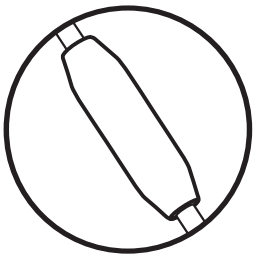
Raychem
from TE Connectivity



HVS-1585(NS) 15kV Class

1/C Splice for PILC-to-PILC or PILC-to-Extruded Dielectric (Poly/EPR) Power Cable

Product Installation Instructions

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.*

⚠ DANGER *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.*

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

⚠ DANGER *As TE 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.*

⚠ DANGER *Working around energized high-voltage systems may cause serious injury or death. Installation should be performed by personnel familiar with good safety practice in handling high-voltage electrical equipment. De-energize and ground all electrical systems before installing product.*

⚠ DANGER *Power distribution and transmission products must be properly selected for the intended application. It must be installed and serviced by competent personnel who have been trained and understand proper safety procedures. These instructions are written for such personnel and are not a substitute for adequate training and experience in safety procedures.*

⚠ DANGER *Read and understand the contents of these instructions before installation and follow all locally approved procedures and safety practices before installing or operating this equipment*

⚠ CAUTION *These instructions cannot cover all details or variations in the equipment, procedures, or processes described, nor provide directions for meeting every possible contingency during installation, operation, or maintenance. When additional information is desired to satisfy a problem not covered sufficiently for the user's purpose, please contact your TE sales representative. These instructions are not intended to supersede or replace existing safety and operating procedures.*

NOTICE *Upon receipt of a product, inspect it thoroughly for damage and loss of parts incurred during shipment. If damage or loss is discovered, file a claim with the carrier immediately or contact your TE representative.*

Suggested Installation Equipment (not supplied with kit)

- Cable preparation tools
- TE 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
- TE recommended torch

Recommended TE 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 TE FH-2629, FH-2649 (uses refillable propane cylinders) and FH-2618A (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	Full pressure
FH-2649	25 psig
FH-2629	15 psig

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

NOTICE *When installing multiple tubes, make sure that the surface of the last tube is still warm before positioning and shrinking the next tube. If installed tube has cooled, re-heat the entire surface.*

Customer Service

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

1. 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 LC shield, lead sheath cables, or if external grounding or shield interrupting is required.

TE's HVS-EG supplies ground braid, spring clamp and suggested modifications to make an external ground or shield interrupt.

Table 1

Kit	PILC/Poly Nominal Cable Range	PILC Insulation Diameter Range	Poly Insulation Diameter Range	Connector Dimensions		
				Max O.D.	Max Length	
				PILC/Poly	PILC/PILC	PILC/Poly
Dimensions in inches						
HVS-1585D (NS)	1250-2500	1.50-2.25	1.60-2.50	2.40	6.0	8.0

2. Prepare cables

Choose the splice type (Choice 1-2) and follow the directions given. (See next page for PILC-to-PILC.)

* Mark PILC cable, if unjacketed.

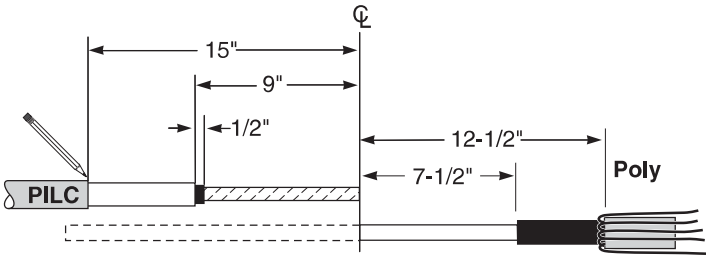
Choice 1

PILC to Jacketed Concentric Neutral Cable (JCN)

NOTICE *Place rejacketing tube over jacketed concentric neutral cable before beginning cable prep.*

Overlap the two cables as shown. Remove jacket 12-1/2" from the center line and fold back neutral wires. Then, cut JCN cable at center line and finish cable prep.

Go to Step 3.



