

METROPOLITAN UTILITIES DISTRICT	Construction Standard	No: 11.7.1
Prepared by: Rich Baird	Sidewall Fusion-Corp. Saddles on HDPE Water Pipe	Page: 1 of 5
Approved by: James Bartels		<u>Supersedes:</u> 10-3-24
		Effective: 1-10-26

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I. GENERAL

This Construction Standard covers the procedures for sidewall fusion of water corporation saddles on 6" and larger HDPE water pipe using the McElroy Sidewinder. All side wall fusion of water corporation saddles shall be installed by District crews or approved contractors. District crews shall be trained and certified to install sidewall fittings by District training employees designated by the Director of Construction. Contractors shall install sidewall fittings in accordance with this standard by persons certified with qualifications listed in MUD 120 and/or contract specifications.

The saddle fusion procedure is an alternative method to electrofusion. The saddle fusion procedure involves melting the base of a saddle fitting, simultaneously melting a matching pattern on the surface of the main, and joining these two molten surfaces.

II. SAFETY PRECAUTIONS

The following precautions must be followed to ensure safe operations.

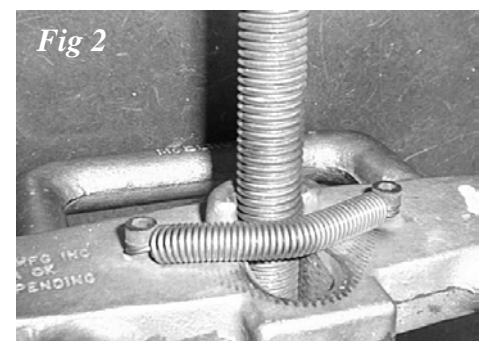
1. Wear suitable work gloves and eye protection.
2. Only employees or contractors who have been properly qualified shall perform fusions and taps on any mains under pressure.
3. The appearance of the melt bead must be verified. See [Section 3, Step 8](#).
4. Temperatures of saddle fusion heater plates must be checked periodically to ensure they are at the recommended operating temperature.
5. All fusion cooling times must be followed before testing the saddle and making the tap.

III. SADDLE FUSION PROCEDURE

McElroy Sidewinder fusion equipment shall be used for sidewall fusion of corporation saddles onto HDPE water mains as an alternative to electrofusion.

The PE fusion heater face shall be checked periodically with a digital or laser pyrometer as shown in Fig 1. The heater's temperature gauge shall be set at 520°. As the temperature gauge only indicates internal temperature, the heater's face will have a temperature slightly lower than that of the temperature gauge. The heater face plates should read 500° ± 10°F.

Pressure is applied with the Sidewinder by a screw which engages in a split nut as shown in Fig 2. A turn of the drive screw knob will apply force (0 to 1000 lbs.) with very little effort. A reaction spring keeps the drive screw engaged in the pressure mode.

