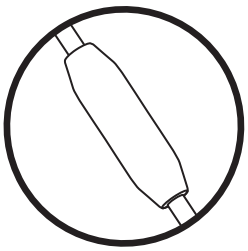
Tyco Electronics



Raychem HVS-C-1520S Splice Series

15kV Class Splice for Extruded Dielectric (Poly/EPR) Power Cables: Metallic Tape, Wire Shield, UniShield, or Lead Sheath Cables

ENERGY DIVISION

Suggested Installation Equipment (not supplied with kit)

- Cable preparation tools
- Tyco Electronics P63 cable preparation kit or cable manufacturer approved solvent
- Clean, lint-free cloths
- Non-conducting abrasive cloth, 120 grit or finer
- Electrician's tape
- Connector(s) and installation tools
- Tyco Electronics recommended torch

Safety Instructions

DANGER: When installing electrical power system accessories, failure to follow applicable personal safety requirements and written installation instructions could result in fire or explosion and serious or fatal injuries.

To avoid risk of accidental fire or explosion when using gas torches, always check all connections for leaks before igniting the torch and follow the torch manufacturer's safety instructions.

To minimize any effect of fumes produced during installation, always provide good ventilation of confined work spaces.

As Tyco Electronics has no control over field conditions which influence product installation, it is understood that the user must take this into account and apply his own experience and expertise when installing product.

Kit Contents

The following items should be included in this kit:

1	Black/red dual wall tube
1	Rejacketing wraparound sleeve
1	Copper braid
2	Roll springs
1	Installation instruction
2	Ground connectors
4	Strips copper tape
2	Angle-cut stips stress relief material
	Long strips stress relief material
	Roll copper mesh
	Strips red sealant

Recommended Tyco Electronics Torches

Install heat-shrinkable cable accessories with a "clean burning" torch, i.e., a propane torch that does not deposit conductive contaminants on the product.

Clean burning torches include the Tyco Electronics FH-2629, FH-2649 (uses refillable propane cylinders), FH-2618A-1, and FH 2640-PS-kit (uses disposable cylinder).

Adjusting the Torch

Adjust regulator and torch as required to provide an overall 12- inch bushy flame. The FH-2629 will be all blue, the other torches will have a 3- to 4-inch yellow tip. Use the yellow tip for shrinking.

Regulator Pressure

FH-2618A-1	Full pressure
FH-2649	25 psig
FH-2629	15 psig
FH-2640-PS-KIT	Full pressure

General Shrinking Instructions

- Apply outer 3- to 4-inch tip of the flame to heat-shrinkable material with a rapid brushing motion.
- Keep flame moving to avoid scorching.
- Unless otherwise instructed, start shrinking tube at center, working flame around all sides of the tube to apply uniform heat.

To determine if a tube has completely recovered, look for the following, especially on the back and underside of the tube:

1. Uniform wall thickness.
2. Conformance to substrate.
3. No flat spots or chill marks.
4. Visible sealant flow if the tube is coated.

Customer Service

For 24 hour customer service, call 800-327-6996.

UniShield is a trademark of General Cable Technologies Corporation.

1. Product selection.

Check kit selection with cable diameter dimensions in Table 1.

2. Check ground braid.

Verify that ground braid(s) or bond wire have equivalent cross-section to cable metallic shield. Additional braid may be needed for lead sheath cables, or if external grounding is required.

Tyco Electronics HVS-EG supplies ground braid, spring clamp and suggested modifications to make an external ground.

Table 1

Kit	Nominal Cable Range	Maximum Jacket Diameter	Insulation Diameter Range	Maximum Connector Dimensions Length	Maximum Connector Dimensions Diameter
HVS-C-1521S	#2-2/0 AWG	1.20″ *(30mm)*	0.65- 0.95″ *(17-24mm)*	4.00″ *(100mm)*	0.80″ *(20mm)*
HVS-C-1522S	3/0 - 400 kcmil	1.65″ *(42mm)*	0.85-1.30″ *(23-33mm)*	5.00″ *(125mm)*	1.25″ *(32mm)*
HVS-C-1523S	500-750 kcmil*	1.90″ *(48mm)*	1.10-1.55″ *(28-47mm)*	8.00″ *(200mm)*	1.45″ *(44mm)*
HVS-C-1524S	750-1000 kcmil	2.30″ *(58mm)*	1.30-1.90″ *(33-48mm)*	8.00″ *(200mm)*	1.85″ *(47mm)*

3. Prepare cables.

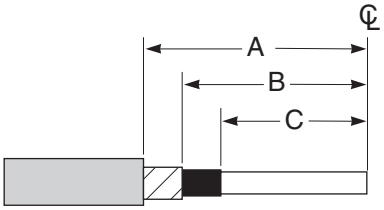
Choose the cable type (Choice 1-3) and use the dimensions shown in Table 2 to prepare the cables.

