



Grinnell GHP double offset high performance butterfly valve – ASME 150 and 300.

Features and Benefits

- Integrally cast mounting pad provides direct mounting of most actuators.
- Rocker-shaped gland bridge compensates for uneven adjustment of gland nuts.
- Extended neck allows for two inches of pipeline insulation.
- Flattened body bore at stem journal ports positions stem bearings near disc, providing maximum stem support.
- Disc taper pins are tangentially positioned half in disc and half in stem, placing them in compression rather than shear, which eliminates potential for failure.
- Integrally cast disc position stop perfectly locates the disc in seat, achieving maximum seat and seal life.
- GHP polymer, elastomer, and fire-safe seats provide bi-directional, drop-tight closure in vacuum and throughout all pressure ranges, as well as at full rated differential pressure. A variety of materials allow optimum seat life in all applications.



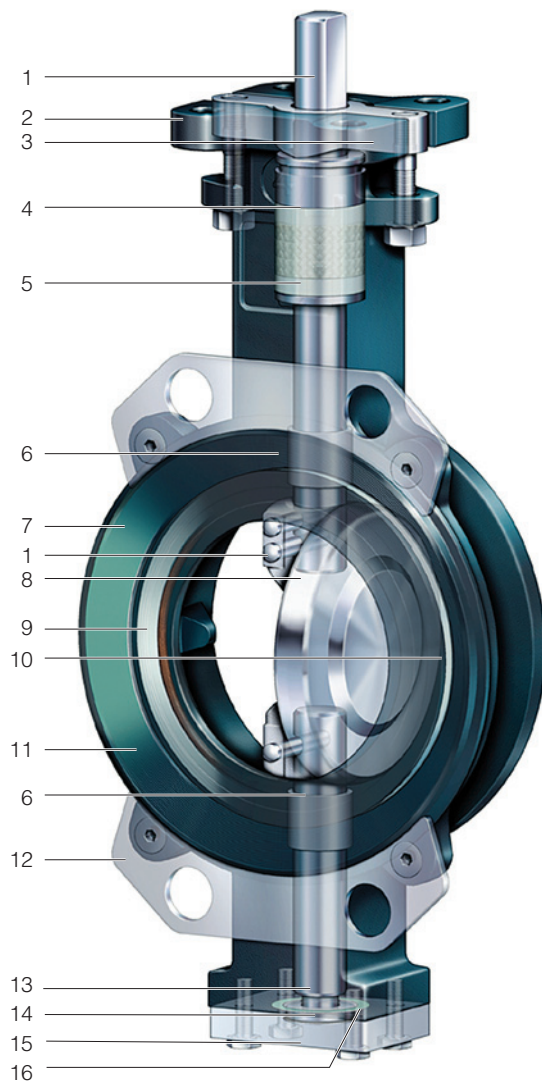
General Applications

- HVAC
- Steam and vacuum services
- Potable water

Technical Data

Size Range:	2" to 36" wafer and lug styles
Pressure Rating:	ASME 150 and 300
Temperature Rating:	-20°F to 1000°F

Grinnell is either a trademark or registered trademark of Tyco International Services AG or its affiliates in the United States and/or other countries. All other brand names, product names, or trademarks belong to their respective holders.

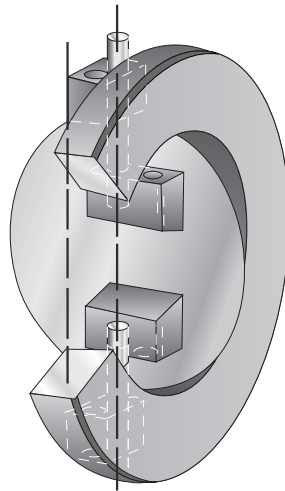


Materials

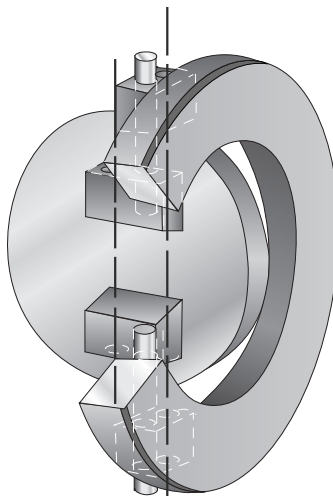
No.	Description	Material	Material Standard
1	Stem and taper pins	17-4 PH 316B SS NITRONIC 50®	ASTM A564 Condition H1075 or H1100 ASTM A276-316 Condition B ASTM A276-XM19
2	Body	CS SS	ASTM A216-WCB ASTM A351-CF8M
3	Gland bridge	17-4PH SS, CS	
4	Packing gland follower	316 SS	
5	Stem packing	PTFE, Graphite	
6	Stem bearing	316 SS/Nitride,	
7	Body gasket	Non-asbestos fiber, Graphite	
8	Disc	316 SS 316 SS/ENP	ASTM A351-CF8M ASTM A351-CF8M/electroless nickel plated
9	Seat	Polymer	PTFE, RTFE, UHMWPE
10	Seat-backing ring	SS	
11	Seat retainer ring	CS, 316 SS	
12	Flange locator plate	SS, CS/zinc plated	
13	Disc locating shoulder	316 SS	
14	Bottom cover gasket	Non-asbestos fiber or Graphite	
15	Bottom cover plate	316 SS	
16	Thrust washer	SS/Nitride	

Principles of Operation

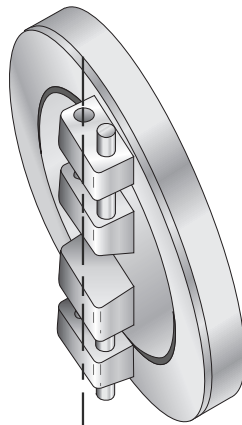
First Offset



Second Offset



Double Offset



Double Offset Disc/Stem

The GHP's unique two-piece stem and double-offset disc/stem design allows for high cycling and creates a lower disc profile with increased capacity and a range of 33:1.

In addition to increasing the flow area across the disc, this design minimizes wear points between seat and disc.

The first offset is achieved by locating the stems downstream of the center-line of the seat. This allows for a totally unobstructed 360° sealing surface.

The second offset locates the stems off-center of the vertical axis of the seat.

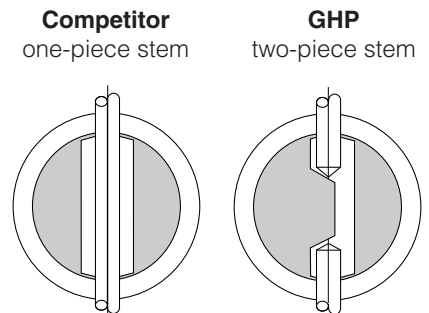
The combination of these two offsets creates a camming effect as the disc swings into and out of the seat. The disc lifts quickly out of the seat in the first few degrees of travel and does not contact the seat again until it is nearly closed. There are no wear points between the seat and disc, while operating torques are reduced and seat life is extended.

