ES-71069

Procedure For Terminating Shielded And Nonshielded Wires To MTC50 Connectors

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Contents

1.0 Purpose and Scope

This standard covers MTC50 connector termination of shielded and nonshielded round wires, AWG 26 and 24, in cable bundles. Shield termination is covered for component cables within the bundle.

2.0 References

ES-61402 Operating and maintenance Manual Waffle Iron II Heating Tool.

ES-61408 Terminating Round Wires to MTC50 Connector Inserts Using Preassembled SolderSleeve Terminators and a Sealing Boot.

MIP-101 Tinel lock installation procedure.

3.0 Tools

Raychem CE-1404200 Waffle Iron.

Raychem AA-400 SuperHeater Hot Air Heating Tool with Needle Point Tip.

Raychem CV-5000-750 Thermogun Hot Air Heating Tool or Equivalent.

Raychem CV-5700 Mini-Gun 3 Heating Tool or Equivalent.

Raychem D-659-0001 Insert Removal Tool or Equivalent.

#1 Phillips Screwdriver.

Shear-type cutter for primary wires.

Wire stripper.

Small diagonal cutter or scissors for braid.

4.0 Materials

SolderSleeve* shield terminators for shields of individual cables.

Thermofit RNF-100 sleeving.

Utility tape.

S1125 adhesive.

*SolderSleeve is a registered trademark of Raychem Corporation.

5.0 Termination Procedures

6.0

5.1 Primary Wire Preparation

1. Cut the wires and component cables slightly longer than the reference length of the harness (Figure 5-1).

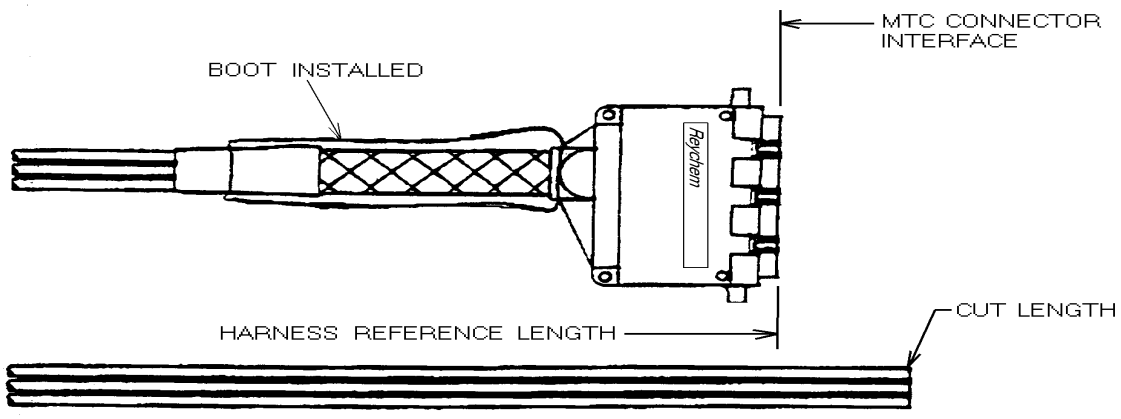

Figure 5-1. Cable Length Determination.

2. Slide a 2-inch length of RNF-100 heat-shrinkable protective sleeving over the bundle and shrink it into position as shown in Figure 5-2.

- Select the smallest diameter sleeving that will slide easily over the cable bundle, or refer to drawing or wire list for size of sleeving for each cable.

- Use the Mini-Gun heating tool with a tubing reflector.

