

**Jamesbury™ Wafer-Sphere™
butterfly valves high performance
series 815W & 815L
model A & B 3"-14" (DN 80-350)
series 830W, 830L, 860W, 860L
model A 3"-12" (DN 80-300)**

Installation, maintenance and
operating instructions

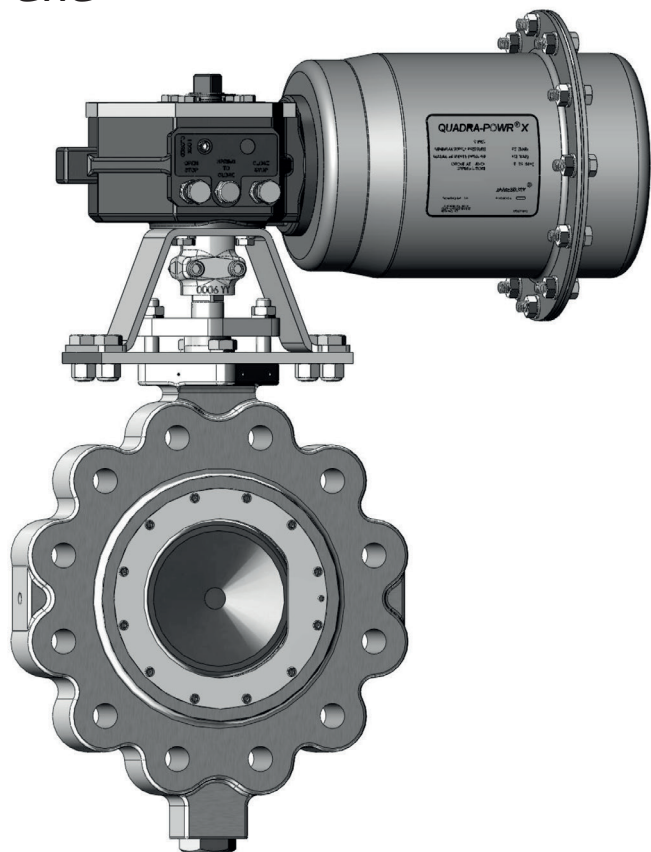


Table of contents

GENERAL	3	CHANGE OF HANDLE QUADRANT	12
Scope of the manual	3	SETTING ADJUSTMENTS	12
Valve Markings	3	Setting Stops (Valve in the Line)	12
Safety Precautions	3	Setting Stops (Valve Out of Line)	12
Welding notes	4	Setting Handle Stop	12
CE and ATEX marking	4	Setting Stops on ST and ST-MS Pneumatic Actuators	13
Eccentric Shaft Design	4	Setting Stops on Quadra-Powr Actuators	13
Positive Stop Feature	4	Setting Stops on MA Manual Gear Actuator	13
Wafer Body Design	5	Setting Stops on Electric Actuators	15
Actuation	5	SERVICE / SPARE PART	15
TRANSPORTATION AND STORAGE	5	EXPLODED VIEW AND PART LIST	16
INSTALLATION	5	EU DECLARATION OF CONFORMITY	17
General	5	TYPE CODE	18
Installing in the pipeline	5	GENERAL SAFETY WARNINGS AND DISCLAIMERS	19
Valve Insulation	5	General safety warnings	19
Actuator	5	General disclaimers	19
Commissioning	6		
MAINTENANCE	7		
General	7		
Actuated Valve	7		
Manual Valve - with Handle	8		
Seat Replacement Non Fire-Tite Valves	8		
Seat Replacement Fire-Tite Valves	8		
Shaft Packing Replacement	9		
Valve Disassembly	10		
Valve Assembly	10		
High Cycle Construction (860 only)	11		
Testing the Valve	11		
ACTUATOR MOUNTING	11		
Change of Actuator Quadrant	11		

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

READ THESE INSTRUCTIONS FIRST!

These instructions provide information about safe handling and operation of the valve. If you require additional assistance, please contact the manufacturer or manufacturer's representative. Addresses and phone numbers are printed on the back cover. See also www.valmet.com/flowcontrol/valves for the latest documentation.

SAVE THESE INSTRUCTIONS!

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

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

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

1 GENERAL

These installation and maintenance instructions 3"-14" (DN80-350), pressure class 150 Model A & B 3"-12" (DN80-300), pressure class 300 & 600, Model A series valves regardless of the type of material used. The 800 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 6 and 7. 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 the manual

This instruction manual contains important information regarding the installation, operation and maintenance of Jamesbury™ Wafer-Sphere high performance butterfly valves, 3" - 14" (DN 80 - 350) Series 815W and 815L, Model A & B, 3" - 12" (DN 80 - 300) Series 830W, 830L, 860W, 860L, Model A. Please read the instructions carefully and save them for future reference.

WARNING

AS THE USE OF THE VALVE IS APPLICATION SPECIFIC, A NUMBER OF FACTORS SHOULD BE TAKEN INTO ACCOUNT WHEN SELECTING A VALVE FOR A GIVEN 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, APPLICATION OR COMPATIBILITY OF THE VALVE WITH THE INTENDED SERVICE, CONTACT VALMET FOR MORE INFORMATION.

1.2 Valve Markings

The valve has an identification plate attached to the pipeline flange (see **Figure 1**).

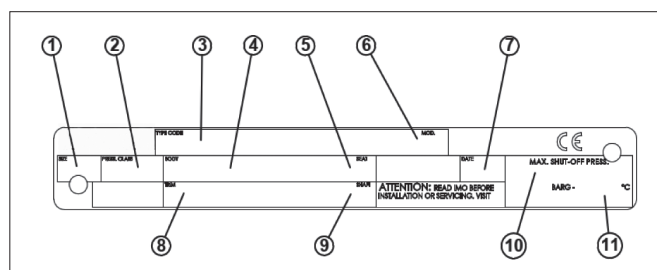


Figure 1. Identification Plate

Identification plate marking:

1. Type code
- 1a. Size
2. Model
3. Date
4. Pressure Class
5. Body Material
6. Trim Material
7. Seat Material
8. Shaft Material
9. Maximum Shut-Off Pressure
10. Maximum Temperature
11. Certification and approvals, eg. CE, Atex etc.

1.3 Safety Precautions

WARNING:

DO NOT EXCEED THE VALVE PERFORMANCE LIMITATIONS!

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

WARNING:

SEAT AND BODY RATINGS!

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

WARNING:

DO NOT DISMANTLE THE VALVE OR REMOVE IT FROM THE PIPELINE WHILE THE VALVE IS PRESSURIZED!

Dismantling or removing a pressurized valve will result in uncontrolled pressure release. Always isolate the relevant part of the pipeline, release the pressure from the valve and remove the medium before dismantling the valve.

Be aware of the type of medium involved. Protect people and the environment from any harmful or poisonous substances.

Make sure that no medium can enter the pipeline during valve maintenance. Failure to do this may result in damage or personal injury.

WARNING:**BEWARE OF DISC MOVEMENT!**

Keep hands, other parts of the body, tools and other objects out of the open flow port. Leave no foreign objects inside the pipeline. When the valve is actuated, the disc functions as a cutting device. Disconnect any pneumatic supply lines, any electrical power sources and make sure springs in springreturn actuators are in the full extended/relaxed state before performing any valve maintenance. Failure to do this may result in damage or personal injury!

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

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

Please consult separate document: instructions for lifting 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.

1.4 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.

1.5 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.

1.6 Eccentric Shaft Design

One of the design features of the *Wafer-Sphere* valve that is responsible for its superior performance is the valve's 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 10**). 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 (see **Figure 10**).

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.

1.7 Positive Stop Feature

To prevent seat damage from over-travel of the disc beyond the closed position (primarily during field mounting of a handle or actuator), a "positive stop" feature been designed into the *Wafer-Sphere* butterfly valve. The "positive stop" feature also makes it possible to adjust the actuator travel stops in-line. The location of this feature is on the body insert for 3" - 12" (DN 80 - 300) and in the body for 14" (DN 350) (see **Figure 18**).

1.8 Wafer Body Design

Some wafer designs (see **Figures 5 and 8**) contain flange bolt holes or slots in the body to hold the valve and assist with correct alignment during installation in the line. The centering holes or slots in wafer bodies alone are not suitable, or intended for containing line pressure, and are only for use in conjunction with a fully bolted pipeline flange.

