

NOTE: The document identifier and heading has been changed on this page to reflect that this is a performance specification. There are no other changes to this document. The document identifier on subsequent pages has not been changed, but will be changed the next time this document is revised.

MIL-PRF-39012/92C
14 December 1987
SUPERSEDING
MIL-C-39012/92B
1 March 1985

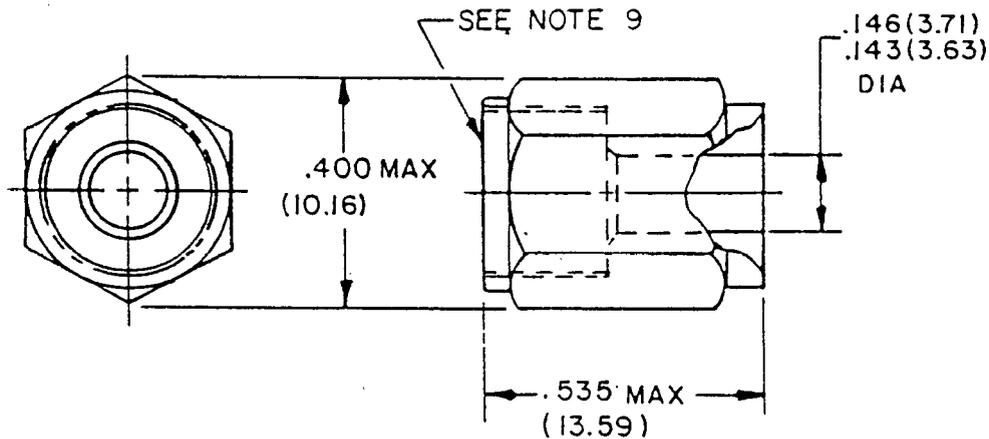
PERFORMANCE SPECIFICATION

CONNECTORS, PLUG, ELECTRICAL, COAXIAL, RADIO FREQUENCY, SERIES
SMA (CABLED, CLASS 2, WITHOUT CONTACT, .141 SEMIRIGID CABLE)

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 sheet and the latest issue of MIL-PRF-39012.

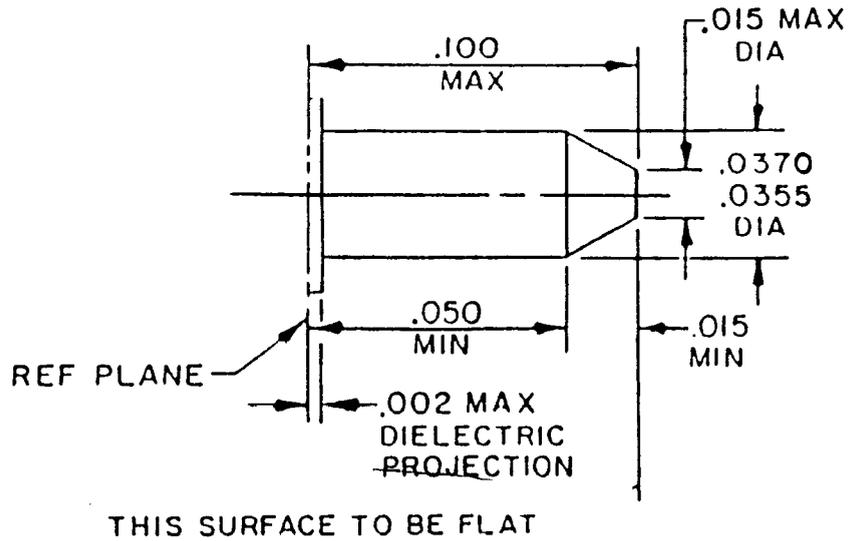
MARKING IMPLEMENTATION DATE FOR
CATEGORY B, SEE TABLE III



NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Metric equivalents are in parentheses.
4. Dimension .400 (10.16 mm) is the largest overall diameter of the connector.
5. Wrench flats to accommodate standard wrench opening per FED-STD-H28, appendix 10.
6. All undimensioned pictorial configurations are for reference purposes only.
7. Dimension .535 (13.59 mm) maximum defines the overall length of connector when assembled to the cable.
8. When applicable (see table I), three holes .016 (0.41 mm) minimum diameter, equally spaced, are required for safety wire after mating. Location on the coupling nuts optional.
9. Series SMA, no contact, in accordance with MIL-STD-348, 310.3.

FIGURE 1. General configuration.



Inches	mm
.002	0.05
.015	0.38
.0355	0.902
.0370	0.940
.050	1.27
.100	2.54

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Deburring is required.

FIGURE 2. Cable stripping dimensions for category E and category F connectors.

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TABLE I, delete and substitute as follows:

" TABLE I. Dash number and applicable cable.

