

MIL-C-6166C

25 SEPTEMBER 1961

SUPERSEDING

MIL-C-6166B

23 JUNE 1952

MILITARY SPECIFICATION**CORD: HEADSET-MICROPHONE, CX-1301/AR**

This specification has been approved by the Department of Defense and is mandatory for use by the Departments of the Army, the Navy, and the Air Force.

1. SCOPE

1.1 This specification covers cord (see 6.4) designed to provide electrical connections between a boom- or mask-type microphone and headphones, and the airplane intercommunicating and radio facilities.

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids, form a part of this specification to the extent specified herein:

SPECIFICATIONS**FEDERAL**

J-C-98 — Cable and Wire, Insulated; Methods of Sampling and Testing.

QQ-B-626 — Brass, Leaded and Non-Leaded; Rod, Shapes, Forgings and Flat Products with Finished Edges (Bar, Flat Wire, and Strips).

QQ-C-533 — Copper-Beryllium Alloy Strip.

QQ-P-416 — Plating, Cadmium (Electrodeposited).

PPP-B-585 — Boxes, Wood Wirebound.

PPP-B-591 — Boxes, Fiberboard, Wood-Cleated.

PPP-B-601 — Boxes, Wood, Cleated-Plywood.

PPP-B-621 — Boxes, Wood, Nailed and Lock-Corner.

PPP-B-636 — Box, Fiberboard.

PPP-T-60 — Tape; Pressure Sensitive Adhesive, Waterproof—for Packaging and Sealing.

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MIL-M-14 — Molding Plastics and Molded Plastic Parts, Thermosetting.

MIL-P-116 — Preservation, Methods of.

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MIL-B-138 — Boxes, Wood, Fiberboard-Lined for Overseas Shipment (for Weight of Contents Not Exceeding 500 Pounds).

MIL-C-3955 — Cans, Fiber, Spirally Wound.

MIL-E-5400 — Electronic Equipment, Aircraft, General Specification for.

MIL-R-6855 — Rubber; Synthetic, Sheet, Molded, and Extruded, for Aircraft Applications.

MIL-H-6875 — Heat Treatment of Steels (Aircraft Practice), Process for.

MIL-S-7947 — Steel, Sheet and Strip (1095).

MIL-B-10377 — Box, Wood, Cleated, Veneer, Paper Overlaid.

MIL-N-18307 — Nomenclature and Nameplates for Aeronautical Electronic and Associated Equipment.

STANDARDS**MILITARY**

MIL-STD-105 — Sampling Procedures and Tables for Inspection by Attributes.

MIL-STD-129 — Marking for Shipment and Storage.

MIL-STD-130 — Identification Marking of U.S. Military Property.

MS 35223 — Screw, Machine, Pan Head, Slotted, Car-

bon Steel, Cadmium Plated, NC-2A and UNC-2A.

MS 35333 — Washer, Lock, Flat, Internal Tooth.

(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.)

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

CONSOLIDATED CLASSIFICATION COMMITTEE**Uniform Freight Classification Rules**

(Application for copies should be addressed to the Consolidated Classification Committee, 202 Chicago Union Station, Chicago 6, Illinois.)

3. REQUIREMENTS

3.1 Qualification. The cord and cordage furnished under this specification shall be a product which has been tested and has passed the qualification tests specified herein, and has been listed on or approved for listing on the applicable Qualified Products List.

3.2 Parts and materials. In the selection of parts and materials, fulfillment of major design objectives shall be the prime consideration. In so doing the following shall govern:

(a) Parts and materials shall conform to Specification MIL-E-5400.

(b) Nonrepairable subassemblies, as specified in Specification MIL-E-5400, shall be used when practicable. The general size of the subassembly, and the amount of circuitry to be included therein shall be approved by the procuring activity. Nonrepairable subassemblies shall be reliable and

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should have mean-time-to failure of more than 5,000 hours.

- (c) When previously produced models of this equipment did not use nonrepairable subassemblies, the design shall not be changed to employ nonrepairable assemblies without the approval of the procuring activity.

3.2.1 Nonstandard parts and material approval. Approval for the use of nonstandard parts and materials shall be obtained as specified in Specification MIL-E-5400.

3.3 Design and construction.

3.3.1 General requirements. This cord shall conform to all general design and performance requirements specified in Specification MIL-E-5400.

3.3.2 Total weight. The total weight of a cord shall be not greater than 11 ounces.

3.3.3 Service conditions. All parts and material, except the cordage, shall operate satisfactorily under any of the service conditions or reasonable combinations of service conditions specified in Specification MIL-E-5400. Service conditions for the cordage are specified in 3.3.7 of this specification.

3.3.4 Moisture- and fungus-resistant treatment. Cords shall be fungus-proofed by selection of parts and materials as nonnutrients for fungus, or the parts and materials shall be so treated prior to their use in the equipment that overall spraying of the equipment is not necessary.

3.3.5 Cord assembly. The CX-1301/AR cord shall consist of the parts specified in 3.3.8 and shall be assembled as shown in figure 1 to perform the functions for which intended (see 6.1).

3.3.6 Cord anchorage. The cord shall be anchored at the junction box and jack to

withstand a 20-pound tension test with wires not connected.

3.3.7 Cordage.

3.3.7.1 Conductor. Each stranded conductor shall be equivalent to 511 circular mils (No. 23 AWG) and shall consist of 21 strands of No. 36 AWG, bunched with a lay of no more than $\frac{3}{4}$ inch.

3.3.7.1.1 Conductor strands. Conductor strands shall be 25 circular mils (No. 36 AWG), tinned, soft copper, or copper alloy, preferably soft copper cadmium alloy.

3.3.7.1.1.1 Tinning. Each conductor strand shall be coated thoroughly and evenly with commercially pure tin. The coating shall adhere firmly to the surface of the conductor strand when tested in accordance with 4.6.9.

3.3.7.2 Conductor insulation. Each conductor shall be well covered with a close serving of fine cotton or cellulose acetate yarn before the rubber or rubber substitute conductor insulation is applied. However, the serving may be omitted, provided the insulation is "free stripping" and free from any detrimental effects which would interfere with normal soldering of the strands or the life of the conductor. Each conductor shall be insulated with a colored rubber or rubber substitute compound to a nominal thickness of insulation of 0.020 inch. The minimum wall thickness at any point along the insulation shall be 0.010 inch.

3.3.7.2.1 Cotton. The cotton used as a separator over the conductor before the rubber insulation is applied shall be purified by repeated washings in order to a minimum the amount of water-soluble salts.

3.3.7.2.2 Rubber. The rubber or rubber substitute compound of the conductor insulation shall be compounded with any filler, antioxidants, and organic accelerators, necessary to provide a compound which, after

