
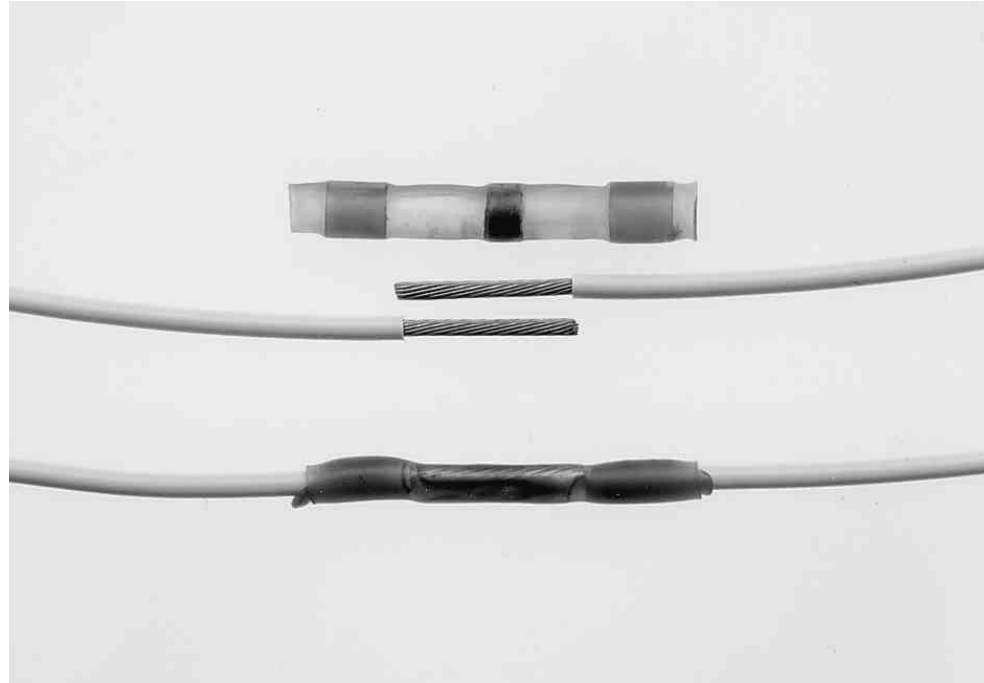


## SolderSleeve Wire Splices

### Product Facts

- Transparent polyvinylidene fluoride or polyolefin sleeve provides encapsulation, inspectability, strain relief, and insulation
- Prefluxed solder preform provides a controlled soldering process
- One-piece design makes installation easy and lowers the installed cost
- With one or two wires per end, the NAS 1744 splices meet 75,000 ft [22,000 m] altitude immersion requirement
- Thermochromic temperature indicator in the NAS splices facilitates termination and inspection
- UL and CUL recognized 



### Applications

In-line wire splices.

### Product Options

Product Series	Minimum Wire Temperature Rating	Maximum Operating Temperature	Intended Application Environment
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 Tyco Electronics for details.

### Product Selection Process

From the Product Options table above, 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 CWT series (low temperature): Use Table A on page 8-7.

- For D-110 series (splashproof): Use Table B on page 8-8.

- For D-1744 series (immersion sealed): Use Table C on page 8-9.

**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<sup>2</sup> sizes):

1. Turn to "CMA/mm<sup>2</sup> Calculation" on page 8-10 and use the workspace there to calculate the total cross section to be spliced.
2. Use Table E on page 8-11 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<sup>2</sup>) 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<sup>2</sup>) and smaller is covered on page 8-8.

#### Available in:

- Americas ■
- Europe ■
- Asia Pacific ■

**SolderSleeve Wire Splices** (Continued)

**Table A:**  
**CWT Series Selection**

Side A:		Side B: Size and Number of Conductors							
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	CWT-9001	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	CWT-9003	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	CWT-9005
10 AWG	1	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005	CWT-9005

Side A:		Side B: Size and Number of Conductors								
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	CWT-9005

**SolderSleeve Wire Splices** (Continued)

**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 mm<sup>2</sup>) 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 mm<sup>2</sup>].

\*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.

**SolderSleeve Wire Splices** (Continued)

**Table C:**  
**D-1744 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-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: Size and Number of Conductors							
		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-1744-03	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/mm<sup>2</sup> Calculation**

**SolderSleeve Wire Splices (Continued)**

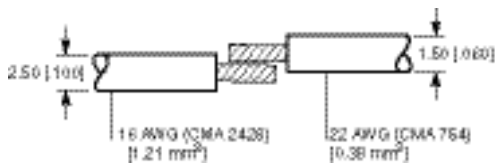
To calculate the total circular mil or mm<sup>2</sup> area of the conductors to be terminated in a single splice, follow these steps:

1. Choose either CMA or mm<sup>2</sup> 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 mm<sup>2</sup> 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 mm<sup>2</sup> you have calculated.
5. Refer to the examples on this page for further clarification.

Wire Number	CMA	mm <sup>2</sup>	
1	_____	_____	
2	_____	_____	
3	_____	_____	
4	_____	_____	
5	_____	_____	
<b>Total</b>	_____	_____	<b>Part Number:</b> _____

**CMA/mm<sup>2</sup> Examples**

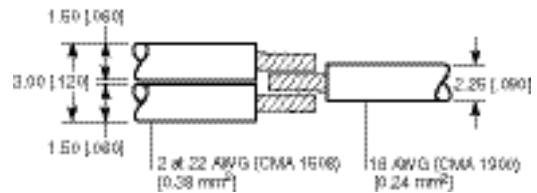
**One-to-One Wire Splice**



**Total CMA = 3180**  
**Total mm<sup>2</sup> = 1.59**

Correct part number selection from Table E (based on CMA/mm<sup>2</sup> and nominal jacket wire OD) = CWT-9002 or D-110-41 or D-1744-02.

**Multiwire Splice**



**Total CMA = 3408**  
**Total mm<sup>2</sup> = 1.71**

Correct part number selection from Table E (based on CMA/mm<sup>2</sup> and nominal jacket wire OD) = CWT-9003 or 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
mm <sup>2</sup>	0.09	0.15	0.24	0.38	0.61	0.95	1.21	1.92	2.94

**Installation Requirements**

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

- HL1802E
- IR-1759 MiniRay
- AA-400 Super Heater
- CV-1981

Refer to Raychem installation procedure RPIP 850-00 for D-1744 Series and RPIP 824-00 for CWT Series.

