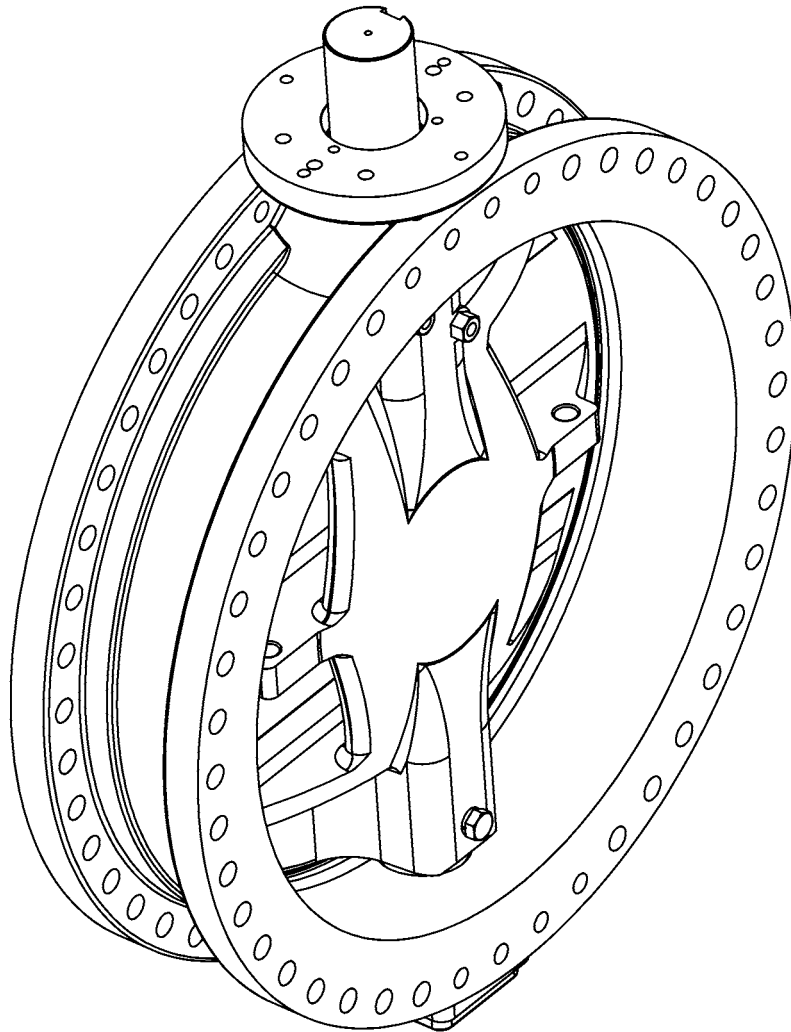


SARTELL  Valves &
Controls

**30--120" BAW AWWA
BUTTERFLY VALVES
WITH MECHANICALLY RETAINED SEAT**



Instruction **DS10385**

August 2008

SARTELL Valves & Controls **30-120" BAW AWWA** **Butterfly Valves with Mechanically Retained Seat**

Instructions

These instructions provide information about BAW AWWA Butterfly Valves. They are for use by personnel who are responsible for installation, operation and maintenance of BAW AWWA Butterfly Valves

Safety Messages

All safety messages in the instructions are flagged with an exclamation symbol and the word Caution, Warning or Danger. These messages indicate procedures that must be followed exactly to avoid equipment damage, personal injury or death. Safety label(s) on the product indicate hazards that can cause equipment damage, personal injury or death.

Safety label(s) on the product indicate hazards that can cause equipment damage, personal injury or death. If a safety label becomes difficult to see or read, or if a label has been removed, please contact SARTELL Valves & Controls for replacement label(s).



WARNING!

Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline materials. Handle valves, which have been removed from service with suitable protection for any potential pipeline material in the valve.

Inspection

Your BAW AWWA Butterfly Valve has been packaged to provide protection during shipment; however, it can be damaged in transport. Carefully inspect the unit for damage upon arrival and file a claim with the carrier if damage is apparent.

Parts

Recommended spare parts are listed on the assembly drawing. These parts should be stocked to minimize downtime.

Order parts from your local SARTELL Valves & Controls sales representative, or directly from SARTELL Valves & Controls. When ordering parts, please include the 7-digit part number and 4-digit revision number (example: **9999999R000**) located on the data plate attached to the valve assembly. Also include the part name, the assembly drawing number, the balloon number and the quantity stated on the assembly drawing.

