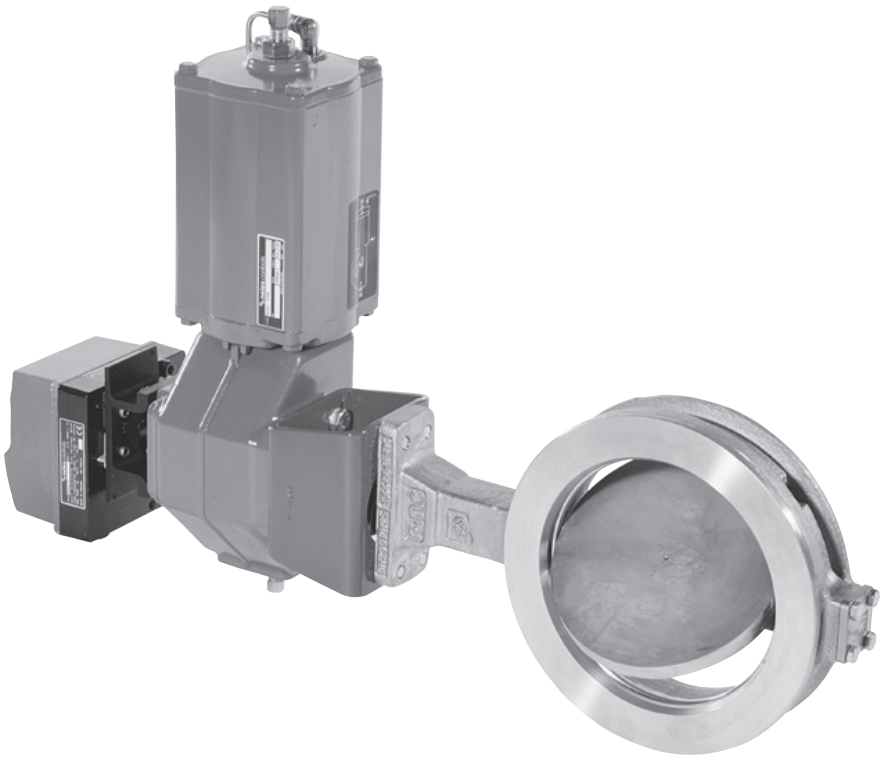
Neles™ Neldisc™ high performance butterfly valves

Series LW, LG

Installation, maintenance and operating instructions



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EAC This product meets the requirements set by the Customs Union of the Republic of Belarus, the Republic of Kazakhstan and the Russian Federation.

READ THESE INSTRUCTIONS FIRST!

These instructions provide information about safe handling and operation of the valve.

If you require additional assistance, please contact the manufacturer or manufacturer's representative.

SAVE THESE INSTRUCTIONS!

Addresses and phone numbers are printed on the back cover.

1. GENERAL

1.1 Scope of the manual

This installation, operation and maintenance manual provides essential information on series LW and LG Neldisc™ triple eccentric disc valves. The actuators and instrumentation to be used with series LW and LG valves are also discussed briefly. Refer to the separate actuator and control equipment instruction manuals for further information.

NOTE:
Selection and use of the valve in a specific application requires close consideration of detailed aspects. Due to the nature of the product, this manual cannot cover all the individual situations that may occur when installing, using or servicing the valve.

If you are uncertain about use of the valve or its suitability for your intended purpose, please contact Valmet for more information.

For valves in oxygen service, please see also the separate installation, maintenance and operating instructions for oxygen service (see Neles document id:10O270EN.pdf)

1.2 Valve description

Neles™ Neldisc™ series LW valves are wafer type and series LG are lug type metal seated triple eccentric disc valves.

The disc is elliptical and has a triple eccentric mounting. 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 (see Fig. 1).

The disc is fitted to the shafts with pins and there are no holes through the disc.

Construction details of individual valves are included in the type code shown on the valve identification plate. To interpret the type code, please refer to Section 11.

The valve operates both in control and shut-off applications.

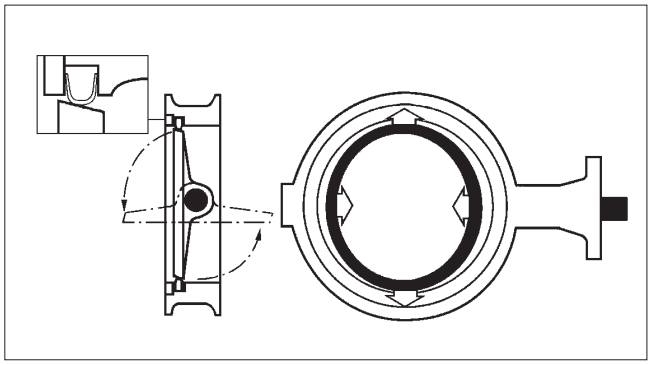


Fig. 1 Construction of a triple eccentric disc valve

1.3 Valve markings

Body markings are cast on the body. The valve also has an identification plate attached to it (see Fig. 2).

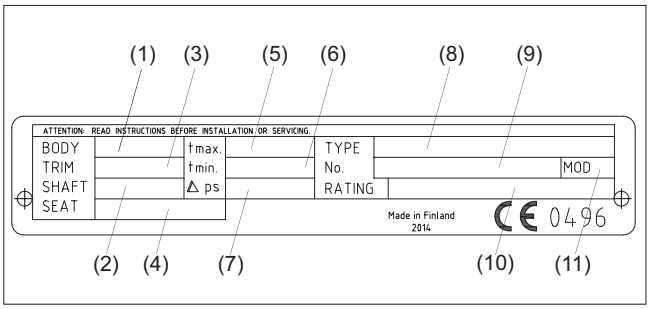


Fig. 2 Identification plate

Identification plate marking:

1. Body material
2. Shaft material
3. Trim material
4. Seat material
5. Maximum operating temperature
6. Minimum operating temperature
7. Maximum shut-off pressure differential
8. Type designation
9. Valve manufacturing parts list no.
10. Pressure class
11. Model

1.4 Technical specifications

Type:	metal seated triple eccentric disc valve LW: wafer type LG: lug type
Pressure class	
Body:	LW6L, LW7L, LG6L, LG7L: PN 25, ISO PN 20, ASME150 LW8M, LG8M, LW5M, LG5M: PN 40, ISO PN 50, ASME300
Trim:	LW6L, LW7L, LG6L, LG7L: Sizes DN 80-150: PN 25 Sizes DN 200 - 600: ISO PN 20 LW8M, LG8M, LW5M, LG5M: PN 40, ISO PN 50
Body & trim:	LW8C, LG8C: Sizes DN700 - DN1000: ASME 150
Temperature range:	-200 °C... +600 °C (over 600 °C, please contact the manufacturer)
Flow direction:	Free
Dimensions:	See Section 10
Weights:	See Section 10

1.5 Valve approvals

TA-Luft, chapter 3.1.8.4

Fire test to BS 6755 and API 607.

1.6 CE marking

The valve meets the requirements of the European Directive 2014/68/EU relating to pressure equipment, and has been marked according to the Directive.

1.7 Recycling and disposal

Most valve parts can be recycled if sorted according to material.

Most parts have material marking. A material list is supplied with the valve. In addition, separate recycling and disposal instructions are available from the manufacturer. A valve can also be returned to the manufacturer for recycling and disposal against a fee.

1.8 Safety precautions

CAUTION:
Do not exceed the valve performance limitations!
Exceeding the limitations marked on the valve may cause damage and lead to uncontrolled pressure release.

Damage or personal injury may result.

CAUTION:
Do not dismantle the valve or remove it from the pipeline while the valve is pressurized!
Dismantling or removing a pressurized valve will result in uncontrolled pressure release. Always isolate the relevant part of the pipeline, release the pressure from the valve and remove the medium before dismantling the valve.

Be aware of the type of medium involved. Protect people and the environment from any harmful or poisonous substances. Make sure that no medium can enter the pipeline during valve maintenance.

Failure to do this may result in damage or personal injury.

CAUTION:
Beware of the discs cutting movement!
Keep hands, other parts of the body, tools and other objects out of the open flow port. Leave no foreign objects inside the pipeline.

When the valve is actuated, the disc functions as a cutting device. The position of the disc can also be changed when moving the valve.

Close and detach the actuator pressure supply pipeline for valve maintenance.

Failure to do this may result in damage or personal injury.

CAUTION:
Beware of noise emissions!
The valve may produce noise in the pipeline. The noise level depends on the application. It can be measured or calculated using Neles Nelprof software. Observe the relevant work environment regulations on noise emission.

CAUTION:
Beware of a very cold or hot valve!
The valve body may be very cold or very hot during use. Protect yourself against cold injuries or burns.

CAUTION:
When handling the valve or the valve package, bear in mind its weight!
Never lift the valve or valve package by the actuator, positioner, limit switch or their piping.

Place the lifting ropes securely around the valve body (see Fig. 3).

Damage or personal injury may result from falling parts.

NOTE:
Do not turn the disc more than 90° as this could damage the seat. The valve is so constructed that the disc operates only between 0-90°.

CAUTION:
Potential electrostatic charging hazard. Ensure the protection in the process.

1.9 Welding notes

WARNING:
Welding and/or grinding stainless steel and other alloys containing chromium metal may cause the release of hexavalent chromium. Hexavalent chromium(VI) or Cr(VI), is known to cause cancer. Be sure to use all appropriate personal protective equipment (PPE) when welding metals containing chromium.

NOTE:
A qualified welder must do the installation welding. The welder and welding procedure should be qualified in accordance with the ASME Boiler and Pressure Vessel Code Section IX or other applicable regulation.

CAUTION:
To prevent damage to the seat and seals, do not allow the temperature of the seat and body seal area to exceed 94 °C (200 °F). It is recommended that thermal chalks be used to check the temperature in these areas during welding.

CAUTION:
Ensure that any weld splatter does not fall onto the valve closing members eg. ball or seats. This may damage critical seating surfaces and cause leaks.

2. TRANSPORTATION, RECEPTION AND STORAGE

Check the valve and the accompanying devices for any damage that may have occurred during transport.

Store the valve carefully before installation, preferably indoors in a dry place.

Do not take the valve to the intended location and do not remove the flow port protectors until the valve is installed.

The valve is delivered in the closed position. A valve equipped with a spring-return actuator is delivered in a position determined by the spring. During storage the valve must be lightly closed.

3. INSTALLATION

3.1 General

Remove the flow port protectors and check that the valve is undamaged and clean inside.

CAUTION:
When handling the valve or the valve package, bear in mind its weight!
Follow the lifting methods shown in Fig. 3.

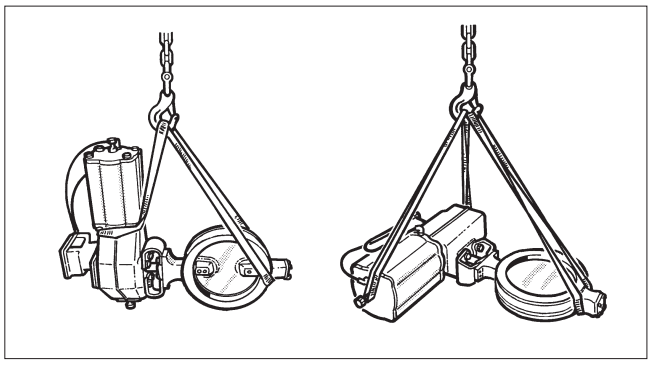


Fig. 3 Lifting of the valve

3.2 Installing into the pipeline

Flush or blow the pipeline carefully before installing the valve. Foreign particles, such as sand or pieces of welding electrode, will damage the disc sealing surface and seat.

The valve may be installed in any position and offers tightness in both directions.

Install the valve in the pipeline so that the shaft is horizontal if possible. However, we do not recommend installing the valve with the actuator on the underside because dirt in the pipeline may then enter the body cavity and damage the gland packing.

If the valve is equipped with a flow balancing trim (type code S-...), it must be on the down stream side of the valve body. The valve must be mounted so that the perforated plate will not collect any impurities in the pipeline (see Fig. 4). The recommended mounting positions exclude the use of mounting positions A-HL, B-HL, C-HL, D-HL.

Select flange gaskets according to the operating conditions.

Do not attempt to correct pipeline misalignment by means of flange bolting.

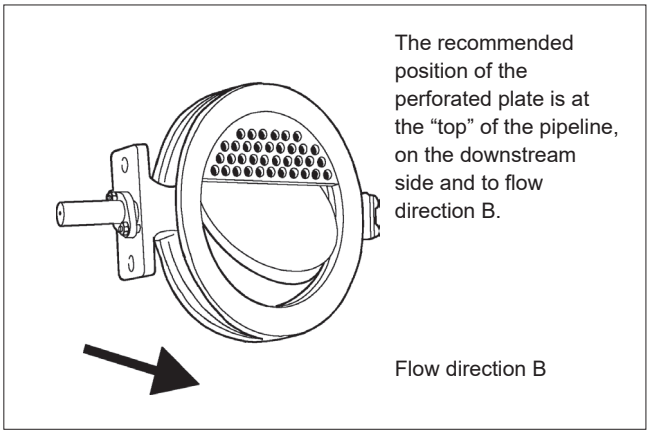


Fig. 4 Position of the flow balancing trim

It may be necessary to firmly support the pipeline to protect the valve from excess stress. Sufficient support will also reduce pipeline vibration and this ensures proper functioning of the positioner. Do not fasten supports to the flange bolting or to the actuator.

It is recommended that the length of any straight pipe preceding the control valve is at least 2 x pipe diameter.

The flow causes a so-called dynamic torque against the valve disc which attempts to close the valve. In a pipe elbow the pressure on the outer edge is higher than on the inner edge.

When installing the triple eccentric disc valve immediately after a pipe elbow, the valve shaft must be directed toward the centre point of the pipe (see Fig. 5). This is especially important when the valve is used as a control valve.

The valve shaft of a valve mounted after the centrifugal pump must be perpendicular to the pump shaft (see Fig. 6).

When thus installed, the valve discs will be more evenly loaded and vibrations otherwise possible in the intermediate positions will be eliminated.

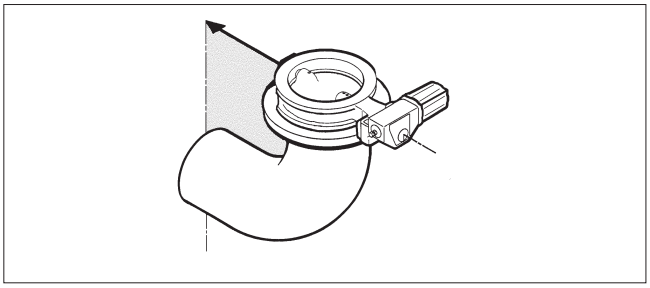


Fig. 5 Mounting after a pipe elbow

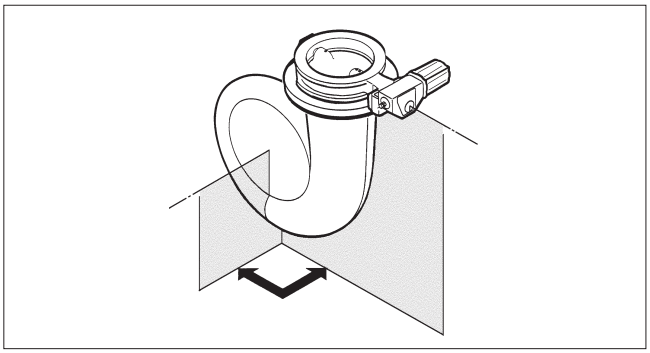


Fig. 6 Mounting after the centrifugal pump

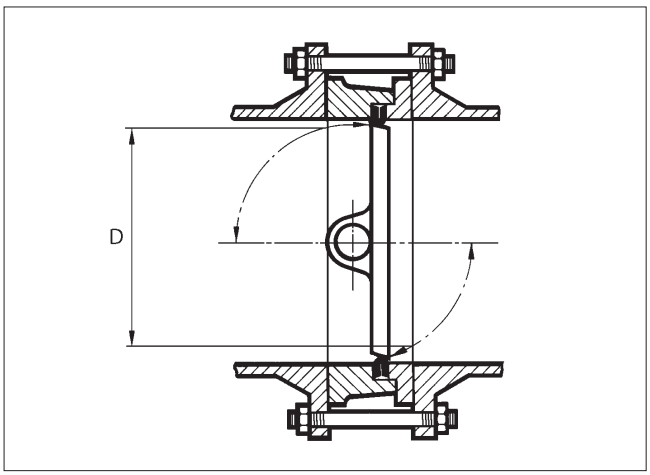


Fig. 7 Minimum pipe inside dimensions

Table 1 Minimum pipe inside dimensions (mm)

Valve size DN / NPS	D	
	LW6L, LW7L, LG6L, LG7L (mm / inch)	LW8M, LG8M, LW5M, LG5M (mm / inch)
80 / 3	69 / 2.71	69 / 2.72
100 / 4	90 / 3.54	90 / 3.54
125 / 5	112 / 4.41	112 / 4.41
150 / 6	144 / 5.67	143 / 5.63
200 / 8	193 / 7.60	190 / 7.48
250 / 10	243 / 9.56	241 / 9.49
300 / 12	290 / 11.42	287 / 11.30
350 / 14	329 / 12.95	321 / 12.64
400 / 16	374 / 14.72	315 / 12.40
450 / 18	422 / 16.61	335 / 13.19
500 / 20	464 / 18.27	385 / 15.16
600 / 24	565 / 22.24	425 / 16.73
700 / 28		520 / 20.47
750 / 30		635 / 25.00
800 / 32		685 / 26.97
900 / 36		735 / 28.94
1000 / 40		825 / 32.48

Note: Sizes DN 700/28” ... DN 1000/40”, available only for types LW8C and LG8C.