Table 2

Kit	Jacket Cutback A	Metallic Shield Cutback B	Semi-con Cutback C
HVS-C-1521S	9-1/2″ *(241mm)*	7-1/2″ *(191mm)*	4-1/2″ *(115mm)*
HVS-C-1522S	10″ *(254mm)*	8″ *(203mm)*	4-3/4″ *(120mm)*
HVS-C-1523S	12″ *(305mm)*	10″ *(254mm)*	6-1/2″ *(165mm)*
HVS-C-1524S	12-1/2″ *(318mm)*	10-1/2″ *(267mm)*	7-1/2″ *(190mm)*

CHOICE 1

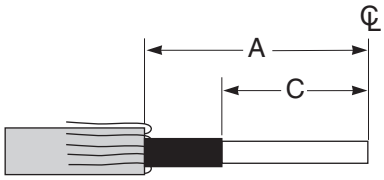
If Metallic Tape Shield, or Lead Sheath Cable



108

CHOICE 2

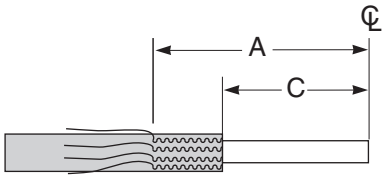
If Drain Wire Shield Cable



109

CHOICE 3

If UniShield Cable



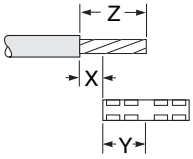
110

4. Remove insulation.

Refer to Table 3 and cut back the insulation as shown.

Table 3

Kit	Maximum Connector Dimensions Length	Maximum Connector Dimensions Diameter	Expansion Gap "X"
HVS-C-1521S	4″ *(100mm)*	0.80″ *(20mm)*	1/4″ *(5mm)*
HVS-C-1522S	5″ *(125mm)*	1.25″ *(30mm)*	1/4″ *(5mm)*
HVS-C-1523S	8″ *(200mm)*	1.45″ *(44mm)*	1/2″ *(10mm)*
HVS-C-1524S	8″ *(200mm)*	1.85″ *(45mm)*	1/2″ *(10mm)*

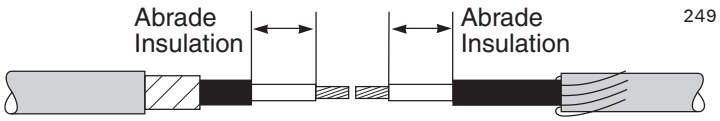


"Z" Insulation Cutback = "X" Expansion Gap + "Y" 1/2 Length of Connector

400

5. Abrade insulation.

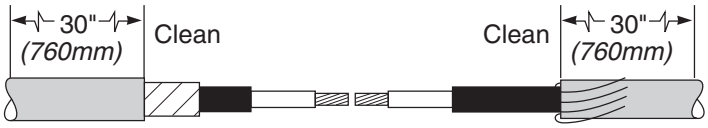
Abrade the insulation, as necessary to remove imbedded semi-con, and clean using an approved solvent.



249

6. Clean cable jackets.

Clean cable jacket with approved solvent on the side where the tube will be temporarily stored.



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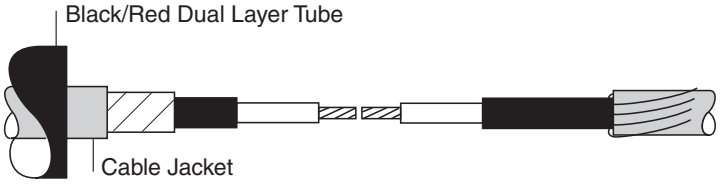
7. Place black/red dual layer tube over cable as shown.