SARTELL Valves & Controls Service

SARTELL Valves & Controls service personnel are available to install, maintain and repair all SARTELL Valves & Controls products. SARTELL Valves & Controls also offers customized training programs and consultation services.

For more information, contact your local SARTELL Valves & Controls sales representative or visit our website at www.sartellvalves.com.

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Description

The 30 -120" BAW AWWA Butterfly Valve is a resilient-seated valve which conforms to AWWA C504 requirements and is capable of bi-directional shutoff to full rated pressure. SARTELL Valves & Controls offers the BAW AWWA Butterfly Valve with a mechanical joint end style per ANSI/AWWA C111/A 21.11-85 up to 48" and a flanged end style up to 120". See the data plate attached to the valve for pressure and temperature limitation information.

The actuator has been sized for the valve shutoff pressure specified by the customer. If the valve is to be used at a shutoff pressure higher than that specified, consult the factory for sizing information.

Handling

Lifting the valve improperly may damage it. Do not fasten lifting devices to the actuator, disc or through the seat opening in the body. Lift the valve with slings, chains or cables fastened around the valve body, or fastened to bolts or rods through bolt holes in the flanges.

Maintenance

This valve is assembled using standard SAE fasteners. To service this valve, you should have a full set of combination wrenches, flat tipped screwdrivers, Allen wrenches, a torque wrench, sockets, chisels, a hooked tool for removing the packing and a dead blow hammer.

Lubrication

The valve does not require periodic lubrication. When installing valve or if maintenance is required, refer to the appropriate sections for lubrication requirements. Refer to the actuator instructions for actuator lubrication requirements.

Closed Position

The valve is in the closed position when the disc is parallel to the flange face. The actuator stops have been adjusted at the factory to stop valve rotation in the proper closed position. See the actuator Instruction for details on adjusting the open and closed position stops.

An indicator mark corresponding with the seat side of the disc is stamped on top of the valve shaft to show the position of the disc when the disc is not visible. The location of the indicator mark is shown on the valve assembly and installation drawings.

