

M1/M2 pocket feeder

Installation, maintenance and
operating instructions

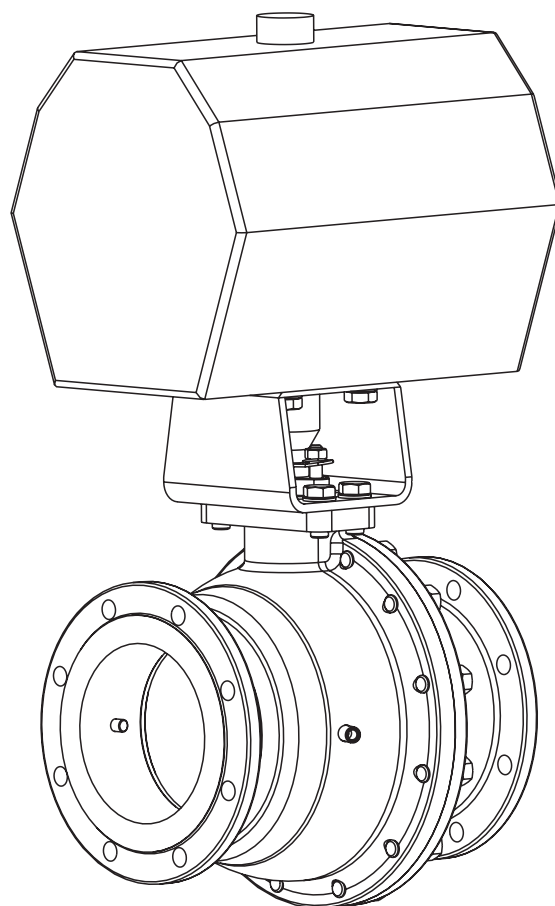


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READ THESE INSTRUCTIONS FIRST!

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.

1. GENERAL

1.1 Scope of the manual

This manual provides the essential information on the use of M1/M2 pocket feeder valves. For further information on actuators and other instruments, which are covered only briefly, please refer to separate manuals on their installation, use and maintenance.

NOTE:

As the use of the valve is application-specific, a number of factors should be taken into account when selecting the application. Therefore, some of the situations in which the valves are used are outside the scope of this manual. If you have any questions concerning the use or application of the valve, contact Valmet for more information.

1.2 Valve construction

M1/M2 pocket feeder valves are flanged ball valves. The valves are metal seated. The valves have two-piece bodies with bolted body joints. In all models, the ball and the shaft are separate parts and a shaft blow-out is prevented by a shoulder machined on the shaft and retaining plates.

A spline driver transmitting the shaft torque to the ball connects the shaft with the ball.

The M1/M2 pocket feeder valves are specially designed for sand separator dump applications. Use of this valve for any service other than the removal of sand from a cyclone type separator in a chip chute liquor circulation process, is not recommended.

