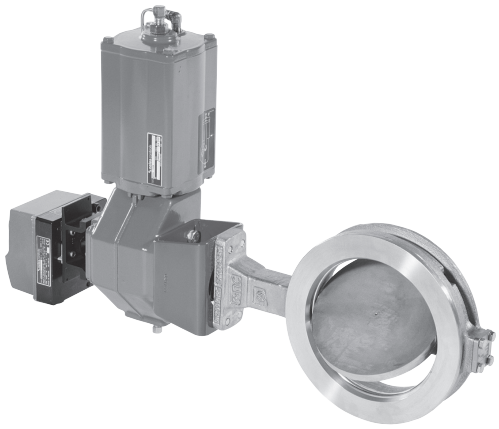
Neles™ high performance metal seated Neldisc™ triple eccentric butterfly valve

Series LW & LG, Sizes DN 700 and bigger

Neles Neldisc is a metal seated high performance triple eccentric disc valve. It provides a long lasting tight shut-off with excellent flow characteristics and high capacity. The LW and LG series fulfill the requirements of ASME, EN and API 609 (cat. B) standards. Following standards types are available:

Wafer -body design, PN25, Class 150	
LW6L	f-to-f EN 558 series 20, API609 cat B, Class 150
LW7L	LW7L f-to-f EN 558 series 25
Wafer -body design, PN40, Class 300	
LW8M	EN 558 part 1, table 5, basic series 16
LW5M	API609 cat B, Class 300
Lug -body design, PN25, Class 150	
LG6L	f-to-f EN 558 series 20, API609 cat B, Class 150
LG7L	f-to-f EN 558 series 25
Lug -body design, PN40, Class 300	
LG8M	EN 558 part 1, table 5, basic series 16
LG5M	API609 cat B, Class 300



The LW and LG series are widely used in pulp and paper, chemical, petrochemical and refining industries. With nearly equal percentage characteristics and superior tightness, Neldisc triple eccentric disc valves operate both in control and shut-off 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. With optional seat, the valve tightness can be improved even more.

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 size range is from 28" to 40" (DN700 - 1000).

Reliability & performance

Approvals

- ISO 15848-1 emission certification, TA-Luft
- API 607 fire safe certification

Increased safety and minimized emissions

- As standard, live loaded gland packing to meet TA-Luft and Clean Air Act requirements.
- PTFE V-ring or graphite packing for a wide range of applications.
- Double packing with or without connection for leakage detection if required.
- Anti-blow out shaft construction is standard in all valves, see page 2 exploded view.
- ATEX

Excellent for on-off and control applications

- Bi-directional tight seat, FCI 70.2 Class VI, API 598
- Unique all-metal 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.
- Low cost control valve for low differential pressures.
- S-disc option for optimised control performance, even to 80 degree opening without dynamic torque and to difficult high noise and cavitation applications.

Abrasion resistant

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

Materials suitable for a broad range of applications

- Standard body materials:
- Carbon steel (1.0619 / WCB)
- Stainless steel (1.4408 / CF8M)
- Other materials are available on application.

Wide range of face to face dimensions

- EN 558 part 1, table 5, basic series 20 (DIN 3202 - K1)
- EN 558 part 1, table 5, basic series 25 (DIN 3202 - K2)
- EN 558 part 1, table 5, basic series 16 (DIN 3202 - K3)
- API 609 cat. B, Class 150
- API 609 cat. B, Class 300

