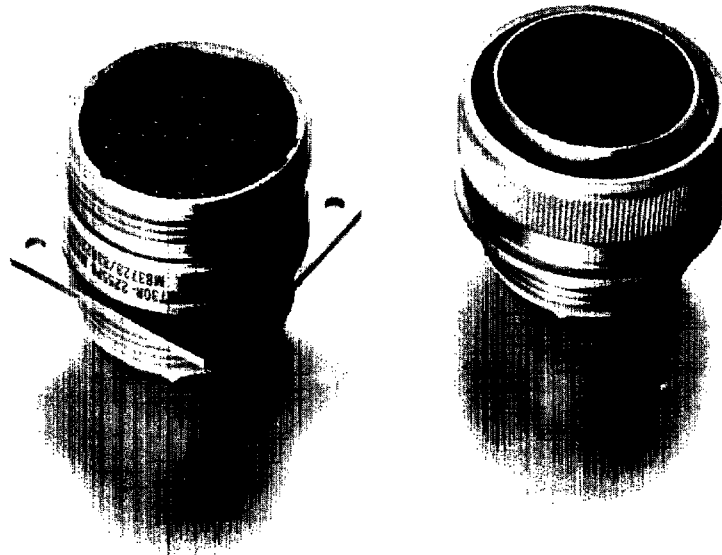


**MIL-C-83723  
Series III****Product Facts**

- Self-locking plugs for high vibration environments
- Patented "frustum" insert retention mechanism to withstand high G-loads during shock and vibration
- Closed entry socket contacts to prevent probe damage
- "Cork and bottle" interfacial seals around each contact
- Sealing grommets accept a wide range of wire diameters
- Largest number of shell sizes, styles, classes and insert arrangements qualified to MIL-C-83723
- Thermocouple pin and socket contacts are available, consult AMP for specifications



For applications requiring extended service at temperatures to 200°C, this line of circular connectors qualified to MIL-C-83723 Series III is ideal. They also have the added advantages of a rear-release contact retention system.

This contact retention system permits insertion, release and removal of contacts from the rear of the connector utilizing the same plastic insertion/extraction tool specified for use with most qualified rear-release type connectors. Servicing the connector from the rear helps prevent damage to the front that might affect the sealing characteristics. This system

also eliminates the need to remove and replace the safety wire.

Pin and socket contacts, used in this connector, conform to MIL-C-39029 using the standard crimp tool per MIL-C-22520.

Both square flange and jam nut mounting type receptacles and their mating plugs are available in a full range of shell sizes and insert arrangements. The threaded coupling plugs are available with a choice of safety wire provisions or self-locking feature.

Complete environmental sealing includes individual contact seal, an interfacial seal, a shell-to-shell seal, redundant rear wire

seals, and an insert-to-shell seal.

The hard face closed entry socket insert is designed with a lead-in chamfer that accepts pin contacts bent to a pre-established limit. The interfacial seal on the pin side insert has raised barriers around each pin. This barrier displaces into the chamfer when mated, providing a positive moisture seal.

These connectors have also been designed to meet the requirements of Boeing specifications BACC63BR and BACC63BT; and McDonnell Douglas specification BAN 7025 (DC50 Series).

### MIL-C-83723 Series III (Continued)

#### Performance Specifications

##### Voltage Rating

| Altitude  |        | Mated Service Rating |      |
|-----------|--------|----------------------|------|
| ft.       | m      | I                    | II   |
| Sea Level | -      | 1500                 | 2300 |
| 50,000    | 15 240 | 500                  | 750  |
| 70,000    | 21 336 | 375                  | 500  |
| 110,000   | 33 528 | 200                  | 200  |

Note: When the voltage as indicated above is applied between shell and closest contact to the shell or between the two closest contacts for a period of 5 seconds, there shall be no evidence of flashover or breakdown.

