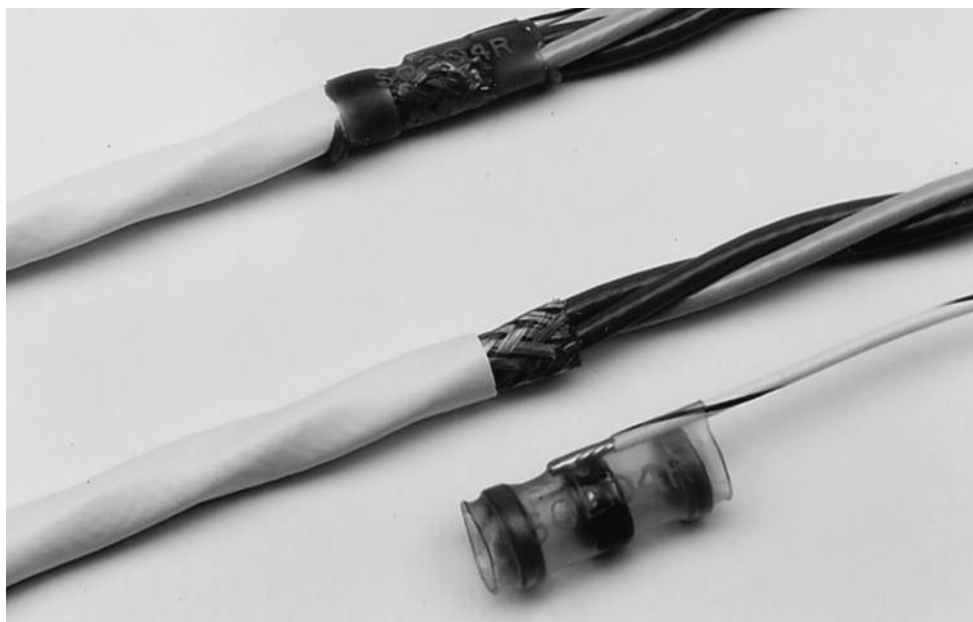


## SolderSleeve Shield Terminators

### Product Facts

- Transparent insulation sleeve provides encapsulation, inspectability, strain relief, and insulation
- Prefluxed solder preform provides a controlled soldering process
- One-piece design offers easy installation and lower installed cost
- Optional preinstalled ground leads provide convenience and ease of installation

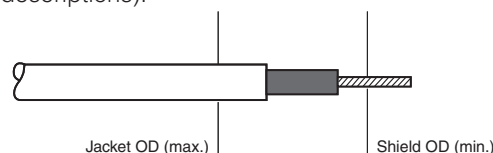


### Applications

Used for shield-to-ground termination.

### Product Selection Process

1. Select product series from the Product Options table below.
2. Determine cable dimensions.
3. Optional: Select pre-installed wire lead type (see Table G on page 8-49 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 8-49 for cross-reference information.



### Product Options (Refer to Table G on Page 8-49 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.

#### Available in:

- Americas ■
- Europe ■
- Asia Pacific ■

## SolderSleeve Shield Terminators (Continued)

**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 8-49 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          |                   | No<br>Preinstalled<br>Lead | Part Nos.                 |                 |                 |                 |               |             |
|-------------------|-------------------|----------------------------|---------------------------|-----------------|-----------------|-----------------|---------------|-------------|
| Jacket OD<br>Max. | Shield OD<br>Min. |                            | Preinstalled Lead Option* |                 |                 |                 | Braid Strap   |             |
|                   |                   |                            | 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 8-49 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).

## SolderSleeve Shield Terminators (Continued)

**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 |          |                           |          |             |          |
|-------------------|-------------------|-----------------------------------------------------------|----------|---------------------------|----------|-------------|----------|
| Jacket OD<br>Max  | Shield OD<br>Min  | No Preinstalled Lead                                      |          | Preinstalled Lead Option* |          |             |          |
|                   |                   | MIL                                                       | TE       | 20 AWG                    |          | 22 AWG      |          |
|                   |                   |                                                           |          | 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<br>Max. | Shield OD<br>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.

| Cable OD          |                   | Part No.                  |                           |
|-------------------|-------------------|---------------------------|---------------------------|
| Jacket OD<br>Max. | Shield OD<br>Min. | Preinstalled Lead Option* |                           |
|                   |                   | 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.

## SolderSleeve Shield Terminators (Continued)

**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<br>Max. | Shield OD<br>Min. | No<br>Preinstalled Lead | Preinstalled Lead Option* |             |
|                   |                   |                         | 22 AWG                    | Braid Strap |
| 1.95 [0.075]      | 0.9 [0.035]       | SO96-1-00               | SO96-1-55-22-90           | SO96-1-01   |
| 2.7 [0.105]       | 1.40 [0.055]      | SO96-2-00               | SO96-2-55-22-90           | SO96-2-01   |
| 4.3 [0.170]       | 2.15 [0.085]      | SO96-3-00               | SO96-3-55-22-90           | SO96-3-01   |
| 6.0 [0.235]       | 3.30 [0.130]      | SO96-4-00               | SO96-4-55-22-90           | SO96-4-01   |
| 7.0 [0.275]       | 4.30 [0.170]      | 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<br>Max. | Shield OD<br>Min. | No<br>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<br>Max. | Shield OD<br>Min. | No<br>Preinstalled Lead | Preinstalled Lead Option* |             |
|                   |                   |                         | 22 AWG                    | Braid Strap |
| 1.95 [0.075]      | 0.90 [0.035]      | S200-1-00               | S200-1-WI-22-9            | S200-1-01   |
| 2.7 [0.105]       | 1.40 [0.055]      | S200-2-00               | S200-2-WI-22-9            | S200-2-01   |
| 4.3 [0.170]       | 2.15 [0.085]      | S200-3-00               | S200-3-WI-22-9            | S200-3-01   |
| 6.0 [0.235]       | 3.30 [0.130]      | S200-4-00               | S200-4-WI-22-9            | S200-4-01   |
| 7.0 [0.275]       | 4.30 [0.170]      | S200-5-00               | S200-5-WI-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]  |

## SolderSleeve Shield Terminators (Continued)

### 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

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:

- HL1901E/HL2010E
- 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>B-155</b>            | <b>RPIP-824-000</b>  |
| <b>CWT</b>              | <b>RPIP-655-00-D</b> |
| <b>SO63</b>             | <b>RCPS-100-70</b>   |
| <b>M83519 (S01/S02)</b> | <b>RCPS-100-70</b>   |
| <b>SO96</b>             | <b>RCPS-100-70</b>   |
| <b>S03</b>              | <b>RCPS-100-70</b>   |
| <b>SO175</b>            | <b>RCPS-100-70</b>   |
| <b>S200</b>             | <b>RCPS-100-71</b>   |

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

## SolderSleeve Shield Terminators (Continued)

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)