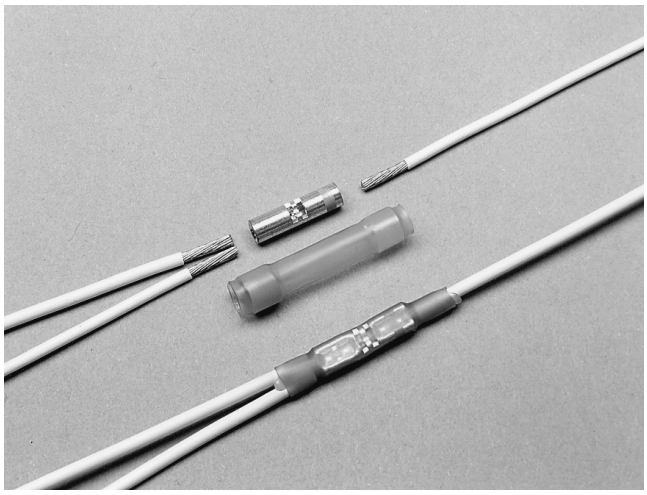
MiniSeal High-Performance, Immersion-Resistant Crimp Splices

Product Facts

- **Immersion-resistant crimp splices are on QPL for SAE-AS-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.

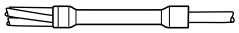
Available in:

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/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 8-23), 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 8-23 and 8-24) 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.

Catalog 1654025
Revised 3-13

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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

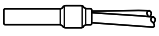


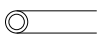
Illustration	Part No.		Crimp Barrel Size Range CMA Min.–Max.	I.D.dimensions			
				Side 1		Side 2	
	Tin Plated	Nickel Plated		Sealing Insert	Max. No. of Wires	Sealing Insert	Max. No. of Wires
	D-436-0128 Red	D-436-0119 Red	304–1510	 2.16 [.085]	2	 1.01 [.040]	2
	D-436-58 Blue	D-436-75 Blue	1058–2680	 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

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Table D. Butt (in-line) splices

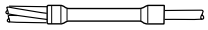
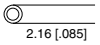
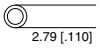
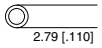
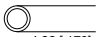
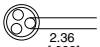
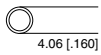
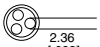
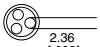
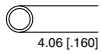
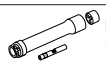
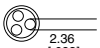
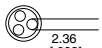
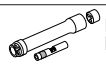
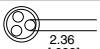
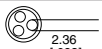
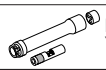
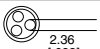
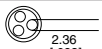


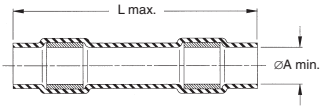
Illustration	Part No.		Crimp Barrel Size Range CMA Min.–Max.	I.D.dimensions			
				Side 1		Side 2	
	Tin Plated	Nickel Plated		Sealing Insert	Max. No. of Wires	Sealing Insert	Max. No. of Wires
	D-436-36* Red	D-436-82 D-200-82 Red	304–1510	 2.16 [.085]	2	 2.16 [.085]	2
	D-436-37* Blue	D-436-83 D-200-83 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]

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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

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:

- HL1910E/HL2010E
- AA-400 Super Heater

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

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

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