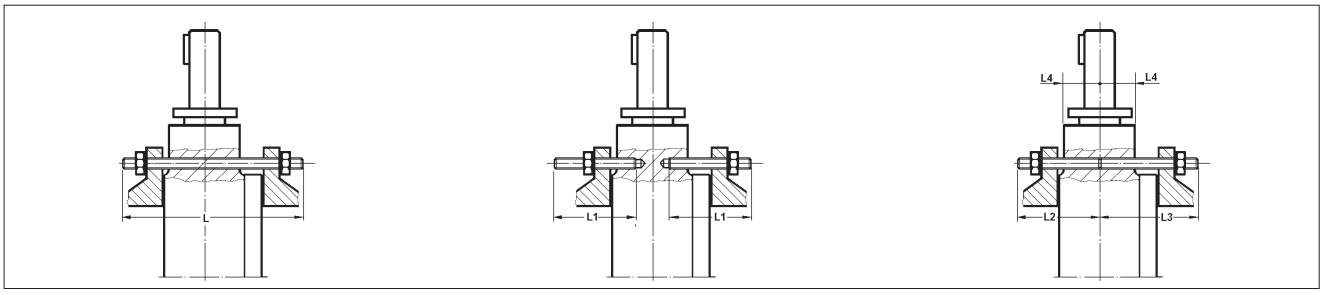


Fig. 8 Stud bolt lenght

Table 2 Stud bolt dimensions, DIN flanges (mm)

LW6L DN	DIN PN 10 flange			DIN PN 16 flange			DIN PN 25 flange			DIN PN 20 flange		
	Thread	L	Qty	Thread	L	Qty	Thread	L	Qty	Thread	L	Qty
80	M16	130	8	M16	130	8	M16	150	8	M16	140	4
100	M16	140	8	M16	140	8	M20	170	8	M16	150	8
125	M16	150	8	M16	150	8	M24	190	8	M20	160	8
150	M20	160	8	M20	160	8	M24	200	8	M20	160	8
200	M20	170	8	M20	170	12	M24	210	12	M20	170	8
250	M20	180	12	M24	180	12	M27	220	12	M24	200	12
300	M20	190	12	M24	200	12	M27	230	16	M24	210	12
350	M20	190	16	M24	200	16	M30	260	16	M27	220	12
400	M24	220	16	M27	240	16	M33	270	16	M27	250	16

DN	DIN PN 10 flange					DIN PN 16 flange					DIN PN 25 flange					DIN PN 20 flange				
	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty
450	M24	240	16	120	8	M27	270	16	130	8	-	-	-	-	-	M30	280	16	-	-
500	M24	260	16	120	8	M30	310	16	140	8	M33	320	16	150	8	M30	310	16	140	8
600	M27	310	16	120	8	M33	360	16	160	8	M36	380	16	170	8	M33	360	16	150	8

LW7L DN	DIN PN 10 flange			DIN PN 16 flange			DIN PN 25 flange			DIN PN 20 flange		
	Thread	L	Qty	Thread	L	Qty	Thread	L	Qty	Thread	L	Qty
80	M16	130	8	M16	130	8	M16	150	8	M16	140	4
100	M16	140	8	M16	140	8	M20	170	8	M16	150	8
125	M16	150	8	M16	150	8	M24	190	8	M20	170	8
150	M20	170	8	M20	170	8	M24	200	8	M20	180	8
200	M20	180	8	M20	180	12	M24	210	12	M20	180	8
250	M20	190	12	M24	190	12	M27	220	12	M24	200	12
300	M20	200	12	M24	210	12	M27	230	16	M24	210	12
350	M20	200	16	M24	210	16	M30	260	16	M27	230	12
400	M24	220	16	M27	240	16	M33	270	16	M27	250	16

DN	DIN PN 10 flange					DIN PN 16 flange					DIN PN 25 flange					DIN PN 20 flange				
	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty
450	M24	240	16	120	8	M27	270	16	130	8						M30	280	16		
500	M24	260	16	120	8	M30	310	16	140	8	M33	320	16	150	8	M30	310	16	140	8
600	M27	310	16	120	8	M33	360	16	160	8	M36	380	16	170	8	M33	360	16	150	8

Tabla 2 Continued

LW8M LW5M DN	DIN PN 25 flange					DIN PN 40 flange					DIN PN 50 flange				
	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty
80	M16	180	8	Stud bolts pass the body in the neck area (length L)		M16	180	8	Stud bolts pass the body in the neck area (length L)		M20	190	8	Stud bolts pass the body in the neck area (length L)	
100	M20	190	8			M20	180	8			M20	200	8		
125	M24	210	8			M24	200	8			M20	210	8		
150	M24	220	8			M24	210	8			M20	220	12		
200	M24	230	12			M27	240	12			M24	250	12		
250	M27	270	12			M30	280	12			M27	300	12	170	8
300	M27	270	12	140	8	M30	290	12	150	8	M30	310	12	160	8
350	M30	300	12	150	8	M33	320	12	160	8	M30	330	16	160	8
400	M33	320	12	160	8	M36	350	12	170	8	M33	350	16	160	8

DN	DIN PN 25 flange					DIN PN 40 flange					DIN PN 50 flange				
	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty
450	M33	340	16	150	8	M36	370	16	160	8	M33	380	20	160	8
500	M33	360	16	150	8	M39	390	16	170	8	M33	400	20	170	8
600	M36	410	16	165	8	M45x4	460	16	200	8	M39	440	20	185	8

LG6L DN	DIN PN 10 flange					DIN PN 16 flange					DIN PN 25 flange					DIN PN 20 flange					L4
	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	
80	M16	60	8	70	8	M16	60	8	70	8	M16	65	8	75	8	M16	65	4	75	4	16
100	M16	65	8	75	8	M16	65	8	75	8	M20	75	8	85	8	M16	70	8	80	8	19
125	M16	70	8	80	8	M16	70	8	80	8	M24	80	8	90	8	M20	75	8	85	8	20
150	M20	75	8	85	8	M20	75	8	85	8	M24	85	8	95	8	M20	75	8	85	8	20
200	M20	80	8	90	8	M20	80	12	90	12	M24	90	12	100	12	M20	80	8	90	8	23
250	M20	85	12	95	12	M24	85	12	95	12	M27	95	12	105	12	M24	95	12	105	12	26
300	M20	90	12	100	12	M24	95	12	105	12	M27	105	16	115	16	M24	100	12	110	12	30
350	M20	90	16	100	16	M24	95	16	105	16	M30	110	16	120	16	M27	105	12	115	12	35
400	M24	100	16	120	16	M27	110	16	130	16	M33	125	16	145	16	M27	115	16	135	16	38

DN	DIN PN 10 flange					DIN PN 16 flange					DIN PN 25 flange					DIN PN 20 flange					L4
	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	
450	M24	105	20	125	20	M27	125	20	145	20						M30	135	16	155	16	47
500	M24	105	20	125	20	M30	135	20	155	20	M33	150	20	170	20	M30	135	20	155	20	54
600	M27	120	20	145	20	M33	155	20	180	20	M36	165	20	190	20	M33	150	20	175	20	63

LG7L DN	DIN PN 10 flange					DIN PN 16 flange					DIN PN 25 flange					DIN PN 20 flange					L4
	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	
80	M16	60	8	70	8	M16	60	8	70	8	M16	65	8	75	8	M16	65	4	75	4	16
100	M16	65	8	75	8	M16	65	8	75	8	M20	75	8	85	8	M16	70	8	80	8	19
125	M16	65	8	85	8	M16	65	8	85	8	M24	80	8	100	8	M20	75	8	95	8	20
150	M20	75	8	95	8	M20	75	8	95	8	M24	85	8	105	8	M20	80	8	100	8	20
200	M20	80	8	100	8	M20	80	12	100	12	M24	90	12	110	12	M20	80	8	100	8	23
250	M20	85	12	105	12	M24	85	12	105	12	M27	95	12	115	12	M24	90	12	110	12	26
300	M20	90	12	110	12	M24	95	12	115	12	M27	105	16	125	16	M24	95	12	115	12	30
350	M20	90	16	110	16	M24	95	16	115	16	M30	110	16	130	16	M27	105	12	125	12	35
400	M24	100	16	120	16	M27	110	16	130	16	M33	125	16	145	16	M27	115	16	135	16	38

DN	DIN PN 10 flange					DIN PN 16 flange					DIN PN 25 flange					DIN PN 20 flange					L4
	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	
450	M24	105	20	125	20	M27	125	20	145	20						M30	135	16	155	16	47
500	M24	105	20	125	20	M30	135	20	155	20	M33	150	20	170	20	M30	135	20	155	20	54
600	M27	120	20	145	20	M33	155	20	180	20	M36	165	20	190	20	M33	150	20	175	20	63

LG8M LG5M DN	DIN PN 25 flange					DIN PN 40 flange					DIN PN 50 flange					L4
	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	
80	M16	65	8	95	8	M16	65	8	95	8	M20	75	8	105	8	16
100	M20	70	8	100	8	M20	70	8	100	8	M20	75	8	105	8	19
150	M24	85	8	115	8	M24	85	8	115	8	M20	85	12	115	12	25
200	M24	90	12	120	12	M27	100	12	130	12	M24	105	12	135	12	34
250	M27	110	12	140	12	M30	120	12	150	12	M27	125	16	155	16	42
300	M27	110	16	140	16	M30	120	16	150	16	M30	135	16	165	16	45
350	M30	125	16	155	16	M33	135	16	165	16	M30	145	20	175	20	50
400	M33	135	16	165	16	M36	150	16	180	16	M33	155	20	185	20	55

DN	DIN PN 25 flange					DIN PN 40 flange					DIN PN 50 flange					L4
	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	
450	M33	150	20	160	20	M36	165	20	175	20	M33	160	24	170	24	70.5
500	M33	150	20	160	20	M39	175	20	185	20	M33	165	24	175	24	73
600	M36	165	20	185	20	M45x4	205	20	225	20	M39	185	24	205	24	78

Table 3 Stud bolt dimensions, ASME flanges (inch/mm)

LW_ NPS / DN	LW6L, LW7L, ASME 150 flange			LW5M, LW8M, ASME 300 flange				
	Thread	L	Qty	Thread	L	Qty	L1	Qty
3 / 80	5/8 UNC	6.30 / 160	4	3/4 UNC	7.87 / 200	8	Stud bolts pass the body in the neck area (length L)	
4 / 100	5/8 UNC	6.69 / 170	8	3/4 UNC	8.26 / 210	8		
5 / 125	3/4 UNC	7.48 / 190	8	3/4 UNC	8.66 / 220	8		
6 / 150	3/4 UNC	7.87 / 200	8	3/4 UNC	9.05 / 230	12		
8 / 200	3/4 UNC	7.87 / 200	8	7/8 UNC	10.23 / 260	12		
10 / 250	7/8 UNC	8.66 / 220	12	1 UNC	11.81 / 300	12	5.91 / 150	8
12 / 300	7/8 UNC	9.05 / 230	12	1 1/8-8 UN	12.20 / 310	12	6.30 / 160	8
14 / 350	1 UNC	9.84 / 250	12	1 1/8-8 UN	12.99 / 330	16	6.30 / 160	8
16 / 400	1 UNC	10.63 / 270	16	1 1/4-8 UN	14.17 / 360	16	6.69 / 170	8

NPS / DN	LW6L, LW7L, ASME 150 flange					LW5M, LW8M, ASME 300 flange				
	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty
18/450	1 1/8-8UN	11.42/290	16			1 1/4-8UN	14.96/380	20	6.30/160	8
20/500	1 1/8-8UN	12.60/320	16	5.51/140	8	1 1/4-8UN	15.75/400	20	6.69/170	8
24/600	1 1/4-8UN	14.17/360	16	5.91/150	8	1 1/2-8UN	17.72/440	20	7.28/185	8

LG_ NPS / DN	LG6, LG7L, ASME 150 flange						LG5M, LG8M, ASME 300 flange					
	Thread	L2	Qty	L3	Qty	L4	Thread	L2	Qty	L3	Qty	L4
3 / 80	5/8 UNC	2.36 / 60	4	3.15 / 80	4	0.63 / 16	3/4 UNC	2.75 / 70	8	3.54 / 90	8	0.63 / 16
4 / 100	5/8 UNC	2.56 / 65	8	3.34 / 85	8	0.75 / 19	3/4 UNC	2.95 / 75	8	3.74 / 95	8	0.75 / 19
5 / 125	3/4 UNC	2.75 / 70	8	3.54 / 90	8	0.78 / 20	-	-	-	-	-	-
6 / 150	3/4 UNC	2.75 / 70	8	3.54 / 90	8	0.78 / 20	3/4 UNC	3.54 / 90	12	3.93 / 100	12	0.98 / 25
8 / 200	3/4 UNC	2.95 / 75	8	3.74 / 95	8	0.90 / 23	7/8 UNC	4.33 / 110	12	4.33 / 110	12	1.34 / 34
10 / 250	7/8 UNC	3.34 / 85	12	4.13 / 105	12	1.02 / 26	1 UNC	4.92 / 125	16	4.92 / 125	16	1.65 / 42
12 / 300	7/8 UNC	3.54 / 90	12	4.33 / 110	12	1.18 / 30	1 1/8 - 8UN	5.31 / 135	16	5.31 / 135	16	1.77 / 45
14 / 350	1-8 UN	4.13 / 105	12	4.92 / 125	12	1.37 / 35	1 1/8 - 8UN	5.51 / 140	20	5.51 / 140	20	2.20 / 56
16 / 400	1-8UN	4.52 / 115	16	5.31 / 135	16	1.49 / 38	1 1/4 - 8UN	6.30 / 160	20	6.69 / 170	20	2.40 / 61

NPS / DN	LG6, LG7L, ASME 150 flange						LG5M, LG8M, ASME 300 flange					
	Thread	L2	Qty	L3	Qty	L4	Thread	L2	Qty	L3	Qty	L4
18/450	1 1/8-8UN	5.12/130	16	5.91/150	16	1.85/47	1 1/4-8UN	6.50/165	24	6.69/170	24	2.78/70.5
20/500	1 1/8-8UN	5.31/135	20	6.10/155	20	2.13/54	1 1/4-8UN	6.69/170	24	7.09/180	24	2.87/73
24/600	1 1/4-8UN	6.10/155	20	7.09/180	20	2.48/63	1 1/2-8UN	7.68/195	24	8.46/215	24	3.07/78

NPS / DN	LW8CB ASME 150 flange[1)]				
	Thread	L2	Qty	L3	Qty
28/700	3/4 UNC	5.118/130	4	5.512/140	4
30/750	3/4 UNC	4.330/110	8	5.512/140	8
32/800	3/4 UNC	4.724/120	8	5.299/160	8
36/900	7/8 UNC	5.118/130	8	5.299/160	8
40/1000	1 UNC	6.299/160	8	7.480/190	8

NPS / DN	LG8CB ASME 150 flange[1)]				
	Thread	L2	Qty	L3	Qty
28/700	3/4 UNC	3.937/100	40	5.118/130	40
30/750	3/4 UNC	3.937/100	44	5.118/130	44
32/800	3/4 UNC	4.330/110	48	5.905/150	48
36/900	7/8 UNC	4.724/120	44	5.905/150	44
40/1000	1 UNC	5.118/130	44	7.086/180	44

1) ASME B16.47 series B class 150

Table 4 Stud bolt dimensions, ISO flanges (mm)

LW_ DN	LW6L, ISO PN 20 flange			LW5M, ISO PN 50 flange				
	Thread	L	Qty	Thread	L	Qty	L1	Qty
80	M16	140	4	M20	160	8	Stud bolts pass the body in the neck area (length L)	
100	M16	150	8	M20	170	8		
125	M20	160	8	-	-	-	-	-
150	M20	160	8	M20	190	12	Stud bolts pass the body in the neck area (length L)	
200	M20	170	8	M24	220	12		
250	M24	190	12	M27	250	14	100	4
300	M24	200	12	M30	270	12	120	8
350	M27	230	12	M30	280	16	120	8
400	M27	250	16	M33	330	16	140	8

DN	LW6L, ISO PN 20 flange					LW5M, ISO PN 50 flange				
	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty
450	M30	290	16			M33	380	20	160	8
500	M30	320	16	140	8	M33	400	20	170	8
600	M33	360	16	150	8	M39	440	20	185	8

LG_ DN	LG6L, ISO PN 20 flange						LG5M, ISO PN 50 flange					
	Thread	L2	Qty	L3	Qty	L4	Thread	L2	Qty	L3	Qty	L4
80	M16	60	4	80	4	16	M20	70	8	90	8	16
100	M16	65	8	85	8	19	M20	75	8	95	8	19
125	M20	70	8	90	8	20	-	-	-	-	-	-
150	M20	70	8	90	8	20	M20	90	12	100	12	25
200	M20	75	8	95	8	23	M24	110	12	110	12	34
250	M24	85	12	105	12	26	M27	125	16	125	16	42
300	M24	90	12	110	12	30	M30	135	16	135	16	45
350	M27	105	16	125	16	35	M30	140	20	140	20	56
400	M27	115	16	135	16	38	M33	160	20	170	20	61

DN	LG6L, ISO PN 20 flange						LG5M, ISO PN 50 flange					
	Thread	L2	Qty	L3	Qty	L4	Thread	L2	Qty	L3	Qty	L4
450	M30	135	16	155	16	47	M33	160	24	170	24	70.5
500	M30	135	20	155	20	54	M33	165	24	175	24	73
600	M33	150	20	175	20	63	M39	185	24	205	24	78

When mounting the valve it must be in a closed position and be carefully centred between the pipe flanges so that the turning disc does not touch the pipe edge or flange gaskets.

Use caution when installing valve with Spring-to-open actuator. Valve must be in closed position during installation if the disc exceeds the Face-to-face length. Energy supply for the actuator must be safely fastened and it cannot suffer damage or break off during the installation.

In case of sudden shutdown of the energy supply the valve will open unexpectedly due to pre-stressed spring package. This may cause significant harm to people and material around the valve.

In valves with certain nominal sizes some flange bolts do not pass the valve body. The valve body is thus equipped with holes, see Fig. 2 and Tables 2...4.

Ensure that the disc can turn to the open position after preliminary tightening of the flange bolts. The actuators of control valves can be equipped with position stops which usually only allow the disc to open 80°.

Lenght of stud bolts in Table 2 are based on:

- gasket thickness of 1.5 mm
- heavy nuts with washers
- flange thickness of weldneck flanges per DIN or ISO

Valve insulation

If necessary, the valve may be insulated. Insulation must not continue above the upper level of the valve body, see Figure 9.

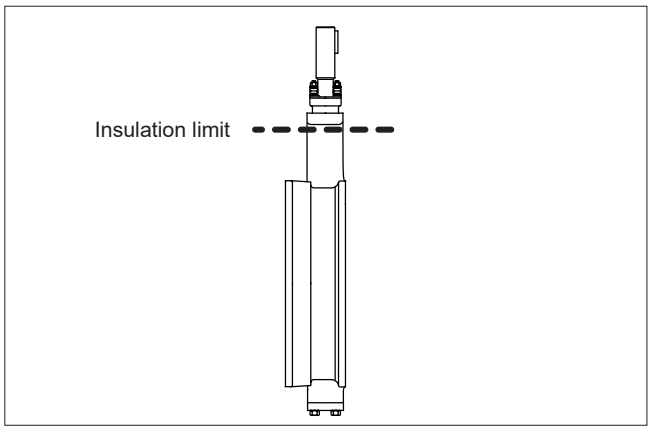


Fig. 9 Insulation of the valve

3.3 Actuator

When installing the actuator on the valve, make sure that the valve package functions properly. See instructions for installing in Section 6.

Observe the space needed for removal of the actuator.

The upright position is recommended for the actuator cylinder.

The actuator must not touch the pipeline, because pipeline vibration may damage it or interfere with its operation.

In some cases, e.g. when a large-size actuator is used or when the pipeline vibrates heavily, supporting the actuator is recommended.

Please contact Valmet for further information.

4. COMMISSIONING

Ensure that no dirt or foreign objects are left inside the valve or pipeline. Flush the pipeline carefully. Keep the valve 30-40° open during flushing.

