



KEYSTONE OPTISEAL
RESILIENT SEATED BUTTERFLY VALVE

A resilient seated butterfly valve in wafer and lug body style for general purpose applications



FEATURES

- Top bushing absorbs actuator side thrust loads.
- Actuator flange acc. ISO 5211.
- High solid, glossy, silicone free, paint system ensuring excellent corrosion resistance.
- Extended body neck allows pipe insulation.
- Body locating holes ease installation and centering between the flanges.
- Rounded polished disc edge gives full concentric sealing, lower torques, longer seat life and bubble-tight shut-off.
- The seat is field replaceable and fully isolates the body and stem from the flow.
- Primary stem sealing exceeds the pressure rating of the valve and prevents leakage through shaft area to atmosphere.
- A secondary shaft sealing provides back-up safety.
- No flange gaskets required.
- High C_v value.
- Top and bottom shaft bearings for optimized support and minimum friction in all body materials up to DN 300, except cast iron.
- Wafer and lugged body design, acc. EN 593, ISO 5752/5 short.
- All valves comply to Pressure Equipment Directive (97/23/EU) Module H - CE Marking.
- Available approvals: KIWA, DNV, CU-TR

GENERAL APPLICATION

Food and beverage processing, dry bulk conveying, paper mills, slurry handling etc. Grease or silicone free valves are available for special applications such as paint or oxygen systems. OptiSeal with PTFE lined seat and PTFE covered disc stem is ideally suited to applications where excellent chemical resistance and non-toxic properties are required.

TECHNICAL DATA

Pressure (bar):	16 (Cl body: 10 bar)
End of line (bar):	6-10-16
Temperature (°C):	-40 to +160
Sizes (DN):	40-1000
Flange accommodation wafer:	
DN 40-500:	PN 10/16, ASME/ASTM B16.5 Cl#150, JIS 10K, BS table E
DN 600:	PN 10/16, ASME/ASTM B16.5 Cl#150, BS table E
DN 700-1000:	Single drilled
Flange accommodation lugged:	
	PN 10/16 ASME/ASTM B16.5 Cl#150 ASME/ASTM B16.47 Cl#150 series A JIS 5K/10K

