INCH-POUND
MIL-PRF-24308D
AMENDMENT 2
12 November 1997
SUPERSEDING
AMENDMENT 1
23 April 1997

PERFORMANCE SPECIFICATION

CONNECTORS, ELECTRIC, RECTANGULAR, NONENVIRONMENTAL, MINIATURE, POLARIZED SHELL, RACK AND PANEL, GENERAL SPECIFICATION FOR

This amendment forms a part of MIL-PRF-24308D, dated 15 July 1996, and is approved for use by all departments and Agencies of the Department of Defense.

PAGE 2

∗ 2.2.1, after SPECIFICATIONS, add the following:

"DEPARTMENT OF DEFENSE

MIL-C-39029 - Contacts, Electrical Connector, General Specification For
MS18281 - Contacts, Pin and Socket, Classes G, N, and H, Solder Type, Non-removable."

∗ After STANDARDS, delete MILITARY and substitute with DEPARTMENT OF DEFENSE, then add the following:

MIL-STD-790 - Standard Practice For Established Reliability and High Reliability Qualified Products List (QPL) Systems for Electrical, Electronic, and Fiber Optic Parts Specifications."

∗ 2.3, after American Society for Testing and Materials (ASTM), add the following:

ASTM B 488 - Electrodeposited Coatings of Gold for Engineering Uses.
ASTM D 5948 - Molding Compounds, Thermosetting, Standard Specification for."

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∗ 3.2.2.1, delete and substitute:

"3.2.2.1 Statistical process control (SPC). The contractor shall implement and use statistical process control techniques when possible in the manufacturing process for parts covered by this specification. The SPC program shall be developed and maintained in accordance with ANSI/EIA-557. Where SPC cannot be utilized because of non-continuous production requirements, a lot sampling plan for inspection in accordance with table XI with c = 0 can be utilized. The SPC and c = 0 programs shall be documented and maintained as part of the overall reliability assurance program as specified in ANSI/EIA-557 and MIL-STD-790. Evidence of such compliance shall be verified by the qualifying activity of this specification as a prerequisite for qualification effective 24 months after the date of this document."

∗ 3.3.2, delete and substitute:

"3.3.2 Dissimilar metals. When dissimilar metals are employed in intimate contact with each other, protection against electrolytic corrosion shall be provided (see 3.3.1). For guidance on dissimilar metals, see 6.8.1."

∗ 3.3.4.2, delete and substitute:

"3.3.4.2 Contact finish (solder contact). The finish on contact bodies shall be gold plated as specified in ASTM B 488 to a minimum of 50 micro inches (1.27µm), applied either overall or localized for class G (see 6.5). The finish on contact bodies for classes D, K, and M shall be gold plated as specified in ASTM B 488 to a minimum of 50 micro inches (1.27µm), applied overall. The finish on contact bodies for class H shall be tin or an equivalent or better finish applied overall. For guidance on contact finish see 6.8.2."

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∗ 3.3.4.2.1, delete and substitute:

3.3.4.2.1 Overall finish. Contact bodies shall be overall gold plated 50 micro inches (1.27µm) thick minimum in accordance with ASTM B 488, (see 3.3), over a suitable underplate (see 6.5). Silver shall not be used as an underplate. Nickel shall not be used as an underplate on classes M and N. The finish on contact bodies of class H connectors shall be electro-tin (see 3.3.1) or an equivalent or better finish (no organic brighteners). Preliminary plating of another metal is permissible. For guidance on overall finish, see 6.8.2.1."

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∗ 3.3.4.2.2.1, delete and substitute:

"3.3.4.2.2.1 Contact mating area. The contact mating area as shown on figure 1 shall be gold plated 50 micro inches (1.27µm) thick minimum in accordance with ASTM B 488, (see 3.3.1) over nickel plating (see 3.3.4.2.2). For guidance on the finish of the contact mating area, see 6.8.2.2."

∗ 3.3.4.2.2.2, delete and substitute:

"3.3.4.2.2.2 Terminations. Terminations shall be plated as follows:

a. Solder cups: 100 microinches minimum tin-lead plated (see 3.3.1), 50 to 95 percent tin.

b. Insulation displacement: 100 microinches minimum tin-lead plated (see 3.3.1), 50 to 95 percent tin.

c. Printed wiring tails: 100 microinches minimum tin-lead plated (see 3.3.1).

For guidance on the plating of terminations, see 6.8.2.3."

∗ 3.3.5.1, delete and substitute:

"3.3.5.1 Insert. Insert materials shall conform to SDG-F or GDI-30F in accordance with ASTM D 5948 (see 3.3.1) or thermoplastic polyester (see 3.3.1), for classes D, G, M, and N connectors. Insert dielectric material for classes H and K shall be glass. For guidance on insert materials, see 6.8.3."

∗ 3.3.6.2, delete and substitute:

"3.3.6.2 Finish for class H connectors. Unless otherwise specified, all metal parts for class H connectors shall be tin plated (see 3.3.1). Preliminary plating of another metal is permissible. For guidance on the finish of class H connectors, see 6.8.4."

∗ 3.3.6.3, delete and substitute:

"3.3.6.3 Finish for classes D, K, and M connectors. All metal parts for classes D and K connectors shall be electrically conductive nickel-phosporus conforming to ASTM B733, class 1 or 2, type III, .0005 inch minimum thickness, or an equivalent industry standard when available, class 1 or 2, grade B, finish shall be dull. Use of a suitable underplate is permissible. For class M, the finish shall be gold (see 3.3.1) over a suitable underplate (see 6.5). A silver underplate shall not be used. For guidance on the finish of classes D, K, and M connectors see 6.8.5."

