

tyco

Flow Control

KEYSTONE

A PTFE lined solution according ISO 5752/5 short (EN 558-1/T5) with various corrosion resistant disc materials to satisfy demanding customer requirements.

Features

- Two-piece elastomer backing of the PTFE liner assures a positive contact and tight seating of the disc.
- The liner also provides positive flange sealing.
- A one piece thin disc stem lined with 3 mm moulded PFA providing high K_v values.
- The liner and disc are the only two valve parts in contact with the medium.
- Primary shaft sealing by preloaded contact between disc and liner hub. The pressure to keep the sealing surfaces together is provided by an upper and lower coil spring.
- Secondary shaft seal by oversizing the shaft diameter in relation to the shaft hole in the liner.
- The liner and disc are moulded and machined to close tolerances to provide:
 - low torque
 - less stress and deformation during opening and closing
 - elimination of tearing and bunching
 - an integrated part of the primary and secondary sealing in the shaft area.
- Vacuum tests with helium have been performed successfully with pressures less than 20 Pa absolute (0,2 mbarA).
- Wafer and lugged split body design.
- Integral body locating holes to ease installation and to ensure perfect centering of the valve between flanges.
- Integral actuator flange acc. ISO 5211.



Technical data

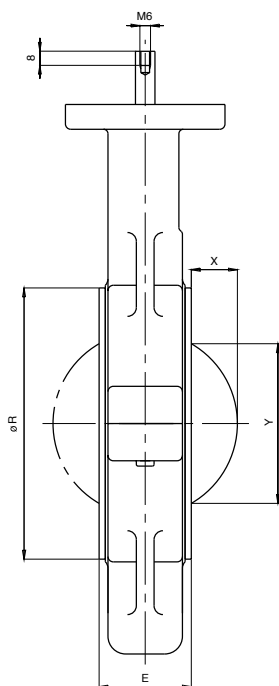
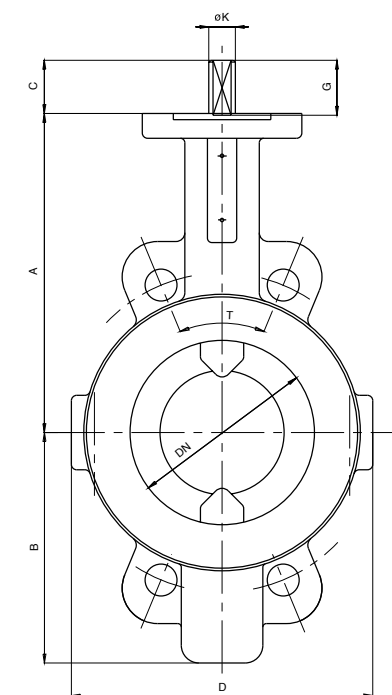
Pressure (bar)	: 10
Temperature (°C)	: -40 + 200
Sizes (mm)	: 50-300
Flange accommodation	: DIN PN 10/(16)

Droptight shut-off in both directions up to 10 bar, in accordance with DIN 3230 part 3, BN leakage rate 1.

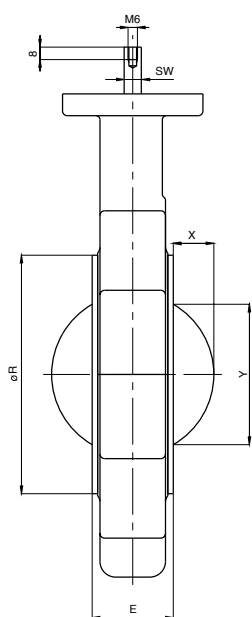
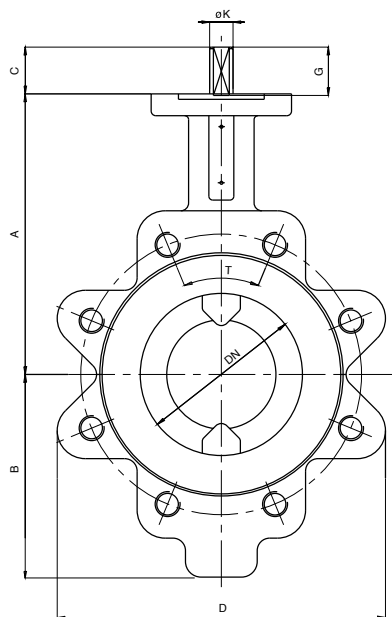
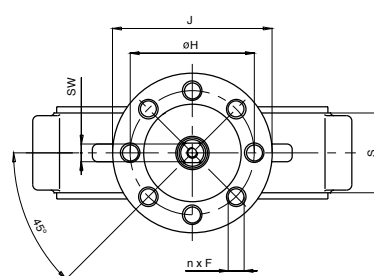
General application