SARTELL Valves & Controls

30-120" BAW AWWA Butterfly Valves with Mechanically Retained Seat

Drawings

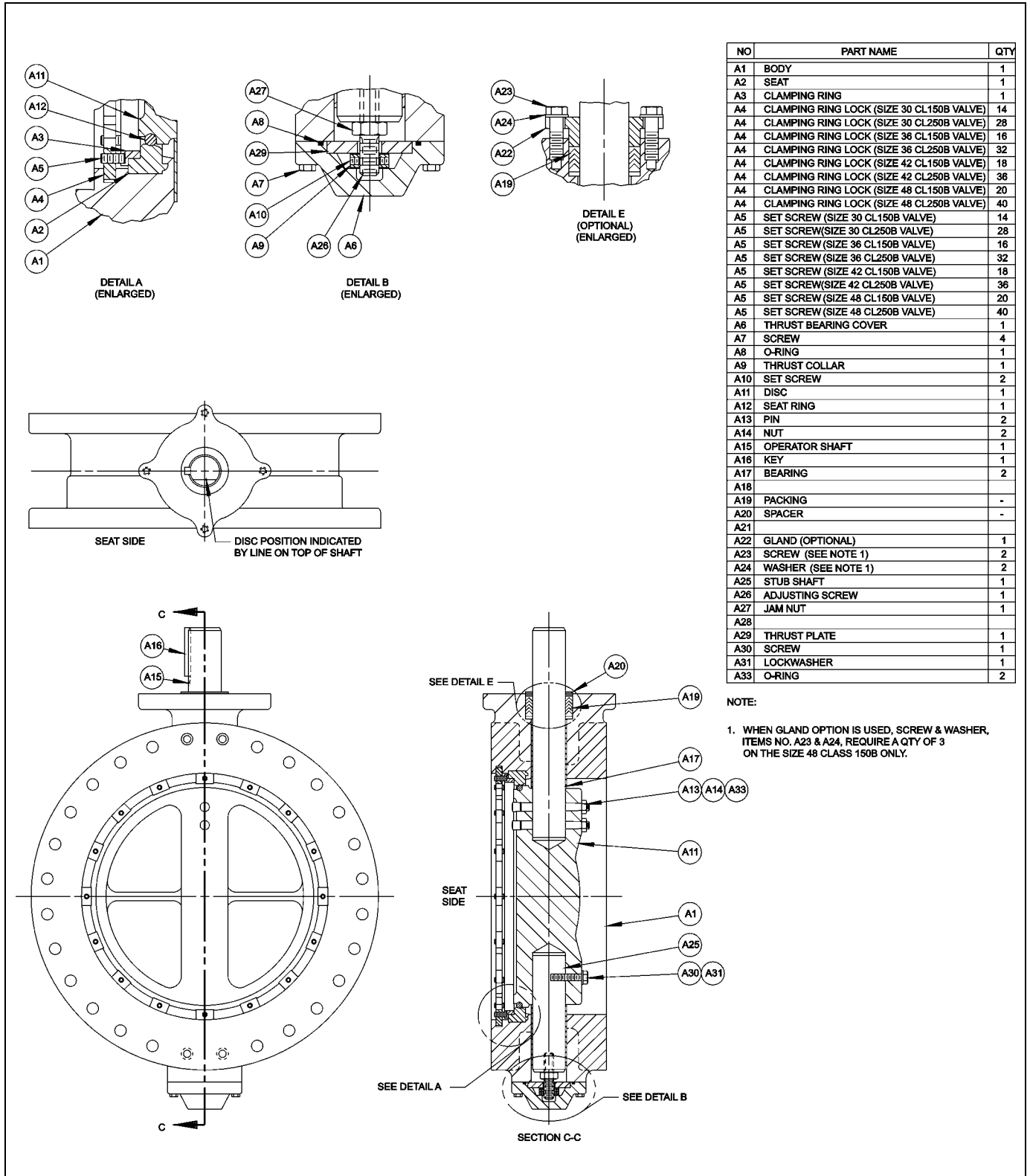


Figure 1- 30 – 48" BAW AWWA Butterfly Valves

SARTELL Valves & Controls 30-120" BAW AWWA

Butterfly Valves with Mechanically Retained Seat

Drawings (Continued)