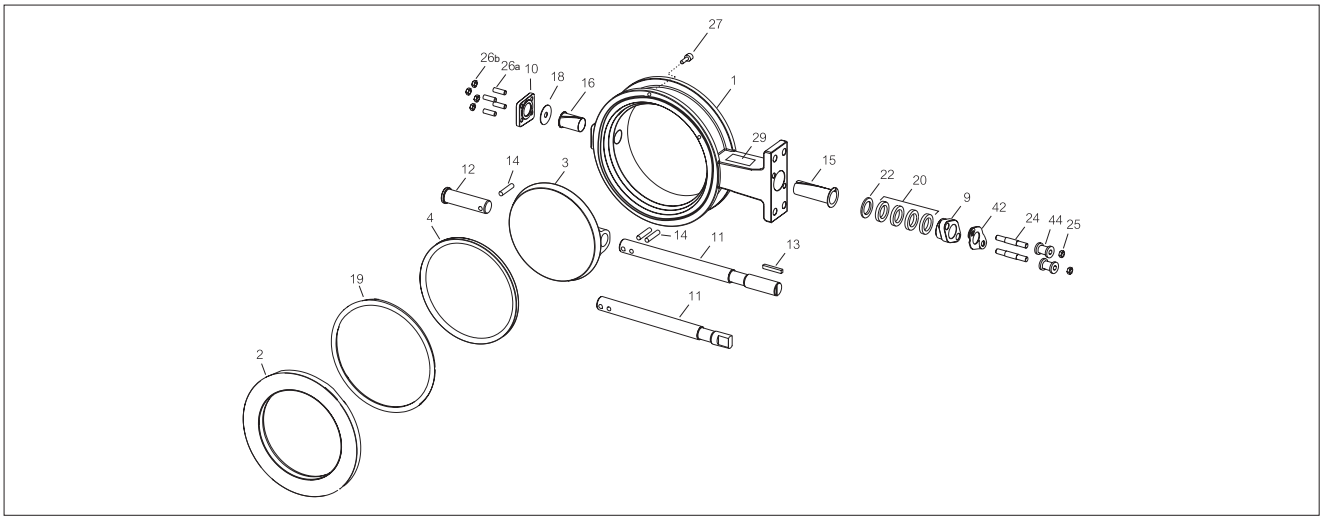
Features

- Metal seated design.
- Bidirectional long term tightness.
- Low friction.
- Excellent wear resistance.
- Extended life cycle.
- Lower operational torque.

Wide pressure and temperature range

- Differential pressure/temperature ratings in accordance with ASME B16.34 and with EN.
- Appropriate constructions perform equally well from -200 °C to +600 °C.

Exploded view

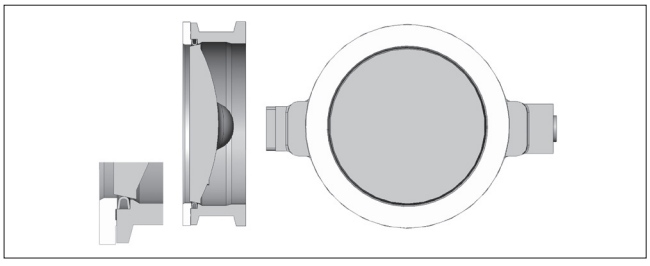


Parts list

ITEM	PART	DESCRIPTION	STANDARD MATERIALS
1	BODY	EN 10213-1.0619 / ASTM A 216 gr. WCB	EN 10213-1.4408 / ASTM A 351 gr. CF8M
2	CLAMP RING	EN 10213-1.4408 / ASTM A 351 gr. CF8M	
3	DISC ASTM	A 182 gr. F316, (EN 10213-1.4408 or EN 10088-1.4401)	
4	SEAT RING (code A) SEAT RING (code C)	Hard chrome coated Incoloy 825 Polymer hard chrome impregated Incoloy 825	
9	GLAND	EN 10213-1.4408 / ASTM A 351 gr. CF8M	
10	BLIND FLANGE	EN 10213-1.4408 / ASTM A 351 gr. CF8M	
11	DRIVE SHAFT	Duplex 1.4460 or 1.4462 (PN25 and below) / ASTM A564 gr. 630	
12	SHAFT	Duplex 1.4460 or 1.4462 (PN25 and below) / ASTM A564 gr. 630	
13	KEY	Stainless Steel	
14	PIN	AISI 329	
15	BEARING	AISI 316 + PTFE / Cobalt based alloy	
16	BEARING	AISI 316 + PTFE / Cobalt based alloy	
18	GASKET	Graphite	
19	BODY SEAL	Graphite	
20	SET GLAND PACKING	PTFE / GRAPHITE	
22	ANTI-EXTRUSION RING	Graphite + AISI 316	
24	STUD	Stainless steel	
25	HEXAGON NUT	Stainless steel	
26a	STUD	Stainless steel	
26 b	HEXAGON NUT	Stainless steel	
27	HEX SOC.HEAD CAP SCREW	Stainless steel	
29	IDENTIFICATION PLATE	AISI 304	
42	RETAINING PLATE	EN 10088-1.4435 CF8M	
44	TA-Luft kit		

Neldisc triple eccentric 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

Metal seated, high performance triple eccentric disc valve

LW : Wafer type
LG : Lug type

Pressure ratings:

Body: ASME 150, ASME 300, PN 10, PN 16, PN 25, PN 40, ISO PN 20, ISO PN 50

Trim: According to body pressure rating.