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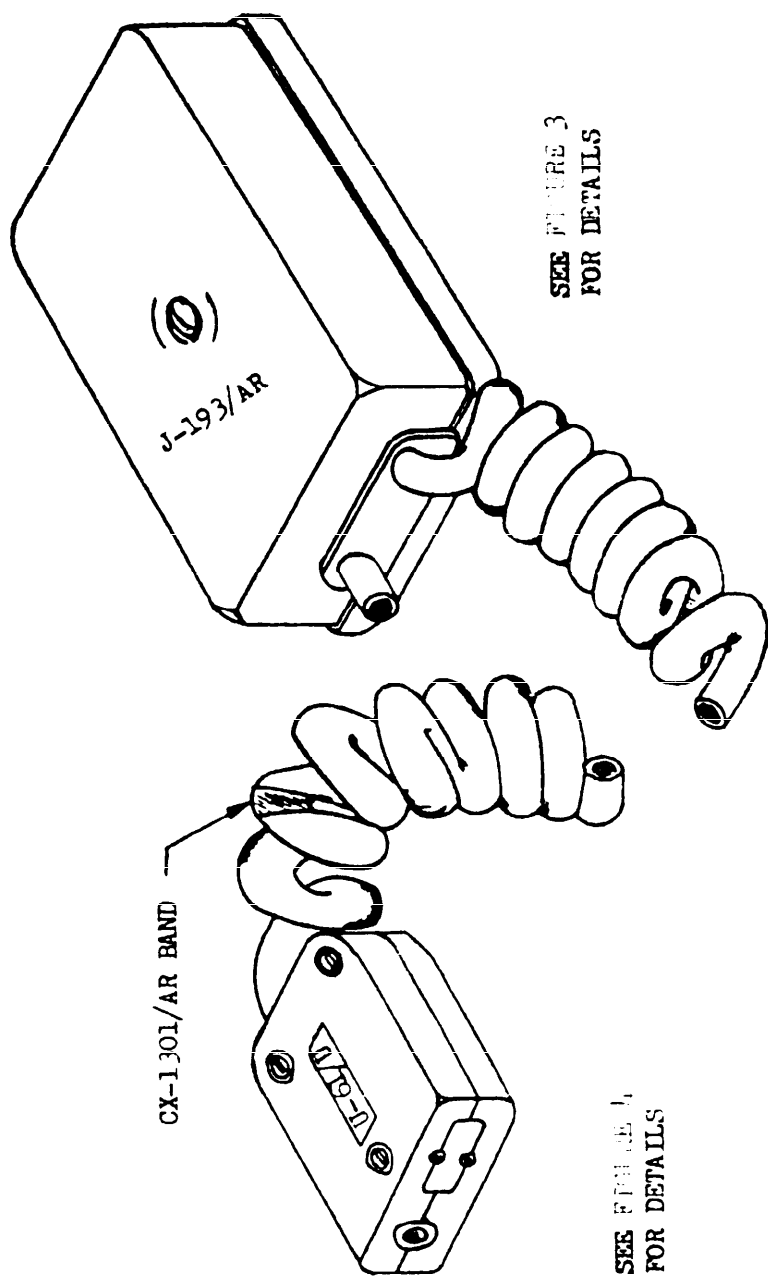


FIGURE 1 CX-1301/AR handset-microphone cord

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vulcanization, will have a long life in service and storage. The compound used shall not contain more than 0.5 percent of free sulfur.

3.3.7.2.3 *Color*. The rubber compound on the individual conductor shall be colored as shown in figure 2.

3.3.7.2.3.1 *Dyes*. No coloring matter shall be used in any material entering into the manufacture of the cordage that will exercise deteriorating effect on the conductors or the rubber or rubber substitute compound.

3.3.7.3 *Cordage fabrication*. The cordage shall be fabricated as a flexible, retractile cable containing four conductors twisted with a lay not greater than $1\frac{1}{4}$ inches. A light, soft cotton binder over the conductor assembly may be used if required. When the cotton binder is omitted, it is required that the outer jacket be free stripping and free from any detrimental effects. A jacket, as specified herein, shall be applied over the twisted conductors and shall hold its shape when the coil is stretched.

3.3.7.3.1 *Outer jacket*. A dense jacket of crude rubber, or synthetic rubber conforming to Specification MIL-R-6855, or a combination of both crude and synthetic rubbers, shall be applied over the conductor assembly. This jacket, after vulcanization, shall pass the tests hereinafter specified. The minimum thickness of the jacket wall at any point in the finished cord shall be not less than 0.010 inch.

3.3.7.3.2 *Terminals*. Terminals, as shown in figure 2, shall be soldered to the conductor ends, using only rosin as a flux, or crimped in a satisfactory manner. They shall be capable of holding a 5-pound load for at least 5 seconds.

3.3.7.3.3 *Dimensions*. The dimensions of the finished retractile cord shall conform to figure 2 when measured in accordance with

the procedure specified in 4.6.1.1. With the cord suspended from either end, the length shall be within 2 inches of the compressed cord (see 6.4).

3.3.7.3.4 *Weight*. The weight of the retractile cordage with terminals (figure 2) shall not exceed 6 ounces.

3.3.8 *CX-1301/AR cord*. The CX-1301/AR cord shall consist of the parts listed in table I. The parts shall be assembled (connected) for use.

TABLE I. CX-1301/AR cord

Parts	Nomenclature	Max allowable weight (ounces)	Applicable paragraphs
Junction box	J-193/AR	3	3.3.9
Jack	U-61/U	1	3.3.10
Retractile cordage (see 6.4)	—	6	3.3.7
Jack clip	—	1	3.3.10.2

3.3.8.1 *Accessories*. The CX-1301/AR cord shall operate with the following accessories. However, these accessories are not supplied as part of the cord.

Plug connector	U-75U
Plug	PJ-292 (or PJ-291)
Plug	PJ-054B (or PJ-054R)

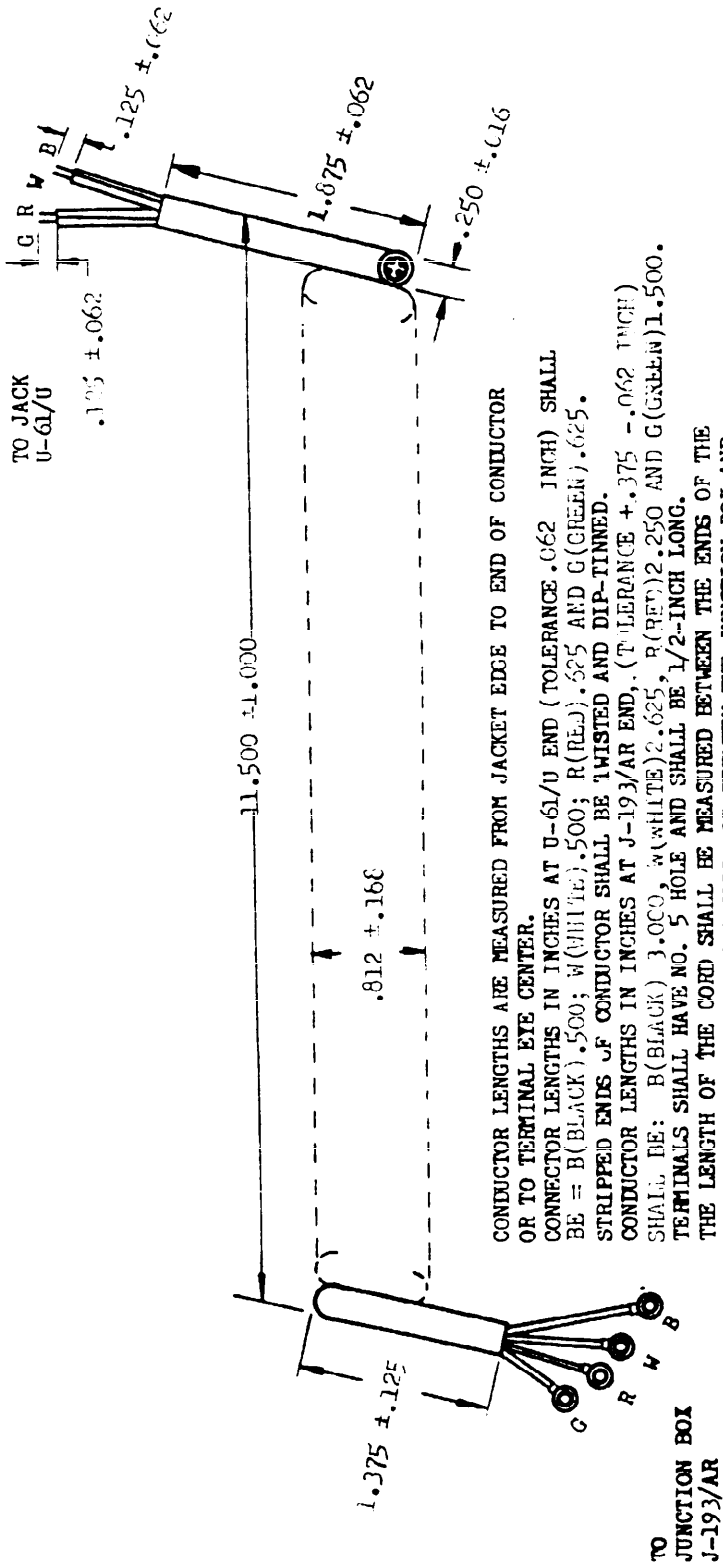
3.3.9 *Junction box, J-193/AR*. The junction box, J-193/AR, shall consist of a terminal strip and cover, having dimensions and construction features as shown in figure 3.