KEYSTONE OPTISEAL RESILIENT SEATED BUTTERFLY VALVE

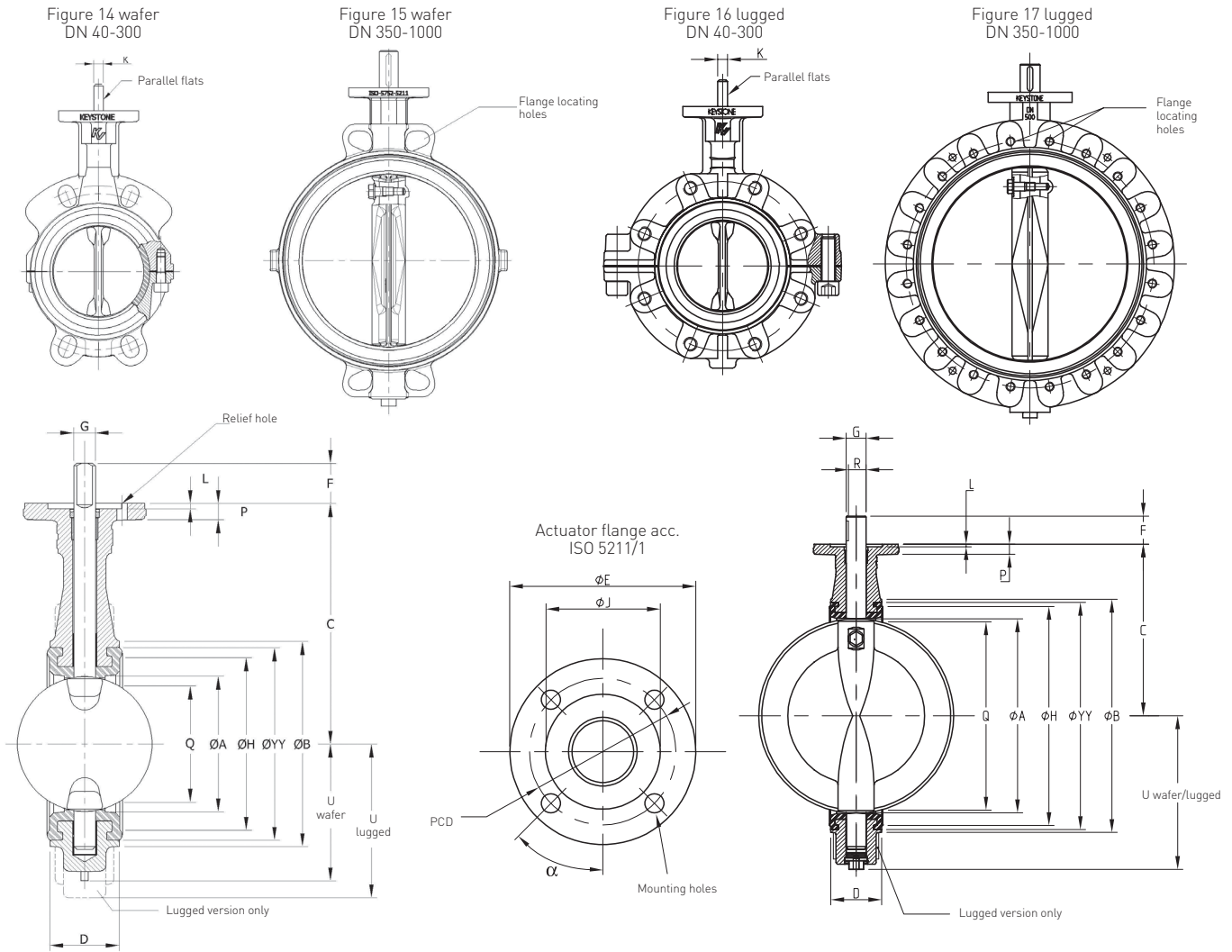


Figure 14 and 16

Figure 15 and 17

VALVE DIMENSIONS in mm

Size (DN)	Shaft					Actuator flange acc. ISO 5211/1										Wafer Mass (kg)	Lugged Mass (kg)
	A	B	C	U Wafer	U Lugged	Type	E	J	L	P	PCD	Hole ø	No holes	α			
40	40	78	130	54	68	F-05	65	35	4	9	50	6.6	4	45	1.5	2.7	
50	50	94	135	59	73	F-05	65	35	4	9	50	6.6	4	45	2.1	3.7	
65	62	109	150	74	80	F-07	90	55	4	12	70	9.0	4	45	3.2	5.0	
80	78	126	160	92	103	F-07	90	55	4	12	70	9.0	4	45	3.7	5.9	
100	99	156	180	106	117	F-07	90	55	4	12	70	9.0	4	45	5.3	8.3	
125	124	189	195	120	133	F-07	90	55	4	12	70	9.0	4	45	7.7	11.5	
150	151	214	210	131	144	F-07	90	55	4	12	70	9.0	4	45	8.6	13.0	
200	195	267	240	167	180	F-12	150	85	4	18	125	13.5	4	45	16.2	22.2	
250	245	321	275	200	220	F-12	150	85	4	18	125	13.5	4	45	23.7	33.5	

❖ Keysize width x height

NOTES

- Flange accommodation must be specified when ordering.
- Q is the disc chordal dimension at face of valve for disc clearance into pipe fitting or equipment.
- Specify size, figure number, part name, material and flange accommodation when ordering spareparts.
- Valve sizes shown are the DN 100 and DN 500.
- Valve sizes DN 900/1000 have no separate lugs, but a double flange design.
- * in case of super seat F = 100, G = 60, R = 53, keysize 18 x 11
- For valves with composite discstem, the mass shown is ± 3% till 20% lower, depending on size and wafer- or lugged type. For investment cast bodies, the mass is ± 30% lower.

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RESILIENT SEATED BUTTERFLY VALVE

VALVE DIMENSIONS in mm (CONTINUED)

Size (DN)	Shaft										Actuator flange acc. ISO 5211/1								Wafer Mass (kg)	Lugged Mass (kg)					
	A	B	C	U	Wafer	U	Lugged	D	H	Q	YY	F	G _{H9}	K _{0.05}	R	Key-size	Type	E			J	L	P	PCD	Hole ø
300	292	375	310	234	245	78	340	283	355	50	30	22	-	-	F-12	150	85	4	18	125	13.5	4	45.0	32.2	51
350	325	413	325	274	274	78	378	319	398	70	35	-	30.0	10 x 8	F12	150	85	4	18	125	13.5	4	45.0	42	60
400	380	470	360	312	312	102	435	369	455	70	40	-	35.0	12 x 8	F16	210	130	6	25	165	22.0	4	45.0	64	120
450	434	530	395	348	348	114	495	422	515	70	40	-	35.0	12 x 8	F16	210	130	6	25	165	22.0	4	45.0	85	144
500	486	584	430	385	385	127	549	472	569	70	50	-	44.5	14 x 9	F16	210	130	6	25	165	22.0	4	45.0	107	173
600	585	685	500	456	456	154	650	569	670	*70	*50	-	*44.5	14 x 9*	F16	210	130	6	25	165	22.0	4	45.0	147	250
700	685	795	570	518	518	165	755	669	775	100	70	-	62.5	20 x 12	F25	300	200	6	30	254	17.5	8	22.5	247	321
750	735	855	605	551	551	190	816	715	835	100	70	-	62.5	20 x 12	F25	300	200	6	30	254	17.5	8	22.5	300	360
800	785	900	640	583	583	190	860	766	880	100	70	-	62.5	20 x 12	F25	300	200	6	30	254	17.5	8	22.5	330	425
900	885	1000	715	-	659	203	960	865	980	100	80	-	71.0	22 x 14	F25	300	200	6	30	254	17.5	8	22.5	448	650
1000	955	1112	780	-	715	216	1076	964	1080	129	90	-	81.0	25 x 14	F30	350	230	6	35	298	22.0	8	22.5	600	800

❖ Keysize width x height

NOTES

- Flange accommodation must be specified when ordering.
- Q is the disc chordal dimension at face of valve for disc clearance into pipe fitting or equipment.
- Specify size, figure number, part name, material and flange accommodation when ordering spareparts.
- Valve sizes shown are the DN 100 and DN 500.
- Valve sizes DN 900/1000 have no separate lugs, but a double flange design.
- * in case of super seat F = 100, G = 60, R = 53, keysize 18 x 11
- For valves with composite discstem, the mass shown is ± 3% till 20% lower, depending on size and wafer- or lugged type. For investment cast bodies, the mass is ± 30% lower.

