Neles™ Neldisc™ high performance butterfly valves
Series L6, LW & LG

Neles Neldisc is a metal seated triple eccentric high performance butterfly valve that provides long lasting tight shut-off with excellent flow characteristics and high capacity. The L-Series are widely used in pulp & paper, chemical, petrochemical and refining industries.

With nearly equal percentage characteristics and superior tightness, Neldisc triple eccentric butterfly valves operate both in control and tight shutoff applications. As a result of the unique triple offset geometry of Neldisc, the contact between disc and seat is mechanically induced and does not rely on assistance from differential pressure. This design also provides extended operational life in control, high cycle, high temperature and abrasive applications.

Due to a number of special constructions, developed from the versatile Neldisc design, these valves offer a powerful tool for standardization and are truly high performance valves.

The Neldisc high-performance butterfly valve is available in double flange, wafer and lug body types with a range of materials and seat combinations suitable for service in a wide variety of applications including NACE MR0103 & MR0175.



Offering

The following designs are available in sizes 3"–24" (DN 80–600);

	LW	LG	L6
Body type	Wafer	Lugged	Double flanged
Design	API 609 ASME B16.34 EN 593	API 609 ASME B16.34 EN 593	API 609 ASME B16.34 EN 593
Pressure class	API 609 Cat B Class 150 & 300	API 609 Cat B Class 150 & 300	API 609 Cat B Class 150 & 300
Face to face	API 609 category B, lug and wafer type EN 558 - part 1, table 5, basic series 16, 20 & 25	API 609 category B, lug and wafer type EN 558 - part 1, table 5, basic series 16, 20 & 25	API 609 category B valves Double-flanged (short pattern) EN 558 - part 1, table 5, basic series 13
Flange connection/ Drilling	ASME B16.5 EN 1092-1	ASME B16.5 EN 1092-1	ASME B16.5 EN 1092-1

Features

Modularity

- Interchangeable modules ensure faster deliveries for a wide range of applications & minimizes parts required to stock on site
- Through shaft and drive shaft with trunnion options available
- Live-loaded packing as standard to minimize the product loss and emission.
- Same inside parts regardless of body design results in same flow characteristics and high Cv

Performance

- Cost effective control valve for moderate differential pressures.
- Contact between disc and seat is mechanically induced and does not rely on assistance from differential pressure.
- Heavy-duty stem and bearings arrangement extend service life and are insensitive to thermal cycles and impurities.
- Easier to withstand process fluctuations and harsh conditions for example flow vibration and temperature/ pressure changes.

- Easy seat maintenance: Interchangeable seat can be replaced without disassembling the disc and shaft.
- Seat replacement does not require any adjustment or special tools.
- Lugged and double flange style valves are suitable for bidirectional dead-end service at the full pressure temperature rating as standard.
- Lifting holes for valves weighing over 20 kg (44 lbs)
- PTFE V-ring or graphite packing for a wide range of applications.

Field-proven single-piece flexible seat design

- Unique all-metal seat design assures superior tightness in difficult applications over long time periods
- Bi-directional long last tightness is maintained even in high cycle rate services.
- Low friction and excellent wear resistance.
- Longer service life with less maintenance
- Sealing element protected in the seat pocket for lowest wear & tear
- No secondary components required to maintain tightness
- No resilient parts exposed to the medium
- Solid metal seat design offers lowered operational torque which reduces actuator size

Offset shaft and eccentric disc

- No seat/disc contact in the open or intermediate position
- Eliminates wear points at top and bottom of seats for high cycle life
- Reduced torque requirements, allowing for smaller actuators

Approvals/Reliability/Safety

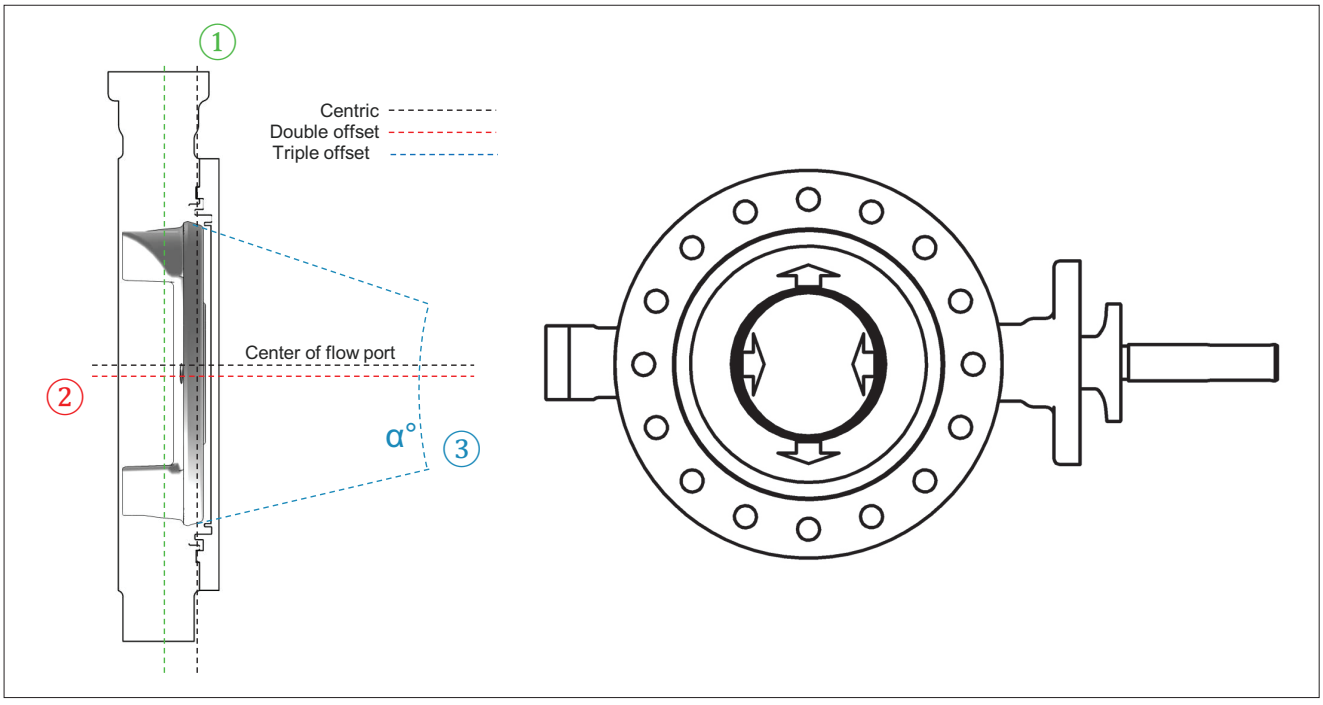
- ISO 15848-1 emission certification
- API 607 fire safe certification
- Anti-blow out design (Positive Shaft Retention). Valves are equipped with retainer plates on top of the gland to prevent movement of the top portion of the shaft past the gland if for any reason the shaft should break within the valve.

Excellent for both on-off and control applications

- Superior control characteristics
- Inherent flow characteristic is modified equal percentage.
- Wide rangeability
- Tight shut-off even in control applications
- Good controllability via smoothly rising installed characteristic curve at both very small openings and nearly full Cv positions. L-series provides very wide rangeability in fairly low pressure drop services.
- Good dynamic stability in both flow directions.