For services where common elastomers are unsuitable, Keystone offers an improved design KeyChem, 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 seat sealing and a positive gastight shut-off through the shaft area to atmosphere.



Wafer and Lugged version



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

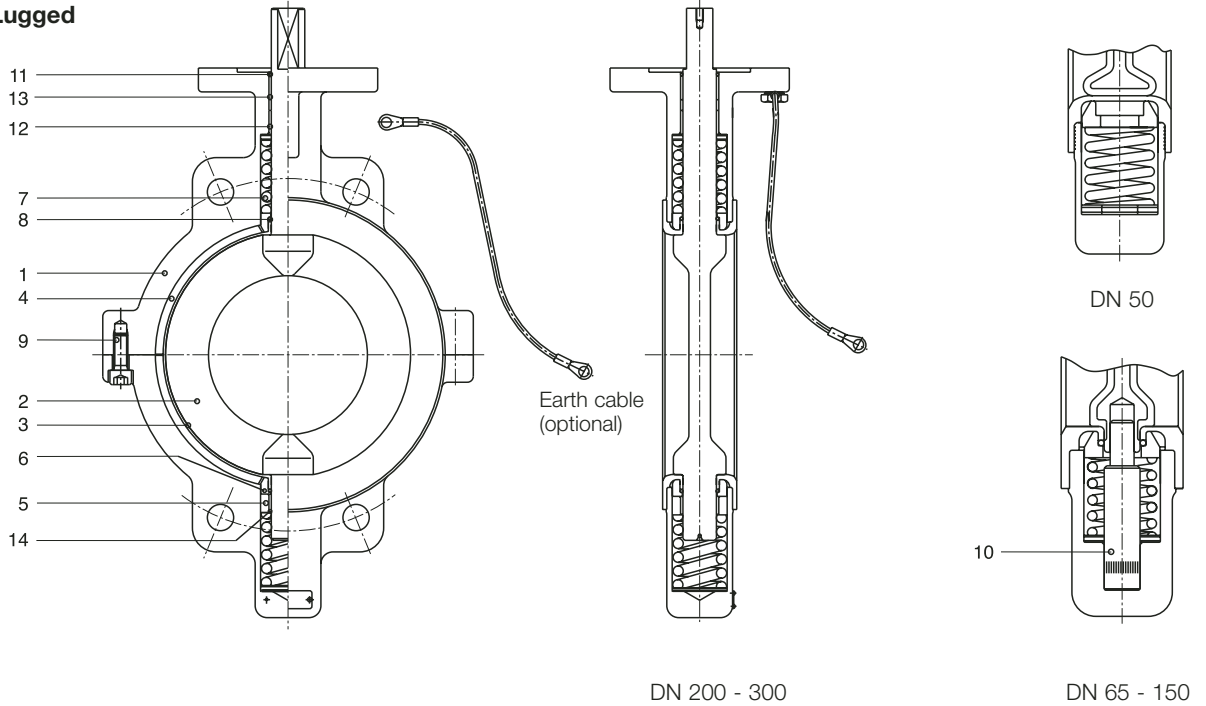
Valve dimensions in mm wafer and lugged

Size	Type	Overall Dimensions										Weight (kg)							
		A	B	C	D	D	E	n x F	G	øH	øJ	øK	øR	S	X	Y	SW	wafer	lugged
50	F05	135	90	25	130	160	43	8 x Ø7	26	50	65	12	95	38	5	31	□ 8	2,8	3,4
65	F07	150	110	30	144	176	46	4 x Ø9	31	70	90	15	120	41	11,5	52	□ 11	4,7	4,2
80	F07	160	118	30	155	188	46	4 x Ø9	31	70	90	15	132	41	18,5	69	□ 11	4,7	6,1
100	F07	180	130	30	180	210	52	4 x Ø9	31	70	90	15	153	45	26,5	91	□ 11	5,7	7,9
125	F07	195	155	30	211	234	56	4 x Ø9	31	70	90	18	183	50	35,5	114	□ 14	8,7	10,6
150	F07	210	170	30	240	269	56	4 x Ø9	31	70	90	20	209	50	48,5	143	□ 14	11,6	13,5
200	F12	240	220	50	310	360	60	8 x Ø13	51	125	150	25	259	56	71,5	196	□ 18	21,0	23,3
250	F12	275	240	50	350	435	68	8 x Ø13	51	125	150	30	309	64	91,5	243	□ 22	31,5	32,1
300	F12	310	280	50	420	500	78	8 x Ø13	53	125	150	30	364	74	111,5	293	□ 22	45,0	49,9

Flange accommodation: DIN PN10/16 (DN50-DN150), DIN PN10 (DN200-DN300)

Note: For larger sizes, contact factory

Wafer and Lugged

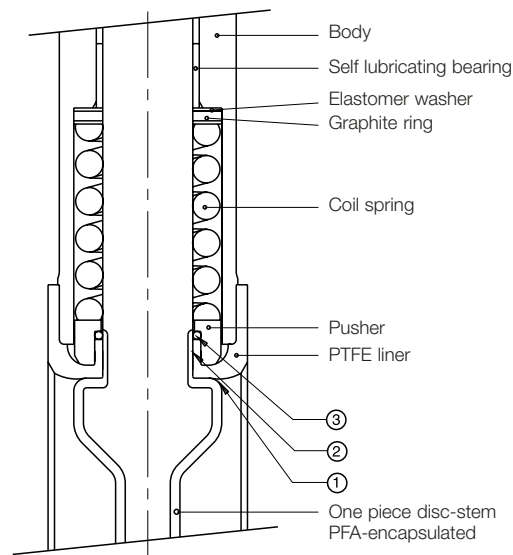


Parts list

Pos.	Part	Standard material	Alternative material
1	Two piece body	Ductile iron polyester coated	
2	One piece disc stem	PFA encapsulated stainless steel	Stainless Steel