When starting up the pump, ensure that the valve in the pipeline is closed or, at the very most, 20° open.

A waterhammer, which follows the start-up of high-capacity pumps, creates a torque peak in the disc. This can damage the pin connection between disc and shaft when the valve is 30-90° open.

The packing construction is live loaded. So tightening the packing screws during service is not necessary.

5. MAINTENANCE

CAUTION:
Observe the safety precautions mentioned in Section 1.8 before maintenance!

CAUTION:
When handling the valve or the valve package as a whole, bear in mind the weight of the valve or the entire package.

CAUTION:
For safety reasons the retaining plates MUST always be installed according to Section 5.3.

5.1 General

Although Neles valves are designed to work under severe conditions, proper preventative maintenancecan significantly help to prevent unplanned downtime and in real terms reduce the total cost of ownership. Valmet recommends inspecting the valves at least every five (5) years. The inspection and maintenance interval depends on the actual application and process condition. The inspection and maintenance intervals can be specified together with your local Valmet experts. During this periodic inspection the parts detailed in the Spare Part Set should be replaced. Time in storage should be included in the inspection interval.

Maintenance can be performed as presented below. For maintenance assistance, please contact your local Valmet office. The part numbers in the text refer to the exploded view and to the parts list in Section 9, unless otherwise stated.

NOTE:
When sending goods to the manufacturer for repair, do not disassemble them. Clean the valve carefully and flush the valve internals.

For safety reasons, inform the manufacturer of the type of medium used in the valve (include material safety datasheets (MSDS).

NOTE:
In order to ensure safe and effective operation, always use original spare parts to make sure that the valve functions as intended.

NOTE:
For safety reasons, replace pressure retaining bolting if the threads are damaged, have been heated, stretched or corroded.

5.2 Removing the valve from the pipeline

CAUTION:
Do not dismantle the valve or remove it from the pipeline while the valve is pressurized!

It is generally most convenient to detach the actuator and its auxiliary devices (see Section 6), before removing the valve from the pipeline. If the valve package is small or difficult to access, it may be more practical to remove the entire package at the same time.

Ensure that the valve is not pressurized and the pipeline is empty. Ensure that the medium cannot flow into the section where servicing is to take place. The valve must be in a closed position when removing.

Support the valve carefully with a hoist. Place ropes carefully and unscrew the pipe flange bolts. Ensure that the ropes are positioned correctly. Lift valve correctly (see Fig. 3).

5.3 Replacing the gland packing

CAUTION:
Do not dismantle the valve or remove it from the pipeline while the valve is pressurized!

PTFE V-rings are used as a standard gland packing and graphite rings for high temperature constructions. The packing construction is live loaded as standard.

The gland packing (20) must be changed if leakage occurs even after the hex nuts (25) have been tightened as recommended.

- Make sure the valve is not pressurized.
- Unfasten the nuts (25) and remove the disc spring (TA-Luft) sets (43), the retaining plates (42) and the gland (9).
- Remove old packing rings (20). Do not damage the surfaces of the packing ring counterbore and shaft. It is not necessary to change anti-extrusion ring (22).
- Clean the gland packing and packing ring counterbore. Install new set of packings (V-ring or graphite). Slip the rings onto the shaft. Ensure that there are no burrs in the keyway groove which could damage the packing.
- Install the gland.
- Mount the retaining plates with the text UPSIDE on top (see Fig. 10).

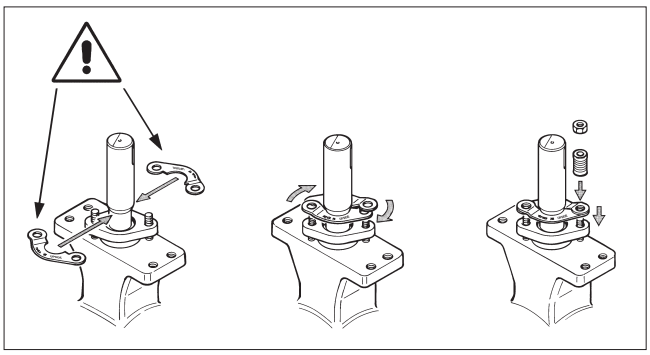


Fig. 10 Mounting the retaining plate

- Mount the disc spring sets.
- Place the nuts on the studs.
- Pre-compress the gland packing by tightening the nuts with a tool until the disc springs have value of compression (h_1–h_2) as in Table 5.
- Carry out 3…5 operation cycles with the valve. Suitable range of movement is about 80 %.
- It is not necessary to fully close or open the valve during the operation.
- Unfasten the nuts and disc springs.
- Measure the height h1 of the disc springs and use these values as a basis when defining the final height of the springs (as compressed condition).
- Re-install the disc springs and tighten the nuts with the tool. Tighten the nuts until the set value of compression (h_1–h_2) of disc springs is achieved, see Table 5.

Table 5 Tightening of gland packing

LW6L, LG6L, LW7L, LG7L	LW8M, LG8M, LW5M, LG5M	Spring set dia	Thread	Compression (h_1–h_2), mm	
				Packing ring material	
DN	DN	mm	M	Graphite + PTFE	PTFE
80	80	20	M8	2.0	1.0
100, 125, 150	100, 125	20	M8	2.5	1.5
200	150	25	M10	2.5	1.5
250		25	M10	3.0	1.5
300	200	25	M10	3.0	2.0
350		25	M10	3.0	2.0
400	250	35.5	M14	4.0	3.0
	300	35.5	M14	4.5	3.0
	350, 400	35.5	M14	4.5	3.0
450		35.5	M14	4.5	2.5
500		35.5	M14	4.5	3.0
600	450, 500	40	M16	5.0	3.0
	600	40	M16	5.5	3.5

LW8CB, LG8CB	---	Spring set dia	Thread	Compression (h_1–h_2), mm	
				Packing ring material	
DN	DN	mm	M	Graphite + PTFE	PTFE
700	--	40	M18	5.0	3.0
750	--	40	M18	5.0	3.0
800	--	40	M18	5.,5	3.5
900	--	50	M20	6.0	4.0
1000	--	50	M20	6.5	4.0

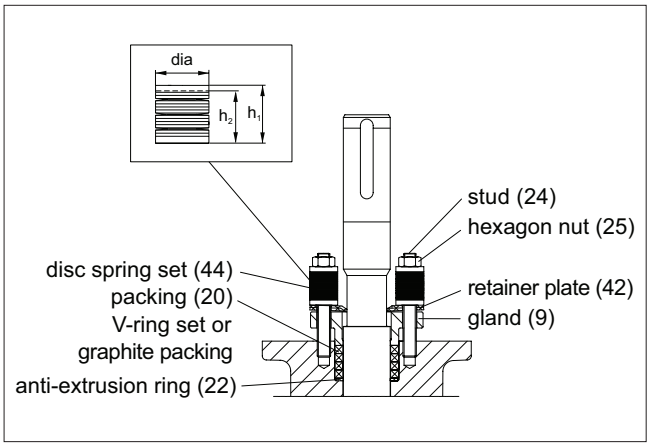


Fig. 11 Gland packing

- If the leakage still occurs when the valve is pressurized, re-tighten the nuts but don't exceed the values in the Table 5 by 50 % or do not fully compress the disc springs.

5.4 Valve leakage

Valve leakage is not always caused by a damaged seat ring or disc. The reason can also be that the disc is not in the closed position.

- Check the position of the actuator relative to the valve. The screws may be loose or the bracket damaged.
- Check the adjustment in the closed position (see Section 6.4).

The marking line parallel to the disc on the valve shaft head shows roughly the closed position of the disc (see Fig. 12).

Pressure shocks can cause loosening of the pin connection between disc and shaft; consequently the shaft moves while the disc remains in place and this prevents full closing of the disc.

If the reason for the leakage does not become apparent after doing the above, the valve must be disassembled for replacing the parts.

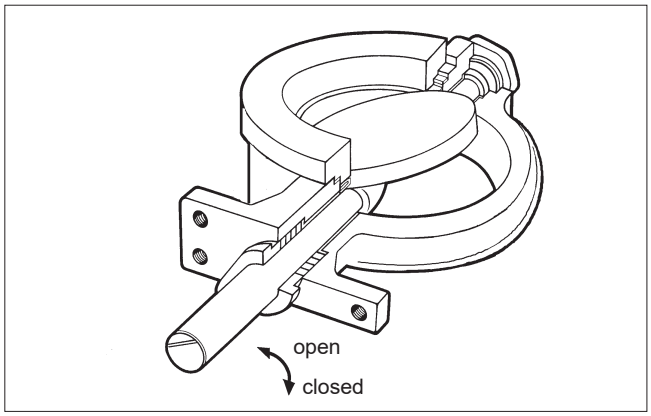


Fig. 12 Open and closed positions of the valve

5.5 Replacing the seat ring

CAUTION:
Do not dismantle the valve or remove it from the pipeline while the valve is pressurized!

- Ensure that the valve is not pressurized.
- Remove the valve from the pipeline. The valve must be in a closed position during removal.
- Follow the lifting methods shown in Section 3.
- Remove the clamp ring (2) by untightening the screws (27).
- Remove the old body seal (19) and the seat ring (4). Change the seat ring if it is damaged.
- Clean all the surfaces of the seats and check the surface of the seat ring.
- Check also the condition of the disc. A damaged disc must be changed (see Section 5.6).
- Check the condition of the pin connection. Repair it if necessary (see Section 5.6).
- Mount a new, self-adhesive body seal (19) into the body. The surface must be clean and free of grease. Handle the ends of the seal according to Fig. 13.
- Spray a thin layer of dry lubricating fluid, e.g. Molykote 321R or equivalent, into the seat groove, surfaces of the clamp ring and seat ring.
- Centre the seat ring (4) carefully into its groove and turn the disc to maintain light contact with the seat.

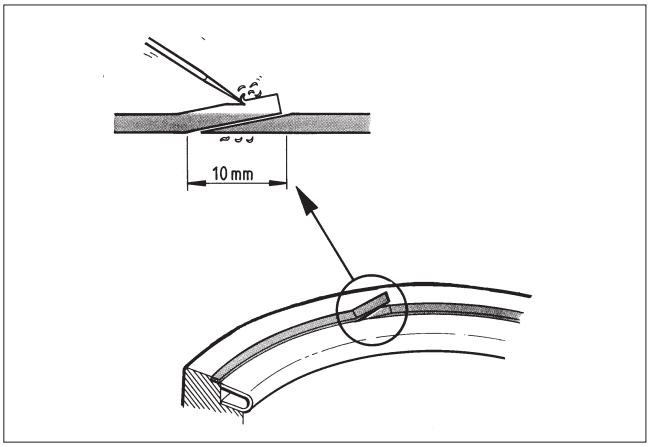


Fig. 13 Mounting the body seal

- Mount the clamp ring and tighten the screws (27) lightly.
- Turn the disc slightly open and pull it back to set the seat into the proper position.
- Tighten the screws (27) crosswise and evenly. Recommended torque values for screws are listed in Table 6. An unevenly tightened flange may damage the seat ring. The screw heads must be below the flange surface in lug type valves.

Table 6 Clamp ring/blind flange screw torque, Nm +/- 10 %

Screw mm/(UNC)	Clamp ring	Blind flange
M6, 1/4	14	11
M8, 5/16	19	15
M10, 3/8	38	29
M12, 1/2	66	51
M14, 5/8	100	90
M16, 5/8	160	123
M20, 3/4	310	240
M24, 1	540	416
M30, 1 1/8	900	600

- Check the position between the seat ring and the disc. The valve closes clockwise (see Fig. 12).
- Mount the actuator into the valve. Adjust the closed position limit and check the open position limit (see Section 6.4).

5.6 Replacing the disc, shafts and bearings

Disassembling the valve

The pin connection of the disc must be opened by drilling for changing the disc (3), shafts (11, 12) and bearings (15, 16).

- Remove the valve from the pipeline and the actuator from the valve.
- Remove the clamp ring (2) and seat ring (4) according to section 5.4.
- Set the valve horizontally on a sturdy surface so that the flat side of the disc lays against the surface (see Fig. 14).
- Drill the holes carefully to the centre of the pins (14). Choose a drill 0.2-0.5 mm smaller than the diameter of the pin.
- Drill the holes deep, but not enough to reach the disc.
- Pull the pins out.
- Dismantle the gland packing including anti-extrutionring (22) and sheet ring (21) according to Section 5.3.
- Detach the screws (26) and the blind flange (10) and remove the gasket (18).

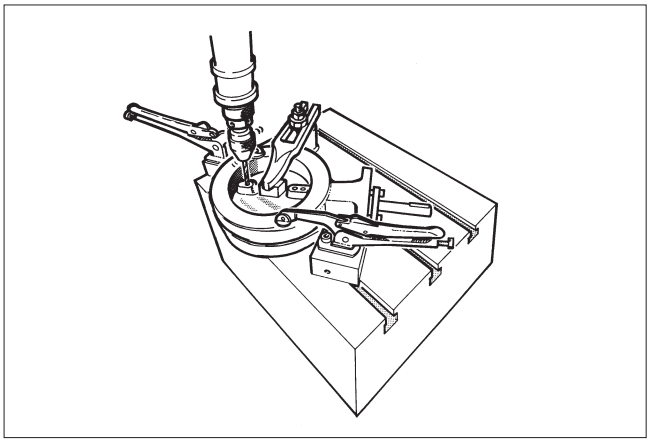


Fig. 14 Drilling the pins

- Place rubber strips or other protection between the disc edge and the body and remove the shafts (see Fig. 15).

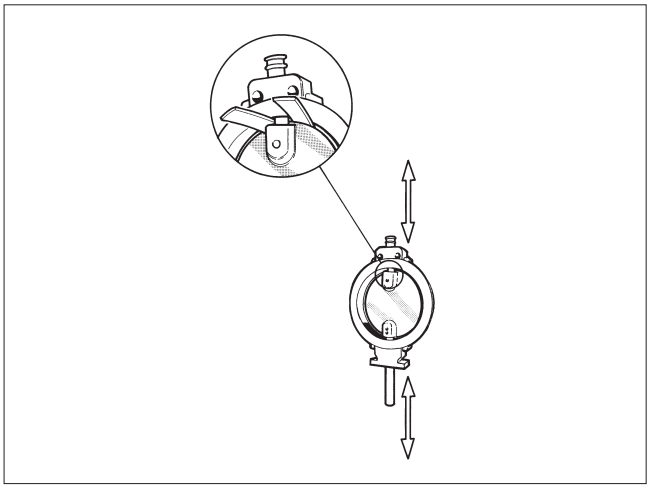


Fig. 15 Protecting the disc during disassembly and assembly

- Remove the bearings (15, 16).
- Clean and check all parts carefully.

5.7 Assembling the valve

- Replace damaged parts with new ones.
- Set the disc and the shaft together beforehand. In case the pin holes have been damaged during removal of the old pins the holes can be drilled to a larger pin size. File off any burrs from the shafts.

The bearing material of the standard construction valves is PTFE-impregnated stainless steel net.

The bearings for the high temperature valves (N and H-constructions) are cobalt alloy bushings which are mounted into the body together with the shafts.

- Mount the bearings into the body (see Fig. 16).
- **High temperature-construction:** Mount the bearing into the shaft. Spray a thin layer of dry lubricating fluid, e.g. Molykote 321R or equivalent, into the inside surface of the bushing and the shaft bearing groove. Press the bushing with a tightening ring into the shaft bearing groove and fit the shaft with the bearings carefully into the body through the tightening ring (see Fig. 17).
- Place the disc horizontally on a surface so that the flat side of the disc lays against the surface. Lift the body around the disc so that the shaft bores are aligned with the bores in the disc. Protect the disc (see Fig. 15).
- Press the shafts into the disc drillings. Align the pin holes. The shaft (11) position against the disc must be according to Fig. 12

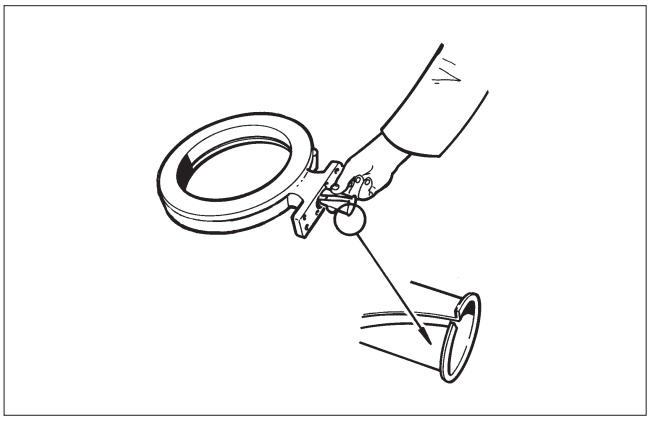


Fig. 16 Mounting the standard bearings

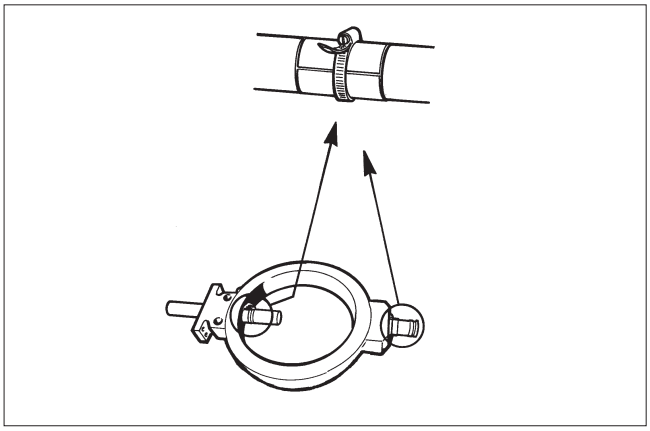


Fig. 17 Mounting the metal bearings

NOTE:
Use only pins supplied by the manufacturer!

NOTE:
The pins must be pressed with enough force to deform them so that the connection will be free from backlash.

- Support the disc well in a horizontal position during mounting of the pins. Push the new pins into the holes and press them in a press to final form (see Fig. 18). Use a smaller tool than the pin diameter. See Table 7 for forces.