Dash number		Applicable cable 1/			
CATEGORY A - FIELD SERVICEABLE (NO SPECIAL TOOLS REQUIRED) 2/ 3/ 4/					
3002 3102 <u>5/</u> 4002 4102 <u>5/</u>		M17/130-RG402 <u>6/</u> M17/130-00001 Through M17/130-00011			
CATEGORY E - FIELD REPLACEABLE (MIL-C-22520 CRIMP TOOL) 2/ 3/ 4/ 9/					
3003 3103 <u>5/</u> 4003 4103 <u>5/</u>		M17/130-RG402 <u>6/</u> M17/130-00001 Through M17/130-00011			
Dash number	Applicable cable <u>1/</u>	Tool number	Positioning dies	Locator pins <u>8/</u>	Crimp dies M22520/5
CATEGORY F - FIELD REPLACEABLE (MIL-C-22520 CRIMP TOOL) 2/ 3/ 4/					
3201 <u>9/</u> 3301 <u>5/ 9/</u> 4201 <u>9/</u> 4301 <u>5/ 9/</u>	M17/130-RG402 <u>6/</u> M17/130-00001 Through M17/130-00011	M22520/36-01	M22520/36-03	M22520/36-06, or -16	----
3202 3302 <u>5/</u> 4202 4302 <u>5/</u>		M22520/5-01	----	----	-05 or -41 cavity B

- 1/ MIL-C-17 cables are specified by the basic number. The latest version of each cable shall be applicable.
- 2/ Durability for center conductor is limited; not to be used in application requiring frequent matings.
- 3/ Coupling nuts shall be corrosion-resistant steel with a passivated finish in accordance with MIL-F-14072 (applies to "-3XXX" series connectors only).
- 4/ For logistics purposes, only connectors with safety wire holes will be stocked.
- 5/ No safety wire holes.
- 6/ Cable to be used when performing tests requiring cable.
- 7/ All corrosion-resistant steel-bodied connectors shall be gold-plated in accordance with MIL-G-45204, type II, class I, at least in the area of solder attachment.
- 8/ The locators required shall be indicated in the assembly instructions.
- 9/ Not for use in Army equipment."

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AMENDMENT 1

CONCLUDING MATERIAL

Custodians:

Army - CR
Navy - EC
Air Force - 85

Review activities:

Army - MI
Navy - SH
Air Force - 11, 17, 99
DLA - ES

User activities:

Army - AR, AT, ME
Navy - AS, MC, OS
Air Force - 19

Preparing activity:

Army - CR

Agent:

DLA - ES

(Project 5935-3920)

TABLE I. Dash number and applicable cable.

Dash no.	Applicable cable	<u>1/</u>
CATEGORY A - FIELD SERVICEABLE (NO SPECIAL TOOLS REQUIRED) <u>2/ 3/ 4/</u>		
3002	M17/130-RG402	<u>6/</u>
3102 <u>5/</u>	M17/130-00001	
4002 <u>5/</u>	M17/130-00002	
4102 <u>5/</u>	M17/130-00003	
CATEGORY E - FIELD REPLACEABLE (STANDARD ASSEMBLY TOOL KIT) <u>2/ 3/ 4/ 9/1</u>		
3003	M17/130-RG402	<u>6/</u>
3103 <u>5/</u>	M17/130-00001	
4003 <u>5/</u>	M17/130-00002	
4103 <u>5/</u>	M17/130-00003	

Dash no.	Applicable cable	Tool no.	Positioning dies	Locator pins	Crimp dies
	<u>1/</u>			<u>8/</u>	M22520/5
CATEGORY F - FIELD REPLACEABLE (MIL-C-22520 CRIMP TOOL) <u>2/ 3/ 4/</u>					
3201 <u>9/</u>					
3301 <u>9/ 5/</u>	M17/130-RG402 <u>6/</u>	M22520/36-01	M22520/36-03	M22520/36-06, or -16	---
4201 <u>9/</u>	M17/130-00001				
4301 <u>9/ 5/</u>	M17/130-00002				
	M17/130-00003				
3202					
3302 <u>5/</u>		M22520/5-01	---	---	-05 or -41 cavity B
4202					
4302 <u>5/</u>					

- 1/ MIL-C-17 cables are specified by the basic number. The latest version of each cable shall be applicable.
- 2/ Durability for center conductor is limited, not to be used in applications requiring frequent matings.
- 3/ Coupling nuts shall be corrosion-resistant steel with a passivated finish per MIL-F-14072. (Applied to "-3XXX" series connectors only).
- 4/ For logistics purposes, only connectors with safety wire holes will be stocked.
- 5/ No safety wire holes.
- 6/ Cable to be used when performing tests requiring cable.
- 7/ All corrosion-resistant steel-bodied connectors shall be gold-plated per MIL-G-45204, type II, class 1.
- 8/ The locators required shall be indicated in the assembly instructions.
- 9/ Not for use in Army equipment.

ENGINEERING DATA:

Nominal impedance: 50 ohms.

Frequency range: 0 to 18 GHz.

Voltage rating: 335 V rms (sea level), 85 V rms (70,000 feet).

Temperature rating: -65°C to +105°C.

Category F: Connectors using semirigid cables with standard stripping dimensions and using standard military assembly tools. The method of assembly of the connector to the cable shall be solderless.

REQUIREMENTS:

Dimensions and configuration: See figure 1 and MIL-STD-348.

