DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR AND ORGANIZATIONAL MAINTENANCE MANUAL
TEST SET, TELEPHONE TS-816/U

Headquarters, Department of the Army, Washington 25, D. C.
2 February 1962

WARNING

HIGH VOLTAGE
is used in
this equipment.

DEATH ON CONTACT
may result if safety precautions
are not observed.
Be careful not to contact high-voltage output connections
when operating, testing, or servicing Test Set, Telephone
TS-816/U.

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*Appendix II supersedes that portion of TM 11-6625-201-25P, 1 June 1959. as pertains to the maintenance allocation chart; and appendix III supersedes TM 11-6625-201-10P, 1 June 1959.

Changes in force: C 2 and C 3

TM 11-6625-201-12
C 4

CHANGE
No. 4

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 8 August 1978

Operator's and Organizational Maintenance Manual
TEST SET, TELEPHONE TS-816/U
(NSN 6625-00-669-1217)

This change is current as of 15 March 1978

TM 11-6625-201-12, 2 February 1962, is changed as follows:

Title of manual is changed as shown above.

Page 3, paragraph 2 is superseded as follows:

2. Forms and Records

a. Reports of Maintenance and Unsatisfactory Equipment. Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750.

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Packaging Improvement Report) as prescribed in AR 700-58/NAVSUPINST 4030.29/AFR 71-13/MCO P4030.29A, and DSAR 4145.8.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33B/AFR 75-18/MCO P4610.19C and DLAR 4500.15.

Paragraph 2.1, lines 6 and 7. "US Army Electronics Command, ATTN: AMSELMA-C," is changed to read "US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-MA-Q."

Add paragraph 2.2 after 2.1.

2.2. Reporting Equipment Improvement Recommendations (EIR)

EIR's will be prepared using DA Form 2407, Maintenance Request. Instructions for preparing EIR's are provided in TM 38-750, the Army Maintenance Management System. EIR's should be mailed direct to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-MA-Q, Fort Monmouth, NJ 07703. A reply will be furnished direct to you.

Page 8, paragraph 10a. Add the following Note after the subparagraph a heading:

NOTE

Do not install batteries that are over one year old. Use of such batteries may cause improper operation of the equipment.

By Order of the Secretary of the Army:

BERNARD W. ROGERS
General, United States Army
Chief of Staff

Official:
J. C. PENNINGTON
Brigadier General, United States Army
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11-87
11-302
11-500(AA-AC)
29-134
29-139

NG: None
USAR: None
For explanation of abbreviations, used AR 310-50.

U.S. GOVERNMENT PRINTING OFFICE :1983 O-418-052
GPO 909-874

TM 11-6625-201-12
C 3

CHANGES }
No. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 7 May 1974

Operator's and Organizational Maintenance Manual
TEST SET, TELEPHONE TS-816/U

TM 11-6625-201-12, 2 February 1962, is changed as follows:

Page 3, paragraph 1.1. Delete paragraph 1.1 and substitute:

1.1. Indexes of Publications

a. DA Pam 310-4. Refer to the latest issue of DA Pam 3104 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. DA Pam 310-7. Refer to DA Pam 310-7 to determine whether there are modification work orders (MWO's) pertaining to the equipment.

Paragraph 2. Delete paragraph 2 and substitute:

2. Forms and Records

a Reports of Maintenance and Unsatisfactory Equipment. Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750.

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700-58/NAVSUP PUB 378/AFR 714/MCO P4030.29, and DSAR 4145.8.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF361) as prescribed in AR 55-38/NAVSUPINST 4610.33/AFM 75-18/MCO P4610.19A, and DSAR 4500.15.

2.1. Reporting of Errors

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded direct to Commander, US Army Electronics Command, ATTN: AMSEL-MA-C, Fort Monmouth, NJ 07703.

Paragraph 5. Delete paragraph 5 and substitute:

5. Items Comprising an Operable Test Set, Telephone TS416/U
(fig. 1 and 2)

FSN	Qty	Nomenclature, part No., mfr code
6625-669-1217		Test Set, Telephone TS816/U which includes:

NOTE
The part number is followed by the applicable 5-digit Federal supply code for manufacturers (FSCM) identified in SB 708-42 and used to identify manufacturer, distributor, or Government agency, etc.

NOTE
Dry batteries shown are used with the equipment but are not considered part of the equipment They will not be preshipped automatically but are to be requisitioned in quantities necessary for the particular organization in accordance with SB-11-6.

6135120-1025	1	Battery BA-15A: 1.5 v; MIL type BA-15A
6135120-1022		Battery BA-27: 4.5 v; MIL type BA-27
61351789506	15	Battery BA-63: 45 v; MIL type BA-63
6625502-1304	1	Cable Assembly, Power Electrical: 18 in. lg; SM-B-189424, 80063
6625502-1305	1	Cable Assembly, Power Electrical; 31 ft; SM-B-189425,80063
662.55573	1	Cover, Test Set: SM-D-189441, 80063

Page 23, appendix III. Delete appendix III and substitute:

APPENDIX III
BASIC ISSUE ITEMS LIST (BIIL) AND ITEMS TROOP INSTALLED OR AUTHORIZED LIST (ITIAL)

Section I. INTRODUCTION

1. Scope
This appendix lists only basic issue items required by the crew/operator for installation, operation, and maintenance of Test Set, Telephone TS-816/U.

2. General
This Basic Issue Items and Items Troop Installed or Authorized List is divided into the following sections:

a. Basic Issue Items List -Section II. A list, in alphabetical sequence, of items which are furnished with, and which must be turned in with the end item.

b. Items Troop Installed or Authorized List -Section III. Not applicable.

