







# Raychem Electrical Interconnect Products

SAE AS81824 & SAE AS83519 Series II Qualified Products Offer Robust and Highly Reliable Wire Termination in Demanding Environments

# Electrical Interconnect Products

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TE Connectivity's (TE) dependable, economical wire and cable termination products provide solutions for hundreds of wire and cable interconnect requirements. All wire termination products are housed inside transparent heat-shrinkable insulation sleeves, which provide inspectability and can provide various levels of environmental protection. Most Raychem brand termination products incorporate a fluxed solder preform, which is essential for a highly controlled soldering process. Other products incorporate controlled crimping or a unique process of combining a twist-on coil with controlled soldering to provide high-reliability joints on the widest variety of conductor types and platings.

SolderSleeve technology ensures high-quality electrical and mechanical performance time after time. Premeasured solder and flux create repeatable, reliable terminations, reducing rejects and field failures. When the SolderSleeve device is heated, the tubing shrinks and the solder preform melts to make a fully insulated, strain-relieved, protected solder connection. Heat-shrinkable tubing provides the benefits of insulation, strain relief, and protection for our controlled crimp products. Many Raychem brand interconnect products have earned UL recognition or SAE AS83159 Mil-Spec approval.

Many SolderSleeve and related devices are made from polyvinylidene fluoride tubings that meet the requirements of AMS-DTL-23053/8 (formerly MIL-DTL-23053/8).

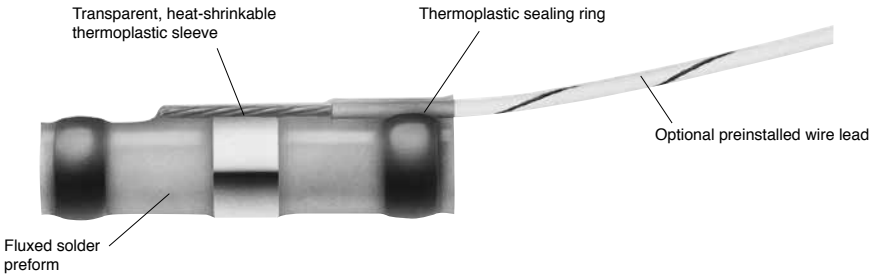
Raychem brand interconnect devices combine high-strength materials with innovative design for consistent, long-life performance. And because the insulation sleeve is transparent, operators can easily inspect the connection.

TE shrink-to-fit technology even helps reduce inventory, because one device size will fit a wide range of wire gauges, cable diameters, and component shapes.

TE interconnect products are designed for many applications, from simple splices to terminators for sophisticated electronic systems, either sealed or unsealed, and for high- or low-temperature environments.

# Product Selection

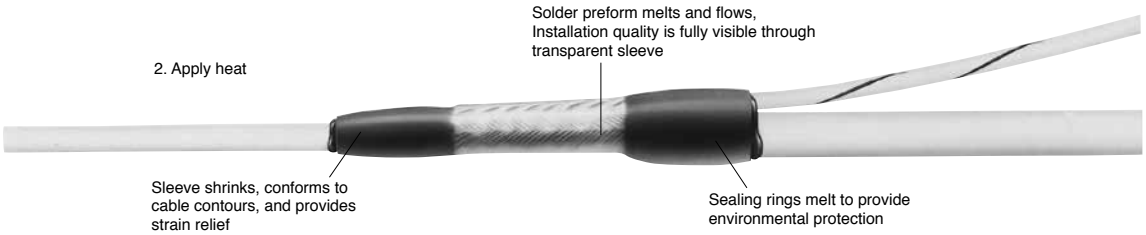
**Typical SolderSleeve Device (illustration of shield terminator concept)**




Typical Installation

1. Insert prepared cable







# Product Selection

| Application Type | Max. Operating Temp. | Connection Type | Product Description | Series | Page Number |
|---|---|---|---|---|---|
| Wire-to-wire splicing | 125°C [257°F] | Solder | SolderSleeve wire splices CWT | B-155-900X | 7 |
| | 150°C [302°F] | Solder | SolderSleeve wire splices | D-110, D-1744 | 7 |
| | 125°C [257°F] | Coil and solder | SolderGrip closed end connector splices (stub) | SGRP Series X-58, SGRS | 13 |
| | 125°C [257°F] | Crimp | DuraSeal crimp splices | D-406 | 19 |
| | 125°C [257°F] | Crimp | Cold applied splices | D-436 | 22 |
| | 150°C [302°F] | Crimp | MiniSeal crimp splices | D-436 (M81824) | 24 |
| | 200°C [392°F] | Crimp | MiniSeal crimp splices | D-200 | 28 |
| Terminals and disconnects | 125°C [257°F] | Crimp | DuraSeal crimp terminals and disconnects | B-106 | 31 |
| | 150°C [302°F] | Coil and solder | SolderGrip terminals | SGRT | 36 |
| Wire termination to pin/post/tab | 125°C [257°F] | Solder | SolderSleeve wire terminators | B-155-15XX | 43 |
| | 150°C [302°F] | Solder | SolderSleeve wire terminators | D-129, D-141, D-71X | 43 |
| Shield termination | 125°C [257°F] | Solder | SolderSleeve shield terminators | B-155-X | 47 |
| | 150°C [302°F] | Solder | SolderSleeve shield terminators | S01, S02, M83519, SO63 | 47 |
| | 175°C [347°F] | Solder | SolderSleeve shield terminators | SO96, SO175 | 47 |
| | 200°C [392°F] | Solder | SolderSleeve shield terminators | S200 | 47 |
| Coaxial cable termination | 125°C [257°F] | Solder | SolderSleeve coaxial cable terminators | B-155, D-184 | 57 |
| | 150°C [302°F] | Solder | SolderSleeve coaxial cable terminators | B-02X, B-04X, D-181 | 57 |
| | 150°C [302°F] | Solder | SolderSleeve PCB/coaxial cable terminators | D-607, B-046 | 59 |
| | 135°C [275°F] | Solder | RF one-step BNC/TNC connectors | RBD, RTD | 61 |
| Cable-to-cable splicing | 150°C [302°F] | Solder/Crimp | SolderShield cable splices | D-150 | 68 |
| | 150°C [302°F] | Solder/Crimp | C-Wrap repair sleeve | D-150 | 71 |
| | 260°C [500°F] | Solder/Crimp | Rayseal repair sleeve | D-260 | 73 |
| | 200°C [392°F] | Solder/Crimp | D-200 flexible splice | D-200 | 75 |
| Shielded contacts | 150°C [302°F] | Solder | SolderTacts shielded contacts | D-602 | 80 |

# Wire-to-Wire Splicing



## Introduction

TE offers many products for wire-to-wire splicing: SolderSleeve splicing devices; SolderGrip splices; and DuraSeal and MiniSeal crimp splices.

Like all TE interconnect products, the wire-to-wire splicing devices are rugged and reliable, yet easy to install.

Designed for applications with temperatures up to 200°C [302°F], products in this section include:

**SolderSleeve** splicing devices, which can be used to make sealed or unsealed splices. In a single step, they solder, insulate, encapsulate, and strain-relieve a wide range of wire sizes.

**DuraSeal** heat-shrinkable nylon crimp splices are easy to use in factory or repair applications. DuraSeal crimp splices provide watertight sealing and superior protection against corrosion, abrasion, and vibration.

Small, lightweight, and low-profile **MiniSeal** high-performance crimp splices, which substantially reduce wire bundle size and weight, are QPL-listed to the SAE AS81824 specification, and are required by the MIL-W-5088 specification.

**SolderGrip** splices, which are closed-end connectors utilizing a spiral copper coil that grips and compresses the conductors and allows a prefluxed solder ring to flow to the center of the splicing area, resulting in a high-reliability, repeatable solder joint.



## RUGGED

- Transparent polyvinylidene fluoride or polyolefin sleeve provides encapsulation, inspectability, strain relief, and insulation
- With one or two wires per end, the NAS 1744 splices meet 75,000 ft [22,000 m] altitude immersion requirement

## CAPABLE

- Prefluxed solder preform provides a controlled soldering process
- UL and CUL recognized (CWT + D-110) See page 12 specifications and approvals

## EASY TO USE

- One-piece design makes installation easy and lowers the installed cost
- Thermochromic temperature indicator in the NAS splices facilitates termination and inspection

# SolderSleeve Wire Splices

### Product Selection Process

From the Product Options table below, select the product series appropriate for your application based on the temperature rating and sealing performance required.

**If the application has only one size of wire per side** and no more than two wires on either side:

1. Determine wire gauge sizes for both sides of splice.
2. Determine number of wires (one or two wires) for each side of splice.
3. Select part numbers from the appropriate table:
   - For B-155 and CWT series (low temperature): Use Table A on page 8.
   - For D-110 series (splashproof): Use Table B on page 9.
   - For D-1744 series (immersion sealed): Use Table C on page 10.

**If the application has more than one size of wire per side** or more than two wires on either side (or if you prefer to work with CMA or $mm^2$ sizes):

1. Turn to "CMA/$mm^2$ Calculation" on page 11 and use the workspace there to calculate the total cross section to be spliced.
2. Use Table E on page 12 to select the sleeve recommended for that cross section.

Notes:

While all combinations listed will provide satisfactory solder joints, the degree of strain relief obtained depends on the outer diameter of the wires being joined. Refer to Table E for the recommended size ranges for the sleeves.

Wires 16 AWG (1.21 $mm^2$) and larger, and wires having more than 19 strands, should be pretinned prior to splicing, to obtain the optimum solder joint quality.

Part selection for wires 26 AWG (0.15 $mm^2$) and smaller is covered on page 11.

### Product Options

| Product Series | Minimum Wire Temperature Rating | Maximum Operating Temperature | Intended Application Environment |
|---|---|---|---|
| B-155 | 85°C [185°F] | 125°C [257°F] | (RoHS) Splashproof |
| CWT | 85°C [185°F] | 125°C [257°F] | Splashproof |
| D-110 | 125°C [257°F] | 150°C [302°F] | Splashproof |
| D-1744 (NAS 1744) | 125°C [257°F] | 150°C [302°F] | Immersion sealed |

**Note:** Cadmium-free option (B-152 series) is available for operating temperature of 125˚C [257˚F]. Consult TE for details.

## Table A: B-155 Series Selection

| Side A: Size and Number of Conductors | | Side B: Size and Number of Conductors | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 26 AWG | | 24 AWG | | 22 AWG | | 20 AWG | |
| | | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 26 AWG | 1 | B-155-9001 | B-155-9001 | B-155-9001 | B-155-9001 | B-155-9001 | B-155-9002 | B-155-9002 | B-155-9002 |
| | 2 | B-155-9001 | B-1559001 | B-155-9001 | B-155-9002 | B-155-9001 | B-155-9002 | B-155-9002 | B-155-9002 |
| 24 AWG | 1 | B-155-9001 | B-155-9001 | B-155-9001 | B-155-9001 | B-155-9001 | B-155-9002 | B-155-9002 | B-155-9002 |
| | 2 | B-155-9001 | B-155-9002 | B-155-9001 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 |
| 22 AWG | 1 | B-155-9001 | B-155-9001 | B-155-9001 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 |
| | 2 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9003 |
| 20 AWG | 1 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9003 |
| | 2 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9003 | B-155-9003 | B-155-9003 |
| 18 AWG | 1 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9003 |
| | 2 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 |
| 16 AWG | 1 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9002 | B-155-9003 | B-155-9003 | B-155-9003 |
| | 2 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 |
| 14 AWG | 1 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-1559003 | B-155-9003 | B-155-9003 |
| | 2 | B-155-9004 | B-155-9004 | B-155-9004 | B-155-9004 | B-155-9004 | B-155-9004 | B-155-9004 | B-155-9004 |
| 12 AWG | 1 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9004 |
| | 2 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 | B-1559005 |
| 10 AWG | 1 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 |

| Side A: Size and Number of Conductors | | Side B: Size and Number of Conductors | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 18 AWG | | 16 AWG | | 14 AWG | | 12 AWG | | 10 AWG |
| | | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 |
| 26 AWG | 1 | B-155-9002 | B-155-9003 | B-155-9002 | B-155-9003 | B-155-9003 | B-155-9004 | B-155-9003 | B-155-9005 | B-155-9005 |
| | 2 | B-155-9002 | B-155-9003 | B-155-9002 | B-155-9003 | B-155-9003 | B-155-9004 | B-155-9003 | B-155-9005 | B-155-9005 |
| 24 AWG | 1 | B-155-9002 | B-155-9003 | B-155-9002 | B-155-9003 | B-155-9003 | B-155-9004 | B-155-9003 | B-155-9005 | B-155-9005 |
| | 2 | B-155-9002 | B-155-9003 | B-155-9002 | B-155-9003 | B-155-9003 | B-155-9004 | B-155-9003 | B-155-9005 | B-155-9005 |
| 22 AWG | 1 | B-155-9002 | B-155-9003 | B-155-9002 | B-155-9003 | B-155-9003 | B-155-9004 | B-155-9003 | B-155-9005 | B-155-9005 |
| | 2 | B-155-9002 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9004 | B-155-9003 | B-155-9005 | B-155-9005 |
| 20 AWG | 1 | B-155-9002 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9004 | B-155-9003 | B-155-9005 | B-155-9005 |
| | 2 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9004 | B-155-9004 | B-155-9005 | B-155-9005 |
| 18 AWG | 1 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9004 | B-155-9004 | B-155-9005 | B-155-9005 |
| | 2 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9004 | B-155-9003 | B-155-9004 | B-155-9004 | B-155-9005 | B-155-9005 |
| 16 AWG | 1 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9004 | B-155-9004 | B-155-9005 | B-155-9005 |
| | 2 | B-155-9003 | B-155-9004 | B-155-9003 | B-155-9004 | B-155-9004 | B-155-9005 | B-155-9004 | B-155-9005 | B-155-9005 |
| 14 AWG | 1 | B-155-9003 | B-155-9003 | B-155-9003 | B-155-9004 | B-155-9003 | B-155-9004 | B-155-9004 | B-155-9005 | B-155-9005 |
| | 2 | B-155-9004 | B-155-9004 | B-155-9004 | B-155-9005 | B-155-9004 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 |
| 12 AWG | 1 | B-155-9004 | B-155-9004 | B-155-9004 | B-155-9004 | B-155-9004 | B-155-9005 | B-155-9004 | B-155-9005 | B-155-9005 |
| | 2 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 |
| 10 AWG | 1 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 | B-155-9005 |

## Table A: CWT Series Selection

| Side A: Size and Number of Conductors | | Side B: Size and Number of Conductors | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 26 AWG | | 24 AWG | | 22 AWG | | 20 AWG | |
| | | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 26 AWG | 1 | CWT-9001 | CWT-9001 | CWT-9001 | CWT-9001 | CWT-9001 | CWT-9002 | CWT-9002 | CWT-9002 |
| | 2 | CWT-9001 | CWT9001 | CWT-9001 | CWT-9002 | CWT-9001 | CWT-9002 | CWT-9002 | CWT-9002 |
| 24 AWG | 1 | CWT-9001 | CWT-9001 | CWT-9001 | CWT-9001 | CWT-9001 | CWT-9002 | CWT-9002 | CWT-9002 |
| | 2 | CWT-9001 | CWT-9002 | CWT-9001 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 |
| 22 AWG | 1 | CWT-9001 | CWT-9001 | CWT-9001 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 |
| | 2 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9003 |
| 20 AWG | 1 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9003 |
| | 2 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9003 | CWT-9003 | CWT-9003 |
| 18 AWG | 1 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9003 |
| | 2 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 |
| 16 AWG | 1 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9002 | CWT-9003 | CWT-9003 | CWT-9003 |
| | 2 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 |
| 14 AWG | 1 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT9003 | CWT-9003 | CWT-9003 |
| | 2 | CWT-9004 | CWT-9004 | CWT-9004 | CWT-9004 | CWT-9004 | CWT-9004 | CWT-9004 | CWT-9004 |
| 12 AWG | 1 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9004 |
| | 2 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 | CWT9005 |
| 10 AWG | 1 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 |

| Side A: Size and Number of Conductors | | Side B: Size and Number of Conductors | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 18 AWG | | 16 AWG | | 14 AWG | | 12 AWG | | 10 AWG |
| | | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 |
| 26 AWG | 1 | CWT-9002 | CWT-9003 | CWT-9002 | CWT-9003 | CWT-9003 | CWT-9004 | CWT-9003 | CWT-9005 | CWT-9005 |
| | 2 | CWT-9002 | CWT-9003 | CWT-9002 | CWT-9003 | CWT-9003 | CWT-9004 | CWT-9003 | CWT-9005 | CWT-9005 |
| 24 AWG | 1 | CWT-9002 | CWT-9003 | CWT-9002 | CWT-9003 | CWT-9003 | CWT-9004 | CWT-9003 | CWT-9005 | CWT-9005 |
| | 2 | CWT-9002 | CWT-9003 | CWT-9002 | CWT-9003 | CWT-9003 | CWT-9004 | CWT-9003 | CWT-9005 | CWT-9005 |
| 22 AWG | 1 | CWT-9002 | CWT-9003 | CWT-9002 | CWT-9003 | CWT-9003 | CWT-9004 | CWT-9003 | CWT-9005 | CWT-9005 |
| | 2 | CWT-9002 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9004 | CWT-9003 | CWT-9005 | CWT-9005 |
| 20 AWG | 1 | CWT-9002 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9004 | CWT-9003 | CWT-9005 | CWT-9005 |
| | 2 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9004 | CWT-9004 | CWT-9005 | CWT-9005 |
| 18 AWG | 1 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9004 | CWT-9004 | CWT-9005 | CWT-9005 |
| | 2 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9004 | CWT-9003 | CWT-9004 | CWT-9004 | CWT-9005 | CWT-9005 |
| 16 AWG | 1 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9004 | CWT-9004 | CWT-9005 | CWT-9005 |
| | 2 | CWT-9003 | CWT-9004 | CWT-9003 | CWT-9004 | CWT-9004 | CWT-9005 | CWT-9004 | CWT-9005 | CWT-9005 |
| 14 AWG | 1 | CWT-9003 | CWT-9003 | CWT-9003 | CWT-9004 | CWT-9003 | CWT-9004 | CWT-9004 | CWT-9005 | CWT-9005 |
| | 2 | CWT-9004 | CWT-9004 | CWT-9004 | CWT-9005 | CWT-9004 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 |
| 12 AWG | 1 | CWT-9004 | CWT-9004 | CWT-9004 | CWT-9004 | CWT-9004 | CWT-9005 | CWT-9004 | CWT-9005 | CWT-9005 |
| | 2 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 |
| 10 AWG | 1 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 | CWT-9005 | B-155-9005 |

## Table B: D-110 Series Selection

| Side A: Size and Number of Conductors | | Side B: Size and Number of Conductors | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 26 AWG | | 24 AWG | | 22 AWG | | 20 AWG | |
| | | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 26 AWG | 1 | D-110-35 | D-110-35 | D-110-35 | D-110-35 | D-110-35 | D-110-41 | D-110-41 | D-110-41 |
| | 2 | D-110-35 | D-110-35 | D-110-35 | D-110-41 | D-110-35 | D-110-41 | D-110-41 | D-110-41 |
| 24 AWG | 1 | D-110-35 | D-110-35 | D-110-35 | D-110-35 | D-110-35 | D-110-41 | D-110-41 | D-110-41 |
| | 2 | D-110-35 | D-110-41 | D-110-35 | D-110-41 | D-110-41 | D-110-41 | D-110-41 | D-110-41 |
| 22 AWG | 1 | D-110-35 | D-110-35 | D-110-35 | D-110-41 | D-110-41 | D-110-41 | D-110-41 | D-110-41 |
| | 2 | D-110-41 | D-110-41 | D-110-41 | D-110-41 | D-110-41 | D-110-41 | D-110-41 | D-110-0181 |
| 20 AWG | 1 | D-110-41 | D-110-41 | D-110-41 | D-110-41 | D-110-41 | D-110-41 | D-110-41 | D-110-0181 |
| | 2 | D-110-41 | D-110-41 | D-110-41 | D-110-41 | D-110-41 | D-110-0181 | D-110-0181 | D-110-0181 |
| 18 AWG | 1 | D-110-41 | D-110-41 | D-110-41 | D-110-41 | D-110-41 | D-110-41 | D-110-41 | D-110-0181 |
| | 2 | D-110-0181 | D-110-0181 | D-110-0181 | D-110-0181 | D-110-0181 | D-110-0101 | D-110-0101 | D-110-0101 |
| 16 AWG | 1 | D-110-41 | D-110-41 | D-110-41 | D-110-41 | D-110-41 | D-110-0181 | D-110-0181 | D-110-0181 |
| | 2 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0181 | D-110-0101 | D-110-0101 | D-110-0101 |
| 14 AWG | 1 | D-110-0181 | D-110-0181 | D-110-0181 | D-110-0181 | D-110-0181 | D-110-0101 | D-110-0101 | D-110-0101 |
| | 2 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0090 | D-110-0101 | D-110-0090 |
| 12 AWG | 1 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0101 |
| | 2 | D-110-0090 | D-110-0090 | D-110-0090 | D-110-0090 | D-110-0090 | D-110-0090 | D-110-0090 | D-110-0090 |
| 10 AWG | 1 | D-110-0090 | D-110-0090 | D-110-0090 | D-110-0090 | D-110-0090 | D-110-0083 | D-110-0083 | D-110-0083 |

| Side A: Size and Number of Conductors | | Side B: Size and Number of Conductors | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 18 AWG | | 16 AWG | | 14 AWG | | 12 AWG | | 10 AWG |
| | | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 |
| 26 AWG | 1 | D-110-41 | D-110-0181 | D-110-41 | D-110-0101 | D-110-0181 | D-110-0101 | D-110-0101 | D-110-0090 | D-110-0090 |
| | 2 | D-110-41 | D-110-0181 | D-110-41 | D-110-0101 | D-110-0181 | D-110-0101 | D-110-0101 | D-110-0090 | D-110-0090 |
| 24 AWG | 1 | D-110-41 | D-110-0181 | D-110-41 | D-110-0101 | D-110-0181 | D-110-0101 | D-110-0101 | D-110-0090 | D-110-0090 |
| | 2 | D-110-41 | D-110-0181 | D-110-41 | D-110-0101 | D-110-0181 | D-110-0101 | D-110-0101 | D-110-0090 | D-110-0090 |
| 22 AWG | 1 | D-110-41 | D-110-0181 | D-110-41 | D-110-0181 | D-110-0181 | D-110-0101 | D-110-0101 | D-110-0090 | D-110-0090 |
| | 2 | D-110-41 | D-110-0101 | D-110-0181 | D-110-0101 | D-110-0101 | D-110-0090 | D-110-0101 | D-110-0090 | D-110-0090 |
| 20 AWG | 1 | D-110-41 | D-110-0101 | D-110-0181 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0090 | D-110-0090 |
| | 2 | D-110-0181 | D-110-0101 | D-110-0181 | D-110-0101 | D-110-0101 | D-110-0090 | D-110-0101 | D-110-0090 | D-110-0090 |
| 18 AWG | 1 | D-110-0181 | D-110-0101 | D-110-0181 | D-110-0101 | D-110-0101 | D-110-0090 | D-110-0101 | D-110-0090 | D-110-0090 |
| | 2 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0090 | D-110-0090 | D-110-0090 | D-110-0083 |
| 16 AWG | 1 | D-110-0181 | D-110-0101 | D-110-0181 | D-110-0101 | D-110-0101 | D-110-0090 | D-110-0101 | D-110-0090 | D-110-0090 |
| | 2 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0090 | D-110-0101 | D-110-0090 | D-110-0090 | D-110-0083 | D-110-0083 |
| 14 AWG | 1 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0101 | D-110-0090 | D-110-0090 | D-110-0090 | D-110-0083 |
| | 2 | D-110-0090 | D-110-0090 | D-110-0090 | D-110-0090 | D-110-0090 | D-110-0090 | D-110-0090 | D-110-0083 | D-110-0083 |
| 12 AWG | 1 | D-110-0101 | D-110-0090 | D-110-0101 | D-110-0090 | D-110-0090 | D-110-0090 | D-110-0090 | D-110-0083 | D-110-0083 |
| | 2 | D-110-0090 | D-110-0090 | D-110-0090 | D-110-0083 | D-110-0090 | D-110-0083 | D-110-0083 | D-110-0083 | D-110-0083 |
| 10 AWG | 1 | D-110-0083 | D-110-0083 | D-110-0083 | D-110-0083 | D-110-0083 | D-110-0083 | D-110-0083 | D-110-0083 | D-110-0083 |

## Fine Wire Splices 26 AWG (0.15 mm²) and Smaller

| Part No. | Inside Diameter | | |
|---|---|---|---|
| | As Supplied* | Fully Recovered** | Length*** |
| D-110-0071 | 0.9 [0.035] | 0.6 [0.025] | 4.7 [0.185] |
| D-110-0213 | 0.9 [0.035] | 0.6 [0.025] | 4.2 [0.165] |
| D-110-0214 | 0.6 [0.025] | 0.3 [0.013] | 6.3 [0.250] |
| D-110-0217 | 1.0 [0.040] | 0.6 [0.025) | 9.1 [0.360] |
| D-110-40 | 0.6 [0.025] | 0.5 [0.021] | 5.1 [0.200] |

**Note:** Micro SolderSleeve terminations are used for splicing wires smaller than 26 AWG [0.15 mm²].
*Minimum. Wire insulation must be smaller than this.
**Maximum. Wire insulation and combined conductor diameters must be greater than this.
***Nominal. Wire strip length must be approximately one-half of this.



## Table C: D-1744 Series Selection

| Side A: Size and Number of Conductors | | Side B: 26 AWG | | 24 AWG | | 22 AWG | | 20 AWG | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 26 AWG | 1 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-02 |
| | 2 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-02 | D-1744-01 | D-1744-02 |
| 24 AWG | 1 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-02 |
| | 2 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-02 | D-1744-02 | D-1744-02 |
| 22 AWG | 1 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-02 | D-1744-01 | D-1744-02 |
| | 2 | D-1744-01 | D-1744-02 | D-1744-01 | D-1744-02 | D-1744-02 | D-1744-02 | D-1744-02 | D-1744-02 |
| 20 AWG | 1 | D-1744-01 | D-1744-01 | D-1744-01 | D-1744-02 | D-1744-01 | D-1744-02 | D-1744-02 | D-1744-02 |
| | 2 | D-1744-02 | D-1744-02 | D-1744-02 | D-1744-02 | D-1744-02 | D-1744-02 | D-1744-02 | D-1744-03 |
| 18 AWG | 1 | D-1744-02 | D-1744-02 | D-1744-02 | D-1744-02 | D-1744-02 | D-1744-02 | D-1744-02 | D-1744-03 |
| | 2 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 |
| 16 AWG | 1 | D-1744-02 | D-1744-02 | D-1744-02 | D-1744-02 | D-1744-02 | D-1744-02 | D-1744-02 | D-1744-03 |
| | 2 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 |
| 14 AWG | 1 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 |
| | 2 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-04 |
| 12 AWG | 1 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-04 | D-1744-04 |
| | 2 | D-1744-04 | D-1744-04 | D-1744-04 | — | D-1744-04 | — | — | — |

| Side A: Size and Number of Conductors | | Side B: 18 AWG | | 16 AWG | | 14 AWG | | 12 AWG | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 26 AWG | 1 | D-1744-02 | D-1744-03 | D-1744-02 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-04 |
| | 2 | D-1744-02 | D-1744-03 | D-1744-02 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-04 |
| 24 AWG | 1 | D-1744-02 | D-1744-03 | D-1744-02 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-04 |
| | 2 | D-1744-02 | D-1744-03 | D-1744-02 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | — |
| 22 AWG | 1 | D-1744-02 | D-1744-03 | D-1744-02 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-04 |
| | 2 | D-1744-02 | D-1744-03 | D-1744-02 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | — |
| 20 AWG | 1 | D-1744-02 | D-1744-03 | D-1744-02 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-04 | — |
| | 2 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-04 | D-1744-04 | — |
| 18 AWG | 1 | D-1744-02 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | — |
| | 2 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-04 | D-1744-03 | — |
| 16 AWG | 1 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-04 | D-1744-03 | — |
| | 2 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-04 | D-1744-04 | — |
| 14 AWG | 1 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-04 | D-1744-03 | — |
| | 2 | D-1744-03 | D-1744-04 | D-1744-04 | D-1744-04 | D-1744-04 | — | — | — |
| 12 AWG | 1 | D-1744-03 | D-1744-03 | D-1744-03 | D-1744-04 | D-1744-03 | — | D-1744-04 | — |

## CMA/mm² Calculation

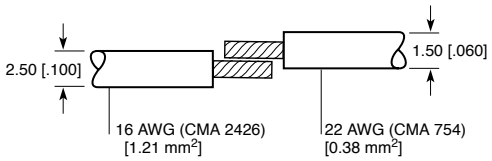
To calculate the total circular mil or mm² area of the conductors to be terminated in a single splice, follow these steps:

1. Choose either CMA or mm² as your unit of measure for selection purposes and continue to use it for all your selection criteria.
2. In the workspace below, list the CMA or mm² for each conductor that will go into the same splice. (To assist you, Table D on this page provides the CMA of typical conductors.)
3. Add together the values listed in the workspace below to obtain the total area.
4. From Table E on the next page, select the part number recommended for the total CMA or mm² you have calculated.
5. Refer to the examples on this page for further clarification.

| Wire Number | CMA | mm² | |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | **Part Number:** |
| Total | | | |

## CMA/mm² Examples

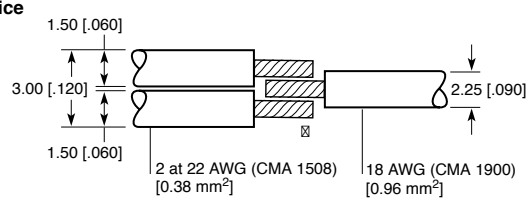
**One-to-One Wire Splice**




**Total CMA = 3180**
**Total mm² = 1.59**

Correct part number selection from Table E (based on CMA/mm² and nominal jacket wire OD) = B-155-9002, CWT-9002, D-110-41 or D-1744-02.

**Multiwire Splice**




**Total CMA = 3408**
**Total mm² = 1.71**

Correct part number selection from Table E (based on CMA/mm² and nominal jacket wire OD) = B-155-9003, CWT-9003, D-110-0181 or D-1744-03.

## Table D.

**CMA of Typical AWG Conductors**

| AWG | 28 | 26 | 24 | 22 | 20 | 18 | 16 | 14 | 12 |
|---|---|---|---|---|---|---|---|---|---|
| CMA | 177 | 304 | 475 | 754 | 1216 | 1900 | 2426 | 3831 | 5874 |
| mm² | 0.09 | 0.15 | 0.23 | 0.38 | 0.62 | 0.96 | 1.23 | 1.44 | 2.97 |

## Installation Requirements

For proper installation of these devices the correct heating tool and reflector attachment must be used. Any one of the following TE heating tools is recommended:

- HL1920E/HL2020E
- IR-1759 MiniRay
- AA-400 Super Heater
- CV-1981

Refer to TE installation procedure RPIP-850-00 for D-1744 Series and RPIP- 824-00 for B-155 Series.