Force to engage and disengage:

Longitudinal force: Not applicable.

Torque: 2 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 7 to 10 inch-pounds.

Mating characteristics: See figure 2 and MIL-STD-348 for dimensions.

Hermetic seal: Not applicable.

Leakage (pressurized connectors): Not applicable.

Center contact retention: Not applicable.

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

Voltage standing wave ratio (VSWR): From 0.5 to 18 GHz, or approximately 80 percent of upper cutoff frequency of the cable, whichever is lower. $1.035 + .005 F$ (GHz).

Swept frequency VSWR test setup:

Item 6: VSWR shall be less than $1.025 + .002 F$ (F in GHz).

Item 16: VSWR shall be less than $1.025 + .002 F$ (F in GHz).

Second step of VSWR checkout procedure: VSWR shall be less than $1.080 + .005 F$ (F in GHz).

Group B inspection: Use step 5, long cable method.

Qualification and group C inspection: Use step 5, long cable method.

Connector durability:

Insertion and withdrawal force:

100 cycles minimum at 12 cycles per minute maximum.

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

Contact resistance: (in milliohms maximum):

	<u>Initial</u>	<u>After environment</u>
Center contact:	Not applicable	Not applicable
Outer contact:	2.0	Not applicable
Outer cable conductor to body:	0.5	Not applicable

Dielectric withstanding voltage at sea level: Not applicable.

Vibration, high frequency: Method 204, test condition D, MIL-STD-202, except cable clamps shall be mounted on the vibration table 6 inches minimum from mating face of the connector pair.

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

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

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

Corona level: 250 volts minimum.

Altitude: 70,000 feet.

RF high potential withstanding voltage: 670 V rms.

Frequency: 5 MHz to 7.5 MHz.

Leakage current: Not applicable.

Cable retention force: 60 pounds minimum.

Torque: 55 inch-ounces (to be applied 4 inches maximum from the end of the connector).

Coupling mechanism retention force: 60 pounds minimum.

RF leakage: -90 dB minimum tested at a frequency between 2 and 3 GHz.

RF insertion loss: dB max = $.03 \times \sqrt{\text{freq GHz}}$. Test frequency at 15.5 to 18 GHz.

Group qualification: Not applicable.

Supplemental test requirements for qualification and group C inspection for category F connectors.

Six additional connectors shall be selected from the production lot and terminated to produce three cable leads, twelve inches minimum, sixteen inches maximum. The three assemblies shall be subjected to the following tests in sequence: VSWR, thermal shock, VSWR, and cable retention.

The following exceptions to the requirements apply to this supplemental test only:

Voltage standing wave ratio (VSWR) of the cable assembly: From 0.5 to 18 GHz.

<u>Test cable assemblies</u>	<u>VSWR (initial)</u>	<u>VSWR (after thermal shock)</u>
M17/130-RG402	1.07 +.011 F (GHz)	1.07 +.013 F (GHz)
M17/130-00001		
M17/130-00002		
M17/130-00003		

Thermal shock: 10 cycles.

Part number: M39012/92- (dash number from table I or "B" number from table II).

TABLE II. CATEGORY B - NONFIELD REPLACEABLE (SPECIAL TOOLS MAY BE REQUIRED).

[NOT FOR AIR FORCE OR NAVY USE. FOR OEM USE ONLY.]

Part number M39012/92B 1/ 2/ 3/ 4/	Applicable cable 5/
3001	M17/130-RG402 7/
3101 6/	M17/130-00001
4001	M17/130-00002
4101 6/	M17/130-00003

- 1/ Durability for center conductor is limited, not to be used in applications requiring frequent matings.
- 2/ For logistics purposes, only connectors with safety wire holes will be stocked.
- 3/ Coupling nuts shall be corrosion-resistant steel with a passivated finish per MIL-F-14072. (Applied to "-3XXX" series connectors only).
- 4/ All corrosion-resistant steel-bodied connectors which are designed to be assembled to the outer conductor using solder shall be gold-plated per MIL-G-45204, type II, class 1.
- 5/ MIL-C-17 cables are specified by the basic number. The latest version of each cable shall be applicable.
- 6/ No safety wire holes.
- 7/ Cable to be used when performing tests requiring cable.

TABLE III. Cross-reference of part numbers.

Current part number 1/ M39012/92	Superseded part number M39012/92
B3001	-3001
B3101	-3101
B4001	-4001
B4101	-4101

- 1/ The new "B" part numbers will be required marking 6 months after the date of this specification. The connectors that are in stock or distribution that were previously qualified and marked with the old part number shall also be considered acceptable for Government use until connector stock is purged.

Revision letters are not used to denote changes due to the extensiveness of the changes.

Custodians:

Army - CR
Navy - EC
Air Force - 85

Preparing activity:

Army - CR

Agent:

DLA - ES

Review activities:

Army - MI
Navy - SH
Air Force - 11, 17, 99
DLA - ES

(Project 5935-3599-13)

User activities:

Army - AR, AT, ME
Navy - AS, OS, MC
Air Force - 19