INCH-POUND

MIL-C-83413/8A
26 June 1995
SUPERSEDING
MIL-C-83413/8
12 October 1983
MS25083K
9 May 1980

MILITARY SPECIFICATION SHEET

CONNECTORS AND ASSEMBLIES, ELECTRICAL, AIRCRAFT GROUNDING: TYPE IV JUMPER CABLE ASSEMBLY, LEAD, ELECTRICAL

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

The requirements for acquiring the product described herein shall consist of this specification sheet and the issue of the following specification listed in that issue of the Department of Defense Index of Specifications and Standards (DODISS) specified in the solicitation: MIL-C-83413.

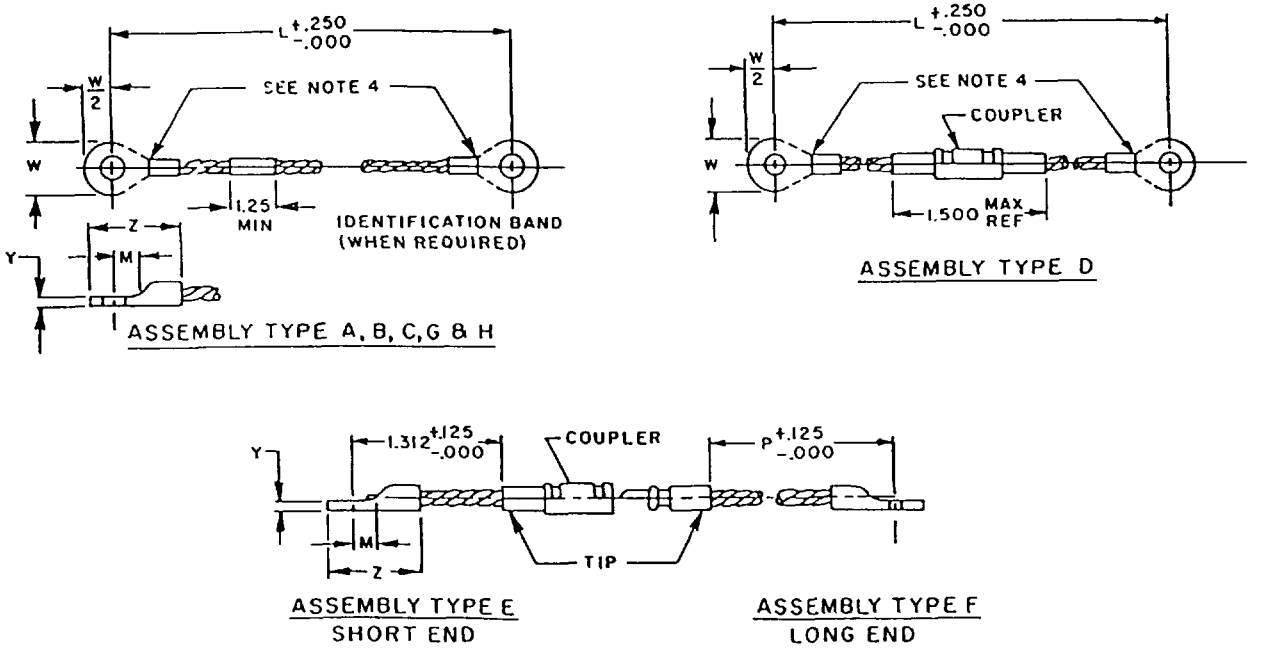


FIGURE 1. Jumper cable assembly.

AMSC N/A FSC 6150

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

TABLE I. Jumper assembly types and characteristics.

Jumper assembly type	Construction type	Wire and terminal material	Wire size (see table II)	Available lug sizes (see table III)	Available cable length, see "L" or "P" dimensions on figure 1	Lightening tested	Fuel compatible 1/	Method of attaching terminals	Color of ID band	Supersedes
A	Bonding	Copper	12	A,B,C,D,E	02-999	No	No	Crimp	No band	MS25083-2
B	Current return	Copper	8	D,E	02-999	No	No	Crimp	No band	MS25083-4
C 2/	Bonding	Aluminum	10	A,B,C,D,E (aluminum only)	04-999	No	Yes	Brazed 4/	Clear	MS25083-1 and -7
D 3/	Quick disconnect	Copper	12	A,B	03-999	No	No	Crimp	No band	MS25083-3
E 3/	Short end of quick disconnect	Copper	12	A,B	Fixed length	No	No	Crimp	No band	MS25083-3S
F 3/	Long end of quick disconnect	Copper	12	A,B	02-999	No	No	Crimp	No band	MS25083-3P
G	Bonding	Copper	12	A,B,C,D,E	04-999	Yes	No	Crimp	Yellow	MS25083-5
H	Current return	Copper	8	D,E	04-999	Yes	No	Crimp	Yellow	MS25083-6

1/ Only fuel compatible jumper assemblies may be used within fuel tank and cells.
2/ Do not use outside fuel tanks and cells.
3/ Inactive for Air Force Airborne use after 9 December 1963.
4/ Dip braze terminals per MIL-B-7883. A coating is not required on interior strands of the cable, chemical conversion coating per MIL-C-5541 class 3 shall be applied after brazing. Inert gas welding using an aluminum based solder or other means of termination may be used only if approved by the qualifying activity. Aluminum terminals may be crimped to the cable to facilitate dip brazing. Overcrimping shall be avoided.