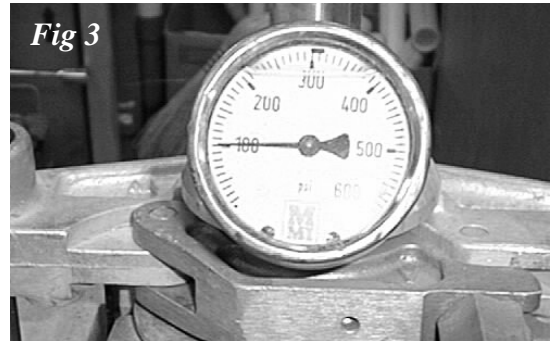


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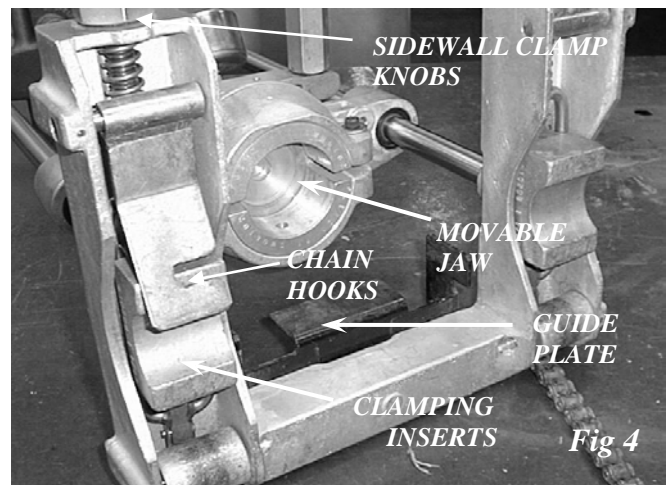
To disengage the drive screw, simply pull the screw against the reaction spring free of the split nut. See Fig 2. The drive screw and clamp will then slide freely up and down the guide rods. To release pressure, turn the drive screw knob counter-clockwise until the gauge reads zero.

The pressure gauge is actuated by a load cell, which is the conical part attached to the movable clamp. This gauge accurately displays actual force pounds being generated. Gauge is shown in Fig 3.



The Sidewinder is virtually maintenance free, but care should be taken to keep the machine clean. The rubber wipers and seals require occasional light lubrication to keep them flexible and in good working condition. Spray the split nut (threaded surface) as needed with a lubricant such as WD – 40 to maintain smooth action.

1. Select the appropriate saddle fusion heater adapters and attach to the heater plate using the screws provided (1/4" – 20 x 2" long). Plug in heater (110 VAC only) and place in the storage box.
2. Loosen the sidewall clamp knobs and remove the chain from the chain hooks. See [Fig 4](#).



NOTE: The unit is equipped with a Sidewinder Heater Guide. Its purpose is to align the heater, so the melted area on the main will line up with the fitting at Fusion. This is a two-position guide and will be installed in the front position. See Fig 4 for the location of the guide plate.

3. Remove the sidewall clamping inserts for 6" and 8" DIPS mains.
4. Remove the fitting inserts from the movable clamping jaw as shown in Fig 5.



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- Place the Sidewinder on the water main in the desired position as shown in Fig 6. Bring the chains around the main. Place one chain in the chain hook and tighten it. Wait approx. 10-15 sec. before hooking and tightening the other chain. **NOTE: Do not over tighten! Over tightening can flatten the main and make it difficult to obtain a melt pattern.**

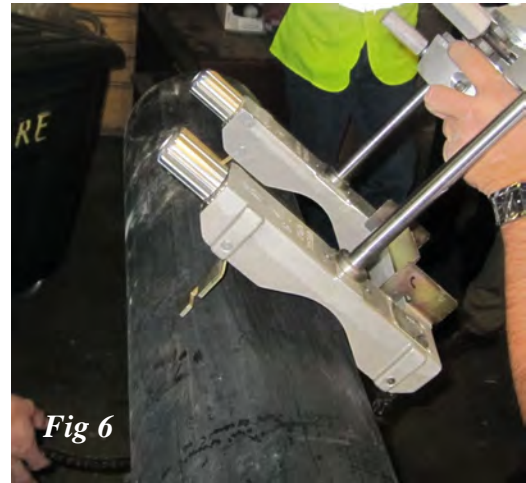


Fig 6

- Clean the fitting base and pipe with 50 or 60 grit emery cloth to remove skin surface from pipe to be melted as shown in Fig 7.

Remove residue with a clean, dry, non-dyed, lint-free cloth or paper towel after sanding. See Fig 8.



Fig 7



Fig 8

Avoid touching the cleaned mating surfaces as body oils and other contaminants can affect fusion joint performance. If the surfaces become contaminated, repeat the cleaning process.

