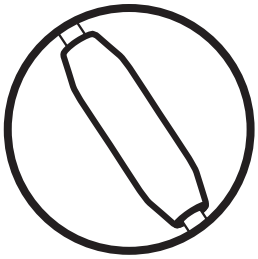
Tyco Electronics



HVS-3510S-J Series 35kV Class

Splice for 1/C Jacketed Concentric Neutral Power 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.

Customer Service

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

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) 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

Cleaning the Cable

Use an approved solvent, such as the one supplied in the P63 Cable Prep Kit, to clean the cable. Be sure to follow the manufacturer's instructions. Failure to follow these instructions could lead to product failure.

Some newer solvents do not evaporate quickly and need to be removed with a clean, lint-free cloth. Failure to do so could change the volume resistivity of the substrate or leave a residue on the surface. Please follow the manufacturer's instructions carefully.

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

Note: *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.*

1. Product selection

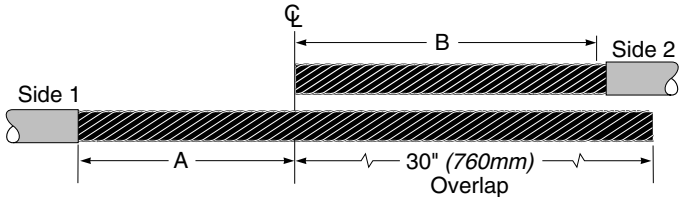
Check kit selection with cable diameter dimensions in Table 1.

Table 1

Kit	Nominal Cable Range	Insulation Diameter Range	Jacket Diameter Max.	Maximum Connector Dimensions	
				Diameter	Length
HVS-3511S-J	1/0-3/0 AWG	0.95-1.35″ (24-34mm)	1.55″ (39mm)	1.00″ (25mm)	5.00″ (125mm)
HVS-3512S-J	4/0-500 kcmil	1.20-1.70″ (30-43mm)	2.10″ (53mm)	1.60″ (41mm)	8.00″ (200mm)
HVS-3513S-J	600-1000 kcmil	1.55-2.15″ (39-55mm)	2.80″ (71mm)	1.85″ (47mm)	10.00″ (255mm)

2. Prepare cables

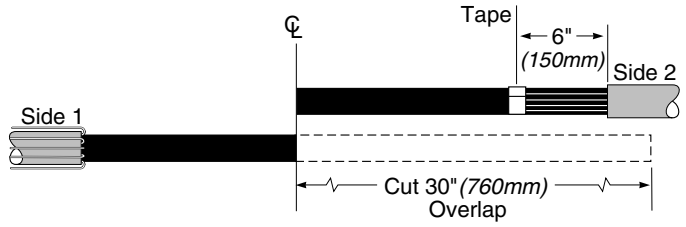
Overlap the two cables as shown. Refer to Table 2 and remove the cable jacket to Dimensions A (plus the 30″ overlap) and B.



1729

Fold back neutral wires on Side 1. Trim the neutral wires on Side 2 and tape over ends as shown.

Cut Side 1 cable at center line.



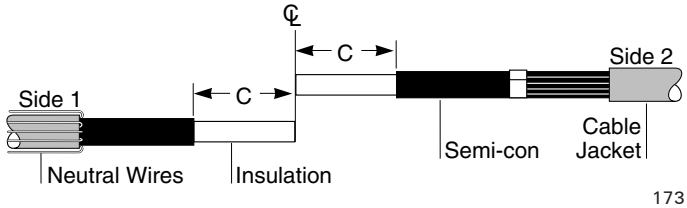
1730

Table 2

Kit	Jacket Cutback A	Jacket Cutback B	Semi-con Cutback C	Maximum Connector Dimensions		Expansion Gap "X"
				Length	Diameter	
Dimensions in inches						
HVS-3511S-J	15″	21″	7.25″	5.00″	1.00″	0.25″
HVS-3512S-J	16″	22″	9.00″	8.00″	1.60″	0.50″
HVS-3513S-J	17″	23″	10.00″	10.00″	1.85″	0.50″
Dimensions in millimeters						
HVS-3511S-J	(380mm)	(530mm)	(185mm)	(125mm)	(25mm)	(5mm)
HVS-3512S-J	(405mm)	(560mm)	(230mm)	(200mm)	(41mm)	(15mm)
HVS-3513S-J	(430mm)	(585mm)	(255mm)	(255mm)	(47mm)	(15mm)

3. Remove semi-con

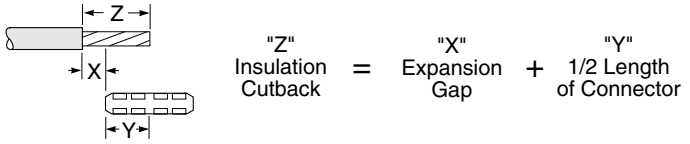
Refer to Table 2 and remove the semi-con to Dimension C.



