

Jamesbury™ Wafer-Sphere™ butterfly valves series 845, high-flow, high-cycle, low pressure air separation valve with cartridge bearings

Installation, maintenance and
operating instructions

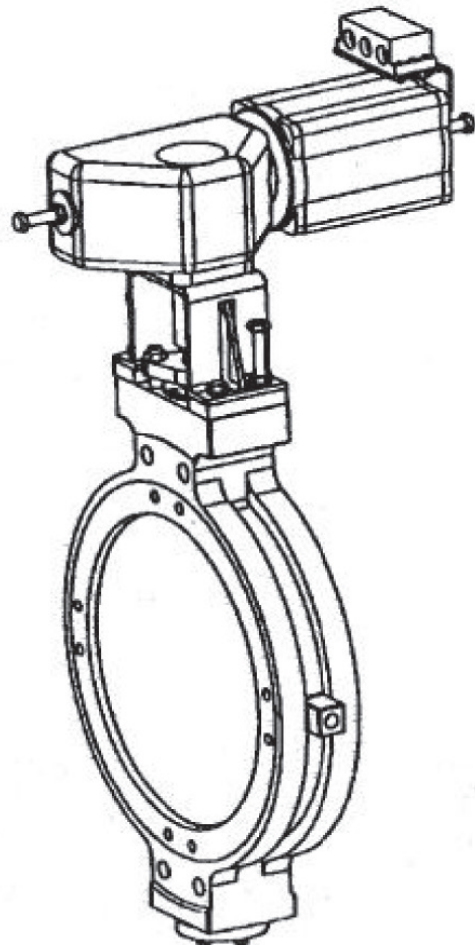


Table of contents

SAFETY	3	SPECIAL MAINTENANCE	9
Description	3	Packing Adjustment	9
INSTALLATION	4	Seat Replacement	9
VALVE REMOVAL	4	Disc Removal and Repair	9
SCHEDULED MAINTENANCE	5	Disc Assembly	9
General	5	Actuator Setting and Repair	9
Actuator Removal	5	Solenoid Valve Repair	11
Cartridge Replacement	5	VALVE TESTING PROCEDURE	11
Actuator Mounting	7	SERVICE PARTS AND TOOL KITS	11
Cartridge Refurbishing	7		

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. SAFETY

WARNING

SAFETY FIRST: FOR YOUR SAFETY, TAKE THE FOLLOWING PRECAUTIONS BEFORE REMOVING THE VALVE FROM THE LINE. OR BEFORE ANY DISASSEMBLY:

1. **WHAT'S IN THE LINE?**
BE SURE YOU KNOW WHAT FLUID IS IN THE LINE. IF THERE IS ANY DOUBT, DOUBLE-CHECK WITH THE PROPER SUPERVISOR.
2. **ARE YOU PROTECTED?**
WEAR ANY PROTECTIVE CLOTHING AND EQUIPMENT NORMALLY REQUIRED TO AVOID INJURY FROM THE PARTICULAR FLUID IN THE LINE.
3. **IS THE LINE DEPRESSURIZED?**
DEPRESSURIZE THE LINE AND DRAIN THE SYSTEM FLUID. THE OFFSET SHAFT IN THE *WAFER-SPHERE* VALVE CREATES GREATER DISC AREA ON ONE SIDE OF THE SHAFT. THIS MEANS THAT A *WAFER-SPHERE* VALVE TENDS TO OPEN WHEN PRESSURIZED ON THE INSERT SIDE WITHOUT AN ACTUATOR ON THE VALVE. **NOTE:** DO NOT PRESSURIZE THE VALVE WITHOUT AN ACTUATOR MOUNTED ON IT. DO NOT REMOVE AN ACTUATOR FROM A VALVE UNDER PRESSURE.
4. **IS THE VALVE CLOSED?**
BEFORE YOU INSTALL A *WAFER-SPHERE* VALVE IN OR REMOVE IT FROM THE LINE. CYCLE THE VALVE FULLY CLOSED. THE *WAFER-SPHERE* VALVE MUST BE REMOVED FROM THE LINE IN THE CLOSED POSITION. THIS WILL PREVENT MECHANICAL DAMAGE TO THE DISC SEALING EDGE. THE KEYWAY ON TOP OF THE SHAFT INDICATES DISC POSITION (SEE FIGURE 1).

WARNING: AT ALL TIMES KEEP HANDS OUT OF THE WATERWAY OF THE VALVE. A VALVE WITH AN ACTUATOR COULD CLOSE UNEXPECTEDLY AT ANY TIME AND RESULT IN SERIOUS INJURY.

1.1 DESCRIPTION

The Jamesbury™ *Wafer-Sphere*™ valve is a high performance butterfly valve design. **IMPORTANT NOTE:** Maximum shut-off pressure rating is limited, refer to tag attached to each valve for this rating. Do not use a valve at service conditions that exceed the rating on the tag.

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 disc center line; and (2) behind the disc sealing plane (See Figure 2). The offset shaft design makes the disc lift completely off the seat as the valve starts to open, eliminating wear points at the top and bottom of the seat.

Positive Stop Feature

To prevent seat damage from over-travel of the disc beyond the closed position (primarily during field mounting of an actuator), a "positive stop" feature has been designed into the *Wafer-Sphere* butterfly valve. The positive stop feature also makes it possible to adjust the actuator stops in-line. The location of this feature is in the body (See Figure 3).

