Neles™ Neldisc™ high performance butterfly valves

Series L1 and L2

Installation, maintenance and operating instructions

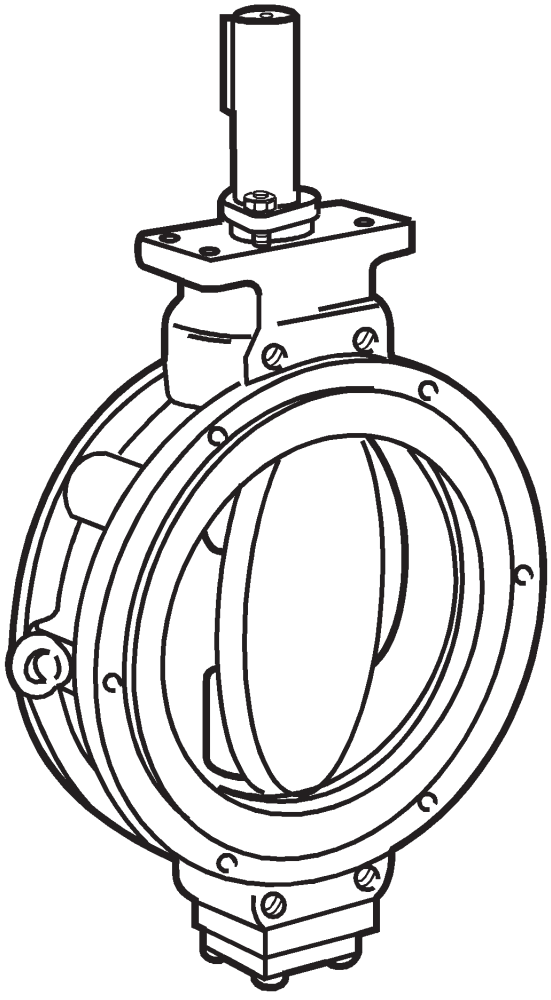


TABLE OF CONTENTS

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 L1 and L2 series Nelsdisc™ triple eccentric disc valves. The actuators and instrumentation to be used with L1 and L2 series 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 L1 is a wafer type and series L2 a lug type triple eccentric disc valve.

The disc is elliptical and has a double 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.

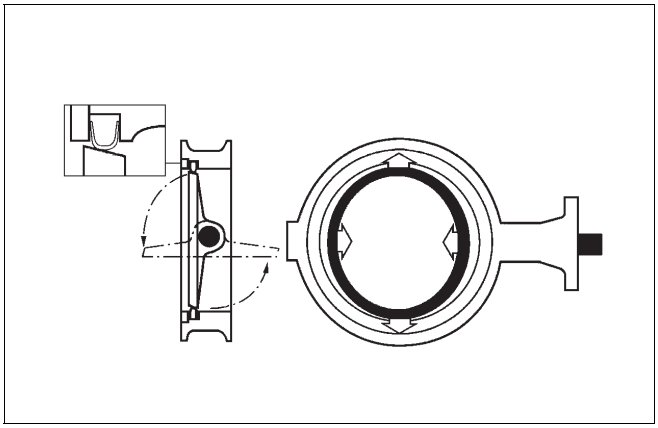


Fig. 1 Construction of a triple eccentric disc valve

1.3 Valve markings

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

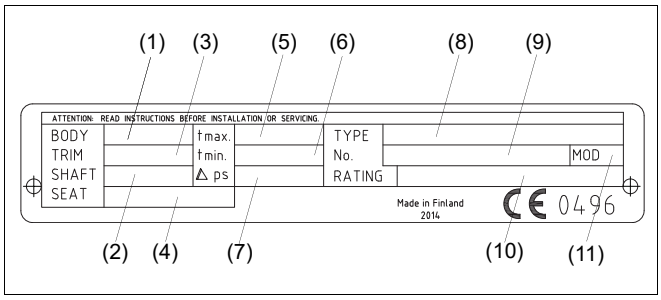


Fig. 2 Identification plate

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:	Full bore, metal seated triple eccentric disc valve
Pressure class:	
Body:	L1C, L2C ANSI 150/PN 25 L1D, L2D ANSI 300/PN 40
Trim:	L1C, L2C ANSI 150 L1D, L2D ANSI 300
Temperature range:	-200... +600 °C (for ambient temperatures > 600 °C, please contact the manufacturer)
Flow direction:	Free
Dimensions:	See Section 10
Weights:	See Section 10

1.5 Valve approvals

The valve meets the requirements of BS 6755, Part 2: 1987 and API 607, Third Edition, November 1985 on fire safety.

Valves with codes T or G are TA-Luft approved.

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 computer program. 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.
Valve sizes DN 350 and over are equipped with a lifting eye bolt. 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.

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

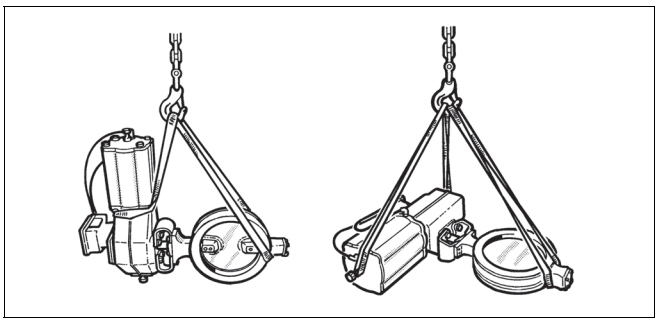


Fig. 3 Lifting of the valve

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 downstream 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).

Select flange gaskets according to the operating conditions.

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

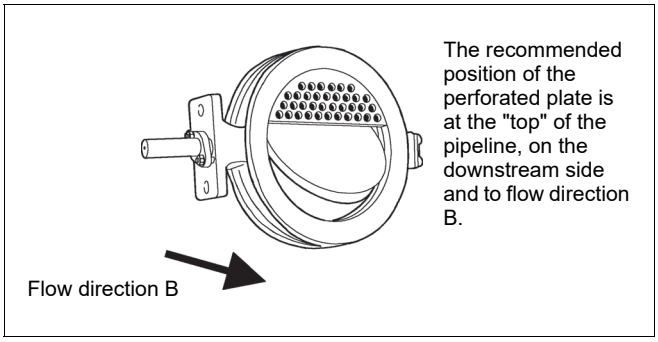


Fig. 4 Position of the flow balancing trim

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 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 triple eccentric disc 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.

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

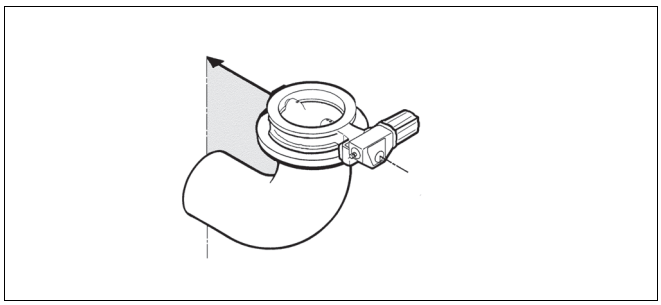


Fig. 5 Mounting after a pipe elbow

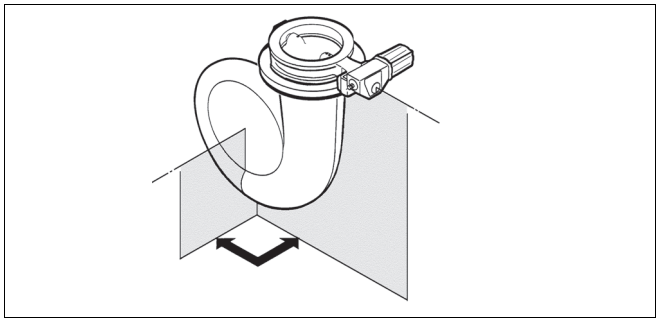


Fig. 6 Mounting after the centrifugal pump

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 grooves, holes or threads (see Section 3.2.1).