Seat Design

The GHP seat is a true interference seat design and does not rely on line pressure to assist in sealing. All seats seal drop-tight bi-directionally at low pressure as well as high pressure. Polymer (PTFE, RTFE and UHMWPE) seats incorporate a stainless steel braided wire winding enclosed in a U-shape envelope, to provide seating energy and memory. This wire winding allows axial flexibility in both directions of flow. The winding also allows radial flexibility when the disc is not fully closed, reducing seat/disc interference, seat wear and stem torque. When the disc closes, it provides circumferential stiffness and assures the required disc/seat seals tight.

Two-piece Stem vs. One-piece Stem

The disc geometry of the GHP maximizes flow capacity by increasing the available flow area through the valve. This increase in disc efficiency results in a higher valve C_v .



Aspect Ratio = Open Area ÷ Disc Area

ANSI/FCI 70-2 Control Valve Seat Leakage, Tolerances, and Test Specifications

ANSI B16.104-1976	Maximum Leakage			Test Medium	Pressure and Temperature
Class VI	Nominal Port Diameter (in.)	Bubbles per Minute ²	ml. per Minute	Air or Nitrogen	Service ΔP or 50 psig [3.4 bar differential], whichever is lower, at 50° to 125°F [10° to 52°C]
	2	3	0.45		
	2½	4	0.60		
	3	6	0.90		
	4	11	1.70		
	6	27	4.00		
	8	45	6.75		
Class V	5 x 10 ⁻⁴ ml/min/psig/in. port dia. [5 x 10 ⁻¹² m ³ /sec/bar differential/mm port dia.]			Water	Service ΔP at 50° to 125°F [10° to 52°C]
Class IV	0.01% valve capacity at full travel			Air or Water	Service ΔP or 50 psig [3.4 bar differential], whichever is lower, at 50° to 125°F [10° to 52°C]

Notes:

- GHP polymer seats provide ANSI Class VI shut-off.
- Using the ANSI/FCI specified calibrated measuring device.

Reference ANSI/FCI 70-2 for further information.

C_v Values vs. Travel Position

Size (in.)	Angle of Opening								CL 150 90°	CL 300 90°
	10°	20°	30°	40°	50°	60°	70°	80°		
2	6	10	19	34	51	78	105	134	163	160
2½	6	10	19	34	53	80	111	148	175	170
3	8	12	24	43	67	100	139	186	220	215
4	16	23	44	80	130	194	269	360	425	413
5	30	44	83	149	242	366	504	673	795	785
6	50	70	130	230	370	550	760	1,010	1,195	1,140
8	83	117	251	437	695	1,052	1,496	2,001	2,440	2,300
10	144	202	454	754	1,185	1,821	2,611	3,541	4,540	4,333
12	208	304	678	1,051	1,625	2,766	3,838	5,325	6,915	6,600
14	257	360	747	1,186	1,909	3,121	4,416	6,225	8,300	7,920
16	308	432	803	1,422	2,289	3,614	5,251	7,530	10,040	9,580
18	373	548	1,121	1,869	2,990	4,735	6,728	9,845	12,460	11,890
20	463	680	1,390	2,315	4,010	6,175	8,795	12,655	15,430	14,720
24	650	991	2,076	3,803	6,060	9,091	13,301	18,466	21,660	20,665
30	1,015	1,550	3,240	4,670	9,460	14,200	21,400	29,800	36,000	35,500
36	1,460	2,300	4,640	5,950	13,700	21,000	30,400	44,000	56,000	55,500

Vacuum Rating

The combination of interference fit seats and bi-directional packing makes the GHP especially well suited for vacuum service.

Standard GHP high performance valves are rated to an absolute pressure of 4 x 10⁻⁵ inch Hg. Higher vacuum applications are available.

Seating and Un-seating Torque

Seating and un-seating torques are a function of the size of the valve and the shut-off pressure of the system.

Specific torque ratings can be found in the Seating/Un-seating chart at the intersection of the "size" row and the "shut-off pressure" column.

Torques listed are for PTFE and RTFE seated valves. For different seat materials specific multipliers are to be used as stated.

All torques listed are for normal service conditions (i.e. operating frequency is a minimum of once per month; disc corrosion is expected to be mild or minor, the media is a clean gas, liquid or steam, and is non-abrasive) and chemical affects upon the seat are minor.

PTFE and RTFE Bi-Directional Seating and Un-Seating Torque Values

Valve Size (inch)	Shaft Mounting Code (ANSI)		Seating and Un-seating Torque (lbs. in.) System Shut-off Pressure (psig)					
	150	300	150	200	285	400	500	740
2	BAB	BAB	220	280	380	460	520	580
2½	BAB	BAB	220	280	380	460	520	580
3	BAC	BAC	250	320	430	520	590	650
4	BAD	BAD	475	600	820	995	1,120	1,235
5	BAD	BAD	925	1,125	1,350	1,570	1,750	1,900
6	CAD/CAE*	CAE	1,370	1,600	1,850	2,150	2,390	2,900
8	CAF	CAF	2,060	2,330	3,200	4,020	4,870	6,720
10	CAF/CAG*	CAG	3,340	3,650	4,700	6,250	7,450	9,850
12	DAG	DAG	4,590	5,250	6,400	8,160	9,690	12,940
14	DAH	DAJ	6,750	7,560	9,150	11,450	13,300	17,200
16	DAH	DAK	9,350	10,450	12,600	15,000	17,500	22,200
18	DAJ	DBA	11,900	13,300	15,800	19,500	21,900	28,500
20	DAK	LAX	15,600	17,500	21,000	25,200	28,700	36,140
24	DAK	MAY	21,700	25,340	30,600	36,900	42,100	54,000
30	MAZ	NAW	29,200	35,000	43,500	54,500	62,500	80,000
36	MBE	EBD	52,500	58,500	70,000	85,000	97,500	125,000

*CAE and CAG mounting codes apply for shaft mounting of UHMWPE, metal and fire-safe seats.

