MIL-P-642D
27 February 1979
SUPERSEDING
MIL-P-642C
3 July 1973, and
MIL-T-81643(AS)
11 April 1973

MILITARY SPECIFICATION

PLUGS, TELEPHONE, AND ACCESSORY SCREWS,

GENERAL SPECIFICATION FOR

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

1. SCOPE

1.1 Scope. This specification covers telephone plugs used in telephone (including telephone switchboard consoles), telegraph, and teletype circuits, and for connecting headsets, handsets, and microphones into communications circuits.

2. APPLICABLE DOCUMENTS

2.1 Issues of documents. The following documents of the issue in effect on date of invitation for bids or request for proposal form a part of this specification to the extent specified herein.

SPECIFICATIONS

MILITARY

MIL-W-76 - Wire and Cable, Hookup, Electrical, Insulated.
MIL-P-79 - Plastic Rods and Tubes, Thermosetting, Laminated.
MIL-M-20693 - Molding Plastic, Polyamide (Nylon), Rigid.
MIL-P-22985 - Plastic Molding and Extrusion Material, Ethyl Cellulose.
MIL-C-45662 - Calibration System Requirements.
MIL-C-55330 - Connectors, Preparation for Delivery of.

(See supplement 1 for list of specification sheets).

STANDARDS

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-202 - Test Methods for Electronic and Electrical Component Parts.
MIL-STD-454 - Standard General Requirements for Electronic Equipment.
MIL-STD-1285 - Marking of Electrical and Electronic Parts.
MS35430 - Terminal, Lug, Solder Type, Copper Stamping, One Hole.

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: US Army Electronics Command, ATTN: DRDCO-CM-DM, Fort Monmouth, NJ 07703 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

2.2 Other publications. The following document forms a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

NATIONAL BUREAU OF STANDARDS

Handbook H28 - Screw-Thread Standards for Federal Services.

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.)

(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

3. REQUIREMENTS

3.1 Specification sheets. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheets. In the event of any conflict between requirements of this specification and the specification sheet, the latter shall govern.

3.2 Classification of requirements. The requirements for the plugs are classified herein as follows:

Requirement	Paragraph
Qualification	3.3
Materials	3.4
Design and construction	3.5
Performance	3.6

3.3 Qualification. Plugs furnished under this specification shall be products which are qualified for listing on the applicable qualified products list at the time set for opening of bids (see 4.4 and 6.4).

3.4 Materials. The materials shall be as specified herein. However, when a definite material is not specified, a material shall be used which will enable the plugs to meet the performance requirements of this specification. Acceptance or approval of any constituent material shall not be construed as a guaranty of the acceptance of the finished product.

3.4.1 Fungus-inert. Materials used in the construction of these plugs shall be fungus-inert (see requirement 4 of MIL-STD-454).

3.4.2 Shells. Unless otherwise specified (see 3.1), shells shall be plastic in accordance with MIL-M-20693; form R or Tm, type PBE, of MIL-P-79; type II of MIL-P-22985; or a substituted polyarylether material, such as a polysulfone.

3.4.3 Screws, nuts, and washers. Screws, nuts, and washers shall be made of corrosion-resistant material, or shall be suitably protected against corrosion to permit compliance with the salt spray requirement of 3.6.9.

3.4.4 Plating of metal parts. When specified (see 3.1), the plating shall be sufficient to prevent corrosion of the basis metal.

3.5 Design and construction. Plugs shall be of the design, construction, and physical dimensions specified (see 3.1).

3.5.1 Shell screws, terminal screws, and lugs. Shell screws, terminal screws, and terminal lugs (MS35430-1) shall be supplied, unassembled, and packaged with each plug.

3.5.2 Screw threads. Screw threads on removable or replaceable threaded parts shall be in accordance with Handbook H28.

3.5.3 Cable clamp (when specified (see 3.1)). A cable clamp for anchoring the electrical cable to the frame of the plug shall be supplied with the plug. If the cable clamp is not made as integral part of the plug the clamp shall be loosely assembled to or packaged with the plug. Twine serving is not acceptable for this service.

3.5.4 Conductor strain relief (when specified (see 3.1)). Provisions for anchoring the stay cord to provide strain relief for the conductors of the electrical cable shall be included in the plug. All edges of the anchor in contact with the stay cord shall be rounded off.