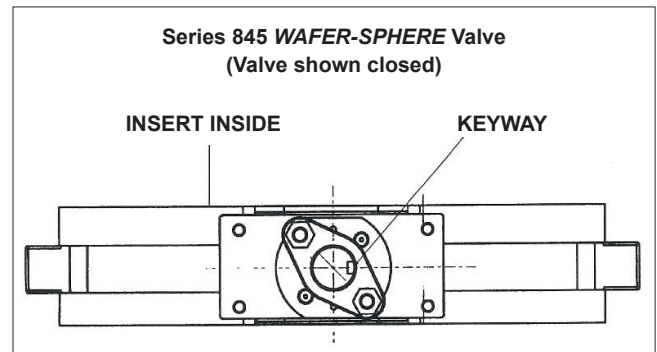


Figure 1.

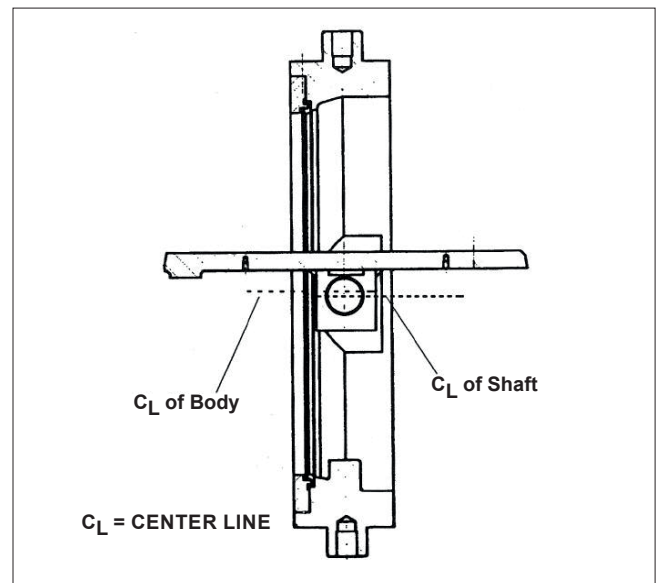


Figure 2.

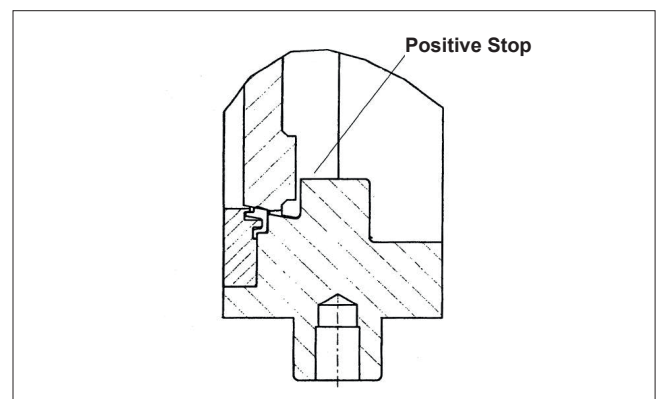


Figure 3.

Wafer Body Design

Some Wafer designs (See Figure 1) 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.

2. INSTALLATION

WARNING

JAMESBURY 'WAFER' STYLE BUTTERFLY VALVES, SERIES 845, MUST BE INSTALLED WITH A FLANGE ATTACHED TO THE DOWNSTREAM SIDE OF THE VALVE FOR DEAD-END OR END OF PIPELINE SERVICE. INSTALLING JAMESBURY SERIES 845 BUTTERFLY VALVES AT THE END OF A PIPELINE WITHOUT ANY DOWNSTREAM PIPING OR FLANGES COULD LEAD TO UNCONTROLLED RELEASE OF PRESSURE, DAMAGE, OR PERSONAL INJURY!

For lowest torque requirements, *Wafer-Sphere* butterfly valves should be installed with the insert toward the higher pressure (shaft downstream). If valve is installed with the shaft horizontal, whenever possible, install the valve as shown in **Figure 4** so that gravity tends to hold the disc in the closed position. This will ease removal and maintenance of the valve when the actuator is re-moved.

1. Read the **WARNING** section carefully.
2. **IMPORTANT:** ONLY the operating actuator stop screws must be used to stop the disc in position. DO NOT use the "positive stop" by itself to limit actuator travel.
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" (.25 mm) to .040" (1 mm) clearance between the disc and the "positive stop" in the body.
4. Before installing the closed valve in the line, be sure that the actuator is attached so that a counterclockwise rotation, viewed from above, opens the valve (**See Figure 2**). Again, fully close the valve before installing it in the line.
5. Do not lift the valve by the actuator only. Wrap hoisting cables or slings around the actuator, actuator stop screws, protrusions on valve body and/or fasteners inserted into threaded holes on the side of the valve body.
6. **CAUTION:** The *Wafer-Sphere* butterfly valve should be centered between flanges to prevent any damage to the disc or shaft by eliminating the possibility of the disc contacting the pipe flange.

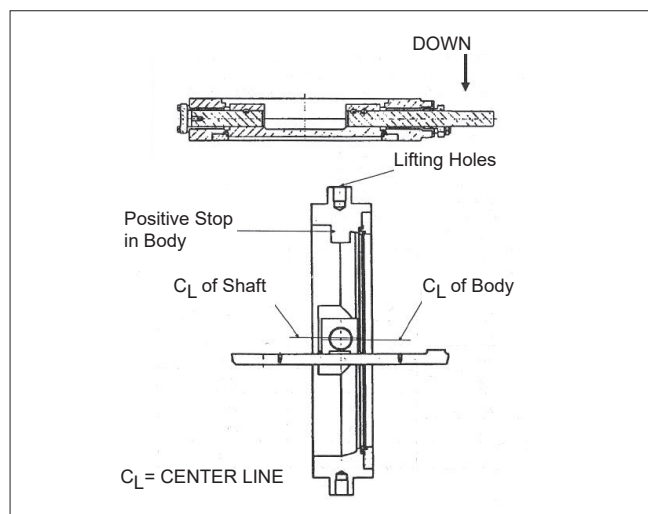


Figure 4.