3. Explanation of Columns
The following provides an explanation of columns found in the tabular listings:

a. Illustration. Not applicable.

b. Federal stock Number. Indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. Part Number. Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements, to identify an item or range of items.

d. Federal Supply Code for Manufacturer (FSCM). The FSCM is a 5digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., and is identified in SB-70842.

e. Description. Indicates the Federal item name and a minimum description required to identify the item.

f. Unit of Measure (U/M). Indicates the standard of basic quantity of the listed item as used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr, etc.). When the unit of measure differs from the unit of issue, the lowest unit of issue that will satisfy the required units of measure will be requisitioned.

g. Quantity Furnished With Equipment (Basic Issue Items Only). Indicates the quantity of the basic issue items furnished with the equipment.

(1) Illustration		(2)	(3)	(4)	(5)	(6)	(7)
(A) Fig. no.	(B) Item no.	Federal stock number	Part number	FSCM	Description Usable on code	Unit of meas	Qty furn with equip
		6625-668-5573	SMD-189441	80063	COVER,TEST SET	ea	1

By Order of the Secretary of the Army:

CREIGHTON W. ABRAMS
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11-302
11-500 AA-AC
29-134
29-136

VG: None.
USAR: None.
For explanation of abbreviations used, see AR 310-50.

☆U.S. GOVERNMENT PRINTING OFFICE :1984 O-421-302 (10861)

TECHNICAL MANUAL

Operator and Organizational Maintenance Manual

TEST SET, TELEPHONE TS-816/U

TM 11-6625-201-12
CHANGES No. 2

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., 15 July 1963

TM 11-6625-201-12, 2 February 1962, is changed as follows:

Page 3. Delete paragraph 1 and substitute:

1. Scope

This manual describes Test Set, Telephone TS-816/U (fig. 1) and covers its installation, operation, and operator's maintenance. It includes instructions for performing preventive and periodic maintenance services and repair functions to be accomplished by the operator. No maintenance is performed at second echelon (appx. II).

Add paragraph 1.1 after paragraph 1.

1.1. Index of Publications

Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to this equipment. DA Pam 310-4 is a current index of technical manuals, technical bulletins, supply bulletins, lubrication orders, and modification work orders that are available through publication supply channel. The index lists the individual parts (-10, -20, -35P, etc.) and the latest changes to and revisions of each equipment publication.

Delete paragraph 2 (As changed by C 1, 9 Nov 62) and substitute:

2. Forms and Records

a. Reports of Maintenance and Unsatisfactory Equipment. Use equipment forms and records in accordance with instructions in TM 38-750.

b. Report of Damaged or Improper Shipment. Fill out and forward DD Form 6 (Report of Damaged or Improper Shipment) as prescribed in AR 700-58 (Army), NAVSANDA Publication 378 (Navy), and AFR 71-4 (Air Force).

c. Comments on Manual. Forward all comments on this publication direct to: Commanding Officer, U.S. Army Electronics Materiel Support Agency, ATTN: SELMS-MP, Fort Monmouth, New Jersey. DA Form 1598 (Record of Comments on Publications), DA Form 2496 (Disposition Form), or letter may be used.

Page 6. Delete paragraphs 8 and 9 and substitute:

8. Unpacking

a. Packaging Data. A typical shipping box and its contents are shown in figure 2. The packaged equipment measures 24 inches high by 19-3/4 inches wide by 14 inches deep; the weight is 73 pounds and the volume is 3.7 cubic feet.

b. Removing Contents. When uncrating and unpacking Test Set, Telephone TS-816/U, be careful not to damage the equipment by thrusting tools into the interior of the container. Do not damage the packaging material more than necessary.

NOTE

The instructions below apply to unpacking export shipments. Domestic packing methods depend on the rules and regulations of common carrier applicable to the mode of transportation.

(1) Cut and fold back the steel straps from the outside of the wooden packing box.

(2) Remove the nails from the top and one side of the wooden packing box with a nail-puller. Remove the top and one side.

(3) Remove the packaged technical manual (not shown) and outer corrugated box.

(4) Carefully cut the outer corrugated carton down the four corners and pull the flaps clear of the equipment.

(5) Cut the moisture-vapor-proof barrier and remove the inner corrugated carton.

(6) Carefully cut the inner corrugated carton down the four corners and pull the flaps clear of the equipment.

(7) Lift out the TS-816/U.

(8) Store the interior packing material in the wooden packing box for future use.

*This Changes supersedes C 1, 9 November 1962.

9. Check Unpacked Equipment

a. Inspect the TS-816/U for damage incurred during shipment. If the equipment has been damaged, report the damage on DD Form 6 (par. 2).

b. Check the equipment against the master packing list. When no packing list accompanies the equipment, check the equipment against the basic items list (appx. III). Report all discrepancies in accordance with instructions in TM 38-750 (par. 2).

NOTE

Shortage of a minor assembly or part that does not affect proper functioning of the equipment should not prevent use of the equipment.

c. If the equipment has been used or reconditioned, see whether it has been changed by a modification work order (MWO). The current MWO's applicable to the TS-816/U are listed in DA Pam 310-4 (par 1.1).

Page 8, paragraph 10*a*. Make the following changes:

Subparagraph (2), line 3. Change "figure 3" to: figure 4.

Subparagraph (3), line 3. Change "figure 3" to: figure 4.

Line 6. Change "figure 3" to: figure 4.

Page 9, figure 3, caption. Delete "battery location" and substitute: controls and instruments.

Page 10, paragraph 12, heading. Change "(fig. 4)" to: (fig. 3).

Page 11, figure 4, caption. Delete "controls and instruments" and substitute: battery location.

Page 14, delete paragraphs 17 and 18 and substitute-

17. Scope of Maintenance

The maintenance duties assigned to the operator of the TS-816/U are listed belong together with a reference to the paragraphs covering the specific maintenance function. The duties assigned do not require tools or test equipment other than those issued with the equipment (par. 18).

a. Daily maintenance checks and services (par 18.3).

b. Cleaning (par. 18.4).

c. Troubleshooting and repairs (par. 19).