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

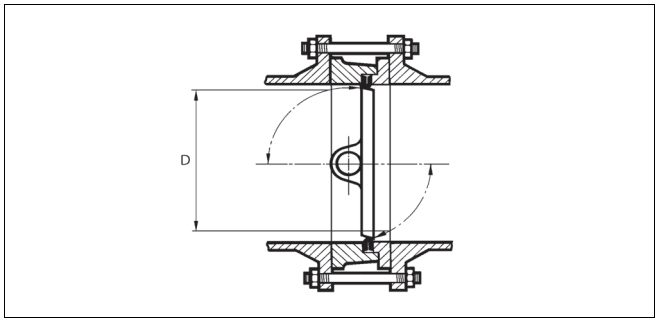


Fig. 7 Minimum pipe inside dimensions

Table 1 Minimum pipe inside dimensions D/(mm)

Valve size	D	
	L1CM	L1DM
18	422	400
20	464	443
24	565	536
28	665	
30	716	
32	762	
36	870	
40	960	

Mounting options

- **X** Flange bolts pass the neck of the body
- **UH** Unthreaded holes at the neck of the body
- **SB** Stud bolts at the neck of the body (L2 always)
- **BH** Stud bolts at the neck of the body and fraised holes on the body and flange ring
- **FH** Unthreaded holes at the neck of the body and fraised holes on the body and flange ring
- **XF** Flange bolts pass the neck of the body and fraised holes on the body and flange ring
- **HM** Fraised holes on the neck of the body for flange bolts
- **—** Flange drilling not suitable

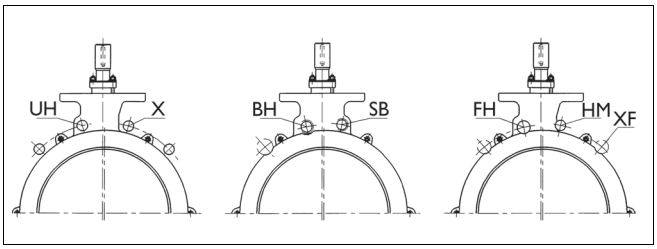


Fig. 8 Mounting options

Table 2 Mounting options

Valve type	ASME 150	ASME 300	PN 10	PN 16	PN 25	PN 40	Valve type	ASME 300	PN 25	PN 40
L1C18	UH	—	SB	SB	SB	—	L1D16	SB	BH	SB
L1C20	SB	SB	SB	SB	SB	—	L1D18	SB	BH	SB
L1C24	SB	SB	SB	SB	SB	—	L1D20	SB	BH	SB
L1C28	SB	SB	SB	SB	SB	SB	L1D24	SB	BH	SB
L1C30	SB	SB	—	—	—	—	L1D28	SB	BH	SB
L1C32	SB	SB	SB	SB	SB	SB	L1D30	SB	—	—
L1C36	SB	SB	SB	SB	SB	SB	L1D36	SB	—	BH
L1C40	SB	SB	SB	SB	SB	SB				

*) L1C40 can also be drilled acc. to MSS SP-44 42" drilling.

Table 3 Stud bolt dimensions (mm) and quantities per valve, L1 mounting options SB, BH

Valve type	A	Class 150								Class 300								PN 10								PN 16								PN 25							
		Thread	Through studs		Body mounted studs						Through studs		Body mounted studs						Through studs		Body mounted studs						Through studs		Body mounted studs						Through studs		Body mounted studs					
			Qty	L3	Qty	L	L1	L2	S	Thread	Qty	L3	Qty	L	L1	L2	S	Thread	Qty	L3	Qty	L	L1	L2	S	Thread	Qty	L3	Qty	L	L1	L2	S	Thread	Qty	L3	Qty	L	L1	L2	S
L1C18	114				Through bore													M24	16	300	8	125	107	85	16	M27	16	350	8	150	132	110	16	M33	16	330	8	140	122	100	16
L1C20	127	1 1/8-8 UN	16	330	8	140	114	93	24	1 1/4-8 UN	20	370	8	150	132	111	16	M24	16	300	8	125	99	79	24	M30	16	330	8	140	114	93	24	M33	16	330	8	140	114	94	24
L1C24	154	1 1/4-8 UN	16	360	8	150	119	95	28	1 1/2-8 UN	20	440	8	180	159	135	18	M27	16	360	8	150	119	95	28	M33	16	340	8	140	109	85	28	M36	16	400	8	170	139	115	28
L1C28	229	1 1/4-8 UN	24	450	8	170	130	97	32	1 5/8-8 UN	24	550	8	220	180	145	32	M27	20	410	8	150	107	75	35	M33	20	430	8	160	117	85	35	M39	20	470	8	180	137	105	35
L1C30	230	1 1/4-8 UN	24	450	8	170	130	95	32	1 3/4-8 UN	24	570	8	230	190	155	32																									
L1C32	241	1 1/2-8 UN	24	480	8	180	140	105	32	1 7/8-8 UN	24	600	8	240	200	165	32	M30	20	480	8	180	137	102	35	M36	20	500	8	190	147	112	35	M45	20	500	8	190	147	112	35
L1C36	241	1 1/2-8 UN	28	490	8	180	145	110	32	2-8UN	28	610	8	240	200	165	32	M30	24	490	8	180	143	110	35	M36	24	510	8	190	153	120	35	M45	24	510	8	190	153	120	35
L1C40	300	1 1/2-8 UN	32	600	8	220	170	130	40	1 5/8-8 UN	28	640	8	240	190	150	40	M33	24	540	8	190	140	100	40	M39	24	560	8	200	150	110	40	M52	24	580	8	210	160	120	40
L1C40/42	300	1 1/2-8 UN	32	600	8	220	170	130	40	1 5/8-8 UN	28	640	8	240	190	150	40																									

Valve type	A	Class 300								PN 40								PN 25							
		Thread	Through studs		Body mounted studs						Through studs		Body mounted studs						Through studs		Body mounted studs				
			Qty	L3	Qty	L	L1	L2	S	Thread	Qty	L3	Qty	L	L1	L2	S	Thread	Qty	L3	Qty	L	L1	L2	S
L1D18	180	1 1/4-8UN	20	400	8	150	113	113	32	M36	16	430	8	170	129	129	36								
L1D20	200	1 1/4-8UN	20	400	8	150	104.5	106	38	M39	16	460	8	180	132.5	134	40	M33	16	380	8	140	92	112	30
L1D24	240	1 1/2-8UN	20	490	8	180	125	125	45	M45	16	480	8	170	110	110	50	M36	16	450	8	160	100	100	45
L1D28	250	1 5/8-8UN	24	510	8	180	135	135	42	M45	20	490	8	170	120	120	45	M39	20	470	8	160	110	110	42
L1D30	300	1 3/4-8UN	24	600	8	200	145	145	40																
L1D36	360	2-8UN	28	720	8	240	175	175	50	M52	24	630	8	200	135	135	55								

Table 4 Stud bolt dimensions (mm) and quantities per valve, L2 mounting option SB

Valve type	A	Class 150								PN10								PN16							
		Thread	Through studs		Body mounted studs						Through studs		Body mounted studs						Through studs		Body mounted studs				
			Qty	L3	Qty	L	L1	L2	S	Thread	Qty	L3	Qty	L	L1	L2	S	Thread	Qty	L3	Qty	L	L1	L2	S
L2C18	152	1 1/8-8UN			32	190	142	88	45	M24	32	280	8	140	122	67	16	M27	32	300	8	160	136	81	22
L2C20	152	1 1/8-8UN			40	180	133	89	45	M24	32	280	8	140	113	69	24	M30			40	180	133	89	45
L2C24	178	1 1/4-8UN			40	190	142	96	46	M27			40	170	122	76	46								
L2C28	250	1 1/4-8UN			56	230	178	122	50	M27			48	180	128	75	50	M33			48	190	138	85	50
L2C30	250	1 1/4-8UN			56	230	178	122	50																
L2C32	270	1 1/2-8UN			56	270	208	142	60	M30			48	200	138	76	60	M36			48	210	148	86	60
L2C36	241	1 1/2-8UN			64	240	178	144	60	M30			56	170	123	89	45	M36			56	190	133	99	55
L2C40/42	320	1 1/2-8UN			72	270	208	150	60																