##### Contact Current Rating and Retention

| Contact Size* | Current Rating |                         | Contact Retention |       |
|---------------|----------------|-------------------------|-------------------|-------|
|               | Amperes Max.   | Voltage Drop Millivolts | Axial Load        |       |
|               |                |                         | lb                | N     |
| 20            | 7.5            | 35                      | 20                | 89.0  |
| 16            | 13.0           | 25                      | 25                | 111.2 |
| 12            | 23.0           | 25                      | 30                | 133.4 |

\*Organize individual circuits to maintain heat rise within operating temperature requirements.

**Operating Temperature Range**  
-65°C to +200°C [-85°F to +392°F]

**Environmental Seal**  
Wired, mated connectors with the specified accessory attached will meet the altitude immersion test specified in MIL-C-83723.

**Durability**  
Minimum of 500 mating cycles.

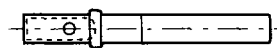
**Shock and Vibration Requirements**  
Wired, mated connectors shall not be damaged, nor shall there be a current interruption longer than 1 microsecond when subjected to the following:

**Shock**  
One shock in each of the three major axes, having a 100 g peak for a 6 millisecond duration (half-sine pulse).

**Vibration**  
Twelve hours of random vibration having a range of 10 to 2,000 Hz with a .06 [1.5] double amplitude (10-55 Hz) and a 20 g peak level (55-2,000 Hz).

Pin and Socket Connectors  
MATRIX Engine/Firewall Cylindrical Connectors

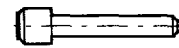
#### Contacts, Sealing Plugs and Assembly Tools



Socket Contact



Pin Contact



Sealing Plug

| Contact Size | Wire Range |                 | Socket Contacts   |                 | Pin Contacts      |                 | Sealing Plugs     |                 |
|--------------|------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|
|              | AWG        | mm <sup>2</sup> | Military Part No. | MATRIX Part No. | Military Part No. | MATRIX Part No. | Military Part No. | MATRIX Part No. |
| 20           | 24-20      | 0.2-0.6         | M39029/5-115      | 5100-001-0020   | M39029/4-110      | 5000-054-0020   | MS27488-20        | 3400-043-0020   |
| 16           | 20-16      | 0.5-1.4         | M39029/5-116      | 5100-001-0016   | M39029/4-111      | 5000-054-0016   | MS27488-16        | 3400-043-0016   |
| 12           | 14-12      | 2-3             | M39029/5-118      | 5100-001-0012   | M39029/4-113      | 5000-054-0012   | MS27488-12        | 3400-043-0012   |

#### Crimping Tools

| Contact Size | Wire Range |                 | Finished Wire Dia. Range |           | Military Part No.    |                      |
|--------------|------------|-----------------|--------------------------|-----------|----------------------|----------------------|
|              | AWG        | mm <sup>2</sup> | inch                     | mm        | Crimping Tool        | Turret or Positioner |
|              |            |                 |                          |           |                      |                      |
| 20           | 24-20      | 0.2-0.6         | .040-.083                | 1.02-2.11 | M22520/1-01 or /2-01 | M22520/1-02 or /2-02 |
| 16           | 20-16      | 0.5-1.4         | .053-.103                | 1.34-2.62 | M22520/1-01          | M22520/1-02          |
| 12           | 14-12      | 2-3             | .097-.158                | 2.46-4.01 | M22520/1-01          | M22520/1-02          |

Note: Each connector is furnished with contacts. One spare for inserts requiring 1 to 26 of each contact and two spares for inserts with more than 26 contacts and a minimum of one sealing plug up to 10% of the number of contacts.