## Table E: Multiwire Splice Selection

| Product Series | Wire Jacket OD | | CMA Combined Total | | mm² Combined Total | |
|---|---|---|---|---|---|---|
| | Min. | Max. | Min. | Max. | Min. | Max. |
| B-155-9001 | 0.4 [0.015] | 1.7 [0.066] | 450 | 1500 | 0.3 | 0.8 |
| B-155-9002 | 1.3 [0.05] | 2.7 [0.106] | 1500 | 4000 | 0.8 | 2.0 |
| B-155-9003 | 1.8 [0.07] | 4.5 [0.18] | 4000 | 7800 | 2.0 | 4.0 |
| B-155-9004 | 2.8 [0.11] | 6.0 [0.236] | 7800 | 12000 | 4.0 | 6.0 |
| B-155-9005 | 3.2 [0.125] | 7.0 [0.275] | 12000 | 19000 | 6.0 | 10.0 |
| D-1744-01 | 0.50 [0.020] | 1.90 [0.075] | 350 | 2000 | – | – |
| D-1744-02 | 0.80 [0.031] | 2.80 [0.110] | 2000 | 4000 | – | – |
| D-1744-03 | 1.30 [0.050] | 4.57 [0.180] | 4000 | 10000 | – | – |
| D-1744-04 | 2.00 [0.080] | 7.11 [0.280] | 10000 | 13000 | – | – |
| D-110-35 | 0.51 [0.020] | 1.78 [0.070] | 500 | 1500 | – | – |
| D-110-41 | 1.27 [0.050] | 2.54 [1.00] | 1200 | 3500 | – | – |
| D-110-0181 | 1.9 [0.075] | 4.5 [0.177] | 3600 | 6000 | – | – |
| D-110-0101 | 2.41 [0.095] | 4.32 [0.17] | 4800 | 9000 | – | – |
| D-110-0090 | 3.56 [0.140] | 7.11 [0.28] | 8500 | 16200 | – | – |
| D-110-0083 | 4.0 [0.160] | 8.76 [0.345] | 16200 | 25000 | – | – |

## Product Characteristics

| | | |
|---|---|---|
| **Material** | | |
| Insulation (D-110, D-1744) | Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride | |
| Insulation (B-155) | Radiation-crosslinked, heat-shrinkable polyolefin | |
| Solder and flux (D-110, D-1744) | Solder: Sn63 Pb37 | Flux: ROL1 per ANSI-J-004 (RMA flux) |
| Solder and flux (B-155) | Solder: Sn42Bi58 | Flux: ROM1 per ANSI-J-004 (RA Flux) |
| Solder and flux (CWT) | Solder: Sn50 Pb32 Cd18 | Flux: ROM1 per ASNI-J-004 (RA flux) |
| Meltable inserts (B-155, D-1744) | Meltable thermoplastic | |
| **Typical Performance** | | |
| Voltage drop | 2.0 mV | |
| Tensile strength | Exceeds strength of conductor | |
| Dielectric strength | 2.0 kV | |
| Temperature rating (B-155) | -55°C to +125°C [-67°F to +257°F] | |
| Temperature rating (D-110, D-1744) | -55°C to +150°C [-67°F to +302°F] | |
| Insulation resistance | 1000 megohms | |

## Specifications/ Approvals

| Series | Agency | TE |
|---|---|---|
| B-155 | n/a | RT-1404 |
| CWT | UL E87681 | D-5023 |
| D-110 | UL E87681 | RT-1404 |
| D-1744 | NAS-1744 | RT-1404 |



**RUGGED**

- Sealed for immersion (SGRS-X-58, SGRS)
- Excellent strain relief

**EASY TO USE**

- Simple installation

**CAPABLE**

- Soldered connection
- Electrical insulation

# SolderGrip Closed End Connector Splices

## Applications

SolderGrip heat-shrinkable solder-type closed-end connectors are designed for electrical termination of multiple-wire combinations. They provide a reliable alternative to crimping, welding, or conventional twist-on-style closed-end connectors.

Their unique combination of wire fixturing and controlled-soldering technology provides dependable electrical termination of multiple wire combinations.

SolderGrip terminators consist of a heat-shrinkable thermoplastic sleeve containing a spiral-wound copper insert. The insert is fitted with a prefluxed solder band.

This innovation design allows SolderGrip products to reliably terminate as many as 10 wires of different sizes and types in a single device.

The capability of SolderGrip terminators encompasses single or multi-stranded, bare or tinned copper wires with low- or high-temperature insulation.

The termination is environmentally protected and strain relieved.

SolderGrip splice terminators are color-coded for easy identification.

## Product Options

| Product Series | Environmental Protection | Max. Operating Temp. |
|---|---|---|
| SGRP | Splashproof | 125°C [257°F] |
| SGRS-X-58 | Sealed | 125˚C [257˚F] |
| SGRS | Sealed | 125°C [257°F] |

## Product Selection Process

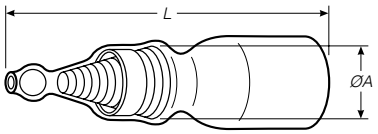
1. From the Product Options table on the previous page, select the product series appropriate for your application.
2. Determine the wire combination (number of wires and size) of the wire bundle you wish to splice.
3. Use Table C (page 16) to select the correct connector for AWG wire combinations.* For mm² wire combinations use Table A to select a SolderGrip part number.

Example: For connecting a bundle with one 12 AWG wire (1 #12) and two 14 AWG wires (+2 #14), you need an SGRP-3 connector. For sealed parts, select the SGRS series.

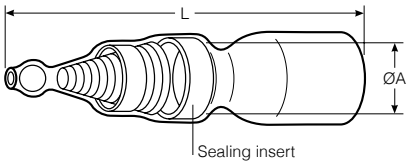
*If the wire combination is not listed in Table C, use the CMA (mm²) method of determining wire bundle size (see "CMA/mm² Calculation" on page 15). Using Table B (page 15, select the smallest size connector that will fit your total wire CMA (mm²) value.

4. Verify that the wire bundle (with wire insulation) does not exceed the maximum diameter allowed for the connector you selected. Simply check the bundle's diameter against the maximum diameter that Table A (below) lists for that part.
5. Verify that the total amperage to be applied does not exceed the maximum amp rating for the part.

**Insulated Closed-End Connectors (SGRP series)**




**Insulated and Sealed Closed-End Connectors (SGRS series)**




## Table A - Product Dimensions and Part Number Descriptions

| Part No. | Color Code | Product Dimensions (Min.) L | ØA | Wire Range (Min.-Max.) CMA/mm² |
|---|---|---|---|---|
| SGRP-1 | Green | 1.370 [34.8] | .120 [2.9] | 1400 - 4800 [0.7 - 2.4] |
| SGRP-2 | Red | 1.350 [34.2] | .150 [3.7] | 4000 - 8000 [2.0 - 4.0] |
| SGRP-3 | Blue | 1.610 [41.0] | .200 [5.1] | 7000 - 16000 [3.5 - 8.0] |
| SGRP-4 | Yellow | 1.650 [42.0] | .270 [6.8] | 15000 - 24000 [7.5 - 12.0] |

| Part No. | Color Code | Product Dimensions (Min.) L | ØA | Wire Range (Min.-Max.) CMA/mm² |
|---|---|---|---|---|
| SGRS-1 | Green | 1.370 [34.8] | 0.130 [3.4] | 1400 - 4800 [0.7 - 2.4] |
| SGRS-2 | Red | 1.350 [34.2] | 0.190 [4.8] | 4000 - 8000 [2.0 - 4.0] |
| SGRS-3 | Blue | 1.650 [42.0] | 0.290 [7.3] | 7000 - 16000 [3.5 - 8.0] |
| SGRS-4 | Yellow | 1.630 [41.5] | 0.360 [9.1] | 15000 - 24000 [7.5 - 12.0] |

| Part No. | Color Code | Product Dimensions (Min.) L | ØA | Wire Range (Min.-Max.) CMA/mm² |
|---|---|---|---|---|
| SGRS-1-58 | Green | 1.370 [34.8] | 0.130 [3.4] | 1400 - 4800 [0.7 - 2.4] |
| SGRS-2-58 | Red | 1.350 [34.2] | 0.190 [4.8] | 4000 - 8000 [2.0 - 4.0] |
| SGRS-3-58 | Blue | 1.650 [42.0] | 0.290 [7.3] | 7000 - 16000 [3.5 - 8.0] |
| SGRS-4-58 | Yellow | 1.630 [41.5] | 0.360 [9.1] | 15000 - 24000 [7.5 - 12.0] |

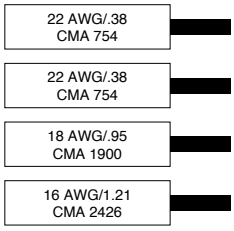
## CMA/mm² Calculation

To calculate the total circular mil or mm² area of the wire bundle to be terminated, follow these steps:

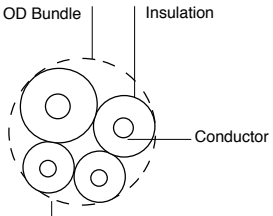
1. Choose either CMA or mm² as your unit of measure for selection purposes and continue to use it for all your selection criteria. (Both measures provide the same results.)
2. In the workspace below, list the CMA or mm² for each conductor in the bundle. (Table B provides the CMA of typical conductors.)
3. Add together the values listed in the workspace below to obtain the total area.
4. Use Table A to select the smallest terminator that will fit the total CMA (mm²).

| Wire Number | CMA | $mm_2$ | |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | **Solder Grip Part No.** |
| Total | | | |

## CMA/mm² Example




Total CMA = 5834
Total mm2 = 2.92
Correct part number (based on CMA of 5834 or mm² of 2.92): SGRP-2, SGRS-2 or SGRS-2-58




Bundle diameter must not exceed 6.0 mm (0.24 in) for SGRP-2 or 0.18 mm (4.5 in) for SGRS-2 or SGRS-2-58

## Table B. CMA of Typical Copper Conductors

| AWG | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 16 | 14 | 12 | 10 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CMA | 112 | 177 | 304 | 475 | 754 | 1216 | 1900 | 2426 | 3831 | 5874 | 9354 | 16983 |
| mm² | 0.05 | 0.09 | 0.15 | 0.24 | 0.38 | 0.61 | 0.95 | 1.21 | 1.92 | 2.94 | 4.74 | 8.61 |



## Table C. SolderGrip Wire Combinations

| Wire Combinations | Splash-proof | Sealed |
|---|---|---|
| 1 # 8 + 1 # 12 | SGRP-4 | SGRS-4-58 |
| 1 # 8 + 1 # 16 | SGRP-4 | SGRS-4-58 |
| 2 # 8 + 2 # 16 | SGRP-4 | SGRS-4-58 |
| 1 # 8 + 1 # 14 | SGRP-4 | SGRS-4-58 |
| 1 # 8 + 1 # 14 + 1 # 16 | SGRP-4 | SGRS-4-58 |
| 1 # 10 + 1 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 10 + 2 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 10 + 3 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 10 + 1 # 16 | SGRP-3 | SGRS-3-58 |
| 1 # 10 + 1 # 16 + 1 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 10 + 1 # 16 + 2 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 10 + 2 # 16 | SGRP-3 | SGRS-3-58 |
| 1 # 10 + 3 # 16 | SGRP-4 | SGRS-4-58 |
| 1 # 10 + 4 # 16 | SGRP-4 | SGRS-4-58 |
| 1 # 10 + 5 # 16 | SGRP-4 | SGRS-4-58 |
| 1 # 10 + 1 # 14 | SGRP-3 | SGRS-3-58 |
| 1 # 10 + 1 # 14 + 1 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 10 + 1 # 14 + 1 # 16 | SGRP-3 | SGRS-3-58 |
| 1 # 10 + 1 # 14 + 2 # 16 | SGRP-3 | SGRS-3-58 |
| 1 # 10 + 1 # 14 + 3 # 16 | SGRP-4 | SGRS-4-58 |
| 1 # 10 + 2 # 14 | SGRP-4 | SGRS-4-58 |
| 1 # 10 + 3 # 14 | SGRP-4 | SGRS-4-58 |
| 1 # 10 + 1 # 12 | SGRP-3 | SGRS-3-58 |
| 1 # 10 + 1 # 12 + 1 # 14 | SGRP-4 | SGRS-4-58 |
| 1 # 10 + 2 # 12 | SGRP-4 | SGRS-4-58 |
| 2 # 10 | SGRP-4 | SGRS-4-58 |
| 2 # 10 + 1 # 16 | SGRP-4 | SGRS-4-58 |
| 1 # 12 + 1 # 18 | SGRP-2 | SGRS-2-58 |
| 1 # 12 + 2 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 3 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 4 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 5 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 1 # 16 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 1 # 16 + 1 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 1 # 16 + 2 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 1 # 16 + 3 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 1 # 16 + 4 # 18 | SGRP-4 | SGRS-4-58 |
| 1 # 12 + 2 # 16 | SGRP-3 | SGRS-3-58 |
| 1 # 14 + 3 # 20 | SGRP-2 | SGRS-2-58 |
| 1 # 14 + 4 # 20 | SGRP-3 | SGRS-3-58 |
| 1 # 14 + 1 # 18 | SGRP-2 | SGRS-2-58 |
| 1 # 14 + 1 # 18 + 1 # 20 | SGRP-2 | SGRS-2-58 |
| 1 # 14 + 2 # 18 | SGRP-2 | SGRS-2-58 |
| 1 # 14 + 3 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 14 + 4 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 14 + 5 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 14 + 1 # 16 | SGRP-2 | SGRS-3-58 |
| 1 # 14 + 1 # 16 + 1 # 20 | SGRP-2 | SGRS-2-58 |
| 1 # 14 + 1 # 16 + 1 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 14 + 1 # 16 + 2 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 14 + 1 # 16 + 3 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 14 + 1 # 16 + 4 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 14 + 2 # 16 | SGRP-3 | SGRS-3-58 |
| 1 # 14 + 2 # 16 + 1 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 14 + 2 # 16 + 2 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 14 + 2 # 16 + 3 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 14 + 3 # 16 | SGRP-3 | SGRS-3-58 |
| 1 # 14 + 3 # 16 + 1 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 14 + 3 # 16 + 2 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 14 + 4 # 16 | SGRP-3 | SGRS-3-58 |
| 1 # 14 + 4 # 16 + 1 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 14 + 5 # 16 | SGRP-3 | SGRS-3-58 |
| 2 # 14 | SGRP-2 | SGRS-2 -58 |
| 2 # 14 + 1 # 16 | SGRP-3 | SGRS-3-58 |
| 2 # 14 + 1 # 16 | SGRP-3 | SGRS-3-58 |
| 2 # 14 + 1 # 16 | SGRP-3 | SGRS-3-58 |
| 2 # 14 + 1 # 16 | SGRP-3 | SGRS-3-58 |
| 2 # 14 + 2 # 16 | SGRP-3 | SGRS-3-58 |
| 2 # 14 + 2 # 16 | SGRP-3 | SGRS-3-58 |
| 2 # 14 + 3 # 16 | SGRP-3 | SGRS-3-58 |
| 2 # 14 + 4 # 16 | SGRP-4 | SGRS-4-58 |
| 3 # 14 | SGRP-3 | SGRS-3-58 |
| 3 # 14 + 1 # 16 | SGRP-3 | SGRS-3-58 |
| 3 # 14 + 2 # 16 | SGRP-4 | SGRS-4-58 |
| 3 # 14 + 3 # 16 | SGRP-4 | SGRS-4-58 |
| 4 # 14 | SGRP-3 | SGRS-3-58 |
| 2 # 16 + 1 # 18 + 3 # 20 | SGRP-3 | SGRS-3-58 |
| 2 # 16 + 1 # 18 + 2 # 20 | SGRP-3 | SGRS-3-58 |
| 2 # 16 + 1 # 18 + 1 # 20 | SGRP-2 | SGRS-2-58 |
| 2 # 16 + 1 # 18 | SGRP-2 | SGRS-2-58 |
| 2 # 16 + 4 # 20 | SGRP-3 | SGRS-3-58 |
| 2 # 16 + 3 # 20 | SGRP-3 | SGRS-3-58 |
| 2 # 16 + 2 # 20 | SGRP-2 | SGRS-2-58 |
| 2 # 16 + 1 # 20 | SGRP-2 | SGRS-2-58 |
| 2 # 16 | SGRP-2 | SGRS-2-58 |
| 1 # 16 + 5 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 16 + 4 # 18 + 1 # 20 | SGRP-3 | SGRS-3-58 |
| 1 # 16 + 4 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 16 + 3 # 18 + 2 # 20 | SGRP-3 | SGRS-3-58 |
| 1 # 16 + 3 # 18 + 1 # 20 | SGRP-3 | SGRS-3-58 |
| 1 # 16 + 2 # 18 + 3 # 20 | SGRP-3 | SGRS-3-58 |
| 1 # 16 + 2 # 18 + 1 # 20 | SGRP-2 | SGRS-2 -58 |
| 1 # 16 + 2 # 18 | SGRP-2 | SGRS-2-58 |
| 1 # 16 + 1 # 18 + 4 # 20 | SGRP-3 | SGRS-3-58 |
| 1 # 16 + 1 # 18 + 3 # 20 | SGRP-2 | SGRS-2-58 |
| 1 # 16 + 1 # 18 + 2 # 20 | SGRP-2 | SGRS-2 -58 |
| 1 # 16 + 1 # 18 + 1 # 20 | SGRP-2 | SGRS-2-58 |
| 1 # 16 + 1 # 18 | SGRP-1 | SGRS-1-58 |
| 1 # 16 + 4 # 20 | SGRP-2 | SGRS-2-58 |
| 1 # 16 + 3 # 20 | SGRP-2 | SGRS-2-58 |
| 1 # 16 + 1 # 20 + 1 # 22 | SGRP-1 | SGRS-1-58 |
| 1 # 16 + 1 # 20 | SGRP-1 | SGRS-1-58 |
| 1 # 16 + 3 # 22 | SGRP-1 | SGRS-1-58 |
| 1 # 16 + 2 # 22 | SGRP-1 | SGRS-1-58 |
| 1 # 16 + 1 # 22 | SGRP-1 | SGRS-1-58 |
| 1 # 18 + 1 # 22 | SGRP-1 | SGRS-1-58 |
| 1 # 18 + 2 # 22 | SGRP-1 | SGRS-1-58 |
| 1 # 18 + 3 # 22 | SGRP-1 | SGRS-1-58 |
| 1 # 18 + 1 # 20 | SGRP-1 | SGRS-1-58 |
| 1 # 18 + 1 # 20 + 1 # 22 | SGRP-1 | SGRS-1-58 |
| 1 # 18 + 1 # 20 + 2 # 22 | SGRP-1 | SGRS-1-58 |
| 1 # 18 + 2 # 20 | SGRP-1 | SGRS-1-58 |
| 1 # 18 + 3 # 20 | SGRP-2 | SGRS-2-58 |
| 1 # 18 + 4 # 20 | SGRP-2 | SGRS-2-58 |



## Table C. SolderGrip Wire Combinations (Continued)

| Wire Combinations | Splash-proof | Sealed |
|---|---|---|
| 1 # 12 + 2 # 16 + 1 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 2 # 16 + 2 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 3 # 16 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 4 # 16 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 5 # 16 | SGRP-4 | SGRS-4-58 |
| 1 # 12 + 1 # 14 + 1 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 1 # 14 + 2 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 1 # 14 + 3 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 1 # 14 + 1 # 16 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 1 # 14 + 2 # 16 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 1 # 14 + 3 # 16 | SGRP-4 | SGRS-4-58 |
| 1 # 12 + 1 # 14 + 4 # 16 | SGRP-4 | SGRS-4-58 |
| 1 # 12 + 2 # 14 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 2 # 14 + 1 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 12 + 2 # 14 + 1 # 16 | SGRP-4 | SGRS-4-58 |
| 1 # 12 + 2 # 14 + 2 # 16 | SGRP-4 | SGRS-4-58 |
| 1 # 12 + 2 # 14 + 3 # 16 | SGRP-4 | SGRS-4-58 |
| 1 # 12 + 3 # 14 | SGRP-4 | SGRS-4-58 |
| 1 # 12 + 3 # 14 + 1 # 16 | SGRP-4 | SGRS-4-58 |
| 1 # 12 + 4 # 14 | SGRP-4 | SGRS-4-58 |
| 2 # 12 | SGRP-4 | SGRS-4-58 |
| 2 # 12 + 1 # 18 | SGRP-3 | SGRS-3-58 |
| 2 # 12 + 1 # 18 | SGRP-3 | SGRS-3-58 |
| 2 # 12 + 1 # 16 | SGRP-3 | SGRS-3-58 |
| 2 # 12 + 2 # 16 + 1 # 18 | SGRP-4 | SGRS-4-58 |
| 2 # 12 + 3 # 16 | SGRP-4 | SGRS-4-58 |
| 2 # 12 + 1 # 14 + 1 # 18 | SGRP-4 | SGRS-4-58 |
| 2 # 12 + 1 # 14 + 1 # 16 | SGRP-4 | SGRS-4-58 |
| 3 # 12 + 1 # 14 | SGRP-4 | SGRS-4-58 |
| 2 # 12 + 2 # 14 | SGRP-4 | SGRS-4-58 |
| 3 # 12 + 1 # 18 | SGRP-4 | SGRS-4-58 |
| 3 # 12 + 1 # 16 | SGRP-4 | SGRS-4-58 |
| 1 # 14 + 1 # 22 | SGRP-1 | SGRS-1-58 |
| 1 # 14 + 1 # 20 | SGRP-2 | SGRS-2-58 |
| 1 # 14 + 2 # 20 | SGRP-2 | SGRS-2-58 |

| Wire Combinations | Splash-proof | Sealed |
|---|---|---|
| 4 # 14 + 1 # 16 | SGRP-4 | SGRS-4-58 |
| 4 # 14 + 2 # 16 | SGRP-4 | SGRS-4-58 |
| 5 # 14 | SGRP-4 | SGRS-4-58 |
| 5 # 14 + 1 # 16 | SGRP-4 | SGRS-4-58 |
| 1 # 16 + 3 # 18 | SGRP-3 | SGRS-3-58 |
| # 16 + 2 # 18 + 2 # 20 | SGRP-3 | SGRS-3-58 |
| 1 # 16 + 5 # 20 | SGRP-3 | SGRS-3-58 |
| 1 # 16 + 2 # 20 | SGRP-2 | SGRS-2-58 |
| 6 # 16 | SGRP-3 | SGRS-3-58 |
| 5 # 16 + 1 # 18 | SGRP-3 | SGRS-3-58 |
| 5 # 16 + 1 # 20 | SGRP-3 | SGRS-3-58 |
| 5 # 16 | SGRP-3 | SGRS-3-58 |
| 4 # 16 + 2 # 18 | SGRP-3 | SGRS-3-58 |
| # 16 + 1 # 18 + 1 # 20 | SGRP-3 | SGRS-3-58 |
| 4 # 16 + 1 # 18 | SGRP-3 | SGRS-3-58 |
| 4 # 16 + 2 # 20 | SGRP-3 | SGRS-3-58 |
| 4 # 16 + 1 # 20 | SGRP-3 | SGRS-3-58 |
| 4 # 16 | SGRP-3 | SGRS-3-58 |
| 3 # 16 + 3 # 18 | SGRP-3 | SGRS-3-58 |
| # 16 + 2 # 18 + 1 # 20 | SGRP-3 | SGRS-3-58 |
| 3 # 16 + 2 # 18 | SGRP-3 | SGRS-3-58 |
| # 16 + 1 # 18 + 2 # 20 | SGRP-3 | SGRS-3-58 |
| # 16 + 1 # 18 + 1 # 20 | SGRP-3 | SGRS-3-58 |
| 3 # 16 + 1 # 18 | SGRP-3 | SGRS-3-58 |
| 3 # 16 + 3 # 20 | SGRP-3 | SGRS-3-58 |
| 3 # 16 + 2 # 20 | SGRP-3 | SGRS-3-58 |
| 3 # 16 + 1 # 20 | SGRP-3 | SGRS-3-58 |
| 3 # 16 | SGRP-2 | SGRS-2-58 |
| 2 # 16 + 4 # 18 | SGRP-3 | SGRS-3-58 |
| # 16 + 3 # 18 + 1 # 20 | SGRP-3 | SGRS-3-58 |
| 2 # 16 + 3 # 18 | SGRP-3 | SGRS-3-58 |
| # 16 + 2 # 18 + 2 # 20 | SGRP-3 | SGRS-3-58 |
| # 16 + 2 # 18 + 1 # 20 | SGRP-3 | SGRS-3-58 |
| 2 # 16 + 2 # 18 | SGRP-3 | SGRS-3-58 |
| — | — | — |

| Wire Combinations | Splash-proof | Sealed |
|---|---|---|
| 1 # 18 + 5 # 20 | SGRP-2 | SGRS-2-58 |
| 2 # 18 | SGRP-1 | SGRS-1-58 |
| 2 # 18 + 1 # 22 | SGRP-1 | SGRS-1-58 |
| 2 # 18 + 1 # 20 | SGRP-2 | SGRS-2-58 |
| 2 # 18 + 2 # 20 | SGRP-2 | SGRS-2-58 |
| 2 # 18 + 3 # 20 | SGRP-2 | SGRS-2-58 |
| 2 # 18 + 4 # 20 | SGRP-3 | SGRS-3-58 |
| 3 # 18 | SGRP-2 | SGRS-2-58 |
| 3 # 18 + 1 # 20 | SGRP-2 | SGRS-2-58 |
| 3 # 18 + 2 # 20 | SGRP-3 | SGRS-3-58 |
| 3 # 18 + 3 # 20 | SGRP-3 | SGRS-3-58 |
| 4 # 18 | SGRP-2 | SGRS-2-58 |
| 4 # 18 + 1 # 20 | SGRP-3 | SGRS-3-58 |
| 4 # 18 + 2 # 20 | SGRP-3 | SGRS-3-58 |
| 5 # 18 | SGRP-3 | SGRS-3-58 |
| 5 # 18 + 1 # 20 | SGRP-3 | SGRS-3-58 |
| 6 # 18 | SGRP-3 | SGRS-3-58 |
| 1 # 20 + 1 # 22 | SGRP-1 | SGRS-1-58 |
| 1 # 20 + 2 # 22 | SGRP-1 | SGRS-1-58 |
| 1 # 20 + 3 # 22 | SGRP-1 | SGRS-1-58 |
| 1 # 20 + 4 # 22 | SGRP-1 | SGRS-1-58 |
| 2 # 20 | SGRP-1 | SGRS-1-58 |
| 2 # 20 + 1 # 22 | SGRP-1 | SGRS-1-58 |
| 2 # 20 + 2 # 22 | SGRP-1 | SGRS-1-58 |
| 2 # 20 + 3 # 22 | SGRP-1 | SGRS-1-58 |
| 3 # 20 | SGRP-1 | SGRS-1-58 |
| 3 # 20 + 1 # 22 | SGRP-1 | SGRS-1-58 |
| 4 # 20 | SGRP-2 | SGRS-2-58 |
| 5 # 20 | SGRP-2 | SGRS-2-58 |
| 6 # 20 | SGRP-2 | SGRS-2-58 |
| 3 # 22 | SGRP-1 | SGRS-1-58 |
| 4 # 22 | SGRP-1 | SGRS-1-58 |
| 5 # 22 | SGRP-1 | SGRS-1-58 |
| 6 # 22 | SGRP-1 | SGRS-1-58 |
| — | — | — |

## Product Characteristics

| **Material** | | | |
|---|---|---|---|
| Insulation | Radiation-crosslinked, transparent heat-shrinkable polyvinylidene fluoride | | |
| Solder preform with flux (SGRS-X-58) | SN42Bi58, ROM1 flux per ANSI-J-STD-004 (RA flux). | | |
| Solder preform with flux (SGRP, SGRS) | Sn 60 Pb 40, ROM1 flux per ANSI-J-STD-004 (RA flux). | | |
| Sealing insert (SGRS-X-58, SGRS) | Hot melt adhesive | | |
| Spiral wound insert | Copper alloy | | |
| **Physical** | **Unit** | **Method of test** | **Requirement** |
| Dimensions | inches | RB-109 | See product dimensions. |
| **Electromechanical** | **Unit** | **Method of test** | **Typical values** |
| Dielectric withstand voltage | kilovolts | RB-109 | 2.0 |
| Static heating | degrees | RB-109 | Less than 50°C rise |
| **Environmental*** | **Unit** | **Method of test** | **Requirement** |
| Insulation resistance after water immersion (SGRS only) | megohms | RB-109 | 100 |
| Contact resistance after testing | milliohms | RB-109 | Less than 6 milliohms |
| **Operating condition** | **Unit** | **Method of test** | **Value** |
| Temperature rating | — | — | -55°C to 125°C [-67°F to 257°F] |
| Voltage rating | volts | — | 600 |

*Immersion resistance sealing is dependent on the wire combinations used. The user should test specific wire combinations. Refer to RB-109 TE specification for procedures.

## Approvals and Reference Documents

| | |
|---|---|
| Agency Approvals | UL, CUL E87681 |
| Reference documents | TE Specification RB-109 for splices<br>Specification Control Drawings<br>Splices—Non Sealed (SGRP-X), Splices—Sealed (SGRS-X) |

Note: SGRS-X-58 is not UL approved.

## Installation Requirements

The SolderGrip product is pushed onto the conductors with a twisting motion. With the product in place, installation can be completed with the proper selection and use of heating tools and reflectors.

Either of the following TE heating tools is recommended:

- HL1920E/HL2020E
- CV-1981

Refer to TE installation procedure RPIP-820-00 for detailed instructions and recommended reflector attachments.



# DuraSeal Heat-Shrinkable, Environmentally Sealed, Nylon-Insulated Crimp Splices

## RUGGED

- Protects splices from water, condensation, salt, and corrosion
- Provides strain relief
- Protects against vibration in rugged environments

## CAPABLE

- Completely insulates and protects electrical connections
- Has adhesive lining for protection that is more reliable than conventional splices
- UL, CUL, and Lloyd's listed

## APPLICATIONS

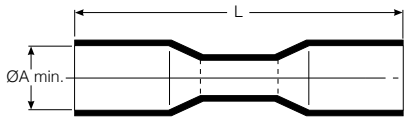
- Automotive/truck wiring repair and maintenance
- Automotive accessory installations.
- OEM automotive/truck/RV wire harness fabrication
- Marine electronics
- Fleet maintenance
- Commercial wiring (pumps/pools/spas)
- Appliances

## Specifications/Approvals

| Series | Agency | TE |
|---|---|---|
| D-406 | UL and CUL listed 91J4, File E87681 | RB-107 |

Note: D406-0034 is not UL approved.

## Product Dimensions
## Butt Splices




| Part No. | Butt Splice Dimensions | | Color | Conductor | Wire Dimensions | |
|---|---|---|---|---|---|---|
| | A Min. | L Nom. | | | Insulation O.D. (Max.) | Insulation O.D. (Min.) |
| D-406-0034 | 3.00 [.118] | 31.5 [1.24] | Yellow | 26-24 | 3.00 [.118] | 1.40 [.055] |
| D-406-0001 | 3.70 [.146] | 31.5 [1.24] | Red | 22–18 | 3.70 [.146] | 1.40 [.055] |
| D-406-0002 | 4.60 [.181] | 31.5 [1.24] | Blue | 16–14 | 4.60 [.181] | 2.00 [.080] |
| D-406-0003 | 6.50 [.255] | 37.5 [1.48] | Yellow | 12–10 | 6.50 [.255] | 2.80 [.110] |

## Product Selection Process

1. Determine wire size.
2. Select part number.

| Wire Size AWG | $mm_2$ | Part No. | Color |
|---|---|---|---|
| 26-24 | 0.15-0.25 | D-406-0034 | Yellow |
| 22–18 | 0.5-1.0 | D-406-0001 | Red |
| 16–14 | 1.2–2.5 | D-406-0002 | Blue |
| 12–10 | 3–6 | D-406-0003 | Yellow |

## Product Characteristics (Typical)

| | |
|---|---|
| Operating temperature | -55°C to 125°C [-67°F to 257°F] |
| Shrink ratio | Approximately 2:1 |
| Physical properties | Cut-through resistance: 31 kg [70 lb]<br>Wire pullout after crimping and recovery: red: 11.3 kg [25 lb]; blue: 22.7 kg [50 lb]; yellow: 27.2 kg [60 lb]<br>Not flame-retardant<br>No cracking after heat aging for 168 h at 160°C [320°F] |
| Chemical properties | Solvent resistance: isopropyl alcohol, trichloroethylene, gasoline, battery acid, diesel fuel, motor oil, antifreeze, brake fluid, 5% salt water |
| Electrical properties | Dielectric strength: 2500 Vac<br>Insulation resistance: 1000 megohms at 100 Vdc |

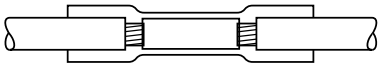
## Installation Requirements

For proper installation of these devices, the correct crimp tool and a heating tool with a reflector attachment must be used. The AD-1522 crimp tool and HL1920E/HL2020E heating tool are recommended.

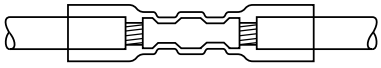
Refer to TE installation procedure RPIP-821-00 for detailed instructions.

## Installation

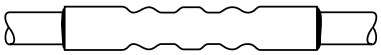
1. Select splice of appropriate size. Strip wire 7.5 mm (5/16 in). Insert into crimp barrel.

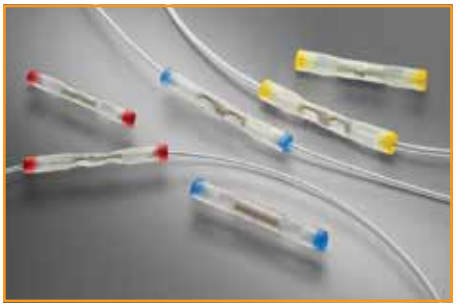


2. Crimp using AD-1522 crimp tool for preinsulated crimps.



3. Heat crimped splice with heat gun until tubing recovers and adhesive flows.





## VERSATILE

- Easy installation and application flexibility
- One-step termination and environmental protection
- No heating required for installation — safe for use on fueled aircraft

## PROVEN TECHNOLOGY

- Reliable in a wide variety of environmental conditions
- Prevents water ingress under permanent pressure/weight
- Achieves environmental performance while maintaining:
  - Small profile
  - Electrical performance

# Raychem Cold Applied Splices and Ring Terminals

TE Connectivity's (TE) cold applied splice and terminals product line is designed as a single-component in-line splice that requires no heat to install. It seals the termination and prevents the ingress of moisture which can lead to insulation failure and breakdown of the electrical connection.