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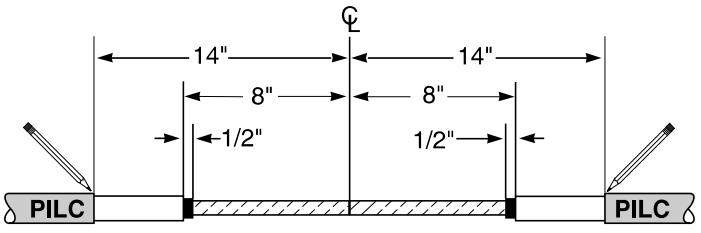
Choice 2

PILC-to-PILC Cable

*Mark PILC cable if unjacketed.

Prepare the cables as shown.

Go to Step 3.



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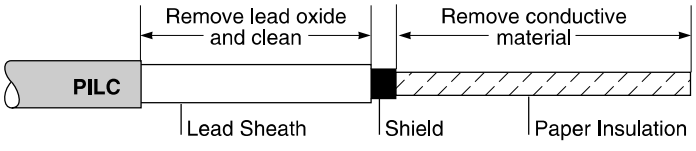
3. Prepare lead sheath and paper insulation

Remove lead oxide from the lead sheath and clean with oil-free solvent.

Remove conductive material from the paper insulation.



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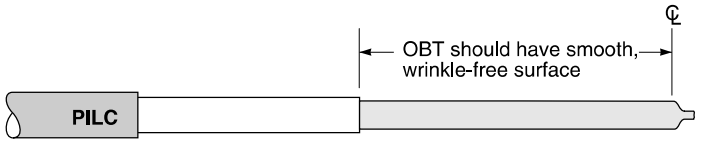
5. Inspect OBT

The OBT should have a smooth, wrinkle-free surface after shrinking. Reheat to smooth any wrinkled areas.



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If PILC to Poly splice, discard second OBT.

6. Remove OBT/insulation

If crimping, make sure connector has a center oil stop.

Cut back the OBT/insulation as shown.

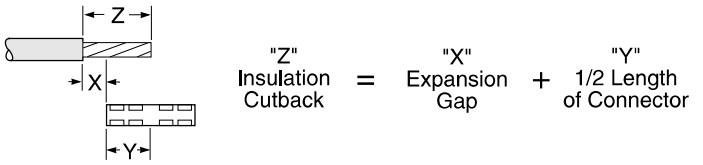

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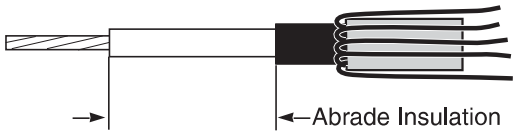
Table 4: Connector Dimensions

Kit	Max O.D.	PILC/PILC Max Length	PILC/Poly Max Length	Expansion Gap "X"
HVS-1585(NS)	2.40"	6.0"	8.0"	1/2"

If PILC-to-PILC splice, repeat Steps 3-6 for second PILC cable.

7. PILC-to-Poly splice only, abrade insulation

Abrade the poly insulation, as necessary to remove imbedded semi-con, and clean.



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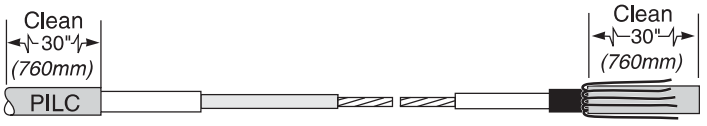
8. Clean cable jackets

Clean the cable for the length of the tubes to ensure that dirt and debris will not contaminate the inside of the tubes that will be parked.



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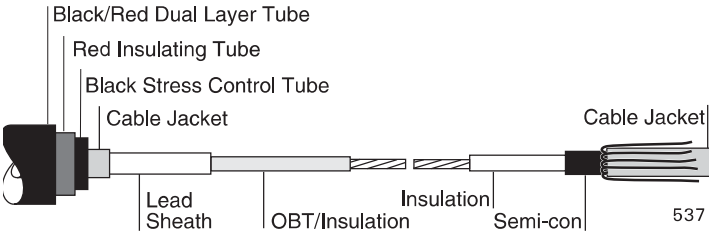
9. Place nested tubes over PILC cable

Place nested tubes over cables as shown. Protect tubes from end of conductor as they are placed over cable end.