Neldisc triple eccentric sealing design

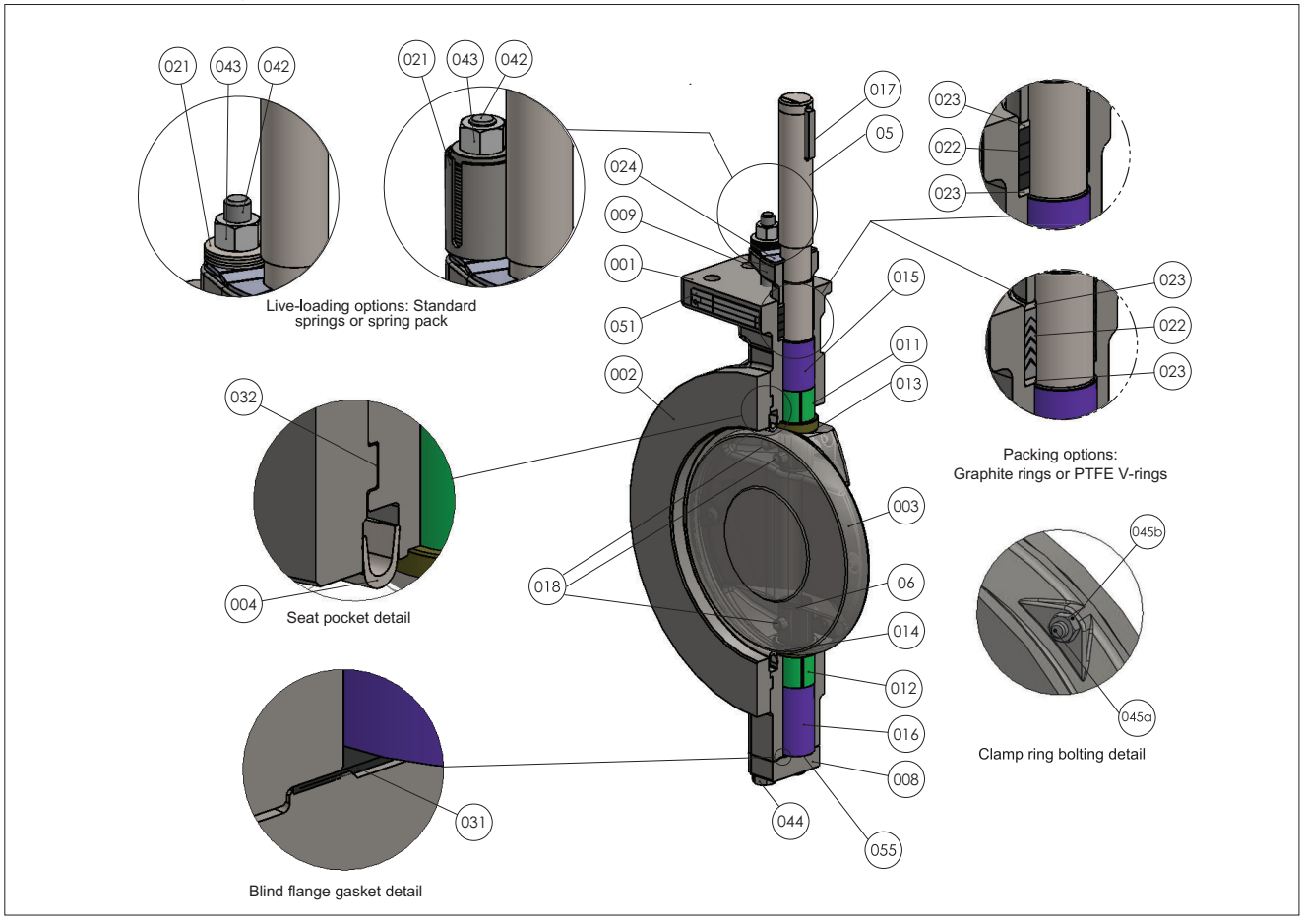
Neldisc high performance butterfly valves rely on triple eccentric sealing design. This unique design enables utilization of performance features from both positions seated and torque seated sealing principles resulting in high tightness level together with low wear. The disc of the valve is machined to close tolerances, to create an elliptical shape, similar to an oblique slice taken from a solid metal cone. When the valve is closed, the elliptical disc at the major axis displaces the seat ring outward, causing the seat ring to contact the disc at the minor axis. The seat ring is able to move freely in a plane in its recess, to accommodate the disc in an optimal manner. When the valve is opened, the contact is released, and the seat ring returns to its original circular shape. With slight changes to the machining of the disc the field proven Neldisc sealing principle is now optimized to reach even the toughest tightness standards.



Triple eccentric sealing design. 1) First eccentricity, 2) Double offset, and 3) Triple offset

Valve construction

Assembly drawing, series LW Mod D



Parts list, series LW Mod D (example)

Item	Qty (example)	Description	Material (example)	Spare part category
1	1	BODY	ASTM A216 gr. WCB / 1.0619	
2	1	CLAMP RING	A351 gr. CF8M / 1.4408	
3	1	DISC	ASTM A351 gr. CF8M	3
4	1	SEAT	UNS N08825 + HCr	2
5	1	DRIVE SHAFT	ASTM A479 gr. 316	3
6	1	TRUNNION	ASTM A479 gr. 316	3
8	1	BLIND FLANGE	A351 gr. CF8M / 1.4408	
9	1	GLAND	A351 gr. CF8M / 1.4408	
11	1	BEARING	316L + RPTFE	3
12	1	BEARING	316L + RPTFE	3
13	1	THRUST BEARING	ASTM A269 gr. 316 + HCr	3
14	1	THRUST BEARING	ASTM A269 gr. 316 + HCr	3
15	1	BEARING SPACER	AISI 316	
16	1	BEARING SPACER	AISI 316	
17	1	KEY	EN 10088-1.4460	3
18	3	PIN	ASTM A479 gr. 316	3
21	6	DISC SPRING	AISI 304	
22	1	V-RING SET	PTFE	1
23	2	ANTI EXTRUSION RING	AISI 316	
24	2	RETAINER	AISI 316	
31	1	GASKET	GRAPHITE	1
32	1	BODY GASKET	GRAPHITE	1
42	2	STUD	ASTM A193 gr. B8M cl. 2	
43	2	HEXAGON NUT	ASTM A194 gr. 8M	
44	4	HEXAGON SCREW	ASTM A193 gr. B8M cl. 2	
045a	4	STUD	ASTM A193 gr. B8M cl. 2	
045b	4	HEXAGON NUT	ASTM A194 gr. 8M	
51	1	IDENTIFICATION PLATE	AISI 316	
55	1	ANTI-STATIC SPRING	UNS N08825	

Spare part set category 1: Recommended soft parts, always needed for the repair. Delivered as a set.

Technical specifications

Product type
- L6: Double flange body design
- LW: Wafer type body design
- LG: Lug type body design

Size range
- NPS 3–24
- DN 80–600

Pressure classes
- ASME 150 & ASME 300
- PN 10–40

Temperature range
- -200 °C ... +600 °C (-328 °F ... +1112 °F)

Design standard
In accordance with ASME B16.34, API 609 cat B, EN 593

Standard materials

Body:	EN 10213-1.0619 / ASTM A 216 gr. WCB
	EN 10213-1.4408 / ASTM A 351 gr. CF8M
Disc:	EN 10088-1.4401 / ASTM A 182 gr. F316
	EN 10213-1.4408 / ASTM A 351 gr. CF8M
Clamp ring:	EN 10213-1.4408 / ASTM A 351 gr. CF8M
Shafts and pins:	AISI 316 / ASTM A 546 gr. 630 (17-4PH)
Seat ring, code A:	Hard chrome plated Incoloy 825
Bearings:	AISI 316 + PTFE or INC625 + carbon-based coating or cobalt based alloy

Material and test certifications
EN 10204-3.1B material certificates for body, clamp ring, gland and blind flange. Disc and shaft certification on request. Tightness test certificate.