18. Tools and Materials Required for Maintenance

a. The tools required for operator's maintenance of the TS-816/U are listed in appendix II.

b. The materials listed below are also required for operator's maintenance.

WARNING

Cleaning compound is flammable and its fumes are toxic. Do not use near a flame; provide adequate ventilation.

(1) Cleaning Compound (FSN 7930-395-7542).

(2) Cheesecloth (FSN 8305-267-3015).

(3) Soft-bristle brush.

Add paragraphs 18.1 through 18.4 after paragraph 18.

18.1. Preventive Maintenance

Preventive maintenance is the systematic care, servicing, and inspection of equipment to prevent the occurrence of trouble, to reduce downtime, and to assure that the equipment is serviceable.

a. Systematic Care. The procedures given in paragraphs 18.3 and 18.4 cover routine systematic care and cleaning essential to proper upkeep and operation of the equipment.

b. Preventive Maintenance Checks and Services. The preventive maintenance checks and services chart (par. 18.3) outlines functions to be performed at a specific interval. These checks and services are to maintain Army electronic equipment in a combat serviceable condition; that is, in good general (physical) condition and in good operating condition. To assist operators in maintaining combat serviceability, the chart indicates what to check, how to check, and what the normal conditions are; the *References* column lists the illustrations, paragraphs. or manuals that contain supplementary information If the defect cannot be remedied by the operator, higher echelon maintenance or repair is required. Records and reports of these checks and services must be made in accordance with the requirements put forth in TM 38-750.

18.2. Preventive Maintenance Checks and Services Periods

Preventive maintenance checks and services of Test Set, Telephone TS-816/U are required daily. Paragraph 18.3 specifies the items to be checked and serviced. In addition to the routine daily checks and services, the equipment should be rechecked and serviced immediately before going on a mission and as soon after completion of the mission as possible.

18.3. Daily Maintenance Service and Inspection Chart

Sequence No.	Item	Procedure	References
1	Completeness.....	Check to be sure that the equipment has a full complement of required components and running spares.	Appx. III.
2	Installation	Check to be sure that the equipment is properly installed	Par. 10.
3	Fuses.....	Check that all operating fuses are of the correct value, Check spare fuses for proper value.	Fig. 1 and par. 18.4.
4	Exterior surfaces.....	Clean the carrying case of the TS-816/U. Check to be sure that painted surfaces are free of bare spots, rust, and corrosion.	
5	Publications	Check to see that the operator's manual is complete and in usable condition and that all changes pertinent to the TS 816/U are on hand.	
6	Modification work orders ...	Check to be sure that all URGENT MWO's have been applied to the equipment and that all ROUTINE MWO's have been scheduled.	PA Pam 310-4.
7	Panel	Check to he sure that the panel is clean, dry, and shows no evidence of damage or deformity. All hardware is present and all nuts, washers, and retaining screws are properly tightened.	Fig. 3.
8	Binding posts	Check to be sure that the binding posts are secured firmly to the chassis.	Fig. 3.
9	Connections.....	Check to be sure that the connector on the test cable assembly fits properly into the LINE receptacle. Check to be sure that the test clips and the rubber boots are not damaged.	Figs. 1 and 3.
10	Battery Compartment...	Open the battery compartment cover and check the interior for evidence of water leakage, condensation, and corrosion.	Fig. 3.
11	Batteries	Check to be sure that the batteries show no evidence of corrosion or swelling and that all battery connectors are tight and firmly seated in their receptacles.	Fig. 4.
12	Internal wiring and components.....	Remove the four panel retaining screws and lift the control panel from the carrying case. Inspect the unit for loose or broken wires, poorly soldered connections, burned resistors, maladjusted or burned switch contacts and other evidence of damage or deformity.	
13	Operation.....	While performing the operational tests as described in paragraph 11, observe that the mechanical action of each knob, dial, and switch is smooth and free of external or internal binding.	Par. 11 and fig. 3.

18.4 Cleaning

Inspect the exterior of the TS 816/U. The exterior surfaces should b clean and free of dust, dirt, grease. and fungus.

WARNING

Cleaning compound is flammable and its fumes are toxic. Do not use near a flame; provide adequate ventilation.

a. Clean the outside of the equipment with a lint-free cloth. Remove grease, fungus, and ground-in dirt from the TS-816/U; use cheesecloth dampened (not wet) with cleaning compound. If dirt is difficult to remove, dampen the cloth with water; mild soap may be used to make the cleaning more effective.

b. Open the cover of the carrying case. Clean the panel with a lint-free cloth.

CAUTION

Do not press the meter face (glass) when cleaning; the meter may become damaged.

c. Use a soft-bristle brush to remove accumulated dust, dirt, and other foreign matter from the binding posts and test switches.

Page 15. Delete figure 5.

Page 16. Delete figure 6.

Page 17. Delete paragraphs 20 and 21 and substitute:

20. Disassembly of Equipment

The following instructions are recommended as a general guide for preparing Test Set, Telephone TS-816/U for transportation and storage:

a. Disconnect and remove the batteries (fig. 4) from the battery compartment.

b. Secure the battery compartment cover securely in place.

c. Remove any leads connected to the TS-816/U binding posts or LINE receptacle.

d. Check to be sure that all switch and control knobs are securely tightened on their shafts.

e. Neatly coil the battery test cable and test cable assembly (fig. 1) and fasten them to the battery compartment cover (fig. 3) with pressure-sensitive tape.

f. Fasten the cover of the TS-816/U to the carrying case.

21. Repackaging Test Set, Telephone TS-816/U

The following instructions are recommended as a general guide for repackaging the TS-816/U.

a. Package each technical manual within a close-fitting bag fabricated of waterproof wrapping paper. Seal the bag securely with pressure-sensitive tape.

b. Wrap the TS-816/U with weather proof wrapping paper.

c. Seal the entire enclosure with waterproof tape and blunt all corners of the enclosure.

d. Overwrap the TS-816/U with pads of filler material and waterproof paper.

e. Completely seal all joints, seams, and closures with waterproof and pressure-sensitive tape.

f. Place the equipment, packages described in *a* through *e* above, within corrugated cardboard and seal the entire enclosure with waterproof and pressure-sensitive tape.