7. The valve should be secured between flanges using appropriate gaskets, fasteners, and tightening torque for the service, in compliance with applicable piping codes and standards. To compress the flange gaskets evenly, tighten the flange bolts in an alternating.
8. On some valves, there is insufficient space for all the flange bolt holes to pass through the valve body. For this reason, threaded holes have been made in the body. It is recommended that a commercially available anti-seize lubricant be used in the threaded holes. If there is weepage past the shaft seal after installation, it means the valve may have been subject to wide temperature variations during shipment. Leak tight performance will be restored by a simple packing adjustment described in the **SPECIAL MAINTENANCE** Section.

3. VALVE REMOVAL

1. Read the **WARNING** section carefully.
2. The valve must be fully closed before sliding it out of the pipeline.
3. Support the weight of the valve and actuator using a sling, hoisting cable, or other suitable lifting device. Approximate weights are listed below.

Valve Size (inches)	Valve Size (DN)	Valve Weight lbs (Kg)	Actuator Weight lbs (Kg)	Total Weight lbs (Kg)
10	250	75 (34)	45 (20)	120 (54)
12	300	110 (50)	45 (20)	155 (70)
14	350	200 (91)	100 (45)	300 (136)
16	400	270 (123)	100 (45)	370 (168)
18	450	350 (159)	140 (63)	490 (222)
20	500	450 (204)	140 (63)	590 (268)
24	600	750 (340)	140 (63)	890 (404)
28	700	1000 (454)	250 (113)	1250 (567)
30	750	1200 (544)	250 (113)	1450 (657)
32	800	1500 (680)	550 (249)	2050 (930)
36	900	2000 (907)	550 (249)	2550 (1156)

4. Do not lift the valve by the actuator only. Wrap hoisting cables or slings around the actuator. Actuator stop screws, protrusions of valve body and/or fasteners inserted into threaded holes on the side of the valve body.
5. If there is insufficient slack in the air supply lines and electric wires to permit removal of the actuator, label lines and wires prior to disconnecting.
6. Remove the flange bolts and carefully slide the closed valve out of the line.

4. SCHEDULED MAINTENANCE

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 of the valve consists of periodic replacement of bearings and seals subject to cyclic wear. For convenience and quick service, all bearings and seals recommended for periodic replacement are contained within cartridges. For fastest service, new cartridges should be installed. Refurbish the cartridges re-moved from the valve with new bearings and seals and store for future use.

Scheduled maintenance is dependent upon operating temperature, differential pressure, system cleanliness, etc. For typical applications, cartridge replacement should occur every 1,000,000 cycles. The scheduled period for maintenance of each valve should be lengthened or shortened based on the condition of the bearings and seals removed.

4.2 ACTUATOR REMOVAL

WARNING

FOR YOUR SAFETY, IT IS IMPORTANT THAT THE FOLLOWING PRECAUTIONS BE TAKEN PRIOR TO REMOVAL OF THE ACTUATOR OR BEFORE ANY DISASSEMBLY IS DONE.

Numbers in () refer to items shown in **Figure 5**.

1. Depressurize the line on both side of the valve.
2. Depressurize the air supply lines to the actuator solenoid valve, and de-energize electric wires to the solenoid valve and any position switches.
3. If there is insufficient slack in the air supply lines and electric wires to permit removal of the actuator, label lines and wires prior to disconnecting.
4. Use a sling or other device to fully support the weight of the actuator prior to loosening bracket bolts (2) and nut (9).

NOTE: The fit between the valve shaft and actuator bore is tight. Normally, the actuator can be lifted directly off the valvestem with little resistance. If the actuator sticks to the valve shaft, use the following steps to force the actuator off the shaft:

5. Remove the two long studs (11), nuts (9), and lockwashers (3) from the valve.
6. Loosen, but do not remove the bracket bolts (2). Rotate the spacers (6) away from the empty stud holes.
7. Position nuts (9) under the bracket (1). Install long studs (11) from the top of the bracket, through the nut (9), and bottom-out in the valve body.
8. Remove the loose bracket bolts (2) and spacers (6).

9. Use a wrench on the top of the long studs (11) to prevent rotation, and alternately turn the nuts (9) in 1/2-turn increments of rotation to force the actuator off the valve stem. **WARNING:** the force generated by turning the nuts can be sufficient to damage the bracket (1) and internal parts within the valve. If after several turns of the nuts (9) there is excessive bending of the bracket or no movement between the actuator and shaft, do not continue to turn nuts. Loosen nuts and determine cause of seizure prior to continuing.

NOTE: Some valves use an adapter (5) between the valve shaft and actuator. If the adapter does not slide off with the actuator, grasp the outer dieter and pull the adapter off the valve shaft.

4.3 CARTRIDGE REPLACEMENT

Numbers in () refer to items shown in **Figure 6**.

Upper Cartridge (contains shaft packing)

1. Remove the actuator per Section 4.2.
2. Remove the nuts (15) from above the compression plate (10). Remove the compression plate. The studs (14) do not have to be removed.
3. Remove the two flat head screws (83) and slide out the cartridge (81). Use the two hex head jacking screws in the tool kit if required.
4. Coat outside diameter of new cartridge with HALOCARBON 25-10M grease or equal that is compatible with the fluid to be handled by the valve. Ensure that the O-ring (86) is coated with grease.
5. Carefully position cartridge over shaft (4) and push the cartridge into the body (1). Secure upper cartridge with the two flat head screws (83). Tighten the flat head screws to the torque shown in **Table 2**.
6. Install the compression plate (10) and nuts (15).
7. Alternately tighten the nuts (15) in even increments of rotation until the packing (8) is adequately compressed to prevent leakage. This should require tightening the nuts approximately 1-1/2 to 2 full turns past the "fingertight" position.
8. Remount the actuator per section 4.4.