You will find ordering information for these tools in Section 10.

**Table E:  
Multiwire Splice Selection**

Product Series	Wire Jacket OD		GMA Combined Total		mm <sup>2</sup> Combined Total	
	Min.	Max.	Min.	Max.	Min.	Max.
CWT-9001	0.4 [0.015]	1.7 [0.066]	450	1500	0.3	1.8
CWT-9002	1.3 [0.05]	2.7 [0.106]	1250	3500	0.8	2.0
CWT-9003	1.8 [0.07]	4.5 [0.18]	2500	7200	2.0	4.0
CWT-9004	2.8 [0.11]	6.0 [0.236]	6100	19000	4.0	6.0
CWT-9005	3.2 [0.125]	7.0 [0.275]	12000	25000	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 (CWT)	Radiation-crosslinked, heat-shrinkable polyolefin
Solder and flux (D-110, D-1744)	Solder: Sn63 Pb37 Flux: ROL1 per ANSI-J-004 (RMAflux)
Solder and flux (CWT)	Solder: Sn50 Pb32 Cd18 Flux: ROM1 per ASNS-J-004 (RAflux)
Melttable inserts (CWT, D-1744)	Melttable thermoplastic
Typical Performance	
Voltage drop	2.0 mV
Tensile strength	Exceeds strength of conductor
Dielectric strength	2.0 kV
Temperature rating (CWT)	-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

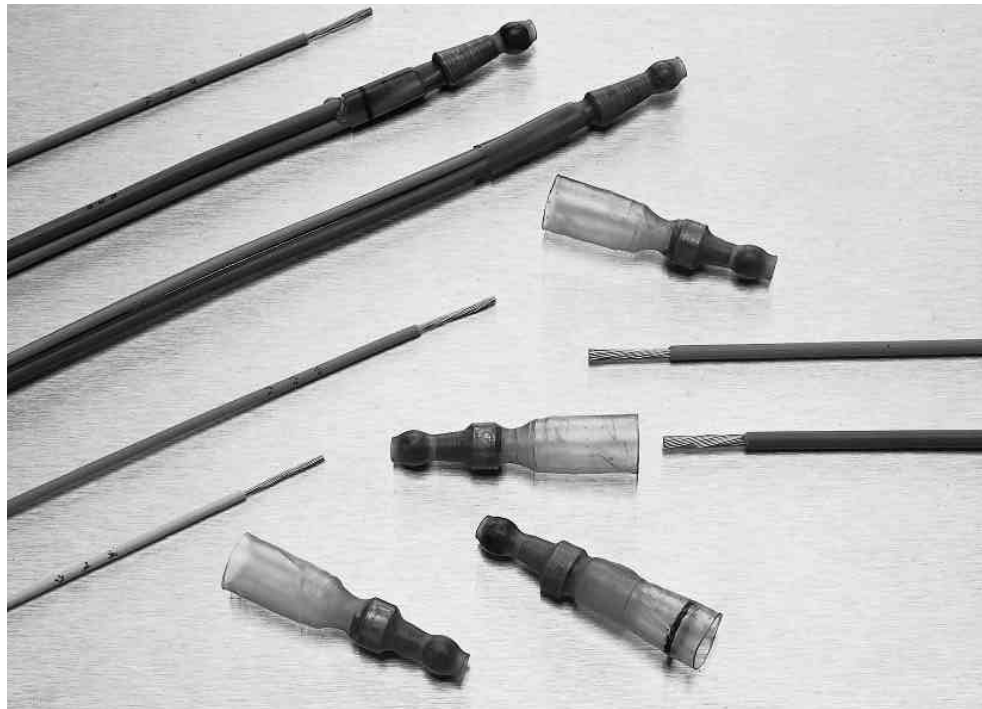
**Specifications/Approvals**

Series	Agency	Raychem
CWT	ULE87681	D-5023
D-110	ULE87681	RT-1404
D-1744	NAS-1744	RT-1404

**Product Facts**

- Soldered connection
- Electrical insulation
- Sealed for immersion (SGRS)
- Excellent strain relief
- Simple installation

**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 multistranded, 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	Sealed	125°C [257°F]

**Available in:**

- Americas ■
- Europe ■
- Asia Pacific ■

**SolderGrip Closed End Connector Splices** (Continued)

**Product Selection Process**

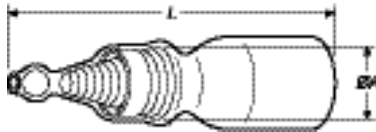
1. From the Product Options table on the previous page, select the product series appropriate for your application.
2. Determine the wire combination (number of wires and size) of the wire bundle you wish to splice.
3. Use Table C (page 8-15) to select the correct connector for AWG wire combinations.\*  
For mm<sup>2</sup> 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.

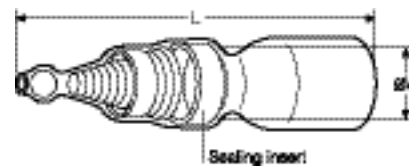
\*If the wire combination is not listed in Table C, use the CMA (mm<sup>2</sup>) method of determining wire bundle size (see "CMA/mm<sup>2</sup> Calculation" on page 8-14). Using Table B (page 8-14), select the smallest size connector that will fit your total wire CMA(mm<sup>2</sup>) value.

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 as specified in Table A.

