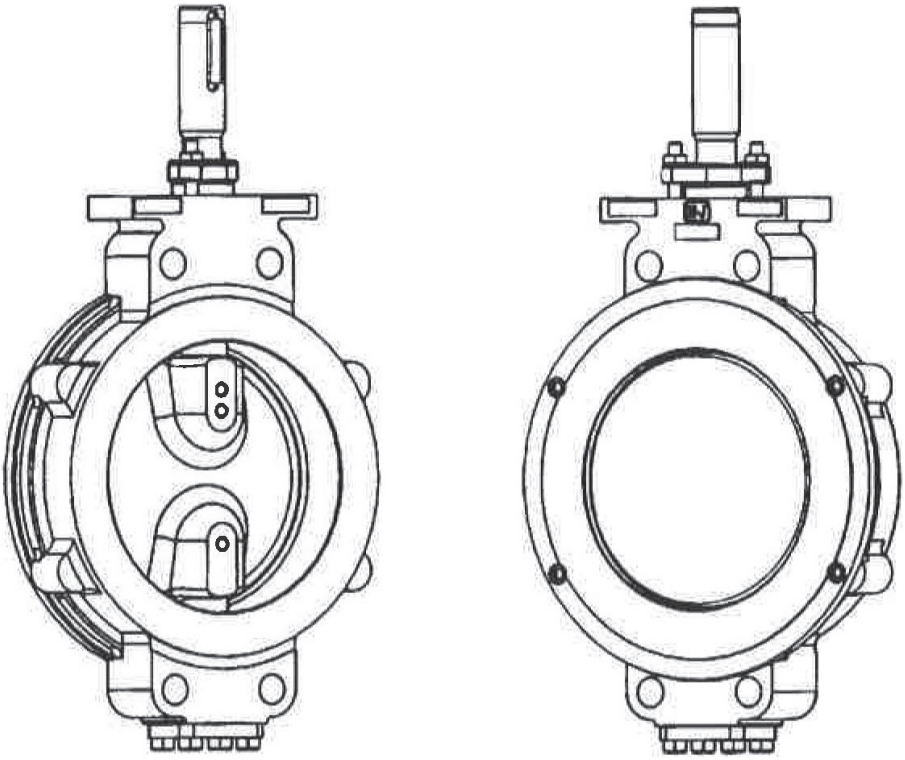
Neldisc™ butterfly valves series L15C/L25C and L15D/L25D 3” - 24” (DN 80 - 600)

Installation, maintenance and operating instructions



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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.

INTRODUCTION

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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"-24" (DN 80 - 600) L15C/L25C and L15D/L25D series valves regardless of the type of material used. The L15C/L25C and L15D/L25D 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 L15C/L25C and L15D/L25D series valves. The actuators and instrumentation to be used with the L15C/L25C and L15D/L25D series valves 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 Valmet document id: 10O270EN.pdf)."

1.2 Description

The Neles™ Neldisc high-performance butterfly valve's maximum shutoff pressure rating depends on the materials of construction. Refer to the tag attached to each valve for this rating. Do not use a valve at service conditions that exceed the rating on the tag.

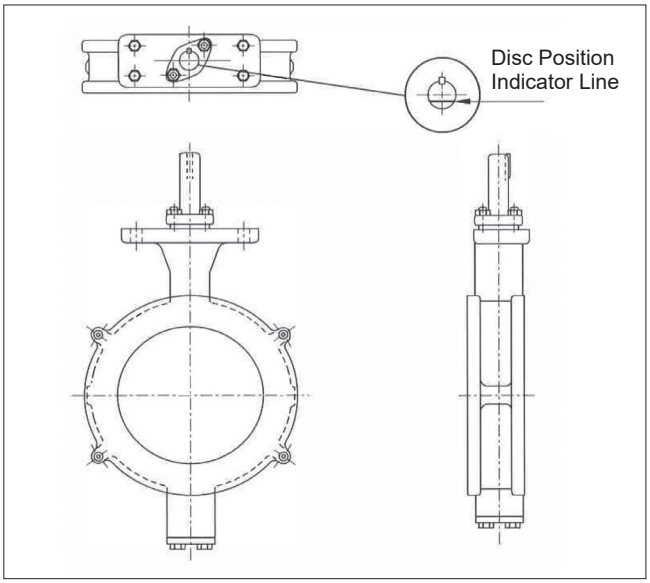


Figure 1. Valves with Key Drive (Wafer or Lug)

1.3 Seating Technology

The solid, all metal seat ring provides superior sealing performance, even under low differential pressure and difficult service conditions. Upon closure, the elliptical disc is rotated into a round metal seat that creates a sealing force which is independent of differential pressure. The solid, rugged all metal ring provides dependable, long life and continuous performance in the mostdemanding applications. (See Figure 2)

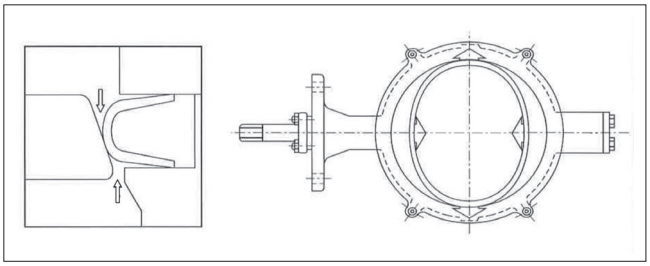


Figure 2.

1.4 Eccentric Shaft

One of the design features of the *Neldisc* valve that is responsible for its superior performance is the eccentric shaft design.The shaft is offset in two planes:(1) away from the valve disc center line, and (2) behind the disc sealing plane (See Figure 3). Offset shaft design makes the rotating disc "cam" back and away from the seat, completely eliminating the usual wear points at the top and bottom of the seat. Because the disc rotates off the seat in an eccentric arc, it operates in one quadrant only.

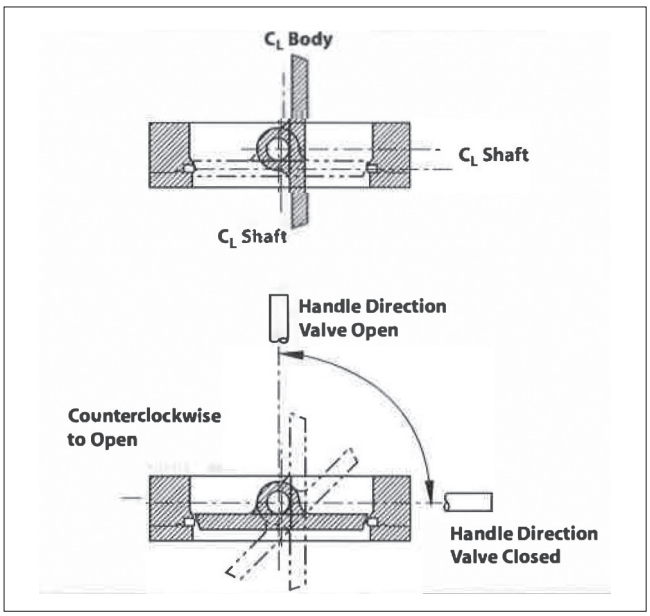


Figure 3.

WARNING:
IF THE VALVE DOES NOT HAVE EITHER A FULLY OPERATIONAL ACTUATOR OR A HANDLE, **DO NOT PRESSURIZE THE VALVE**. UNRESTRAINED DISC MAY OPEN OR CLOSE DUE TO PIPELINE PRESSURE.

The line on top of the keyed shaft will indicate the position of the disc (see Figure 1).

1.5 Actuation

High line pressure may create high enough forces to pull a manual handle out of an operators hand. A manual gear operator, a pneumatic, or an electric actuator should be used in place of a detent handle on 6”(152 mm) and larger *Neldisc* valves.

1.6 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 spring-return 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 Valmet products. (See Valmet 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°.

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.

1.7 Welding notes

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

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

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

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

1.8 CE and ATEX marking

When applicable, 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.

Refer to EU Declaration of Conformity below, for product details.

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!
2. Before installing a closed valve in the pipeline, be sure that the handle or actuator is attached so that a counter-clockwise rotation, viewed from above, opens the valve (See Figure 3). Fully close the valve again before installing in the pipeline.
3. The valve must be centered between flanges to avoid disc-pipe 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.
4. 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 4).

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. For lowest operating torque it is recommended that the valve is installed with the clamp ring towards the higher pressure (shaft downstream).

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 (Figure 4) because dirt in the pipeline may damage the gland packing.

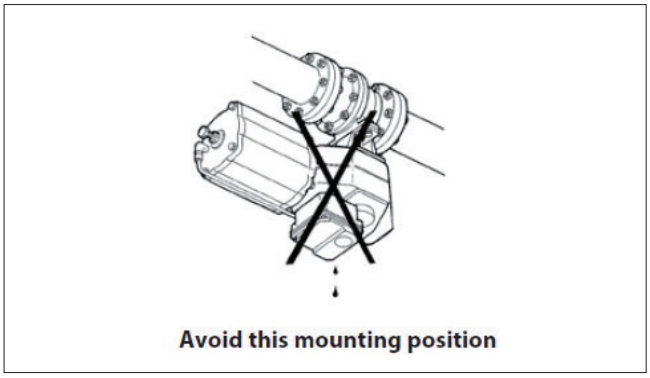


Figure 4. Avoid this mounting position

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.

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).

