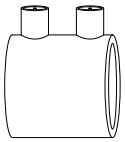
SAFETY

- MTD EF Fittings are rated to MOP of 125psi for GAS and 200psi for WATER at 10°F to 120°F.
- All operators must be qualified in accordance with 49 CFR 192 Subpart N.
- For processor operation, refer to manual provided with your processor.
- Ensure pipe conforms with labeled standards prior to joining.
- Pipe surface must be clean, dry and properly prepared prior to introducing a fitting.
- Always follow proper grounding procedures to avoid static buildup and potential arcing / ignition.
- Never scan barcodes of fittings other than the fitting connected to your processor.

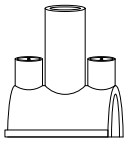
SOCKET-INTERFACE FITTINGS JOINING INSTRUCTIONS



Couplings
Elbows
Three-Way Tees
End Caps
Reducers

1. **Wash Pipe - 3x**
   Wash 3x the length required by the fitting with water and a cloth to remove dirt/mud from pipe surface.
2. **Prepare Pipe Ends**
   Cut pipe ends relatively square, within 5°. Remove burrs / shavings from ends. Remove any toe-in from pipe end(s).
3. **Clean Pipe - 2x**
   Clean 2x the length required by the fitting with alcohol (90% or higher concentration).
4. **Set and Mark Fusion Area**
   Make stab mark on pipe equal to fitting stab depth + one inch. Do not remove fitting from bag. Use contrasting marker to fill area with witness marks.
5. **Peel Pipe**
   Peel from pipe end to stab mark. Remove all witness marks. Remove a minimum of 0.007" of pipe surface for successful fusion. Multiple passes may be required.
6. **Clean Pipe - Final 1x Pass**
   Clean the peeled area with alcohol (90% or higher concentration) and a clean, lint-free cloth or wipe. Do not wipe outside peeled area.
7. **Clean Fitting**
   Remove bag from fitting. Clean fusion mat with alcohol (90% or higher concentration) and a clean lint-free cloth or wipe. Do not touch inside of fitting with anything other than cleaner.
8. **Re-Mark Stab Depth**
   Use stab depth indicator or measurement to make a mark on peeled pipe.
9. **Fit Joint**
   Slip pipe ends into fitting until fully stabbed. Fitting edge should meet stab depth mark.
10. **Clamp Joint**
    Install clamping tool around fitting. Check that fitting has not moved.
11. **Energize Fitting**
    Follow manufacturer's instructions for processor to energize and fuse fitting to pipe. Only scan fitting being fused.
12. **Verify and Mark Pipe**
    Write operator's initials, time that heating cycle was completed, clamping time and rough handling time on the pipe.

SADDLE-INTERFACE FITTINGS JOINING INSTRUCTIONS



Branch Saddles
Tapping Tees
HV Tapping Tees
Repair Saddles
Gasket Saddles

1. **Wash Pipe - 3x**
   Wash 3x the length required by the fitting saddle with water and a cloth to remove dirt/mud from pipe surface.
2. **Clean Pipe - 2x**
   Clean 2x the length required by the saddle with alcohol (90% or higher concentration).
3. **Set and Mark Fusion Area**
   Make two marks on pipe equal to width of saddle plus one inch on each side. Fill in with witness marks.
4. **Peel Pipe**
   Peel pipe between width marks. Remove all witness marks. Remove a minimum of 0.007" of pipe surface for successful fusion. Multiple passes may be required.
5. **Clean Pipe - Final 1x Pass**
   Clean the peeled area with alcohol (90% or higher concentration) and a clean, lint-free cloth or wipe. Do not wipe outside peeled area.
6. **Clean Fitting**
   Remove bag from fitting. Clean fusion mat with alcohol (90% or higher concentration) and a clean, lint-free cloth or wipe. Do not touch inside of fitting with anything other than cleaner.
7. **Fit Joint**
   Place saddle on peeled area and tighten. Fitting is tight enough when it does not rotate on the pipe when pushed with reasonable force.

   For molded underclamps, loosen screws and snap underclamp around pipe. Tighten screws to tighten fitting to pipe.

   For strap underclamps, remove nuts on one side, pass U-bolt under pipe, reinstall U-bolt in fitting base and tighten nuts to tighten fitting to pipe.

   For 1-1/4" main sizes, an external underclamp is required.

   DO NOT USE pneumatic tools to tighten fittings.
8. **Re-Mark Width**
   Make marks against both sides of saddle to monitor fitting movement.
9. **Energize Fitting**
   Follow manufacturer's instructions for processor to energize and fuse fitting to pipe. Only scan fitting being fused.
10. **Verify and Mark Pipe**
    Write operator's initials, time that heating cycle was completed, clamping time and rough handling time on the pipe.