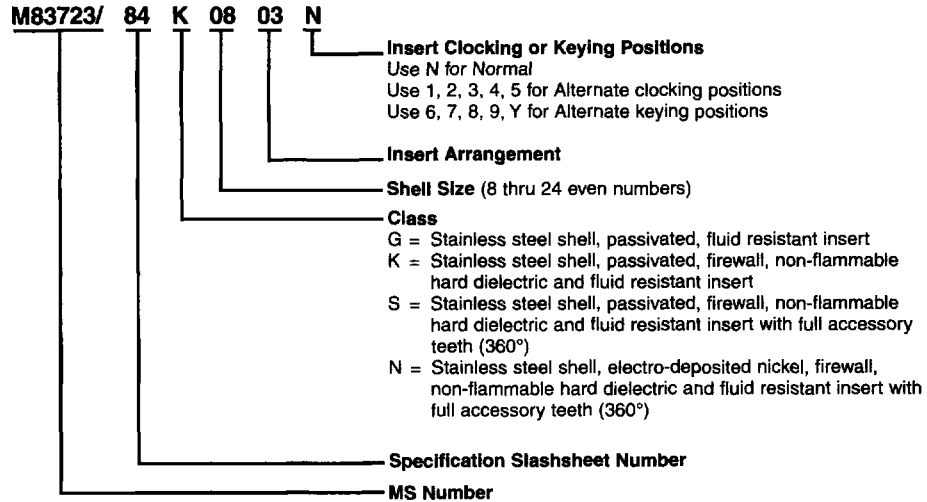
#### Insertion/Extraction Tools

| Contact Size | Color Code | Military Part | MATRIX Part No. |
|--------------|------------|---------------|-----------------|
| 20           | Rd./Wh.    | M81969/14-02  | 6500-001-0020   |
| 16           | Bl./Wh.    | M81969/14-03  | 6500-001-0016   |
| 12           | Yel./Wh.   | M81969/14-04  | 6500-001-0012   |

### MIL-C-83723

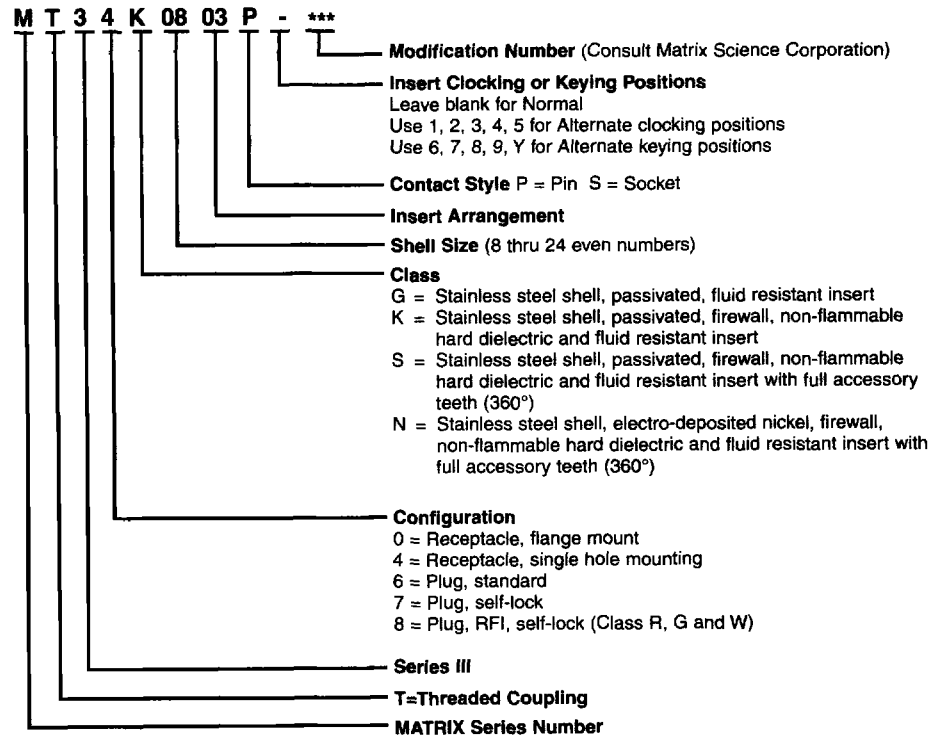
#### Series III (Continued)