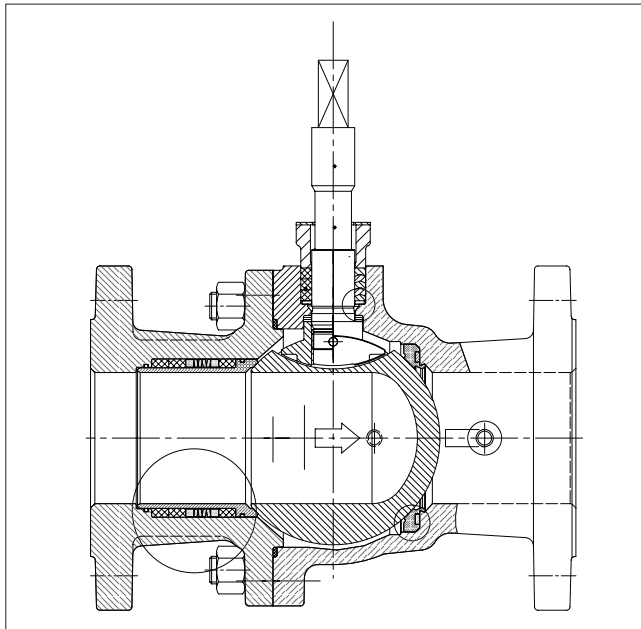


Fig. 1 Construction of the M1/M2 pocket feeder valve

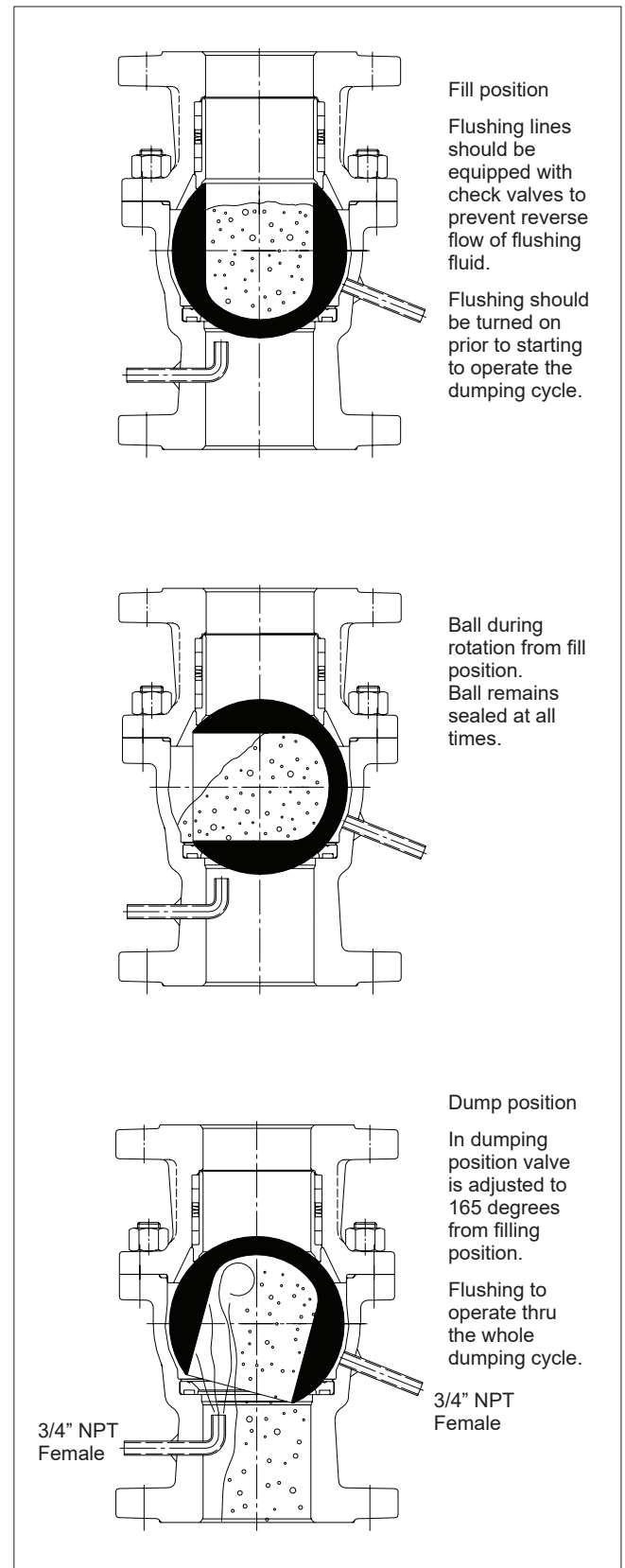


Fig. 2 Operation principle of the Pocket Feeder valve

1.3 Valve markings

Body markings are cast or stamped on the body. The identification plate (Figure 3) is on the valve flange.

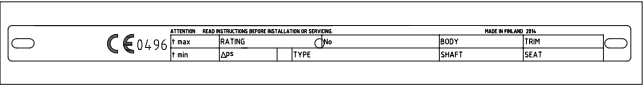


Fig. 3 Identification plate

Identification plates have the following markings:

- 1. Body material
- 2. Shaft material
- 3. Trim material
- 4. Seat material
- 5. Maximum/minimum operating temperature
- 6. Maximum shut-off pressure differential
- 7. Pressure class
- 8. Type designation
- 9. Valve manufacturing parts list no.
- 10. Model
- 11. Certification and approvals, eg. CE, ATEX etc

1.4 Technical specifications

Face-to-face length:	ISO 5752
Size range:	DN 150 and DN 200
Pressure ratings:	PN 16 - 40 and ASME 150 - 300
Temperature range:	-50 ... +250 °C
Flow direction:	The arrow indicates the recommended flow direction
Valve tightness:	
metal seated	ISO 5208 Rate D, standard ANSI FCI class V DIN 3230 Rate 2
Dimensions:	see Section 11
Weight:	see Section 11

Table 1 Pressure ratings

Size	PN 10	PN 16	PN 25	PN 40	ASME 150	ASME 300
DN 150/06	X	X	X	X	X	X
DN 200/08	X	X	X	X	X	X

1.5 Valve certifications

A tightness certificate and an EN/DIN 50049 3.1B certificate for the valve body can be granted on request.

1.6 CE marking

The valve meets the requirements of the European Directive 97/23/EC relating to pressure equipment, and has been marked according to the Directive.

1.7 Recycling and disposal

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

1.8 Safety precautions

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

CAUTION:
Do not dismantle the valve or remove it from the pipeline while the valve is pressurized!
Dismantling or removing a pressurized valve will result in uncontrolled pressure release. Always isolate the relevant part of the pipeline, release the pressure from the valve and remove the medium before dismantling the valve.
Be aware of the type of medium involved. Protect yourself and the environment from any harmful or poisonous substances. Make sure that no medium can enter the pipeline during valve maintenance.
Failure to do this may result in damage or personal injury.

CAUTION:
Beware of the segment 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 segment functions as a cutting device. The segment position may also change when the valve is moved. Close and detach the actuator pressure supply pipeline for valve maintenance. Failure to do this may result in damage or personal injury.

CAUTION:
The fluid being dumped with the sand is a very strong caustic at temperatures up to 120 °C in normal operation.

CAUTION:
When handling the valve or the valve package, take its weight into account!
Never lift the valve or valve package by the actuator, positioner, limit switch or their piping.
Place the lifting ropes securely around the valve body. Damage or personal injury may result from falling parts. The weights are shown in Section 11.