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.)			Part No.	Color Code	Product Dimensions (Min.)		
		L	ØA	Wire Range (Min.-Max.) CMA/mm <sup>2</sup>			L	ØA	Wire Range (Min.-Max.) CMA/mm <sup>2</sup>
SGRP-1	Green	1.370 [34.8]	.120 [2.9]	1400 - 4800 [0.7 - 2.4]	SGRS-1	Green	1.370 [34.8]	0.130 [3.4]	1400 - 4800 [0.7 - 2.4]
SGRP-2	Red	1.350 [34.2]	.150 [3.7]	4000 - 8000 [2.0 - 4.0]	SGRS-2	Red	1.350 [34.2]	0.190 [4.8]	4000 - 8000 [2.0 - 4.0]
SGRP-3	Blue	1.610 [41.0]	.200 [5.1]	7000 - 18000 [3.5 - 8.0]	SGRS-3	Blue	1.650 [42.0]	0.290 [7.3]	7000 - 16000 [3.5 - 8.0]
SGRP-4	Yellow	1.650 [42.0]	.270 [6.8]	15000 - 30000 [7.5 - 12.0]	SGRS-4	Yellow	1.630 [41.5]	0.360 [9.1]	15000 - 24000 [7.5 - 12.0]



### CMA/mm<sup>2</sup> Calculation

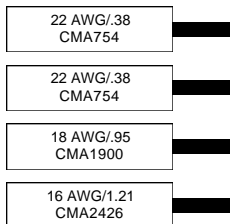
### SolderGrip Closed End Connector Splices (Continued)

To calculate the total circular mil or mm<sup>2</sup> area of the wire bundle to be terminated, follow these steps:

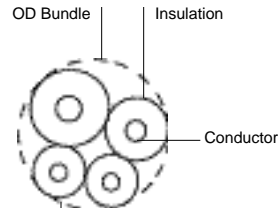
1. Choose either CMA or mm<sup>2</sup> as your unit of measure for selection purposes and continue to use it for all your selection criteria. (Both measures provide the same results.)
2. In the workspace below, list the CMA or mm<sup>2</sup> for each conductor in the bundle. (Table B provides the CMA 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 (mm<sup>2</sup>).

Wire Number	CMA	mm <sup>2</sup>	
1	_____	_____	
2	_____	_____	
3	_____	_____	
4	_____	_____	
5	_____	_____	
6	_____	_____	
7	_____	_____	
8	_____	_____	
9	_____	_____	
10	_____	_____	
<b>Total</b>	_____	_____	<b>Solder Grip Part No.</b> _____

### CMA/mm<sup>2</sup> Example



Total CMA= 5834  
 Total mm<sup>2</sup> = 2.92  
 Correct part number (based on CMA of 5834 or mm<sup>2</sup> of 2.92): SGRP-2 or SGRS-2



