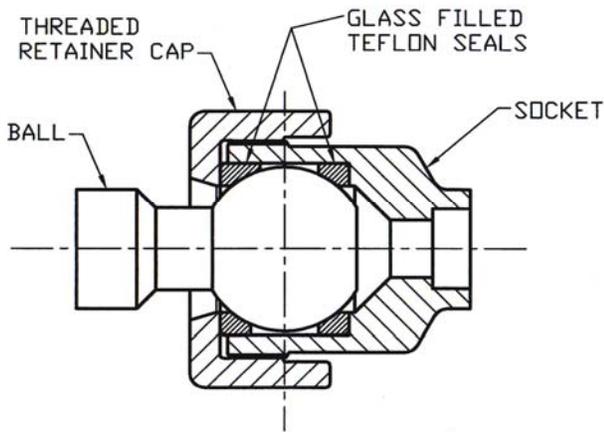


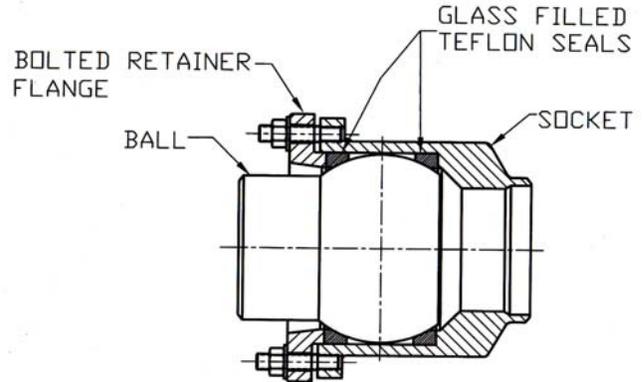


“S” SERIES FLEXIBLE BALL JOINTS

INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS



SIZES THRU 2-1/2”



SIZES 3” AND LARGER

GENERAL:

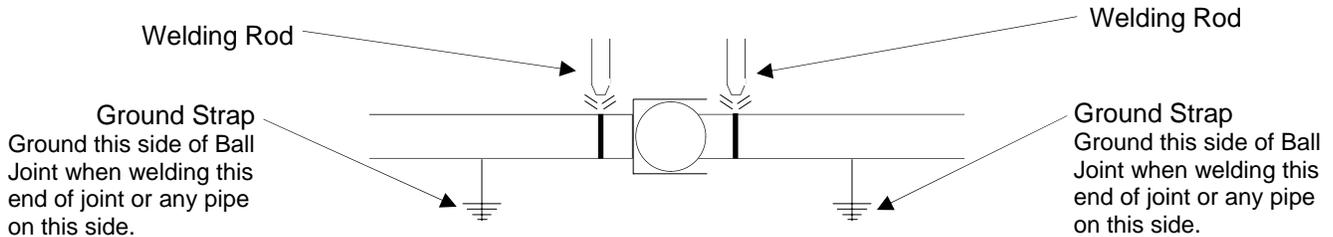
1. Prior to installation, verify that the ball joints have been properly cold positioned where necessary.
2. Installation in other than a horizontal attitude should be with the ball nipple facing downward in order to help keep the exposed ball free from contamination. Installation drawings should be reviewed to verify the ball joints are installed in their specified location with proper distance between balls.
3. Three ball joint linkages are not self supporting and must be supported.
4. The ball joint will provide for both angular flex (refer to catalog for amount of angular flex) and 360° rotation.
5. The ball joint may be hydrostatically tested to 1-1/2 times the design pressure. The test pressure must not exceed the rating of the adjoining piping.
6. The **SERIES “S”** Ball Joints are supplied with glass filled Teflon® compression seals without injectable packing.



INSTALLATION:

1. The inside of the pipe should be clean of sand, dirt, gravel, scale, etc. as these foreign materials may cause damage to the seals and/or damage the plated ball.

CAUTION: Whenever welding on or near the ball joint, the welding ground must be located on the pipe, adjacent to the weld being performed to prevent a welding arc between the ball and socket. (See “Figure 1” on page 2.) For the remainder of the piping installation, the ball joint cannot be in the welding ground path. Improper location of the welding ground may result in damage to the chrome plated surface of the ball joint and void the warranty.



“Figure 1”

2. During welding the exposed portion of the ball should be protected from weld splatter. Upon completion of installation, the protective material between the ball and socket bore should be removed. The exposed area between the ball and socket should be checked to ensure it is free of dirt and foreign debris which may damage the ball joint during operation.

INITIAL START-UP:

1. Prior to testing or energizing the system, the installer should check that all anchors are secure, and that pipe alignment guides and/or supports are properly located and secured.
2. During the initial energizing of the pipeline, inspect each ball joint to ensure that they are operating properly and no leakage is apparent.
3. The ball joint should be inspected several times during the first two (2) months of continuous operation to ensure no leaks have developed.

ROUTINE MAINTENANCE:

Sizes up to 2-1/2” with Retainer Cap:

1. When the pipeline is properly aligned, supported and anchored at installation, routine maintenance of the ball joints is **minimal**. Each ball joint should be inspected for leakage on a regular basis determined by previous performance. A record of each inspection should be maintained noting the ball joint, date, leaks noted and the severity of the leak.
2. In the event of leakage, the retainer cap must be tightened evenly and just enough to contain leakage. Loosen the lock screw on the retainer cap. The cap can then be tightened with a spanner wrench. Once leakage is contained, re-engage the lock screw at the retainer cap.

Routine Maintenance continued on page 3



Routine Maintenance continued:

- 3. During any system shutdown, the ball joint should be inspected and cleaned of any buildup debris or water treatment compound. This will assure a more leak-free operation of the joint.

Sizes 3” and larger Bolted Design:

- 1. When the pipeline is properly aligned, supported and anchored at installation, routine maintenance of the ball joints is **minimal**. Each ball joint should be inspected for leakage on a regular basis determined by previous performance. A record of each inspection should be maintained noting the ball joint, date, leaks noted and the severity of the leak.
- 2. In the event of leakage, the flange bolts must be tightened evenly and just enough to contain leakage. Refer to Table 1 for maximum bolt torques allowed.
- 3. During any system shutdown, the ball joint should be inspected and cleaned of any buildup debris or water treatment compound. This will assure a more leak-free operation of the joint.

Table 1 - Maximum Bolt Torque for SERIES “S”

Ball Joint Size	Torque, Ft. Lb.
3”	10
4” & 5”	15
6” & 8”	25
10” & 12”	35

RECOMMENDED SPARE PARTS & ACCESSORIES:

Replacement of Compression Seals: In the event that a Glass Filled Teflon® compression seal needs to be replaced, consult the factory.

OTHER ATS PUBLICATIONS:

ATS publications are now available in PDF format by request.

TP2 Thermal Pak Slip Joints	ATS-TP2-IOM-2010	Anchors, Guides & Supports	ATS-G/A/S-IOM-2010
P2/S2 Series Ball Joints	ATS-P2/S2-IOM-2010	Injection Packing Instructions	ATS-Packing-IOM-2009
Solar “S2” Ball Joints	ATS-Solar-IOM-2010	SAF-T-PACKER Instructions	ATS-SAF-IOM-2009