In this product, sealing is achieved by replacing traditional methods, such as grommets, greases, and tapes with a novel gel technology. A polymer outer layer provides electrical isolation.

## MECHANICAL/ENVIRONMENTAL

- **Tensile Strength:** Exceeds that of spliced wire
- **Temperature Range:** -65°C to 150°C
- **Dielectric Strength:** 2500 V maximum
- **Insulation Resistance:** 5000 megohms minimum
- **Altitude Immersion:** 75,000 feet
- **Fluid Resistance:** MIL-L-7808, MIL-L-3699, MIL-H-5605 (Hydraulic), MIL-A-8243, MIL-C-59769, and MIL-T-5624 (JP-5)
- **Current Rating:** Defined by the size of the crimp, gauge of wire, and specification

## PHYSICAL

- **Cross-Linked Gel Technology:**
  - Well-established gel sealing system
  - Versatile gel closure
  - Non-flowing gel
- Protects and seals on all conventional Mil Spec and commercial wire insulation systems

## MATERIALS

- **Insulation Sleeve:** Transparent polyvinylidene fluoride
- **Metal Crimp Splice or Terminal:** Tin-plated copper
- **End Caps:** Thermoplastic, color coded
- **Gel:** Clear, flame-retardant silicone-based gel

## STANDARDS

- **SAE AMS-DTL-23053/8** (Insulation sleeve)
- **SAE AS81824/12 for Splices**
  **SAE AS7928/14 for Terminals**



**AD-1381 Hand Crimping Tool**
Tool is used to crimp cold-applied gel-filled splices with wires ranging from 26 to 12 AWG.

## Specifications

### DIMENSION

- **Overall Length:** 230 mm (9") approx.

### WEIGHT

- 350 g (12.3 oz.)

### COLD-APPLIED SPLICE PRODUCT RANGE

- **D-436-36-COLD:** 26 to 20 AWG wire range
- **D-436-37-COLD:** 18 to 16 AWG wire range
- **D-436-38-COLD:** 14 to 12 AWG wire range

## Ordering Information

### AD-1381 Hand Crimping Tool

| Model | Description | Part No. |
|---|---|---|
| AD-1381 Hand Crimping Tool | AD-1381 | CS1660-000 |
| Calibration Gauge | AD-1382 | 992013-000 |

**ROHS Information** can be found at the following website: http://www.te.com/customersupport/productcompliance/

This product must not be disposed of as municipal waste.

RoHS Compliant

### ORDERING INFORMATION

**Mini-Seal Crimp Wire Splices – Cold Applied (Gel Filled)**

| TE Description | TE RPN | QPL P/N | Specification |
|---|---|---|---|
| D-436-36-COLD | CN1020-000 | M81824/12-1 | SAE AS81824 |
| D-436-37-COLD | CN1021-000 | M81824/12-2 | SAE AS81824 |
| D-436-38-COLD | CN1022-000 | M81824/12-3 | SAE AS81824 |



**Ring Tongue Terminal – Cold Applied (Gel Filled)**

| TE Description | TE RPN | QPL P/N | Specification |
|---|---|---|---|
| D-436-1101-COLD | CW8662-000 | M7928/14-004 | SAE AS7928 |
| D-436-1102-COLD | CW0419-000 | M7928/14-008 | SAE AS7928 |
| D-436-1103-COLD | CW0421-000 | M7928/14-016 | SAE AS7928 |
| D-436-1122-COLD | TBD | M7928/14-012 | SAE AS7928 |
| D-436-1123-COLD | TBD | M7928/14-020 | SAE AS7928 |
| D-436-1142-COLD | TBD | M7928/14-009 | SAE AS7928 |
| D-436-1143-COLD | TBD | M7928/14-017 | SAE AS7928 |
| D-436-1162-COLD | TBD | M7928/14-010 | SAE AS7928 |
| D-436-1163-COLD | TBD | M7928/14-018 | SAE AS7928 |
| D-436-1382-COLD | TBD | M7928/14-011 | SAE AS7928 |
| D-436-1383-COLD | TBD | M7928/14-019 | SAE AS7928 |
| D-436-1401-COLD | TBD | M7928/14-001 | SAE AS7928 |
| D-436-1402-COLD | TBD | M7928/14-005 | SAE AS7928 |
| D-436-1403-COLD | TBD | M7928/14-013 | SAE AS7928 |
| D-436-1601-COLD | TBD | M7928/14-002 | SAE AS7928 |
| D-436-1602-COLD | TBD | M7928/14-006 | SAE AS7928 |
| D-436-1603-COLD | TBD | M7928/14-014 | SAE AS7928 |
| D-436-1801-COLD | CW8661-000 | M7928/14-003 | SAE AS7928 |
| D-436-1802-COLD | CW0418-000 | M7928/14-007 | SAE AS7928 |
| D-436-1803-COLD | CW0420-000 | M7928/14-015 | SAE AS7928 |





**RUGGED**

- Insulation and strain relief

**CAPABLE**

- MIL-Spec approval
- Small size
- Light weight

**EASY TO USE**

- Immersion-resistant crimp splices are on QPL for SAE-AS81824
- Easy installation

# MiniSeal High-Performance, Immersion-Resistant Crimp Splices

## Applications

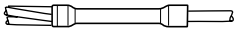
MiniSeal wire-to-wire splicing products offer solutions for hundreds of aerospace and defense applications. These environment-resistant splices provide excellent reliability, long term performance, MIL-S-81824/1 qualification, and a low installed cost.

MiniSeal crimp splices consist of a plated copper crimp barrel and a separate, heat-shrinkable, transparent sealing sleeve. They can be used on a combination of wires, from 1:1 to 10:10. MiniSeal splices are one of the smallest, lightest, and most environment-resistant splices available. They preserve the electrical integrity of the splice by preventing the penetration of liquids and the resulting chemical and galvanic corrosion.

## Product Selection Process

1. Determine the type of splice required.
   - Stub (parallel) splice:

     
   - Butt (in-line) splice:

     
2. Determine which crimp barrel plating is required:
   - Tin plating, recommended for tin or silverplated wire
   - Nickel plating, recommended for nickel-plated wire, or silver-plated wire in applications above 150°C [302°F].
3. Calculate the size of crimp barrel required.

   Using the CMA/mm² worksheet on the next page, calculate the total cross section to be spliced by adding the circular mil area (CMA) or square millimeters (mm²) of each wire.

   Stub splice: Add the CMA or mm² of all wires together.

   Butt splice: Calculate each side separately (see example on the worksheet).

   Table A provides the CMA of typical conductors. (Both CMA and mm² give the same results, so choose either CMA or mm² as your unit of measure for selection purposes and continue to use it for all your selection criteria.)
4. Select the color code for the size crimp barrel required. Using Table B (page 24), select the crimp barrel—color-coded red, blue, or yellow—for the CMA or mm² you calculated.

   **Stub splice:** Select the barrel that will accommodate the total cross section.

   **Butt splice:** Select the smallest barrel that will accommodate the largest CMA/mm² required. (Refer to the example in the worksheet for a more specific description.) If the CMA/mm² of the smaller side of a butt splice is too small for the size barrel required to fit the larger side, increase the CMA/mm² — either by doubling back one wire (stripping the conductor twice the length you would ordinarily strip it and then folding it back) or by adding a filler wire.
5. Determine the type of sealing sleeve required. Some wire insulations will not fit in the holes of the sealing sleeve inserts, so be sure to compare the internal diameter of each hole with the outer diameter of the wire(s) you intend to insert in that hole. To create a reliable seal, place a maximum of two wires in any hole of the sealing sleeve.
6. Select the part number. Turn to the MiniSeal part number selection tables (Tables C and D, page 24 and 25) and find the table for the type of splice (stub or butt) required.

   Using the appropriate table, find the crimp barrel size range and the size and number of wires for your application. Then select the part number for the type of plating required. The color code accompanying that part number should match the color code you arrived at in Table B, confirming that the part number you have selected is correct.

## Table A. CMA of Typical Conductors

| Strands | 7 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 37 |
|---|---|---|---|---|---|---|---|---|---|
| AWG | 28 | 26 | 24 | 22 | 20 | 18 | 16 | 14 | 12 |
| CMA | 177 | 304 | 475 | 754 | 1216 | 1900 | 2426 | 3831 | 5874 |
| $mm^2$ | 0.09 | 0.15 | 0.24 | 0.38 | 0.61 | 0.95 | 1.21 | 1.92 | 2.94 |

## Table B. Crimp Barrel Color Code Selection

| CMA Range | 1:1 Splice (AWG Size) | Color Code |
|---|---|---|
| 304–1510 | 26–20 | Red |
| 1058–2680 | 20–16 | Blue |
| 2375–6755 | 16–12 | Yellow |

## CMA/$mm^2$ Worksheet

### Example:

Application: A butt splice with three AWG 22 wires in one side and one AWG 18 wire in the other side:

The CMA for AWG 22 wire in Table A is 754.

Side one is therefore calculated as follows:

CMA = 3 x 754 = 2262

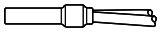
The other side, where the CMA for AWG 18 is 1900, is calculated as:

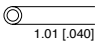
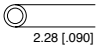
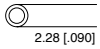
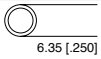
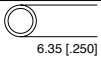
CMA = 1 x 1900 = 1900

Using Table B to select the smallest crimp barrel that will easily fit 2262 CMA, the blue barrel is the correct choice.

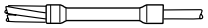
| Wire Number | CMA | $mm^2$ | |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | **Part Number:** |
| Total | | | |

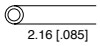
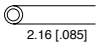
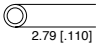
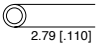
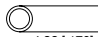
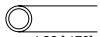
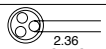
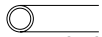
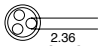
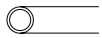
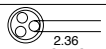
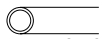
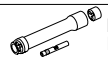
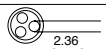
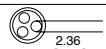
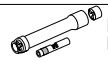
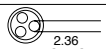
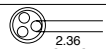
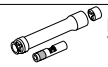
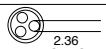
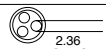
## Table C. Stub (Parallel) Splices



| Illustration | Part No. | | Crimp Barrel Size Range CMA Min.–Max. | I.D.dimensions | | | |
|---|---|---|---|---|---|---|---|
| | | | | Side 1 | | Side 2 | |
| | Tin Plated | Nickel Plated | | Sealing Insert | Max. No. of Wires | Sealing Insert | Max. No. of Wires |
|  | D-436-0128 Red | D-436-0119 Red | 304–1510 |  2.16 [.085] | 2 |  1.01 [.040] | 2 |
|  | D-436-58 Blue | D-436-75 Blue | 1058–2680 |  4.56 [.180] | 2 |  2.28 [.090] | 2 |
|  | D-436-59 Yellow | D-436-76 Yellow | 2375—6755 |  4.56 [.180] | 2 |  2.28 [.090] | 2 |
|  | D-436-60 Blue | D-436-77 Blue | 1058–2680 |  2.03 [.080] | 10 (2 per hole) |  6.35 [.250] | 2 |
|  | D-436-61 Yellow | D-436-78 Yellow | 2375–6755 |  2.03 [.080] | 10 (2 per hole) |  6.35 [.250] | 2 |

## Table D. Butt (in-line) splices



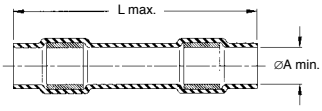
| Illustration | Part No. | | Crimp Barrel Size Range CMA Min.–Max. | I.D.dimensions | | | |
|---|---|---|---|---|---|---|---|
| | | | | Side 1 | | Side 2 | |
| | Tin Plated | Nickel Plated | | Sealing Insert | Max. No. of Wires | Sealing Insert | Max. No. of Wires |
|  | D-436-36* Red | D-436-82 D-200-82 Red | 304–1510 |  2.16 [.085] | 2 |  2.16 [.085] | 2 |
|  | D-436-37* Blue | D-436-83 D-200-83 Blue | 1058–2680 |  2.79 [.110] | 2 |  2.79 [.110] | 2 |
|  | D-436-38* Yellow | D-436-84 D-200-84 Yellow | 2375–6755 |  4.32 [.170] | 2 |  4.32 [.170] | 2 |
|  | D-436-0110 Red | D-436-85 Red | 304–1510 |  2.36 [.093] | 6 |  4.06 [.160] | 2 |
|  | D-436-52 Blue | D-436-86 Blue | 1058–2680 |  2.36 [.093] | 6 (2 per hole) |  4.06 [.160] | 2 |
|  | D-436-53 Yellow | D-436-87 Yellow | 2375–6755 |  2.36 [.093] | 6 (2 per hole) |  4.06 [.160] | 2 |
|  | D-436-0115 Red | D-436-88 Red | 304–1510 |  2.36 [.093] | 6 (2 per hole) |  2.36 [.093] | 6 (2 per hole) |
|  | D-436-42 Blue | D-436-89 Blue | 1058–2680 |  2.36 [.093] | 6 (2 per hole) |  2.36 [.093] | 6 (2 per hole) |
|  | D-436-43 Yellow | D-436-90 Yellow | 2375–6755 |  2.36 [.093] | 6 (2 per hole) |  2.36 [.093] | 6 (2 per hole) |

*Qualified to MIL-S-81824/1.

## Table E. Crimp Barrel Only

| Type | Color Code | Tin-Plated | Nickel Plated | Crimp Barrel Size Range CMA Min. - Max. |
|---|---|---|---|---|
| Butt (in-line) | Red | D-609-06 | D-609-09 | 304-1510 |
| Butt (in-line) | Blue | D-609-07 | D-609-10 | 1058-2680 |
| Butt (in-line) | Yellow | D-609-08 | D-609-11 | 2350-6755 |
| Stub (Parrel) | Red | D-609-03 | D-609-12 | 304-1510 |
| Stub (Parrel) | Blue | D-609-04 | D-609-13 | 1058-2680 |
| Stub (Parrel) | Yellow | D-609-05 | D-609-14 | 2350-6755 |

## Table F. Sealing Sleeve Only




| Part No. | Color Code | L Max. | A Min. |
|---|---|---|---|
| D-436-0096 | Red | 29.2 [1.15] | 2.16 [0.085] |
| D-436-0097 | Blue | 29.2 [1.15] | 2.8 [0.110] |
| D-436-0098 | Yellow | 29.2 [1.15] | 4.32 [0.170] |

## Product Characteristics

| Material | |
|---|---|
| Insulation | Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride (D-436) |
| Crimp barrel | Tin- or nickel-plated copper |
| Meltable inserts | Meltable thermoplastic (D-436) |
| **Typical Performance** | |
| Voltage drop | 6.9 mV at 4.5 A vs 8.1 mV for an equal length of wire |
| Tensile strength | Exceeds strength of conductor |
| Dielectric strength | 2.5 kV |
| Temperature rating | -55°C to 150°C [-67°F to 302°F] (D-436 Series) |
| Insulation resistance | 5000 megohms |

## Specifications/ Approvals

| Series | Military |
|---|---|
| D-436 | SAE-AS-81824/1 for D-436-36/37/38 |

## Installation Requirements

For proper installation of these devices, the correct crimp tool (TE part number AD-1377) and a heating tool and reflector attachment must be used.

Any one of the following TE heating tools is recommended:

- HL1920E/HL2020E
- AA-400 Super Heater

Refer to TE installation procedure RCPS-200-20 for detailed instructions and recommended reflector attachments.



**AD-1377 Hand Crimping Tool**
Tool is used for crimping wire terminations with MiniSeal splices.

## Specifications

### DIMENSION

- **Overall Length:** 230 mm (9”) approx.

### WEIGHT

- 350 g (12.3 oz.)

## Ordering Information

### AD-1377 Crimp Tool for MiniSeal Splices

| Model | Description | Part No. |
|---|---|---|
| AD-1377 Crimp Tool | AD-1377-CRIMP-TOOL-3-CVTY | 992008-000 |
| Commercial Crimp Tool | AD-1377-S-SPEC-CRIMP-TOOL | 959025-000 |
| Calibration Gauge | AD-1386-CALIBRATION-GAUGE | 992013-000 |

### Accessories and Replacement Parts

| Parts | Description | Part No. |
|---|---|---|
| Crimp Locator | AD-1377-103-CRIMP-LOCATOR | 994855-000 |
| Spring | AD-1377-P-E118-TOR-SPRNG | 994123-000 |

**ROHS Information** can be found at the following website: http://www.te.com/customersupport/productcompliance/

This product must not be disposed of as municipal waste.

RoHS Compliant



**RUGGED**

- Transparent heat-shrinkable insulation sleeve provides environmental protection and strain relief

**EASY TO USE**

- No need to staffer wire splices

**VERSATILE**

- Small size
- Light weight
- Immersion-resistant crimp splices while meeting all requirements of SAE AS81824/11
- Splices provide sealing to unetched wire insulations

# 200˚ MiniSeal High-Performance, Immersion-Resistant Crimp Splices

In-line nickel plated sealed crimp splices for 200˚C applications were developed for the growing needs of high temperature applications in the aerospace and defense industry.

200˚C MiniSeal crimp splices provides the smallest, lightest, and the most environmental-resistant splices available, while meeting all requirements of SAEAS81812/11.

## Applications

MiniSeal wire-to-wire splicing products are ideal for aerospace and defense applications where performance, reliability or size reduction is essential.

Designed to provide an immersion resistant in-line splice on 1:1 wires for the following: wire range from 26 AWG to 12 AWG; nickel-plated conductors and insulation rated for at least 135˚C.

## Product Characteristics

| Material | |
|---|---|
| Insulation | Heat-shrinkable, transparent blue, radiation cross-linked modified fluoropolymer |
| Crimp splicer | Base Metal: Copper alloy 101 or 102 per ASTM B75<br>Plating: Nickel per SAE AMS-QQ-N-290<br>Color Code: see table below |
| Meltable rings | Environment resistant modified thermoplastic fluoroelastomer<br>Color: Light blue |
| **Typical Performance** | |
| Voltage drop | 6.9 mV at 4.5 A vs 8.1 mV for an equal length of wire |
| Tensile strength | Exceeds strength of conductor |
| Dielectric strength | 2.5 kV |
| Temperature rating | -55˚C to 200°C [-67°F to 392°F] |
| Insulation resistance | 5000 megohms |

## Specifications/ Approvals

| Series | Military |
|---|---|
| D-200 | Meets the requirements of SAE AS81824/11 |

## Part Numbers

| Part No. | Color Code | Part Number |
|---|---|---|
| D-200-82 | Red | D17660-000 |
| D-200-83 | Blue | A36675-000 |
| D-200-84 | Yellow | C60253-000 |

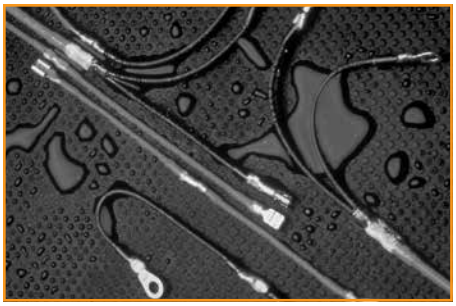
## Product Dimensions

| Product Name | Product Rev. | I.D.* a. min b. max | Crimp Splicer øA | øB | C | D | E max. | Color Code |
|---|---|---|---|---|---|---|---|---|
| D-200-82 | A | 2.16 (0.085)<br>0.64 (0.025) | 1.27 (0.050)<br>1.14 (0.045) | 2.03 (0.080)<br>1.91 (0.075) | 12.95 (0.510)<br>12.45 (0.490) | 6.22 (0.245)<br>5.72 (0225) | 0.38<br>(0.015) | Red |
| D-200-83 | A | 2.79 (0.110)<br>0.64(0.025) | 1.75 (0.069)<br>1.63 (0.064) | 2.70 (0.106)<br>2.57 (0.101) | 14.86 (0.585)<br>14.35 (0.565) | 7.11 (0.280)<br>6.60 (0.260) | 0.51<br>(0.020) | Blue |
| D-200-84 | A | 4.32 (0.170)<br>0.64 (0.025) | 2.60 (0.102)<br>2.46 (0.097) | 3.89 (0.153)<br>3.73 (0.147) | 14.86 (0.585)<br>14.35 (0.565) | 7.11 (0.280)<br>6.60 (0.260) | 1.27<br>(0.050) | Yellow |

*I.D.: a- As received; b- After unrestricted recovery thru meltable insert.

| Product Name | MIL Spec Equivalent Size | Wire Range | Wgt. Lbs/Mpc max. |
|---|---|---|---|
| D-200-82 | M81824/11-1 | 26-20 | 1.02 |
| D-200-83 | M81824/11-2 | 20-16 | 1.61 |
| D-200-84 | M81824/11-3 | 16-12 | 2.72 |

# Insulated Terminals and Disconnects





## Introduction

TE insulated electrical terminal products provide reliable, repeatable, and rugged examples of terminals available. We start on the front end with terminal sizes and configurations that meet or exceed industry standards in terms of material selection, surface treatment, and electrical performance.

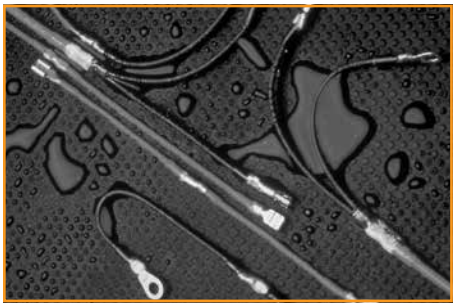
Here the comparison stops. What separates Raychem brand products from the rest of the industry are the materials and termination techniques used on the back end of the products, which provide unparalleled value.

**Products include:**

**DuraSeal heat-shrinkable nylon crimp products**, which protect against water, condensation, salt, and corrosion. Their tough, heat-shrinkable nylon tubing resists abrasion and cut-through damage, provides strain relief, and protects against vibration damage. DuraSeal products are simple and quick to install using a crimp tool and a heat source. They accommodate a wide range of wire sizes and are color-coded for easy identification, yet are transparent for visual inspection of the finished splice.

**SolderGrip heat-shrinkable twist-on products**, which utilize a spiral copper coil that grips and compresses the conductors and allows a prefluxed solder ring to flow to the center of the splicing area, resulting in a highly reliable, repeatable joint. SolderGrip terminals use a durable polyvinylidene fluoride heat-shrinkable tubing that protects the electrical joint and provides insulation and strain relief. The SolderGrip technology is a reliable means of terminating more than two conductors time after time. SolderGrip terminals can terminate a variety of conductor types (solid and stranded) and platings. Terminations on more than eight individual conductors in a single joint have been successfully demonstrated using this product.

DuraSeal product delivers protected electrical joints on industry standard terminals and is suitable for harsh environments.



**DURABLE**
- Resistance to moisture and abrasion
- Strain relief

**CAPABLE**
- Protection from wire pull-out
- UL and CUL listed

**EASY TO USE**
- Easy installation

# DuraSeal Heat-Shrinkable Environmentally Sealed, Nylon Insulated Crimp Terminals and Disconnects

## Applications

DuraSeal products insulate and protect electrical connections from mechanical abuse, wire pull-out, and abrasion while resisting water, salt, and other contaminant's.

DuraSeal devices provide a tough, environmentally sealed wire connection. Their crimp barrel or terminal, encased in rugged, heat-shrinkable nylon tubing lined with a special hot-melt adhesive, resists damage from abrasions and cuts.

DuraSeal devices retain flexibility and impact-resistance long after similar products have become brittle.

DuraSeal devices accommodate wire gauge sizes 22 to 10. They are color-coded for easy identification of gauge sizes, yet transparent for inspection of the finished splice.

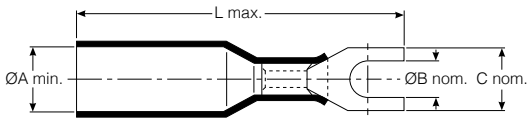
## Approvals and Reference Documents

| | |
|---|---|
| Agency approvals | UL listed component, file E87681, terminals except quick connect terminals; file E157833, quick connect terminals |
| Reference documents | TE specifications RB-108,<br>Specification DuraSeal crimp terminals<br>DuraSeal selection guide (H54153)<br>DuraSeal installation guidelines (H54154) |

## Product Characteristics

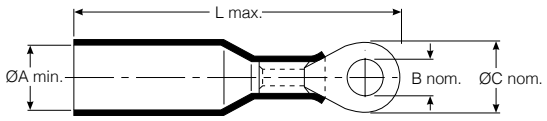
| | Property | Unit | Requirement | Method of Test |
|---|---|---|---|---|
| Physical | Dimensions<br>Tensile strength | Inches<br>Pounds | None<br>8 to 40 lbs depending on AWG | See product dimensions<br>UL486C, IEC512-8 |
| | **Property** | **Unit** | **Typical value** | **Method of Test** |
| Electrical | Voltage drop<br>Insulation resistance<br>Dielectric withstand voltage | Millivolts<br>Megohms<br>Kilovolts | Less than equal length of wire<br>103 min.<br>2.5 | MIL-S-81824, IEC512-2<br>MIL-STD-202 method 302<br>MIL-STD-202F method 301, IEC512-2 |
| | **Property** | **Unit** | **Requirement** | **Method of Test** |
| Chemical | Diesel fuel<br>Brake fluid<br>Antifreeze<br>5% salt water<br>Motor oil | — | Meet electrical test listed above after conditioning. | ASTM D 3032, ESA-603D |
| Environmental (Fluid) | Humidity<br>Immersion<br>Vibration<br>Bending<br>Thermal shock<br>Heat aging (168h @ 85°C [185°F)<br>Salt spray | — | Meet electrical test listed above after conditioning. | MIL-STD-202F method 106, IEC68-2-30<br>MIL-STD-202F condition C, IEC68-2-14 test NC<br>MIL-STD-202F method 201, IEC68-2-6<br>UL486C, IEC512-8<br>MIL-STD-202F method 107, IEC68-2-14 test N<br>MIL-STD-202F, IEC68-2-2<br>MIL-STD-202F method 101, IEC68-2-11 |
| Operating conditions | Temperature rating<br>Minimum shrink temperature<br>Voltage rating | — | -55°C to +125°C [-67°F to -257°F]<br>180°C [356°F]<br>600 Volt max | None<br>None<br>None |

## Fork Terminals



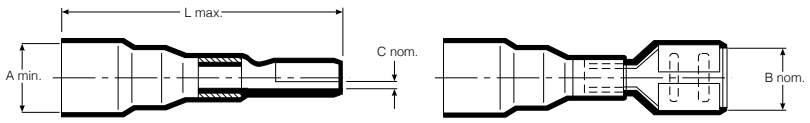

| Part No. | Fork Terminal Dimensions | | | | | Color | Insulation Conductor (AWG) | Wire Dimensions | |
|---|---|---|---|---|---|---|---|---|---|
| | A Min. | Stud Size | | C Nom. | L Max. | | | Insulation O.D. (Max.) | O.D. (Min.) |
| | | Metric | Imperial | | | | | | |
| B-106-2401 | 3.81 [.15] | M4 | 8 | 7.87 [.31] | 32.00 [1.26] | Red | 22–18 | 3.81 [.150] | 1.40 [.055] |
| B-106-2402 | 4.57 [.18] | M4 | 8 | 7.87 [.31] | 35.05 [1.38] | Blue | 16–14 | 4.45 [.175] | 2.00 [.080] |
| B-106-2403 | 6.35 [.25] | M4 | 8 | 7.87 [.31] | 38.10 [1.50] | Yellow | 12–10 | 6.35 [.250] | 2.79 [.110] |
| B-106-2502 | 4.57 [.18] | M5 | 10 | 9.91 [.39] | 35.05 [1.38] | Blue | 16–14 | 4.45 [.175] | 2.00 [.080] |
| B-106-2503 | 6.35 [.25] | M5 | 10 | 9.91 [.39] | 40.15 [1.58] | Yellow | 12–10 | 6.35 [.250] | 2.79 [.110] |

## Ring Terminals



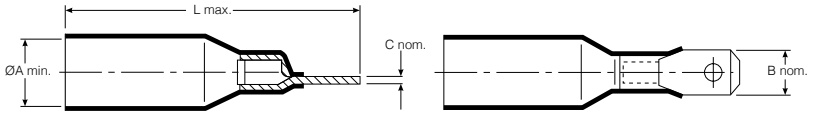

| Part No. | Ring Terminal Dimensions | | | | | Color | Wire Dimensions | | |
|---|---|---|---|---|---|---|---|---|---|
| | A Min. | Stud Size | | C Nom. | L Max. | | Insulation Conductor (AWG) | Insulation O.D. (Max.) | O.D. (Min.) |
| | | Metric | Imperial | | | | | | |
| B-106-1401 | 3.81 [.15] | M4 | 8 | 7.88 [.31] | 32.00 [1.26] | Red | 22–18 | 3.81 [.150] | 1.40 [.055] |
| B-106-1501 | 3.81 [.15] | M5 | 10 | 9.91 [.39] | 34.04 [1.34] | Red | 22–18 | 3.81 [.150] | 1.40 [.055] |
| B-106-1601 | 3.81 [.15] | M6 | 1/4 | 11.94 [.47] | 36.07 [1.42] | Red | 22–18 | 3.81 [.150] | 1.40 [.055] |
| B-106-1801 | 3.81 [.15] | M8 | 5/16 | 13.97 [.55] | 39.12 [1.54] | Red | 22–18 | 3.81 [.150] | 1.40 [.055] |
| B-106-1991 | 3.81 [.15] | M10 | 3/8 | 17.78 [.70] | 43.18 [1.70] | Red | 22–18 | 3.81 [.150] | 1.40 [.055] |
| B-106-1402 | 4.57 [.18] | M4 | 8 | 7.88 [.31] | 33.02 [1.30] | Blue | 16–14 | 4.45 [.175] | 2.00 [.080] |
| B-106-1502 | 4.57 [.18] | M5 | 10 | 9.91 [.39] | 35.05 [1.38] | Blue | 16–14 | 4.45 [.175] | 2.00 [.080] |
| B-106-1602 | 4.57 [.18] | M6 | 1/4 | 11.94 [.47] | 36.58 [1.44] | Blue | 16–14 | 4.45 [.175] | 2.00 [.080] |
| B-106-1802 | 4.57 [.18] | M8 | 5/16 | 13.97 [.55] | 40.13 [1.58] | Blue | 16–14 | 4.45 [.175] | 2.00 [.080] |
| B-106-1992 | 4.57 [.18] | M10 | 3/8 | 17.78 [.70] | 43.94 [1.73] | Blue | 16–14 | 4.45 [.175] | 2.00 [.080] |
| B-106-1403 | 6.35 [.25] | M4 | 8 | 7.88 [.31] | 38.10 [1.50] | Yellow | 12–10 | 6.35 [.250] | 2.79 [.110] |
| B-106-1503 | 6.35 [.25] | M5 | 10 | 9.91 [.39] | 40.13 [1.58] | Yellow | 12–10 | 6.35 [.250] | 2.79 [.110] |
| B-106-1603 | 6.35 [.25] | M6 | 1/4 | 11.94 [.47] | 41.66 [1.64] | Yellow | 12–10 | 6.35 [.250] | 2.79 [.110] |
| B-106-1803 | 6.35 [.25] | M8 | 5/16 | 13.97 [.55] | 45.21 [1.78] | Yellow | 12–10 | 6.35 [.250] | 2.79 [.110] |
| B-106-1993 | 6.35 [.25] | M10 | 3/8 | 17.78 [.70] | 46.99 [1.85] | Yellow | 12–10 | 6.35 [.250] | 2.79 [.110] |

## Push-on Terminals



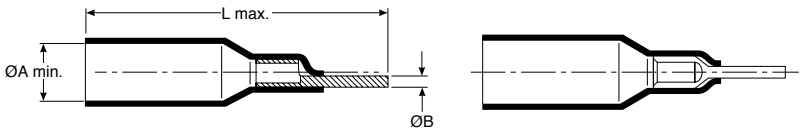

| Part No. | Tab Size (inches) | Push-on Terminal Dimensions | | | | Color | Insulation Conductor (AWG) | Wire Dimensions | |
|---|---|---|---|---|---|---|---|---|---|
| | | A Min. | B Nom. | C Nom. | L Max. | | | Insulation O.D. (Max.) | O.D. (Min.) |
| B-106-3631 | .250 x .032 | 3.81 [.150] | 6.35 [.250] | .81 [.032] | 30.48 [1.200] | Red | 22–18 | 3.81 [.150] | 1.40 [.055] |
| B-106-3632 | .250 x .032 | 4.57 [.180] | 6.35 [.250] | .81 [.032] | 32.00 [1.260] | Blue | 16–14 | 4.45 [.175] | 2.00 [.080] |
| B-106-3633 | .250 x .032 | 6.35 [.250] | 6.35 [.250] | .81 [.032] | 33.02 [1.300] | Yellow | 12–10 | 6.35 [.250] | 2.79 [.110] |
| B-106-3281 | .110 x .020 | 3.81 [.150] | 2.79 [.110] | .51 [.020] | 22.86 [.900] | Red | 22–18 | 3.81 [.150] | 1.40 [.055] |
| B-106-3481 | .187 x .020 | 3.81 [.150] | 4.75 [.187] | .51 [.020] | 30.48 [1.200] | Red | 22–18 | 3.81 [.150] | 1.40 [.055] |

