tyco
Flow Control

KEYSTONE

A fully PTFE covered Butterfly valve acc. ISO 5752/5 short (DIN 3202, part 3/K1). Actuator flange acc. ISO 5211. The range complies to both the high standards in various markets like chemical and petrochemical and to the latest standardisation parameters for Butterfly valves.

Features

- A one piece thin disc stem covered with 3 mm isostatically molded PTFE providing a very minimum obstruction to flow.
- The PTFE seat extends over the seat face to make contact with the flanges to provide a reliable seat/flange sealing.
- The seat and disc are the only two valve parts in contact with the medium.
- Primary shaft sealing by preloaded contact between disc and seat hub.
- Secondary shaft seal by oversizing the shaft diameter in relation to the shaft hole in the seat.
- Tertiary shaft seal (gastight) is accomplished by precision machined, self adjusting chevron shaped PTFE seals.
- Succesfull vacuumtests with helium have been performed with pressures less than 20 Pa (0,2 millibar).
- Wafer type split body design.
- The isostatically molded seat is specially machined to close tolerances to provide the following advantages:
  - low torque
  - less stress and deformation during opening and closing
  - eliminates tearing and bunching
  - is an integrated part of the primary, secondary and tertiary sealing in the shaft area.
- Uninterrupted silicon rubber backing of the PTFE seat assures by its resiliency a positive contact and tight seating of the disc.
- Integral body locating holes to ease installation and perfect centering of the valve between flanges.

Technical data

Pressure (bar)	: 10
Temperature (°C)	: -40 + 200
Sizes (mm)	: 50-300
Flange acc.	: PN 10/16 ANSI 150

Droptight shut-off in both directions up to 10 bar, in accordance with DIN 3230 part 3, BN leakage rate 1. BO (gastight) is available on request.

General application

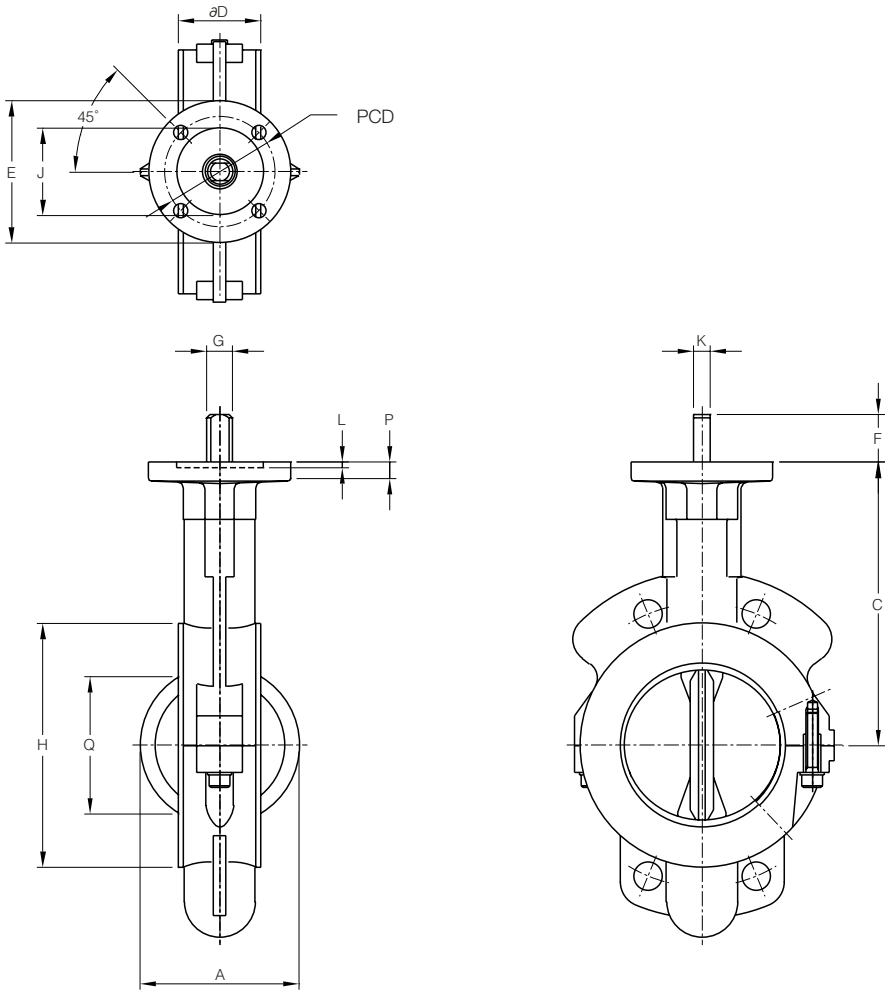
For services where common elastomers are unsuitable, Keystone offers an improved design Figure 24, oriented to chemical, pharmaceutical, cosmetic and food industries.
The accurate machining of all valve components, and the combination of safety precautions in the shaft area provide a drop-tight seatsealing and a positive gastight shut-off through the shaft area to atmosphere.

