

Neles[™] Neldisc[™] high performance butterfly valves Series LW, LG



Table of contents

GENERAL	4
Scope of this manual	4
Description	4
Valve markings	4
Technical specifications	5
Valve approvals	5
CE and ATEX marking	5
Recycling and disposal	5
Safety Precautions	5
weiding notes	0
TRANSPORTATION, RECEPTION AND STORAGE Unpacking	6 6
	0
INSTALLATION	6
General	6
Installing in the pipeline	7
Valve insulation	11
Actuator	TI
COMMISSIONING	11
MAINTENANCE	11
	11
Removing the valve from the nineline	12
Replacing the gland packing	12
Valve leakage	13
Replacing the seat ring	13
Replacing the disc, shafts and bearings	14
INSTALLING AND	

TROUBLE SHOOTING TABLE	19
TOOLS	19
ORDERING SPARE PARTS	19
EXPLODED VIEW AND PARTS LIST	23
DIMENSIONS AND WEIGHTS Flange drilling and compatibility	24 28
EU DECLARATION OF CONFORMITY FOR ATEX APPROVED VALVES	29
TYPE CODE	30
GENERAL SAFETY WARNINGS AND DISCLAIMERS General safety warnings General disclaimers	32 32 32

DETACHING THE ACTUATOR General Installing the B1 series actuator Detaching the B1 series actuators

Detaching and installing other actuator types

Stop screw adjustment

Subject to change without notice.
All trademarks are property of their respective owners.



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

16

16

16

16

16

17

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.

L series Neles[™] Neldisc[™] high performance butterfly valves

These instructions provide the customer/operator with important information in addition to the customer/operator's normal operation and maintenance procedures. Since operation and maintenance philosophies vary, Valmet does not attempt to dictate specific procedures, but to provide basic limitations and requirements created by the type of equipment provided.

These instructions assume that operators already have a general understanding of the requirements for safe operation of mechanical and electrical equipment in potentially hazardous environments. Therefore, these instructions should be interpreted and applied in conjunction with the safety rules and regulations applicable at the site and the particular requirements for operation of other equipment at the site.

These instructions do not intend to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the customer/ operator's purposes the matter should be referred to Valmet.

The rights, obligations and liabilities of Valmet and the customer/operator are strictly limited to those expressly provided in the contract relating to the supply of the equipment. No additional representations or warranties by Valmet regarding the equipment or its use are given or implied by the issue of these instructions.

These instructions contain proprietary information of Valmet and are furnished to the customer/operator solely to assist in the installation, testing, operation, and/or maintenance of the equipment described. This document shall not be reproduced in whole or in part nor shall its contents be disclosed to any third party without the written approval of Valmet.

INTRODUCTION

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. Addresses and phone numbers are printed on the back cover. See also www.valmet.com/flowcontrol/valves for the latest documentation.

SAVE THESE INSTRUCTIONS!

The following instructions should be thoroughly reviewed and understood prior to installing, operating or performing maintenance on this equipment. Throughout the text, safety and/or caution notes will appear and must be strictly adhered to, otherwise, serious injury or equipment malfunction could result.

Valmet has highly skilled personnel available for startup, maintenance and repair of our valves and component parts. Arrangements for this service can be made through your local Valmet representative or sales department. When performing maintenance use only Valmet replacement parts. Parts are obtainable through your local representative or spare parts department.

When ordering parts, always include Model and Serial Number of the unit being repaired.

1. GENERAL

These installation and maintenance instructions apply to 3"-40" (DN 80-1000), pressure class 150 and 300 LW,LG series valves regardless of the type of material used. The L series valves are designed with built in versatility making them well-suited to handle a wide variety of process applications.

Recommended spare parts required for maintenance refer to section 9. The model number, size, rating and serial number of the valve are shown on the identification tag located on the valve.

1.1 Scope of this manual

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

For valves in oxygen service, please see also the separate installation, maintenance and operating instructions for oxygen service (see Neles document id: 100270EN.pdf).

1.2 Description

Neles[™] Neldisc[™]series L is a metal seated triple eccentric butterfly valve available in wafer and lugged styles. The valve operates both in control and shut-off applications.

Offset Design

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 Figure 1).

The disc is connected 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 12. 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 or stamped on the body.

The valve also has an identification plate attached to it (see Fig. 2).

 		TTRATION BEAL	NUTRICITION STORE AND		PRIMA CONTACT VALUET FOR CORY	Volume Raw Control of	he Models Philad	
Neles CE	CE I	t max	RATING		No.	BODY	TRIM	
Valmet	0496	tmin	∆ps	TYPE		SHAFT	SEAT	

Fig. 2 Identification plate

Identification plate marking:

- 1. Size
- 2. Pressure class
- 3. Type code
- 4. Body material
- 5. Seat material
- 6. Model number
- 7. Date
- 8. Trim material
- 9. Shaft material
- 10. Maximum shut-off pressure
- 11. Maximum temperature
- 12. Certification and approvals, eg. CE, Atex etc.

1.4 Technical specifications

Туре:	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 11
Weights:	See Section 11

1.5 Valve approvals

API 607 Fire Test for Quarter-turn Valves and Valves Equipped with Nonmetallic Seats

ISO 15848 INDUSTRIAL VALVES. MEASUREMENT, TEST AND QUALIFICATION PROCEDURES FOR FUGITIVE EMISSIONS Group II Category 2 according to directive 2014/34/EU (ATEX). NACE MR0103 & MR0175.

1.6 CE and ATEX 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.

When applicable, the valve meets the requirements of the European Directive 2014/34/EU relating to equipment and protective systems intended for use in potentially explosive atmospheres, 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

WARNING: DO NOT EXCEED THE VALVE PERFORMANCE LIMITATIONS!

Exceeding the pressure or temperature limitations marked on the valve identification plate may cause damage and lead to uncontrolled pressure release. Damage or personal injury may result.

WARNING:

SEAT AND BODY RATINGS!

The practical and safe use of this product is determined by both the seat and body ratings. Read the identification plate and check both ratings. This product is available with a variety of seat materials. Some of the seat materials have pressure ratings that are less than the body ratings. All of the body and seat ratings are dependent on valve type and size, seat material, and temperature. Do not exceed these ratings!

WARNING:

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.

WARNING:

BEWARE OF DISC 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. Disconnect any pneumatic supply lines, any electrical power sources and make sure springs in springreturn actuators are in the full extended/relaxed state before performing any valve maintenance. Failure to do this may result in damage or personal injury!

WARNING:

WHEN HANDLING THE VALVE OR VALVE/ACTUATOR ASSEMBLY, TAKE ITS WEIGHT INTO ACCOUNT!

Never lift the valve or valve/actuator assembly by the actuator, positioner, limit switch or their piping. Place lifting devices securely around the valve body. Failure to follow these instructions may result in damage or personal injury from falling parts.

Please consult separate document: instructions for lifting Neles products. (See Neles document id: 10LIFT70EN.PDF).

CAUTION:

BEWARE OF NOISE EMISSIONS!

The valve may produce noise in the pipeline. The noise level depends on the application. Observe the relevant work environment regulations on noise emission. This can be measured or calculated using Neles[™] Nelprof[™] software.

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.

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:

Contact Valmet experts for dead-end service compliance. Wafer type is not applicable for dead-end service.

ATEX/Ex Safety

CAUTION:

Potential electrostatic hazard, ensure the protection (grounding, etc.) in the process.

CAUTION:

The actual surface temperature of valve is dependent on the process temperature. The protection from high or low temperature must be considered by the end user before valve is put into service.

CAUTION:

Ensure the general process and worker protection from static electricity in the facilities.

Note! Within series there is possibility to Category 2, Category 3 and non-ATEX valve.

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 $^{\circ}$ C (200 $^{\circ}$ 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. trim 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 remove the flow port protectors until installing the valve. Move the valve to its intended location just before installation. The valve is usually 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. If the valve(s) are to be stored for a long duration, follow the recommendations of M-1147-En.

2.1 Unpacking

Care must be exercised when unpacking the valve to prevent damage to the accessories and component parts. Contact the local Valmet Sales office or Service Center with any issues or problems. Be sure to note the valve model number and serial number in all correspondence.