FLANGE ACCOMMODATION WAFER

	Sizes (DN)		
	40-500	600	700-1000
PN 6	Optional	Optional	Optional
JIS 5K	Optional	Optional	Optional
PN 10/16	Yes	Yes	Single drilled
ASME/ASTM B16.5 Cl#150	Yes	Yes	-
ASME/ASTM B16.47 Cl#150 series A	-	-	Single drilled
JIS 10K	Yes	Optional	Single drilled
BS table E	Yes	Yes	Single drilled

DIMENSIONS OF FLANGE LOCATING HOLES (mm)

Size (DN)	PN 10				PN 16			
	T	U	V	X	T	U	V	X
700	M27	-	-	-	M33	55.5	22.5	62.5
750	M30	-	-	-	M33	63.0	30.0	70.0
800	M30	-	-	-	M36	61.0	25.0	70.0
900	M30	56.5	6.5	76.5	M36	60.5	6.5	76.5
1000	M33	73.0	23.0	85.0	M39	73.0	23.0	85.0

NOTES

- T = thread type, U = full thread + V, X = max. bore depth.
- All holes in lugged version are through threaded, except the holes closest to top and bottom shaft.

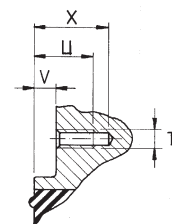


Figure 15 and Figure 17

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PARTS LIST

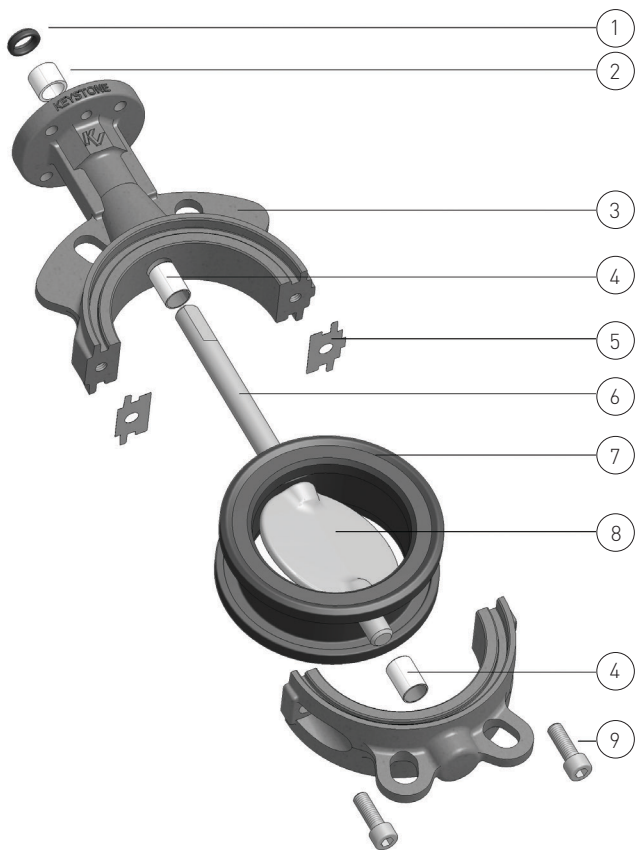


Figure 14/16 exploded view
(Ductile iron bodies)

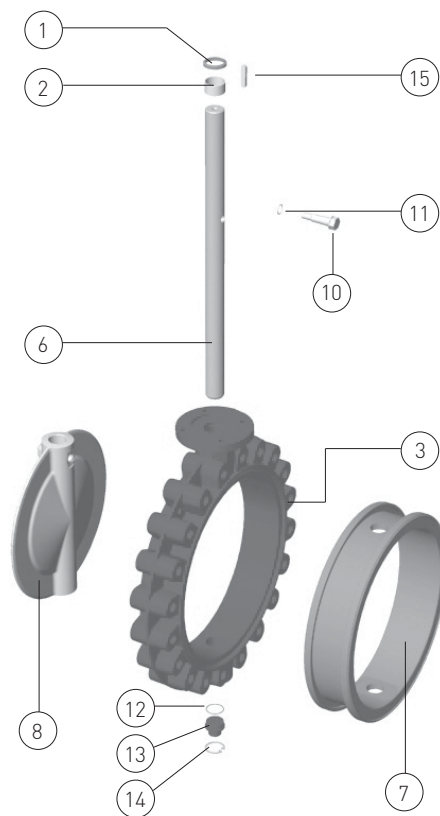


Figure 17 exploded view

PARTS LIST

Part	Name
1.	Dirtscraper
2.	Shaft bushing
3.	Body
4.	Bearing
5.	Split seal
6.	Shaft
7.	Seat
8.	Disc
9.	Body screws
10.	Disc screw
11.	O-ring
12.	O-ring
13.	Plug
14.	Circlip
15.	Key

