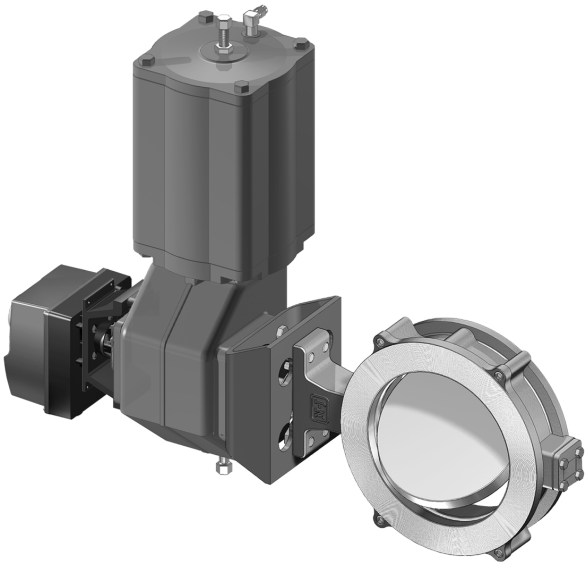
METAL SEATED NELES ZEROLEAK™ NELDISC® BUTTERFLY VALVES, SERIES L1 & L2

Neldisc series L1 is a wafer type and series L2 a lug type metal seated high performance butterfly valve. With close to equal percentage characteristics and superior tightness Neldisc butterfly valves operate both in control and shut-off applications.
As a result of the unique geometry of Neldisc, the contact between disc and seat is mechanically induced and does not rely on assistance from differential pressure. The valve is very tight even in low Δp applications.
Due to a number of special constructions developed from the versatile Neldisc design, these valves offer a powerful tool for standardization and are true high performance valves.



ZeroLeak™ features

- Metal to metal
- Bidirectional long term tightness
- Low friction
- Excellent wear resistance
- Extended life cycle
- Lower operational torque

Applications

The Neldisc butterfly valves are widely used in applications such as:

- Liquids
- Gases
- Steam
- Pulpstocks both on control and shutoff services.

FEATURES

Bidirectional tight seat

- Unique all-meatal seat design assures superior tightness in difficult applications over long time periods.
- Contact between disc and seat is mechanically induced and does not rely on assistance from differential pressure.

Abrasion resistent

- Solid metal seat design offered in a variety of materials to suit your application.
- Fully metal seated construction with no resilient parts exposed to the medium.

Wide pressure and temperature range

- Differential pressure/temperature ratings in accordance with ASME B16.34.
- Appropriate constructions perform equally well from -200 ˚C to +800 ˚C / -330°F to +1480°F.

Low cost of ownership

- Extremely high cycle life minimizes need for maintenance.
- Change packing without removing actuator.
- Totally interchangeable seats can be replaced without disassembly of the disc and shaft.

Offset shaft and eccentric disc

- No seat/disc contact in the open or intermediate position.
- Eliminates wear points at top and bottom of disc.

Anti-blow out shaft

- Anti-blow out shaft construction standard in all valves, see page 2 exploded view.

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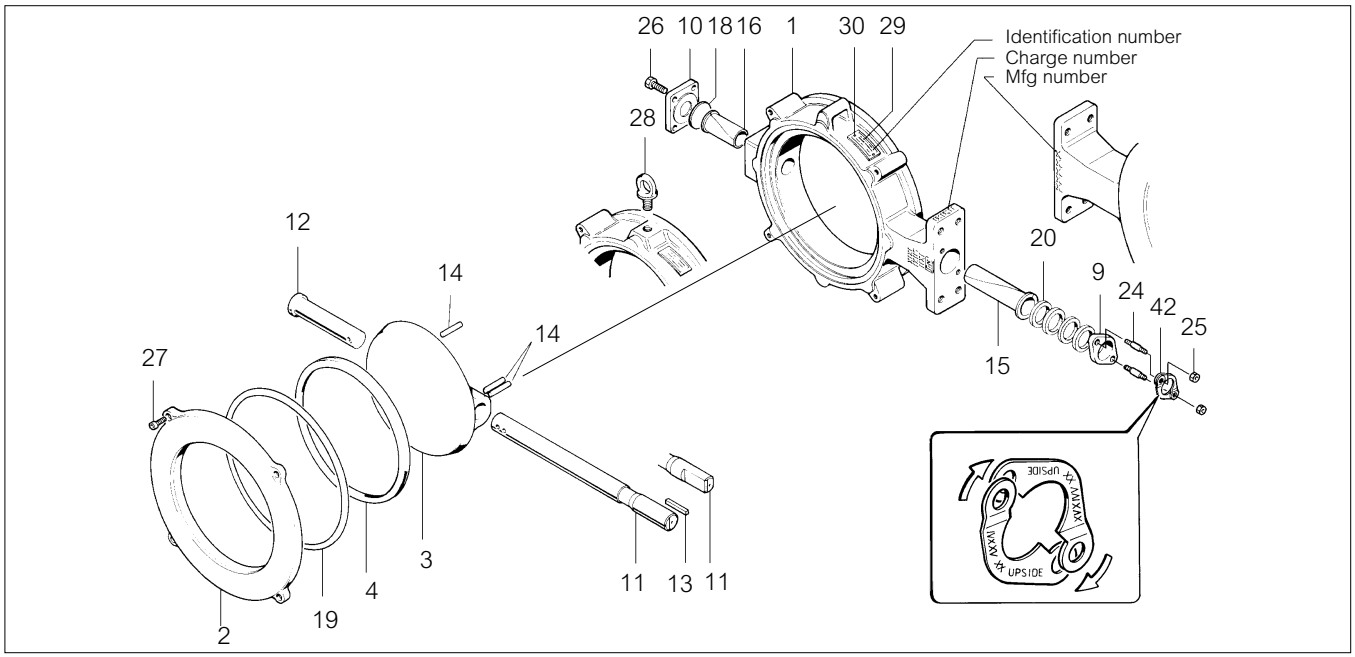
EXPLODED VIEW