1.9 Actuation

With series 815W, 815L, 830W and 830L valves, either a manual gear operator, or pneumatic or electric actuator should be used in place of a detent handle on 3" & 4" (DN 80 & 100) valves when differential pressure exceeds 300 psi (20.7 bar), on 6" & 8" (DN 150 & 200) valves when differential pressure exceeds 150 psi (10.4 bar), and on 10" & 12" (DN 250 & 300) valves when differential pressure exceeds 50 psi (3.5 bar). With series 860W and 860L valves in 3" - 6" (DN 80 - 150) sizes, a gear operator or actuator should be used when differential pressure exceeds 150 psi (10.5 bar).

WARNING

High line pressure may create high enough forces to pull the handle out of the operator's hand.

2 TRANSPORTATION AND STORAGE

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

Store the valve carefully. Storage indoors in a dry place is recommended.

Do not remove the flow port protectors until installing the valve.

Move the valve to its intended location just before installation.

If the valve(s) will be stored for a long period, check all for reference to IMO-S1 to maintain the valves integrity.

3 INSTALLATION

3.1 General

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

Flush the pipeline carefully before installing the valve. Foreign objects, such as sand or pieces of welding electrodes, will damage the disc and seat.

For lowest torque requirements, *Wafer-Sphere* butterfly valves should be installed with the insert toward the higher pressure (shaft downstream).

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!

Recommended fastener lengths are listed in technical bulletin T104-1.

1. **IMPORTANT:** Only operating handle stops or actuator stop set screws must be used to stop the disc in position. **DO NOT** use the "positive stop" by itself to limit actuator travel.
2. The valve may be installed in any position and offers tightness in both directions. It is recommended, however, that the valve be installed with the insert (2) facing upstream. Install the valve in the pipeline so the shaft is horizontal if possible. 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.
3. Visually check the position of the disc when the valve is in the closed position and the insert is fully compressed. There should be .010" to .040" (.254 to 1.02 mm) clearance between the disc and the "positive stop" on the insert.
4. Before installing the closed valve in the line, be sure that the handle or actuator is attached so that a counter-clockwise rotation, viewed from above, opens the valve (see **Figure 10**). Again, fully close the valve before installing it in the line.
5. **CAUTION:** The *Wafer-Sphere* butterfly valve should be centered between flanges to prevent any damage to the disc or shaft which could be caused by the disc striking the pipe wall.
6. Secure the valve between flanges. Compress the flange gasket **EVENLY** by tightening the fasteners in an alternating sequence.
7. If there is weepage past the shaft seal upon installation, the valve may have been subject to wide temperature variations in shipment. Leak tight performance will be restored by a simple packing adjustment described in the **MAINTENANCE** Section.

3.3 Valve Insulation

If necessary, the valve may be insulated. Insulation must not continue above the upper level of the valve (see **Figure 3**).

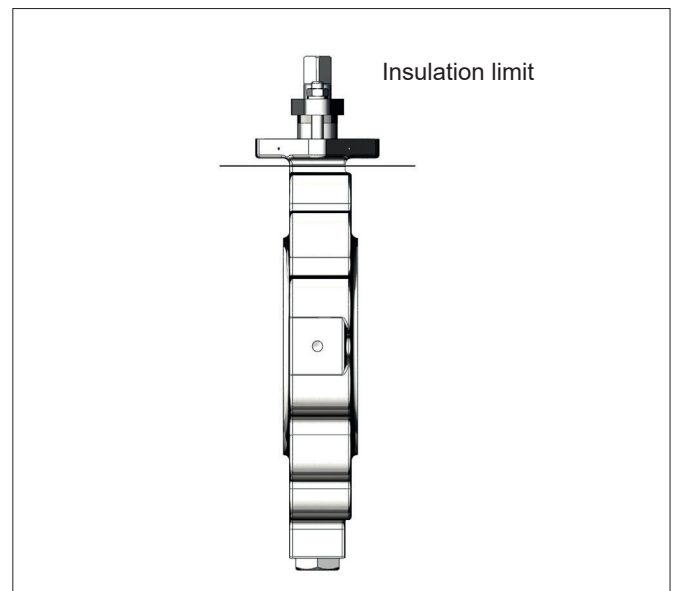


Figure 2. Insulation of the valve

3.4 Actuator

CAUTION:

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

When installing the actuator on the valve, make sure that the valve package functions properly. See instructions for installing in Section 5.

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

The upright position is recommended for the actuator cylinder. In some cases, e.g. when a large-size actuator is used or when the pipeline vibrates heavily, supporting the actuator is recommended. Please contact Valmet for further information.

3.5 Commissioning

Ensure that there is no dirt or foreign objects left inside the valve or pipeline. Flush the pipeline carefully. Make sure that the valve is fully open when flushing.

Ensure that all nuts and fittings are properly fastened.

If so equipped, check that the actuator positioner and/or switch are correctly adjusted. To adjust actuator or any accompanying device(s) refer to the separate control equipment instruction manuals.

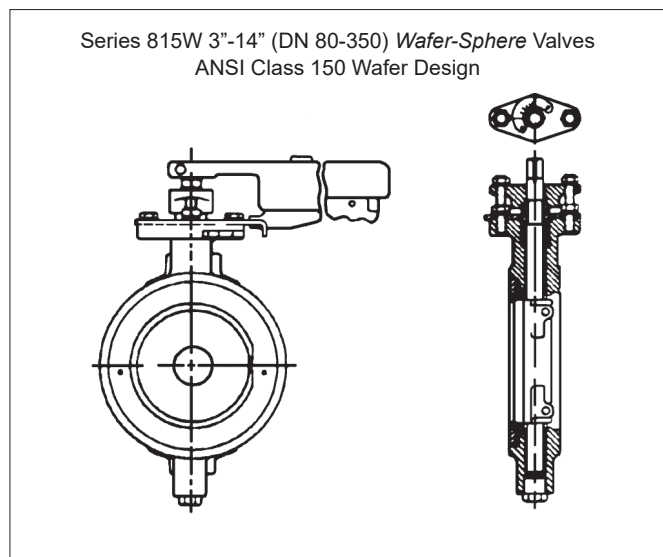


Figure 3.

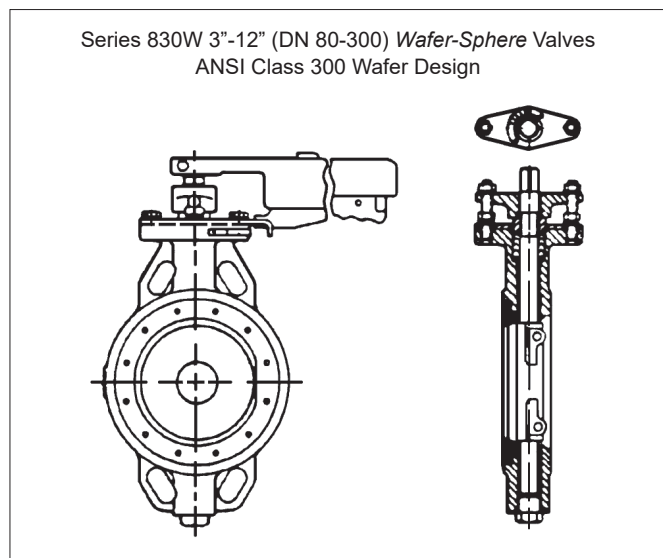


Figure 4.

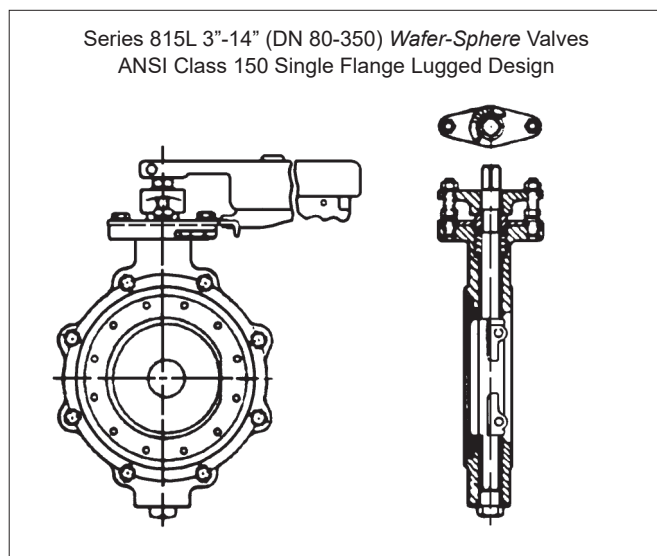


Figure 5.