TABLE II. Wire characteristics by jumper assembly type.

Jumper assembly type	Material	Stranding No. x AWG	Wire size	Assembly 2/ resistance (max-ohms)	Tensile strength (min-lb)	Copper only	
						Crimping tools 3/	Crimping dies
A, G	Copper	(7 x 37) x 36	12	.00016xL +.00034 Ω	110	MIL-C-22520/5-01 1/ or MIL-C-22520/24-01	MIL-C-22520/5-100 ---
B, H	Copper	(7 x 95) x 36	8	.00006xL +.00016 Ω	225	MS25441	MS23002 1/ MS90485
C	Aluminum	37 x 0.0167 inch	10	.00042xL +.00110 Ω	75	Not applicable	Not applicable
D	Copper	(7 x 37) x 36	12	.00016xL +.00034 Ω	110	MIL-C-22520/5-01 MIL-C-22520/24-01	MIL-C-22520/5-100 ---
E	Copper	(7 x 37) x 36	12	.00057	110	MIL-C-22520/5-01 MIL-C-22520/24-01	MIL-C-22520/5-100 ---
F	Copper	(7 x 37) x 36	12	.00016xL +.00034 Ω	110	MIL-C-22520/5-01 MIL-C-22520/24-01	MIL-C-22520/5-100 ----

1/ Application: MIL-C-22520/5-01, /5-100 and MS23002 for use on insulated terminals. MIL-C-22520/24-01 and MS90485 for use on uninsulated terminals.

2/ Where L = length of the cable assembly in inches. Example: For a 24 inch type A assembly, Assembly Resistance = .00016 ohm/inch x 24 inches + .00034Ω = .00418 ohms (max).

3/ Alternate crimping tools which use the specified dies of this table or qualified class II copper terminal lugs from MIL-T-7928 (crimped with the tools and dies used to obtain the class II terminal lug approval), may be used to facilitate high volume production of copper jumpers. However, either of these options must be pre-approved by the qualifying activity before qualification tests are initiated on samples produced using these termination options.

TABLE III. Available lug sizes.

Code letter lug size designation	For stud size	Aluminum terminals 1/ (Type C assembly only)								Copper terminals (All types except type C)	
		Stud hole I.D.		M Min	W		Y		Z Max	MS25036 Insulated	MS20659 Uninsulated
		Max	Min		Max	Min	Max	Min			
A	.112 or .137	.152	.142	.218	.406	.313	.083	.037	1.172	-111	-165
B	.164 or .190	.203	.193	.250						-112	-105
C	.24	.285	.260	.281	.540	.450			1.300	-157	----
D	.3125	.343	.320	.329	.741	.531	.090	.038	1.390	1/ -113, 2/ -117	1/ -106, 2/ -108
E	.375	.410	.385	.343					1.626	1/ -114, 2/ -118	1/ -128, 2/ -129

1/ Size #12 - #10 AWG wire only.
2/ Size #8 AWG wire only.

Inch	mm	Inch	mm	Inch	mm
.005	0.127	.193	4.90	.385	9.78
.0167	0.42	.203	5.16	.406	10.31
.031	.79	.218	5.54	.410	10.41
.037	.94	.24	6.1	.450	11.93
.038	.97	.250	6.35	.531	13.49
.083	2.11	.260	6.60	.540	13.72
.090	2.29	.281	7.14	.741	18.82
.112	2.85	.285	7.24	.750	19.05
.125	3.18	.3125	7.94	1.172	29.77
.137	3.50	.313	8.0	1.300	33.02
.142	3.61	.320	8.13	1.312	33.32
.152	3.86	.329	8.36	1.390	35.31
.164	4.20	.343	8.71	1.500	38.10
.190	4.85	.375	9.53	1.626	41.30

NOTES:

1. Dimensions are in inches.

2. Unless otherwise specified, tolerance is ±.005.

3. Metric equivalents (to the nearest .01 mm) are given for general information only and are based upon 1 inch = 25.4 mm.

4. Resistance readings to be taken at the junction of terminal barrels and tongues.

5. Lightning current tests applicable to type G and H assemblies only.

REQUIREMENTS:

1. Material:

   a. Copper wire (except type C assembly): QQ-W-343, Type R, Class undesignated (36 AWG strands), Temper 1, Coating T of the size specified in table II.

   b. Aluminum wire (type C assembly): Size 10, 37 strands of 0.0167 inch, electrical grade, aluminum alloy, 1350 strands per ASTM B 230, concentric stranded, length of lay (pitch) .75 to 1.25 inch.

   c. Copper terminals (except type C assembly): MIL-T-7928, under the applicable MS sheet shown in table III.

   d. Aluminum terminals (type C assembly): Aluminum alloy QQ-A-225/2, or QQ-A-250/2, Temper 0 with dimensions as shown in table III.

