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Inches dimensions are in between brackets.

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## **Installation Procedure for D-200 series Shielded Cable Splice Kits with MiniSeal Crimp Primary Splices**

### **1.0 Scope**

This standard contains the procedures for making environment resistant 1 to 1 in-line splices in shielded and jacketed cables listed in Paragraph 5.0 using Raychem D-200 series shielded cable splice kits.

### **2.0 References**

Tyco Electronics Control Drawing (TECD) Series D-200. See Paragraph 5.0 for applicable Raychem parts.

### **3.0 Application Equipment**

#### **3.1 Wire Handling Tools**

- a) Wire stripper for primaries.
- b) Wire stripper for cable jacket.
- c) Small sharp scissors or diagonal cutters for braid.
- d) Ruler readable to 0.50 (0.020).
- e) Raychem AD-1377 crimp tool (calibrated).

#### **3.2 Heating Tools**

Use one of the following or Tyco Electronics approved alternative.

- a) HL2010E Steinel heat gun with p/n reflector 832011-000.
- b) AA-400 Super Heater with mini SolderSleeve device relector 979663-000.
- c) IR-550 infrared heater with RG-2 relector.

### **4.0 General Information**

#### **4.1 Splice Kit Description**

The Raychem D-200 series shielded cable splice kits consists of:

- a) SolderShield braid splice for splicing and encapsulating the cable shields.
- b) MiniSeal crimp barrels for splicing the primary conductors.
- c) MiniSeal crimp sealing sleeves for encapsulating the primary conductor splices.

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## 5.0 Installation Procedures

Use procedure paragraph applicable to the cable configuration being spliced.

Cable Primaries			Splice Kit Number	Applicable Paragraph
No.	AWG Range	Plating		
1	26 to 20	Nickel	D-200-0228	5.1
1	20 to 16	Nickel	D-200-0229	5.1
1	16 to 12	Nickel	D-200-0230	5.1
2	26 to 20	Nickel	D-200-0231	5.2
2	18 to 16	Nickel	D-200-0232	5.2
2	14	Nickel	D-200-0233	5.2
2	12	Nickel	D-200-0234	5.2
3/4	26 to 20	Nickel	D-200-0236	5.3
3/4	18 to 16	Nickel	D-200-0237	5.3
3/4	14 to 12	Nickel	D-200-0238	5.3
3/4	18 to 16	Nickel	D-200-0239	5.3

### 5.1 Single Conductor Shielded Cable

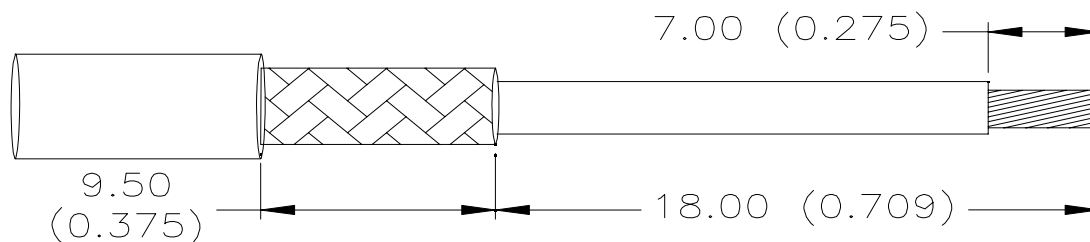
Applicable cable gauges and splices kit numbers:

26, 24, 22, 20	D-200-0228
20, 16	D-200-0229
16, 12	D-200-0230

#### 5.1.1 Cable Preparation

Tolerances: All lengths  $\pm 0.50$  (0.020)

- Remove cable jacket and shield: 18.00 (0.700)
- Strip primaries: 7.00 (0.275)
- Remove cable jacket: 9.50 (0.375)



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### 5.1.2 Assembly Procedure

#### **WARNING**

Hot air tools can cause severe burns. Do not allow skin to contact the hot surfaces of the tool or the hot air stream. Use adequate ventilation. Charring or burning the product will produce fumes that may cause eye, skin, nose, and throat irritation. Consult Material Safety Data Sheet **RAY5104** for further information.

- a) Place the SolderShield device's sleeve (small end first) onto one of the cables.
- b) Primary Conductor Splice.
  - 1) Place the MiniSeal sealing sleeve onto one of the cables
  - 2) Crimp primaries into opposite ends of the crimp splice using a calibrated Raychem AD-1377 crimp tool. Be sure matching primaries from each cable are in same sleeve.
  - 3) Center the sleeve over the splice.
  - 4) Apply heat to the center of the sleeve until adhesive melts and extrudes out at the ends of the sleeve.
  - 5) When extruded adhesive is clearly visible, move the heat source along the sleeve back and forth until the adhesive flows out sufficiently to flatten the tubing along the length of the wire.
  - 6) Inspect per Paragraph 6.1.
- c) Shield Splice
  - 1) Center the SolderShield splice sleeve over the splice and the exposed cable shields.
  - 2) Heat sleeve.
    - a) Heat center of sleeve until the solder melts and the shield and tube recover.
    - b) Move the heat toward one end of the shield slowly enough to keep the sleeve recovering as you move along.
    - c) Apply heat for an additional 5 to 10 seconds to the final 12.5 mm (half-inch) of the sleeve shield to ensure sufficient heat transfer to the cable shield to make a good joint.
    - d) Apply heat to end of sleeve until adhesive melts and flows along cable jacket.
    - e) Repeat for other end of sleeve.
  - 3) Inspect per Paragraph 6.2.