1731

4. Remove insulation

Refer to Table 2 and cutback the insulation as shown.



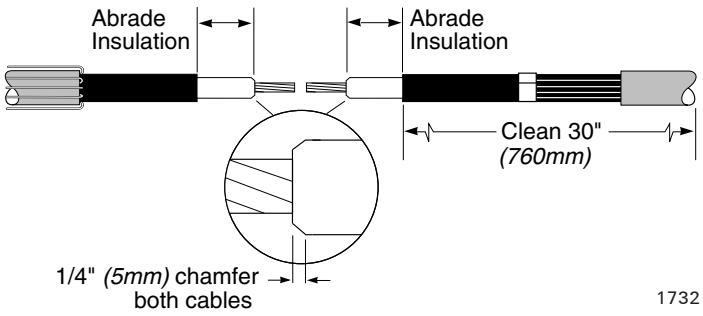
400

5. Chamfer insulation; abrade insulation; clean cable

Chamfer insulation for 1/4" (5mm) as shown.

Note: Chamfering is not required, but is recommended.

Abrade the insulation, if necessary, to remove imbedded semi-con, and clean cable as shown



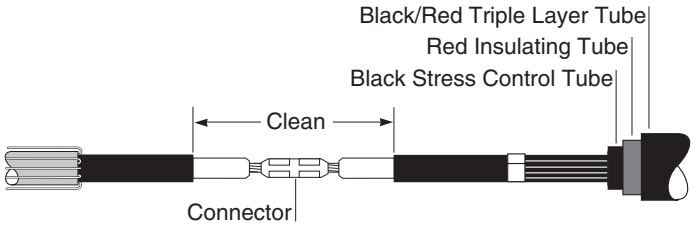
1732

6. Place tubes over cable; install connector

Note: Tyco Electronics recommends the use of connectors with rounded or "tapered" ends, but they are not required.

Protect tubes from end of conductor as they are placed over the cable. Install the connector. After installation, deburr connector.

Clean the insulation as shown

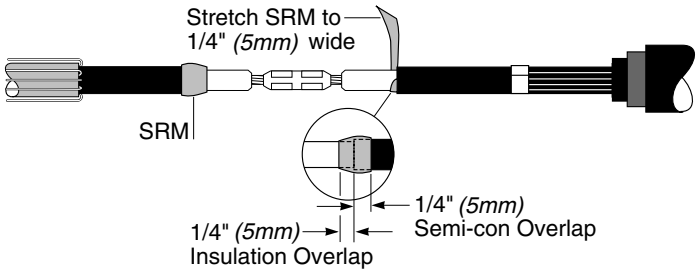


1733

7. 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.

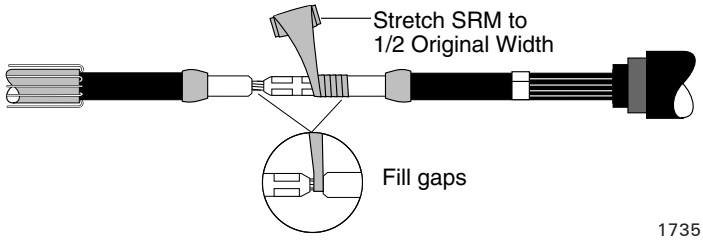
Depending on cable size, more SRM is supplied than is required to fill the step. After filling the step, discard excess angle cut pieces.



1734

8. Apply SRM over connector

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



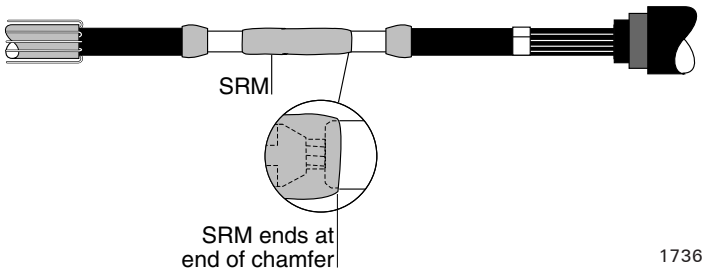
1735

Continue to wrap SRM 1/4" onto the solvent cleaned insulation as shown.