3	Liner	Virgin PTFE	Conductive PTFE
4	Elastomer back-up	Silicon	FPM
5	Distance ring	Stainless Steel	
6	Pusher	Stainless Steel	
7	Coil spring package	Stainless Steel	
8	O-Ring	FPM	FEP encapsulated
9	Int. Hex screw	Stainless Steel A2-70	
10	Pivot pin	Stainless steel	
11	O-Ring	FPM	
12	Bearing	DU (Steel/PTFE conductive)	
13	Bearing	Iglidur X (Thermoplast)	
14	Bearing	DU (Steel/PTFE conductive)	

Notes

- ① Primary seal: spring loaded mechanical seal
- ② Secondary seal: radial lip seal
- ③ Third seal: FPM



Cross section of stem seal

K _v values										
size in										
disc opening	mm	50	65	80	100	125	150	200	250	300
25°		3	5	7	12	21	56	101	172	250
30°		4	8	13	25	41	84	151	258	378
35°		8	16	24	45	73	134	240	352	537
40°		13	29	33	60	97	181	323	478	746
45°		18	41	50	90	146	245	435	609	1007
50°		27	61	69	125	203	296	525	836	1264
55°		36	80	95	170	276	395	700	1103	1585
60°		48	107	125	225	364	503	891	1353	2035
65°		63	141	164	295	477	610	1080	1727	2810
70°		78	175	222	400	647	803	1422	2131	3320
75°		91	203	292	525	848	1130	2000	2821	4874
80°		97	217	347	625	1009	1482	2622	3485	5416
85°		102	228	381	685	1106	1723	3050	3846	6067
90°		105	235	411	741	1196	1973	3492	4170	6102

Note

1. Rated K_v = the volume of water in m³/hr that will pass through a given valve opening at a pressure drop of 1 bar.

Maximum allowable shaft torques in Nm										
size in										
shaft mat.	mm	50	65	80	100	125	150	200	250	300
1.4542		75	160	160	160	294	362	831	1280	1280

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.