Notes:

- Torques are applicable only to PTFE and RTFE seats in noncorrosive or nonabrasive services such as water. For fire-safe and metal seats, select only the torque for the valve at 285 psig and multiply by 2.0.
- For other seat materials, select the torque applicable for the maximum differential pressure and multiply by the following factor:
 EPDM/NBR/Fluoroelastomer (FKM): x 1.4
 UHMWPE (Clean Service): x 1.3
- For corrosive, abrasive or other services than water, multiply by the following factor:
 High solids slurry: x 1.5
 Dry gas: x 2.0
 Dry powders: x 2.7
 Liquids other than water: x 1.2
 Lubricating fluids: x 0.8

For services that combine unfriendly conditions such as extreme temperatures and high solids, or corrosive with high temperatures, contact the factory.

Extension Brackets For Various Temperatures

Pipeline Fluid Temperature	Required Extension Lengths (inches)				
	Handle	Gear	200°F Std. F79U	450°F High Temp. F79U	Standard F777
-100°F - 375°F	–	–	–	–	–
376°F - 460°F	4	–	–	–	4
461°F - 560°F	6	4	4	–	4
561°F - 650°F	6	4	4	–	4
651°F - 725°F	6	6	6	4	6
726°F - 825°F	8	8	8	6	8
826°F - 925°F	10	8	8	6	8
926°F - 1,000°F	10	10	10	8	10

Notes:

1. Surrounding air temperature is assumed to be 70°F. For every degree over 100°F of the surrounding air, deduct 2 degrees from the temperature ranges shown above.
(Example: 125°F external reduces maximum temperature values to 325, 410, 510, 600, etc.)
2. Valves may be insulated or uninsulated.
3. Brackets may be open rectangular tubes or the standard closed Grinnell tubular stem extensions.
4. All actuators have a maximum service temperature (outside atmosphere). These temperature limitations apply regardless of GHP extension lengths.

Flange Gaskets

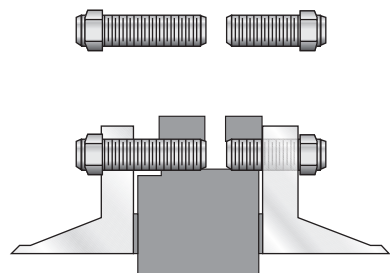
The GHP high performance butterfly valve is designed to accommodate the use of standard, non-metallic gaskets for pipe flanges (such as compressed fiber, rubber, non-asbestos, flexible graphite, asbestos or equivalent gasket materials), meeting the dimensional requirements of ASME B16.21-1992. Metallic wound gaskets may also be used, however, please note that any valve with a bolted on retainer requires the wound gaskets material to be manufactured to the following dimensions (inches):

	Outside Diameter	Inside Diameter
2	3 ³ / ₈	2 ³ / ₄
2 ¹ / ₂	3 ⁷ / ₈	3 ¹ / ₄
3	4 ³ / ₄	4
4	5	4 ¹ / ₈
5	6 ¹ / ₈	5 ¹ / ₄
6	7 ³ / ₁₆	6 ¹ / ₄
8	9 ³ / ₁₆	8
10	11 ⁵ / ₁₆	10 ¹ / ₈
12	13	11 ¹ / ₂
14	14 ¹ / ₂	13
16	16 ¹ / ₂	14 ³ / ₄
18	18	16
20	19 ³ / ₄	18
24	26 ¹ / ₄	24
30	29 ¹ / ₂	27 ¹ / ₂
36	36 ¹ / ₂	34 ¹ / ₄

Recommended Flange Bolt Lengths

Lug Body 150 Class						
Valve Size (in.)	Qty.	Hex Head Machine Bolt Size	Length (in.)	Qty.	All Thread Size	Length (in.)
2	4 ^{5/8}	5/8 - 11UNC	x 1 ^{3/4}	4	5/8 - 11UNC	x 2 ^{1/2}
	4	5/8 - 11UNC	x 2	4	5/8 - 11UNC	x 2 ^{3/4}
2 ^{1/2}	8	5/8 - 11UNC	x 1 ^{3/4}	8	5/8 - 11UNC	x 2 ^{1/2}
3	4	5/8 - 11UNC	x 2	4	5/8 - 11UNC	x 2 ^{3/4}
	4	5/8 - 11UNC	x 1 ^{1/2}	4	5/8 - 11UNC	x 2 ^{1/2}
4	8	5/8 - 11UNC	x 2	8	5/8 - 11UNC	x 2 ^{3/4}
	8	5/8 - 11UNC	x 1 ^{3/4}	8	5/8 - 11UNC	x 2 ^{1/2}
5	16	3/4 - 10UNC	x 2	16	3/4 - 10UNC	x 3
6	8	3/4 - 10UNC	x 2 ^{1/4}	8	3/4 - 10UNC	x 3
	8	3/4 - 10UNC	x 2	8	3/4 - 10UNC	x 3 ^{1/4}
8	8	3/4 - 10UNC	x 2 ^{1/2}	8	3/4 - 10UNC	x 3 ^{1/2}
	8	3/4 - 10UNC	x 2	8	3/4 - 10UNC	x 3
10	12	7/8 - 9UNC	x 2 ^{3/4}	12	7/8 - 9UNC	x 4
	12	7/8 - 9UNC	x 2 ^{1/4}	12	7/8 - 9UNC	x 3 ^{1/2}
12	12	7/8 - 9UNC	x 3	12	7/8 - 9UNC	x 4
	12	7/8 - 9UNC	x 2 ^{1/2}	12	7/8 - 9UNC	x 3 ^{3/4}
14	12	1 - 8UN	x 3 ^{1/2}	12	1 - 8UN	x 4 ^{3/4}
	12	1 - 8UN	x 2 ^{3/4}	12	1 - 8UN	x 4
16	16	1 - 8UN	x 3	16	1 - 8UN	x 4 ^{3/4}
	16	1 - 8UN	x 3 ^{3/4}	16	1 - 8UN	x 4
18	16	1 ^{1/8} - 8UN	x 3 ^{3/4}	16	1 ^{1/8} - 8UN	x 5
	16	1 ^{1/8} - 8UN	x 3 ^{3/4}	16	1 ^{1/8} - 8UN	x 5
20	16	1 ^{1/8} - 8UN	x 4 ^{1/4}	16	1 ^{1/8} - 8UN	x 6
	16	1 ^{1/8} - 8UN	x 4	16	1 ^{1/8} - 8UN	x 5 ^{1/2}
	4	1 ^{1/8} - 8UN	x 3	4	1 ^{1/8} - 8UN	x 5
	4	1 ^{1/8} - 8UN	x 3	4	1 ^{1/8} - 8UN	x 4 ^{1/2}
24	20	1 ^{1/4} - 8UN	x 5	20	1 ^{1/4} - 8UN	x 6 ^{3/4}
	20	1 ^{1/4} - 8UN	x 4 ^{1/2}	20	1 ^{1/4} - 8UN	x 6
30	24	1 ^{1/4} - 8UN	x 7 ^{1/2}	24	1 ^{1/4} - 8UN	x 7
	24	1 ^{1/4} - 8UN	x 5 ^{1/2}	24	1 ^{1/4} - 8UN	x 9
	4	1 ^{1/4} - 8UN	x 4 ^{1/4}	4	1 ^{1/4} - 8UN	x 5 ^{1/4}
	4	1 ^{1/4} - 8UN	x 4 ^{1/2}	4	1 ^{1/4} - 8UN	x 5
36	28	1 ^{1/2} - 8UN	x 7	28	1 ^{1/2} - 8UN	x 9
	28	1 ^{1/2} - 8UN	x 8	28	1 ^{1/2} - 8UN	x 10
	4	1 ^{1/2} - 8UN	x 5	4	2 - 8UN	x 7 ^{1/2}
	4	1 ^{1/2} - 8UN	x 6	4	2 - 8UN	x 8