3.3.10 *Jack, U-61 U and clip*. The jack, U-61 U, shall have dimensions and construction features as shown in figure 4.

3.3.10.1 *Insertion and withdrawal force*. The force required for plug insertion and withdrawal from the U-61 U jack shall be in accordance with table II.

3.3.10.2 The jack clip shall have dimen-

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CONDUCTOR LENGTHS ARE MEASURED FROM JACKET EDGE TO END OF CONDUCTOR OR TO TERMINAL EYE CENTER.

CONNECTOR LENGTHS IN INCHES AT U-61/U END (TOLERANCE .062 INCH) SHALL BE = B (BLACK) .500; W (WHITE) .500; R (RED) .625 AND G (GREEN) .625. STRIPPED ENDS OF CONDUCTOR SHALL BE TWISTED AND DIP-TINNED.

CONDUCTOR LENGTHS IN INCHES AT J-193/AR END, (TOLERANCE +.375 -.062 INCH) SHALL BE: B (BLACK) 3.000, W (WHITE) 2.625, R (RED) 2.250 AND G (GREEN) 1.500. TERMINALS SHALL HAVE NO. 5 HOLE AND SHALL BE 1/2-INCH LONG.

THE LENGTH OF THE CORD SHALL BE MEASURED BETWEEN THE ENDS OF THE RETRACTILE PORTION OF THE CORD, OR BETWEEN THE JUNCTION BOX AND JACK WHICHEVER IS THE LESSER.

FIGURE 2. Dimensions of retractable cordage for CX-1301/AR headset-microphone cord

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TABLE II. *Insertion and withdrawal force*

Mating plug	Insertion force in pounds (max)	Withdrawal force in pounds
U-75/U	8	6 ± 2
PJ-292 (PJ-291)	4	3 ± 1
PJ-054B (PJ-054R)	5	4 ± 1

sions and construction features as shown in figure 5.

3.4 Performance.

3.4.1 Stretching. When tested as specified in 4.6.8, no more than one-third of the total number of strands in a conductor shall be broken and no more than three of these shall occur at the same place. During any stretching cycle, the resistance of any conductor shall not vary more than 5 percent. After completion of the test specified in 4.6.8, the cord shall return to within 2 inches of its retracted length (see 6.4).

3.4.2 Extended length. The finished cord shall be capable of extended length when subjected to the test specified in 4.6.6.1. The finished cord shall be capable of extension to a minimum of five times its retracted length when tested as specified in 4.6.6.2.

3.4.3 Temperature characteristics.

3.4.3.1 Low-temperature characteristics. There shall be no fracturing of the cord jacket, conductor, or conductor insulation when subjected to the test specified in 4.6.7.1. The cord shall return to within 1/2 inch of its retracted length after removal from the cold chamber under the conditions specified in 4.6.7.1.

3.4.3.2 High-temperature characteristics. The cord shall show no signs of softness or tackiness after being subjected to the test specified in 4.6.7.2. The cord shall return to within 1/2 inch of its retracted length after removal from the oven under the conditions specified in 4.6.7.2.

3.4.4 Conductor resistance. The resistance

of a single conductor shall not exceed 0.030 ohm per foot at 68°F.

3.4.5 Dielectric strength. The finished cord shall withstand a potential of 500 volts root mean square (rms), 60 cycles per second (cps), applied as specified in 4.6.4, for 5 minutes without insulation breakdown.

3.4.6 Insulation resistance. The insulation resistance of all cordage, when measured in accordance with 4.6.5, shall be not less than 500 megohms per 1,000 feet.

3.4.7 Tensile strength.

3.4.7.1 Conductor wires. Previous to stranding, a tinned copper conductor wire shall have a tensile strength not to exceed 40,000 pounds per square inch (psi); that of a tinned copper alloy conductor wire shall not exceed 55,000 psi. After stranding, the tensile strength of a tinned copper conductor wire shall have a tensile strength not to exceed 42,000 psi; that of a tinned copper alloy conductor wire shall not exceed 58,000 psi.

3.4.7.2 Conductor insulation. The tensile strength of the conductor insulation shall be not less than 800 psi.

3.4.7.3 Jacket. The tensile strength of the jacket shall be not less than 1,200 psi.

3.4.8 Elongation.

3.4.8.1 Conductor wires. The elongation of each tinned conductor wire previous to stranding shall be not less than 10 percent in 10 inches. The elongation of each wire after stranding shall be not less than 5 percent in 10 inches.

3.4.8.2 Conductor insulation. The elongation of the conductor insulation shall be not less than an average of 250 percent in 2 inches for all samples tested.