3. INSTALLATION

1. Read all WARNINGS!

- IMPORTANT: Only operating handle stops or actuator stop screws must be used to stop the disc position.
- 3. The valve must be centered between flanges to avoid discpipe contact which could damage the disc and shaft. Any flange or pipeline welding should be done prior to installation of the valves. If this is impossible, protective covering or shields must be placed in the pipeline between the valve and the area being welded prior to welding. Not only must the valve be protected against weld slag, but also against any excessive heat, which could cause seat damage. It is essential that all weld slag, rods, debris, tools, etc., be removed from the pipeline before valves are installed or cycled.
- It is not recommended to install the valve with the stem on the underneath side because dirt in the pipeline may then enter the body cavity and potentially damage the stem packing (see Figure 3).
- For installation of the cryogenic extension to the valve, the extension and the valve should be typically in vertical position.
 For installation of the valve in cryogenic applications the valve package as a whole should be typically in vertical position.

3.1 General

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

Before installing the valve in the line, clean piping and valve of all foreign material such as welding chips, scale, oil, grease or dirt. Gasket surfaces should be thoroughly cleaned to ensure leak-proof joints.

3.2 Installing in the pipeline

WARNING:

The valve should be tightened between flanges using appropriate gaskets and fasteners compatible with the application, and in compliance with applicable piping codes and standards. Center the flange gaskets carefully when fitting the valve between flanges. Do not attempt to correct pipeline misalignment by means of flange bolting!

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 except shown in Figure 3.

Install the valve in the pipeline so that the shaft is horizontal if possible. However, Valmet does 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).

Select flange gaskets according to the operating conditions.

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

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



Fig. 3 Avoid this mounting position



Fig. 4 Position of the flow balancing trim

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 center point of the pipe (see Fig. 5). This is especially important when the valve is used as a control valve.

The shaft of a valve mounted after the centrifugal pump must be perpendicular to the pump shaft (see Fig. 6). When thus installed, the valve disc 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	LW6L, LW7L, LG6L, LG7L (mm / inch)	LW8M, LG8M, LW5M, LG5M (mm / inch)
80 / 3 100 / 4 125 / 5 150 / 6 200 / 8 250 / 10 300 / 12 350 / 14 400 / 16 450 / 18 500 / 20 600 / 24	69 / 2.71 90 / 3.54 112 / 4.41 144 / 5.67 193 / 7.60 243 / 9.56 290 / 11.42 329 / 12.95 374 / 14.72 422 / 16.61 464 / 18.27 565 / 22 24	69 / 2.72 90 / 3.54 112 / 4.41 143 / 5.63 190 / 7.48 241 / 9.49 287 / 11.30 321 / 12.64 315 / 12.40 335 / 13.19 385 / 15.16 425 / 16.73
700 / 28 750 / 30 800 / 32 900 / 36 1000 / 40		520 / 20.47 635 / 25.00 685 / 26.97 735 / 28.94 825 / 32.48

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



Fig. 8 Stud bolt lenght

Table 2 Stud bolt dimensions, DIN flanges (mm)

LW6L	D	IN PN 10 flang	je	D	IN PN 16 flang	je	D	IN PN 25 flang	je	DIN PN 20 flange			
DN	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 fla	ange			DIN	PN 16 fla	ange	DIN PN 25 flange					DIN PN 20 flange					
DN	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	C	IN PN 10 flang	ge	C	IN PN 16 flang	ge	C	DIN PN 25 flang	ge	DIN PN 20 flange			
DN	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	

		DIN	PN 10 fla	ange			DIN	PN 16 fla	ange		DIN PN 25 flange					DIN PN 20 flange				
DN	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

Table 2 Continued

LW8M		DII	N PN 25 flar	nge			DII	N PN 40 flar	nge		DIN PN 50 flange					
DN	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty	
80	M16	180	8			M16	180	8			M20	190	8			
100	M20	190	8			M20	180	8]		M20	200	8	Stud bolts	s pass the	
125	M24	210	8	Stud bolts	s pass the	M24	200	8	Stud bolts	s pass the	M20	210	8	body in	the neck	
150	M24	220	8	area (le	enath I)	M24	210	8	area (le	enath I)	M20	220	12	area (le	ength L)	
200	M24	230	12		gu: =/	M27	240	12		gu: =/	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		DI	N PN 25 flar	nge			DI	N PN 40 flar	nge		DIN PN 50 flange					
DN	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		DIN	PN 10 fla	ange			DIN	PN 16 fl	ange			DIN	PN 25 fla	ange			DIN	PN 20 fla	ange		1.4
DN	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	L4
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 fla	ange			DIN	PN 16 fla	ange			DIN	PN 25 fla	ange			DIN	PN 20 fla	ange		14
DN	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	L4
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		DIN	PN 10 fl	ange			DIN	PN 16 fla	ange			DIN	PN 25 fla	ange			DIN	PN 20 fla	ange		14
DN	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	L4
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 fla	ange			DIN	PN 16 fla	ange			DIN	PN 25 fla	ange			DIN	PN 20 fla	ange		14
DN	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	L4
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		DIN	NPN 25 flai	nge			DI	N PN 40 fla	nge			DI	N PN 50 flai	nge		
LG5M DN	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	L4
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	N PN 25 flai	nge			DI	N PN 40 fla	nge			DI	N PN 50 flai	nge		14
DN	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	Thread	L2	Qty	L3	Qty	L4
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	LW6I	, LW7L, ASME 150 f	lange		LW5N	A, LW8M, ASME 300	flange	
NPS / DN	Thread	L	Qty	Thread	L	Qty	L1	Qty
3 / 80	5/8 UNC	6.30 / 160	4	3/4 UNC	7.87 / 200	8		
4 / 100	5/8 UNC	6.69 / 170	8	3/4 UNC	8.26 / 210	8	Stud bolts	s pass the
5 / 125	3/4 UNC	7.48 / 190	8	3/4 UNC	8.66 / 220	8	body in the	e neck area
6 / 150	3/4 UNC	7.87 / 200	8	3/4 UNC	9.05 / 230	12	(leng	gth L)
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

		LW6L,	LW7L, ASME 150	flange			LW5M,	LW8M, ASME 30	0 flange	
NF3/DN	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_		•	LG6, LG7L, AS	SME 150 flange	e			L	G5M, LG8M, A	SME 300 flang	ge	
NPS / DN	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

			LG6, LG7L, AS	ME 150 flange	•			Ŀ	G5M, LG8M, A	SME 300 flang	je	
NP5/DN	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

		LW8C	B ASME 150 fl	ange ¹⁾	
NP5/DN	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

		LG8CI	BASME 150 fl	ange ¹⁾	
NP5/DN	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_	L	W6L, ISO PN 20 flang	je	LW5M, ISO PN 50 flange						
DN	Thread	L	Qty	Thread	L	Qty	L1	Qty		
80	M16	140	4	M20	160	8	Stud bolts pass	the body in the		
100	M16	150	8	M20	170	8	neck area	(length Ĺ)		
125	M20	160	8	-	-	-	-	-		
150	M20	160	8	M20	190	12	Stud bolts pass	the body in the		
200	M20	170	8	M24	220	12	neck area	(length Ĺ)		
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		LW	6L, ISO PN 20 fla	nge	LW5M, ISO PN 50 flange					
DN	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			LG6L, ISO F	PN 20 flange			LG5M, ISO PN 50 flange					
DN	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					
DN	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. 8 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° .

See Figure 8 and Tables 2...4, length of stud bolts are based on:

- gasket thickness of 3 mm
- heavy nuts with washers
- flange thickness of weldneck flanges per DIN or ISO

3.3 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

3.4 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 actuator should be installed in a manner that allows plenty of room for its removal.

CAUTION:

The actuator must not touch the pipeline, because pipeline vibration may damage it or interfere with its operation. In some certain cases, when a large-size actuator is used, extended stems are required or when the pipeline vibrates heavily, supporting the actuator is recommended.

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 $30-40^{\circ}$ 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.



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.

WARNING:

FOR YOUR SAFETY IT IS IMPORTANT THE FOLLOWING PRECAUTIONS BE TAKEN PRIOR TO REMOVAL OF THE VALVE FROM THE PIPELINE OR BEFORE ANY DISASSEMBLY:

- 1. Wear any protective clothing or equipment normally required when working with the fluid involved.
- 2. Depressurize the pipeline and cycle the valve as follows:

• Place the valve in the open position and drain the pipeline. After removal and before any disassembly, cycle the valve again several times.