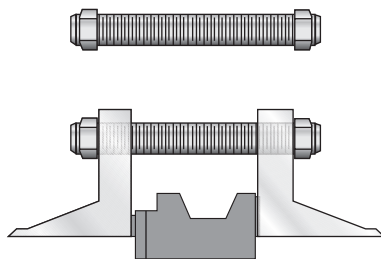
Lug Body 300 Class						
Valve Size (in.)	Qty.	Hex Head Machine Bolt Size	Length (in.)	Qty.	All Thread Size	Length (in.)
2	8	5/8 - 11UNC	x 1 ^{3/4}	16	5/8 - 11UNC	x 3
2 ^{1/2}	8	3/4 - 10UNC	x 1 ^{3/4}	8	3/4 - 10UNC	x 2 ^{3/4}
	8	3/4 - 10UNC	x 2	8	3/4 - 10UNC	x 2 ^{3/4}
3	8	3/4 - 10UNC	x 2 ^{1/4}	8	3/4 - 10UNC	x 3 ^{1/4}
	8	3/4 - 10UNC	x 1 ^{3/4}	8	3/4 - 10UNC	x 2 ^{3/4}
4	8	3/4 - 10UNC	x 2 ^{1/2}	8	3/4 - 10UNC	x 3 ^{1/4}
	8	3/4 - 10UNC	x 2	8	3/4 - 10UNC	x 3
5	8	3/4 - 10UNC	x 2 ^{1/2}	16	3/4 - 10UNC	x 3 ^{1/2}
	8	3/4 - 10UNC	x 2 ^{1/4}			
6	12	3/4 - 10UNC	x 2 ^{3/4}	24	3/4 - 10UNC	x 3 ^{1/2}
	12	3/4 - 10UNC	x 2 ^{1/4}			
8	12	7/8 - 9UNC	x 3 ^{1/4}	12	7/8 - 9UNC	x 4 ^{1/2}
	12	7/8 - 9UNC	x 2 ^{1/2}	12	7/8 - 9UNC	x 3 ^{1/2}
10	16	1 - 8UN	x 3 ^{3/4}	16	1 - 8UN	x 5
	16	1 - 8UN	x 3	16	1 - 8UN	x 4 ^{1/4}
12	16	1 ^{1/8} - 8UN	x 4	16	1 ^{1/8} - 8UN	x 5 ^{1/2}
	16	1 ^{1/8} - 8UN	x 3 ^{1/2}	16	1 ^{1/8} - 8UN	x 4 ^{3/4}
14	16	1 ^{1/8} - 8UN	x 4 ^{1/2}	16	1 ^{1/8} - 8UN	x 6
	16	1 ^{1/8} - 8UN	x 4	16	1 ^{1/8} - 8UN	x 5 ^{1/2}
	4	1 ^{1/8} - 8UN	x 3 ^{1/4}	4	1 ^{1/8} - 8UN	x 4 ^{3/4}
	4	1 ^{1/8} - 8UN	x 3	4	1 ^{1/8} - 8UN	x 4 ^{1/2}
16	16	1 ^{1/4} - 8UN	x 5 ^{1/2}	32	1 ^{1/4} - 8UN	x 6 ^{1/2}
	16	1 ^{1/4} - 8UN	x 4	32	1 ^{1/4} - 8UN	x 6 ^{1/4}
	4	1 ^{1/4} - 8UN	x 3 ^{1/2}	4	1 ^{1/4} - 8UN	x 5
	4	1 ^{1/4} - 8UN	x 3 ^{1/2}	4	1 ^{1/4} - 8UN	x 5
18	40	1 ^{1/4} - 8UN	x 5 ^{1/4}	40	1 ^{1/4} - 8UN	x 6 ^{3/4}
	4	1 ^{1/4} - 8UN	x 3 ^{1/2}	8	1 ^{1/4} - 8UN	x 5
	4	1 ^{1/4} - 8UN	x 3 ^{1/2}	8	1 ^{1/4} - 8UN	x 5
20	20	1 ^{1/4} - 8UN	x 6	20	1 ^{1/4} - 8UN	x 8
	20	1 ^{1/4} - 8UN	x 4 ^{1/2}	20	1 ^{1/4} - 8UN	x 6
	4	1 ^{1/4} - 8UN	x 6	4	1 ^{1/4} - 8UN	x 6
	4	1 ^{1/4} - 8UN	x 4 ^{1/2}	4	1 ^{1/4} - 8UN	x 7 ^{3/4}
24	20	1 ^{1/2} - 8UN	x 6 ^{1/2}	20	1 ^{1/2} - 8UN	x 8
	20	1 ^{1/2} - 8UN	x 6	20	1 ^{1/2} - 8UN	x 8
	4	1 ^{1/2} - 8UN	x 5	4	1 ^{1/2} - 8UN	x 6 ^{3/4}
	4	1 ^{1/2} - 8UN	x 4	4	1 ^{1/2} - 8UN	x 6
30	48	1 ^{3/4} - 8UN	x 8	24	1 ^{3/4} - 8UN	x 10 ^{1/2}
	8	1 ^{3/4} - 8UN	x 5	24	1 ^{3/4} - 8UN	x 10
				8	1 ^{3/4} - 8UN	x 7 ^{3/4}