NOTICE *A PILC to Poly splice is shown in this instruction as an example. Any cable combination discussed earlier can be used.*



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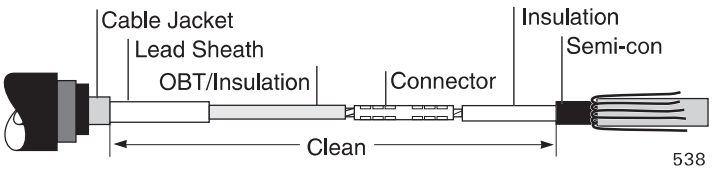
10. Install connector

If soldering, protect OBT by wrapping it with cotton or glass fiber tape.

After installation, deburr connector.

Using an approved solvent, clean the cables as shown, paying particular attention to the OBT surface.



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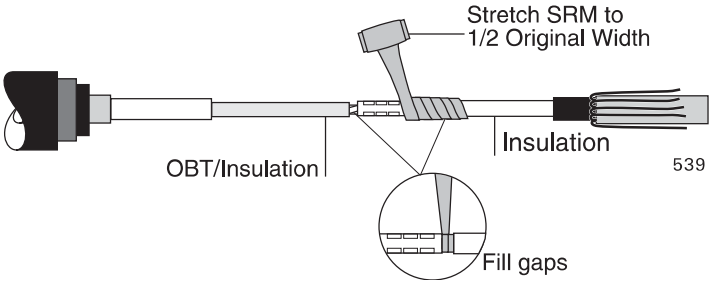
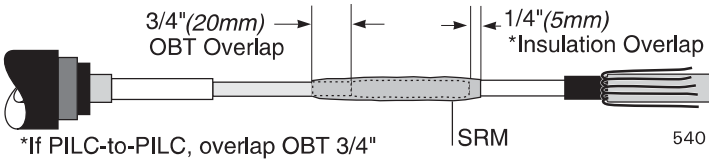
11. Apply SRM over connector

Remove backing from one side of a long strip of SRM. Roll the SRM and remaining backing strip into a convenient size. Remove the remaining backing strip and tightly wrap the SRM around the connector and exposed conductor. Be sure to fill the gaps and low spots around the connector.

Continue to wrap SRM onto the solvent-cleaned OBT and insulation as shown.

NOTICE *If connector diameter is larger than insulation diameter, apply two half-lapped layers of SRM over the entire connector. Discard any excess SRM (long strips).*





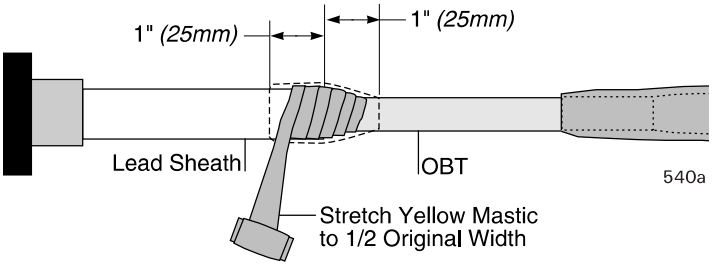
12. Apply yellow mastic at lead sheath cutback

Solvent clean OBT and lead sheath.

Remove backing from one side of a long strip of yellow mastic. Roll the yellow mastic and remaining backing strip into a convenient size.

Remove the remaining backing strip and tightly wrap yellow mastic around the edge of the lead. Continue wrapping to the mark on the lead sheath, then back across the shield onto the paper insulation as shown.

NOTICE *Apply a maximum thickness of 1/8" (3mm) of yellow mastic over the lead sheath to prevent excessive diameter build-up.*



If PILC-to-PILC Splice, repeat this step for second PILC cable.

13. Apply SRM at semi-con cutback

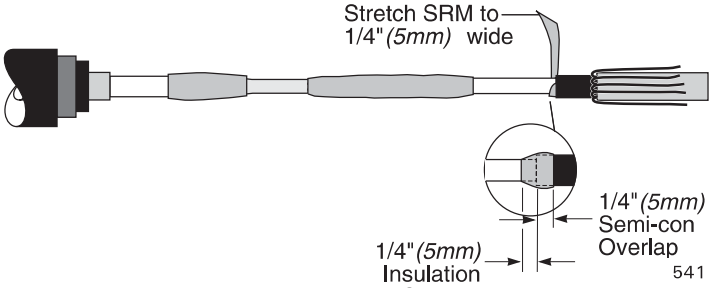
Choose the appropriate splice type (Choice 1-2) and follow the given directions.