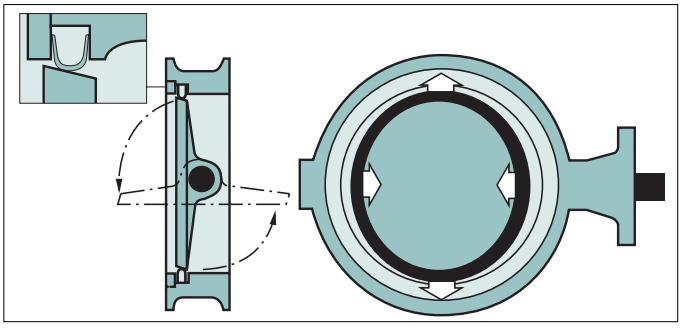


PARTS LIST

ITEM	PART DESCRIPTION	MATERIAL	
1	BODY	Carbon steel, ASTM A 216 gr. WCB	Stainless steel, ASTM A 351 gr. CF8M
2	CLAMP RING	Carbon steel, 1.0425 (Type ASTM A 515 gr. 55)	Stainless steel, ASTM A 351 gr. CF8M
3	DISC	Stainless steel, ASTM A 351 gr. CF8M	
4	SEAT RING	Ni-Fe-base superalloy + Hard chrome, ASTM B 424 (Incoloy 825) or W.no. 1.4418	
9	GLAND	Stainless steel, ASTM A 351 gr. CF8M	
10	BLIND FLANGE	DN 450-500 Stainless steel, ASTM A 351 gr. CF8M DN 600- Carbon steel, ASTM A 216 gr. WCB or equal	Stainless steel ASTM A 351 gr. CF8M
11	DRIVE SHAFT	L1/L2C AISI 329 (SS 14 2324) L1/L2D Stainless steel, ASTM A 564 gr. 630 (17-4PH)	
12	SHAFT	L1/L2C AISI 329 (SS 14 2324) L1/L2D Stainless steel, ASTM A 564 gr. 630 (17-4PH)	
13	KEY	Stainless steel, Type AISI 329 (SS 14 2324)	
14	PIN	L1/L2C AISI 329 (SS 14 2324) L1/L2D Stainless steel, ASTM A 564 gr. 630 (17-4PH)	
15	BEARING	PTFE on stainless steel net	
16	BEARING	PTFE on stainless steel net	
18	GASKET	Graphite	
19	BODY SEAL	Graphite	
20	GLAND PACKING	Polytetrafluoroethylene (PTFE)	
24	STUD	Stainless steel, ISO 3506 A4-80 or A4-70	
25	HEXAGON NUT	Stainless steel, ISO 3506 A4-80	
26	HEXAGON SCREW	DN 450-500 Stainless steel, ISO 3506 A4-80 DN 600- Steel, zinc plated, ASTM A 320 gr. L7M	Stainless steel ISO 3506 A4-80
27	HEXAGON SOCKET SCREW	Stainless steel, ISO 3506 A4-80	
28	LIFTING EYE BOLT (DN 600-)	Steel	
29	IDENTIFICATION PLATE	Stainless steel, AISI 304	
42	RETAINING PLATE	Stainless steel, DIN 17440-1.4435 (AISI 316L)	

NELDISC TRIPLE OFFSET SEATING PRINCIPLE

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. When the valve is opened, the contact is released and the seat ring returns to its original circular shape.



TECHNICAL SPECIFICATION

Product type

High performance butterfly valve
Metal seated fully rated
L1 - Wafer type
L2 - Lug type

Pressure ratings

Body:	L1C, L2C	ASME 150/DIN PN 25
	L1D, L2D	ASME 300/DIN PN 40
Trim:	L1C, L2C	ASME 150
	L1D, L2D	ASME 300

Size range

L1C:	DN 450 - DN 1200 / 18" - 48"
L1D:	DN 450 - DN 900 / 18" - 36"
L2C:	DN 450 - DN 750 / 18" - 30"
L2D:	DN 450 - DN 750 / 18" - 30"

Temperature range

-200 ˚C … +600 ˚C / -330°F…+1480°F
(over +600°C/+1480°F please consult with factory).

Design standards

Body:	ASME B16.34.
Face to face:	ISO 5752, L2D face to face according Metso Automation.