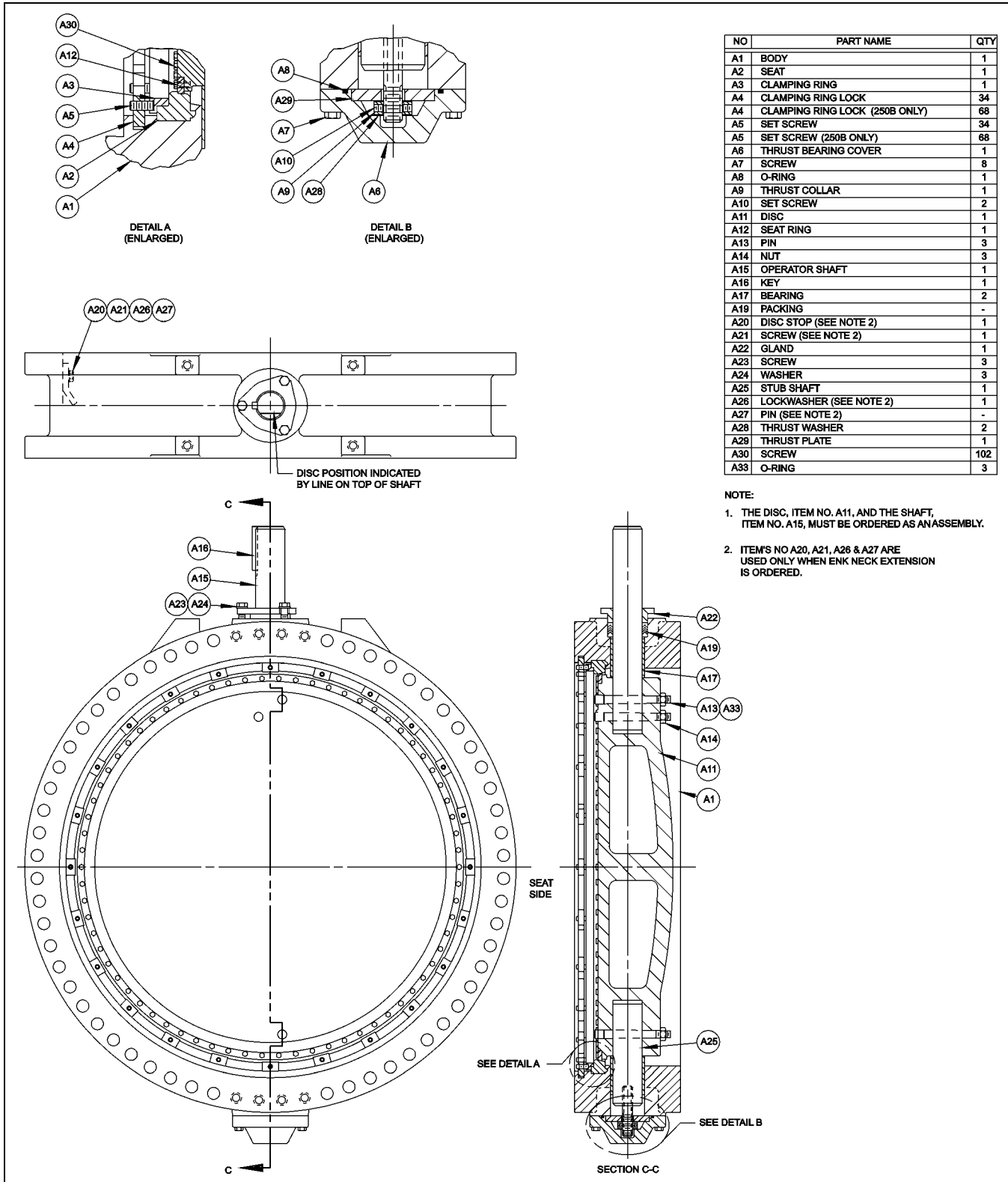


Figure 2 - 54-120" BAW AWWA Butterfly Valves

Installation

Requirements

SARTELL Valves & Controls recommends installing BAW AWWA Butterfly Valves with seat side upstream. Whenever possible, install the valve with the shaft horizontal to provide a self-cleaning action on the seat and disc. Refer to the installation drawing.



CAUTION!

PVC pipe that does not meet AWWA standards may damage the valve. If PVC pipe is used with mechanical joint valves, the pipe O.D. must comply with AWWA C905-97, Table 2 "PVC PIPE WITH CAST IRON PIPE EQUIVALENT O.D.'S."

Installing Valves using Class 200 PVC

When installing valves with mechanical joint ends on Class 200 (DR 14 or higher) PVC pipe:

1. Chamfer the ID of the pipe as shown in Table A to provide clearance for the valve disc.

Table A: Chamfer Requirements *

Valve Size	Pipe Pressure Class	Pipe Dimension Rate	Chamfer Seat Side	Chamfer Opposite Seat	Min. Chamfer Dia. (in)	Chamfer Angle
30"	165	25	No	No	N/A	N/A
	200	21	Yes	No	29.00"	20°
	235	18	Yes	No	29.00"	20°
36"	165	25	Yes	No	35.38"	20°
	200	21	Yes	Yes	35.50"	20°
42"	165	25	Yes	Yes	41.50"	20°
48"	165	25	Yes	Yes	47.50"	20°

*Call SARTELL Valves & Controls customer service if you have any questions on this procedure.

2. Cycle the valve for three full open–close cycles to ensure disc fully clears the pipe.

SARTELL Valves & Controls **30-120" BAW AWWA** **Butterfly Valves with Mechanically Retained Seat**

Installation *(Continued)*

All Valves

1. Thoroughly clean the pipeline of all debris.
2. Open the valve, clean the seat and sealing edge of the disc, then apply a paint-like coating of an NSF 61 approved lubricant (such as Dow Corning 111 or Phoenix 505) to the seat.
3. With the valve closed, place the valve in the pipeline with seat side upstream.



CAUTION!

To reduce the effects of downstream disturbances, install the valve at least 8 pipe diameters downstream from the nearest pump or elbow.



CAUTION!

Ensure that the valve, the pipeline, and the mating connections are properly aligned before tightening the pipeline bolts. Do not use the valve to force the pipeline into position.

4. Place flange bolts in the threaded holes first, and tighten all flange bolts, in a crisscross pattern.
5. Due to varying conditions during shipment, storage, handling, and installation, it is recommended that each valve be tested while the valve is accessible in the pipeline.

Actuator Installation

This valve is available without a mounted actuator for customers wishing to install an actuator other than a SARTELL Valves & Controls actuator.