Choice 1

PILC-to-Poly Splice

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.

Go to Step 14.



Choice 2

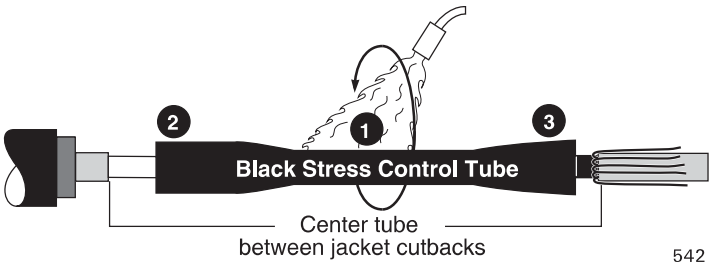
PILC-to-PILC Splice

Discard angle-cut SRM.

Go to Step 14.

14. Position black stress control tube; shrink in place

Center tube over splice as shown (or equivalent position if unjacketed). Begin shrinking at center of tube (1), working torch with a smooth brushing motion around the tube. After center portion shrinks, work torch as before toward one end (2), then to the opposite end (3). Apply sufficient heat to ensure softening of the SRM, indicated by a smooth surface profile.



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NOTICE *Do not point flame directly at cable semi-con layer.*

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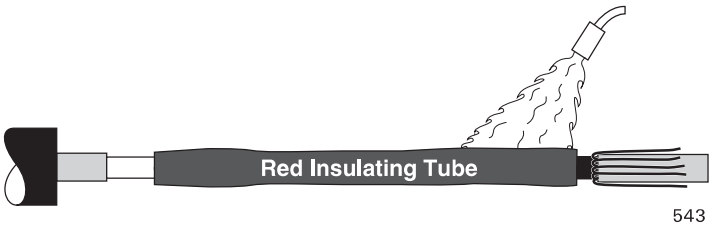
15. Position red insulating tube; shrink in place

Center tube over the black stress control tube. Shrink in place using the same method as in Step 14.



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16. Apply red sealant

Remove backing from red sealant. Using light tension, wrap sealant over the cable, butted against the red insulating tube as shown. Build the sealant to the level of the red insulating tube.

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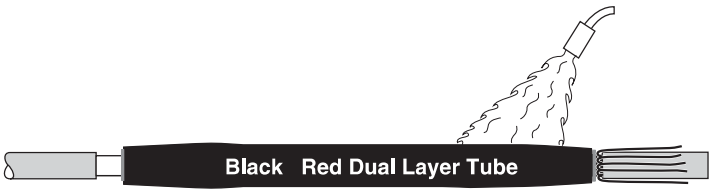
17. Position black/red dual layer tube; shrink in place

Center tube over the red insulating tube. Shrink in place using the same method as in Step 14.

NOTICE *The dual layer tube requires more heating time to install than the single layer tubes. Post heat the entire tube for 45 seconds after fully shrunk.*



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18. Install ground braid

Wrap 4 tight layers of 2″ wide copper mesh around a minimum of 3″ of cleaned lead sheath on PILC cable.

1338ca

You may tape down on edge only. Copper mesh must be exposed for contact with straps installed later.

Repeat on other side if PILC-PILC.

Clean cable jacket; apply sealant.

Using an approved solvent, clean and abrade 8″ of cable jackets as shown.

1338aa

Apply one wrap of sealant starting at the jacket cut back around the PILC cable jacket as shown.

1338ba

If PILC-to-PILC; apply sealant to both cables.

19. Install ground braid on PILC side

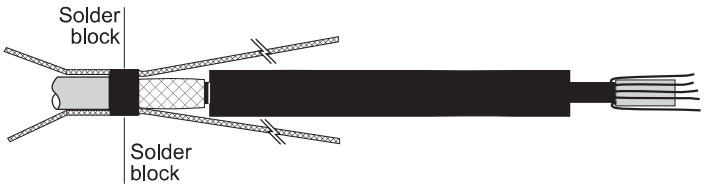
Position the solder blocked section of both ground braids over the sealant with the longer part of the braid extending over the splice. Press the braids into the sealant.