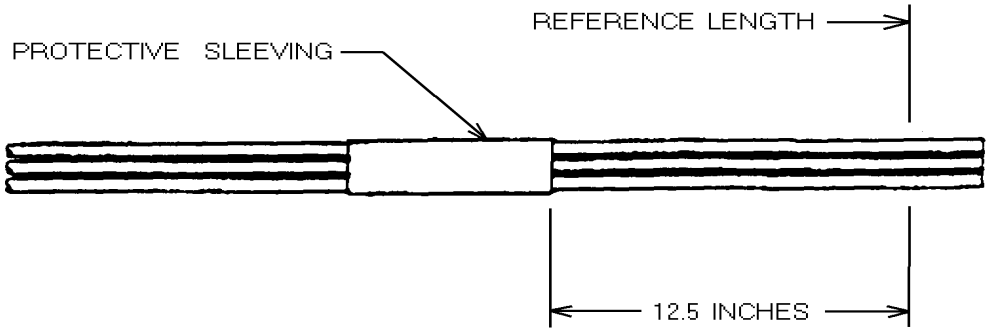

Figure 5-2. Heat-Shrinkable Sleeving Positioned on Harness.

3. Strip jackets of shielded component cables for shield terminator installation (Figure 5-3).

    - Stagger the shield termination positions between 6 and 9 inches from reference length as shown, to prevent diameter buildup.

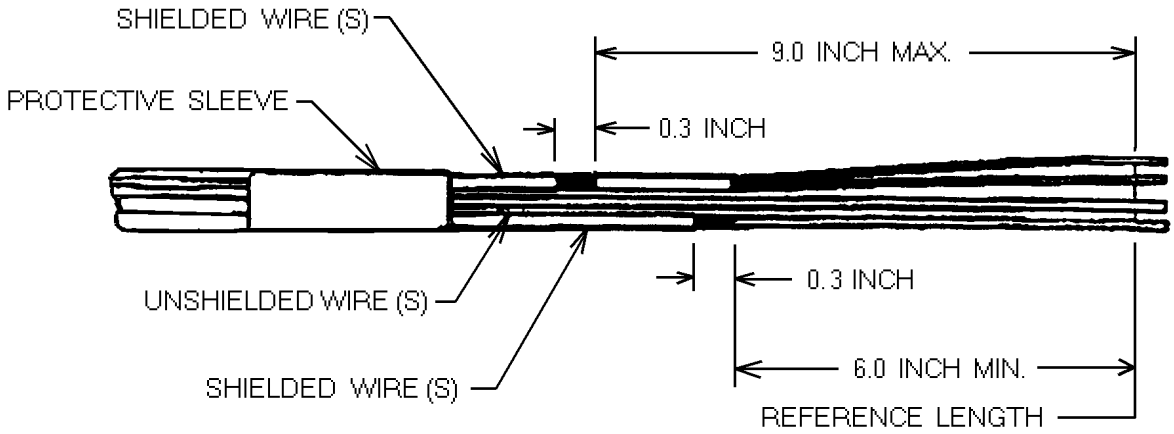

Figure 5-3. Strip Length for Shielded Component Cables.

4. Position the SolderSleeve shield terminators over the exposed shield braid as shown in Figure 5-4.

    - Check drawing for shield terminator part number, or select smallest shield terminator that slides easily over wire.
    - Prepare ground wires. Strip to 0.3 inch.
    - Make sure that the solder perform is centered over the stripped length of shield braid, and the stripped ground lead is centered over the braid.

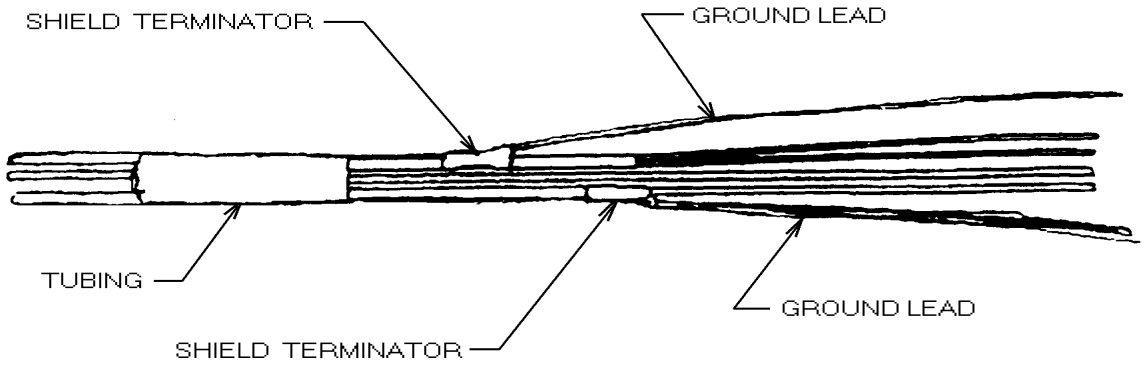

Figure 5-4. Shield Terminator Positioning.