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

It is generally most convenient to detach the actuator and its auxiliary devices before removing the valve from the pipeline. If the valve package is small or if it is difficult to access, it may be more practical to remove the entire assembly.

NOTE:

To ensure proper reassembly, observe the position of the actuator and positioner/limit switch with respect to the valve before detaching the actuator.

WARNING:

Always disconnect the actuator from its power source, pneumatic, hydraulic or electrical, before attempting to remove it from the valve!

WARNING:

Do not remove a spring-return actuator unless a stop-screw is carrying the spring force!

- 1. Detach the air supply, electrical supply, hydraulic supply and control signal cables or pipes from their connectors.
- 2. Unscrew the actuator mounting bracket screws.
- Lift the actuator straight up in line with the valve stem until the coupling between actuator drive and valve stem is completely disengaged.
- 4. Place actuator in a safe location to avoid damage or personal injury.

WARNING:

Do not dismantle the valve or remove it from pipeline while the valve is pressurized.

CAUTION:

Valve must be fully closed before removing it from the pipeline.

CAUTION:

Valves equipped with spring-to-open (air-to-close) actuators must be disconnected from the actuators and then closed.

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. Support the valve carefully with a hoist. Place ropes carefully and unscrew the pipe flange bolts. Ensure that the ropes are positioned correctly.

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 (44), 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).
- Ensure that there are no burrs in the keyway groove which could damage the packing. Clean the gland packing and packing ring counterbore. Install new set of packings (V-ring or graphite). Slip the rings onto the shaft.
- · 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 (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.

LW6L,	LW8M,			Compression (h ₁ –h ₂), mm Packing ring material			
LG6L, LW7L, LG7L	LG8M, LW5M, LG5M	Spring set dia	Thread				
DN	DN	mm	м	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		

T	T		
Table 5	Lightening	of gland	packing

LW8CB,		Spring set	Thursd	Compression (h ₁ -h ₂), mm			
LG8CB		dia	IIIIeau	Packing ring material			
DN	DN	mm	М	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 6.5).

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.
- 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.



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.
- 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).

Fig. 13 Mounting the body seal

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

TORQL A2/A	JE FOR 4-70	TORQU B8M	JE FOR CL1	TORQU L7	ie for M	TORQU GR.	JE FOR 660	TORQU N10	IE FOR 276	TORQL S31	IE FOR 254	Convert
Thread size [mm]	Torque [Nm]	Thread size [in]										
M5	5	M5	3	M5	6	M5	7	M5	3	M5	3	-
M6	9	M6	5	M6	10	M6	11	M6	5	M6	6	1/4 UNC
M8	21	M8	11	M8	25	M8	27	M8	13	M8	14	5/16 UNC
M10	41	M10	22	M10	50	M10	53	M10	26	M10	28	3/8 UNC
M12	70	M12	38	M12	85	M12	91	M12	44	M12	47	1/2 UNC
M14	110	M14	61	M14	140	M14	150	M14	71	M14	76	9/16 UNC
M16	170	M16	95	M16	210	M16	230	M16	110	M16	120	5/8 UNC
M20	340	M20	190	M20	420	M20	440	M20	220	M20	230	3/4 UNC
M24	590	M24	320	M24	720	M24	770	M24	370	M24	400	1 UNC (-8UN)
M30	1200	M30	650	M30	1400	M30	1500	M30	750	M30	800	1-1/8-8UN
M36	2100	M36	1100	M36	2500	M36	2700	M36	1300	M36	1400	1-3/8-8UN

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 (5) and bearings (11).

- 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.
- Set the valve horizontally on a sturdy surface so that the flat side of the disc lays against the surface (see Fig. 14).



Fig. 14 Drilling the pins

- Drill the holes carefully to the center of the pins (16). 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-extrusion ring (23) according to Section 5.3.
- Detach the screws (44) and the blind flange (8) and remove the gasket (31).
- Place rubber strips or other protection between the disc edge and the body and remove the shafts (see Fig 15).
- Remove the bearings (11).
- · Clean and check all parts carefully.



Fig. 15 Protecting the disc during disassembly and assembly

Checking Parts

- 1. Clean all disassembled parts.
- 2. Check the shaft (5) and disc (3) for damage. Pay particular attention to the sealing areas.
- 3. Check all sealing and gasket surfaces of the body (1) and clamp ring (2).
- 4. Replace any damaged parts.

NOTE: When ordering spare parts, always include the following information:

- Valve catalog code from Identification plate,
- If the valve is serialized the serial number (stamped on the valve body)

Assembling the valve

- Replace damaged parts with new ones.
- Set the disc (3) and the shaft (5 & 6) 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.
- Mount the bearings (11) into the body (1) from flow port side.
- High temperature-construction: 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 area. Mount the bearing on the shaft. Press the bushing with a tightening clamp on the shaft's bearing area and fit the shaft with the bearings carefully into the body.
- · Place thrust bearings (12) at the end of the shaft

- 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 (5) position against the disc must be according to Figure 12.

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. 16). Use slightly larger pressing tool than the pin diameter. See Table 7 for forces.



Fig. 16 Pressing the pins

Table 7 Pin Pressing force, kN

		DIAMETER OF PIN (mm)									
	5	6	8	10	12	15	20	25	30	35	
PIN material		(TOOL	. MUST	DIA OI I be s	F PRE	SSING As pin	TOOL OR S	IZE BI	GGER)	
	6	8	10	12	15	20	25	30	35	40	
			Р	IN PRI	SSIN	G FOR	CE (kl	N)			
1.4460 / 1.4462	32	46	82	128	184	287	511	798	1149	1563	
17-4PH H1150M	39	56	100	156	224	350	623	973	1401	1907	
NIMONIC 80A	46	66	117	183	263	411	730	1141	1643	2237	
XM-19HS, NITRONIC 50	49	71	126	196	283	442	785	1227	1767	2239	
UNS S31254, SMO 254	33	48	85	134	192	300	534	834	1202	1636	
UNS N10276, HAST-C276	34	49	87	135	195	305	542	847	1219	1660	

- 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 gasket (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

WARNING:

Before installing the valve and actuator, be sure that the indicator pointer on top of the actuator is correctly indicating the valve position. Failure to assemble these products to indicate correct valve position could result in damage or personal injury.

CAUTION:

When installing a linkage or servicing a valve/ actuator assembly, the best practice is to remove the entire assembly from service.

CAUTION:

An actuator should be remounted on the valve from which it was removed. The actuator must be readjusted for proper open and close position each time it is remounted.

WARNING:

The linkage has been designed to support the weight of the Neles actuators and recommended accessories. Use of this linkage to support additional equipment such as people, ladders, etc. may result in the failure of the linkage, valve or actuator and may cause personal injury.

CAUTION:

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. Mounting an open actuator to a closed valve may result in valve stem damage.

CAUTION:

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

WARNING:

Do not detach a spring-return actuator unless a stopscrew is carrying the spring force!

CAUTION:

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:

When Valmet supplies whole valve-actuator assembly, the actuator is mounted at Valmet factory on the valve and the stroke limit stops are adjusted by Valmet.

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.
- Adjust the stop screws to the closed position (see Section 6.5).
- 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. 17).
- Remove the bracket and coupling, if any.



Fig. 17 Actuator removal, B1 series

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 10 and 11 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

WARNING:

The actuator must not be removed from the valve in a pipeline under pressure as it will result dynamic torque!

Always remove the actuator from the valve shaft before mounting it into another key area. 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. 18 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. 19 Cylinder actuator, series B1C

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. 20 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°.



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 8.
- 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. 23 Hand lever, series RH

Table 8 Hand lever RH, adjustment val

Size	L	L1	Torque		Fo	rce
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

Fig. 21 Cylinder actuator, series B1JA

M-series operator

- Close the valve as per the tabulated primary torque M1 (handwheel torque) given in Tables 10 and 11.
- Tighten the closed position stop screw until it touches the linkage, then turn back 1/4 turn and lock up with Loctite locking glue.