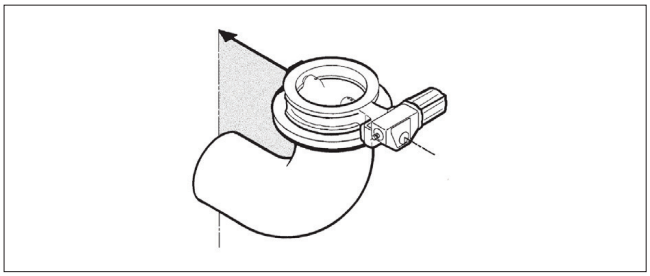


Figure 5. Mounting after a pipe elbow

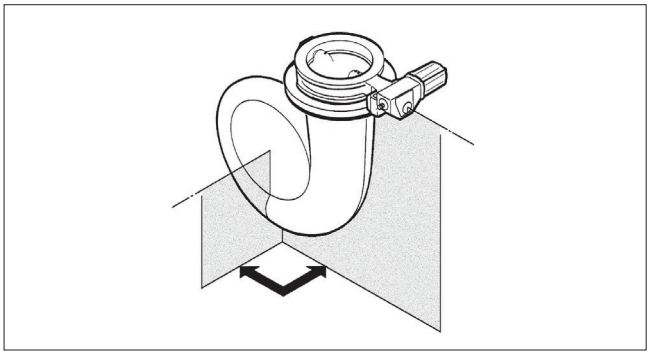


Figure 6. Mounting after the centrifugal pump

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

When mounting the valve it must be in a closed position and be carefully centered between the pipe flanges so that the turning disc does not touch the pipe edge or flange gaskets, see Fig.7 and Table 1.

Use caution when installing valve with Spring-to-open actuator.

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 to limit the allowable travel of the disc.

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 according DIN or ISO standard

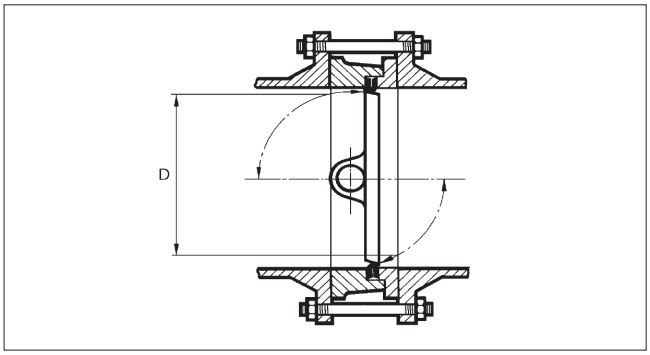


Figure 7. Minimum pipe inside dimensions

Table 1 Minimum pipe inside dimensions (as in API 609)

Valve size [NPS]	Class 150	Class 300
	EN PN10-16	EN PN25-40
3	Standard weight	Extra strong
4	Standard weight	Extra strong
6	Standard weight	Extra strong
8	Standard weight	Extra strong
10	Standard weight	Extra strong
12	Standard weight	Extra strong
14	Standard weight	Extra Strong
16	Standard weight	Extra Strong
18	Standard weight	Schedule 40
20	Standard weight	Schedule 40
24	Standard weight	Schedule 40

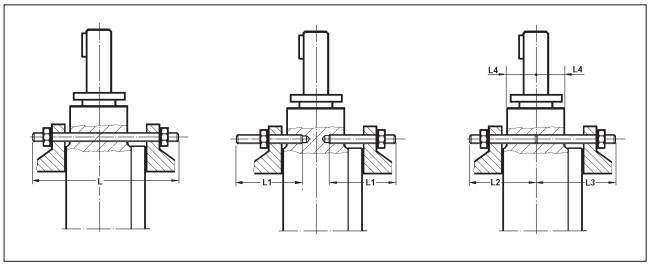


Figure 8. Stud bolt length

Below are presented the minimum dimensions for the stud bolts. Next size standard length bolt can be used.

Table 2 Minimum stud bolt dimensions, LW

LW6	ASME 150					PN10					PN16				
DN / NPS	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty
80 / 3	5/8 UNC	150	4	-	-	M16	150	8	-	-	M16	150	8	-	-
100 / 4	5/8 UNC	160	8	-	-	M16	150	8	-	-	M16	150	8	-	-
150 / 6	3/4 UNC	180	8	-	-	M20	170	8	-	-	M20	170	8	-	-
200 / 8	3/4 UNC	190	8	-	-	M20	180	8	-	-	M20	180	12	-	-
250 / 10	7/8 UNC	220	12	-	-	M20	190	12	-	-	M24	200	12	-	-
300 / 12	7/8 UNC	240	12	-	-	M20	220	12	-	-	M24	220	12	-	-
350 / 14	1 UNC	260	12	-	-	M20	220	16	-	-	M24	240	16	-	-
400 / 16	1 UNC	280	16	-	-	M24	240	16	-	-	M27	260	16	-	-
450 / 18	1-1/8 - 8UN	320	16	-	-	M24	260	16	90	8	M27	300	16	150	8
500 / 20	1-1/8 - 8UN	340	16	130	8	M24	280	16	140	8	M30	320	16	160	8
600 / 24	1-1/4 - 8UN	380	16	130	8	M27	320	16	110	8	M33	380	16	190	8

LW7	ASME 150					PN10					PN16				
DN / NPS	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty
80 / 3	5/8 UNC	150	4	-	-	M16	150	8	-	-	M16	150	8	-	-
100 / 4	5/8 UNC	160	8	-	-	M16	150	8	-	-	M16	150	8	-	-
150 / 6	3/4 UNC	190	8	-	-	M20	170	8	-	-	M20	180	8	-	-
200 / 8	3/4 UNC	200	8	-	-	M20	190	8	-	-	M20	190	12	-	-
250 / 10	7/8 UNC	220	12	-	-	M20	200	12	-	-	M24	220	12	-	-
300 / 12	7/8 UNC	240	12	-	-	M20	220	12	-	-	M24	220	12	-	-
350 / 14	1 UNC	260	12	-	-	M20	220	16	-	-	M24	240	16	-	-
400 / 16	1 UNC	280	16	-	-	M24	240	16	-	-	M27	260	16	-	-
450 / 18	1-1/8 - 8UN	320	16	-	-	M24	260	16	90	8	M27	300	16	150	8
500 / 20	1-1/8 - 8UN	340	16	130	8	M24	280	16	140	8	M30	320	16	160	8
600 / 24	1-1/4 - 8UN	380	16	130	8	M27	320	16	110	8	M33	380	16	190	8

LW8	ASME 150					PN10					PN16				
DN / NPS	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty
80 / 3	5/8 UNC	160	4	-	-	M16	160	8	-	-	M16	160	8	-	-
100 / 4	5/8 UNC	170	8	-	-	M16	160	8	-	-	M16	160	8	-	-
150 / 6	3/4 UNC	200	8	-	-	M20	190	8	-	-	M20	190	8	-	-
200 / 8	3/4 UNC	220	8	-	-	M20	220	8	-	-	M20	220	12	-	-
250 / 10	7/8 UNC	260	12	-	-	M20	240	12	-	-	M24	260	12	-	-
300 / 12	7/8 UNC	260	12	-	-	M20	240	12	-	-	M24	260	12	-	-
350 / 14	1 UNC	300	12	-	-	M20	260	16	-	-	M24	280	16	-	-
400 / 16	1 UNC	320	16	-	-	M24	280	16	-	-	M27	300	16	-	-
450 / 18	1-1/8 - 8UN	340	16	-	-	M24	300	16	130	8	M27	320	16	190	8
500 / 20	1-1/8 - 8UN	360	16	150	8	M24	300	16	160	8	M30	340	16	190	8
600 / 24	1-1/4 - 8UN	400	16	160	8	M27	340	16	130	8	M33	400	16	220	8

LW5	ASME 300					PN25					PN40				
DN / NPS	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty
80 / 3	3/4 UNC	180	8	-	-	M16	150	8	-	-	M16	150	8	-	-
100 / 4	3/4 UNC	190	8	-	-	M20	170	8	-	-	M20	170	8	-	-
150 / 6	3/4 UNC	220	12	-	-	M24	200	8	-	-	M24	200	8	-	-
200 / 8	7/8 UNC	240	12	-	-	M24	220	12	-	-	M27	240	12	-	-
250 / 10	1 UNC	280	12	150	8	M27	240	12	-	-	M30	260	12	-	-
300 / 12	1-1/8 - 8UN	300	12	140	8	M27	260	12	120	8	M30	280	12	130	8
350 / 14	1-1/8 - 8UN	340	16	140	8	M30	300	12	120	8	M33	320	12	130	8
400 / 16	1-1/4 - 8UN	380	16	150	8	M33	320	12	130	8	M36	360	12	140	8
450 / 18	1-1/4 - 8UN	400	20	160	8	M33	360	16	130	8	M36	380	16	150	8
500 / 20	1-1/4 - 8UN	420	20	170	8	M33	360	16	140	8	M39	400	16	160	8
600 / 24	1-1/2 - 8UN	460	20	170	8	M36	420	16	150	8	M45	480	16	180	8