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

1.9 Welding notes

WARNING:

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

NOTE:

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

CAUTION:

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

CAUTION:

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

2. TRANSPORTATION, RECEPTION AND STORAGE

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

Store the valve carefully. We recommend storing indoors in a dry place.

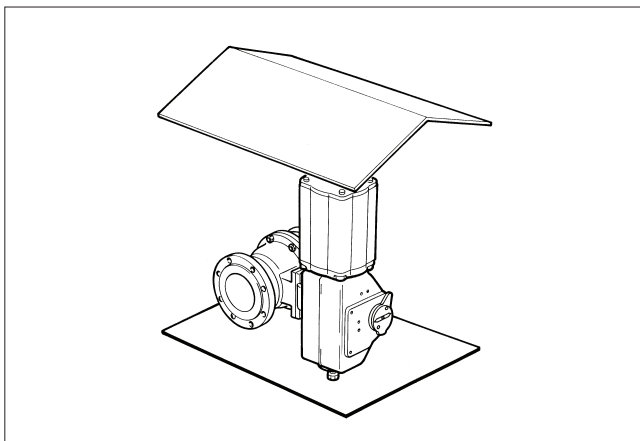


Fig. 4 Storing the valve

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 open position.

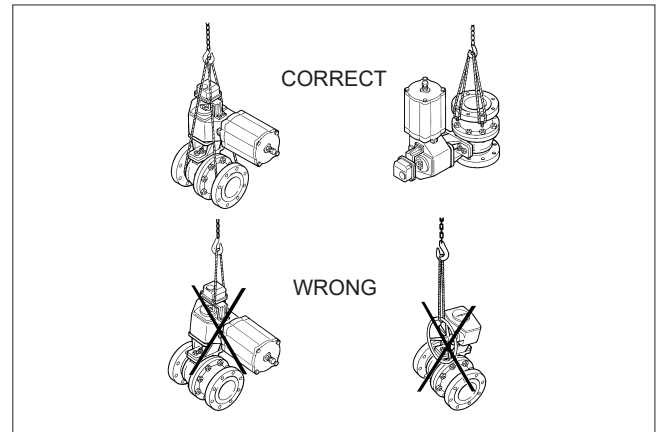


Fig. 5 Lifting the valve

3. INSTALLATION AND USE

3.1 General

Remove the flow bore protectors and check that the valve is clean inside. Clean the valve if necessary.

3.2 Installing in the pipeline

CAUTION:

When handling the valve or the valve package as a hole, bear in mind the weight of the valve or the entire package!

Flush the pipeline carefully before installing the valve. Foreign particles, such as pieces of welding electrode, will damage the ball and seats.

NOTE:

Use screws, nuts, bolts and gaskets equivalent to the fastenings used elsewhere in the pipeline. Center the flange gaskets carefully when fitting the valve between flanges.

NOTE:

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

This valve fills and purges by gravity and must be mounted in a vertical pipe line with the purges for the ball and body cavities in the lower positions.

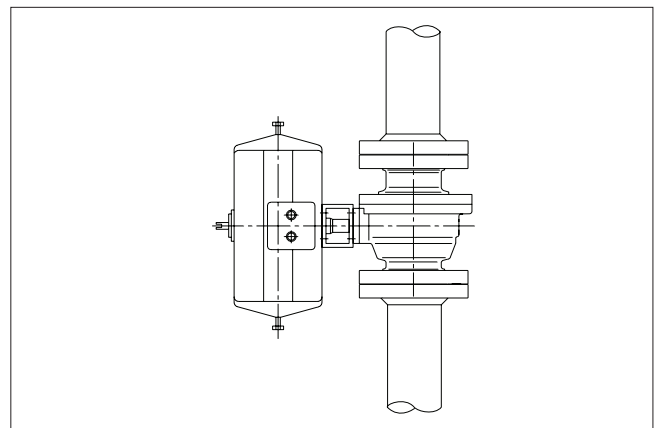


Fig. 6 Mounting

3.3 Actuator

NOTE:

When installing the actuator on the valve, make sure that the valve package functions properly. Detailed information on actuator installation is given in the separate actuator instructions.

The valve open/closed position is indicated as follows:

- by an indicator on the actuator or
- by a groove at the end and on side of the ball shaft (parallel to the ball flow opening).

If there is any uncertainty about the indicator, check the ball position by the groove.

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

The upright position is recommended for the actuator cylinder.

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

In certain cases it may be considered advantageous to provide additional support to the actuator. These cases will normally be associated with large actuators, extended shafts, or where severe vibration is present. Please contact Valmet for advice.

3.4 Commissioning

Ensure that there is no dirt or foreign objects left inside the valve or pipeline.

Ensure that all nuts, pipings, and cables are properly fastened.

Check that the actuator, positioner, and limit switches are correctly adjusted. To adjust the accompanying device refer to the separate control equipment instruction manuals.

3.5 Operating

The valve is specially designed for sand separator dump application.

If the dump valve is used as outlined here-in, it will provide safe operation throughout its service life.

NOTE:

Do not allow the pocket ball to overfill.