On valves with non-adjustable packing, the actuator or mounting bracket must be capable of retaining the valve packing in the packing chamber. Also ensure that the spacer on top the packing is in place before installing the new actuator.

On valves with adjustable packing, the actuator or mounting bracket must be designed so it does not interfere with the packing gland or hinder packing gland adjustment.

For information regarding installation of a SARTELL Valves & Controls actuator, see the instruction for that actuator.

Packing Adjustment

If the packing leaks on valves without packing gland the packing can be adjusted by removing the actuator, sliding a .03" thick shim down the valve shaft and reinstalling the actuator. If packing leakage persists, the packing must be replaced.

On valves with packing gland, if leakage past the packing occurs, tighten the packing nuts just enough to stop the leakage; over-tightening will cause excessive operating torques and premature packing wear. If packing leakage cannot be stopped by tightening the packing gland nuts, the packing must be replaced.

Packing Replacement

To replace the packing, you will need the following:

- A set of new packing
- New spacers (when applicable)
- NSF 61 approved lubricant (such as Dow Corning 111 or Phoenix 505)

Valves without Packing Gland

1. Close the valve and relieve pipeline pressure.



WARNING!

Moving parts from accidental operation of power actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing.

2. If the actuator is powered, disconnect and lock out the pneumatic, hydraulic, or electrical power to prevent accidental operation of the actuator.
3. Remove the actuator from the valve—see actuator instructions.
4. Remove the actuator adaptor from the top of the valve.
5. Slide the spacers off the valve shaft.
6. Pull all of the packing rings (A19) from the packing chamber with a hooked tool.
7. Apply a paint-like coat of an NSF 61 approved lubricant (such as Dow Corning 111 or Phoenix 505) to the inside and outside diameters of the new packing rings (A19), then install the new packing rings one ring at a time.

Note: Push the packing firmly into place, but do not use a sharp or pointed tool.

8. Install new spacers (A20).

Note: The spacers must stack up so they project 1/32" to 1/16" above the body.

9. Fasten the actuator adaptor to the top of the valve.
10. Install the actuator on the valve—see actuator instructions.

Packing Replacement *(Continued)*

Valves with Packing Gland

1. Close the valve and relieve pipeline pressure.



WARNING!

Moving parts from accidental operation of power actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing.

2. If the actuator is powered, disconnect and lock out the pneumatic, hydraulic, or electrical power to prevent accidental operation of the actuator.
3. Remove the actuator from the valve—see the actuator instructions.
4. Remove the actuator adaptor from the top of the valve.
5. Remove the screws (A23), washers (A24) and packing gland (A22).
6. Pull all of the packing rings (A19) from the packing chamber with a hooked tool.
7. Apply a paint-like coat of an NSF 61 approved lubricant (such as Dow Corning 111 or Phoenix 505) to the inside and outside diameters of the new packing rings (A19), then install the new packing rings one ring at a time.

Note: Start each chevron ring into the packing chamber at a slight angle and push each ring carefully into position so that the sealing lips do not bend over. Push the packing firmly into place. Do not use a sharp or pointed tool.

8. Slide the packing gland (A22) down the shaft (A15) until it just contacts the packing (A19).
9. Insert the packing gland screws (A23) and washers (A24) into the body (A1) and screw finger tight plus ½ turn.
10. Fasten the actuator adaptor to the top of the valve.
11. Install the actuator on the valve—see actuator instructions.
12. If the actuator is powered, reconnect the pneumatic, hydraulic, or electrical power.
13. After the valve is pressurized, check for packing leaks.
14. If packing leaks, tighten the packing gland screws just until the leak stops.

Disassembling Valve

Before disassembly, remove the valve from the pipeline, open the valve and remove actuator (and adapter, if included) from the valve.



WARNING!

Moving parts from accidental operation of power actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing.

Removing the Disc/Shaft from Body

1. If the valve has a packing gland, remove the screws (A23), washers (A24) and gland (A22).
2. Pull all the packing (A19) out using hooked tool.
3. Remove the screws (A7) and take off the thrust bearing cover (A6).
4. Remove O-ring (A8).
5. On size 78" & larger valves, slide out thrust washer (A28).
6. Unscrew the two set screws (A10), then remove thrust collar (A9) and thrust plate (A29)
7. Remove the O-Rings:
 - a. On 30 – 48" valves, remove the two nuts (A14), two O- Rings (A33), screw (A30) and washer (A31).
 - b. On 54" and larger valves, remove the three nuts (A14) and three O- Rings (A33).
8. Using hammer, drive out the pins (A13). Caution: Secure disc in place before driving out the pins.
9. Remove the upper shaft (A15) and lower shaft (A25).
10. Remove the disc (A11) from the side of body opposite seating side.

