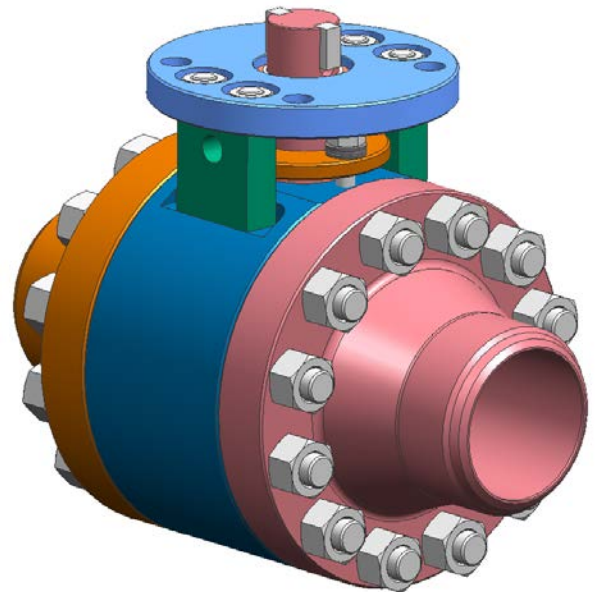
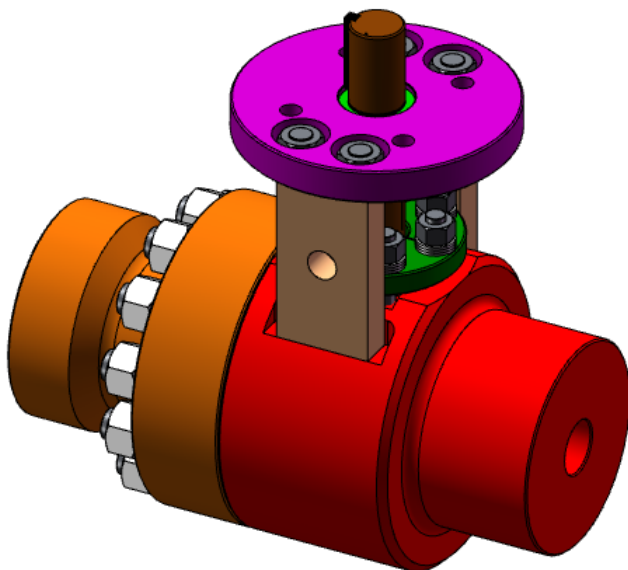
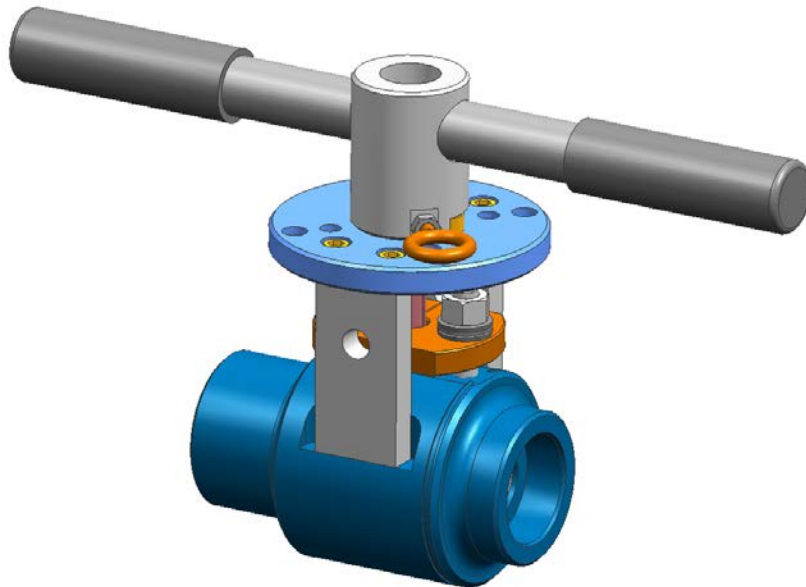


Severe Service Technology, Inc.