3.6 Performance.

3.6.1 Torque (unless otherwise specified (see 3.1)). When plugs are tested as specified in 4.6.2, torque applied between the separate metal parts of the plug finger shall cause no damage to, or loosening of, any parts thereof.

3.6.2 Dielectric withstanding voltage. When tested as specified in 4.6.3, plugs shall withstand a minimum of 500 volts root mean square (rms) without dielectric breakdown or flashover.

3.6.3 Contact resistance. When plugs are tested as specified in 4.6.4, the contact resistance shall not exceed 0.02 ohm, except following the salt spray test, the contact resistance shall not exceed 0.10 ohm.

3.6.4 Insulation resistance. When plugs are tested as specified in 4.6.5, the insulation resistance shall be 1,000 megohms or greater.

3.6.5 Moisture resistance. When plugs are tested as specified in 4.6.6, the initial insulation resistance shall be not less than 1,000 megohms, and the initial dielectric withstanding voltage shall be as specified in 3.6.2. Following step 6 of the final cycle, at a relative humidity of 90 to 95 percent, the insulation resistance shall be not less than 5 megohms. Following the 24-hour conditioning period, the insulation resistance shall be not less than 1,000 megohms, and dielectric withstanding voltage and contact resistance shall be as specified in 3.6.2 and 3.6.3, respectively; shells and other insulation shall not be cracked, warped, or delaminated; there shall be no excessive corrosion (see 3.6.9) of metal parts; all marking shall remain legible; it shall be possible to remove and replace screw-on shells without the use of tools; and the outside diameter of the insulating spacer(s) between the tip and sleeve shall be as specified (see 3.1).

3.6.6 Thermal shock. When plugs are tested as specified in 4.6.7, shells and other insulation shall not be cracked, warped, or delaminated; the electrical continuity shall not be affected; all marking shall remain legible; and it shall be possible to remove and replace screw-on shells without the use of tools.

3.6.7 Vibration, high frequency. When plugs are tested as specified in 4.6.8, there shall be no damage or loosening of parts, the mating jack shall not separate from the plug, and the contact resistance shall be as specified in 3.6.3.

3.6.8 Shock (specified pulse). When plugs are tested as specified in 4.6.9, there shall be no visual evidence of mechanical damage, loosening of parts, or rupture of dielectric materials.

3.6.9 Salt spray (corrosion). When plugs are tested as specified in 4.6.10, there shall be no excessive corrosion of metal parts; the insulation shall not be cracked, warped, or delaminated; and the contact resistance shall be as specified in 3.6.3. Excessive corrosion shall be construed as any corrosion which interferes with electrical performance, or, in the case of plated metals, when the corrosive action has passed through the plating and attacked the basis metal. Exposed screw threads may be protected with a suitable coating.

3.6.10 Insertion and withdrawal forces. When jacks are tested as specified in 4.6.11, the insertion and withdrawal forces shall be as specified (see 3.1).

3.6.11 Strain relief (when specified (see 3.1)). When tested as specified in 4.6.12, there shall be no evidence of damage or cutting of the conductors or stay cord.

3.6.12 Longitudinal pull (when specified (see 3.1)). When tested as specified in 4.6.13, there shall be no damage or loosening of parts, loss of electrical continuity for more than a period of ten microseconds with a current of 100 ±2 milliamperes dc, and the mating jack shall not separate from the plug, and the contact resistance shall be as specified in 3.6.3.

3.6.13 Static load (when specified (see 3.1)). When plugs are tested as specified in 4.6.14, there shall be no damage or loosening of parts.

3.6.14 Stack assembly strength (when specified (see 3.1)). When tested as specified in 4.6.15, there shall be no damage or loosening of parts.

3.6.15 Controlled drop (when specified (see 3.1)). When tested as specified in 4.6.16, there shall be no damage or loosening of parts.

3.17 Marking. Plugs shall be marked in accordance with method I of MIL-STD-1285, and shall include the manufacturer's name, trademark, or source code and the part number (see 3.1).

3.18 Workmanship. Plugs shall be processed in such a manner as to be uniform in quality and shall be free from defects that will affect life, serviceability, and appearance. There shall be no evidence of loose contacts; poor or improper molding or fabrication; damaged or improperly assembled contacts; peeling, flaking, or chipping of plating or finish; mechanical damage due to testing environment; nicks or burrs of metal parts or surfaces; improper or incorrect marking; or improper tinning of solder cups, terminals, pins, or contacts.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Test equipment and inspection facilities. Test and measuring equipment and inspection facilities of sufficient accuracy, quality and quantity to permit performance of the required inspection shall be established and maintained by the contractor. The establishment and maintenance of a calibration system to control the accuracy of the measuring and test equipment shall be in accordance with MIL-C-45662.