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

**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
mm <sup>2</sup>	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	Wire Combinations	Splash-proof	Sealed	Wire Combinations	Splash-proof	Sealed
1 # 8 + 1 # 12	SGRP-4	SGRS-4	1 # 14 + 3 # 20	SGRP-2	SGRS-2	2 # 16 + 1 # 18 + 3 # 20	SGRP-3	SGRS-3
1 # 8 + 1 # 16	SGRP-4	SGRS-4	1 # 14 + 4 # 20	SGRP-3	SGRS-3	2 # 16 + 1 # 18 + 2 # 20	SGRP-3	SGRS-3
2 # 8 + 2 # 16	SGRP-4	SGRS-4	1 # 14 + 1 # 18	SGRP-2	SGRS-2	2 # 16 + 1 # 18 + 1 # 20	SGRP-2	SGRS-2
1 # 8 + 1 # 14	SGRP-4	SGRS-4	1 # 14 + 1 # 18 + 1 # 20	SGRP-2	SGRS-2	2 # 16 + 1 # 18	SGRP-2	SGRS-2
1 # 8 + 1 # 14 + 1 # 16	SGRP-4	SGRS-4	1 # 14 + 2 # 18	SGRP-2	SGRS-2	2 # 16 + 4 # 20	SGRP-3	SGRS-3
1 # 10 + 1 # 18	SGRP-3	SGRS-3	1 # 14 + 3 # 18	SGRP-3	SGRS-3	2 # 16 + 3 # 20	SGRP-3	SGRS-3
1 # 10 + 2 # 18	SGRP-3	SGRS-3	1 # 14 + 4 # 18	SGRP-3	SGRS-3	2 # 16 + 2 # 20	SGRP-2	SGRS-2
1 # 10 + 3 # 18	SGRP-3	SGRS-3	1 # 14 + 5 # 18	SGRP-3	SGRS-3	2 # 16 + 1 # 20	SGRP-2	SGRS-2
1 # 10 + 1 # 16	SGRP-3	SGRS-3	1 # 14 + 1 # 16	SGRP-2	SGRS-3	2 # 16	SGRP-2	SGRS-2
1 # 10 + 1 # 16 + 1 # 18	SGRP-3	SGRS-3	1 # 14 + 1 # 16 + 1 # 20	SGRP-2	SGRS-2	1 # 16 + 5 # 18	SGRP-3	SGRS-3
1 # 10 + 1 # 16 + 2 # 18	SGRP-3	SGRS-3	1 # 14 + 1 # 16 + 1 # 18	SGRP-3	SGRS-3	1 # 16 + 4 # 18 + 1 # 20	SGRP-3	SGRS-3
1 # 10 + 2 # 16	SGRP-3	SGRS-3	1 # 14 + 1 # 16 + 2 # 18	SGRP-3	SGRS-3	1 # 16 + 4 # 18	SGRP-3	SGRS-3
1 # 10 + 3 # 16	SGRP-4	SGRS-4	1 # 14 + 1 # 16 + 3 # 18	SGRP-3	SGRS-3	1 # 16 + 3 # 18 + 2 # 20	SGRP-3	SGRS-3
1 # 10 + 4 # 16	SGRP-4	SGRS-4	1 # 14 + 1 # 16 + 4 # 18	SGRP-3	SGRS-3	1 # 16 + 3 # 18 + 1 # 20	SGRP-3	SGRS-3
1 # 10 + 5 # 16	SGRP-4	SGRS-4	1 # 14 + 2 # 16	SGRP-3	SGRS-3	1 # 16 + 2 # 18 + 3 # 20	SGRP-3	SGRS-3
1 # 10 + 1 # 14	SGRP-3	SGRS-3	1 # 14 + 2 # 16 + 1 # 18	SGRP-3	SGRS-3	1 # 16 + 2 # 18 + 1 # 20	SGRP-2	SGRS-2
1 # 10 + 1 # 14 + 1 # 18	SGRP-3	SGRS-3	1 # 14 + 2 # 16 + 2 # 18	SGRP-3	SGRS-3	1 # 16 + 2 # 18	SGRP-2	SGRS-2
1 # 10 + 1 # 14 + 1 # 16	SGRP-3	SGRS-3	1 # 14 + 2 # 16 + 3 # 18	SGRP-3	SGRS-3	1 # 16 + 1 # 18 + 4 # 20	SGRP-3	SGRS-3
1 # 10 + 1 # 14 + 2 # 16	SGRP-3	SGRS-3	1 # 14 + 3 # 16	SGRP-3	SGRS-3	1 # 16 + 1 # 18 + 3 # 20	SGRP-2	SGRS-2
1 # 10 + 1 # 14 + 3 # 16	SGRP-4	SGRS-4	1 # 14 + 3 # 16 + 1 # 18	SGRP-3	SGRS-3	1 # 16 + 1 # 18 + 2 # 20	SGRP-2	SGRS-2
1 # 10 + 2 # 14	SGRP-4	SGRS-4	1 # 14 + 3 # 16 + 2 # 18	SGRP-3	SGRS-3	1 # 16 + 1 # 18 + 1 # 20	SGRP-2	SGRS-2
1 # 10 + 3 # 14	SGRP-4	SGRS-4	1 # 14 + 4 # 16	SGRP-3	SGRS-3	1 # 16 + 1 # 18	SGRP-1	SGRS-1
1 # 10 + 1 # 12	SGRP-3	SGRS-3	1 # 14 + 4 # 16 + 1 # 18	SGRP-3	SGRS-3	1 # 16 + 4 # 20	SGRP-2	SGRS-2
1 # 10 + 1 # 12 + 1 # 14	SGRP-4	SGRS-4	1 # 14 + 5 # 16	SGRP-3	SGRS-3	1 # 16 + 3 # 20	SGRP-2	SGRS-2
1 # 10 + 2 # 12	SGRP-4	SGRS-4	2 # 14	SGRP-2	SGRS-2	1 # 16 + 1 # 20 + 1 # 22	SGRP-1	SGRS-1
2 # 10	SGRP-4	SGRS-4	2 # 14 + 1 # 16	SGRP-3	SGRS-3	1 # 16 + 1 # 20	SGRP-1	SGRS-1
2 # 10 + 1 # 16	SGRP-4	SGRS-4	2 # 14 + 1 # 16	SGRP-3	SGRS-3	1 # 16 + 3 # 22	SGRP-1	SGRS-1
1 # 12 + 1 # 18	SGRP-2	SGRS-2	2 # 14 + 1 # 16	SGRP-3	SGRS-3	1 # 16 + 2 # 22	SGRP-1	SGRS-1
1 # 12 + 2 # 18	SGRP-3	SGRS-3	2 # 14 + 1 # 16	SGRP-3	SGRS-3	1 # 16 + 1 # 22	SGRP-1	SGRS-1
1 # 12 + 3 # 18	SGRP-3	SGRS-3	2 # 14 + 2 # 16	SGRP-3	SGRS-3	1 # 18 + 1 # 22	SGRP-1	SGRS-1
1 # 12 + 4 # 18	SGRP-3	SGRS-3	2 # 14 + 2 # 16	SGRP-3	SGRS-3	1 # 18 + 2 # 22	SGRP-1	SGRS-1
1 # 12 + 5 # 18	SGRP-3	SGRS-3	2 # 14 + 3 # 16	SGRP-3	SGRS-3	1 # 18 + 3 # 22	SGRP-1	SGRS-1
1 # 12 + 1 # 16	SGRP-3	SGRS-3	2 # 14 + 4 # 16	SGRP-4	SGRS-4	1 # 18 + 1 # 20	SGRP-1	SGRS-1
1 # 12 + 1 # 16 + 1 # 18	SGRP-3	SGRS-3	3 # 14	SGRP-3	SGRS-3	1 # 18 + 1 # 20 + 1 # 22	SGRP-1	SGRS-1
1 # 12 + 1 # 16 + 2 # 18	SGRP-3	SGRS-3	3 # 14 + 1 # 16	SGRP-3	SGRS-3	1 # 18 + 1 # 20 + 2 # 22	SGRP-1	SGRS-1
1 # 12 + 1 # 16 + 3 # 18	SGRP-3	SGRS-3	3 # 14 + 2 # 16	SGRP-4	SGRS-4	1 # 18 + 2 # 20	SGRP-1	SGRS-1
1 # 12 + 1 # 16 + 4 # 18	SGRP-4	SGRS-4	3 # 14 + 3 # 16	SGRP-4	SGRS-4	1 # 18 + 3 # 20	SGRP-2	SGRS-2
1 # 12 + 2 # 16	SGRP-3	SGRS-3	4 # 14	SGRP-3	SGRS-3	1 # 18 + 4 # 20	SGRP-2	SGRS-2

SolderGrip Closed End Connector Splices (Continued)