Fig. 22 Actuator, series M

7. TROUBLE SHOOTING TABLE

Table 9 Trouble shooting

Symptom	Possible fault	Recommended action			
	Wrong stop screw adjustment of the actuator	Adjust the stop screw for closed position			
	Faulty zero setting of the positioner	Adjust the positioner			
Leakage through a closed	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			
Lookago through body joint	Damaged gasket	Replace the gasket			
Leakage infough bouy joint	Loose body joint	Tighten the nuts or screws			
	Actuator or positioner malfunction	Check the operation of the actuator and positioner			
	Process medium accumulated on the sealing surface	Clean the sealing surfaces			
inegular valve movements	Closing member or seat damaged	Replace the closing member or seat			
	Crystallizing medium has entered the bearing spaces	Flush the bearing spaces			
Cland packing looking	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,	Mc	Мс	BC and BJ	BC	рс	BJ	рс	BJA	**) pc	BJM	Крс	BJKA	**) pc	BJ	V pc	BJVA	. **) pc
LW6	(1)	(11-6.64)	0175	(1	((1)	((1)	((1)	((1)	((1	((1)	(
DN / SIZE	(Nm)	(101 ft)	SIZE	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)
			6	2,5	36	0,1	1,45	3,8	55	*)spring		3,3	48	0,5	7,251887	4,5	65
80	45	33	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
			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
100	75	55	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												
			6	6	87												
			8	5	72	*)spring		4,5	65			3,8	55	*)spring		5,3	77
125	110	00	9	3	43												
5"		00	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
			6	8,2	119												
450			9	4,1	59												
150 6"	150	110	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
			10	6,5	94	*)spring		5	72			4,4	64	*)spring		5,6	81
000			11	4,2	61												
8"	300	220	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
			12	5,5	80	*)spring		4,6	67			4	58	*)spring		5,5	80
250	500	370	13	3,5	51												
10"		010	16	2,8	41	0,5	7	3,6	52	0		3	43	1	14	4,3	62
			17	1,8	26												
			13	5,8	84												
300	825	610	16	4,5	65	*)spring		4,2	61			3,6	52	0,3	4	5	73
12"			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
			16	6,4	93	*)spring		4,9	71			4,3	62	*)spring		5,7	83
350	1160	860	17	4,2	61												
14			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
			16	9,5	138			5,9	86			5,2	75	*)spring		6,8	99
400	1650	1220	17	6	87												
10			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	5/
450	0000	1000	20	6,3	91	*)spring	0	4,8	/0	*) '		4,2	61	^)spring	40	5,3	11
18"	2200	1620	25	3,2	46	0,4	6	3,7	54	^)spring	7	3,1	45	0,9	13	4,2	61
			32	1,6	23	0,9	13	3,1	45	0,5	/	2,5	36	1,4	20	3,1	54
500 20"	2700	1990	25	3,9	5/	0,1	1,45	3,9	5/)spring	0	3,3	48	0,6	9	4,4	04 57
			32	1,9	28	U,8	IZ	10	70	0,4	0	2,1	59	1,3	19	3,ð	55 77
600 24"	4400	3240	20	0,4	93)spring	e	4,8	70	*)opring		4,2	01	Jspring	10	0,3	60
27				ა,∠	40	0,4	0	3,1	54	Jspring		ک, I	45	υ,ŏ	12	4,3	02

*) 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.

L8M, L5M	Мс	Mc	BC and BJ	BC	рс	BJ	рс	BJA	**) pc	BJK	Крс	BJKA	**) pc	BJV	рс	BJVA	**) pc
DN/SIZE	(Nm)	(lbf ft)	SIZE	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)
00			6	2,5	36	0,1	1,45	3,8	55,1	*)spring		3,3	48	0,5	7,2	4,5	65
3"	45	33	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
			6	4,1	59	*)spring		4,7	68,2	*)spring		*)spring		*)spring		5,4	78
100			8	3,4	49	0,2	3	3,8	55	*)spring		3,3	48	0,6	9	4,6	68
4"	75	55	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												
			6	6	8/	+) .		4.5	05			0.0		+\ .		5.0	77
405			8	5	12	^)spring		4,5	65			3,8	55	^)spring		5,3	11
125	110	80	9	3	43	0.6	0	24	40	0.0	2	2.0	40	1 1	16	4	50
5			10	2,4	30	0,0	9	3,4	49	0,2	3	2,9	42	1,1	10	4	00
			10	1,0	10	11	16	2	12	0.7	10	2.2	20	1.6	22	2.7	54
			10	5	72	*)cpring	10	1.1	40	0,7	10	2,2	55	0.1	1	5	73
			11	3.2	12	Jopiniy		4,4	04			5,0	55	0,1	1	5	15
150	230	170	12	2.5	36	0.5	7	3.5	51	0.1	1	29	42	11	16	43	62
6"	200	110	13	1.6	23	0,0	,	0,0	01	0,1		2,5	74	1,1	10	,0	02
			16	1,3	19	0.9	13	3	43	0.6	9	23	33	15	22	37	54
			11	6.4	93	0,0		-		0,0		2,0		.,,0		0,1	
			12	5	72	*)sprina		4.4	64			3.8	55	0.1	1	5.3	77
200	400		13	3.2	46	7-1 5		,				- / -		- /		- / -	
8"	460	340	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
			13	5,6	81												
250	800	590	16	4,4	64	*)spring		4,2	61			3,6	52	0,4	6	4,9	71
10"	000	550	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
			17	4,6	67												
300	1250	920	20	3,6	52	0,2	3	3,8	55	*)spring		3,2	46	0,7	10	4,3	62
12"		020	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												
050			1/	6,4	93	*\		4.2				0.7	54	0.0		4.0	70
350	1750	1290	20	5	12	")spring	0	4,3	02	0.0	2	3,7	54	0,2	3	4,8	70
14			20	2,0	30	0,0	9	3,4	49	0,2	3	2,9	42	1,1	10	3,9	57
			25	1,5	52	0.2	3	2,9	42	0,0 *)coring	9	2,3	16	1,5	10	3,0	62
400	2500	18/10	32	1.8	26	0,2	12	3.0	46	0.4	6	2.5	36	1.3	10	3.8	55
16"	2000	1040	40	0.9	13	0,0	12	0,2		0,7	0	2,0	00	1,0	10	0,0	
			25	4 9	71	*)spring		4.3	62			37	54	0.2	3	4.8	70
450			32	2.4	35	0.6	9	3.4	49	0.2	3	2.8	41	11	16	4	58
18"	3400	2510	322	-,.		1	15	2.9	42	0.6	9	2.2	32	1.5	22	3.4	49
			40	1,2	17			,=		-,-	-	_,_		.,.			
			25	5,2	75	*)spring		4,2	61	*)spring		3,6	52	*)spring		4,7	68
500	2400	0540	32	2,6	38	0,6	9	3,4	49	*)spring		2,7	39	1	15	3,9	57
20"	3400	2510	322			1	15	3	44	0,6	9	2,3	33	1,4	20	3,5	51
			40	1,3	19												
			32	3,1	45	0,4	6	3,6	52	*)spring		2,9	42	0,8	12	4,1	59
600	4100	3020	40	1,5	22												
24"	4100	0020	322			0,9	13	3,1	45	0,5	7	2,4	35	1,4	20	3,5	51
				0,8	12												

Table 11	Series I W/8M	L G8M	1 W/5M	and	LG5M	closing	torques
	Series Livolvi,	LGOIVI,	LVVSIVI	anu	LGOIVI,	CIOSING	lorques

	M	lc	BC and BJ	BC	рс	BJ	рс	BJA	**) pc	BJM	(pc	BJKA	**) pc	BJ\	/ рс	BJVA	**) pc
L_00D	(Nm)	(lbf ft)	SIZE	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)	(bar)	(psi)
700			25	6,7	97	*)spring		4,8	70			4,2	61	*)spring		5,3	77
28"	4400	3240	32	3,3	48	0,4	6	3,7	54	*)spring		3,1	45	0,8	12	4,3	62
20			40	1,6	23												
			32	4,9	71	*)spring		4,2	61			3,6	52	0,3	4	4,8	70
750	6500	4700	322			0,6	9			0,2	3						
30"	0500	4790	40	2,4	35												
			50	1,2	17												
			32	6,1	88			4,6	67			4	58	*)spring		5,2	75
800	0000	5000	322			0,5	7			*)spring							
32"	0000	5900	40	2,9	42												
			50	1,5	22												
000			322			0,3	4			*)spring							
900	9400	6930	40	3,5	51												
50			50	1,8	26												
4000			322			*)spring											
1000	12600	9290	40	4,6	67												
0			50	24	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.