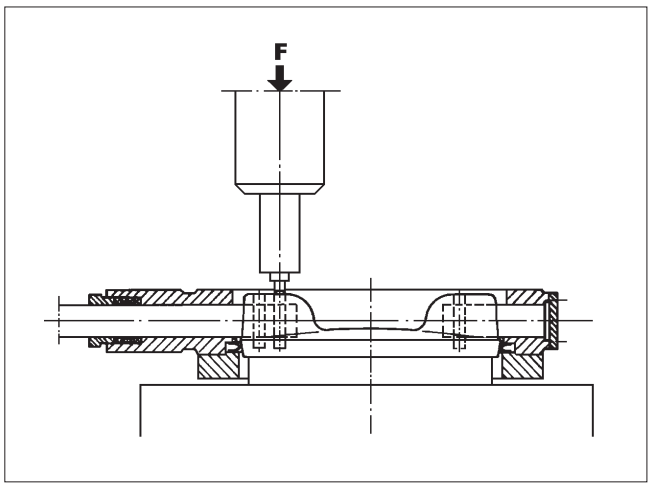


Fig. 18 Pressing the pins

Table 7 Pressing the pins, forces

Pin diameter, mm	Force, kN	Pin diameter, mm	Force, kN
5	45	15	280
6	60	20	500
8	80	25	780
10	125	30	1125
12	180		

- Install the gasket (18) and the blind flange (10). Screws of the blind flange must be tightened evenly. An unevenly tightened flange will damage the seat.
- Install the seat ring. See details in Section 5.5.
- Install the body seal (19) and the clamp ring (2). See details in Section 5.5.
- Install the gland packing (see Section 5.3).
- Check the contact line between the seat ring and the disc (see Fig. 12).

6. INSTALLING AND DETACHING THE ACTUATOR

6.1 General

CAUTION:
When handling the valve or the valve package, bear in mind its weight!

CAUTION:
The actuator must not be removed from the valve in a pipeline under pressure as result of dynamic torque!

CAUTION:
Do not detach a spring-return actuator unless a stop-screw is carrying the spring force!

NOTE:
Do not turn the disc more than 90° as this could damage the seat. The valve is so constructed that the disc operates only between 0-90°.

NOTE:
Before dismantling, carefully observe the position of the valve with respect to the actuator and positioner/limit switch so as to ensure that the package can be properly reassembled.

The actuator is factory-mounted on the valve and the stroke limit stop screws are adjusted in advance.

6.2 Installing the B1 series actuator

- Turn the valve to the closed position before mounting the actuator.
- Clean the shaft and the shaft bore and file off any burrs which could interfere with mounting. Protect the joint surfaces from corrosion, e.g. with Cortec VCI 369.
- If a bushing is required between the actuator shaft bore and the valve shaft, mount it first in the actuator shaft bore.
- The valve keyway is on the side opposite the flat side of the disc. The actuator shaft bore has two keyways set 90° apart.
- For double-acting cylinder actuator, B1C, and spring-return cylinder actuator, B1J (spring-to-close), choose the keyway which establishes the piston in its upper position (at the top end of the cylinder) when the valve is closed.
- In the spring-return cylinder actuator B1JA (spring-to-open), choose the keyway which establishes the piston in its lower position when the valve is open.
- Check visually that the actuator is correctly positioned relative to the valve. Tighten all the fastening screws as tightly as possible.
- Adjust the stop screws to the closed position (see Section 6.7).
- The opening angle in a control valve can be limited by a stop screw to 80°. The opening angle of a shut-off valve is 90°.
- When a shaft extension is required, the sizing of the shaft extension must be discussed with the valve manufacturer.

6.3 Detaching the B1 series actuators

- Disconnect the actuator from its power source; detach the air supply pipe and control signal cables or pipes from their connectors.
- Unscrew the bracket screws.
- Detach the actuator using a suitable extractor. The correct tool can be ordered from the manufacturer (see Fig. 19).
- Remove the bracket and coupling, if any.

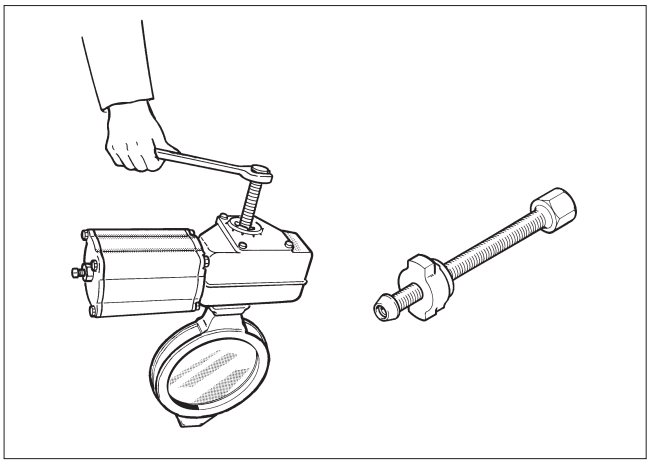


Fig. 19 Pressing the pins

6.4 Detaching and installing other actuator types

See actuator's manual for details.

6.5 Stop screw adjustment

General

Close the metal seated triple eccentric disc valve by turning the disc with a torque against the seat. Choose the torque from Tables 11 and 12 for adjusting the stop screw to the closed position of the actuator. Try not to exceed the given values since excessive torque would strain the seat and the joint between the disc and the shaft. Always readjust the stop screw after changing the seat and after mounting the actuator.

Actuators other than tabulated

Close the valve as per the tabulated torque Mc and adjust the stops accordingly. Note the increased torque created by the actuator while the valve is closed.

NOTE:
Valmet accepts no responsibility for compatibility of actuators not installed by Valmet.

Changing the mounting position

CAUTION:
The actuator must not be removed from the valve in a pipeline under pressure as result of dynamic torque!

Always remove the actuator from the valve shaft before mounting it into another key groove. Readjust the closed position limit as instructed.

If manually operated, the valve should close when the handwheel is turned clockwise. In a double-action cylinder, the piston must be in the upper position of the cylinder when the valve is closed. In this position the actuator creates maximum torque. **Do not turn the disc more than 90° as this could damage the seat.**

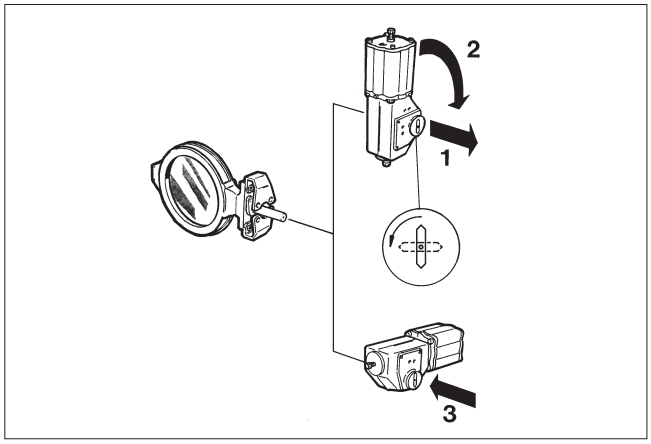


Fig. 20 Changing the mounting position

Double-acting cylinder actuator B1C

- Apply the tabulated shut-off pressure Pc to the air connection at the cylinder base.
- With the stop screw removed, check through the air connection hole that the piston does not touch the cylinder end. If it does, loosen the bracket screws and turn the actuator clockwise to increase the adjusting margin.
- Turn the closed position stop screw until it touches the piston, then turn back 1/4 turn and lock up. An O-ring is used for leakproofing the stop screw.
- An extra long screw is needed for opening angles < 80°.

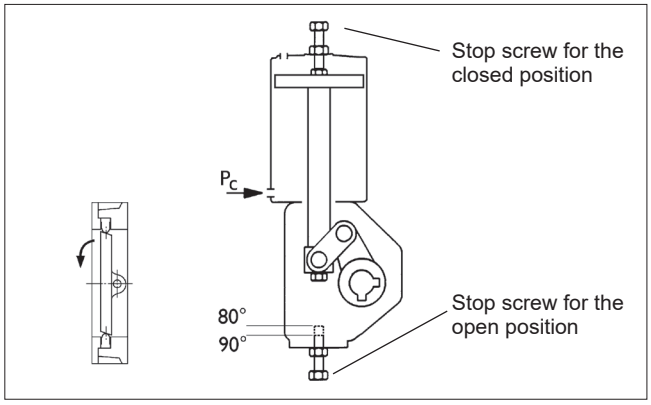


Fig. 21 Cylinder actuator, series B1C

Double-acting diaphragm actuator EC

Follow instructions given in Section 6.7.4. See also Fig. 21.

Spring-return cylinder actuator B1J

“Spring-to-close”

- Before mounting the cylinder, screw in the closed position stop screw completely.
- The table indicates *) spring when the spring-created torque does not exceed the maximum permitted closing torque Mc. Otherwise, apply the tabulated pressure Pc into the air connection at the cylinder end against the spring force. **The stop screw must not be removed when the cylinder is pressurized!** Open the stop screw until it does not touch the piston.
- Turn the closed position stop screw until it touches the piston, then turn back 1/4 turn and lock up. An O-ring is used for leakproofing the stop screw.
- After adjusting, check the adjusting margin through the air connection hole. The piston must not touch the cylinder end. If necessary, increase the margin by loosening the bracket screws and turning the actuator clockwise.
- An extra long screw is needed for opening angles < 80°.

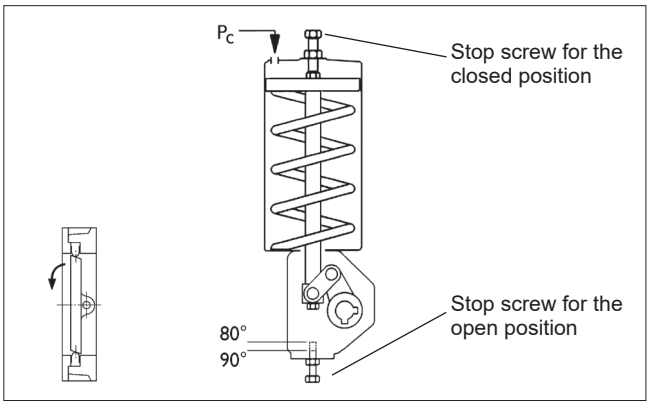


Fig. 22 Cylinder actuator, series B1J

Spring-return cylinder actuator B1JA

“Spring-to-open”

- The actuator being unpressurized the valve is open. Unscrew the close limit stop screw (actuator housing). Apply tabulated shut-off pressure Pc to the air connection at the cylinder bottom end against the spring force to close the valve.
- Check through the stop screw hole that the piston rod does not touch the cylinder top end. If it does, loosen the bracket screws and turn the actuator clockwise to increase the adjusting margin.
- Turn the closed position stop screw until it touches the piston, then turn back 1/4 turn and lock up. An O-ring is used for leakproofing the stop screw.
- An extra long screw is needed for opening angles < 80°.

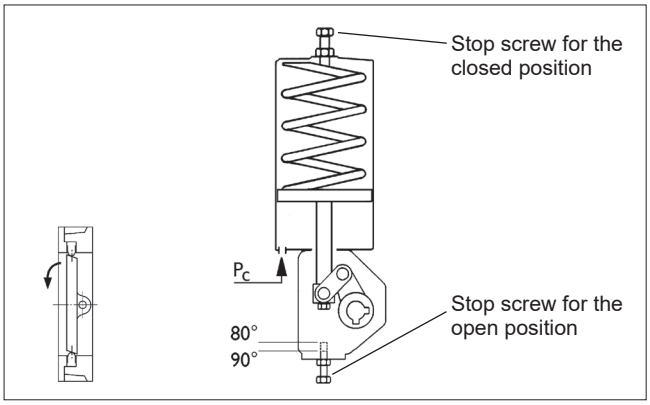


Fig. 23 Cylinder actuator, series B1JA

M-series operator

- Close the valve as per the tabulated primary torque M1 (handwheel torque) given in Tables 11 and 12.
- Tighten the closed position stop screw until it touches the linkage, then turn back 1/4 turn and lock up with Loctite 225.

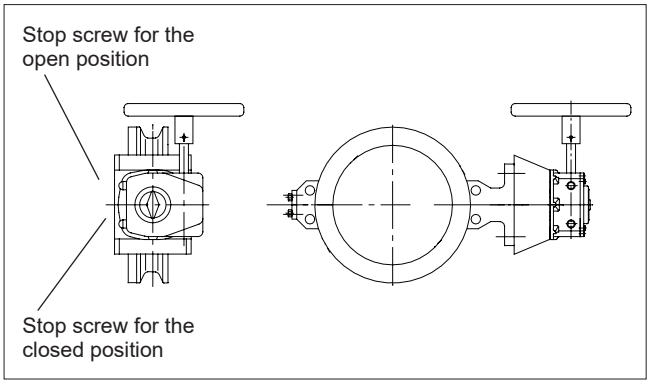


Fig. 24 Actuator, series M

Hand lever RH

- Mount the hand lever on the valve, but do not fasten hex screws (A). Turn the lever using force F in Table 10.
- When closing torque is applied, turn the housing (B) cog of the closing limit to contact with the lever arm. Fasten hex screws (A).

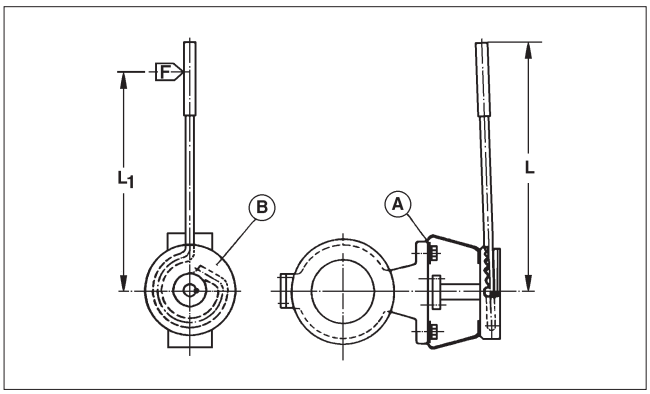


Fig. 25 Hand lever, series RH

Table 8 Hand lever RH, adjustment values

Size	L	L1	Torque		Force	
DN	mm	mm	Nm	Lbf ft	N	Lbf
80	400	350	40	30	115	26
100	400	350	70	52	200	45
125	400	350	100	74	285	63
150	500	450	135	100	300	67

Electric operator

Instructions for adjustment are given in a separate leaflet, code D304568, which is available from the manufacturer.

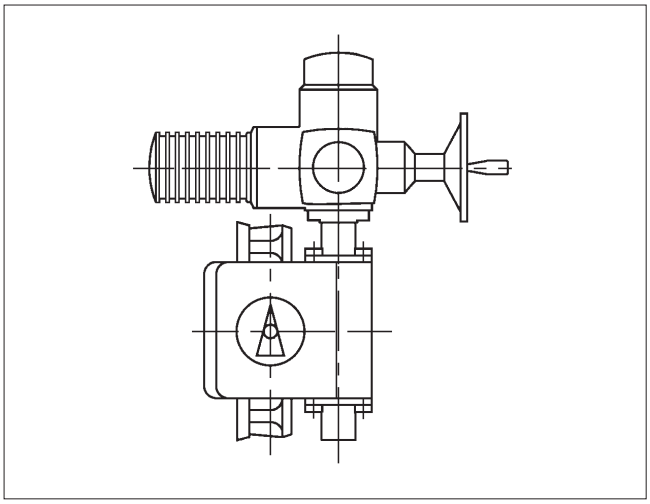


Fig. 26 Electric operator

7. TROUBLE SHOOTING TABLE

The following Table 11 lists malfunctions that might occur after prolonged use.

Table 9 Trouble shooting

Symptom	Possible fault	Recommended action
Leakage through a closed valve	Wrong stop screw adjustment of the actuator	Adjust the stop screw for closed position
	Faulty zero setting of the positioner	Adjust the positioner
	Damaged seat	Replace seat
	Damaged closing member	Replace the closing member
	Closing member in a wrong position relative to the actuator	Select the correct keyway in the actuator
Leakage through body joint	Damaged gasket	Replace the gasket
	Loose body joint	Tighten the nuts or screws
Irregular valve movements	Actuator or positioner malfunction	Check the operation of the actuator and positioner
	Process medium accumulated on the sealing surface	Clean the sealing surfaces
	Closing member or seat damaged	Replace the closing member or seat
	Crystallizing medium has entered the bearing spaces	Flush the bearing spaces
Gland packing leaking	Gland packing worn or damaged	Replace the gland packing
	Loose packing	Tighten the packing nuts

8. TOOLS

No special tools are needed for servicing the valve. However, we recommend an extractor tool (ID-code table in actuator's IMO) for removing the actuator from the valve. The tool can be ordered from the manufacturer.

9. ORDERING SPARE PARTS

When ordering spare parts, always include the following information:

- type code, sales order number, serial number (stamped on a valve body)
- number of the parts list, part number, name of the part and quantity required

This information can be found from the identification plate or documents.

Table 10 Series LW6L, LW7L, LG6L and LG7L, closing torques

LW7, LW6	Mc	Mc	BC ja BJ	BC pc		BJ pc		BJA **) pc		BJK pc		BJKA **) pc		BJV pc		BJVA **) pc	
DN / SIZE	(Nm)	(lbf ft)	SIZE	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)
80 3”	45	33	6	2,5	36	0,1	1,45	3,8	55	*)spring		3,3	48	0,5	7,251887	4,5	65
			8	2,1	30	0,7	10	3,3	48	0,3	4	2,8	41	1,1	16	4	58
			10	1,6	23	1,1	16	2,8	41	0,7	10	2,2	32	1,6	23	3,4	49
100 4”	75	55	6	4,1	59	*)spring		4,7	68	*)spring		*)spring		*)spring		5,4	78
			8	3,4	49	0,2	3	3,8	55	*)spring		3,3	48	0,6	9	4,6	68
			9	2,1	30												
			10	1,9	28	0,9	13	3,1	45	0,5	7	2,6	38	1,4	20	3,7	54
			11	1,1	16												
125 5”	110	80	6	6	87												
			8	5	72	*)spring		4,5	65			3,8	55	*)spring		5,3	77
			9	3	43												
			10	2,4	35	0,6	9	3,4	49	0,2	3	2,9	42	1,1	16	4	58
			11	1,5	22												
			12	1,3	19	1,1	16	3	43	0,7	10	2,2	32	1,6	23	3,7	54
150 6”	150	110	6	8,2	119												
			9	4,1	59												
			10	3,3	48	0,2	3	3,8	55	*)spring		3,2	46	0,8	12	4,3	62
			11	2,1	30												
			12	1,6	23	0,9	13	3,1	45	0,5	7	2,6	38	1,5	22	3,9	57
200 8”	300	220	10	6,5	94	*)spring		5	72			4,4	64	*)spring		5,6	81
			11	4,2	61												
			12	3,3	48	0,2	3	3,8	55	*)spring		3,2	46	0,8	12	4,6	68
			13	2,1	30												
			16	1,6	23	0,9	13	3,1	45	0,5	7	2,6	38	1,3	19	3,8	55
250 10”	500	370	12	5,5	80	*)spring		4,6	67			4	58	*)spring		5,5	80
			13	3,5	51												
			16	2,8	41	0,5	7	3,6	52	0		3	43	1	14	4,3	62
			17	1,8	26												
300 12”	825	610	13	5,8	84												
			16	4,5	65	*)spring		4,2	61			3,6	52	0,3	4	5	73
			17	3	43												
			20	2,3	33	0,6	9	3,4	49	0,2	3	2,8	41	1,1	16	3,9	57
350 14”	1160	860	16	6,4	93	*)spring		4,9	71			4,3	62	*)spring		5,7	83
			17	4,2	61												
			20	3,3	48	0,3	4	3,7	54	*)spring		3,1	45	0,8	12	4,2	61
			25	1,7	25	0,9	13	3,1	45	0,5	7	2,6	38	1,4	20	3,6	52
400 16”	1650	1220	16	9,5	138			5,9	86			5,2	75	*)spring		6,8	99
			17	6	87												
			20	4,7	68	*)spring		4,2	61			3,6	52	0,3	4	4,7	68
			25	2,4	35	0,6	9	3,4	49	0,2	3	2,8	41	1,1	16	3,9	57
450 18”	2200	1620	20	6,3	91	*)spring		4,8	70			4,2	61	*)spring		5,3	77
			25	3,2	46	0,4	6	3,7	54	*)spring		3,1	45	0,9	13	4,2	61
			32	1,6	23	0,9	13	3,1	45	0,5	7	2,5	36	1,4	20	3,7	54
500 20”	2700	1990	25	3,9	57	0,1	1,45	3,9	57	*)spring		3,3	48	0,6	9	4,4	64
			32	1,9	28	0,8	12			0,4	6	2,7	39	1,3	19	3,8	55
600 24”	4400	3240	25	6,4	93	*)spring		4,8	70			4,2	61	*)spring		5,3	77
				3,2	46	0,4	6	3,7	54	*)spring		3,1	45	0,8	12	4,3	62

*) spring = spring torque not adequete to reach tightness according to ISO 5208 Rate D, BS 6755 Part 1 Rate D, ANSI/FCI 70.2 Class V, IEC 534-4 or MSS-SP72/1970
**) Adjust the supply pressure regulator to the pressure below. Do not exceed given value.