**Table C. SolderGrip Wire Combinations** (Continued)

Wire Combinations	Splash-proof	Sealed	Wire Combinations	Splash-proof	Sealed	Wire Combinations	Splash-proof	Sealed
1 # 12 + 2 # 16 + 1 # 18	SGRP-3	SGRS-3	4 # 14 + 1 # 16	SGRP-4	SGRS-4	1 # 18 + 5 # 20	SGRP-2	SGRS-2
1 # 12 + 2 # 16 + 2 # 18	SGRP-3	SGRS-3	4 # 14 + 2 # 16	SGRP-4	SGRS-4	2 # 18	SGRP-1	SGRS-1
1 # 12 + 3 # 16	SGRP-3	SGRS-3	5 # 14	SGRP-4	SGRS-4	2 # 18 + 1 # 22	SGRP-1	SGRS-1
1 # 12 + 4 # 16	SGRP-3	SGRS-3	5 # 14 + 1 # 16	SGRP-4	SGRS-4	2 # 18 + 1 # 20	SGRP-2	SGRS-2
1 # 12 + 5 # 16	SGRP-4	SGRS-4	1 # 16 + 3 # 18	SGRP-3	SGRS-3	2 # 18 + 2 # 20	SGRP-2	SGRS-2
1 # 12 + 1 # 14 + 1 # 18	SGRP-3	SGRS-3	1 # 16 + 2 # 18 + 2 # 20	SGRP-3	SGRS-3	2 # 18 + 3 # 20	SGRP-2	SGRS-2
1 # 12 + 1 # 14 + 2 # 18	SGRP-3	SGRS-3	1 # 16 + 5 # 20	SGRP-3	SGRS-3	2 # 18 + 4 # 20	SGRP-3	SGRS-3
1 # 12 + 1 # 14 + 3 # 18	SGRP-3	SGRS-3	1 # 16 + 2 # 20	SGRP-2	SGRS-2	3 # 18	SGRP-2	SGRS-2
1 # 12 + 1 # 14 + 1 # 16	SGRP-3	SGRS-3	6 # 16	SGRP-3	SGRS-3	3 # 18 + 1 # 20	SGRP-2	SGRS-2
1 # 12 + 1 # 14 + 2 # 16	SGRP-3	SGRS-3	5 # 16 + 1 # 18	SGRP-3	SGRS-3	3 # 18 + 2 # 20	SGRP-3	SGRS-3
1 # 12 + 1 # 14 + 3 # 16	SGRP-4	SGRS-4	5 # 16 + 1 # 20	SGRP-3	SGRS-3	3 # 18 + 3 # 20	SGRP-3	SGRS-3
1 # 12 + 1 # 14 + 4 # 16	SGRP-4	SGRS-4	5 # 16	SGRP-3	SGRS-3	4 # 18	SGRP-2	SGRS-2
1 # 12 + 2 # 14	SGRP-3	SGRS-3	4 # 16 + 2 # 18	SGRP-3	SGRS-3	4 # 18 + 1 # 20	SGRP-3	SGRS-3
1 # 12 + 2 # 14 + 1 # 18	SGRP-3	SGRS-3	4 # 16 + 1 # 18 + 1 # 20	SGRP-3	SGRS-3	4 # 18 + 2 # 20	SGRP-3	SGRS-3
1 # 12 + 2 # 14 + 1 # 16	SGRP-4	SGRS-4	4 # 16 + 1 # 18	SGRP-3	SGRS-3	5 # 18	SGRP-3	SGRS-3
1 # 12 + 2 # 14 + 2 # 16	SGRP-4	SGRS-4	4 # 16 + 2 # 20	SGRP-3	SGRS-3	5 # 18 + 1 # 20	SGRP-3	SGRS-3
1 # 12 + 2 # 14 + 3 # 16	SGRP-4	SGRS-4	4 # 16 + 1 # 20	SGRP-3	SGRS-3	6 # 18	SGRP-3	SGRS-3
1 # 12 + 3 # 14	SGRP-4	SGRS-4	4 # 16	SGRP-3	SGRS-3	1 # 20 + 1 # 22	SGRP-1	SGRS-1
1 # 12 + 3 # 14 + 1 # 16	SGRP-4	SGRS-4	3 # 16 + 3 # 18	SGRP-3	SGRS-3	1 # 20 + 2 # 22	SGRP-1	SGRS-1
1 # 12 + 4 # 14	SGRP-4	SGRS-4	3 # 16 + 2 # 18 + 1 # 20	SGRP-3	SGRS-3	1 # 20 + 3 # 22	SGRP-1	SGRS-1
2 # 12	SGRP-4	SGRS-4	3 # 16 + 2 # 18	SGRP-3	SGRS-3	1 # 20 + 4 # 22	SGRP-1	SGRS-1
2 # 12 + 1 # 18	SGRP-3	SGRS-3	3 # 16 + 1 # 18 + 2 # 20	SGRP-3	SGRS-3	2 # 20	SGRP-1	SGRS-1
2 # 12 + 1 # 16	SGRP-3	SGRS-3	3 # 16 + 1 # 18 + 1 # 20	SGRP-3	SGRS-3	2 # 20 + 1 # 22	SGRP-1	SGRS-1
2 # 12 + 1 # 18	SGRP-3	SGRS-3	3 # 16 + 1 # 18	SGRP-3	SGRS-3	2 # 20 + 2 # 22	SGRP-1	SGRS-1
2 # 12 + 2 # 16 + 1 # 18	SGRP-4	SGRS-4	3 # 16 + 3 # 20	SGRP-3	SGRS-3	2 # 20 + 3 # 22	SGRP-1	SGRS-1
2 # 12 + 3 # 16	SGRP-4	SGRS-4	3 # 16 + 2 # 20	SGRP-3	SGRS-3	3 # 20	SGRP-1	SGRS-1
2 # 12 + 1 # 14 + 1 # 18	SGRP-4	SGRS-4	3 # 16 + 1 # 20	SGRP-3	SGRS-3	3 # 20 + 1 # 22	SGRP-1	SGRS-1
2 # 12 + 1 # 14 + 1 # 16	SGRP-4	SGRS-4	3 # 16	SGRP-2	SGRS-2	4 # 20	SGRP-2	SGRS-2
3 # 12 + 1 # 14	SGRP-4	SGRS-4	2 # 16 + 4 # 18	SGRP-3	SGRS-3	5 # 20	SGRP-2	SGRS-2
2 # 12 + 2 # 14	SGRP-4	SGRS-4	2 # 16 + 3 # 18 + 1 # 20	SGRP-3	SGRS-3	6 # 20	SGRP-2	SGRS-2
3 # 12 + 1 # 18	SGRP-4	SGRS-4	2 # 16 + 3 # 18	SGRP-3	SGRS-3	3 # 22	SGRP-1	SGRS-1
3 # 12 + 1 # 16	SGRP-4	SGRS-4	2 # 16 + 2 # 18 + 2 # 20	SGRP-3	SGRS-3	4 # 22	SGRP-1	SGRS-1
1 # 14 + 1 # 22	SGRP-1	SGRS-1	2 # 16 + 2 # 18 + 1 # 20	SGRP-3	SGRS-3	5 # 22	SGRP-1	SGRS-1
1 # 14 + 1 # 20	SGRP-2	SGRS-2	2 # 16 + 2 # 18	SGRP-3	SGRS-3	6 # 22	SGRP-1	SGRS-1
1 # 14 + 2 # 20	SGRP-2	SGRS-2	—	—	—	—	—	—