Reassembling Valve

Cleaning

1. Remove all dirt and chips from all parts.
2. Remove all grease and oil from all surfaces of seat.
3. Remove all rust from the seat groove in body.

Lubrication

1. Apply a paint-like coating of an NSF 61 approved lubricant (such as Dow Corning 111 or Phoenix 505) to the following surfaces:
 - The inside and outside diameters of each rubber packing ring
 - The O-ring(s)
 - All surfaces of the keyseat in the shaft
 - The disc sealing surface on the seat
2. Apply a light coat of an anti-seize compound to both sides of the thrust collar and all surfaces of the key.

Reassembling Valve *(Continued)*

Reassembling Valve

1. Block the body (A1) in a horizontal position with the seat facing down.
2. Holding the disc (A11) in a horizontal position with the shaft connection toward the top of body (A1). Insert the disc into the seat opening and align the shaft holes in the disc with the shaft holes in the body.
3. Insert the upper shaft (A15) through the top of the body (A1) and into the top of the disc (A11).
Note: Insert the shaft carefully so that the upper bearing (A17) is not damaged or moved out of position.
4. Insert the lower shaft (A25) through the bottom of the body (A1) and into the bottom of the disc (A11).
Note: Insert the shaft carefully so that the lower bearing (A17) is not damaged, or moved out of position.

Pinning Disc-to-Shaft Assembly



CAUTION!

Mismatching pins can cause damage to the valve. Ensure the disc, shaft, and pins remain matched. Also ensure that the pins remain matched to the holes.

1. Install the O-ring (A33) into machined groove of each tapered pin (A13).
2. Apply a thin coating of the NSF 61 authorized sealant (Permatex No. 2) to the tapered surface of the disc pin (A13).
3. Align the shafts (A15 & A25) with the tapered hole in the disc (A11).
4. Drive the pins (A13) into the disc (A11) and upper shaft (A15) and lower shaft (A25, 54" and larger valves only) until heads are slightly mushroomed.
5. On **30-48" valves**, connect the disc (A11) and lower shaft (A25) with the screw (A30) and washer (A31).
6. Secure the pin nuts (A14) with Loctite and tighten the pin nuts according to Table B.

Table B: Pin Nut Torque

Fastener Size	Torque	
	Ft. Lbs.	Nm
9/16-18	103	139
3/4-16	250	339
1-12	360	488
1 1/4-6	660	894
1 1/2-6	1150	1559

Reassembling Valve *(Continued)*

Final Assembly

1. Secure the adjusting screw (A26) and jam nut (A27) in the bottom of lower shaft with Primer and Loctite.
2. Make sure that the lower bearing (A17) is within 1/8" of the valve port when seated in the shaft bore.
3. Install thrust plate (A29).
4. On 78" & larger valves, install the thrust washer (A28).
5. Install thrust collar (A9). Tighten or loosen the thrust collar to center the disc (A11) in the valve port.
6. Secure the thrust collar (A9) in place with the two set screws (A10).
7. Insert new o-ring (A8) into thrust bearing cover (A6) and secure cover to body (A1) with screws (A7).
8. Replace packing and gland where applicable—see packing replacement section.

Replacing Bearings

1. Disassemble valve as instructed in "Disassembling Valve" section
2. Push bearings (A17) out of valve body at upper and lower journals using sleeve about the same size of bearing OD.
3. Clean inside journals before replacing bearings
4. Replace bearings by pushing inwardly bearing in using sleeve.
Note: Bearing end should be flush with valve body opening, within 1/8" of the valve port.
5. Reassemble valve by following "Reassembling Valve" section.

Valve Removal

To remove the entire valve assembly from the pipeline, follow these steps carefully.

1. Relieve pipeline pressure and drain portion of the system where valve is located.



WARNING!

Moving parts from accidental operation of power actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing.

2. Close the valve.
3. If the actuator is powered, disconnect and lock out the pneumatic, hydraulic, or electrical power to prevent accidental operation of the actuator.
4. Support the valve assembly, then remove the flange bolts or mechanical joint connector.
5. Remove the valve from the pipeline.

