SECTION 2

AMERICAN Pipe Joints

AMERICAN Fastite® Joint Pipe Assembly Instructions

The AMERICAN Fastite Joint is a push-on type joint meeting all the rigorous requirements of AWWA C111. The ANSI/AWWA C600 Standard covers in detail the installation of ductile iron water mains, including assembly instructions for push-on joint pipe.

Field-cutting of AMERICAN Ductile Iron Pipe can be easily performed, thus eliminating the necessity for factory-made special lengths of Fastite pipe. The plain end of Fastite pipe cut in the field requires little or no preparation for assembly into the socket of a mechanical joint fitting. Where a cut pipe is to be assembled into a Fastite socket, the required beveling or rounding of the plain end can be easily accomplished by the use of a portable grinding wheel or other suitable apparatus. Methods of cutting ductile iron pipe are described in Section 3.

The AMERICAN Fastite Joint requires only one joint component, the rubber gasket*, which when properly installed, fits snugly in the gasket recess in the bell socket. A special lubricant supplied with the pipe is applied to the plain end and the inside surface of the gasket before assembly. The pipe end is tapered or rounded to provide self-centering of the plain end in the gasket and ease of assembly. A circumferential stripe on the plain end provides a visual indication for checking the proper insertion of the joint. The stripe, shown in the photographs illustrating assembly methods, passes fully into the bell when the plain end is fully inserted into the socket with the two lengths of pipe in straight alignment. Joints can then be safely deflected up to the extent shown in Table No. 2-3. In deflected joints, the stripe will typically be visible to some extent after assembly.

Easier assembly is effected if the pipe is suspended an inch or so off the bottom of the trench during the jointing operation.

The following instructions should be followed in order to properly assemble the joints and to fully realize the maximum speed and ease of assembly of the Fastite Joint:

1. Clean socket and plain end thoroughly, **removing** mud, gravel, or **any** other **matter that might cause the front of the gasket to protrude into the path of the entering spigot.**

2. Insert gasket fully into the gasket recess of the socket, large end of the gasket entering first. Gasket may be installed with one or two V-shaped folds as shown (Photo 1). After the gasket is in place at the bottom, the top of the gasket is positioned fully into the gasket recess. Gaskets and lubricant to be installed in very cold weather should be warmed first (as by storage in a heated equipment cab or pick-up, etc.) for optimum assembly.

3. Apply a thin film of regular AMERICAN Fastite Joint Lubricant to the rounded or tapered spigot end of the pipe, the immediate outside pipe surface between the stripe and the nose of the pipe (Photo 2), and also to the inside surface of the gasket. **Special AMERICAN Fastite Joint Lubricant intended specifically for underwater or very wet installations can be supplied when requested.**

Photo 1

Photo 2

*Gaskets not used immediately should be stored in a cool location, out of direct sunlight.

Caution: If a spigot end contacts the ground or trench side after lubrication, any adhering dirt or rocks should be cleaned off and the area re-lubricated prior to assembly.

4. Insert the plain end in the socket. For optimum assembly it is preferable that the entering pipe be in reasonably straight alignment; however, the Fastite Joint may be assembled if necessary with the pipe deflected within its rated deflection. (Exception: If Fast-Grip gaskets are being used, straight alignment must be maintained.) Push the plain end into the socket using any of the applicable assembly methods described hereinafter. If the joint cannot be assembled with a moderate force, remove the pipe and check for the cause of the difficulty, such as improper positioning of gasket, insufficient or wrong type lubricant, dirt under or behind the gasket, dirt adhering to the pipe, or any other cause which would result in obstruction or increased friction between pipe end and gasket surface. **For assurance of proper assembly, a thin automotive, blade-type feeler gauge can also be used if desired for quick and easy probe confirmation of correctly installed axial gasket position around the joint.**

5. "Backwards" installation. AMERICAN does not recommend "backward laying" (bells assembled over spigots, rather than spigots inserted into bells as pictured in this literature) of large-diameter ductile iron pipe in buried installations. AMERICAN can furnish bell and plain end fittings to minimize the need for backward pipe laying. Other devices such as sleeves and couplings may also be employed for this reason. However, if this condition cannot be avoided, we strongly recommend that installers contact AMERICAN for instructions on how to reduce the potential for problems that could occur when assembling pipe in this manner.