LW8	ASME 300					PN25					PN40				
DN / NPS	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty
80 / 3	3/4 UNC	190	8			M16	170	8			M16	170	8		
100 / 4	3/4 UNC	200	8			M20	180	8			M20	180	8		
150 / 6	3/4 UNC	220	12			M24	220	8			M24	220	8		
200 / 8	7/8 UNC	260	12			M24	240	12			M27	260	12		
250 / 10	1 UNC	300	12	170	8	M27	280	12			M30	300	12		
300 / 12	1-1/8 - 8UN	320	12	160	8	M27	280	12	140	8	M30	300	12	150	8
350 / 14	1-1/8 - 8UN	360	16	150	8	M30	300	12	130	8	M33	340	12	140	8
400 / 16	1-1/4 - 8UN	380	16	160	8	M33	340	12	130	8	M36	360	12	150	8
450 / 18	1-1/4 - 8UN	400	20	160	8	M33	360	16	130	8	M36	380	16	150	8
500 / 20	1-1/4 - 8UN	420	20	160	8	M33	380	16	140	8	M39	400	16	160	8
600 / 24	1-1/2 - 8UN	460	20	170	8	M36	420	16	150	8	M45	480	16	180	8

Table 3 Stud bolt dimensions, LG

LG6	ASME 150						PN10						PN16					
DN / NPS	Thread	L3	Qty	L2	Qty	L4	Thread	L3	Qty	L2	Qty	L4	Thread	L3	Qty	L2	Qty	L4
80 / 3	5/8 UNC	80	4	70	4	17	M16	80	8	80	8	17	M16	80	8	80	8	17
100 / 4	5/8 UNC	80	8	80	8	24	M16	80	8	80	8	24	M16	80	8	80	8	24
150 / 6	3/4 UNC	90	8	90	8	22	M20	90	8	90	8	22	M20	90	8	90	8	22
200 / 8	3/4 UNC	100	8	90	8	22	M20	100	8	90	8	22	M20	100	12	90	12	22
250 / 10	7/8 UNC	110	12	100	12	26	M20	100	12	90	12	26	M24	110	12	100	12	26
300 / 12	7/8 UNC	120	12	110	12	26	M20	110	12	100	12	26	M24	120	12	110	12	26
350 / 14	1 UNC	110	12	110	12	26												
400 / 16	1 UNC	130	16	130	16	28												
450 / 18	1-1/8 - 8UN	130	16	130	16	30												
500 / 20	1-1/8 - 8UN	130	20	130	20	30												
600 / 24	1-1/4 - 8UN	140	20	140	20	34												

LG7	ASME 150						PN10						PN16					
DN / NPS	Thread	L3	Qty	L2	Qty	L4	Thread	L3	Qty	L2	Qty	L4	Thread	L3	Qty	L2	Qty	L4
80 / 3	5/8 UNC	80	4	70	4	17	M16	80	8	80	8	17	M16	80	8	80	8	17
100 / 4	5/8 UNC	80	8	80	8	24	M16	80	8	80	8	24	M16	80	8	80	8	24
150 / 6	3/4 UNC	110	8	90	8	22	M20	90	8	90	8	22	M20	100	8	90	8	22
200 / 8	3/4 UNC	110	8	90	8	22	M20	110	8	90	8	22	M20	110	12	90	12	22
250 / 10	7/8 UNC	120	12	100	12	26	M20	110	12	90	12	26	M24	120	12	100	12	26
300 / 12	7/8 UNC	120	12	110	12	26	M20	110	12	100	12	26	M24	120	12	110	12	26
350 / 14	1 UNC	110	12	110	12	26												
400 / 16	1 UNC	130	16	130	16	28												
450 / 18	1-1/8 - 8UN	130	16	130	16	30												
500 / 20	1-1/8 - 8UN	130	20	130	20	30												
600 / 24	1-1/4 - 8UN	140	20	140	20	34												

LG8	ASME 150						PN10						PN16					
DN / NPS	Thread	L3	Qty	L2	Qty	L4	Thread	L3	Qty	L2	Qty	L4	Thread	L3	Qty	L2	Qty	L4
80 / 3	5/8 UNC	100	4	70	4	17	M16	90	8	80	8	17	M16	90	8	80	8	17
100 / 4	5/8 UNC	90	8	80	8	24	M16	90	8	80	8	24	M16	90	8	80	8	24
150 / 6	3/4 UNC	110	8	90	8	22	M20	110	8	90	8	22	M20	110	8	90	8	22
200 / 8	3/4 UNC	130	8	90	8	22	M20	130	8	90	8	22	M20	130	12	90	12	22
250 / 10	7/8 UNC	160	12	100	12	26	M20	150	12	90	12	26	M24	150	12	100	12	26
300 / 12	7/8 UNC	150	12	110	12	26	M20	140	12	100	12	26	M24	150	12	110	12	26
350 / 14	1 UNC	150	12	110	12	26												
400 / 16	1 UNC	170	16	130	16	28												
450 / 18	1-1/8 - 8UN	170	16	130	16	30												
500 / 20	1-1/8 - 8UN	160	20	130	20	30												
600 / 24	1-1/4 - 8UN	170	20	140	20	34												

LG5	ASME 300						PN25						PN40					
DN / NPS	Thread	L3	Qty	L2	Qty	L4	Thread	L3	Qty	L2	Qty	L4	Thread	L3	Qty	L2	Qty	L4
80 / 3	3/4 UNC	90	8	90	8	20	M16	80	8	80	8	20	M16	80	8	80	8	20
100 / 4	3/4 UNC	100	8	100	8	24	M20	90	8	90	8	24	M20	90	8	90	8	24
150 / 6	3/4 UNC	110	12	100	12	26	M24	100	8	100	8	26	M24	100	8	100	8	26
200 / 8	7/8 UNC	130	12	120	12	29	M24	120	12	110	12	29	M27	130	12	110	12	29
250 / 10	1 UNC	140	16	130	16	32	M27	130	12	120	12	32	M30	140	12	130	12	32
300 / 12	1-1/8 - 8UN	160	16	140	16	38	M27	140	16	120	16	38	M30	150	16	140	16	38
350 / 14	1-1/8 - 8UN	150	20	150	20	34												
400 / 16	1-1/4 - 8UN	170	20	170	20	36												
450 / 18	1-1/4 - 8UN	170	24	170	24	36												
500 / 20	1-1/4 - 8UN	180	24	180	24	42												
600 / 24	1-1/2 - 8UN	190	24	190	24	46												

LG8	ASME 300						PN25						PN40					
DN / NPS	Thread	L3	Qty	L2	Qty	L4	Thread	L3	Qty	L2	Qty	L4	Thread	L3	Qty	L2	Qty	L4
80 / 3	3/4 UNC	110	8	90	8	20	M16	100	8	80	8	20	M16	100	8	80	8	20
100 / 4	3/4 UNC	110	8	100	8	24	M20	100	8	90	8	24	M20	100	8	90	8	24
150 / 6	3/4 UNC	120	12	100	12	26	M24	120	8	100	8	26	M24	120	8	100	8	26
200 / 8	7/8 UNC	140	12	120	12	29	M24	130	12	110	12	29	M27	140	12	110	12	29
250 / 10	1 UNC	170	16	130	16	32	M27	160	12	120	12	32	M30	170	12	130	12	32
300 / 12	1-1/8 - 8UN	180	16	140	16	38	M27	150	16	120	16	38	M30	170	16	140	16	38
350 / 14	1-1/8 - 8UN	160	20	150	20	34												
400 / 16	1-1/4 - 8UN	170	20	170	20	36												
450 / 18	1-1/4 - 8UN	170	24	170	24	36												
500 / 20	1-1/4 - 8UN	180	24	180	24	42												
600 / 24	1-1/2 - 8UN	190	24	190	24	46												

Table 4 Stud bolt dimensions, L6

L64	ASME 150					PN10					PN16				
DN / NPS	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty
80 / 3	5/8 UNC	100	4	65	4	M16	100	12	70	4	M16	100	12	70	4
100 / 4	5/8 UNC	110	12	75	4	M16	100	8	70	8	M16	100	8	70	8
150 / 6	3/4 UNC	120	12	90	4	M20	110	12	80	4	M20	110	12	80	4
200 / 8	3/4 UNC	120	12	100	4	M20	120	12	90	4	M20	120	20	90	4
250 / 10	7/8 UNC	140	20	100	4	M20	120	20	90	4	M24	130	20	100	4
300 / 12	7/8 UNC	140	20	110	4	M20	120	20	90	4	M24	140	20	100	4
350 / 14	1 UNC	160	20	140	4										
400 / 16	1 UNC	190	28	120	4										
450 / 18	1-1/8 - 8UN	190	28	120	4										
500 / 20	1-1/8 - 8UN	190	34	150	6										
600 / 24	1-1/4 - 8UN	220	34	160	6										

L64	ASME 300					PN25					PN40				
DN / NPS	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty	Thread	L	Qty	L1	Qty
80 / 3	3/4 UNC	120	12	90	4	M16	100	16	75	4	M16	100	12	75	4
100 / 4	3/4 UNC	130	12	80	4	M20	120	16	75	4	M20	120	12	75	4
150 / 6	3/4 UNC	140	20	90	4	M24	140	16	100	4	M24	140	12	100	4
200 / 8	7/8 UNC	160	20	100	4	M24	140	24	90	4	M27	160	20	100	4
250 / 10	1 UNC	180	24	140	8	M27	150	24	100	4	M30	170	20	110	4
300 / 12	1-1/8 - UN	200	24	120	8	M27	160	24	100	8	M30	180	24	120	8
350 / 14	1-1/8 - UN	220	28	170	12										
400 / 16	1-1/4 - UN	260	28	190	12										
450 / 18	1-1/4 - UN	260	36	200	12										
500 / 20	1-1/4 - UN	260	36	200	12										
600 / 24	1-1/2 - UN	280	36	220	12										

3.3 Valve Removal

5. Read the WARNING Section on (Section 1.6) carefully.
6. The valve must be fully closed before removing it from the pipeline.
7. **CAUTION: Valves equipped with spring-to-open (air to close) actuators must be disconnected from the actuators and then closed before removing them from the pipeline.**

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.