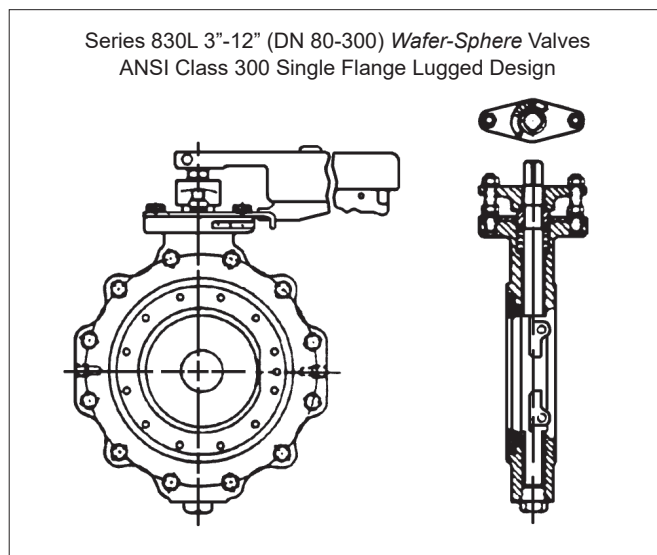


Figure 6.

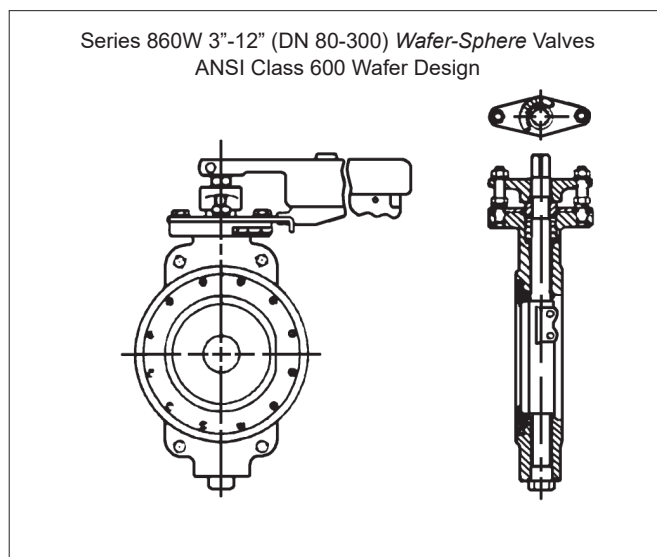


Figure 7.

Series 860L 3"-12" (DN 80-300) Wafer-Sphere Valves
ANSI Class 600 Single Flange Lugged Design

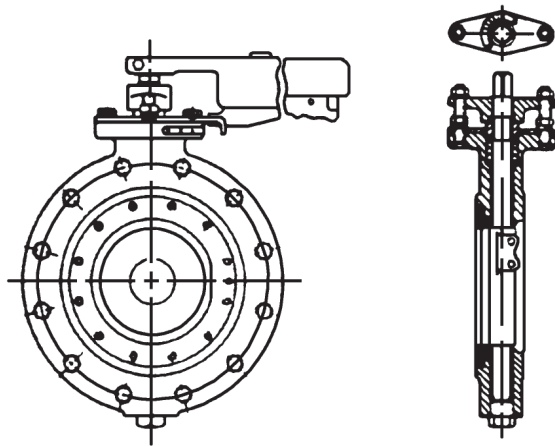


Figure 8.

4 MAINTENANCE

WARNING:

Observe the safety precautions mentioned in Section 1.3 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 shaft packing **MUST** always be installed according to Section 4.6.

Numbers in () refer to items shown in Figures 11, 12, 13, & 18.

4.1 General

Although *Jamesbury* valves are designed to work under severe conditions, proper preventative maintenance can significantly help to prevent unplanned downtime and in real terms reduce the total cost of ownership. Valmet recommends inspecting valves at least every five (5) years. The inspection and maintenance frequency depends on the actual application and process condition. Routine maintenance consists of tightening the hex nuts (15) in (Figure 18) periodically to compensate for stem seal wear. The valve should be fully closed during the tightening. **CAUTION:** Tightening hex nuts (15) too severely will shorten the life of the shaft seals.

Overhaul maintenance consists of replacing seats and seals. These parts may be obtained through your authorized Valmet Distributor.

NOTE: Always use original OEM parts to make sure that the valve functions properly.

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. BE SURE YOU KNOW WHAT FLUID IS IN THE PIPELINE. IF THERE IS ANY DOUBT, DOUBLE-CHECK WITH THE PROPER SUPERVISOR.
2. WEAR ANY PPE (PROTECTIVE CLOTHING OR EQUIPMENT) NORMALLY REQUIRED WHEN WORKING WITH THE FLUID INVOLVED.
3. DEPRESSURIZE THE PIPELINE AND DRAIN THE PIPELINE FLUID. THE WAFER-SPHERE VALVES OFFSET SHAFT CREATES GREATER DISC AREA ON ONE SIDE OF THE SHAFT. THIS WILL CAUSE THE WAFER-SPHERE VALVE TO OPEN WHEN PRESSURIZED ON THE INSERT SIDE WITHOUT A HANDLE OR ACTUATOR ON THE VALVE.
4. AFTER REMOVAL AND BEFORE ANY DISASSEMBLY, CYCLE THE VALVE SEVERAL TIMES.

NOTE: DO NOT PRESSURIZE THE VALVE WITHOUT A HANDLE OR AN ACTUATOR MOUNTED ON IT! DO NOT REMOVE A HANDLE OR AN ACTUATOR FROM A VALVE UNDER PRESSURE!

5. BEFORE YOU INSTALL A WAFER-SPHERE VALVE IN, OR REMOVE IT FROM THE PIPELINE, CYCLE THE VALVE CLOSED. THE WAFER-SPHERE VALVE MUST BE REMOVED IN THE CLOSED POSITION. FAILURE TO FOLLOW THESE INSTRUCTIONS WILL CAUSE MECHANICAL DAMAGE TO THE VALVE AND MAY RESULT IN PERSONAL INJURY.

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 Actuated Valve

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

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

WARNING

ALWAYS DISCONNECT THE ACTUATOR FROM ITS POWER SOURCE, PNEUMATIC, HYDRAULIC OR ELECTRICAL, BEFORE ATTEMPTING TO REMOVE IT FROM THE VALVE!

WARNING

DO NOT REMOVE A SPRING-RETURN ACTUATOR UNLESS A STOP-SCREW IS CARRYING THE SPRING FORCE!

1. Read all **WARNINGS** prior to attempting any maintenance.
2. Detach the air supply, electrical supply, hydraulic supply and control signal cables or pipes from their connectors.
3. If the valve uses a two-piece "no-play" bolted coupling, loosen the valve/actuator coupling screws.
4. Remove the four bolts holding the actuator bracket to the baseplate.
5. Lift the actuator straight up in line with the valve shaft until the coupling between actuator drive and valve stem is completely disengaged.
6. Place actuator in a safe location to avoid damage or personal injury.

4.3 Manual Valve - with Handle

1. Read all **WARNINGS** prior to attempting any maintenance.
2. Loosen the handle nut (H11). Lift the handle (H1) straight up in line with the valve shaft (4) until it is completely disengaged (see **Figure 18**).

4.4 Seat Replacement Non Fire-Tite Valves

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 and cycle it open. Take care not to damage the sealing edge of the valve disc.
2. Remove the insert screws (21) and the insert (2) (See **Figure 18**). If the insert does not lift out easily, tap it out from the shaft side using a wooden or plastic rod and a hammer. Do not strike the valve directly with a hammer.
3. Remove the seat (5) and discard it.
4. Remove the body seal (40) when applicable, (3" and 4" [DN 80 and 100] Series 815L, 830L, 860L and 860W valves).
5. Clean the valve.
6. Carefully clean and polish the disc (3) sealing surface. It should be free of all grooves and scratches.
7. If the disc (3) is slightly damaged it may be possible to smooth the sealing surface with crocus cloth, a fine stone, or the equivalent. If the deep scratches are present, replace the disc or return the valve to the local Valmet center.
8. Cycle the valve closed.
9. Install the seat (5) into the insert.
10. Place the new body seal (40) in the groove in the body (when applicable).

11. Replace the insert and seat together, using insert screws when applicable. Tighten the screws in a uniform sequence. Torque values are given in (**Table 1**). Open valve and retorque the insert screws (per **Table 1**). Take care not to damage the sealing edge of the disc. Close the valve.