∗ 3.4.1.1, delete and substitute:

"3.4.1.1 Solder contacts. Solder contacts shall be nonremovable from the insert, shall have eyelet or solder cup terminals as specified (see 3.1and 3.3.1) and shall be in accordance with MS18281. Solder cups shall be so designed such that during soldering, no components will be damaged and no liquid solder shall escape."

∗ 3.4.1.2, delete and substitute:

"3.4.1.2 Crimp contacts. Crimp contacts (see 3.3.1) shall be as follows:

Connector density	Contact size	Contact Part or Identifying Number (PIN)
High	22D socket	M39029/57-354
High	22D pin	M39029/58-360
Standard	20 pin	M39029/64-369
Standard	20 socket	M39029/63-368 "

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∗ 3.4.1.3, delete and substitute:

"3.4.1.3 Classes H and K contacts. Classes H and K contacts are to be permanently fused in place and are to have eyelet or solder cup terminals, as specified (see 3.1and 3.3.1), and shall be in accordance with MS18281."

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∗ 3.4.2, delete and substitute:

"3.4.2 Insert design and construction. Inserts shall be designed with suitable sections and radii such that they will not readily chip, crack, or break in assembly or in normal service. Inserts shall be molded or bonded with a bond barrier between all adjacent contacts and outside edge, one-piece construction, except for IDC. Pin entry openings on socket insert faces shall be as small as practicable. Socket insert shall provide adequate protection against a pin contacting a socket before the mating pair of connectors has been polarized. The inserts shall be so designed that the inserts cannot be removed from the shells. The contact retaining system shall be free of foreign material, adhesive, or any obstruction that would prevent smooth contact insertion and positive retention. The contact retention system for removable crimp contact connectors shall be a metal retention clip or other contact retention method which will enable the contacts to meet the contact retention requirements specified in 3.5.5. All contact retention systems shall utilize a common contact insertion/removal tool (see 3.3.1)."

∗ 3.4.4.1, delete and substitute:

"3.4.4.1 Intermateability. Plug and receptacle connectors having the same shell size, keying and contact arrangement shall be intermatable. Materials and processes used shall form compatible interface with materials and processes used to supply components supplied to MIL-C-24308."

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∗ 4.1.2 delete and substitute:

"4.1.2 Established Reliability and high reliability practice . An established reliability and high reliability practice shall be established and maintained in accordance with MIL-STD-790. Evidence of such compliance shall be verified by the qualifying activity of this specification as a prerequisite for qualification and continued qualification effective 24 months after the date of this document."

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∗ 6.8, delete and substitute:

"6.8 GUIDANCE INFORMATION

6.8.1 Dissimilar metals. When dissimilar metal are employed in intimate contact with each other, protection against electrolytic corrosion has been provided. Previous techniques to successfully provide this protection followed guideline 16 of MIL-HDBK-454.

6.8.2 Contact finish (solder contact). Based on past experience to successfully meet the performance requirements of this specification, the finish on contact bodies for classes D, K and M have been gold applied overall. The finish on contact bodies for class H have been tin applied overall.

6.8.2.1 Overall finish. Based on past experience to successfully meet the performance requirements of this specification, contact bodies have been overall gold-plated 50 microinches thick minimum in accordance with MIL-G-45204, type II, grade C, class 1, over a suitable underplate (see 6.5). Silver was not to be used as an underplate. Nickel was not to be used as an underplate on classes M and N. The finish on contact bodies of class H connectors have been 50 microinches minimum of electro-tin (no organic brighteners) in accordance with MIL-T-10727. Preliminary plating of another metal was permissible.

6.8.2.2 Contact mating area. Based on past experience to successfully meet the performance requirements of this specification, the contact mating area as shown on figure 1 have been gold plated 50 microinches thick minimum in accordance with MIL-G-45204, type II, grade C, class 1.

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6.8.2.3 Terminations. Based on past experience to successfully meet the performance requirements of this specification, the terminations have been plated as follows:

a. Solder cups: 100 microinches minimum tin-lead plated in accordance with MIL-P-81728, 50 to 95 percent tin.

b. Insulation displacement: 100 microinches minimum tin-lead plated in accordance with MIL-P-81728, 50 to 95 percent tin.

c. Printed wiring tails: Dimension M as shown on MS14058 and MS14059, 100 microinches minimum tin-lead plated in accordance with MIL-P-81728."

6.8.3 Insert Material. Based on past experience, to successfully meet the performance requirements of this specification, insert materials conformed to SDG-F of ASTM D5948 or type GPT-30F or GET-30F of MIL-M-24519 for classes D, G, M, and N connectors. Insert dielectric material for classes H and K have been glass.

6.8.4 Finish for class H connectors. Based on past experience to successfully meet the performance requirements of this specification, unless otherwise specified, all metal parts for class H connectors have been tin plated in accordance with MIL-T-10727. Preliminary plating of another material had been permissible.

6.8.5 Finish for classes D, K, and M connectors. Based on past experience to successfully meet the performance requirements of this specification, all metal parts for classes D and K connectors have been electrically conductive nickel-phosphorus conforming to ASTM B733, class 1 or 2, type III, .0005 inch minimum thickness, class 1 or 2, grade B, finish had to be dull. Use of a suitable underplate had been permissible. For class M, the finish had been gold in accordance with MIL-G-45204, grade C, class 1 over a suitable underplate (see 6.5). A silver underplate had not been used.

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∗ 6.9, delete in its entirety.

CONCLUDING MATERIAL

Custodians:
Army - CR
Navy - EC
Air Force - 85
NASA-NA

Review activities:
Army - AT, CR4, MI
Navy- AS, CG, MC, SH
Air Force - 17, 99

Preparing activity:
DLA - CC

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