#### Military Part Number System



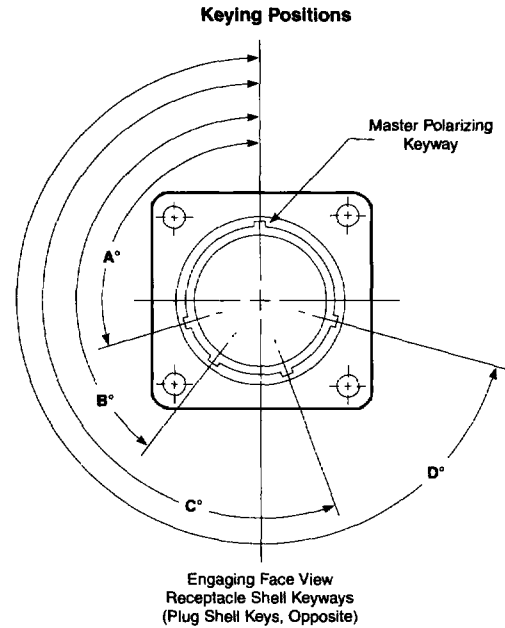
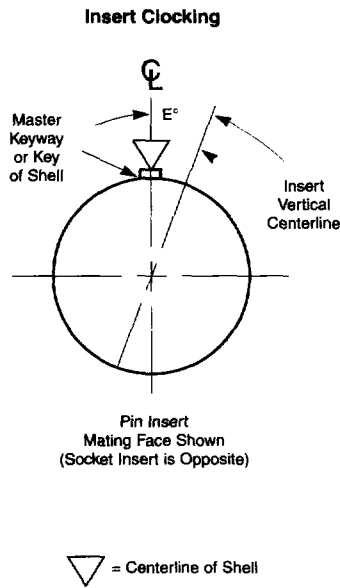
Pin and Socket Connectors  
 MATRIX Engine/Firewall Cylindrical Connectors

#### MATRIX Part Number System



### MIL-C-83723 Series III (Continued)

#### Polarization



#### Insert Clocking (Per MIL-STD-1554)

| Shell Size                           | Polarizing Position | Key/Keyway Positions |     |     |     | Insert Position E° | Service Rating   |
|--------------------------------------|---------------------|----------------------|-----|-----|-----|--------------------|--|
|                                      |                     | A°                   | B°  | C°  | D°  |                    |  |
| 8,10                                 | N                   | 105                  | 140 | 215 | 265 | 0                  | Refer to Insert Arrangement Captions on next two pages |
|                                      | 1*                  | 105                  | 140 | 215 | 265 | 10                 |  |
|                                      | 2*                  | 105                  | 140 | 215 | 265 | 20                 |  |
|                                      | 3*                  | 105                  | 140 | 215 | 265 | 30                 |  |
|                                      | 4*                  | 105                  | 140 | 215 | 265 | 40                 |  |
| 12,14<br>16,18<br>20,22<br>24 & 28** | 5*                  | 105                  | 140 | 215 | 265 | 50                 |  |
|                                      | N                   | 105                  | 140 | 215 | 265 | 0                  |  |
|                                      | 1*                  | 105                  | 140 | 215 | 265 | 10                 |  |
|                                      | 2*                  | 105                  | 140 | 215 | 265 | 20                 |  |
|                                      | 3*                  | 105                  | 140 | 215 | 265 | 30                 |  |
|                                      | 4*                  | 105                  | 140 | 215 | 265 | 40                 |  |
|                                      | 5*                  | 105                  | 140 | 215 | 265 | 50                 |  |

\*Position 1 thru 5 inactive for new design. (Ref. MIL-STD-1554)

