



1.0 Purpose

This standard covers the installation procedure and inspection requirements for terminating cable shields to ground leads using TE Connectivity (TE) S200 SolderSleeve shield terminators.

2.0 Heating Tools and Ordering Information

WARNING

Follow installation instructions carefully. Use adequate ventilation and avoid charring or burning during installation. Charring or burning the product will produce fumes that may cause eye, skin, nose and throat irritation. Consult Material Safety Data Sheets **RAY5103** or **RAY5104** for further information.

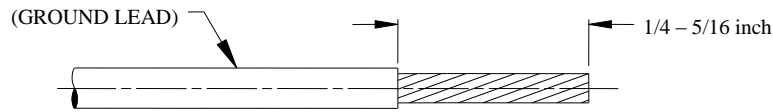
Products	Heat Gun / Setting	Heating Tools & Accessories
Size 1, 2 and 3	HL1920E = 6 on dial ⁽¹⁾ HL2020E = 700°F (370°C) on LCD ⁽¹⁾	HL1802E-074616: SolderSleeve Terminators Reflector - Mini-Gun. HL-ADPT-PR-REFLECTORS: Adapter for PR Series Reflectors. PR-25-REFLECTOR: Small to Medium SolderSleeve Terminations 7mm and under.
Size 4, and 5	HL1920E = 7 on dial ⁽¹⁾ HL2020E = 800°F (425°C) on LCD ⁽¹⁾	PR-25D-REFLECTOR: Large SolderSleeve Terminations for size 1, 2, and 3. PR-13C-REFLECTOR: Terminations for size 4, and 5.
All Sizes	IR-550 Heating Tool with RG-2 reflector.	IR-550-50: IR Heating Tool with RG-2 Reflector.
Size 1, 2, and 3	IR-1759 MiniRay and AE-424 inner reflector	IR1759: MiniRay Infrared Heating Tool. AE-424: Inner Reflector for Standard Appertual.

Note: CV-1981 Heating Tools are suitable alternatives. See product brochure for additional details.

3.0 Cable and Ground Lead Preparation

3.1 Ground Lead Preparation: (if using loose ground leads)

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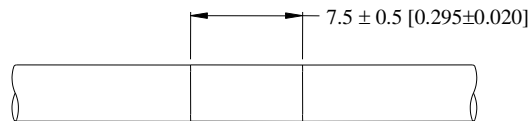


3.1.2 Inspect wires to ensure that the strands lie flat in their normal lay, with no loose strands poking out. This can be achieved by semi-stripping and twisting the insulation slug off by hand.

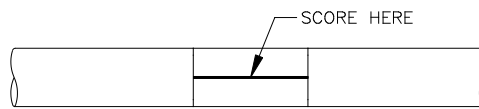
3.2 Cable Preparation

3.2.1 Center Strip - Remove $7.5 \pm 0.5\text{mm}$ [0.295 ± 0.020 inch] of cable jacket at the desired termination point as follows:

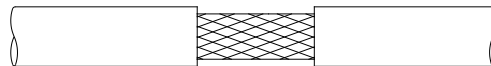
3.2.1.1 Score the jacket around the cable in two places, $7.5 \pm 0.5\text{mm}$ [0.295 ± 0.020 inch] apart.



Score the jacket between the cuts.



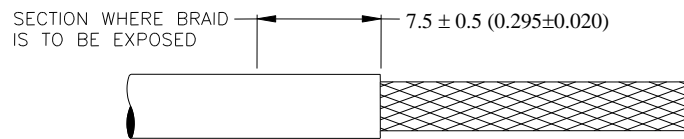
3.2.1.2 Remove the section of jacket.



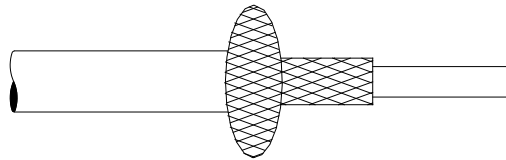
3.2.2 End Strip - The cable can be stripped according to the following procedure designed to leave the shield braid smooth and flat. The use of finger cots is recommended to prevent transfer of oils to the shield.

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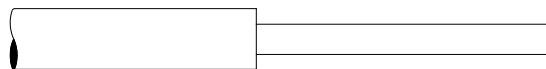
3.2.2.1 Score and remove the jacket as shown:



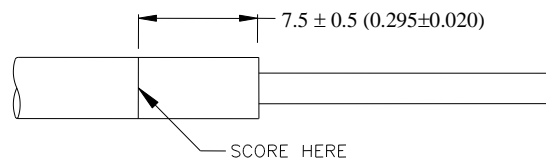
3.2.2.2 Bunch the braid.



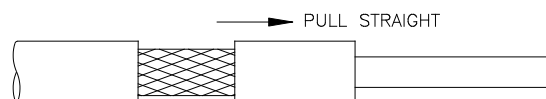
3.2.2.3 Trim the braid as close as possible to the jacket.