Standard materials

Body:	ASTM A216 gr. WCB
	ASTM A351 gr. CF8M
	ASTM A351 gr. CG8M
Disc:	ASTM A351 gr. CF8M
	ASTM A351 gr. CG8M
Clamp ring:	DIN 17155 - 1.0425
	ASTM A351 gr. CF8M
	ASTM A351 gr. CG8M
Shaft and pins:	
	AISI 329 (SS 14 2324) in Class ASME 150
	ASTM A564 gr. 630 (17-4 PH) in Class ASME 300
Seat ring:	ASTM B424 (Incoloy 825) in DN 450 - DN 600 / 18"-24"
	W.Nr. 1.4418 (Avesta 248SV) in DN 700 - DN 1200 / 28" - 48"
	Seat ring is always hard chrome plated.
Bearing:	PTFE + AISI 316 net

Pressure/Temperature ratings

Maximum working pressure ratings of the valve in accordance with ASME B16.34.

Temp. °C	Temp. °F	ASME 150				ASME 300			
		Carbon steel* (bar)	AISI 316 Stainless steel (bar)	Carbon steel* (psi)	AISI 316 Stainless steel (psi)	Carbon steel* (bar)	AISI 316 Stainless steel (bar)	Carbon steel* (psi)	AISI 316 Stainless steel (psi)
-29 to 38	-20 to 100	19.6	19.0	284.2	275.5	51.1	49.6	740.9	719.2
50	122	19.2	18.4	278.4	266.8	50.1	48.1	726.4	697.4
100	212	17.7	16.2	256.6	234.9	46.4	42.2	672.8	611.9
150	300	15.8	14.8	229.1	214.6	45.2	38.5	655.4	558.2
200	392	14.0	13.7	203.0	198.6	43.8	35.7	635.1	517.6
250	482	12.1	12.1	175.4	175.4	41.7	33.4	604.6	484.3
300	572	10.2	10.2	147.9	147.9	38.7	31.6	561.1	458.2
350	662	8.4	8.4	121.8	121.8	37.0	30.4	536.5	440.8
375	707	7.4	7.4	107.3	107.3	36.5	29.7	529.2	430.6
400	752	6.5	6.5	94.2	94.2	34.5	29.1	500.2	421.9
425	797	5.6	5.6	81.2	81.2	28.8	28.7	417.6	416.1
450	842	4.7	4.7	68.1	68.1	20.0	28.1	290.0	407.4
475	887	3.7	3.7	53.6	53.6	13.5	27.4	195.7	397.3
500	932	2.8	2.8	40.6	40.6	8.8	26.8	127.6	388.6
525	977	1.9	1.9	27.5	27.5	5.2	25.8	75.4	374.1
550	1022	-	1.3	-	18.8	-	25.0	-	362.5
575	1067	-	1.3	-	18.8	-	24.1	-	349.4
600	1112	-	1.3	-	18.8	-	21.4	-	310.3
625	1157	-	1.3	-	18.8	-	18.3	-	265.3
650	1202	-	1.3	-	18.8	-	14.1	-	204.4
675	1247	-	1.3	-	18.8	-	12.6	-	182.7
700	1292	-	1.3	-	18.8	-	9.9	-	143.5
725	1337	-	1.3	-	18.8	-	7.7	-	111.6
750	1382	-	1.3	-	18.8	-	5.9	-	85.5
775	1427	-	1.3	-	18.8	-	4.6	-	66.7
800	1472	-	1.0	-	14.5	-	3.5	-	50.7

* Permissible but not recommended for prolonged usage above about +424°C/+800 °F.

Certification

Body and clamp ring:	EN 10 204 - 3.1B
Disc:	EN 10 204 - 3.1B on request

Approvals

Fire safe test according to BS 6755/API 607 4th edition.

TA-Luft: Chapter 3.1.8.4

Valve testing

Each valve undergoes a shell test and a seat test. The shell test pressure is 1.5 x PN. The seat test pressure is 1.1 x PN. The test medium is inhibited water.

Valve tightness: Bidirectionally ISO 5208 Rate D or ANSI Class V (Zeroleak tightness available on request).

Options

- ☐ Cryogenic.
- ☐ High temperature.
- ☐ Heating jacket.
- ☐ S-disc, flow balancing trim, see bulletin 2S-L1 20.
- ☐ NACE.
- ☐ High cyclic design.
- ☐ Erosion resistant design.

Flow data

C_V tables of L1 and L2 valves in pressure classes ASME 150 and ASME 300.

ASME 150

DN	inch	Relative opening h 100%
450	18	17600
500	20	21900
600	24	31000
700	28	39300
750	30	46900
800	32	53600
900	36	66400
1000	40	82800
1200	48	116000

ASME 300

DN	inch	Relative opening h 100%
450	18	12100
500	20	14400
600	24	22000
700	28	28100
750	30	28800
900	36	40300

ACTUATOR SELECTION

CLASS 150

EXAMPLE: Valve L1CMA24 for control and shut-off service, flow direction B. Supply pressure Ps=6 bar
Initial values: α=62° Δp=0,6 bar, α=0° Δps=8,5 bar

a) In the range 10°…90° the torque requirement is 1600 Nm. The torque of actuator B1C25 is sufficient (scale "control"). When a spring-return actuator is required, B1J25 is selected in "spring-to-close" service and BJA25 in "spring-to-open" service (scale "control").