Finished SRM diameter should be only slightly larger than that of the cable insulation.

Make sure the area between the connector end and the end of the insulation is filled in up to the top of the chamfered insulation.

Note: If connector diameter is larger than insulation diameter, apply two tightly wrapped, half-lapped layers of SRM over the entire connector and be sure to fill the gaps. Discard excess SRM (long strips).

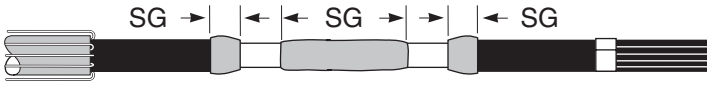


1736

9. Apply Silicone Grease (SG)

Snip open end of the SG ampule and apply a thin film of compound on the SRM over the connector and the semi-con steps.

Apply thin film of SG over surface of installed SRM



1737

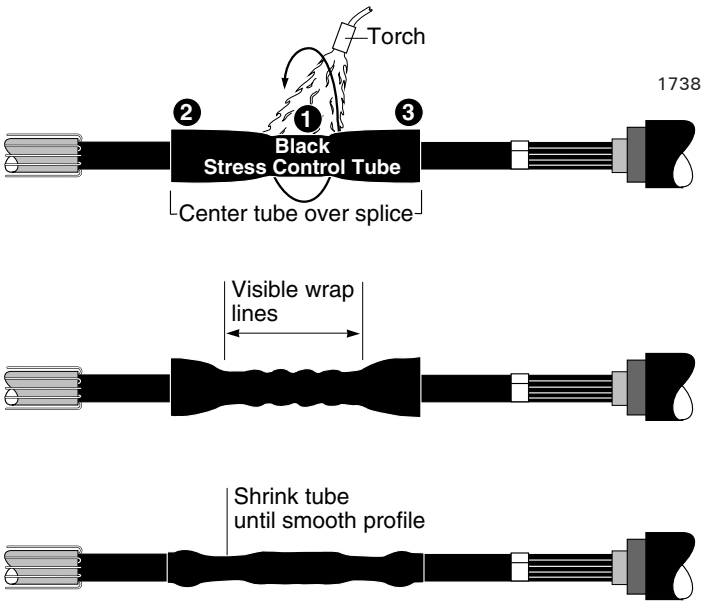
10. Position black stress control tube; shrink in place

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.

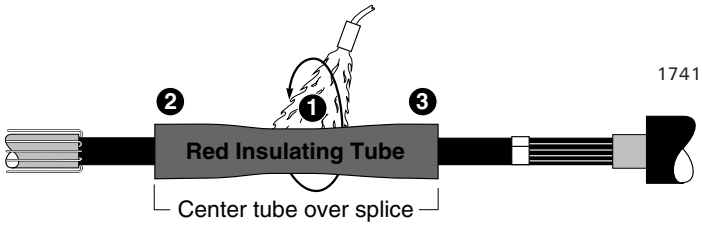
The rings from the SRM wraps may be visible as the tubing is shrunk.

Post heat the connector area until the tube surface is smooth and the under-lying SRM wraps are no longer visible.



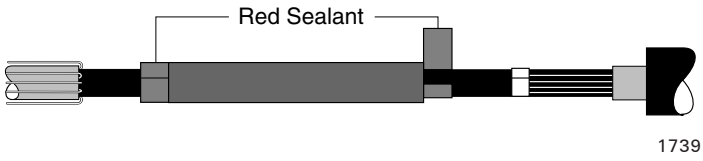
11. Position red tube; shrink in place

Shrink tube using same technique used in Step 10.



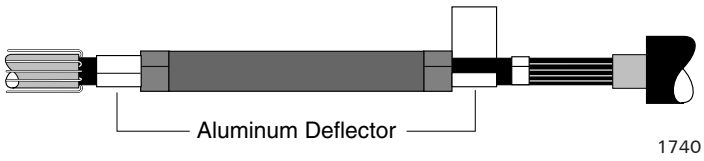
12. Apply red sealant

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



13. Apply aluminum deflector

Remove backing and install the aluminum deflector around the cable semi-con layer butted up to the edge of the red sealant applied in Step 12.



