

## INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

### SV-1600/SV-1600A WATER GAGE VALVE SEAT & YOKE/STEM SUB-ASSEMBLY REPLACEMENT

***WARNING: THE FOLLOWING PROCEDURE REQUIRES THE REMOVAL OF PRESSURE-CONTAINING VALVE COMPONENTS. PRIOR TO DISASSEMBLY, BE ABSOLUTELY CERTAIN THAT ALL PROCESS PRESSURE HAS BEEN RELIEVED FROM THE VALVE. FAILURE TO HEED THIS REQUIREMENT CAN RESULT IN SERIOUS PERSONAL INJURY, PROPERTY DAMAGE AND/OR ENVIRONMENTAL CONTAMINATION FROM SPILLED HAZARDOUS PROCESS FLUID.***

#### SV-1600/SV-1600A REPLACEMENT VALVE PARTS REQUIRED

- Valve seat
- Valve body/yoke spiral-wound gasket (do not reuse the removed compressed gasket)
- Valve yoke sub-assembly (includes valve stem)

#### TOOLS & SUPPLIES REQUIRED

- Bench vise (required only if valve body is removed from vessel)
- Flat blade screwdriver (1/8 to 3/8" wide blade)
- Long (needle) nose pliers
- Inch-units measuring device (small ruler or tape measure)
- Nickel-based anti-seize lubricant
- Fine grit emery cloth or steel wool & clean cloth/towel
- 3/8" hex straight wrench, 5-1/2" minimum length (L-shaped "key wrench" will not work)
- Torque wrench 50 to 100 ft.-lbs. (68-136 Nm) working range
- 3/8" socket wrench (drive size to fit torque wrench)
- 5/8" deep well socket wrench or standard socket with drive extension (drive size to fit torque wrench)

#### VALVE SEAT & YOKE/STEM SUB-ASSEMBLY REPLACEMENT PROCEDURE

##### A. RELIEVE PRESSURE, FIXTURE VALVE & REMOVE YOKE/STEM SUB-ASSEMBLY (Fig. A-1. thru A-3.)

Having determined with certainty that all pressure has been relieved from the valve, clamp the valve body lower end in a bench vise (if valve body is not fixtured by the vessel) and bring the valve to full open position by turning handwheel counter-clockwise until travel limit is reached. Remove (turn counter-clockwise) the four (4) socket head cap screws on the yoke flange. Note the yoke/stem sub-assembly position relative to the valve body markings then remove the sub-assembly by lifting straight outward from valve body.



Fig. A-1. Valve body clamped in a vise & valve in the full open position.



Fig. A-2. Remove cap screws with a 3/8" straight hex wrench inserted through handwheel openings.



Fig. A-3. Note position of yoke then lift sub-assembly straight outward from valve body.

**B. REMOVE VALVE SEAT FROM VALVE BODY (Fig. B-1. & B-2.)**

The valve seat is located at the bottom of the valve body bore. Use a 5/8" deep well socket (or standard socket and drive extension) and turn seat counter-clockwise to unthread. Use long (needle) nose pliers to withdraw the seat from the body bore.



Fig. B-1. Unthread valve seat from valve body bore with a 5/8" socket & ratchet/torque or bar wrench.



Fig. B-2. Valve seat removed from valve body.

**C. REMOVE SPIRAL-WOUND GASKET, INSPECT GASKET RECESS & CLEAN IF NEEDED (Fig. C-1. & C-2.)**

Remove the spiral-wound gasket from the valve body recess by very carefully prying the gasket outward with a flat blade screwdriver inserted into the crease of the gasket – DO NOT insert or leverage the screwdriver between the bottom of the gasket and the recess face as this can damage the body sealing surface and create an irreparable leak-path. Inspect the surface of the gasket recess; remove any corrosion present by GENTLY sanding/buffing with very fine emery cloth or steel wool around parallel to the recess face – DO NOT sand or buff the recess face in the transverse direction (across the face width) as this can create an "inside-to-outside" leak-path across sealing area. Wipe-away all residue from gasket recess with a clean cloth.

Insert screwdriver blade into the center crease of (not underneath) the spiral-wound gasket

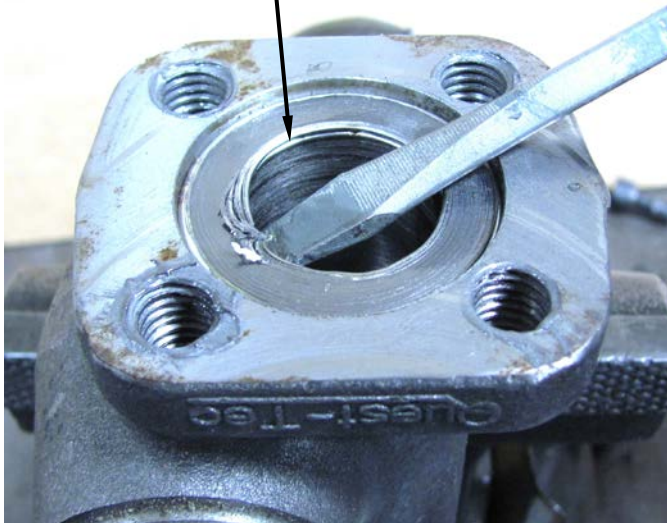


Fig. C-1. CAREFULLY remove spiral-wound gasket from valve body recess with a flat blade screwdriver.