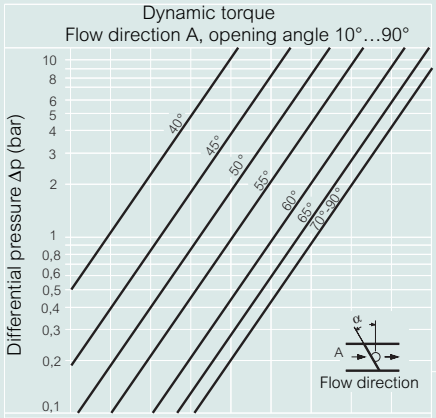
b) In the range 0°…10° the torque requirement is 4400 Nm when Δps=8,5 bar and the leakage rate is specified according to the ISO 5208 Rate D standard. In this application sufficient actuators are B1C32 (scale "on-off"), B1J32 in "spring-to-close" service and B1JA32 in "spring-to-open" service (scale "on-off").
ACTUATORS WILL BE CHOSEN ACCORDING TO THE ALTERNATIVE b!

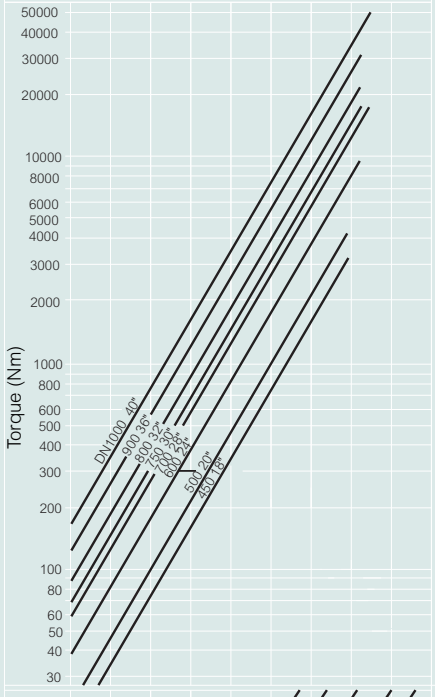
c) If the leakage rate is specified according to the 10xISO 5208 Rate D standard, sufficient actuators are B1C25 (scale "on-off"), B1J32 in "spring-to-close" service and B1JA25 in "spring-to-open" service (scale "on-off").

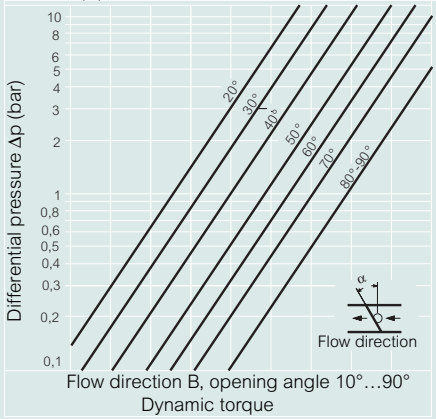
THE TORQUE REQUIREMENT IN THE RANGE 0°…10°

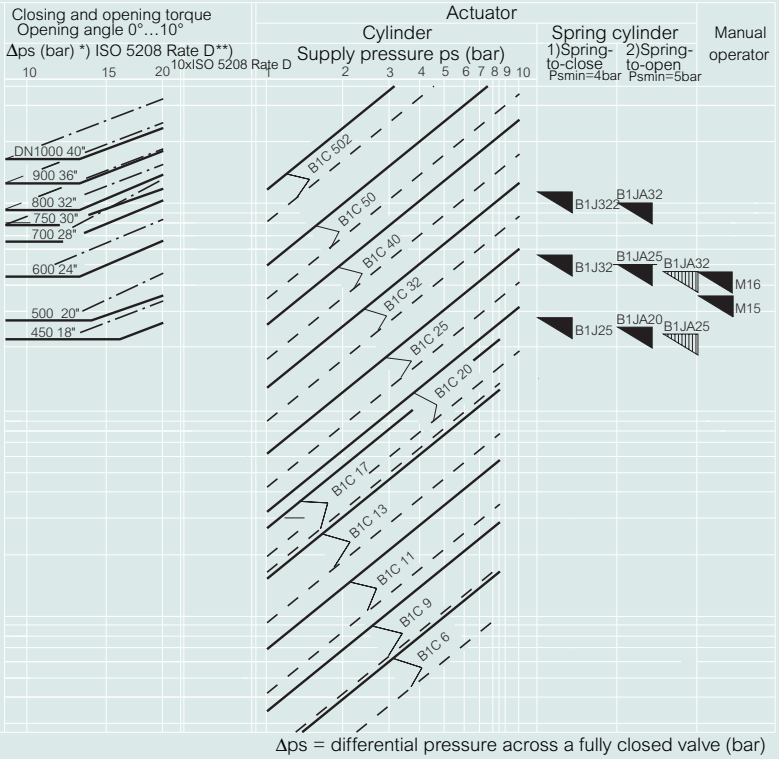
*) Leakage specified according to the ISO 5208 Rate D:
= L1CMA, = L1CMH

**) Leakage specified according to the 10xISO 5208 Rate D
L1CMA: Max. differential pressure across a fully closed valve Δps=10 bar
L1CMH: Max. differential pressure across a fully closed valve Δps=7 bar









Δps = differential pressure across a fully closed valve (bar)

Cryogenic valve L1CMC:
The opening torque is obtained by multiplying the opening torque of L1CMA by 1,3.