3.2.2.4 Score the jacket 7.5 ± 0.5mm (0.295 ± 0.020inch) from the end of the braid.



3.2.2.5 Remove section of jacket carefully by pulling straight. This will flatten the braid strand ends.

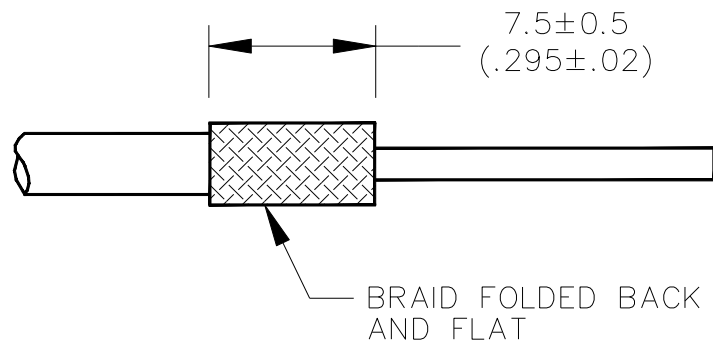


3.2.2.6 Inspect the cable to make sure that the braid strands are lying against the primary insulation.

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3.3 End Strip with Braid Fold Back

This procedure is recommended as an alternate procedure for installing SolderSleeve in end strip of a cable. The cable is prepared as in section 3.2.2.1 and then the braid is folded back over the cable Jacket. This is done to prevent damages to the primary insulation while preparing cables.

**4.0 Size Selection**

Shield Terminator size selection shall be done based on cable and ground lead dimensions as specified on each applicable Customer Drawing (CD).

5.0 Assembly Components**WARNING**

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- 5.1 Position the stripped portion of ground lead(s) against the stripped portion of the shield braid.
- 5.2 Slip the selected shield terminator over the cable and ground lead assembly. Rotate the shield terminator as it slides over the ground lead to prevent it from catching on the strands.
- 5.3 Position the terminator so that the exposed shield is centered between the meltable inserts and some of the cable jacket is visible between the meltable inserts and the exposed shield.



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5.4 Additional notes for terminating Nickel-plated conductors and/or braids:

- When using product for terminations into nickel conductors and /or braids, it is advisable to check the solderability of the conductor and/or braid.
- If lack of wetting is experienced it is recommended that a small drop of flux be applied to conductor and braid prior to positioning of the sleeve. A recommended flux is Kester 1544.
- Solderability of Ni-plated is not the same as Tin-plated shields. Therefore, same solder wetting will not be achieved. See pictures on section 6 of this procedure as reference for acceptable terminations.
- When cable jacket O.D. is close to the minimum O.D. specified on applicable CD and SolderSleeve shield terminator is to be installed with Infrared tools, it might be observed solder squirting out of the SolderSleeve shield terminator during installation. Solder squirting can be avoided by moving SolderSleeve shield terminator out of the reflector focal point. Splice can be moved up, down, closer, or farther to the reflector aperture.

6.0 Heating

WARNING

The heating tool and the assembly become hot during the installation of the Shield Terminator. To help prevent burns, allow tool and the assembly to cool down before handling.

- 6.1 Allow hot air heaters to warm up before using.
- 6.2 Position the assembly (cable, ground lead, and shield terminator) in the reflector so that the solder perform is in the center of the hot air or at the focal point of the infrared heaters.
- 6.3 If the cable jacket or ground lead insulation is susceptible to heat damage (i.e. infrared heating used with black insulation), move the assembly **toward** the heat source to minimize unwanted exposure of the jacket to the heat.
- 6.4 Heat until the solder pre-form melts, flows and wets the shield and ground lead.
- 6.5 S200 Shield Terminators contain a Bi-alloy solder pre-form, which consists of a solder pre-form and a fusible ring on top of it. Fusible solder ring is the thermal indicator to signal when the correct amount of heat has been applied to the solder.

Shield Terminators shall be heated until the solder pre-form melts and the fusible ring disappears in the joint area. A slight trace of fusible ring might appear occasionally.

The thermal indicator is only an aid for deciding when to stop heating. Its presence or absence in the installed part should not be the reason for rejection or acceptance of the installation. See section 7 for inspection criteria.

7.0 Inspection

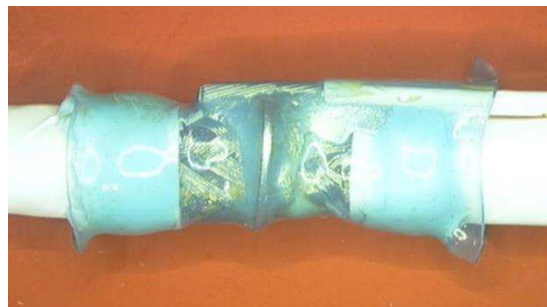
7.1 Assembly

- 7.1.1 The stripped portion of the ground-lead conductor should be located directly over the stripped portion of the braid.
- 7.1.2 The sleeve should completely cover the stripped portions of the ground lead and the braid.
- 7.1.3 The sleeve must be recovered tightly onto the ground lead and the cable. If the sleeve has not recovered onto the assembly, the terminator is too large for the application.