- Place the fitting in the machine and bring down to the main as seen in Fig 9. Make sure the fitting is seated properly on the main and tighten the movable clamping jaw enough to secure the fitting in the unit. **NOTE: Do not over tighten.**

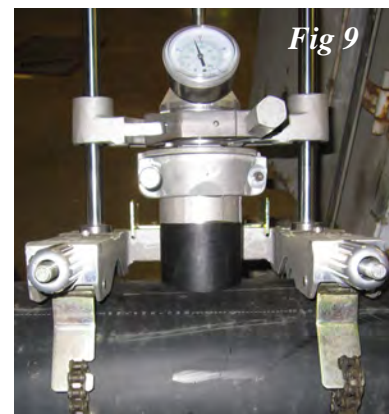


Fig 9

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8. For 6” and 8” mains, rest the heater plate on the main without any down pressure for approximately 10 seconds. Apply 150 to 200 lbs. of down pressure for about 20 seconds or until the melt bead is of the proper size.

The heating iron shall be removed when a complete melt bead can be seen on the main as shown in Fig 10. A bead of 3/16” should be seen on the main.

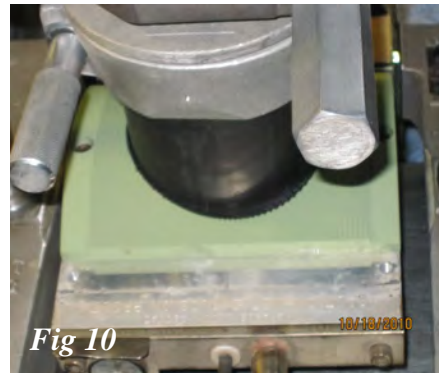


Fig 10

9. Return the machine to zero pressure, pull the drive screw forward to clear the split nut, and pull upward on the drive screw. Give the heater handle a downward snap to break the bond between the heater and fittings. Visually inspect the melt pattern. See Fig 11.

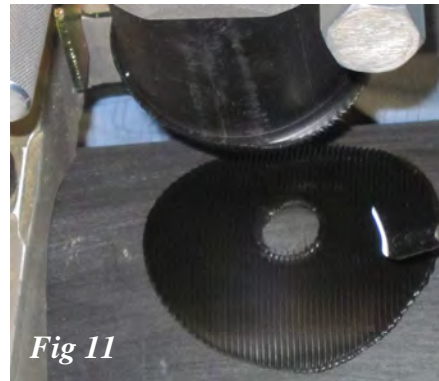


Fig 11

10. Quickly set the tapping saddle on the main and apply 100 lbs. of down pressure as shown in Fig 12. Maintain this pressure for a minimum of 10 minutes until your finger can remain comfortably on the bead, then remove the machine.



Fig 12

11. On the pipe next to the fusion area, write down the following information using a fast-drying permanent visible marker of contrasting color to the pipe that does not contain oils or other ingredients that could accidentally contaminate a prepared pipe surface (see [Section VI](#) below for cooling times):

- a. Time of day fusion process is complete
- b. District employee number or installer name
- c. Date of fusion

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NOTE: If inspection reveals the fusion is not complete, do not tap the main. Abandon the fusion saddle in place but strip the threads so there won't be any attempt to use it again.

NOTE: During cold weather, the heat time may have to be increased to get the proper melt pattern. Never raise the tool temperature or increase downward pressure. Increase time only.

VI. COOLING TIME

IMPORTANT NOTE: Proper installation of the saddle requires the recommended cooling times are observed.

1. Leave the sidewinder in place for a minimum of 10 minutes of "clamping" time before removing
2. Allow joint to cool additional 30 minutes before subjecting the joint to rough handling (e.g. bending, burying, pressure testing, etc.)
3. Inspect the fusion. A good bond has a melt squeezed out completely around the edge of the saddle base as shown in Fig 13



Fig 14

4. Install corporation, leak test and tap according to Construction Standard [6.0.6](#).

Revision

The latest revision is detailed on the following page(s).

