

INCH-POUND

MIL-PRF-39012/130A

12 June 2018

SUPERSEDING

MIL-PRF-39012/130

10 July 1985

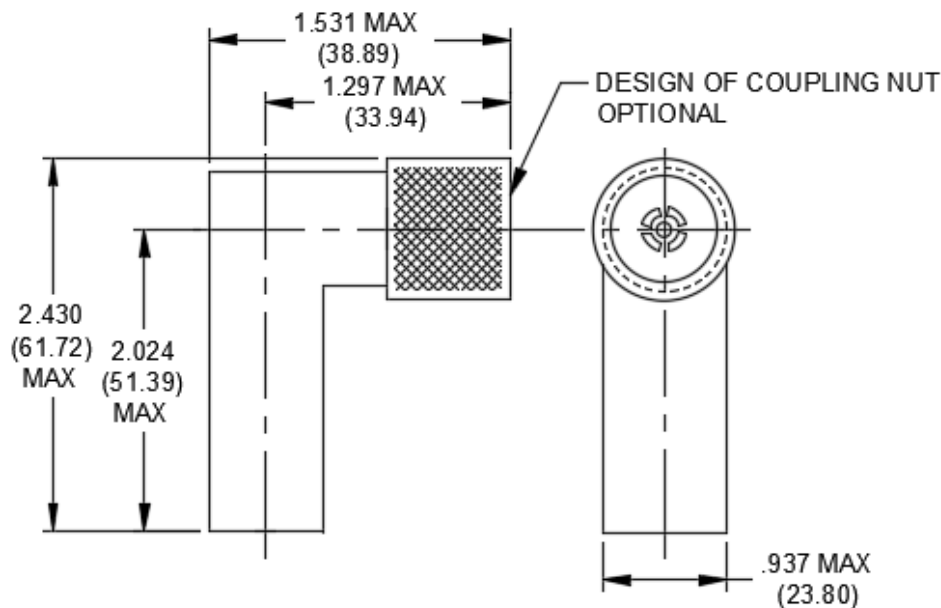
PERFORMANCE SPECIFICATION SHEET

CONNECTORS, PLUG, ELECTRICAL, COAXIAL, RADIO FREQUENCY (SERIES N (CABLED) – RIGHT ANGLE, 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 requirements for acquiring the connectors described herein shall consist of
this specification and the latest issue of MIL-PRF-39012.

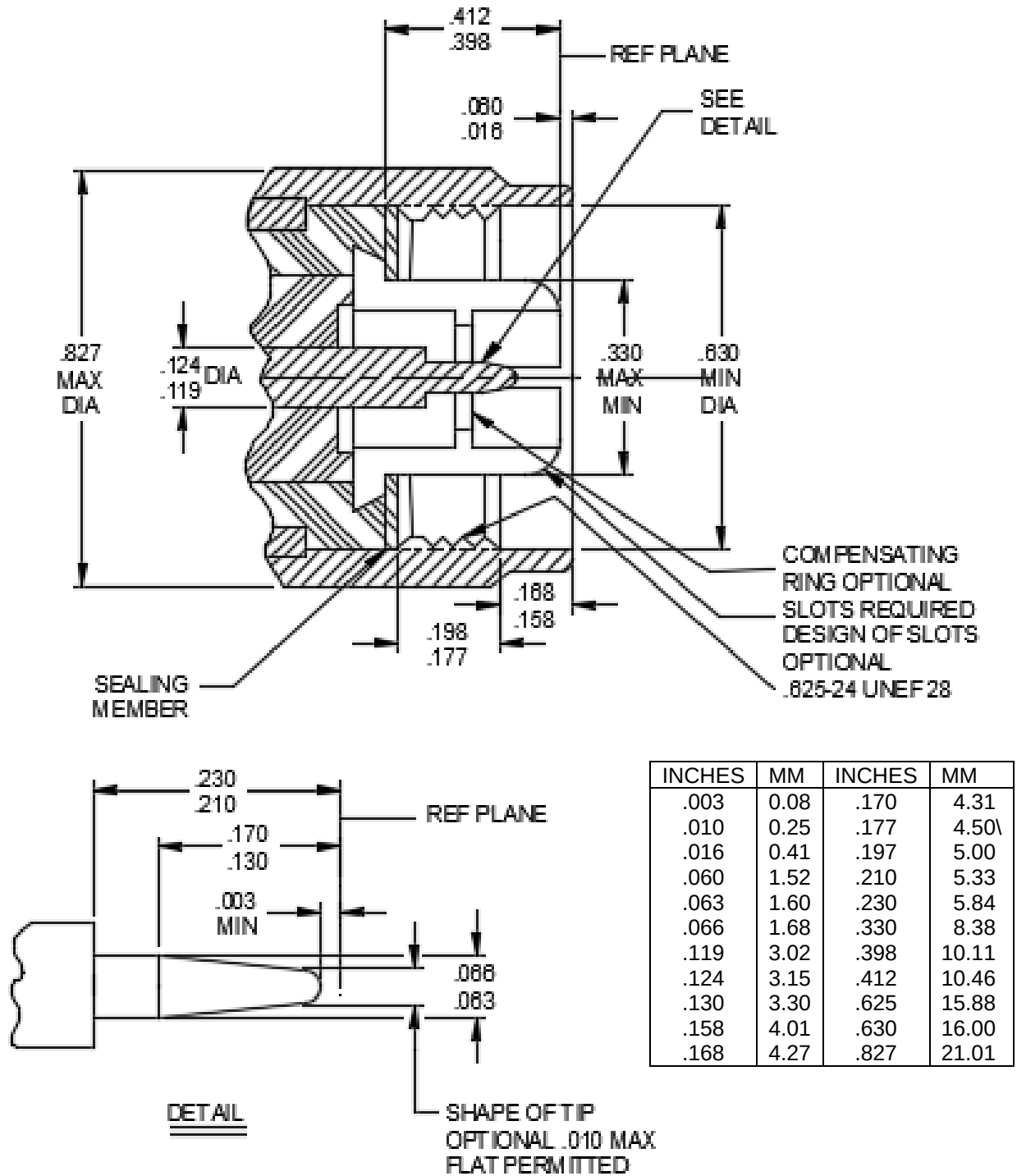


NOTES:

1. Dimensions are in inches. Metric equivalents are in parentheses.
2. Dimension 1.531 (38.89 mm), .937 (23.80 mm) and 2.430 (61.72 mm) are the largest overall dimensions of the connector.
3. Wrench flats, when applicable, are to accommodate standard wrench opening per FED-STD-H28.
4. All undimensioned pictorial representations are for reference purposes only.
5. Dimension 2.430 (61.72 mm) defines the maximum length of the connector when assembled to the appropriate cable.
6. Metric equivalents are given for general information only.

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.

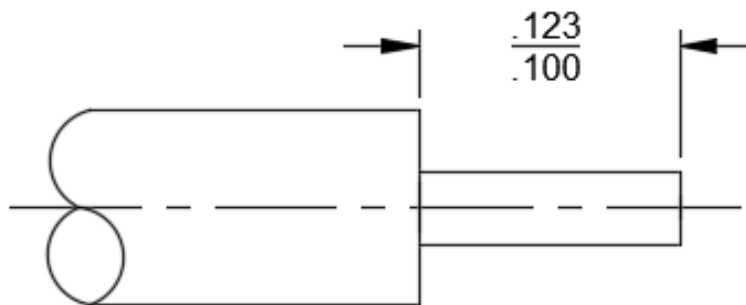
TABLE I. Dash number and applicable cable.

Dash No.	Applicable cable <u>2/</u>
CATEGORY A – FIELD SERVICEABLE <u>1/</u> (NO SPECIAL TOOLS REQUIRED)	
0001 3001	M17/130-RG402* 0.141 dia. (3.58 mm) M37/130-00001, 00002, 00003
0002 3002	M17/129-RG4018 0.250 dia. (6.35 mm)
CATEGORY E – FIELD REPLACEABLE <u>1/</u> (STANDARD ASSEMBLY TOOL KIT)	
0003 3003	M17/130-RG402* 0.141 dia. (3.58 mm) M37/130-00001, 00002, 00003

Dash No.	Applicable cable <u>2/</u>	Tool No.	Positioning dies	Locator pins	Crimp dies M22520/5
3201 3202	M17/129-RG401* M17/130-RG402* M17/130-00001, 00002, 00003	M22520/ 36-01	M22520/36-XX	M22520/36-XX	---
3203 3204	M17/129-RG401* M17/130-RG402* M17/130-00001, 00002, 00003	M22520/ 5-01	---	---	-XX

- 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 I.D.: .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.

Insulation resistance: MIL-STD-202-302, test condition B. 5,000 megohms, minimum.

Center contact retention (applicable to captivated center contact connectors only): 6 pounds minimum axial force.

Corrosion (salt spray): MIL-STD-202-101, test condition B.

Voltage standing wave ratio (VSWR): From 2.0 to 18.0 GHz, $1.15 + .015 \text{ freq. (GHz)}$.

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

Contact resistance (in milliohms maximum):

	Initial	After environment
Center contact	1.5	2.0
Outer contact	.2	Not applicable
Outer contact (stainless steel)	2.0	Not applicable
Cable outer conductor to body	.05	Not applicable
Cable outer conductor to stainless steel body	2.0	Not applicable

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, and 30 g peak will be applicable.

Shock: MIL-STD-202-213, test condition I

Thermal shock: MIL-STD-202-213, test condition I, except test high temperature shall be 115°C.

Moisture resistance: 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.

<u>Cable (semirigid)</u>	<u>V rms</u>
M17/129-RG401	500
M17/130-RG402, M17/130-00001, 00002, 00003	375

RF high potential withstanding voltage.

Frequency: 5 to 7.5 MHz inclusive.

Leakage current: Not applicable.

<u>Cable (semirigid)</u>	<u>V rms</u>
M17/129-RG401	1,200
M17/130-RG402, M17/130-00001, 00002, 00003	1,000

Cable retention

<u>Cable</u>	<u>Force</u>	<u>Torque</u>
M17/129-RG401	90 pounds minimum	70 inch-ounces minimum
M17/130-RG402, M17/130-00001, 00002, 00003	60 pounds minimum	55 inch-ounces minimum

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 = $15 \times \sqrt{\text{freq. GHz}}$. Test frequency at 6.0 GHz.

Part number: M39012/130- (dash number from table I).

TABLE II. Group qualification.

Group	Submission and qualification of any of the following dash numbers <u>1/ 2/</u>	Qualifies the following dash numbers
I	*001	*001
II	*002	*002
III	*003	*003

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-202-101
MIL-STD-202-106
MIL-STD-202-204
MIL-STD-202-213
MIL-STD-202-301
MIL-STD-202-302

CONCLUDING MATERIAL

Custodians:

Army - CR
Navy - EC
Air Force – 85
NASA – NA
DLA – CC

Preparing activity:

DLA - CC

(Project 5935-2018-074)

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>.