5. Heat the shield terminators using the AA-400 SuperHeater.
   - Use the large SolderSleeve reflector.
   - Direct the hot air at the solder perform until the solder melts and flows, forming a fillet between the ground lead and the shield. The thermal indicator material inside the sleeve will lose its color when enough heat has been applied.

6. Cut the primary wires to the lengths required.
   - Use of a fixture is recommended to dress the wires into the proper breakout for the terminals of the MTC connector inserts (Figure 5-5).

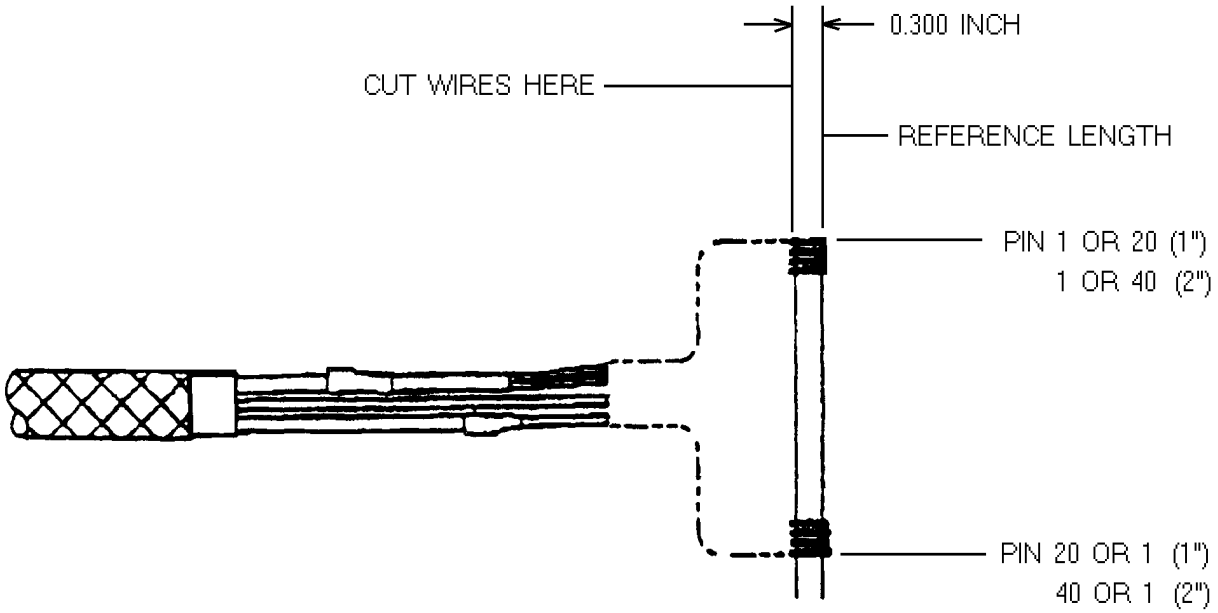

Figure 5-5. Primary Wire Breakout for MTC50 Connector.

7. Install any wire marking sleeves onto primary wires, if required, and shrink into position. Slide the tubing (to hold shield), boot and braid over the cable and position them several inches from the end of the cable.