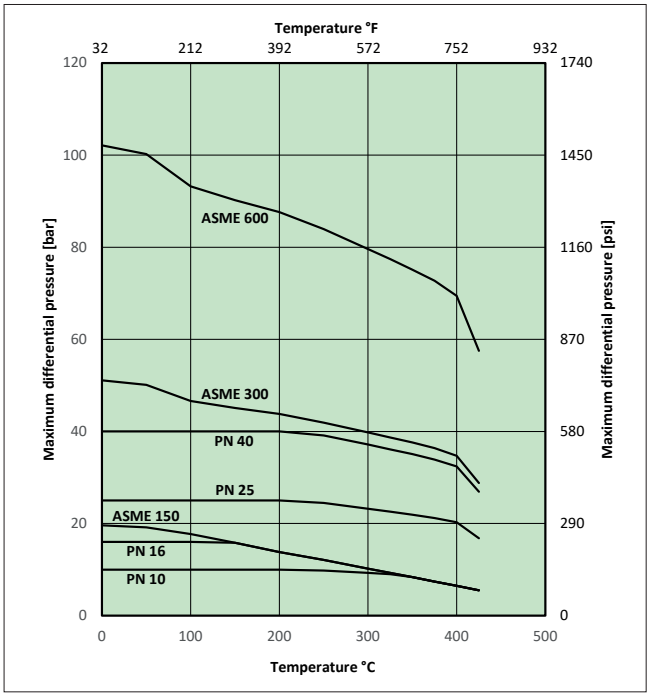
Approvals
- API 607 fire safe
- ISO 15848-1 fugitive emission
- TSG
- SIL

Tightness (Bi-directional)
- Standard tightness
  - ISO 5208, rate D, air
  - ANSI/FCI 70-2 Class V, air
  - 10 x ISO 5208 rate D with RH hand lever
- Optional tightness:
  - API 598 (metal seated),
  - ANSI/FCI 70-2 Class VI
  - ISO 5208 Rate A (zero leak)

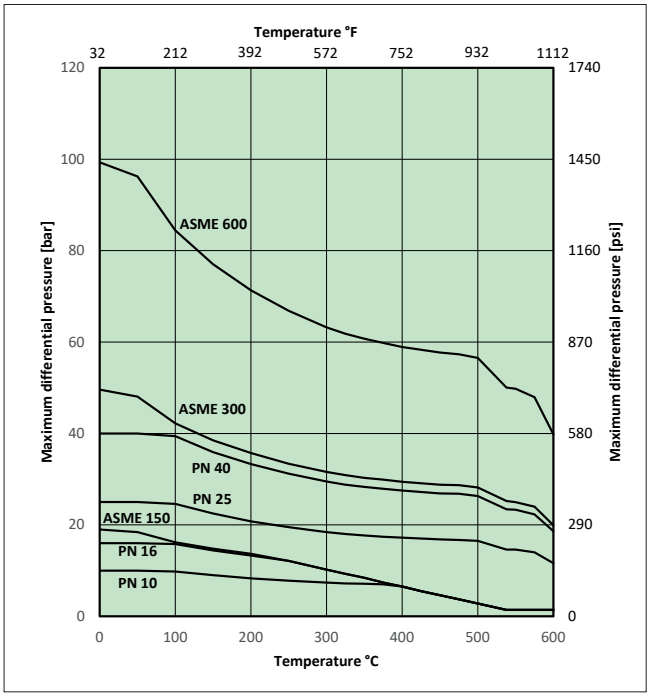
Optional leakage tests can be conducted per request.

Options
- Neles™ Q-disc™ flow balancing trim, see bulletin 8QD20EN
- Oxygen construction for gaseous oxygen service
- High temperature design
- Extended service design
- Bearing protection design
- Graphite free design
- Cryogenic construction with extended bonnet and drive shaft
- L series valves are available to comply with NACE MR0103 or NACE MR0175

Pressure/temperature ratings for valve body, WCB



Pressure/temperature ratings for valve body, CF8M



Flow data

The tables below provide flow coefficients for L-Series butterfly valves covered in this bulletin. The Cv values represent the number of gallons per minute of +60 °F water that flows through a fully open valve at a pressure drop of 1 psi.
The metric equivalent Kv is the flow of water at +16 °C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm^2. To convert Cv to Kv multiply by 0.8569.

NPS	DN	Design style	Cv		
			ASME 150, PN 10 - 16	ASME 300, PN 25 - 40	PN 25 / ASME 150 (LW7L & LW7L/C only)
3	80	Through shaft	220	220	220
4	100	Through shaft	357	357	357
6	150	Through shaft	1240	1020	1020
8	200	Through shaft	1990	1670	1990
10	250	Through shaft	3470	3150	3470
12	300	Through shaft	5320	4050	5320
14	350	Through shaft	6110	4930	6110
16	400	Through shaft	8180	6070	8180
18	450	Through shaft	10900	8730	10900
20	500	Through shaft	13400	10500	13400
24	600	Through shaft	18800	15700	18800

NPS	DN	Design style	Cv		
			ASME 150, PN 10 - 16	ASME 300, PN 25 - 40	PN 25 /ASME 150 (LW7L & LW7L/C only)
3	80	Drive shaft + trunnion	247	247	247
4	100	Drive shaft + trunnion	482	482	482
6	150	Drive shaft + trunnion	1630	1260	1260
8	200	Drive shaft + trunnion	2400	1810	2400
10	250	Drive shaft + trunnion	4460	3600	4460
12	300	Drive shaft + trunnion	6820	4670	6820
14	350	Drive shaft + trunnion	7850	5500	7850
16	400	Drive shaft + trunnion	9780	6580	9780
18	450	Drive shaft + trunnion	13500	9430	13500
20	500	Drive shaft + trunnion	16600	11200	16600
24	600	Drive shaft + trunnion	23500	16700	23500

Valve torque data

Valve closing torque values are given in the following tables. Values are given separately for zero leakage (Rate A) and for non-zero leakage butterfly valves.