Dynamic torque factors F _T for metric units										
size in										
disc opening	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°		-	-	-	-	-	-	-	-	-

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.

Sizing torques in Nm (10 bar pressure differential)										
size in										
disc/liner	mm	50	65	80	100	125	150	200	250	300
PFA/PTFE		20	25	45	60	85	140	190	320	420
SS/PTFE		30	40	50	75	110	160	220	320	420

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.

Valve material selection

Body	Disc	Shaft	Seat	Seat backing	Trim no.	Sizes	Remarks
Ductile Iron	PFA	Stainless Steel	PTFE	Silicon	N01	50-300	
	PFA	Stainless Steel	PTFE	FPM	N02	50-300	
	Conductive PFA	Stainless Steel	Conductive PTFE	Silicon	N04	50-300	
	Conductive PFA	Stainless Steel	Conductive PTFE	FPM	N05	50-300	
	Stainless Steel	Stainless Steel	PTFE	Silicon	N07	50-300	
	Stainless Steel	Stainless Steel	PTFE	FPM	N08	50-300	
	Stainless Steel	Stainless Steel	Conductive PTFE	Silicon	N10	50-300	
	Stainless Steel	Stainless Steel	Conductive PTFE	FPM	N11	50-300	
	Titanium	Titanium	PTFE	Silicon	N1E	50-300	contact factory
	Titanium	Titanium	PTFE	FPM	N1F	50-300	contact factory

Note: For larger sizes, contact factory

Order example

Type	Size	Body	Standard
KCB = KeyChem	50-300	W/L	DIN
Standard	Body	Operation	
10 = DIN PN10	W = Wafer	B = Bare shaft	50-300
	L = Lugged	L = Lever	50-300

Example of order KeyChem

Type	Size (mm)	Trim	Body	Standard	Operation	Variant
KCB	150	N01	W	10	B	00 Wafer
KCB	150	N01	L	10	B	00 Lugged

Note: For definitive variant, please contact your local sales office

Valve material list (standard configuration)

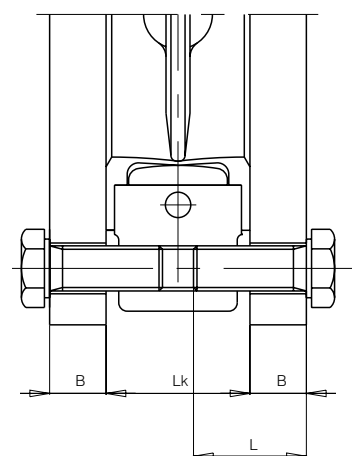
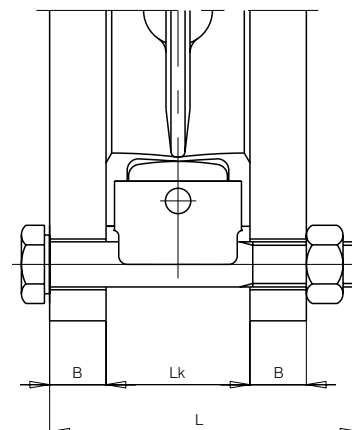
Part name	Material	DIN designation	DIN mat. no.	Remarks
Body	Ductile Iron	EN-GJS 400-18U-LT-Z (GGG 40.3)	0.7043	Heat treated, coating: 2-components polyester powder, RAL 9002
		ASTM A395		
Disc	PFA covered Stainless Steel	X 5 CrNiMoNb 17 4 GX 5 CrNiMoNb 19-11	1.4542 1.4581	
Shaft	PFA covered Stainless Steel	X 5 CrNiMoNb 17 4 X 5 CrNiMoNb 17 4	1.4542 1.4542	
Seat	PTFE Conductive PTFE			FDA 21CFR177.1550
Body screws	Stainless Steel	X 5 CrNi 18 10	1.4301	A2-70
Top spring	Spring Steel	X 12 CrNi 17 7	1.4310	DIN 17224
Bottom spring	Spring Steel	X 12 CrNi 17 7	1.4310	DIN 17224
O-rings	FEP encapsulated Silicon			
Seat backing	Silicon FPM			
Top bearing	Thermoplast			
Bottom bearing	Steel/PTFE conductive			