If overfill occurs, the shut off tightness of the valve can be severely affected by sand working its way between the ball/seat sealing surfaces. This will eventually destroy the sealing surfaces. We have incorporated a solids proof seat sealing feature in the valves' construction to address this problem. However, the best way to avoid damaging the sealing surfaces is to not overfill the ball.

To minimize overfilling the ball pocket, each installation should be custom tailored to the amount of sand that has to be removed. For the majority of installations, one (1) dump cycle every 20 minutes should be sufficient. This estimate, however, should be verified and the cycle rate adjusted accordingly.

Measure the amount of sand being dumped. **It is important that caution is used at all times when working near the valve area.**

Ideally, it would be best to adjust the cycle rate so that the valve dumps when the ball is half full. By doing so, a safety margin is created that should be able to accommodate normal operating variations in the amount of sand being removed.

A half full ball pocket has the following capacities:

DN 150 = 3,39 dm³

DN 200 = 7,90 dm³

Valmet recommends the use of a control panel to assure that an established dumping cycle is adhered to. The control panel should be remotely located to assure operator safety. This panel is available from Valmet with several additional operating features.

This valve contains two 1/2" purge connections located in the bottom half of the valve (see Section 10). The body purge must be connected to a 4.2 bar (minimum) water supply. This is required to flush the body cavity during the dump cycle. The ball purge must be connected to a solenoid valve with a 4.2 bar (minimum) water supply. Both purges must be "ON" whenever the valve solenoid is energized, which is while the ball is rotating through the dump cycle and at the dump position. These solenoid valves are available from Valmet, or may be supplied by customer. Failure to use the purges may result in incomplete dumping of the pocket and sand build up in the body as well as a possible reduction in service life.

The sand separator dump valve is designed to handle sand and similar size particles. It is not designed to handle any item that can get caught in the shearing action of the ball and seat.

4. SERVICING

4.1 General

CAUTION:

Observe the safety precautions mentioned in Section 1.7 before servicing!

CAUTION:

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

NOTE:

Always use original spare parts to make sure that the valve functions as intended.

Although M1/M2 pocket feeder valves require no regular maintenance, it is recommended that the gland packing is checked regularly for tightness.

If for some reason the valve should require maintenance, then a few simple service measures should normally suffice. This section outlines the service operations that can be carried out by the end user.

The numbers in parentheses refer to the parts list and the drawing of the valve in Section 10, if not otherwise stated.

NOTE:

If you choose to send the valve to the manufacturer for servicing, do not dismantle it. Instead, clean the valve carefully of all medium and inform the manufacturer of any dangerous medium involved.

4.2 Replacing the packing without removing the valve from the pipeline

CAUTION:

Observe the safety precautions mentioned in Section 1.6 before servicing!

CAUTION:

For safety reasons the retainer plates **MUST** always be installed according to the instructions.



Because of pressure, the V-ring packing does not require any regular tightening as any increase in pressure will also increase tightness. Compression by the gland follower provides the necessary tightness in the packing.

Replace the packing (69) if tightening of the hexagon nuts (18) does not stop leakage. V-ring packing can be damaged by the use of excessive force and should therefore be tightened with care.

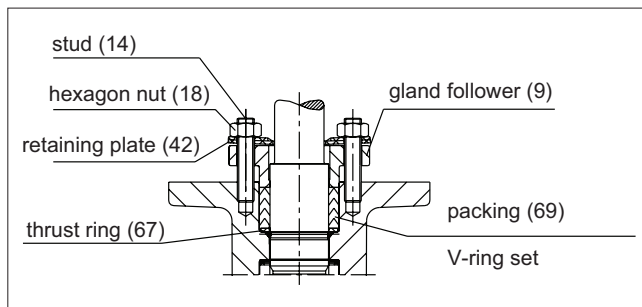


Fig. 7 Gland packing

- Make sure that there is no pressure in the valve.
- Detach the actuator and the bracket. See also Section 4.4.
- Remove the nuts (18) and the retaining plates (42).
- Remove the gland follower (9).
- Remove the packing rings (69) from around the shaft using a knife or other pointed instrument. Make sure that there is no damage to the shaft or the counterbore. Please note that the thrust ring (67) may come off as you remove the packing. It should be placed back in its position before installing the new packing.
- Clean the counterbore, if necessary.
- Place the new packing rings (69) around the shaft (5) and in the counterbore, e.g. using the gland follower (9). See Figure 7 for correct position of the packing.
- Fasten the gland follower (9) and the retaining plates (42), place the nuts (18) on the studs (14) and tighten them first by hand and then 1.5-2 turns with a tool.
- In case of leakage through the packing of a pressurized valve, carefully tighten the nuts until the leakage stops.

4.3 Repairing a jammed or stiff valve without removing it from the pipeline

Jamming or stiff function may be caused by a flow medium clogging the seat (7, 25) and the ball (3). The ball and the seats can be cleaned without removing the valve from the pipeline by turning the ball to a partly open position and flushing the pipes. If this does not help, follow the instructions below.

4.4 Detaching the actuator from the valve

CAUTION:

When handling the valve package, remember its weight!