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FLOW AND TORQUE DATA

K_v VALUES

Disc opening	Size in mm																			
	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750	800	900	1000
10°	-	-	-	-	-	-	-	-	19.5	47.3	119	155	196	242	349	475	545	620	785	969
20°	0.6	0.9	2.4	5.0	9.2	14.8	22.4	53	151	314	304	397	503	621	894	1216	1396	1589	2011	2483
30°	3.8	5.9	11.1	20.4	37.6	66.8	108	204	300	369	637	832	1053	1300	1871	2547	2924	3327	4211	5197
40°	9.2	14.3	26.2	47.4	84.8	143.0	221	392	572	718	1142	1492	1888	2331	3357	4569	5245	5968	7553	9325
50°	18.1	28.3	49.7	87.9	154.0	254.0	381	657	956	1212	1936	2529	3200	3951	5689	7744	8890	10114	12801	15803
60°	33.5	51.6	87.4	151.0	260.0	420.0	621	1050	1540	1993	3110	4062	5141	6347	9140	12440	14281	16248	20564	25384
70°	54.2	88.6	156.0	274.0	471.0	743.0	1062	1731	2628	3624	5010	6544	8288	10224	14723	20040	23005	26174	33127	40897
80°	57.6	111.0	232.0	442.0	789.0	1261.0	1802	2946	4616	6613	8969	11714	14826	18303	26357	35875	41183	46857	59303	73214
90°	58.5	112.0	249.0	492.0	895.0	1444.0	2099	3715	6883	11343	10407	13592	17203	21238	30583	41626	47785	54369	68811	84953

NOTES

- 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.
- $K_v = Q \sqrt{\frac{R.D.}{\Delta P}}$ (liquid)
 Q = flow through valve (m³/hr)
 R.D. = relative density of liquid (water = 1)
- Values for composite discstem, indication only. For details: contact factory.

DYNAMIC TORQUE FACTORS F_T FOR METRIC UNITS

Disc opening	Size in mm																			
	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750	800	900	1000
10°	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20°	0.1	0.1	0.2	0.5	0.9	1.8	3.0	7.2	14.1	24.3	21.4	32.0	45.6	62.5	108.0	171.5	210.9	256.0	364.5	500
30°	0.1	0.3	0.6	1.1	2.1	4.1	7.1	16.8	32.8	56.7	64.3	96.0	136.7	187.5	324.0	514.5	632.8	768.0	1093.5	1500
40°	0.3	0.5	1.1	2.1	4.1	8.0	13.8	32.8	64.1	110.7	124.3	185.6	264.3	362.5	626.4	994.7	1223.4	1484.8	2114.1	2900
50°	0.4	0.9	1.9	3.6	7.0	13.7	23.6	56.0	109.4	189.0	235.8	352.0	501.2	687.5	1188.0	1886.5	2320.3	2816.0	4009.5	5500
60°	0.8	1.5	3.3	6.1	12.0	23.4	40.5	96.0	187.5	324.0	415.9	620.8	883.9	1212.5	2095.2	3327.1	4092.2	4966.4	7071.3	9700
70°	1.3	2.5	5.5	10.2	20.0	39.1	67.5	160.0	312.5	540.0	733.2	1094.4	1558.2	2137.5	3693.6	5865.3	7214.1	8755.2	12465.9	17100
80°	2.0	3.9	8.5	15.9	31.0	60.5	104.6	248.0	484.4	837.0	1346.3	2009.6	2861.3	3925.0	6782.4	10770.2	13246.9	16076.8	22890.6	31400
90°	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES

- 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)
- The above mentioned dynamic torque includes all frictional resistances.
- The dynamic torque is tending to close the disc.
- ΔP to be determined with K_v formula.

MAXIMUM ALLOWABLE SHAFT TORQUES in Nm

	Valve size in mm																			
	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750	800	900	1000
SS 1.4401	65	65	160	160	160	320	320	545	970	970	-	-	-	-	-	-	-	-	-	-
SS 1.4470	65	65	160	160	160	320	320	655	1160	1160	-	-	-	-	-	-	-	-	-	-
SS 1.4408	32	32	80	80	80	160	160	327	580	580	-	-	-	-	-	-	-	-	-	-
SS 1.4057	90	90	230	230	230	460	460	935	1660	1660	1760	2012	3472	3858	6587	7685	8234	8782	15949	22956
SS 1.4057*	65	65	110	160	160	320	320	935	1660	1660	-	-	-	-	-	-	-	-	-	-
SS 1.4462	70	70	170	170	170	345	345	700	1215	1215	-	-	-	-	-	-	-	-	-	-
Ti**	45	45	105	105	105	210	210	430	760	760	-	-	-	-	-	-	-	-	-	-

* for Composite disc ** Ti = Titanium

NOTES

- In ISO 5211/2 a table is listed representing the maximum torques which can be transmitted through the actuator flange. These values are based upon specific criteria and can 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.