Size range

DN 700 - DN 1000

Temperature range

-200 °C…+ 538 °C (for higher temperatures contact product line)

Design standards

In accordance with ASME B16.34, API 609 cat B and DIN 3840

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 329 - 1.4418 / ASTM A 546 gr. 630 (17-4PH)
Seat ring, code A: Hard chrome plated Incoloy 825
Bearings: AISI 316 + PTFE or cobalt based alloy

Material and test certification

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, TA-Luft
- TSG
- TR-CU

Valve tightness (bi-directionally)

Standard seat, code A:
ANSI Class V
ISO 5208, rate D, air
DIN 3230 rate 3
10 x ISO 5208 rate D with RH hand lever

Optional tightness:
API 598 (metal seated),
ANSI Class VI

Other tightness on request

Options

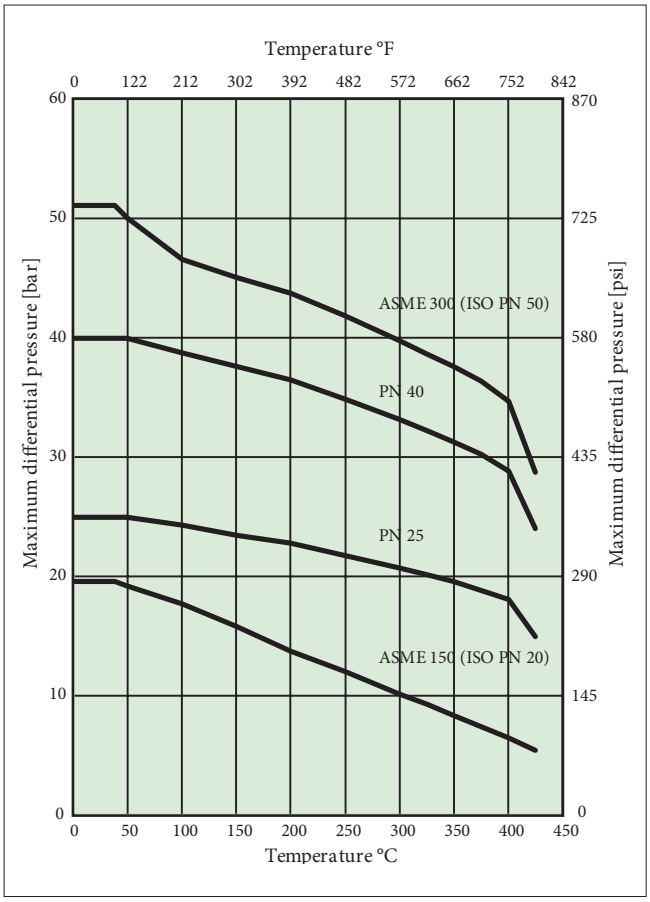
S-Disc, flow balancing trim, see bulletin 2 S-L1 20
Oxygen construction for gaseous oxygen service
High temperature design
High cycle/cycling design
Erosion resistant design
Cryogenic
Steam jacket, heat tracing
NACE MR0103/MR0175

