

SECTION 9

AMERICAN Restrained Joint Pipe





AMERICAN Ductile Iron Flex-Ring® Joint Pipe

Assembly Instructions 14" - 48"

1) Cleaning and Fastite gasket insertion

Thoroughly clean the socket restraining groove (nearest the bell end), the Fastite gasket recess, and the pipe plain end, removing dirt, sand, ice, mud, or any other material which could prevent the proper placement of the Fastite gasket and flex-ring. As in normal Fastite joint assembly, insert the gasket into the gasket socket groove (Photo



1). **Important: A Fastite gasket must also be used, because the rubber-backed flex-ring does not perform any sealing function.**



2) Placement of the flex-ring in socket and joint lubrication

Remove the flex-ring from its container and place it in the socket restraining groove in gasket-like fashion (Photo 2). The **yellow** restraining segments of the flex-ring must be oriented toward the entering spigot. This may be done by first placing the flex-ring in the socket groove by forming one or more inward or lateral loops in the rubber-backed ring (Photo 3). Work all inward or lateral loops fully outward and planar such that each metal



segment fits reasonably flush against the wedging surface of the socket, and no rubber bulges or twists remain (Photo 4).

Lubricate the inside surface of the gasket and the first four inches of the spigot including the beveled nose end of the pipe. Do not allow the lubricated spigot end of the pipe to contact the ground prior to insertion.

3) Initial placement of Flex-Ring spigot end into socket

With the spigot in reasonably straight alignment and centered within the flex-ring (Photo 5), insert the spigot until it contacts the back of the socket per normal Fastite joint assembly procedure. (See Section 2 for additional detail on Fastite



assembly procedures.) When the weld bead is in proper assembled position fully beyond the yellow Flex-Ring segments, every segment will be trapped firmly between the weld bead, the spigot, and the wedging surface of the socket.

Verify the correct positioning of the yellow Flex-Ring segments by visual inspection (or by "feeler" gauge if installed in conditions of poor visibility). The segments will normally snap directly into the correct assembled position. However, if any segment should not come down firmly onto the pipe at any location, deflect the pipe slightly in that direction, thereby allowing the segment to seat itself correctly.

After joint assembly, the joint may be extended and then deflected within the range of allowable joint deflection for the size of pipe being assembled.

4) Assembly of fittings

Flex-Ring pipe and fitting joints can generally be assembled with the same tools and methods used for many years with Fastite joints. When using a field-cut pipe to locate a fitting, it may be advantageous to use an uncut flex-ring spigot end (with factory weld bead) and a standard Flex-Ring in the fitting socket rather than using a field-cut plain end and Field



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Assembly Instructions 14"- 48"

Flex-Ring with black-toothed gripping segments. A Field Flex-Ring and cut pipe plain end may then be used in the nearest pipe socket on either side of the fitting. When possible, the use of standard flex-ring with yellow segments and factory spigots with weld beads in the sockets of a fitting may allow easier orientation or rotation of the fitting relative to the pipe after assembly, if this is needed. (See Section 4 for additional detail on the assembly of Fastite fittings.)

5) Joint extension after installation

The 14"-48" Flex-Ring locking mechanism allows approximately one inch of free axial movement and also provides substantial flexibility after installation. However, the joints may be extended after assembly to minimize this joint take-up in test or service conditions.

In most underground installations (including most restrained bend locations), joint take-up is advantageous in that increased thrust-resisting forces are generated. Also, expansion and contraction due to temperature variations may be accommodated without excessive stress in pipe members. The amount of joint take-up or line movement in buried restrained pipelines is substantially limited by the sur-

rounding soil. Therefore, system security and safety is maximized by filling and testing restrained sections of pipelines **after** backfilling as recommended by ANSI/AWWA C600, Installation of Ductile Iron Water Mains and Their Appurtenances and AWWA M41.

In any application where axial or lateral movement may be undesirable, such as certain bridge crossings, certain exposed or unburied piping applications, or certain connections of restrained pipe sections to rigid piping, special provisions, including effective joint extension, may be necessary to control unacceptable pipeline movement.

Depending on job conditions and restrained pipe length, cumulative joint take-up can obviously be substantial, particularly in exposed piping applications.

Where joint pre-extension is necessary in a piping system, it may be accomplished by pulling or jacking the spigot away from the socket until firm resistance is encountered. This will not limit joint flexibility. See "Restrained Joint Pipe Assembly Extension Procedure" in this section of the Pipe Manual for more information concerning joint extension.



The versatile performance capabilities of AMERICAN Flex-Ring Joint Pipe are perfectly suited for projects containing a variety of conditions such as the hilly, rocky terrain shown in this photo.