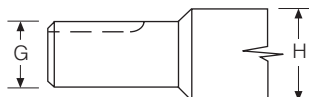
Recommended Flange Bolt Lengths

Wafer Body 150 Class						
Valve Size (in.)	Hex Head Machine Bolt Qty.	Hex Head Machine Bolt Size	Hex Head Machine Bolt Length (in.)	All Thread Qty.	All Thread Size	All Thread Length (in.)
2	4	5/8 - 11UNC	x 5	4	5/8 - 1UNC	x 5 1/2
2 1/2	4	5/8 - 11UNC	x 4 1/2	4	5/8 - 11UNC	x 5
3	4	5/8 - 11UNC	x 4 1/2	4	5/8 - 11UNC	x 5 1/4
4	8	5/8 - 11UNC	x 4 3/4	8	5/8 - 11UNC	x 5 1/2
5	8	3/4 - 10UNC	x 5	8	3/4 - 10UNC	x 6
6	8	3/4 - 10UNC	x 5 1/4	8	3/4 - 10UNC	x 6
8	8	3/4 - 10UNC	x 5 3/4	8	3/4 - 10UNC	x 6 1/2
10	12	7/8 - 9UNC	x 6 1/4	12	7/8 - 9UNC	x 7
12	12	7/8 - 9UNC	x 7	12	7/8 - 9UNC	x 7 1/2
14	12	1 - 8UN	x 7 1/2	12	1 - 8UN	x 8 1/2
16	16	1 - 8UN	x 8	16	1 - 8UN	x 9
18	16	1 1/8 - 8UN	x 9 1/4	16	1 1/8 - 8UN	x 10 1/2
20	16	1 1/8 - 8UN	x 10	16	1 1/8 - 8UN	x 11
	4	1 1/8 - 8UN	x 3 1/2	4	1 1/8 - 8UN	x 5
	4	1 1/8 - 8UN	x 3	4	1 1/8 - 8UN	x 4 1/2
24	20	1 1/4 - 8UN	x 11 1/2	20	1 1/4 - 8UN	x 12 1/2
30	24	1 1/4 - 8UN	x 13 1/4	24	1 1/4 - 8UN	x 16
	4	1 1/4 - 8UN	x 3 1/2	4	1 1/4 - 8UN	x 5 1/4
	4	1 1/4 - 8UN	x 3 1/4	4	1 1/4 - 8UN	x 4 3/4
36	28	1 1/2 - 8UN	x 15	28	1 1/2 - 8UN	x 18 3/4
	4	1 1/2 - 8UN	x 5	4	1 1/2 - 8UN	x 6 3/4
	4	1 1/2 - 8UN	x 4	4	1 1/2 - 8UN	x 6 0

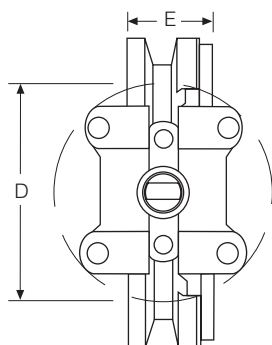
Wafer Body 300 Class						
Valve Size (in.)	Hex Head Machine Bolt Qty.	Hex Head Machine Bolt Size	Hex Head Machine Bolt Length (in.)	All Thread Qty.	All Thread Size	All Thread Length (in.)
2	8	5/8 - 11UNC	x 5 1/4	8	5/8 - 11UNC	x 5 3/4
2 1/2	8	3/4 - 10UNC	x 4 3/4	8	3/4 - 10UNC	x 5 1/2
3	8	3/4 - 10UNC	x 5	8	3/4 - 10UNC	x 5 3/4
4	8	3/4 - 10UNC	x 5 1/2	8	3/4 - 10UNC	x 6 1/2
5	8	3/4 - 10UNC	x 6	8	3/4 - 10UNC	x 7
6	12	3/4 - 10UNC	x 6	12	3/4 - 10UNC	x 7
8	12	7/8 - 10UNC	x 7 1/4	12	7/8 - 9UNC	x 8
10	16	1 - 8UN	x 8 1/4	16	1 - 8UN	x 9 1/2
12	16	1 1/8 - 8UN	x 9	16	1 1/8 - 8UN	x 10
14	16	1 1/8 - 8UN	x 10 1/4	16	1 1/8 - 8UN	x 11 1/2
	4	1 1/8 - 8UN	x 3 1/4	4	1 1/8 - 8UN	x 4 3/4
	4	1 1/8 - 8UN	x 3	4	1 1/8 - 8UN	x 4 1/2
16	16	1 1/4 - 8UN	x 11 1/2	16	1 1/4 - 8UN	x 12 1/2
	4	1 1/4 - 8UN	x 3 1/4	4	1 1/4 - 8UN	x 4 3/4
	4	1 1/4 - 8UN	x 3	4	1 1/4 - 8UN	x 4 1/2
18	20	1 1/4 - 8UN	x 12	20	1 1/4 - 8UN	x 13 1/2
	4	1 1/4 - 8UN	x 3 1/2	4	1 1/4 - 8UN	x 5
	4	1 1/4 - 8UN	x 3	4	1 1/4 - 8UN	x 4 3/4
20	20	1 1/4 - 8UN	x 13	20	1 1/4 - 8UN	x 14
	8	1 1/4 - 8UN	x 4	8	1 1/4 - 8UN	x 5 1/2
24	20	1 1/2 - 8UN	x 14 1/2	20	1 1/2 - 8UN	x 16
	4	1 1/2 - 8UN	x 4 3/4	4	1 1/2 - 8UN	x 6 1/2
	4	1 1/2 - 8UN	x 4 1/4	4	1 1/2 - 8UN	x 6 1/4
30	24	1 1/2 - 8UN	x 19	24	1 3/4 - 8UN	x 20 1/2
	8	1 3/4 - 8UN	x 5 1/2	8	1 3/4 - 8UN	x 7 1/4



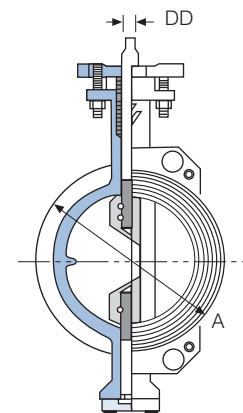
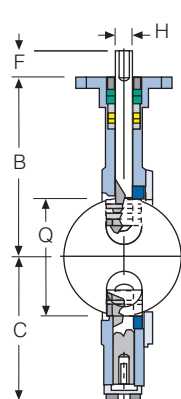
Wafer Style



Upper Shaft/Keyway
8" to 24"



Top Plate View



ANSI Class 150 Wafer Dimensions (inches)