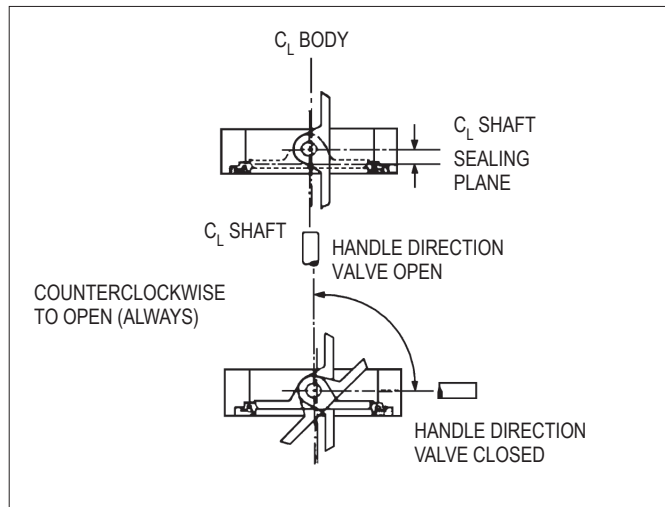


Figure 9.

12. Set the handle or actuator stops as described in the **SETTING ADJUSTMENTS** Section. **NOTE:** After installation of a new seat, torque will be higher for a few cycles.

NOTE: If complete disassembly becomes necessary; it is recommended to replace the seat and all seals. Standard repair kits and/or spare parts may be obtained through your authorized Valmet Distributor.

4.5 Seat Replacement Fire-Tite Valves

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 and cycle it open. Take care not to damage the sealing edge of the valve disc.
2. Remove the insert screws (21) and the insert (2). (See **Figure 18**). If the insert does not lift out easily, tap it out from the shaft side using a wooden or plastic rod and a hammer. Do not strike the valve directly with a hammer.
3. Remove the seat (5) and discard it.
4. Remove the gasket from the insert and body.
5. Carefully clean the gasketing surfaces with solvent. They should be free of all grooves and scratches. If deep scratches are present, polish or repair as required.
6. Clean the valve.
7. Carefully clean and polish the disc (3). It should be free of all grooves and scratches.

TABLE 1			
Insert Screw Torque (FT.LBS Unless Otherwise Specified)			
ANSI CL 150/300/600	Screw Size	Torque C'stl. -IN-LBS (N-m)	Torque St. St'l -IN-LBS (N-m)
3" (DN 80)	#10	63/92 (7.1/10.4)	17/25 (1.9/2.9)
4" (DN 100)	1/4	10/16 (13.5/21.7)	4/7 (5.4/9.5)
6" (DN 150)	#10	63/92 (7.1/10.4)	17/25 (1.9/2.9)
8" (DN 200)	1/4	10/16 (13.5/21.7)	4/7 (5.4/9.5)
10" (DN 250)	1/4	10/16 (13.5/21.7)	4/7 (5.4/9.5)
12" (DN 300)	5/16	22/33 (19.8/44.7)	8/12 (10.9/16.3)
14" (DN 350)	3/8	37/55 (50.2/74.6)	15/22 (20.3/29.8)

8. If the disc (3) is slightly damaged, it may be possible to smooth the sealing surface with crocus cloth, a fine stone, or the equivalent. If deep scratches are present, replace the disc or return the valve to the local Valmet center.
9. Cycle the valve closed.
10. A gasket is required between the seat tail and body as shown in (Figure 12). The valve uses a graphite type gasket (except 14" [DN 350] which uses PTFE paste sealant). This is installed in accordance with the following steps:
 - A. **IMPORTANT:** Exercise care at all times not to damage the gasket. A break will cause leakage, and hence cannot be allowed.
 - B. The bottom surface of the insert is to be free of all foreign particles. Clean thoroughly with a solvent that is compatible with the media.

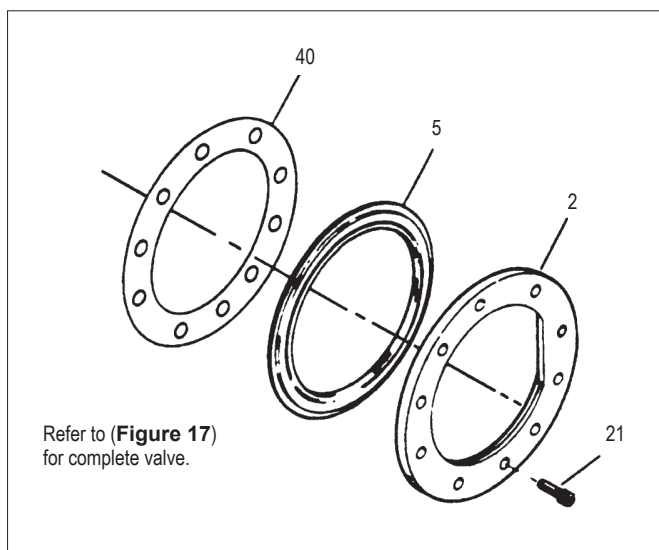


Figure 10.

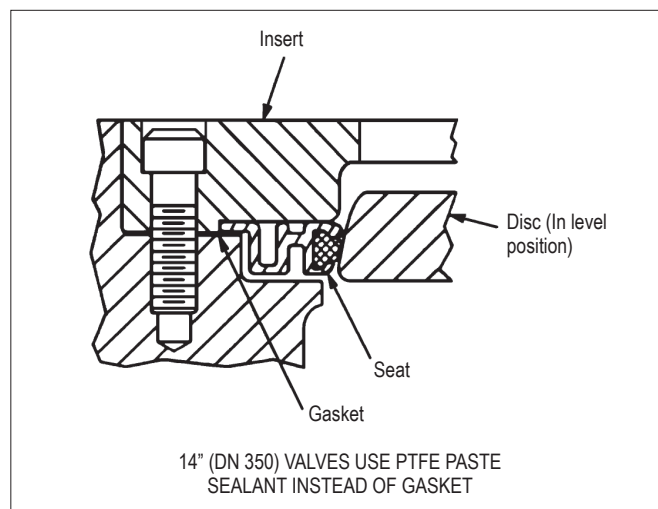


Figure 11.

- C. Apply the gasket to the body taking care to align the holes in the gasket with the insert screw and pin holes. With 14" (DN 350) valves apply a uniform bead of PTFE paste to the under side of seat (grooved surface) only.
11. Verify that the disc is in the level position. Install new seat and insert (see Figure 11). Install the insert screws, and tighten them in a uniform sequence. Torque values are given in (Table 1). Open valve and retorquing the insert screws (per Table 1). Take care not to damage the sealing edge of the disc. Close the valve.
12. Set the actuator stops as described in the **ACTUATOR/VALVE ADJUSTMENTS** Section. Do not install and tighten flanges on a newly reseated valve until the actuator stops are properly set and the valve is fully closed. Incorrect disc positioning may cause damage to a new seat when the valve is compressed between flanges for the first time. **NOTE:** After installation of a new seat, torque will be higher for a few cycles.

4.6 Shaft Packing Replacement

WARNING:

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

1. Remove the handle or actuator as described in 4.2 and 4.3.
2. Remove the indicator pointer (29) from the shaft. Pull it straight out with a pair of pliers to avoid breaking it off.
3. Remove the nuts (15) and washers (16) from above the compression plate (10). Remove the compression plate and blowout spacer (75) (3", 4" and 6" [DN 80, 100 and 150] 860 **ONLY**). The studs (14) do not have to be removed.
4. Slide the retainer ring (47) off the shaft.
5. Remove the compression ring (9).
6. Remove the old shaft packing (8) with a packing tool.
7. The spacer (7) need not be removed for shaft packing replacement.
8. Replace the old packing with new packing. **NOTE:** If the packing is of the PTFE chevron type, keep the packing rings stacked in the same order as removed from the kit. Remove one of the four center chevron rings from packing being installed in Series 815W and 815L valves. (**Note orientation in Figure 18**).

- Reinstall the compression ring (9) (not on 14" [DN 350] Type 815), the retainer ring (47), the blowout spacer (75) (3", 4" and 6" [DN 80, 100 and 150] 860 ONLY), the compression plate (10), the lock washers (16) and nuts (15) and the indicator pointer (29). Be sure that the indicator plate is under the pointer.

*If the compression ring initially sits too high to install the retainer ring it may be necessary to precompress the packing somewhat. In that case, install the compression plate and tighten the nuts enough to accomplish the precompression. Remove the compression plate to install the retainer ring and then complete the reassembly.

- Close the valve (the seat and insert should be installed in the valve at this point).
- Tighten the nuts (15) evenly until the packing is adequately compressed to prevent leakage. This should require tightening the nuts approximately 1-1/2 to 2 full turns past the "finger-tight" position.