#### Keying Positions (Per MIL-STD-1554)

| Shell Size                             | Polarizing Position | Key/Keyway Positions |     |     |     | Insert Position E° | Service Rating   |
|--|---------------------|----------------------|-----|-----|-----|--------------------|--|
|  |                     | A°                   | B°  | C°  | D°  |                    |  |
| 8 thru 24                              | N                   | 105                  | 140 | 215 | 265 | 0                  | Refer to Insert Arrangement Captions on next two pages |
|  | 6                   | 102                  | 132 | 248 | 320 | 0                  |  |
|  | 7                   | 80                   | 118 | 230 | 312 | 0                  |  |
| 8 & 10                                 | 8                   | 35                   | 140 | 205 | 275 | 0                  |  |
|  | 9                   | 64                   | 155 | 234 | 304 | 0                  |  |
|  | Y*                  | 25                   | 115 | 220 | 270 | 0                  |  |
| 10 only                                | 6                   | 18                   | 149 | 192 | 259 | 0                  |  |
|  | 7                   | 92                   | 152 | 222 | 342 | 0                  |  |
| 12, 14<br>16, 18<br>20, 22<br>24 & 28* | 8                   | 84                   | 152 | 204 | 334 | 0                  |  |
|  | 9                   | 24                   | 135 | 199 | 240 | 0                  |  |
|  | Y*                  | 98                   | 152 | 268 | 338 | 0                  |  |

\*Positions 10 and Z designators are inactive, superseded by Y. (Ref. MIL-STD-1554)

\*\*Shell size 28 not military standard connector

#### Notes:

1. In the "Normal insert position" (position N), the insert centerline coincides with the centerline of the master key/keyway of the shell.

2. In the "Alternate insert position" (positions 1, 2, 3, 4 and 5), the socket insert is rotated clockwise relative to the centerline of the master key/keyway of the shell as indicated in the Figure and Table. The pin insert is rotated counter-clockwise.

3. Alternate polarizing positions 1, 2, 3, 4 and 5 are for interchangeability use only. Not recommended for new design, per MIL-C-83723.

4. In the "Alternate keying position" (positions 6, 7, 8, 9 and Y), the minor keys/keyways are positioned with reference to master key/keyway as indicated in the keying position table.

5. All plugs have keys. All receptacles have keyways.

### MIL-C-83723 Series III (Continued)

Insert Arrangements (Per MIL-STD-1554)

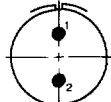
Numbering identification example: **0803** (Shell Size and Insert Number)  
**3 #20** (Contact quantity and size)  
**I** (Service rating)



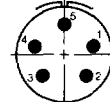
**0803**  
**3 #20**



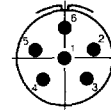
**0898**  
**3 #20**



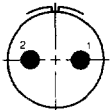
**1002**  
**2 #20**



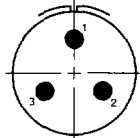
**1005**  
**5 #20**



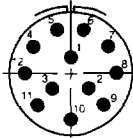
**1006**  
**6 #20**



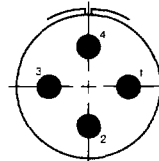
**1020**  
**2 #16**



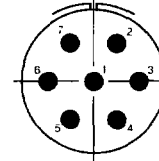
**1203**  
**3 #16**



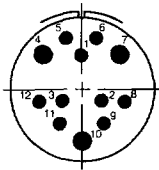
**1212**  
**12 #20**



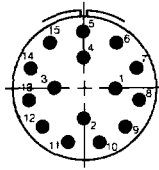
**1404**  
**4 #12**



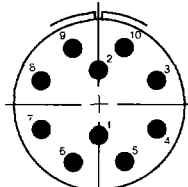
**1407**  
**7 #16**



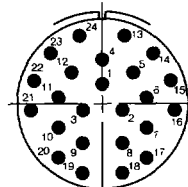
**1412**  
**9 #20, 3 #16**



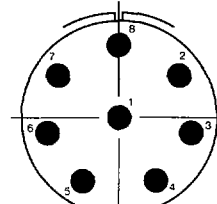
**1415**  
**15 #20**



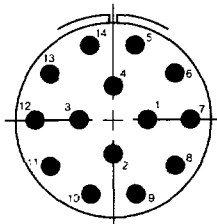
**1610**  
**10 #16**



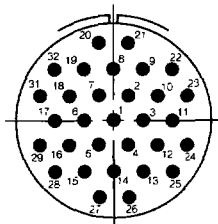
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**24 #20**



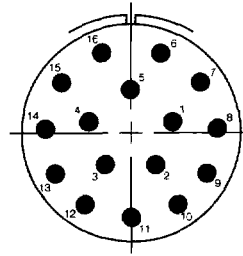
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**8 #12**