NOTE:

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

Detaching the actuator

- Close and detach the actuator pressure supply and disconnect the control cables and pipes.
- Loosen the fastening screws.
- The actuator can now be detached. Please note that there may be a coupling connecting the shaft and the actuator.

4.5 Removing the valve from the pipeline

CAUTION:

Do not remove or dismantle a pressurized valve!

- Make sure that the pipeline is empty and unpressurized and that there is no medium flowing to the pipeline while the valve is being serviced.
- Carefully attach the ropes, loosen the pipe flange screws and lift the valve using the ropes. Make sure that you lift the valve correctly. See also Figure 5.

4.6 Dismantling the valve

- Place the valve so that the body's hexagon nuts (16) point upwards. Use a surface that does not damage the flanges.
- Mark the body halves for correct orientation during reassembly.
- Loosen the gland follower nut (18).
- Turn the ball to the open position.
- Loosen the body's hexagon nuts (16).
- Remove the body cap (2) from the valve. Should the ball seat (25) not stay on the body cap, keep it from falling while you are lifting it out by putting your fingers under the body cap (small sizes) or in the flow bore (large sizes). **Watch out for your hand!** Lower the body cap onto the surface in a standing position, i.e. onto its flange (see Figure 8).

- Remove the seat (25) from the body cap making sure that it is not damaged during the operation. Removal of a locked type seat is done using a special tool which can be ordered from the manufacturer (see Figure 9 and Section 8 'Tools').
- Remove the ball (3) from the body (1) by gripping the edges of the pocket bore with a special tool. To detach the ball from the spline driver (4), turn the ball to the open position before lifting. Make sure that the ball is not damaged and put it onto a soft surface.

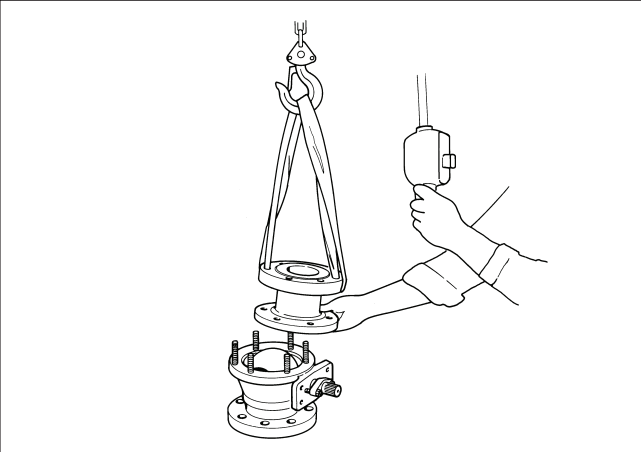


Fig. 8 Lifting a body cap

- Remove the gland follower nuts (18), the retaining plates (42) and the gland follower (9). Remove the packing (69). Please note that the trust ring (67) may come off with the seals. To remove the pin (50), turn the shaft. Remove the spline driver. Remove the shaft (5) by pulling it outwards. Please note that this will detach the thrust bearings (70) from around the shaft.
- Remove the ball seat (7) from the body (1), if necessary with a special tool. Also remove the back seals (63) from the ball seats and the body gasket (65).

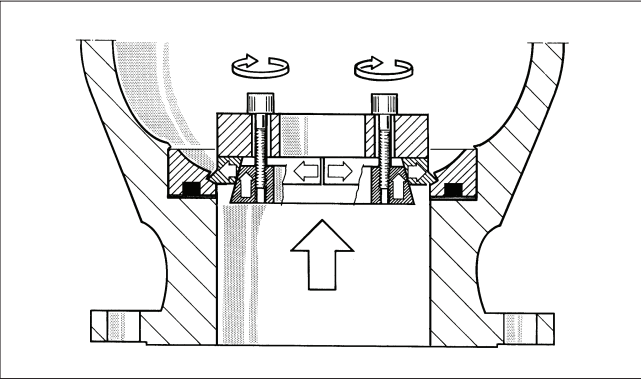


Fig. 9 Removing a locked seat

4.7 Checking the parts of a dismantled valve

- Clean the removed parts.
- Check the shaft (5) and the thrust bearings (70).
- Check the ball (3) and the ball seats (7, 25).
- Check the body gasket surfaces.
- Replace any damaged parts.

4.8 Replacing parts

Replace soft parts whenever you dismantle the valve for maintenance. Replace other parts when necessary. By using original spare parts, you can ensure proper functioning of the valve. For ordering the spare parts, see Section 9 ('Ordering spare parts').

4.9 Reassembling the valve

- Place the valve body on its pipe flange. Use a surface that does not damage the pipe flanges.
- Locked seat:** Place the back seal (63) in the body (1); see Figure 10. Place the seat (7) in the body (1). Lock the seat (7) with a special tool supplied with separate instructions.
- Place the shaft partly inside the body from above and place the thrust bearings (70) on the shaft from inside the body. Place the spline driver (4) on the shaft spline and lock it with a pin (50).
- Put the ball (3) in its position so that the spline driver is in the ball slot.
- Screw down the studs (14). Place the thrust ring (67), the packing (69), the gland follower (9) and the retaining plates (42) in their position. Place the nuts (18) on the studs (14) and screw down them gently. Make sure that the shaft and the ball move smoothly.
- Solids Proof seat:** Place the O-ring (84), the back seals (75), support rings (76) and disc springs (62) on the seat (25); see Figure 10. Place the O-ring (83) and then the seat in the body cap (2).
- Place the body gasket (65) in the body groove. Tighten the studs (12) into the body (1).
- Carefully place the body cap (2) on the body. Make sure that the marks made during dismantling are aligned.
- Tighten the body nuts (16). For the best results, press the valve parts against each other. If this is not possible, make sure that you tighten the nuts evenly. The torque is shown in Table 2.