7.2 Heating and Wetting

- 7.2.1 Insufficient Heat - The following criteria indicate that the heat applied to the assembly during installation was insufficient to produce an acceptable solder joint.
 - 7.2.1.1 Meltable inserts have not flown.
 - 7.2.1.2 Tubing has not fully recovered over the cable jacket
 - 7.2.1.3 Thermal indicator (fusible ring), although has collapsed, its contour is still visible.

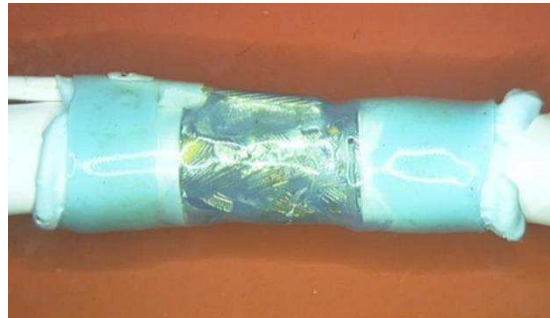
Not Acceptable



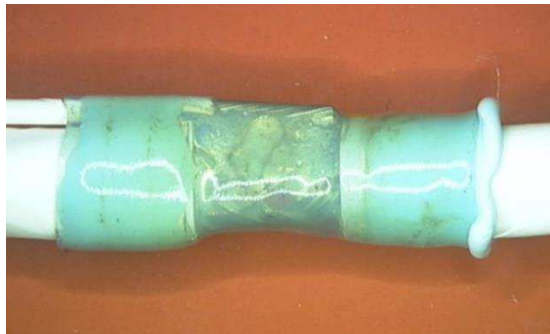
- 7.2.2 Wetting - The following criteria indicate that enough heat was applied to the assembly during installation to produce an acceptable solder joint.
 - 7.2.2.1 Meltable inserts have melted and flowed.
 - 7.2.2.2 Tubing has fully recovered over the cable jacket
 - 7.2.2.3 Solder pre-forms and fusible ring have melted and flowed. It is normal to have a slight trace of fusible ring occasionally. There is a solder fillet between cable shield and ground lead. See paragraph 5.1 of this procedure if poor wetting is observed.

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Minimum Acceptable



Maximum Acceptable



7.2.3 Overheating - The absence of the following criteria indicates that the termination was heated longer than necessary to achieve a good solder joint on solderable wire.

7.2.3.1 The sleeve must remain sufficiently transparent to allow inspection of the solder joint. No tubing and/or sealing inserts thermal degradation shall be observed.

7.2.3.2 There shall be solder fillet at least 1/8 inch-long visible along at least one side of the ground lead.

7.3 Damaged Assemblies - Examine the insulation sleeve and the wire and cable insulation for damage.

7.3.1 The insulation sleeve must be intact with no shield or conductor strands poking through it.

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8.0 Rework

WARNING

Eye damage is possible if safety glasses are not worn during sleeve removal or solder joint disassembly.

- 8.1 Insulation Sleeve Replacement - The insulation sleeve must be replaced if it is misaligned, overheated or otherwise damaged.
 - 8.1.1 Removal of Sleeve
 - 8.1.1.1 Score sleeve using a sharp blade. It is not necessary to cut through the sleeve. Use care not to cut cable jacket or ground insulation.
 - 8.1.1.2 Reheat sleeve until it softens and then grasp it with needle-nose pliers, on the side opposite of the scored line, and gently pull the sleeve off of the assembly.
 - 8.1.2 Reinsulation - If the examination of the solder joint, after the sleeve removal shows that the solder joint is acceptable, re-insulate the termination.
 - 8.1.2.1 Use a terminator of the correct size
 - 8.1.2.2 Remove the solder preform by crushing the pre-form and allowing it to drop out of the sleeve.
 - 8.1.2.3 Center the sleeve over the joint and heat until it recovers onto the assembly.
- 8.2 Solder Joint Replacement - The solder joint must be remade if it is misaligned or there is insufficient solder in the joint because of overheating.
 - 8.2.1 Disassembled Joint
 - 8.2.1.1 Remove sleeve as in 8.1.1
 - 8.2.1.2 Heat solder joint until the solder melts and then carefully separate the components.
 - 8.2.2 Re-termination - Remove as much solder from shield as possible and then install a new terminator as desired.
- 8.3 Inspection of Rework Assemblies
Inspect all reworked assemblies per section 7. In addition, a Dielectric Withstanding test between the cable primaries and ground lead be performed to insure that the primary insulation has not been damaged.

¹ These values are for reference only and may change based on other variables (i.e. reflector type, sleeve's relative distance to the reflector, etc.)

DISCLAIMER

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