	Manual	Input to	rque M1
L_0CD	operator	(Nm)	(lbf ft)
700	M16	166	122
28"		190	140
750	M25	244	180
30"			
800	M25	103	76
32"			
900			
36"			
1000			
40"			

LW7, LW6	Мс	Mc	Q-P	spring	g close	**) spri	ng open	Manual	Input to	rque M1
DN / SIZE	(Nm)	(lbf ft)	actuator	(bar)	(psi)	(bar)	(psi)	operator	(Nm)	(lbf ft)
80	45	22	QP2C	0,6	9	3,6	52	M07	4	2
3"	40	33	QP3C	1,1	16	3,2	46	IVIO7	4	3
100	75	55	QP2C			4,3	62	M07	7	5
4"	10	00	QP3C	0,8	12	3,5	51	inio/	1	Ŭ
125	110	00	QP3C	0,3	4	3,9	57	M07	10	7
5"	110	80	QP4C	1	14	3,3	48	INIU7	10	/
150	150	110	QP3C			4,3	62	107	14	10
6"	150	110	QP4C	0,8	12	3,5	51	IVIU7	14	10
200	200	220	QP4C			4,3	62	M07	26	19
8"	300	220	QP5C	0,8	12	3,5	51	M10	27	20
250	500	270	QP5C	0,1	1	4,1	59	M10	43	32
10"	500	370						M12	44	32
300	025	610						M12	69	51
12"	020	010						M14	51	38
350	1160	960						M14	72	53
14"	1100	000								
400	1650	1000						M14	125	92
16"	0001	1220						M15	80	59
450	2200	1620						M15	107	79
18"	2200	1020						M16	83	61
500	2700	1000						M16	102	75
20"	2100	1990						M25	98	72
600 24"	4400	3240						M16	166	122

L8M, L5M	Мс	Мс	Q-P	spring	g close	**) spri	ng open	Manual	Input to	rque M1
DN/SIZE	(Nm)	(lbf ft)	actuator	(bar)	(psi)	(bar)	(psi)	operator	(Nm)	(lbf ft)
80	45	22	QP2C	0,6	9	3,6	52	M07	4	3
3"	40		QP3C	1,1	16	3,2	46	IVIO7	4	3
100	75	55	QP2C			4,3	62	M07	7	5
4"	15	55	QP3C	0,8	12	3,5	51	IVIO7	1	5
125	110	80	QP3C	0,3	4	3,9	57	M07	10	7
5"	110	00	QP4C	1	14	3,3	48	IVIO7	10	1
150	220	170	QP4C	0,3	4	3,9	57	M07	20	15
6"	230	170	QPC5	1	14	3,3	48	M10	21	15
			QPC5	0,3	4	3,9	57	M10	40	29
200	460	340						M12	38	28
								M14	28	21
250	800	500						N41.4	40	26
10"	000	590						IVI 14	49	
300	1250	020						M15	61	45
12"	1250	920						M16	44	32
350	1750	1200						M15	85	63
14"	1750	1290						M16	62	46
400	2500	1940						M16	94	69
16"	2500	1040						M25	91	67
450	2400	2510						M16	100	04
18"	3400	2510						IVITO	120	94
500	2400	2510						MAG	100	04
20"	3400	2310						IVIIO	120	94
600	4100	2020						M16	155	114
24"	4100	3020						M25	149	110

10. EXPLODED VIEW AND PARTS LIST



ltem	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	Кеу	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

				Dimensi	ons, mm	1					v		Dim	ensions,	mm		Weight
DN	A1	LW6LB A (K1/API)	LW7LB A (K2)	ØB	С	E	К	S	Т	Thread	v Thread	0	R	М	N	Р	kg
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

				Dim	ensions,	mm					v		Dim	ensions,	mm		Waight
DN	A1	LW8M A (K3)	LW5M A (API)	ØB	С	Е	К	S	Т	Thread	Thread	0	R	М	N	Р	kg
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	С	E	К	S	т	U	v	0	R	М	N	Р	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

			Dimen	sions	, mm									FI	ange	drillings					Dim	ensions	, mm		
DN		LG6LB	LG7LB	_		_			_	U	V	PN1	0	PN1	6	PN2	5	ISO PN	120	-				-	Weight
	A1	A (K1/API)	A (K2)	В	С	E	ĸ	S	I	Threau	meau	Thread	Qty	Thread	Qty	Thread	Qty	Thread	Qty	0	к	М	N	Р	ĸу
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

				Dimens	ions, m	Im							F	lange dr	illing	s		Dimensions, mm					
DN		LG8MB	LG5M	_		_			_	U	V	PN2	5	PN4	0	ISO PI	N50	_	_			_	Weight
	A1	A (K3)	A (API)	В	С	E	K	S	T	Thread	Infeau	Thread	Qty	Thread	Qty	Thread	Qty	0	R	М	N	Р	ĸġ
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	С	E	к	S	т	U	v	0	R	м	N	Р	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 Flange drilling and compatibility

--Date e.g. /K NA = 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.

= 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
	DIN DN 40	DIN DN 46	DIN DN 25		ISO DN 20		ACME 450	A CMT 200		IIC ACK	110 2017	110 2017
	DINPNIU	DINFN 10	DIN PN 25	DIN FN 40	130 PN 20	130 PN 30	ASIVIE 150	ASIVIE 300	JIS IUK	JISTON	JI3 20K	JIS 30K
DN 000												
DN 100												
DN 120									N/A			
DN 130	N/A		//	/M	/X	17	/C	/D	N/A	/S	/т	/11
DN 250	N/A	N/A	//	/M	/X	17	/0	/D	N/A	/0	Л	/U
DN 300	N/A	N/A	/L	/M	/X	/Z	/C	/D	N/A	/S	/Т	/U
DN 350	N/A	N/A	/L	/M	/X	/Z	/C	/D	N/A	/S	/Т	/U
DN 400	N/A	N/A	/L	/M	/X	/Z	/C	/D	N/A	/S	/Т	/U
DN 450	N/A	N/A	/L	/M	N/A	/Z	N/A	/D	N/A	/S	/Т	N/A
DN 500	N/A	N/A	/L	/M	N/A	/Z	N/A	/D	N/A	/S	/Т	N/A
DN 600	N/A	N/A	/L	/M	N/A	/Z	N/A	/D	N/A	/S	/Т	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	/I (T	N/A
DN 350	/J	/K		N/A	/X	N/A	/C	N/A	N/A	/5	/I (T	N/A
DN 400	/J	/K		N/A	/X	N/A	///	N/A	/R	/5	/1	N/A
DN 450	/J	/K	N/A	N/A	/X /X	N/A	10	N/A	/R /P	N/A	N/A	N/A
DN 500	/J	//\	/L	N/A		N/A	10	IN/A	/R /D	N/A	N/A	N/A
DN 000	/5	/1	/L	IN/A	1	IN/A	10	IN/A	//\	IN/A	IN/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
L C 9M	DIN DN 40	DIN DN 46			ISO DN 20	ISO DN 50	ASME 450	ASME 200	IIS 10K	119 164	116 2014	116 304
	DIN PN 10	DIN PN 10	DIN PN 25	DIN PN 40	130 PN 20	130 PN 30	ASIVIE 150	ASIVIE 300	JISTUK	JIS 10K	JIS 20K	JIS 30K
	/1				/X /X	12		/D	/K	15	/ I /T	/U
DN 100	/J	//\				12	10	/D	//K	/5 N/A	/ I N/A	/U
	/J	//\ N/Δ			/A N/A	12	N/A	/0	N/A	N/A	N/A	N/A
DN 200	N/A	N/A	/L	-	N/A	12	N/A	/D	N/A	N/A	N/A	N/A
DN 300	N/A	N/A	/L		N/A	/7	N/A	/D	N/A	N/A	N/A	N/A
DN 350	N/A	N/A	//		N/A	17	N/A	/D	N/A	N/A	N/A	N/A
DN 400	N/A	N/A	//		N/A	/7	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	/Т	N/A
DN 500	N/A	N/A	/L	/M	N/A	/Z	N/A	/D	N/A	/S	/Т	N/A
DNI 600	N/A	N/A	//	/M	N/A	17	Ν/Δ	/D	N/A	/S	/Т	N/A