4.2 Classification of inspections. The inspections specified herein are classified as follows:

a. Qualification inspection (see 4.4).
b. Quality conformance inspection (see 4.5).

4.3 Inspection conditions. Unless otherwise specified herein, all inspections shall be performed in accordance with the test conditions specified in the "GENERAL REQUIREMENTS" of MIL-STD-202.

4.4 Qualification inspection. Qualification inspection shall be performed at a laboratory acceptable to the Government (see 6.4) on sample units produced with equipment and procedures normally used in production.

4.4.1 Sample size. Twelve plugs of each type shall be subjected to qualification inspection.

4.4.2 Inspection routine. The sample shall be subjected to the inspections specified in table I, in the order shown. All sample units shall be subjected to the inspection of group I. The sample shall then be divided equally into two groups of six units each and subjected to the inspection for their particular group.

TABLE I. Qualification inspection.

Inspection	Requirement paragraph	Test paragraph
Group I - all sample units		
Visual and mechanical examination 1/ - -	3.1, 3.4, 3.5, 3.17 and 3.18	4.6.1
Torque (when applicable) - - - - - - - -	3.6.1	4.6.2
Dielectric withstanding voltage - - - -	3.6.2	4.6.3
Contact resistance - - - - - - - - - - -	3.6.3	4.6.4
Insulation resistance - - - - - - - - -	3.6.4	4.6.5
Insertion and withdrawal forces - - - -	3.6.10	4.6.11
Strain relief - - - - - - - - - - - - -	3.6.11	4.6.12
Longitudinal pull - - - - - - - - - - -	3.6.12	4.6.13
Static load - - - - - - - - - - - - - -	3.6.13	4.6.14
Group II - 6 sample units		
Moisture resistance - - - - - - - - - -	3.6.5	4.6.6
Group III - 6 sample units		
Thermal shock - - - - - - - - - - - - -	3.6.6	4.6.7
Vibration, high frequency - - - - - - -	3.6.7	4.6.8
Shock (specified pulse) - - - - - - - -	3.6.8	4.6.9
Salt spray (corrosion) - - - - - - - - -	3.6.9	4.6.10
Stack assembly strength - - - - - - - -	3.6.14	4.6.15
Controlled drop - - - - - - - - - - - -	3.6.15	4.6.16

1/ Marking will be considered a defect only if it is illegible at the completion of any of the required tests.

4.4.3 Failures. One or more failures shall be cause for refusal to grant qualification approval.

4.4.4 Retention of qualification. To retain qualification, the contractor shall forward a report to the qualifying activity at 24 month intervals. The qualifying activity shall establish the initial reporting date. Subsequent reporting periods will be 36 months each. The report shall consist of:

a. A summary of the results of the tests performed for inspection of product for delivery, groups A and B, indicating as a minimum the number of lots that have passed and the number that have failed. The results of tests of all reworked lots shall be identified and accounted for.
b. A summary of the results of tests performed for periodic inspection, group C, including the number and mode of failures. The test report shall include results of periodic inspection tests performed and completed during the 24- or 36-month period. If the summary of the test results indicates nonconformance with specification requirements, and corrective action acceptable to the qualifying activity has not been taken, action may be taken to remove the failing product from the qualified products list.

Failure to submit the report within 30 days after the end of each 24- or 36-month period may result in loss of qualification for the product. In addition to the periodic submission of inspection data, the contractor shall immediately notify the qualifying activity at any time during the 24- or 36-month period that the inspection data indicates failure of the qualified product to meet the requirements of this specification.

In the event that no production occurred during the reporting period, a report shall be submitted certifying that the company still has the capabilities and facilities necessary to produce the item. If during 2 consecutive reporting periods there has been no production, the manufacturer may be required, at the discretion of the qualifying activity, to submit a representative product of each type to testing in accordance with the qualification inspection requirements.

4.4.5 Extension of qualification. Plugs of the same type shall be qualified for any permissible color other than that tested during qualification inspection, provided that the material and design and construction used are identical. Plugs shall be qualified for types with both plastic shells and metal shells by submitting a sample of six plugs fabricated with plastic shells and six plugs of the same type fabricated with metal shells. Plug type PJ-054 and PJ-540 shall both be qualified upon satisfactory completion of qualification inspection of either type.