Valve type	A	Class 300								PN40								PN25							
		Thread	Through studs		Body mounted studs						Throughstuds		Body mounted studs						Throughstuds		Body mounted studs				
			Qty	L3	Qty	L	L1	L2	S	Thread	Qty	L3	Qty	L	L1	L2	S	Thread	Qty	L3	Qty	L	L1	L2	S
L2D18	210	1 1/4-8UN			48	200	148	110	50	M36			40	210	153	115	55	M33			40	190	138	100	50
L2D20	230	1 1/4-8UN			48	200	148	120	50	M39			40	210	143	115	65	M33			40	180	128	100	50
L2D24	250	1 1/2-8UN			48	240	174	131	60	M45			40	260	183	140	75	M36			40	210	153	110	55
L2D28	295	1 5/8-8UN			56	260	198	155	60									M39			48	210	148	105	60
L2D30	300	1 3/4-8UN			56	270	198	160	70																
L2D32																									
L2D36	370	2-8UN			64	310	233	175	75																

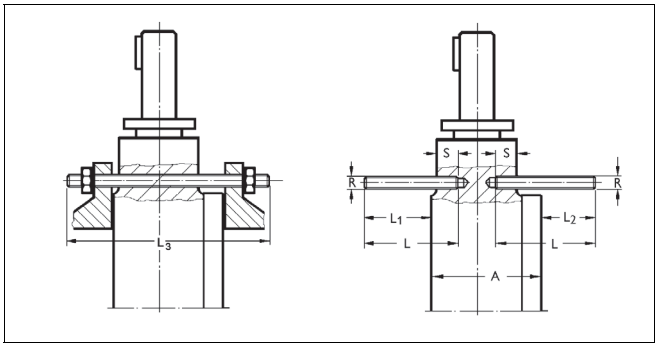


Fig. 9 Stud bolt mounting dimensions, mounting options SB, BH

Valve insulation

If necessary, the valve may be insulated. Insulation must not continue above the upper level of the valve body, see Figure 10.

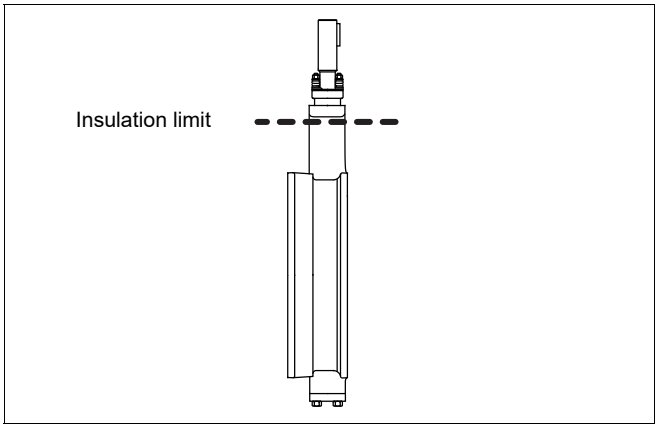


Fig. 10 Insulation of the valve

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 gland packing may leak after long storage. Tighten both nuts in the packing evenly until the leakage stops.

5 MAINTENANCE

5.1 Maintenance general

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 acc. to section 5.2.

Although Neles valves are designed to work under severe conditions, proper preventative maintenance can 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 (see Fig. 3). 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.
- 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. 11).

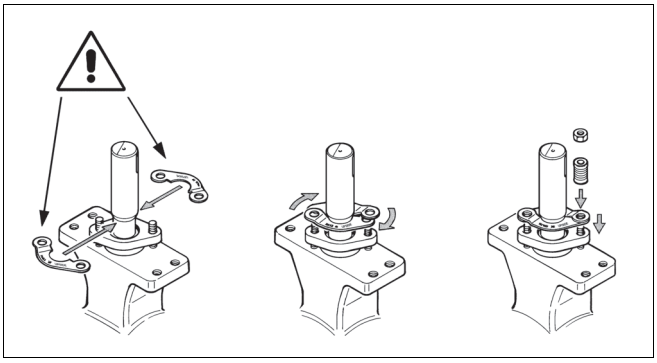


Fig. 11 Mounting the retaining plate

- 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 (h1–h2) 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 (h1–h2) of disc springs is achieved, see Table 5

Table 5 Tightening of gland packing .

L1C, L2C	L1D, L2D	Spring set dia	Thread	Compression (h_1–h_2) mm	
				Packing ring material	
DN / NPS	DN / NPS	mm	M, UNC	Graphite + PTFE	PTFE
450 / 18		35.5	M14, 1/2	4.0	2.5
500 / 20		35.5	M14, 1/2	4.5	2.5
600 / 24	16 / 400, 18 / 450	40	M18, 5/8	5.0	3.0
700 / 28	20 / 500	40	M18, 5/8	5.5	3.5
750 / 30		40	M18, 5/8	5.5	3.5
800 / 32	24 / 600	50	M20, 3/4	6.0	3.5
900 / 36		50	M20, 3/4	6.5	4.0
	900 / 36	50	M20, 3/4	6.5	6.0
1000 / 40	28 / 700	56	M24, 1	6.5	5.5
	30 / 750	50	M22, 7/8	6.5	5.0
1200 / 48		71	M30, 1 1/4	6.5	6.5
	36 / 900	56	M24, 1 (4 pcs.)	6.5	6.0

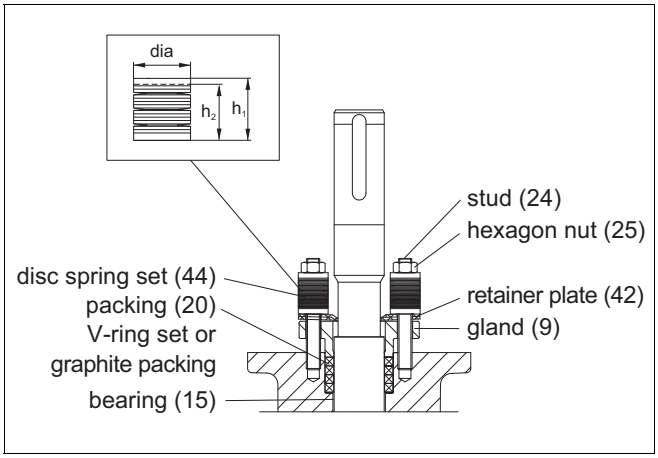


Fig. 12 Gland packing

- 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. 13).

Pressure chocks 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.

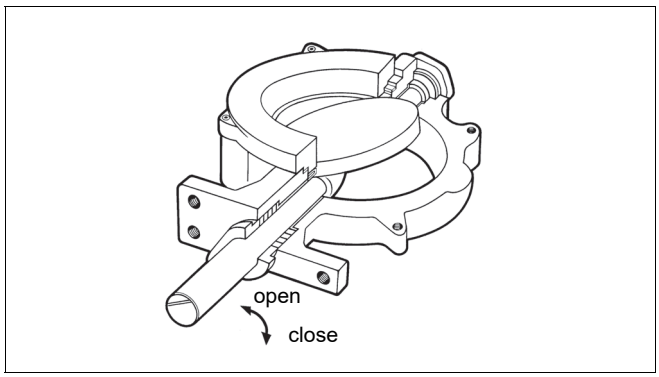


Fig. 13 The contact line between the disc and seat ring

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 seating surfaces of the body and clamp ring. 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).

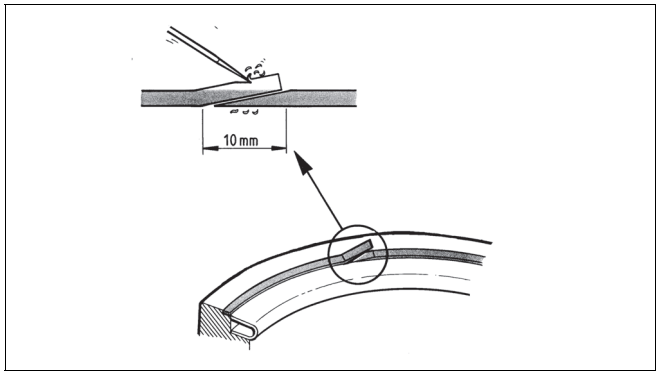


Fig. 14 Mounting the body seal

- 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. 14.
- 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.
- 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) evenly. An unevenly tightened flange may damage the seat ring. The screw heads must be below the flange surface.
- Check the position between the seat ring and the disc. The valve closes clockwise (see Fig. 13).
- 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 5.5.
- Set the valve horizontally on a sturdy surface so that the flat side of the disc lays against the surface, see Fig. 15.