12. EU DECLARATION OF CONFORMITY FOR ATEX APPROVED VALVES

	•	EU DECLARATION OF CONF	ORMITY
Manufactur	er:	for ATEX approved valves	
Valmet Flov	v Control Oy		
01380 Vant	aa, Finland		(X3)
Valmet Flov	Control (Jiaxing) Co.	, Ltd.	
*) Also manu	la Ifactures certain series	5	
,			
EU Authorise Vantaa, Finla	ed Representative: Va and. Contact details: <u>+</u>	Imet Flow Control Oy, Vanha Porvoontie 229, 01 358 10 417 5000	380
his declarati	on of conformity is iss	ued under the sole responsibility of the manufac	turer.
Product:	Neles Butterfly Valve	es	
Tvpe:	L-series (L1, L2, L4,	L5. L6. L12. LG. LW).	
	Ex GAS:	Ex h IIC 85°C Tmax Gb	
	Ex DUST:	Ex h IIIC T85°CT(Tmax) Db	
		Tr	ax= valve max. temperature in name plate
Janufacturo	's certificates:		
Standard / Di	rective	Notified Body and NoBo number	Certificate No
SO 9001.20	15	I ROA (Certification body)	10531829
PED 2014/69	/EU Module H	DNV Business Assurance Italy S r L 0496	142306-2013-CE-EIN-ACCREDIA
ATEX 2014/3	4/EU Annex IV	DNV Product Assurance AS Norway 2460	Presafe 18 ATEX 91983Q Issue 6
ATEX 2014/3	4/EU Annex VIII techr	nical files are archived by Notified Body number	0537
The object of	the declaration descri	ibed above is in conformity with the relevant Uni	on harmonisation legislation:
PED 2014/6	68/EU	Valve	
ATEX 2014	/34/EU	Non-ele	ctrical equipment
ATEX 2014	/34/EU ents:	Non-ele	ctrical equipment
ATEX 2014, Iain compon Valve: The valve is	/34/EU ents: suitable for service up	Non-ele	ctrical equipment
ATEX 2014, <u>fain compon</u> Valve: The valve is Valve design	/34/EU ents: suitable for service up standard: ASME B16	Non-ele o to PED Cat III 5.34	ctrical equipment
ATEX 2014, <u>Main compon</u> Valve: The valve is Valve design	/34/EU ents: suitable for service up n standard: ASME B16	Non-ele o to PED Cat III 5.34	ctrical equipment
ATEX 2014, Main compon Valve: The valve is Valve design Installation, M mounting and	34/EU ents: suitable for service up a standard: ASME B16 laintenance and Operatir usage of equipment.	Non-ele o to PED Cat III 5.34 ng instructions manual (IMO) must be followed before i	ctrical equipment
ATEX 2014, lain compon Valve: The valve is Valve design Installation, M mounting and The product a The product is	34/EU ents: suitable for service up n standard: ASME B16 laintenance and Operatir usage of equipment. bove is manufactured in s in conformity with the c	Non-ele to to PED Cat III 5.34 ng instructions manual (IMO) must be followed before i compliance with the applicable European directives ar ustomer order.	ctrical equipment
ATEX 2014, <u>Main compon</u> Valve: The valve is Valve design Installation, M mounting and The product a The product as Instrumentatic be in conform	34/EU ents: suitable for service up n standard: ASME B10 laintenance and Operatin usage of equipment. bove is manufactured in s in conformity with the co on and accessories havin ity with this Declaration of	Non-ele to to PED Cat III 5.34 Ing instructions manual (IMO) must be followed before i compliance with the applicable European directives ar ustomer order. Ing equal protection concept, level and performance spe of Conformity.	nstallation in order to ensure proper and safe nd technical specifications/standards (EN10204).
ATEX 2014, <u>Main compon</u> Valve: The valve is Valve design Installation, M mounting and The product a The product as Instrumentation be in conform Protection from EN 60079-19	34/EU ents: suitable for service up a standard: ASME B10 laintenance and Operatir usage of equipment. bove is manufactured in s in conformity with the ci on and accessories havin ity with this Declaration of m e.g. static electricity ca applies for modifications	Non-ele to to PED Cat III 5.34 Ing instructions manual (IMO) must be followed before i compliance with the applicable European directives ar ustomer order. Ing equal protection concept, level and performance spe of Conformity.	ctrical equipment nstallation in order to ensure proper and safe and technical specifications/standards (EN10204). ecification with the original can be presumed to considered by the user (EN 60079-14 § 6).
ATEX 2014, <u>Main compon</u> Valve: The valve is Valve design Installation, M mounting and The product a The product as Instrumentatic be in conform Protection fro EN 60079-19 Non-electrical equipment is a temperature n	34/EU ents: suitable for service up a standard: ASME B10 laintenance and Operatir usage of equipment. bove is manufactured in is in conformity with the ci- on and accessories havin ity with this Declaration of m e.g. static electricity ca applies for modifications equipment is according depended on the process nust be considered by the	Non-ele to to PED Cat III 5.34 Ing instructions manual (IMO) must be followed before i compliance with the applicable European directives ar ustomer order. Ing equal protection concept, level and performance spe of Conformity. aused by the process or connected equipment must be EN 80079-37:2016 and EN 80079-36:2016. The actuals a end ambient conditions (EN 80079-36:2016 § 6.2.5 ar e end user before put into service.	ctrical equipment
ATEX 2014, lain compon Valve: The valve is Valve design Installation, M mounting and The product a Instrumentatic be in conform Protection fro EN 60079-19 Non-electrical equipment is temperature r The product d procedures st	34/EU ents: suitable for service up a standard: ASME B16 laintenance and Operatin usage of equipment. bove is manufactured in s in conformity with the co on and accessories havin ity with this Declaration of m e.g. static electricity ca applies for modifications equipment is according depended on the process nust be considered by the loes not possess any res ated by the IMO are follo	Non-ele to to PED Cat III 6.34 Ing instructions manual (IMO) must be followed before i compliance with the applicable European directives ar ustomer order. Ing equal protection concept, level and performance spect of Conformity. aused by the process or connected equipment must be EN 80079-37:2016 and EN 80079-36:2016. The actual is and ambient conditions (EN 80079-36:2016 § 6.2.5 ar e end user before put into service. idual risk according to hazard analysis conducted undowed and the product is used under conditions mention	nstallation in order to ensure proper and safe and technical specifications/standards (EN10204). ecification with the original can be presumed to considered by the user (EN 60079-14 § 6). Il surface temperature of non-electrical and 6.2.7). The protection from high or low er the applicable directives providing that the led in the technical specifications.
ATEX 2014, <u>Main compon</u> Valve: The valve is Valve design Installation, M mounting and The product a The product a Instrumentatic be in conform Protection fro EN 60079-19 Non-electrical equipment is temperature r The product d procedures st Documents w national code dispatch the id protectine au	34/EU ents: suitable for service up in standard: ASME B16 laintenance and Operatin usage of equipment. bove is manufactured in is in conformity with the co- on and accessories havin ity with this Declaration of m e.g. static electricity ca applies for modifications equipment is according depended on the process nust be considered by the loses not possess any res ated by the IMO are follo ith digital and/or e-signat on e-signatures. In order dentification is covered b based on organizational thorities to particular data	Non-ele to to PED Cat III 5.34 Ing instructions manual (IMO) must be followed before i compliance with the applicable European directives ar ustomer order. Ing equal protection concept, level and performance specific of Conformity. aused by the process or connected equipment must be EN 80079-37:2016 and EN 80079-36:2016. The actual is and ambient conditions (EN 80079-36:2016 § 6.2.5 ar e end user before put into service. Idual risk according to hazard analysis conducted undowed and the product is used under conditions mention ture conveyed by Valmet Flow Control conform to the fir r to secure the integrity of the document, the authentici y individual ID codes, passwords, and by regularly char position and/or is task related. The impartial third party abases.	nstallation in order to ensure proper and safe and technical specifications/standards (EN10204). ecification with the original can be presumed to considered by the user (EN 60079-14 § 6). Il surface temperature of non-electrical and 6.2.7). The protection from high or low er the applicable directives providing that the led in the technical specifications. Regulation (EU) No 910/2014 as well as the ty of the sender, and indisputableness of the inging passwords. The authorization to sign <i>y</i> in the company bestows the access right with
ATEX 2014, <u>Main compon</u> Valve: The valve is Valve design Installation, M mounting and The product a The product a The product is instrumentatic be in conform Protection froi EN 60079-19 Non-electrical equipment is temperature r The product d procedures st Documents w national code dispatch the in documents is predefined au Vantaa	34/EU ents: suitable for service up in standard: ASME B16 laintenance and Operatin usage of equipment. bove is manufactured in is in conformity with the co- on and accessories havin ity with this Declaration of m e.g. static electricity ca applies for modifications equipment is according depended on the process nust be considered by the loes not possess any res ated by the IMO are follo ith digital and/or e-signat on e-signatures. In order dentification is covered b based on organizational thorities to particular data	Non-ele to to PED Cat III 5.34 Ing instructions manual (IMO) must be followed before i compliance with the applicable European directives ar ustomer order. Ing equal protection concept, level and performance spect of Conformity. aused by the process or connected equipment must be EN 80079-37:2016 and EN 80079-36:2016 § 6.2.5 ar e end user before put into service. idual risk according to hazard analysis conducted undowed and the product is used under conditions mention ture conveyed by Valmet Flow Control conform to the F r to secure the integrity of the document, the authenticion tro secure the integrity of the document, the authenticion position and/or is task related. The impartial third party abases.	ectrical equipment
ATEX 2014, <u>Main compon</u> Valve: The valve is Valve design Installation, M mounting and The product a The product a Instrumentation be in conform Protection froi EN 60079-19 Non-electrical equipment is temperature r The product of procedures st Documents w national code dispatch the in documents is predefined au Vantaa	34/EU ents: suitable for service up a standard: ASME B16 aintenance and Operatin usage of equipment. bove is manufactured in is in conformity with the co- on and accessories havin ity with this Declaration of m e.g. static electricity ca applies for modifications equipment is according depended on the process nust be considered by the loes not possess any res ated by the IMO are follo ith digital and/or e-signat on e-signatures. In order dentification is covered b based on organizational thorities to particular data	Non-ele to to PED Cat III 5.34 Ing instructions manual (IMO) must be followed before in compliance with the applicable European directives an ustomer order. Ing equal protection concept, level and performance specific f Conformity. aused by the process or connected equipment must be EN 80079-37:2016 and EN 80079-36:2016. The actual is and ambient conditions (EN 80079-36:2016 § 6.2.5 and e end user before put into service. idual risk according to hazard analysis conducted undi- wed and the product is used under conditions mention ture conveyed by Valmet Flow Control conform to the F to secure the integrity of the document, the authentici y individual ID codes, passwords, and by regularly char position and/or is task related. The impartial third party abases. 10.9.2024	ectrical equipment