If recess cleaning is needed, sand/buff ONLY IN A DIRECTION PARALLEL TO THE RECESS as shown



Fig. C-2. Inspect gasket recess in the top of valve body; clean as needed with very fine grit emery cloth or steel wool.

**D. LUBRICATE SCREW THREADS OF NEW VALVE SEAT & INSTALL SEAT INTO VALVE BODY (Fig. D-1. thru D-3.)**

Apply a coating of nickel-based anti-seize lubricant to the screw threads of the valve seat. Place the valve seat (threaded end downward) into the valve body bore and finger-tighten clockwise using a 5/8" socket wrench. Attach torque wrench to socket and tighten valve seat to 30 ft-lbs. (41 Nm).



Fig. D-1. Apply nickel-based anti-seize lubricant to the screw threads of valve seat.



Fig. D-2. Install valve seat & tighten finger-tight using 5/8" socket wrench.



Fig. D-3. Attach wrench to socket and tighten valve seat to 30 ft-lbs. (41 Nm).

**E. LUBRICATE FLANGE CAP SCREWS & INSTALL NEW SPIRAL-WOUND GASKET (Fig. E-1. & E-2.)**

Apply a coating of nickel-based anti-seize lubricant to the screw threads of the four (4) socket head cap screws; set cap screws aside. Place the new spiral-wound gasket into the gasket recess of the valve body.



Fig. E-1. Apply nickel-based anti-seize lubricant to the screw threads of the four (4) body/yoke flange cap screws; set screws aside.



Fig. E-2. Place new spiral-wound gasket into the valve body recess.

**F. RETRACT VALVE STEM OF THE NEW YOKE/STEM SUB-ASSEMBLY & MEASURE WIDTH OF PACKING STUD HEX NUT TO DETERMINE SPECIFIC VALVE MODEL (Fig. F-1. & F-2.)**

Verify that the valve stem is fully retracted to the open position by turning handwheel counter-clockwise until travel limit is reached. Determine the specific valve model (SV-1600 or SV-1600A) by measuring the width of one of the packing stud hex nuts as shown.



Fig. F-1. Verify that the valve stem is fully retracted to the open position - turn handwheel counter-clockwise until travel limit stop is reached as shown.

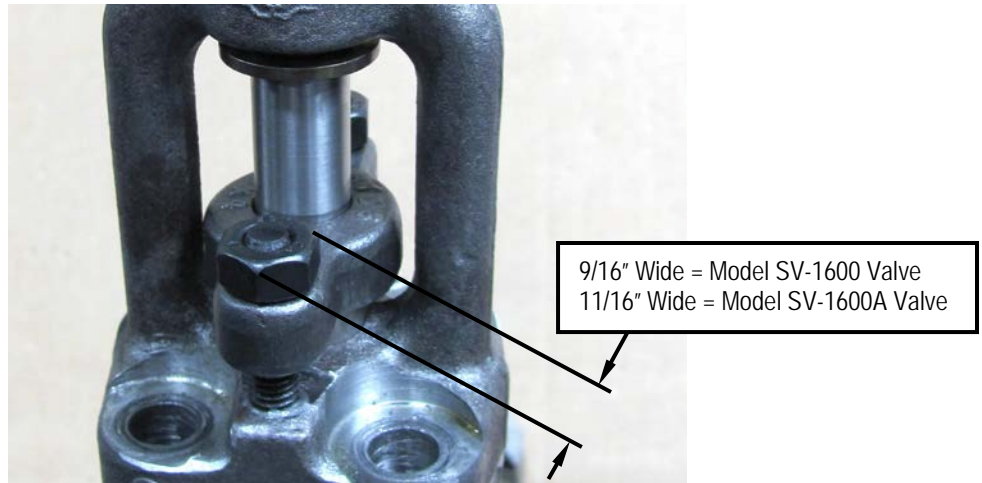


Fig. F-2. Measure the width (across the flats) of one of the packing stud hex nuts to determine the valve model; SV-1600 or SV-1600A. The two valve models have different gasket compression requirements (see Fig. G-3.) therefore the specific model must be established prior to bolting the new yoke/stem sub-assembly to the valve body.

**G. PLACE NEW YOKE/STEM SUB-ASSEMBLY ON VALVE BODY, INSTALL CAP SCREWS & TIGHTEN (Fig. G-1. thru G-3.)**

Position the new yoke/stem sub-assembly on top of valve body in the same orientation as the removed (old) sub-assembly, install the pre-lubricated cap screws & tighten (clockwise) making 3-4 passes in a cross-pattern to achieve uniform gasket compression.



Fig. G-1. Orient the new yoke/stem sub-assembly (relative to the valve body) in the position as was the previously removed (old) sub-assembly.



Fig. G-2. Insert a 3/8" straight hex wrench through handwheel openings and in an alternating cross-pattern, tighten screws evenly making 3-4 passes to a final torque of 35 ft.-lbs. (48 Nm).



Fig. G-3-A. MODEL SV-1600 VALVE  
Gap between yoke and valve body flanges will be approximately 3/64" (1.2 mm) when properly tightened.



Fig. G-3-B. MODEL SV-1600A VALVE  
Yoke and valve body flanges shall be made-up metal-to-metal with no gap when properly tightened.