4.5 Quality conformance inspection.

4.5.1 Inspection of product for delivery. Inspection of product for delivery shall consist of groups A and B inspections.

4.5.1.1 Inspection lot. An inspection lot shall consist of all plugs of the same basic type, produced under essentially the same conditions, and offered for inspection at one time. An inspection lot may include plugs of the same basic type having shells of different colors, provided that the plugs are otherwise mechanically and dimensionally identical.

4.5.1.2 Group A inspection. Group A inspection shall consist of visual and mechanical examination (see 4.5.1).

4.5.1.2.1 Sampling plan. Statistical sampling and inspection shall be in accordance with MIL-STD-105 for general inspection level II. The acceptable quality level (AQL) shall be 1.0 and 4.0 (percent defective) for major or minor defects, respectively. Major and minor defects shall be as defined in MIL-STD-105.

4.5.1.2.2 Rejected lots. If an inspection lot is rejected, the contractor may rework it to correct the defects, or screen out the defective units, and resubmit for reinspection. Resubmitted lots shall be inspected using tightened inspection and shall not thereafter be tendered for acceptance unless the former rejection or requirement of correction is disclosed. Such lots shall be separate from new lots, and shall be clearly identified as reinspected lots.

4.5.1.3 Group B inspection. Group B inspection shall consist of the inspections specified in table II, in the order shown, and shall be made on sample units which have been subjected to and have passed the group A inspection.

4.5.1.3.1 Sampling plan. The sampling plan shall be in accordance with MIL-STD-105 for special inspection level S-4. The sample size shall be based on the inspection lot size from which the sample was selected for group A inspection. The AQL shall be 4.0 percent defective.

TABLE II. Group B inspection.

Inspection	Requirement paragraph	Test paragraph
Contact resistance - - - - - - - - - - -	3.6.3	4.6.4
Insulation resistance - - - - - - - - -	3.6.4	4.6.5
Dielectric withstanding voltage - - -	3.6.2	4.6.3
Torque (when applicable) - - - - - - -	3.6.1	4.6.2

4.5.1.3.2 Rejected lots. If an inspection lot is rejected, the contractor may rework it to correct the defects, or screen out the defective units, and resubmit for reinspection. Resubmitted lots shall be inspected using tightened inspection and shall not thereafter be tendered for acceptance unless the former rejection or requirement of correction is disclosed. Such lots shall be seperate from new lots, and shall be clearly identified as reinspected lots.

4.5.1.3.3 Disposition of sample units. Sample units which have passed all gorup B inspection may be delivered on the contract if the lot is accepted and the sample units are still within specified electrical tolerances.

4.5.2 Verification of qualification. Verification of qualification inspection shall consist of group C. Except where the results of this inspection show noncompliance with the applicable requirements (see 4.5.2.1.4), delivery of products which have passed groups A and B shall not be delayed pending the results of this qualification inspection.

4.5.2.1 Group C inspection. Group C inspection shall consist of the inspections specified in table III, in the order shown. Group C inspection shall be made on sample units selected from inspection lots which have passed the groups A and B inspections.

4.5.2.1.1 Sampling plan. Twelve sample units of each basic type shall be selected at random from items produced every 24- or 36-months, as applicable (see 4.4.4). The sample units shall be subdivided as specified for each subgroup in table III.

4.5.2.1.2 Failures. If any sample units fail to pass group C inspection, the entire sample shall be considered to have failed and if the contractor has been inspecting on a 36-month basis as permitted in 4.4.4, he shall revert to a 24-month testing basis. He can return to a 36-month inspection basis by meeting requirements of 4.5.2.1.1.

TABLE III. Group C inpsection.

Inspection	Requirement paragraph	Test paragraph
Subgroup 1 (6 specimens)		
Moisture resistance - - - - - - - - -	3.6.5	4.6.6
Torque (when applicable) - - - - -	3.6.1	4.6.2
Subgroup 2 (6 specimens)		
Thermal shock - - - - - - - - - - - -	3.6.6	4.6.7
Vibration - - - - - - - - - - - - - -	3.6.7	4.6.8
Shock (specified pulse) - - - - - -	3.6.8	4.6.9
Torque (when applicable) - - - - -	3.6.1	4.6.2
Salt spray (corrosion) - - - - - -	3.6.9	4.6.10

4.5.2.1.3 Disposition of sample units. Sample units which have been subjected to group C inspection shall not be delivered on the contract.