3.4.8.3 Jacket. The elongation of the jacket shall be not less than 200 percent in 2 inches.

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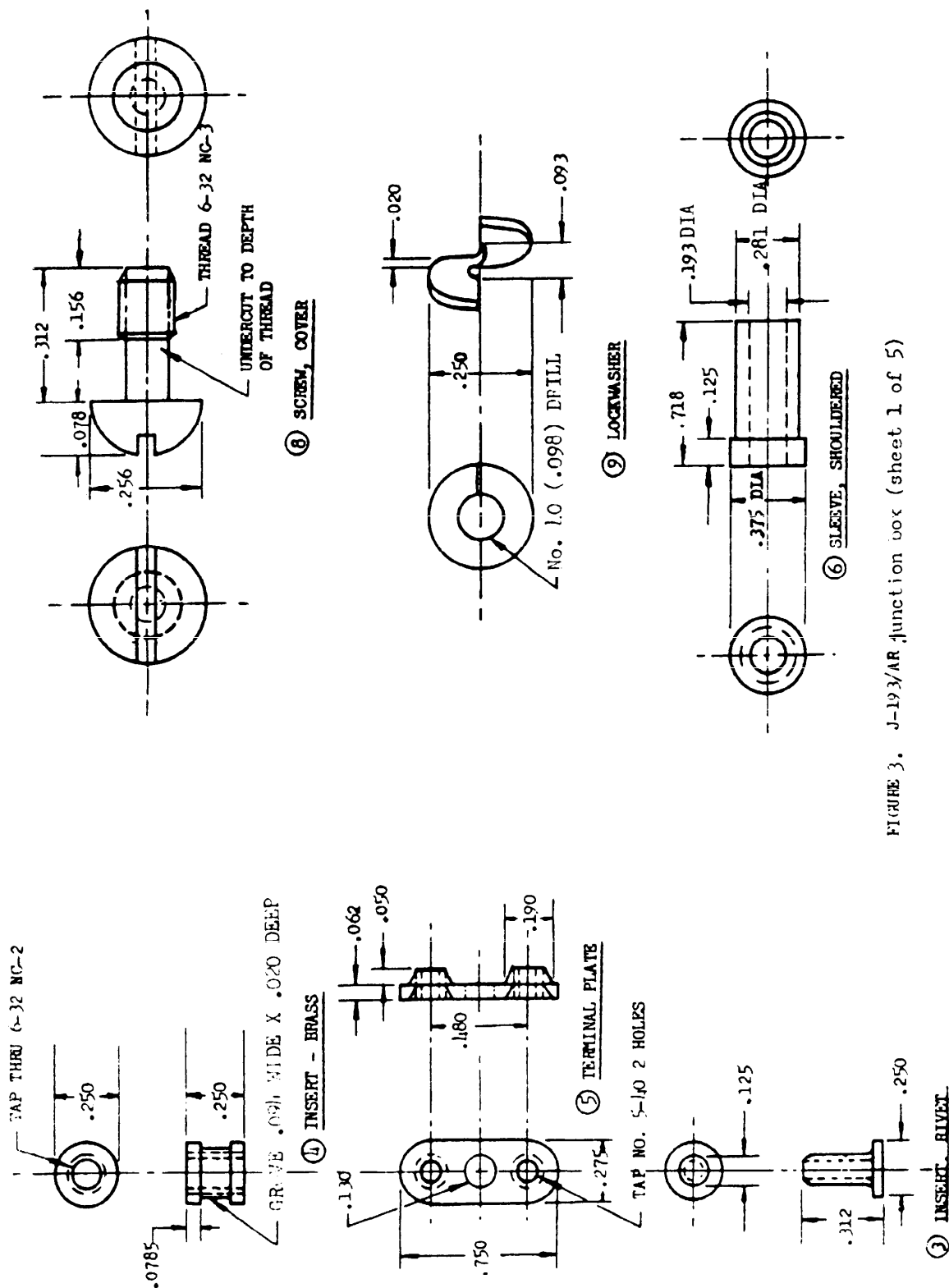
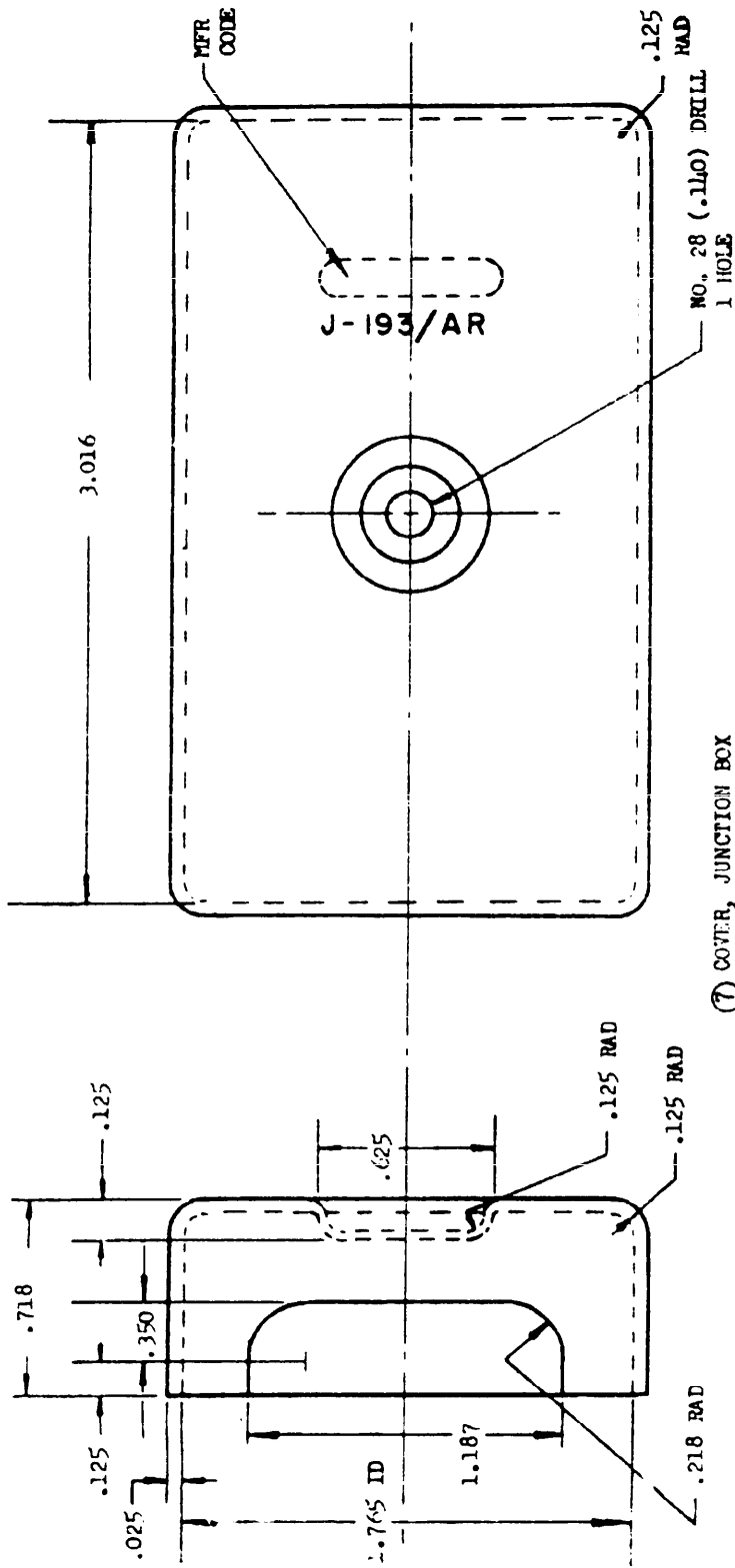


FIGURE 3. J-193/AR junction box (sheet 1 of 5)

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① COVER, JUNCTION BOX

LABEL INSIDE COVER IS TO INDICATE COLOR CODING FOR TERMINAL CONNECTIONS: FIGURE 3. J-193/AR junction box (sheet 2 of 5)