Flow data

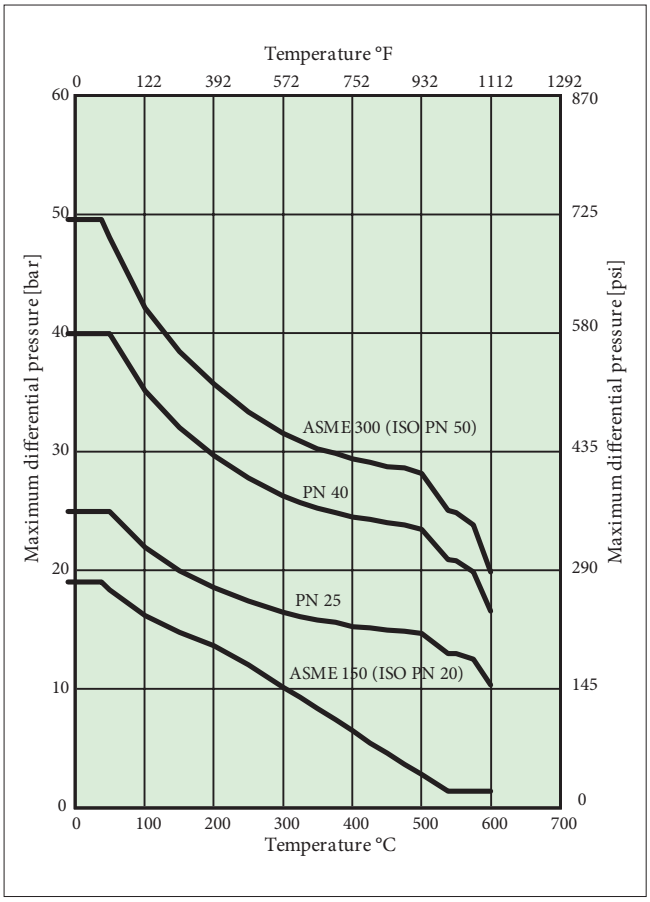
Cv of LW6, LW7, LW8 and LG6, LG7 and LG8 valves in pressure classes PN 25 and PN 40 / ISO PN 50. Kv value is 0,865 x Cv.

Inch	DN	Cv values	
		Cv values	S-Disc
		#150	#150
28	700	25100	12700
30	750	35300	17800
32	800	46700	20900
36	900	53000	23100
40	1000	69600	30000

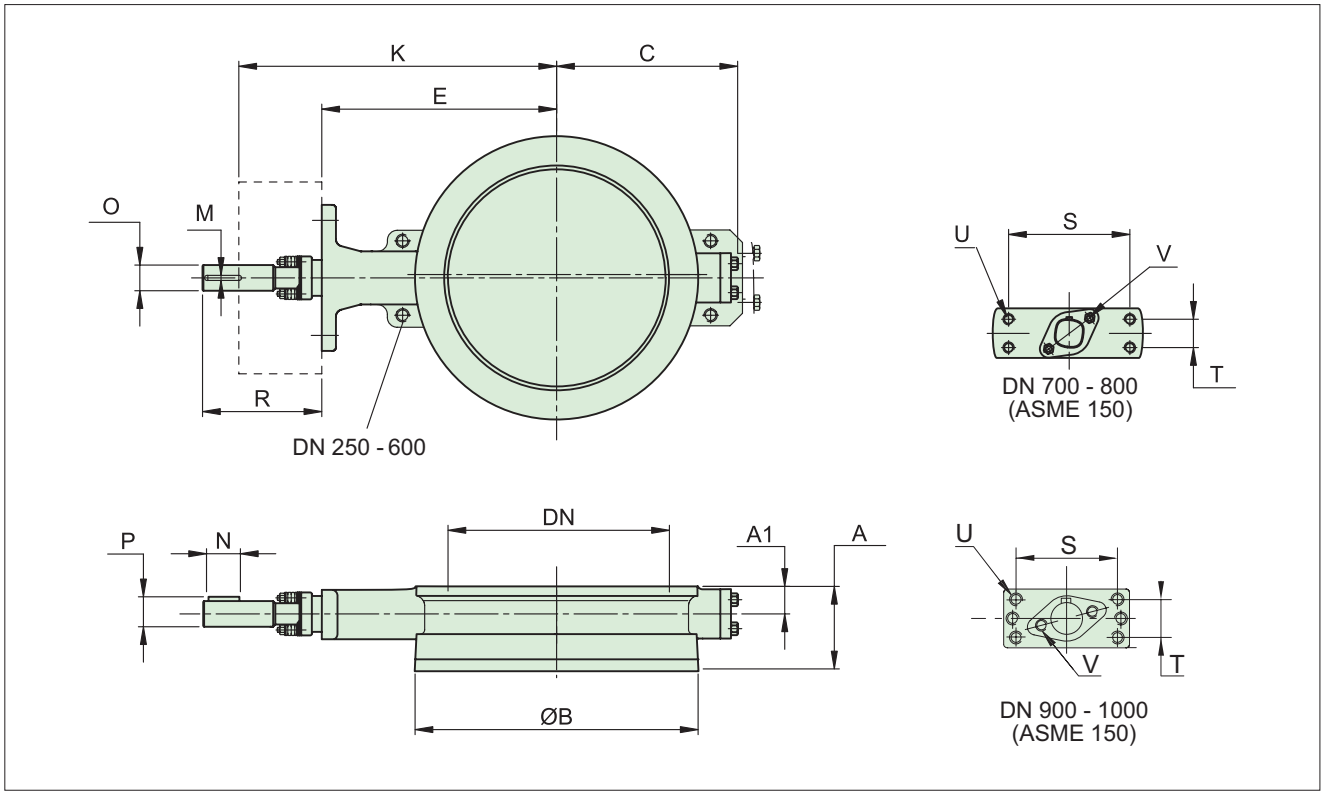
Pressure/temperature ratings for valve body, WCB