Add paragraph 21.1 after paragraph 21:

21.1. Packing Data

The following materials are used in the repacking described in paragraph 21. For stock numbers of materials, consult SB 38-100.

Material	Quantity
Corrugated cardboard.....	6 square feet
Desiccant.....	1/2 pound
Filler material	1 pound
Pressure-sensitive tape	2 feet
Waterproof paper	6 square feet
Waterproof tape.....	2 feet

Page 18. Appendix I. Make the following changes -- In line 1, delete “and organizational maintenance personnel”. Add after last reference -

TM 38-750 The Army Equipment Record System and Procedures

Page 21, Maintenance allocation chart, column 2, line 4 (as changed by C 1, 9 Nov 62). Delete “repair” line in its entirety.

Page 22, Allocation of tools for maintenance functions chart, column 1, line 4 (as changed by C1, 9 Nov 62). Delete “Tool Equipment TE-49” item in its entirety.

By Order of the Secretary of the Army:

EARLE G. WHEELER,
General, United States Army,
Chief of Staff.

Official

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Major General, United States Army,
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NG: State AG (3); units-same as active Army except allowance is one copy to each unit.
USAR: None.
For explanation of abbreviations used, see AR 320-50.

☆U.S. GOVERNMENT PRINTING OFFICE: 1984 O-421-302 (10862)

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1. Scope

This manual describes Test Set, Telephone TS-816/U and covers its installation, operation, and operator's maintenance. It includes operation under usual and unusual conditions, cleaning and inspection of the equipment, and replacement of parts available to first echelon maintenance personnel. No maintenance is performed at second echelon (appx II).

2. Forms and Records

a. Unsatisfactory Equipment Reports. Fill out and forward DA Form 468 (Unsatisfactory Equipment Report) as specified in AR 700-38.

b. Report of Damaged or Improper Shipment. Fill out and forward DD Form 6 (Report of Damaged or Improper Shipment) as prescribed in AR 700-58 (Army).

c. Preventive Maintenance Forms. Prepare DA Form 11-266 (fig. 5 and 6), (Maintenance Check List for Signal Equipment (Test Equipment)) in accordance with instructions on the form.

d. Parts List Form. Forward DA Form 2028 (Recommended Changes to DA Technical Manual Parts List or Supply Manual 7, 8, or 9) direct to the Commanding Officer, U. S. Army Signal Materiel Support Agency, ATTN: SIGMS-MLM, Fort Monmouth, N. J., with comments on parts listings.

e. Comments on Manual. Forward all other comments on this publication direct to the Commanding Officer, U. S. Army Signal Materiel Support Agency, ATTN: SIGMS-PA2d, Fort Monmouth, N. J.

f. DA Pamphlet 310-4. Refer to DA Pamphlet 310-4 to determine what changes to or revisions of this publication are current.

Section II. DESCRIPTION AND DATA

3. Purpose and Use

The TS-816/U is designed to apply a high voltage across conductors of a fixed plant cable to break down (burn in) a high-resistance fault. Tone facilities and a resistance-measuring circuit are provided to locate the fault after it has been burned in.

NOTE

The TS-816/U does not provide adequate voltages to break down a high-resistance fault in plastic insulated cable.

4. Technical Characteristics

Operating Voltages:

Buzzer	4.5, 9, 22.5, 45, 67.5, and 90 volts dc.
Breakdown	630 volts dc.
Power source	Internal batteries.
Buzzer:	
Frequency	500 cps.
Operation	Interrupted or continuous tone.
Meter range:	
Resistance	0-2 megohms.
Current	0-5 amperes.

5. Components

For a list of items comprising an operable equipment and a list of running spares, refer to appendix III.

6. Description

(fig. 1 and 3)

Test Set, Telephone TS-816/U is housed in a metal carrying case. A control panel

occupies the lower third of the carrying case. A battery compartment occupies the remaining space. A coiled 31-foot test cable assembly and a battery test cable assembly are stored between the metal cover and the plastic battery compartment cover. A carrying handle and a hanger are secured to the outside of the carrying case.

7. Additional Equipment Required

Equipment required for operation, but not supplied as part of the TS-816/U is listed in the following chart.

Quantity	Equipment	Function
1	Battery BA-15-A	Provides dc for operation of ohmmeter in RX 1 position.
2	Battery BA-27	Provides dc for operation of buzzer in 4.5- and 9-volt position.
15	Battery BA-63	Provides dc for operation of ohmmeter in RX 1000 position and provides breakdown voltage.
1	Exploring coil (FSN 5950-309-5383)	Permits tracing tone to cable fault without physical connection.
1	Telephone receiver (FSN 5965-223-4567) equipped with cord.	Permits operator to hear tone picked up by exploring coil.
1	Fibre-Glass Pruner Pole Section (Winston Products Co. No. GP-36) equipped with Safe Exploring Coil (Winstor Products Co. No. GEC-4).	Permits operator to hold exploring coil against cable while standing on the ground.
1	Resistance Bridge ZM-4/U	Permits locating faults by resistance measurement.