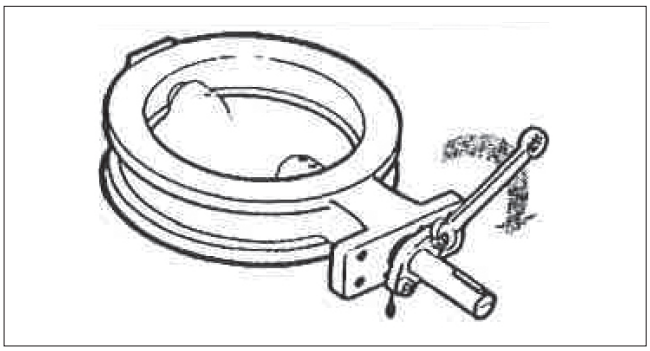


Figure 9.

4. MAINTENANCE

WARNING:
Observe the safety precautions mentioned in Section 1.6 before maintenance!

CAUTION:
When handling the valve or the valve package as a whole, be mindful of the weight of the valve or the entire package.

WARNING:
For safety reasons the retaining plates MUST always be installed according to Section 4.4.

Numbers in ( ) refer to items shown in figures 9, 11, and 12.

4.1 General

Routine maintenance consists of periodically tightening down the compression plate (9) to compensate for shaft seal wear (See Figure 9). The gland, however, should not be tightened down too tight, since this will shorten the life of the seals. More extensive maintenance such as seat, seal and bearing replacement is described below.

Numbers in () refer to items shown in (Figure 12).

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 by placing the valve in the open position and draining 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.

4.2 Seat Replacement

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

1. After removing the valve from the line, place it on a bench. Take care not to damage the sealing edge of the valve disc (3).
2. Remove the insert screws (27) and insert (2).
3. Remove the seat (4) and discard it.
4. Carefully clean and polish the disc sealing surface. It should be free of all grooves and scratches. If the disc is slightly damaged, it may be possible to polish the sealing surface with a 400 or finer grit material. If deep scratches are present, replace the disc or return the valve to the factory for service.
5. Clean the surfaces of the seat groove and check the condition of the sealing surface.
6. Apply a thin layer of dry lubricant into the seat groove and the outer surface of the new seat. **NOTE:** Be sure the lubricant used is compatible with the flow media.
7. Place the new graphite body gasket (1 9) in the groove for the body seal.
8. Place the new seat into the body.
9. Tighten the insert screws (per Table 5), below. Coat insert screws with a lubricant that is compatible with the flow media.
10. Set the actuator stop as described in the **ACTUATOR MOUNTING INSTRUCTIONS** Section.

4.3 Pin Removal and Installation

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

WARNING: To avoid damaging the shafts, support the opposite side of the disc while drilling out or pressing in pins.

Pin Removal

1. Remove the valve from the pipeline and place the valve, shaft side up, on an appropriate surface. **The valve must be supported by the disc, not by the body.** (See Figure 11a)
2. Use a center punch to make holes in the center of each pin that is holding the disc and shaft together. (The pins may already have center holes.)
3. Remove any material that will prohibit the removal of the pins (burrs, stake marks, etc.).
4. Drill and tap a hole in the pins per (Table 3).
5. Using the stud from the kit, screw the stud into the pin. (See Figure 11b)
6. Place the spacer over the stud.
7. Place the washer and the nut over the stud. (See Figure 11C)
8. Tighten the nut until the pin is extracted. Repeat steps 3 through 8 for each pin.

Pin Installation

NOTE: Only use new pins that are the same material as the shaft. Only use new replacement pins that are supplied by Valmet. IT IS IMPERITIVE THAT THE PROPER MATERIAL AND HEATTREATMENT FOR THE PINS IS USED.

9. Place the valve, shaft side up, on an appropriate surface. The valve must be supported by the disc not by the body. (See Figure 13)
10. Determine the pressing force required to install the pins from (Table 8).
11. Apply the force from step # 11 above to the center of each pin.
12. Stake all the pins in three locations.

Table 5

Valve Size		Torque for Insert Screws											
		L15C Class 150 - Wafer			L25C Class 150 - Lugged			L15D Class 300 - Wafer			L25D Class 300 - Lugged		
Inches	DN	Screw Size	Torque		Screw Size	Torque		Screw Size	Torque		Screw Size	Torque	
			FT•LBS	N•m		FT•LBS	N•m		FT•LBS	N•m		FT•LBS	N•m
3	80	1/4"	7	10	1/4"	7	10	1/4"	7	10	1/4"	7	10
4	100	5/16"	15	20	1/4"	7	10	5/16"	15	20	5/16"	15	20
6	150	5/16"	15	20	5/16"	15	20	5/16"	15	20	3/8"	25	34
8	200	5/16"	15	20	3/8"	25	34	3/8"(LJ	15	20	3/8"(LJ	15	20
10	250	5/16"	15	20	3/8"	25	34	3/8"(LJ	15	20	1/2"(l)	33	45
12	300	5/16"	15	20	3/8"	25	34	1/2"(LJ	33	45	1/2"(L)	33	45
14	350	5/16"	15	20	1/2"	61	83	1/2"	61	83	1/2"	61	83
16	400	5/16"	15	20	1/2"	61	83	1/2"	61	83	1/2"	61	83
18	450	3/8"	25	34	1/2"	61	83	1/2"(L)	33	45	1/2"(LJ	33	45
20	500	3/8"	25	34	1/2"	61	83	1/2"(L)	33	45	1/2"(L)	33	45
24	600	3/8"	25	34	5/8"	122	165	5/8"	122	165	5/8"	122	165

(L) = Low Head Cap Screw

4.4 Shaft Seal Replacement

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

1. Remove the handle or actuator.
2. Remove the shaft key (13), hex nuts (25), retaining plates (42) and the compression plate (9). The studs (24) do not have to be removed.
3. Remove the old packing (20) segments. Do not score the shaft or body!
4. Replace the old packing with a new packing.
5. Reinstall the compression plate.Reinstall the retaining plates and the hex nuts as shown in the Blow Out Preventer Assembly. (See Figure 10).
6. Close the valve.The seat and insert should be installed in the valve at this point.See **SEAT REPLACEMENT** Section.
7. With the valve still closed, tighten nuts on the retaining plates evenly until the packings are adequately com pressed to prevent leakage. This should require tight ening the nuts approximately 1.5 to 2 full turns after they both come in contact with the retaining plates.

4.5 Valve Assembly

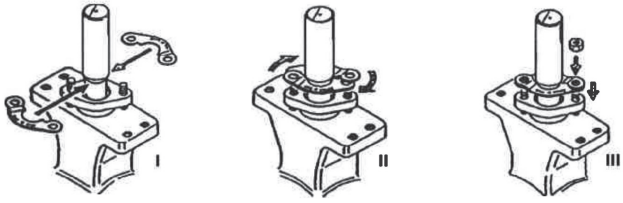
1. Clean all valve components.
2. Inspect all components for damage before assem bling the valve. Look for damage to the sealing areas on the disc, shaft, clamp ring and body,and for wear in the bearing areas.
3. Carefully clean and polish the disc sealing surface, it should be free of all grooves and scratches.
4. If the disc is slightly damaged, it may be possible to polish the sealing surface with crocus cloth, a fine stone, or the equivalent with 400 grit. If deep scratches are present, replace the disc or return the valve to the factory for service.
5. Put the bearings (15 & 17) and shafts (11 & 12) into the body. The bearing surface (inside surface of bushing and shaft bearing surface) should be lightly sprayed with a dry lubricating fluid (*Molykote* Spray 321R).
6. Slide upper shaft (11) and lower shaft (12) through the bore of the disc until the pin holes are aligned. Use caution to prevent damage to the shaft bearings and the disc sealing surface.

NOTE: Double check the ha ‘s orientation!!!! If the valve is on the bench with the disc facing down, the keyway in the shaft MUST be facing upward. (See Figure 13)

7. Press in the pins (14). Refer to the section on **PIN INSTALLATION** Section for specific instructions.
8. Install the gasket (18) and cover plate (10).To prevent damaging the gasket, the screws (26) must be tight ened evenly. (See Table 6), below, for required torque.
9. Install the seat ring (4),body gasket (19) and the insert (2). Refer to the section on **SEAT REPLACEMENT** Section for specific instructions. Coat insert screws with a lubricant that is compatible with the flow media.
10. Assemble the anti-extrusion ring (63) and the packing (20). Refer to the section **SHAFT SEAL REPLACEMENT** Section for specific instructions. If the studs (24) have been removed from the valve, reinstall them in the holes using Loctite® or other locking compound to prevent vibration loosening.
11. Set the actuator stops as described in the **ACTUATOR MOUNTING INSTRUCTIONS** Section.