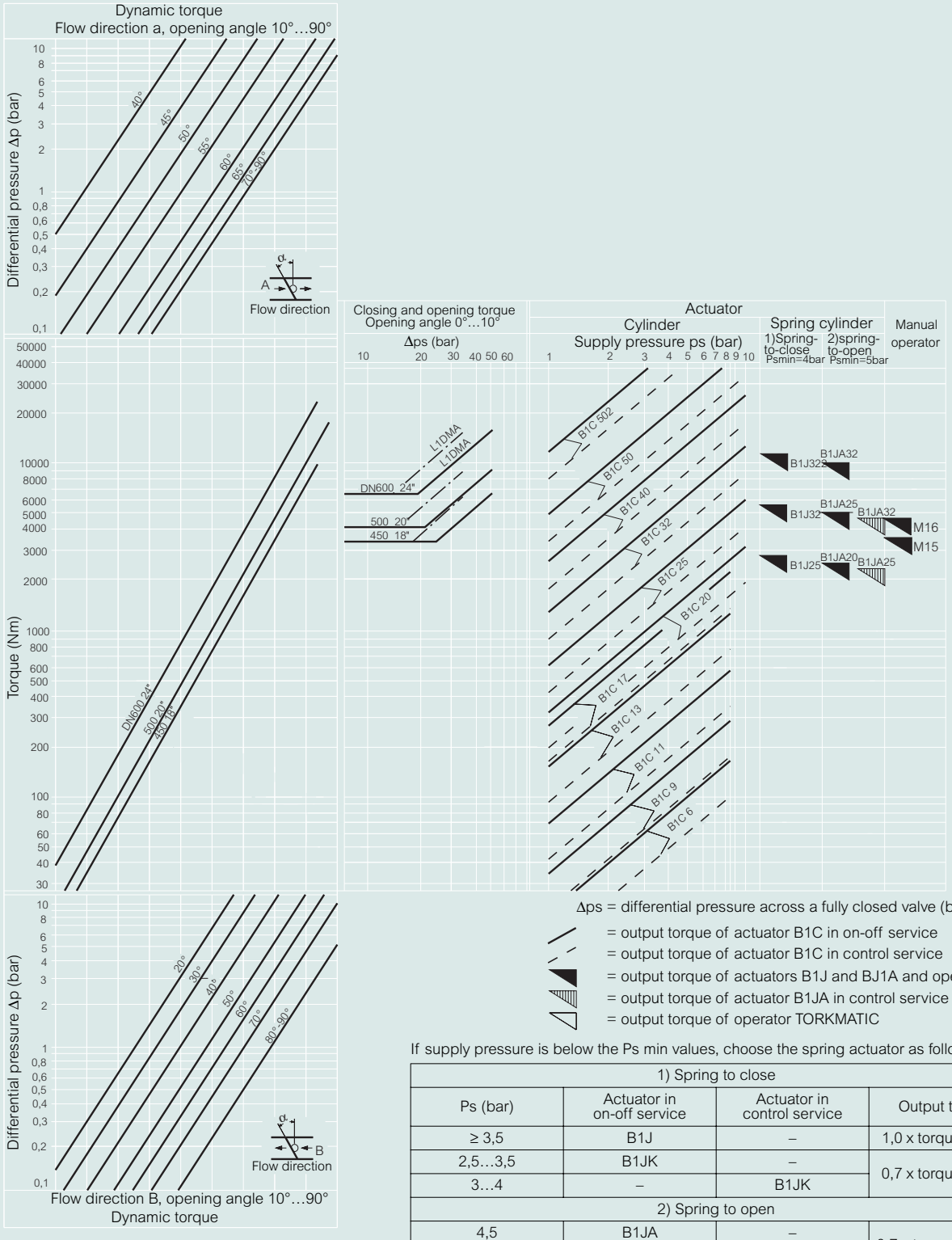
= output torque of actuator B1C in on-off service
= output torque of actuator B1C in control service
= output torque of actuators B1J and B1JA and operator M
= output torque of actuator B1JA in control service
= output torque of operator TORKMATIC

If supply pressure is below the Ps min values, choose the spring actuator as follows:

1) Spring to close			
Ps (bar)	Actuator in on-off service	Actuator in control service	Output torque
≥ 3,5	B1J	–	1,0 x torque of B1J
2,5…3,5	B1JK	–	0,7 x torque of B1J
3…4	–	B1JK	
2) Spring to open			
4,5	B1JA	–	0,7 x torque of B1JA
4	B1JKA	–	
3,5	B1JKA	–	0,6 x torque of B1JA
3,5…4,5	–	B1JKA	0,7 x torque of B1JA in control service

Note: Alternatively Nelprof® Selection Software can be used for actuator selection or torque prediction.

CLASS 300



Δps = differential pressure across a fully closed valve (bar)