Closing torque for zero leakage (Rate A) butterfly valves

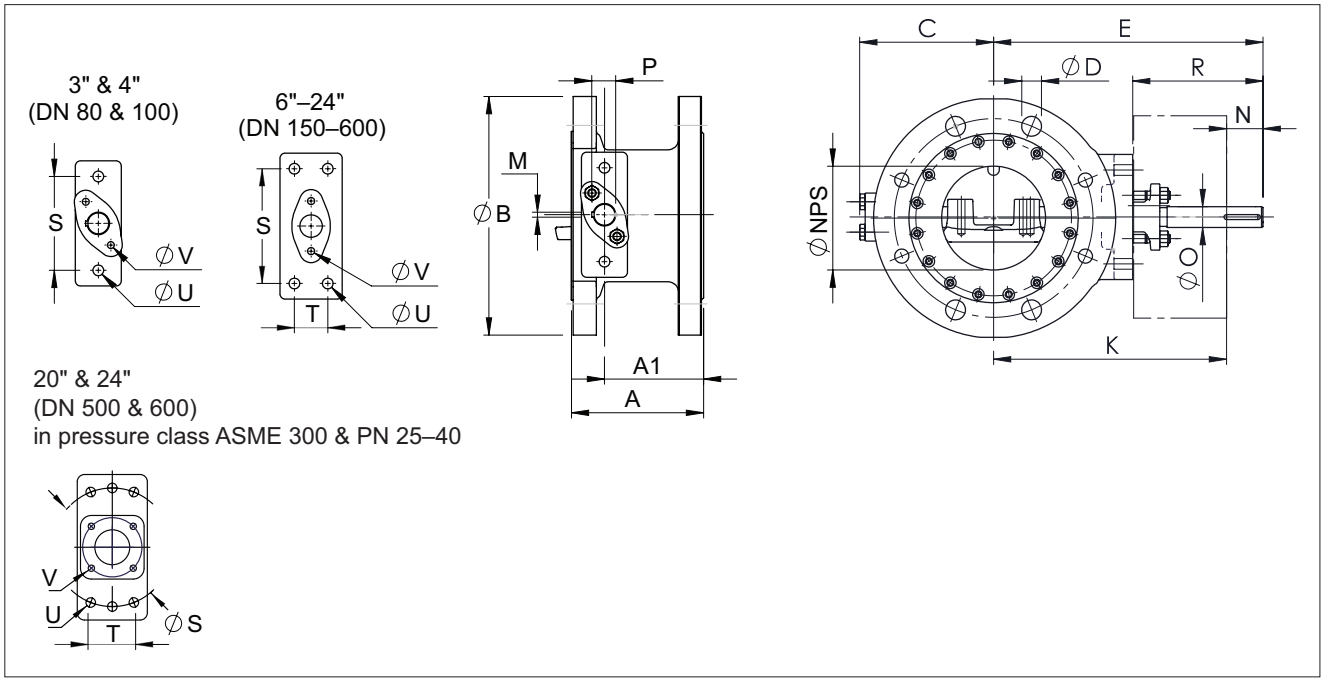
NPS	DN	Pressure class	Closing torque (Nm)	Pressure class	Closing torque (Nm)	Pressure class	Closing torque (Nm)
3	80	ASME 150, PN 10 - 16	60	ASME 300, PN 25 - 40	60	PN 25 (LW7L)	60
4	100	ASME 150, PN 10 - 16	100	ASME 300, PN 25 - 40	100	PN 25 (LW7L)	100
6	150	ASME 150, PN 10 - 16	150	ASME 300, PN 25 - 40	230	PN 25 (LW7L)	230
8	200	ASME 150, PN 10 - 16	350	ASME 300, PN 25 - 40	400	PN 25 / ASME 150 (LW7L/C)	350
10	250	ASME 150, PN 10 - 16	500	ASME 300, PN 25 - 40	700	PN 25 / ASME 150 (LW7L/C)	500
12	300	ASME 150, PN 10 - 16	800	ASME 300, PN 25 - 40	1100	PN 25 / ASME 150 (LW7L/C)	800
14	350	ASME 150, PN 10 - 16	1300	ASME 300, PN 25 - 40	1600	PN 25 / ASME 150 (LW7L/C)	1300
16	400	ASME 150, PN 10 - 16	2000	ASME 300, PN 25 - 40	2400	PN 25 / ASME 150 (LW7L/C)	2000
18	450	ASME 150, PN 10 - 16	2500	ASME 300, PN 25 - 40	3200	PN 25 / ASME 150 (LW7L/C)	2500
20	500	ASME 150, PN 10 - 16	3500	ASME 300, PN 25 - 40	4100	PN 25 / ASME 150 (LW7L/C)	3500
24	600	ASME 150, PN 10 - 16	5000	ASME 300, PN 25 - 40	6000	PN 25 / ASME 150 (LW7L/C)	5000

Closing torque for non-zero leakage butterfly valves

NPS	DN	Pressure class	Closing torque (Nm)	Pressure class	Closing torque (Nm)	Pressure class	Closing torque (Nm)
3	80	ASME 150, PN 10 - 16	40	ASME 300, PN 25 - 40	40	PN 25 (LW7L)	40
4	100	ASME 150, PN 10 - 16	70	ASME 300, PN 25 - 40	70	PN 25 (LW7L)	70
6	150	ASME 150, PN 10 - 16	100	ASME 300, PN 25 - 40	160	PN 25 (LW7L)	160
8	200	ASME 150, PN 10 - 16	240	ASME 300, PN 25 - 40	280	PN 25 / ASME 150 (LW7L/C)	240
10	250	ASME 150, PN 10 - 16	350	ASME 300, PN 25 - 40	490	PN 25 / ASME 150 (LW7L/C)	350
12	300	ASME 150, PN 10 - 16	560	ASME 300, PN 25 - 40	770	PN 25 / ASME 150 (LW7L/C)	560
14	350	ASME 150, PN 10 - 16	910	ASME 300, PN 25 - 40	1120	PN 25 / ASME 150 (LW7L/C)	910
16	400	ASME 150, PN 10 - 16	1400	ASME 300, PN 25 - 40	1680	PN 25 / ASME 150 (LW7L/C)	1400
18	450	ASME 150, PN 10 - 16	1750	ASME 300, PN 25 - 40	2240	PN 25 / ASME 150 (LW7L/C)	1750
20	500	ASME 150, PN 10 - 16	2450	ASME 300, PN 25 - 40	2870	PN 25 / ASME 150 (LW7L/C)	2450
24	600	ASME 150, PN 10 - 16	3500	ASME 300, PN 25 - 40	4200	PN 25 / ASME 150 (LW7L/C)	3500

Dimensions

L6, Double flanged design



L64 (ASME 150)

DN	NPS	Dimensions (mm)																Weight (kg)
		A (API/ Series 13)	A1	ØB	C	D	E	K	M	N	O	P	R	S	T	U	V	
80	3	114	86	190	115	19	226	201	4.8	25	15	17.0	105	70	-	M10	M8	10
100	4	127	95	230	135	19	258	223	4.8	35	20	22.2	125	90	-	M12	M8	18
150	6	140	107	280	165	22	277	242	4.8	35	20	22.2	125	110	32	M12	M8	26
200	8	152	115	345	195	22	323	277	6.4	46	25	27.8	136	110	32	M12	M10	43
250	10	165	125	405	230	25	393	342	6.4	51	30	32.9	161	130	32	M12	M12	61
300	12	178	134	485	265	25	428	370	9.5	58	35	39.1	168	130	32	M12	M12	94
350	14	190	140	535	310	29	508	440	9.5	68	40	44.2	188	160	40	M16	M12	140
400	16	216	161	595	345	29	570	490	12.7	80	45	50.4	220	160	55	M20	M16	185
450	18	222	162	635	375	32	610	520	12.7	90	50	55.5	230	160	55	M20	M16	220
500	20	229	161	700	415	32	680	590	12.7	90	55	60.6	270	230	90	M24	M16	300
600	24	267	190	815	480	35	769	650	19.1	119	70	78.2	299	230	90	M24	M16	460

L64 (PN 10–16)