## Tab Terminals




| Part No. | Tab Size (inches) | Tab Terminal Dimensions | | | | Color | Insulation Conductor (AWG) | Wire Dimensions | |
|---|---|---|---|---|---|---|---|---|---|
| | | A Min. | B Nom. | C Nom. | L Max. | | | Insulation O.D. (Max.) | O.D. (Min.) |
| B-106-4631 | .250 x .032 | 3.81 [.150] | 6.35 [.250] | .81 [.032] | 30.48 [1.20] | Red | 22–18 | 3.81 [.150] | 1.40 [.055] |
| B-106-4632 | .250 x .032 | 4.57 [.180] | 6.35 [.250] | .81 [.032] | 32.00 [1.26] | Blue | 16–14 | 4.45 [.175] | 2.00 [.080] |

## Pin Terminals




| Part No. | Pin Terminal Dimensions | | | Color | Wire Dimensions | | |
|---|---|---|---|---|---|---|---|
| | A Min. | B Nom. | L Max. | | Conductor (AWG) | Insulation O.D. (Max.) | Insulation O.D. (Min.) |
| B-106-6201 | 3.81 [.150] | 2.00 [.080] | 30.99 [1.220] | Red | 22–18 | 3.81 [.150] | 1.40 [.055] |

## Bullet Terminals

Fig. 1

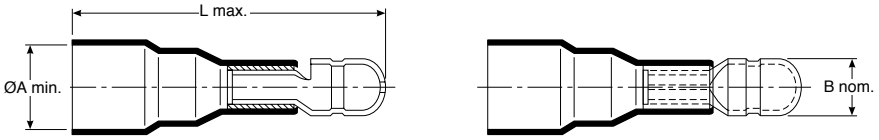
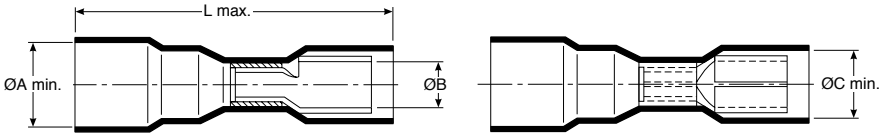



Fig. 2




| Part No. | Fig. | Type | Bullet Terminal Dimensions | | | | Color | Conductor (AWG) | Wire Dimensions | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | A Min. | B Nom. | C Min. | L Max. | | | Insulation O.D. (Max.) | Insulation O.D. (Min.) |
| B-106-7401 | 1 | M | 3.81 [.150] | 3.81 [.150] | — | 33.53 [1.32] | Red | 22–18 | 3.81 [.150] | 1.40 [.055] |
| B-106-7502 | 1 | M | 4.57 [.180] | 5.08 [.200] | — | 34.54 [1.36] | Blue | 16–14 | 4.45 [.175] | 2.00 [.080] |
| B-106-8401 | 2 | F | 3.81 [.150] | 3.81 [.150] | 5.59 [.220] | 30.48 [1.20] | Red | 22–18 | 3.81 [.150] | 1.40 [.055] |
| B-106-8502 | 2 | F | 4.57 [.180] | 5.08 [.200] | 6.10 [.240] | 32.51 [1.28] | Blue | 16–14 | 4.45 [.175] | 2.00 [.080] |

## Product Characteristics (Typical)

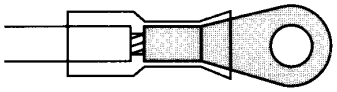
| | |
|---|---|
| Operating temperature | -55°C to 125°C [-67°F to 257°F] |
| Shrink ratio | Approximately 2:1 |
| Physical properties | Cut-through resistance: 31.7 kg [70 lb]<br>Wire pullout after crimping and recovery: red: 11.3 kg [25 lb]; blue: 22.7 kg [50 lb]; yellow: 27.2 kg [60 lb]<br>Not flame-retardant<br>No cracking after heat aging for 168 hr at 160°C [320°F] |
| Chemical properties | Solvent resistance: isopropyl alcohol, trichloroethylene, gasoline, battery acid, diesel fuel, motor oil, antifreeze, brake fluid, 5% salt water |
| Electrical properties | Dielectric strength: 1000 V<br>Insulation resistance: 10 megohms |

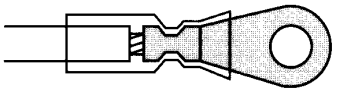
## Specifications/ Approvals

| Series | Agency | TE |
|---|---|---|
| B-106 | UL and CUL 91J4, File E87681<br>Lloyd's listed, File 65 247 HH 02-93<br>UL and CUL E157833<br>(B-106-3XXX/B-106-4XXX) | RB-108 |

## Installation Requirements

1. Select appropriate size. For terminal and disconnect terminations, strip wire 6.5 mm (1/4 inch).
2. Crimp using AD-1522 crimp tool for preinsulated crimps.
3. Heat terminal or disconnect with heat gun until tubing recovers and adhesive flows. Avoid heating ring or fork metallic parts.







For proper installation of these devices, the correct crimp tool and heating tool with reflector attachment must be used. The AD-1522 crimp tool and HL1920E/ HL2020E heating tools are recommended. Refer to TE installation procedure RPIP-684-00 for detailed instructions.



**AD-1522-1 Hand Crimping Tool**
Tool is used for completing wire terminations using DuraSeal splices.

## Specifications

### DIMENSION

- **Overall Length:** 230 mm (9") approx.

### WEIGHT

- 350 g (12.3 oz.)

### PRODUCT RANGE

- DuraSeal Crimp Splices and Terminals

## Ordering Information

### AD-1522-1 Crimp Tool for DuraSeal Splices

| Product | Description | Part No. |
|---|---|---|
| Crimp Tool | AD-1522-1 | 047011-000 |
| Calibration Gauge | AE-2245 | 020435-000 |

**ROHS Information** can be found at the following website: http://www.te.com/customersupport/productcompliance/

This product must not be disposed of as municipal waste.



**RUGGED**

- Transparent insulation sleeve provides encapsulation, inspectability, strain relief, and insulation

**VERSATILE**

- Spiral copper coil grips and compresses the conductors for optimum solder connection
- Prefluxed solder preform provides a controlled soldering process
- Accommodates a wide variety of conductor types, quantities, sizes, and plating types unmatched by any other termination technique

**HIGH PERFORMANCE**

- Parts meet the performance requirements of MIL-T-7928G

**EASY TO USE**

- One-piece design for easy installation

**APPLICATIONS**

- Used for terminating multiple wires to terminals

# SolderGrip Self-Fixturing Insulated Terminals

## Product Selection Process

1. Determine the wire combination (number of wires and size) of the wire bundle you wish to terminate.
2. Use Table C to select the correct terminal for AWG wire combination.* Example: For connecting a bundle with one 12 AWG wire (1 #12) and two 18 AWG wires (+ 2 #18) to a terminal, you need an SGRT-4-XX terminal.
3. Determine the correct stud size.
4. Select the correct part number from Table A for that stud size in the terminal series and size you selected in Step 2. Example: If the stud size is 1/4, select part number SGRT-4-06.
5. Verify that the wire bundle (with wire insulation) does not exceed the maximum diameter allowed for the part you selected. Simply check the bundle's diameter against the maximum diameter that Table A lists for that part.
6. Verify that the total amperage to be applied does not exceed the maximum amp rating for the part as specified in Table A.

*If the wire combination is not listed in Table B, use the CMA ($mm^2$) method of determining wire bundle size (see "CMA/$mm^2$ Calculation" on page 37).

Using Table B, select the smallest size part that will fit your total wire CMA ($mm^2$) value.

## Product Option

| Product Series | Environmental Protection |
|---|---|
| SGRT | Splashproof (not RoHS compliant) |

## Table A. Part Number Selection

| SolderGrip Part No. | Stud Size | Maximum Bundle Diameter† | Maximum Amp Rating | Wire Range (Min.–Max.) CMA [$mm^2$] | Typical Length |
|---|---|---|---|---|---|
| SGRT-1-02 | 2 [2] | 4.1 [.161] | 12.5 A | 1400–5000 [0.7–2.5] | 38 [1 1/2] |
| SGRT-2-03 | 3 [6] | 5.0 [.195] | 15 A | 2400–6000 [1.2–3.0] | 38 [1 1/2] |
| SGRT-2-04 | 4 [8] | — | 15 A | 2400–6000 [1.2–3.0] | 38 [1 1/2] |
| SGRT-2-05 | 5 [10] | — | 15 A | 2400–6000 [1.2–3.0] | 38 [1 1/2] |
| SGRT-2-06 | 6 [1/4] | — | 15 A | 2400–6000 [1.2–3.0] | 38 [1 1/2] |
| SGRT-3-06 | 6 [1/4] | 6.5 [.255] | 33 A | 5000–13,200 [2.5–6.6] | 44.5 [1 3/4] |
| SGRT-3-08 | 8 [5/16] | — | 33 A | 5000–13,200 [2.5–6.6] | 51.0 [2] |
| SGRT-4-06 | 6 [1/4] | 9.0 [.355] | 56 A | 12,000–22,400 [6.0–11.2] | 44.5 [1 3/4] |
| SGRT-4-08 | 8 [5/16] | — | 56 A | 12,000–22,400 [6.0–11.2] | 51 [2] |

†Maximum bundle diameter is measured over wire insulation.

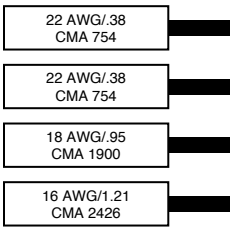
## CMA/mm² Calculation

To calculate the total circular mil or mm² area of the wire bundle to be terminated, follow these steps:

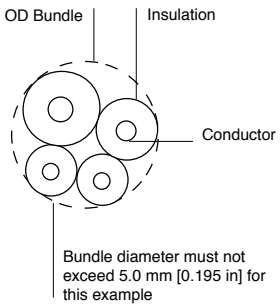
1. Choose either CMA or mm² as your unit of measure for selection purposes and continue to use it for all your selection criteria. (Both measures provide the same results.)
2. In the workspace below, list the CMA or mm² for each conductor in the bundle. (Table B provides the CMA of typical conductors.)
3. Add together the values listed in the workspace below to obtain the total area.
4. Use Table A to select the smallest terminator that will fit the total CMA (mm²).

| Wire Number | CMA | mm² | |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | Solder Grip Part No. |
| | | | |
| Total | | | |

## CMA/mm² Example




Total CMA = 5834
Total mm² = 2.92
Correct part number (based on CMA of 5834 or mm² of 2.92):
SGRT-2-XX if bundle OD is less than 5.0 mm (0.195 in).



## Table B. CMA of Typical Copper Conductors

| Strands | 7 | 19 | 19 | 19 | 19 | 19 | 19 | 19 | 37 |
|---|---|---|---|---|---|---|---|---|---|
| AWG | 28 | 26 | 24 | 22 | 20 | 18 | 16 | 14 | 12 |
| CMA | 177 | 304 | 475 | 754 | 1216 | 1900 | 2426 | 3831 | 5874 |
| $mm^2$ | 0.09 | 0.15 | 0.24 | 0.38 | 0.61 | 0.95 | 1.21 | 1.92 | 2.94 |

## Table C. SolderGrip Wire Combinations (see Table A for Terminal Size [-XX])

| Wire Combinations | Part No. | Wire Combinations | Part No. | Wire Combinations | Part No. |
|---|---|---|---|---|---|
| 1 # 8 | SGRT-4-XX | 1 # 12 + 1 # 16 + 4 # 18 | SGRT-4-XX | 1 # 14 + 4 # 20 | SGRT-3-XX |
| 1 # 8 + 1 # 16 | SGRT-4-XX | 1 # 12 + 2 # 16 | SGRT-3-XX | 1 # 14 + 1 # 18 | SGRT-2-XX |
| 2 # 8 + 2 # 16 | SGRT-4-XX | 1 # 12 + 2 # 16 + 1 # 18 | SGRT-3-XX | 1 # 14 + 1 # 18 + 1 # 20 | SGRT-3-XX |
| 1 # 8 + 1 # 14 | SGRT-4-XX | 1 # 12 + 2 # 16 + 2 # 18 | SGRT-4-XX | 1 # 14 + 2 # 18 | SGRT-3-XX |
| 1 # 10 | SGRT-3-XX | 1 # 12 + 3 # 16 | SGRT-4-XX | 1 # 14 + 3 # 18 | SGRT-3-XX |
| 1 # 10 + 1 to 3 # 18 | SGRT-3-XX | 1 # 12 + 4 # 16 | SGRT-4-XX | 1 # 14 + 4 # 18 | SGRT-3-XX |
| 1 # 10 + 2 # 18 | SGRT-3-XX | 1 # 12 + 5 # 16 | SGRT-4-XX | 1 # 14 + 5 # 18 | SGRT-4-XX |
| 1 # 10 + 3 # 18 | SGRT-4-XX | 1 # 12 + 1 # 14 + 1 # 18 | SGRT-3-XX | 1 # 14 + 1 # 16 | SGRT-3-XX |
| 1 # 10 + 1 # 16 | SGRT-3-XX | 1 # 12 + 1 # 14 + 2 # 18 | SGRT-4-XX | 1 # 14 + 1 # 16 + 1 # 20 | SGRT-3-XX |
| 1 # 10 + 1 # 16 + 1 # 18 | SGRT-4-XX | 1 # 12 + 1 # 14 + 3 # 18 | SGRT-4-XX | 1 # 14 + 1 # 16 + 1 # 18 | SGRT-3-XX |
| 1 # 10 + 1 # 16 + 2 # 18 | SGRT-4-XX | 1 # 12 + 1 # 14 + 1 # 16 | SGRT-3-XX | 1 # 14 + 1 # 16 + 2 # 18 | SGRT-3-XX |
| 1 # 10 + 2 # 16 | SGRT-4-XX | 1 # 12 + 1 # 14 + 2 # 16 | SGRT-4-XX | 1 # 14 + 1 # 16 + 3 # 18 | SGRT-3-XX |
| 1 # 10 + 3 # 16 | SGRT-4-XX | 1 # 12 + 1 # 14 + 3 # 16 | SGRT-4-XX | 1 # 14 + 1 # 16 + 4 # 18 | SGRT-4-XX |
| 1 # 10 + 4 # 16 | SGRT-4-XX | 1 # 12 + 1 # 14 + 4 # 16 | SGRT-4-XX | 1 # 14 + 2 # 16 | SGRT-3-XX |
| 1 # 10 + 5 # 16 | SGRT-4-XX | 1 # 12 + 2 # 14 | SGRT-4-XX | 1 # 14 + 2 # 16 + 1 # 18 | SGRT-3-XX |
| 1 # 10 + 1 # 14 | SGRT-3-XX | 1 # 12 + 2 # 14 + 1 # 18 | SGRT-4-XX | 1 # 14 + 2 # 16 + 2 # 18 | SGRT-3-XX |
| 1 # 10 + 1 # 14 + 1 # 18 | SGRT-4-XX | 1 # 12 + 2 # 14 + 1 # 16 | SGRT-4-XX | 1 # 14 + 2 # 16 + 3 # 18 | SGRT-4-XX |
| 1 # 10 + 1 # 14 + 1 # 16 | SGRT-4-XX | 1 # 12 + 2 # 14 + 2 # 16 | SGRT-4-XX | 1 # 14 + 3 # 16 | SGRT-3-XX |
| 1 # 10 + 1 # 14 + 2 # 16 | SGRT-3-XX | 1 # 12 + 2 # 14 + 3 # 16 | SGRT-4-XX | 1 # 14 + 3 # 16 + 1 # 18 | SGRT-3-XX |
| 1 # 10 + 1 # 14 + 3 # 16 | SGRT-4-XX | 1 # 12 + 3 # 14 | SGRT-4-XX | 1 # 14 + 3 # 16 + 2 # 18 | SGRT-4-XX |
| 1 # 10 + 2 # 14 | SGRT-4-XX | 1 # 12 + 3 # 14 + 1 # 16 | SGRT-4-XX | 1 # 14 + 4 # 16 | SGRT-4-XX |
| 1 # 10 + 3 # 14 | SGRT-4-XX | 1 # 12 + 4 # 14 | SGRT-4-XX | 1 # 14 + 4 # 16 + 1 # 18 | SGRT-4-XX |
| 1 # 10 + 1 # 12 | SGRT-4-XX | 2 # 12 + 1 # 18 | SGRT-4-XX | 1 # 14 + 5 # 16 | SGRT-4-XX |
| 1 # 10 + 1 # 12 + 1 # 14 | SGRT-4-XX | 2 # 12 + 1 # 16 | SGRT-4-XX | 2 # 14 | SGRT-3-XX |
| 1 # 10 + 2 # 12 | SGRT-4-XX | 2 # 12 + 2 # 16 + 1 # 18 | SGRT-4-XX | 2 # 14 | SGRT-3-XX |
| 2 # 10 | SGRT-4-XX | 2 # 12 + 3 # 16 | SGRT-4-XX | 2 # 14 | SGRT-3-XX |
| 2 # 10 + 1 # 16 | SGRT-4-XX | 2 # 12 + 1 # 14 + 1 # 18 | SGRT-4-XX | 2 # 14 | SGRT-3-XX |
| 1 # 12 | SGRT-3-XX | 2 # 12 + 1 # 14 + 1 # 16 | SGRT-4-XX | 2 # 14 | SGRT-3-XX |
| 1 # 12 + 1 # 18 | SGRT-3-XX | 2 # 12 + 2 # 14 | SGRT-4-XX | 2 # 14 + 1 # 16 | SGRT-3-XX |
| 1 # 12 + 2 # 18 | SGRT-3-XX | 3 # 12 + 1 # 18 | SGRT-4-XX | 2 # 14 + 1 # 16 | SGRT-3-XX |
| 1 # 12 + 3 # 18 | SGRT-3-XX | 3 # 12 + 1 # 16 | SGRT-4-XX | 2 # 14 + 1 # 16 | SGRT-3-XX |
| 1 # 12 + 4 # 18 | SGRT-4-XX | 3 # 12 + 1 # 14 | SGRT-4-XX | 2 # 14 + 1 # 16 | SGRT-3-XX |
| 1 # 12 + 5 # 18 | SGRT-4-XX | 1 # 14 | SGRT-2-XX | 2 # 14 + 2 # 16 | SGRT-3-XX |
| 1 # 12 + 1 # 16 | SGRT-3-XX | 1 # 14 + 1 # 22 | SGRT-2-XX | 2 # 14 + 2 # 16 | SGRT-3-XX |
| 1 # 12 + 1 # 16 + 1 # 18 | SGRT-3-XX | 1 # 14 + 1 # 20 | SGRT-2-XX | 2 # 14 + 3 # 16 | SGRT-4-XX |
| 1 # 12 + 1 # 16 + 2 # 18 | SGRT-3-XX | 1 # 14 + 2 # 20 | SGRT-3-XX | 2 # 14 + 4 # 16 | SGRT-4-XX |
| 1 # 12 + 1 # 16 + 3 # 18 | SGRT-4-XX | 1 # 14 + 3 # 20 | SGRT-3-XX | 3 # 14 | SGRT-3-XX |

**Table C. SolderGrip Wire Combinations** (see Table A for Terminal Size [-XX]) (Continued)

| Wire Combinations | Part No. |
|---|---|
| 3 # 14 + 1 # 16 | SGRT-4-XX |
| 3 # 14 + 2 # 16 | SGRT-4-XX |
| 3 # 14 + 3 # 16 | SGRT-4-XX |
| 4 # 14 | SGRT-4-XX |
| 4 # 14 + 1 # 16 | SGRT-4-XX |
| 4 # 14 + 2 # 16 | SGRT-4-XX |
| 5 # 14 | SGRT-4-XX |
| 5 # 14 + 1 # 16 | SGRT-4-XX |
| 1 # 16 | SGRT-2-XX |
| 1 # 16 + 1 # 22 | SGRT-2-XX |
| 1 # 16 + 2 # 22 | SGRT-2-XX |
| 1 # 16 + 3 # 22 | SGRT-2-XX |
| 1 # 16 + 1 # 20 | SGRT-2-XX |
| 1 # 16 + 1 # 20 + 1 # 22 | SGRT-2-XX |
| 1 # 16 + 2 # 20 | SGRT-2-XX |
| 1 # 16 + 3 # 20 | SGRT-3-XX |
| 1 # 16 + 4 # 20 | SGRT-3-XX |
| 1 # 16 + 5 # 20 | SGRT-3-XX |
| 1 # 16 + 1 # 18 | SGRT-2-XX |
| 1 # 16 + 1 # 18 + 1 # 20 | SGRT-2-XX |
| 1 # 16 + 1 # 18 + 2 # 20 | SGRT-3-XX |
| 1 # 16 + 1 # 18 + 3 # 20 | SGRT-3-XX |
| 1 # 16 + 1 # 18 + 4 # 20 | SGRT-3-XX |
| 1 # 16 + 2 # 18 | SGRT-3-XX |
| 1 # 16 + 2 # 18 + 1 # 20 | SGRT-3-XX |
| 1 # 16 + 2 # 18 + 2 # 20 | SGRT-3-XX |
| 1 # 16 + 2 # 18 + 3 # 20 | SGRT-3-XX |
| 1 # 16 + 3 # 18 | SGRT-3-XX |
| 1 # 16 + 3 # 18 + 1 # 20 | SGRT-3-XX |
| 1 # 16 + 3 # 18 + 2 # 20 | SGRT-3-XX |
| 1 # 16 + 4 # 18 | SGRT-3-XX |
| 1 # 16 + 4 # 18 + 1 # 20 | SGRT-3-XX |
| 1 # 16 + 5 # 18 | SGRT-3-XX |
| 2 # 16 | SGRT-2-XX |
| 2 # 16 + 1 # 20 | SGRT-3-XX |
| 2 # 16 + 2 # 20 | SGRT-3-XX |
| 2 # 16 + 3 # 20 | SGRT-3-XX |
| 2 # 16 + 4 # 20 | SGRT-3-XX |
| 2 # 16 + 1 # 18 | SGRT-3-XX |
| 2 # 16 + 1 # 18 + 1 # 20 | SGRT-3-XX |
| 2 # 16 + 1 # 18 + 2 # 20 | SGRT-3-XX |
| 2 # 16 + 1 # 18 + 3 # 20 | SGRT-3-XX |
| 2 # 16 + 2 # 18 | SGRT-3-XX |
| 2 # 16 + 2 # 18 + 1 # 20 | SGRT-3-XX |
| 2 # 16 + 2 # 18 + 2 # 20 | SGRT-3-XX |
| 2 # 16 + 3 # 18 | SGRT-3-XX |
| 2 # 16 + 3 # 18 + 1 # 20 | SGRT-3-XX |
| 2 # 16 + 4 # 18 | SGRT-3-XX |
| 3 # 16 | SGRT-3-XX |
| 3 # 16 + 1 # 20 | SGRT-3-XX |
| 3 # 16 + 2 # 20 | SGRT-3-XX |
| 3 # 16 + 3 # 20 | SGRT-3-XX |
| 3 # 16 + 1 # 18 | SGRT-3-XX |
| 3 # 16 + 1 # 18 + 1 # 20 | SGRT-3-XX |
| 3 # 16 + 1 # 18 + 2 # 20 | SGRT-3-XX |
| 3 # 16 + 2 # 18 | SGRT-3-XX |
| 3 # 16 + 2 # 18 + 1 # 20 | SGRT-3-XX |
| 3 # 16 + 3 # 18 | SGRT-3-XX |
| 4 # 16 | SGRT-3-XX |
| 4 # 16 + 1 # 20 | SGRT-3-XX |
| 4 # 16 + 2 # 20 | SGRT-3-XX |
| 4 # 16 + 1 # 18 | SGRT-3-XX |
| 4 # 16 + 1 # 18 + 1 # 20 | SGRT-3-XX |
| 4 # 16 + 2 # 18 | SGRT-4-XX |
| 5 # 16 | SGRT-3-XX |
| 5 # 16 + 1 # 20 | SGRT-4-XX |
| 5 # 16 + 1 # 18 | SGRT-4-XX |
| 6 # 16 | SGRT-4-XX |
| 1 # 18 + 1 # 22 | SGRT-2-XX |
| 1 # 18 + 2 # 22 | SGRT-2-XX |
| 1 # 18 + 3 # 22 | SGRT-2-XX |
| 1 # 18 + 1 # 20 | SGRT-2-XX |
| 1 # 18 + 1 # 20 + 1 # 22 | SGRT-2-XX |
| — | — |
| 1 # 18 + 1 # 20 + 2 # 22 | SGRT-2-XX |
| 1 # 18 + 2 # 20 | SGRT-2-XX |
| 1 # 18 + 3 # 20 | SGRT-2-XX |
| 1 # 18 + 4 # 20 | SGRT-3-XX |
| 1 # 18 + 5 # 20 | SGRT-3-XX |
| 2 # 18 | SGRT-2-XX |
| 2 # 18 + 1 # 22 | SGRT-2-XX |
| 2 # 18 + 1 # 20 | SGRT-2-XX |
| 2 # 18 + 2 # 20 | SGRT-3-XX |
| 2 # 18 + 3 # 20 | SGRT-3-XX |
| 2 # 18 + 4 # 20 | SGRT-3-XX |
| 3 # 18 | SGRT-2-XX |
| 3 # 18 + 1 # 20 | SGRT-3-XX |
| 3 # 18 + 2 # 20 | SGRT-3-XX |
| 3 # 18 + 3 # 20 | SGRT-3-XX |
| 4 # 18 | SGRT-3-XX |
| 4 # 18 + 1 # 20 | SGRT-3-XX |
| 4 # 18 + 2 # 20 | SGRT-3-XX |
| 5 # 18 | SGRT-3-XX |
| 5 # 18 + 1 # 20 | SGRT-3-XX |
| 6 # 18 | SGRT-3-XX |
| 1 # 20 + 2 # 22 | SGRT-2-XX |
| 1 # 20 + 3 # 22 | SGRT-2-XX |
| 1 # 20 + 4 # 22 | SGRT-2-XX |
| 2 # 20 | SGRT-2-XX |
| 2 # 20 + 1 # 22 | SGRT-2-XX |
| 2 # 20 + 2 # 22 | SGRT-2-XX |
| 2 # 20 + 3 # 22 | SGRT-2-XX |
| 3 # 20 | SGRT-2-XX |
| 3 # 20 + 1 # 22 | SGRT-2-XX |
| 4 # 20 | SGRT-2-XX |
| 5 # 20 | SGRT-3-XX |
| 6 # 20 | SGRT-3-XX |
| 4 # 22 | SGRT-2-XX |
| 5 # 22 | SGRT-2-XX |
| 6 # 22 | SGRT-2-XX |
| — | — |

## Installation Requirements

The SolderGrip product is pushed onto the conductors with a twisting motion. With the product in place, installation can be completed with the proper selection and use of heating tools and reflectors.

Either of the following TE heating tools is recommended:

- HL1920E/HL2020E
- CV-1981

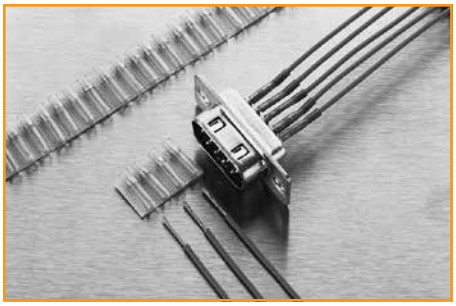
Refer to TE installation procedure RPIP-820-01 for detailed instructions and recommended reflector attachments.

## Product Characteristics

| | |
|---|---|
| **Material** | |
| Insulation | Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride (Kynar®) |
| Solder and flux | Sn60 Pb40 with RA flux |
| **Typical Performance** | |
| Tensile strength | Exceeds strength of individual wires |
| Temperature rating | -55°C to +150°C [-67°F to +302°F] |
| Voltage Drop | Not to exceed that of equivalent length of wire by more than 1 mV |
| Dielectric Withstanding Voltage | Current leakage less than 2 mA (1.5 kV) |

Kynar is a trademark of Arkema, Inc.

# Wire Termination to Pin/Post/Tab



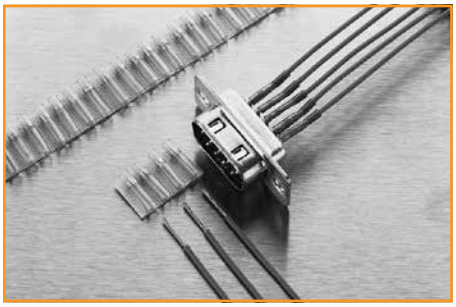
## Introduction

TE SolderSleeve terminators offer easy, one-step solutions for wire connections to pins, posts, and tabs and for mass wire terminations.

Designed for applications with temperatures up to 150°C [302°F], the products in this section include SolderSleeve discrete wire terminators, which are heat-shrinkable thermoplastic sleeves containing a precisely engineered fluxed solder preform.

SolderSleeve terminators are also available on carrier tape, spaced precisely to match connector terminal spacing, enabling termination of an entire row of wires at one time.

SolderSleeve wire-to-pin, wire-to-post, and wire-to-tab terminators, like all TE termination products, provide reliability and economical installation for greater productivity. They can be supplied either in bulk or on carrier tape.



**DURABLE**

- Transparent polyvinylidene fluoride or polyolefin insulation sleeve provides encapsulation, inspectability, strain relief, and insulation

**CAPABLE**

- Prefluxed solder preform offers a controlled soldering process

**HIGH PERFORMANCE**

- UL and CUL Recognized

**EASY TO USE**

- One-piece design means easy installation and low installed cost
- Optional tape carrier provides convenience and ease of installation

**APPLICATIONS**

- Used for terminating wires to component terminals, such as motor tabs, connector pins, and switch terminals

# SolderSleeve Discrete Wire Terminators

### Product Selection Process

1. Determine the application operating temperature.
2. From the Product Options table on the next page, select the product series appropriate for the application, based on the temperature required.
3. Determine your component connection point type (pin, post, or tab) and dimensions.
4. Determine your wire gauge.
5. Optional: Select tape carrier center-to-center spacing (D-71X series only). This should match center spacing of component terminals.
6. Select part number from the appropriate table:
   - For B-155 and CWT series (applications with low-temperature wires—below 125°C [257°F]), use Table A.
   - For D-129/141/71X series (applications with wires rated higher than 125°C [257°F]), use Table B.

### Installation Requirements

For proper installation of these devices, the correct heating tool and reflector attachment must be used. Either of the following TE heating tools is recommended:

- HL1920E/HL2020E
- AA-400 Super Heater

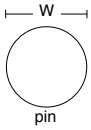
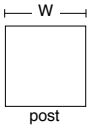
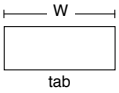
Refer to TE installation procedure RCPS-200-12 (for D-129, D-141, D-71X) or RPIP-824-00 (for B-155 and CWT) for detailed instructions and recommended reflector attachment.

## Product Options

| Product Series | Max. Operating Temperature | Min. Wire Temperature Rating |
|---|---|---|
| B-155, CWT | 125°C [257°F] | 85°C [185°F] |
| D-129, D-141, D-71X | 150°C [302°F] | 125°C [257°F] |

**Note:** Cadmium-free option (B-152 series) is available for operating temperature of 125˚C [257˚F]. Consult TE for details.