Installation, Operations & Maintenance Manual



Installation, Operations & Maintenance Manual

Index

General Overview of IBV Valve.....page 3

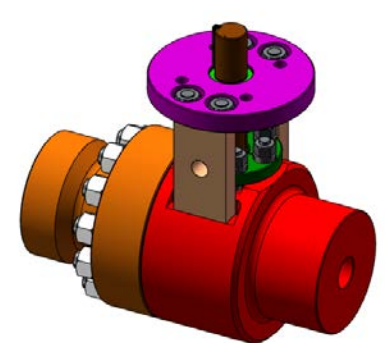
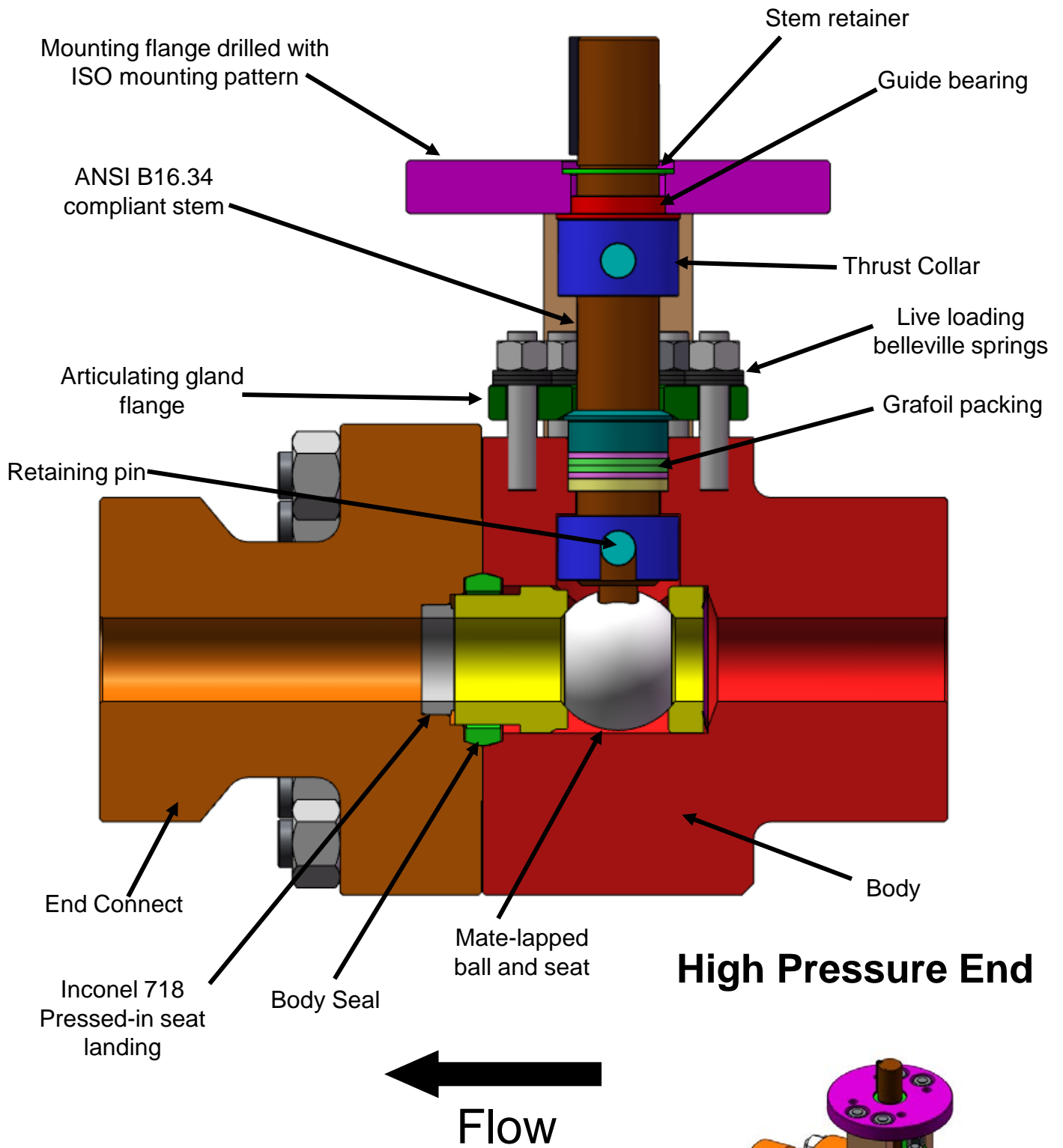
General Overview of SSG Valve.....page 4