AMERICAN Pipe Assembly Mechanisms

In general, Fastite joints or other Fastite gasketed pipes may be readily pushed or pulled together without the need for complicated tools or substantial manpower. This is most often accomplished with the procedures discussed on page 2-14. In general, the joints of AMERICAN push-on pipes are purposefully "tight," and most joints require an assembly force of about 100 to 200 pounds or more of assembly force per inch of pipe diameter (i.e. a 12" joint might require about 12 x 100 or 1,200 pounds of assembly force).

In pulling operations, simply wrap a sound wire rope choker cable or nylon sling around the barrel of the entering pipe. Secure the thimble eye or other end loop of the choker to a suitably anchored pulling device (e.g. backhoe, come-along, etc.). Use the mechanism to pull the cable taut in the assembly direction (Photo 3). Continue pulling the cable in a smooth, continuous motion until the joint is in the fully assembled position. If desired for special conditions, AMERICAN can furnish suitable, simple come-alongs and choker cables for man-

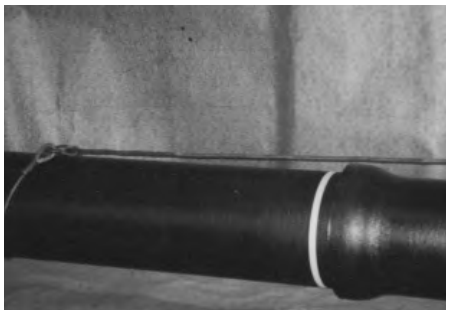


Photo 3

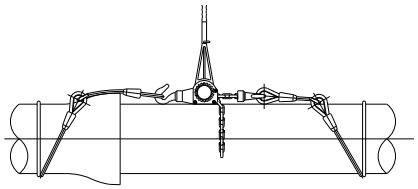


Figure 1

power assembly of most **4"-24"** pipes (See Figure 1 and specify pipe sizes involved).

The joints may normally be disassembled in a similar manner, reversing the direction of the pull with the choker cable (Photo 4). It is also sometimes helpful to use rebating or wiggling deflection to aid in the disassembly of push-on joint pipes, particularly when pipes have been installed for some time prior to removal.

30"-64" Pipe

Photo 4

Large pipes are most often readily pushed or pulled together with heavy excavating/earthmoving equipment available on-site (see page 2-14). In cases where assembly of pipes by manpower is desired, AMERICAN can provide special assembly tools and rigging which can be used for assembling most pipes of all sizes (Photo 5). These tools consist of a heavy-duty roller chain hoist, a steel pipe-end hook and snatch block, and associated wire rope and chain tackle (Photo 5) to attach all the rigging together to effect "double line" assembly from the top of the pipe (Photo 6). The snatch block pulley and twin line rigging approximately doubles the assembly force from the strong come-along, making possible the assembly of up to 64" full-length pipe joints from the top of the pipe (Photo 7).

Photo 5

Photo 6

Fittings and Short Pipes

Push-on fitting or short pipe joint assembly is basically the same as that of standard length pipe, though special rigging may be necessary to hold these short items reasonably stable for assembly. See also Push-On Fittings Assembly Instructions in Section 4.

Photo 7

Field Rounding

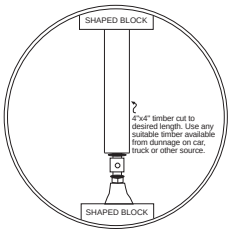
Occasionally, field rounding of pipe ends may be necessary to accomplish assembly, particularly when large-diameter pipes are cut to be assembled into mechanical joints or couplings. Need for rounding in assembly of mechanical or stuffing-box-type joints can be predetermined by a difficulty in sliding the gland or end ring over the end of the pipe. Rounding may be accomplished in the following manner using a mechanical jack and shaped blocks. (Note: This procedure may also be used with the assemblies involving push-on joint pipe, fittings, valves, etc.; however, rounding is less frequently necessary for assembly of push-on joints.)