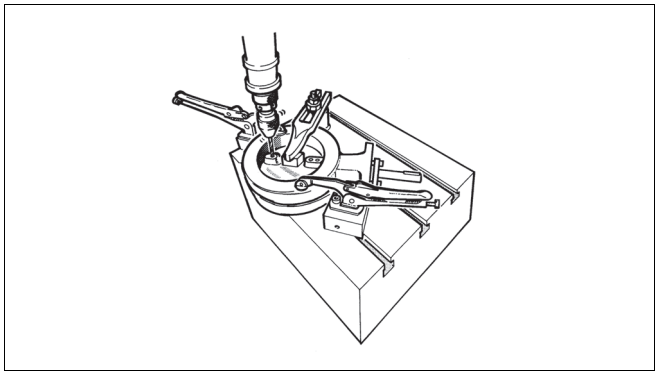


Fig. 15 Drilling the pins

- 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 according to Section 5.3.
- Detach the screws (26) and the blind flange (10) and remove the gasket (18).
- Place rubber strips or other protection between the disc edge and the body and remove the shafts (see Fig. 16).
- Remove the bearings (15, 16).
- Clean and check all parts carefully.

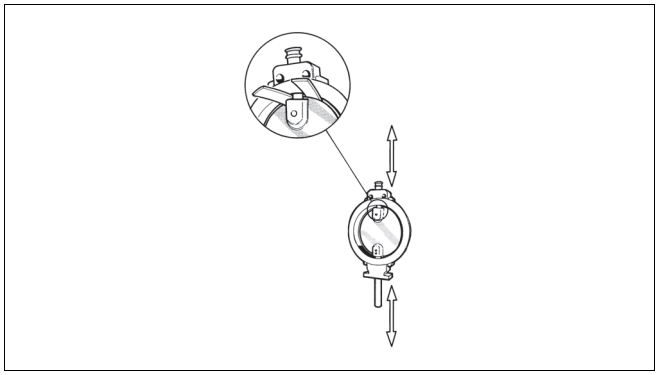


Fig. 16 Protecting the disc during disassembly and assembly

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 (H-construction) are cobalt alloy bushings which are mounted into the body together with the shafts.

- Mount the bearings into the body (see Fig. 17).

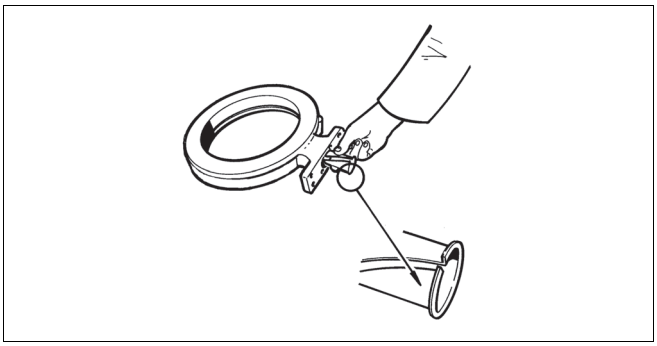


Fig. 17 Mounting the standard bearings

H-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. 18).

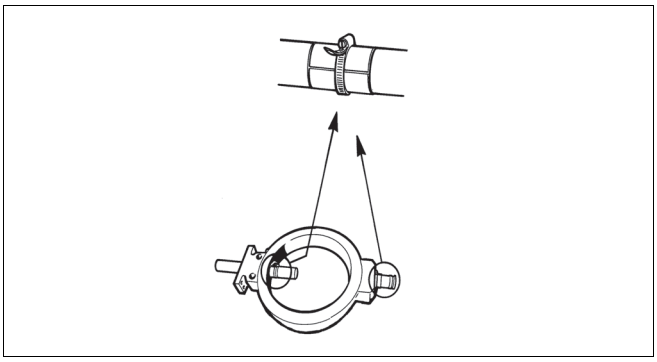


Fig. 18 Mounting the H-construction bearings

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. 16).

Press the shafts into the disc drillings. Align the pin holes. The shaft (11) position against the disc must be according to Fig. 13.

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. 19). Use a smaller tool than the pin diameter. See Table 6 for force needed.

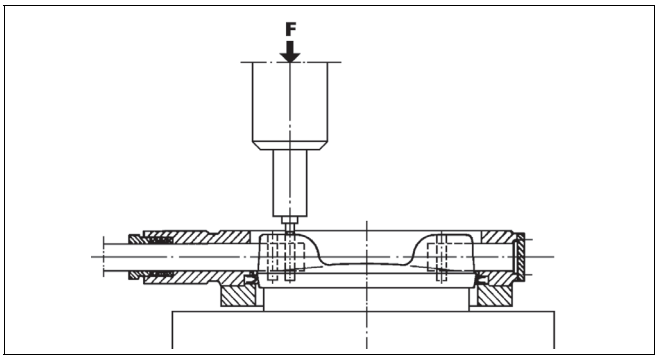


Fig. 19 Pressing the pins

Table 6 Pressing the pins, forces

Pin diameter, mm	Force, kN	Pin diameter, mm	Force, kN
5	45	20	500
6	60	25	780
8	80	30	1125
10	125	35	1500
12	180	40	2000
15	280	50	3150

- 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. 13).

6 MOUNTING AND DETACHING THE ACTUATOR

6.1 General

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

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°.

6.2 Mounting the actuator onto the valve

- 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.
  In valves with manual operation the disc must be closed by turning the handwheel clockwise.
- 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 6.4).
- The opening angle in a control valve is usually limited by a bolt 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 actuator

CAUTION:
The actuator cannot be removed from the valve when the pipeline is under pressure as a result of dynamic torque!

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.

- Ensure that the pipeline is not pressurized.
- 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. 20).
- Remove the bracket and coupling, if any.

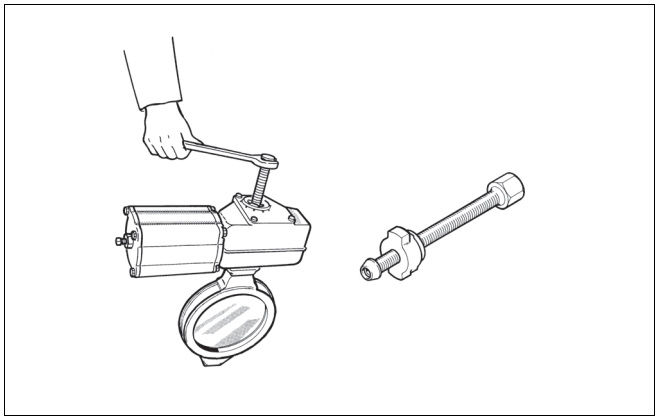


Fig. 20 Removing the actuator with an extractor

6.4 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 8 and 9 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 a 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.**

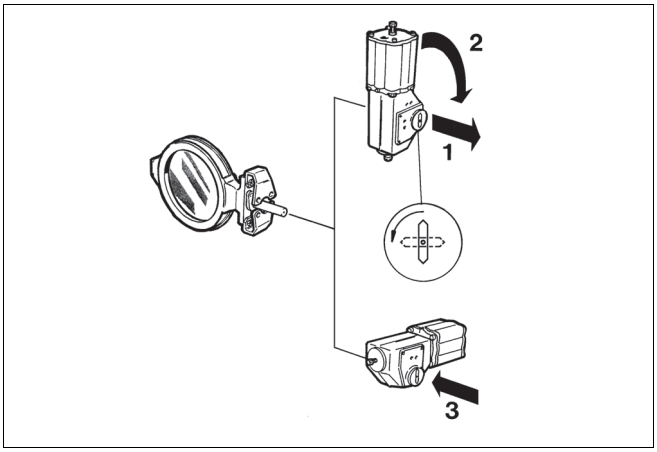


Fig. 21 Changing the mounting position

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.