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Disassembly Instructions for 14"- 48" Flex-Ring Joints

Flex-Ring joints may be disassembled if required using sharp wedges and 3/16"-1/4" thick disassembly shims. Flex-Ring disassembly sets are available from AMERICAN and are suggested for disassembly. These disassembly sets include two sharp steel starter wedges and an appropriate number of "L"-shaped shims. The wedges are used to start the separation of the yellow Flex-Ring joint locking segments outward from the spigot while it is in the bell of an already assembled joint. The "L"-shaped shims are then hammered between the spigot and each locking segment. The thicker shims lift the locking segments entirely away from the spigot when fully inserted, and allow the spigot weld bead to pass under the locking segments generally located as shown in Figs. 1 and 2. Step-by-step instructions follow:

- 1. First straighten the joint as much as possible and push or pull the spigot back into the bell until it "bottoms out" in the rear of the socket. (Fig. 3)**
- 2. Hammer a starter wedge under a yellow locking segment until an approximately 1/8" gap is seen between the segment and the spigot. (Fig. 4)**
- 3. Hammer a second wedge (if necessary to start the shims) under the other end of the locking segment as in step 2.**

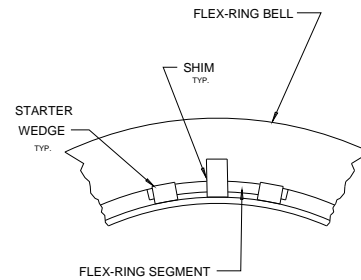


Figure 1
Starter shim and wedge arrangement for 14", 18", and 20" sizes.

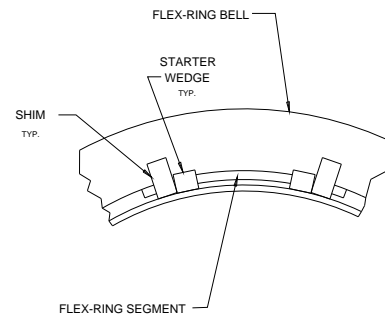


Figure 2
Shim and wedge arrangement for 16", 24", 30", 42", and 48" sizes.

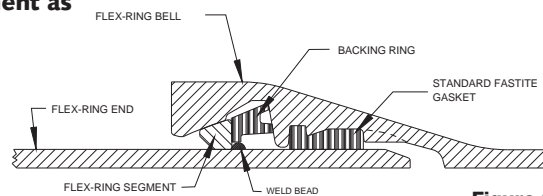


Figure 3

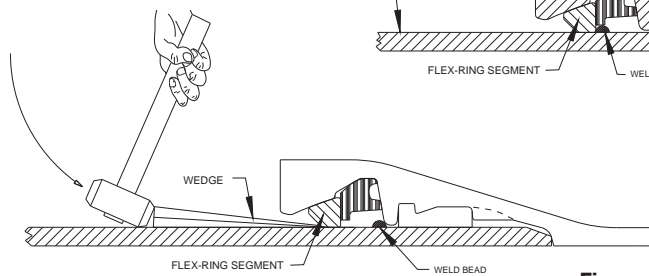


Figure 4

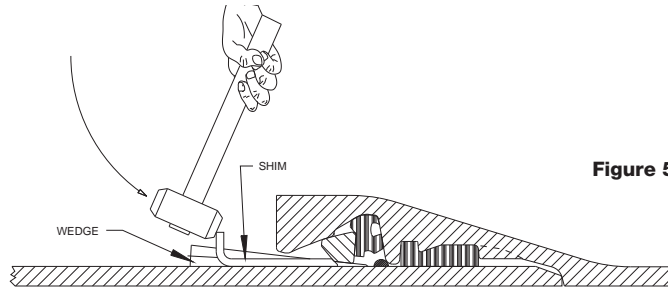


Figure 5

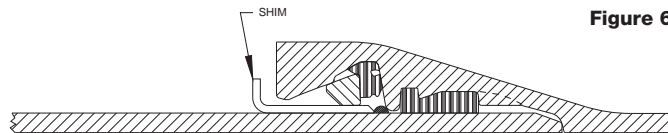


Figure 6

4. With a large hammer (such as a six pounder) vigorously drive one or two “L”-shaped shims under the locking segment until the ends of the shims firmly contact the spigot weld bead. (Fig. 5) Shims and wedges can be safely and firmly held against the pipe as they are hammered using a block of wood or a board. Safety precautions such as the wearing of safety glasses and keeping clear of the hammer during striking should always be taken to avoid injury.

5. Remove the starter wedges from between the locking segment and spigot, leaving the shim(s) in place. (Fig. 6) Note that the wedges are reused for each locking segment.

6. Drive wedges and shims under all locking segments as shown in steps 2-5. (See photo.) Check to be sure that the inner surface of all segments will not interfere with the spigot weld bead during joint separation after inserting shims.

7. Separate the joint. During joint separation, it is generally best to pull the spigot straight out of the socket. Extreme back and forth deflecting motions of the spigot during joint separation can cause shims to fall out of the joint and/or relocking to occur. If the joint does not readily come apart, check to see if one or more of the segments is in locking contact with the spigot weld bead. If so, push or deflect the spigot back in that location and add or replace shims as required.



Disassembly kits accompanied by instructions for use can be furnished by AMERICAN upon request.