- BLACK - GND
- WHITE - AUD
- RED - MIC
- GREEN - CONT

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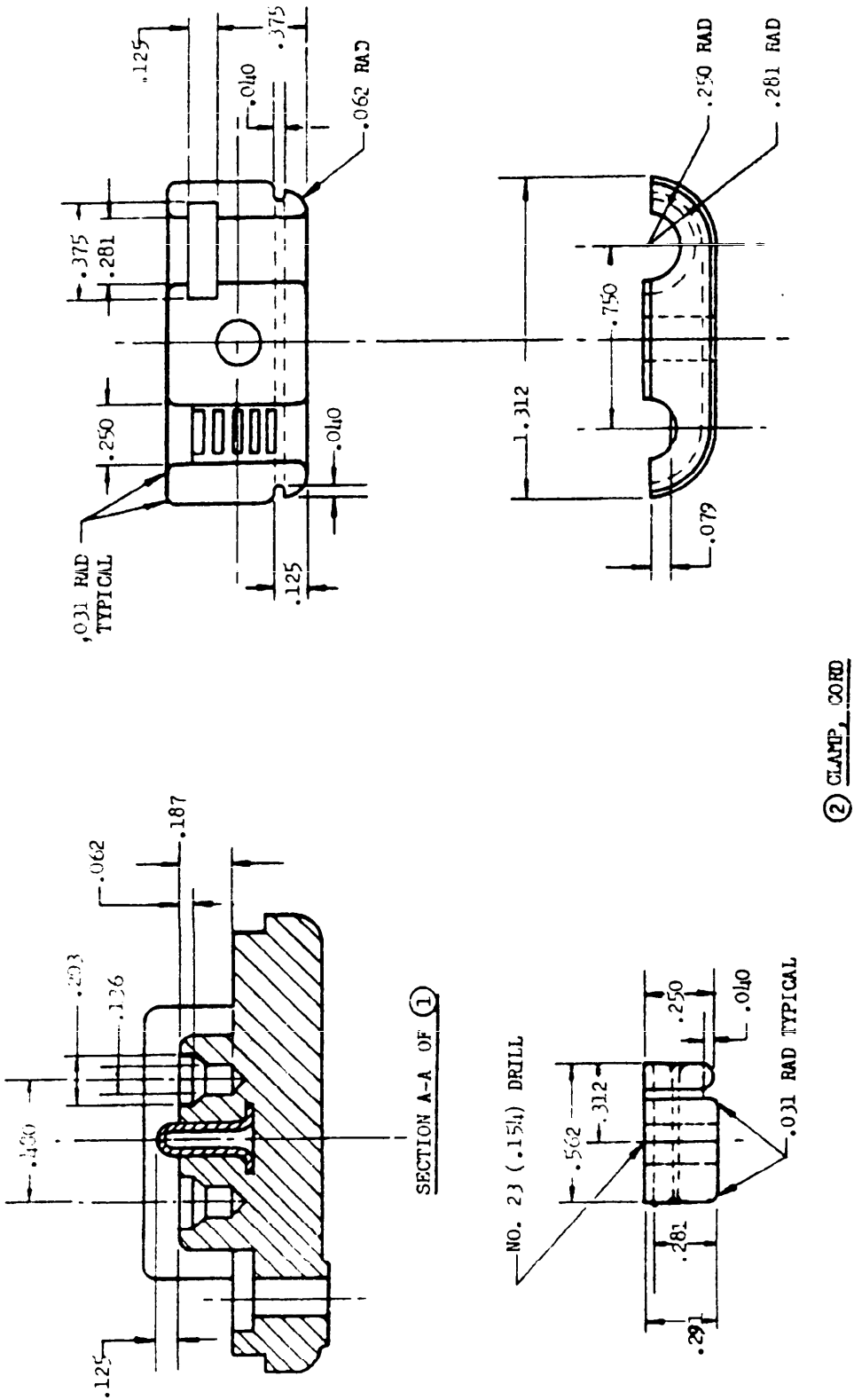


FIGURE 3. J-193/AR junction box (sheet 3 of 5)

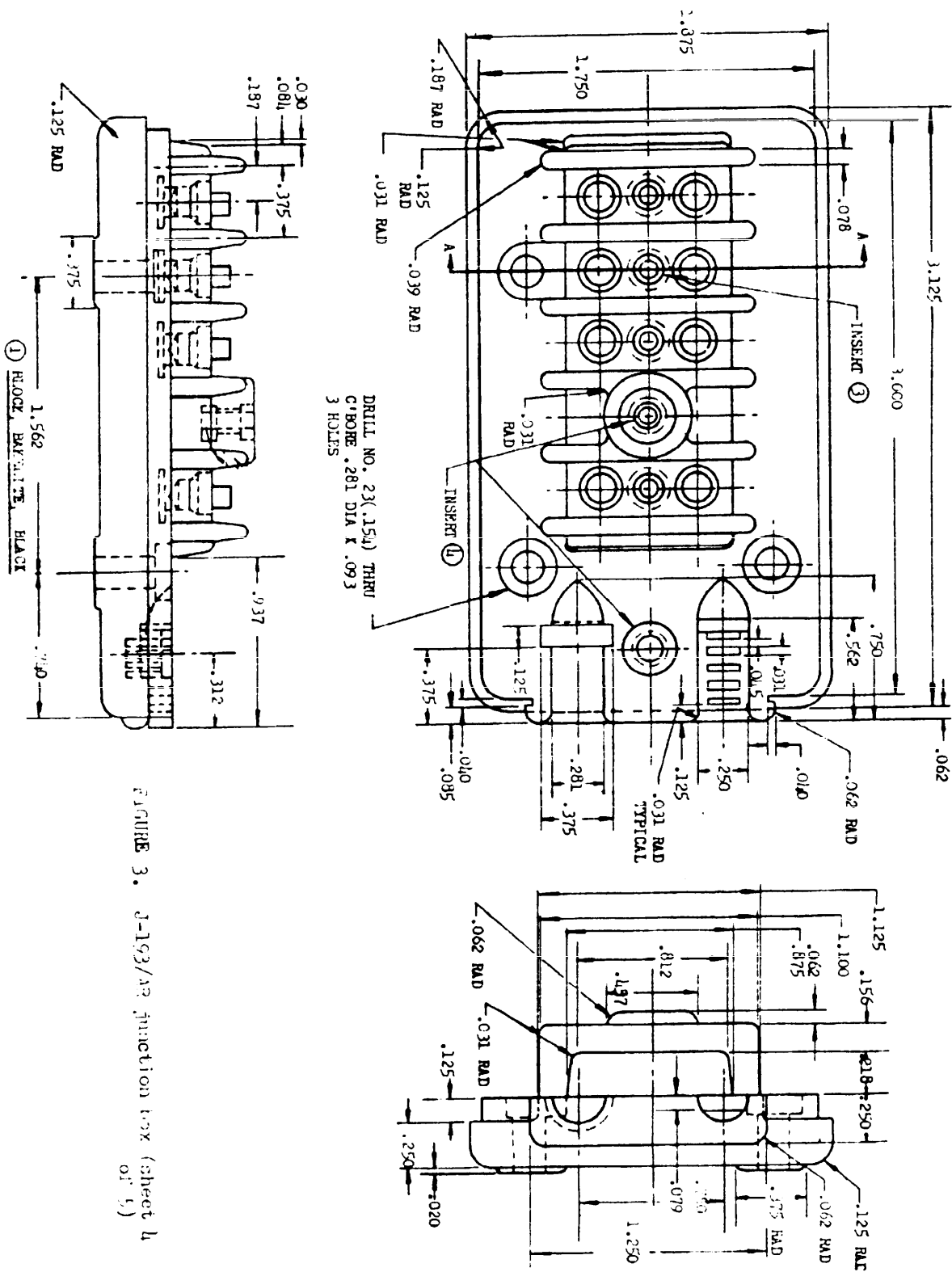


FIGURE 3. 3-193/az junction box (sheet 4 of 5)

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STOCK LIST					
ITEM NO.	NO. REQD	NAME	STOCK	MATERIAL	FINISH
①	1	BLOCK TERMINAL		BAKELITE, BLACK	
②	1	CLAMP, CORD		BAKELITE, BLACK	
	1	SCREW, CORD CLAMP	NO. 6-32, NC-2.500	BRASS, P1	DULL NICKEL
	1	LOCKWASHER, EXTERNAL	TOOTH, SHAKEPROOF	PHOS BRONZE	DULL NICKEL
	1	WASHER	.312 DIA X .025 THICK	BRASS	DULL NICKEL
③	4	INSERT, RIVET		BRASS	
④	2	INSERT, SCREW	FOR NO. 6-32 SCREW	BRASS	
⑤	4	PLATES, TERMINAL	NO. 16BS (.05808)	BRASS	DULL NICKEL
	8	SCREWS, TERMINAL	NO. 5-40, NC-2.250	BRASS	DULL NICKEL
	8	LOCKWASHER, EXTERNAL	TOOTH, SHAKEPROOF	PHOS BRONZE	DULL NICKEL
⑥	1	SLEEVES, SHOULDERED		RUBBER	
⑦	1	COVER, JUNCTION BOX	.025 THICK	STEEL, CORR. PROTF	3/
⑧	1	SCREW, COVER	NO. 6-32 BH	BRASS	DULL NICKEL
	1	LOCKWASHER, EXTERNAL	TOOTH, SHAKEPROOF	PHOS BRONZE	DULL NICKEL
⑨	1	LOCKWASHER, (SPRING)	.250 DIA X .20	PHOS BRONZE	DULL NICKEL

✓ Cadmium plate: type II, class 3 of Specification QQ-P-116.