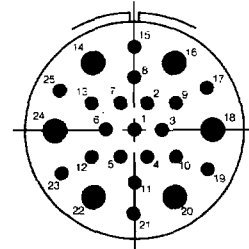
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**14 #16**



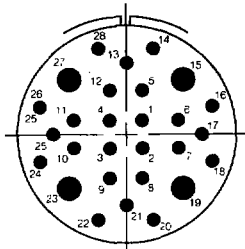
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**31 #20**



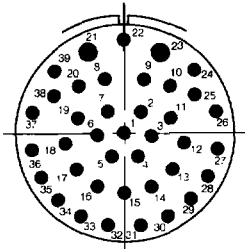
**2016**  
**16 #16**



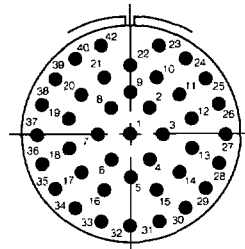
**2025**  
**19 #20, 6 #12**



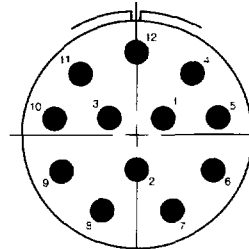
**2028**  
**24 #20, 4 #12**



**2039**  
**37 #20, 2 #16**



**2041**  
**41 #20**



**2212**  
**12 #12**

Note: Mating face of pin insert is shown. Socket insert is opposite.

SOURCE: Catalog 82785

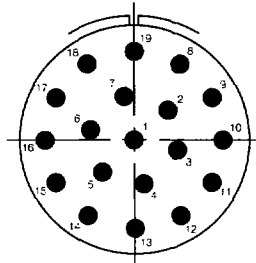
**Specifications  
subject to change.**

**1-800-522-6752**  
Product Information Center/ AMP FAX Service

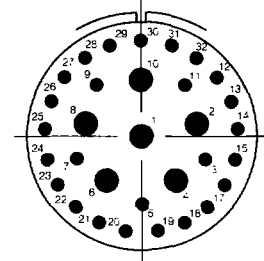
**1-800-722-1111**  
Tooling/Technical Assistance Center

**MIL-C-83723**  
**Series III (Continued)**

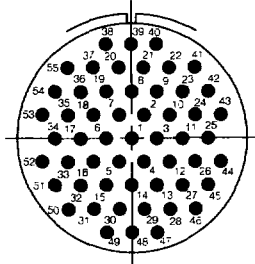
**Insert Arrangements**  
 (Continued)



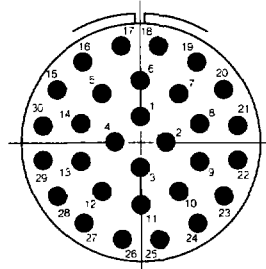
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**19 #16**