Size	A	B	C	D	E	F	G	H	Q	Top Plate Drilling				Wt. Lbs.	Actuator Code
										DD or Keyway	Bolt Circle	No. Holes	Hole Dia.		
2	4 1/8	6	4 1/16	4	2 3/8	1 1/4	n/a	9/16	1 7/8	3/8	3 1/4	4	7/16	8	BAB
2 1/2	4 1/8	6	4 1/16	4	1 7/8	1 1/4	n/a	9/16	2 5/16	3/8	3 1/4	4	7/16	9	BAB
3	5	6 5/8	4 5/8	4	1 7/8	1 1/4	n/a	5/8	2 3/4	7/16	3 1/4	4	7/16	12	BAC
4	6 3/16	7 1/2	5 1/2	4	2 1/8	1 1/4	n/a	3/4	3 1 1/16	1/2	3 1/4	4	7/16	20	BAD
5	7 1/4	7 9/16	5 9/16	4	2 1/4	1 1/4	n/a	3/4	4 3/4	1/2	3 1/4	4	7/16	25	BAD
6	8 19/32	8 3/4	6 11/16	6	2 1/4	1 1/4	n/a	7/8	5 5/8	1/2	5	4	9/16	32	CAD
6*	8 19/32	8 3/4	6 11/16	6	2 1/4	1 1/4	n/a	7/8	5 5/8	5/8	5	4	9/16	33	CAE
8	10 5/8	10 1/8	8 1/16	6	2 1/2	2	1 1/8	1 1/8	7 7/16	1/4 x 1/4 x 1 5/8	5	4	9/16	50	CAF
10	12 3/4	11 3/8	9 3/8	6	2 13/16	2	1 1/8	1 3/8	9 7/16	1/4 x 1/4 x 1 5/8	5	4	9/16	77	CAF
10*	12 3/4	11 3/8	9 3/8	6	2 13/16	3	1 3/8	1 3/8	9 7/16	5/16 x 5/16 x 2 5/8	5	4	9/16	78	CAG
12	14 3/4	13	10 9/16	8	3 3/16	3	1 3/8	1 1/2	11 1/4	5/16 x 5/16 x 2 5/8	6 1/2	4	13/16	124	DAG
14	16 1/4	13 1/4	11 9/16	8	3 5/8	3	1 5/8	1 5/8	12 5/16	3/8 x 3/8 x 2 5/8	6 1/2	4	13/16	141	DAH
16	18 1/2	14 1/2	12 9/16	8	4	3	1 5/8	1 3/4	14 1/8	3/8 x 3/8 x 2 5/8	6 1/2	4	13/16	230	DAH
18	21	16	13 7/16	8	4 1/2	4 1/16	1 7/8	1 7/8	16 3/16	1/2 x 3/8 x 3 7/8	6 1/2	4	13/16	305	DAJ
20	23	17 7/16	15 1/16	8	5	4 5/16	2 1/4	2 1/4	17 15/16	1/2 x 3/8 x 3 7/8	6 1/2	4	13/16	350	DAK
24	27 1/2	19 1 1/16	17 7/16	8	6 1/16	4 1/4	2 1/4	2 1/2	21 1/8	1/2 x 3/8 x 3 7/8	6 1/2	4	13/16	620	DAK
30	33 3/4	24 1/2	20 3/4	13	7 3/8	7	3	3	27 5/16	3/4 x 3/4 x 5 7/8	9 3/4	4	1 1/16	1,020	MAZ
36	40 1/4	28 3/8	24 1/4	9 1/2	8 1/2	8	3 1/2	3 1/2	33 3/4	7/8 x 7/8 x 5 7/8	9 3/4	4	1 1/16	1,850	MBE

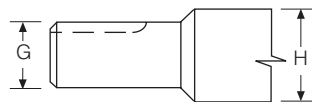
Note:

* E.N.P. discs require larger upper stem connection diameters on 6" and 10" valve sizes for UHMWPE seat, metal seat and fire-safe seat trims.

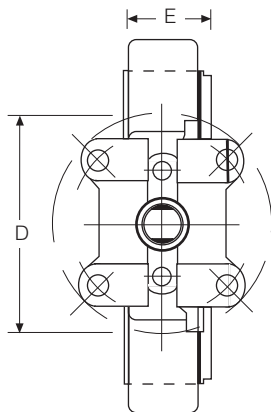
ANSI Class 300 Wafer Dimensions (inches)

Size	A	B	C	D	E	F	G	H	Q	Top Plate Drilling				Tapped Lug Data			Wt. Lbs.	Actuator Code
										DD or Keyway	Bolt Circle	No. Holes	Hole Dia.	No. Holes	Bolt Circle	Tap		
2	4 1/8	6	4 3/16	4 3/16	2 3/8	1 1/4	9/16	9/16	1 7/8	3/8	3 1/4	4	7/16	-	-	-	8	BAB
2 1/2	4 1/8	6	4 3/16	4 3/16	1 7/8	1 1/4	9/16	9/16	2 3/8	3/8	3 1/4	4	7/16	-	-	-	9	BAB
3	5	6 5/8	4 3/4	4 3/16	1 7/8	1 1/4	5/8	5/8	2 15/16	7/16	3 1/4	4	7/16	-	-	-	12	BAC
4	6 3/16	7 1/2	5 5/8	4 3/16	2 1/8	1 1/4	3/4	3/4	3 7/8	1/2	3 1/4	4	7/16	-	-	-	20	BAD
5	7 1/4	7 9/16	5 3/4	4 3/16	2 5/16	1 1/4	3/4	3/4	4 3/16	1/2	3 1/4	4	7/16	-	-	-	25	BAD
6	8 19/32	8 3/4	6 13/16	6 1/8	2 5/16	1 1/4	7/8	7/8	5 11/16	1/2	5	4	9/16	-	-	-	32	CAE
8	10 5/8	10 1/8	8 5/16	6 1/8	2 7/8	2	1 1/8	1 1/8	7 1/2	1/4 x 1/4 x 1 5/8	5	4	9/16	-	-	-	65	CAF
10	12 3/4	11 3/8	9 5/8	6 1/8	3 1/4	3	1 3/8	1 3/8	9 1/2	5/16 x 5/16 x 2 5/8	5	4	9/16	-	-	-	95	CAG
12	15	13	10 7/8	8 1/8	3 5/8	3	1 3/8	1 1/2	11 5/16	5/16 x 5/16 x 2 5/8	6 1/2	4	13/16	-	-	-	145	DAG
14	16 1/4	13 1/4	12 3/8	8 3/16	4 5/8	4 1/4	1 7/8	1 7/8	12 1/2	1/2 x 3/8 x 4	6 1/2	4	13/16	4	20 1/4	1 1/4-8UN	270	DAH
16	18 1/2	16 1/16	13 1/2	8 3/16	5 1/4	4 1/4	2 1/4	2 1/4	14 1/4	1/2 x 3/8 x 4	6 1/2	4	13/16	4	22 1/2	1 1/4-8UN	305	DAH
18	21	16	15	8 3/16	5 7/8	4 1/4	2 1/2	2 1/2	16 3/16	5/8 x 5/8 x 4	6 1/2	4	13/16	4	24 3/4	1 1/4-8UN	385	DAJ
20	23	17 5/8	16 1/4	8	6 1/4	6 1/2	2 3/4	2 3/4	18	5/8 x 5/8 x 5 3/4	8	4	13/16	4	27	1 1/4-8UN	450	LA X
24	27 1/2	19 1 1/16	19 1 1/16	13	7 1/8	6 13/16	3 1/2	3 1/2	21 3/16	7/8 x 7/8 x 5 3/4	9 3/4	4	1 1/16	4	32	1 1/2-8UN	770	MAY
30	33 3/4	24 1/2	24 7/16	14	9 1/2	7 3/8	4 1/2	4 1/2	27 3/8	1 x 1 x 6 1/4	10	4	1 1/8	4	39 1/4	1 3/4-8UN	1,100	NAW
36	40 1/4	28 3/8	28 3/16	10	10 3/4	8	5	5	33 3/4	1 1/4 x 1 1/4 x 6 3/4	12	4	1 1/8	4	46	2-8UN	1,590	EBD

