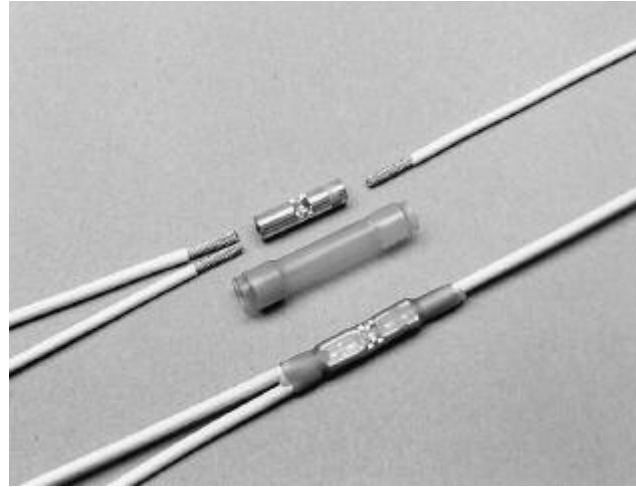


### MiniSeal High-Performance, Immersion-Resistant Crimp Splices

#### 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.


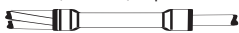
MiniSeal crimp splices consist of a plated copper crimp barrel and a separate, heat-shrinkable, transparent sealing sleeve. They can be used on a combination of wires, from 1:1 to 10:10. MiniSeal splices are one of the smallest, lightest, and most environment-resistant splices available. They preserve 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).

4. Select the color code for the size crimp barrel required. Using Table B (page 8-23), select the crimp barrel—color-coded red, blue, or yellow—for the CMA or mm<sup>2</sup> you calculated.
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 8-23 and 8-24) and find the table for the type of splice (stub or butt) required.

*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.

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:

$$\text{CMA} = 3 \times 754 = 2262$$

$$(\text{mm}^2 = 3 \times 0.38 = 1.14)$$

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

$$\text{CMA} = 1 \times 1900 = 1900$$

$$(\text{mm}^2 = 1 \times 0.95 = 0.95)$$

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 [.085]	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)	 6.35 [.250]	2
	D-436-61 Yellow	D-436-78 Yellow	1900–6755 [0.95–3.37]	 2.03 [.080]	10 (2 per hole)	 6.35 [.250]	2

Table D. Butt (in-line) splices



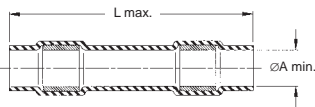
Illustration	Part No.		Crimp Barrel Size Range CMA [mm <sup>2</sup> ] Min.-Max.	I.D. dimensions			
	Tin Plated	Nickel Plated		Side 1	Max. No. of Wires	Side 2	Max. No. of Wires
				Sealing Insert		Sealing Insert	
	D-436-36* Red	D-436-82 Red	304-1510 [0.15-0.75]		2		2
	D-436-37* Blue	D-436-83 Blue	779-2680 [0.39-1.34]		2		2
	D-436-38* Yellow	D-436-84 Yellow	1900-6755 [0.95-3.37]		2		2
	D-436-0110 Red	D-436-85 Red	304-1510 [0.15-0.75]		6		2
	D-436-52 Blue	D-436-86 Blue	779-2680 [0.39-1.34]		6 (2 per hole)		2
	D-436-53 Yellow	D-436-87 Yellow	1900-6755 [0.95-3.37]		6 (2 per hole)		2
	D-436-0115 Red	D-436-88 Red	304-1510 [0.15-0.75]		6 (2 per hole)		6 (2 per hole)
	D-436-42 Blue	D-436-89 Blue	779-2680 [0.39-1.34]		6 (2 per hole)		6 (2 per hole)
	D-436-43 Yellow	D-436-90 Yellow	1900-6755 [0.95-3.37]		6 (2 per hole)		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	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

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

Material	
Insulation	Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride
Crimp barrel	Tin- or nickel-plated copper
Melttable inserts	Melttable thermoplastic
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]
Insulation resistance	5000 megohms

Specifications/Approvals

Series	Military
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.