FIGURE 3. J-123/AR junction box (sheet 5 of 6)

MIL-C-6166C**3.4.9 Accelerated aging.**

3.4.9.1 Conductor insulation. The insulated conductors from the finished cordage, after being aged 94 hours in an oxygen bomb, shall be wound around a 1/16-inch diameter mandrel without any cracking of the insulation.

3.4.9.2 Jacket. Specimens of the jacket, after being aged 94 hours in an oxygen bomb, shall not show any signs of cracking or failure. The average tensile strength and elongation of all samples tested shall not be reduced by more than 25 percent.

3.4.10 Flame retardance. With the finished cord fully extended in a horizontal position in still air, self-sustained combustion of the cordage shall not progress at a rate in excess of 2 inches in 1 minute.

3.4.11 Cold bend. Specimens of insulated conductors shall exhibit no cracks after being subjected to the test specified in 4.6.14. The bent specimens shall, while immersed in the tapwater, withstand a potential of 500 volts rms, 60 cps, applied between the conductor and water for 1 minute.

3.5 Interchangeability. The equipment shall conform to interchangeability as specified in Specification MIL-E-5400.

3.6 Identification of equipment.

3.6.1 Nameplates and nomenclature. Nameplates and nomenclature shall be in accordance with Specification MIL-N-18307. For U.S. Army Signal Corps, identification marking shall conform to Standard MIL-STD-130.

3.6.2 Junction box. The junction box shall be permanently and clearly marked with the designation "J-193 AR", as indicated on figure 3.

3.6.3 Jack. The jack shall be permanently and clearly marked with designation "U-

61/U", as indicated in figure 4.

3.6.4 Cordage. The cordage shall have a metal band or other suitable means of marking to show designation CX-1301/AR, contract number, and contractor's code designation in conformance with Specification MIL-N-18307 and as shown in figure 1.

3.7 Workmanship. Workmanship on all cordage and cords shall be such as to produce a product which conforms to this specification and any applicable requirements of referenced specifications.

4. QUALITY ASSURANCE PROVISIONS

4.1 Inspection responsibility. The supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own or any other inspection facilities and services acceptable to the Government. Inspection records of the examination and tests shall be kept complete and available to the Government as specified in the contract or order. 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.

4.2 Classification of tests. The inspection and testing of cords shall be classified as follows:

- (a) Qualification tests (4.3).
- (b) Acceptance tests (4.4).

4.3 Qualification tests.

4.3.1 Sampling instructions. The qualification test samples shall consist of 10 complete cords of each manufacturer's part number upon which qualification is desired. Samples shall be identified as required and forwarded to the activity responsible for qualification designated in the letter of authorization from that activity (see 6.3).

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4.3.1.1 *Separate samples for tinning test.* In order that a separate test may be performed for tinning, the manufacturer shall submit, in addition to the sample cords, 10 feet of tinned wire before stranding.

4.3.2 *Tests.* Qualification inspection shall consist of the tests specified in tables III, IV, and V. These tests may, at the option of the activity responsible for qualification, be supplemented with any additional tests required to determine compliance with the

TABLE III. Group A inspection (cordage).

Inspection or test	Requirement paragraph	Inspection paragraph
Conductor resistance	3.4.4	4.6.3
Dielectric strength	3.4.5	4.6.4
Insulation resistance	3.4.6	4.6.5
Temperature characteristics	3.4.3	4.6.7
Stretching	3.4.1	4.6.8
Tinning	3.3.7.1.1.1	4.6.9
Tensile strength	3.4.7	4.6.10
Elongation	3.4.8	4.6.11
Accelerated aging	3.4.9	4.6.12
Flame retardance	3.4.10	4.6.13
Cold bend	3.4.11	4.6.14

specification or drawing.

4.3.3 *Accessory material and design data.* Accessory material and design data to be supplied with the test cords shall be in accordance with Specification MIL-E-5400.

4.4 *Acceptance tests.* Acceptance tests shall consist of examination and sampling (groups A and B inspection) as specified in table III for cordage, and tables IV and V for cords (see 6.4.1).

4.4.1 *Group A inspection.*

4.4.1.1 *Cordage.* This inspection shall consist of the examination and tests specified in table III. Sampling shall conform to the "Sampling and Acceptance Procedures" of Specification J-C-98.

4.4.1.2 *Cords.* This inspection (including sampling) shall conform to table IV and Standard MIL-STD-105. Unless otherwise specified, normal inspection shall be used at the start of a contract.

TABLE IV. Group A inspection (cords)

Inspection or test	Requirement paragraph	Inspection paragraph	AQL	
			Major	Minor
<i>Visual and mechanical</i>				
Examination of product	3.7	4.6.1	1% for group	4.0% for group
Dimensions	3.3.7.3.3	4.6.1.1		
Construction	3.3.7.2 3.3.7.3.1	4.6.1.2		
Stripping	3.3.7.3	4.6.1.3		
<i>Electrical</i>				
Continuity	3.3.5	4.6.2		
Dielectric strength	3.4.5	4.6.4	1% for group	1
Insulation resistance	3.4.6	4.6.5		

¹ All electrical tests are considered major.

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TABLE V. *Group B inspection (cords)*

Inspection or test	Requirement paragraph	Inspection paragraph	AQL
Insertion and withdrawal force	3.3.10.1	4.6.15	6.5% for the group 1
Extended length	3.4.2	4.6.6	
Terminals	3.3.7.3.2	4.6.16	
Cord anchorage	3.3.6	4.6.17	

¹ Sampling shall be in accordance with the special procedures for small sample inspection of Standard MIL-STD-105. The reduced inspection procedure shall be R-1. Level L-7 shall be used for normal and tightened, and L-5 for reduced inspection.

4.5 Test conditions. All tests specified herein shall be made under the following ambient conditions, except as otherwise required in specific tests:

- (a) Temperature: From +20° to +35°C.
- (b) Pressure: From 28 to 30 inches of mercury.
- (c) Humidity: From 15 to 90 percent relative.

4.5.1 Test equipments. All instruments used in performing the measurements required by this specification shall conform to at least one of the following requirements:

- (a) Navy standard: Shall be listed as approved standard Navy test equipments.
- (b) Specific approval: Shall be acceptable to the cognizant Government inspector and the procuring activity as indicated by written approval on file at the contractor's plant.

4.6 Test methods.

4.6.1 Examination of product. Each product shall be examined to determine that the material, physical dimensions, construction, and marking are as specified, and that the workmanship is satisfactory.

4.6.1.1 Dimensions. The dimensions of the cord shall be measured after it has been stretched six times to approximately four

times its retracted length, as received (see 3.3.7.3.3).

4.6.1.2 Construction. The thickness of the conductor insulation and jacket of the cordage shall be measured by means of a measuring microscope or other gage accurate to 0.001 inch, and capable of being operated in such a way as not to deform the insulation significantly.

4.6.1.3 Stripping. Irregularities in the jacket edge owing to stripping shall not exceed 3/16 inch overall.

4.6.2 Electrical continuity. The electrical continuity of each cord shall be checked with a circuit checker, ohmmeter, or similar equipment for compliance with 3.3.5.

4.6.3 Conductor resistance. The resistance of the stranded conductor shall be tested in accordance with Method 6021 of Specification J-C-98 to determine compliance with 3.4.4.

4.6.4 Dielectric strength. The dielectric strength of the sample retractile cordage shall be tested in accordance with Method 6111 of Specification J-C-98, except that the period of immersion shall be 24 hours and the test voltage shall be applied for a period of 5 minutes.