Silver plating

For severe applications silver plated trim configuration available.

Tyco reserves the right to change the contents without notice EBPJD-0096-EN-0011

Butterfly Valve Figure 24
50-300 mm



Valve dimensions in mm

						Shaft			Actuator flange acc. ISO 5211								Mass
Size	**A**	**C**	**D**	**H**	**Q**	**F**	**G_{h9}**	**$K°_{-0.05}$**	**Type**	**E**	**J**	**L**	**P**	**PCD**	**hole ø**	**holes**	**(kg)**
50	51	135	43	91	27	25	12	8	F-05	65	35	4	7,5	50	6,6	4	2,0
65	62	150	46	105	42	30	16	11	F-07	90	55	4	10,5	70	9	4	3,1
80	78	160	46	123	63	30	16	11	F-07	90	55	4	10,5	70	9	4	3,9
100	101	180	52	155	87	30	16	11	F-07	90	55	4	10,5	70	9	4	5,6
125	126	195	56	186	113	30	20	14	F-07	90	55	4	10,5	70	9	4	7,7
150	152	210	56	208	141	30	20	14	F-07	90	55	4	16,5	70	9	4	9,2
200	197	240	60	264	188	50	25	18	F-12	150	85	4	16,5	125	13,5	4	15,7
250	249	275	68	319	240	50	30	22	F-12	150	85	4	16,5	125	13,5	4	23,4
300	294	310	78	371	283	50	30	22	F-12	150	85	4	16,5	125	13,5	4	35,0

Technical data

Temperature (°C) : -40 + 200

Size (mm)	50-150	200-300
10 bar	180°C	160°C
6 bar	200°C	180°C
4 bar	200°C	200°C

Flange accom : PN 10/16
ANSI 150

Optional accom. : BS 10 D E
BS 4504
JIS 10/16

Other flange accommodations on request.

Actuator selection

Actuator type	Figure	Remark
Handle	F412	Leverlock
	F413	Continuous adjustable
Gear	F455	-
Pneumatic	F79E	-
Gear/Pneumatic	F454 + F79E	Declutchable gearunit provides manual override for the Keystone pneumatic actuator
Electric	F778	-

Notes

1. Flange accommodation must be specified when ordering.
2. Q is the disc chordal dimension at face of valve for disc clearance into pipe fitting or equipment.
3. Contact factory in case of repair. Special tooling is required.
4. Valve drawing shows the 100 mm size. Other sizes show different configurations. For information see separate data sheets.

Tyco reserves the right to change the contents without notice

Note

1. Rated Kv = the volume of water in m^3/hr that will pass through a given valve opening at a pressure drop of 1 bar.

K_V values

disc opening \ size in mm	50	65	80	100	125	150	200	250	300
10°	-	-	-	-	-	-	-	19,6	47,6
15°	0,2	0,7	1,6	2,3	4,1	5,4	13,1	78,2	182,5
20°	0,9	2,4	5,0	9,3	14,9	22,5	53,3	152,2	315,7
25°	2,9	6,0	11,2	21,2	36,9	59,3	121,1	218,8	345,1
30°	6,0	11,2	20,5	37,8	67,2	109,0	205,0	301,9	371,1
35°	9,7	17,9	32,6	58,9	102,9	161,8	294,1	421,3	507,8
40°	14,4	26,4	47,7	85,3	143,6	222,3	394,4	575,2	722,3
45°	20,6	37,0	66,2	117,6	193,8	295,0	513,8	753,4	960,2
50°	28,5	50,0	88,2	154,8	255,2	383,2	660,9	961,9	1218,8
55°	38,4	66,1	115,9	201,5	328,7	492,2	839,1	1213,6	1530,2
60°	51,9	88,2	152,2	261,2	422,1	624,5	1056,2	1549,2	2004,2
65°	69,8	117,6	203,3	347,7	550,1	798,4	1327,8	2010,3	2733,4
70°	89,1	156,6	275,9	474,0	747,4	1068,3	1741,2	2643,4	3645,1
75°	106,4	203,3	371,1	644,4	1031,1	1467,9	2361,5	3529,2	4805,1
80°	111,6	233,6	444,6	794,1	1268,1	1812,2	2962,6	4642,5	6651,0
85°	111,6	246,5	488,7	882,3	1418,6	1954,9	3546,5	6228,0	10207,0
90°	112,5	250,9	494,8	900,5	1452,3	2111,5	3736,8	6923,5	11409,4

Note

1. In ISO 5211/2 a table is listed representing the maximum torques which can be transmitted through the mounting flange. These values are based upon specific criteria and may be lower than the maximum allowable shaft torques. In this case the criteria can be changed in order to reach the maximum allowable shaft torques.