= output torque of actuator B1C in on-off service

= output torque of actuator B1C in control service

= output torque of actuators B1J and BJ1A and operator M

= output torque of actuator B1JA in control service

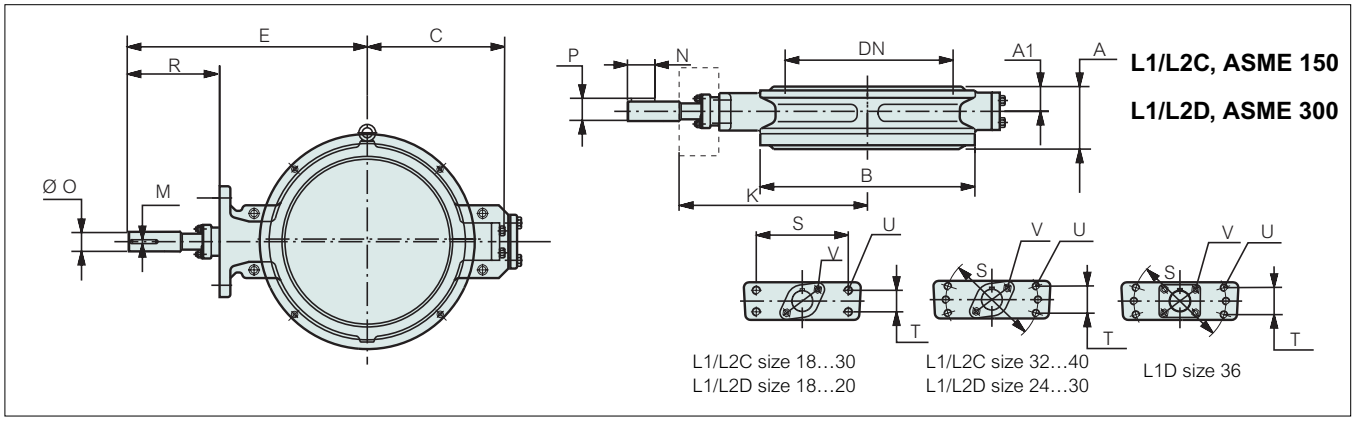
= output torque of operator TORKMATIC

If supply pressure is below the Ps min values, choose the spring actuator as follows:

1) Spring to close			
Ps (bar)	Actuator in on-off service	Actuator in control service	Output torque
≥ 3,5	B1J	–	1,0 x torque of B1J
2,5…3,5	B1JK	–	0,7 x torque of B1J
3…4	–	B1JK	
2) Spring to open			
4,5	B1JA	–	0,7 x torque of B1JA
4	B1JKA	–	
3,5	B1JKA	–	0,6 x torque of B1JA
3,5…4,5	–	B1JKA	0,7 x torque of B1JA in control service

Note: Alternatively Nelprof® Selection Software can be used for actuator selection or torque prediction.

DIMENSIONS,WEIGHTS AND C_V -VALUES



L1/L2C, ASME 150

DN	Dimensions, mm												U UNC	V UNC	Dimensions, mm					Δps bar	Δp70° bar	C_v 90°	L1 Weight kg	L2 Weight kg
	L1				L2																			
	A	ø B	C	E	A	ø B	C	E	A1	K	S	T			ø O	R	M	P	N					
450	114	537	370	560	152	635	370	560	46	480	160	55	3/4	1/2	50	180	12.70	55.5	90	20	1.7	17600	130	260
500	127	590	415	600	152	700	415	600	53	520	160	55	3/4	1/2	55	180	12.70	60.6	90	20	1.7	21900	160	300
600	154	690	505	745	178	813	505	745	65	615	230	90	1	5/8	70	250	19.05	78.2	119	20	2.2	31000	280	470
700	229	805	545	810	250	927	545	800	96	680	230	90	1	5/8	85	250	22.23	94.7	146	20	2.6	39300	400	700
750	229	870	585	835	250	985	585	850	96	705	230	90	1	5/8	85	250	22.23	94.7	145	20	2.1	46900	470	820
800	241	910	600	960	270	1060	600	930	101	785	330	120	1 1/4	3/4	95	330	22.23	104.8	156	20	2.0	53600	550	1000
900	241	1010	660	995	270	1170	660	995	105	820	330	120	1 1/4	3/4	105	330	25.40	116.2	180	20	2.1	66400	710	1400
1000	300	1120	715	1090	320	1290	715	1060	130	915	330	120	1 1/4	3/4	120	330	31.75	133.8	205	20	2.4	82800	950	1800

Size	Dimensions, inch												U UNC	V UNC	Dimensions, inch					Δps psi	Δp70° psi	C_v 90°	L1 Weight lbs	L2 Weight lbs
	L1				L2																			
	A	ø B	C	E	A	ø B	C	E	A1	K	S	T			ø O	R	M	P	N					
18	4.49	21.14	14.57	22.05	5.98	25.00	14.57	22.05	1.81	18.90	6.30	2.17	3/4	1/2	1.97	7.09	0.50	2.19	3.54	290	25	17600	286	572
20	5.00	23.23	16.34	23.62	5.98	27.56	16.34	23.62	2.09	20.47	6.30	2.17	3/4	1/2	2.17	7.09	0.50	2.39	3.54	290	25	21900	352	660
24	6.06	27.17	19.88	29.33	7.01	32.01	19.88	29.33	2.56	24.21	9.06	3.54	1	5/8	2.76	9.84	0.75	3.08	4.69	290	32	31000	616	1034
28	9.02	31.69	21.46	31.89	9.84	36.50	21.46	31.50	3.78	26.77	9.06	3.54	1	5/8	3.35	9.84	0.88	3.73	5.75	290	38	39300	880	1540
30	9.02	34.25	23.03	32.87	9.84	38.78	23.03	33.46	3.78	27.76	9.06	3.54	1	5/8	3.35	9.84	0.88	3.73	5.71	290	30	46900	1034	1804
32	9.49	35.83	23.62	37.80	10.63	41.73	23.62	36.61	3.98	30.91	12.99	4.72	1 1/4	3/4	3.74	12.99	0.88	4.13	6.14	290	29	53600	1210	2200
36	9.49	39.76	25.98	39.17	10.63	46.06	25.98	39.17	4.13	32.28	12.99	4.72	1 1/4	3/4	4.13	12.99	1.00	4.57	7.09	290	30	66400	1562	3080
40	11.81	44.09	28.15	42.91	12.60	50.79	28.15	41.73	5.12	36.02	12.99	4.72	1 1/4	3/4	4.72	12.99	1.25	5.27	8.07	290	35	82800	2090	3960

Δps = max. differential pressure across a closed valve allowed by the mechanical strength of the valve.
Δp70° = max. differential pressure across a 70° open valve allowed by its mechanical strength.
C_v70° = capacity coefficient of the valve across a 70° open valve.
C_v80° = capacity coefficient of the valve across a 80° open valve.
C_v90° = capacity coefficient of the valve across a 90° open valve.
Flange drilling alternatives are ANSI 150. PN10. 16 and 25.
When ordering. please state the type required and the flange drilling.