Pressure/temperature ratings for valve body, CF8M

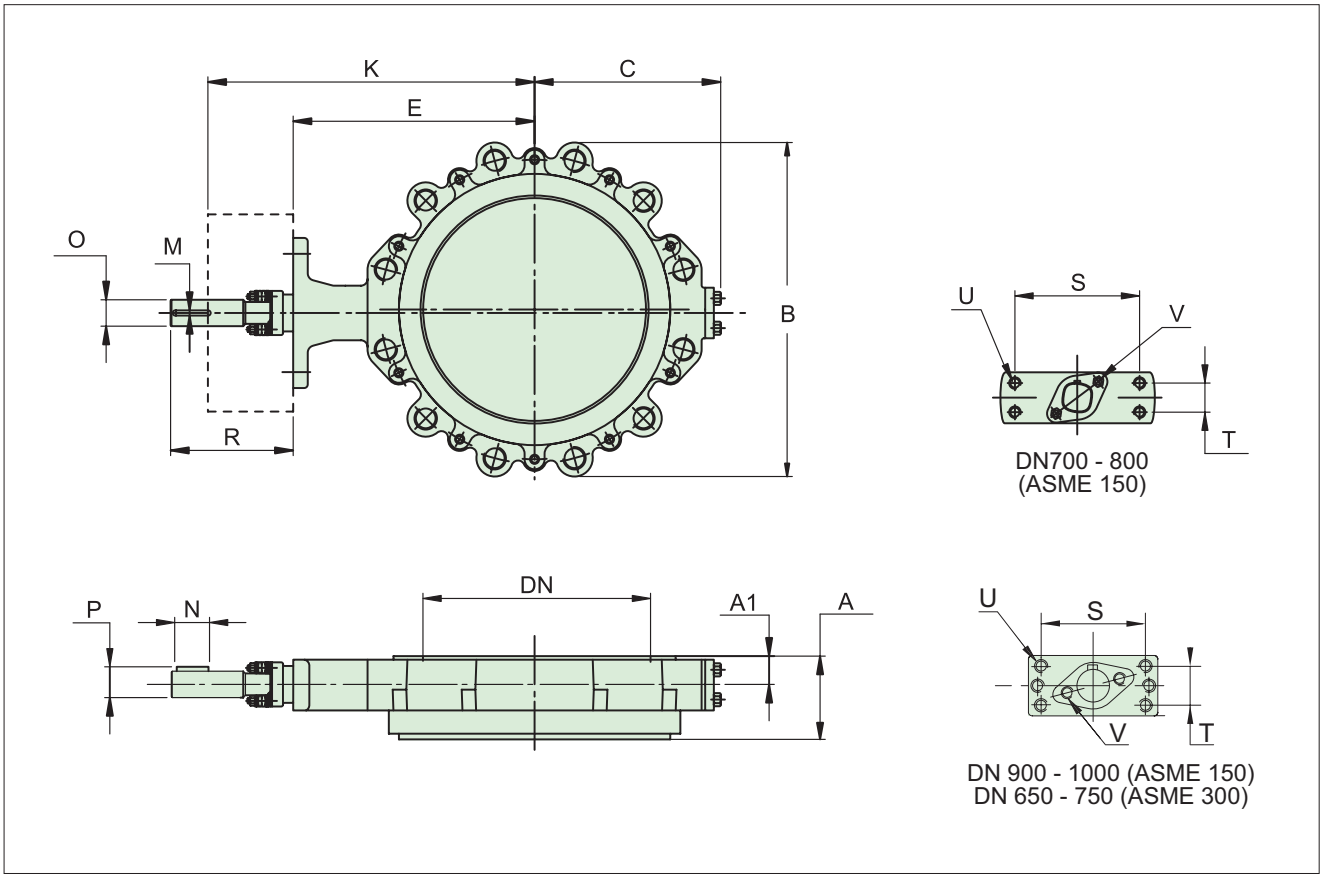


Dimensions and weights



Series LW, Pressure class ASME 150, DN 700 - 1000, DIMENSIONS

LW8CB NPS/DN	A1	LW8CB A(K3)	Dimensions, mm						U Thread	V Thread	Dimensions, mm					Weight kg
			ØB	C	E	K	S	T			O	R	M	N	P	
28/700	115	229	762	510	505	685	230	90	M24	M16	70	399	19.05	119	78.2	360
30/750	102	229	813	530	575	755	230	90	M24	M16	85	326	22.23	146	94.6	470
32/800	102	241	864	615	600	780	230	90	M24	M16	85	326	22.23	146	94.6	540
36/900	107	241	972	655	630	850	330	120	M30	M24	95	376	22.23	156	104.8	730
40/1000	135	300	1080	745	724	944	330	120	M30	M24	105	400	25.4	180	116.1	1030



Series LG, Pressure class 150, DN 700 - 1000, DIMENSIONS

NPS/DN	A1	A(K3)		B	C	E	K	S	T	U	V	O	R	M	N	P	Weight kg
28/700	115	229	-	835	510	505	685	230	90	M24	M16	70	399	19.05	119	78.2	550
30/750	102	229	-	885	530	575	755	230	90	M24	M16	85	326	22.23	146	94.6	590
32/800	102	241	-	940	615	600	780	230	90	M24	M16	85	326	22.23	146	94.6	600
36/900	107	241	-	1055	655	630	850	330	120	M30	M24	95	376	22.23	156	104.8	790
