PERFORMANCE SPECIFICATION SHEET

CONNECTORS, PLUG, ELECTRICAL, COAXIAL, RADIO FREQUENCY
(SERIES N (CABLED) – PIN CONTACT, CLASS 2) FOR SEMI-RIGID CABLE

Reinstated after 12 June 2018 and may be used for new and existing designs and acquisitions.

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The complete requirements for acquiring the connectors described herein shall consist of this specification and the latest issue of MIL-PRF-39012.

NOTES:
1. Dimensions are in inches. Metric equivalents are given for general information only.
2. Metric equivalents are in parentheses.
3. Dimension .937 (23.80 mm) is the largest overall diameter of the connector.
4. Wrench flats, when applicable, are to accommodate standard wrench opening per FED-STD-H28.
5. All undimensioned pictorial representations are for reference purposes only.
6. Dimension 1.625 (41.28 mm) defines the maximum length of the connector when assembled to the appropriate cable.

FIGURE 1. General configuration.
NOTES:
1. Dimensions are in inches. Metric equivalents are given for general information only.
2. Three holes .027 (0.69 mm) minimum diameter, equally spaced, are required for safety wiring after mating. Location on coupling nut optional.

FIGURE 2. Mating dimensions for pin terminations.
TABLE I. Dash number and applicable cable.

<table>
<thead>
<tr>
<th>Dash No.</th>
<th>Applicable cable 2/</th>
</tr>
</thead>
<tbody>
<tr>
<td>CATEGORY A – FIELD SERVICEABLE 1/ (NO SPECIAL TOOLS REQUIRED)</td>
<td></td>
</tr>
<tr>
<td>0001 3001</td>
<td>M17/130-RG402* 0.141 dia. (3.58 mm) M17/130-00001, 00002, 00003</td>
</tr>
<tr>
<td>0002 3003</td>
<td>M17/129-RG401* 0.250 dia. (6.35 mm)</td>
</tr>
<tr>
<td>CATEGORY E – FIELD REPLACEABLE 1/ (STANDARD ASSEMBLY TOOL KIT)</td>
<td></td>
</tr>
<tr>
<td>0003 3003</td>
<td>M17/130-RG402* 0.141 dia. (3.58 mm) M17/130-00001, 00002, 00003</td>
</tr>
<tr>
<td>CATEGORY F – FIELD REPLACEABLE 1/ (MIL-C-22520 COMPRESSION TOOL)</td>
<td></td>
</tr>
<tr>
<td>3201 3202 3203 3204</td>
<td>M17/129-RG401* M17/130 – 00001, 00002, 00003</td>
</tr>
<tr>
<td>Tool No.</td>
<td>Positioning dies</td>
</tr>
<tr>
<td>----------</td>
<td>------------------</td>
</tr>
<tr>
<td>3201 3202 3203 3204</td>
<td>M22520/5</td>
</tr>
</tbody>
</table>

1/ These connectors have captivated center contacts.
2/ The latest version of each cable shall be applicable.
3/ Cable to be used when performing tests requiring cable.

NOTE: Direct solder type connectors shall not be used on cable larger than .141 nominal diameter.

FIGURE 3. Cable stripping dimensions for category E and category F connectors.
ENGINEERING DATA.
Nominal impedance: 50 ohms.
Frequency range: 0 to 18 GHz.
Voltage rating:
500 volts rms maximum working voltage at sea level.
125 volts rms maximum at 70,000 feet.
Temperature rating:
-65°C to +105°C for M17/129-RG401.
-65°C to +105°C for M17/130-RG402, M17/130-00001, 00002, 00003

REQUIREMENTS
Dimensions and configuration: See figure 1.
Force to engage and disengage:
Longitudinal force: Not applicable.
Torque: 6 inch-pounds maximum.
Coupling proof torque: 15 inch-pounds minimum.
Inspection conditions: For each test of threaded coupling connector where the test is performed on mated pairs, the pairs shall be torqued to 6 to 10 inch-pounds.
Mating characteristics: See figure 2 for dimensions.
Outer contact:
Test ring: .316 maximum, 16 microinches finish.
Insertion force: 25 pounds maximum when inserted a minimum of .093.
Contacts with slotted members. Shall contact a .324 minimum diameter ring within .031 of their tip ends.
Center contact retention (applicable to captivated center contact connectors only): 5 pounds minimum axial force.
Voltage standing wave ratio (VSWR): From 2.0 to 18.0 GHz, 1.15 + .012 x freq. (GHz).
Swept frequency VSWR test setup
Item 6. VSWR shall be less than 1.008 +.002 F (F in GHz).
Item 16. VSWR shall be less than 1.008 + .002 F (F in GHz).
Second step of VSWR checkout procedure. VSWR shall be less than 1.012 + .004 F (F in GHz).
Group B inspection: VSWR shall be less than 1.024 + .007 F (F in GHz).