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## 5.2 Two Conductor Shielded Cable

Applicable cables gauges and splice kit numbers:

26, 24, 22, 20	D-200-0231
18, 16	D-200-0232
14	D-200-0233
12	D-200-0234

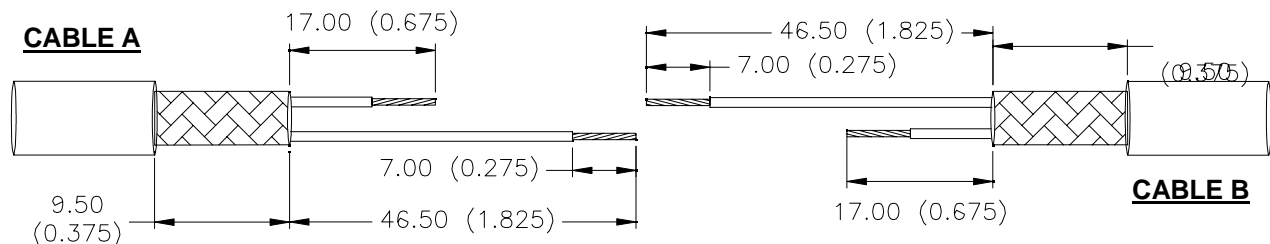
### 5.2.1 Cable Preparation

Tolerances: All lengths  $\pm 0.50$  (0.020)

- Remove cable jacket and shield: 46.50 (1.825)
- Cut 1 primary on each cable: 17.00 (0.675) from cable jacket.

**Note:** Short primaries on cable A must be left uncut on cable B.

- Strip primaries: 7.00 (0.275)
- Remove cable jacket: 9.50 (0.375)



### 5.2.2 Assembly Procedure

- Place the SolderShield splice sleeve (small end first) onto one of the cables
- Primary Conductor Splices.
  - Place the MiniSeal sealing sleeve onto the longer lead of each cable.
  - Crimp primaries into opposite ends of the crimp splice using a calibrated Raychem AD-1377 crimp tool.
  - Center the sleeves over the splices.
  - Apply heat to the center of the sleeve until adhesive melts and extrudes out at the ends of the sleeve.
  - When extruded adhesive is clearly visible, move the heat source along the sleeve back and forth until the adhesive flows out sufficiently to flatten the tubing along the length of the wire.
  - Inspect per Paragraph 6.1.

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- c) Shield Splice
  - 1) Center the SolderShield splice sleeve over the splice and the exposed cable shields.
  - 2) Heat sleeve
    - a) Heat center of sleeve until the solder melts and the shield and tube recover.
    - b) Move the heat toward one end of the shield slowly enough to keep the sleeve recovering as you move along.
    - c) Apply heat for an additional 5 to 10 seconds to the final 12.5 mm (half-inch) of the sleeve shield to ensure sufficient heat transfer to the cable shield to make a good joint.
    - d) Apply heat to end of sleeve until adhesive melts and flows along cable jacket.
    - e) Repeat for other end of sleeve.
  - 3) Inspect per Paragraph 6.2.

### 5.3 Three and Four Conductor Shielded Cable

Applicable cables gauges and splice kit numbers:

26, 24, 22, 20	D-200-0236
18, 16	D-200-0237
14, 12	D-200-0238
18, 16	D-200-0239

#### 5.3.1 Cable Preparation

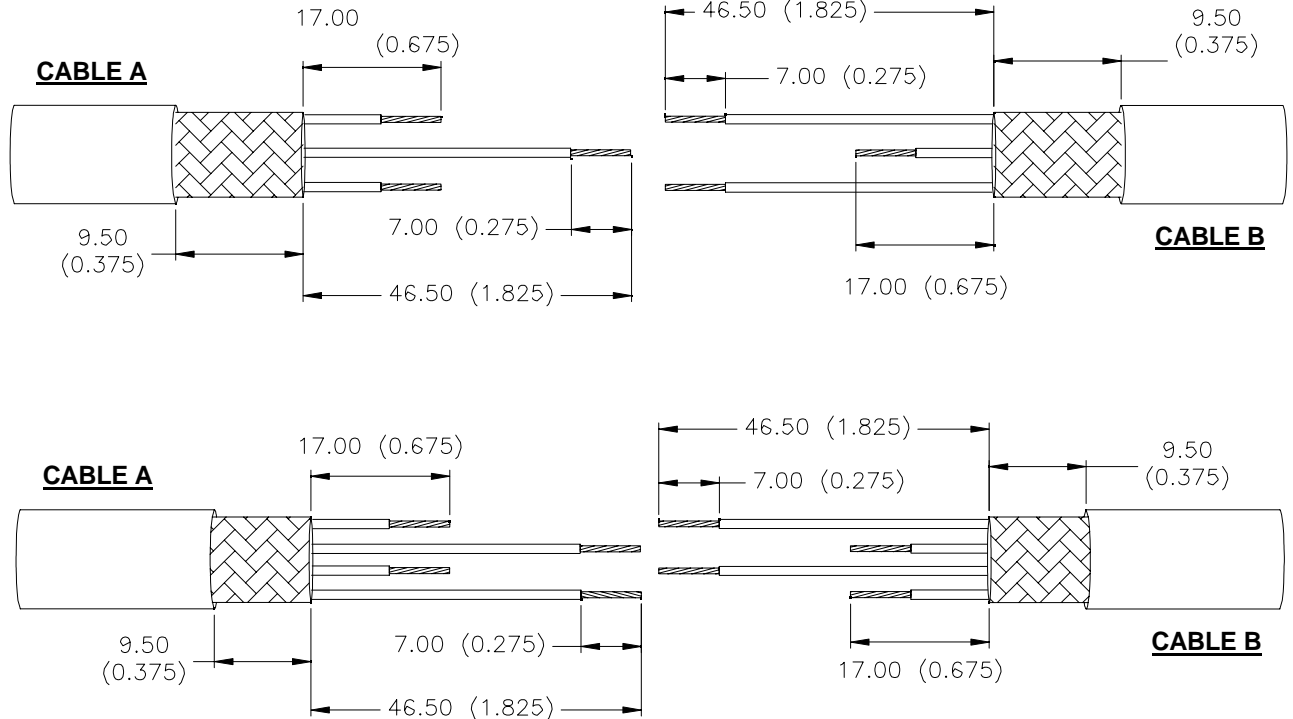
Tolerances: All lengths  $\pm 0.50$  (0.020)

- a) Remove cable jacket and shield: 46.50 (1.825)
- b) Cut primaries: 3-conductor: 2 on cable A and 1 on cable B; 4-conductor: 2 on both cables A and B: 17.00 (0.675) from cable jacket.

**Note:** Short primaries on cable A must be left uncut on cable B.

- c) Strip primaries: 7.00 (0.275)
- d) Remove cable jacket: 9.50 (0.375)

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### 5.3.2 Assembly Procedure

- a) Place the shield splice sleeve (small end first) onto one of the cables.
- b) Primary Conductor Splices.
  - 1) Place the MiniSeal sealing sleeve onto the longer lead of each cable.
  - 2) Crimp primaries into opposite ends of the crimp splice using a calibrated Raychem AD-1377 crimp tool.
  - 3) Center the sleeves over the splices.
  - 4) Apply heat to the center of the sleeve until adhesive melts and extrudes out at the ends of the sleeve.
  - 5) When extruded adhesive is clearly visible, move the heat source along the sleeve back and forth until the adhesive flows out sufficiently to flatten the tubing along the length of the wire.
  - 6) Inspect per Paragraph 6.1.
- c) Shield Splice
  - 1) Center the SolderShield splice sleeve over the splice and the exposed cable Shield.

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- 2) Heat sleeve.
  - a) Heat center of sleeve until the solder melts and the shield and tube recover.
  - b) Move the heat toward one end of the shield slowly enough to keep the sleeve recovering as you move along.
  - c) Apply heat for an additional 5 to 10 seconds to the final 12.5 mm (half-inch) of the sleeve shield to ensure sufficient heat transfer to the cable shield to make a good joint.
  - d) Apply heat to end of sleeve until adhesive melts and flows along cable jacket.
  - e) Repeat for other end of sleeve.
- 3) Inspect per Paragraph 6.2.

## 6.0 Inspection

### 6.1 MiniSeal Splices

- a) Conductors must be visible at the point where they enter the crimp barrel.
- b) Both indentations of a crimp must be on the crimp barrel.
- c) Sealing sleeve inserts must have flowed along wire insulation.
- d) Sleeve must not have discolored to the degree that the crimp barrel cannot be inspected.
- e) Sleeve must not be cut or split.

### 6.2 Shield Splice

- a) Sleeve/shield must be recovered along its entire length.
- b) Sleeve must be recovered tightly around cable jacket.
- c) Sealing rings must have flowed along cable jacket.
- d) Sleeve must not have discolored to the degree that joint can not be inspected.
- e) Sleeve must not cut or split.
- f) Strands must not be poking through the sleeve.

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