Note: S-Disc option does not effect to the face-to-face dimension.

L1/L2D, ANSI 300

DN	Dimensions, mm												U UNC	V UNC	Dimensions, mm					Δps bar	Δp70° bar	C_v 90°	L1 Weight kg	L2 Weight kg
	L1				L2																			
	A	ø B	C	E	A	ø B	C	E	A1	S	K	T			ø O	R	M	P	N					
450	180	565	410	655	210	710	410	655	90	230	525	90	1	5/8	70	250	19.05	78.2	119	51	5.5	12100	245	500
500	200	625	465	705	230	775	465	705	100	230	575	90	1	5/8	85	250	22.23	94.7	146	51	7.2	14400	305	620
600	240	743	525	860	250	915	525	860	120	330	685	120	1 1/4	3/4	95	330	22.23	104.8	156	51	5.2	22000	540	950
700	250	848	615	935	–	–	–	–	125	330	760	120	1 1/4	3/4	120	330	31.75	133.8	205	51	7.9	28100	830	–
750	300	942	655	970	300	1090	615	1000	150	360	795	135	1 1/4	7/8	135	330	31.75	149.0	225	51	6.6	28800	1250	1650
900	360	1100	730	1060	–	–	–	–	180	360	885	135	1 1/4	1	165	330	38.10	181.0	280	51	8.5	40300	2000	–

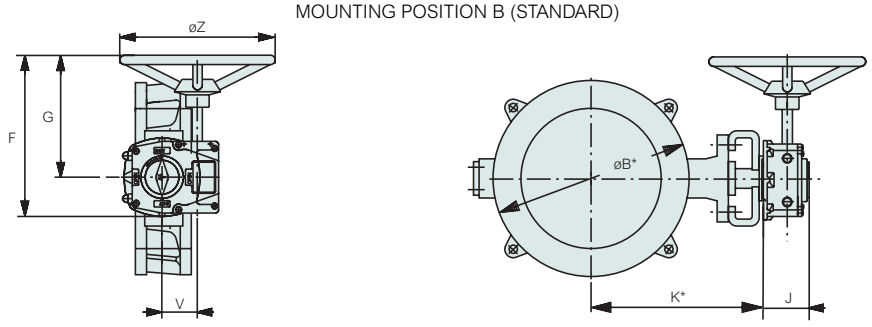
Size	Dimensions, inch												U UNC	V UNC	Dimensions, inch					Δps psi	Δp70° psi	C_v 90°	L1 Weight lbs	L2 Weight lbs
	L1				L2																			
	A	ø B	C	E	A	ø B	C	E	A1	S	K	T			ø O	R	M	P	N					
18	7.09	22.24	16.14	25.79	8.27	27.95	16.14	25.79	3.54	9.06	20.67	3.54	1	5/8	2.76	9.84	0.75	3.08	4.69	740	80	12100	539	1100
20	7.87	24.61	18.31	27.76	9.06	30.51	18.31	27.76	3.94	9.06	22.64	3.54	1	5/8	3.35	9.84	0.88	3.73	5.75	740	104	14400	671	1364
24	9.45	29.25	20.67	33.86	9.84	36.02	20.67	33.86	4.72	12.99	26.97	4.72	1 1/4	3/4	3.74	12.99	0.88	4.13	6.14	740	75	22000	1188	2090
28	9.84	33.39	24.21	36.81	–	–	–	–	4.92	12.99	29.92	4.72	1 1/4	3/4	4.72	12.99	1.25	5.27	8.07	740	115	28100	1826	–
30	11.81	37.09	25.79	38.19	11.81	42.91	24.21	39.37	5.91	14.17	31.30	5.31	1 1/4	7/8	5.31	12.99	1.25	5.87	8.86	740	96	28800	2750	3630
36	14.17	43.31	28.74	41.73	–	–	–	–	7.09	14.17	34.84	5.31	1 1/4	1	6.50	12.99	1.50	7.13	11.02	740	123	40300	4400	–

Δps = max. differential pressure across a closed valve, L1DMA 51 bar / 740 psi, L1DMH 35 bar allowed by the mechanical strength of the valve.
Δp70° = max. differential pressure across a 70° open valve allowed by its mechanical strength.
C_v70° = capacity coefficient of the valve across a 70° open valve,
C_v80° = capacity coefficient of the valve across a 80° open valve,
C_v90° = capacity coefficient of the valve across a 90° open valve.
Flange drilling alternatives are ANSI 300 and DIN PN40.
When ordering, please state the type required and the flange drilling.

Note: S-Disc option does not effect to the face-to-face dimension.