Table 6

Torque for Cover Plate Screws							
Valve Size		Class IS0 L1S/L2S			Class 300 L15/L2S		
Inches	DN	Screw Size	Torque		Screw Size	Torque	
			FT•LBS	N•m		FT•LBS	N•m
3	80	1/4”	8	11	1/4”	8	11
4	100	5/16”	16	22	5/16”	16	22
6	150	1/4”’	8	11	5/16”	16	22
8	200	1/4”	8	11	3/8”	29	39
10	250	5/16”	16	22	1/2”	72	98
12	300	3/8”	29	39	5/8”	144	195
14	350	3/8”	29	39	5/8”	144	195
16	400	1/2”	72	98	5/8”	144	195
18	450	5/8”	144	195	3/4”	256	347
20	500	5/8”	144	195	3/4”	256	347
24	600	3/4”	256	347	3/4”	256	347



I. Compression plate, packing rings, and studs are assembled with usual procedure before installing retaining plates.

II. Overtap retaining plates into studs so that·upside” test can be seen

III. Tighten the hex nuts according to Steps 6 and 7 in the SHAFT SEAL REPLACEMENT Section

Figure 10. Blow Out Preventer Assembly

Table 7

NeldiscPin Removal						
Pin Size		Valve Series		Drill Size	Drill Depth	Tap Size
mm	inch	LI5C, L25C	LI5D, L25D			
5	0.197	3	3	#29 / 0.1360	0.500	#8 - 32
6	0.236	4,6	4	#29 / 0.1360	0.750	#8 - 32
8	0.315	8	6	#7 I 0.2010	1.000	1/4 - 20
10	0.394	10, 12	8	#7 /0.2010	1.500	1/4 - 20
12	0.472	14	-	F / 0.2570	2.000	5/16 - 18
15	0.591	16 - 20	10 -16	5/16 / 0.3125	2.500	3/8 - 16
20	0.787	24	18, 20	27/64/0.4219	2.500	1/2 - 13
25	0.984	-	24	27/64/0.4219	3.000	1/2 - 13

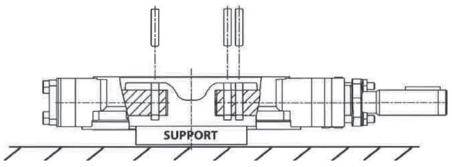


Figure 11A

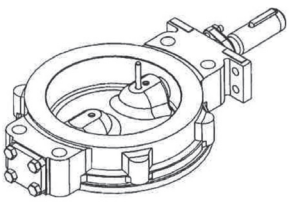


Figure 11B

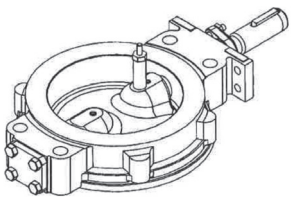


Figure 11C

Figure 11.

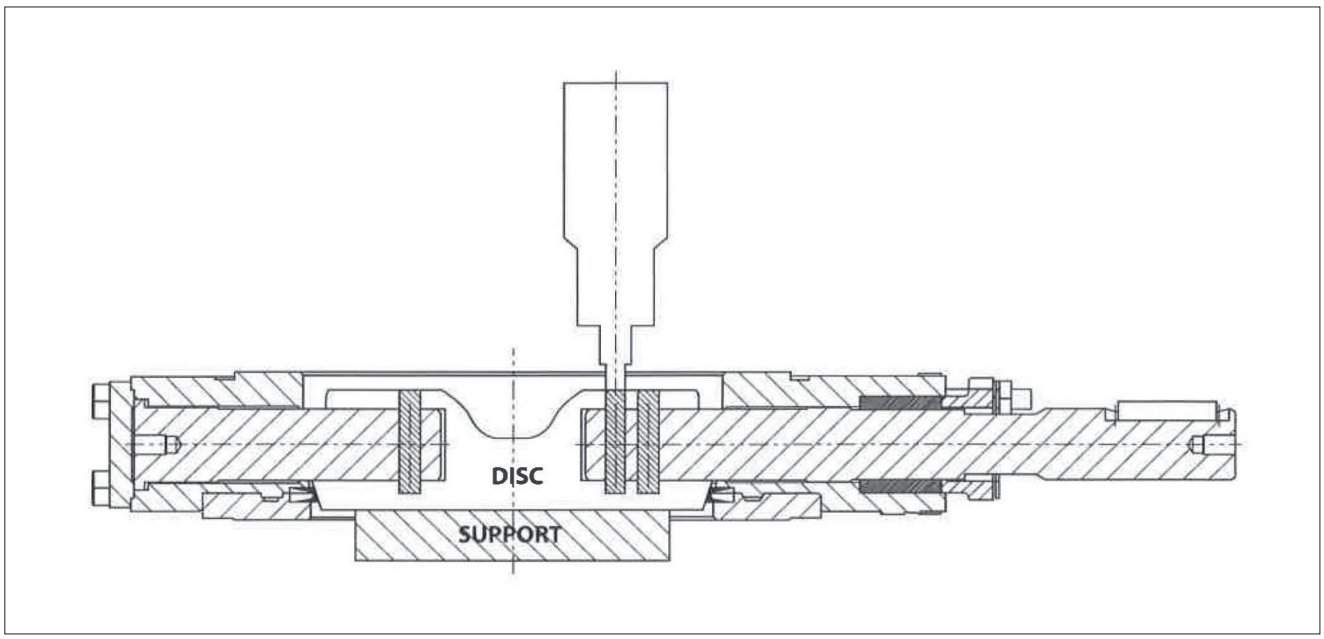


Figure 12.

Table 8

***Neldisc* Pin Installation Diameter and Pressing Force**							
Valve Sizes		**Diameter of pin**		**Pressing force**			
L15C/L25C	**L15D/L25D**			**SIS 2324 AISI 329**		**117-4PH 1150M Nimonic® 80a & Inconel 718**	
#150	**#300**	**(mm)**	**(in)**	**(US-TON)**	**(kN)**	**(US-TON)**	**(kN)**
3	3	5	0.19	5.1-5.2	45 -45.9	5.1-5.2	45-45.9
4, 5, 6		6	0.23	6.7-6.8	60-61.2	7.9 -8.1	70-71.4
8	6	8	0.31	9.0-9.2	80-81.6	11-11.2	95-96.9
10, 12	8	10	0.39	14-14.3	125-127.5	16-16.3	140-142.8
14		12	0.47	20-20.4	180-183.6	22-22.4	200-204
16, 18,2 0	10, 12, 14, 16	15	0.59	31-31.6	280-285	34-34.7	300-306
24	18, 20	20	0.78	56-57.1	500-510	56-57.1	500-510
28, 30	24	25	0.98	88-89.8	780-795	88-89.8	780-796
32, 36		30	1.18	126-129	1125-1148	126-128.5	1125-1148
40		40	1.57	225-230	2000-2040	225-229.5	2000-2040

When pressing the pins, the disc must be supported on the opposite side. (See Figure 13, above.)
‘“ARMCO Stainless Steel Division

4.6 Actuator Mounting Instructions

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 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 adjusted for proper open and close position each time it is remounted.

CAUTION:
The linkage has been designed to support the weight of 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.

WARNING: When mounting the actuator, make sure that the valve and actuator are both in the same position. Mounting an open actuator to a closed valve may result in valve stem damage.

1. Assemble the bracket to the actuator.
2. Turn the valve to the closed position before mounting actuator. Make sure that the actuator is in same position as the valve. (See **WARNINGS** above.)
3. Clean the shaft and the shaft bore and file off any burrs which could interfere with mounting. Protect the joint surfaces from corrosion.
4. If a bushing is required between the actuator shaft bore and the valve shaft, mount it first in the actuator shaft bore. The bushing will be mounted on the valve shaft as the actuator is mounted on the valve.
5. The valve keyway groove is on the side opposite the flat side of the disc. The actuator shaft bore has two keyway grooves. For a double-acting cylinder actuator and a spring-return cylinder actuator"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 "BJA" "spring-to open" choose the keyway which establishes the piston in its lower position when the valve is open. In valves with gear operators, the disc must be closed by turning the handwheel clockwise.

6. Check visually that the actuator is correctly positioned relative to the valve. Tighten all the fastening screws as tightly as possible. Valve Open: Disc face is perpen dicular with the flange face. Valve Closed: Disc face is parallel to flange face.

4.7 Actuator Stop Screw Adjustment

Close the metal-seated butterfly valve by turning the disc against the seat. Choose the supply pressure or input torque from (Tables 9 through 12) to provide the required closing torque. Refer to the following sections for specific instructions to adjust the actuator stop screw of direct mount actuators such as AR, BC, BJ, and BJA. Do not exceed the given values, since excessive torque would strain the seat and the joint between the disc and shaft. **Always readjust the stop screw after changing the seat and after mounting the actuator.** Check before adjusting that the insert screws are tight and that the insert and body are assembled correctly.

5. QPII SPRING RETURN ACTUATOR, "SPRING-TO-CLOSE"

1. Before mounting the actuator, screw in the closed position stop screw completely.
2. Apply the tabulated pressure Pc, given in (Tables 11 and 12), into the air connection at the cylinder top against the spring force. Then open the stop screw completely.
3. Turn the closed position stop screw until it touches the piston and lock the nut. Leak proof with *Loctite* 225 or other non-hardening sealer.

6. MANUAL OPERATORS

6.1 AR, MA, and Torkmatic Manual Operators

1. Close the valve using primary torque Ml (handwheel torque) given in (Tables 9 and 10). If needed, the closing force (F) to the handwheel can be calculated by using formula F = Ml/R, where R is the handwheel radius.
2. Once the proper closing torque is applied, tighten the closed position stop screw until it touches the linkage, then back off 1/4 turn, lock with the locking nut and seal, e.g. with *Loctite* 225.

6.2 Other Manual Operators

Installer must insure appropriate valve torque if manual oper ators other than MA or AR are used. Needed valve torques are tabulated in (Tables 9 and 10).