2. Coupler (assembly types "D", "E" and "F" only): In accordance with MIL-S-6852-3.

3. Identification band (Types C, G and H only): Polyolefin, heat shrinkable in accordance with MIL-I-23053/5. Color according to table I.

4. Assembly resistance: See table II.

5. Tensile strength: See table II. Perform after the flexibility test in MIL-C-83413 Group II qualification sequence. Omit assembly resistance as a tensile strength post test.

6. Crimping tools and crimping dies: See table II.

7. Marking (Types C, G and H only): Part number identification shall be marked on the identification band. If the identification band is too short to accommodate the entire part number on a single line, the part number may be put on two lines or both sides of the identification band. Assembly type "C" parts shall be marked with an ink or fluid which is compatible with fuel.

8. Salt spray: 48 hours in accordance with MIL-STD-1344 Method 1001.

9. Altitude-Low temperature: Not applicable.

10. Dust: Not applicable.

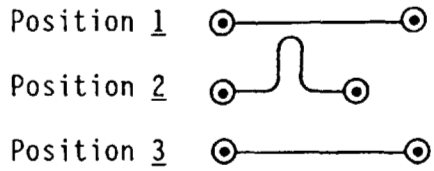
11. Ozone exposure: Not applicable.

12. Lightning current: Not applicable to types A, B, C, D, E and F.

13. Flexibility: For type "C" aluminum assemblies, change the MIL-C-83413 test to the following: Twist and flex: prior to the tensile strength test of table II of MIL-C-83413:

    Test No. 1 - Twist test 3 full twists in a direction to tighten the wire weave.

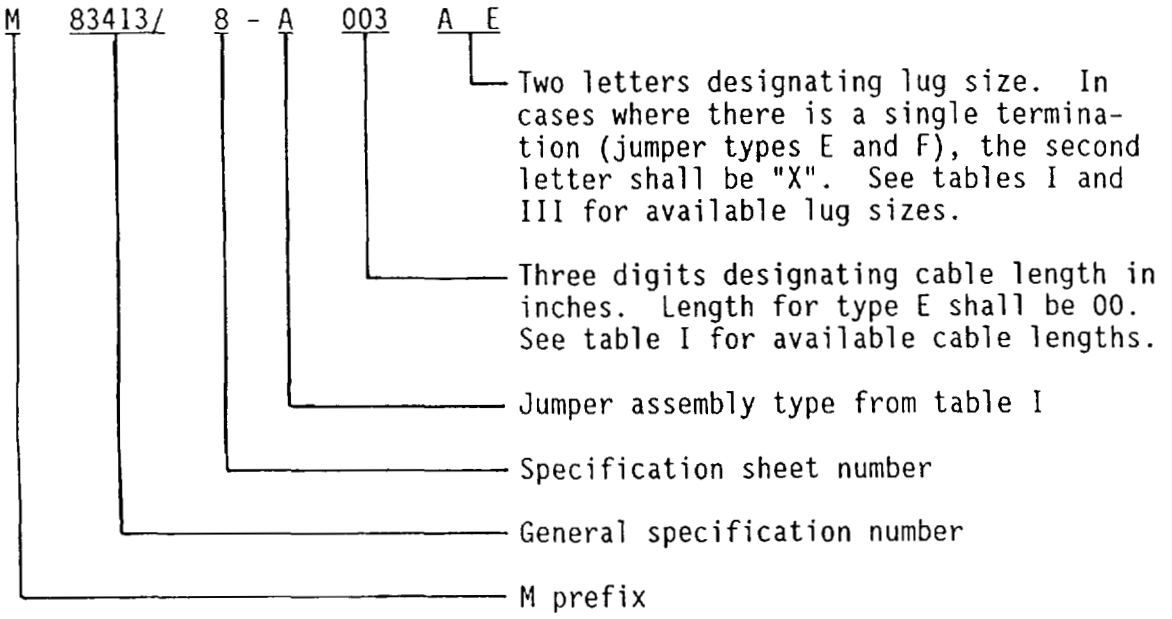
    Test No. 2 - Flex 20 times.



Note: For copper assemblies the flexibility test of MIL-C-83413 shall be performed at a rate of 30-65 cycles/minute.

14. Part or Identifying Number (PIN)

Example of PIN: M83413/8-A003AE



15. Supersession data: In addition to MS25083, the following documents are also superseded by this specification sheet: Specification AN-J-1, AN749, AN751, and AN752.

16. Qualification required: The activity responsible for the qualified products list for this specification sheet is the Naval Air Systems Command, Washington, DC 20361-5100; however, information pertaining to qualification may be obtained from the Naval Air Warfare Center Aircraft Division, Indianapolis Code 4.5.6.3, 6000 East 21st Street, Indianapolis, IN 46219-2189.

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

Custodians:
Army - AV
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Air Force - 85

Review activities:
Army - AR, CR, ME, MI
Navy - MC
Air Force - 11, 18, 82, 90, 99
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Preparing activity:
Navy - AS

(Project 6150-0234)