Table 11 Series LW8M, LG8M, LW5M and LG5M, closing torques

L8M, L5M	Mc	Mc	BC y BJ	BC pc		BJ pc		BJA **) pc		BJK pc		BJKA **) pc		BJV pc		BJVA **) pc	
DN/SIZE	(Nm)	(lbf ft)	SIZE	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)
80 3”	45	33	6	2,5	36	0,1	1,45	3,8	55,1	*)spring		3,3	48	0,5	7,2	4,5	65
			8	2,1	30	0,7	10	3,3	48	0,3	4	2,8	41	1,1	16	4	58
			10	1,6	23	1,1	16	2,8	41	0,7	10	2,2	32	1,6	23	3,4	49
100 4”	75	55	6	4,1	59	*)spring		4,7	68,2	*)spring		*)spring		*)spring		5,4	78
			8	3,4	49	0,2	3	3,8	55	*)spring		3,3	48	0,6	9	4,6	68
			9	2,1	30												
			10	1,9	28	0,9	13	3,1	45	0,5	7	2,6	38	1,4	20	3,7	54
			11	1,1	16												
125 5”	110	80	6	6	87												
			8	5	72	*)spring		4,5	65			3,8	55	*)spring		5,3	77
			9	3	43												
			10	2,4	35	0,6	9	3,4	49	0,2	3	2,9	42	1,1	16	4	58
			11	1,5	22												
			12	1,3	19	1,1	16	3	43	0,7	10	2,2	32	1,6	23	3,7	54
150 6”	230	170	10	5	72	*)spring		4,4	64			3,8	55	0,1	1	5	73
			11	3,2	46												
			12	2,5	36	0,5	7	3,5	51	0,1	1	2,9	42	1,1	16	4,3	62
			13	1,6	23												
			16	1,3	19	0,9	13	3	43	0,6	9	2,3	33	1,5	22	3,7	54
200 8”	460	340	11	6,4	93												
			12	5	72	*)spring		4,4	64			3,8	55	0,1	1	5,3	77
			13	3,2	46												
			16	2,5	36	0,5	7	3,5	51	0,1	1	2,9	42	1	14	4,2	61
			17	1,7	25												
			20	1,4	20	1	14	2,9	42	0,6	9	2,3	33	1,5	22	3,5	51
250 10”	800	590	13	5,6	81												
			16	4,4	64	*)spring		4,2	61			3,6	52	0,4	6	4,9	71
			17	2,9	42												
			20	2,3	33	0,7	10	3,3	48	0,3	4	2,8	41	1,2	17	3,8	55
300 12”	1250	920	17	4,6	67												
			20	3,6	52	0,2	3	3,8	55	*)spring		3,2	46	0,7	10	4,3	62
			25	1,8	26	0,8	12	3,2	46	0,4	6	2,6	38	1,3	19	3,7	54
			32	1	15												
350 14”	1750	1290	17	6,4	93												
			20	5	72	*)spring		4,3	62			3,7	54	0,2	3	4,8	70
			25	2,6	38	0,6	9	3,4	49	0,2	3	2,9	42	1,1	16	3,9	57
			32	1,3	19	1	14	2,9	42	0,6	9	2,3	33	1,5	22	3,6	52
400 16”	2500	1840	25	3,6	52	0,2	3	3,8	55	*)spring		3,2	46	0,7	10	4,3	62
			32	1,8	26	0,8	12	3,2	46	0,4	6	2,5	36	1,3	19	3,8	55
			40	0,9	13												
450 18”	3400	2510	25	4,9	71	*)spring		4,3	62			3,7	54	0,2	3	4,8	70
			32	2,4	35	0,6	9	3,4	49	0,2	3	2,8	41	1,1	16	4	58
			322			1	15	2,9	42	0,6	9	2,2	32	1,5	22	3,4	49
			40	1,2	17												
500 20”	3400	2510	25	5,2	75	*)spring		4,2	61	*)spring		3,6	52	*)spring		4,7	68
			32	2,6	38	0,6	9	3,4	49	*)spring		2,7	39	1	15	3,9	57
			322			1	15	3	44	0,6	9	2,3	33	1,4	20	3,5	51
			40	1,3	19												
600 24”	4100	3020	32	3,1	45	0,4	6	3,6	52	*)spring		2,9	42	0,8	12	4,1	59
			40	1,5	22												
			322			0,9	13	3,1	45	0,5	7	2,4	35	1,4	20	3,5	51
				0,8	12												

L_8CB	Mc		BC ja BJ	BC pc		BJ pc		BJA **) pc		BJK pc		BJKA **) pc		BJV pc		BJVA **) pc	
	(Nm)	(lbf ft)	SIZE	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)
700 28”	4400	3240	25	6,7	97	*)spring		4,8	70			4,2	61	*)spring		5,3	77
			32	3,3	48	0,4	6	3,7	54	*)spring		3,1	45	0,8	12	4,3	62
			40	1,6	23												
750 30”	6500	4790	32	4,9	71	*)spring		4,2	61			3,6	52	0,3	4	4,8	70
			322			0,6	9			0,2	3						
			40	2,4	35												
			50	1,2	17												
800 32”	8000	5900	32	6,1	88			4,6	67			4	58	*)spring		5,2	75
			322			0,5	7			*)spring							
			40	2,9	42												
			50	1,5	22												
900 36”	9400	6930	322			0,3	4			*)spring							
			40	3,5	51												
			50	1,8	26												
1000 40”	12600	9290	322			*)spring											
			40	4,6	67												
			50	2,4	35												

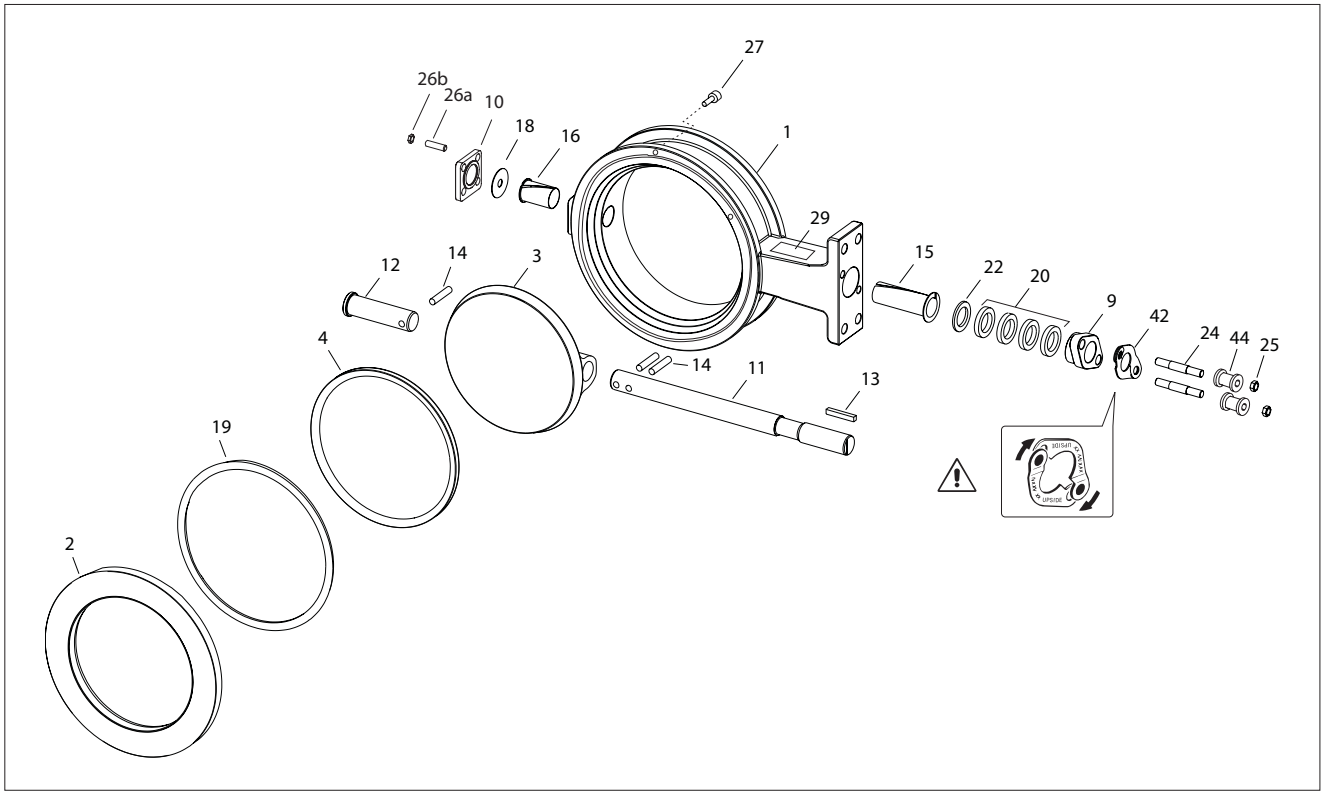
*) spring = spring torque not adequete to reach tightness according to ISO 5208 Rate D, BS 6755 Part 1 Rate D, ANSI/FCI 70.2 Class V, IEC 534-4 or MSS-SP72/1970
**) Adjust the supply pressure regulator to the pressure below. Do not exceed given value.

L_8CB	Manual operator	Input torque M1	
		(Nm)	(lbf ft)
700 28”	M16	166	122
		190	140
750 30”	M25	244	180
800 32”	M25	103	76
900 36”			
1000 40”			

LW7, LW6	Mc	Mc	Q-P	spring close		**) spring open		Manual operator	Input torque M1	
DN / SIZE	(Nm)	(lbf ft)	actuator	(bar)	(psi)	(bar)	(psi)		(Nm)	(lbf ft)
80 3”	45	33	QP2C	0,6	9	3,6	52	M07	4	3
			QP3C	1,1	16	3,2	46			
100 4”	75	55	QP2C			4,3	62	M07	7	5
			QP3C	0,8	12	3,5	51			
125 5”	110	80	QP3C	0,3	4	3,9	57	M07	10	7
			QP4C	1	14	3,3	48			
150 6”	150	110	QP3C			4,3	62	M07	14	10
			QP4C	0,8	12	3,5	51			
200 8”	300	220	QP4C			4,3	62	M07	26	19
			QP5C	0,8	12	3,5	51	M10	27	20
250 10”	500	370	QP5C	0,1	1	4,1	59	M10	43	32
								M12	44	32
300 12”	825	610						M12	69	51
								M14	51	38
350 14”	1160	860						M14	72	53
400 16”	1650	1220						M14	125	92
								M15	80	59
450 18”	2200	1620						M15	107	79
								M16	83	61
500 20”	2700	1990						M16	102	75
								M25	98	72
600 24”	4400	3240						M16	166	122

L8M, L5M	Mc	Mc	Q-P	spring close		**) spring open		Manual operator	Input torque M1	
DN/SIZE	(Nm)	(lbf ft)	actuator	(bar)	(psi)	(bar)	(psi)		(Nm)	(lbf ft)
80 3”	45	33	QP2C	0,6	9	3,6	52	M07	4	3
			QP3C	1,1	16	3,2	46			
100 4”	75	55	QP2C			4,3	62	M07	7	5
			QP3C	0,8	12	3,5	51			
125 5”	110	80	QP3C	0,3	4	3,9	57	M07	10	7
			QP4C	1	14	3,3	48			
150 6”	230	170	QP4C	0,3	4	3,9	57	M07	20	15
			QPC5	1	14	3,3	48	M10	21	15
200 8”	460	340	QPC5	0,3	4	3,9	57	M10	40	29
								M12	38	28
								M14	28	21
250 10”	800	590						M14	49	36
300 12”	1250	920						M15	61	45
								M16	44	32
350 14”	1750	1290						M15	85	63
								M16	62	46
400 16”	2500	1840						M16	94	69
								M25	91	67
450 18”	3400	2510						M16	128	94
500 20”	3400	2510						M16	128	94
600 24”	4100	3020						M16	155	114
								M25	149	110

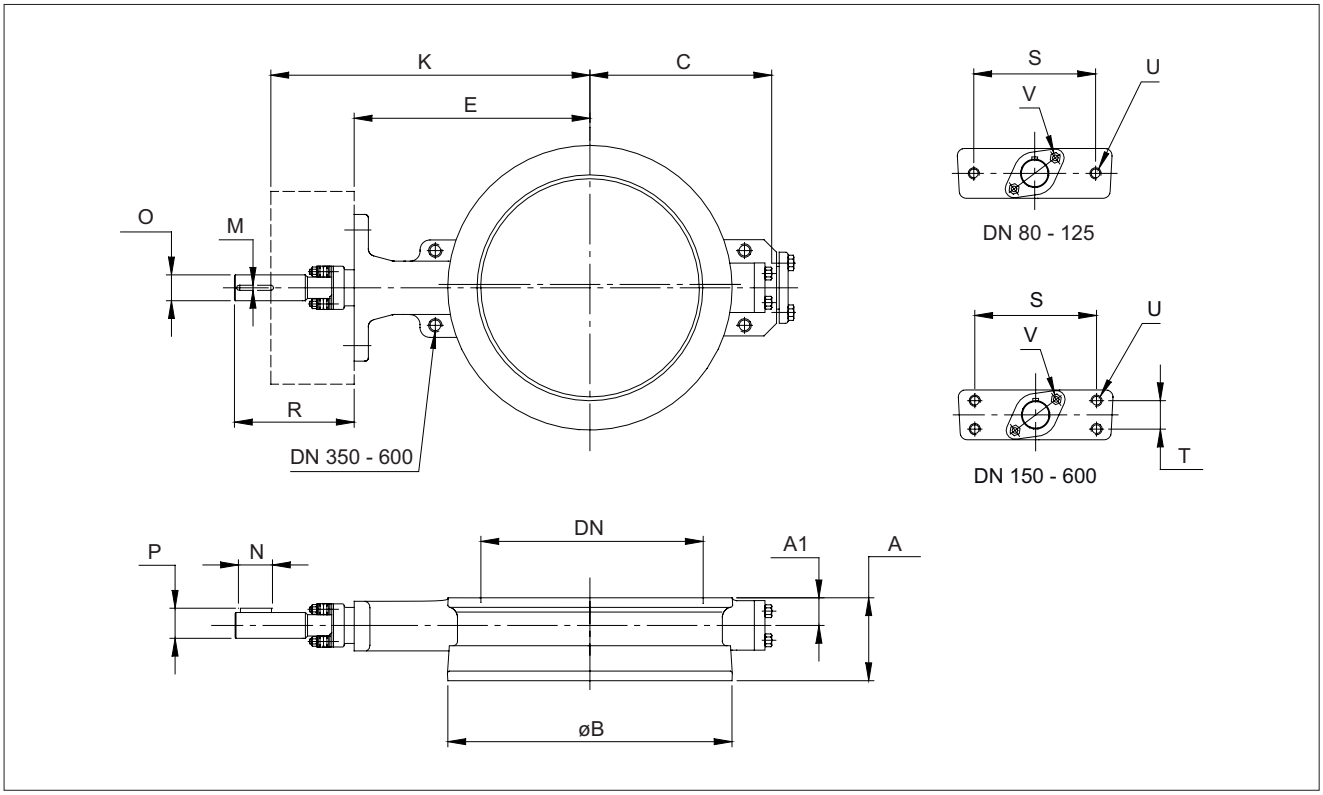
10. EXPLODED VIEW AND PARTS LIST



Item	Qty	Description	Spare part category
1	1	Body	
2	1	Clamp ring	
3	1	Disc	3
4	1	Seat ring	2
9	1	Gland	
10	1	Blind flange	
11	1	Drive shaft	3
12	1	Shaft	3
13	1	Key	3
14	3	Pin	3
15	1	Bearing	3
16	1	Bearing	3
18	1	Gasket	1
19	1	Body seal	1
20	1 set	Gland packing	1
22	1	Anti-extrusion ring	
24	2	Stud	
25	2	Hexagon nut	
26a		Stud	
26b		Hexagon nut	
27		Hexagon socket screw	
29	1	Identification plate	
42	2	Retaining plate	
44	2	Disc spring set	