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TORQUE DATA

SIZING TORQUES in Nm (STANDARD AND LINED SEAT)

ΔP in bar	Size in mm																			
	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600	700	750	800	900	1000
I*																				
3.5	10	13	19	26	37	58	81	148	241	345	492	672	889	1146	1789	2625	3123	3679	4654	6138
7	10	13	20	27	40	63	88	164	271	387	559	773	1032	1342	2128	3164	3786	4482	5672	7551
10	11	14	21	30	44	70	99	188	315	451	660	923	1247	1636	2637	3972	4779	5688	7198	9670
14	11	15	23	33	49	80	113	219	374	536	-	-	-	-	-	-	-	-	-	-
16	12	15	25	36	51	85	120	235	403	578	-	-	-	-	-	-	-	-	-	-
II*																				
3.5	11	14	21	29	42	66	93	169	274	392	555	755	994	1276	1976	2880	3416	4011	5076	6658
7	11	14	22	31	45	71	100	185	303	434	623	856	1138	1472	2315	3419	4078	4815	6093	8071
10	11	15	23	33	49	78	111	208	347	498	724	1007	1352	1766	2824	4226	5072	6021	7619	10190
14	12	16	26	36	54	88	125	240	406	583	-	-	-	-	-	-	-	-	-	-
16	12	17	27	38	56	93	132	255	436	626	-	-	-	-	-	-	-	-	-	-
III*																				
3.5	12	15	23	32	48	74	105	190	306	439	619	839	1100	1406	2163	3135	3708	4344	5497	7178
7	12	16	24	34	50	79	112	206	336	481	686	939	1243	1602	2502	3673	4371	5148	6514	8591
10	12	16	26	36	54	86	122	229	380	545	787	1090	1457	1896	3011	4481	5364	6354	8040	10710
14	13	17	28	40	59	96	136	261	439	629	-	-	-	-	-	-	-	-	-	-
16	13	18	29	41	61	101	143	276	468	672	-	-	-	-	-	-	-	-	-	-

SIZING TORQUES in Nm (SUPER SEAT**)

ΔP in bar	Size in mm														
	40	50	65	80	100	125	150	200	250	300	350	400	450	500	600
I*															
10	-	18	28	40	59	95	134	250	412	591	851	1173	1563	2026	3198
14	-	19	30	43	64	104	148	281	471	676	986	1374	1849	2419	3876
16	-	19	31	44	67	109	155	297	501	719	1053	1474	1992	2615	4216
II*															
10	-	20	31	45	67	107	152	281	461	662	947	1298	1721	2221	3879
14	-	21	33	48	72	117	166	313	520	746	1081	1499	2007	2614	4157
16	-	21	34	49	74	121	173	328	549	789	1149	1599	2150	2810	4496
III*															
10	-	27	43	63	96	151	216	396	640	919	1297	1755	2300	2936	4509
14	-	28	45	66	101	161	230	427	699	1004	1432	1956	2586	3329	5187
16	-	28	46	68	103	166	237	443	728	1046	1499	2057	2729	3525	5526

* Application I, II, III

NOTES

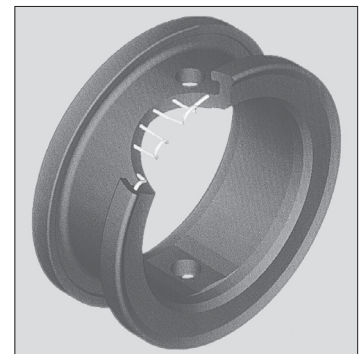
- Application I:** Water, seawater, lubricating types of hydrocarbons.
Application II: All other liquid applications and lubricating gasses.
Application III: Non lubricating and dry media.
- The charted maximum sizing operating torque is the sum of all friction and resistance for opening and closing of the disc against the indicated pressure differential.
- The effect of dynamic torque is not considered in tabulation.
- In sizing operators it is not necessary to include safety-factors.
- Torque values for application I, II and III are relevant for the temperature range of: 0°C to 80°C, when valve opens at least once a month (for other temperatures, contact factory).

** For limited shaft material selection only.

SUPERSEAT

Suitable for:

- severe vacuum applications
- high line velocities up to 12 m/s for liquids
- Bördel and slip-on flanges
- full rated end-of-line service
- pressure testing during erection and commissioning



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PRESSURE AND TEMPERATURE DATA