**SolderGrip Closed End Connector Splices** (Continued)

**Product Characteristics**

<b>Material</b>			
Insulation	Radiation-crosslinked, transparent heat-shrinkable polyvinylidene fluoride		
Solder preform with flux	Sn 60, Pb 40, ROM1 flux per ANSI-J-STD-004 (RAflux).		
Sealing insert (SGRS)	Hot melt adhesive		
Spiral wound insert	Copper alloy		
<b>Physical</b>	<b>Unit</b>	<b>Method of test</b>	<b>Requirement</b>
Dimensions	inches	RB-109	See product dimensions.
<b>Electromechanical</b>	<b>Unit</b>	<b>Method of test</b>	<b>Typical values</b>
Dielectric withstand voltage	kilovolts	RB-109	2.0
Static heating	degrees	RB-109	Less than 50°C rise
<b>Environmental*</b>	<b>Unit</b>	<b>Method of test</b>	<b>Requirement</b>
Insulation resistance after water immersion (SGRS only)	megohms	RB-109	100
Contact resistance after exposure	milliohms	RB-109	Less than 6 milliohms
<b>Operating condition</b>	<b>Unit</b>	<b>Method of test</b>	<b>Value</b>
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 Raychem specification for procedures.

**Approvals and Reference Documents**

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

**Installation**


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 Raychem heating tools is recommended:

- HL1802E
- CV-1981

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

You will find ordering information for these tools in Section 10.

### Product Facts

- Protects splices from water, condensation, salt, and corrosion
- Provides strain relief
- Protects against vibration in rugged environments
- Completely insulates and protects electrical connections
- Has adhesive lining for protection that is more reliable than conventional splices
- UL, CUL, and Lloyd's listed 

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



### Applications

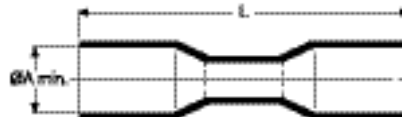
- Automotive/truck wiring repair and maintenance.
- Automotive accessory installations.
- OEM automotive/truck/RV wire harness fabrication.
- Marine electronics.
- Fleet maintenance.
- Commercial wiring (pumps/pools/spas).

### Specifications/Approvals

Series	Agency	Raychem
D-406	ULand CULlisted 91J4, File E87681	RB-107
—	Lloyd's listed, File 65 247 HH 02-93	—

### Product Dimensions

#### Butt Splices



#### Available in:

- Americas ■
- Europe ■
- Asia Pacific ■

Part No.	Butt Splice Dimensions		Color	Conductor	Wire Dimensions	
	A Min.	Nom.			Insulation O.D. (Max.)	Insulation O.D. (Min.)
D-406-0001	3.68 [1.45]	31.75 [1.25]	Red	22-18	3.56 [.140]	1.40 [.055]
D-406-0002	4.57 [1.80]	31.75 [1.25]	Blue	16-14	4.45 [.175]	2.03 [.080]
D-406-0003	6.35 [2.50]	38.10 [1.50]	Yellow	12-10	6.22 [.245]	2.79 [.110]

**DuraSeal Heat-Shrinkable, Environmentally Sealed, Nylon-Insulated Crimp Splices (Continued)**

**Product Selection Process**

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

Wire Size AWG	mm <sup>2</sup>	Part No.	Color
22-18	0.38-0.95	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] Wire pullout after crimping and recovery: red: 11.3 kg [25 lb]; blue: 22.7 kg [50 lb]; yellow: 27.2 kg [60 lb] Not flame-retardant 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 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 Raychem AD-1522 crimp tool and HL1802E heating tool are recommended.

You will find ordering information for these tools in Section 10.

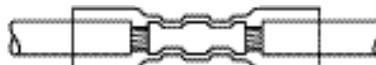
Refer to Raychem installation procedure RPIP 821-00 for detailed instructions.

**Installation**

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



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



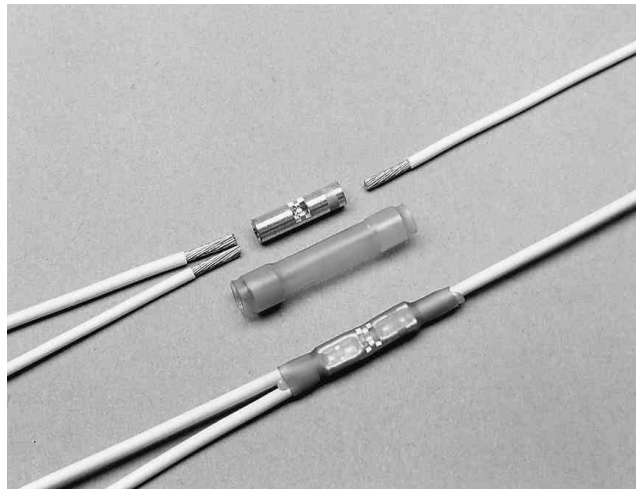
3. Heat crimped splice with heat gun until tubing recovers and adhesive flows.



**MiniSeal High-Performance, Immersion-Resistant Crimp Splices**

**Product Facts**

- Immersion-resistant crimp splices are on QPL for MIL-S-81824
- MIL-Spec approval
- Small size
- Light weight
- Insulation and strain relief
- Easy installation



**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.



**Available in:**

- Americas ■
- Europe ■
- Asia Pacific ■

**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/mm<sup>2</sup> worksheet on the next page, calculate the total cross section to be spliced by adding the circular mil area (CMA) or square millimeters (mm<sup>2</sup>) of each wire.