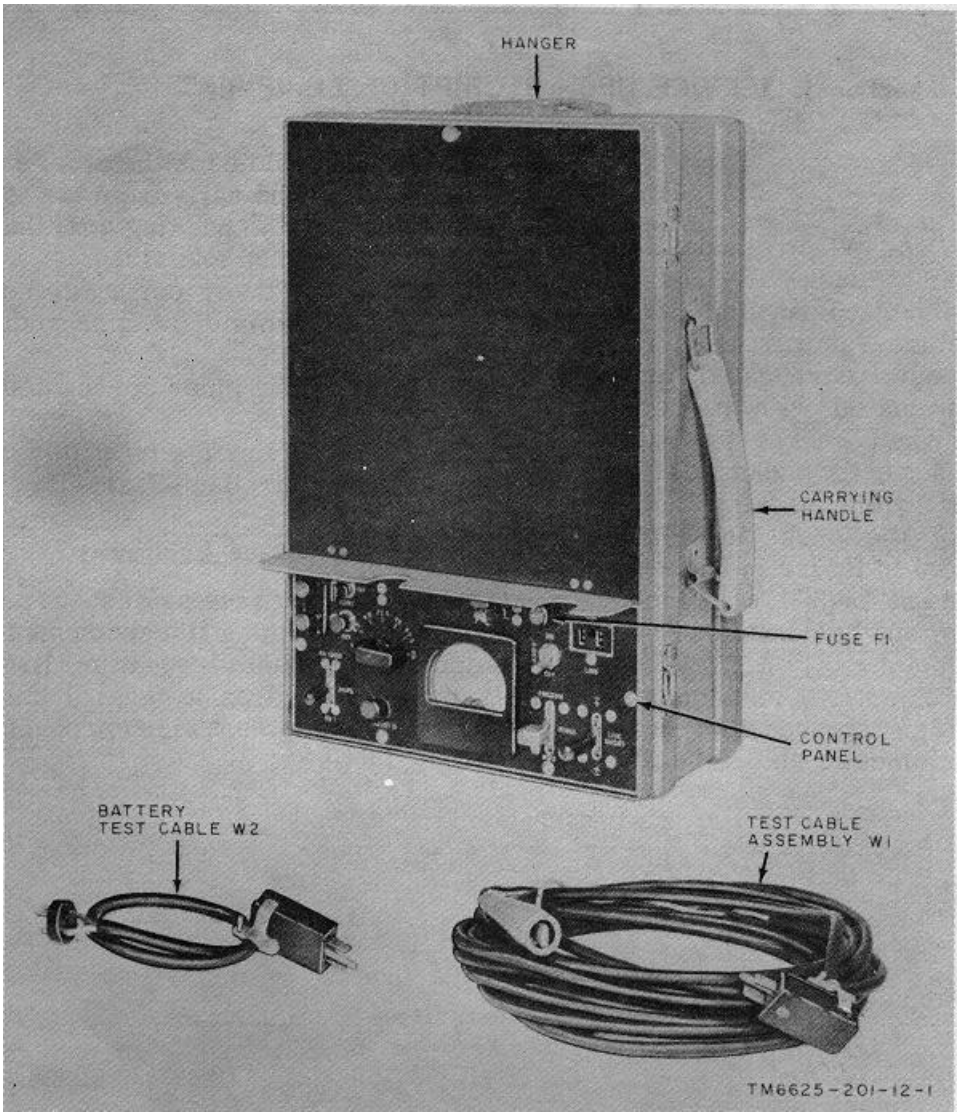


Figure 1. Test Set, Telephone TS-816/U.

CHAPTER 2
OPERATION

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

8. Unpacking

(fig. 2)

a. *Packaging Data.* When packed for domestic shipment, each TS-816/U is packaged in an inner corrugated carton, wrapped in moisture-vaporproof barrier, and packed in an outer corrugated carton. Each carton is sealed with pressure-sensitive tape. When packed for export shipment, three each of the packaged equipment are packed in one packing box. An exploded view of the packaging for the TS-816/U is shown in figure 2. The export packing box is 24 x 19-3/4 x 14 inches, weighs 73 pounds, and has a volume of 3.7 cubic feet.

b. Removing Contents. Omit subparagraphs (1) and (2) when unpacking equipment packed for domestic shipment.

(1) Cut and fold back the steel straps.

(2) Remove the nails from the top and sides of the packing box; then remove the top and sides.

(3) Open the outer corrugated carton and the moisture-vaporproof barrier.

(4) Remove the inner corrugated carton.

(5) Open the inner corrugated carton and remove the TS-816/U.

9. Checking Unpacked Equipment

Check the equipment against the packing list. When no packing list accompanies the equipment, the basic issue items list (appx III) may be used as a general check to indicate the equipment which probably was packed.