4.7 Valve Disassembly

WARNING:

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

NOTE: If complete disassembly becomes necessary, replacement of all seats and seals is recommended.

- Place the valve on a bench or other suitable working place.
- If the seat is to be replaced, follow Steps 2, 3 and 4 in the **SEAT REPLACEMENT** Section. **NOTE:** It is a good idea to replace the seat (and body seal in 3" and 4" [DN 80 and 100] valves) any time a valve is rebuilt.
- Remove the shaft packing compression hardware as detailed in Steps 1-5 in the **SHAFT PACKING REPLACEMENT** Section. The packing material itself can be more easily removed after the shaft has been removed from the valve.
- Remove the disc pin welds by grinding or machining off the weld. Drive out the pins in the direction shown in **(Figure 18)**.
- Grind or file off the tack weld locking the pressure plug (11). Remove the plug and its seal (42).
- Use a soft rod and hammer to tap the bottom of the shaft (4). Remove it through the top of the valve.

NOTE: In doing so, and freeing the disc, be careful not to scratch the sealing surface of the disc.

- Remove the packing (8) and the spacer (7), and when applicable, the spacers (41) and (43)
- Remove the top bearing (6) either through the top of the valve or the waterway.
- Remove the bottom bearing (6) either from the bottom of the valve or the waterway.

4.8 Valve Assembly

- Clean all valve components.
- Inspect all components for damage before starting to assemble the valve. Look especially for damage to sealing areas on the disc, shaft and body, and for wear in the bearing areas of the shaft and body
- 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 smooth the sealing surface with crocus cloth, a fine stone, or the equivalent. If deep scratches are present, replace the disc or return the valve to the local Valmet Center.

- Install the bearings (6) into the body bores.
- Coat the shaft and the disc bore lightly with a lubricant compatible with the fluid to be handled by the valve.
- Position the disc (3) in the body between the thrust bearings (64) and slide the shaft (4) through the body and disc. For high cycle constructions, position excluder rings in shaft bore of body as shown in **Figure 13**. Use caution to prevent damage to the bearings. An arrow and the word "bonnet" on the disc indicates correct orientation with the compression plate (10).
- Insert the disc pins (13) and drive them into place. The pins must be driven so that both pins are the same depth within 1/16" (1.6 mm). An arrow cast on the back of the disc shows the direction of pin installation. Be certain that the pins are installed from the direction shown in **(Figure 18)**. When they are correct, the indicator pointer (29) will point exactly parallel with the face of the disc. Weld both ends of the pins, small end first. After the disc cools, clean the welds with a wire brush. **CAUTION:** Use care to keep contamination out of the valve.
- Install the upper bearing spacer (41) when applicable, the spacer (7), the packing (8), the compression ring (9)(not on 14" [DN 350] Type 815), and the retainer ring (47) where applicable. If the packing is of the PTFE chevron type, be certain that it is installed in the orientation shown in **(Figure 18)**.
- If the studs (14) have been removed from the valve, reinstall them in the holes shown in **(Figure 18)**.
- If the handle ratchet plate or the actuator base plate has been removed from the valve, reinstall it in the orientation shown in **(Figure 15 or Figure 18)**. Install lockwashers and screws in the two bonnet holes not used by the studs and install the lower lockwashers (16) and nuts (15) on the studs. Do not tighten the screws and nuts until the stops are set (see **SETTING ADJUSTMENTS** Section).
- Install blowout spacer (75) (3", 4" and 6" [DN 80, 100 and 150] 860 **ONLY**). Place the compression plate (10) over the shaft (4) and studs (14). Orient the plate so that the indicator pointer will be over the indicator plate. Install the lockwashers (16) and nuts (15), but do not tighten. Install the indicator pointer in the shaft.
- Install the lower bearing spacer (43), when applicable. Place the plug seal (42) in the recess at the bottom of the valve and install the plug (11). Torque the plug until it is flush with the body. A small (1/16" [1.6 mm]) tack weld on the corner of the plug is recommended. **CAUTION:** A larger tack weld is apt to have enough heat to damage the seal.
- Cycle the valve fully closed. If the seat and body seal are to be replaced as recommended, do so at this point. See the **SEAT REPLACEMENT** Section for details.
- Install the insert or insert screws as shown in **(Figure 18)**. The 3" and 4" (DN 80 and 100) 815W and 830W series valves do not have insert screws. They use two pins (12) to locate and hold the insert. Tighten the screws in a uniform sequence. Torque values are given in **(Table 1)**.
- With the valve still closed, tighten the nuts (15) on the compression plate evenly until the packing is adequately compressed to prevent leakage. This should require tightening the nuts approximately 1-1/2 to 2 full turns past the "finger-tight" position.
- Set the handle or actuator stops as described in the **SETTINGS ADJUSTMENTS** Section. Tighten the screws and nuts holding the ratchet plate or actuator base plate.

4.9 High Cycle Construction (860 only)

Using these materials, Xtreme® (X) seat, filled super PTFE shaft seals, 316 SS/Woven PTFE shaft bearings, PEEK®-filled PTFE thrust bearings and excluder rings, yields significantly longer life than a standard configuration valve. Actual cycle performance is subject to media, pressure, and temperature conditions. Applications such as oxygen, nitrogen, hydrogen, water, and other clean media are ideally suited for this option.

WARNING

AVOID ANY MEDIA CONTAINING ACIDS OR CHEMICALS SUCH AS CHLORINE, BROMINE, SULFUR DIOXIDE, OR STEAM, OR TEMPERATURES THAT EXCEED 325°F (163°C).

For proper assembly, the excluder ring must be assembled with the open side toward the waterway on both sides. See **Figure 13** for proper assembly.

4.10 Testing the Valve

WARNING

WHEN PRESSURE TESTING, EXERCISE CAUTION AND MAKE SURE ALL EQUIPMENT USED IS IN GOOD WORKING CONDITION AND APPROPRIATE FOR THE INTENDED PRESSURE.

If the valve is to be tested prior to returning to service make sure the test pressures are in accordance with an applicable standard.

When testing the valve for external tightness, keep the dis in the half open position.

If testing the valve seat tightness, please contact Valmet for advice.

WARNING

WHEN PERFORMING ANY TESTS, NEVER EXCEED THE MAXIMUM OPERATING PRESSURE OR MAXIMUM SHUT-OFF PRESSURE LISTED ON THE IDENTIFICATION PLATE!

5 ACTUATOR MOUNTING

Original mounting of actuators is not covered in this document because of the wide variety of possible actuators. If an actuator is to be added to the valve, see the Actuator Mounting Instructions (AMI) accompanying the linkage kit for the actuator being mounted. Adjust the actuator stops as described in the **STOP SETTING** Section for the appropriate actuator.

5.1 Change of Actuator Quadrant

WARNING:

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

If it is necessary to orient the actuator in a different quadrant (**Figure 15 and 16**):

1. If the valve uses a two-piece “no-play” bolted coupling, loosen the valve/actuator coupling by loosening the coupling screws.
2. Remove the four bolts holding the actuator bracket to the actuator base plate.