8. Install the tinel ring and adapter onto the bundle and push it out of the way (Figure 5-6).

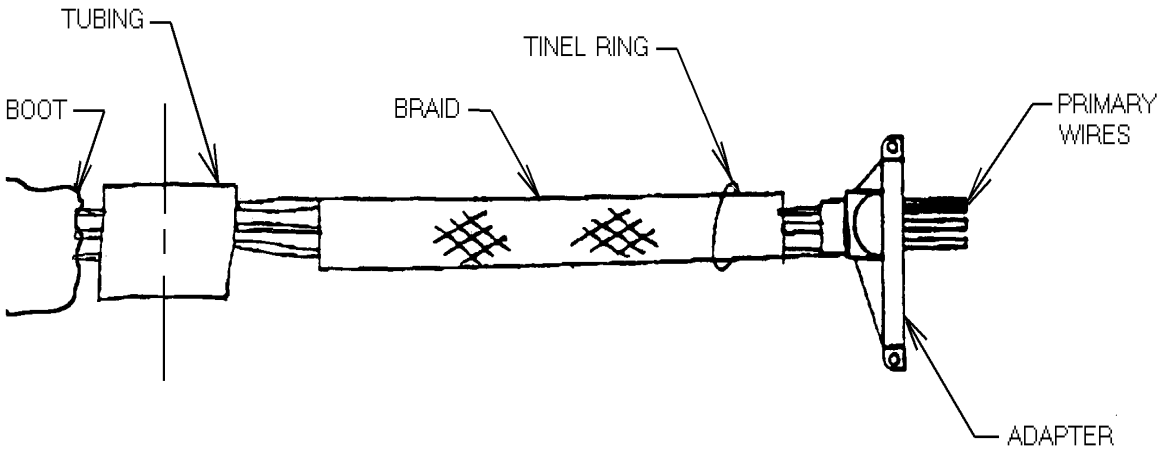

Figure 5-6. Shielded Backshell Pushed Back onto Bundle.

9. Strip primary wires (Figure 5-7).

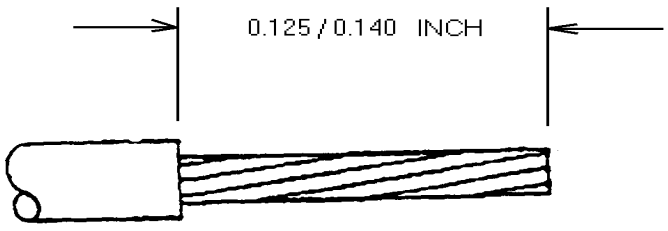

Figure 5-7. Primary Wire Strip Length.

10. Pretin all primary wires (see ES-61408) (Figure 5-8).

- Make sure that the strands are twisted into their proper lay.
- Flux the conductor for half of its exposed length using a 1:1 mixture of Alpha 611 flux and flux thinner.
- Dip the conductor for at least 3/4 of its exposed length in molten Sn96 solder at 515±10°F for 4 to 6 seconds.
- Inspect the tinned conductor. At least 3/4 of the exposed length of wire shall be at least 95 percent covered by a continuous solder coating. Pinholes and voids shall not be concentrated in one area, and shall not exceed 5 percent of the total pretinned area.

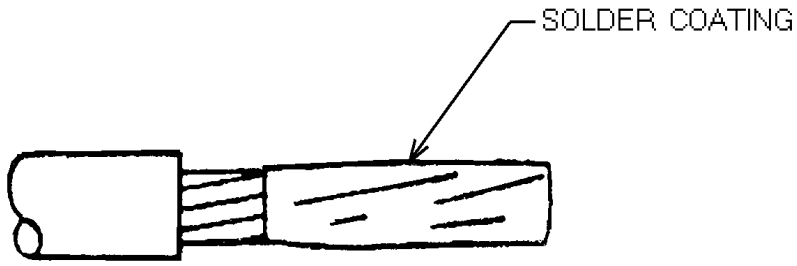

Figure 5-8. Pretinned Conductor.

11. Separate into two bundles, all wires that terminate to the "A" insert, and all wires that terminate to the "B" insert.

12. Slide a connector boot over each bundle and tape them out of the way.

13. Terminate wires and install the boots per ES-61408.

5.2 Installing Terminated Inserts Into Shells.

Both inserts for a connector must be terminated before continuing.