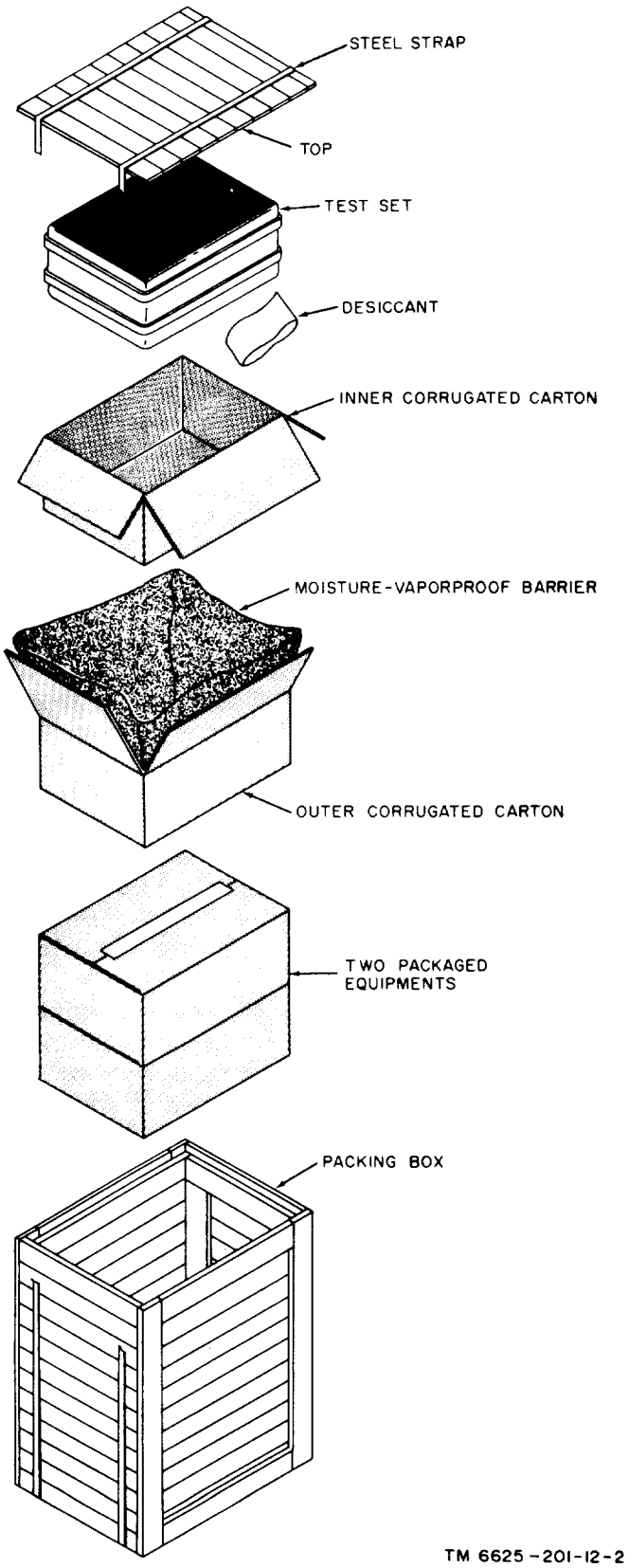


Figure 2. Test Set, Telephone TS-816/U, packaging diagram.

Section II. OPERATING PROCEDURES

10. Battery Installation

a. Batteries BA-63.

(1) Remove the battery compartment cover.

(2) Test the 15 Batteries BA-63 (para 11*c*). Place each one in position as shown in figure 3.

(3) Insert the connectors into the receptacles on each of batteries B1 through B10, as shown in figure 3. After the other batteries have been installed, connect B11 through B15 as shown in figure 3.

b. Battery BA-15-A.

(1) Place the BA-15-A between Batteries BA-63, designated B10 and B11.

(2) Connect lead 8 to the positive terminal, and lead 10 to the negative terminal.

c. Batteries BA-27.

(1) Place the two Batteries BA-27 in the open space adjacent to the BA-15-A. Be sure to position the positive (+) terminal of both batteries toward the control panel.

(2) Connect the spade lug on the lead designated 6 to the positive (+) terminal of the BA-27 nearest the control panel.

(3) Connect one of the spade lugs on the lead designated 7 to the position (+) terminal of the other BA-27. Connect the other spade lug of lead 7 to the negative terminal of the BA-27 ((2) above).

(4) Connect the spade lug on the lead designated 9 to the negative terminal of the BA-27 farthest from the control panel of the TS-816/U.

NOTE

Check to be sure that all connections are tight and that all connectors are firmly seated in the receptacles.

11. Preoperational Tests

a. Ohmmeter.

(1) Connect the test cable assembly to the LINE receptacle and short the test cable leads.

(2) Operate the BRKDWN-OHMS-BUZ switch to the OHMS position; operate the LINE SHORT switch to either the ± or the ∓ position.

(3) Operate the AMPS-RX 1-RX 1000 switch to the RX 1 position and adjust the ADJUST 0 control until the meter indicates 0.

(4) Operate the AMPS-RX 1-RX 1000 switch to the RX 1000 position and adjust the ADJUST 0 control until the meter indicates 0.

b. Buzzer.

(1) Connect the test cable assembly to the LINE receptacle and short the test cable leads.

(2) Operate the LINE SHORT switch to either the ± or the ∓ position, and the BRKDWN-OHMS-BUZ switch to the BUZ position.

(3) Operate the TONE-INT-CONT switch to the CONT position.

(4) Operate the voltage selector switch to the 4.5 position. The buzzer should operate continuously.

(5) Operate the TONE-INT-CONT switch to the INT position. The buzzer should operate intermittently.

(6) Set the voltage selector switch to each of the other positions, in turn, and operate the TONE-INT-CONT switch to the CONT and INT positions for each setting of the voltage selector switch. The buzzer should operate at each position of the voltage selector switch.

c. Battery BA-63 (45- Volt) Test.

(1) Connect the battery test cable to the LINE receptacle.

(2) Insert the connector into the receptacle on the battery to be tested.

(3) Operate the LINE SHORT switch to the ∓ position and momentarily operate the BRKDWN-OHMS-BUZ switch to the BRKDWN position. The meter should indicate a minimum of 2 amperes.

NOTE

Do not use Batteries BA-63 that indicate less than 2 amperes under test.