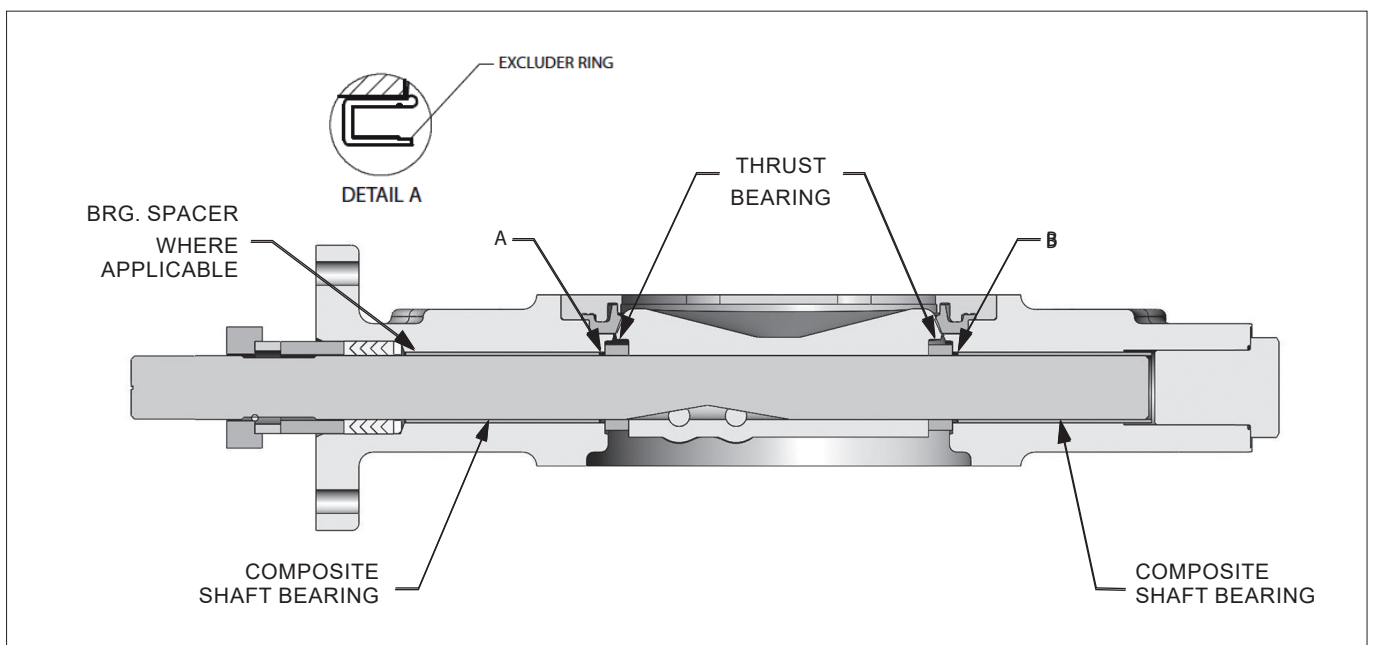


Figure 12.

- After removing the actuator and bracket from the valve, remove the four screws holding the actuator bracket to the actuator.
- Reposition the actuator in the desired quadrant.
- Reinstall and retighten the four screws which hold the actuator bracket to the actuator.
- Verify that the actuator and valve positions match, i.e., valve closed and actuator at the "closed" end of stroke. This ensures opening of the valve in a counterclockwise direction, as shown in the illustrations.
- Reinstall the bracket on the base plate, holding the two together with the four bolt and nuts. The bracket and base plate should touch each other at all four bolt holes, but the nuts should be only "finger-tight". (Excessive tightening will prevent proper alignment of the actuator drive shaft and valve stem. Failure to tighten snugly will cause the shaft and disc to be pushed downward away from the optimum seat contact when final tightening is accomplished.)
- Install the coupling and tighten the coupling bolts. **Be sure the actuator drive shaft and valve stem are rigidly held together and properly aligned.**
- Loosen slightly the four nuts and bolts joining the bracket and base plate so that the coupling can better align the actuator drive shaft and valve stem. Then fully tighten the nuts and bolts.
- Set the actuator stops as described below in the **SETTINGS ADJUSTMENTS** Section for the appropriate actuator. If the valve is not installed in the line, do not install it until the actuator stops are properly adjusted.

6 CHANGE OF HANDLE QUADRANT

WARNING:

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

If it is necessary to remount the handle 180° from its standard direction (**Figure 14**):

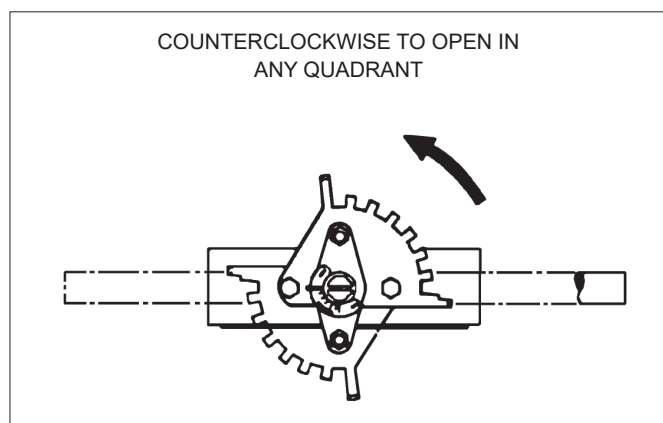


Figure 13.

- Remove the handle, hex head cap screws (H6) and lockwashers (H12). Do not remove the studs (14).
- Lift the ratchet plate up and rotate it 180° around the shaft. Do not turn it upside down.

- Reinstall all the components which were just removed. Be certain that the indicator plate (26) is correctly oriented with respect to the indicator pointer (29) during the reassembly. Do not tighten the ratchet plate fasteners until the plate has been properly adjusted as described in the **SETTING HANDLE STOP** Section. If the valve is not installed in the line, do not install it until the ratchet plate is properly adjusted.

7 SETTING ADJUSTMENTS

7.1 Setting Stops (Valve in the Line)

It is preferable to adjust the stops on the handle or actuator before the valve is installed in the line because of the ability to check disc position visually. If this is not possible, and the valve is installed in the line, use the procedures which follow, ignoring any reference to measured clearance to the disc. **CAUTION:** There must be no pressure across the valve while the stops are being set. Following adjustments, check all linkage and coupling bolts for tightness. Recommended torque values for fasteners are shown in (**Table 1**).

7.2 Setting Stops (Valve Out of Line)

The following steps rely upon the insert (2) being clamped in the position it will take when installed in the line. The insert must be flush with the face of the body (1) within 1/32" (.79 mm) maximum. The installed seat tends to lift the insert unless it is completely clamped or screwed in place. It may be most convenient to adjust the stops with the seat removed from the valve. Following the setting of the stops, the seat and insert must be reinstalled as described in the **SEAT REPLACEMENT** Section.

Following adjustments, check all linkage and coupling bolts for tightness. Recommended torque values for fasteners are shown in (**Table 2**).

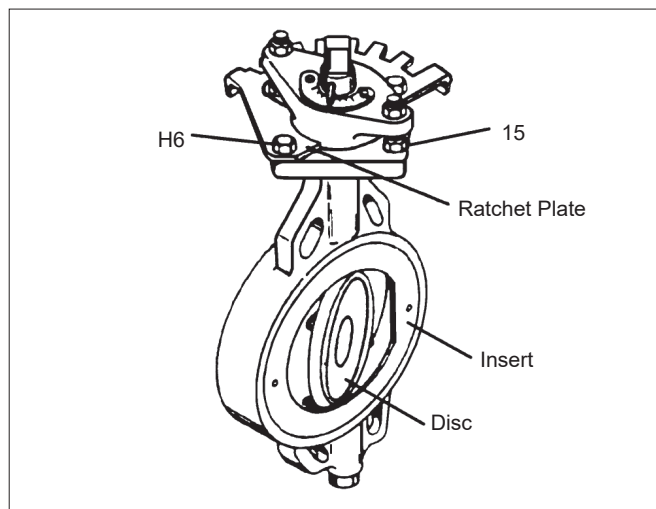


Figure 14.

7.3 Setting Handle Stop (Figure 15)

- Loosen the two hex head cap screws (H6) clamping the ratchet plate to the valve.
- Close the valve until the disc is parallel with the flange faces within 1/32" (.79 mm) Do not over close the valve so that the disc is in contact with the insert.

3. If the handle (H1 in **Figure 18**) has been removed from the valve, reinstall it on the shaft drive square and tighten the nut (H11). The handle should be installed so that it is parallel with the disc (3) in order to provide visual indication of disc position when viewed from a distance. With the handle locking tab in the last (closed) notch of the ratchet plate, rotate the ratchet plate clockwise (when viewed from above the handle) until it is stopped by the locking tab. The disc/handle assembly is now lightly trapped between the insert and the ratchet plate.
4. Tighten the two nuts (15) and two screws (H6) holding the ratchet plate.

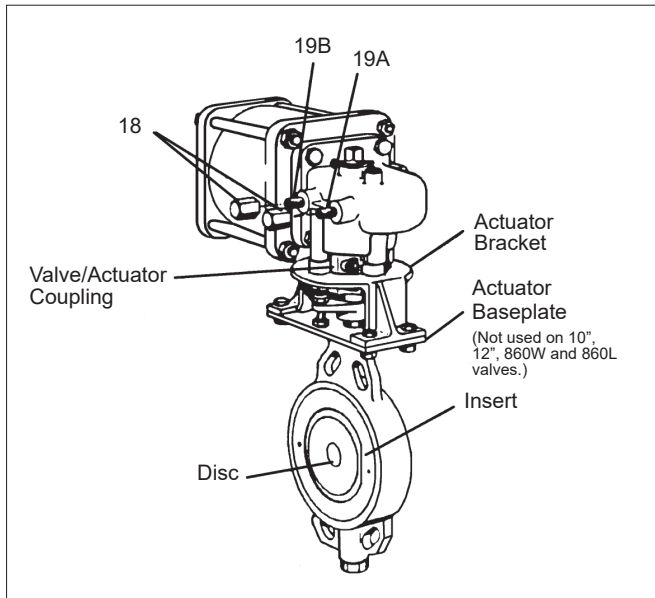


Figure 15.