## Table A. B-155 Series (125°C [257°F] rated)

| Connection-point Type and Size | Terminal Dimensions | Wire AWG/mm² | Part No. |
|---|---|---|---|
|  | W = up to 0.63 [.025] | 24 [0.24]<br>20 [0.61] | B-155-1501<br>B-155-1502 |
| | W = 0.63 [.025] to 0.89 [0.035] | 24 [0.24]<br>22 [0.38]<br>20 [0.61] | B-155-1501<br>B-155-1502<br>B-155-1503 |
|  | W = 0.89 [0.035] to 1.14 [.045] | 24–22 [0.24–0.38]<br>20–18 [0.61–0.95] | B-155-1502<br>B-155-1503 |
| | W = 1.14 [.045] to 1.52 [.060] | 24–22 [0.24–0.38]<br>20–18 [0.61–0.95] | B-155-1503<br>B-155-1504 |
|  | W = up to1.52 [.060] | 24–20 [0.24–0.61] | B-155-1501 |
| | W = 1.27 [.050] to 2.28 [.090] | 24-18 [0.24–0.95] | B-155-1502 |
| | W = 1.77 [.070] to 2.79 [.110] | 24-18 [0.24–0.95] | B-155-1503 |
| | W = 2.54 [.100] to 3.80 [.150] | 24-18 [0.24–0.95] | B-155-1504 |
| | W = 2.28 [.090] to 4.70 [.187] | 22-16 [0.38–1.21] | B-155-1505 |

## Table B. D-129/141/71X Series (up to 150°C [302°F] rated)

### Connection-point Type and Size

| Terminal Dimensions | | Wire AWG | Wire $mm^2$ | Tape Carrier Spacing of Sleeves (Center-to-Center) None | 1.27 [0.050] | 2.54 [0.100] | 3.17 [0.125] | 4.0 [0.156] |
|---|---|---|---|---|---|---|---|---|
| W<br>pin | W = up to 0.61 [.024] | 30–26 | [0.05–0.15] | D-141-30 | D-713-03 | — | — | — |
| | | 24–22 | [0.24–0.38] | D-141-07 | — | D-711-00 | — | — |
| | W = 0.63 [.025] to 0.81 [.032] | 20 | [0.61] | D-141-31 | — | D-711-04 | D-711-07 | D-711-08 |
| W<br>post | W = 0.76 [.030] to 1.27 [.050] | 24–20 | [0.24–0.61] | D-141-56 | — | — | — | — |
| | W = up to 1.52 [.060] | 24–20 | [0.24–0.61] | D-129-05 | — | D-714-01 | — | — |
| W<br>tab | W = 1.27 [.050] to 2.28 [.090] | 24–20 | [0.24–0.61] | D-129-03 | — | — | — | D-714-00 |
| | W = 2.28 [.090] to 3.55 [.140] | 24–20 | [0.24–0.61] | D-129-0043 | — | — | — | — |

### For Fine Wire Terminations 0.15 $mm^2$ (26 AWG) and Smaller*

| Part No.* | Inside Diameter As Supplied** | Fully Recovered† | Length†† |
|---|---|---|---|
| D-110-0062 | 1.0 [0.040] | 0.6 [0.025] | 16.0 [0.630] |
| D-110-0217 | 1.0 [0.040] | 0.6 [0.025] | 9.0 [0.360] |
| D-141-13 | 0.75 x 1.65 [0.030 X 0.065] | 0.75 [0.030] | 4.7 [0.185] |
| D-141-22 | 0.75 x 1.65 [0.030 X 0.065] | 0.75 [0.030] | 6.0 [0.240] |
| D-141-30 | 0.75 x 1.65 [0.030 X 0.065] | 0.75 [0.030] | 9.5 [0.375] |

**Note:** Micro SolderSleeve terminators are used for attaching leads smaller than 26 AWG (0.15 $mm^2$) to terminals less than 0.6 [.025] wide.

*The D-110 series sleeves are primarily for single wire terminations and do not have a wire stop. The D-141 series will accept either one or two wires; the parts have a built-in wire stop that will locate the wire approximately 0.76 [0.03] from bottom of terminal.

**Minimum. Wire insulation must be smaller than this. When using the D-141 parts for two-wire terminations, the combined wire insulation diameters must be less than 1.5 [.060].

†Maximum. The combination of conductor diameter and terminal width and the wire insulation must be greater than this.

††The terminal length should be at least 1.2 [0.05] shorter than this. The wire strip length must be adjusted so that, when terminated, the exposed conductor is covered by the sleeve.

## Product Characteristics

| | | |
|---|---|---|
| **Material** | | |
| Insulation [D-129, D-141, D-71X] | Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride | |
| Insulation [B-155, CWT] | Radiation-crosslinked, heat-shrinkable polyolefin | |
| Solder and flux [D-129, D-141, D-71X] | Solder: Sn63 Pb37 | Flux: ROL1 per ANSI-J-004 [RMA flux] |
| Solder and flux [B-155] | Solder: Sn42Bi58 | Flux: ROM1 per ANSI-J-004 [RA flux] |
| Solder and flux [CWT] | Solder: Sn50 Pb32 Cd 18 | Flux: ROM1 per ANSI-J-004 [RA flux] |
| **Typical Performance** | | |
| Voltage drop | 2.0 mV | |
| Tensile strength | Exceeds strength of conductor | |
| Dielectric strength | 2.0 kV | |
| Temperature rating [B-155, CWT] | -55°C to 125°C [-67°F to 257°F] | |
| Temperature rating [D-129, D-141, D-71X] | -55°C to 150°C [-67°F to 302°F] | |
| Insulation resistance | 1000 megohms | |

## Specifications/ Approvals

| Series | Agency | TE |
|---|---|---|
| B-155 | RoHS | RT-1404 |
| CWT | UL and CUL E87681 | D-5023 |
| D-129, D-141 | UL and CUL E87681 | RT-1404 |

# Shield Termination



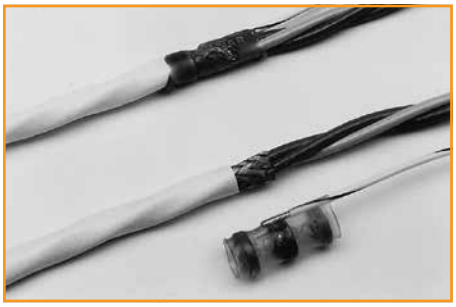
## Introduction

TE SolderSleeve shield grounding terminators provide an environmentally sealed, insulated, and encapsulated solder connection for a variety of applications. SolderSleeve terminators are available in many styles.

Designed for a wide variety of temperature applications ranging from -65°C to 200°C [-85°F to 392°F], the products in this section include:

- B-155-X and CWT-X SolderSleeve terminators, designed for low-temperature cables with operating temperatures up to 125°C [257°F] and suitable for most commercial environments.
- MIL-S-83519 SolderSleeve terminators, which are immersion resistant and available with or without a preinstalled ground lead.
- SO Series SolderSleeve terminators, which also are immersion resistant and feature the TE BiAlloy temperature indication system.
- S200 Shield terminators are offered in various sizes and ground lead configurations.

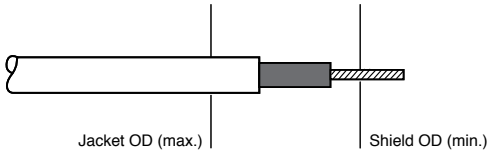
All SolderSleeve products are reliable, versatile, and easy to install, resulting in lower installed costs.



# SolderSleeve Shield Terminators

### Product Selection Process

1. Select product series from the Product Options table below.
2. Determine cable dimensions.
3. Optional: Select preinstalled wire lead type (see Table G on page 53 for type descriptions).
4. Select part number (use the selection table indicated for your product series in the Product Options table below).
5. Refer to Table H on page 53 for cross-reference information.




**RUGGED**

- Transparent insulation sleeve provides encapsulation, inspectability, strain relief, and insulation

**VERSATILE**

- Prefluxed solder preform provides a controlled soldering process

**EASY TO USE**

- One-piece design means easy installation and lower installed cost
- Optional preinstalled ground leads provide convenience and ease of installation

**APPLICATIONS**

- Used for shield-to-ground termination

### Product Options (Refer to Table G on Page 53 for Additional Information)

| Product Series | System Oper. Temperature (Max.) | Used on Cables Rated (Min.) | Environmental Protection | Solder Alloy | Flux Type | Insulation Material | Part No. Selection Table |
|---|---|---|---|---|---|---|---|
| B-155 | 125°C [257°F] | 85°C [185°F] | Splash resistant | Bi58 | PA | Polyolefin | A |
| CWT | 125°C [257°F] | 85°C [185°F] | Splash resistant | Cd18 | RA | Polyolefin | A |
| SO63* | 150°C [302°F] | 125°C [257°F] | Immersion resistant | Sn63 | RMA | Polyvinylidene fluoride | B |
| S01/S02**, S03 | 150°C [302°F] | 125°C [257°F] | Immersion resistant | Sn63 | RMA | Polyvinylidene fluoride | C, D |
| SO96*** | 175°C [347°F] | 150°C [302°F] | Immersion resistant | Sn96 | RA | Polyvinylidene fluoride | E |
| SO175**** | 175˚C [347°F] | 150˚C [302°F] | Immersion resistant | Sn96 | RA | Polyvinylidene fluoride | F |
| S200**** | 200°C [392°F] | 150˚C [302°F] | Immersion resistant | Sn96 | RA | Fluoropolymer | G |

*Meets performance requirements of SAE-AS83519 (formerly MIL-S-83519) and NAS 1747, supplied with BiAlloy temperature indicator.
**Qualified to SAE-AS83519 (formerly MIL-S-83519), supplied with thermochromic temperature indicator.
***Meets performance requirements of SAE-AS83519 (formerly MIL-S-83519) and NAS 1747, supplied with thermochromic temperature indicator.
****Meets performance requirements of SAE-AS83519 (formerly MIL-S-83519), supplied with BiAlloy temperature indicator.
**Note:** Cadmium-free option (B-152 series) is available for operating temperature of 125˚C [257˚F]. Consult TE for details.



## ECONOMICAL

- One-piece design allows for a single-step, simplified installation and a low total installed cost
- Bi-alloy or thermochromic temperature indicator works as a process control aid and simplifies operator training
- Offered in various sizes and ground lead configurations

## CAPABLE

- Provides a completely soldered, strain-relieved termination
- Heat-shrinkable sleeve helps provide insulation, inspectability, and strain relief
- Designed for high-temperature applications up to 200°C
- Sealing inserts helps ensure reliable, environmental protection

## APPLICATIONS

- Shield termination of cables subjected to a minimum temperature rating of 150°C and maximum operating temperature of 200°C
- Protecting and sealing for BMS 13-60 PTFE wrapped cables and M27500 cables with PTFE/polyimide jackets

# Raychem S200 Shield Terminators

**HIgh-Performance, High-Temperature Cable Terminators**
An important extension of the Raychem SolderSleeve family, S200 shield termination devices were developed specifically to address the need for high-temperature connecting, insulating, and sealing for applications in the aerospace and defense industry.

**Wide Selection**
Offered in various sizes and ground lead configurations, our S200 shield termination devices provide environmentally protected shield termination on cables with a minimum temperature rating of 150°C, and silver or nickel-plated shields. They are also available with bi-alloy or thermochromic indicators

**Fast Installation and Lower Costs**
Convenient to use, the one-piece design of S200 shield termination devices help ensure reliable environmental protection and greatly simplified installation for a lower total installed cost.

## MATERIALS

- **Solder**: Tin 96%/Silver 4% bi-alloy solder
- **Tubing**: Heat-shrinkable modified fluoropolymer
- **Inserts**: Thermoplastic fluoropolymer

## STANDARDS AND SPECIFICATIONS

- **Industry Standards**:
  SAE-AMS-DTL-23053/13 (applies to heat-shrinkable insulation sleeve only)
  SAE-AS83519 (modified for 200°C applications)
  EU RoHS/ELV compliant
- **TE Instruction Sheet**: RCPS-100-71
- **TE Qualification and Test Report**: Available on request

## MECHANICAL/ENVIRONMENTAL

- **Operating Temperature**: 150°C to 200°C
- **Durability**: Heat-shrinkable sleeve adheres and seals to provide a completely soldered, strain-relieved termination



**ORDERING INFORMATION (**TC indicates that this part has a thermochromic indicator)

**Without ground lead**

| Jacket OD (mm) | Shield (mm) | Product Description | Raychem Part Number | SAE AS83519 |
|---|---|---|---|---|
| 1.90 | 0.90 | S200-1-00 | F92583-000 | |
| 1.90 | 0.90 | S200-1-00-TC | CN5417-000 | |
| 2.67 | 1.40 | S200-2-00 | F94898-000 | |
| 2.67 | 1.40 | S200-2-00-TC | CN5418-000 | |
| 4.32 | 2.15 | S200-3-00 | A65903-000 | |
| 4.32 | 2.15 | S200-3-00-TC | CN5419-000 | |
| 5.97 | 3.30 | S200-4-00 | E32454-000 | |
| 5.97 | 3.30 | S200-4-00-TC | CN5420-000 | |
| 6.98 | 4.30 | S200-5-00 | D12074-000 | |
| 6.98 | 4.30 | S200-5-00-TC | CN5421-000 | |

**With pre-installed braid: Nickel-plated copper strands in accordance to AA59569F36N0031. (6 Inches)**

| Jacket OD (mm) | Shield (mm) | Product Description | Raychem Part Number | SAE AS83519 |
|---|---|---|---|---|
| 1.90 | 0.90 | S200-1-01 | CS5526-000 | M83519/5-1 |
| 2.67 | 1.40 | S200-2-01 | D08259-000 | M83519/5-2 |
| 4.32 | 2.15 | S200-3-01 | A77145-000 | M83519/5-3 |
| 5.97 | 3.30 | S200-4-01 | F26506-000 | M83519/5-4 |
| 6.98 | 4.30 | S200-5-01 | A18826-000 | M83519/5-5 |

**With pre-installed braid: Ni-plated copper strands per ASTM B355, Class 4. CMA = 1200. (6 Inches)**

| Jacket OD (mm) | Shield (mm) | Product Description | Raychem Part Number | SAE AS83519 |
|---|---|---|---|---|
| 1.90 | 0.90 | S200-1-9020 | CJ1037-000 | M83519/5-11 |
| 1.90 | 0.90 | S200-1-9020-TC | CP7589-000 | M83519/5-16 |
| 2.67 | 1.40 | S200-2-9020 | CJ1039-000 | M83519/5-12 |
| 2.67 | 1.40 | S200-2-9020-TC | CP4262-000 | M83519/5-17 |
| 4.32 | 2.15 | S200-3-9020 | CJ1041-000 | M83519/5-13 |
| 4.32 | 2.15 | S200-3-9020-TC | CP6063-000 | M83519/5-18 |
| 5.97 | 3.30 | S200-4-9020 | CJ1042-000 | M83519/5-14 |
| 5.97 | 3.30 | S200-4-9020-TC | CP6893-000 | M83519/5-19 |
| 6.98 | 4.30 | S200-5-9020 | CJ1043-000 | M83519/5-15 |
| 6.98 | 4.30 | S200-5-9020-TC | CP7313-000 | M83519/5-20 |

**With pre-installed braid: Ni-plated copper strands per ASTM B355, Class 4. CMA = 1800. (6 Inches)**

| Jacket OD (mm) | Shield (mm) | Product Description | Raychem Part Number | SAE AS83519 |
|---|---|---|---|---|
| 1.90 | 0.90 | S200-1-9030 | CA7639-000 | |
| 2.67 | 1.40 | S200-2-9030 | CA7640-000 | |
| 4.32 | 2.15 | S200-3-9030 | CA7641-000 | |
| 5.97 | 3.30 | S200-4-9030 | CA7642-000 | |
| 6.98 | 4.30 | S200-5-9030 | CA7643-000 | |
| 6.98 | 4.30 | S200-5-9030-TC | CP7417-000 | |



**With pre-installed braid: High nickel-plated copper strands per ASTM-B355 Class 7. CMA = 640. (10 Inches)**

| Jacket OD (mm) | Shield (mm) | Product Description | Raychem Part Number | SAE AS83519 |
|---|---|---|---|---|
| 1.90 | 0.90 | S200-1-01-100HN | D89883-000 | |
| 2.67 | 1.40 | S200-2-01-100HN | A87947-000 | |
| 4.30 | 2.15 | S200-3-01-100HN | A59779-000 | |
| 5.95 | 3.30 | S200-4-01-100HN | C69495-000 | |
| 6.90 | 4.30 | S200-5-01-100HN | D92195-000 | |

**With pre-installed braid: Stranded nickel-plated copper wire in accordance with SAE-AS22759/41.**

| Jacket OD (mm) | Shield (mm) | Product Description | Raychem Part Number | SAE AS83519 |
|---|---|---|---|---|
| 1.90 | 0.90 | S200-1-55-22-9 | EH1934-000 | |
| 2.67 | 1.40 | S200-2-55-22-9 | EH1935-000 | |
| 4.30 | 2.15 | S200-3-55-22-9 | EH1936-000 | |
| 5.95 | 3.30 | S200-4-55-22-9 | EH1938-000 | |
| 6.90 | 4.30 | S200-5-55-22-9 | EH1939-000 | |

**With pre-installed braid: Stranded nickel-plated copper wire in accordance with SAE-AS22759/41.**

| Jacket OD (mm) | Shield (mm) | Product Description | Raychem Part Number | SAE AS83519 |
|---|---|---|---|---|
| 1.90 | 0.90 | S200-1-55-20-9 | EH1940-000 | |
| 2.67 | 1.40 | S200-2-55-20-9 | EH1941-000 | |
| 4.30 | 2.15 | S200-3-55-20-9 | EH1942-000 | |
| 5.95 | 3.30 | S200-4-55-20-9 | EH1943-000 | |
| 6.90 | 4.30 | S200-5-55-20-9 | EH1944-000 | |

**With pre-installed braid: Stranded nickel-plated copper wire in accordance with SAE-AS22759/41.**

| Jacket OD (mm) | Shield (mm) | Product Description | Raychem Part Number | SAE AS83519 |
|---|---|---|---|---|
| 1.90 | 0.90 | S200-1-55-18-9 | EH1945-000 | |
| 2.67 | 1.40 | S200-2-55-18-9 | EH1946-000 | |
| 4.30 | 2.15 | S200-3-55-18-9 | EH1948-000 | |
| 5.95 | 3.30 | S200-4-55-18-9 | EH1949-000 | |
| 6.90 | 4.30 | S200-5-55-18-9 | EH1950-000 | |

## Table A. B-155 Series (125°C [257°F] rated)

| Cable OD | | Part Nos. | |
|---|---|---|---|
| Jacket OD Max. | Shield OD Min. | No Preinstalled Lead | With Preinstalled Lead (22AWG/0.38 mm² green) |
| 1.7 [.065] | 0.9 [.035] | B-155-3801 | — |
| 1.95 [.075] | 1.1 [.043] | B-155-3802 | — |
| 2.7 [.105] | 1.5 [.059] | B-155-3 | B-155-03-35-22-5 |
| 4.5 [.180] | 2.0 [.079] | B-155-5 | B-155-05-35-22-5 |
| 6.0 [.235] | 3.3 [.130] | B-155-6 | B-155-06-35-22-5 |
| 7.0 [.275] | 3.3 [.130] | B-155-7 | B-155-07-35-22-5 |
| 8.7 [.340] | 4.5 [.177] | B-155-9 | B-155-09-35-22-5 |
| 10.7 [.420] | 4.5 [.177] | B-155-11 | B-155-11-35-22-5 |
| 13.0 [.510] | 7.0 [.276] | B-155-13 | B-155-13-35-22-5 |

*See Table G on page 53 for lead description.
Note: The B-155 series is suitable for applications using low-temperature wires (typically rated at 85°C [185°F] to 125°C [257°F]) with bare copper or tin plating.

## Table B. SO63 Series

### BiAlloy Temperature Indication System

This system greatly enhances the reliability and repeatability of SO63 series terminators while reducing installed cost. The heat-shrinkable thermoplastic sleeve contains a precisely engineered, fluxed solder band that is visible through the sleeve. The band provides exactly the amount of solder and flux required to terminate the ground lead to the cable shield. Encircling the band is a small temperature indicator ring. This ring melts only when the surfaces to be joined have reached the correct soldering temperature, thus ensuring a properly soldered connection. Process control is built into each sleeve.

| Cable OD | | | Part Nos. | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Preinstalled Lead Option* | | | | Braid Strap | |
| Jacket OD Max. | Shield OD Min. | No Preinstalled Lead | 20 AWG | 22 AWG | 24 AWG | 26 AWG | Nickel Plated | Tin Plated |
| 1.95 [0.075] | 0.90 [.035] | SO63-1-00 | SO63-1-55-20-90 | SO63-1-55-22-90 | SO63-1-55-24-90 | SO63-1-55-26-90 | SO63-1-01 | SO63-1-9030 |
| 2.7 [0.105] | 1.40 [.055] | SO63-2-00 | SO63-2-55-20-90 | SO63-2-55-22-90 | SO63-2-55-24-90 | SO63-2-55-26-90 | SO63-2-01 | SO63-2-9030 |
| 4.3 [0.170] | 2.15 [.085] | SO63-3-00 | SO63-3-55-20-90 | SO63-3-55-22-90 | SO63-3-55-24-90 | SO63-3-55-26-90 | SO63-3-01 | SO63-3-9030 |
| 6.0 [0.235] | 3.30 [.130] | SO63-4-00 | SO63-4-55-20-90 | SO63-4-55-22-90 | SO63-4-55-24-90 | SO63-4-55-26-90 | SO63-4-01 | SO63-4-9030 |
| 7.0 [0.275] | 4.30 [.170] | SO63-5-00 | SO63-5-55-20-90 | SO63-5-55-22-90 | SO63-5-55-24-90 | SO63-5-55-26-90 | SO63-5-01 | SO63-5-9030 |

*See Table G on page 53 for lead description. Color of wire lead is denoted by the last two digits of the part number as follows:
90 = White with a black stripe 9 = White 0 = Black 6 = Blue (24 AWG only) 5 = Green (20, 22, 24 AWG)
The SO63 series is immersion resistant, features the TE BiAlloy temperature indication system, and meets the performance requirements of SAE-AS83519 (formerly MIL-S-83519) .

## Table C. S01/S02 M83519 Series

### Thermochromic Temperature Indicator

The M83519 (S01 and S02) series terminators contain a colored thermochromic temperature indicator that exhibits a distinct color change when surfaces have reached wetting temperature. This color change gives both manufacturing and Quality Control an aid in the inspection of the completed termination.

| Cable OD | | Part No. (MIL Part Number and TE Part No.) by Lead Option | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | Preinstalled Lead Option* | | | |
| | | No Preinstalled Lead | | 20 AWG | | 22 AWG | |
| Jacket OD Max | Shield OD Min | MIL | TE | MIL | TE | MIL | TE |
| 1.95 [0.075] | 0.9 [.035] | M83519/1-1 | S01-01-R | M83519/2-1 | S02-01-R | M83519/2-6 | S02-06-R |
| 2.7[0.105] | 1.40 [.055] | M83519/1-2 | S01-02-R | M83519/2-2 | S02-02-R | M83519/2-7 | S02-07-R |
| 4.3 [0.170] | 2.15 [.085] | M83519/1-3 | S01-03-R | M83519/2-3 | S02-03-R | M83519/2-8 | S02-08-R |
| 6.0 [0.235] | 3.30 [.130] | M83519/1-4 | S01-04-R | M83519/2-4 | S02-04-R | M83519/2-9 | S02-09-R |
| 7.0 [0.275] | 4.30 [.170] | M83519/1-5 | S01-05-R | M83519/2-5 | S02-05-R | M83519/2-10 | S02-10-R |
| Jacket OD Max. | Shield OD Min. | | | Preinstalled Lead Option* | | | |
| | | | | 24 AWG | | 26 AWG | |
| 1.95 [0.075] | 0.9 [.035] | | | M83519/2-11 | S02-11-R | M83519/2-16 | S02-16-R |
| 2.7 [0.105] | 1.40 [.055] | | | M83519/2-12 | S02-12-R | M83519/2-17 | S02-17-R |
| 4.3[0.170] | 2.15 [.085] | | | M83519/2-13 | S02-13-R | M83519/2-18 | S02-18-R |
| 6.0 [0.235] | 3.30 [.130] | | | M83519/2-14 | S02-14-R | M83519/2-19 | S02-19-R |
| 7.0 [0.275] | 4.30 [.170] | | | M83519/2-15 | S02-15-R | M83519/2-20 | S02-20-R |

*See Table G for lead description.

M83519 is the qualified product listed in SAE-AS83519 (formerly MIL-S-83519) . The series features a thermochromic temperature indicator to assist in termination and inspection. The part number is permanently marked on the sleeve.

## Table D. S03 Series

### Thermochromic Temperature Indicator

The S03 series terminators contain a colored thermochromic temperature indicator that exhibits a distinct color change when surfaces have reached wetting temperature. This color change gives both Manufacturing and Quality Control an aid in the inspection of the completed termination.

These parts now have qualification to /3
SOLDER SLEEVE SHIELD TERMINATORS
S03-01-R 257305-000 M83519/3-1 SAE AS83519
S03-02-R 065762-000 M83519/3-2 SAE AS83519
S03-03-R 676516-000 M83519/3-3 SAE AS83519
S03-04-R 689088-000 M83519/3-4 SAE AS83519
S03-05-R 531872-000 M83519/3-5 SAE AS83519
S03-06-R 022926-000 M83519/3-6 SAE AS83519
S03-07-R 101273-000 M83519/3-7 SAE AS83519
S03-08-R 587725-000 M83519/3-8 SAE AS83519
S03-09-R 751586-000 M83519/3-9 SAE AS83519
S03-10-R 621833-000 M83519/3-10 SAE AS83519

| Cable OD | | Part No. | |
|---|---|---|---|
| | | Preinstalled Lead Option* | |
| Jacket OD Max. | Shield OD Min. | Tin plated Braid Strap | Nickel plated Braid Strap |
| 1.95 [0.075] | 0.9 [.035] | S03-01-R | S03-06-R |
| 2.7 [0.105] | 1.40 [.055] | S03-02-R | S03-07-R |
| 4.3 [0.170] | 2.15 [.085] | S03-03-R | S03-08-R |
| 6.0 [0.235] | 3.30 [.130] | S03-04-R | S03-09-R |
| 7.0 [0.275] | 4.30 [.170] | S03-05-R | S03-10-R |

*See Table G for lead description.

## Table E. SO96 Series (175°C [347°F] rated)

### Thermochromic Temperature Indicator

The SO96 series terminators contain a colored thermochromic temperature indicator that exhibits a distinct color change when surfaces have reached wetting temperature. This color change gives both manufacturing and Quality Control an aid in the inspection of the completed termination.

| Cable OD | | Part No. | | |
|---|---|---|---|---|
| Jacket OD Max. | Shield OD Min. | No Preinstalled Lead | Preinstalled Lead Option* | |
| | | | 22 AWG | Braid Strap |
| 1.95 [0.075] | 0.9 [.035] | SO96-1-00 | SO96-1-55-22-90 | SO96-1-01 |
| 2.7 [0.105] | 1.40 [.055] | SO96-2-00 | SO96-2-55-22-90 | SO96-2-01 |
| 4.3 [0.170] | 2.15 [.085] | SO96-3-00 | SO96-3-55-22-90 | SO96-3-01 |
| 6.0 [0.235] | 3.30 [.130] | SO96-4-00 | SO96-4-55-22-90 | SO96-4-01 |
| 7.0 [0.275] | 4.30 [.170] | SO96-5-00 | SO96-5-55-22-90 | SO96-5-01 |

*See Table G for lead description.
The SO96 series is designed for high-temperature applications with operating temperature requirements up to 200°C [392°F]. This series features a thermochromic temperature indicator and meets performance requirements of SAE-AS83519 (formerly MIL-S-83519) . The solder is Sn96 with RA flux compatible with nickel-plated shields.

## Table F. SO175 Series (175°C [347°F] rated)

### BiAlloy Temperature Indication System

This system greatly enhances the reliability and repeatability of SO175 series terminators while reducing installed cost. The temperature indicator ring, encircling the solder preform, melts to indicate the very minimum amount of heat.

| Cable OD | | Part No. | | |
|---|---|---|---|---|
| Jacket OD Max. | Shield OD Min. | No Preinstalled Lead | Preinstalled Lead Option* | |
| | | | 22 AWG | Braid Strap |
| 1.95 [0.075] | 0.90 [0.035] | SO175-1-00 | SO175-1-55-22-90 | SO175-1-01 |
| 2.7 [0.105] | 1.40 [0.055] | SO175-2-00 | SO175-2-55-22-90 | SO175-2-01 |
| 4.3 [0.170] | 2.15 [0.085] | SO175-3-00 | SO175-3-55-22-90 | SO175-3-01 |
| 6.0 [0.235] | 3.30 [0.130] | SO175-4-00 | SO175-4-55-22-90 | SO175-4-01 |
| 7.0 [0.275] | 4.30 [0.170] | SO175-5-00 | SO175-5-55-22-90 | SO175-5-01 |

*See Table H for lead description.

## Table G. S200 Series (200°C [392°F] rated)

### BiAlloy Temperature Indication System

This system greatly enhances the reliability and repeatability of S200 series terminators while reducing installed cost. The temperature indicator ring, encircling the solder preform, melts to indicate the very minimum amount of heat.

| Cable OD | | Part No. | | |
|---|---|---|---|---|
| Jacket OD Max. | Shield OD Min. | No Preinstalled Lead | Preinstalled Lead Option* | |
| | | | 22 AWG | Braid Strap |
| 1.95 [0.075] | 0.90 [0.035] | S200-1-00 | S200-1-55-22-9 | S200-1-01 |
| 2.7 [0.105] | 1.40 [0.055] | S200-2-00 | S200-2-55-22-9 | S200-2-01 |
| 4.3 [0.170] | 2.15 [0.085] | S200-3-00 | S200-3-55-22-9 | S200-3-01 |
| 6.0 [0.235] | 3.30 [0.130] | S200-4-00 | S200-4-55-22-9 | S200-4-01 |
| 7.0 [0.275] | 4.30 [0.170] | S200-5-00 | S200-5-55-22-9 | S200-5-01 |

*See Table H for lead description.

## Table H. Preinstalled Lead Description

| Series | Lead Type | Remarks | Plating | Stranding | Min. Length |
|---|---|---|---|---|---|
| S200 | M22759/91 | MIL-W-22759/91 | Silver | Stranded | 150 (6.00) |
| M83519, SO63 | 55A0111 | MIL-W-22759/32 | Tin | Stranded | 150 [6.00] |
| SO96, SO175 | 55A0813 | MIL-W-22759/41 | Nickel | Stranded | 150 [6.00] |
| SO63, SO96, S03 | Braid strap | Uninsulated | Nickel | 40 x 38 AWG | 150 [6.00] |
| B-155 | XL polyethylene | RoHS | Tin | Stranded (W2) | 150 [6.00] |
| CWT | XL polyethylene | UL Listed | Tin | Stranded (W1) | 150 [6.00] |
| SO63, S03 | Braid Strap | Uninsulated | Tin | Stranded | 150 [6.00] |

## Product Characteristics

| Material | | |
|---|---|---|
| **Insulation** | | |
| S200 | Radiation-crosslinked, heat-shrinkable, modified fluoropolymer | |
| SO, M83519 | Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride | |
| B-155 | Radiation-crosslinked, heat-shrinkable polyolefin | |
| **Solder and flux** | | |
| SO63, M83519, S03 | Solder: Sn63 Pb37 | Flux: ROL1 per ANSI - J - 004 (RMA Flux) |
| S200, SO96, SO175 series | Solder: Sn96 Ag4 | Flux: ROM1 per ANSI - J - 004 (RA Flux) |
| B-155 | Solder: SN42Bi58 | Flux: ROM1 per ANSI - J - 004 (RA Flux) |
| **Ground lead** | | |
| B-155 series | XL polyethylene | |
| S200 series | MIL-C-22759/91 or /87 | |
| SO, M83519, SO175 | MIL-W-22759/32 or /41 | |
| **Typical Performance** | | |
| Voltage drop | 2.5 mV | |
| Tensile strength | Exceeds strength of ground lead | |
| Dielectric strength | 1.0 kV immersed | |
| Temperature rating | | |
| B-155 | -55°C to 125°C [-67°F to 257°F] | |
| SO63/M83519/S03 | -55°C to 150°C [-67°F to 302°F] | |
| SO96/SO175 series | -55°C to 175°C [-67°F to 347°F] | |
| S200 | -55°C to 200°C [-67°F to 392°F] | |
| Insulation resistance | 1000 megohms | |

## Specifications/ Approvals

| Series | Agency | TE |
|---|---|---|
| B-155 | — | RT-1404 |
| SO63* | NAS 1747 | RT-1404 |
| M83519** | MIL-S-83519/1&/2 | RT-1404 |
| SO96*** | NAS 1747 | RT-1404 |
| SO175 | | RT-1404 |
| S200** | — | RT-1404 |

* Meets performance requirements of SAE-AS83519 (formerly MIL-S-83519) and NAS 1747, supplied with BiAlloy temperature indicator.
** Qualified to SAE-AS83519 (formerly MIL-S-83519), supplied with thermochromic temperature indicator.
***Meets performance requirements of SAE-AS83519 (formerly MIL-S-83519) and NAS 1747, supplied with thermochromic temperature indicator.