Installation.....page 5

Operation.....page 7

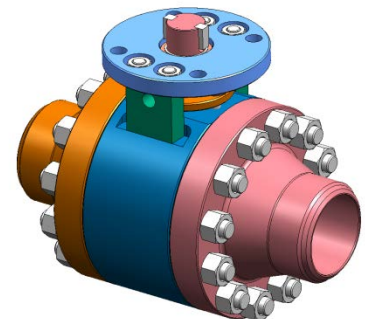
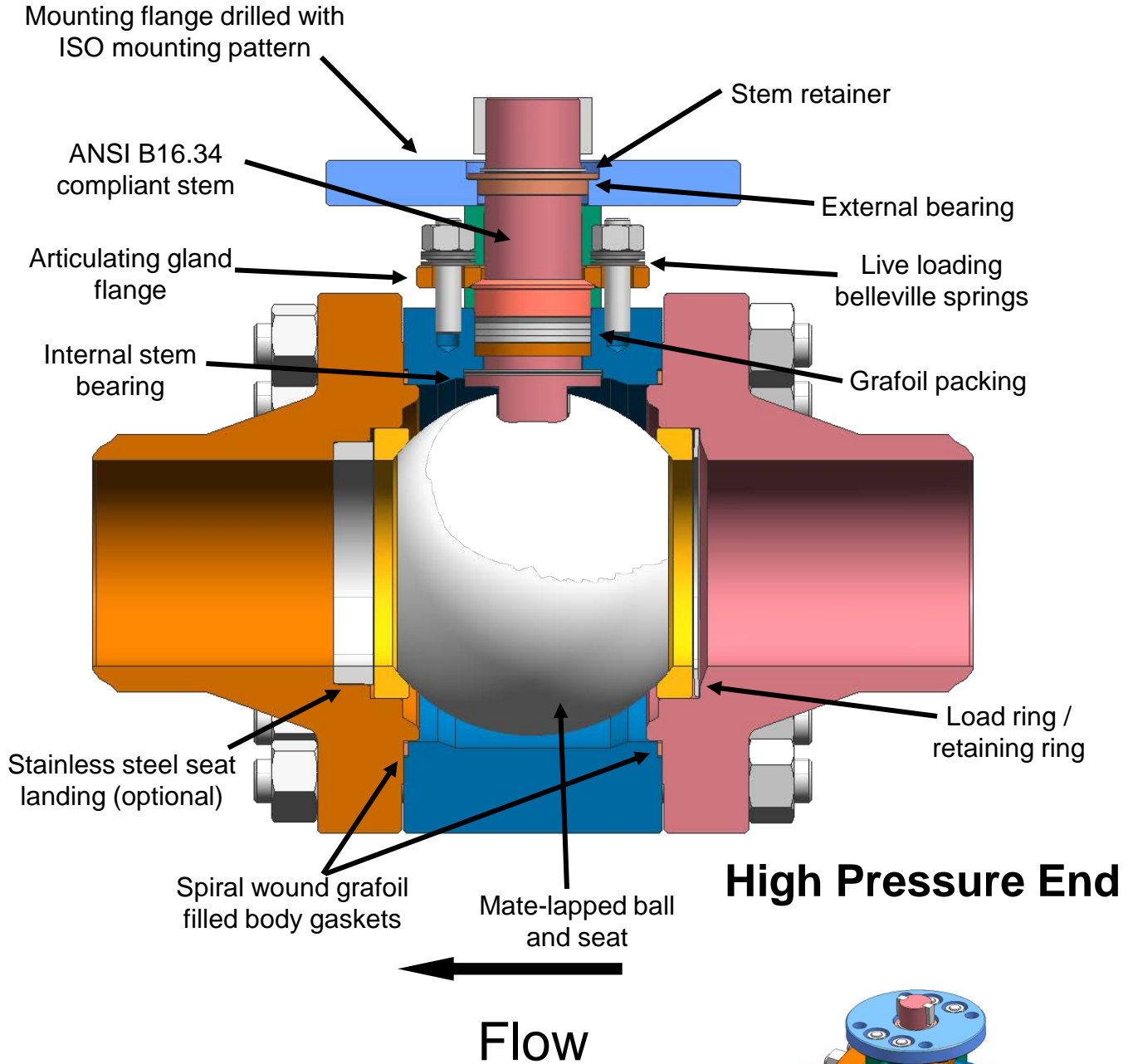
Maintenance.....page 9

IBV VALVE



SSG Valve Split body valve

(2 or 3 Piece body available – 3 piece body shown)



- Available with handle or actuator.
- Available in uni-directional or bi-directional (uni-directional shown).

This manual describes the procedures for the safe and efficient installation and operation of SST metal seated ball valves. **Failure to follow the procedures in this manual may result in SST warranties being voided.** Problems with valve operation and maintenance should be directed to SST approved repair facilities.

