KEYSTONE

• 990 – Wafer thin disc resilient seated butterfly valve
• 920 – Lugged thin disc resilient seated butterfly valve

Features and Benefits

- One-piece, thin profile, 316 Stainless steel disc/stem provides minimum obstruction to flow, resulting in highest C_V, lowest pressure drops and best control characteristics. Also available with PTFE, NBR or EPDM molded disc.
- Triple function, resilient dovetail seat isolates body and stem from line media, provides drop-tight shut-off of line media at full-rated pressure and permits convenient and economical replacement in the field.
- Heavy duty, corrosion resistant top bushing provides upper stem support, absorbs actuator sideloading and extends valve cycle life.
- Bi-directional, self-adjusting double V-cup stem seals prevent external contaminants from entering the valve.
- Split body design enables easy field replacement of seat and disc/stem and permits direct mounting of Keystone actuators without the use of couplings or brackets.

General Application

Figure 990 (wafer) and Figure 920 (lug) are used when sanitary service or corrosion resistance is required. Heavy duty applications include food and beverage, pharmaceutical, pulp and paper, mining and power industries. Available with PTFE lining for light corrosive services and rubber lining for light abrasive services.

Flange Standard

Figure 990 is a resilient-seated, wafer-style, butterfly valve suitable for installation between ANSI Class 125/150 flanges.

Figure 920 provides drilled and tapped lugs around the valve body, compatible with ANSI Class 125/150 flange standards.

Technical Data

Sizes:
Figure 990 (wafer style) 1" to 20"
Figure 920 (lug style) 2" to 20"

Pressure Ratings:
1" to 12" – 150 psi
14" to 20" – 75 psi

- PTFE or elastomer mold disc
  2" to 12" – 100 psi
  14" to 20" – 75 psi
- White NBR seats
  2" to 20" – 50 psi

tyco Flow Control

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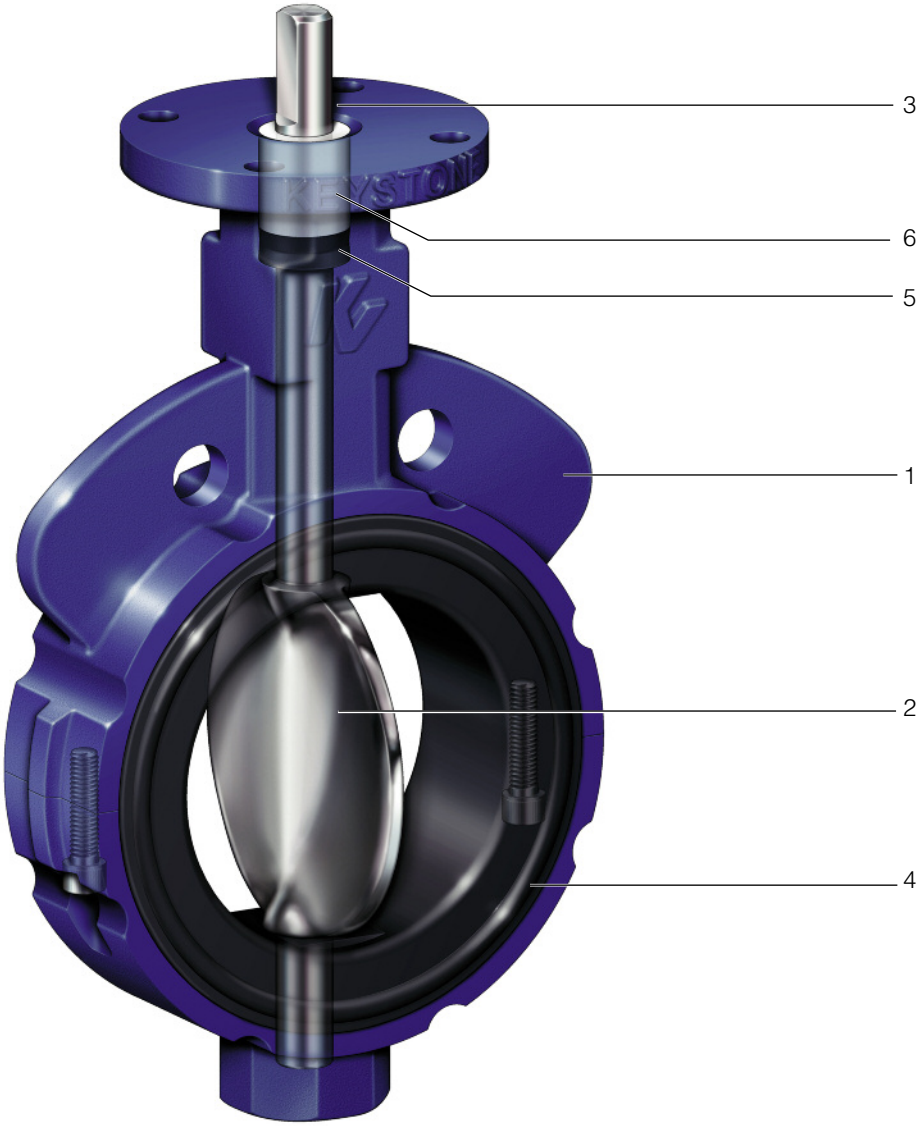
Materials