Table 2 Recommended torque of the body stud nuts

Stainless steel	
Thread	Recommended torque (Nm)
M12	35
M14	65
M16	135
M20	205
M24	360
NOTE: Lubricate the threads properly.	

- To make sure that the ball lies properly between the seats, turn the shaft slowly in both directions two or three times.
- Tighten the nuts (18) of the gland follower by hand as tightly as possible and after that as shown in the instructions in Section 4.2. In case of leakage through the packing of a pressurized valve, carefully tighten the nuts until the leakage stops.
- Solids Proof seat:** Measure the 0-torque of the valve. It should be acc. to Table 3. 0-torque shall be adjusted with graphite plate rings (available thicknesses are 0.2, 0.5 and 1.0 mm).

Table 3 0-torques

Size	0-torque (Nm)
150	400-500
200	800-1000

- Observe the same caution in reinstalling the valve that you used in dismantling it. Please also note the instructions in Section 3.

NOTE:

A groove in the shaft indicates the position of the pocket.

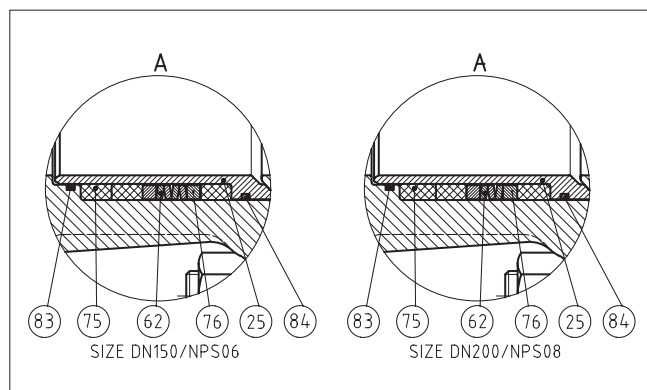


Fig. 10 B/A seat (see section 10. Assembly drawing).

5. TESTING THE VALVE

CAUTION:

For pressure testing, use equipment conforming to the correct pressure class!

Test the valve's body pressure after reassembly.

Test the pressure in accordance with an applicable standard. Use the pressure required by the pressure class or the flange bore. Keep the valve in the half open position during the test.

If the tightness of the closure member is also to be tested, please contact the manufacturer.

6. INSTALLING THE ACTUATOR

6.1 General

Use suitable mounting parts and couplings when you install the actuators.

6.2 Installing actuator

Turn the valve to the open position. Please note the correct position of the actuator shaft. The groove at the end and on the side of the actuator shaft indicates the direction of the ball bore. Push the actuator onto the shaft with or without a coupling, and fasten with four screws.

NOTE:

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

7. MALFUNCTIONS

The following Table 4 lists malfunctions that might occur after prolonged use.

Table 4 Possible malfunctions

Symptom	Possible fault	Recommended action
Leakage through a closed valve	Wrong stop screw adjustment of the actuator	Adjust the stop screw for closed position
	Damaged seat(s)	Replace seat
	Ball cannot move freely	Clean the inside of the valve
Irregular valve movements	Impurities between the ball and seats	Flush the valve from the inside
	Process medium accumulated on the segment surface	Clean the segment
		Clean the sealing surfaces and seats mechanically
Gland packing is leaking	Loose packing	Tighten the gland nuts
	Worn-out or damaged packing	Replace the gland packing

8. TOOLS

In addition to standard tools, the following special tools are needed.

- For removal of the locked seats:
 - detaching tool
- For locking of the seats:
 - locking tool
- For lifting of the ball
 - gripping tool