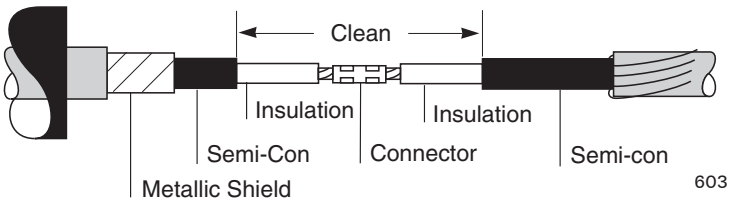
Protect tube from end of conductor by temporarily wrapping conductor end with tape to prevent damage to inside of tube while positioning onto cable. Remove tape before making connection.



602

8. Install connector.

Deburr connector after installation. Reclean the insulation as shown using an approved solvent.

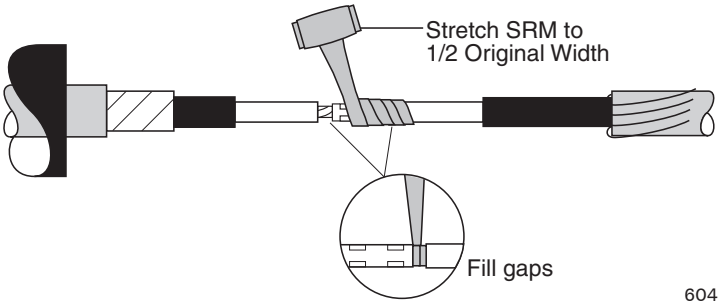


603

9. Apply SRM over connector.

Remove the backing from the side of the long strip of Stress Relief Material (SRM) that has printing on it. Roll the SRM and remaining backing strip into a convenient size. Remove the backing strip while wrapping the SRM around the connector and exposed conductor, stretching to 1/2 original width. Be sure to fill the gaps and low spots around the connector.

Note: If connector diameter is larger than insulation diameter, apply only two half-lapped layers of SRM over the entire connector and taper SRM down onto insulation with 1/4" overlap. Discard any excess SRM (long strips).



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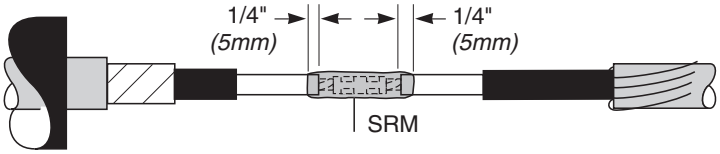

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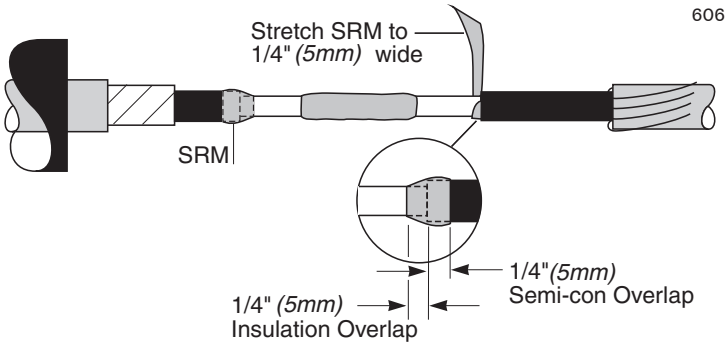
10. Apply SRM at semi-con cutback.

Remove backings from the *short angle-cut piece* of SRM. Place tip of SRM at semi-con cutback and tightly wrap to fill semi-con step. Overlap semi-con and insulation as shown. Taper SRM down to meet insulation.

Note: If using UniShield cable, apply SRM as shown to fill conductive jacket step

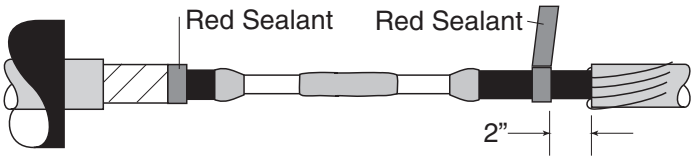
UniShield is a trademark of General Cable Technologies Corporation.