Installation

Receiving and Preparation procedure

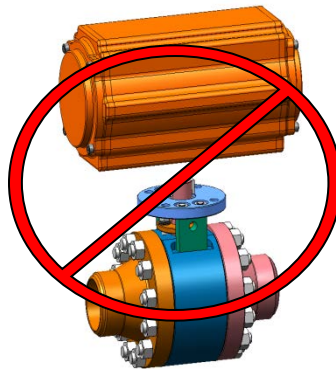
- 1 – Remove shipping protection.
- 2 – Inspect the valve for transportation damage.
- 3 – Inspect the valve bore and remove any debris.
- 4 – Cycle the valve and inspect for smooth operation.



Actuators

Important!

Valves mounted with electric actuators should be cycled to the mid-stroke position before cycling under power.



Caution!

Actuators shall not be mounted, removed, adjusted or re-installed on SST valves except by trained SST personnel.

Orientation

Caution!

Valves must be installed with the FLOW ARROW pointing from high pressure to low pressure with the valve in the closed isolating position. The high pressure end of the valve will be labeled. Bi-directional valves have a preferred high pressure end and should be installed with the labeled high pressure end on the high pressure side.

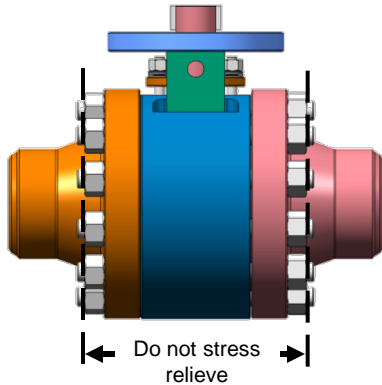
Note: Uni-directional valves should not be installed in lines where a differential back pressure (from low to high pressure) of 200psi or more may exist.

Welding, Stress Relieving and Insulation

- Do not ground across valve, ground on same side that you are welding on.
- **Valve should be OPEN, if possible during welding to avoid weld splatter on ball!**
- Radiation shields are advised if heat damage to the actuator is a concern.
- Care should be taken to minimize weld slag and splatter within the valve.
- **Do not strike arcs on the valve.**

Caution!

Excessive temperature during stress relieving technique may damage the valve and void the warranty.

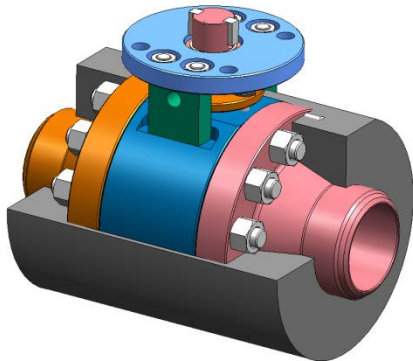


Localized Stress Relief is acceptable. Do not furnace relieve without consulting SST.

Caution!

Valve insulation is prohibited during stress relieving.

Valve service insulation is recommended when the valve is expected to experience temperature differentials greater than 400 ° F.



Post insulation procedures

- Piping system shall be free of large debris that could damage valve when closing.
- Limit switch and position indicator operation should be observed as the valve is cycled several times.

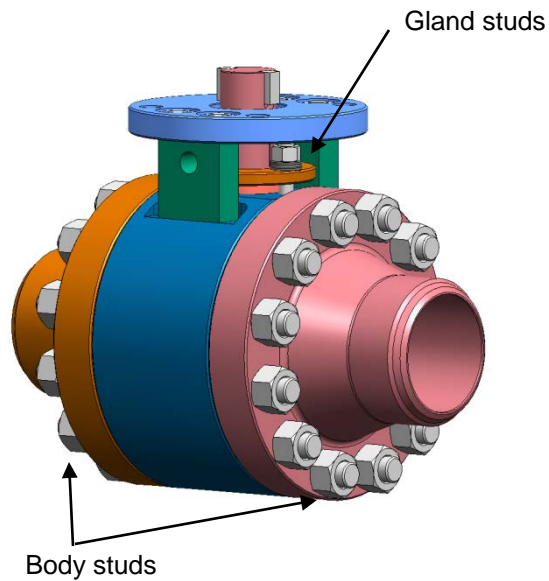
Operation

Valve Lubrication

- SST ball valves require no lubrication.
- Gland packing bolting should be re-tightened after first elevated pressure and temperature (1/4 turn on packing gland nuts).
- Copper-based anti-seize grease for stud lubrication and Molybdenum Disulfide anti-seize grease for packing lubrication may be used.