Materials

No.	Description	Material	Material Standard
1	Two-piece body with top plate	Cast iron Ductile iron (lug style only) 316 Stainless steel	ASTM A-126, Class B ASTM A-395 Gr. 60/40/18 ASTM A-743 CF8M[1]
2	Thin profile disc	316 Stainless steel Steel Teflon® molded[2] Steel EPDM molded[2] Steel NBR molded[2]	
3	Stem	316 Stainless steel	
4	Seat	NBR food grade (0°F to 212°F) EPDM food grade (-40°F to 250°F) PTFE-lined EPDM (-20°F to 300°F) PTFE-lined NBR (0°F to 250°F)	
5	Stem packing	NBR	
6	Upper stem bushing	Polyester	

Notes:

1. Not available on 2 1/2" and 5". Stainless steel bodies, 2" to 6", include upper and lower stem bearings.
2. Not available on 1", 1 1/2", 2 1/2" and 5".

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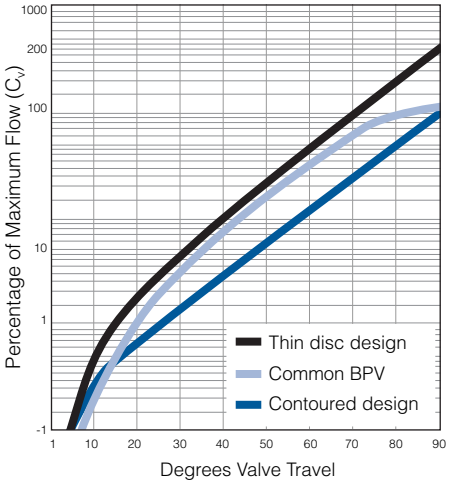
PTFE Lined

The Keystone Figure 990 and 920 is offered with PTFE lining for mildly corrosive services or an elastomer lining for mildly abrasive services.

Flow Control Characteristics

While most butterfly valves achieve an equal percentage characteristic, the Keystone thin-profile disc design does so at a significantly higher capacity through the valve's full travel. This results in not only 100:1 rangeability (Maximum C_V/Minimum C_V), but also greatly increased turndown ratio (Maximum Flow/Minimum Flow).