Lay braid onto copper mesh

Wrap the spring clamp around the ground braids over the copper mesh as shown. Tighten the clamp by twisting it in the direction it is wrapped and secure with the copper foil tape provided.

Repeat with second spring clamp.

Apply one more wrap of sealant over the ground braids and the previously installed sealant to cover solder block.



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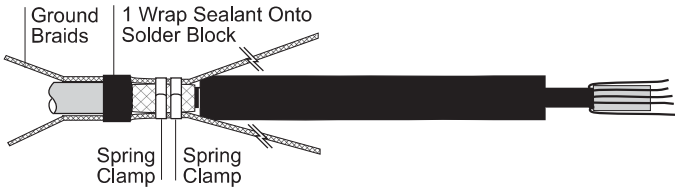


1341ca

Choice 1

If PILC-Poly

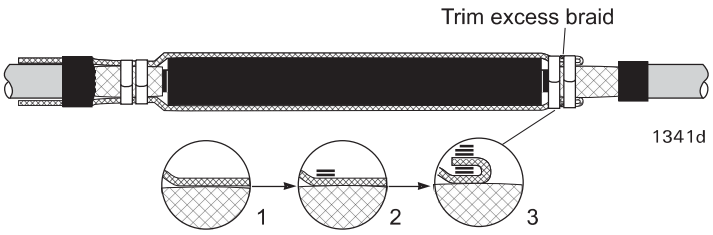
Lay the braids across the splice and attach 1/2 of neutral wires to each braid using customer supplied connector.

1341da

Choice 2

If PILC-to-PILC

Lay the braids across the splice and attach both to the copper mesh with spring clamp. Install first clamp onto the copper mesh covered lead. With the second clamp, make two wraps of the clamp over the braids, fold the braids back over the clamp, and finish wrapping the clamp over the braids. Tighten both clamps by twisting and secure with copper tape. Trim excess braids.



1341d

20. Install the shielding mesh

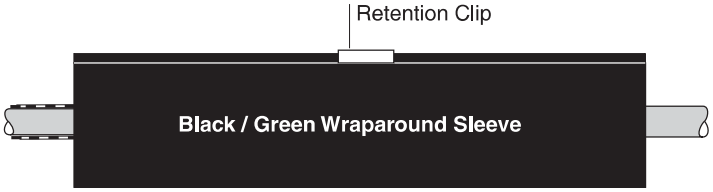
Lightly wrap a half-lapped layer of the mesh across the entire splice and tie-off.

1341e

21. Position wraparound sleeve

Remove or tape over all sharp points to prevent puncture of wraparound sleeve.

Remove backing from the wraparound sleeve and center over the splice. Slide metal retention clip onto butted rails.



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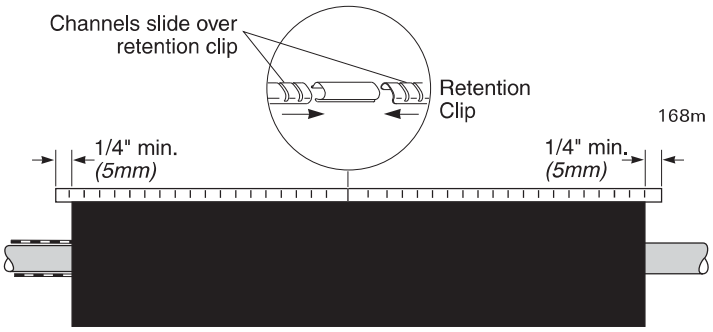
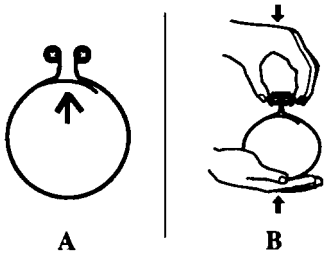
22. Install channel clip

Slide the channels toward the center from each end of the sleeve and over the retention clip. A minimum of 1/4 inch of channel should be extended beyond the edges of the sleeve.

If channels slide on easily go to step 23. 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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23. Shrink 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 and 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.

NOTICE *Green heat-sensitive paint will turn black as sleeve shrinks in place.*

This completes the splice.

NOTICE *Allow to cool before moving or placing in service.*