Stem Torque

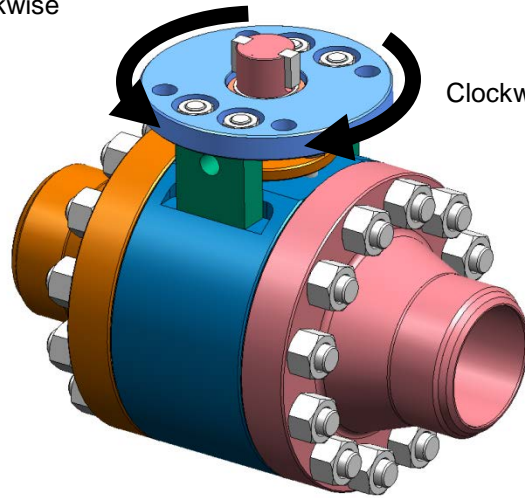
- Contact SST approved service centers for stem torque values.
- Stem torques may differ due to application and environment.



Stem rotation direction

- SST valves are operated clockwise to close and counter-clockwise to open.

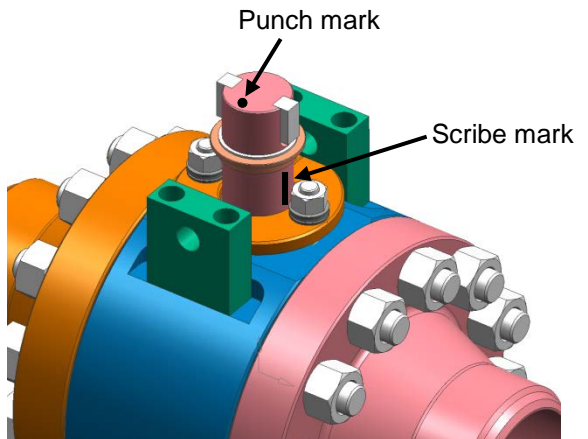
Counter-clockwise
to open.



Clockwise to close.

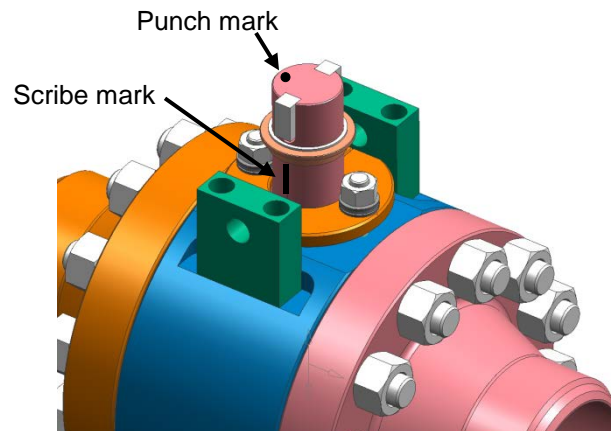
Valve position indication

- A punch mark on the top of the stem and a scribe mark on the side of the stem indicate whether the valve is open or closed as shown below.
- In addition to the punch and scribe marks, lever operated valves are shown open when the lever is in line with the flow.
- **Caution: Key position does not indicate valve position.**



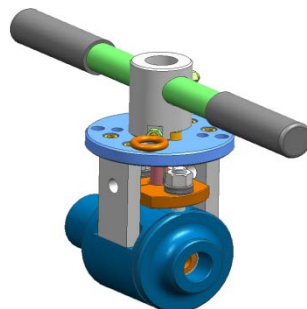
Valve Open

High Pressure end

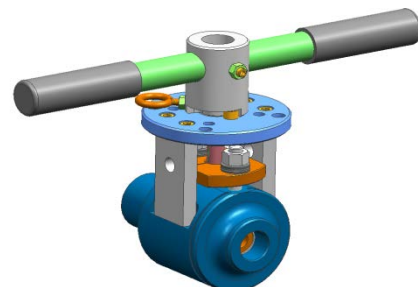


Valve Closed

High Pressure end



Lever operated - Valve Open



Lever operated - Valve Closed

Actuator operation

Valve actuators must be installed, operated, and maintained as per the manufacturers written instructions.

Worm gear lubricant should be inspected and replenished or replaced every 3 months, or as instructed by the manufacturers written instructions.

MAINTENANCE

Disassembly

Valve actuators must be installed, operated, and maintained as per the manufacturers written instructions.

Worm gear lubricant should be inspected and replenished or replaced every 3 months, or as instructed by the manufacturers written instructions.