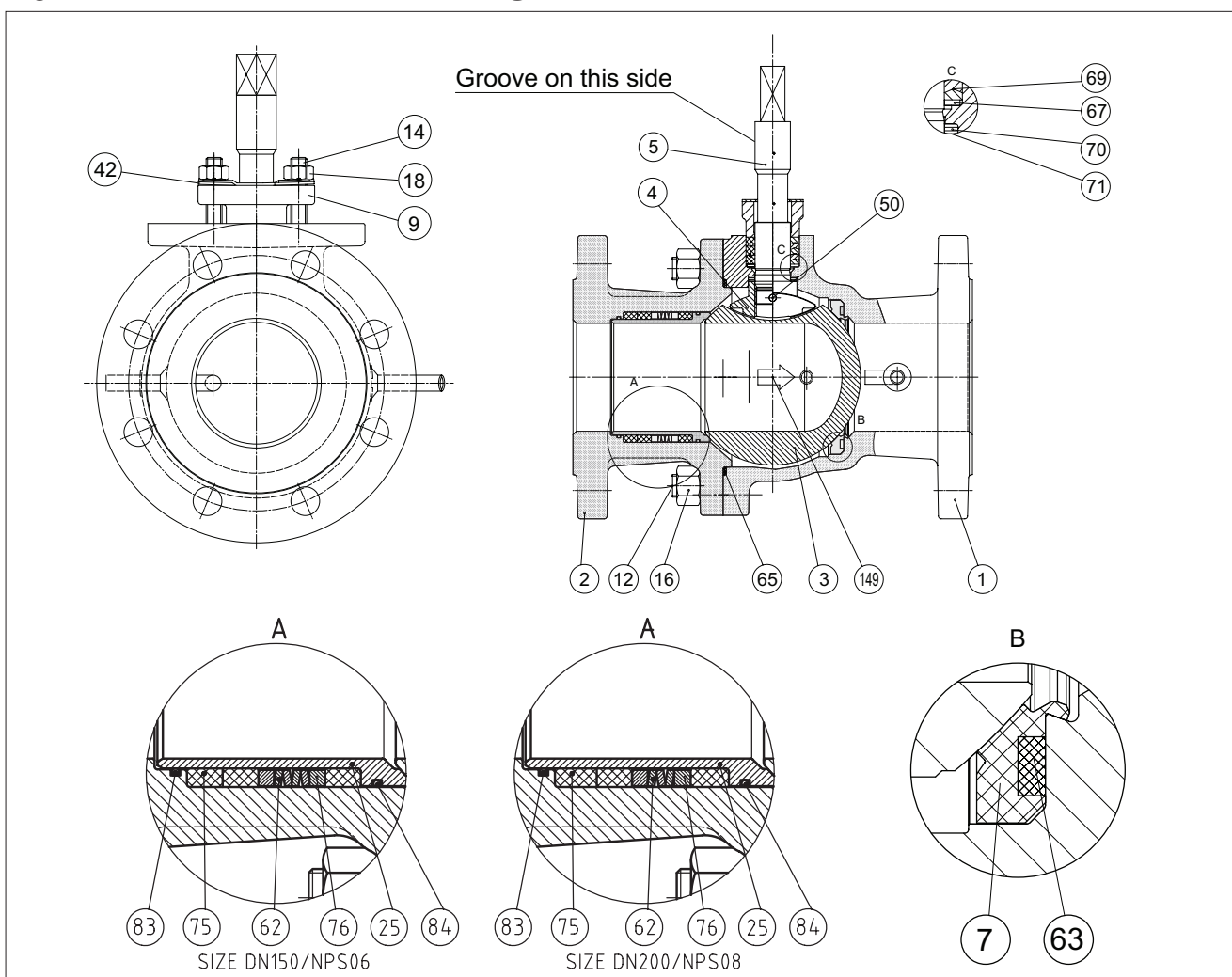
These tools can be ordered from the manufacturer. Always give the valve type designation when ordering.

9. ORDERING SPARE PARTS

When ordering spare parts, always include the following information:

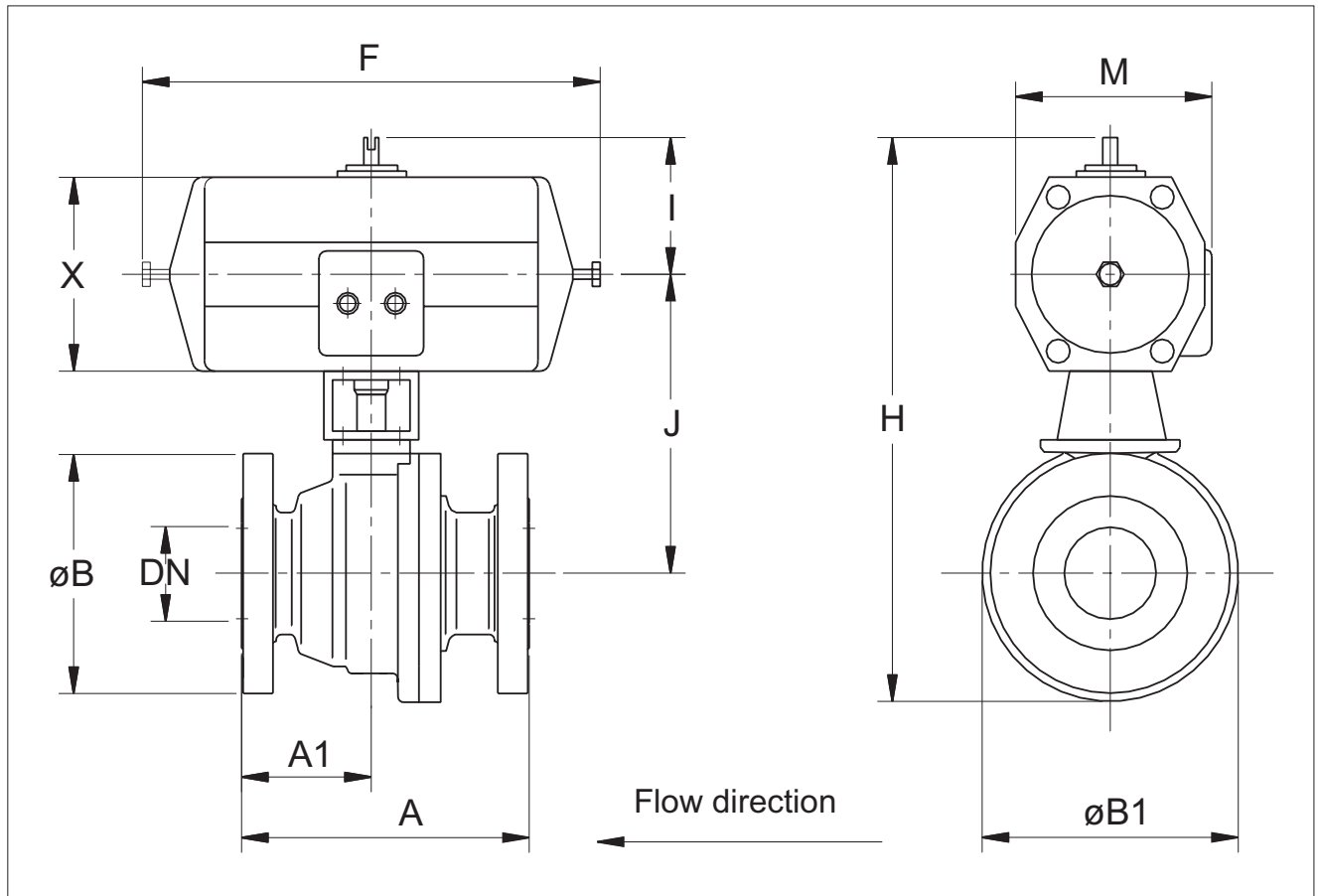
- valve type designation (from the identification plate or documents)
- number of the parts list (number of this manual), part number, name of the part and quantity required