Note: Failure to lift the valve properly may cause damage. Lift the valve with slings fastened around the valve body, or attach them to bolts or rods run through the bolt holes for the pipeline flanges. Do not fasten lifting devices to the actuator or disc, or through the seat opening in the body.

Seat Adjustment



CAUTION!

Over tightening the seat adjusting screws can cause seat wear and excessive operating torques. Tighten the seat adjustment screws only enough to stop leaks.

If the seat leaks between two screws, tighten the two seat adjusting screws 1/4 turn, then test. Repeat this procedure until leak stops.

If leak occurs at a seat adjusting screw, tighten that screw 1/4 turn, then tighten the two closest screws about 1/8 turn. Repeat this procedure until leak stops.

Seat Replacement

The seat can be replaced in-line if the piping system has enough clearance. To replace the seat, you will need the following: A new seat, new clamping ring locks, new seat adjusting screws, silicone sealant (such as Dow Corning #732 RTV), and an NSF 61 approved lubricant (such as Dow Corning 111 or Phoenix 505).

1. Relieve pipeline pressure and drain the section near the valve.
-



WARNING!

Accidental operation of power actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing.

2. If the actuator is powered, disconnect and lock out the pneumatic, hydraulic, or electrical power to prevent accidental operation of the actuator.
3. If valve is to be repaired in-line, remove the piping from the **seat side** of the valve. If the valve is not going to be repaired in-line, remove valve from the pipeline.
4. Place the valve in the open position.
5. Remove seat-adjusting screws (A5), clamp-ring locks (A4) and clamp ring (A3) from the valve.
Note: Do not re-use these seat adjusting screws (A5) when installing the new seat.
6. Remove the old seat (A2) from the valve body and clean out the seat groove.
Note: The groove area must be cleaned to bare metal.
7. Install the new seat (A2):
For 250 or 300 lb. rated valves
 - a. Sandblast or sand the clamping ring to white metal as shown in Figure 3.

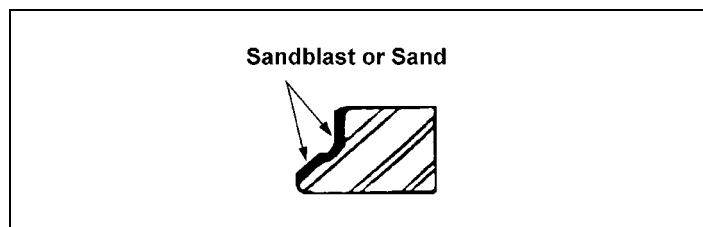


Figure 3 – Sanding the Clamping Ring

Seat Replacement (Continued)

- b. Sand and apply Black Max adhesive (#119696) to areas as shown in Figure 4.

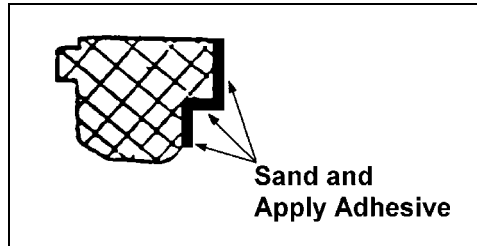


Figure 4 – Sanding the Seat

- c. Immediately install the seat, clamping ring and four of the locking tabs.
- d. Tighten adjustment screws finger-tight.
- e. Wait ten minutes and install the rest of the locking tabs.
- f. Continue with step 8.

For 150 lb. rated valves

- a. Immediately before installing the seat (5 minutes maximum), apply a uniform coating approximately .010" to .015" thick of silicone sealant to the seat groove as shown in Figure 5.