7. BC, B1C DOUBLE-ACTING CYLINDER ACTUATOR

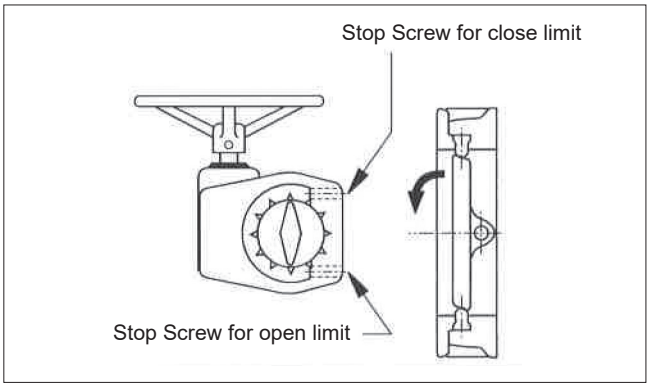
1. Apply the shutoff pressure (Pc) to the air connection at the cylinder base given in (Tables 9 and 10).
2. With the stop screw removed, check through the air con nection hole that the piston does not touch the cylinder end. If it does, increase the adjusting margin by loosening the bracket screws and turning the actuator clockwise.
3. Turn the closed position stop screw until it touches the piston, then back off 1/4 turn and lock the locking nut. Leak proof with *Loctite* 225 or other non-hardening sealer.

8. BJ, BJK, BJV, BU, BUK, B1JV SPRING RETURN ACTUATOR “SPRING-TO-CLOSE”

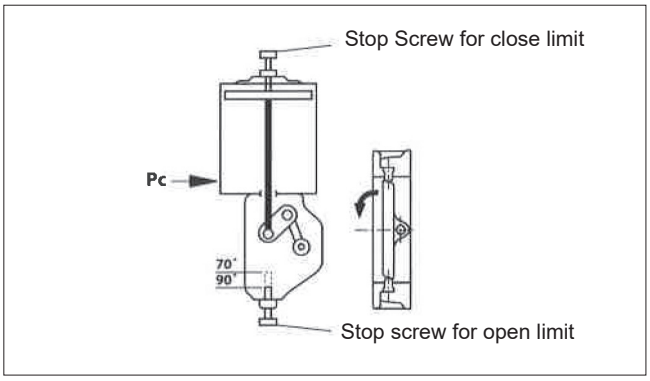
1. Before mounting the cylinder, screw in the closed posi tion stop screw completely.
2. Apply the tabulated pressure Pc into the air connection at the cylinder top end, against the spring force. (See Tables 9 and 10) for pressure. Then open the stop screw.
3. Turn the closed position stop screw until it touches the piston, then back off 1/4 turn and lock the locking nut. Leak proof with *Loctite* 225 or other non-hardening sealer.
4. After adjusting, check the adjusting margin through the air connection hole.The piston must not touch the cylin der end. If necessary, increase the margin as instructed in step 2 for actuator BC, BCl. An extra long screw is needed for an opening angle of 70°.

9. BJA,BJKA, BJVA, BUA, BUKA, BUVA SPRING-RETURN ACTUATOR, “SPRING-TO-OPEN”

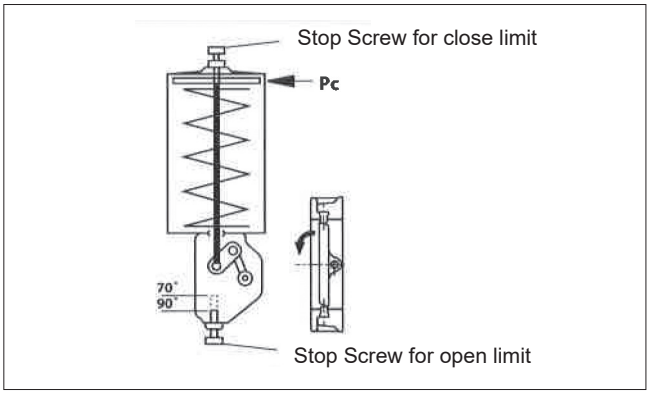
1. The actuator being unpressurized, the valve is open. Unscrew the close limit stop. Apply tabulated shutoff pressure Pc to the air connection at the cylinder bottom end against the spring force for closing the valve. (From Tables 9 and 10)
2. Check through the stop screw hole that the piston rod does not touch the cylinder top end. If it does, increase the adjusting margin by loosening the bracket screws and turning the actuator clockwise.
3. Tighten the closed limit stop screw until it touches the piston rod. Then turn it back 1/4 turn and lock up. Leak proof with *Loctite* 225 sealer. An extra long screw is need ed for an opening angle of 70°.



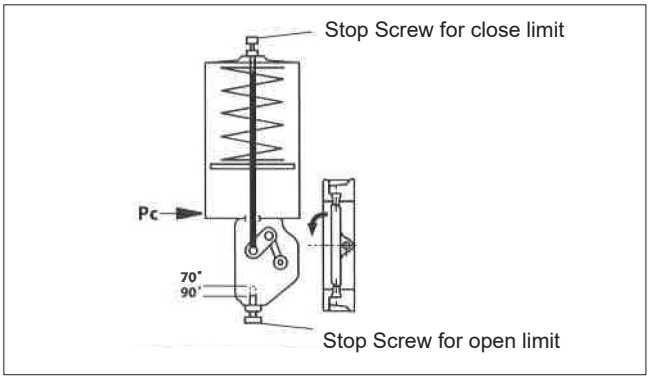
Manual Operators AR



BC Double-Acting Cylinder Actuator



BJ Spring-Return Cylinder Actuator, “Spring-to-Close”



BJA Spring-Return Cylinder Actuator, “Spring-to-Open”

Table 9

Neldisc Series LI 5C and L25C Actuator Table									
Valve Size In.	**Closing Torque FT•LBS (N•m)**	**BC, BJ, BJV BJA, BJVA BIC, BIJ BIJV BIJA BIJVA Size**	**BC, B1C Supply Preisure Pc psi (bar)**	**BJ, BIJ Pressure Pc psi (bar)**	**BJV, BIJV Pressure Pc psi (bar)**	**BJA, BIJA Pressure Pc psi (bar)**	**BJVA, BIJVA Pressure Pc psi (bar)**	**Manual Operator**	**Handwheel Torque FT•LBS (N•m)**
3	33 (45)	6 8 9	36 (2.5) - 18 (1.2)	- 11 (0.8) -	- - -	- 45 (3.1) -	- - -	AR11 MA010 M07	3 (4) 7 (9) 3 (4)
4	55 (75)	6 8 9 10 11	60 (4.1) - 29 (2.0) - 16 (1.1)	- 4 (0.3) - 12 (0.8) -	- - - - -	- 52 (3.6) - 43 (3.0) -	- - - - -	ARI 1 MA010 M07	4.5 (6) 11 (15) 5 (7)
6	110 (150)	8 9 10 11 12	- 57 (3.9) - 31 (2.1) -	- - 3 (0.2) - 12 (0.8)	- - - - -	- - 51 (3.5) - 44 (3.0)	74 (5.1) - - - -	AR11 MA010 M07	9 (12) 22 (30) 10 (14)
8	220 (300)	10 11 12 13 16	- 62 (4.3) - 30 (2.1) -	- - 4 (0.3) - 12 (0.8)	- - - - -	- - 53 (3.7) - 44 (3.0)	76 (5.2) - - - -	AR11 MA030 MIO	18 (24) 25 (33) 20 (27)
10	370 (500)	12 13 16 17 20	- 49 (3.4) - 27 (1.9) -	- - 6 (0.4) - 12 (0.8)	- - - - -	64 (4.4) - 50 (3.4) - 42 (2.9)	71 (4.9) - - - -	AR21 MA045 M12	21 (29) 21 (28) 32 (44)
12	610 (825)	16 17 20 25	- 44 (3.0) 36 (2.5) 19 (1.3)	- - 8 (0.6) -	4 (0.3) - - -	60 (4.1) - 47 (3.2) -	69 (4.8) - - -	AR31 MA045 M14	26 (35) 34 (46) 38 (51)
14	860 (1160)	17 20 25	61 (4.2) 50 (3.4) 26 (1.8)	- 3 (0.2) 11 (0.8)	- - -	- 52 (3.6) 43 (3.0)	- - -	AR31 MA045 M14	36 (49) 48 (65) 53 (72)
16	1220 (1650)	20 25 32	71 (4.9) 37 (2.6) 19 (1.3)	- 8 (0.6) -	2 (0.1) - -	59 (4.1) 47 (3.2) -	66 (4.6) - -	AR31 AR41 MA045 MA060 MIS	52 (70) 52 (70) 68 (92) 38 (52) 59 (80)
18	1620 (2200)	20 25 32	- 49 (3.4) 25 (1.7)	- 4 (0.3) 12 (0.8)	- - -	- 51 (3.5) 44 (3.0)	74 (5.1) - -	AR41 MA060 MIS M16	69 (93) 51 (69) 79 (107) 61 (83)
20	2000 (2700)	25 32 40	60 (4.1) 30 (2.1) 15 (1.0)	0 (0) 10 (0.7) -	7 (0.5) - -	54 (3.7) 45 (3.1) -	61 (4.2) - -	MA060 MA070 M16	63 (85) 34 (45) 75 (102)
24	3240 (4400)	25 32 322 40 50	- 49 (3.4) - 24 (1.7) 13 (0.9)	- 4 (0.3) 14(1.0) - -	- - - - -	- 52 (3.6) 42 (2.9) - -	74 (5.1) 59 (4.1) - - -	MA070 MA080 M16	54 (74) 33 (44) 122 (166)