Pages affected: #1, #3, #4, #5 & #6

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I. GENERAL

This Construction Standard covers the procedures for sidewall fusion of water corporation saddles on 6” and 8”larger HDPE water pipe using the McElroy Sidewinder. All side wall fusion of water corporation saddles shall be installed by ~~MUD-District~~ crews or approved contractors. ~~MUDDistrict~~ crews shall be trained and certified to install sidewall fittings by District training employees designated by the Director of Construction. Contractors shall install sidewall fittings in accordance with this standard by persons certified with qualifications listed in MUD 120 and/or contract specifications.

The saddle fusion procedure is an alternative method to electrofusion. The saddle fusion procedure involves melting the base of a saddle fitting, simultaneously melting a matching pattern on the surface of the main, and joining these two molten surfaces.

II. SAFETY PRECAUTIONS

The following precautions must be followed to ~~insure~~ensure safe operations.

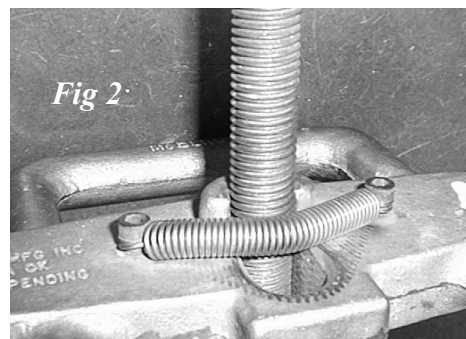
1. Wear suitable work gloves and eye protection.
2. Only employees or contractors who have been properly qualified shall perform fusions and taps on any mains under pressure.
3. The appearance of the melt bead must be verified. See Section 2, step 8.
54. Temperatures of saddle fusion heater plates must be checked periodically to ensure they are at the recommended operating temperature.
65. All fusion cooling times must be followed before testing the saddle and making the tap.

III. SADDLE FUSION PROCEDURE

McElroy Sidewinder fusion equipment shall be used for sidewall fusion of corporation saddles onto HDPE water mains as an alternative to electrofusion.

The P.E. fusion heater face shall be checked periodically with a digital or laser pyrometer as shown in Fig 1. The heater’s temperature gauge shall be set at 520°. As the temperature gauge only indicates internal temperature, the heater’s face will have a temperature slightly lower than that of the temperature gauge. The heater face plates should read 500° ± 10°F.

Pressure is applied with the Sidewinder by a screw which engages in a split nut as shown in Fig 2. A turn of the drive screw knob will apply force (0 to 1000 lbs.) with very little effort. A reaction spring keeps the drive screw engaged in the pressure mode.



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- Place the Sidewinder on the water main in the desired position as shown in Fig 6. Bring the chains around the main. Place one chain in the chain hook and tighten it. Wait approx. 10-15 sec. **B**efore hooking and tightening the other chain. **NOTE: Do not over tighten! Over tightening can flatten the main and make it difficult to obtain a melt pattern.**



- Clean the fitting base and pipe with 50 or 60 grit emery cloth to remove skin surface from pipe to be melted as shown in Fig 7.

Remove residue with a clean, dry, non-dyed, lint-free cloth or paper towel after sanding. See Fig 8.

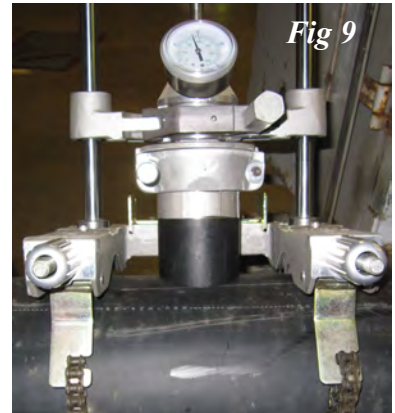


Avoid touching the cleaned mating surfaces as body oils and other contaminants can affect fusion joint performance. If the surfaces become contaminated, repeat the cleaning process.