## Installation Requirements

For proper installation of these devices, the correct heating tool and reflector attachment must be used. Any one of the following TE heating tools is recommended:

- HL1920E/HL2020E
- AA-400 Super Heater
- CV-1981
- MiniRay
- IR-1759

For detailed instructions and recommended reflector attachments, refer to the appropriate TE installation procedure:

| Series | Procedure |
|---|---|
| **B-155** | **RPIP-824-000** |
| **CWT** | **RPIP-655-00-D** |
| **SO63** | **RCPS-100-70** |
| **M83519 (S01/S02)** | **RCPS-100-70** |
| **SO96** | **RCPS-100-70** |
| **S03** | **RCPS-100-70** |
| **SO175** | **RCPS-100-70** |
| **S200** | **RCPS-100-71** |

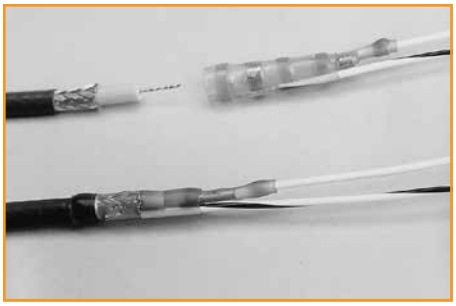
## Table H. NAS, M83519, and TE Cross-Reference

| NAS Part No. | TE D Series Part No. | NAS Comment |
|---|---|---|
| 1744-1 | D-1744-01 | |
| 1744-2 | D-1744-02 | |
| 1744-3 | D-1744-03 | |
| 1744-4 | D-1744-04 | |
| 1744-5 | D-1744-05 | |
| 1744-6 | D-1744-06 | |
| 1744-7 | D-1744-07 | |
| 1744-8 | D-1744-08 | |
| 1745-1 | D-144-25 | Inactive, Use SAE-AS83519/1-1 (formerly MIL-S-83519) |
| 1745-2 | D-100-00 | Inactive, Use SAE-AS83519/1-2 (formerly MIL-S-83519) |
| 1745-3 | D-101-00 | Inactive, Use SAE-AS83519/1-3 (formerly MIL-S-83519) |
| 1745-4 | D-103-00 | Inactive, Use SAE-AS83519/1-5 (formerly MIL-S-83519) |
| 1745-5 | D-144-26 | |
| 1745-6 | D-100-31 | |
| 1745-7 | D-101-31 | |
| 1745-8 | D-103-31 | |
| 1745-9 | | Obsolete - Use NAS1745-13 |
| 1745-10 | | Obsolete - Use NAS1745-14 |
| 1745-11 | | Obsolete - Use NAS1745-15 |
| 1745-12 | | Obsolete - Use NAS1745-16 |
| 1745-13 | D-142-83 | Inactive, Use SAE-AS83519/1-1 (formerly MIL-S-83519) |
| 1745-14 | D-142-50 | Inactive, Use SAE-AS83519/1-2(formerly MIL-S-83519) |
| 1745-15 | D-142-51 | Inactive, Use SAE-AS83519/1-3 (formerly MIL-S-83519) |
| 1745-16 | D-142-52 | Inactive, Use SAE-AS83519/1-5 (formerly MIL-S-83519) |
| 1745-17 | D-107-00 | Inactive, Use SAE-AS83519/1-4 (formerly MIL-S-83519) |
| 1745-18 | D-104-00 | |
| 1745-19 | D-105-00 | |
| 1745-20 | D-107-31 | |
| 1745-21 | D-104-31 | |
| 1745-22 | D-105-31 | |
| 1745-23 | D-142-56 | Inactive, Use SAE-AS83519/1-4 (formerly MIL-S-83519) |
| 1745-24 | D-142-65 | |
| 1745-25 | D-142-66 | |
| 1746-1 | D-144-25 | Inactive, Use SAE-AS83519/1-1 (formerly MIL-S-83519) |
| 1746-2 | D-144-00 | Inactive, Use SAE-AS83519/1-2 (formerly MIL-S-83519) |
| 1746-3 | D-144-01 | Inactive, Use SAE-AS83519/1-3 (formerly MIL-S-83519) |
| 1746-4 | D-144-02 | Inactive, Use SAE-AS83519/1-5 (formerly MIL-S-83519) |
| 1746-5 | D-144-26 | |
| 1746-6 | D-144-03 | |
| 1746-7 | D-144-04 | |
| 1746-8 | D-144-05 | |
| 1746-9 | D-144-46 | Inactive, Use SAE-AS83519/1-4 (formerly MIL-S-83519) |
| 1746-10 | D-144-37 | |

| Military Part No. | TE S01/S02 Series* Part No. | TE SO63 Series** Part No. |
|---|---|---|
| M83519/1-1 | S01-01-R | SO63-1-00 |
| M83519/1-2 | S01-02-R | SO63-2-00 |
| M83519/1-3 | S01-03-R | SO63-3-00 |
| M83519/1-4 | S01-04-R | SO63-4-00 |
| M83519/1-5 | S01-05-R | SO63-5-00 |
| M83519/2-1 | S02-01-R | SO63-1-55-20-90 |
| M83519/2-2 | S02-02-R | SO63-2-55-20-90 |
| M83519/2-3 | S02-03-R | SO63-3-55-20-90 |
| M83519/2-4 | S02-04-R | SO63-4-55-20-90 |
| M83519/2-5 | S02-05-R | SO63-5-55-20-90 |
| M83519/2-6 | S02-06-R | SO63-1-55-22-90 |
| M83519/2-7 | S02-07-R | SO63-2-55-22-90 |
| M83519/2-8 | S02-08-R | SO63-3-55-22-90 |
| M83519/2-9 | S02-09-R | SO63-4-55-22-90 |
| M83519/2-10 | S02-10-R | SO63-5-55-22-90 |
| M83519/2-11 | S02-11-R | SO63-1-55-24-90 |
| M83519/2-12 | S02-12-R | SO63-2-55-24-90 |
| M83519/2-13 | S02-13-R | SO63-3-55-24-90 |
| M83519/2-14 | S02-14-R | SO63-4-55-24-90 |
| M83519/2-15 | S02-15-R | SO63-5-55-24-90 |
| M83519/2-16 | S02-16-R | SO63-1-55-26-90 |
| M83519/2-17 | S02-17-R | SO63-2-55-26-90 |
| M83519/2-18 | S02-18-R | SO63-3-55-26-90 |
| M83519/2-19 | S02-19-R | SO63-4-55-26-90 |
| M83519/2-20 | S02-20-R | SO63-5-55-26-90 |

* QPL listed to SAE-AS83519 (formerly MIL-S-83519)
** Meets performance requirements of SAE-AS83519 (formerly MIL-S-83519)

# Coaxial Cable Termination



## Introduction

TE SolderSleeve coaxial cable terminators allow reliable, easy terminations in a variety of coaxial cable applications, including printed circuit boards (PCBs). The insulating and strain-relieving capabilities of SolderSleeve terminators provide the ideal solution to center-conductor breakage problems.

Designed for applications with temperatures up to 150°C [302°F], the products in this section include:

- SolderSleeve coaxial cable terminators, which allow reliable, economical attachment of coaxial cable to connector terminals, printed wiring assemblies, or solderless wrap terminals.
- One-piece SolderSleeve PCB coaxial cable terminators, which permit quick, easy, and cost-effective terminations of coaxial cable to printed circuit boards.
- RF one-step BNC/TNC connectors, which are single-piece assemblies for terminating the center conductor and the braid of a broad range of coaxial cables. They are fully intermateable with MIL-C-39012C connectors and are available in 50-ohm and 75-ohm versions).

With precisely measured solder and flux, SolderSleeve products provide exact process control of terminations. The SolderSleeve method means strong connections with the lowest possible voltage drop. Small, lightweight SolderSleeve terminators are also the ideal solution for high-density packaging problems.



# SolderSleeve Coaxial Cable Terminators

## Product Selection Process

1. Select product series from the product options table below.
2. Select preinstalled lead type from the table below.
3. Determine cable RG number or dimensions.
4. Select part number from Table A (B-155, CWT series) or Table B (B-02X/B-04X series) on the next page.

### VERSATILE

- Transparent polyvinylidene fluoride or polyolefin insulation sleeve provides encapsulation, inspectability, strain relief (eliminates center conductor breakage), and insulation.
- Prefluxed solder preform provides a controlled soldering process

### EASY TO USE

- One-piece design means easy installation and lower installed cost
- Optional preinstalled ground leads provide convenience and ease of installation

### APPLICATIONS

- Used for terminating coaxial cable to component terminals, contacts, printed circuit boards, and solderless wrap terminals.

## Product Characteristics

| | | |
|---|---|---|
| **Material** | | |
| Insulation (B-02X/B-04X, D-181, D-184) | Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride | |
| Insulation (B-155, CWT series) | Radiation-crosslinked, heat-shrinkable polyolefin | |
| Solder and flux (B-02X/B-04X, D-181) | Solder: Sn63 Pb37 | Flux: ROL1 per ANSI-J-004 (RMA Flux) |
| Solder and flux (CWT series, D-184) | Solder: Sn50 Pb32 Cd18 | Flux: ROM1 per ANSI-J-004 (RA Flux) |
| Solder and flux (B-155) | Solder: Sn42Bi58 | Flux: ROM1 per ANSI-J-004 (RA Flux) |
| **Typical Performance** | | |
| Voltage drop | 2.0 mV | |
| Tensile strength | Exceeds strength of conductor | |
| Dielectric strength | 2.0 kV | |
| Temperature rating (B-155, CWT, D-184) | -55°C to 125°C [-67°F to 257°F] | |
| Temperature rating (B-02X/B-04X, D-181) | -55°C to 150°C [-67°F to 302°F] | |
| Insulation resistance | 1000 megohms | |

## Product Options

| Product Series | Max. Operating Temp. | Use on Cables Rated (Min) | Cable Shield Plating | Part No. Selection Table | Design |
|---|---|---|---|---|---|
| B-155, CWT | 125°C [257°F] | 85°C [185°F] | Tin, copper | A | 2-pc. |
| B-02X/B-04X | 150°C [302°F] | 125°C [257°F] | Tin, silver | B | 1-pc. |
| D-181 | 150°C [302°F] | 125°C [257°F] | Tin, silver | C | 2-pc. |
| D-184 | 125°C [257°F] | 85°C [185°F] | Tin | D | 2-pc. |

## Preinstalled Lead Descriptions

| Series | Lead Type | Plating | Stranding | AWG | Length | Color |
|---|---|---|---|---|---|---|
| B-155, CWT | XL polyethelene | Tin | Stranded (W1) | 22 | 150 [6.000] | White (cntr), green (grnd) |
| B-021 | M81822/13 (solderless wrap) | Silver | Solid-OFHC | 24—30 | 150 [6.000] | White (cntr), blue (grnd) |
| B-041 | M81822/13 (solderless wrap) | Silver | Solid-OFHC | 24—30 | 150 [6.000] | White (cntr), blue (grnd) |
| B-043 | M81822/13 (solderless wrap) | Silver | Solid-OFHC | 24—30 | 150 [6.000] | White (cntr), blue (grnd) |
| B-020 | 55A0111 (MIL-W-22759/32) | Tin | Stranded | 20—30 | 150 [6.000] | White (cntr), blue (grnd) |
| B-040 | 55A0111 (MIL-W-22759/32) | Tin | Stranded | 20—30 | 150 [6.000] | White (cntr), blue (grnd) |
| B-044 | 55A0111 (MIL-W-22759/32) | Tin | Stranded | 20—30 | 150 [6.000] | White (cntr), blue (grnd) |
| D-181-12XX | 55A0111 (MIL-W-22759/32) | Tin | Stranded | 20—30 | 150 [6.000] | White (cntr), white w/black stripe (grnd) |
| D-181-22XX | 55A0111 (MIL-W-22759/32) | Tin | Stranded | 20—30 | 150 [6.000] | White (cntr), white w/black stripe (grnd) |
| D-181-32XX | 55A0111 (MIL-W-22759/32) | Tin | Stranded | 20—30 | 150 [6.000] | White (cntr), white w/black stripe (grnd) |
| D-181-18XX | M81822/13 | Silver | Solid | 26 – 30 | 150 [6.000] | White (cntr), blue (grnd) |
| D-181-28XX | M81822/13 | Silver | Solid | 26 – 30 | 150 [6.000] | White (cntr), blue (grnd) |
| D-184 | 55A0111 (MIL-W-22759/32) | Tin | Stranded | 20 – 26 | 150 [6.000] | White (cntr), white w/black stripe (grnd) |

## Table A. B-155 Series Part Numbers

| Cable RG Number | Dimensions | | Part No. With Preinstalled Lead AWG/0.38 mm² Green/White) |
|---|---|---|---|
| | Dielectric OD | Jacket OD | |
| 174 | 0.80–2.30 [.032–.091] | 1.30–2.80 [.051–.110] | CWT-4174-W122-5/9 |
| 58, 122 | 2.00–2.80 [.079–.110] | 2.50–4.40 [.100–.173] | CWT-4058-W122-5/9 |
| 59 | 2.80–3.30 [.110–.130] | 3.20–6.00 [.125–.235] | CWT-4059-W122-5/9 |

## Table B. B-02X/B-04X Series Part Numbers

**Part 1: Coaxial Product Group Selection**

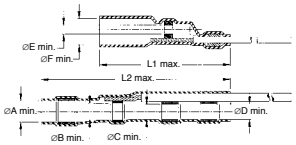
| Typical Compatible Part No. | | Dimension Range | | | | |
|---|---|---|---|---|---|---|
| RG Cable Number | TE Cable Description | Jacket OD (Max.) | Shield OD | Dielectric OD | Conductor OD | One-Piece Coaxial Product Group |
| RG178, RG404 | 5030A13XX<br>5028A13XX | 3.40 [.134] | 1.30–2.30 [.051–.091] | 0.50–1.70 [.019–.067] | 0.30–0.80 [.011–.032] | Group 1 |
| RG179, RG316 | 5024A13XX<br>7530A13XX<br>7526A13XX<br>9530A13XX | 4.40 [.173] | 1.50–2.80 [.060–.110] | 1.20–2.50 [.047–.100] | 0.30–1.60 [.011–.063] | Group 2 |
| RG180, RG302, RG303 | 9527A13XX<br>9528A13XX | 6.30 [.248] | 2.40–4.60 [.094–.181] | 1.40–4.30 [.055–.169] | 0.30–2.80 [.011–.110] | Group 3 |

**Part 2: Product Part Number Selection**

| One-Piece Coaxial Product Group | Preinstalled Wire Type | Preinstalled Wire Size | | | | | |
|---|---|---|---|---|---|---|---|
| | | 20 AWG | 22 AWG | 24 AWG | 26 AWG | 28 AWG | 30 AWG |
| Group 1 | Stranded (M22759) | — | B-044-22-N | B-044-24-N | B-044-26-N | — | — |
| | Solid (M81822) | — | — | B-043-24-N | B-043-26-N | B-043-28-N | B-043-30-N |
| Group 2 | Stranded (M22759) | B-040-20-N | B-040-22-N | B-040-24-N | B-040-26-N | B-040-28-N | B-040-30-N |
| | Solid (M81822) | — | — | B-041-24-N | B-041-26-N | B-041-28-N | B-041-30-N |
| Group 3 | Stranded (M22759) | B-020-20-N | B-020-22-N | B-020-24-N | B-020-26-N | — | — |
| | Solid (M81822) | — | — | — | B-021-26-N | — | — |

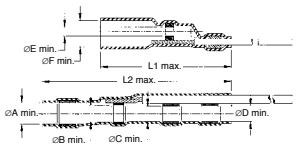
1. The B-02X/B-04X series uses a one-piece design to terminate coaxial cables rated at 125°C minimum.
2. Using Part 1 of this table, select the appropriate coaxial product group (1, 2, or 3) based on your RG cable number, TE cable description, or cable dimensions.
3. Using Part 2 of this table, select the product part number based on the coaxial product group you selected in Part 1 and the appropriate preinstalled lead type you selected on the previous page.

## Table C. D-181 Series Part Numbers

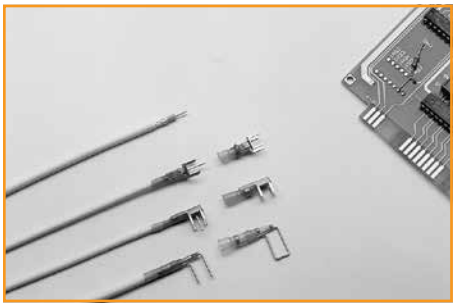



| Product Name | Product Dimensions | | | | | | | | Wire AWG |
|---|---|---|---|---|---|---|---|---|---|
| | A min. | B min. | C min. | D min. | E min. | F min. | L1 max. | L2 max. | |
| D-181-1220-90/9 | | | | | | | | | 20 |
| D-181-1222-90/9 | | | | | | | | | 22 |
| D-181-1224-90/9 | 3.7 [0.145] | 3.2 [0.125] | 2.7 [0.105] | 2.4 [0.095] | 0.71 [0.028] | 2.3 [0.09] | 17 [0.67] | 21.5 [0.85] | 24 |
| D-181-1226-90/9 | | | | | | | | | 26 |
| D-181-1826-6/9 | | | | | | | | | 26 |
| D-181-1830-6/9 | | | | | | | | | 30 |
| D-181-2220-90/9 | | | | | | | | | 20 |
| D-181-2222-90/9 | | | | | | | | | 22 |
| D-181-2224-90/9 | 4.5 [0.18] | 4 [0.16] | 3.45 [0.135] | 2.9 [0.115] | 1.1 [0.045] | 3 [0.12] | 17 [0.67] | 22.7 [0.895] | 24 |
| D-181-2226-90/9 | | | | | | | | | 26 |
| D-181-2826-6/9 | | | | | | | | | 26 |
| D-181-2830-6/9 | | | | | | | | | 30 |
| D-181-3220-90/9 | | | | | | | | | 20 |
| D-181-3222-90/9 | | | | | | | | ] | 22 |
| D-181-3224-90/9 | 5.2 [0.205] | 4.7 [0.185] | 4.45 [0.175] | 3.95 [0.155] | 1.3 [0.055] | 4 [0.16] | 17 [0.67] | 21.5 [0.85] | 24 |
| D-181-3226-90/9 | | | | | | | | | 26 |
| D-181-3826-6/9 | | | | | | | | | 26 |
| D-181-3830-6/9 | | | | | | | | | 30 |

## Table D. D-184 Series Part Numbers




| Product Name | Product Dimensions | | | | | | | | Wire AWG |
|---|---|---|---|---|---|---|---|---|---|
| | ØA min. | ØB min. | ØC min. | ØD min. | ØE min. | ØF min. | L1 max. | L2 max. | |
| D-184-1220-90/9 | | | | | | | | | 20 |
| D-184-1222-90/9 | 3.7 [0.145] | 3.2 [0.125] | 2.7 [0.105] | 2.4 [0.095] | 0.71 [0.028] | 2.3 [0.09] | 17 [0.67] | 21.5 [0.85] | 22 |
| D-184-1224-90/9 | | | | | | | | | 24 |
| D-184-1226-90/9 | | | | | | | | | 26 |
| D-184-2220-90/9 | | | | | | | | | 20 |
| D-184-2222-90/9 | 4.5 [0.18] | 4 [0.16] | 3.45 [0.135] | 2.9 [0.115] | 1.1 [0.045] | 3 [0.12] | 17 [0.67] | 22.7 [0.895] | 22 |
| D-184-2224-90/9 | | | | | | | | | 24 |
| D-184-2226-90/9 | | | | | | | | | 26 |



# SolderSleeve PCB/Coaxial Cable Terminators

### VERSATILE

- Transparent polyvinylidene fluoride or polyolefin insulation sleeve provides encapsulation, inspectability, strain relief (eliminates center conductor breakage), and insulation.
- Prefluxed solder preform provides a controlled soldering process

### EASY TO USE

- One-piece design means easy installation and lower installed cost
- Optional preinstalled ground leads provide convenience and ease of installation

### APPLICATIONS

- Used for terminating coaxial cable to component terminals, contacts, printed circuit boards, and solderless wrap terminals.

### Installation Requirements

For proper installation of these devices, the correct heating tool and reflector attachment must be used. Any one of the following TE heating tools is recommended:

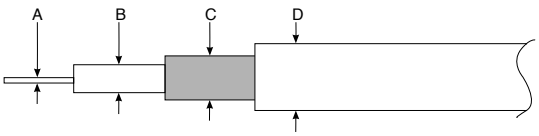
- HL1920E/HL2020E
- AA-400 Super Heater
- IR-1759 MiniRay
- CV-1981

Refer to TE installation procedure ES-61139 for detailed instructions and recommended reflector attachments.

### Product Selection Process

1. Select product series from the Product Options table below.
2. Determine cable RG number or outside diameter dimensions.
3. Select the appropriate part number from Table A (D-607 series) or Table B (B-046 series).

- For D-607 (matched impedance) series, determine straight or right-angle entry to PCB and grid pattern, then select the appropriate part number from Table A on the next page.
- For B-046 (PinPak, or pin to ground) series, determine hole spacing and diameter. Refer to Table B for product selection (see illustration below for cable dimensions).




### Product Options

| Product Series | Typical Application Performance | Shield Method | Part No. Selection Table |
|---|---|---|---|
| D-607 | Matched impedance up to 2.3 GHz | Metal body | A |
| B-046 | Effective transmission up to 100 MHz | Pin to ground | B |

## Specifications/Approvals

| Series | TE |
|---|---|
| D-607 | RT-1404 |
| B-046 | RT-1404 |

## Table A. D-607 Series Part Numbers

| RG Cable No. | Cable Dimensions (mm/in) Max. Outside Diameter | | | Part No. Entry to PCB | | |
|---|---|---|---|---|---|---|
| | Jacket | Shield | Dielectric | Straight grid 5.08 [.200] | Right-Angle Grid 5.08 [.200] | Straight Grid 2.54 [.100] |
| 174, 178, 179, 316, 404 | 1.5–3.55 [.060–.140] | 1.1–3.15 [.045–.125] | 0.60–2.25 [.025–.090] | D-607-09 | D-607-10 | D-607-40* |

## Table B. B-046 Series Part Numbers

| RG Cable No. | Cable Dimensions | | | | Pin Diameter | Part No. | | |
|---|---|---|---|---|---|---|---|---|
| | A | B | C | D Max. | | Spacing Between Pins 2.54 [.100] | 5.08 [.200] | 6.35 [.250] |
| 178, 404 | 0.30–0.80 [.011–.032] | 0.5–1.7 [.019–.067] | 1.3–2.3 [.050–.091] | 3.4 [.134] | 0.6 [.023] 0.8 [.031] | B-046-14-N | B-046-10-N | B-046-12-N |
| | | | | | | | B-046-11-N | B-046-13-N |
| 179, 316 | 0.3–1.6 [.011–.063] | 1.2–2.5 [.047–.100] | .1.5–2.8 [.060–.110] | 4.4 [.173] | 0.6 [.023] 0.8 [.031] | B-046-15-N | B-046-66-N | B-046-16-N |
| | | | | | | | B-046-68-N | B-046-18-N |

## Product Characteristics

| | | |
|---|---|---|
| **Material** | | |
| Insulation | Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride | |
| Solder and flux | Solder: Sn63 Pb37 | Flux: ROL1 per ANSI - J - 004 (RMA flux) |
| Termination body/pin | Copper alloy, solder-plated | |
| **Typical Performance** | | |
| Voltage drop | 2.0 mV | |
| Tensile strength | Exceeds strength of conductor | |
| Dielectric strength | 2.0 kV | |
| Temperature rating | -55°C to 150°C [-67°F to 302°F] | |
| Insulation resistance | 1000 megohms | |
| **Electrical Performance (typical) D-607 Series Only Frequency** | **VSWR (D-607-09, -40)** | **VSWR (D-607-10)** |
| 350 MHz | 1.04 max. | 1.04 max. |
| 700 MHz | 1.05 max. | 1.09 max. |
| 2.3 GHz | 1.09 max. | 1.12 max. |

# RF One Step BNC/TNC Connectors

**DURABLE**

- Outstanding cable-retention force
- Exceptional cable retention force to withstand high vibration and frequent mates and unmates
- Excellent built-in strain relief against vibration and excessive handling

**CAPABLE**

- Long-term reliability
- Meets performance requirements of MIL-C-39012 up to 2.8 GHz
- Solder-solder connection type (center conductor and braid)
- Fully soldered center conductor and braid

**VERSATILE**

- Three product sizes to accommodate a wide range of cables
- Use with standard RG/U cables and TE Cheminax cables

**EASY TO USE**

- One-step termination for easy, quick installation and lower installed cost

## Applications

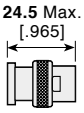
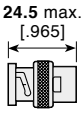
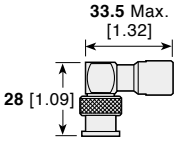
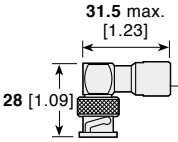
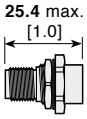
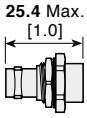
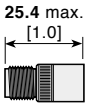
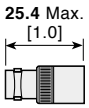
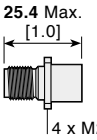
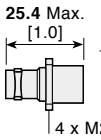
One-Step BNC/TNC connectors are single-piece assemblies for terminating the center conductor and the braid of a broad range of coaxial cables.

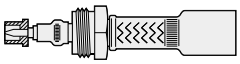
The connectors are fully intermateable with MIL-C-39012 connectors and are available in 50-ohm and 75-ohm versions.



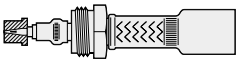
| Specifications | Installation | |
|---|---|---|
| TE RB-115 | For proper installation of these devices, the correct heating tool and reflector attachment must be used.<br>Any one of the following TE heating tools is recommended:<br>• Steinel® Model HL-2010E-230V<br>• CV-1981 | Refer to TE installation procedure RPIP-683-00 for detailed instructions. |

## Product Options and Part Numbering System

| RXX - XX - X - XX | Connector Style Dash No. -XX | Style | Connector Type TNC | Connector Type BNC |
|---|---|---|---|---|
| | -00 | Straight plug |   |   |
| | -01 | Right-angle plug |   |   |
| | -02 | Straight bulkhead jack |   |   |
| | -03 | Straight jack |   |   |
| | -04 | Straight panel jack |   |   |



Male



Female

**Connector size**

L = Large
M = Medium
S = Small

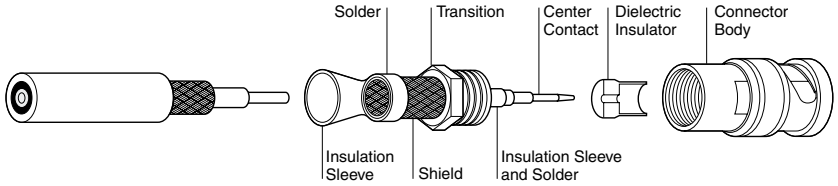
50 = 50 ohms
75 = 75 ohms

D = Nickel-plated brass body, gold-plated brass pin

B = BNC
T = TNC

Example: RBD-50-L-00 is a BNC connector, 50 ohms, large size, with straight plug body.

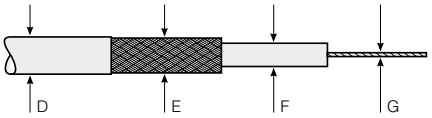
## Product Characteristics




| | |
|---|---|
| **Material** | |
| Center contact | Gold-plated beryllium copper (female) |
| | Gold-plated brass (male) |
| Dielectric insulator | PTFE |
| Transition | Silver-plated brass |
| Connector body | Nickel-plated brass |
| Solder and flux | Sn63Pb37, RMA flux |
| Braided shield | Tin-plated copper wire per ASTM B3 |
| Insulation sleeve | Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride, transparent blue |
| Strain relief/sealing sleeve | Radiation-crosslinked, heat-shrinkable modified polyolefin with adhesive, black |
| **Typical Performance** | |
| Dielectric withstand voltage | 1500 V |
| Insulation resistance | 5000 megohms |
| Temperature rating | -55˚C to 150˚C [-67˚F to 302˚F] |
| Contact resistance-straight | Inner = 1.5 milliohms, outer = 1.0 milliohm |
| Contact resistance — right-angle | Inner = 2.5 milliohms, outer = 1.5 milliohms |
| Cable retention force | 295N (66 lb) to 822N (196 lb) |
| Voltage rating | 500 V RMS |
| Connector durability | 500 mating cycles minimum |
| **Electrical Performance** | |
| Nominal impedance | 50 and 75 ohms |
| Frequency range | Up to 2.8 GHz |

## Part Selection Process

1. From Product Options and Part Numbering System, select the connector style you need (BNC or TNC, plug or jack, male or female contacts).
2. From the tables that follow, find the appropriate table for the connector style you selected.
3. From the appropriate table, select the connector part number based on the RG cable type or cable part number. For cable types not shown use the cable dimensions.
   Note: The cable dimensions in each table are keyed to the diagram below.



| Impedance (ohms) | Cable Type RG Cables | Cables | Cable Dimensions D (Min.–Max.) | E (Min.–Max.) | F (Max.) | G (Max.) | Part No. |
|---|---|---|---|---|---|---|---|
| **BNC Straight Plugs, Male Contacts** | | | | | | | |
| 50 | RG-174, RG-178, RG-188, RG-196,RG–316 | 5026A1311, 5028A1317, 5030A1317 | 1.50–5.50 [.060–.217] | 0.90–3.00 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RBD-50-S-00 |
| 50 | RG-58, RG-141, RG-142, RG-303, RG-400 | 5019D3318, 5021D1331, 5020A1311 | 3.50–7.00 [.138–.276] | 2.10–5.00 [.083–.197] | 3.00 [.118] | 1.25 [.050] | RBD-50-M-00 |
| 50 | RG-165, RG-215, RG-213, RG-225, RG-214 | 5012F3332, 5012A3311 | 5.00–12.50 [.197–.500] | 4.10–9.50 [.161–.375] | 7.30 [.287] | 2.45 [.100] | RBD-50-L-00 |
| 75 | RG-179, RG-187 | 7530A1317 | 1.50–5.00 [.060–.217] | 5 0.90-3.00 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RBD-75-S-00 |
| 75 | — | 7524A1311, 7528A1317 | 3.50–7.00 [.138–.276] | 2.10–5.00 [.083–.197] | 3.70 [.126] | 1.25 [.050] | RBD-75-M-00 |
| 75 | RG-6, RG-11, RG-12, RG-59 RG-144, RG-216 | — | 5.00–.12.50 [.197–.500] | 4.10–9.50 [.161–.375] | 7.3 [.287] | 2.45 [.100] | RBD-75-L-00 |
| **BNC Right-Angle Plugs, Male Contacts** | | | | | | | |
| 50 | RG-174, RG-178, RG-188, RG-196,RG–316 | 5026A1311, 5028A1317, 5030A1317 | 1.50–5.50 [.060–.217] | 0.90–3.00 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RBD-50-S-01 |
| 50 | RG-58, RG-141, RG-142, RG-303, RG-400 | 5019D3318, 5021D1331, 5020A1311 | 3.50–7.00 [.138–.276] | 2.10–5.00 [.083–.197] | 3.00 [.118] | 1.25 [.050] | RBD-50-M-01 |
| 50 | RG-165, RG-215, RG-213, RG-225, RG-214 | 5012F3332, 5012A3311 | 5.00–12.50 [.197–.500] | 4.1–9.50 [.161–.375] | 7.30 [.287] | 2.45 [.100] | RBD-50-L-01 |
| 75 | RG-179, RG-187 | 7530A1317 | 1.50–5.50 [.060–.217] | 0.9-3.00 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RBD-75-S-01 |
| 75 | — | 524A1311, 7528A1317 | 3.50–7.00 [.138–.276] | 2.1–5.00 [.083–.197] | 3.70 [.146] | 1.25 [.050] | RBD-75-M-01 |
| 75 | RG-6, RG-11, RG-12, RG-59 RG-144, RG-216 | — | 5.00–12.50 [.197–.500] | 4.1–9.50 [.161–.375] | 7.30 [.287] | 2.45 [.100] | RBD-75-L-01 |
| **BNC Straight Bulkhead Jacks, Female Contacts** | | | | | | | |
| 50 | RG-174, RG-178, RG-188, RG-196,RG–316 | 5026A1311, 5028A1317, 5030A1317 | 1.50–5.50 [.060–.217] | 0.90–3.00 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RBD-50-S-02 |
| 50 | RG-58, RG-141, RG-142, RG-303, RG-400 | 5019D3318, 5021D1331, 5020A1311 | 3.50–7.00 [.138–.276] | 2.10–5.00 [.083–.197] | 3.00 [.118] | 1.25 [.050] | RBD-50-M-02 |
| 50 | RG-165, RG-215, RG-213, RG-225, RG-214 | 5012F3332, 5012A3311 | 5.00–12.50 [.197–.500] | 4.10–9.50 [.161–.375] | 7.30 [.287] | 2.45 [.100] | RBD-50-L-02 |
| 75 | RG-179, RG-187 | 7530A1317 | 1.50–5.00 [.060–.217] | 5 0.90-3.00 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RBD-75-S-02 |
| 75 | — | 75 7524A1311, 7528A1317 | 3.50–7.00 [.138–.276] | 2.10–5.00 [.083–.197] | 3.70 [.146] | 1.25 [.050] | RBD-75-M-02 |
| 75 | RG-6, RG-11, RG-12, RG-59 RG-144, RG-216 | — | 5.00-12.50 [.197–.500] | 4.10–9.50 [.161–.375] | 7.30 [.287] | 2.45 [.100] | RBD-75-L-02 |
| **BNC Straight Jacks, Female Contacts** | | | | | | | |
| 50 | RG-174, RG-178, RG-188, RG-196,RG–316 | 5026A1311, 5028A1317, 5030A1317 | 1.50–5.50 [.060–.217] | 0.90–3.00 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RBD-50-S-03 |
| 50 | RG-58, RG-141, RG-142, RG-303, RG-400 | 5019D3318, 5021D1331, 5020A1311 | 3.50–7.00 [.138–.276] | 2.10–5.00 [.083–.197] | 3.00 [.118] | 1.25 [.050] | RBD-50-M-03 |
| 50 | RG-165, RG-215, RG-213, RG-225, RG-214 | 5012F3332, 5012A3311 | 5.00–12.50 [.197–.500] | 4.10–9.50 [.161–.375] | 7.30 [.287] | 2.45 [.100] | RBD-50-L-03 |
| 75 | RG-179, RG-187 | 7530A1317 | 1.50–5.50 [.060–.217] | 0.90–3.00 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RBD-75-S-03 |
| 75 | — | 75 7524A1311, 7528A1317 | 3.50–7.00 [.138–.276] | 2.10–5.00 [.083–.197] | 3.70 [.146] | 1.25 [.050] | RBD-75-M-03 |
| 75 | RG-6, RG-11, RG-12, RG-59 RG-144, RG-216 | — | 5.00–12.50 [.197–.500] | 4.10–9.50 [.161–.375] | 7.30 [.287] | 2.45 [.100] | RBD-75-L-03 |
| **BNC Straight Panel Jacks, Female Contacts** | | | | | | | |
| 50 | RG-174, RG-178, RG-188, RG-196,RG–316 | 5026A1311, 5028A1317, 5030A1317 | 1.50–5.50 [.060–.217] | 0.90–3.00 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RBD-50-S-04 |
| 50 | RG-58, RG-141, RG-142, RG-303, RG-400 | 5019D3318, 5021D1331, 5020A1311 | 3.50–7.00 [.138–.276] | 2.10–5.00 [.083–.197] | 3.00 [.118] | 1.25 [.050] | RBD-50-M-04 |
| 50 | RG-165, RG-215, RG-213, RG-225, RG-214 | 5012F3332, 5012A3311 | 5.00–12.50 [.197–.500] | 4.10–9.50 [.161–.375] | 7.30 [.287] | 2.45 [.100] | RBD-50-L-04 |
| 75 | RG-179, RG-187 | 7530A1317 | 1.50–5.50 [.060–.217] | 0.90–3.00 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RBD-75-S-04 |
| 75 | — | 7524A1311, 7528A1317 | 3.50–7.00 [.138–.276] | 2.10–5.00 [.083–.197] | 3.70 [.146] | 1.25 [.050] | RBD-75-M-04 |
| 75 | RG-6, RG-11, RG-12, RG-59 RG-144, RG-216 | — | 5.00–12.50 [.197–.500] | 4.10–9.5o [.161–.375] | 7.30 [.287] | 2.45 [.100] | RBD-75-L-04 |