Table 10

Neldisc Series LI 5D and L25D Actuator Table									
Valve Size In.	**Closing Torque FT•LBS (N•m)**	**BC,BJ, BJV, BJA, BJVA BIC, BIJ, B1JV, B1JA, BIJVA Size**	**BC, BIC Supply Pressure Pc psi (bar)**	**BJ, BIJ Pressure Pc psi (bar)**	**BJV, BIJV Pressure Pc psi (bar)**	**BJA, BIJA Pressure Pc psi (bar)**	**BJVA, BIJVA Pressure Pc psi (bar)**	**Manual Operator**	**Handwheel Torque FT•LBS (N•m)**
3	33 (45)	6 8 9	36 (2.5) - 18 (1.2)	- 11 (0.8) -	- - -	- 45 (3.1) -	- - -	AR11 MA010 M07	3 (4) 7 (9) 3 (4)
4	55 (75)	6 8 9 10 11	60 (4.1) - 29 (2.0) - 16 (1.1)	- 4 (0.3) - 12 (0.8) -	- - - - -	- 52 (3.6) - 43 (3.0) -	- - - - -	AR11 MA010 M07	4.5 (6) 11 (15) 5 (7)
6	170 (230)	10 11 12 13 16 17	- 48 (3.3) - 23 (1.6) - 13 (0.9)	- - 8 (0.6) - 14 (1.0) -	- - - - - -	60 (4.1) - 49 (3.4) - 42 (2.9) -	67 (4.6) - - - - -	AR11 MA030 M10	14 (19) 19 (26) 15 (21)
8	340 (460)	12 13 16 17 20 25	- 46 (3.2) - 25 (1.7) 20 (1.4) 11 (0.8)	- - 7 (0.5) - 13 (0.9) -	- - - - - -	61 (4.2) - 49 (3.4) - 41 (2.8) -	69 (4.8) - - - - -	AR21 AR31 MA030 MA045 M14	20 (27) 15 (20) 38 (51) 19 (26) 21 (28)
10	590 (800)	16 17 20 25 32	- 42 (2.9) 35 (2.4) 18 (1.2) 9 (0.6)	- - 8 (0.6) 14 (1.0) -	4 (0.3) - - - -	59 (4.1) - 46 (3.2) 40 (2.8) -	68 (4.7) - - - -	AR31 AR41 MA045 M14	25 (34) 25 (34) 33 (45) 36 (49)
12	922 (1250)	17 20 25 32	67 (4.6) 54 (3.7) 28 (1.9) 14 (1.0)	- 2 (0.1) 11 (0.8) 16 (1.1)	- - - -	- 53 (3.7) 44 (3.0) 40 (2.8)	- 60 (4.1) - -	AR31 AR41 MA045 MA060 M15	39 (53) 39 (53) 52 (70) 29 (40) 45 (61)
14, 16	1291 (1750)	20 25 32 40	- 39 (2.7) 20 (1.4) 10 (0.7)	- 7 (0.5) 14 (1.0) -	- - - -	60 (4.1) 47 (3.2) 42 (2.9) -	68 (4.7) 54 (3.7) - -	AR31 AR41 MA045 MA060 MA070 M16	55 (74) 55 (74) 72 (98) 41 (55) 22 (30) 63 (85)
18	1840 (2500)	25 32	52 (3.6) 26 (1.8)	3 (0.2) 12 (0.8)	- -	55 (3.8) 46 (3.2)	- -	AR31/AR41 M16	80 (110) 69 (94)
20, 24	3020 (4100)	32 40 322	44 (3.0) 20 (1.4) -	6 (0.4) - 13 (0.9)	- - -	52 (3.6) - 44 (3.0)	- - -	AR41 M16	130(175) 114 (155)

Table 11

Neldisc Series LI 5C & L25C and QPII Actuator Table				
Valve Size Inches (DN)	**Closing Torque FT•LBS (N•m)**	**QPII Actuator Size**	**Spring-to-Close Pressure Pc, psi (bar)**	**Spring-to-Open Supply Pressure Pc, psi (bar)**
3 (80)	33 (45)	2C	10 (0.7)	54 (3.7)
4 (100)	55 (75)	2D 3C	7 (0.5) 12 (0.8)	74 (5.1) 51 (3.5)
6 (150)	110 (150)	3D 4C	7 (0.5) 12 (0.8)	74 (5.1) 51 (3.5)
8 (200)	220 (300)	4D 5C	7 (0.5) 12 (0.8)	74 (5.1) 51 (3.5)
10 (250)	370 (500)	5C 5D	4 (0.3) 11 (0.8)	59 (4.1) 70 (4.8)

Table 12

Neldisc Series LI 5D & L25D and QPII Actuator Table				
Valve Size Inches (DN)	**Closing Torque FT•LBS (N•m)**	**QPII Actuator Size**	**Spring-to-Close Pressure Pc, psi (bar)**	**Spring-to-Open Supply Pressure Pc, psi (bar)**
3 (80)	33 (45)	2C	10 (0.7)	54 (3.7)
4 (100)	55 (75)	2D 3C	7 (0.5) 12 (0.8)	74 (5.1) 51 (3.5)
6 (150)	170 (230)	4C 4D 5C	6 (0.4) 12 (0.8) 14 (1.0)	58 (4.0) 68 (4.7) 48 (3.3)
8 (200)	339 (460)	5C 5D	6 (0.4) 12 (0.8)	58 (4.0) 68 (4.7)

Replacement Parts for *Neldisc* High-Performance Butterfly Valves

Table 13

L15C & L25C 3" -12"(DN 80 -300)*								
Part Name		**Material**	**3" (DN 80)**	**4" (DN 100)**	**6" (DN 150)**	**8" (DN200)**	**10" (DN250)**	**12" (DN 300)**
Service Kit Number		**(See below)**	**20350292**	**20350294**	**20350296**	**20350300**	**20350304**	**20350308**
Qty.	**Description**							
1	Body Seal	Graphite	60230000	60230010	60230030	60230040	60230050	60230060
1	Bottom Shaft Seal	Graphite	21215580	21215590	21215590	21215600	21215610	647040
6	Packing Rings	PTFE	2904	2905	2905	2832	4048	2833
Service Kit Number		**(See below)**	**20350293**	**20350295**	**20350297**	**20350301**	**20350305**	**20350309**
Qty.	**Description**							
1	Body Seal	Graphite	60230000	60230010	60230030	60230040	60230050	60230060
1	Bottom Shaft Seal	Graphite	21215580	21215590	21215590	21215600	21215610	647040
6	Packing Rings	Graphite	4004	4033	4033	4005	4052	4007
Metal Seat		Incoloy® 825: Hard Chrome Plated	743760	743780	743820	743840	743860	7543880

Table 14

L15C & L25C 14" - 24" (DN 350 - 600)*							
Part Name		**Material**	**14" (DN 350)**	**16" (DN400)**	**18" (DN450)**	**20" (DN500)**	**24" (DN600)**
Service Kit Number		**(See below)**	**20350312**	**20350316**	**20350318**	**20350320**	**20350322**
Qty.	**Description**						
1	Body Seal	Graphite	60230070	60230080	60230090	60230100	60230110
1	Bottom Shaft Seal	Graphite	21215620	606260	180170	648610	647080
6	Packing Rings	PTFE	2834	3859	4429	2835	3394
Service Kit Number		**(See below)**	**20350313**	**20350317**	**20350319**	**20350321**	**20350323**
Qty.	**Description**						
1	Body Seal	Graphite	60230070	60230080	60230090	60230100	60230110
1	Bottom Shaft Seal	Graphite	21215620	606260	180170	648610	647080
6	Packing Rings	Graphite	4009	4011	4128	4014	4015
Metal Seat		Incoloy® 825: Hard Chrome Plated	743900	743920	743940	743960	743980

* Graphite or PTFE packing as required

Replacement Parts for *Neldisc* High-Performance Butterfly Valves (Cont'd.)

Table 15

L15D & L25D 3" -12" (DN 80- 300)"								
Part Name		**Material**	**3" (DN 80)**	**4" (DN 100)**	**6" (DN 150)**	**8" (DN200)**	**10" (DN 250)**	**12" (DN 300)**
Service Kit Number		**(See below)**	**20350292**	**20350294**	**20350298**	**20350302**	**20350306**	**20350310**
Qty.	**Description**							
1	Body Seal	Graphite	60230000	60230010	60230030	60230040	60230050	60230060
1	Bottom Shaft Seal	Graphite	21215580	21215590	21215600	647040	606260	180170
6	Packing Rings	PTFE	2904	2905	2832	2833	3859	4429
Service Kit Number		**(See below)**	**20350293**	**20350295**	**20350299**	**20350303**	**20350307**	**20350311**
Qty.	**Description**							
1	Body Seal	Graphite	60230000	60230010	60230030	60230040	60230050	60230060
1	Bottom Shaft Seal	Graphite	21215580	21215590	21215600	647040	606260	180170
6	Packing Rings	Graphite	4004	4033	4005	4007	4011	4128
Metal Seat		*Incoloy* 825: Hard Chrome Plated	743760	743780	743820	743840	743860	743880

Table 16

L15D & L25D 14" -24" (DN 350 -600)"							
Part Name		**Material**	**14" (DN 350)**	**16" (DN400)**	**18" (DN450)**	**20" (DN 500)**	**24" (DN600)**
Service Kit Number		**(See below)**	**20350314**	**20350316**	**20350318**	**20350320**	**20350322**
Qty.	**Description**						
1	Body Seal	Graphite	60230070	60230080	60230090	60230100	60230110
1	Bottom Shaft Seal	Graphite	648610	606260	180170	648610	647080
6	Packing Rings	PTFE	2835	3859	4429	2835	3394
Service Kit Number		**(See below)**	**20350315**	**20350317**	**20350319**	**20350321**	**20350323**
Qty.	**Description**						
1	Body Seal	Graphite	60230070	60230080	60230090	60230100	60230110
1	Bottom Shaft Seal	Graphite	648610	606260	180170	648610	647080
6	Packing Rings	Graphite	4014	4011	4128	4014	4015
Metal Seat		*Incoloy* 825: Hard Chrome Plated	743900	743920	743940	743960	743980

* Graphite or PTFE packing as required.