1 – Valve must be in the Closed position

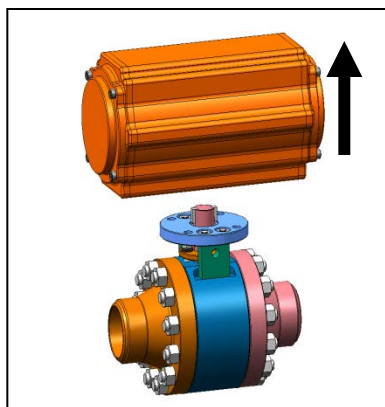
2 – Orientation and position must be marked on valve components, particularly the side of the ball matched to the seat, prior to removal.

3 – Marking should be indelible to the valve cleaning process, but should not damage the parts (No Stamping).

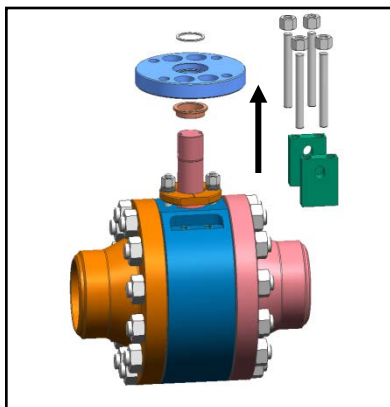
Warning!
Disassembly and repair of SST valves by unauthorized personnel may be hazardous and negate warranties.

Caution!
During disassembly take care to not damage the mating and sealing surfaces, or the packing area.

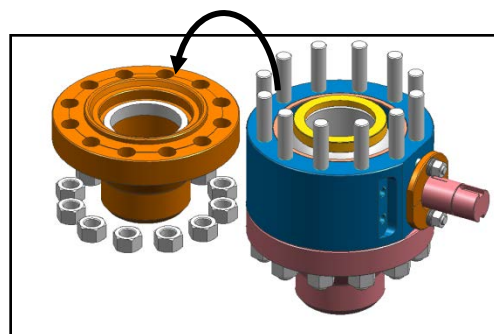
Caution!
Packing must be replaced if gland nuts are loose. Only approved SST packing shall be used.



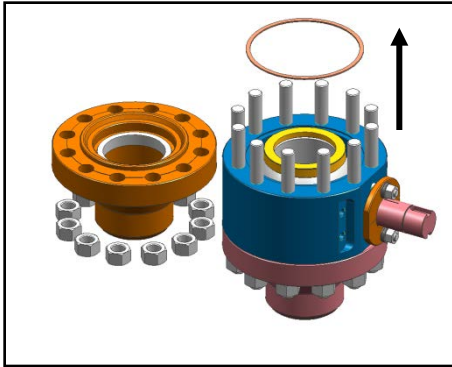
4 – Remove the actuator and any actuator mounting bracketry. Do not use excessive force.



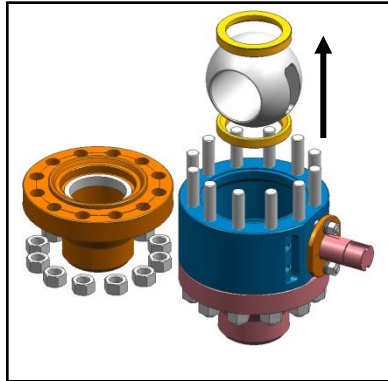
5 – Remove stem retainer ring, mounting leg nuts & studs, mounting flange, and mounting legs.



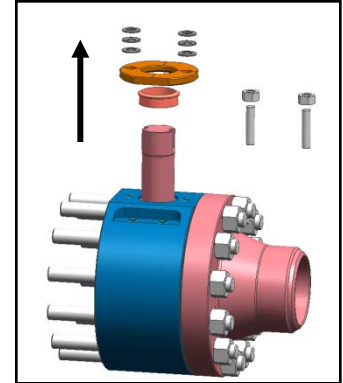
6 – Remove body nuts and low pressure end piece.



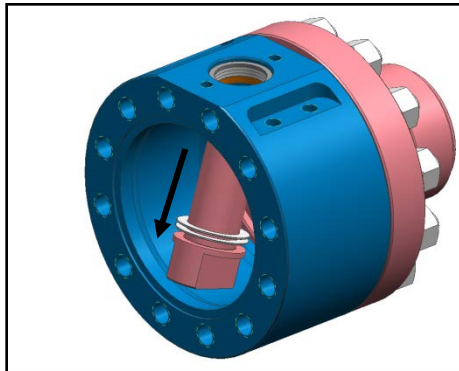
7 – Remove body gasket.