7.4 Setting Stops on ST and ST-MS Pneumatic Actuators (Figure 16)

1. Disc travel on *Wafer-Sphere* valves with a type ST or ST-MS pneumatic actuator is controlled with a closed ("shut") travel stop set screw (19A), and by an open travel stop set screw (19B) in the actuator.
2. Remove acorn nuts (18) protecting the stop set screws.
NOTE: Be sure O-rings remain in the acorn nuts.
3. Adjust the closed ("shut") stop set screw (19A) until the disc just touches the insert when the actuator is at the end of its stroke. Air pressure may have to be applied to ST-MS actuators to relieve the load on the closed ("shut") stop set screw during the adjustment. **CAUTION:** If pressure is supplied to the actuator while the valve is exposed, keep hands and tools away from the disc.
4. From the position which allows the disc to just touch the insert, turn the stop set screw in about 1/8 turn to get the disc .010"/.040" (.254/1.02 mm) off the insert.
5. Cycle the actuator open and back to closed several times and verify that the disc returns to the same position each time. Keep hands and tools away from the disc, and do not allow the disc to drag across surfaces which can scratch the sealing edge.
6. Cycle the valve to the open position. If necessary, adjust the open set stop screw (19B) until the pointer (24) is approximately 90° from the closed ("shut") position. This is full open.

7. With the valve in the full open position, and with air applied so that the load is applied to the open stop set screw to prevent it from moving, cover the open set screw with an acorn nut. Tighten the open stop set screw acorn nut.
8. Now close the valve. With the valve in the closed position, and air (or spring) load applied to the stop set screw, tighten the closed ("shut") stop set screw acorn nut.
9. Cycle the valve open and closed, with full air pressure, three times. The disc must return to the same position each time. Visually check to see that the disc is within .010"/.040" (.254/1.02 mm) of the insert stop, but is not lifting the insert from its proper position.

7.5 Setting Stops on Quadra-Powr Actuators

Follow the instructions for adjustment of ST-MS actuators with the following exceptions:

1. The *Quadra-Powr* has no acorn nuts on the stop screws.
2. Because the stop set screws can be held in position with a screwdriver while tightening the jam nuts, there is no need to apply a load to the ends of the screws during this operation.

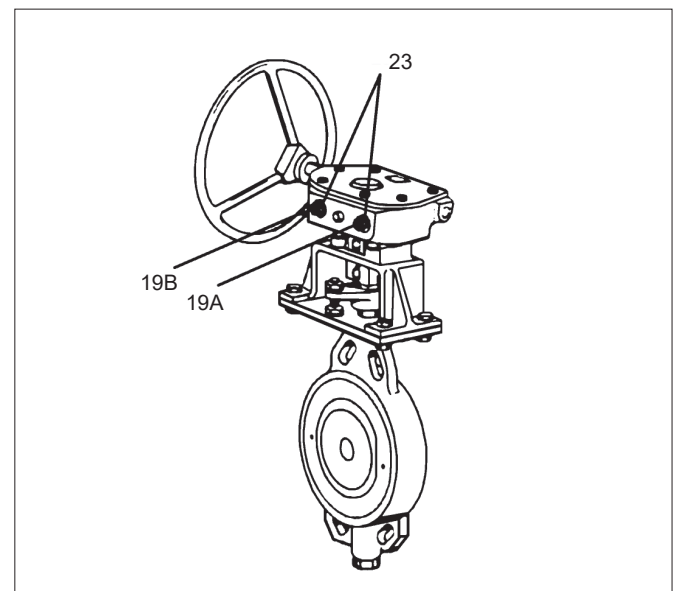


Figure 16.

7.6 Setting Stops on MA Manual Gear Actuator (Figure 17)

1. Loosen the jam nuts (23) locking the stop set screws (19). Back out the closed ("shut") stop set screw (19A) far enough to allow the actuator to move the disc until it is just touching the insert.
2. Screw in the closed ("shut") stop set screw until it stops against the gear face inside the actuator.

HANDLE PARTS		
ITEM	PART NAME	QTY
H1	Handle	1
H2	Lever	1
H3	Ratchet Plate	1
H4	Spring	1
H5	Spirol Pin	1
H6	Hex Head Cap Screw	2
H9	Hex Head Cap Screw	1
H10	Lockwasher	1
H11	Nut	1
H12	Star Washer	2
H13	Washer	2
VALVE PARTS		
ITEM	PART NAME	QTY
1	Body	1
2	Insert	1
3	Disc	1
4	Shaft	1
5	Seat	1
6	Shaft Bearing	2
7	Spacer	1
8	Shaft Packing	1
9	Compression Ring*	1
10	Compression Plate*	1
11	Pressure Plug	1
12	Insert Roll Pin (3" - 4" [DN 80 - 100])	2
13	Disc Pin	2
14	Stud	2
15	Jam nut	4
16	Lockwasher	4
17	Name Plate	1
18	Drive Screw	3
21	Cap Screw (All valves except 3" & 4" (DN 80 & 100) series 815W & 830W)	+
26	Indicator Plate*	1
27	Drive Screw*	2
29	Indicator Pointer	1
40	Insert Seal (3" - 4" [DN 80 - 100])	1
	815L & 830L; 860L & 860W)	
41	Top Bearing Spacer	1
42	Plug Seal	1
43	Bottom Bearing Spacer	1
44	Paper Tag	1
47	Retainer Ring	1
64	Thrust Bearing	2
75	Blowout Spacer (3", 4", 6" [DN 80, 100, 150]) 860 ONLY	1

*On 14" (DN 350) Type 815 omit items 26 and 27. Items 9 and 10 are one piece.
+815W 14" (DN 350) = 4
+860W & 860L 3" - 8" (DN 80 - 200) = 12
+815W & 830W 6" - 12" (DN 150 - 300) = 2
+860W & 860L 10" (DN 250) = 16
+815L & 830L 3" - 8" (DN 80 - 200) = 12
+860W & 860L 12" (DN 300) = 20
+815L & 830L 10" (DN 250) = 16

BRACKET BOLTING TORQUES FOR GR. 5 HEX CAP			
Bolt Size	Torque to Aluminum Body Actuators		
	No Lubrication to Screws		
	FT•LBS	IN•LBS	N•m
1/4	6	72	8.1
5/16	12	144	16.3
3/8	20	240	27
7/16	30	360	41
1/2	50	600	68
9/16	70	840	95
5/8	90	1080	122
3/4	160	1920	217
7/8	250	3000	339
1	360	4320	488
1-1/8	520	6240	705
1-1/4	700	8400	949
M6	5	60	6.8
M8	11	132	14.9
M10	22	264	30
M12	38	456	52
M16	90	1080	122
M20	170	2040	230
M30	570	6840	773
M36	950	11400	1288
Bolt Size	Torque to Aluminum Body Actuators		
	No Lubrication to Screws		
	FT•LBS	IN•LBS	N•m
1/4	8	96	10.8
5/16	16	192	21.7
3/8	27	324	37
7/16	45	540	61
1/2	67	804	91
9/16	100	1200	136
5/8	135	1620	183
3/4	225	2700	305
7/8	335	4020	454
1	520	6240	705
1-1/8	700	8400	949
1-1/4	990	11880	1342
M6	7	84	9.5
M8	14	168	19.0
M10	28	336	38
M12	48	576	65
M16	115	1380	156
M20	225	2700	305
M30	783	9396	1062
M36	1347	16164	1826

REQUIRED TORQUE FOR NO-PLAY COUPLING FASTENERS (Gr. 8 Socket Cap Screws and Lock Nuts)	
No Lubrication to Screws/Nuts	
Thread Size	Tightening Torque - FT.LBS (N.m)
1/4 - 20	9 - 12 (12.2 - 16.3)
1/4 - 28	11 - 14 (14.9 - 19.0)
5/16 - 18, 5/16 - 24	22 - 27 (29.8 - 36.6)
3/8 - 16, 3/8 - 24	35 - 40 (47.5 - 54.2)
1/2 - 13, 1/2 - 20	80 - 90 (108.4 - 122.0)
5/8 - 11, 5/8 - 18	160 - 170 (217.0 - 230.5)

3. Taking care not to move the set screw, use the handwheel to open the disc slightly. Turn the closed ("shut") stop set screw in about 1/8 turn. Check to see that the disc is .010"/.040" (.254/1.02 mm) off the insert.
4. Lock the stop set screw with the jam nut at this point. The screw must be kept from moving while the nut is being tightened. This may be done either by holding the screw with a wrench, or by using the handwheel to drive the gear firmly against the end of the screw.
5. Open the valve so that the pointer is approximately 90° from the closed (shut position using the handwheel). Adjust the open stop set screw (19B) to stop the gear at this position. Hold the stop set screw and tighten the jam nut.

