



Operations and Maintenance Procedures

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O&M Section # 12.3	SCUD Task # 100, 101, 102
Section: Construction/Operations	Revision Date: 09/06/16

Joining of Plastic Pipe – Butt Heat Fusion: Manual

SCOPE AND PURPOSE

This procedure is to provide personnel with safe and effective activities to produce strong gastight joints utilizing butt heat fusion techniques.

It describes practices required to comply with §192.281(a) and (c)(1)-(c)(4).

RESPONSIBILITY

The Main Line Supervisor, Service Line Supervisor, Maintenance Supervisor, or other designee, is responsible to ensure that joining plastic pipe by butt heat fusion is performed as described in this procedure.

PERSONNEL SAFETY

Every reasonable precaution shall be taken to protect employees and the general public.
Avoid using fusion machine in a combustible gas atmosphere.

EQUIPMENT AND MATERIALS

Butt Fusion Machine
Facing Unit
Heating Tool
Electrical Power Source
Other Equipment and Materials as Needed

OPERATOR QUALIFICATION

This activity is a covered task under the Operator Qualification Plan and may only be performed by an individual who is currently qualified to perform this task. Refer to the OQ Plan for specific qualification requirements.

INSTRUCTIONS

Maintenance and Operation of Equipment

All equipment shall be operated and maintained in accordance with the manufacturers' instructions.
The manufacturers' instructions shall take precedence if a conflict appears with these instructions.

General

- Manufacturers may have a similar but slightly different approach regarding plastic pipe heat fusion; however, pipe melt patterns must be joined with a specified amount of force and maintained in a immobile position until adequately cooled as described in the manufacturer's instruction manual. Personnel performing butt heat fusion production joints shall follow each respective joining procedure.
- Coated butt fusion heater plates should be attached to heating tool. The heater plate surfaces are coated with an anti-stick coating and must be clean and free of any contamination.
- When cross fusing (joining medium density to high density pipe), use a compatibility insulator "heat shield". Place the compatibility insulator against the medium density pipe. Remove the compatibility insulator once 50% of the normal melt pattern has been reached. This helps ensure that both pipe ends will melt equally.

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Manual Steps

1. Plug heating tool in a proper power source and place into an insulated heater stand. Allow the heater to warm-up and reach operating temperature. (400-450 degrees)
2. Install proper inserts into the clamps of fusion machine for the pipe size to be fused.
3. Position pipe into fusion machine by opening the upper section of clamps and insert pipe. The pipe ends should extend slightly beyond the clamps.
4. Close upper section of clamps and rotate clamp knobs until pipe is securely tighten in place. This will prevent pipe slippage when facing and joining.
5. Thoroughly clean pipe ends removing dirt and other debris.
6. Place facing unit between the pipe ends onto guide rods and lock into position. Use the lever handle to bring pipe ends together against the facer. Turn facer handle counter clockwise while applying firm pressure on the lever handle. Continue operating facer until facer stops have bottomed out against the clamps.
7. Remove facer by unlatching from guide rod.
8. Remove shavings being careful not to touch the newly faced pipe ends. Body oils can contaminate pipe ends causing inadequate fusion.
9. Bring pipe ends together again and check for proper alignment. If necessary, adjust high side down by tightening clamp. Once pipe is properly aligned, use the lever handle to separate pipe.
10. Once heating tool has reached acceptable surface temperature, position between pipe ends. Use the lever handle to bring pipe ends against heater surface making full contact Hold pipe ends in contact with the heater until melt swell beads have reached the proper size.
11. Use the lever handle to separate pipe ends and remove the heating tool being careful not to displace melt.
12. Quickly bring pipe ends together using enough pressure to roll the melt swell beads over the pipe surface creating a double bead. **DO NOT SLAM ENDS TOGETHER.** Hold this pressure for the acceptable cooling time. Refer to manufacturer’s manual for melt swell bead width guidelines, cooling time and proper appearance of double bead.
13. Once the pipe has sufficiently cooled, remove from fusion machine.
 - * Visually examine the joint for compliance.

REPORTING/NOTIFICATION

Complete documentation in accordance with Operation and Maintenance Manual.

RELATED PROCEDURES

CONST008 – Joining of Plastic Pipe - Butt Fusion – Hydraulic Machine