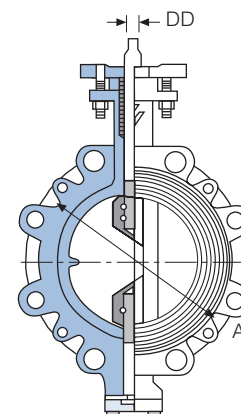
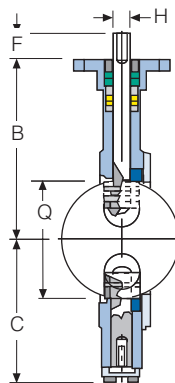
Lug Style



Upper Shaft/Keyway
8" to 24"



Top Plate View



ANSI Class 150 Lug Dimensions (inches)

Size	A	B	C	D	E	F	G	H	Q	Top Plate Drilling			Tapped Lug Data			Wt. Lbs.	Actuator Code	
										DD or Keyway	Bolt Circle	No. Holes	Hole Dia.	No. Holes	Bolt Circle			Tap
2	4 1/8	6	4 1/16	4	2 3/8	1 1/4	n/a	9/16	1 7/8	3/8	3 1/4	4	7/16	4	4 3/4	5/8-11UNC	13	BAB
2 1/2	4 1/8	6	4 1/16	4	1 7/8	1 1/4	n/a	9/16	2 5/16	3/8	3 1/4	4	7/16	4	5 1/2	5/8-11UNC	14	BAB
3	5	6 5/8	4 5/8	4	1 7/8	1 1/4	n/a	5/8	2 3/4	7/16	3 1/4	4	7/16	4	6	5/8-11UNC	15	BAC
4	6 3/16	7 1/2	5 1/2	4	2 1/8	1 1/4	n/a	3/4	3 11/16	1/2	3 1/4	4	7/16	8	7 1/2	5/8-11UNC	26	BAD
5	7 1/4	7 9/16	5 9/16	4	2 1/4	1 1/4	n/a	3/4	4 3/4	1/2	3 1/4	4	7/16	8	8 1/2	3/4-10UNC	31	BAD
6	8 19/32	8 3/4	6 11/16	6	2 1/4	1 1/4	n/a	7/8	5 5/8	1/2	5	4	9/16	8	9 1/2	3/4-10UNC	40	CAD
6*	8 19/32	8 3/4	6 11/16	6	2 1/4	1 1/4	n/a	7/8	5 5/8	5/8	5	4	9/16	8	9 1/2	3/4-10UNC	41	CAE
8	10 5/8	10 1/8	8 1/16	6	2 1/2	2	1 1/8	1 1/8	7 7/16	1/4 x 1/4 x 1 5/8	5	4	9/16	8	11 3/4	3/4-10UNC	63	CAF
10	12 3/4	11 3/8	9 3/8	6	2 13/16	2	1 1/8	1 3/8	9 7/16	1/4 x 1/4 x 1 5/8	5	4	9/16	12	14 1/4	7/8-9UNC	106	CAF
10*	12 3/4	11 3/8	9 3/8	6	2 13/16	3	1 3/8	1 3/8	9 7/16	5/16 x 5/16 x 2 5/8	5	4	9/16	12	14 1/4	7/8-9UNC	107	CAG
12	14 3/4	13	10 9/16	8	3 3/16	3	1 3/8	1 1/2	11 1/4	5/16 x 5/16 x 2 5/8	6 1/2	4	13/16	12	17	7/8-9UNC	160	DAG
14	16 1/4	13 1/4	11 9/16	8	3 5/8	3	1 5/8	1 5/8	12 5/16	3/8 x 3/8 x 2 5/8	6 1/2	4	13/16	12	18 3/4	1-8UN	265	DAH
16	18 1/2	14 1/2	12 9/16	8	4	3	1 5/8	1 3/4	14 1/8	3/8 x 3/8 x 2 5/8	6 1/2	4	13/16	16	21 3/4	1-8UN	305	DAH
18	21	16	13 3/16	8	4 1/2	4 1/16	1 7/8	1 7/8	16 3/16	1/2 x 3/8 x 3 7/8	6 1/2	4	13/16	16	22 3/4	1 1/8-8UN	415	DAJ
20	23	17 1/16	15 1/16	8	5	4 5/16	2 1/4	2 1/4	17 15/16	1/2 x 3/8 x 3 7/8	6 1/2	4	13/16	20	25	1 1/8-8UN	500	DAK
24	27 1/2	19 11/16	17 7/16	8	6 1/16	4 1/4	2 1/4	2 1/2	21 1/8	1/2 x 3/8 x 3 7/8	6 1/2	4	13/16	20	29 1/2	1 1/4-8UN	750	DAK
30	33 3/4	24 1/2	20 3/4	13	7 3/8	7	3	3	27 5/16	3/4 x 3/4 x 5 7/8	9 3/4	4	1 1/16	28	36	1 1/4-8UN	1,360	MAZ
36	40 1/4	28 3/8	24 1/4	9 1/2	8 1/2	8	3 1/2	3 1/2	33 3/4	7/8 x 7/8 x 5 7/8	9 3/4	4	1 1/16	32	42 3/4	1 1/2-8UN	2,250	MBE

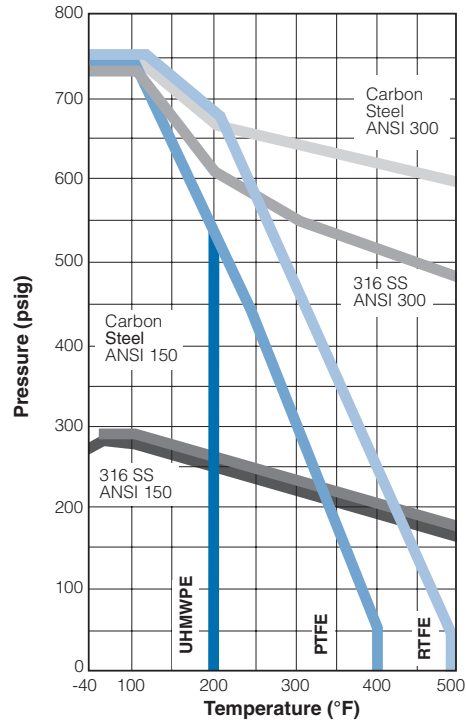
Note:

* E.N.P. discs require larger upper stem connection diameters on 6" and 10" valve sizes for UHMWPE seat, metal seat and fire-safe seat trims.