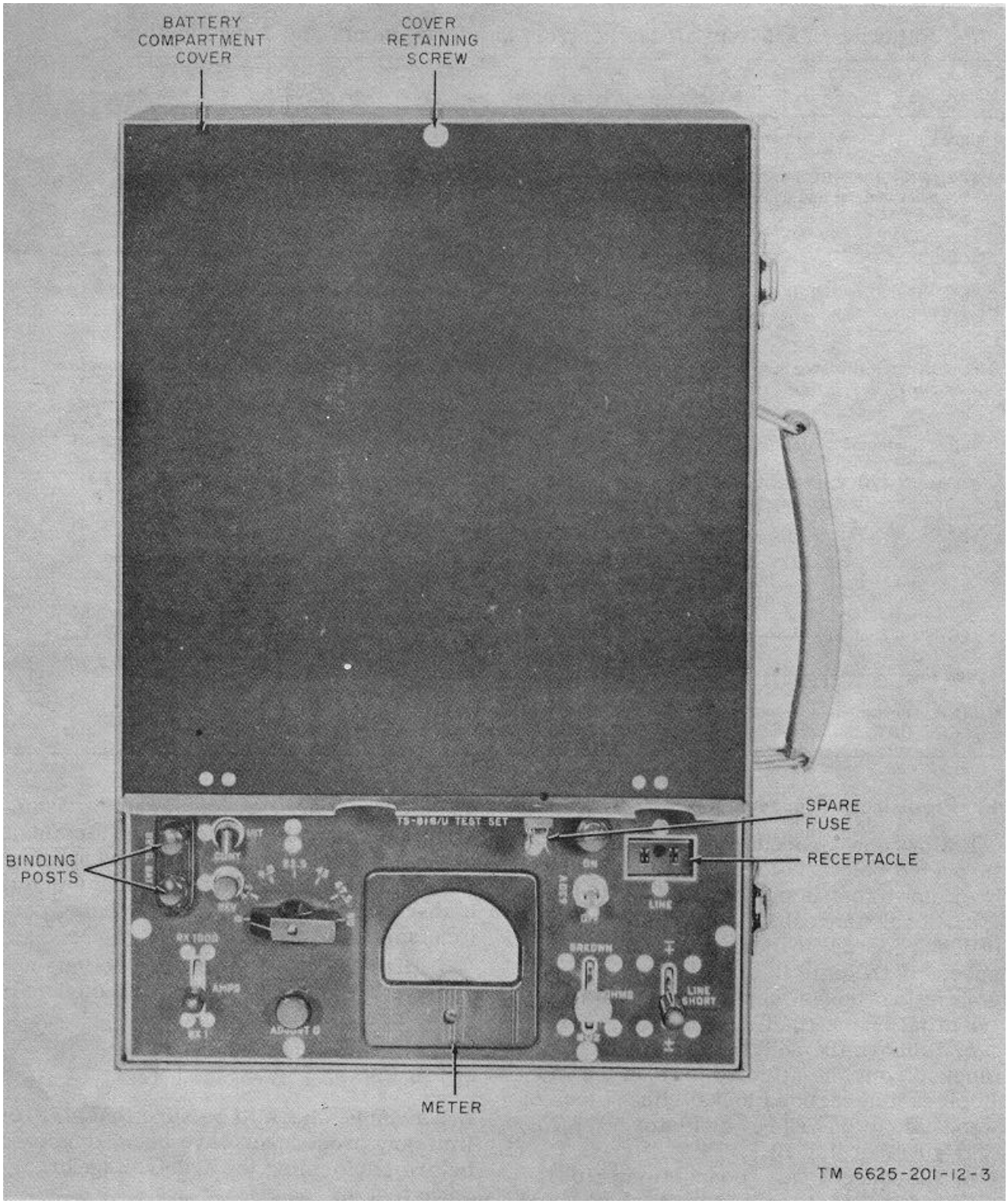


Figure 3. Test Set, Telephone TS-816/U, battery location.

12. Controls and Instruments

(fig. 4)

The following chart lists all the controls and instruments and their functions.

Control and Instrument	Function	
630V ON-OFF switch (two-position toggle switch).	Controls 630-volt circuit.	
BRKDWN-OHMS-BUZ switch (three-position locking and nonlocking switch).	*Sw pos*	*Action*
	BRKDWN (nonlocking)	Applies 630 volts to LINE receptacle.
	OHMS (locking)	Connects ohmmeter to LINE receptacle.
	BUZ (locking)	Connects buzzer to LINE receptacle through LINE SHORT switch.
LINE SHORT switch (three-position	LINE SHORT	Connects internal resistance across LINE receptacle.
	± or ∓	Connects all circuits to LINE receptacle. Reverses polarity to LINE receptacle.
TONE switch (two-position turn switch).	CONT	Arranges buzzer circuit to provide continuous tone.
	INT	Arranges buzzer circuit to provide intermittent tone.
Voltage selector switch (rotary switch).		Applies various voltages (indicated on panel) to buzzer circuit.
AMPS-RX 1-RX 1000 switch (three-position locking switch).	AMPS	Arranges meter circuit to indicate current.
	RX 1	Arranges meter circuit measure up to 2,000 ohms.
	RX 1000	Arranges meter circuit to measure up to 2 megaohms.
REV switch (push switch)		Reverses polarity of battery to external Wheatstone bridge.
ADJUST 0 control	Adjusts meter for zero indication before making resistance measurements.	
Meter	Indicates current or resistance across LINE receptacle. Used with AMPS - RX 1 - RX 1000 switch.	
LINE receptacle	Connects line to test set.	
BRDG. BAT. binding posts.....	Provide connection for external Wheatstone bridge.	

13. Preliminary Procedures

Follow the procedures described in *a* through *d* below before the high-voltage breakdown test is performed.

a. Check the cable record and central office records to determine all appearances of the pair in terminal cans, cross-connecting boxes and on the main distributing frame (mdf).

b. Remove the heat coils and the carbon blocks from the affected pair on the mdf. Replace the carbon blocks with a block of wood or a plastic insulator (WECo., Marker, Warning B).

c. Disconnect all connections to the affected pair at each terminal can and check to be sure that other connections in the terminal cans are clear of the terminals associated with the affected pair. Insulate the terminals to prevent other personnel who may be working in the same terminal can from contacting the terminals during the test. Tag or otherwise mark the terminals to alert personnel that a high-voltage breakdown test is being performed.

d. Disconnect all cross connections and remove all fuses from the affected pair in the cross connecting boxes.

14. High-Voltage Breakdown Test

WARNING

Check to be sure that all preliminary procedures have been completed before performing the high-voltage breakdown test.

a. Connections.

(1) Place the TS-816/U in the truck or on a rubber blanket and remove the cover.