40/1000	135	300	-	1175	745	724	944	330	120	M30	M24	105	400	25.4	180	116.1	1150

Series LG, Pressure class 300, DN 700 - 900, DIMENSIONS

NPS	A1	A(K3)	B	C	E	K	S	T	U	V	O	R	M	N	P	Weight kg
28/700	108	229	920	640	630	850	330	120	M30	M24	120	425	31.75	205	133.8	850
30/750	117	241	990	765	700	950	360	135	M30	M24	135	475	31.75	225	149	1150

How to order

NELDISC triple eccentric disc VALVE, SERIES LW, LG, DIN and ASME rated
LW7LBA_AAJAT Standard valve (T_{max}) +250 °C
LW7LBN _ AACAG Extended service valve (T_{max} = 425 °C)
LW7LBH_AANHG High temp. valve (T_{max} = 538 °C)
LW7LBH_AAHHG High temp. valve (T_{max} = 538 °C)
LW7LBC_AACAG Cryo temp. valve (T = -200 °C - +250 °C)

1.	2.	3.	4.	5.	6.	7.	8.	9.	10	11.	12.		13.
	LW	6	L	B	A	700	P	A	C	C	T	/	03

1. sign	S-DISC CONSTRUCTION
S-	Flow balancing trim on down stream side of body flow port. Not available with LW6 or LG6.

2. sign	PRODUCT SERIES / DESIGN
LW	Wafer type, metal seated triple eccentric disc valve.
LG	Lug type, metal seated triple eccentric disc valve.