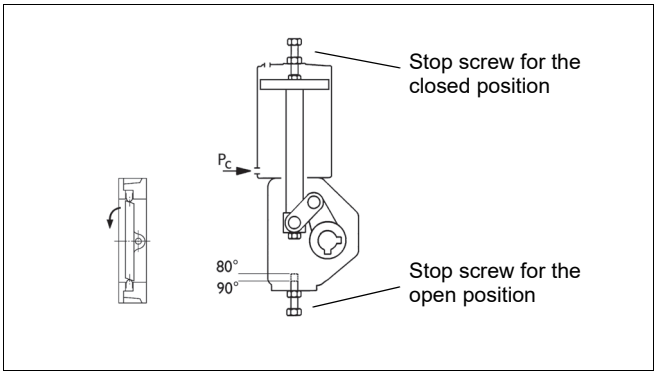


Fig. 22 Cylinder actuator, Series B1C

- Turn the closed position stop screw until it touches the piston, then turn back 1/4 turn and lock up. Leakproof with Loctite 225 or other non-hardening sealant. The sealant must not flow inside the cylinder.
- An extra long screw is needed for opening angles < 80°.

6.5 Manual operator M

- Close the valve as per the tabulated primary torque M1 (handwheel torque) given in Tables 8 and 9.
- Tighten the closed position stop screw until it touches the linkage, then turn back 1/4 turn and lock up with Loctite 225.

Electric operator

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

Spring-return cylinder actuator B1J

Spring-to-close

- Before mounting the cylinder, screw in the closed position stop screw completely.

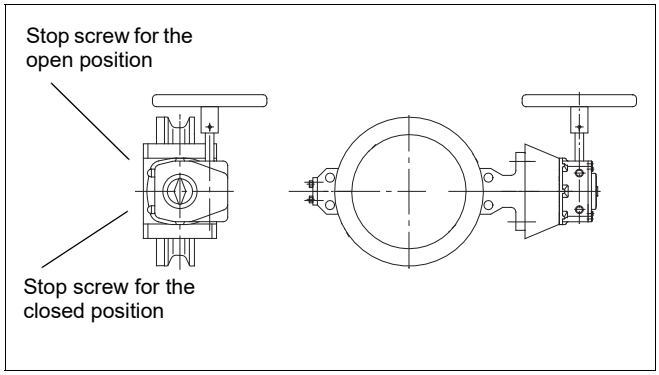


Fig. 23 Actuator, Series M

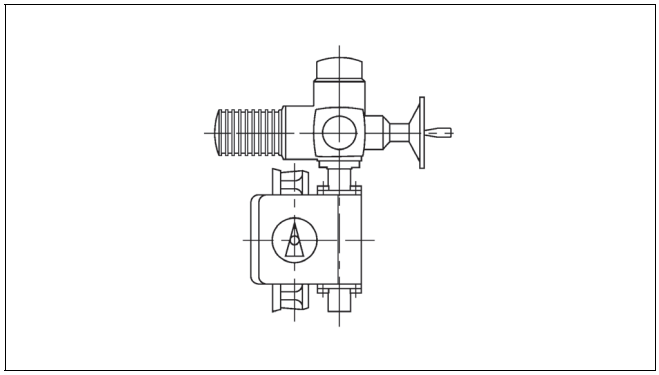


Fig. 24 Electric operator

- The table overleaf 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 cannot 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°.

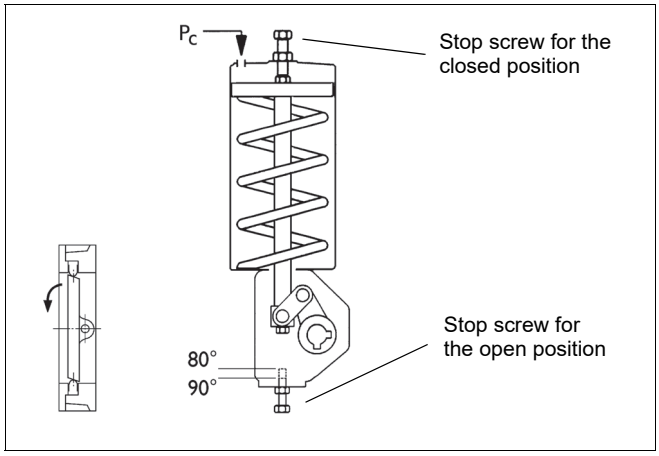


Fig. 25 Cylinder actuator, Series B1J

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. Leakproof with Loctite 225 or other non-hardening sealant. The sealant must not flow inside the cylinder.
- An extra long screw is needed for opening angles < 80°.

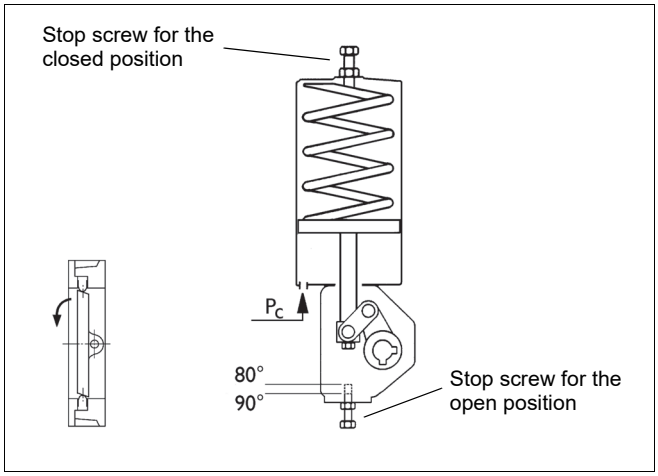


Fig. 26 Cylinder actuator, Series B1JA

7 TROUBLE SHOOTING TABLE

Table 7 lists malfunctions that might occur after prolonged use.

Table 7 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 for removing the actuator from the valve. The tool can be ordered from the manufacturer.

Extractor tools (Actuator Series B1C/B1J)

Product:	ID:
B1C/B1J 6	303821
B1C 8-11 / B1J 8-10	8546-1
B1C 12-17 / B1J 12-16	8546-2
B1C/B1J 20	8546-3
B1C/B1J 25	8546-4
B1C/B1J 32	8546-5
B1C 40 / B1J 322	8546-6
B1C 50	8546-7
B1C 502	8546-8

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 8 Series L1C, L2C closing torques

DN SIZE	Mc		BC and BJ SIZE	BC pc		BJ pc		BJA** pc		BJK pc		BJKA** pc		BJV pc		BJVA** pc		Manual operator	Input torque M1	
	(Nm)	(lbf ft)		(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)		(Nm)	(lbf ft)
450 18"	2200	1620	20	6.3	91	*)spring		4.8	70			4.2	61	*)spring		5.3	77	M15	107	79
			25	3.2	46	0.4	6	3.7	54	*)spring		3.1	45	0.9	13	4.2	61	M16	83	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	3.9	57	*)spring		3.3	48	0.6	9	4.4	64	M16	102	75
			32	1.9	28	0.8	12			0.4	6	2.7	39	1.3	19	3.8	55	M25	98	72
600 24"	4400	3240	25	6.7	97	*)spring		4.8	70			4.2	61	*)spring		5.3	77	M16	166	122
			32	3.3	48	0.4	6	3.7	54	*)spring		3.1	45	0.8	12	4.3	62			
			40	1.6	23															
700 28"	6500	4790	32	4.9	71	*)spring		4.2	61			3.6	52	0.3	4	4.8	70	M25	244	180
			322			0.6	9			0.2	3									
			40	2.4	35															
			50	1.2	17															
750 30"	8000	5900	32	6.1	88			4.6	67			4	58	*)spring		5.2	75	M25	103	76
			322			0.5	7			*)spring										
			40	3,9	42															
			50	1.5	22															
800 32"	9400	6930	322			0.3	4			*)spring										
			40	3.5	51															
			50	1.8	26															
900 36"	12600	9290	322			*)spring														
			40	4.6	67															
			50	2.4	35															
1000 40"	16400	12090	40	5.7	83															
			50	2.9	42															
			502	1.3	19															
1200 48"	25600	18880	50	4.8	70															
			502	2	29															