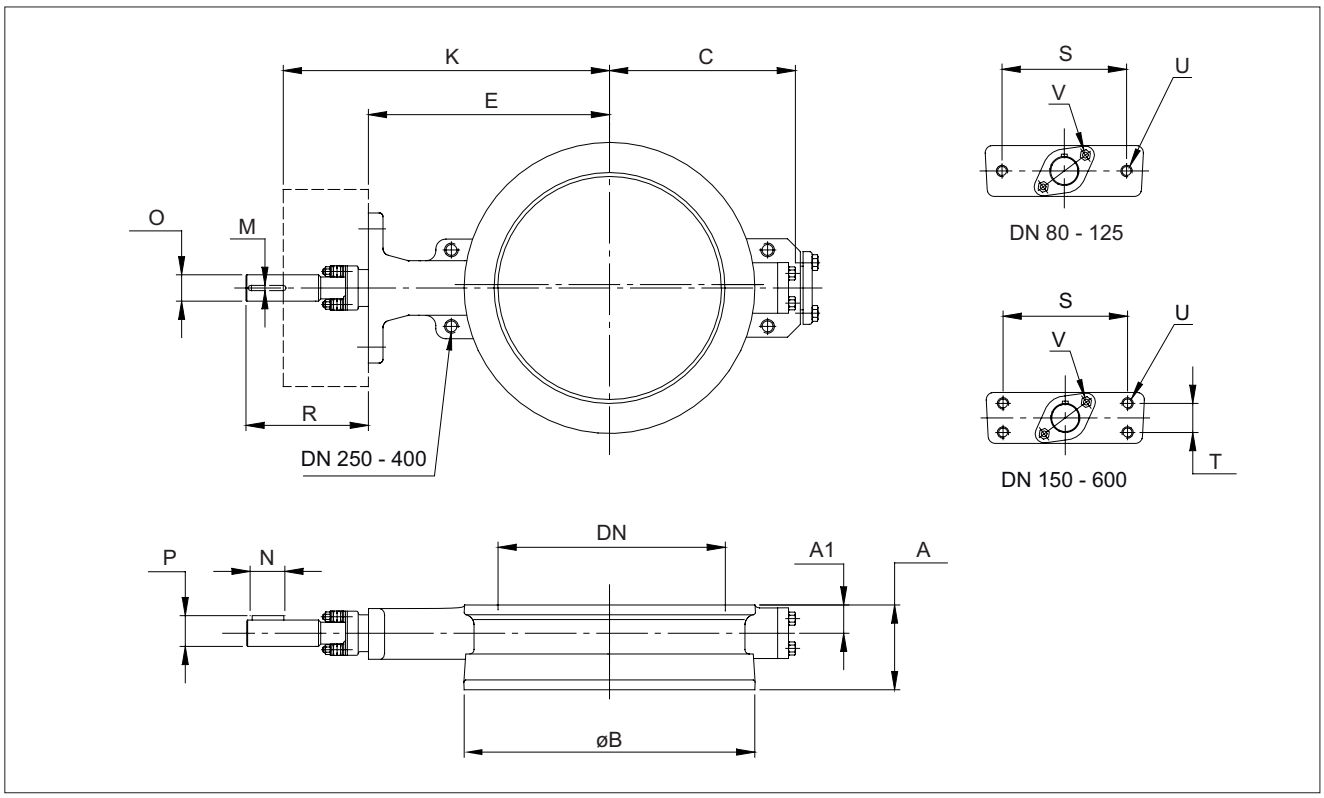
Spare part set category 1: Recommended soft parts, always needed for the repair. Delivered as a set.
Spare part category 2: Parts for replacing of the seat
Spare part category 3: Parts for replacing of the closing element
Spares for the full overhaul: All parts from the categories 1, 2 and 3

11. DIMENSIONS AND WEIGHTS



LW6LB & LW7LB, DN 80 – 600, DIMENSIONS

DN	Dimensions, mm									U Thread	V Thread	Dimensions, mm					Weight kg
	A1	LW6LB A (K1/API)	LW7LB A (K2)	ØB	C	E	K	S	T			O	R	M	N	P	
80	18	46/48	49	128	80	168	248	70	-	M10	M8	15	105	4.76	25	17.0	4
100	20	52/54	56	158	100	182	272	90	-	M12	M8	20	125	4.76	35	22.2	6
125	22	56/ -	64	190	135	205	295	90	-	M12	M8	20	125	4.76	35	22.2	9
150	23	56/57	70	212	150	227	317	110	32	M12	M8	20	125	4.76	35	22.2	15
200	24	60/64	71	268	160	257	347	110	32	M12	M10	25	135	6.35	46	27.8	20
250	29	68/71	76	320	210	290	400	130	32	M12	M10	30	160	6.35	51	32.9	30
300	32	78/81	83	378	275	320	430	130	32	M12	M10	35	160	9.52	58	39.1	45
350	36	92/92	92	438	290	355	475	160	40	M16	M10	40	188	9.52	68	44.2	70
400	44	102/102	102	485	320	405	525	160	40	M16	M14	45	200	12.7	80	50.4	95
450	47	114/114	114	532	375	380	520	160	55	M20	M14	50	230	12.7	90	55.5	130
500	56	127/127	127	585	415	440	580	160	55	M20	M14	55	230	12.7	90	60.6	175
600	72	154/154	154	685	465	505	685	230	90	M20	M14	70	300	19.05	119	78.15	305

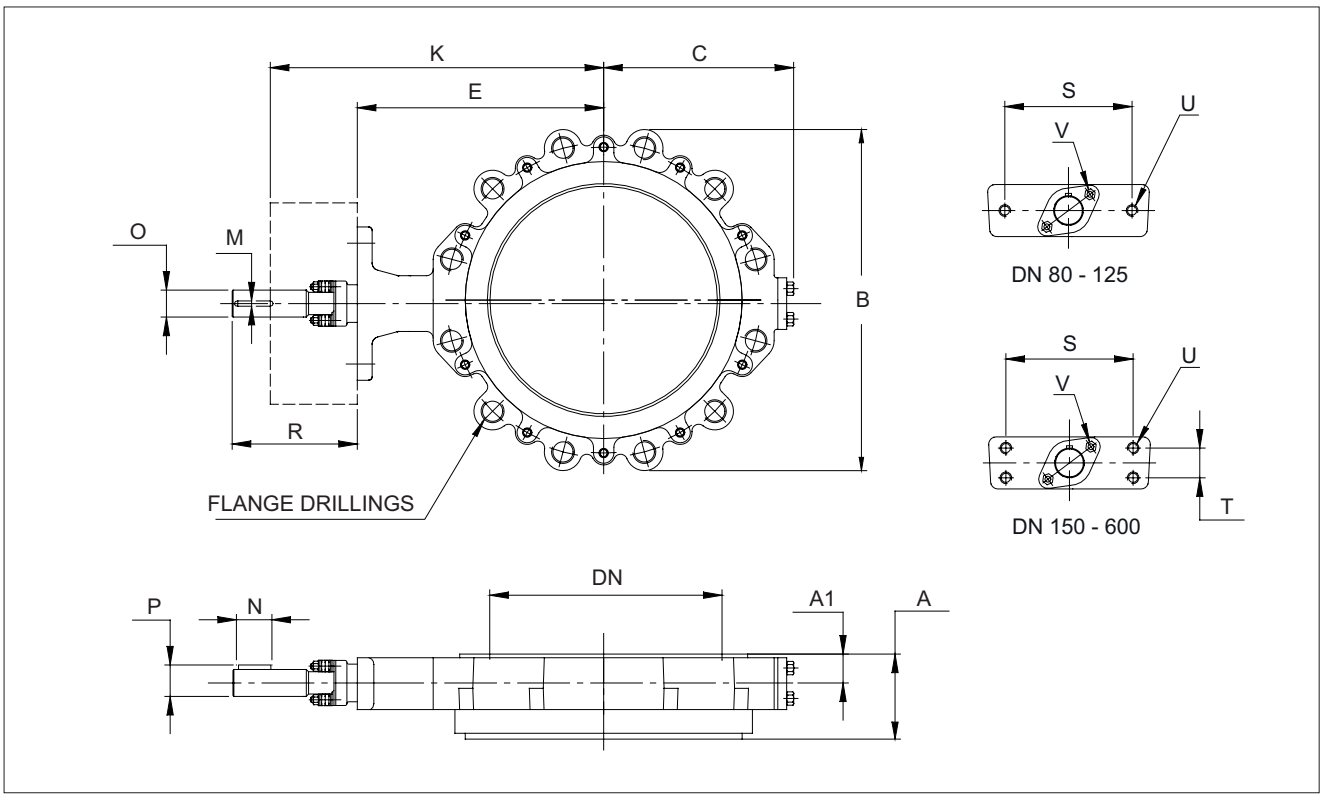


LW8MB, LW5MB, DN 80 – 600, DIMENSIONS

DN	Dimensions, mm									U Thread	V Thread	Dimensions, mm					Weight kg
	A1	LW8M A (K3)	LW5M A (API)	ØB	C	E	K	S	T			O	R	M	N	P	
80	18	64	48	128	80	168	248	70	-	M10	M8	15	105	4.76	25	17.0	4
100	20	64	54	158	100	182	272	90	-	M12	M8	20	125	4.76	35	22.2	6
125	20	70	56	158	100	182	272	90	-	M12	M8	20	125	4.76	35	22.2	6
150	27	76	59	218	145	232	322	110	32	M12	M10	25	135	6.35	46	27.8	20
200	34	89	73	276	205	274	384	130	32	M12	M10	35	165	9.52	58	39.1	38
250	41	114	83	335	260	320	440	160	40	M16	M14	45	200	12.7	80	50.4	60
300	46	114	92	395	300	360	500	160	55	M20	M14	50	230	12.7	90	55.5	85
350	57	127	117	450	330	400	540	160	55	M20	M14	55	230	12.7	90	60.6	105
400	66	140	133	505	370	440	580	160	55	M20	M14	55	230	12.7	90	60.6	125
450	72	152	149	554	410	415	595	230	90	M24	M16	70	299	19.05	119	78.25	225
500	73	152	159	610	445	440	620	230	90	M24	M16	70	298	19.05	119	78.25	255
600	83	178	181	700	5204	500	680	230	90	M24	M16	85	326	22.225	146	94.625	405

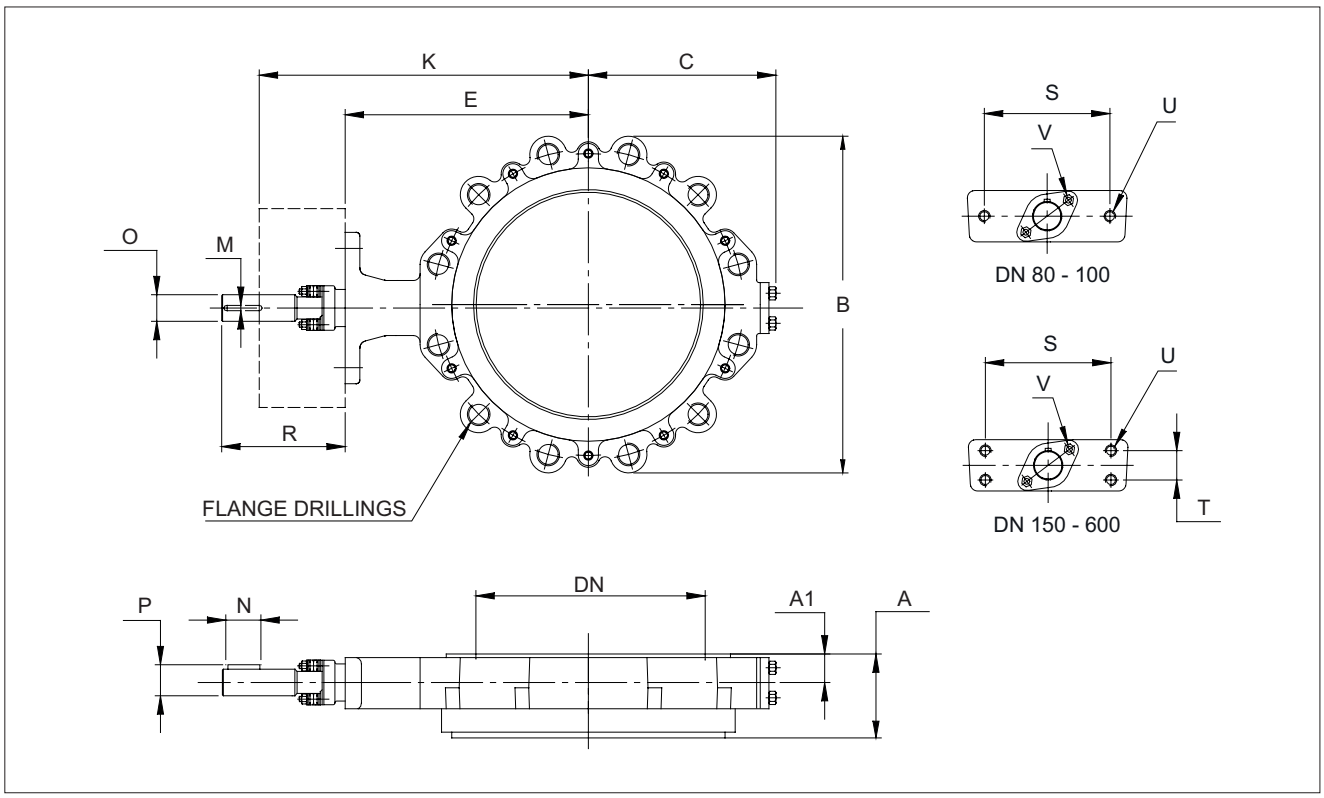
LW8C

LW8CB NPS/DN	A1	LW8CB A(K3)		ØB	C	E	K	S	T	U	V	O	R	M	N	P	Weight kg
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



LG6LB & LG7LB, DN 80 - 600, DIMENSIONS

DN	Dimensions, mm									U Thread	V Thread	Flange drillings								Dimensiones, mm					Weight kg
	A1	LG6LB A (K1/API)	LG7LB A (K2)	B	C	E	K	S	T			PN10		PN16		PN25		ISO PN20		O	R	M	N	P	
												Thread	Qty	Thread	Qty	Thread	Qty	Thread	Qty						
80	17	46/48	49	205	120	168	248	70	-	M10	M8	M16	8	M16	8	M16	8	M16	4	15	105	4.76	25	17.0	9
100	21	52/54	56	235	135	182	272	90	-	M12	M8	M16	8	M16	8	M20	8	M16	8	20	125	4.76	35	22.2	14
150	22	56/57	70	300	160	227	317	110	32	M12	M8	M20	8	M20	8	M24	8	M20	8	20	125	4.76	35	22.2	24
200	25	60/64	71	360	185	257	347	110	32	M12	M10	M20	8	M20	12	M24	12	M20	8	25	135	6.35	46	27.8	34
250	28	68/71	76	425	220	290	400	130	32	M12	M10	M20	12	M24	12	M27	12	M24	12	30	160	6.35	51	32.9	43
300	32	78/81	83	485	275	320	430	130	32	M12	M10	M20	12	M24	12	M27	16	M24	12	35	160	9.52	58	39.1	75
350	36	92/92	92	555	310	355	475	160	40	M16	M10	M20	16	M24	16	M30	16	M27	16	40	188	9.52	68	44.2	95
400	41	102/102	102	610	340	405	525	160	40	M16	M14	M24	16	M27	16	M33	16	M27	16	45	200	12.7	80	50.4	150
450	49	114/114	114	640	370	380	520	160	55	M20	M14	M24	20	M27	20	-	-	M30	16	50	230	12.7	90	55.5	205
500	56	127/127	127	730	415	440	580	160	55	M20	M14	M24	20	M30	20	M33	20	M30	20	55	230	12.7	90	60.6	297
600	65	154/154	154	835	465	505	685	230	90	M20	M14	M27	20	M33	20	M36	20	M33	20	70	300	19.05	119	78.15	446



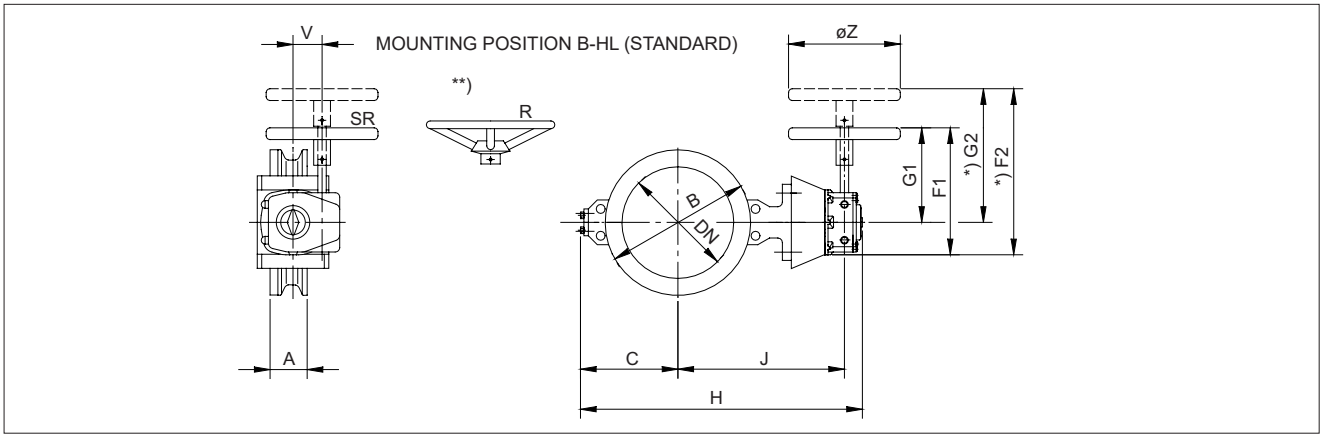
LG8M, LG5M DN80 - 600, DIMENSIONS

DN	Dimensions, mm									U Thread	V Thread	Flange drillings						Dimensions, mm					Weight kg
	A1	LG8MB A (K3)	LG5M A (API)	B	C	E	K	S	T			PN25		PN40		ISO PN50		O	R	M	N	P	
												Thread	Qty	Thread	Qty	Thread	Qty						
80	17	64	48	205	120	168	248	70	-	M10	M8	M16	8	M16	8	M20	8	15	105	4.76	25	17.0	9
100	21	64	54	235	135	182	272	90	-	M12	M8	M20	8	M20	8	M20	8	20	125	4.76	35	22.2	14
150	24	76	59	290	160	232	322	110	32	M12	M10	M24	8	M24	8	M20	12	25	135	6.35	46	27.8	25
200	34	89	73	365	205	274	384	130	32	M12	M10	M24	12	M27	12	M24	12	35	165	9.52	58	39.1	48
250	41	114	83	435	260	320	440	160	40	M16	M14	M27	12	M30	12	M27	16	45	200	12.7	80	50.4	90
300	46	114	92	500	300	360	500	160	55	M20	M14	M27	16	M30	16	M30	16	50	230	12.7	90	55.5	150
350	57	127	117	565	330	400	540	160	55	M20	M14	M30	16	M33	16	M30	20	55	230	12.7	90	60.6	200
400	62	140	133	649	370	440	580	160	55	M20	M33	M14	16	M36	16	M33	20	55	230	12.7	90	60.6	290
450	72.5	152	149	710	410	415	595	230	90	M24	M16	M33	20	M36	20	M33	24	70	299	19.05	119	78.25	382
500	75	152	159	770	445	440	620	230	90	M24	M16	M33	20	M39	20	M33	24	70	298	19.05	119	78.25	445
600	80	178	181	915	520	500	680	230	90	M24	M16	M36	20	M45x4	20	M39	24	85	326	22.225	146	94.625	725