PRESSURE-TEMPERATURE DIAGRAM (DN 40-300) - INLINE / EOL

Body			Temperature in °C										
material	Seat material	Disc material	-40	-20	-15	-10	0	50	100	120	130	150	160
Cast iron (GJL-250)	EPDM - FG	DI-Epoxy, SS (One piece)*, SS-Satin*, SS-Mirror*, SS (Standard), Duplex, NiAlBz, Hstl, Ur*, Composite†, EPDM coated, Titanium*†							10 bar / 6 bar				
	EPDM - FG - HT	DI-Epoxy, SS (One piece)*, SS-Satin*, SS-Mirror*, SS (Standard), Duplex, NiAlBz, Hstl, Ur*, Composite†, Titanium*†							10 bar / 6 bar				
		EPDM coated							10 bar / N/A†				
		Composite†, Titanium*†							10 bar / N/A†				
	EPDM - Metal reinforced	DI-Epoxy, SS (One piece)*, SS-Satin*, SS-Mirror*, SS (Standard), Duplex, NiAlBz, Hstl, Ur*, Composite†, Titanium*†							10 bar / 10 bar				
	FKM (A/B)	DI-Epoxy, SS (One piece)*, SS-Satin*, SS-Mirror*, SS (Standard), Duplex, NiAlBz, Hstl, Ur*, Composite†, Titanium*†							10 bar / 6 bar			[2]	
	NBR - Metal reinforced	DI-Epoxy, SS (One piece)*, SS-Satin*, SS-Mirror*, SS (Standard), Duplex, NiAlBz, Hstl, Ur*, Composite†, Titanium*†							10 bar / 10 bar				
Ductile iron (GJS-400-15)	EPDM - FG	DI-Epoxy, SS (Standard), Duplex, NiAlBz, Hstl, Ur*, Composite† (DN40-150)							16 bar / 10 bar				
		SS (One piece)*, SS-Satin*, SS-Mirror*							10 bar / 6 bar				
		Composite† (DN200-300), EPDM coated, Titanium*†							10 bar / N/A†				
	EPDM - FG - HT	SS (Standard), Duplex, NiAlBz, Hstl, Ur*, Composite† (DN40-150)							16 bar / 10 bar				
		SS (One piece)*, SS-Satin*, SS-Mirror*							10 bar / 6 bar				
		Composite† (DN200-300), Titanium*†							10 bar / N/A†				
	EPDM - Metal reinforced	DI-Epoxy, SS (Standard), Duplex, NiAlBz, Hstl, Ur*							16 bar / 16 bar				
	SS (One piece)*, SS-Satin*, SS-Mirror*, Composite†, Titanium*†							10 bar / 10 bar					
FKM (A/B)	DI-Epoxy, SS (Standard), Duplex, NiAlBz, Hstl, Ur*							16 bar / 10 bar			[1]		
Ductile iron Heat Treated (GJS-400-18U-LT), Stainless steel	EPDM - FG	SS (One piece)*, SS-Satin*, SS-Mirror*, Composite†, Titanium*†							10 bar / 6 bar				
		Composite† (DN200-300), EPDM coated, Titanium*†							10 bar / N/A†				
		SS (Standard), Duplex, NiAlBz, Hstl, Ur*, Composite† (DN40-150)							16 bar / 10 bar				
	EPDM - FG - HT	SS (One piece)*, SS-Satin*, SS-Mirror*, Composite† (DN200-300), Titanium*†							10 bar / 6 bar				
		DI-Epoxy							16 bar / 16 bar				
	EPDM - Metal reinforced	SS (Standard), Duplex, NiAlBz, Hstl, Ur*						16 bar / 16 bar					
		SS (One piece)*, SS-Satin*, SS-Mirror*, Titanium*†							10 bar / 10 bar				
FKM (A/B)	DI-Epoxy							16 bar / 10 bar			[1]		
	SS (Standard), Duplex, NiAlBz, Hstl, Ur*							16 bar / 10 bar			[1]		
	SS (One piece)*, SS-Satin*, SS-Mirror*, Composite†, Titanium*†							10 bar / 6 bar			[2]		
NBR - Metal reinforced	DI-Epoxy							16 bar / 16 bar					
	SS (Standard), Duplex, NiAlBz, Hstl, Ur*							16 bar / 16 bar					
	SS (One piece)*, SS-Satin*, SS-Mirror*, Titanium*†							10 bar / 10 bar					
NBR and white NBR	DI-Epoxy							16 bar / 16 bar					
	SS (Standard), Duplex, NiAlBz, Hstl, Ur*, Composite† (DN40-150)							16 bar / 10 bar					
	SS (One piece)*, SS-Satin*, SS-Mirror*, Composite† (DN200-300), Titanium*†							10 bar / 6 bar					
PTFE / EPDM	SS (Standard), Duplex, NiAlBz, Hstl, Ur*							16 bar / 10 bar			[1]	[2]	
	SS (One piece)*, SS-Satin*, SS-Mirror*, PTFE lined†, Titanium*†							10 bar / 6 bar			[2]	[4]	

NOTES

- † Not suitable for end-of-line service, or not covered by PED approval
 - Discontinued material
 - * Size DN 300 max 6 bar
1. 10 bar / 6 bar
 2. 6 bar / 4 bar
 3. 6 bar / N/A†
 4. 4 bar / 2 bar
 5. 4 bar / N/A†
 6. 2 bar / N/A†

KEYSTONE OPTISEAL

MATERIAL SPECIFICATION

MATERIAL SPECIFICATION (DN 40-300)