4.5.2.1.4 Noncompliance. If a sample fails to pass group C inspection, the manufacturer shall notify the qualifying activity and the cognizant inspection activity of such failure and take corrective action on the materials or processes, or both, as warranted, and on all units of product which can be corrected and which were manufactured under essentially the same conditions, with essentially the same materials, processes, etc, and which are considered subject to the same failure. Acceptance and shipment of the product shall be discontinued until corrective action, acceptable to the qualifying activity has been taken. After the corrective action has been taken, group C inspection shall be repeated on additional sample units (all inspection, or the inspection which the original sample failed, at the option of the qualifying activity). Groups A and B inspection may be reinstituted; however, final acceptance and shipment shall be withheld until the group C inspection has shown that the corrective action was successful. In the event of failure after reinspection, information concerning the failure shall be furnished to the cognizant inspection activity and the qualifying activity.

4.5.3 Inspection of packaging. The sampling and inspection of the preservation-packaging, packing and container marking for shipment and storage shall be in accordance with the requirements of MIL-C-55330.

4.6 Methods of inspection.

4.6.1 Visual and mechanical inspection (see 3.1, 3.4, 3.5, 3.7, and 3.8). Plugs shall be inspected to verify that the materials, screw threads, physical dimensions, marking, and workmanship are in accordance with the applicable requirements.

4.6.2 Torque (unless otherwise specified (see 3.1) (see 3.6.1)). With the sleeve of the plug held rigid, a twisting force of 2 pound-inches shall be applied for at least 1 minute to the tip of the plug assembly in a direction tending to loosen the tip of the plug. On three-element plugs having a dead collar between the tip and the ring, a twisting force of 1-1/2 pound-inches shall also be applied to the dead collar, in a direction tending to loosen it from the assembly.

4.6.3 Dielectric withstanding voltage (see 3.6.2). Plugs shall be tested in accordance with method 301 of MIL-STD-202. The following details shall apply:

a. Magnitude of test voltage and nature of potential - 500 volts ac.
b. Duration of application - For qualification inspection, the test voltage shall be applied at a rate of 100 volts per second. For quality conformance inspection, the voltage may be applied instantaneously and shall be maintained for at least 5 seconds.
c. Points of application - Between mutually insulated terminals of the plug.

4.6.4 Contact resistance (see 3.6.3). The plug shall be inserted into the approved mating jack (see table IV) six times before testing, to insure that the plug is clean. With the plug inserted in the jack, a direct current of 100 ±2 milliamperes shall flow through the contacts under test. The contact resistance shall be measured between each plug terminal and the corresponding jack terminal at the point of normal connection.

4.6.5 Insulation resistance (see 3.6.4). Plugs shall be tested in accordance with method 302, test condition B of MIL-STD-202, except electrification time shall not exceed 1 minute.

4.6.6 Moisture resistance (see 3.6.5). Plugs shall be tested in accordance with method 106 of MIL-STD-202. The following details and exceptions shall apply:

a. Mounting - Polyvinylchloride-insulated wires conforming to type MW of MIL-W-76 shall be connected in the normal manner to the plug terminals. The plugs shall then be held in an approximately vertical position, with the finger pointed upward, by means of a nylon cord fastened to the sleeve, or by other suitable means simulating this condition.
b. Initial measurements - The insulation resistance shall be measured with a direct-current potential of 500 volts applied between mutually insulated terminals of the plugs. The dielectric withstanding voltage shall then be measured as specified in 4.6.3.
c. Subcycle (steps 7a and 7b) - Not applicable.
d. Polarization - A direct-current potential of 100 volts shall be applied between the terminals of 50 percent of the plugs. For plugs having tip-and-sleeve connections, the sleeve shall be negative, and the tip positive; for plugs having tip-ring-and sleeve connections, the sleeve and tip shall be negative, and the ring positive. No potential shall be applied to the remaining 50 percent of the plugs.
e. Final measurements - After completion of step 6 of the final cycle, and not sooner than 1/2-hour nor later than 3 hours after the sample plugs shall have been removed from the chamber, the insulation resistance shall be measured as specified in 4.6.5. The plugs shall then be conditioned at a relative humidity of 50 ±5 percent for a period of 24 hours, after which the insulation resistance, contact resistance and dielectric withstanding voltage shall be measured as specified in 4.6.5, 4.6.4, and 4.6.3, respectively.