Lower Cartridge

9. Remove the cap screws (55), lockwashers (56) and the cover plate (53). Remove the gasket (54) and discard.
10. Slide out the lower cartridge (82). Use the two hex head jacking screws in the tool kit if required.
11. Coat outside dieter of new lower cartridge with HALOCARBON 25-10M grease or equal that is compatible with the fluid to be handled by the valve. Ensure that the gasket (85) is correctly installed over the cartridge.
12. Carefully position the cartridge over the shaft (37) and insert into the body (1). Assemble the new gasket (54), cover plate (53), cap screws (55) with lockwashers (56). Tighten the cap screws to the Torqueshown in **Table 2**.

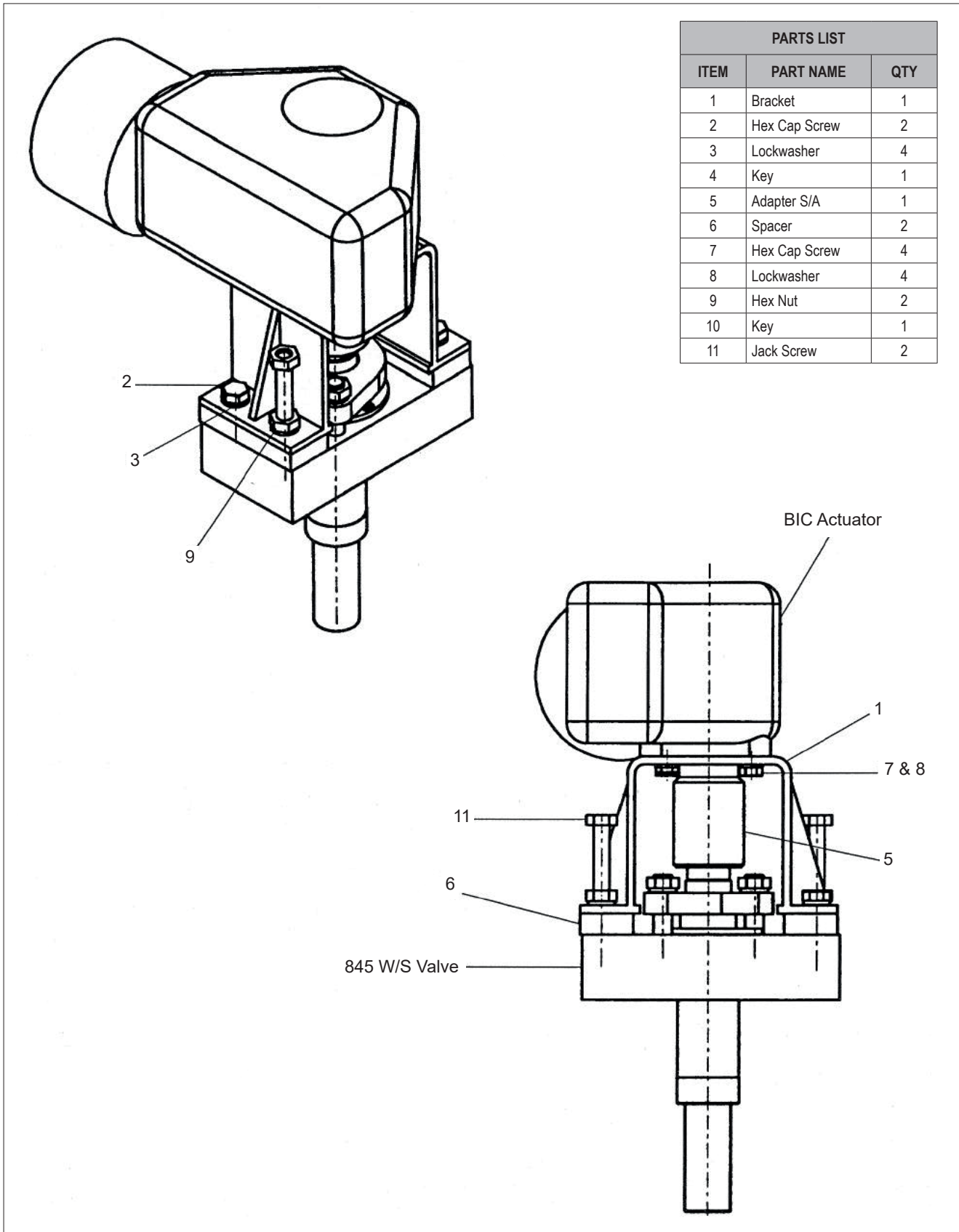


Figure 5.

TABLE 2		
Standard Torque Table		
Bolt Size (inch)	Torque (lbs.-ft.)	Torque (Nm)
1/4	9	12
5/16	17	23
3/8	30	40
7/16	50	70
1/2	70	100
9/16	100	140
5/8	140	190
3/4	230	310
7/8	350	470
1	540	730

4.4 ACTUATOR MOUNTING

WARNING

BEFORE MOUNTING THE ACTUATOR ON THE VALVE, BE SURE THAT THE POSITION INDICATION ON TOP OF THE ACTUATOR IS CORRECTLY INDICATING THE VALVES POSITION. FAILURE TO ASSEMBLE THESE PRODUCTS IN THE CORRECT POSITION COULD RESULT IN VALVE DAMAGE AND PERSONAL INJURY.