Qualification and group C inspection: VSWR shall not exceed 1.08.

Connector: 500 cycles at 12 cycles per minute maximum. The connector shall meet the mating characteristics and force to engage and disengage requirements.

The connector shall meet the mating characteristics and force to engage and disengage requirements.

Contact resistance (in milliohms maximum):

<table>
<thead>
<tr>
<th></th>
<th>Initial</th>
<th>After environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center contact</td>
<td>1.5</td>
<td>2.0</td>
</tr>
<tr>
<td>Outer contact</td>
<td>.2</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Outer contact (stainless steel)</td>
<td>2.0</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Cable outer conductor to body</td>
<td>.05</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Cable outer conductor to stainless steel body</td>
<td>2.0</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

Dielectric withstanding voltage: MIL-STD-202-301. 1,500 volts rms, minimum at sea level.

Vibration, high frequency: MIL-STD-202-204, test condition B, except the method of mounting shall be approved by the qualifying activity.


Thermal shock: MIL-STD-202-107, test condition B, except test high temperature shall be 115°C.

Humidity: MIL-STD-202-106. No measurements at high humidity. Insulation resistance shall be at least 200 megohms within 5 minutes after removal from humidity.

Corona level.

Altitude: 70,000 feet.

<table>
<thead>
<tr>
<th>Cable (semirigid)</th>
<th>V rms</th>
</tr>
</thead>
<tbody>
<tr>
<td>M17/129-RG401</td>
<td>500</td>
</tr>
<tr>
<td>M17/130-RG402, M17/130-00001, 00002, 00003</td>
<td>375</td>
</tr>
</tbody>
</table>

RF high potential withstanding voltage

Frequency: 5 to 7.5 MHz inclusive.

Leakage current: Not applicable.

<table>
<thead>
<tr>
<th>Cable (semirigid)</th>
<th>V rms</th>
</tr>
</thead>
<tbody>
<tr>
<td>M17/129-RG401</td>
<td>1,200</td>
</tr>
<tr>
<td>M17/130-RG402, M17/130-00001, 00002, 00003</td>
<td>1,000</td>
</tr>
</tbody>
</table>

Cable retention

<table>
<thead>
<tr>
<th>Cable</th>
<th>Force</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>M17/129-RG401</td>
<td>90 pounds minimum</td>
<td>70 inch-ounces minimum</td>
</tr>
<tr>
<td>M17/130-RG402, M17/130-00001, 00002, 00003</td>
<td>60 pounds minimum</td>
<td>55 inch-ounces minimum</td>
</tr>
</tbody>
</table>

Coupling mechanism retention force: 100 pounds minimum.
RF leakage: -90 dB minimum, tested at a frequency between 2 and 3 GHz.

Insertion loss: dB maximum = \(0.10 \times \sqrt{\text{freq. GHz}}\). Test frequency at 6.0 GHz.

Part number: M39012/129- (dash number from table I).

TABLE II. Group qualification.

<table>
<thead>
<tr>
<th>Group</th>
<th>Submission and qualification of any of the following dash numbers 1/2/</th>
<th>Qualifies the following dash numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>*001</td>
<td>*001</td>
</tr>
<tr>
<td>II</td>
<td>*002</td>
<td>*002</td>
</tr>
<tr>
<td>III</td>
<td>*003</td>
<td>*003</td>
</tr>
</tbody>
</table>

1/ Individual connectors other than listed are self qualifying only.

2/ Qualification of connectors qualifies connectors of the same material only.

* Body material and connector requirement.

Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Referenced documents. In addition to MIL-PRF-39012, this document references the following:

- FED-STD-H28
- MIL-STD-202-106
- MIL-STD-202-107
- MIL-STD-202-204
- MIL-STD-202-213
- MIL-STD-202-301
- MIL-STD-202-302
CONCLUDING MATERIAL

Custodians: Preparing activity:
Army - CR DLA - CC
Navy - EC (Project 5935-2018-073)
Air Force – 85
NASA – NA
DLA – CC

Review activities:
Army – AR, AT, MI
Navy - AS, MC, OS, SH
Air Force - 19, 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at https://assist.dla.mil.