VALVE + MANUAL GEAR OPERATOR SERIES M

MOUNTING POSITION B (STANDARD)

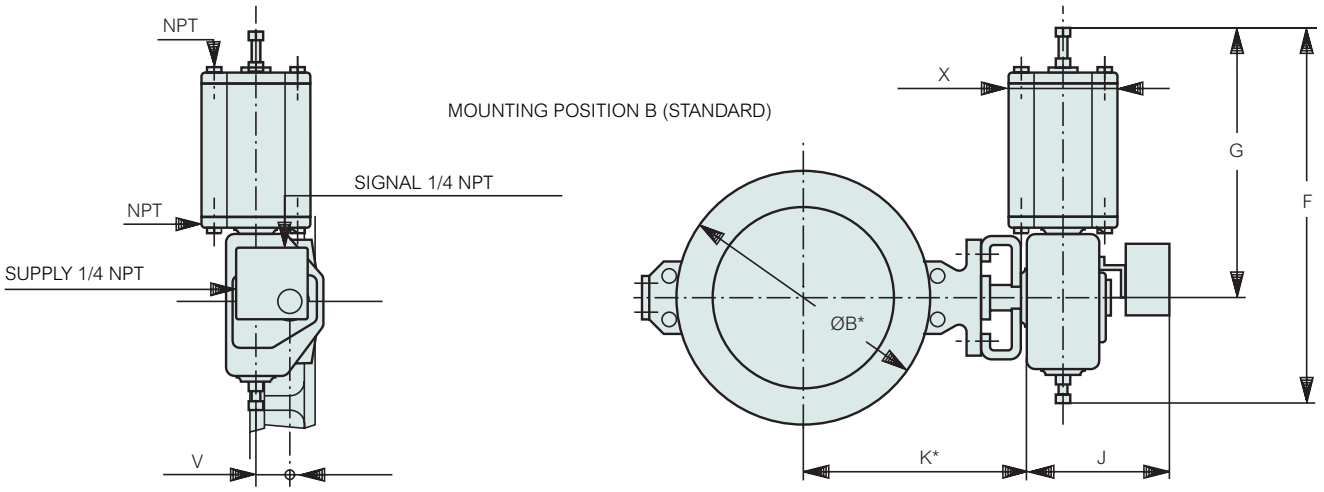


Type	Dimensions, mm					kg
	F	G	J	V	ØZ	
M15	532	406	106	123	457	31
M16	642	466	127	154	610	45

Type	Dimensions, inch					lbs
	F	G	J	V	ØZ	
M15	20.94	15.98	4.15	4.84	17.99	68
M16	25.28	18.35	4.98	6.06	24.02	99

* See dimensions ØB and K on page 6 and 7.

VALVE + PNEUMATIC ACTUATOR / B1C / B1J / B1JA



Type	Dimensions, mm					NPT	kg
	X	G	F	V	J		
B1C25	265	710	1040	121	448	1/2	131
B1C32	395	910	1330	153	525	3/4	256
B1C40	505	1150	1660	194	595	3/4	446
B1C50	610	1350	1970	242	690	1	830

Type	Dimensions, inch					NPT	lbs
	X	G	F	V	J		
B1C25	10.43	27.95	40.94	4.76	17.64	1/2	289
B1C32	15.55	35.83	52.36	6.02	20.67	3/4	564
B1C40	19.88	45.28	65.35	7.64	23.43	3/4	983
B1C50	24.02	53.15	77.56	9.53	27.17	1	1829

Type	Dimensions, mm					NPT	kg
	X	G	F	V	J		
B1J, B1JA20	395	935	1200	97	358	3/4	175
B1J, B1JA25	505	1200	1530	121	448	3/4	350
B1J, B1JA32	540	1410	1830	153	525	1	671

Type	Dimensions, inch					NPT	lbs
	X	G	F	V	J		
B1J, B1JA20	15.55	36.81	47.24	3.82	14.09	3/4	386
B1J, B1JA25	19.88	47.24	60.24	4.76	17.64	3/4	771
B1J, B1JA32	21.26	55.51	72.05	6.02	20.67	1	1479

* See dimensions ØB and K on page 6 and 7.

HOW TO ORDER

Example

L2	C	M	A	18	A	A	J	A
1	2	3	4	5	6	7	8	9

1	VALVE TYPE
L1	Wafer type.
L2	Lug type.

2	PRESSURE RATING
C	ASME Class 150.
D	ASME Class 300.

3	SEAT TYPE
M	Metal seat.
N	Non-tight.

4	CONSTRUCTION TYPE
A	Standard.
C	Cryogenic.
H	High-temp.
Y	Special, to be specified.

5	VALVE SIZE
18"	
	See Engineering Dimensions on page 6-7.
40"	

6	BODY MATERIAL
A	ASTM A351 gr CF8M.
C	ASTM A351 gr CG8M.
P	ASTM A216 gr WCB.
Y	Special, to be specified.

7	DISC MATERIAL
A	ASTM A351 gr CF8M.
C	ASTM A351 gr CG8M.
P	ASTM A216 gr WCB.
Y	Special, to be specified.

8	SHAFT AND PIN MATERIAL
C	17-4PH.
J	SIS 2324.
Y	Special, to be specified.

9	SEAT MATERIAL
A	Incoloy 825.
B	SS Avesta 248 SV.
C	Incoloy 825, polymer impregnated hard chrome plated.
Y	Special, to be specified.