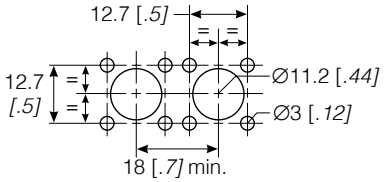
## TNC Coaxial Connectors

| Impedance (ohms) | Cable Type RG Cables | Cables | Cable Dimensions D (Min.–Max.) | E (Min.–Max.) | F (Max.) | G (Max.) | Part No. |
|---|---|---|---|---|---|---|---|
| **TNC Straight Plugs, Male Contacts** | | | | | | | |
| 50 | RG-174, RG-178, RG-188, RG-196,RG–316 | 5026A1311, 5028A1317, 5030A1317 | 1.50–5.50 [.060–.217] | 0.90–3.00 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RTD-50-S-00 |
| 50 | RG-58, RG-141, RG-142, RG-303, RG-400 | 5019D3318, 5021D1331, 5020A1311 | 3.50–7.00 [.138–.276] | 2.10–5.00 [.083–.197] | 3.00 [.118] | 1.25 [.050] | RTD-50-M-00 |
| 50 | RG-165, RG-215, RG-213, RG-225, RG-214 | 5012F3332, 5012A3311 | 5.00–12.50 [.197–.500] | 4.10–9.50 [.161–.375] | 7.30 [.287] | 2.45 [.100] | RTD-50-L-00 |
| 75 | RG-179, RG-187 | 7530A1317 | 1.50–5.50 [.060–.217] | 0.90-3.00 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RTD-75-S-00 |
| 75 | — | 7524A1311, 7528A1317 | 3.50–7.00 [.138–.276] | 2.10–5.00 [.083–.197] | 3.70 [.146] | 1.25 [.050] | RTD-75-M-00 |
| 75 | RG-6, RG-11, RG-12, RG-59 RG-144, RG-216 | — | 5.00–12.50 [.197–.500] | 4.10–9.50 [.161–.375] | 7.30 [.287] | 2.45 [.100] | RTD-75-L-00 |
| **TNC Straight Jacks, Female Contacts** | | | | | | | |
| 50 | RG-174, RG-178, RG-188, RG-196,RG–316 | 5026A1311, 5028A1317, 5030A1317 | 1.5–5.5 [.060–.217] | 0.9–3.0 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RTD-50-S-03 |
| 50 | RG-58, RG-141, RG-142, RG-303, RG-400 | 5019D3318, 5021D1331, 5020A1311 | 3.5–7.0 [.138–.276] | 2.1–5.0 [.083–.197] | 3.0 [.118] | 1.25 [.050] | RTD-50-M-03 |
| 50 | RG-165, RG-215, RG-213, RG-225, RG-214 | 5012F3332, 5012A3311 | 5.0–12.5 [.197–.500] | 4.1–9.5 [.161–.375] | 7.3 [.287] | 2.45 [.100] | RTD-50-L-03 |
| 75 | RG-179, RG-187 | 7530A1317 | 1.5–5.5 [.060–.217] | 0.9–3.0 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RTD-75-S-03 |
| 75 | — | 7524A1311, 7528A1317 | 3.5–7.0 [.138–.276] | 2.1–5.0 [.083–.197] | 3.7 [.146] | 1.25 [.050] | RTD-75-M-03 |
| 75 | RG-6, RG-11, RG-12, RG-59 RG-144, RG-216 | — | 5.0–12.5 [.197–.500] | 4.1–9.5 [.161–.375] | 7.3 [.287] | 2.45 [.100] | RTD-75-L-03 |
| **TNC Straight Panel Jacks, Female Contacts** | | | | | | | |
| 50 | RG-174, RG-178, RG-188, RG-196,RG–316 | 5026A1311, 5028A1317, 5030A1317 | 1.5–5.5 [.060–.217] | 0.9–3.0 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RTD-50-S-04 |
| 50 | RG-58, RG-141, RG-142, RG-303, RG-400 | 5019D3318, 5021D1331, 5020A1311 | 3.5–7.0 [.138–.276] | 2.1–5.0 [.083–.197] | 3.0 [.118] | 1.25 [.050] | RTD-50-M-04 |
| 50 | RG-165, RG-215, RG-213, RG-225, RG-214 | 5012F3332, 5012A3311 | 5.0–12.5 [.197–.500] | 4.1–9.5 [.161–.375] | 7.3 [.287] | 2.45 [.100] | RTD-50-L-04 |
| 75 | RG-179, RG-187 | 7530A1317 | 1.5–5.5 [.060–.217] | 0.9–3.0 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RTD-75-S-04 |
| 75 | — | 7524A1311, 7528A1317 | 3.5–7.0 [.138–.276] | 2.1–5.0 [.083–.197] | 3.7 [.146] | 1.25 [.050] | RTD-75-M-04 |
| 75 | RG-6, RG-11, RG-12, RG-59 RG-144, RG-216 | — | 5.0–12.5 [.197–.500] | 4.1–9.5 [.161–.375] | 7.3 [.287] | 2.45 [.100] | RTD-75-L-04 |

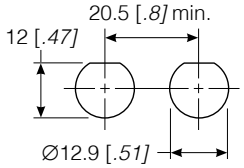
## TNC Coaxial Connectors

Panel thickness: 3.2 [.125] max.

RBD-XX-X-04
RTD-XX-X-04

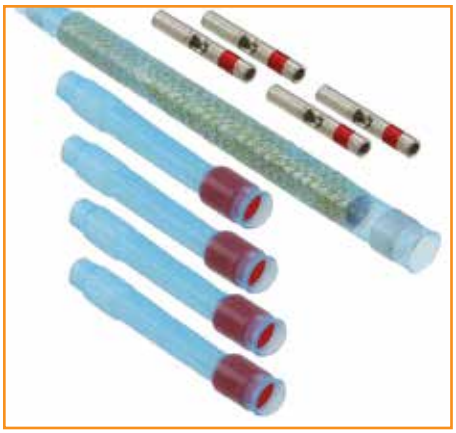



RBD-XX-X -02
RTD-XX-X -02




| Cable Type | | | Cable Dimensions | | | | Part No. |
|---|---|---|---|---|---|---|---|
| Impedance (ohms) | RG Cables | Cables | D (Min.–Max.) | E (Min.–Max.) | F (Max.) | G (Max.) | |
| **TNC Straight Bulkhead Jacks, Female Contacts** | | | | | | | |
| 50 | RG-174, RG-178, RG-188, RG-196,RG–316 | 5026A1311, 5028A1317, 5030A1317 | 1.50–5.50 [.060–.217] | 0.90–3.00 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RTD-50-S-02 |
| 50 | RG-58, RG-141, RG-142, RG-303, RG-400 | 5019D3318, 5021D1331, 5020A1311 | 3.5–7.0 [.138–.276] | 2.10–5.00 [.083–.197] | 3.00 [.118] | 1.25 [.050] | RTD-50-M-02 |
| 50 | RG-165, RG-215, RG-213, RG-225, RG-214 | 5012F3332, 5012A3311 | 5.0–12.5 [.197–.500] | 4.10–9.50 [.161–.375] | 7.30 [.287] | 2.45 [.100] | RTD-50-L-02 |
| 75 | RG-179, RG-187 | 7530A1317 | 1.5–5.5 [.060–.217] | 0.90–3.00 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RTD-75-S-02 |
| 75 | — | 7524A1311, 7528A1317 | 3.5–7.0 [.138–.276] | 2.10–5.00 [.083–.197] | 3.70 [.146] | 1.25 [.050] | RTD-75-M-02 |
| 75 | RG-6, RG-11, RG-12, RG-59 RG-144, RG-216 | — | 5.0–12.5 [.197–.500] | 4.10–9.50 [.161–.375] | 7.30 [.287] | 2.45 [.100] | RTD-75-L-02 |
| **TNC Right-Angle Plugs, Male Contacts** | | | | | | | |
| 50 | RG-174, RG-178, RG-188, RG-196,RG–316 | 5026A1311, 5028A1317, 5030A1317 | 1.50–5.50 [.060–.217] | 0.90–3.00 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RTD-50-S-01 |
| 50 | RG-58, RG-141, RG-142, RG-303, RG-400 | 5019D3318, 5021D1331, 5020A1311 | 3.50–7.00 [.138–.276] | 2.10–5.00 [.083–.197] | 3.00 [.118] | 1.25 [.050] | RTD-50-M-01 |
| 50 | RG-165, RG-215, RG-213, RG-225, RG-214 | 5012F3332, 5012A3311 | 5.00–12.50 [.197–.500] | 4.10–9.50 [.161–.375] | 7.30 [.287] | 2.45 [.100] | RTD-50-L-01 |
| 75 | RG-179, RG-187 | 7530A1317 | 1.50–5.50 [.060–.217] | 0.90–3.00 [.035–.118] | 1.55 [.060] | 0.65 [.025] | RTD-75-S-01 |
| 75 | — | 7524A1311, 7528A1317 | 3.50–7.00 [.138–.276] | 2.10–5.00 [.083–.197] | 3.70 [.146] | 1.25 [.050] | RTD-75-M-01 |
| 75 | RG-6, RG-11, RG-12, RG-59 RG-144, RG-216 | — | 5.0–12.5 [.197–.500] | 4.10–9.50 [.161–.375] | 7.30 [.287] | 2.45 [.100] | RTD-75-L-01 |

# Cable-to-Cable Splicing



## Introduction

The question is, how to meet growing performance requirements for shielded cable system fabrication and maintenance while minimizing electromagnetic interference (EMI). The answer is TE SolderShield cable splices. SolderShield devices are one-piece products consisting of a flux-coated, solder-impregnated copper shield braid encased in a heat-shrinkable insulation sleeve.

SolderShield cable-to-cable splice kits, designed for single-conductor or multiconductor shielded cables, are ideal for fabrication/repair/rework while restoring the electrical integrity of the cable.

SolderShield devices perform even in demanding environments. They are reliable, versatile, and easy to install.



**VERSATILE**

- Flux-coated, solder-impregnated copper shield braid encased in a transparent heat-shrinkable insulation sleeve provides a controlled soldering process, encapsulation, inspectability, strain relief, and insulation

**EASY TO USE**

- One-piece design means easy installation and lower installed cost

**CAPABLE**

- Circumferential (360°) shielding results in EMI protection and shield continuity equal to or better than the original cable
- Conductor splices are made using MiniSeal crimp products, which are recognized by MIL-S-81824 and MIL-W-5088

# SolderSleeve Shielded and Coaxial Cable Splices

## Product Selection Process

1. Select product series from the Product Options table below.
2. Determine cable RG number or outside diameter dimensions.
3. Select the appropriate part number from Table A (D-607 series) or Table B (B-046 series).

- For D-607 (matched impedance) series, determine straight or right-angle entry to PCB and grid pattern, then select the appropriate part number from Table A on the next page.
- For B-046 (PinPak, or pin to ground) series, determine hole spacing and diameter. Refer to Table B for product selection (see illustration below for cable dimensions).

## Installation Requirements

For proper installation of these devices, the correct heating tool and reflector attachment must be used. Any one of the following TE heating tools is recommended:

- HL1920E/HL2020E
- IR-1759 MiniRay
- CV-1981

Refer to TE installation procedure RCPS-150-02 (D-150 series) and RPIP-699-00 (B-202 series) for detailed instructions and recommended reflector attachment.

## Applications

Used for splicing a wide range of cables, including coaxial and multiconductor cables.

SolderShield devices can be used to repair or splice shielded or coaxial cables. These products consist of a MiniSeal crimp splice plus a flux-coated, solder-impregnated copper shield encased in a heat-shrinkable sealing sleeve, for splicing the shields. SolderShield kits terminate single- or multiple-conductor cables, eliminate EMI problems at the splice, and provide strain relief for the cable.

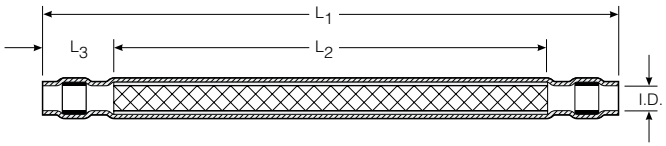
## Specifications/Approvals

| Series | Military | TE |
|---|---|---|
| D-150 | US: M81824 (conductor splice only)<br>UK: RAF AP 1130-2008-1 | RT-1404 |

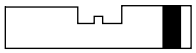
## Table A. Multiconductor Cable Splices

Each SolderShield part consists of a SolderShield splice and one or more conductor splices. Refer to information below for description and numbers of conductor splices.

**SolderShield Splice**




**Crimp Splice**



**SolderShield Product Dimensions**

| Part No. | | Dimensions | | | | Conductor Splice Size Range CMA [mm²] Min.–Max. | Color Code | Quantity Per Kit |
|---|---|---|---|---|---|---|---|---|
| Tin Plated | Nickel Plated | L1 Max. | L2 Nom. | L3 Min. | ID Min. | | | |
| D-150-0168 | D-150-0228 | 80.50 [3.17] | 50.00 [1.97] | 10.20 [.400] | 3.00 [.118] | 304–1510 [0.15–0.75] | Red | 1 |
| D-150-0169 | D-150-0229 | 80.50 [3.17] | 50.00 [1.97] | 10.20 [.400] | 4.00 [.157] | 779–2680 [0.39–1.34] | Blue | 1 |
| D-150-0170 | D-150-0230 | 80.50 [3.17] | 50.00 [1.97] | 10.20 [.400] | 5.00 [.197] | 1900–6755 [0.95–3.37] | Yellow | 1 |
| D-150-0174 | D-150-0231 | 10.60 [4.17] | 75.00 [2.95] | 10.20 [.400] | 4.00 [.157] | 304–1510 [0.15–0.75] | Red | 2 |
| D-150-0175 | D-150-0232 | 10.60 [4.17] | 75.00 [2.95] | 10.20 [.400] | 5.00 [.197] | 779–2680 [0.39–1.34] | Blue | 2 |
| D-150-0176 | D-150-0233 | 10.60 [4.17] | 75.00 [2.95] | 10.20 [.400] | 6.00 [.236] | 1900–6755 [0.95–3.37] | Yellow | 2 |
| D-150-0177 | D-150-0234 | 10.60 [4.17] | 75.00 [2.95] | 10.20 [.400] | 9.00 [.356] | 304–1510 [0.15–0.75] | Yellow | 2 |
| D-150-0178 | D-150-0235 | 10.60 [4.17] | 75.00 [2.95] | 10.20 [.400] | 4.00 [.157 ] | 304–1510 [0.15–0.75] | Red | 4 |
| D-150-0179 | D-150-0236 | 10.60 [4.17] | 75.00 [2.95] | 10.20 [.400] | 5.00 [.197] | 779–2680 [0.39–1.34] | Red | 4 |
| D-150-0180 | D-150-0237 | 10.60 [4.17] | 75.00 [2.95] | 10.20 [.400] | 6.00 [.236] | 1900–6755 [0.95–3.37] | Blue | 4 |
| D-150-0181 | D-150-0238 | 10.60 [4.17] | 75.00 [2.95] | 10.20 [.400] | 9.00 [.353] | 1900–6755 [0.95–3.37] | Yellow | 4 |

**Note:** The SolderShield splice kits listed in this table are for 1:1 cable splices. The kits can be used on cables with tin-, silver-, and nickel-plated copper conductors. All the kits have environmental-sealing capability. The cable temperature rating must be 125°C minimum.

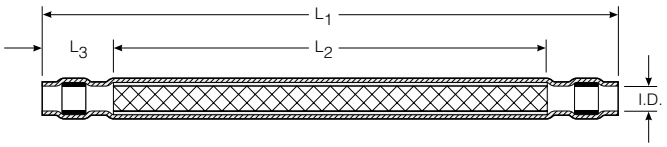
To find the splice kit part number for your application:

1. Determine the number of conductors in the cable to be spliced.
2. Determine the gauge of each conductor or the maximum jacket OD.
3. Determine the conductor plating.
4. Select the appropriate part number from the table above.

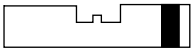
## Table B. Coaxial Cable Splices

Each SolderShield part consists of a SolderShield splice and one or more conductor splices. Refer to information below for description and numbers of conductor splices.

**SolderShield Splice**




**Crimp Splice**



| RG Cable No. | Cable Description | Conductor Splice Qty/Kit | Part No. | SolderShield Dimensions | | |
|---|---|---|---|---|---|---|
| | | | | L1 Max | L2 Min | ID Min |
| 8A, 9B, 11 | 5012A3311 | 1 | D-150-0214 | 80.50 [3.170] | 50.00 [1.970] | 12.00 [.472] |
| 13, 26, 31 | 5012E1339 | | | | | |
| 115, 144, 149 | 7518A1311 | | | | | |
| 165, 213, 214 | — | | | | | |
| 216, 235, 391 | — | | | | | |
| 393, 397 | — | | | | | |
| 178, 196, | 5028A1317 | 1 | D-150-0094 | 80.50 [3.170] | 50.00 [1.970] | 3.00 [.118] |
| 179, 187, 188, | 7528A1317 | | | | | |
| 316, 404, M17/138-00001, | 5030A1317 | | | | | |
| M17/136-00001 | 7530A1317 | | | | | |
| 180, 195 | 5024A1311 | 1 | D-150-0095 | 80.50 [3.170] | 50.00 [1.970] | 4.00 [.157] |
| M17/137-00001 | 7526A1311 | | | | | |
| M17/139-00001 | 9527A1318 | | | | | |
| — | 9530E1014 | | | | | |
| 124, 140, 141 | 5020A1311 | 1 | D-150-0096 | 80.50 [3.170 ] | 50.00 [1.970] | 5.00 [.236] |
| 159, 302, 303 | 5022A1311 | | | | | |
| — | 7522A1311 | | | | | |
| — | 7523D1331 | | | | | |
| — | 7524A1311 | | | | | |
| 29, 30, 55B | 5019D3318 | 1 | B-202-81* | 56.00 [2.200] | 23.00 [.900] | 7.00 [.275] |
| 58, 223 | 5021D1331 | | | | | |
| — | 5022A1311 | | | | | |
| 59, 62, 71 | 7523D1331 | 1 | B-202-82* | 56.00 [2.200 ] | 23.00 [.900] | 7.00 [.275] |
| — | 7524A1311 | | | | | |
| — | 9524A1311 | | | | | |

*These kits use solder to terminate the center conductors. All other kits use crimp.
All kits are for one-to-one coaxial cable splices, and all kits have environmental sealing capability. Each kit contains products to splice conductors, build up dielectric, splice the shield, and provide insulation.

## Product Characteristics

| | |
|---|---|
| **Materials** | |
| Insulation sleeve | Radiation-crosslinked polyvinylidene fluoride |
| Meltable inserts | Fluorocarbon-based thermoplastic |
| MiniSeal crimp splice | Base metal: Copper alloy C10200 per ASTM B75<br>Plating: Tin per MIL-T-10727 or nickel per QQ-N-290 |
| SolderShield shield splice | Base metal: Tin-plated copper wire braid per ASTM B3<br>Solder and flux coating: Type Sn63 Pb37. Flux: ROM1 per ANSI - J - STD - 004 (RA flux) |

| Parameter | Test Method | Requirement |
|---|---|---|
| **Electromechanical Performance** | | |
| Dielectric strength (shield connection) | — | No breakdown or arcing at 1000 Vac (RMS) |
| Dielectric strength (conductor connection) | — | 2.5 kV |
| Voltage drop | MIL-S-81824 | Less than 2.0-millivolt increase |
| Insulation resistance (shield connection) | — | 1000 megohms minimum at 500 Vdc |
| Insulation resistance (conductor connection) | — | 5000 megohms |
| Tensile strength for MiniSeal | MIL-S-81824 | Exceed yield strength (pounds) of wire. |
| Tensile strength for SolderShield | MIL-S-81824 | 75% of strength (pounds) of unspliced cable |
| Temperature rating | — | -55°C to 150°C [-67°F to 302°F] |
| **Environmental Resistance** | | |
| Salt spray | MIL-STD-202 M101 | Meet voltage drop requirement. |
| Heat aging | 750 hours at 150°C [302°F] | Meet all electromechanical requirements. |
| Temperature cycling | MIL-STD-202 M107C | Meet all electromechanical requirements. |
| Altitude immersion | Immersion at 22,860m [75,000 ft] | Meet insulation-resistance requirement. |
| Corrosion resistance | with MIL-STD-202, Method 101, Test Condition A | No evidence of corrosion after testing in accordance |



## EASY INSTALLATION

- Easy to install: saves time, manpower, and cost
- Color-coded to ensure proper sizing for each application
- Low profile (small diameter and short length)
- Side entry for easy access to damaged wire

## MECHANICALLY ROBUST

- 150˚C rated
- Long-term performance provides a permanent repair
- Wrap-around design eliminates de-pinning of connector for repair

# Raychem C-Wrap Side Entry Repair Sleeve

TE Connectivity's (TE) C-Wrap repair sleeve is a side-entry sleeve designed to repair and seal a damaged wire jacket that is either chafed or has a radial crack or cut on the insulation. It consists of two pieces: the outer tubing and an adhesive inner layer.

## MECHANICAL/ENVIRONMENTAL

- Environmental resistant
- Ideal for use on insulations rated at 135˚C or higher
- **Temperature range:** -65˚C to +150˚C

## MATERIALS

- **Meltable Adhesive:** Modified thermoplastic fluoroelastomer
- **Insulation Sleeve:** Radiation cross-linked modified fluoropolymer

## STANDARDS

- **SAE AS81824** (fluid and sealing requirements)
- **TE Performance Specification:** D-6201
- **TE Application Specification:** RPIP-1101
- **TE Qualification Test Reports:** ISTR-1134 and ISTR-1206

## APPLICATION TOOLING

- **General Purpose Heat Gun:** Steinel HL19XX or HL20XX
- **SolderSleeve Reflector:** Steinel HL1802E-074616
- **Mil Spec installation tools:**
  **D-150-C-11:** M81969/8-08
  **D-150-C-12:** M81969/8-08
  **D-150-C-13:** M81969/8-10
  **D-150-C-14:** M81969/8-10

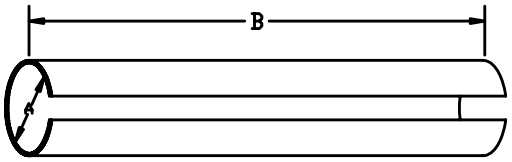
  Contact TE for details on installation tooling

## APPLICATIONS

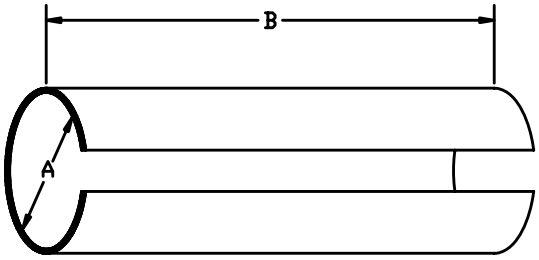
- Used as a side-entry repair kit
- Repair of nicks, chafed and radial cracks on the wire in most Aerospace, Defense and Marine applications
- Prevents galvanic corrosion on center conductor
- RoHS compliant

## ORDERING INFORMATION

ADHESIVE




OUTER SLEEVE




| Part Description | Color Code | Product Dimension | | | | Conductor | |
|---|---|---|---|---|---|---|---|
| | | I.D. (A) | | Cut Length (B) | | AWG | Wire OD (Note*) |
| | | Adhesive ±.05 (.002) | Sleeve ±.05 (.002) | Adhesive ±.5 (.02) | Sleeve ±.5 (.02) | | |
| D-150-C-11 | Green | 1.11 (.044) | 2.29 (.090) | 21.59 (.85) | 19.05 (.75) | 26 - 24 | 0.80 - 1.10 (.031 - .043) |
| D-150-C-12 | Red | 1.68 (.066) | 2.74 (.108) | 21.59 (.85) | 19.05 (.75) | 22 - 20 | 1.10 - 1.50 (.043 - .029) |
| D-150-C-13 | Blue | 2.13 (.084) | 3.43 (.135) | 21.59 (.85) | 19.05 (.75) | 18 - 16 | 1.50 - 2.30 (.059 - .090) |
| D-150-C-14 | Yellow | 3.34 (.133) | 4.80 (.189) | 21.59 (.85) | 19.05 (.75) | 14 - 12 | 2.30 - 2.80 (.090 - .110) |

## MATERIALS

- **Meltable Adhesives:** Environment-resistant modified thermoplastic fluoroelastomer. Color coded.
- **Insulation Sleeve:** Heat-shrinkable, transparent, radiation cross-linked modified fluoropolymer. Color coded.

## APPLICATION

- Parts are designed to provide an environment-resistant repair to damaged primary wire that has a radial crack up to 360°, nicks/scrapes not longer than 1/4" on insulations rated for 135°C minimum with no damage to the wire conductor. For insulation procedures, refer to RPIP 1101.
- Install using TE approved convection or infrared heating tools in accordance with TE. When installed with approved convection or infrared heating tools, assemblies will meet the performance requirements of TE D-6201 specification. Infrared tools are not recommended for use with black cable jackets.
- Temperature range: -65°C to +150°C.

**Note*:** If the O.D. of the wire is out of the range that is specified in the Table, use the next size of C-Wrap up or down






D-150-C-11
(Part No. CX2001-000)
NSN 5970-01-611-8609



D-150-C-12
(Part No. CX2096-000)
NSN 5970-01-611-8596



D-150-C-13
(Part No. CX2097-000)
NSN 5970-01-611-8600



D-150-C-14
(Part No. CX2098-000)
NSN 5970-01-611-8586



# Rayseal High-Performance, Large-Gauge Cable Repair

The Rayseal large gauge cable repair sleeve is a high-performance side-entry repair product for large gauge and power feeder cables (8 AWG to 4/0 AWG) with chafed or cracked insulation.

Its tough fluoropolymer material has been specially formulated by TE to give greater resistance to mechanical abrasion and common aerospace fuels and fluids. The high-temperature adhesive lining, by sealing around the underlying damage to the cable jacket, maintains the cable jacket properties as close as possible to its original specification.

The operating temperature range from -65°C to +260°C helps ensure excellent high-temperature performance.

### RUGGED PERFORMANCE

- Designed for 8 AWG to 4/0 AWG cable
- Abrasion-resistant fluoropolymer
- Resists aerospace fuels and fluids

### COST SAVINGS

- Easy to install: helps save manpower and cost
- Permanent, tough and robust repair
- Side entry helps reduce repair times

### VERSATILE

- Make permanent repairs to chafed and cracked cable insulation
- High-temperature adhesive lining seals around repair
- -65°C to +260°C temperature range

### APPLICATIONS

- Military Aerospace and Defense
- Commercial Air
- Military Ground Systems

## ENVIRONMENTAL/MECHANICAL

- **Operating temperatures:** -65°C to +260°C
- **Durability:** Adheres and seals for permanent repair
- **Fluid resistance:** Resists aggressive fluids used in military and aerospace platforms

## MATERIALS

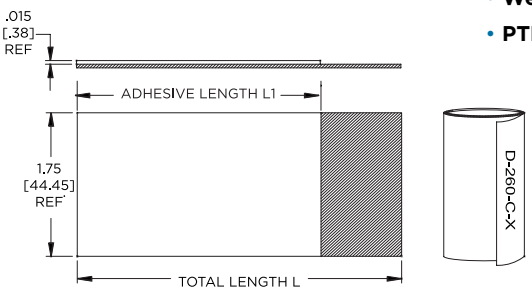
- **Sleeve:** Fluoropolymer, black
- **Adhesive:** Fluoropolymer

## TOOLING

- **Heat gun:** CV2014-JETS-120V460W-UL (US plug)
  CV2014-JETS-230V460W-EU (European plug)
  CV2014-JETS-230V460W-UK (UK plug)
  PR-38-B-REFLECTOR

## EACH KIT ALSO CONTAINS:

- **Abrasive Cleaning Pad, 2" x 2"**
- **Wet/Dry Cleaning Wipes, 2-Package Kit**
- **PTFE Tape, 2 Mils Thick, 1" Wide, 30" Long**




| Cable | | Sleeve Dimensions | | Part Description | Kit Part No. |
|---|---|---|---|---|---|
| Wire Size (AWG) | Cable OD | L | L1 | | |
| 10, 8 | .137-203 [3.48-5.16] | 1.40 [35.6] | 1.00 [24.5] | D-260-C-A | **EF7428-000** |
| 6, 4 | .225-.308 [5.72-7.82] | 1.70 [43.2] | 1.25 [31.8] | D-260-C-B | **EF7429-000** |
| 2, 1/0 | .356-.465 [9.04-11.81] | 2.20 [55.9] | 1.75 [44.5] | D-260-C-C | **EF7430-000** |
| 2/0, 3/0 | .485-.590 [14.99-12.32] | 2.67 [67.8] | 2.10 [53.3] | D-260-C-D | **EF7431-000** |
| 4/0 | .590-.640 [14.99-16.26] | 3.10 [78.8] | 2.50 [63.5] | D-260-C-E | **EF7432-000** |



**DURABLE SPLICING**

- Resistant to most common aerospace fluids
- Flexible splice for long-term performance
- Immersion resistant, sealed cable splice with 360° shielding

**HIGH PERFORMANCE**

- Rated for 200°C continuous operating temperature
- Resists vibration and mechanical shock without loss of signal
- Splice allows bending without insulation cracking

**VERSATILE**

- Cables can be spliced with existing heating and crimping tools
- Additional sealing rings allow splicing 1 to 1, 2 to 1, and 2 to 2 constructions
- Works with shielded single, paired, and triple cables
- 26 AWG to 10 AWG wire range

# Raychem D-200 Flexible Splice Kit

Our D-200 flexible splice kit features environmentally resistant, high-temperature splices with EMI protection and flexibility.

### In-Line Splicing for Harsh Aerospace and Defense Applications

An important extension of the Raychem family of termination devices, the D-200 splice kit is specially designed for use in demanding high temperature aerospace and defense applications.

### Fast Installation and Lower Costs

Make in-line splices fast and easy with the D-200 flexible splice kit. Whether splicing shielded single, twisted pair, or trio cables, the D-200 splice kit creates a permanent, flexible, immersion-resistant splice for long-term reliable performance in the harshest environments. Easy installation with existing crimp and heating tools results in a lower total installed cost.