606



11. Apply 2″ wide red sealant..

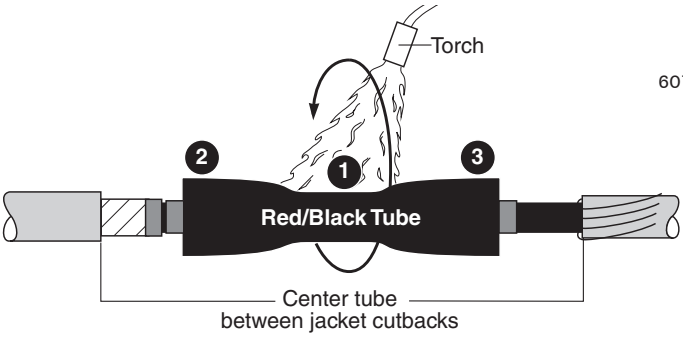
Apply one wrap of 2″ wide red sealant at the end of the metallic tape shield or 2″ from the jacket cutback for wire shield cables. Do not stretch red sealant.



12. Center red/black tube; shrink in place.

Center the tube over the splice. Begin shrinking at the center (1) of the tube, working the torch around all sides of the tube. After the center portion shrinks, work towards one end (2), then to the opposite end (3).

Note: Do not point the flame at the cable semi-con.



Note: If External Grounding

Refer to Tyco Electronics HVS-EG, “Guide for External Grounding of Power Cable Splices” for modifications to these instructions.

13. Install ground.

Choose the appropriate cable type (Choice 1-3) and follow the directions given.

CHOICE 1

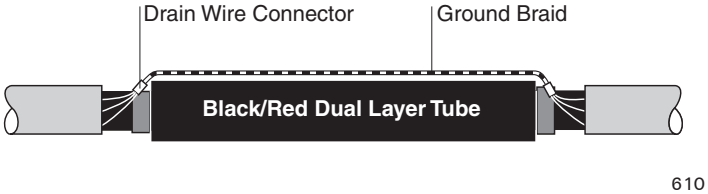
If Drain Wire or Unishield Cable

Pigtail the shield wires on each side. Crimp the ground braid onto one pigtail with the connector provided.

Lay braid across splice tube and attach to pigtail on the other side, using second connector provided. Cut off excess braid and trim pig-tailed wires.

Discard spring clamps and foil tape.

Go to step 14.



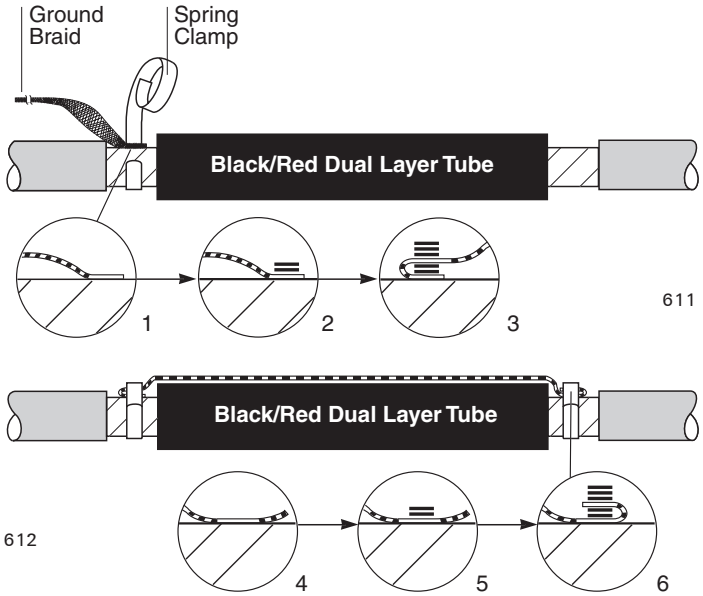
CHOICE 2

If Metallic Tape Shield Cable

(1) Flare one end of the ground braid and place it onto the metallic tape butted up to the installed splice tube. (2) Attach the braid to the shield by placing two wraps of the spring clamp over the braid.
(3) Fold the braid back over the spring clamp wraps. Continue to wrap the remaining clamp over the braid. Tighten clamp by twisting it in the direction it is wrapped and secure with copper foil tape provided.
(4) Lay the braid across the splice tube and onto the exposed tape shield on the other side. (5) Make two wraps of the clamp over the braid. (6) Fold the braid back toward the splice and finish wrapping the clamp. Tighten and secure. Cut off excess braid.

Discard connectors.

Go to step 14.