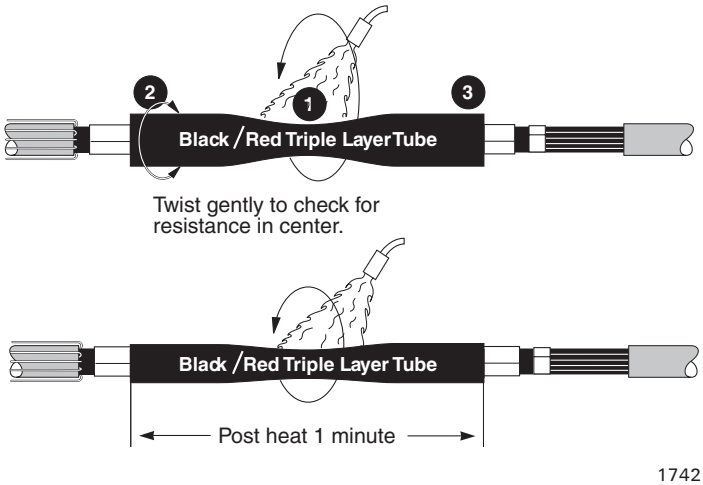
14. Position black/red triple layer tube; shrink in place

Note: Black/red triple layer tube takes longer to shrink than single tubes.

Center tube over joint as shown. Begin shrinking at center of tube (1), working torch with a smooth brushing motion around the tube. Before moving away from the center, make sure the tube has shrunk by gently twisting the unshrunk end to feel for resistance. After center portion shrinks, work torch as before toward one end (2), then to the opposite end (3).

Note: Pay particular attention to the hard to reach parts, especially the back and underside of the tube. The tube should have a smooth and even surface when finished.

Post heat the entire tube for 1 minute after fully shrunk.



15. Connect neutral wires

Remove aluminum deflectors. Twist neutral wires together and splice with suitable connector(s).

1744

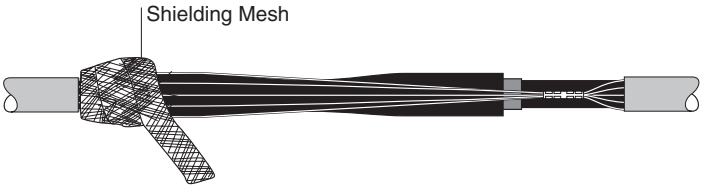
16. Clean cable jackets

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

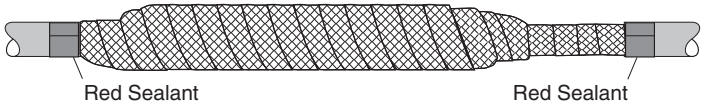
1745

17. Install the shielding mesh.

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



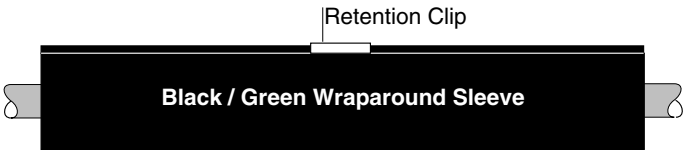
Remove release paper from red sealant and place one full wrap at cable jacket cutbacks as shown.



614

18. 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. Slide metal retention clip onto the butted rails.

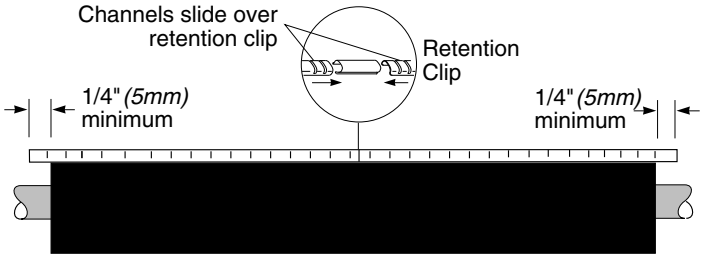


1746

19. 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.

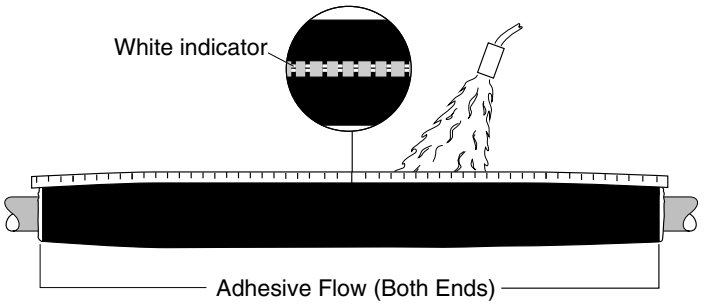


1747

20. Shrink the wraparound sleeve

Preheat evenly along both sides of the rail/channel area until this area begins to shrink. 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.

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



1748

This completes the installation.

Allow splice to cool before moving or placing in service.