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	В	A	300	Р	A	J	A	Т	1	03	K

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

PRODUCT SERIES / DESIGN 2. 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 & DRILLING (DN80 – 600)
С	ASME 150 Example LW7CBA350PAJAG (old type code LW7LBA350PAJAG/C)
D	ASME 300
J	PN 10
K	PN 16
L	PN 25
М	PN40
Х	ISO PN 20
Z	ISO PN 50
R	JIS10K
S	JIS16K
Т	JIS20K
U	JIS30K
Y	Special, to be defined

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

5.	VALVE - ACTUATOR CONNECTION
В	Drive shaft with two key ways / bracket manufacturer standard.

6.	CONSTRUCTION
A	STANDARD (-50 °C+260 °C) - bearings AISI 316 + PTFE - body and blind flange gaskets graphite - live loaded TA-Luft packing
С	CRYOGENIC (min200 °C) - extended bonnet and drive shaft - otherwise as construction A
Ν	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 - live loaded TA-luft packing
Н	HIGH TEMPERATURE, valve (ATEX II 2 G c) - shaft bearings surfaces celsit coated - bearings cobalt based alloy - body and blind flange gaskets graphite - live loaded TA-luft packing
1C	CRYOGENIC (Optional Cryo extension) - extended bonnet and drive shaft T =+ 230 °C to -50 °C100 °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).
Е	EROSION CONSTRUCTION (ONLY FOR LW), valve (ATEX II 2 G c).
Т	HIGH CYCLING (only for LW5M / LW8M), valve (ATEX II 2 G c).
В	BEARING PROTECTION
1B	BEARING PROTECTION (higher temperature)
Р	POLISHED (ONLY FOR LW), polished flow port and disc.
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.
Х	LOW EMISSION, otherwise as construction N.
Y	Special

Note! Only Z constructions available for oxygen flow media, (See IMO 100270en.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
Ρ	WCB/1.0619		-	С	Gr. 630 (17-4PH)
	-		-	Н	Nimonic 80A
	-		-	Ν	XM-19 (Nitronic 50)
С	ASTM A351 gr CG8M/AISI 317	С	ASTM A351 gr CG8M/ AISI 317		-
В	EN 10213-4.1.4581	G	EN 10213-4.1.4581		-
Ν	ASTM A217 gr. WC6	Ν	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		-
	-	В	CF8M / F316+cobalt based alloy on disc edge		-
н	ASTM A494 gr. CW-6M (Hastelloy C)	Н	ASTM A494 gr. CW-6M (Hastelloy C)	H1	HAST C Only soft bearings, "A"-construction

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

12.	DESIGN OPTIONS	
Т	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		
С	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)		
М	PN 40 (available with LW_M and LG_M valves)		
Х	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)		
Т	JIS 20K (34 bar) (available with LW8M or LW5M)		
U	JIS 30K (51 bar) (available with LW8M or LW5M)		
Y	Special		
*) Conception in 40.4 for flagge drilling and competibility			

*) 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).

14. GENERAL SAFETY WARNINGS AND DISCLAIMERS

General safety warnings (Only for Neles Neldisc[™] L-series)

Lifting

- Always use a lifting plan created by a qualified person to lift this equipment. Lifting guidance is provided in this IMO (Installation, Maintenance and Operation manual) to assist in lifting plan development. Think about the center of gravity (CG) of the equipment being lifted. Make sure the CG is always under the central lifting point.
- 2. Valves may be equipped with lifting threads on the body or on the flanges. These are intended to be used with the lifting plan.
- Use only correct and approved lifting devices. Ensure that lifting devices and straps are securely attached to the equipment prior to lifting.
- Check, that lifting devices are not damaged and in good condition with a valid check stamp prior to use.
- 5. Workers must be trained for lifting and handling valves.
- 6. Never lift an assembly by the instrumentation (solenoid, positioner, limit switch, etc.) or by the instrumentation piping. Straps and lifting devices should be fitted to prevent damage to instrumentation and instrumentation piping. Failure to follow the lifting guidance provided may result in damage and personal injury from falling objects.

Work activities on the valve

- 1. Wear your personal safety equipment. Personal safety equipment includes but is not limited to protective shoes, protective clothing, safety glasses, helmet, hearing protection and working gloves.
- Always follow the local safety instructions in addition to the Valmet instructions. If Valmet instructions conflict with local safety instructions, stop work and contact Valmet for more information.
- 3. Before beginning service on the equipment, make sure that the actuator is disconnected from any kind of power source (pneumatic, hydraulic, and/or electric), and no stored energy is applied on the actuator (compressed spring, compressed air volumes, etc.). Do not attempt to remove a spring return actuator unless the stop screw is carrying the spring force.
- Make sure that there is a LOTOTO (Lock Out / Tag Out / Try Out) procedure in place for the system in which the valve is installed and strictly follow it.
- Always make sure that the pipeline is depressurized and in ambient temperature condition before maintenance work is started.
- 6. Keep hands and other body parts out of the flow port when the valve is being serviced and the actuator is connected to the valve. There is a high risk of serious injury to hands and/ or fingers due to malfunction if the valve suddenly starts to operate.
- 7. Beware of Trim (Disc, Ball or Plug) movement even when the valve is disassembled. Trim may move simply due to the weight of the part or change in position of the valve. Keep hands or other body parts away from locations where they may be injured by movement of the trim. Do not leave objects near or in the valve port which may fall in and need to be retrieved.

