7.59	1.88	1.09	2.09	3.34	3/16	.500	5/8-11	4	5.500	2.25	3/8-16	11
3"	11.98	8.60	1.92	1.20	2.75	3.60	3/16	.625	5/8-11	4	6.000	2.25	3/8-16	13
4"	13.55	9.42	2.13	1.26	3.62	3.67	3/16	.625	5/8-11	8	7.500	2.25	3/8-16	25
5"	15.16	10.28	2.25	1.34	4.55	3.81	1/4	.750	3/4-10	8	8.500	2.25	3/8-16	30
6"	15.93	10.81	2.29	1.38	5.55	3.81	1/4	.750	3/4-10	8	9.500	2.25	3/8-16	35
8"	17.94	11.93	2.50	1.49	7.28	3.80	3/8	1.000	3/4-10	8	11.750	2.25	3/8-16	48
10"	20.85	12.97	2.81	1.70	9.20	4.09	3/8	1.250	7/8-9	12	14.250	3.25	3/8-16	91
12"	24.96	15.46	3.23	1.86	11.15	4.83	3/8	1.500	7/8-9	12	17.00	3.25	3/8-16	127
14"	27.14	16.07	3.62	2.19	12.76	4.82	3/8	1.500	1-8	12	18.750	3.25	3/8-16	183
16"	31.66	19.61	4.00	2.31	14.58	6.92	1/2	1.750	1-8	16	21.250	4.25	1/2-13	250
18"	34.53	21.35	4.50	2.45	16.38	7.35	1/2	2.000	1 1/8-8	16	22.750	4.25	1/2-13	305
20"	36.70	22.76	5.00	2.94	18.38	7.63	3/4	2.250	1 1/8-8	20	25.000	5.00	3/4-10	414
24"	41.57	25.13	6.06	3.12	21.88	7.88	3/4	2.500	1 1/4-8	20	29.500	5.00	3/4-10	702

ASME Class 300 Valves

Valve Size	A	B	C	D	E	F	G	H	M	N	P	R	S	Weight (LBS.)
2"	10.59	7.59	1.75	1.06	1.72	3.34	3/16	.500	5/8-11	8	5.000	2.25	3/8-16	11
2 1/2"	10.30	7.59	1.88	1.09	2.09	3.34	3/16	.500	3/4-10	8	5.880	2.25	3/8-16	11
3"	11.98	8.60	1.92	1.20	2.75	3.60	3/16	.625	3/4-10	8	6.625	2.25	3/8-16	17
4"	13.54	9.42	2.13	1.25	3.62	3.67	3/16	.625	3/4-10	8	7.875	2.25	3/8-16	24
5"	15.16	10.28	2.25	1.34	4.55	3.81	1/4	.750	3/4-10	8	9.250	2.25	3/8-16	30
6"	16.31	10.81	2.29	1.38	5.55	3.81	3/8	1.000	3/4-10	12	10.625	2.25	3/8-16	49
8"	19.50	12.22	2.88	1.54	7.06	4.08	3/8	1.250	7/8-9	12	13.000	3.25	3/8-16	80
10"	22.10	14.22	3.25	1.70	9.00	4.84	3/8	1.500	1-8	16	15.250	3.25	3/8-16	115
12"	28.40	17.90	3.62	1.86	10.72	6.90	1/2	1.750	1 1/8-8	16	17.750	4.25	1/2-13	199
14"	34.31	19.74	4.62	2.48	12.08	7.36	1/2	2.000	1 1/8-8	20	20.250	4.25	1/2-13	324
16"	38.14	21.82	5.25	2.59	13.72	7.82	3/4	2.250	1 1/4-8	20	22.500	5.00	3/4-10	401
18"	40.26	23.00	5.88	3.03	15.56	7.87	3/4	2.500	1 1/4-8	24	24.750	5.00	3/4-10	517
20"	43.62	25.13	6.31	3.24	17.22	8.74	3/4	3.000	1 1/4-8	24	27.00	5.00	3/4-10	735
24"	49.94	28.27	7.19	3.62	20.61	8.89	1	3.500	1 1/2-8	24	32.00	7.00	1-8	1020

NOTES:

1. General

- Standard valves tested to MSS SP-61. API 598 testing available on request.
- Dimensions shown are for reference only. Certified drawings available on application.

2. For all sizes:

- Face-to-face dimensions (C) meet, within specified tolerance, MSS SP-67 and API 609 requirements.
- Valves are designed for installation between ASME B16.5 flanges.