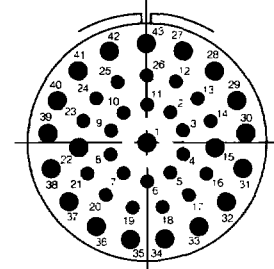
**2232**  
**26 #20, 6 #12**



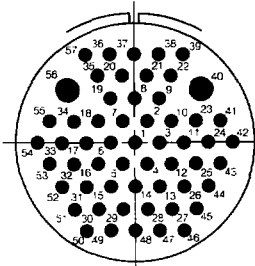
**2255**  
**55 #20**



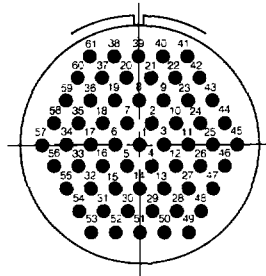
**2430**  
**30 #16**



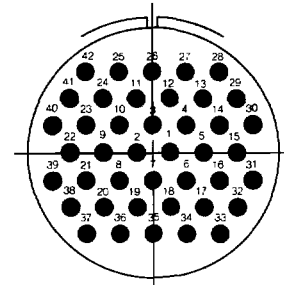
**2443**  
**23 #20, 20 #16**



**2457**  
**55 #20, 2 #12**



**2461**  
**61 #20**



**2842**  
**42 #16**  
 (Not an MS layout)

**Note:** Mating face of pin insert is shown. Socket insert is opposite.

**Pin and Socket Connectors**  
**MATRIX Engine/Firewall Cylindrical Connectors**

2

### MIL-C-83723

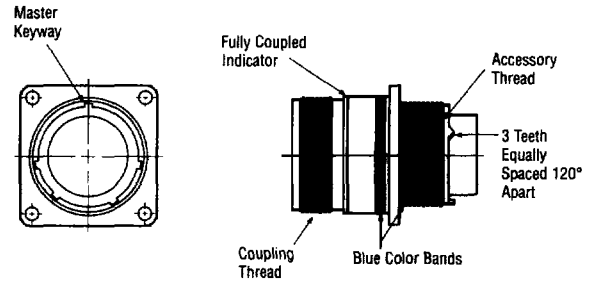
#### Series III (Continued)

#### Shell Size

|    |
|----|
| 8  |
| 10 |
| 12 |
| 14 |
| 16 |
| 18 |
| 20 |
| 22 |
| 24 |
| 28 |

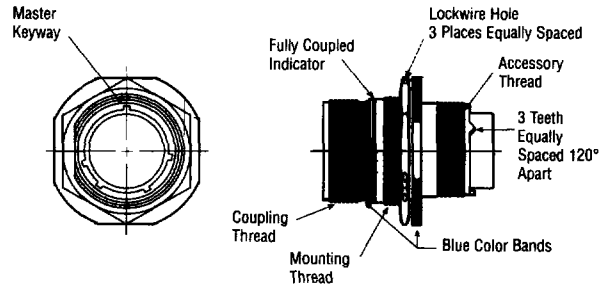
#### Receptacle Shell, Flange Mount, Threaded Coupling

Military No. M83723/82 & 83  
 MATRIX No. MT30 G, K, KS\*, KN\*  
 Boeing No. BACC63BT\*  
 McDonnell Douglas  
 BAN 7025 No. DC54, DC55



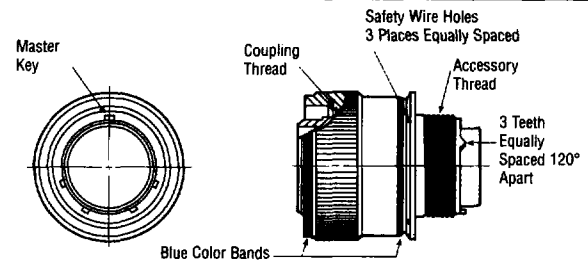
#### Receptacle Shell, Jam Nut Mount, Threaded Coupling

Military No. M83723/84 & 85  
 MATRIX No. MT34 G, K, KS\*, KN\*



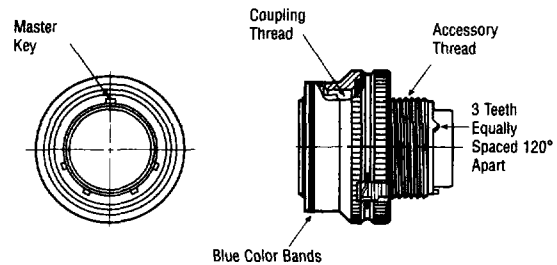
#### Plug Shell, Threaded Coupling

Military No. M83723/86, 87,  
 91\*, & 92\*  
 MATRIX No. MT36 G, K



#### Plug Shell, Self-Locking, Threaded Coupling

Military No. M83723/95 & 96  
 MATRIX No. MT37 G, K  
 Boeing No. BACC63BR\*\*  
 McDonnell Douglas  
 BAN 7025 No. DC 56, DC 57



#### Plug Shell, RFI Grounding, Self-Locking Threaded Coupling

MATRIX No. M83723/97 & 98  
 MATRIX No. MT38 KS, KN

