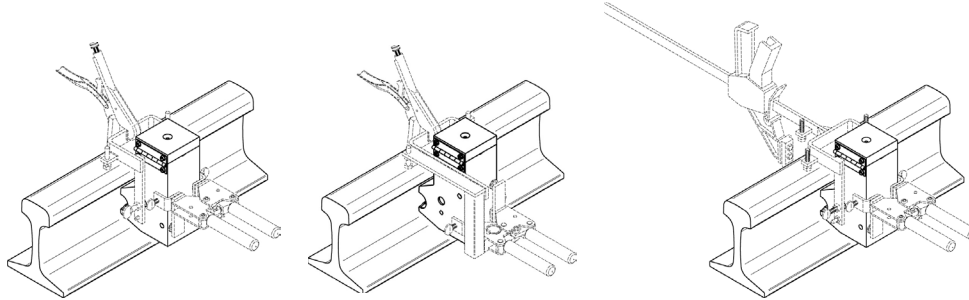


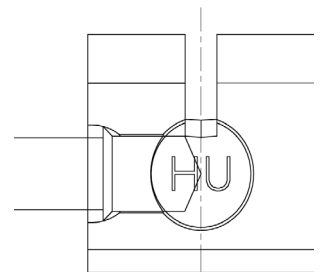
ULTRAWELD®

INSTRUCTIONS FOR ULTRAWELD® GROUNDING CONNECTIONS CABLE TO WEB OF RAIL

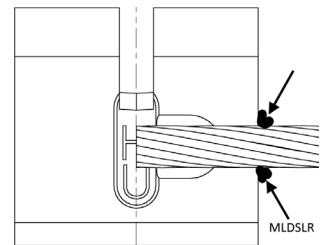


**INSTALLED MOLD AND FRAME ASSEMBLIES
FRAMES AND HANDLES SOLD SEPARATELY**

1. See reverse side of this page for preparation of cable, bond-ends, rail surfaces, and safety precautions.
2. Install selected frame and handle on the mold.
3. Prior to locking the mold to the rail web: For field-made and pre-fabricated bond terminals with a flare, insert the bond-end into the mold until the sleeve flare prevents it from entering any further. See Figure 1. For bond terminals without a flare, insert the bond-end into the mold until the end of the cable is centered on the tap hole. For bare copper conductors, insert the end of the cable into the mold until it is centered on the tap hole. See Figure 2. Do not cut conductor for thru-connections of bare copper conductor. See Figure 3.
4. While holding the conductor in place, engage the frame or clamp onto the rail to secure the mold in place. The weld shall be performed on the web of the rail, at or near the neutral axis of the rail. For additional installation requirements, refer to Chapter 4 of AREMA's *Manual for Railway Engineering*.
5. Mold Sealer (MLDSLR) is required when welding bare copper conductors without bond terminals. See Figures 2 and 3. Do not allow MLDSLR to contaminate inside of weld cavity, end of cable, or location on rail where weld will be performed. Failure to do so may cause the spewing of molten weld metal and porous welds. MLDSLR is not required for conductors with bond terminals.
6. Follow the steps outlined on the reverse side of this sheet for welding instructions.



**FIGURE 1 - DEAD END BOND
TERMINAL**



**FIGURE 2 - DEAD END
CONDUCTOR**

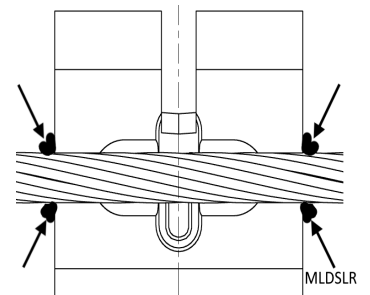
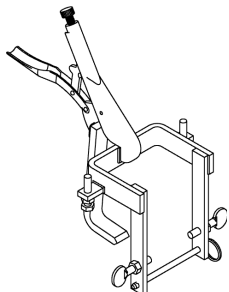
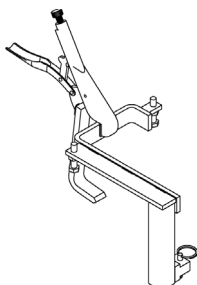


FIGURE 3 - THRU CONDUCTOR

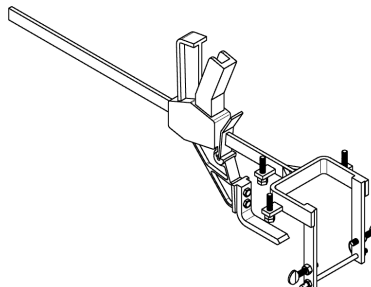
AVAILABLE HANDLE CLAMP / FRAME ASSEMBLIES