Thin Disc Flow Control



Flow Coefficient (C_V)

Valve Size (in.)	Angle of Disc Opening 10°	20°	30°	40°	50°	60°	70°	80°	90°
1	0.07	0.7	2.8	4.8	8.3	13	24	42	89
1 1/2	0.16	1.6	6.5	11.4	20	31	55	88	162
2	0.30	2.7	10.7	18.7	32	51	91	161	267
2 1/2	0.45	4.5	18.0	32	54	86	153	273	451
3	0.70	6.9	27.7	49	83	132	235	419	693
4	1.30	13.1	52.6	92	158	250	447	795	1,314
5	2.10	21.1	84.3	148	253	400	717	1,275	2,108
6	2.80	27.9	112	195	335	530	848	1,690	2,790
8	5.20	52.1	208	365	625	990	1,770	3,150	5,208
10	8.30	83.1	332	582	997	1,580	2,825	5,025	8,308
12	12.00	120	481	842	1,440	2,286	4,090	7,275	12,030
14	15.00	150	600	1,050	1,800	2,850	5,100	9,075	15,000
16	20.00	200	798	1,397	2,395	3,792	6,788	12,075	19,960
18	25.80	258	1,032	1,805	3,095	4,900	8,768	15,600	25,790
20	32.20	322	1,290	2,257	3,870	6,125	10,960	19,500	32,240

Based on independent laboratory testing.

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Figure 990 Wafer

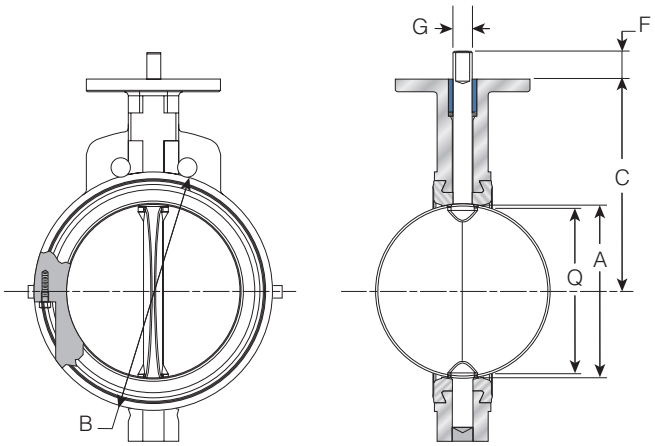
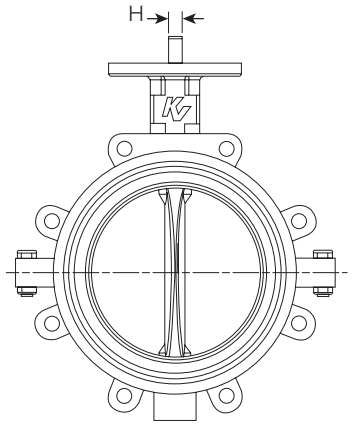


Figure 920 Lug



Cast and Ductile Iron Body (inches)