1. Position the two inserts evenly together with their retention ribs facing outward.

2. Orient the A insert toward the A side of the shell and the B insert toward the B side of the shell (Figure 5-9).

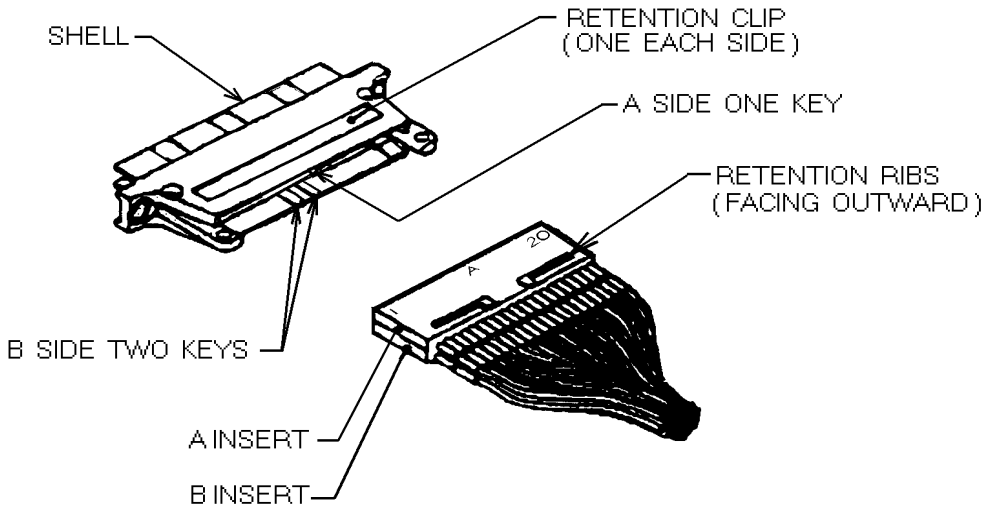

Figure 5-9. Terminated Insert Pair Ready for Installation into Shell.

3. Push the inserts into the shell until the retention clips of both inserts click into place.

   - If one of the inserts is a dummy or has no cable attached, use the D-659-0001 insert removal tool to push the insert into place.

4. Pull on each set of wires separately to make sure that both inserts are seated and locked into place.

5.3 Attachment of Backshell Halves, Adaptor Housing and Tinel Ring.

1. Attach the two backshell halves to the connector shell (Figure 5-10).

   - The top and bottom backshells halves are identical, and overlap each other at the edges.

   - IMPORTANT: When attaching backshell to a plug shell, be sure that the hooks at the ends of the tabs are hooked around the lip of the shell in the recessed areas. Improperly installed tabs will prevent proper connector mating.

   - Each backshell half attaches by two size 2-56 Phillips head screws. Use #1 Phillips screwdriver and tighten gently.