10. ASSEMBLY DRAWING AND PARTS LIST



Item	Qty.	Description	Recommended spare part
1		Body	
2		Body cap	
3		Ball	
4		Spline driver	
5		Shaft	
7		Ball seat	
9		Casting gland	
12		Stud	
14		Stud	
16		Hexagon nut	
18		Hexagon nut	
19		Identification plate	
25		Seat	
42		Retainer plate	
50		Locking pin	
62	4 pcs. 3 pcs.	Disc spring, size NPS 6" Disc spring, size NPS 8"	
63		Back seal	x
65		Body gasket	x
67		Support ring	
69		V-ring set	x
70		Thrust bearing	x
71		Thrust bearing	x
75		Back ring	x
76		Support ring	
83		O-ring	x
84		O-ring	x
149		Flow direction arrow	

11. DIMENSIONS AND WEIGHTS



Type	DN	Actuator *)	Dimensions in mm										Kg
			A	A1	Dia B	Dia B1	F	M	H	I	J	X	
M1J	150	P4000	394	197	285	338	890	390	885	220	495	380	205
	200	P4000	457	228,5	340	426	890	390	1010	220	575	380	275
M1K	150	P4000	394	197	285	338	890	390	885	220	495	380	205
	200	P4000	457	228,5	340	426	890	390	1010	220	575	380	275
M1L	150	P4000	403	201,5	300	346	890	390	885	220	495	380	270
	200	P4000	502	251	360	432	890	390	1010	220	575	380	315
M1M	150	P4000	403	201,5	300	346	890	390	885	220	495	380	270
M2C	150	P4000	394	197	280	342	890	390	887	220	495	380	205
	200	P4000	457	228,5	343	430	890	390	1012	575	380	275	290
M2D	150	P4000	403	201,5	317,5	353	890	390	887	220	495	380	240
	200	P4000	419	209,5	380	462	890	390	1010	220	575	380	355

12. TYPE CODE

M1/M2 Pocket Feeder						
1.	2.	3.	4.	5.	6.	7.
M1	J	P	150	G	B	/01

1.	Valve series, face-to-face length
M1	Seat supported ball valve, full bore, PN rating
M2	Seat supported ball valve, full bore, ASME rating

3.	Construction
P	Pocket Feeder construction. Drive shaft with square head.

2.	Pressure rating of body and flanges		
J	DIN PN 10	L	DIN PN 25 (DN 50 and 80 only)
K	DIN PN 16	M	DIN PN 40 (DN 50 and 80 only)
C	ASME150	D	ASME300

4.	Size
	150, 200 (mm)
	06, 08 (in)

Materials							
5.	Body	Trim & Coating	Seat & Coating	Thrust bearing	Stem	Packing and gaskets	Bolting
G (DN 150 and 200)	CF8M	Type AISI 329 & (W/Cr)C	Type AISI 329 & (W/Cr)C	MTFE	XM-19	PTFE	A2

6.	Seat type and back seals material	
	Seat type	Back seal material
B	Solids Proof + locked P	PTFE

7.	End connection style
-	EN 1092-1 Type B1 (PN rated valves) ASME B16.5, smooth finish (Ra 3,2 - 6.3) (ASME rated valves)

13. 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.
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.

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 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.
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.

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