DN	NPS	Dimensions (mm)																	Weight (kg)
		A (API/ Series 13)	A1	ØB (PN10)	ØB (PN16)	C	D (PN10)	D (PN16)	E	K	M	N	O	P	R	S	T	U	V	
80	3	114	86	200	200	115	18	18	226	201	4.8	25	15	17.0	105	70	-	M10	M8	12
100	4	127	95	220	220	135	18	18	258	223	4.8	35	20	22.2	125	90	-	M12	M8	16
150	6	140	107	285	285	165	22	22	277	242	4.8	35	20	22.2	125	110	32	M12	M8	25
200	8	152	115	340	340	195	22	22	323	277	6.4	46	25	27.8	136	110	32	M12	M10	39
250	10	165	125	395	405	230	22	26	393	342	6.4	51	30	32.9	161	130	32	M12	M12	57
300	12	178	134	445	460	265	22	26	428	370	9.5	58	35	39.1	168	130	32	M12	M12	81
350	14	190	140	505	520	310	22	26	508	440	9.5	68	40	44.2	188	160	40	M16	M12	125
400	16	216	161	565	580	345	26	30	570	490	12.7	80	45	50.4	220	160	55	M20	M16	170
450	18	222	162	615	640	375	26	30	610	520	12.7	90	50	55.5	230	160	55	M20	M16	220
500	20	229	161	670	715	415	26	33	680	590	12.7	90	55	60.6	270	230	90	M24	M16	310
600	24	267	190	780	840	480	30	36	769	650	19.1	119	70	78.2	299	230	90	M24	M16	490

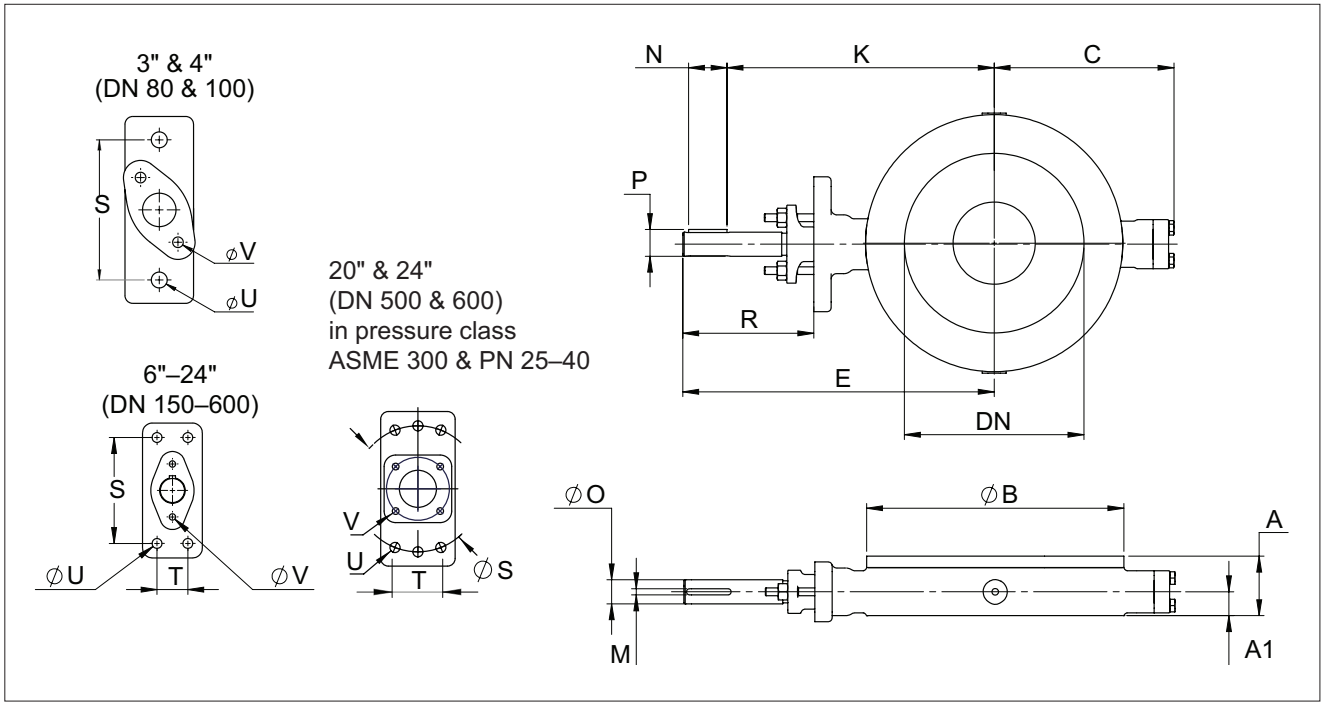
L64 (ASME 300)

DN	NPS	Dimensions (mm)																	Weight (kg)
		A (API/ Series 13)	A1	ØB	C	D	E	K	M	N	O	P	R	S	ØS	T	U	V	
80	3	114	86	210	115	22	226	201	4.8	25	15	17.0	105	70	-	-	M10	M8	15
100	4	127	95	255	135	22	258	223	4.8	35	20	22.2	125	90	-	-	M12	M8	25
150	6	140	104	320	185	22	321	275	6.4	46	25	27.8	136	110	-	32	M12	M10	47
200	8	152	108	380	220	25	381	323	9.5	58	35	39.1	168	130	-	32	M12	M12	71
250	10	165	117	445	260	29	442	374	9.5	68	40	44.2	188	160	-	40	M16	M12	108
300	12	178	124	520	305	32	535	445	12.7	90	50	55.5	230	160	-	55	M20	M16	169
350	14	190	129	585	340	32	625	535	12.7	90	55	60.6	270	230	-	90	M24	M16	255
400	16	216	146	650	385	35	699	580	19.1	119	70	78.2	299	230	-	90	M24	M16	350
450	18	222	147	710	410	35	724	605	19.1	119	70	78.2	299	230	-	90	M24	M16	410
500	20	229	145	775	450	35	836	690	22.2	146	85	94.6	366	-	330	120	M30	M16	560
600	24	267	172	915	525	41	926	770	22.2	156	95	104.8	376	-	330	120	M30	M16	840

L64 (PN 25–40)

DN	NPS	Dimensions (mm)																		Weight (kg)
		A (API/ Series 13)	A1	ØB (PN25)	ØB (PN40)	C	D (PN25)	D (PN40)	E	K	M	N	O	P	R	S	ØS	T	U	V	
80	3	114	86	200	200	115	18	18	226	201	4.8	25	15	17.0	105	70	-	-	M10	M8	13
100	4	127	95	235	235	135	22	22	258	223	4.8	35	20	22.2	125	90	-	-	M12	M8	20
150	6	140	104	300	300	185	26	26	321	275	6.4	46	25	27.8	136	110	-	32	M12	M10	37
200	8	152	108	360	375	220	26	30	381	323	9.5	58	35	39.1	168	130	-	32	M12	M12	63
250	10	165	117	425	450	260	30	33	442	374	9.5	68	40	44.2	188	160	-	40	M16	M12	101
300	12	178	124	485	515	305	30	33	535	445	12.7	90	50	55.5	230	160	-	55	M20	M16	155
350	14	190	129	555	580	340	33	36	625	535	12.7	90	55	60.6	270	230	-	90	M24	M16	245
400	16	216	146	620	660	385	36	39	699	580	19.1	119	70	78.2	299	230	-	90	M24	M16	350
450	18	222	147	670	685	410	36	39	724	605	19.1	119	70	78.2	299	230	-	90	M24	M16	380
500	20	229	145	730	755	450	36	42	836	690	22.2	146	85	94.6	366	-	330	120	M30	M16	510
600	24	267	172	845	890	525	39	48	926	770	22.2	156	95	104.8	376	-	330	120	M30	M16	800

LW, Wafer design



LW6, LW7 & LW8 (ASME 150, PN 10–16)