Wafer		PN 10 DIN 2632			PN 16 DIN 2633		
Valve size	Face to face length	Flange thickness	No. of boltholes	Boltsize	Flange thickness	No. of boltholes	Boltsize
mm	Lk	B		L	B		L
50	43	18	4	M16x100	18	4	M16x100
65	46	18	4	M16x100	18	4	M16x100
80	46	20	8	M16x100	20	8	M16x100
100	51	20	8	M16x110	20	8	M16x110
125	56	22	8	M16x120	22	8	M16x120
150	56	22	8	M20x120	22	8	M20x120
200	62	24	12	M20x130	24	12	M20x130
250	70	26	12	M20x140	26	12	M24x140
300	80	26	12	M20x150	28	12	M24x150

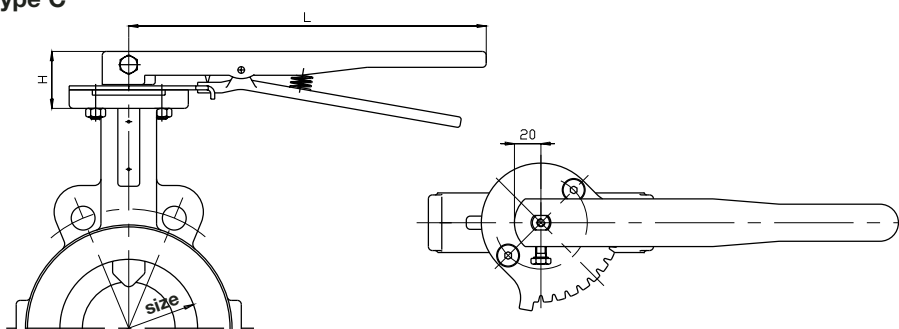
Lugged		PN 10 DIN 2632			PN 16 DIN 2633		
Valve size	Face to face length	Flange thickness	No. of boltholes	Boltsize	Flange thickness	No. of boltholes	Boltsize
mm	Lk	B		L	B		L
50	43	18	4	M16x35	18	4	M16x35
65	46	18	4	M16x35	18	4	M16x35
80	46	20	8	M16x35	20	8	M16x35
100	51	20	8	M16x40	20	8	M16x40
125	56	22	8	M16x45	22	8	M16x45
150	56	22	8	M20x45	22	8	M20x45
200	62	24	8	M20x50	24	12	M20x50
250	70	26	12	M20x55	26	12	M24x55
300	80	26	12	M20x60	28	12	M24x60

Recommended bolt torques for installation

Valve size	Torque	Valve size	Torque
mm	Nm	mm	Nm
50	35	150	70
65	45	200	95
80	50	250	100
100	55	300	115
125	65		



Type C



Handle lever Type C

Size	L	H
50	267	46
65	267	46
80	267	46
100	267	46
125	356	49
150	356	54

Handle lever material list

Part name	Material	DIN designation	DIN mat. no
Handle bar	Ductile iron	EN-GJS-400-15 (GGG 40)	0.7040
Handle lever	Ductile iron	EN-GJS-400-15 (GGG 40)	0.7040
Spring	Stainless Steel	X 5 CrNiMo 17 12 2	1.4401
Groove pin	Stainless Steel	X 10 CrNiS 18 9	1.4305
Throttling plate	Stainless Steel	X 5 CrNi 18 10	1.4301
Handle screw	Stainless Steel	X 5 CrNi 18 10	1.4301
Screw	Stainless Steel	X 5 CrNi 18 10	1.4301