Part name	Material	Designation	EN/DIN mat.no	Remark
Body	Cast iron	GJL-250	EN JL-1040	Max. pressure 10 bar
	Ductile iron	GJS-400-15	EN JS-1030	
	Ductile iron Heat Treated	GJS-400-18U-LT	EN JS-1049	With heat treatment certificate and Charpy V-notch test
	Stainless steel	GX5CrNiMo19-11-2	EN 1.4408	Only for Wafer style DN 50-300
Disc	Ductile iron CTD	GJS-400-15	EN JS-1030	CTD = Epoxy coated max temp 120°C
	Duplex	GX2CrNiMoN22-5-3	EN 1.4470	
	Hastelloy C4C	ASTM A494 CW2M	-	Shaft connection by welded pins
	NiAlBz	CuAl10Fe5Ni5	EN CC333G	Comparable with BS 1400 AB2
	Stainless steel	GX5CrNiMo19-11-2	EN 1.4408	Comparable with CF8M
	Stainless steel MP	GX5CrNiMo19-11-2	EN 1.4408	DN 40-250 max 10 bar, DN 300 max. 6 bar
	Stainless steel SF	GX5CrNiMo19-11-2	EN 1.4408	DN 40-250 max 10 bar, DN 300 max. 6 bar
	EPDM covered steel			Max. 10 bar 120°C
	PTFE covered steel			Max. 10 bar
	Composite			DN 40-300 Engineered composite XP1620
Shaft	Stainless steel	X5CrNiMo17-12-2	EN 1.4401	Standard shaft material
	Stainless steel	X17CrNi16-2	EN 1.4057	Similar to ASTM A276/Gr. 431. Used for DI, DI-CTD and Composite disc
	Stainless steel	GX5CrNiMo19-11-2	EN 1.4408	Comparable with CF8M for mirror polished and satin finished disc
	Duplex	X2CrNiMoN22-5-3	EN 1.4462	For EPDM, PTFE covered, Hastelloy, Uranus disc
	Duplex	GX2CrNiMoN22-5-3	EN 1.4470	For Duplex disc
	Titanium	Ti3	DIN 3.7055	Comparable with ASTM B348 grade 2
Seat	EPDM			Food grade
	Superseat EPDM			Seat reinforced with metal insert food grade
	NBR			Food grade
	Superseat NBR			Seat reinforced with metal insert food grade
	NBR white			Food grade
	FKM			
	PTFE lined EPDM			
	XP EPDM			Food grade
EPDM WA-3			KIWA	
Body screws	Steel			Quality 8.8
	Stainless steel			Optional
Bushing	Polyactetal			
Dirt scraper	NBR/Steel			
Bearing	PTFE lined			Standard in CS, SS, DI and DI HTC body
Split-seal	Graphite			

KEYSTONE OPTISEAL

MATERIAL SPECIFICATION

PRESSURE-TEMPERATURE DIAGRAM (DN 350-1000)

Seat material	Disc material	Body material	Size range DN (mm)	Valve function Wafer/End of Line	Temperature in °C										
					-40	-30	-20	-15	0	50	100	120	130	150	160
EPDM	all	DI/CS	all	W / EOL	10 bar / 6 bar										
Superseat EPDM	all	DI/CS	350-600	W / EOL	16 bar / 10 bar										
NBR and white NBR	all	DI/CS	all	W / EOL	10 bar / 6 bar										
Superseat NBR	all	DI/CS	350-600	W / EOL	16 bar / 10 bar										
PTFE/EPDM	SS, Hastelloy	DI/CS	350-400	W / EOL	10 bar / 6 bar										
XP EPDM	all	DI/CS	all	W / EOL	10 bar / 6 bar										

NOTES

1. 6 bar / 4 bar
2. 4 bar / 2 bar

SS = Stainless steel, DI = Ductile iron, CS = Carbon steel

KEYSTONE OPTISEAL

MATERIAL SPECIFICATION

MATERIAL SPECIFICATION (DN 350-1000)

Part name	Material	Designation	EN/DIN mat.no	Remark
Body	Cast steel	GP240GH	EN 1.0619	Only for chemical market configuration for DN 350 and above
	Ductile iron	GJS-400-15	EN JS-1030	
	Ductile iron Heat Treated	GJS-400-18U-LT	EN JS-1049	With heat treatment certificate and Charpy V-notch test
	Stainless steel	GX5CrNiMo19-11-2	EN 1.4408	
Disc	Ductile iron CTD	GJS-400-15	EN JS-1030	CTD = Epoxy coated max temp 120°C
	Ductile iron	GJS-400-15	EN JS-1030	
	NiAlBz	CuAl10Fe5Ni5	EN CC333G	Comparable with BS 1400 AB2
	Stainless steel	GX5CrNiMo19-11-2	EN 1.4408	Comparable with CF8M
	Stainless steel PP	GX5CrNiMo19-11-2	EN 1.4408	
	Stainless steel MP	GX5CrNiMo19-11-2	EN 1.4408	Optional
	Stainless steel SF	GX5CrNiMo19-11-2	EN 1.4408	Optional
	EPDM covered steel			Max. 10 bar 120°C. Optional up to DN 400
	Other materials			Duplex, Hastelloy on request
Shaft	Stainless steel	X17CrNi16-2	EN 1.4057	Similar to ASTM A276/Gr. 431. Standard shaft material for DN 350-900
	Duplex	X2CrNiMoN22-5-3	EN 1.4462	For EPDM, PTFE covered, Hastelloy, Uranus or Duplex disc
Seat	EPDM			Food grade
	Superseat EPDM			Seat reinforced with metal insert food grade, max DN 600
	NBR			Food grade
	Superseat NBR			Seat reinforced with metal insert food grade, max DN 600
	NBR white			Food grade
	PTFE lined EPDM			DN 300, DN 400, DN 500 (DN 600 on request)
	XP EPDM			Food grade
EPDM			KIWA	
Disc screw	Stainless steel	X2CrNiMoN22-5-3	EN 1.4462	
Disc screw O-ring	NBR			
Plug	Carbon steel	C45-QT	EN 1.0503QT	
Plug O-ring	NBR			
Circlip	Springsteel			According DIN 472
Bushing	Polyactetal			
Dirt scraper	NBR/Steel			

KEYSTONE OPTISEAL

MODEL CODE OPTIONS AND DESCRIPTIONS

Series		Size	End Connection	Drilling / Schedule	Face to Face	Pressure Rating		Body Material	Disc Material	Stem Material	Seat Material	Stem Seal	Operator Mounting Type	Actuation Type		Optional Feature 1	Optional Feature...	Actuation Option
OPTI	-	0050	W0	P1	00	06	-	D5	D02	S0	F0	00	I	B	-	NP1	TPZ	+ GS-001