3. sign	FACE TO FACE
6	EN 558-Part 1, Table 5 / Basic series 20, (DIN 3202-K1). API 609 category B Class 150
7	EN 558-Part 1, Table 5 / Basic series 25, (DIN 3202-K2).
8	EN 558-Part 1, Table 5 / Basic series 16, (DIN 3202-K3).
5	API 609, category B. Class 300
Y	Special to be specified.

* LW7L has the same face to face length as the previous L1C valve serie.

4. sign	PRESSURE RATING & DRILLING (DN80 – 600)
C	ASME 150
D	ASME 300
J	PN 10
K	PN 16
L	PN 25
M	PN40
X	ISO PN 20
Z	ISO PN 50
R	JIS10K
S	JIS16K
T	JIS20K
U	JIS30K
Y	Special, to be defined

5. sign	VALVE- ACTUATOR CONNECTION
B	DRIVE SHAFT WITH KEY WAY / BRACKET MANUFACTURER STANDARD.

6. sign	CONSTRUCTION
A	STANDARD (-50 °C...+260 °C) - BEARINGS AISI 316 + PTFE - BODY AND BLIND FLANGE GASKETS GRAPHITE - LIVE LOADED TA-Luft PACKING
C	CRYOGENIC (min. -200 °C) - EXTENDED BONNET AND DRIVE SHAFT - OTHERWISE AS CONSTRUCTION A
N	Extended service (max. +425 °C) - SHAFT BEARINGS SURFACES NITRATED - BEARINGS COBALT BASED ALLOY - BODY AND BLIND FLANGE GASKETS GRAPHITE - LIVE LOADED TA-Luft PACKING
H	HIGH temperature (max. +538 °C, for higher temperatures contact product line) - SHAFT BEARINGS SURFACES CELSIT COATED - BEARINGS COBALT BASED ALLOY - BODY AND BLIND FLANGE GASKETS GRAPHITE - LIVE LOADED TA-Luft PACKING
Z	OXYGEN CONSTRUCTION - BAM tested non-metallic materials - T = -50 °C...+200 °C - Max pressure as per body rating - Bearings cobalt based alloy - Oxygen cleaning acc. to manufacturer internal procedures. - Recommended typecodes L_ _ _BZH_AACAG or L_ _ _BZH_AMMKG or L_ _ _BZH_MMMKG

Note! Only "Z" construction available for oxygen flow media. Not to be used with other flow medias.

7. sign	SIZE
	700, 750, 800, 900, 1000

MATERIALS					
8. sign	BODY	9. sign	DISC	10. sign	SHAFTS & PINS
A	CF8M / 1.4408	A	CF8M or F316	J	Duplex 1.4460 or 1.4462 (PN 25 and below)
P	WCB / 1.0619			C	Gr. 630 (17-4PH)
B	1.4581	G	1.4581	N	XM-19 (Nitronic 50)
N	WC6	K	1.4408 or 1.4401		
F	LCC	B	CF8M / 1.4408 or F316 / 1.4401+ cobalt based ALLOY	H	Nimonic 80A only sign 6 = "H"
C	CG8M/ AISI 317	C	CG8M/AISI 317		

11. sign	STANDARD SEAT	11. sign	NON-STANDARD SEAT
A	Incoloy 825, HARD CHROME PLATED	H	Nimonic 80a, HARD CHROME PLATED
		K	2.4681, UNS R31233 (ULTIMET)

12. sign	DESIGN OPTIONS
T	TA-Luft PTFE V-ring packing.
G	Ta-luft graphite packing, Fire safe construction.
Y	Special, to be specified.

13. sign	FLANGE FACING
-	EN 1092-1 Type B1 (Ra 3.2 - 12.5), standard, without sign cover: ASME B16.5, (Ra 3.2 - 6.3, smooth finish, AARH 125 - 250) DIN 2526 Form E (Ra 4)
07	DIN 2512 FORM N (groove) (Ra 10).
Y	Special, to be specified.

Valmet Flow Control Oy
Vanha Porvoontie 229, 01380 Vantaa, Finland.
Tel. +358 10 417 5000.
www.valmet.com/flowcontrol