CAUTION: WHEN SERVICING A VALVE AND ACTUATOR ASSEMBLY, ENSURE BOTH THE VALVE AND ACTUATOR ARE FULLY DEPRESSURIZED, AND CANNOT BE INADVERTENTLY OPERATED.

CAUTION: AN ACTUATOR SHOULD BE REMOUNTED ON THE SAME VALVE FROM WHICH IT WAS REMOVED. THE ACTUATOR MUST BE CHECKED AND ADJUSTED AS NECESSARY FOR PROPER OPEN AND CLOSED POSITION EACH TIME IT IS REMOUNTED.

CAUTION: THE VALVE/ACTUATOR LINKAGE HAS BEEN DESIGNED TO SUPPORT THE WEIGHT OF THE VALMET ACTUATORS AND RECOMMENDED ACCESSORIES. USE OF THIS LINKAGE TO SUPPORT ADDITIONAL EQUIPMENT SUCH AS PEOPLE, LADDERS, ETC. MAY RESULT IN THE FAILURE OF THE LINKAGE, VALVE, ACTUATOR, AND MAY CAUSE PERSONAL INJURY.

1. When actuator is being mounted, the valve and actuator should be in the closed position, and the bracket should be fastened to the actuator.
2. Clean the shaft, key, actuator shaft bore, and if used, the adapter and adapter key. File off any burrs which could interfere with mounting. To ease assembly and protect surfaces from corrosion, grease the shaft, key and actuator shaft bore with anti-seize lubricant prior to assembly.
3. Position the actuator over the shaft. Use a sling or other lifting device to support the weight of the actuator when positioning it over the shaft. Align key slot in actuator bore with shaft key and slide actuator onto shaft.
4. Normally, the actuator can be pushed directly onto the valve shaft with little effort. If the actuator is sticking to the valve shaft, use the following steps to force the actuator onto the valve shaft. Numbers in () refer to **Figure 5**.

5. Install the two long studs (11), with nuts (9) and lockwashers (3) through the bracket (1) and spacer (6) on opposite corners of the valve bonnet. Bottom the long studs in the threaded holes in the valve body.

6. Use a wrench on the top of the long studs (11) to prevent rotation, and alternately turn the nuts (9) in 1/2-turn increments of rotation to force the actuator onto the valve stem.

WARNING: The force generated by turning the nuts can be sufficient to damage the bracket (1) and internal parts within the valve. If after several turns of the nuts (9) there is excessive bending of the bracket or no movement between the actuator and shaft, do not continue to turn nuts. Disassemble and determine cause of seizure prior to continuing.

7. Install remaining bracket bolts (2) and lockwashers (3). If disconnected, reconnect air supply lines and electric wires to solenoid valve. Prior to fully tightening, the all the bracket bolts, cycle the actuator several times to ensure proper alignment between the actuator and valve. Tighten the bracket bolts to the torque in **Table 2**.

8. During system test, check the shaft seal (8, fig. 6). cartridge seals (54, 85, 86, fig. 7) and flange gaskets for leakage. This can be done by applying a liquid mixture of soap and water at all seal joints and watching for bubbles.

IMPORTANT: If leakage is detected between the valve and flanges, **STOP IMMEDIATELY**. Mark the area of leakage. Vent the line, and when it has returned to 0 psig, retighten the flange bolts in that area. Repressurize the valve, checking the whole gasket again. If leakage persists, disassemble and inspect for damage.

9. If leakage is detected at the shaft seal, cartridges, or cover plate, tighten only enough to stop the leak. Cover plate and upper cartridge fasteners should be tightened to the values in **Table 2**. Refer to Section 5.1 for tightening of shaft seals to stop leakage. If leakage persists after tightening, vent the line to 0 psig, disassemble and inspect for damage.

4.5 CARTRIDGE REFURBISHING

Numbers in () refer to items shown in **Figure 7**.