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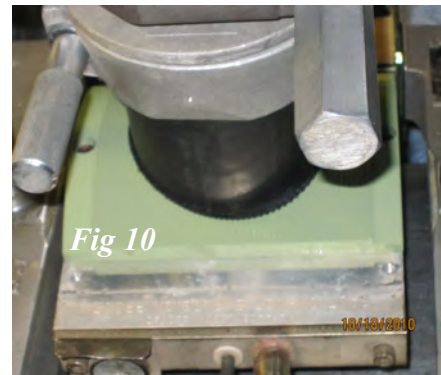
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- Place the fitting in the machine and bring down to the main as seen in Fig 9. Make sure the fitting is seated properly on the main and tighten the movable clamping jaw enough to secure the fitting in the unit. **NOTE: Do not over tighten.**

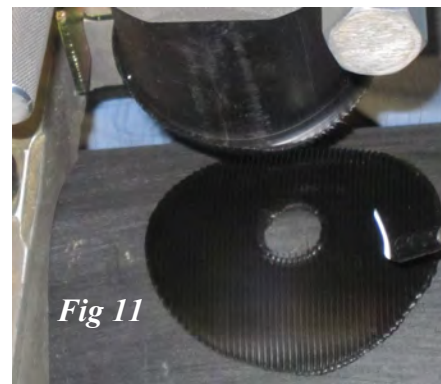


- For 6" and 8" mains, rest the heater plate on the main without any down pressure for approximately 10 seconds. ~~and then a~~ Apply 150 to 200 lbs. of down pressure for about 20 seconds or until the melt bead is of the proper size.

The heating iron shall be removed when a complete melt bead can be seen on the main as shown in Fig 10. A bead of 3/16" should be seen on the main.



- Return the machine to zero pressure, pull the drive screw forward to clear the split nut, and pull upward on the drive screw. Give the heater handle a downward snap to break the bond between the heater and fittings. ~~Give a quick visual inspection of the melt pattern~~ **Visually inspect the melt pattern.** -See Fig 11.



- Quickly set the tapping saddle on the main and apply 100 lbs. of down pressure as shown in Fig 12. Maintain this pressure for a minimum of 10 minutes until your finger can remain comfortably on the bead, then remove the machine.



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11. On the pipe next to the fusion area, write down the following information using a fast-drying permanent visible marker of contrasting color to the pipe that does not contain oils or other ingredients that could accidentally contaminate a prepared pipe surface (see Section VI below for cooling times):

- a. Time of day fusion process is complete
- b. District employee number or installer name
- c. Date of fusion

VI. COOLING TIME

IMPORTANT NOTE: Proper installation of the saddle requires the recommended cooling times are observed.

1. Leave the sidewinder in place for a minimum of 10 minutes of “clamping” time before removing
2. Allow joint to cool additional 30 minutes before subjecting the joint to rough handling (e.g. bending, burying, pressure testing, etc.)

13. Inspect the fusion. A good bond has a melt squeezed out completely around the edge of the saddle base as shown in Fig 13



4. Install corporation, leak test and tap according to Construction Standard 6.0.6

NOTE: If inspection reveals the fusion is not complete, do not tap the main. Abandon the fusion saddle in place but strip the threads so there won't be any attempt to use it again.

NOTE: During cold weather, the heat time may have to be increased to get the proper melt pattern. Never raise the tool temperature or increase downward pressure. Increase time only.

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VI. COOLING TIME

~~IMPORTANT NOTE: Proper installation of the saddle requires the recommended cooling times are observed.~~

- ~~1. Leave the sidewinder in place for a minimum of 10 minutes of “clamping” time before it can be removed. With a felt tip marker, note the time on the pipe when the sidewinder can be removed.~~
- ~~2. Remove the sidewinder after the “clamping time” is complete. ***NOTE: Do not bend or bury until the joints have cooled to ambient temperatures.***~~
- ~~3. Install corporation, leak test, and tap according to Construction Standard 6.0.6.~~