4.6.7 Thermal shock (see 3.6.6). Plugs shall be tested in accordance with method 107 or MIL-STD-202. The following details shall apply:

a. The plug shall be inserted into the mating jack (see table IV) and shall remain inserted in the jack throughout the test.
b. Measurements before and after test - None.
c. Test condition - A.

4.6.8 Vibration, high frequency (see 3.6.7). Plugs shall be tested in accordance with method 204 of MIL-STD-202. The following details and exceptions shall apply:

a. Test condition number - A.
b. Method of mounting - Plugs shall be mounted with their axes in a horizontal plane.
c. Mating jack - Plugs shall be inserted into mating jacks (see table IV) and shall remain inserted in the jacks throughout the test. Each plug tested shall have a 3-foot length of cord, of the type normally used with the plug, attached and hanging free.
d. Direction of motion - Along the axis of the plug, and then perpendicular to the axis of the plug.
e. Measurements after vibration - The contact resistance shall be measured as specified in 4.6.4.

4.6.9 Shock (specified pulse) (see 3.6.8). Plugs shall be tested in accordance with method 213 of MIL-STD-202. The following details shall apply:

a. Test condition letter H (75 G's).
b. 6 blows in 3 planes (total 18 blows).
c. Mounting - Plugs shall be mounted on rigid test plate and tested in vertical position.
d. The test shall then be repeated with the plugs mounted on a horizontal plate.

4.6.10 Salt spray (corrosion) (see 3.6.9). Plugs shall be tested in accordance with method 101 of MIL-STD-202. The following details shall apply:

a. Test condition letter B (48 hrs).
b. Measurement after test - Contact resistance shall be measured as specified in 4.6.4.
c. Unless otherwise specified, 5 percent salt solution.

4.6.11 Insertion and withdrawal forces (see 3.6.10). The specified mating jack conforming to the applicable specification sheet (see table IV) shall be used. The maximum force required to insert and withdraw the plug shall be measured as follows: The axis of the plug shall be alined with the axis of the jack bushing. A straight thrust shall then be applied gradually in a direction along the axis of the plug until it is completely inserted in the jack; a straight pull shall then be applied gradually in a direction along the axis of the plug until it is completely separated from the jack.

4.6.12 Strain relief (see 3.6.11). While terminated to the specified cable, a force of 50 pounds minimum shall be applied in a longitudinal direction for a minimum of five minutes.

4.6.13 Longitudinal pull (see 3.6.12). The specified mating jack conforming to the applicable specification sheet (see table IV) shall be used. The plug, when inserted in the jack and subjected to a longitudinal pull of one pound less than the measured withdrawal force shall not render the jack inoperative or cause an open contact (discontinuity) between the plug and jack.

4.6.14 Static load (see 3.6.13). A static load of 150 pounds minimum shall be applied to the plug at approximately midpoint for one minute minimum. The plug shall be resting in a horizontal position on a concrete floor or rigid metal surface. The load shall be applied perpendicular to the longitudinal axis of the plug through a rigid bar 0.50 ±.025 wide placed tangent to the shell surface and parallel to the floor or surface supporting the plug.

4.6.15 Stack assembly strength (see 3.6.14). With the frame of the plug in the horizontal position the plug shall be subjected to a static load of eight pounds minimum, on the number one contact, for a minimum period of 24 hours.

4.6.16 Controlled drop (see 3.6.15). With the frame of the plug in the horizontal position each contact shall be subjected to the impact of a 0.5 ounce (min) brass weight dropped from a vertical distance of 6 feet minimum. The weight shall be dropped through a tube 6 feet (min) long having an internal diameter of 7/16 ±1/16 inch. Each contact shall be subjected to three consecutive blows with the plug being rotated 120° ±10° between each blow.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-C-55330.

6. NOTES

6.1 Intended use. The telephone plugs covered by this specification are primarily for use in airborne, ground support, and shipboard communications equipment.

6.2 Ordering data. Procurement documents should specify the following:

a. Title, number, and date of this specification.
b. Title, number, and date of the applicable specification sheet, and the complete military part number (see 3.1).
c. Levels of preservation-packaging, packing and marking (see section 5).