4.6.5 Insulation resistance. The insulation resistance test shall be made immediately after the test specified in 4.6.4 and shall be conducted in accordance with Method 6031 of Specification J-C-98, using a 500-volt

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direct-current test potential.

4.6.6 Extended length.

4.6.6.1 Extended length. The cord shall be stretched six times to a length of four times its retracted length. After the specified stretching, the finished cord shall be extended, at room temperature, to $2\frac{1}{2}$ times its retracted length when subjected to a pull of not more than 8 ounces at the free end of the suspended cord.

4.6.6.2 The cord shall be stretched again six times to a length of four times its retracted length and, while suspended at room temperature, extended to a minimum of five times its retracted length.

4.6.7 Temperature characteristics.

4.6.7.1 Low-temperature characteristics. The cord shall be stretched to $2\frac{1}{2}$ times its retracted length at a temperature of -40°C ., with all portions of the cord stabilized at this temperature, to determine conformance to 3.4.3.1. Within 1 hour after removal from the cold chamber, the cord shall be at the retracted length specified in 3.4.3.1, and shall withstand, without insulation breakdown, 500 volts rms, 60 cps, applied between each conductor and the balance of the conductors for 5 minutes.

4.6.7.2 High-temperature characteristics. The cord shall be stretched to $2\frac{1}{2}$ times its retracted length after being subjected to a temperature of $+85^{\circ}\text{C}$. for 1 hour to determine conformance to 3.4.3.2. Within 1 hour after removal from the oven, the cord shall be at the retracted length specified in 3.4.3.2, and shall withstand, without insulation breakdown, 500 volts rms, 60 cps, applied between each conductor and the balance of the conductors for 5 minutes. Following the temperature conditioning, the cord shall be subjected to the test specified in 4.6.4.

4.6.8 Stretching. The cordage shall be subjected to not less than 60,000 stretches,

at a rate of approximately 36 cycles per minute (cpm), to four times its retracted length to determine conformance to 3.4.1. While the cordage is being stretched, the resistance of the conductor wires shall be recorded for at least 3 minutes during each hour to determine whether or not there are resistance changes during a cycle of stretching. After stretching the cord the specified number of times, it shall be examined for any other signs of failure of the conductor wires, conductor insulation, and jacket.

4.6.9 Tinning. The tinning test shall be conducted in accordance with Method 7121 of Specification J-C-98 (see 3.3.7.1.1.1).

4.6.10 Tensile strength (see 3.4.7).

4.6.10.1 Conductor wires. The tensile strength of conductor wires shall be tested in accordance with Method 3211 of Specification J-C-98.

4.6.10.2 Conductor insulation. The tensile strength of conductor insulation shall be tested in accordance with Method 3021 of Specification J-C-98.

4.6.10.3 Jacket. The tensile strength of the jacket shall be tested in accordance with Method 3021 of Specification J-C-98.

4.6.11 Elongation (see 3.4.8).

4.6.11.1 Conductor wires. The elongation of conductor wires shall be tested in accordance with Method 3211 of Specification J-C-98.

4.6.11.2 Conductor insulation. The elongation of conductor insulation shall be tested in accordance with Method 3031 of Specification J-C-98.

4.6.11.3 Jacket. The elongation of the jacket shall be tested in accordance with Method 3031 of Specification J-C-98.

4.6.12 Accelerated aging. Specimens of

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the jacket and insulated conductors shall be tested in accordance with Method 4011 of Specification J-C-98 (see 3.4.9).

4.6.13 Flame retardance. The flame retardance test shall be conducted in accordance with Method 5211 of Specification J-C-98 (see 3.4.10).

4.6.14 Cold bend. Specimens of the insulated conductor, each about 2 feet in length, shall be skinned 1 inch at each end to the bare conductor. They shall then be placed in a cold chamber at -40°C . with their upper ends attached to a mandrel 1 inch in diameter and with their lower ends weighted. The specimens shall then be conditioned for a period of 2 hours. At the end of that period, and while still at -40°C ., they shall be wrapped about the mandrel at the rate of one turn in 4 seconds, for a sufficient number of turns in order that their center portions are subjected to at least five turns. The specimens shall be unwrapped and rewrapped in the opposite direction in a similar manner. The weights attached to the lower ends of the specimens shall be sufficient to keep them taut during the bending operations in order that close turns of the specimens upon the mandrel will be obtained. The specimens shall then be removed from the mandrel and, without straightening, immersed in tapwater at not more than 30°C . for 1 hour, with 6 inches of each end protruding above the water (see 3.4.11). They shall then be subjected to the test specified in 4.6.4.

4.6.15 Insertion and withdrawal force. The jack U-61/U shall be tested, using accessory mating plugs, for compliance with the insertion and withdrawal force requirements specified in 3.3.10.1.

4.6.16 Terminals. Terminals shall be tested for compliance with 3.3.7.3.2.

4.6.17 Cord anchorage. The cord anchorage shall be tested for compliance with 3.3.6.

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging.

5.1.1 Level A. Cord shall be preserved and packaged in accordance with Method IA8 of Specification MIL-P-116, and placed in containers conforming to Specification MIL-C-3955 or type I or II, class 2 of Specification PPP-B-636.

5.1.2 Level C. Cord shall be preserved and packaged in accordance with the contractor's commercial practice. It shall be the responsibility of the contractor to afford a level of protection adequate to prevent damage and deterioration during transit from the contractor's plant to the receiving activity.

5.2 Packing.

5.2.1 Level A. Cord, preserved and packaged in accordance with 5.1.1, shall be overpacked in exterior-type shipping containers conforming to Specification PPP-B-585, PPP-B-591, PPP-B-601, PPP-B-621, PPP-B-636, MIL-B-138, or MIL-B-10377. Insofar as practicable, exterior-type shipping containers should be of uniform shape and size, of minimum cube and tare consistent with the protection required, and should contain identical quantities. The maximum gross weight of wood-type containers shall be approximately 200 pounds; whereas fiberboard shall be limited to 70 pounds. Containers shall be closed and strapped in accordance with the applicable container specification or appendix thereto. Containers conforming to Specification PPP-B-636 shall have all joints and seams, including manufacturer's joint, sealed with tape conforming to Specification PPP-T-60.

5.2.2 Level B. Cord, preserved and packaged in accordance with 5.1.1, shall be packaged in domestic exterior-type shipping containers conforming to Specification PPP-B-585, PPP-B-591, PPP-B-601, PPP-B-621, PPP-B-636, or MIL-B-10377. Exterior shipping containers shall be of minimum cube

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and tare consistent with the protection required. Insofar as practicable, exterior containers should be of uniform shape and size and should contain identical quantities. The maximum gross weight of wood-type container packs shall be limited to approximately 200 pounds; whereas fiberboard shall be limited to 70 pounds. Containers shall be closed and strapped in accordance with the applicable container specification or appendix thereto. When fiberboard containers are used, the fiberboard shall have a minimum Mullen test of not less than 275 pounds.

5.2.3 Level C. Packages which require overpacking for acceptance by the carrier shall be packed in exterior-type shipping containers in a manner that will insure safe transportation at the lowest rate to the point of delivery. Containers shall conform to Uniform Freight Classification Rules or regulations of other common carriers, as applicable to the mode of transportation.

5.3 Marking of shipments. Interior and exterior containers shall be marked in accordance with Standard MIL-STD-129.

6. NOTES

6.1 Intended use. The cord assembly covered by this specification is intended to provide interconnection between boom- or mask-type microphones and headphones, and aircraft intercommunicating and radio facilities.

6.2 Ordering data. Procurement documents shall specify the following:

- (a) Title, number, and date of this specification.
- (b) Level of preservation, packaging, and packing desired (see 5.1).
- (c) When accessories are desired to be furnished with the cord.
- (d) Either a CX-1301/AR cord or any of the parts specified in 3.3.8, as required.