LG8C

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

11.1 VALVE + MANUAL GEAR OPERATOR, M



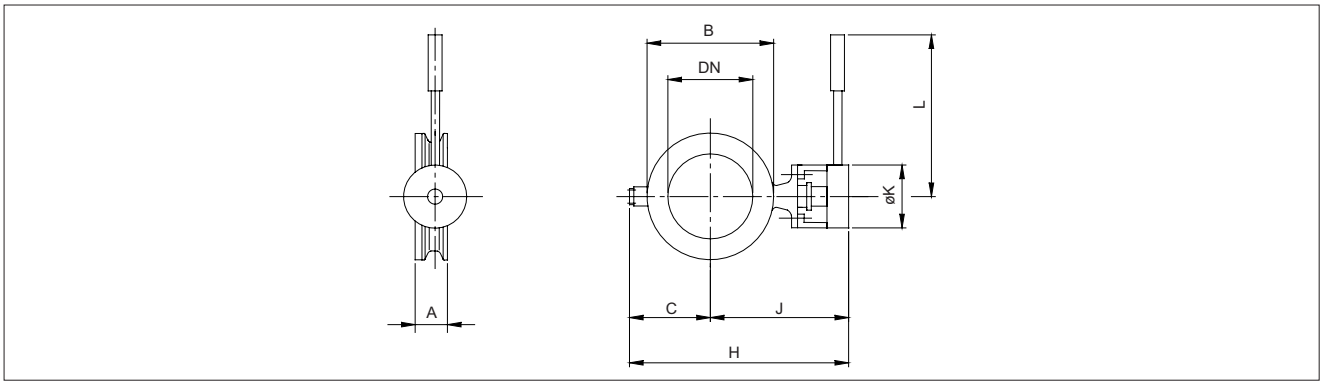
LW6LB, LW7LB + M series

VALVE	DN	OPERATOR/ ISO 5211	L_6	L_7	LW_			LG_			Dimensions, mm							LW_L-M	LG_L-M
			A(K1/API)	A (K2)	B	C	H	B	C	H	F1	G1	F2 *)	G2 *)	J	V	ØZ	kg	kg
LW6L / LG6L LW7L / LG7L	80	M07/F07	46/48	49	128	80	390	205	120	430	196	152	-	-	275	39	160	8	13
	100	M07/F07	52/54	56	158	100	435	235	135	470	196	152	-	-	299	39	160	10	18
	125	M07/F07	56/ -	64	190	135	495	270	145	505	196	152	-	-	322	39	160	13	24
	150	M07/F07	56/57	70	212	150	530	300	160	540	196	152	-	-	344	39	160	19	28
	200	M10/F10 or M10E/F10	60/64	71	268	160	580	360	185	605	227	169	297	239	387	52	200	26	40
	250	M12/F12 or M12E/F12	68/71	76	320	210	695	425	220	705	285	210	357	282	440	67	315	42	55
	300	M12/F12 or M12E/F12	78/81	83	378	275	805	485	275	805	378	279	435	354	480	90	315	65	95
	350	M14/F16 or M14E/F16	92/92	92	438	290	865	555	310	885	378	279	435	354	525	90	400	95	120
	400	M16/F16 or M16E/F16	102/102	102	485	320	970	610	340	990	549	391	642	466	575	154	600	140	195
	450	M15/F16	114/114	114	532	375	995	640	375	995	456	346	532	406	568	105	500	156.2	231.2
	500	M15/F16	127/127	127	585	415	1095	730	415	1095	456	346	532	406	568	105	500	201.2	323.2
	500	M16/F16	127/127	127	585	415	1120	730	415	1120	456	346	642	466	635	130	600	211.8	333.8
	600	M25/F16	154/154	154	685	465	1310	835	465	1310	597	412	-	-	744	182	600	365.8	506.8

LG8M, LG5M + M series

VALVE	DN	OPERATOR ISO 5211	L_8(K3) A	LW5M A (API)	LW_			LG_			Dimensions, mm							LW_M	LG_M
					B	C	H	B	C	H	F1	G1	F2 *)	G2 *)	J	V	ØZ	kg	kg
LW8M / LG8M LW5M / LG5M	80	M07/F07	64	48	128	80	390	205	120	430	196	152	-	-	275	39	160	8	13
	100	M07/F07	64	54	158	100	435	235	135	470	196	152	-	-	299	39	160	10	18
	150	M10/F10 or M10E/F10	76	59	218	145	540	290	160	555	227	169	297	239	327	52	200	26	31
	200	M14/F14 or M14E/F14	87	73	278	205	670	365	205	670	378	279	435	354	414	90	400	58	68
	250	M14/F16 or M14E/F16	114	83	335	260	800	435	260	800	378	279	435	354	490	90	400	80	110
	300	M15/F16 or M15E/F16	114	92	395	300	910	500	300	910	457	331	532	406	550	123	500	120	185
	350	M15/F16 or M15E/F16	127	117	450	330	980	565	330	980	457	331	532	406	590	123	500	140	235
	400	M15/F16 or M15E/F16	140	133	505	370	1060	650	370	1060	457	331	532	406	630	123	500	160	325
	450	M16/F16	152	149	554	410	1130	710	410	1130	456	346	642	466	650	130	600	261.8	418.8
	450	M25/F16	152	149	554	410	1165	710	410	1165	597	412	-	-	654	182	600	285.8	442.8
	500	M25/F16	152	159	610	445	1225	770	445	1225	597	412	-	-	679	182	600	315.8	505.8
	600	M25/F16	178	181	700	520	1360	915	520	1360	597	412	-	-	739	182	600	465.8	785.8

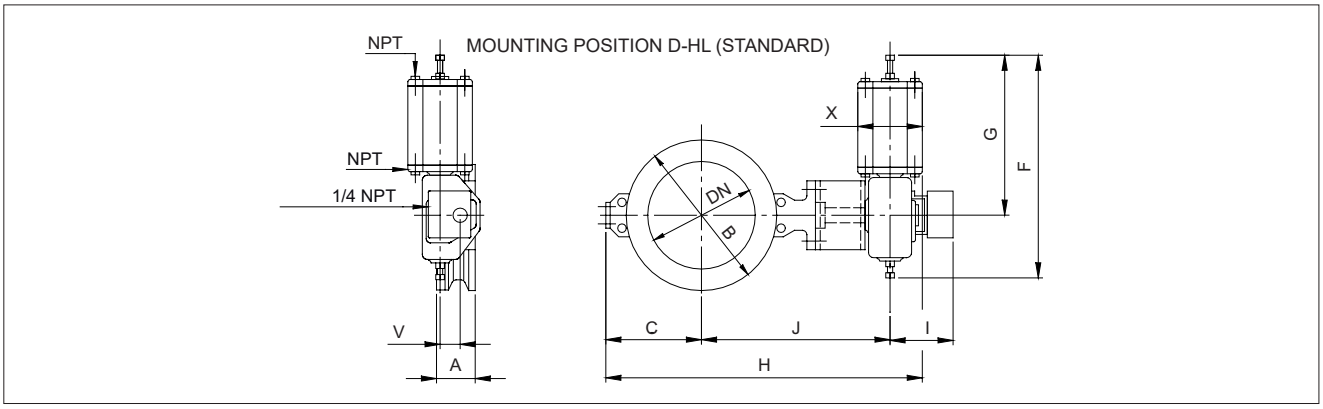
VALVE + HAND LEVER, RH



LW6LB, LW7LB + RH

Valve	DN	Handlever	L_6 (K1)	L_7 (K2)	LW_			LG_			Dimensions, mm			LW_L-RH	LG_L-RH
			A	A	B	C	H	B	C	H	J	K	L	kg	kg
LW6L / LG6L	80	RH415	49	49	128	80	355	205	120	395	275	100	400	5	10
	100	RH420	52	56	158	100	410	235	135	445	310	100	400	7	15
LW7L / LG7L	125	RH420	56	64	190	135	495	270	145	505	330	100	400	11	22
	150	RH520	56	70	212	150	530	300	160	540	370	130	500	17	26

12. VALVE + PNEUMATIC ACTUATOR, B1C



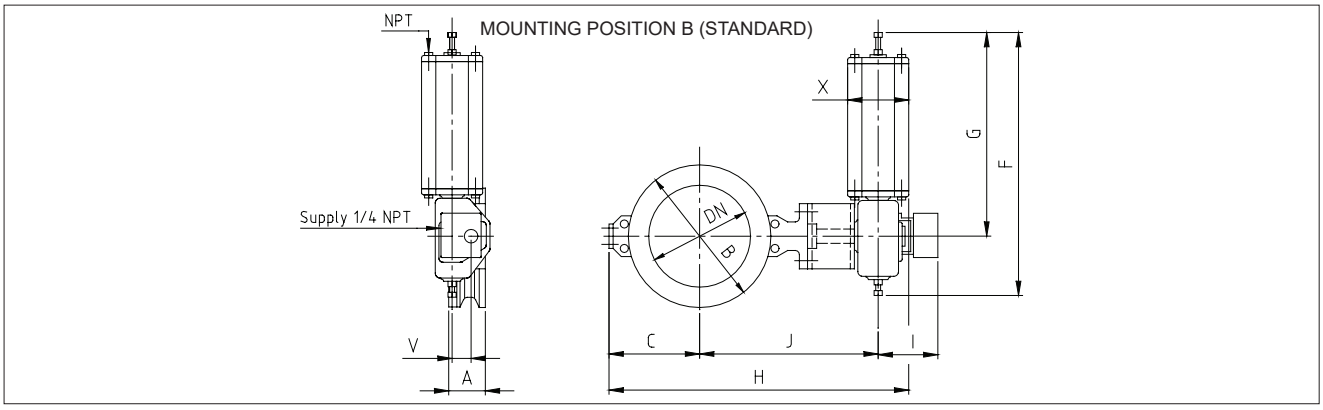
LW6LB, LW7LB + B1C

VALVE	DN	Actuator	L_6	L_7	LW_			LG_			Dimensions, mm						NPT	LW_L-B1C	LG_L-B1C
			A (K1 API)	A (K2)	B	C	H	B	C	H	F	G	I	J	V	X		kg	kg
LW6L / LG6L LW7L / LG7L	80	B1C9	46/48	49	128	80	445	205	120	485	450	315	220	307	43	110	1/4	20	25
	100	B1C9	52/54	56	158	100	490	235	135	525	450	315	220	331	43	110	1/4	22	30
	100	B1C11	52/54	56	158	100	510	235	135	545	535	375	225	337	51	135	3/8	28	36
	125	B1C9	56/ -	64	190	135	550	-	-	-	450	315	220	351	43	110	1/4	25	38
	125	B1C11	56/ -	64	190	135	570	-	-	-	535	375	225	360	51	135	3/8	31	44
	150	B1C9	56/57	70	212	150	585	300	160	595	450	315	220	376	43	110	1/4	34	43
	150	B1C11	56/57	70	212	150	605	300	160	615	535	375	225	382	51	135	3/8	40	49
	150	B1C13	56/57	70	212	150	640	300	160	445	650	640	445	240	398	175	3/8	55	64
	200	B1C11	60/64	71	268	160	645	360	185	670	535	375	225	412	51	135	3/8	45	59
	200	B1C13	60/64	71	268	160	680	360	185	705	640	445	240	428	65	175	3/8	60	74
	200	B1C17	60/64	71	268	160	715	360	185	740	785	555	255	443	78	215	1/2	83	97
	250	B1C13	68/71	76	320	210	785	425	220	795	640	445	240	481	65	175	3/8	71	84
	250	B1C17	68/71	76	320	210	820	425	220	830	785	555	255	496	78	215	1/2	94	107
	300	B1C13	78/81	83	378	275	880	485	275	880	640	445	240	511	65	175	3/8	86	116
	300	B1C17	78/81	83	378	275	915	485	275	915	785	555	255	526	78	215	1/2	110	140
	300	B1C20	78/81	83	378	275	935	485	275	935	880	590	270	545	97	215	1/2	128	158
	350	B1C17	92/92	92	438	290	975	555	310	995	785	555	255	571	78	215	1/2	135	160
	350	B1C20	92/92	92	438	290	995	555	310	1015	880	590	270	590	97	215	1/2	145	180
	350	B1C25	92/92	92	438	290	1040	555	310	1060	1075	725	310	613	121	265	1/2	215	240
	400	B1C20	102/102	102	485	320	1075	610	340	1095	880	590	270	640	97	215	1/2	180	235
	400	B1C25	102/102	102	485	320	1120	610	340	1140	1075	725	310	663	121	265	1/2	240	295
	450	B1C25	114/114	114	532	370	1160	640	370	1160	1075	725	310	658	121	265	1/2	261	336
	450	B1C32	114/114	114	532	370	1265	640	370	1265	1370	920	350	695	153	395	3/4	386	461
	500	B1C25	127/127	127	585	415	1265	730	415	1265	1075	725	310	718	121	265	1/2	306	428
	500	B1C32	127/127	127	585	415	1365	730	415	1365	1370	920	350	755	153	395	3/4	431	553
	600	B1C32	154/154	154	685	465	1525	835	465	1525	1370	920	350	860	153	395	3/4	561	702
	600	B1C40	154/154	154	685	465	1630	835	465	1630	1670	1150	370	910	194	505	3/4	751	892

LW8MB, LW5MB + B1C

VALVE	DN	Actuator	LW8M A(K3)	LW5M A (API)	LW_			LG_			Dimensions, mm						NPT	LW_-B1C	LG_-B1C
					B	C	H	B	C	H	F	G	I	J	V	X		kg	kg
LW8M / LG8M LW5M / LG5M	80	B1C9	64	48	128	80	445	205	120	485	450	315	220	307	43	110	1/4	21	26
	100	B1C9	64	54	158	100	490	235	135	525	450	315	220	331	43	110	1/4	23	31
	100	B1C11	64	54	158	100	510	235	135	545	535	375	225	337	51	135	3/8	29	37
	125	B1C9	70	56	190	135	550	-	-	-	450	315	220	354	43	110	1/4	26	-
	125	B1C11	70	56	190	135	570	-	-	-	535	375	225	360	51	135	3/8	32	-
	150	B1C9	76	59	218	145	605	290	160	620	450	315	220	387	43	110	1/4	36	41
	150	B1C11	76	59	218	145	640	290	160	655	535	375	225	403	51	135	3/8	42	47
	150	B1C13	76	59	218	145	675	290	160	690	640	445	240	418	65	175	3/8	58	63
	200	B1C11	89	73	278	205	745	365	205	745	535	375	225	445	51	135	3/8	60	70
	200	B1C13	89	73	278	205	780	365	205	780	640	445	240	460	65	175	3/8	76	86
	200	B1C17	89	73	278	205	795	365	205	795	785	555	255	479	78	215	1/2	100	110
	250	B1C17	114	83	335	260	910	435	260	910	785	555	255	536	78	215	1/2	120	150
	250	B1C20	114	83	335	260	930	435	260	930	880	590	270	555	97	215	1/2	140	170
	250	B1C25	114	83	335	260	975	435	260	975	1075	725	310	578	121	265	1/2	200	230
	300	B1C20	114	92	395	300	1030	500	300	1030	880	590	270	615	97	215	1/2	230	165
	300	B1C25	114	92	395	300	1075	500	300	1075	1075	725	310	638	121	265	1/2	225	290
	350	B1C20	127	117	450	330	1100	565	330	1100	880	590	270	655	97	215	1/2	185	280
	350	B1C25	127	117	450	330	1145	565	330	1145	1075	725	310	678	121	265	1/2	245	340
	400	B1C20	140	133	505	370	1180	649	370	1180	880	590	270	695	97	215	1/2	205	370
	450	B1C32	152	149	554	410	1380	710	410	1380	1370	920	350	770	153	395	3/4	481	638
	450	B1C40	152	149	554	410	1485	710	410	1485	1670	1150	370	820	194	505	3/4	671	828
	500	B1C32	152	159	610	445	1435	770	445	1435	1370	920	350	795	153	395	3/4	511	701
	500	B1C40	152	159	610	445	1540	770	445	1540	1670	1150	370	845	194	505	3/4	701	891
	600	B1C32	178	181	700	520	1570	915	520	1570	1370	920	350	855	153	395	3/4	661	981
	600	B1C40	178	181	700	520	1675	915	520	1675	1670	1150	370	905	194	505	3/4	851	1171
	600	B1C50	178	181	700	520	1780	915	520	1780	2060	1390	415	955	242	610	1	1235	1555

12.1 VALVE + PNEUMATIC SPRING RETURN ACTUATOR, B1J



LW6LB, LW7LB + B1J

VALVE	DN	Actuator	L_6	L_7	LW_			LG_			Dimensions, mm						NPT	LW_L-B1J	LG_L-B1J
			A (K1/API)	A (K2)	B	C	H	B	C	H	F	G	I	J	V	X		kg	kg
LW6L / LG6L LW7L / LG7L	80	B1J8	46/48	49	128	80	460	205	120	500	555	420	220	307	43	135	3/8	27	32
	100	B1J8	52/54	56	158	100	505	235	135	540	555	420	220	331	43	135	3/8	29	37
	100	B1J10	52/54	56	158	100	530	235	135	565	640	480	225	337	51	175	3/8	42	50
	125	B1J8	56/ -	64	190	135	560	-	-	-	555	420	220	351	43	135	3/8	32	45
	125	B1J10	56/ -	64	190	135	585	-	-	-	640	480	225	360	51	175	3/8	45	58
	150	B1J8	56/57	70	212	150	600	300	160	610	555	420	220	376	43	135	3/8	41	50
	150	B1J10	56/57	70	212	150	625	300	160	635	640	480	225	382	51	175	3/8	54	63
	150	B1J12	56/57	70	212	150	660	300	160	670	815	620	240	398	65	215	1/2	81	90
	200	B1J10	60/64	71	268	160	665	360	185	690	640	480	225	412	51	175	3/8	59	73
	200	B1J12	60/64	71	268	160	700	360	185	725	815	620	240	428	65	215	1/2	86	100
	200	B1J16	60/64	71	268	160	740	360	185	765	990	760	255	443	78	265	1/2	143	129
	250	B1J12	68/71	76	320	210	805	425	220	815	815	620	240	481	65	215	1/2	97	110
	250	B1J16	68/71	76	320	210	845	425	220	855	990	760	255	496	78	265	1/2	140	153
	300	B1J12	78/81	83	378	275	900	485	275	900	815	620	240	511	65	215	1/2	112	142
	300	B1J16	78/81	83	378	275	940	485	275	940	990	760	255	526	78	265	1/2	156	186
	300	B1J20	78/81	83	378	275	1025	485	275	1025	1230	940	270	545	97	395	3/4	230	260
	350	B1J16	92/92	92	438	290	1000	555	310	1020	990	760	255	571	78	265	1/2	180	205
	350	B1J20	92/92	92	438	290	1085	555	310	1105	1230	940	270	590	97	395	3/4	245	280
	350	B1J25	92/92	92	438	290	1160	555	310	1180	1490	1140	310	613	121	505	3/4	435	460
	400	B1J20	102/102	102	485	320	1165	610	340	1185	1230	940	270	640	97	395	3/4	280	335
	400	B1J25	102/102	102	485	320	1240	610	340	1260	1490	1140	310	663	121	505	3/4	460	515
	450	B1J25	114/114	114	532	375	1285	640	375	1285	1490	1140	310	658	121	505	3/4	480	555
	500	B1J32	127/127	127	585	415	1440	730	415	1440	1885	1435	350	755	153	540	1	846	968
	600	B1J32	154/154	154	685	465	1325	835	465	1325	1885	1435	350	860	153	540	1	976	1117
	600	B1J40	154/154	154	685	465	1736	835	465	1736	2095	1578	365	910	194	724	1	1405	1546