General disclaimers

Receiving, handling and unpacking.

- 1. Respect the safety warnings above!
- 2. Valves are critical components for pipelines to control high pressure fluids and must therefore be handled with care.
- 3. Store valves and equipment in a dry and protected area until the equipment is installed.
- Do not exceed the maximum storage temperatures given in the IMO (installation, maintenance, and operating instructions).
- 5. Keep the original packaging on the valve as long as possible to avoid environmental contamination by dust, water, dirt, etc.
- 6. Remove the valve endcaps just before mounting into the pipeline.
- 7. FOR YOUR SAFETY IT IS IMPORTANT TO FOLLOW THESE PRECAUTIONS BEFORE REMOVAL OF THE VALVE FROM THE PIPELINE OR ANY DISASSEMBLY:
 - Be sure you know what flow medium is in the pipeline. If there is any doubt, confirm with the proper supervisor.
 - Wear any personal protective equipment (PPE) required for working with the flow medium involved in addition to any other PPE normally required.
 - Depressurize the pipeline, bring to ambient temperature, and drain the pipeline flow medium.
 - Cycle the valve to relieve any residual pressure in the body cavity.
 - After removal but before disassembly, cycle the valve again until no evidence of trapped pressure remains.
 - The valves with offset shaft (Butterfly, eccentric rotary plug) have greater trim area on one side of the shaft. This will cause the valve to open when pressurized from the FTO direction.
 - WARNING: DO NOT PRESSURIZE THE ECCENTRIC VALVE WITHOUT A HANDLE OR AN ACTUATOR MOUNTED ON IT!
 - WARNING: DO NOT REMOVE A HANDLE OR AN ACTUATOR FROM AN ECCENTRIC VALVE WHILE PRESSURIZED!
 - Before installing the eccentric valve in or remove it from the pipeline, cycle the valve closed. Eccentric valves must be in the closed position to bring the trim within the face to face of the valve. Failure to follow these instructions will cause damage to the valve and may result in personal injury.

Operating

- 8. The identification plate (ID-plate, type plate, nameplate, or engraved markings) on the valve gives the information of max. process conditions to the valve.
- 9. (For soft seats) The practical and safe use of this product is determined by both the temperature and pressure ratings of the seat and body. Read the identification plate and check both ratings. This product is available with a variety of seat materials. Some seat materials have pressure ratings that are lower than the body ratings. All body and seat ratings are dependent on the valve type, size and material of the body and seat. Never exceed the marked rating.
- Temperatures and pressures must never exceed values marked on the valve. Exceeding these values may cause uncontrolled release of pressure and process medium. Damage or personal injury may result.

- 11. The operating torque of the valve may rise over time due to wear, particles or other damage of the seat. Never exceed the actuator torque preset values (air supply, position). Application of excessive torque may cause damage to the valve.
- 12. Valmet valves typically are designed to be used in atmospheric conditions. Do not use valves under external pressurized conditions unless specifically designed and explicitly marked for this service.
- 13. Avoid Pressure shocks or water hammer. Systems with high pressure valves should be equipped with a bypass to reduce the differential pressure before opening the valve to avoid pressure shock.
- 14. Avoid thermal shock. High temperature, Low temperature and cryogenic valves should be operated in a way that limits the rate of increase or decrease in temperature. The valve should be thermally stabilized before being pressurized.
- 15. Materials of the valve are carefully selected for the process conditions. Changes to the process media can have a major impact on function and safety of the valve. Always confirm the materials are suitable for the service prior to installation.
- 16. As the use of the valve is application specific, several factors should be considered when selecting a valve for a given application. Therefore, some situations in which the valves are used are outside the scope of this manual.
- 17. It is the end user's responsibility to confirm compatibility of the valve materials with the intended service, however if you have questions concerning the use, application, or compatibility of the valve for the intended service, contact Valmet for more information.
- 18. Never use a valve with enriched or pure oxygen if the valve is not explicitly designed and cleaned for oxygen. Selected materials and design have a major impact on the safety to operate the valve with oxygen.
- Valves intended for use in or with explosive atmospheres must be equipped with a grounding device and marked according ATEX (or equivalent international standards).
- 20. Manual handles are available for specific butterfly valve sizes and maximum line pressures. Do not operate a valve with a handle or wrench outside the size and pressure limits stated in the IMO. High line pressure may create a large enough force to pull the handle from the operator's hands. Damage or personal injury may result.

Maintenance

- 21. Respect the safety warnings above!
- 22. Plan service and maintenance actions, that spare parts, lifting devices and service personnel is available.
- Maintain the valve within the recommended minimum maintenance intervals or within the recommended maximum operating cycles.
- 24. Always make sure that the valve and the pipeline is depressurized before starting any kind of maintenance work at a valve.
- 25. Always check the position of the valve before starting maintenance work. Follow the Lock out /tag out (LOTO) rules at the site before starting any maintenance activity.
 - See IMO for the correct stem position.
 - Consider that the positioner may give the wrong signals.
- 26. Sealing materials (soft sealing parts) should be changed when the valve is in maintenance. Always use original equipment manufacturers (OEM) spare parts to ensure proper performance of the repaired valve.

- 27. All pressure containing parts must be inspected visually for damage or corrosion. Damaged parts must be replaced.
- 28. Valve pressure retaining parts and all internals must be inspected for corrosion or erosion which may result in reduced wall thickness on pressure retaining parts. Damaged pressure retaining parts must be replaced with original equipment manufacturer's (OEM) replacement parts or repaired to factory specifications by an authorized Valmet service partner in order to maintain the warranty.
- 29. Do not use sharp tools, grinding machines, or files to work on functional surfaces such as sealing, seating or bearing surfaces as this can damage these surfaces.
- Check the condition of sealing surfaces on the seats, trim (disc, ball, plug, etc.), body and body cap. Replace parts if there are significant wear, scratches, or damage.
- 31. Check the wear of bearings and bearing contact surfaces on the shaft and replace damaged parts if necessary.
- 32. Do not weld on pressure retaining parts without an ASME and PED qualified procedure and personnel.
- Pressure retaining parts of valves in high temperature applications must be carefully examined for the effects of material creep and fatigue.
- 34. Make sure that the valve is positioned in the correct flow direction into the pipeline.
- 35. If the valves are marked to be suitable for explosive atmospheres, the correct function of the discharging device must be tested before returning to service.
- 36. Always work in a clean environment. Avoid getting particles inside the valve due to machining, grinding, or welding nearby.
- 37. Never store a valve in maintenance without flow port protection.
- 38. When pressure testing valve seats, never exceed the maximum operating pressure of the system or the maximum shut-off pressure marked on the valve identification plate.
- 39. Actuator mounting and unmounting:
 - Before installing the actuator on to the valve, be sure the actuator is properly indicating the valve position. Failure to assemble these to indicate correct valve position may result in damage or personal injury.
 - When installing or removing a linkage kit, best practice is to remove the entire linkage assembly, including couplings which may fall off the valve during lifting or when position changes.
 - Mounting sets have been designed to support the weight of the Valmet actuator and recommended accessories either as is or with additional actuator support. Use of the linkage to support additional equipment or additional weight such as people, ladders, etc. may result in equipment damage or personal injury.
- 40. The valve should be installed between flanges using appropriate gaskets and fasteners that are compatible with the application, and in compliance with applicable piping codes and standards. Center the gaskets carefully when fitting the valve between the flanges. Do not attempt to correct pipeline misalignment by means of the flange bolting.

- 41. Repairs on valves for special service like Oxygen, Chlorine, and Peroxide, have special requirements.
 - Parts must be cleaned appropriate to the service and protected from contamination prior to assembly.
 - Assembly areas and tools must be clean and dry to prevent contamination of the parts during assembly.
 - Test equipment must be clean and dry to prevent contamination during testing. This includes the test equipment internals that may allow particles or other contamination into the test medium during the test.
 - Lubrication shall be used only if specifically required in the instructions. Where lubrication is required, the lubricant must be approved for the service by the end user.

Valmet Flow Control Oy

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