7.7 Setting Stops on Electric Actuators

Electric actuator stops are controlled by adjustable cams and switches. Follow basically the same procedure for these actuators as for ST actuators. The closed ("shut") switch should stop the disc within .010"/.040" (.254/1.02 mm) of the insert. Do not set the stop so that the disc touches the insert before the switch turns the actuator off.

8 SERVICE / SPARE PART

We recommend that valves be directed to our service centers for maintenance. The service centers are equipped to provide rapid turnaround at a reasonable cost and offer new valve warranty with all reconditioned valves.

NOTE: When sending goods to the service center for repair, do not disassemble them. Clean the valve carefully and flush the valve internals. Include the material safety datasheets (MSDS) for all media flowing through the valve. Valves sent to the service center without MSDS datasheet(s) will not be accepted.

For further information on spare parts and service or assistance visit our web-site at www.valmet.com/flowcontrol.

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

- a. Valve catalog code from identification plate,
- b. If the valve is serialized - the serial number (from identification plate)
- c. From **Figure 18**, the ballooned part number, part name and quantity required.

9 EXPLODED VIEW AND PART LIST

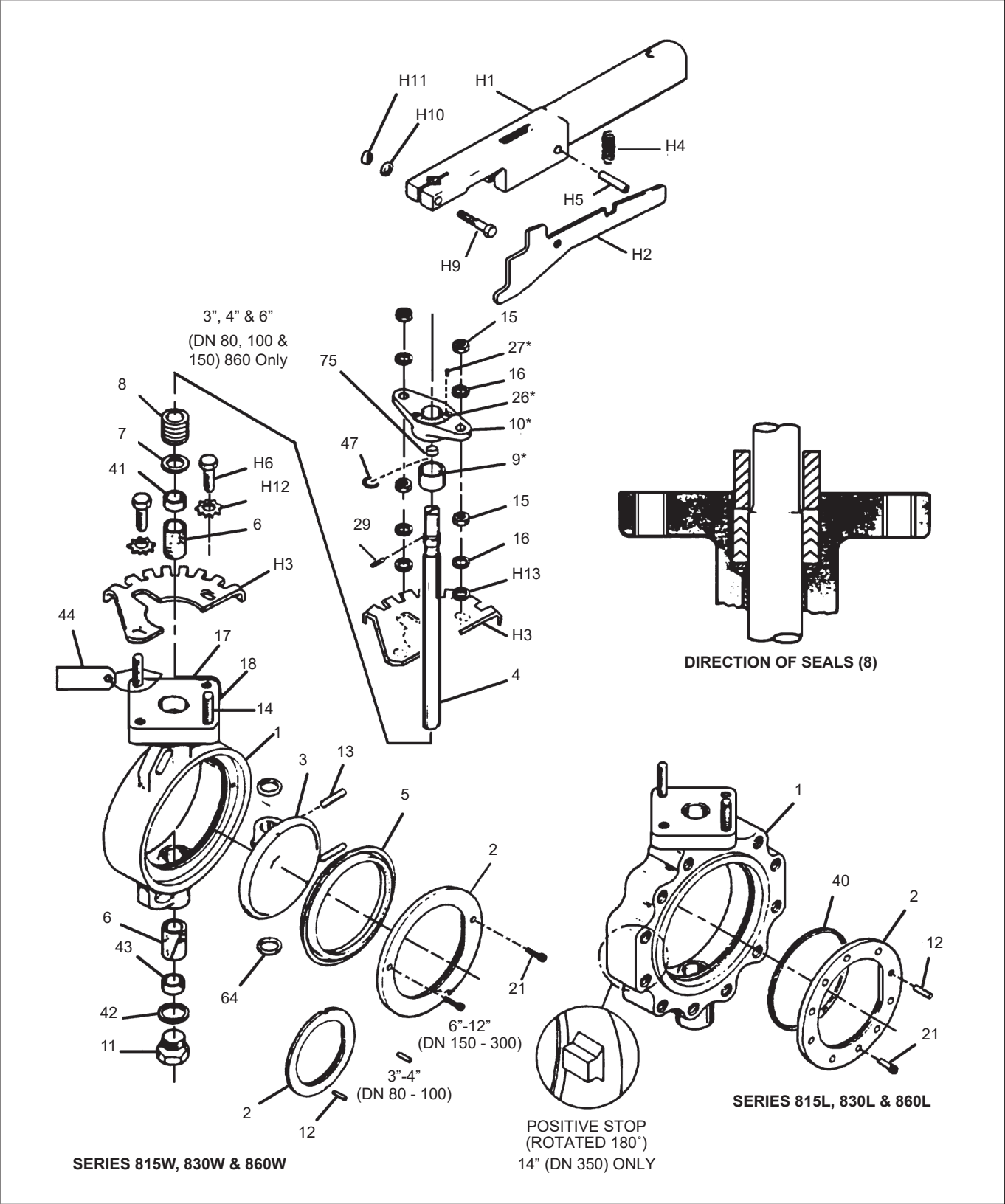


Figure 17.

10 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](tel:+358104175000)

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

11 TYPE CODE

JAMESBURY BRAND WAFER-SPHERE VALVE, SERIES 800

1	2	3	4	5	6	7	8	9	10
3	815	W	-	11	22	36	XZ	A	QY

1. sign	VALVE SIZE (inch / mm)
INCHES	3, 4, 6, 8, 10, 12, 14
DN	80, 100, 150, 200, 250, 300, 350

2. sign	VALVE SERIES & STYLE
815	Standard Class 150
F815	<i>Fire-Tite</i> Class 150
818	Standard with CE Marking & Documentation Class 150
F818	<i>Fire-Tite</i> with CE Marking & Documentation Class 150
830	Standard Class 300
F830	<i>Fire-Tite</i> Class 300
838	Standard with CE Marking & Documentation Class 300
F838	<i>Fire-Tite</i> with CE Marking & Documentation Class 300
860	Standard Class 600
F860	<i>Fire-Tite</i> Class 600
868	Standard with CE Marking & Documentation Class 600
F868	<i>Fire-Tite</i> with CE Marking & Documentation Class 600

3. sign	BODY STYLE
W	Wafer
L	Single-flange Lugged

4. sign	CONSTRUCTION / SPECIAL SERVICE
-	Standard (no entry)
C	Chlorine
N	NACE MR0103-2003
O	Oxygen
H	Hard-coated Disc
HV	High Vacuum
HVC	High Vacuum Certified
D	Double Packing
DL	Double Packing with Monitoring Port

5. sign	SEAT TYPE
11	Standard (non Fire-Tite)
31	Fire-Tite

6. sign	BODY MATERIAL
22	Carbon Steel (WCB)
35	Alloy 20 (CN7M)
36	Stainless Steel (CF8M)
37	Stainless Steel (CG8M)
71	Monel® (M-35-1)
73	Hastelloy® C (CW-12MW)

Other materials available on application

7. sign	DISC AND SHAFT MATERIAL
35	Alloy 20 disc and shaft
36	316 Stainless Steel disc and shaft
37	317 Stainless Steel disc and shaft
71	Monel disc and shaft
73	Hastelloy C disc and shaft
HB	316 Stainless Steel disc, 17-4 PH shaft
00	Same as body material

Other materials available on application

8. sign	SEAT AND SEAL MATERIAL
	STANDARD
XZ	<i>Xtreme</i> seat & carbon-filled enhanced PTFE seal
TT	PTFE seat and seal
MT	Filled PTFE seat, PTFE seal
UU	PEEK/Graphite/Graphite
	FIRE-TITE
AE	PTFE/Stainless steel seat, graphite seal
AF	PTFE/Alloy-20 seat, graphite seal
AH	PTFE/Monel seat, graphite seal
XE	<i>Xtreme</i> /Stainless steel seat, graphite seal
XF	<i>Xtreme</i> /Alloy-20 seat, graphite seal
XH	<i>Xtreme</i> /Monel seat, graphite seal

9. sign	MODEL
A	-

10. sign	MODIFIER CODE
-	Standard
QY	Live-loaded packing
MM	High Cycle Construction

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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.

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