LW8MB, LW5MB + B1J

VALVE	DN	Actuator	LW8M	LW5M	LW_			LG_			Dimensions, mm						NPT	LW_-B1J	LG_-B1J
			A(K3)	A (API)	B	C	H	B	C	H	F	G	I	J	V	X		kg	kg
LW8M / LG8M LW5M / LG5M	80	B1J8	64	48	128	80	460	205	120	500	555	420	220	307	43	135	3/8	28	33
	100	B1J8	64	54	158	100	505	235	135	540	555	420	220	331	43	135	3/8	30	38
	100	B1J10	64	54	158	100	530	235	135	565	640	480	225	337	51	175	3/8	43	41
	125	B1J8	70	56	190	135	565	-	-	-	555	420	220	354	43	135	3/8	33	-
	125	B1J10	70	56	190	135	590	-	-	-	640	480	225	360	51	175	3/8	46	-
	125	B1J12	70	56	190	135	620	-	-	-	815	620	240	376	65	215	1/2	73	-
	150	B1J10	76	59	218	145	625	290	160	640	640	480	225	387	51	175	3/8	56	61
	150	B1J12	76	59	218	145	660	290	160	975	815	620	240	403	65	215	1/2	83	88
	150	B1J16	76	59	218	145	700	290	160	715	990	760	255	418	78	265	1/2	128	133
	200	B1J12	89	73	278	205	765	365	205	765	815	620	240	445	65	215	1/2	100	110
	200	B1J16	89	73	278	205	805	365	205	805	990	760	255	460	78	265	1/2	145	155
	200	B1J20	89	73	278	205	890	365	205	890	1230	940	270	479	97	395	3/4	220	230
	250	B1J16	114	83	335	260	935	435	260	935	990	760	255	536	78	265	1/2	165	195
	250	B1J20	114	83	335	260	1020	435	260	1020	1230	940	270	555	97	395	3/4	240	270
	250	B1J25	114	83	335	260	1095	435	260	1095	1490	1140	310	578	121	505	3/4	440	470
	300	B1J20	114	92	395	300	1120	500	300	1120	1230	940	270	615	97	395	3/4	300	330
	300	B1J25	114	92	395	300	1195	500	300	1195	1490	1140	310	638	121	505	3/4	445	510
	350	B1J20	127	117	450	330	1190	565	330	1190	1230	940	270	655	97	395	3/4	285	380
	350	B1J25	127	117	450	330	1265	565	330	1265	1490	1140	310	678	121	505	3/4	465	560
	400	B1J20	140	133	505	370	1265	649	370	1265	1230	940	270	695	97	395	3/4	305	470
	400	B1J25	140	133	505	370	1340	649	370	1340	1490	1140	310	718	121	505	3/4	485	650
	450	B1J32	152	149	554	410	1450	710	410	1450	1885	1435	350	770	153	540	1	896	1053
	500	B1J32	152	159	610	445	1510	770	445	1510	1885	1435	350	795	153	540	1	926	1116
	600	B1J322	178	181	700	520	1695	915	520	1695	2870	1435	-	870	153	610	1	2055	2375
	450	BJ140	152	149	554	410	1586	710	410	1586	2095	1578	365	814	194	724	1	1325	1482
	500	BJ140	152	159	610	445	1650	770	445	1650	2095	1578	365	846	194	724	1	1355	1545
	600	BJ140	178	181	700	520	1800	915	520	1800	2095	1578	365	921	194	724	1	1925	2245

12.2 Flange drilling and compatibility

-- = No marking allowed / Fits without extra machining. Rating is always the highest possible.
Date e.g. /K = Valve needs extra machining to fit the specified flange drilling. Code needed at the end of the Type code.
NA = Not available (The drilling is not possible to do or is not logic).

LW6L, 7L	DIN PN 10	DIN PN 16	DIN PN 25	DIN PN 40	ISO PN 20	ISO PN 50	ASME 150	ASME 300	JIS 10K	JIS 16K	JIS 20K	JIS 30K
DN 080	--	--	--	--	--	--	--	--	--	--	--	--
DN 100	--	--	--	--	--	--	--	--	--	--	--	--
DN 125	--	--	--	--	--	--	--	--	--	--	--	--
DN 150	--	--	--	N/A	--	N/A	--	N/A	--	N/A	N/A	N/A
DN 200	--	--	--	N/A	--	N/A	--	N/A	--	N/A	N/A	N/A
DN 250	--	--	--	N/A	--	N/A	--	N/A	--	N/A	N/A	N/A
DN 300	--	--	--	N/A	--	N/A	--	N/A	/R	/S	/T	N/A
DN 350	/J	/K	/L	N/A	/X	N/A	/C	N/A	N/A	N/A	N/A	N/A
DN 400	/J	/K	/L	N/A	/X	N/A	/C	N/A	/R	N/A	N/A	N/A
DN 450	/J	/K	N/A	N/A	/X	N/A	/C	N/A	/R	N/A	N/A	N/A
DN 500	/J	/K	/L	N/A	/X	N/A	/C	N/A	/R	N/A	N/A	N/A
DN 600	/J	/K	/L	N/A	/X	N/A	/C	N/A	N/A	N/A	N/A	N/A

LW5M, 8M	DIN PN 10	DIN PN 16	DIN PN 25	DIN PN 40	ISO PN 20	ISO PN 50	ASME 150	ASME 300	JIS 10K	JIS 16K	JIS 20K	JIS 30K
DN 080	--	--	--	--	--	--	--	--	--	--	--	--
DN 100	--	--	--	--	--	--	--	--	--	--	--	--
DN 125	--	--	--	--	--	--	--	--	--	--	--	--
DN 150	--	--	--	--	--	--	--	--	N/A	--	--	--
DN 200	N/A	N/A	/L	/M	/X	/Z	/C	/D	N/A	/S	/T	/U
DN 250	N/A	N/A	/L	/M	/X	/Z	/C	/D	N/A	/S	/T	/U
DN 300	N/A	N/A	/L	/M	/X	/Z	/C	/D	N/A	/S	/T	/U
DN 350	N/A	N/A	/L	/M	/X	/Z	/C	/D	N/A	/S	/T	/U
DN 400	N/A	N/A	/L	/M	/X	/Z	/C	/D	N/A	/S	/T	/U
DN 450	N/A	N/A	/L	/M	N/A	/Z	N/A	/D	N/A	/S	/T	N/A
DN 500	N/A	N/A	/L	/M	N/A	/Z	N/A	/D	N/A	/S	/T	N/A
DN 600	N/A	N/A	/L	/M	N/A	/Z	N/A	/D	N/A	/S	/T	N/A

LG6L, 7L	DIN PN 10	DIN PN 16	DIN PN 25	DIN PN 40	ISO PN 20	ISO PN 50	ASME 150	ASME 300	JIS 10K	JIS 16K	JIS 20K	JIS 30K
DN 080	--	--	--	/M	/X	/Z	/C	/D	N/A	/S	/T	/U
DN 100	/J	/K	--	/M	/X	/Z	/C	/D	N/A	/S	/T	/U
DN 150	/J	/K	--	N/A	/X	N/A	/C	N/A	/R	N/A	N/A	N/A
DN 200	/J	/K	--	N/A	/X	N/A	/C	N/A	/R	/S	/T	N/A
DN 250	/J	/K	--	N/A	/X	N/A	/C	N/A	/R	/S	/T	N/A
DN 300	/J	/K	--	N/A	/X	N/A	/C	N/A	N/A	/S	/T	N/A
DN 350	/J	/K	--	N/A	/X	N/A	/C	N/A	N/A	/S	/T	N/A
DN 400	/J	/K	--	N/A	/X	N/A	/C	N/A	/R	/S	/T	N/A
DN 450	/J	/K	N/A	N/A	/X	N/A	/C	N/A	/R	N/A	N/A	N/A
DN 500	/J	/K	/L	N/A	/X	N/A	/C	N/A	/R	N/A	N/A	N/A
DN 600	/J	/K	/L	N/A	/X	N/A	/C	N/A	/R	N/A	N/A	N/A

LG5M	DIN PN 10	DIN PN 16	DIN PN 25	DIN PN 40	ISO PN 20	ISO PN 50	ASME 150	ASME 300	JIS 10K	JIS 16K	JIS 20K	JIS 30K
DN 080	--	--	--	--	/X	/Z	/C	/D	N/A	/S	/T	/U
DN 100	/J	/K	--	--	/X	/Z	/C	/D	N/A	/S	/T	/U
DN 150	/J	/K	--	--	/X	/Z	/C	/D	N/A	N/A	N/A	N/A
DN 200	N/A	N/A	N/A	N/A	N/A	/Z	N/A	/D	N/A	N/A	N/A	N/A
DN 250	N/A	N/A	N/A	N/A	N/A	/Z	N/A	/D	N/A	N/A	N/A	N/A
DN 300	N/A	N/A	N/A	--	N/A	/Z	N/A	/D	N/A	N/A	N/A	N/A
DN 350	N/A	N/A	N/A	--	N/A	/Z	N/A	/D	N/A	N/A	N/A	N/A
DN 400	N/A	N/A	N/A	--	N/A	/Z	N/A	/D	N/A	N/A	N/A	N/A
DN 450	N/A	N/A	/L	/M	N/A	/Z	N/A	/D	N/A	/S	/T	N/A
DN 500	N/A	N/A	/L	/M	N/A	/Z	N/A	/D	N/A	/S	/T	N/A
DN 600	N/A	N/A	/L	/M	N/A	/Z	N/A	/D	N/A	/S	/T	N/A

LG8M	DIN PN 10	DIN PN 16	DIN PN 25	DIN PN 40	ISO PN 20	ISO PN 50	ASME 150	ASME 300	JIS 10K	JIS 16K	JIS 20K	JIS 30K
DN 080	--	--	--	--	/X	/Z	/C	/D	/R	/S	/T	/U
DN 100	/J	/K	--	--	/X	/Z	/C	/D	/R	/S	/T	/U
DN 150	/J	/K	--	--	/X	/Z	/C	/D	N/A	N/A	N/A	N/A
DN 200	N/A	N/A	/L	--	N/A	/Z	N/A	/D	N/A	N/A	N/A	N/A
DN 250	N/A	N/A	/L	--	N/A	/Z	N/A	/D	N/A	N/A	N/A	N/A
DN 300	N/A	N/A	/L	--	N/A	/Z	N/A	/D	N/A	N/A	N/A	N/A
DN 350	N/A	N/A	/L	--	N/A	/Z	N/A	/D	N/A	N/A	N/A	N/A
DN 400	N/A	N/A	/L	--	N/A	/Z	N/A	/D	N/A	N/A	N/A	N/A
DN 450	N/A	N/A	/L	/M	N/A	/Z	N/A	/D	N/A	/S	/T	N/A
DN 500	N/A	N/A	/L	/M	N/A	/Z	N/A	/D	N/A	/S	/T	N/A
DN 600	N/A	N/A	/L	/M	N/A	/Z	N/A	/D	N/A	/S	/T	N/A

13. TYPE CODE

Neles™ Neldisc™ high performance butterfly valves. Series LW and LG														
1.	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**	**10.**	**11.**	**12.**		**13.**	**14.**
	LW	6	L	B	A	300	P	A	J	A	T	/	03	K

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

2.	PRODUCT SERIES / DESIGN
LW	Wafer type, full bore, metal seated butterfly valve
LG	Lug type, full bore, metal seated butterfly valve

3.	FACE-TO-FACE LENGTH
6	EN 558-Part 1, Table 5 / Basic series 20, (DIN 3202-K1). API 609 class 150 category B (4.sign is L)
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 (4.sign is M)
2	Face to face acc. to L2-series (Used LG2 for replacing old L2)
Y	Special

4.	PRESSURE RATING
L	Sizes DN 80-DN 125: 50 bar (ASME 300, PN 40, ISO PN 50, JIS16K, JIS20K, JIS30K) Sizes DN 150-600: 25 bar (PN 10-25, ASME 150, ISO PN 20, JIS 10-16K) Max shut off pressure: sizes DN 80 - DN 125 max Δp 50 bar sizes DN 150 max Δp 25 bar sizes DN 200-600 Δp 20 bar
M	Body max pressure 50 bar (PN 40, ISO PN 50, ASME 300, JIS 16K, JIS 20K, JIS 30K) sizes DN 80-600 max Δp 50 bar

Other pressure ratings, flange drilling and compatibility, see Section 10.4

5.	VALVE - ACTUATOR CONNECTION
B	Drive shaft with two key ways / bracket Neles standard.

6.	CONSTRUCTION
A	STANDARD (max. -50 °C...+260 °C) - bearings PTFE+ C25 + AISI 316 or PTFE+ C25 + Alloy 625. - body and blind flange gaskets graphite
N	EXTENDED SERVICE (max. +425 °C), valve (ATEX II 2 G c). - shaft bearings surfaces nitrated - bearings cobalt based alloy - body and blind flange gaskets graphite
H	HIGH TEMPERATURE, valve (ATEX II 2 G c) - shaft bearings surfaces cobalt based alloy coated - bearings cobalt based alloy - body and blind flange gaskets graphite
C	CRYOGENIC (min. -200 °C) - extended bonnet and drive shaft - otherwise as construction A
1C	CRYOGENIC (Optional Cryo extension) - extended bonnet and drive shaft T =+ 230 °C to -50 °C..-100 °C.
2C	CRYOGENIC (Optional Cryo extension) - extended bonnet and drive shaft T =+ 230 °C to -200 °C.
S	STEAM JACKET (only for LW), valve (ATEX II 2 G c).
E	EROSION CONSTRUCTION (ONLY FOR LW), valve (ATEX II 2 G c).
T	HIGH CYCLING (only for LW5M / LW8M), valve (ATEX II 2 G c).
B	BEARING PROTECTION
1B	BEARING PROTECTION (higher temperature)
P	POLISHED (ONLY FOR LW), polished flow port and disc.

6.	CONSTRUCTION
1A	PTFE SOFT PARTS (GRAPHITE FREE) - anti static device, (ATEX II 3 G c)
2A	STANDARD, anti static device (ATEX II 3 G c, with Teflon packing,"T", "T2") (ATEX II 2 G c, with gr. packing, "G", "G2")
3A	PTFE SOFT PARTS (GRAPHITE FREE) against the flow media Graphite SOFT PARTS to enable the fire safe. - anti static device, (ATEX II 2 G c, with PTFE/graphite packing, "TG")
3N	PTFE SOFT PARTS (GRAPHITE FREE) against the flow media Graphite SOFT PARTS to enable the fire safe. (ATEX II 2 G c, with PTFE/graphite packing, "TG")
V	STANDARD + stop screw for disc (only for LW)
1V	EXTENDED SERVICE + stop screw for disc (only for LW), (max. +425 °C).
Z	OXYGEN CONSTRUCTION - BAM tested non-metallic materials - T= +200 °C to -50 °C, Oxygen cleaning acc. to Neles procedure.
X	LOW EMISSION, otherwise as construction N.
Y	Special

Note!
Only Z constructions available for oxygen flow media, (See IMO 10O270en.pdf)

7.	SIZE
080, 100, 125 (LW only), 150, 200, 250, 300, 350, 400, 450, 500 and 600	

MATERIALS					
8. BODY			**9. DISC**		**10. SHAFT & PINS**
A	CF8M/1.4408	A	CF8M/F316	J	SS 329 (SIS 2324) only L_6L and L_7L
P	WCB/1.0619		-	C	Gr. 630 (17-4PH)
	-		-	H	Nimonic 80A
	-		-	N	XM-19 (Nitronic 50)
C	ASTM A351 gr CG8M/AISI 317	C	ASTM A351 gr CG8M/AISI 317		-
B	EN 10213-4.1.4581	G	EN 10213-4.1.4581		-
N	ASTM A217 gr. WC6	N	ASTM A217 gr. WC6		-
U	ASTM A351 gr. CK3MCuN (SMO254)	U	ASTM A351 gr. CK3MCuN (SMO254)	U	UNS31254 (SMO254)
S	ASTM A217 gr C5	S	ASTM A217 gr C5		-
F	ASTM A352 gr. LCC				-
	-	K	EN 10213. 1.4408 (or eq. 1.4401) / CF8M		-
	-	B	CF8M / F316+cobalt based alloy on disc edge		-
H	ASTM A494 gr. CW-6M (Hastelloy C)	H	ASTM A494 gr. CW-6M (Hastelloy C)	H1	HAST C Only soft bearings, "A"-construction

SEAT MATERIALS			
11.	**STANDARD**	**11.**	**NON-STANDARD**
A	Incoloy 825, hard chrome plated. (Nace MR 0103) T = -200 °C to +500 °C.	H	Nimonic 80A, hard chrome plated (Not Nace) T = -200 °C to +650 °C.
		K	2.4681, UNS R31233 (ULTIMET), (Nace MR 0103) T = -200 °C to +600 °C.

12.	DESIGN OPTIONS
T	Live loaded PTFE V-ring packing
G	Live loaded graphite packing. Fire safe construction (ATEX II 3 G c, with soft bearings)
TG	Live loaded PTFE V-ring packing + Live loaded graphite packing. - Firesafe by design, (ATEX II 2 G c)
Y	Special

13.	FLANGE FACING
-	Standard (Ra 3.2 - 6.3), without sign Covering: EN 1092-1 Type B1 (Ra 3.2 - 12.5) ASME B16.5 (Ra 3.2 - 6.3, Smooth finish, AARH125-250) DIN 2526 Form E (Ra 4)
Y	Special

14.	FLANGE DRILLING*
-	Without sign: L_6L, L_7L LW5M, LW8M multiple flange drillings available. LG5M, LG8M flange drilling according to PN 40
C	ASME 150 (20 bar)(available with LW_L and LG_L valves)
D	ASME 300 (50 bar) (available with LW_M and LG_M valves)
J	PN 10 (available with LW_L and LG_L valves)
K	PN 16 (available with LW_L and LG_L valves)
L	PN 25 (available with LW_M and LG8M valves)
M	PN 40 (available with LW_M and LG_M valves)
X	ISO PN 20 (available with LW_L and LG_L valves)
Z	ISO PN 50 (available with LW_M and LG_M valves)
R	JIS 10K (14 bar) (available with LW6L or LW7L)
S	JIS 16K (27 bar) (available with LW6L, LW7L or LW8M, LW5M)
T	JIS 20K (34 bar) (available with LW8M or LW5M)
U	JIS 30K (51 bar) (available with LW8M or LW5M)
Y	Special

*) See section in 10.4 for flange drilling and compatibility.
Note: DIN/EN PN drilling (J, K, L, M) is not possible in LG5M-series (API face to face).

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