DN	NPS	Dimensions (mm)																		Weight (kg)
		LW6 A (API)	LW6 A (Series 20)	LW7 A (Series 25)	LW8 A (Series 16)	A1	ØB	C	E	K	M	N	O	P	R	S	T	U	V	
80	3	48	46	49	64	20	131	115	226	201	4.8	25	15	17.0	105	70	-	M10	M8	6
100	4	54	52	56	64	22	156	135	258	223	4.8	35	20	22.2	125	90	-	M12	M8	9
150	6	57	56	70	76	24	217	165	277	242	4.8	35	20	22.2	125	110	32	M12	M8	16
200	8	64	60	71	89	25	267	195	323	277	6.4	46	25	27.8	136	110	32	M12	M10	26
250	10	71	68	76	114	30	328	230	393	342	6.4	51	30	32.9	161	130	32	M12	M12	46
300	12	81	78	83	114	37	375	265	428	370	9.5	58	35	39.1	168	130	32	M12	M12	59
350	14	92	92	92	127	42	438	310	508	440	9.5	68	40	44.2	188	160	40	M16	M12	107
400	16	102	102	102	140	47	483	345	570	490	12.7	80	45	50.4	220	160	55	M20	M16	135
450	18	114	114	114	152	55	538	375	610	520	12.7	90	50	55.5	230	160	55	M20	M16	173
500	20	127	127	127	152	62	593	415	680	590	12.7	90	55	60.6	270	230	90	M24	M16	219
600	24	154	154	154	178	79	695	480	769	650	19.1	119	70	78.2	299	230	90	M24	M16	338

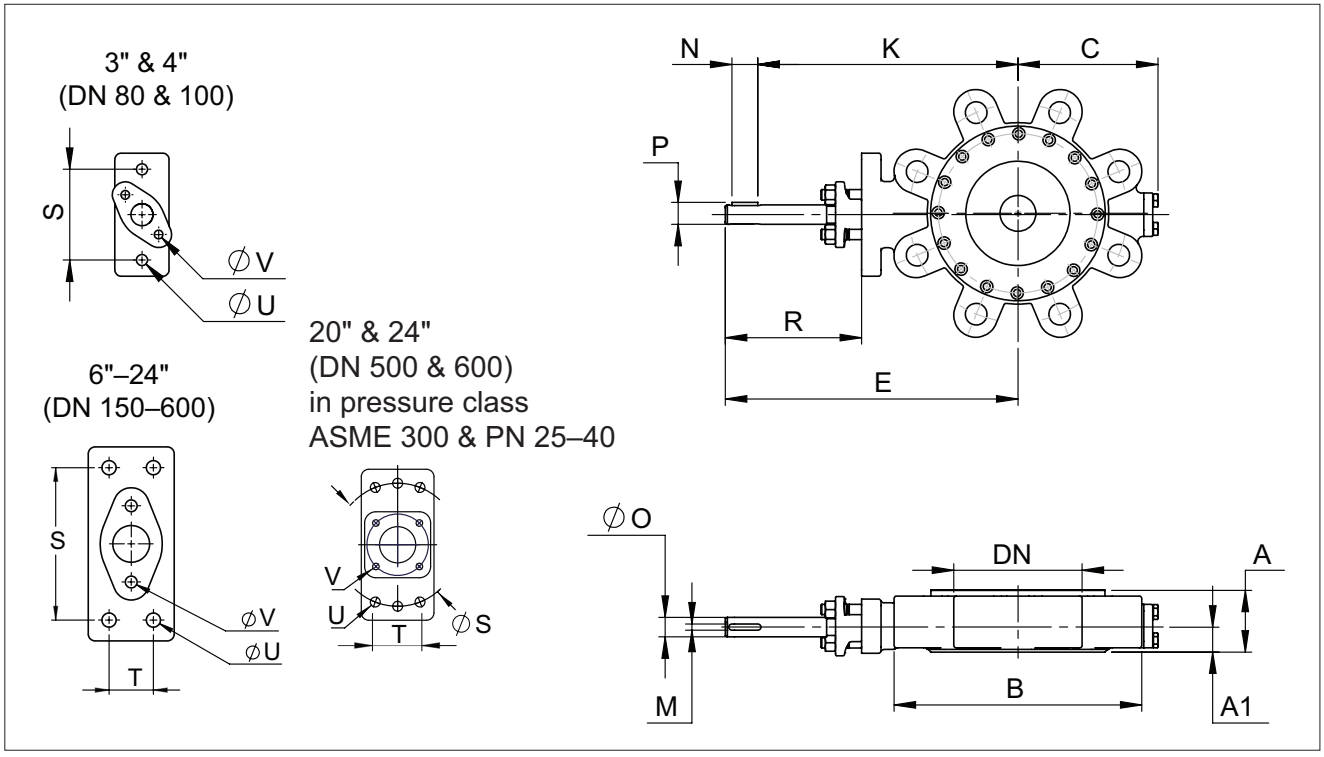
LW5 & LW8 (ASME 300, PN 25–40)

DN	NPS	Dimensions (mm)																	Weight (kg)
		LW5 A (API)	LW8 A (Series 16)	A1	ØB	C	E	K	M	N	O	P	R	S	ØS	T	U	V	
80	3	48	64	20	131	115	226	201	4.8	25	15	17.0	105	70	-	-	M10	M8	6
100	4	54	64	22	156	135	258	223	4.8	35	20	22.2	125	90	-	-	M12	M8	8
150	6	59	76	25	217	185	321	275	6.4	46	25	27.8	136	110	-	32	M12	M10	19
200	8	73	89	32	280	220	381	323	9.5	58	35	39.1	168	130	-	32	M12	M12	37
250	10	83	114	38	340	260	442	374	9.5	68	40	44.2	188	160	-	40	M16	M12	64
300	12	92	114	41	400	305	535	445	12.7	90	50	55.5	230	160	-	55	M20	M16	94
350	14	117	127	56	447	340	625	535	12.7	90	55	60.6	270	230	-	90	M24	M16	142
400	16	133	140	63	507	385	699	580	19.1	119	70	78.2	299	230	-	90	M24	M16	207
450	18	149	152	75	564	410	724	605	19.1	119	70	78.2	299	230	-	90	M24	M16	245
500	20	159	152	71	624	450	836	690	22.2	146	85	94.6	366	-	330	120	M30	M16	347
600	24	181	178	85	731	525	926	770	22.2	156	95	104.8	376	-	330	120	M30	M16	510

LW7 (PN25, PN 25 / ASME 150)

DN	NPS	Dimensions (mm)															Weight (kg)
		A	A1	ØB	C	E	K	M	N	O	P	R	S	T	U	V	
80	3	49	20	131	115	226	201	4.8	25	15	17	105	70	-	M10	M8	5
100	4	56	22	156	135	258	223	4.8	35	20	22.2	125	90	-	M12	M8	8
150	6	70	25	217	185	321	275	6.4	46	25	27.8	136	110	32	M12	M10	18
200	8	71	25	267	195	323	277	6.4	46	25	27.8	136	110	32	M12	M10	22
250	10	76	30	328	230	393	342	6.4	51	30	32.9	161	130	32	M12	M12	35
300	12	83	37	375	265	428	370	9.5	58	35	39.1	168	130	32	M12	M12	49
350	14	92	42	438	310	508	440	9.5	68	40	44.2	188	160	40	M16	M12	88
400	16	102	47	483	345	570	490	12.7	80	45	50.4	220	160	55	M20	M16	112
450	18	114	55	538	375	610	520	12.7	90	50	55.5	230	160	55	M20	M16	146
500	20	127	62	593	415	680	590	12.7	90	55	60.6	270	230	90	M24	M16	198
600	24	154	79	695	480	769	650	19.1	119	70	78.2	299	230	90	M24	M16	312