This sheet is not intended to take the place of qualification training, nor does it replace full installation instructions. Rather, this sheet is intended to provide quick reference to field installers. Comprehensive installation instructions are available at **www.isco-pipe.com** or scan the QR code to the left with your mobile device.

MTD

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COOLING INSTRUCTIONS

Total cooling time includes two phases: Clamping Time and Rough Handling Time. Rough handling time is total, not additional to clamping time.

1. **Clamping Time**
   Allow joint to remain in the clamp and cool for the time specified on the label and molded into the fitting body. Clamp may be removed after clamping time has passed.

2. **Rough Handling Time**
   Allow the joint to cool for its rough handling time prior to pressure testing, backfilling, fusing tee outlet, tapping, etc.

Determining Cooling Time

Every MTD fitting is labeled with a cooling time. The cooling time is also contained within the white fusion barcode and is displayed on most electrofusion processors. The time labeled on the fitting is Clamping Time. Refer to manual for details.

- For Rough Handling Time on saddle fittings, triple the labeled cooling time.
- For Rough Handling Time on socket fittings, double the labeled cooling time.

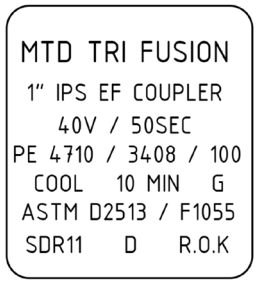
FITTING LABELS / STAMPS

All MTD fittings are labeled and stamped with important information. Labels may vary slightly, but the information contained does not.

1. **Fusion Barcode Label**
   This black and white label includes fitting description, fusion time, cooling time, lot number and ISO 13950 fusion barcode.

2. **Traceability Barcode Label**
   This black and yellow label includes the ASTM F2897 tracking & traceability barcode. It contains no human-readable information and must be read and decoded by a device.

3. **Data Stamp**
   This information is molded into the body of the fitting. It includes fitting branding, description, fusion voltage and time, fitting material, cooling time, standards information, DR rating, country of origin and 'G' indicating for fuel gas service.



TAPPING TEE OPERATION

To perform a tap with a tapping tee:

1. **Close Outlet**
   Before tapping, the outlet of the tapping tee must be closed, either with a service line or test plug.

2. **Test Fusion Joints**
   Perform leak testing on the tap tee base and tap tee outlet, as well as any service line fusions.

3. **Insert Tapping Tool**
   Remove cap from tap tee and insert appropriate tapping tool.

4. **Tap Main**
   For standard tapping tees, thread the tool onto top of the tap tee in place of cap, then rotate the tapping tool clockwise until the travel stop touches the top of the tool. Rotate the tapping tool counter-clockwise to retract. Once cutter reaches top of tap tee, remove tool.

   For high-volume tapping tees, insert tool into cutter and rotate counter-clockwise to retract to top. Thread back pressure safety adapter into cutter. Thread tool onto top of the tap tee in place of cap, then rotate tapping tool clockwise until the travel stop contacts the top of tool. Rotate tapping tool counter-clockwise to retract. Once cutter reaches top of tap tee, remove tool.

5. **Replace Cap**
   Reinstall cap on tap tee. Tighten by hand or with cap wrench.

JOINT ABNORMALITIES - QUICK GUIDE

This section is intended to be used as quick field guidance. Consult full training & installation manual for comprehensive guidance and definitions.

1. **Melt-Out**
   Flow of molten plastic outside of the fusion joint is not acceptable. This can indicate a loss of interface pressure, or an excessive concentration of heat and pressure in one area of the joint. Joints with melt-out beyond the edge of the fitting should be cut out or abandoned.

2. **Smoke Production**
   Electrofusion fittings may <u>rarely</u> produce a small amount (wisps) of smoke during the heating cycle or shortly after. Smoking is acceptable only if:

   - There is no accompanying ejection of material, and
   - Smoke is not being forcefully expelled (blowing) from the fitting, and
   - The joint passes a field pressure test after fusion and cooling.

3. **Visible Wire**
   Visible wire inside the edge of an electrofusion fitting is acceptable <u>only</u> if:

   - There is no accompanying forceful ejection of plastic material, and
   - The visible wire is not protruding beyond the edge of the fitting.

   Visible wire protruding outside the edge(s) of the fitting may indicate a loss of fusion pressure, and joints displaying this abnormality should be cut out or abandoned.

⚠ Some company procedures completely and expressly disallow fusion anomalies such as smoke production or wire migration. If this is the case, your company procedures must be followed in lieu of the guidance in this section.