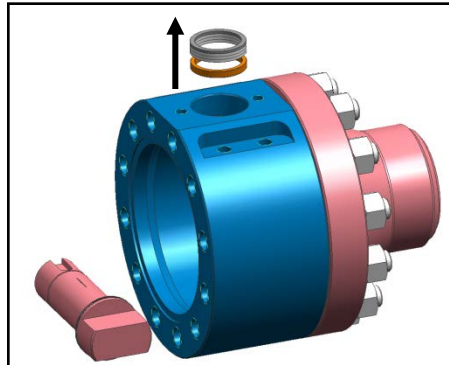
8 – Remove ball, seats, and spring. Mark orientation of ball (**no stamping**). Protect ball and seats from damage.



9 – Remove gland nuts, gland springs, gland flange, and packing follower.



10 – Remove stem and bearing. Take care to not scratch the area on the stem that is in contact with the valve packing.



11 – Remove packing and packing bearing.

12 – Inspect all components, note defects and replace if necessary. De-grease as required.

!
Warning!
!
 Sand blasting on or near sealing areas is not permissible.

Repair and rework

Prior to reassembly the following components should be replaced or inspected and verified as acceptable:

- Packing
- Body gasket
- Spring
- Ball and seats

Ball and seats: If no damage is evident the ball may be re-lapped to the seats. If the ball or seats have evidence of damage then they must be re-machined, re-coated, and re-lapped. This work must be done by an SST approved repair facility. DOWN STREAM SIDE OF BALL IS INDICATED BY THE ALPHA CHARACTER IN STEM SLOT. CORRESPONDING DOWN STREAM SEAT HAS ALPHA CHARACTER IN SERIAL NUMBER.

Seat landing: The low pressure side (downstream) seat landing (and high pressure side seat landing on bi-directional valves) must be inspected before returning to service. If there is evidence of damage then the seat landing can be reworked. This work must be done by an SST approved repair facility.

Other valve parts: Other valve parts may be cleaned and returned to service. Contact an SST approved repair facility if there is a doubt regarding the suitability of cleaned parts.

Ball and seat lapping instructions:

- The ball is lapped to the seat using a diamond lapping compound. Final lapping should be done using a 3 micron diamond lapping compound.
- The seat should be rotated on a platform while the ball is moved in a figure-8 pattern motion against the seat. Care should be taken to avoid creating a "groove" in the ball by overlapping the ball.
- The ball and seat must be tested using a liquid dye penetrant (e.g. "bluing" compound). A solid blue ring indicates a good seal. A non-continuous blue ring indicates further lapping is required. Contact SST for assistance.

Instruction for installing new Ball and Seat parts on the valve:

- The back face of the seat downstream need's to be lapped to the face of the seat landing.
- If the valve is a bi-directional type, the seat upstream need's to be lapped to the upstream landing.
- Please contact SST for assistance in how to lapped the back face of the seat to the landing.

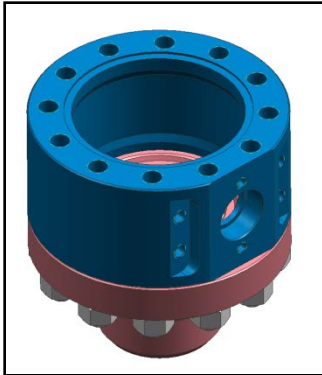
Reassembly

Caution!

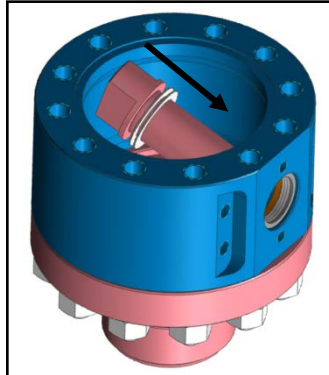
Only approved SST components should be re-assembled in the valve.

Caution!

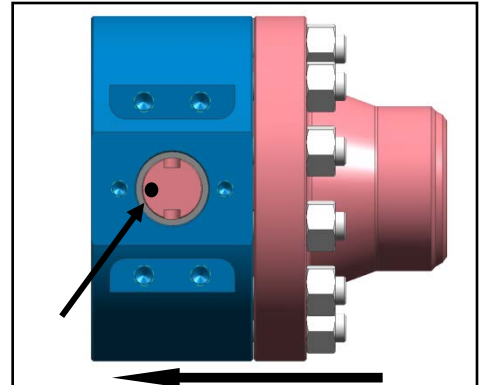
It is recommended that all carbon steel parts be coated with a light motor oil.