ANSI Class 300 Lug Dimensions (inches)

Size	A	B	C	D	E	F	G	H	Q	Top Plate Drilling			Tapped Lug Data			Wt. Lbs.	Actuator Code	
										DD or Keyway	Bolt Circle	No. Holes	Hole Dia.	No. Holes	Bolt Circle			Tap
2	4 1/8	6	4 3/16	4 3/16	2 3/8	1 1/4	9/16	9/16	1 7/8	3/8	3 1/4	4	7/16	8	5	3/4-10UNC	17	BAB
2 1/2	4 1/8	6	4 3/16	4 3/16	1 7/8	1 1/4	9/16	9/16	2 3/8	3/8	3 1/4	4	7/16	8	5 7/8	3/4-10UNC	18	BAB
3	5	6 5/8	4 3/4	4 3/16	1 7/8	1 1/4	5/8	5/8	2 15/16	7/16*	3 1/4	4	7/16	8	6 5/8	3/4-10UNC	20	BAC
4	6 3/16	7 1/2	5 5/8	4 3/16	2 1/8	1 1/4	3/4	3/4	3 7/8	1/2	3 1/4	4	7/16	8	7 7/8	3/4-10UNC	26	BAD
5	7 1/4	7 9/16	5 3/4	4 3/16	2 5/16	1 1/4	3/4	3/4	4 13/16	1/2	3 1/4	4	7/16	8	9 1/4	3/4-10UNC	31	BAD
6	8 19/32	8 3/4	6 13/16	6 1/8	2 5/16	1 1/4	7/8	7/8	5 11/16	1/2	5	4	9/16	12	10 5/8	3/4-10UNC	55	CAE
8	10 5/8	10 1/8	8 5/16	6 1/8	2 7/8	2	1 1/8	1 1/8	7 1/2	1/4 x 1/4 x 1 5/8	5	4	9/16	12	13	7/8-9UNC	80	CAF
10	12 3/4	11 3/8	9 5/8	6 1/8	3 1/4	3	1 3/8	1 3/8	9 1/2	5/16 x 5/16 x 2 5/8	5	4	9/16	16	15 1/4	1-8UN	137	CAG
12	15	13	10 7/8	8 1/8	3 5/8	3	1 3/8	1 1/2	11 5/16	5/16 x 5/16 x 2 5/8	6 1/2	4	13/16	16	17 3/4	1 1/8-8UN	185	DAG
14	16 1/4	13 1/4	12 3/8	8 3/16	4 5/8	4 1/4	1 7/8	1 7/8	12 1/2	1/2 x 3/8 x 4	6 1/2	4	13/16	20	20 1/4	1 1/8-8UN	340	DAH
16	18 1/2	16 1/16	13 1/2	8 3/16	5 1/4	4 1/4	2 1/4	2 1/4	14 1/4	1/2 x 3/8 x 4	6 1/2	4	13/16	20	22 1/2	1 1/4-8UN	432	DAH
18	21	16	15	8 3/16	5 7/8	4 1/4	2 1/2	2 1/2	16 3/16	5/8 x 5/8 x 4	6 1/2	4	13/16	24	24 3/4	1 1/4-8UN	550	DAJ
20	23	17 5/8	16 1/4	8	6 1/4	6 1/2	2 3/4	2 3/4	18	5/8 x 5/8 x 5 3/4	8	4	13/16	24	27	1 1/4-8UN	850	LA X
24	27 1/4	19 11/16	19 11/16	13	7 1/8	6 13/16	3 1/2	3 1/2	21 3/16	7/8 x 5/8 x 5 3/4	9 3/4	4	1 1/16	24	32	1 1/2-8UN	1,278	MAY
30	33 3/4	24 1/2	24 7/16	14	9 1/2	7 3/8	4 1/2	4 1/2	27 3/8	1 x 1 x 6 1/4	10	4	1 1/8	28	39 1/4	1 3/4-8UN	2,450	NAW
36	40 1/4	28 3/8	28 3/16	10	10 3/4	8	5	5	33 3/4	1 1/4 x 1 1/4 x 6 3/4	12	4	1 1/8	32	46	2-8UN	2,850	EBD

Pressure/Temperature Ratings for Polymer Seats



How to Order

Order By Figure Number

Valve Size	Valve Series	ANSI Rating	Body Style	Body Material	Disc/Shaft Material	Seat Material	Packing Material	Operator
2	GHP	1 - 150	L - Lug	CS - Carbon Steel	SS - 316 SS Disc/ 17-4 SS Shaft	R - RTFE	P - PTFE	1 - Manual Handle
2.5		3 - 300	W - Wafer	SS - 316 SS				2 - Gear Operator
3								3 - Pneumatic Actuator DA
4								4 - Pneumatic Actuator SR
5								5 - Electric Actuator
6								
8								
10								
12								
14								
16								
18								
20								
24								
30								
36								



Grinnell Flow Control (GFC) provides the information herein in good faith but makes no representation as to its comprehensiveness or accuracy. This data sheet is intended only as a guide to GFC products and services. Individuals using this data sheet must exercise their independent judgment in evaluating product selection and determining product appropriateness for their particular purpose and system requirements. GFC MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT(S) TO WHICH THE INFORMATION REFERS. ACCORDINGLY, GFC WILL NOT BE RESPONSIBLE FOR DAMAGES (OF ANY KIND OR NATURE, INCLUDING INCIDENTAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES) RESULTING FROM THE USE OF OR RELIANCE UPON THIS INFORMATION. All Patents and Patents Pending in the U.S. and foreign countries are property of their respective owners. Grinnell reserves the right to change product designs and specifications without notice. All registered trademarks are the property of their respective owners. Printed in the USA.