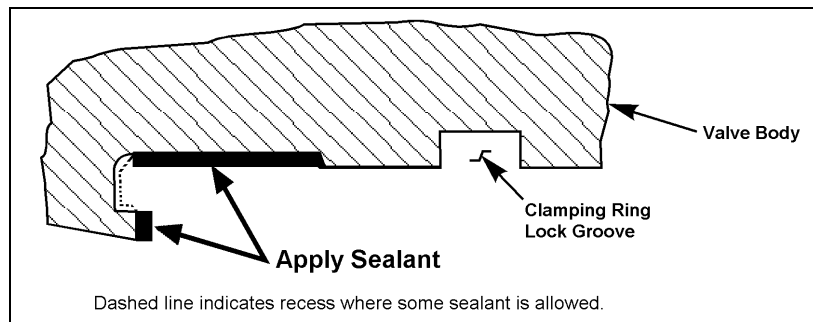


Figure 5 – Sanding the Clamping Ring

- b. Clean the seat of all oil and grease and insert the seat into the seat groove.
 - c. Install the clamp ring, clamp-ring locks and seat adjusting screws.
Note: Equally space the locks around the perimeter of the clamping ring. Do not tighten the seat adjusting screws at this time.
8. Close the valve and tighten the seat adjusting screws:
- a. Tighten the seat adjusting screws in a criss-cross pattern once around the entire valve to the torque specified in Table C, Column A.
 - b. Re-torque the seat adjusting screws in a criss-cross pattern to the torque shown in Table C, Column B.

Note: Only retighten the screws that are too loose. DO NOT OVERTIGHTEN THE SCREWS.

Seat Replacement *(Continued)*

Table C: Seat Adjustment Screw Torques

Valve Size inches	Class	Column A Torque, inch lbs. \pm 5	Column B Torque, inch lbs. \pm 5
30–48	25	70	60
	75	100	90
	150	150	130
	250	170	150
	300	180	160
54–120	25	80	70
	75	110	100
	150	160	150
	250	180	160
	300	190	170

9. Apply a paint-like coat of an NSF 61 approved lubricant (such as Dow Corning 111 or Phoenix 505) to disc and rubber seat.
10. If the actuator is a powered actuator, reconnect power to the actuator.
11. Cycle the valve through one open-close cycle to ensure the assembly operates properly.
12. Test the valve seat for leaks. If seat leaks, tighten the seat adjusting screws—see “Adjusting Seat” section.

Troubleshooting

Condition	Possible Cause	Corrective Action
Packing leaks.	Packing is loose.	Adjust packing
	Packing is worn.	Replace Packing.
Valve leaks when closed.	Closed position stop is set incorrectly.	Adjust closed position stop
	Seat is worn or damaged.	Replace seat.
	Sealing edge of disc is worn or damaged.	Replace disc.
Valve does not fully close.	Object is wedged between seat and disc.	Fully open valve to remove object.
	Closed position stop is not adjusted correctly.	Adjust closed position stop.
Valve does not fully open.	Open position stop is not adjusted correctly.	Adjust open position stop.
Opening and/or closing torque is excessive.	Bearings, shaft, disc and/or seat are dirty or worn.	Clean or replace dirty or worn component(s).
	Shaft is bent.	Replace shaft.
	Packing gland screws or seat adjustment screws are over-tightened.	Loosen screws and replace packing if needed.

Guarantee

Products, auxiliaries and parts thereof of Sartell Valves, Inc. manufacture are warranted to the original purchaser for a period of twenty-four (24) months from date of shipment from factory, against defective workmanship and material, but only if properly installed, operated and serviced in accordance with Sartell Valves, Inc. recommendations. Repair or replacement, at our option, for items of Sartell Valves, Inc. manufacture will be made free of charge, (FOB) our facility with removal, transportation and installation at your cost, if proved to be defective within such time, and this is your sole remedy with respect to such products. Equipment or parts manufactured by others but furnished by Sartell Valves, Inc. will be repaired or replaced, but only to the extent provided in and honored by the original manufacturers warranty to Sartell Valves, Inc., in each case subject to the limitations contained therein. No claim for transportation, labor or special or consequential damages or any other loss, cost or damage shall be allowed. You shall be solely responsible for determining suitability for use and in no event shall Sartell Valves, Inc. be liable in this respect. Sartell Valves, Inc. does not guarantee resistance to corrosion, erosion, abrasion or other sources of failure, nor does Sartell Valves, Inc. guarantee a minimum length of service. Your failure to give written notice to us of any alleged defect under this warranty within twenty (20) days of its discovery, or attempts by someone other than Sartell Valves, Inc. or its authorized representatives to remedy the alleged defects therein, or failure to return product or parts for repair or replacement as herein provided, or failure to install and operate said products and parts according to instructions furnished by Sartell Valves, Inc., or misuse, modification, abuse or alteration of such product, accident, fire, flood or other Act of God, or failure to pay entire contract price when due shall be a waiver by you of all rights under this warranty.

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Sales and Service

For information about our worldwide locations, approvals, certifications and local representative:

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