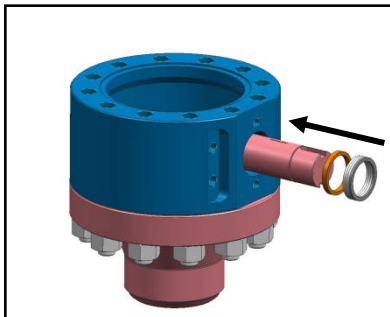
1 - The body portion of the valve must be placed as shown. Clamp the body securely to the work.



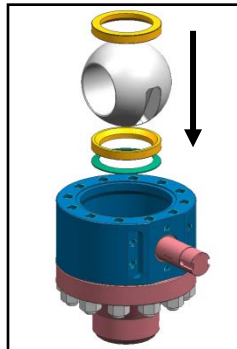
2 - The stem (and bearings if applicable) must be inserted into the body stem hole.



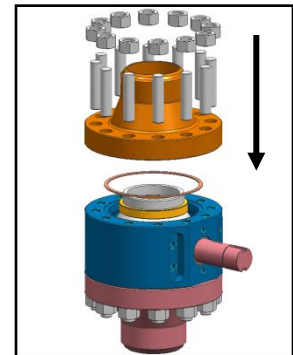
3 - The stem alignment punch mark must be placed in the orientation shown. Note that the key slots should not be used to indicated stem position.



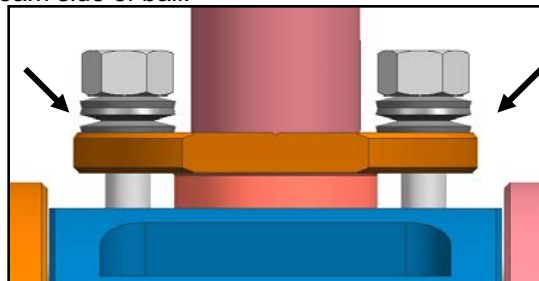
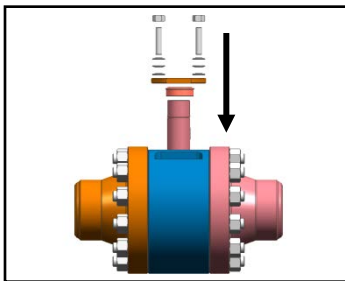
4 - Replace the stem bearing and install new packing (do not reuse packing). The packing will help to hold the stem in place during subsequent operations.



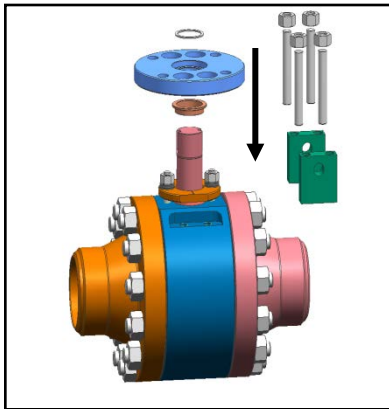
5 - Install the spring, high pressure seat, ball, and low pressure seat. The ball will need to be tipped as shown to engage the stem. Note alpha character on down stream seat and down stream side of ball.



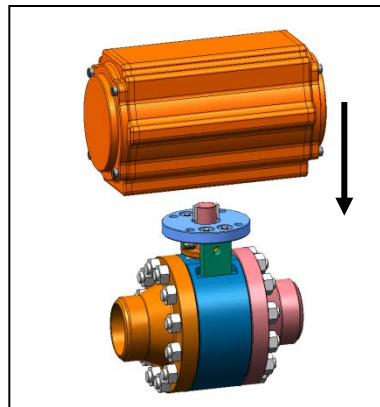
6 - Install a new body gasket (do not reuse gasket), end connect, studs, and nuts. Use anti-seize compound. Contact SST for torque values.



7 - Reorient the valve on the workspace (as shown) and secure in place. Install packing follower, gland, gland springs, studs and nuts. Gland springs must be installed in the orientation shown. Use a copper based anti-seize lubricant on the studs. Contact SST for required torques.



8 – Assemble mounting legs mount flange, stem bearing, stem retainer ring, studs and nuts. Use anti-seize compound on studs.



9 – Assemble actuator or lever and accompanying bracketry. Refer to actuator manufacturers instructions for details. Actuator and valve must be in closed position.

Caution!
Actuators must be installed by SST approved personnel. The valve **must** be tested after mounting the actuator to ensure no leakage.

Warning!

Care must be taken during actuator installation to prevent pushing the stem down into the valve possible damaging the ball.

10 – Set operator closed stop with ball precisely in closed position.

11 – Cycle the valve several times and re-torque packing gland nuts.

12 – Test valve in accordance with MSS-SP61 test procedures.