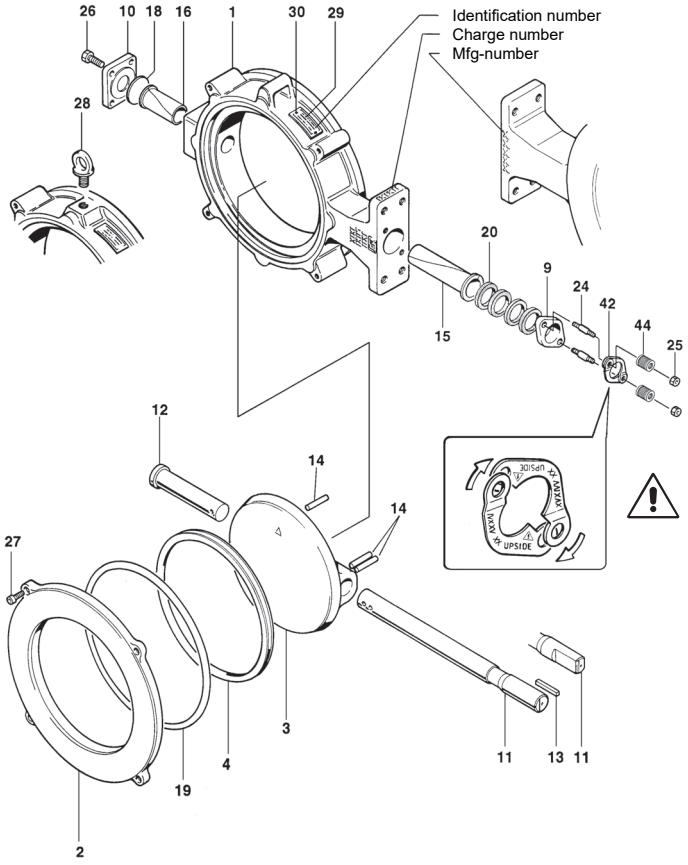
*) spring = spring torque not adequete to reach tightness according to ISO 5208 Rate D, BS 6755 Part 1 Rate D, ANSI/FCI 70.2 Class V, IEC 534-4 or MSS-SP72/1970
**) Adjust the supply pressure regulator to the pressure below. Do not exceed given value.

Table 9 Series L1D, L2D closing torques

DN SIZE	Mc		BC and BJ SIZE	BC pc		BJ pc		BJA** pc		BJK pc		BJKA** pc		BJV pc		BJVA** pc		Manual operator	Input torque M1	
	(Nm)	(lbf ft)		(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)		(Nm)	(lbf ft)
450 18"	3400	2510	25	4.9	71	*)spring		4.3	62			3.7	54	0.2	3	4.8	70	M16	128	94
			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"	4100	3020	32	3	43	0.4	6	3.6	52	*)spring		3	43	0.9	13	4.2	61	M16	155	114
			40	1.4	20													M25	149	110
			322			0.9	13	3	43	0.5	7	2.4	35							
			50	0.8	12															
			502	0.3	4															
600 24"	6700	4940	32	4.8	70	*)spring		4.3	62			3.6	52	0.2	3	4.9	71	M25	244	180
			322			0.6	9			0.2	3									
			40	2.3	33															
700 28"	9800	7230	322			0.2	3			*)spring										
			40	3.4	49															
			50	1.8	26															
750 30"	12000	8850	322			*)spring														
			40	4.2	61															
			50	2.2	32															
800 32"	14000	10320	40	4.9	71															
			50	2.5	36															
900 36"	19000	14010	50	3.4	49															
			502	1.5	22															

*) 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.

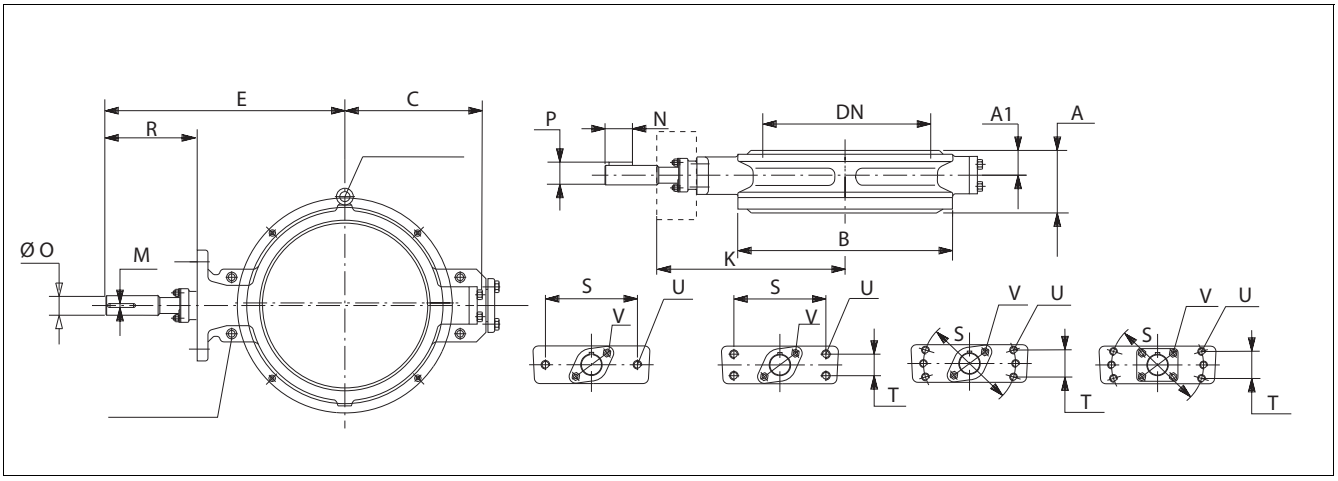
10 EXPLODED VIEW AND PARTS LIST



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 *
24	2	Stud	
25	2	Hexagon nut	
26		Hexagon screw	
27		Hexagon socket screw	
28	1	Lifting eye bolt (DN 600-)	
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



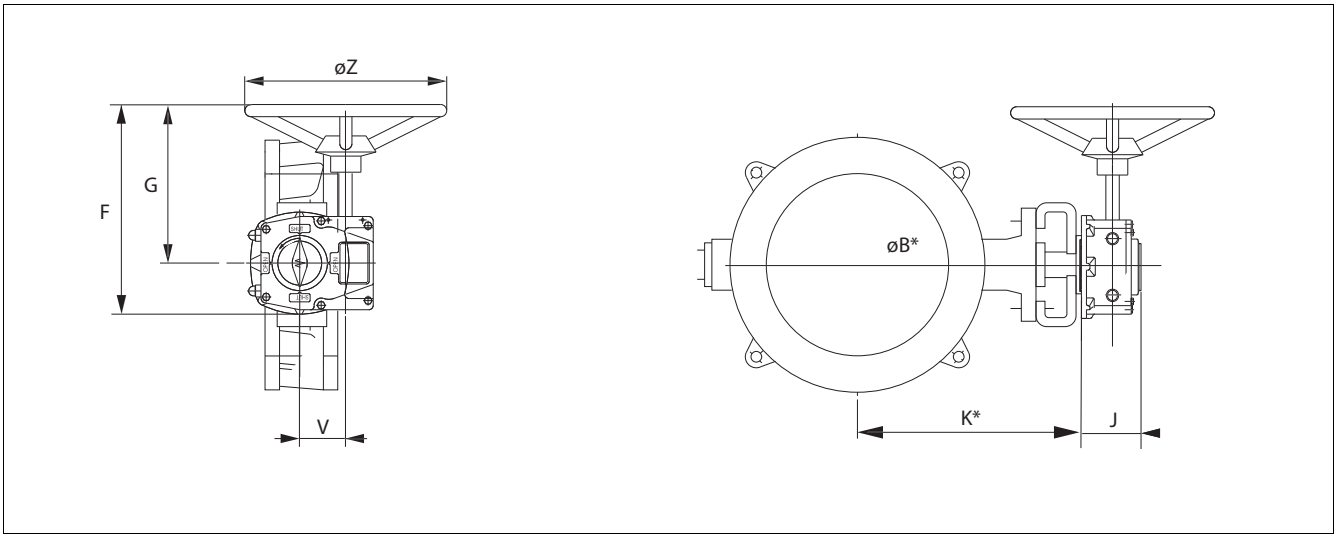
L1C/ASME 150

Size		Dimensions, mm							U UNC	V UNC	Dimensions, mm					Weight kg
in	DN	A	A1	B	C	E	S	T			O	R	M	P	N	
18	450	114	46	537	370	608	160	55	3/4	1/2	50	228	12.7	55.5	90	130
20	500	127	53	590	415	649	160	55	3/4	1/2	55	229	12.7	60.6	90	160
24	600	154	65	690	505	794	230	90	1	5/8	70	299	19.05	78.2	119	280
28	700	229	96	805	545	886	230	90	1	5/8	85	326	22.23	94.7	146	400
30	750	229	96	870	585	911	230	90	1	5/8	85	326	22.23	94.7	146	470
32	800	241	101	910	600	1006	330	120	1 1/4	3/4	95	376	22.23	104.8	156	550
36	900	241	105	1010	660	1060	330	120	1 1/4	3/4	105	395	25.4	116.2	180	710
40	1000	300	130	1120	715	1090	330	120	1 1/4	3/4	120	330	31.75	133.8	205	950