10. EXPLODED VIEW AND PART LIST

PARTS LIST (L1SC/L25C/L 15D/L25D1		
Item No.	**Description**	**Qt.**
1	Body	1
2	Insert	1
3	Disc	1
4	Seat	1
9	Compression Plate	1
10	Cover Plate	1
11	Drive Shaft	1
12	Shaft	1
13	Key	1
14	Pin	3
15	Bearing	2
17	Thrust Bearing	2
18	Gasket	1
19	Body Gasket	1
20	Packing	6
24	Stud	2
25	Hex Nut	2
26	Hex Screw	2 - 4
27	Hex Socket Cap Screw	2 - 20
28*+	Lifting Eye Bolt	1
29+	Name Plate	1
42	Retaining Plate	2
63	Anti-Extrusion Rin	1

* 14” - 24” (DN 350 - 600) L15C/L25C &
10” - 24” (DN 250 - 600) L15D/L25D
\+ Not Shown

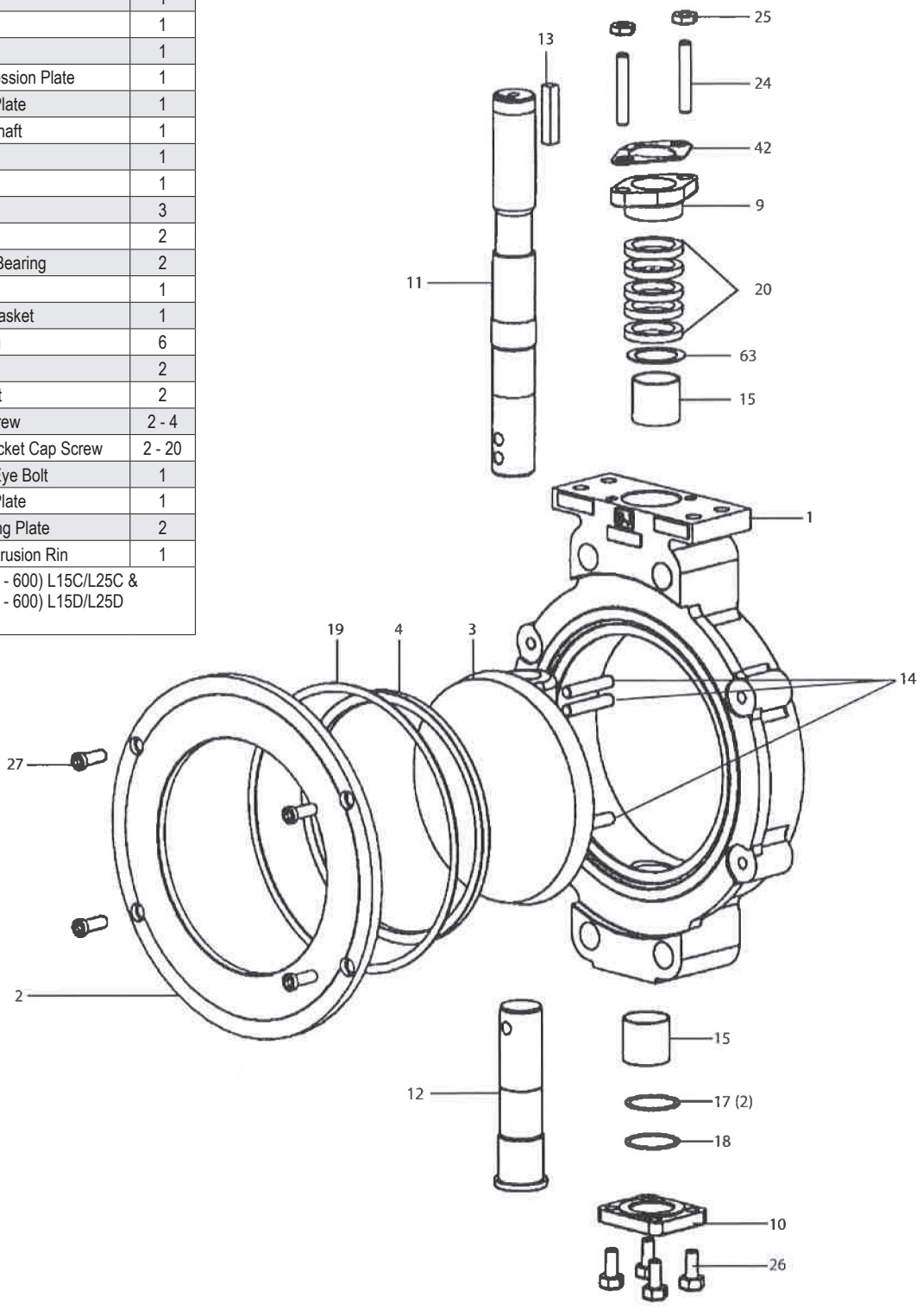


Figure 13.

11. EU DECLARATION OF CONFORMITY

EU DECLARATION OF CONFORMITY

for ATEX approved valves

Manufacturer:
Valmet Flow Control Inc.
Shrewsbury, MA 01545-8044
USA
*Valmet Flow Control (Jiaxing) Co., Ltd.
Jiaxing, China
*) Also manufactures certain series

EU Authorised Representative: Valmet Flow Control Oy, Vanha Porvoontie 229, 01380 Vantaa, Finland. Contact details: +358 10 417 5000

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Product:	Jamesbury Wafer-Sphere™ high performance Butterfly Valves
Type:	2-1/2" – 60" Series 802, 805, 806, 818, 838, 83P, 855, 858, 868, 878, 882, 885, and 898 Wafer and Lugged Style** **) Dependent on valve code designation.
ATEX group and category:	II 2 GD, II 3 GD
Ex GAS:	Ex h IIC 85°C…Tmax Gb
Ex DUST:	Ex h IIIC T85°C…T(Tmax) Db
	Tmax= valve max. temperature in name plate

Manufacturer's certificates:

Standard / Directive	Notified Body and NoBo number	Certificate No.
ISO 9001:2015	LRQA (Certification body)	10531829
PED 2014/68/EU Module H	DNV Business Assurance Italy S.r.l. 0496	142306-2013-CE-FIN-ACCREDIA
ATEX 2014/34/EU Annex IV	DNV Product Assurance AS Norway 2460	Presafe 18 ATEX 91983Q Issue 6

ATEX 2014/34/EU Annex VIII technical files are archived by Notified Body number 0537

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

PED 2014/68/EU	Valve
ATEX 2014/34/EU	Non-electrical equipment

Main components:

Valve:
The valve is suitable for service up to PED Cat III
Valve design standard: ASME B16.34

Installation, Maintenance and Operating instructions manual (IMO) must be followed before installation in order to ensure proper and safe mounting and usage of equipment.

The product above is manufactured in compliance with the applicable European directives and technical specifications/standards (EN10204). The product is in conformity with the customer order.

Instrumentation and accessories having equal protection concept, level and performance specification with the original can be presumed to be in conformity with this Declaration of Conformity.

Protection from e.g. static electricity caused by the process or connected equipment must be considered by the user (EN 60079-14 § 6). EN 60079-19 applies for modifications.

Non-electrical equipment is according EN 80079-37:2016 and EN 80079-36:2016. The actual surface temperature of non-electrical equipment is depended on the process and ambient conditions (EN 80079-36:2016 § 6.2.5 and 6.2.7). The protection from high or low temperature must be considered by the end user before put into service.

The product does not possess any residual risk according to hazard analysis conducted under the applicable directives providing that the procedures stated by the IMO are followed and the product is used under conditions mentioned in the technical specifications.

Documents with digital and/or e-signature conveyed by Valmet Flow Control conform to the Regulation (EU) No 910/2014 as well as the national code on e-signatures. In order to secure the integrity of the document, the authenticity of the sender, and indisputableness of the dispatch the identification is covered by individual ID codes, passwords, and by regularly changing passwords. The authorization to sign documents is based on organizational position and/or is task related. The impartial third party in the company bestows the access right with predefined authorities to particular databases.

Shrewsbury 10.9.2024

Juha Virolainen, Global Quality Director

12. GENERAL SAFETY WARNINGS AND DISCLAIMERS

General safety warnings

Lifting

1. 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.
3. Use only correct and approved lifting devices. Ensure that lifting devices and straps are securely attached to the equipment prior to lifting.
4. 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.
2. 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.
4. 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.
5. 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.
4. 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 preferred direction without a locking handle or an actuator installed.
   - **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.
10. 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.
19. 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.
23. 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 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.
30. 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.
33. 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.
flowcontrol@valmet.com
Tel. +358 10 417 5000.
www.valmet.com/flowcontrol