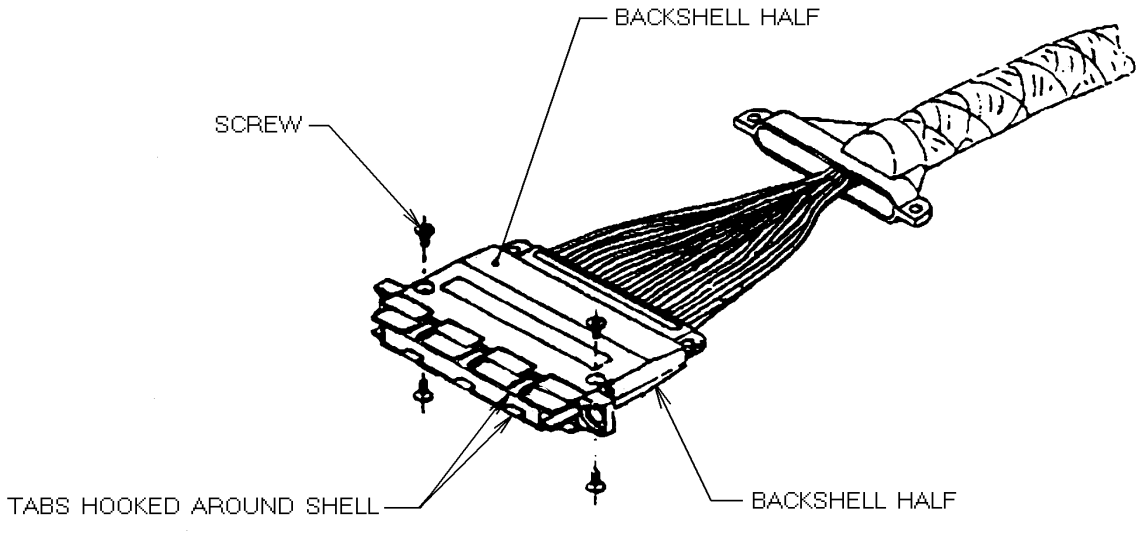

Figure 5-10. Attaching EMI Backshell to Connector Shell.

2. Slide the adapter housing to the rear of the backshell and install the clamps (Figure 5-11).

   - The round part of the adapter housing may fit to the right or left of center. This location should be staggered on stacked connectors to allow room for stacking.

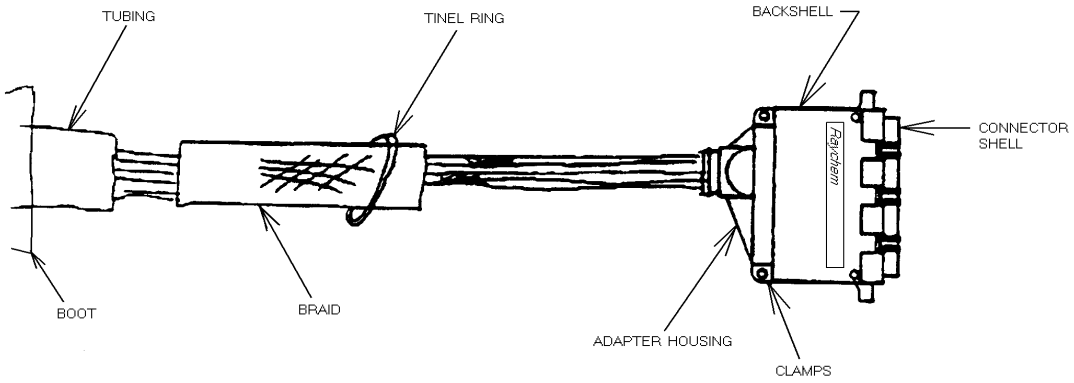

Figure 5-11. Adapter Housing Clamped at Rear of Backshell.

3. Position the braid over the end of the adapter (Figure 5-12).

   - Position and terminate the tinel ring. Refer to installation procedure MIP-101.
   - Position tubing and heat.
   - Apply S1125 adhesive to the adapter and boot as required.
   - Position boot, then heat. (refer to Fig. 5-1 for boot position).

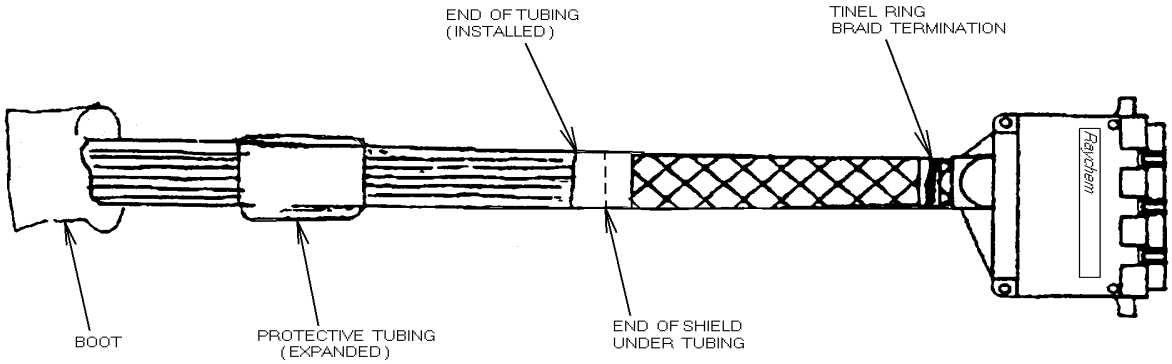

Figure 5-12. Positioning Tinel Ring and Shrinking Tubing and Boot.