Stub splice: Add the CMA or mm<sup>2</sup> 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 mm<sup>2</sup> give the same results, so choose either CMA or mm<sup>2</sup> 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 8-21), select the crimp barrel—color-coded red, blue, or yellow—for the CMA or mm<sup>2</sup> 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/mm<sup>2</sup> required. (Refer to the example in the worksheet for a more specific description.) If the CMA/mm<sup>2</sup> of the smaller side of a butt splice is too small for the size barrel required to fit the larger side, increase the CMA/mm<sup>2</sup>—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 8-21 and 8-22) 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**

**MiniSeal High-Performance, Immersion-Resistant Crimp Splices (Continued)**

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 <sup>2</sup>	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	mm <sup>2</sup> Range	1:1 Splice (AWG Size)	Color Code
304–1510	0.15–0.75	26–20	Red
779–2680	0.39–1.34	20–16	Blue
1900–6755	0.95–3.37	18–12	Yellow

**CMA/mm<sup>2</sup> 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 (0.38 mm<sup>2</sup>).  
 Side one is therefore calculated as follows:  
 CMA = 3 x 754 = 2262 (mm<sup>2</sup> = 3 x 0.38 = 1.14)

The other side, where the CMA for AWG 18 is 1900, is calculated as:  
 CMA = 1 x 1900 = 1900 (mm<sup>2</sup> = 1 x 0.95 = 0.95)  
 Using Table B to select the smallest crimp barrel that will easily fit 2262 CMA (0.95 mm<sup>2</sup>), the blue barrel is the correct choice.

Wire Number	CMA	mm <sup>2</sup>	
1	_____	_____	
2	_____	_____	
3	_____	_____	
4	_____	_____	
5	_____	_____	
6	_____	_____	
7	_____	_____	
8	_____	_____	
9	_____	_____	
10	_____	_____	
Total	_____	_____	Part Number: _____

**Table C. Stub (Parallel) Splices**



Illustration	Part No.		Crimp Barrel Size Range CMA [mm <sup>2</sup> ] Min.–Max.	I.D. dimensions			
	Tin Plated	Nickel Plated		Side 1		Side 2	
				Sealing Insert	Max. No. of Wires	Sealing Insert	Max. No. of Wires
	D-436-0128 Red	D-436-0119 Red	304–1510 [0.15–0.75]	2.16 [096]	2	1.01 [040]	2
	D-436-58 Blue	D-436-75 Blue	779–2680 [0.39–1.34]	4.56 [180]	2	2.28 [090]	2
	D-436-59 Yellow	D-436-76 Yellow	1900–6755 [0.95–3.37]	4.56 [180]	2	2.28 [090]	2
	D-436-60 Blue	D-436-77 Blue	779–2680 [0.39–1.34]	2.03 [080]	10 (2 per hole)	6.96 [260]	2
	D-436-61 Yellow	D-436-78 Yellow	1900–6755 [0.95–3.37]	2.03 [080]	10 (2 per hole)	6.96 [260]	2



Table D. Butt (in-line) splices



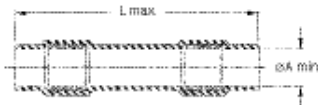
Illustration	Part No.		Crimp Barrel Size Range CMA [mm <sup>2</sup> ] Min.-Max.	I.D.dimensions			
	Tin Plated	Nickel Plated		Side 1		Side 2	
				Sealing Insert	Max. No. of Wires	Sealing Insert	Max. No. of Wires
	D-436-36* Red	D-436-82 Red	304-1510 [0.15-0.75]	 2.16 [0.085]	2	 2.16 [0.085]	2
	D-436-37* Blue	D-436-83 Blue	779-2680 [0.39-1.34]	 2.79 [1.10]	2	 2.79 [1.10]	2
	D-436-38* Yellow	D-436-84 Yellow	1900-6755 [0.95-3.37]	 4.02 [1.70]	2	 4.02 [1.70]	2
	D-436-0110 Red	D-436-85 Red	304-1510 [0.15-0.75]	 2.96 [0.093]	6	 4.06 [1.60]	2
	D-436-52 Blue	D-436-86 Blue	779-2680 [0.39-1.34]	 2.96 [0.093]	6 (2 per hole)	 4.06 [1.60]	2
	D-436-53 Yellow	D-436-87 Yellow	1900-6755 [0.95-3.37]	 2.96 [0.093]	6 (2 per hole)	 4.06 [1.60]	2
	D-436-0115 Red	D-436-88 Red	304-1510 [0.15-0.75]	 2.96 [0.093]	6 (2 per hole)	 2.96 [0.093]	6 (2 per hole)
	D-436-42 Blue	D-436-89 Blue	779-2680 [0.39-1.34]	 2.96 [0.093]	6 (2 per hole)	 2.96 [0.093]	6 (2 per hole)
	D-436-43 Yellow	D-436-90 Yellow	1900-6755 [0.95-3.37]	 2.96 [0.093]	6 (2 per hole)	 2.96 [0.093]	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[mm <sup>2</sup> ] Min. - Max.
Butt (in-line)	Red	D-609-06	D-609-09	304-1510 [0.15-0.75]
Butt (in-line)	Blue	D-609-07	D-609-10	779-2680 [0.39-1.34]
Butt (in-line)	Yellow	D-609-08	D-609-11	1900-6755 [0.95-3.37]
Stub (Parrel)	Red	D-609-03	D-609-12	304-1510 [0.15-0.75]
Stub (Parrel)	Blue	D-609-04	D-609-13	779-2680 [0.39-1.34]
Stub (Parrel)	Yellow	D-609-05	D-609-14	1900-6755 [0.95-3.37]

Table F. Sealing Sleeve Only



Part No.	Color Code	LMax.	Amin.
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**

**MiniSeal High-Performance, Immersion-Resistant Crimp Splices** (Continued)

<b>Material</b>	
Insulation	Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride
Crimp barrel	Tin- or nickel-plated copper
Melttable inserts	Melttable thermoplastic
<b>Typical Performance</b>	
Voltage drop	6.9 mV at 4.5 Avs 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]
Insulation resistance	5000 megohms

**Specifications/Approvals**

<b>Series</b>	<b>Military</b>
D-436	MIL-S-81824/1 for D-436-36/37/38

**Installation**

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

Any one of the following Raychem heating tools is recommended:

- HL1802E
- AA-400 Super Heater

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

You will find ordering information for these tools in Section 10.

**Introduction**

Raychem 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 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.