L1D/ASME 300

Size		Dimensions, mm							U UNC	V UNC	Dimensions, mm					Weight kg
in	DN	A	A1	B	C	E	S	T			O	R	M	P	N	
18	450	180	90	565	410	655	230	90	1	5/8	70	250	19.05	78.2	119	245
20	500	200	100	625	465	705	230	90	1	5/8	85	250	22.23	94.7	146	305
24	600	240	120	743	525	860	330	120	1 1/4	3/4	95	330	22.23	104.8	156	540
28	700	250	125	848	615	935	330	120	1 1/4	3/4	120	330	31.75	133.8	205	830
30	750	300	150	942	655	970	360	135	1 1/4	7/8	135	330	31.75	149.0	225	1250
36	900	360	180	1100	730	1060	360	135	1 1/4	1	165	330	38.10	181.0	280	2000

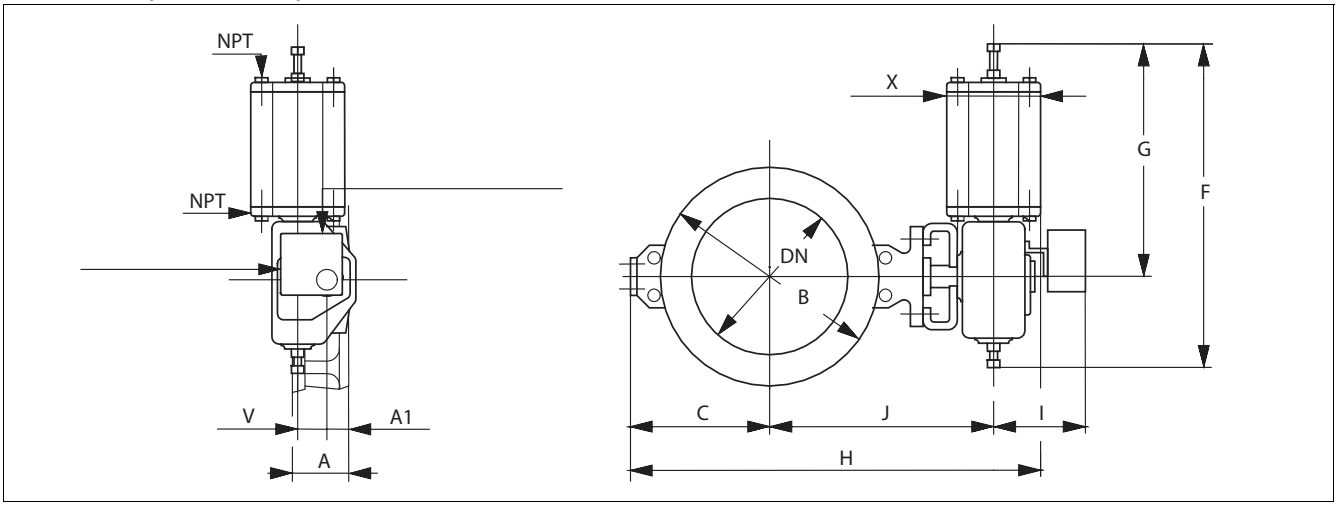
L1C + M



L1C + M

Type	F	G	J	V	øZ	kg
M07	196	152	58	39	160	3
M10	297	239	67	52	200	5
M12	357	282	81	67	315	10
M14	435	345	94	90	400	18
M15	532	406	106	123	500	31
M16	642	466	127	154	600	45

L1C + B1C (DN 80...400)



Type valve and actuator	Dimensions, mm												NPT	Weight kg	*H
	DN	A	A1	B	C	F	G	H	X	I	J	V			
L1C 18 - B1C20	450	114	46	537	370	840	575	1090	215	275	595	97	1/2	210	1105
L1C 18 - B1C25	450	114	46	537	370	1040	710	1150	265	310	618	121	1/2	275	1180
L1C 18 - B1C32	450	114	46	537	370	1330	910	1235	395	350	665	153	3/4	390	1265

* = Dimension H for B1CM

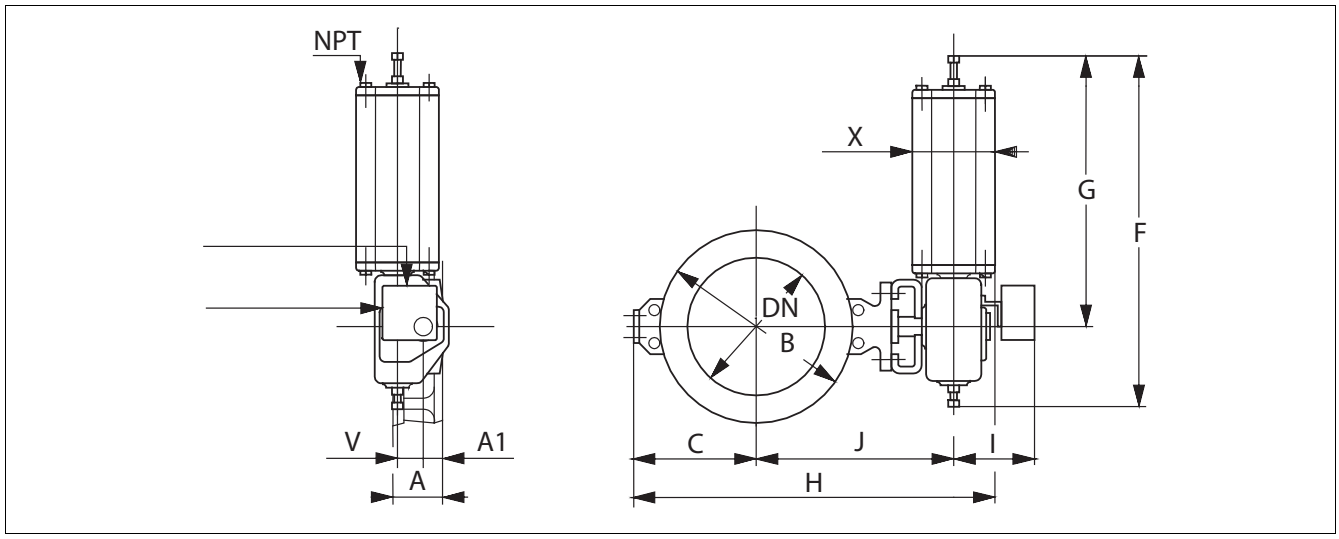
L1C + B1C (DN 500...1000)