6.3 Qualification. With respect to products requiring qualification, awards will be made only for such products as have, prior to the time set for opening of bids, been tested and approved 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 suppliers is called to this requirement, 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 or orders for the products covered by this specification. The activity responsible for the Qualified Products List is the Bureau of Naval Weapons, Navy Department, Washington 25, D. C., and information pertaining to qualification of products may be obtained from that activity.

6.4 Definitions.

6.4.1 Cordage and cord. The term "cordage" as used in this specification means bulk cordage while "cord" as described in Federal Standard No. 5 means a cable, consisting of one or more wires, of definite length with one or more processed terminals.

6.4.2 Retracted length and compressed cord. "Retracted length" referred to throughout this specification is defined as the length measured with the cord suspended from either end. "Compressed cord" is defined as the length measured between the points indicated on figure 2 with the cord fully compressed along its longitudinal axis.

6.5 This specification is not intended to be restrictive with respect to the details of construction, except where such details are specified. Alternate forms of constructions will be considered, provided the contractor submits to the procuring activity for approval a clear description of the points of difference and data to show that all performance requirements of this specification are being met.

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Notice. When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise, as in any manner licensing the holder or any other person or corporation or conveying any

rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

Custodians:

Army—SigC
Navy—Wep
Air Force—AFSC

Preparing activity:

Navy—Wep

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REMOVE ALL BURRS AND SHARP EDGES
 ALL OUTSIDE CONTOUR RADII TO BLEND SMOOTHLY.
 TYPE NUMBER CHARACTERISTICS SHALL BE RAISED TO SURFACE
 WITHIN RECESS IN POSITION SHOWN. THE LETTERS SHALL
 BE $.001$ INCH IN HEIGHT.

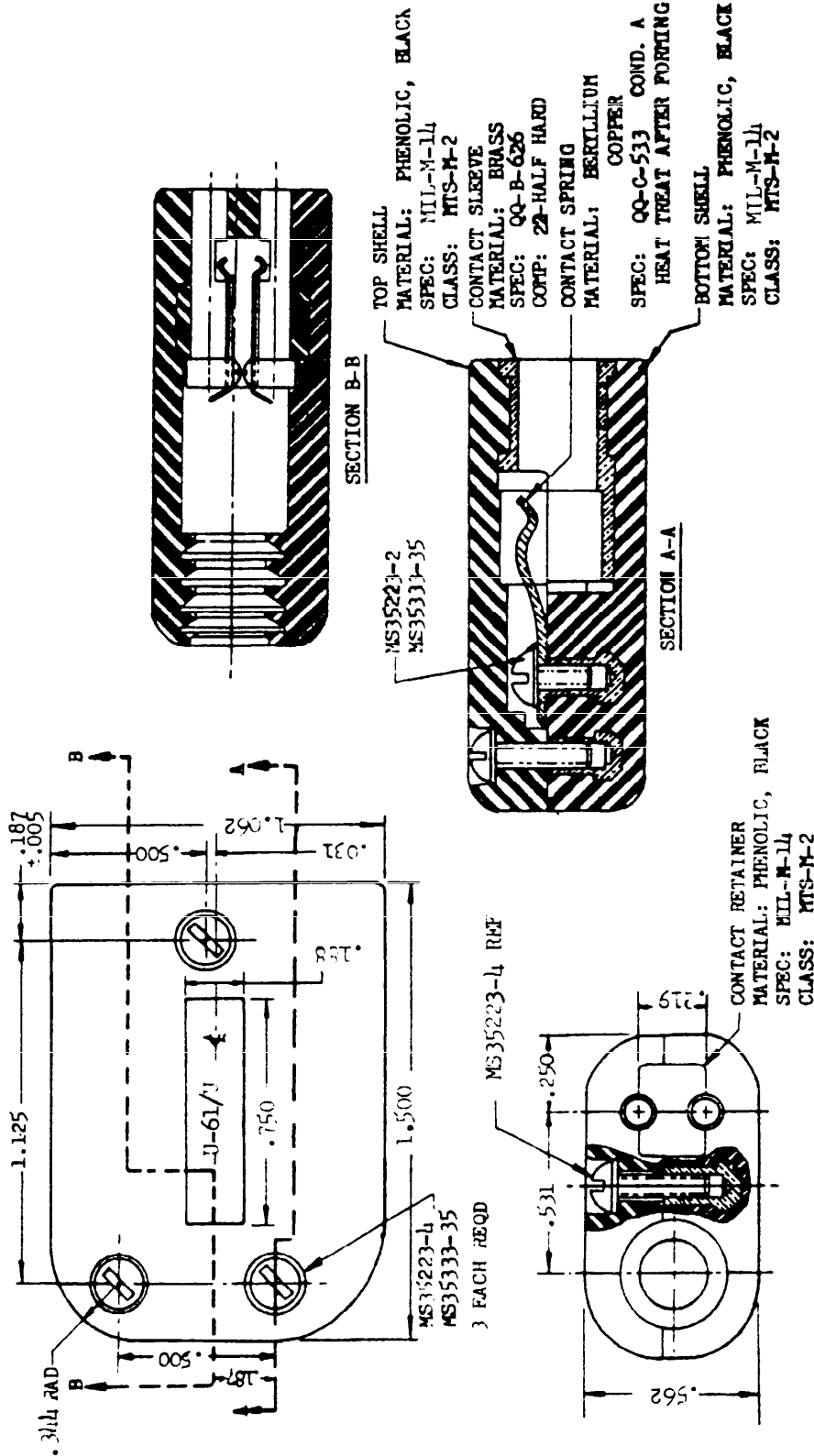
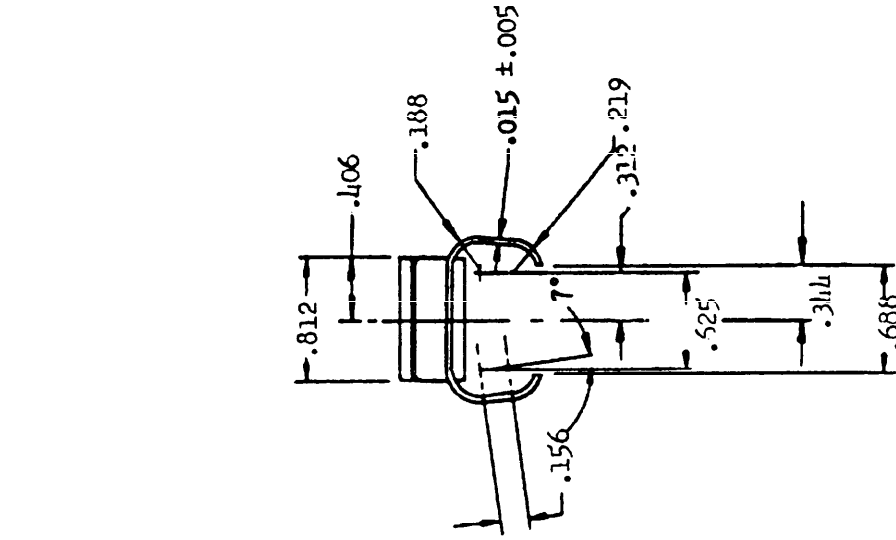


FIGURE 1. Jack T-61/U assembly

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MATERIAL: STEEL, SPEC MIL-S-7947 APPROX
 TREATMENT: SPRING TEMPER PER SPEC
 MIL-H-6875
 FINISH: BLACK NICKEL

DIMENSIONS IN INCHES. TOLERANCES:
 DECIMALS: +.016, ANGLES +2°.

FOR USE WITH JACK U-61/U (REF)
 REMOVE ALL BURRS AND SHARP EDGES.

FIGURE 5. Clip