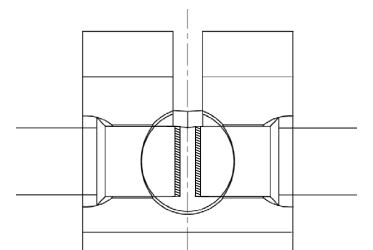
RMFRMW105C



RMWC1



RMFRMW105IB4



**FIGURE 4 - THRU
FIELD MADE BOND**



INSTRUCTIONS FOR ULTRAWELD® GROUNDING CONNECTIONS

CABLE TO WEB OF RAIL

WARNING: Do not attempt to make an exothermic connection until you have thoroughly read and understood the instructions that accompany all of the various components of the system and have been factory trained and certified by an authorized trainer.

GENERAL SAFETY INSTRUCTIONS

1. Always wear proper clothing, safety glasses and gloves when exothermic welding.
2. Only weld items mold is designed for.
3. Do not use excessively worn or broken molds which could cause leakage of molten weld metal.
4. Ensure that all components to be welded fit into the mold properly and that the mold will close tightly.
5. Do not alter molds or accessories without factory authorization.
6. Avoid breathing concentrations of smoke, as it may be hazardous to your health.
7. Avoid contact with hot materials.
8. Remove or protect fire hazards in the welding area.
9. Avoid moisture and contaminants in the mold and materials being welded. Contact of molten weld metal with moisture or contaminants may cause weld metal to spew out of mold.

PREPARATION OF CABLE

1. Cable must be bright, clean and dry.
2. Cable that is saturated with oil or grease must be cleaned.
3. Cable may be cleaned by burning it off with a torch (gasoline blow torch, butane torch, acetylene torch).
4. After burning off oil or grease, a wire brush should be used to remove residue. Wet cable must be dried out. Use a hand torch.
5. Cable must be clean and free of corrosion. Use #CCBRSH1, Card Cloth Brush or #CCBRSH2, Cable Cleaning Brush. It is important that the ends of the individual strands are clean. This can best be accomplished by making a fresh cut on the end of the cable.
6. Cable should be straightened before clamping mold in place. Bent or out of round cable will hold mold open and cause leakage.
7. If using a saw to cut insulated cable, remove insulation from insulated cable before cutting. Failure to do so may cause strands to be coated with insulating material which may cause a defective connection.
8. A sleeve must be used when welding flexible cable.

PREPARATION OF RAIL

1. Surface to be welded must be bright clean and dry.
2. Remove rust and mill scale with coarse file or grinder.
3. Remove oil, grease or pitch coatings with a solvent or torch.
4. Galvanizing should be removed from surfaces to be welded.

WELDING PROCEDURE

1. Check mold tag for material to be welded and proper cartridge size to use.
2. Ensure all surfaces and conductors are clean, dry, and are the proper sizes for the mold's application.
3. Molds can be dried by heating to approximately 250°F and may be dried with a hand operated torch.
4. Position mold onto conductor(s). See front of this sheet for positioning of conductors in mold. If required, lock mold with handle clamps or fame.
5. Before igniting, verify conductor positioning and that mold is closed completely.
6. Insert UltraShot® cartridge into mold, close the lid and attach a Drone® cord lead to the cartridge igniter.
7. Ensure the igniter is inserted fully into Drone® cord lead.
8. Start the reaction process by pressing both buttons on the controller.
9. Wait approximately 30 seconds before opening mold to allow connection to completely solidify.
10. Clean the mold with a natural bristle brush or soft cloth prior to making next connection. On horizontally split molds, use an appropriately sized mold cleaning spade to remove slag from tap hole.

DO NOT USE A WIRE BRUSH TO CLEAN MOLD

SAFETY AND PRECAUTIONS

WARNING: Back-to-back bonding of web connections is strictly forbidden! Failure to observe this may result in a rail break leading to property damage, injury, or death.

WARNING: The location of the bond is very important! Rail track connection web bonds must be made at the neutral axis of the rail. Failure to observe this may result in a rail break leading to property damage, injury, or death. **Track connection bonding shall not be performed on or near the head outside the confines of the rail joint bar, or to the base of the rail.**

CAUTION: Grinding and cleaning must not be performed more than 2 hours prior to bonding. If the time lapse exceeds this requirement, sufficient contaminating oxidation may develop requiring additional preparation. Failure to observe this may result in a less than optimal bond.

WARNING: The rail and mold must be warmed to drive off moisture. Failure to observe this may result in molten weld metal spewing with the potential for serious burn injury, and a less than optimal bond with excessive porosity.

WARNING: Re-welding near an earlier web bond is strictly forbidden! Failure to observe this may result in a rail break leading to property damage, injury, or death.