Size	A	B	C	D	E	F	G	H[1]	Q[3]	Top Plate Drilling Key	Bolt Circle	No. Holes	Hole Dia.	Tapped Lug Data Bolt Circle	No. Holes	Tap Size	Weight (lbs.) 990	920	Adapt Code
1	1 1/4	2 7/16	3 1/8	1 1/8	2 1/4	3/4	3/8	1/4	5/8	N/A	1 3/4	4	9/32	N/A	N/A	N/A	1 1/2	N/A	AAA
1 1/2	1 3/4	3 7/32	3 23/32	1 3/16	2 1/4	3/4	3/8	1/4	1 7/16	N/A	1 3/4	4	9/32	N/A	N/A	N/A	2 1/4	N/A	AAA
2	2	4 1/8	5 1/2	1 5/8	4	1 1/4	9/16	3/8	1 3/8	N/A	3 1/4	4	7/16	4 3/4	4	5/8 - 11 UNC	6	7	BAB
2 1/2	2 1/2	4 5/8	6	1 3/4	4	1 1/4	9/16	3/8	2 1/16	N/A	3 1/4	4	7/16	5 1/2	4	5/8 - 11 UNC	8	9 3/4	BAB
3	3	5 1/8	6 1/4	1 3/4	4	1 1/4	9/16	3/8	2 9/16	N/A	3 1/4	4	7/16	6	4	5/8 - 11 UNC	9	10	BAB
4	4	6 3/8	7	2	4	1 1/4	5/8	7/16	3 5/8	N/A	3 1/4	4	7/16	7 1/2	8	5/8 - 11 UNC	11	16 3/4	BAC
5	5	7 3/8	7 1/2	2 1/8	4	1 1/4	3/4	1/2	4 3/4	N/A	3 1/4	4	7/16	8 1/2	8	3/4 - 10 UNC	15 1/2	22	BAD
6	5 3/4	8 1/2	8	2 1/8	4	1 1/4	3/4	1/2	5 1/2	N/A	3 1/4	4	7/16	9 1/2	8	3/4 - 10 UNC	17 1/2	24 1/4	BAD
8	7 3/4	10 11/16	9 1/2	2 1/2	6	1 1/4	7/8	5/8	7 1/2	N/A	5	4	9/16	11 3/4	8	3/4 - 10 UNC	30	42	CAE
10	9 3/4	13	10 3/4	2 1/2	6	2	1 1/8	N/A	9 19/32	1/4 x 1/4	5	4	9/16	14 1/4	12	7/8 - 9 UNC	45	65	CAF
12	11 3/4	14 13/16	12 1/4	3	6	2	1 1/8	N/A	11 9/16	1/4 x 1/4	5	4	9/16	17	12	7/8 - 9 UNC	78	108	CAF
14	13 23/64	16 7/8	12	3	6	3	1 3/8	N/A	13 1/8	5/16 x 5/16	5	4	9/16	18 3/4	12	1 - 8 UNC	105	143	CAG
16	15 3/8	19	12 15/16	4	6	3	1 5/8	N/A	15	3/8 x 3/8	5	4	9/16	21 1/4	16	1 - 8 UNC	180	238	CAH
18	17 3/8	21 3/8	14 1/2	4 1/4	8	4 1/4	1 7/8	N/A	17	1/2 x 3/8	6 1/2	4	13/16	22 3/4	16	1 1/8 - 7 UNC	222	261	DAJ
20	19 3/8	23 1/2	15 7/8	5	8	4 1/4	1 7/8	N/A	18 7/8	1/2 x 3/8	6 1/2	4	13/16	25	20	1 1/8 - 7 UNC	315	366	DAJ

Stainless Steel Body (inches)

Size	A	B	C	D	E	F	G	H[1]	Q[3]	Top Plate Drilling Bolt Circle	No. Holes	Hole Dia.	Tapped Lug Data Bolt Circle	No. Holes	Tap Size	Weight (lbs.) 990	920	Adapt Code
1	1 3/16	2 3/8	3 1/8	1 1/8	2	4 3/4	3/8	1/4	4 5/8	1 3/4	4	5/16	N/A	N/A	N/A	1 1/4	N/A	AAA
1 1/2	1 3/4	3	3 3/4	1 3/16	2	3/4	3/8	1/4	1 7/16	1 3/4	4	5/16	N/A	N/A	N/A	1 3/4	N/A	AAA
2	2	3 7/8	5 1/2	1 5/8	3 1/16	1 1/4	9/16	3/8	1 3/8	3 1/4	4	7/16	4 3/4	4	5/8 - 11 UNC	3 3/4	5 1/4	BAB
3	3	5	6 1/4	1 3/4	3 1/16	1 1/4	9/16	3/8	2 9/16	3 1/4	4	7/16	6	4	5/8 - 11 UNC	6	7 1/4	BAB
4	4	6 1/4	7	2	3 1/16	1 1/4	5/8	7/16	3 5/8	3 1/4	4	7/16	7 1/2	8	5/8 - 11 UNC	8 1/2	13 1/2	BAC
6	5 3/4	8 1/4	8	2 1/8	3 1/16	1 1/4	3/4	1/2	5 1/2	3 1/4	4	7/16	9 1/2	8	3/4 - 10 UNC	13	19	BAD

Notes:

1. "H" dimension refers to flat on stem.
2. 1" and 1 1/2" valve assemblies are furnished with integral 10-position throttling plate.
3. "Q" dimension is the minimum allowable pipe or flange inside diameter at the centered body face to protect the disc sealing edge against damage when opening the valve.

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