Type valve and actuator	Dimensions, mm												NPT	Weight kg	*H
	DN	A	A1	B	C	F	G	H	X	I	J	V			
L1C 20 - B1C25	500	127	53	590	415	1040	710	1235	265	310	658	121	1/2	305	1265
L1C 20 - B1C32	500	127	53	590	415	1330	910	1320	395	350	705	153	3/4	420	1350
L1C 24 - B1C25	600	154	65	690	505	1040	710	1410	265	310	743	121	1/2	425	1440
L1C 24 - B1C32	600	154	65	690	505	1330	910	1485	395	350	780	153	3/4	540	1515
L1C 24 - B1C40	600	154	65	690	505	1660	1150	1610	505	365	850	194	3/4	755	1655
L1C 28 - B1C32	700	229	96	805	545	1330	910	1590	395	350	845	153	3/4	650	1620
L1C 28 - B1C40	700	229	96	805	545	1660	1150	1715	505	365	915	194	3/4	875	1760
L1C 28 - B1C50	700	229	96	805	545	1970	1350	1815	610	415	965	242	1	1260	-
L1C 30 - B1C32	750	229	96	870	585	1330	910	1655	395	350	870	153	3/4	740	1685
L1C 30 - B1C40	750	229	96	870	585	1660	1150	1780	505	365	940	194	3/4	955	1825
L1C 30 - B1C50	750	229	96	870	585	1970	1350	1880	610	415	990	242	1	1330	-
L1C 32 - B1C32	800	241	101	910	600	1330	910	1725	395	350	925	153	3/4	820	1755
L1C 32 - B1C40	800	241	101	910	600	1660	1150	1865	505	365	1010	194	3/4	1035	1910
L1C 32 - B1C50	800	241	101	910	600	1970	1350	1965	610	415	1060	242	1	1410	-
L1C 36 - B1C40	900	241	105	1010	660	1660	1150	1960	505	365	1045	194	3/4	1185	1205
L1C 36 - B1C50	900	241	105	1010	660	1970	1350	2060	610	415	1095	242	1	1580	-
L1C 40 - B1C40	1000	300	130	1120	715	1660	1150	2110	505	365	1140	194	3/4	1455	2155
L1C 40 - B1C50	1000	300	130	1120	715	1970	1350	2210	610	415	1190	242	1	1830	-

L1D + B1C

Type valve and actuator	Dimensions, mm												NPT	Weight kg	*H
	DN	A	A1	v	v	F	G	H	I	X	J	V			
L1D 18 - B1C25	450	180	90	565	410	1040	710	1225	265	310	653	121	1/2	385	1255
L1D 18 - B1C32	450	180	90	565	410	1330	910	1300	395	350	690	153	3/4	510	1330
L1D 20 - B1C32	500	200	100	625	465	1330	910	1405	395	350	740	153	3/4	570	1435
L1D 20 - B1C40	500	200	100	625	465	1660	1150	1530	505	365	810	194	3/4	775	1575
L1D 24 - B1C32	600	240	120	743	525	1330	910	1550	395	350	825	153	3/4	810	1580
L1D 24 - B1C40	600	240	120	743	525	1660	1150	1690	505	365	910	194	3/4	1015	1735

* = Dimension H for B1CM



L1C + B1J

Type valve and actuator	Dimensions, mm												NPT	Weight kg
	DN	A	A1	B	C	F	G	H	X	I	J	V		
L1C 18 -B1J20	450	114	46	537	370	1200	935	1155	395	250	585	97	3/4	295
L1C 18 -B1J25	450	114	46	537	370	1530	1200	1245	505	290	618	121	3/4	450
L1C 18 - B1J32	450	114	46	537	370	1830	1410	1305	540	330	665	153	1	840
L1C 20 - B1J25	500	127	53	590	415	1530	1200	1330	505	290	658	121	3/4	480
L1C 20 - B1J32	500	127	53	590	415	1830	1410	1390	540	330	705	153	1	870
L1C 24 - B1J25	600	154	65	690	505	1530	1200	1505	505	290	743	121	3/4	600
L1C 24- B1J32	600	154	65	690	505	1830	1410	1555	540	330	780	153	1	990
L1C 28 - B1J32	700	229	96	805	545	1830	1410	1660	540	330	845	153	1	1120
L1C 30 - B1J32	750	229	96	870	585	1830	1410	1725	540	330	870	153	1	1190
L1C32 - B1J32	800	241	101	910	600	1830	1410	1795	540	330	925	153	1	1270

L1D + B1J

Type valve and actuator	Dimensions, mm												NPT	Weight kg
	DN	A	A1	B	C	F	G	H	X	I	J	V		
L1D 18 - B1J32	450	180	90	565	410	1830	1410	1370	540	330	690	153	1	960
L1D 20 - B1J32	500	200	100	625	465	1830	1410	1475	540	330	740	153	1	1020
L1D 24 - B1J32	600	240	120	743	525	1830	1410	1620	540	330	825	153	1	1260

12 TYPE CODE

Neles™ Neldisc™ high performance butterfly valves, series L1 and L2.													
1.	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**	**10.**	**11.**		**12.**	**13.**
-	L1	C	M	A	20	A	A	J	A	T	/	-	-

1.	S-DISC CONSTRUCTION
-	without sign, standard valve without S-disc
S-	Flow balancing trim on downstream side

2.	PRODUCT SERIES
L1	Wafer type / full bore
L2	Lug type / full bore

3.	PRESSURE RATING
C	Body ASME class 150 (PN 25, PN10-25, ASME150, ISO PN 20, JIS 10K, JIS 16K). Body max pressure 25 bar, maximum differential pressure 20 bar.
D	Body ASME class 300 (ISO PN 50, PN40, ISO PN50, ASME300, JIS 16K, JIS 20K, JIS 30K) Body max pressure 50 bar.

4.	SEAT TYPE
M	Metal seat

5.	CONSTRUCTION
A	STANDARD
C	CRYOGENIC (Standard Cryo extension) T = -198 °C..-50 °C
1C	CRYOGENIC (Optional Cryo extension, short) T = -100 °C..-50 °C
2C	CRYOGENIC (Optional Cryo extension, extra long) T = -198 °C..-50 °C
H	HIGH TEMP (ATEX II 2 G c) Tmax = +600 °C
S	STEAM JACKET (ATEX II 2 G c) (ONLY FOR L1)
E	EROSION CONSTRUCTION (ONLY FOR L1C)
B	BEARING PROTECTION - O-ring bearing protection for soft bearings.
P	POLISHED (ONLY FOR L1) - polished flow port and disc (Ra 0.8), guided flange.
Z	OXYGEN CONSTRUCTION - Degreasing acc. to Neles standard Note! This is the construction for oxygen flow media more info see IMO 10O270en.pdf
Y	Special, to be specified

6.	VALVE SIZE
	Valves acc. to ASME pressure ratings: L1C: 18, 20, 24, 28, 30, 32, 36, 40, 48 L2C: 18, 20, 24, 28, 30, 32, 36 L1D: 18, 20, 24, 28, 30, 36, 48 (48" with Class 150 internals) L2D: 18, 20, 24, 30

7.	BODY MATERIAL
A	ASTM A351 gr. CF8M
C	ASTM A351 gr. CG8M
P	ASTM A216 gr. WCB
F	ASTM A352 gr. LCC
Y	Special

8.	DISC MATERIAL
A	ASTM A351 gr. CF8M
C	ASTM A351 gr. CG8M
P	ASTM A216 gr. WCB
Y	Special

9.	SHAFT AND PIN MATERIAL
J	SS 329 (SIS 2324
C	Gr. 630 (17-4PH)
H	Nimonic 80A
N	XM-19 (Nitronic 50)

10.	SEAT MATERIAL
A	Incoloy 825, hard chrome plated, valve size 16" - 24" T = -200 °C ... + 500 °C
B	W. No. 1.4418, hard chrome plated, available only for valve size 28" and bigger T = -200 °C ... + 400 °C
H	Nimonic 80A (UNS N07080), hard chrome plated, valve size 16" - 64" (64" is max internal size) T = -200 °C ... + 650 °C (not Nace)
H1	ASTM A182 Gr F5, hard chrome plated, valve size 26" and bigger T = -50 °C ... + 540 °C
K	W. No. 2.4681, UNS R31233 (ULTIMET), valve size 16" - 24" T = -200 °C ... + 600 °C

11.	PACKING CONSTRUCTION
T	Live loaded PTFE V-ring packing with spring sets.
G	Live loaded graphite packing. (ATEX II 3 G c) Firesafe

12.	FLANGE FACING
-	Ra 3,2 - 6,3 standard covering: EN 1092-1 type B1 (a 3.2–12.5) ASME B16.5, Ra 6,3–6,3, (125–250 µin)

13.	FLANGE DRILLING
-	without sign according to valve pressure rating, C ASME cl.150 and D ASME cl.300.
J	PN 10
K	PN 16
L	PN 25
M	PN 40
R	JIS 10K
S	JIS 16K
T	JIS 20K
U	JIS 30K
X	ISO PN 20
Z	ISO PN 50
B	ASME 16.47 Series B cl.150 and cl.300 (size 24"...48".)
Y	Special

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