D-200-0232-RT


D-200-0233-RT


D-200-0237-RT

## STANDARDS AND TEST REPORT

- **SAE AMS-DTL-23053/13** (applies to insulation sleeve only)
- **SAE AS81824/11**
- **TE Performance Specification:** D-6203
- **TE Qualification Test Report:** ISTR-1404

## MATERIALS

- **Cable Sealing Sleeve**
  **Insulation Sleeve**: Heat-shrinkable fluoropolymer, black
  **Meltable Inserts**: Environment-resistant thermoplastic fluoroelastomer, light blue
- **SolderSleeve Device**
  **Insulation Sleeve**: Heat-shrinkable fluoropolymer, transparent blue
  **Solder Preform with Flux**: 96% tin per ANSI/J-STD-006. ROM1 per ANSI/J-STD-004
  **Meltable Insert**: Thermoplastic, blue
- **Crimp Splice**: Nickel-plated copper alloy
- **Sealing Splice Sleeve**: Heat-shrinkable fluoropolymer, containing two environment-resistant sealing rings, transparent blue
- **Meltable Insert**: Environment-resistant thermoplastic fluoroelastomer, light blue

## PHYSICAL PROPERTIES

- **Tensile Strength**: 75% min. of an unspliced cable
- **Vibration and Mechanical Shock**: Resistant without loss of signal
- **Temperature Range**: -55°C to 200°C

## CHEMICAL PROPERTIES

- **Immersion Resistance**: Resists most common aerospace fluids (e.g., fuels, oils, MPK, etc.)
- **Immersion Resistance Altitude**: 75,000 feet

## ELECTRICAL PROPERTIES

- **Voltage Drop**: Voltage drop across spliced conductors and shield do not exceed equivalent length of unspliced cable
- **Dielectric Strength**: 2500 V
- **Insulation Resistance**: 100 V

## TOOLING

- Steinel HL20XXE heat gun
- TE IR-550 infrared tool
- TE AD-1377 crimp tool
- TE 46447 crimp tool

| Number of Conductors | Wire Range (AWG) | Color Code | Part Description | Part Number |
|---|---|---|---|---|
| 1 | 26 – 20 | Red | D-200-0228-RT | CV7712-000 |
| | 20 – 16 | Blue | D-200-0230-RT | EG4031-000 |
| | 16 – 12 | Yellow | D-200-0232-RT | EG4032-000 |
| | 12 – 10 | None | D-200-0242-RT | EG3869-000 |
| 2 | 26 – 20 | Red | D-200-0233-RT | EG3678-000 |
| | 20 – 16 | Blue | D-200-0234-RT | CU1642-000 |
| | 16 – 12 | Yellow | D-200-0235-RT | EG3865-000 |
| | 12 – 10 | None | D-200-0249-RT | CW7956-000 |
| 3 | 20 – 16 | Blue | D-200-0237-RT | EG3867-000 |
| | 16 – 12 | Yellow | D-200-0238-RT | EG3868-000 |
| | 12 – 10 | None | D-200-0243-RT | CW7949-000 |

# Shielded Contacts



## Introduction

TE SolderTacts shielded contacts are designed to provide reliable, one-piece solder terminations for use with circular and rectangular connectors. These controlled soldering contacts help speed installation and reduce installed costs while eliminating the variables associated with hard-to-handle crimped terminations.

With TE's controlled soldering technology, the connections typically exceed the strength of the wire. Transparent insulation and inspection windows permit fully inspectable terminations.

SolderTacts products are available to terminate coaxial cable and twisted wire pairs in both military and commercial applications.



**ECONOMICAL**

- One-piece contact design with integrated soldering technology
- One-step installation process
- One contact fits multiple cable sizes
- No special tools required

**RELIABLE**

- 360° shielding reduces crosstalk and improves signal transmission
- Reflow solder joints are strong and reliable
- Controlled reflow soldering process yields reliable, consistent terminations
- Terminations are fully inspectable

**VERSATILE**

- Compatible with a variety of commercial and military connectors
- Termination available for coax cables, shielded pairs, twisted pairs, and triaxial cables
- 150°C temperature rating

# SolderTacts Shielded One-Piece Solder Contacts

One-piece controlled-reflow-solder SolderTacts contacts are designed to terminate coaxial cables, shielded wires and twisted pairs faster and more reliably than other methods. SolderTacts contacts help eliminate the variables of crimping. The one-step installation process helps cut down on production time while reducing handling and installed costs.

### Controlled Soldering and Strain Relief

SolderTacts contacts provide the optimum amount and type of solder and flux in a prefluxed solder preform that controls soldering and reduces operator sensitivity. The geometry of the coaxial cable is carried through the connector to eliminate separate pins, help reduce crosstalk, and supports improved shielding effectiveness and signal transmission.

These contacts contain two SolderSleeve terminations. One terminator connects the cable's signal conductor to the contact's inner pin. The other terminator connects the shield or ground lead to the contact body. When the contact is heated, the solder melts to provide a precise solder connection. SolderTacts contacts provide a simultaneous electrical connection and strain relief. Heat shrinkable tubing insulations help eliminate stress concentration on the wire within the contact.

### Improved Signal Integrity

For digital and RF signals, SolderTacts contacts offer better signal transmission than obtained with crimp contacts. They reduce crosstalk, signal attenuation, and reflections, while providing excellent protection against outside noise.

### Compatibility

SolderTacts contacts are compatible with a wide range of circular and rectangular military and commercial connectors, including MIL-DTL-38999, MIL-DTL-83723 and MIL-DTL-28748. Compatible with most standard connector cavities, SolderTacts contacts are intermateable and intermountable with contacts qualified to the above connector specifications. They use standard insertion and extraction tools.

## APPLICATION TOOLING

- **Steinel HL1920E or HL2020E**
- **Steinel HL1802E-074616**
- **Raychem CV-1981**
- **Raychem CV-1983**
- **Raychem AA-400**

For more details, please see TE Application Tooling brochure 1-1773872-1

## SPECIFICATION

- **D-6002:** SolderTacts Military-Grade Electrical Contacts for Solder Termination

## APPLICATIONS

- **Commercial Aerospace**
- **Military Aerospace**
- **C4ISR**
- **Ground Defense**
- **Military Marine**
- **Missile Defense**
- **Offshore/Civil Marine**
- **Space**

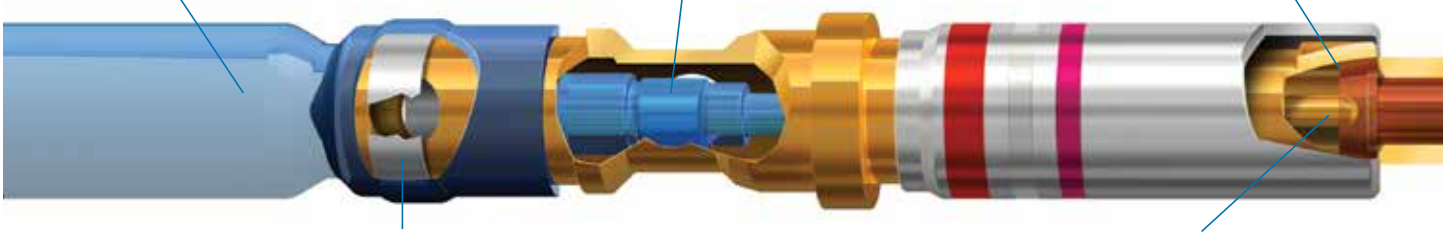




The outer SolderSleeve termination is a cross-linked heat-shrinkable insulating sleeve supplied in the expanded state. Cables insert easily, with no spacers or other parts required.

The inner SolderSleeve termination is a heat-shrinkable sleeve with a precisely prefluxed solder preform conforming to QQ-S-571.

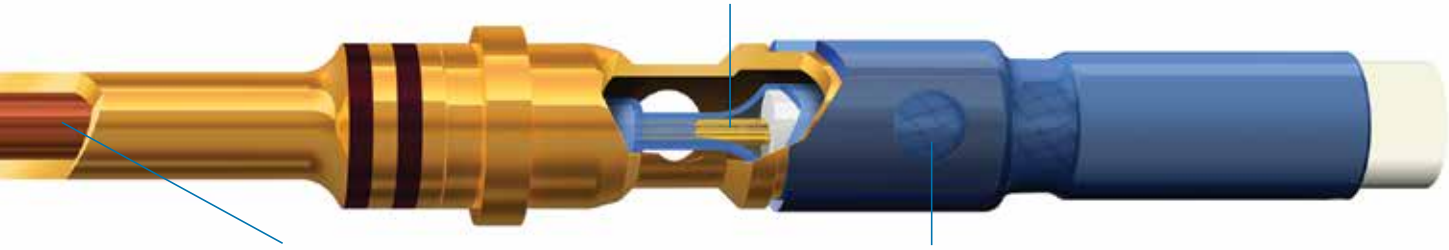
The precision outer body meets electrical engagement and contact retention requirements of individual connector systems.



The outer solder preform contains precise amounts of solder and flux conforming to QQ-S-571.

Inner pin and socket contacts are permanently fixed within the assembly to provide proper setback and concentricity.

| SolderTact Series | Part No. (D-602-) | Engineering Standard (Termination Instructions) | Repair Wand | |
|---|---|---|---|---|
| | | | Part No. | Part Description |
| Submin | 0218, 0219 | ES-61170 | 959014-000 | AD-1481-SUBMN-SLDTK-HOLDR |
| | 0238, 0239 | ES-61169 | | |
| 748 | 44, 45 | ES-61133 | 994040-000 | AD-1480 |
| | 0172, 0173 | ES-61240 | | |
| | 54, 55 | ES-61132 | | |
| | 0126, 0127 | ES-61199 | | |
| | D-610-09, -10 | ES-61187 | 551737-000 | AD-1571-1-POWERTACT-HOLDR |
| 723 | 0094, 0095 | ES-61128 | 994057-000 | AD-14940723-SLTC-HLD-ASY |
| | 0106, 0107 | ES-61134 | | |
| | 0104, 0105 | ES-61129 | | |
| No. 12 | 16, 17 | ES-61161 | 966800-000 | AD-1508-REP-FOR-12-CONT |
| 482 | 46, 47 | ES-61137 | 181779-000 | AD-1565-1-SLDTCT-HLDR-ASY |
| | 56, 57 | ES-61138 | | |
| 999 Size 16 | 0140, 0141 | ES-61226 | 859747-000 | AD-1572-1-SOLD-HOLDER-ASY |
| | 0142, 0143 | ES-61224 | | |
| | 0171 | ES-61226 | | |
| | 0174 | ES-61124 | | |
| 999 Size 12 | 0144, 0145 | ES-61206 | 122917-000 | AD-1566-1-HOLDER-ASSEMBLY |
| | 0146, 0147 | ES-61218 | | |
| | 0159/0151 | ES-61223 | | |
| 999 Size 8 | 1108/1109 | ES-61172 | 635308-000 | AD-1568-1-SOLDERTACT-HLDR |
| | 1110/1111 | | | |
| | 1112/1113 | ES-61184 | | |
| | 0156/0157-X | ES-61231 | | |
| | 0169/0170-X | ES-61235 | | |





## Table I: SolderTacts Contacts-to-Cable Cross Reference

| | Submin Series | 723 Series Size 12 | 723 Series Size 12 | 748 Series Size 16 | 748 Series Size 16 | 847 Series Size 16 | 748 Series Size 16 |
|---|---|---|---|---|---|---|---|
| | D-602-0278<br>D-602-0279 | D-602-0094<br>D-602-0095 | D-602-0106<br>D-602-0107 | D-602-44<br>D-602-45 | D-602-0172<br>D-602-0173 | D-602-72<br>D-602-73 | D-602-76<br>D-602-77 |
| **Cheminax Coaxial Cables** | | | | | | | |
| 5021K1X1X | | | | | | | |
| 5022A1X1X | | | | | | | |
| 5024A1X1X | ✔ | ✔ | | | | | |
| 5026A1X1X | ✔ | | | ✔ | | ✔ | ✔ |
| 5026D1X2X | ✔ | | | ✔ | | ✔ | ✔ |
| 5028A1X1X | ✔ | | | | | | |
| 5028A1X2X | ✔ | | | | | | |
| 5030A1X1X | ✔ | | | ✔[4] | ✔ | ✔ | ✔ |
| 7522A1X1X | | | | | | | |
| 7524A1X1X | | | | | | | |
| 7528A1X1X | ✔ | ✔ | | ✔[4] | ✔ | ✔ | ✔ |
| 7530A1X1X | ✔ | | | ✔[4] | ✔ | ✔ | ✔ |
| 7530D1X2X | | | | | | | |
| 9526A1X1X | | | | | | | |
| 9528A1X1X | | | ✔ | | | | |
| 9528D1X2X | | | ✔ | | | | |
| 9530A1X1X | | ✔ | | | | | |
| 9530H1X1X | ✔ | ✔ | | | | | |
| 9532A1X1X | ✔ | ✔ | | ✔[4] | ✔ | ✔ | ✔ |
| **RG/U Coaxial Cables** | | | | | | | |
| RG-58 | | | | | | | |
| RG-174 | ✔ | ✔ | | ✔ | | ✔ | ✔ |
| RG-178 | ✔ | ✔ | | ✔[1] | ✔ | ✔[1] | ✔[1] |
| RG-179 | ✔ | ✔ | | ✔ | ✔ | ✔ | ✔ |
| RG-180 | | | ✔ | | | | |
| RG-195 | | | ✔ | | | | |
| RG-316 | ✔ | ✔ | | ✔ | | ✔ | ✔ |
| **Twisted Pair Cables** | | | | | | | |
| | **Submin Series** | **723 Series Size 12** | **723 Series Size 12** | **748 Series Size 16** | **748 Series Size 16** | **847 Series Size 16** | **748 Series Size 16** |
| | D-602-0288<br>D-602-0289 | D-602-0104<br>D-602-0105 | – | D-602-54<br>D-602-55 | D-602-0126<br>D-602-0127 | D-602-74<br>D-602-75 | – |
| 22-26 | | | | | ✔ | | |
| 24-26 | | ✔ | | | | | |
| 24-30[3] | ✔[2] | | | ✔ | | ✔ | |
| 26-30[3] | | | | | | | |

1. Requires use of barrier.
2. .048" maximum insulation diameter.
3. Smaller cables can be accommodated. Consult product management.
4. These cables can be accommodated by D-602-44 and D-602-45. However, the D-602-0172 and the D-602-0173 are preferred for these cables.

The cross reference list above is not intended to be exhaustive. Please consult TE.



## Table I: SolderTacts Contacts-to-Cable Cross Reference

| | 482 Series Size 16 | No. 12 Size 12 | 999 Series Size 8 | 999 Series Size 12 | 999 Series Size 12 | 999 Series Size 16 |
|---|---|---|---|---|---|---|
| | D-602-46<br>D-602-47 | D-602-16<br>D-602-17 | D-602-0122<br>D-602-0123 | D-602-0144<br>D-602-0145 | D-602-0150<br>D-602-0151 | D-602-0140<br>D-602-0141<br>D-602-0171 |
| **Cheminax Coaxial Cables** | | | | | | |
| 5021K1X1X | | | ✔ | | | |
| 5022A1X1X | | | ✔ | | ✔ | |
| 5024A1X1X | | ✔ | | ✔ | | |
| 5026A1X1X | ✔ | ✔ | | ✔ | | ✔ |
| 5026D1X2X | ✔ | ✔ | | | | ✔ |
| 5028A1X1X | | | | | | ✔ |
| 5028A1X2X | | ✔ | | | | |
| 5030A1X1X | ✔ | ✔ | | | | ✔ |
| 7522A1X1X | | | ✔ | | | |
| 7524A1X1X | | | ✔ | | | |
| 7528A1X1X | ✔ | ✔ | | ✔ | | ✔ |
| 7530A1X1X | ✔ | ✔ | | ✔ | | ✔ |
| 7530D1X2X | | ✔ | | | | |
| 9526A1X1X | | | ✔ | | | |
| 9528A1X1X | | | ✔ | | ✔ | |
| 9528D1X2X | | | ✔ | | ✔ | |
| 9530A1X1X | | | | ✔ | | |
| 9530H1X1X | | ✔ | | ✔ | | |
| 9532A1X1X | ✔ | ✔ | | ✔ | | |
| **RG/U Coaxial Cables** | | | | | | |
| RG-58 | | | ✔ | | | |
| RG-174 | ✔ | ✔ | | ✔ | | |
| RG-178 | ✔ | | | | | ✔ |
| RG-179 | ✔[1] | ✔ | | ✔ | | ✔ |
| RG-180 | | | ✔ | | ✔ | |
| RG-195 | | | ✔ | | | |
| RG-316 | ✔ | ✔ | | ✔ | | ✔ |
| **Twisted Pair Cables** | | | | | | |
| | **482 Series Size 16** | **No. 12 Size 12** | **999 Series Size 8** | **999 Series Size 12** | **999 Series Size 12** | **999 Series Size 16** |
| | D-602-56<br>D-602-57 | – | – | D-602-0146<br>D-602-0147 | – | – |
| 22-26 AWG | | | | ✔ | | |
| 24-26 | | | | | | |
| 24-30[3] | ✔ | | | | | |
| 26-30[3] | | | | | | ✔ |

1. Requires use of barrier.
2. .048" maximum insulation diameter.
3. Smaller cables can be accommodated. Consult product management.
4. These cables can be accommodated by D-602-44 and D-602-45. However, the D-602-0172 and the D-602-0173 are preferred for these cables.

The cross reference list above is not intended to be exhaustive. Please consult TE.



## Table II: Connector Accommodation: SolderTacts Shielded Contacts

| Military Specification | SolderTacts Contacts Series/Contact Size | Specification | Cable Type | Contact Type | Part No. |
|---|---|---|---|---|---|
| NAS 1599<br>MIL-DTL-26482<br>Series II<br>SAE-AS81703<br>Series III<br>MIL-DTL-83723<br>Series I & III<br>MIL-DTL-83733 | 723 Series<br>Size 12 Contact | AS39029/74 | Small Coaxial | Pin | D-602-0094 |
| | | AS39029/73 | Small Coaxial | Socket | D-602-0095 |
| | | AS39029/74 | Large Coaxial | Pin | D-602-0106 |
| | | AS39029/73 | Large Coaxial | Socket | D-602-0107 |
| | | AS39029/74 | Twisted Pair | Pin | D-602-0104 |
| | | AS39029/73 | Twisted Pair | Socket | D-602-0105 |
| MiL-DTL-26482<br>Series I<br>MIL-DTL-26500<br>MIL-PRF-81733<br>Series II | No. 12 Series<br>Size 12 Contact | MIS-20067<br>(Army) | Coaxial | Pin | D-602-17 |
| | | | Coaxial | Socket | D-602-16 |
| | 482 Series<br>Size 16 Contact | | Coaxial | Pin | D-602-46 |
| | | | Coaxial | Socket | D-602-47 |
| | | | Twisted Pair | Pin | D-602-56 |
| | | | Twisted Pair | Socket | D-602-57 |
| MIL-DTL-<br>28748/3,4,9,10<br>MIS-20065 (Army) | 748 Series<br>Size 16 Contact | MIS20067<br>(Army) | Coaxial | Pin | D-602-44 |
| | | | Coaxial | Socket | D-602-45 |
| | | | Twisted Pair | Pin | D-602-54 |
| | | | Twisted Pair | Socket | D-602-55 |
| | | | Power | Pin | D-610-09 |
| | | | Power | Socket | D-610-10 |
| | | | Coaxial | Pin | D-602-0173 |
| | | | Coaxial | Socket | D-602-0172 |
| | | | Twisted Pair (MIL-STD-1553) | Pin | D-602-0126 |
| | | | Twisted Pair | Socket | D-602-0127 |
| MIL-DTL-38999<br>Series I, II*, III, IV | 999 Series<br>Size 16 Contact | AS39029/76 | Coaxial | Pin | D-602-0140 |
| | | AS39029/77 | Coaxial | Socket | D-602-0141 |
| | | AS39029/77 | Coaxial* | Socket | D-602-0171 |
| | | AS39029/76 | Twisted Pair | Pin | D-602-0142 |
| | | AS39029/77 | Twisted Pair | Socket | D-602-0143 |
| | | AS39029/77 | Twisted Pair* | Socket | D-602-0174 |
| | 999 Series<br>Size 12 Contact | AS39029/28 | Coaxial | Pin | D-602-0144 |
| | | AS39029/75 | Coaxial | Socket | D-602-0145 |
| | | AS39029/28 | Twisted Pair | Pin | D-602-0146 |
| | | AS39029/75 | Twisted Pair | Socket | D-602-0147 |
| | | AS39029/28 | Large Coaxial | Pin | D-602-0150 |
| | | AS39029/75 | Large Coaxial | Socket | D-602-0151 |
| | 999 Series<br>Size 8 Contact | AS39029/60 | Coaxial | Pin | D-602-0122 |
| | | AS39029/59 | Coaxial | Socket | D-602-0123 |
| | | USAF8340712-1^ | Shielded Twisted Pair (MIL-STD-1553) | Socket | D-602-1108 |
| | | USAF8340713-1^ | Shielded Twisted Pair (MIL-STD-1553) | Pin | D-602-1109 |
| | | USAF8340712-2^ | Shielded Twisted Pair (MIL-STD-1553) | Socket | D-602-1112 |
| | | USAF8340713-2^ | Shielded Twisted Pair (MIL-STD-1553) | Pin | D-602-1113 |
| | | | Triaxial | Socket | D-602-1110 |
| | | | Triaxial | Pin | D-602-1111 |
| — | Submin Series<br>Size 16 | | Coaxial | Pin | D-602-0278 |
| | | | Coaxial | Socket | D-602-0279 |
| | | | Twisted Pair | Pin | D-602-0288 |
| | | | Twisted Pair | Socket | D-602-0289 |

* Size 16 contacts only for use with MTCP and MIL-DTL-38999 Series II connectors only.
^ Intermountable and intermatable, replaces crimp style termination.



## Table III: SolderTacts Contact Compatibility

| Contact Military Specification | TE Equivalent* Part Numbers | Nature of Compatibility | SolderTacts - Compatible Connector Specifications | SolderTact Series |
|---|---|---|---|---|
| M39029/73-396<br>M39029/73-397<br>M39029/73-398<br>M39029/73-555 | D-602-0107<br>D-602-0095<br>D-602-0105<br>D-602-0093 | Equivalent product.<br>TE is a qualified vendor. | MIL-DTL-26482 Series II<br>MIL-DTL-81703 Series III<br>MIL-DTL-83723 Series I, III<br>MIL-DTL-83733<br>NAS-1599 | 723<br>Series |
| M39029/74-399<br>M39029/74-400<br>M39029/74-401 | D-602-0106<br>D-602-0094<br>D-602-0104 | | | |
| M39029/28 | D-602-0144<br>D-602-0146<br>D-602-0150 | Intermountable and intermatable.<br>Replaces crimp-style termination. | MIL-DTL-38999 Series I, II*, III, IV<br>*Size 16 only | 999<br>Series |
| M39029/59 | D-602-0123 | | | |
| M39029/60 | D-602-0122 | | | |
| M39029/75 | D-602-0145<br>D-602-0147<br>D-602-0151 | | | |
| M39029/76 | D-602-0140<br>D-602-0142 | | | |
| M39029/77 | D-602-0141<br>D-602-0143<br>D-602-0171<br>D-602-0174 | | | |
| M39029/90 | DK-602-0156-N-X<br>DK-602-0169-N-X | Intermountable and intermatable.<br>Replaces crimp-style termination. | | |
| M39029/91 | DK-602-0157-N-X<br>DK-602-0170-N-X | | | |
| USAF8340712-1<br>USAF8340712-2<br>USAF8340713-1<br>USAF8340713-2 | D-602-1108<br>D-602-1112<br>D-602-1109<br>D-602-1113 | Equivalent product.<br>TE is a qualified vendor. | | |
| M39029/25<br>M39029/26 | D-602-17<br>D-602-16 | Intermountable and intermatable.<br>Replaces crimp-style termination. | MIL-DTL-26482 Series I<br>MIL-DTL-26500<br>MIL-DTL-81703 Series II | No. 12<br>Series |
| MIS20067/5<br>MIS20067/6 | D-602-16<br>D-602-17 | Equivalent product.<br>TE is a qualified vendor. | | |
| M39029/40<br>M39029/41<br>M39029/42<br>M39029/43 | D-602-76<br>D-602-77<br>D-602-77<br>D-602-76 | Intermountable and intermatable.<br>Replaces crimp-style termination. | MIL-DTL-28748/3, /4, /9, /10 | 748<br>Series |
| M39029/79 | D-602-72<br>D-602-74 | Intermountable and intermatable.<br>Replaces crimp-style termination. | MIS-20065 (Army) | 847<br>Series |
| M39029/80 | D-602-73<br>D-602-75 | | | |
| MIS20067/1<br>MIS20067/2<br>MIS20067/3<br>MIS20067/4<br>MIS20067/7<br>MIS20067/8 | D-602-45<br>D-602-44<br>D-602-55<br>D-602-54<br>D-610-10<br>D-610-09 | Equivalent products.<br>TE is a qualified vendor. | | 748<br>Series |
| | D-602-77<br>D-602-76<br>D-602-76<br>D-602-77 | Intermountable and intermatable.<br>Replaces crimp-style termination. | | 748<br>Series |
| | D-602-0278<br>D-602-0279<br>D-602-0288<br>D-602-0289 | Intermountable and intermatable.<br>Replaces crimp-style termination. | Souriau Trim Trio Connector Family | Submin<br>Series |

* SolderTacts contacts are intermatable and interchangeable with existing MIL-spec contacts.

# Additional Repair Products



**MATCHED IMPEDANCE**
- Maintains cable's electrical properties
- Meets MIL-PRF-32517 performance requirements
- Matches cable's impedance +10%/-3%

**TIME AND COST SAVING**
- Repairs made in situ
- No need to remove or replace cable

**SEALED**
- Heat-shrinkable outer layer plus thermoplastic adhesive for sealing and strain relief

**ROBUST**
- Withstands high vibration
- Corrosion resistant
- Wide temperature range
- Excellent fluid resistance
- Suitable for high EMI environments

**APPLICATIONS**
- Military Aerospace
- Commercial Aerospace

## Raychem Matched Impedance Splices

With the matched impedance splice, TE Connectivity (TE) solves the problem of costly removal and replacement of damaged coaxial cable. Not only does the new splice allow fast, easy repair of the cable in situ, it maintains the characteristic impedance and other electrical properties. System performance is not affected by the repair.

### Save Time and Money

Removing and replacing a damaged coaxial cable can be time consuming and expensive. The matched impedance splice's ability to be applied without removing the cable can significantly speed the repair, saving time and cost.

### Simple and Effective

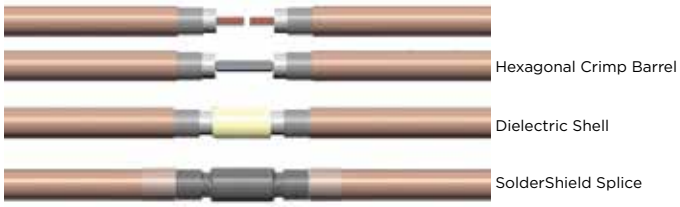
The splice contains three components: a hexagonal crimp barrel for the center conductors, a dielectric shell that helps maintain cable geometry for impedance control, and a SolderShield splice that both terminates the cable's shield and provides sealing to protect the splice environmentally.

The SolderShield splice uses a flux-coated, solder-impregnated copper shield inside an adhesive-lined, heat-shrinkable sleeve. The completed assembly provides an environmentally sealed termination and strain relief.

### Part Numbers

| Cable Type | Part Number |
|---|---|
| RG-393 | D-150-Z393 |






## Specifications

### Electrical

| | |
|---|---|
| **Impedance:** | MIL-PRF-32517 |
| **Insertion Loss:** | MIL-PRF-32517 |
| **Return Loss:** | MIL-PRF-32517 |
| **Insulation Resistance:** | 5000 MΩ |

### Environmental/Mechanical

| | |
|---|---|
| **Altitude Immersion:** | 75,000 ft |
| **Heat Aging:** | 750 hr. at +165°C |
| **Temperature Range:** | -55° C to 150°C |

### Cable Compatibility

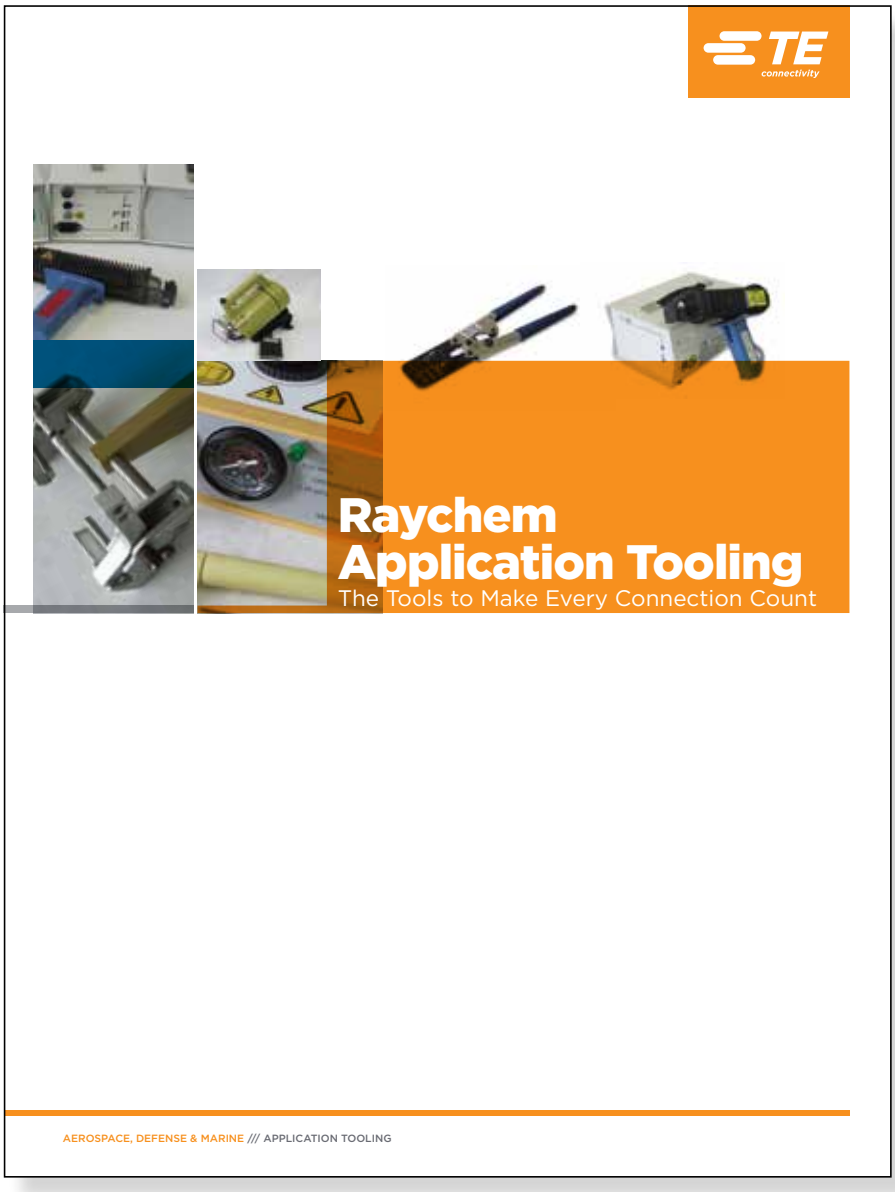
| | |
|---|---|
| **Cable Types:** | RG-393 |

### TE Specifications

| | |
|---|---|
| **Application Specification:** | D-6204 |
| **Product Specification:** | D-6204 |
| **Qualification Test Reports:** | HT4203 (for D-150-Z393) |
| **Installation Instructions:** | RPIP-1108 |

# Raychem Application Tooling

Lit #1-1773872-1





## Notes



## Notes

## LET'S CONNECT

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Consult TE for the latest dimensions and design specifications.

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1-2355088-5 RP73D2A6K34BTG RP73PF1E76K8BTDF RT4S4S15 13611919 1393230-7 T1619101220-000 RP73PF1E53R6BTDF RP73PF1J69K8BTDF RQ73C2A1K05BTDF T4051310003-005 TLR3A10ER004FTDG 170095-1 2108891-1 7-160433-8 CPF0603B5K62E1 THS50150RJ CPF0201B1K82E1 CPF0603B19K6E1 MRSSV0DR10SMGWTR ROX05SJ3R9 RT114018 2299806-1 AVH22MSSFE17121604 RN73C2A26K1BTDF T41513C9L14-007 1SNK505061R0000 35408R2FT CPF0201B147RE1 RQ73C2A90R9BTDF