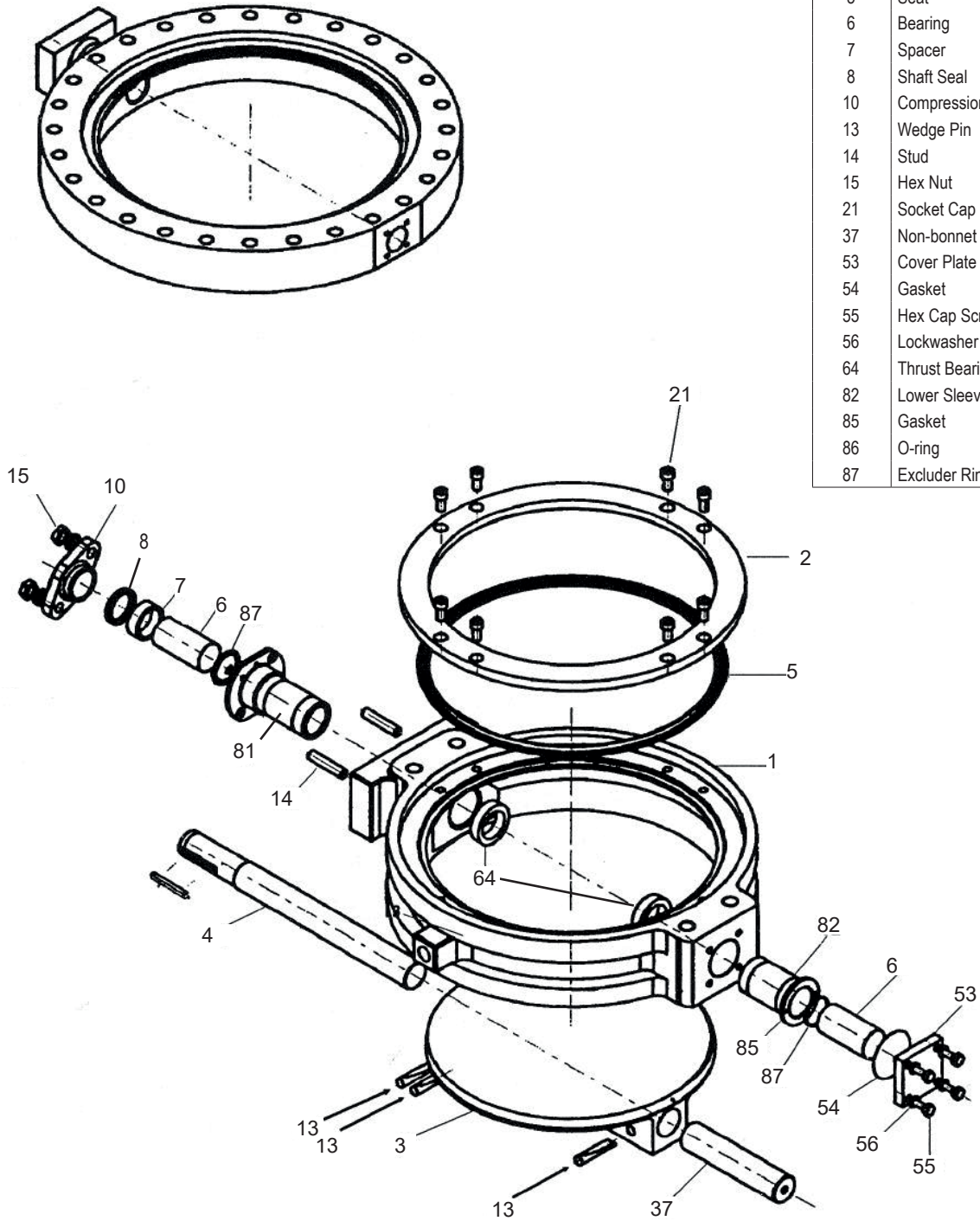
Upper Cartridge (contains shaft packing)

1. Remove the shaft packing (8) spacer (7) bearing (6) and excluder ring (87) from the used cartridge (81). Remove the O-ring (86). Discard all removed parts.
2. Insert the new excluder ring (87) with the open end facing the bottom of the cartridge, towards valve disc. Assemble the new bearing (6) spacer (7) and new shaft packing (8) into the cartridge (81). The graphite ring should be on top of the packing.

Lower Cartridge

3. Remove the gasket (85) from the lower cartridge (82). Remove the bearing (6) and the excluder ring (87). Discard all removed parts.
4. Slide the new gasket (85) over the cartridge (82). Insert new excluder ring (87) with the open side facing the bottom of the cartridge, towards valve disc. Assemble the new bearing (6) into the cartridge (82).
5. Package both the upper and lower cartridge assemblies together, label and store for future use.

28" and 32" Valve Body Style



PARTS LIST	
ITEM	PART NAME
1	Body
2	Insert
3	Disc
4	Bonnet Shaft
5	Seat
6	Bearing
7	Spacer
8	Shaft Seal
10	Compression Plate
13	Wedge Pin
14	Stud
15	Hex Nut
21	Socket Cap Screw
37	Non-bonnet Shaft
53	Cover Plate
54	Gasket
55	Hex Cap Screw
56	Lockwasher
64	Thrust Bearing
82	Lower Sleeve
85	Gasket
86	O-ring
87	Excluder Ring

Figure 6.

5. SPECIAL MAINTENANCE

5.1 PACKING ADJUSTMENT

Periodic tightening down of the compression plate may be necessary to compensate for shaft seal wear. The compression plate, however, should not be tightened down too severely, since this will shorten the life of the seals. Shut-off of shaft seal leakage may not result immediately after tightening the compression plate since several valve cycles are required for the packing to reset and run-in.

5.2 SEAT REPLACEMENT

Numbers in () refer to items shown in **Figure 6**.

1. After removing the valve from the line per Section 3. Place it on a bench or other suitable working space and cycle it open. Take care not to damage the sealing edge of the valve disc (3).
2. Remove the insert screws (21) and the insert (2). 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 the hammer.
3. Remove the seat (5) and discard it.
4. Clean the valve.
5. Carefully clean and polish the disc (3) sealing surface. It should be free of all grooves and scratches.
6. If the disc (3) sealing surface is slightly damaged, it may be possible to smooth the surface with crocus cloth, a fine stone, or the equivalent. If deep scratches are present, replace the disc, or return the valve to the factory for service.
7. Cycle the valve closed.
8. Install the seat (5) into the insert (2).
9. Replace the insert (2) and seat (5) together using the insert screws (21). Equally tighten the insert screws in an alternating sequence. Torque values are given in **Table 3**. Whenever possible, open the valve and retorque the insert screws. Take care not to damage the sealing edge of the disc. Close the valve.

NOTE: After the installation of a new seat, the valve operating torque will be higher for a few cycles.

10. Install the valve in line per Section 2.

TABLE 3		
Insert Screw Torque Table		
Screw Size	Torque	
	Lb.-FT	N-M
3/8	19	26
1/2	37	50

5.3 DISC REMOVAL AND REPAIR

Numbers in () refer to items shown in **Figure 6**.

1. If disc (3) removal is required it is recommended that new upper and lower cartridge kits and seat (5) be installed.
2. Remove actuator per Section 4.2.
3. Remove the valve from the line per Section 3.
4. Place the valve on a bench or other suitable working space.
5. Remove upper and lower cartridges (81, 82) per Section 4.3.