LG, Lug design



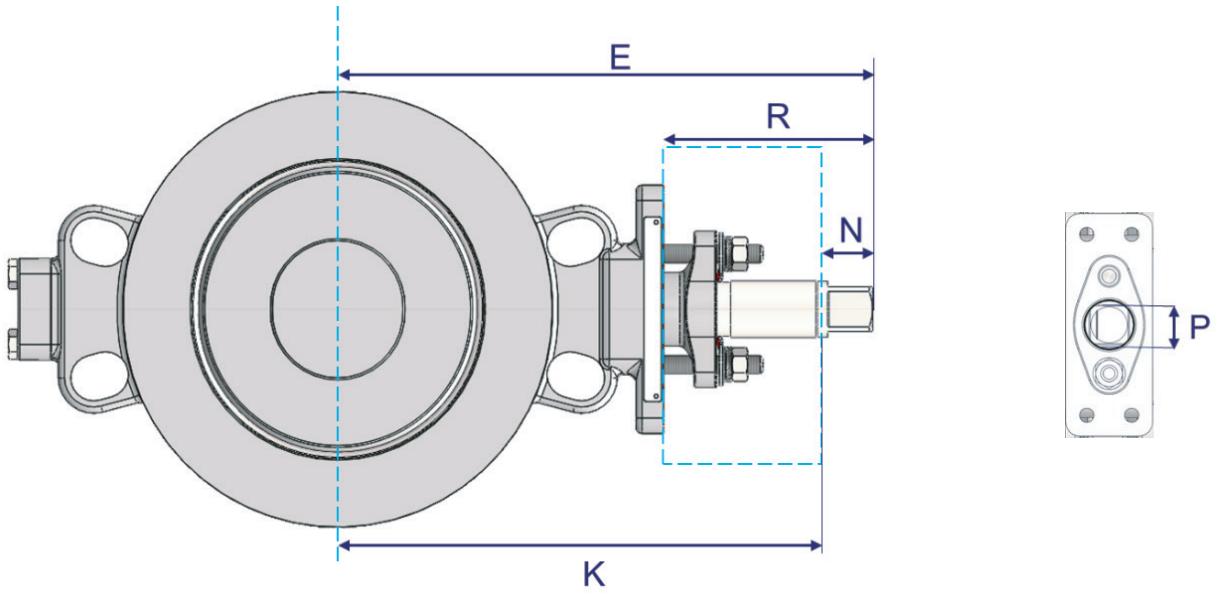
LG6, LG7 & LG8 (ASME 150, PN 10–16)

DN	NPS	Dimensions (mm)																		Weight (kg)
		LG6 A (API)	LG6 A (Series 20)	LG7 A (Series 25)	LG8 A (Series 16)	A1	ØB	C	E	K	M	N	O	P	R	S	T	U	V	
80	3	48	46	49	64	20	180	115	226	201	4.8	25	15	17.0	105	70	-	M10	M8	10
100	4	54	52	56	64	22	240	135	258	223	4.8	35	20	22.2	125	90	-	M12	M8	14
150	6	57	56	70	76	24	280	165	277	242	4.8	35	20	22.2	125	110	32	M12	M8	19
200	8	64	60	71	89	25	335	195	323	277	6.4	46	25	27.8	136	110	32	M12	M10	34
250	10	71	68	76	114	30	405	230	393	342	6.4	51	30	32.9	161	130	32	M12	M12	53
300	12	81	78	83	114	37	475	265	428	370	9.5	58	35	39.1	168	130	32	M12	M12	70
350	14	92	92	92	127	42	520	310	508	440	9.5	68	40	44.2	188	160	40	M16	M12	130
400	16	102	102	102	140	47	590	345	570	490	12.7	80	45	50.4	220	160	55	M20	M16	175
450	18	114	114	114	152	54	635	375	610	520	12.7	90	50	55.5	230	160	55	M20	M16	220
500	20	127	127	127	152	59	705	415	680	590	12.7	90	55	60.6	270	230	90	M24	M16	290
600	24	154	154	154	178	77	830	480	769	650	19.1	119	70	78.2	299	230	90	M24	M16	450

LG5 & LG8 (ASME 300, PN 25–40)

DN	NPS	Dimensions (mm)																	Weight (kg)
		LG5 A (API)	LG8 A (Series 16)	A1	ØB	C	E	K	M	N	O	P	R	S	ØS	T	U	V	
80	3	48	64	20	205	115	226	201	4.8	25	15	17.0	105	70	-	-	M10	M8	10
100	4	54	64	22	240	135	258	223	4.8	35	20	22.2	125	90	-	-	M12	M8	14
150	6	59	76	25	320	185	321	275	6.4	46	25	27.8	136	110	-	32	M12	M10	31
200	8	73	89	31	380	220	381	323	9.5	58	35	39.1	168	130	-	32	M12	M12	46
250	10	83	114	37	445	260	442	374	9.5	68	40	44.2	188	160	-	40	M16	M12	84
300	12	92	114	40	505	305	535	445	12.7	90	50	55.5	230	160	-	55	M20	M16	113
350	14	117	127	56	575	340	625	535	12.7	90	55	60.6	270	230	-	90	M24	M16	195
400	16	133	140	63	650	385	699	580	19.1	119	70	78.2	299	230	-	90	M24	M16	280
450	18	149	152	75	690	410	724	605	19.1	119	70	78.2	299	230	-	90	M24	M16	320
500	20	159	152	75	755	450	836	690	22.2	146	85	94.6	366	-	330	120	M30	M16	450
600	24	181	178	85	890	525	926	770	22.2	156	95	104.8	376	-	330	120	M30	M16	670

Dimensions for valves with square shaft connection



Same dimensions apply for all body types. Other dimensions as in above tables

ASME 150, PN 10–16

Size		E	K	N	P	R
DN	NPS					
80	3	211	201	10	11	90
100	4	237	223	14	14	104
150	6	256	242	14	14	104
200	8	296	277	19	19	109
250	10	364	342	22	22	132
300	12	397	370	27	27	136

ASME 300, PN 25–40

Size		E	K	N	P	R
DN	NPS					
80	3	211	201	10	11	90
100	4	237	223	14	14	104
150	6	294	275	19	19	109
200	8	349	323	26	27	137
250	10	404	374	30	30	150
300	12	480	445	35	36	175

Type code

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13		14.
-	LW	6	K	B	A	200	A	A	A	A	T	D	/	-

1. sign	FLOW BALANCING CONSTRUCTION
-	Standard construction
Q-	Flow balancing trim, Q-disc (available up to 12" / DN 300)

2 sign	PRODUCT SERIES / DESIGN
LW	Wafer type, metal seated triple eccentric butterfly valve
LG	Lug type, metal seated triple eccentric butterfly valve
L6	Double flange type, metal seated triple eccentric butterfly valve

3. sign	FACE TO FACE
	LW & LG
6	EN 558-part 1, table 5 / basic series 20 (DIN 3202-K1) (with PN 10–16) API 609 category B class 150 (with ASME 150)
7	EN 558-part 1, table 5 / basic series 25 (DIN 3202-K2) (with PN 10–16 and ASME 150)
8	EN 558-part 1, table 5 / basic series 16 (DIN 3202-K3)
5	API 609 category B class 300 (with PN 25–40 and ASME 300)
	L6
4	API 609 category B, Double-flanged (short pattern) (with all pressure classes), equivalent to ISO5752 / EN558 basic series 13