CHOICE 3

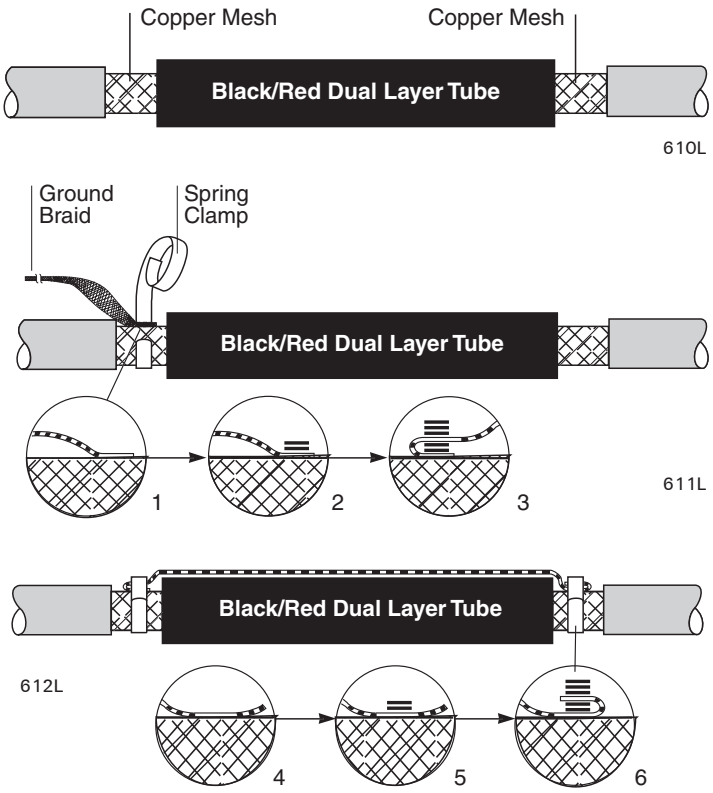
If Lead Sheath Cable

Wrap three layers of 2″ wide copper mesh around the cleaned lead sheath. Tie off with a slip knot.

(1) Flare one end of the ground braid and place it onto the mesh-covered lead sheath butted up to the installed splice tube. (2) Attach the braid to the lead sheath by placing two wraps of the spring clamp over the braid. (3) Fold the braid back over the spring clamp wraps. Continue to wrap the remaining clamp over the braid. Tighten clamp by twisting it in the direction it is wrapped and secure with copper foil tape provided. (4) Lay the braid across the splice tube and onto the mesh-covered lead sheath on the other side. (5) Make two wraps of the clamp over the braid. (6) Fold the braid back toward the splice and finish wrapping the clamp. Tighten and secure. Cut off excess braid.

Discard connectors.

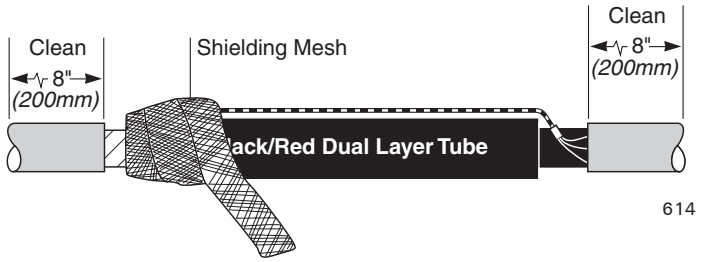
Go to step 14.



14. Install the shielding mesh.

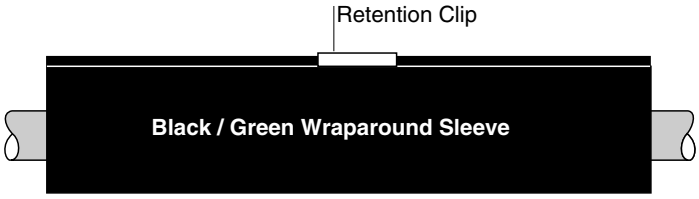
Wrap a half-lapped layer of the mesh across the entire splice and tie-off.

Abrade and solvent clean cable jackets as shown to provide an oil-free surface.



15. Position wraparound sleeve.

Remove or tape over all sharp points to prevent puncture of wraparound sleeve. Remove backing from the wraparound sealing sleeve and center sleeve over splice. Clamp the metal retention clip onto the butted rails at the center of the sleeve to hold the sleeve together while channels are installed.