6. Remove the disc pin (13) welds by grinding or machining off the welds. Use a rod or punch and hammer to drive out the pins opposite the direction shown in **Figure 6**.

NOTE: THE DISC WILL NEED TO BE SUPPORTED IN ORDER TO REMOVE THE SHAFTS (4 & 37). EACH DISC IS EQUIPPED WITH THREADED HOLES FOR THIS PURPOSE.

NOTE: WHEN REMOVING THE SHAFTS (4 & 37) FROM DISC (3). BE CAREFUL NOT TO SCRATCH THE SEALING SURFACE OF THE DISC.

7. Use a soft rod and hammer to tap the lower shaft (37) through the bottom of the valve. Repeat the procedure with the upper shaft (4), tapping the shaft out through the top of the valve.
8. If deep scratches are present in the sealing surface, replace the disc or return to the factory for repair.

5.4 DISC ASSEMBLY

Numbers in () refer to items shown in **Figure 6**.

1. Clean all valve parts.
2. Inspect all parts for damage before starting to assemble the valve. Look for damage on sealing areas of the disc (3), shafts (4 & 37), and body (1), and for wear in the seal and bearing areas on the shafts.
3. Carefully clean and polish the disc (3) sealing surface. It should be free of grooves and scratches.
4. If the disc (3) is slightly damaged it may be possible to smooth the sealing surface with crocus cloth, a fine stone, or equivalent. If deep scratches are present, replace the disc or return the valve to the factory for service.
5. Install the upper and lower cartridge kits per Section 4.3.
6. Position the disc (3) in the body (1) between the thrust bearings (64). Slide the shafts (4, 37) through the body and disc. Use caution to prevent damage to the bearings. An arrow and the word "bonnet" on the disc should point towards the compression plate (10).
7. Insert the disc pins (13) in the direction shown in **Figure 6** and drive them into place. Tack weld both ends of the pins, small end first. After the disc (3) cools clean the welds with a wire brush.
CAUTION: Use care to keep contamination out of the valve.
8. Cycle the valve fully closed. Replace the seat (5) at this time per Section 5.2.

5.5 ACTUATOR SETTING AND REPAIR

Maintenance instructions for series BC actuators are provided in IMO 5 BC 70-A.

The actuator has an adjustable travel stop on each end to limit valve disc rotation at both the fully open and fully closed position. The actuator stop on the cylinder end of the actuator has a seal to prevent leakage past the stop threads. When necessary, adjust the actuator stops as described in IMO 5 BC 70-A to the proper valve open and closed positions.

Valve Open: Disc face perpendicular with the flange face.

Valve Closed: Disc face parallel to the flange face within 1/32 inch (0.8 mm).