Maximum allowable shaft torques in Nm

shaft mat. \ size in mm	50	65	80	100	125	150	200	250	300
DIN 1.4401	65	160	160	160	320	320	545	970	970
DIN 1.4462	70	170	170	170	340	340	695	1245	1245
Titanium	42	105	105	105	210	210	428	760	760

Notes

1. Dynamic operating torque formula:
   $T_D = F_T \times \Delta P$

   T_D = Dynamic torque (Nm)
   ΔP = Pressure drop across disc at desired disc-opening (bar)
   F_T = Dynamic torque factor (see table)
2. The above mentioned dynamic torque includes all frictional resistances.
3. The dynamic torque is tending to close the disc.

Dynamic torque factors F_T for metric units

disc opening \ size in mm	50	65	80	100	125	150	200	250	300
10°	-	-	-	-	-	-	1,7	0,4	8,1
15°	0,1	0,1	0,3	0,5	1,0	1,7	4,0	7,8	13,5
20°	0,1	0,2	0,5	0,9	1,8	3,0	7,2	14,1	24,3
25°	0,2	0,4	0,7	1,4	2,7	4,7	11,2	21,9	37,8
30°	0,3	0,6	1,1	2,1	4,1	7,1	16,8	32,8	56,7
35°	0,4	0,8	1,5	3,0	5,9	10,1	24,0	46,9	81,0
40°	0,5	1,1	2,1	4,1	8,0	13,8	32,8	64,1	110,7
45°	0,7	1,5	2,8	5,4	10,5	18,2	43,2	84,4	145,8
50°	0,9	1,9	3,6	7,0	13,7	23,6	56,0	109,4	189,0
55°	1,1	2,5	4,6	9,0	17,6	30,4	72,0	140,6	243,0
60°	1,5	3,3	6,1	12,0	23,4	40,5	96,0	187,5	324,0
65°	1,9	4,1	7,7	15,0	29,3	50,6	120,0	234,4	405,0
70°	2,5	5,5	10,2	20,0	39,1	67,5	160,0	312,5	540,0
75°	3,4	7,4	13,8	27,0	52,7	91,1	216,0	421,9	729,0
80°	3,9	8,5	15,9	31,0	60,5	104,6	248,0	484,4	837,0
85°	2,5	5,5	10,2	20,0	39,1	67,5	160,0	312,5	540,0
90°	-	-	-	-	-	-	-	-	-

Note

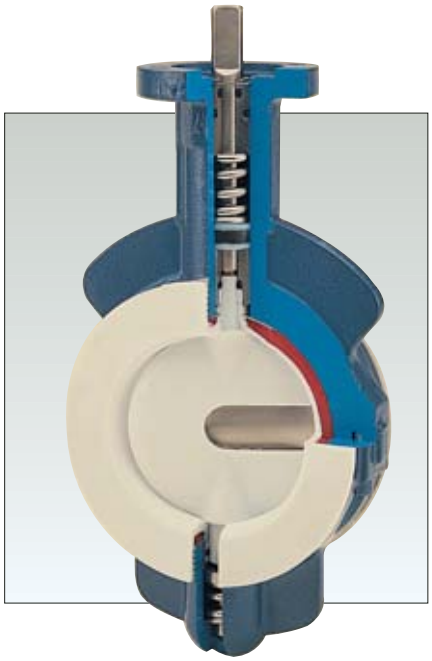
1. The charted maximum sizing operating torque is the sum of all friction and resistance for opening and closing of the disc against the indicated pressure differential.
2. The effect of dynamic torque is not considered in tabulation.
3. In sizing operators it is not necessary to include safety-factors.

Sizing torques in Nm

ΔP in bar \ size in mm	50	65	80	100	125	150	200	250	300
5	21	33	47	71	111	157	283	452	649
10	22	36	51	77	123	175	323	526	755

Tyco reserves the right to change the contents without notice

Butterfly Valve Figure 24
material selection



Body	Disc	Shaft	Seat	Seat backing	Trim no.**	Sizes(mm)
Ductile Iron	PTFE	Stainless Steel	PTFE	Silicon Fluorelastomer	**269** **330**	50-300 50-300
	Conductive PTFE	Stainless Steel	Conductive PTFE	Silicon	**326**	50-300
	Stainless Steel	Stainlessl Steel	PTFE	Silicon	**290**	50-300
			Conductive PTFE	Silicon	**327**	50-300
	Titanium	Titanium	PTFE	Silicon Fluorelastomer	**329** **335**	50-300 50-300
Ductile Iron Heat Treated*	PTFE	Stainless Steel	PTFE	Silicon Fluorelastomer	**385** **391**	50-300 50-300
	Conductive PTE	Stainless Steel	Conductive PTFE	Silicon	**388**	50-300
	Stainless Steel	Stainless Steel	PTFE Conductive PTFE	Silicon Silicon	**386** **389**	50-300 50-300
	Titanium	Titanium	PTFE	Silicon Fluorelastomer	**390** **387**	50-300 50-300

Tyco reserves the right to change the contents without notice