SERIES

Code	Description
OPTI	OptiSeal

SIZE

Code	Description
0040	DN 40 / NPS 1½
0050	DN 50 / NPS 2
0065	DN 65 / NPS 2½
0080	DN 80 / NPS 3
0100	DN 100 / NPS 4
0125	DN 125 / NPS 5
0150	DN 150 / NPS 6
0200	DN 200 / NPS 8
0250	DN 250 / NPS 10
0300	DN 300 / NPS 12
0350	DN 350 / NPS 14
0400	DN 400 / NPS 16
0450	DN 450 / NPS 18
0500	DN 500 / NPS 20
0600	DN 600 / NPS 24
0700	DN 700 / NPS 28
0750	DN 750 / NPS 30
0800	DN 800 / NPS 32
0900	DN 900 / NPS 36
1000	DN 1000 / NPS 40

END CONNECTION

Code	Description
W0	Wafer
L0	Lugged

DRILLING / SCHEDULE

Code	Description
P1	PN 6
P2	PN 10
P3	PN 16
PB	PN 10 / 16
MH	PN 10 / 16, AS 2129 E
MN	PN 10 / 16, JIS 10
MJ	PN 10, JIS 10
A1	ASME 150
J1	JIS 5K
J3	JIS 10K
B2	BS 10 table E
M1	ASME 150, PN 10/16, BS E, JIS 10
M2	ASME 150, PN 10/16, BS E
MF	ASME 150, PN 10/16, BS E, JIS 5/10
MG	ASME 150, PN 10/16, BS E, JIS 10/16
M9	ASME 150, PN 6/10/16, BS E, JIS 10
ZZ	Special

FACE TO FACE

Code	Description
00	Standard (refer to product literature)

PRESSURE RATING

Code	Description
04	3.5 bar / 50 psi
06	6 bar / 90 psi
10	10 bar / 150 psi
16	16 bar / 230 psi

BODY MATERIAL

Code	Description
D5	Ductile Iron EN-GJS-400-15
DB	Ductile Iron EN-GJS-400-18-U-LT
CJ	Carbon Steel 1.0619 (GP240GH)
I3	Cast Iron EN 1561 EN-GJL-250 (5.1301)
J1	Stainless Steel 1.4408 (GX5CrNiMo 19-11-2)
ZZ	Special

DISC MATERIAL

Code	Description
D02	Ductile Iron - Epoxy
S00	Stainless Steel 316
S0M	Stainless Steel 316 - Mirror Polished
S0P	Stainless Steel 316 - Pickled + Passivated
S0S	Stainless Steel 316 - Satin Finish
S0T	Stainless Steel 316 - PTFE
S0E	Stainless Steel 316 - EPDM
N00	Nickel Aluminium Bronze
U00	Duplex 2205
H00	Hastelloy C-276
P10	Composite XP 1620

KEYSTONE OPTISEAL

MODEL CODE OPTIONS AND DESCRIPTIONS

Series	Size	End Connection	Drilling / Schedule	Face to Face	Pressure Rating	Body Material	Disc Material	Stem Material	Seat Material	Stem Seal	Operator Mounting Type	Actuation Type	Optional Feature 1	Optional Feature...	Actuation Option				
OPTI	-	0050	W0	P1	00	06	-	D5	D02	S0	F0	00	I	B	-	NP1	TPZ	+	GS-001

STEM MATERIAL

Code	Description
S0	Stainless Steel 316
S2	Stainless Steel 431
M1	Monel K500
U0	Stainless Steel Duplex
ZZ	Special

SEAT MATERIAL

Code	Description
F1	FKM - A
E0	EPDM - FG HT
E1	EPDM - FG
E5	EPDM - WA3
E6	EPDM - Metal Reinforced
N0	NBR - FG
N8	NBR - Metal Reinforced
N9	NBR - White
F2	FKM - B
T1	PTFE / EPDM
ZZ	Special

STEM SEAL

Code	Description
00	Standard (Refer to Product Literature)
ZZ	Special

OPERATOR MOUNTING TYPE

Code	Description
I	ISO 5211

ACTUATION TYPE

Code	Description
B	Bare Stem

OPTIONAL FEATURES

Code	Description
NP1	Additional 316 Stainless Steel Tag
TPZ	Special Hydrostatic Test Report
CLE	Oil and Grease Surface Cleaning (GS-40)
PSL	Silver Paint

NOTE

For the full list of optional features, consult your local Emerson representative.

ADDITIONAL ACTUATION OPTIONS

Code	Description
HS-##	Standard Handle ^[1]
GS-###	Standard Gear ^[1]
PS-###	Standard Pneumatic ^[2]
HZ	Other Handle ^[3]
GZ	Other Gear Operators ^[3]
PZ	Other Pneumatic Actuators ^[3]
EZ	Other Electric Actuators ^[3]

NOTES

1. Additional characters identify specific handle or gear. For the full list, consult the Handles and Gear Operators Addendum ([VCREP-14325](#)).
2. Additional characters identify actuator configuration.
3. Required operator, mouting and accessory part number(s) are specified per order acknowledgement.

NOTE

For the full list of optional features, consult your local Emerson representative.

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