1. Measure/determine the minimum (minor) diameter of the ends to be rounded.

2. Place the jack and the shaped blocks in line with the minor diameter as shown in the attached sketch using a sound 4"x4" spacer timber cut square to the required length to take up the space.

3. Apply a load carefully with the jack only until the "minimum diameter equals the maximum diameter," or until the gland will easily slip over the end. No more jacking should be attempted or necessary - **DO NOT ATTEMPT TO PERMANENTLY ROUND END**.

4. After the joint is completely assembled and the bolts (if involved) are uniformly tightened to the required torque, carefully relax and remove the jack and timbers from the pipe.



Note: Field rounding operations should be conducted without backfill on any part of large-diameter pipes and prior to encasing any part of pipe in concrete. If the inside of the pipe cannot be accessed to remove jacking materials, pipe ends can alternatively be rounded using external clamping means.

AMERICAN Fastite® Joint Lubricant Requirement by Size of Pipe

64" AMERICAN Fastite Joint pipe being installed in a wastewater application.

Table No. 2-5

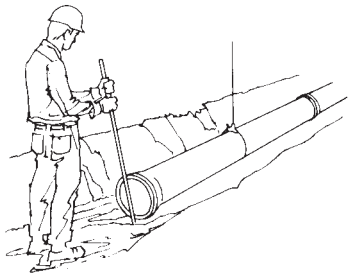
Pipe Size in.	Approx. Pounds of Lubricant per Joint	Approx. No. of Joints per Pound of Lubricant
4	.03	33
6	.045	22
8	.06	17
10	.07	14
12	.08	12
14	.09	11
16	.11	9
18	.12	8
20	.14	7
24	.17	6
30	.30	3
36	.36	3
42	.44	2
48	.50	2
54	.59	2
60	.66	1
64	.71	1

AMERICAN Fastite® Joint
Common Assembly Methods

In seeking ways to take even greater advantage of the cost-reducing features of the Fastite Joint, utility contractors have developed other methods of assembling this joint without special tools. The following methods are described for the information of the user, who may elect to use them at his discretion, keeping in mind that these methods may not be effective for all installations and under all field conditions.

Spade or Crowbar Method

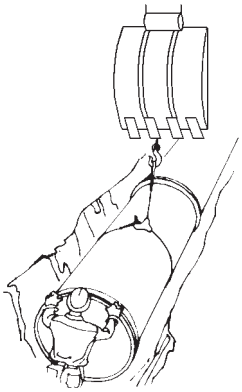
This is applicable to the smaller sizes of AMERICAN Fastite Joint Pipe, and consists of centering the lubricated end of the entering pipe in the gasket and then pushing against the bell face of the entering pipe with a spade or crowbar driven into the ground in front of the bell face. This method requires the trench bottom to be fairly firm soil. The method may not be effective in a rocky trench or with a trench that is soft, muddy or sandy. A wooden block between the bell face and the pry bar may increase the leverage. Easier assembly is effected if the pipe is suspended an inch or so off the bottom of the trench.



Spade or Crowbar Method

Backhoe and Heavy Equipment Methods

These methods are usually applicable to the intermediate and larger sizes of AMERICAN Fastite Joint Pipe where the bar method might not be effective. It consists of centering the end of the entering pipe in the gasket as the pipe to be assembled is suspended from the backhoe. Then it can be pulled into the adjoining socket with the pipe sling by moving the backhoe arm toward the previously assembled pipe. In other instances, the pipe may be assembled by placing the backhoe or other earth mover bucket or blade against the bell face of the entering pipe and pushing it into the socket. When pushing against the bell face, care should be taken to avoid very small contact areas and possible damage to the pipe bells or spigots. Wood cushions between the backhoe bucket and the pipe are particularly effective in preventing damage.



Backhoe and Heavy Equipment Methods