6.3 Definitions. See MIL-STD-1353, "Electrical Connectors and Hardware."

6.4 Qualification. With respect to products requiring qualification, awards will be made only for products which are at the time set for opening of bids, qualified for inclusion in the applicable Qualified Products List whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification, in order that they may be eligible to be awarded contracts for the products covered by this specification. The activity responsible for the Qualified Products List is the U.S. Army Electronics Command, AMSEL-PP-EM, Fort Monmouth, NJ 07703; however, information pertaining to qualification of products may be obtained from the Defense Electronics Supply Center (DESC-E), Dayton, Ohio 45444. Application for qualification tests shall be made in accordance with provisions governing qualification SD-6 (see 6.4.1).

6.4.1 Copies of "Provisions Governing Qualification SD-6" may be obtained upon application to Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

6.5 Mating jacks. Information on mating jacks is shown in table IV. All plugs listed in the same block of column 1 are applicable for mating with all jacks listed in the corresponding block of column 2.

TABLE IV. Plugs and mating jacks.

Plugs		Jacks	
Part number	Type designation	Part number	Type designation
M642/1-1	PJ-047B	M641/1-1	JJ-015
M642/1-2	PJ-047R	M641/1-2	JJ-019
M642/4-1	PJ-055B	M641/2-1	JJ-016
M642/4-2	PJ-055R	M641/2-2	JJ-017
M642/4-3	PJ-055M	M641/2-3	JJ-024
M642/11-1	PJ-636	M641/2-4	JJ-035
		M641/2-5	JJ-072
		M641/2-6	JJ-084
		M641/2-7	JJ-085
		M641/2-8	JJ-086
		M641/2-9	JJ-087
		M641/6-1	JJ-034
		M641/12-1	JJ-089
		M641/13-1	JJ-092
		M641/13-2	JJ-093
		M641/13-3	JJ-096
		M641/13-4	JJ-097
		M641/15-1	JJ-098
		M641/15-2	JJ-099
		M641/15-3	JJ-102
		M641/16-1	JJ-104
		M641/16-2	JJ-105
		M641/16-3	JJ-107
		M641/18-1	JJ-134
M642/2-1	PJ-051B	M641/3-1	JJ-022
M642/2-2	PJ-051R	M641/3-2	JJ-042
		M641/3-3	JJ-073
		M641/3-4	JJ-074
		M641/3-5	JJ-075
		M641/3-6	JJ-077
		M641/3-7	JJ-078
		M641/9-1	JJ-079
		M641/9-2	JJ-081
		M641/9-3	JJ-082
		M641/9-4	JJ-106
		M641/14-1	JJ-095
		M641/14-2	JJ-101
		M641/14-3	JJ-103
M642/3-1	1/ PJ-054B	M641/4-1	JJ-026
M642/3-2	1/ PJ-054R	M641/4-2	JJ-026
M642/10-1	PJ-540B		
M642/10-2	PJ-540R		
M642/5-1	PJ-068	M641/5-1	JJ-033
M642/8-1	PJ-309	M641/10-1	JJ-083
		M641/17-1	JJ-133
M642/6-1	PJ-291	M641/7-1	JJ-048
		M641/7-2	JJ-048
M642/7-1	PJ-292	M641/8-1	JJ-055
		M641/8-2	JJ-055
M642/9-1	PJ-327	M641/2-8	2/ JJ-086
		M641/11-1	JJ-088

See footnotes at end of table.

TABLE IV. Plugs and mating jacks -Continued.

Plugs		Jacks	
Part number	Type designation	Part number	Type designation
M642/13-1 M642/13-2 M642/13-3 M642/13-4	PJ-711 PJ-711 PJ-778 PJ-778	M641/19-1 thru M641/19-12 M641/20-1 thru M641/20-8 M641/21-1 thru M641/21-12	N/A
M642/14-1	U-384/U	M641/22-1	U-385/U

1/ Types PJ-054B and PJ-054R can be replaced by types PJ-540B and PJ-540R, respectively. The cord-entrance dimension for PJ-054B and PJ-054R is 0.250 inch; for PJ-540B and PJ-540R, the cord-entrance dimension is 0.281 inch.
2/ Two JJ-086 are needed for use with PJ-327.

6.6 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

Custodians:
Army - CR
Navy - EC
Air Force - 11

Review Activities:
Army - MI, ME, AR
Navy - AS
Air Force - 85, 99
DLA - ES

User activities:
Army - WC, AV
Navy - OS, MC, SH, YD
Air Force - 17

Preparing activity:
Army - CR

Agent:
DLA - ES

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