**Product Facts**

- Resistance to moisture and abrasion
- Strain relief
- Protection from wire pull-out
- Easy installation
- UL and CUL listed 

**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 contaminants.

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	ULlisted component, file E87681, terminals except quick connect terminals; file E157833, quick connect terminals
Reference documents	Raychem specifications RB-108, Specification DuraSeal crimp terminals DuraSeal selection guide (H54153) DuraSeal installation guidelines (H54154)

**Available in:**

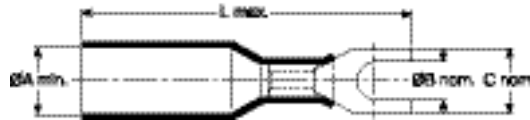
Americas	■
Europe	■
Asia Pacific	■

**DuraSeal Heat-Shrinkable Environmentally Sealed, Nylon Insulated Crimp Terminals and Disconnects (Continued)**

**Product Characteristics**

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

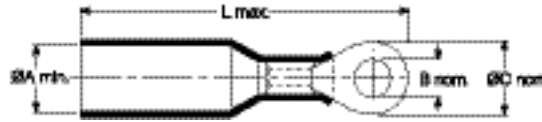
**Fork Terminals**



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]	

**DuraSeal Heat-Shrinkable Environmentally Sealed, Nylon Insulated Crimp Terminals and Disconnects (Continued)**

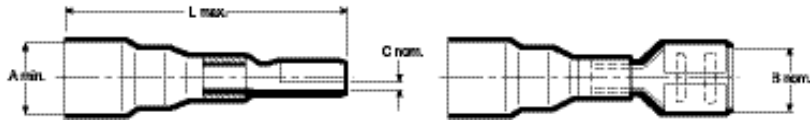
Ring Terminals



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-106-1401	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]

**DuraSeal Heat-Shrinkable Environmentally Sealed, Nylon Insulated Crimp Terminals and Disconnects (Continued)**

**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]

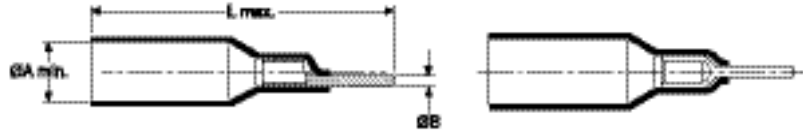
**Tab Terminals**



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]

**DuraSeal Heat-Shrinkable Environmentally Sealed, Nylon Insulated Crimp Terminals and Disconnects (Continued)**

**Pin Terminals**



Part No.	Pin Terminal Dimensions			Color	Conductor (AWG)	Wire Dimensions	
	A Min.	B Nom.	L Max.			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

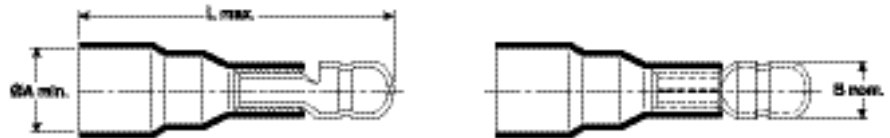
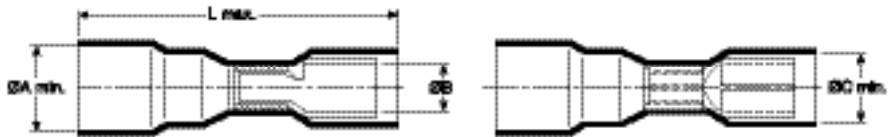


Fig. 2



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]



**DuraSeal Heat-Shrinkable Environmentally Sealed, Nylon Insulated Crimp Terminals and Disconnects (Continued)**

**Product Characteristics (Typical)**

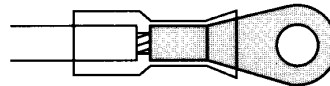
Operating temperature	-55°C to 125°C [-67°F to 257°F]
Shrink ratio	Approximately 2:1
Physical properties	Cut-through resistance: 31.7 kg [70 lb] Wire pullout after crimping and recovery: red: 11.3 kg [25 lb]; blue: 22.7 kg [50 lb]; yellow: 27.2 kg [60 lb] Not flame-retardant No cracking after heat aging 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 Insulation resistance: 10 megohms

**Specifications/Approvals**

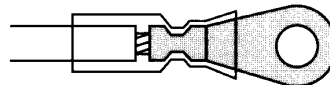
Series	Agency	Raychem
B-106	ULand CUL91J4, File E87681 Lloyd's listed, File 65 247 HH 02-93 ULand CULE157833 (B-106-3XXX/B-106-4XXX)	RB-108

**Installation**

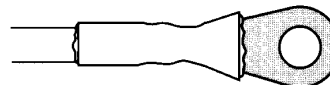
1. Select appropriate size. For terminal and disconnect terminations, strip wire 6.5 mm (1/4 inch).



2. Crimp using Raychem 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 Raychem AD-1522 crimp tool and HL1802E heating tool are recommended. You will find ordering information for these tools in Section 10. Refer to Raychem installation procedure RPIP 684-00 for detailed instructions.

### Product Facts

- Transparent insulation sleeve provides encapsulation, inspectability, strain relief, and insulation
- Spiral copper coil grips and compresses the conductors for optimum solder connection
- Prefluxed solder preform provides a controlled soldering process.
- One-piece design for easy installation
- Accommodates a wide variety of conductor types, quantities, sizes, and plating types unmatched by any other termination technique
- Parts meet the performance requirements of MIL-T-7928G

### Applications

Used for terminating multiple wires to terminals.



**Table A. Part Number Selection**

<b>Available in:</b>	
Americas	■
Europe	■
Asia Pacific	■

### SolderGrip Self-Fixturing Insulated Terminals



### Product option

Product Series	Environmental Protection
SGRT	Splashproof

### 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<sup>2</sup>) method of determining wire bundle size (see "CMA/mm<sup>2</sup> Calculation" on page 8-32).  
Using Table B, select the smallest size part that will fit your total wire CMA (mm<sup>2</sup>) value.

SolderGrip Part No.	Stud Size	Maximum Bundle Diameter†	Maximum Amp Rating	Wire Range (Min.-Max.) CMA [mm <sup>2</sup> ]	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.