4. sign	PRESSURE RATING & DRILLING
C	ASME 150
D	ASME 300
J	PN 10
K	PN 16
L	PN 25
L/C	PN 25 rated body / ASME 150 rated internal components (only with LW)
M	PN 40

5. sign	VALVE-ACTUATOR CONNECTION AND SHAFT CONSTRUCTION
B	Drive shaft + trunnion with two keyways / bracket according to manufacturer standard (keyways' orientation according to ISO 5211)
A	Through shaft with two keyways / bracket according to manufacturer standard (keyways' orientation according to ISO 5211)
D	Drive shaft + trunnion with square drive / bracket according to manufacturer standard (up to 12" / DN 300)

6. sign	CONSTRUCTION
A	**STANDARD (max. +260 °C / +500 °F)** • Bearings 316 + PTFE-based coating • Body and blind flange gaskets graphite • "A" construction fulfills NACE MR0175 for LW • Anti-static device with PTFE packing: ATEX II 3 G c with graphite packing: ATEX II 2 G c
N/1N	**EXTENDED SERVICE (max. +425 °C / +797 °F)** • Bearings Inconel 625 + PVDC coating • Body and blind flange gaskets graphite • "N" construction fulfills NACE MR0175 for LW with "A" seat • "1N" construction fulfills NACE MR0175 for L6 and LG with "A" seat NACE compliant clamp ring bolting • Anti-static device with PTFE packing: ATEX II 3 G c with graphite packing: ATEX II 2 G c
H/1H	**HIGH TEMPERATURE SERVICE (max. +600 °C / +1112 °F)** • Cobalt based alloy bearings • Shaft cobalt-based material coated • Body and blind flange gaskets graphite • "H" construction fulfills NACE MR0175 for LW with "A" seat • "1H" construction fulfills NACE MR0175 for L6 and LG with "A" seat NACE compliant clamp ring bolting • Anti-static device: ATEX II 2 G c
B	**BEARING PROTECTION (Temp range -15 °C ... +220 °C / +5 °F ... +428 °F)** • PTFE bearing protection • Back space of seat filled to prevent accumulation of process fluid • Otherwise as "A" construction
1B	**BEARING PROTECTION FOR EXTENDED SERVICE (max. +425 °C / +797 °F)** • Graphite bearing protection • Otherwise as "N" construction
Z	**OXYGEN SERVICE** • BAM/WHA approved soft parts • Temperature range with CF8M, T= -30 °C ... +140 °C (-22 °F ... +284 °F) • Temperature range with Monel, T= -50 °C ... +200 °C (-58 °F ... +392 °F) • Max. pressure with CF8M = 26 bar (377 psi) • Max. pressure with Monel = 41.4 bar (600 psi) • Flow direction limited to flow-to-close • Oxygen cleaning acc. to Valmet internal procedure FC-M-1360-En **Note!** No carbon steel body material allowed. **Note!** Only "Z" construction available for oxygen flow media. Not to be used with other flow medias.
1A	**GRAPHITE FREE (PTFE SOFT PARTS) (max. +260 °C / 500 °F)** • Body and blind flange gaskets PTFE • Otherwise as "A" construction
C	**CRYOGENIC (Standard Cryo extension)** • Extended bonnet and drive shaft (Cryo extension for T = -200 °C ... +260 °C /-328 °F ... +500 °F) • Additional gaskets and bearings • Otherwise as "A" construction Only with "G1" packing

7. sign	SIZE (inches / mm)
ASME	03, 04, 06, 08, 10, 12, 14, 16, 18, 20, 24
PN	080, 100, 150, 200, 250, 300, 350, 400, 450, 500, 600

8. sign	BODY	9. sign	DISC	10. sign	SHAFT & PINS
Note: Material coding specifies only the type of material not grade (cast, wrought, bar, forged...) which can change based on size or type. Below material combinations are not fixed by each row.					
A	CF8M / 1.4408	A	CF8M / F316	A	AISI 316 (strain hardened) Not suitable with ASME 300 (sign 4 "D")
P	WCB / 1.0619		-	C	Gr. 630 (17-4PH) Not suitable for "C" construction
A1	ASTM A351 gr. CF8 / AISI 304	A1	ASTM A351 gr. CF8 / AISI 304	N	XM-19 (Nitronic 50)
A2	ASTM A351 gr. CF3M / AISI 316L	A2	ASTM A351 gr. CF3M / AISI 316L	H	Nimonic 80A
A3	ASTM A351 gr. CF3 / AISI 304L	A3	ASTM A351 gr. CF3 / AISI 304L	-	-
A4	ASTM A351 gr. CF8C / AISI 347	A4	ASTM A351 gr. CF8C / AISI 347	-	-
F	ASTM A352 gr. LCC	B	CF8M / F316 + cobalt based alloy on disc edge	-	-
F1	ASTM A352 gr. LCB	-	-	-	-
C	ASTM A351 gr. CG8M / AISI 317	C	ASTM A351 gr. CG8M / AISI 317	-	-
C1	ASTM A351 gr. CG3M	C1	ASTM A351 gr. CG3M	-	-
P1	ASTM A216 gr. WCC	-	-	-	-
M	ASTM A494 gr. M-35-1 (Monel K400)	M	ASTM A494 gr. M-35-1 (Monel K400)	M	Monel K500
U2	ASTM A995 gr. 4A / EN 10213 - 1.4570	U2	ASTM A995 gr. 4A / EN 10213 - 1.4570		
U3	ASTM A995 gr. 5A / EN10213 - 1.4469	U3	ASTM A995 gr. 5A / EN 10213 - 1.4469	U3	UNS 32750

11. sign	STANDARD SEAT
A	Incoloy 825 (UNS N08825), hard chrome plated T = -200 °C ... +500 °C (-328 °F ... +932 °F), (Nace MR 0103/MR0175)
H	Nimonic 80A (UNS N07080), hard chrome plated T = -200 °C ... +650 °C (-328 °F ... +1202 °F), (Not Nace)
K	W. No. 2.4681, UNS R31233 (ULTIMET) T = -200 °C ... +600 °C (-328 °F ... +1112 °F), (Nace MR 0103)

12. sign	SHAFT SEAL OPTIONS
T	Standard live loaded PTFE V-ring packing (ISO15848-1 certified)
G	Standard live loaded graphite packing (Fire safe and ISO15848-1 certified)
T1	High performance live loaded PTFE V-ring packing (ISO15848-1 certified)
G1	High performance live loaded graphite packing (Fire safe and ISO15848-1 certified)

13. sign	
D	Mod D, modular butterfly valve platform

14. sign	STANDARD FLANGE FINISHING Special flange finish shall always be marked in type code.
-	Ra 3.2–6.3, standard, without sign cover: EN 1092-1 Type B1 (Ra 3.2–12.5) ASME B16.5, Ra 3.2–6.3 (125–250 µin) DIN 2526 Form E (Ra 4)
05	Ring joint
12	ASME B16.5 Large Male (Ra 10–12.5)
13	ASME B16.5 Large Female
16	ASME B16.5 Large Tongue
17	ASME B16.5 Large Groove
18	ASME B16.5 Small Tongue
19	ASME B16.5 Small Groove
20	ASME B16.5 Flat face
24	EN1092-1 Type D Groove
25	EN1092-1 Type E Spigot

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