EXPLODED VIEW AND PARTS LIST

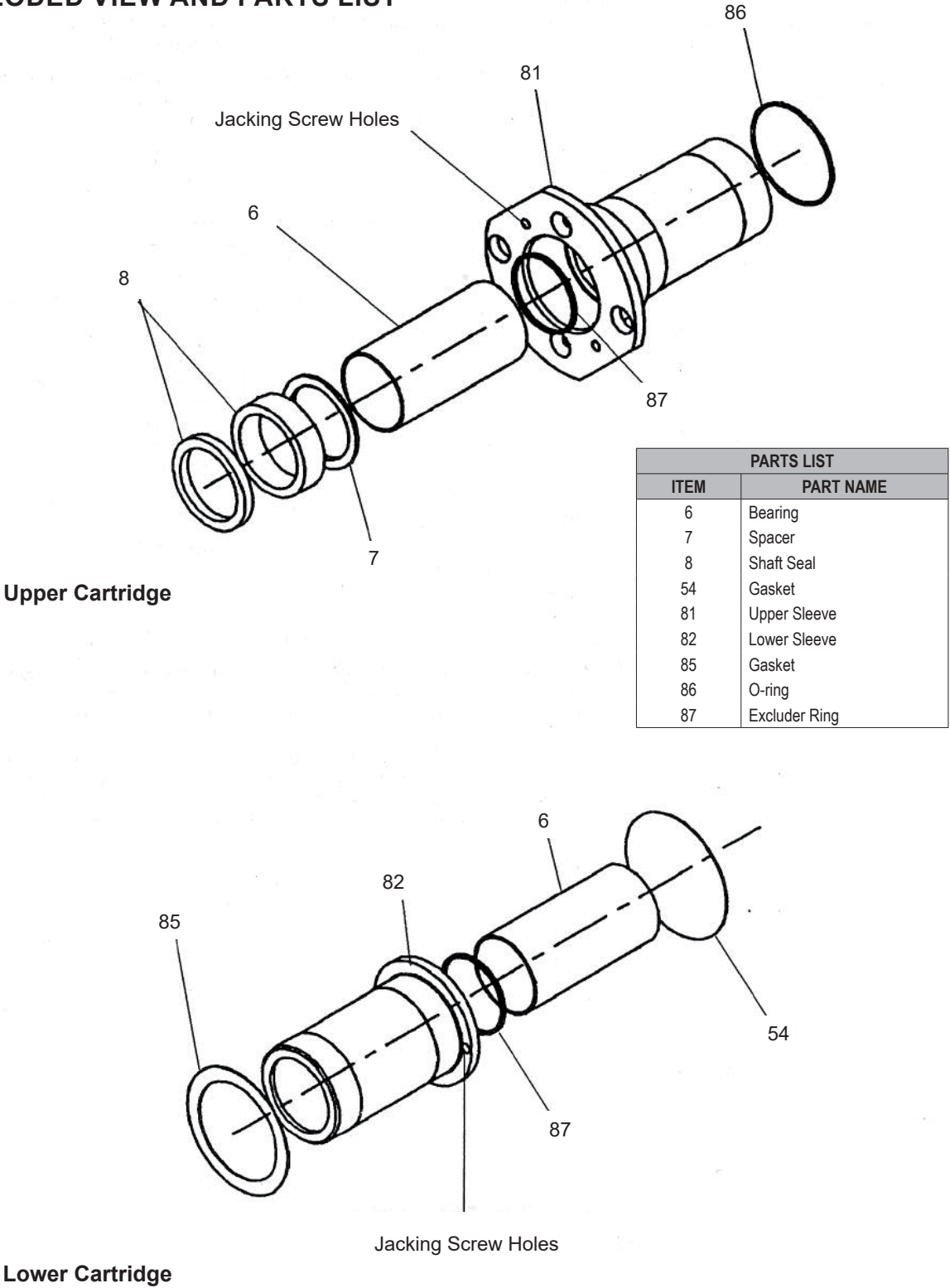


Figure 7.

5.6 SOLENOID VALVE REPAIR

Series 845 *Wafer-Sphere* valves should be outfitted with heavy-duty solenoid valves for high cycle life. Warranty coverage, operational problems or failures as well as repairs must be addressed directly to the solenoid valve manufacturer.

6. VALVE TESTING PROCEDURE

Should it be necessary to perform a leak test of the valve prior to installation in the pipeline, follow the procedure outlined below.

1. In the following test, suitable gaskets or seals are required between the faces of the valve and the test hardware. The gaskets or seals must be appropriate for the test conditions, in compliance with applicable piping codes and standards.
2. Before pressurizing the valve, be sure all actuator linkage fasteners are tight, and that pressure is applied to the actuator to keep the valve in the closed position. If it is not securely held shut, the offset design of the valve will cause the disc to rotate when pressure is applied to the valve.
3. The valve should be installed between flanges or in a testing apparatus using suitable gaskets. If flanges are used, secure the valve as described in Section 2. If a testing device other than flanges is used, the clamping force of the device must be comparable with the flange bolt loads on the valve.
4. Cycle the valve slightly open. Verify that you do not have a seal between the seat and disc. Use caution when cycling a valve in the test apparatus to avoid possible disc damage from striking the test fixture.
5. Cap the downstream vent and apply 100 psig to the valve. Check the shaft seal, cover plate, cartridges, and flange gaskets for leakage. This can be done by applying a liquid mixture of soap and water at all seal joints and watching for bubbles.

IMPORTANT: If leakage is detected between the valve and flanges, **STOP IMMEDIATELY**. Mark the area of leakage. Vent the line, and when it has returned to 0 psig, retighten the flange bolts in that area. Repressurize the valve, checking the whole gasket again. If leakage persists, disassemble and inspect for damage.

6. If leakage is detected at the shaft seal, cartridges, or cover plate, tighten only enough to stop the leak. Cover plate fasteners may be tightened to the values in Table 2. If leakage persists after tightening, vent the line to 0 psig, disassemble and inspect for damage.
7. Vent the valve, and when it has reached 0 psig, cycle the valve closed.
8. Attach a small tube or hose to the downstream flange, which is on the shaft side of the valve disc.
9. Be sure pressure is still applied to the actuator to hold the valve in the shut position. Pressurize the upstream flange (insert side of the valve) to 100 psig. Check for leakage passing through the free end of the tube/hose.
10. If leakage is detected, vent the valve and make an adjustment to the closed position actuator stop as described in the actuator IMO 5 BC 70-A.
11. Repressurize the valve and check the leakage. If the valve still

leaks, repeat step 10. If leakage cannot be stopped, adjust the actuator stop so that leakage is minimized.

12. Rebuilt valves may have some minor leakage due to damage to the disc. With the valve still pressurized, insert the free end of the tube/hose into a beaker of water and check for bubbles. In the absence of other test standards, observe leakage after it has reached a stable rate. Because of the volume of air that must be exhausted from a cycled valve, it may be necessary to wait several minutes for the leakage to stabilize or stop. One bubble per inch of valve diameter per minute may be considered acceptable for rebuilt valves.

7. SERVICE PARTS AND TOOL KITS

Service parts for scheduled maintenance includes an upper and lower cartridge kit. Jamesbury kit numbers for the cartridges are listed below. When ordering service or replacement parts for special maintenance such as seat replacement, use the specific Jamesbury part numbers listed below. For items not listed, contact your local Valmet distributor. A tool kit is available that contains two Jacking screws to assist cartridge removal. All valve sizes use the same tool kit, Jamesbury kit number RKW-599.

We recommend that valves be directed to our service centers for maintenance. The service centers are equipped to provide rapid turn-around 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 datasheet(s) (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.neles.com/valves.

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 6**, the ballooned part number, part name and quantity required.

TABLE 4

Valve Size (inches)	Valve Size (DN)	Cartridge Kit	Cartridge Refurbishment Kit	Seat Part Number
10	250	RKW-614	RKW-615	002-0784-49
12	300	RKW-616	RKW-617	002-0785-49
14	350	RKW-602	RKW-603	002-0875-49
16	400	RKW-604	RKW-605	002-0877-49
18	450	RKW-606	RKW-607	002-0871-49
20	500	RKW-608	RKW-609	002-0910-49
24	600	RKW-610	RKW-611	002-0911-49
28	700	RKW-612	RKW-613	002-1600-49
30	750	RKW-618	RKW-619	002-0913-49
32	800	RKW-600	RKW-601	002-1606-49
36	900	RKW-620	RKW-621	002-1039-49

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