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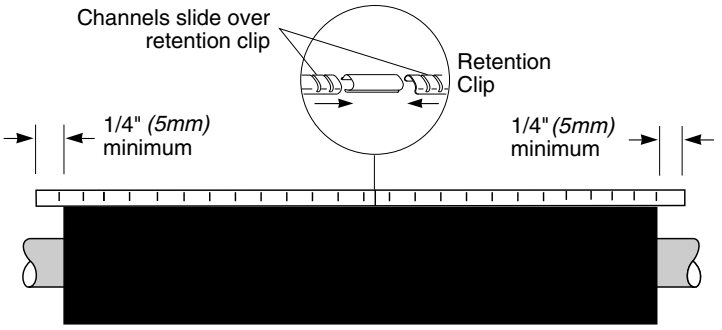
16. Install channels.

Connect the channels by overlapping the retention clip as shown at right.

Note: Channels must overlap sleeve edge by 1/4 inch *(5mm)* minimum.

If channels slide on easily go to step 17. If channel fit seems tight, continue with next paragraph.

As shown in illustration A, make sure flap is not pinched between the rails. Push the sleeve up from the bottom and down from the top while sliding on channel as shown in illustration B. The idea is to flatten the rails together to prevent the channels from binding.



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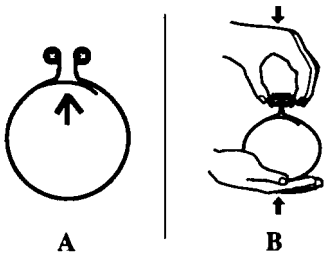


17. Shrink the wraparound sleeve.

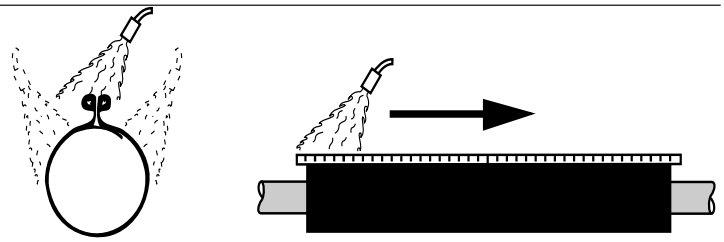
Preheat evenly along both sides of the rail/channel area until this area begins to shrink. To achieve uniform heating, move the flame back and forth from one side of the channel to the other as shown in illustration "A" **while** moving flame along the entire length of the channel as shown in illustration "B" until the sleeve starts to shrink. This technique will assure a properly preheated rail and channel area.

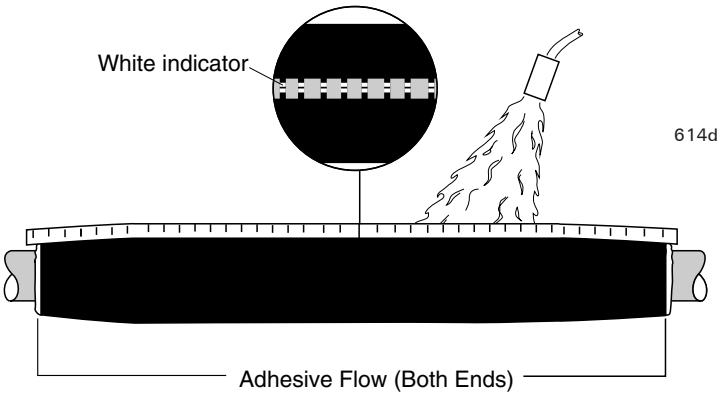
Begin shrinking at the center of the sleeve. After shrinking the entire circumference at the center, then work toward each end. Apply heat until the sleeve is fully shrunk and the heat-sensitive green paint is completely converted to black. Continue heating the rail/channel area for another 5 seconds per foot. A white line should be visible in the channel gaps indicating sufficient heating.

Note: Green heat-sensitive paint will turn black as sleeve shrinks in place.

This completes the splice.

Note: Allow to cool before moving or placing in service.





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The Information contained in these installation instructions is for use only by installers trained to make electrical power installations and is intended to describe the correct method of installation for this product. However, Tyco Electronics Corporation has no control over the field conditions which influence product installation. It is the user's responsibility to determine the suitability of the installation method in the user's field conditions. Tyco Electronics' only obligations are those in Tyco Electronics' standard Conditions of Sale for this product and in no case will Tyco Electronics be liable for any other incidental, indirect or consequential damages arising from the use or misuse of the products.

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