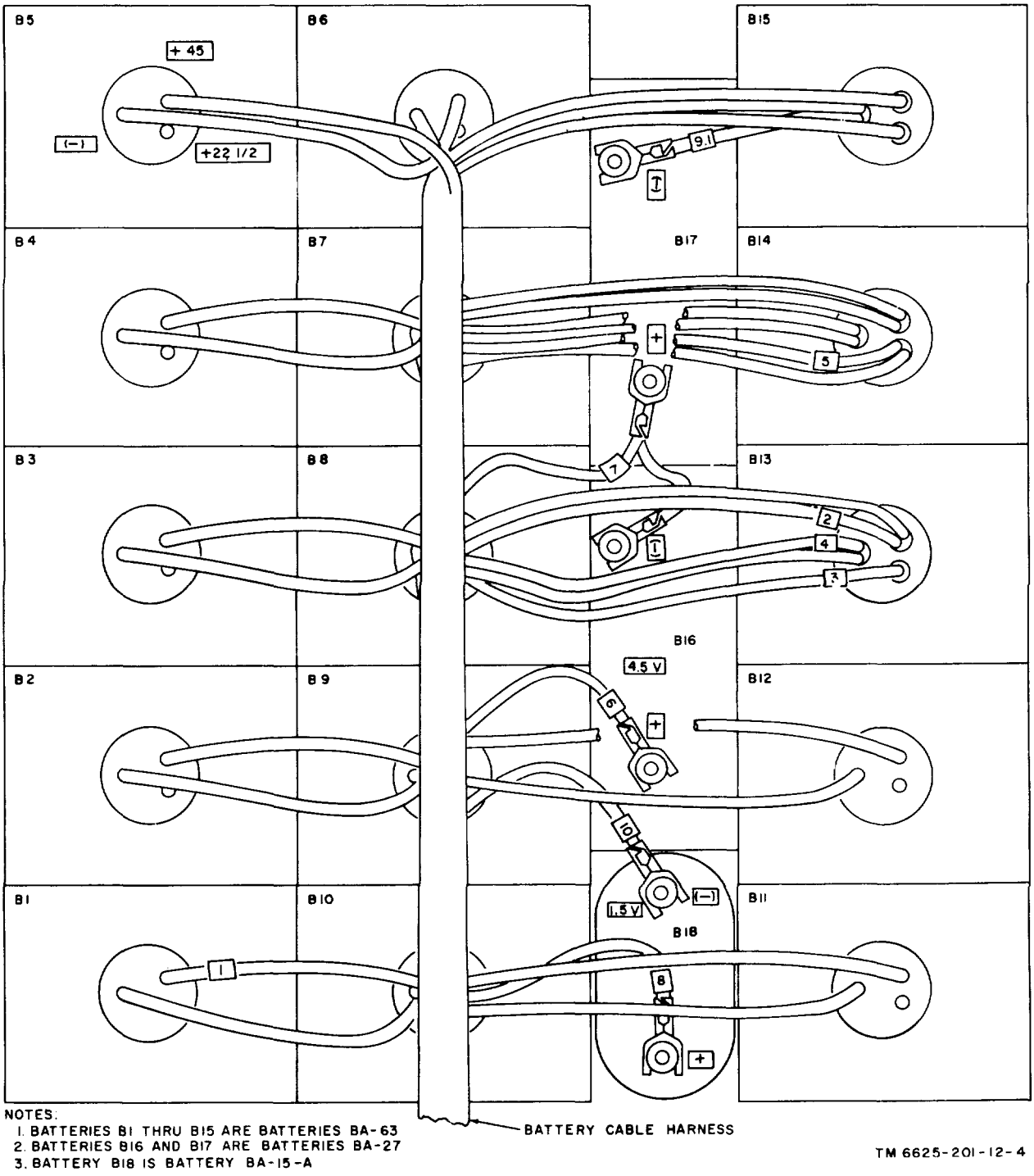


Figure 4. Test Set, Telephone TS-816/U, controls and instruments.

(2) Uncoil the test cable assembly and connect the test clips across the terminals of the affected pair. Check to be sure that the rubber boot on each test clip covers the test clip and the terminal.

(3) Secure the test cable assembly in position with marline or a hand line if the terminal can is on a pole.

(4) Insert the connector on the test cable assembly into the LINE receptacle on the TS-816/U.

b. Tests.

(1) Operate the LINE SHORT switch to either the ± or the ∓ position.

(2) Operate the AMPS-RX 1-RX 1000 switch to RX 1000. Check the meter indication; if the resistance is too low to provide an accurate meter indication, operate the AMPS-RX 1-RX 1000 switch to the RX 1 position. Check and record the meter indication.

(3) Operate the 630V switch to the ON position.

(4) Operate the BRKDWN-OHMS-BUZ switch to the BRKDWN position and hold for approximately one-half second. Operate the LINE SHORT switch to the opposite position (± or ∓) to reverse the polarity of the breakdown voltage, and reoperate the BRKDWN switch for approximately one-half second. Repeat this procedure approximately 25 times, or until the ammeter indicates 1 ampere or more. This indicates that the trouble has been burned in.

(5) Check the resistance as indicated in (2) above.

15. Locating Cable Faults (Troubles)

After the breakdown test has been completed, follow one of the procedures given below to find the exact location of the trouble.

a. Resistance Measurements (Ohmmeter). Follow the procedure given below to determine the location of the cable fault; use the ohmmeter in the TS-816/U.

(1) Operate the LINE SHORT switch to either the ± or the ∓ position.

(2) Operate the AMPS-RX 1-RX 1000 switch to the RX 1 position. If the resistance is too high to provide an accurate meter indication, operate the AMPS-RX 1-RX 1000 switch to the RX 1000 position.

(3) Check the temperature at the cable location and refer to the chart below to convert the resistance (meter indication) to linear feet.

NOTE

If the cable pair is composed of several wire gages, refer to TM 11-372 for the procedure used to convert the meter indication to linear feet.

Temperature (F)	Feet per ohm (linear)				
	28-gage	26-gage	24-gage	22-gage	18-gage
0°.....	17.4	27.6	44.2	70.9	142.6
10°.....	17.0	27.0	43.4	69.5	139.9
20°.....	16.7	26.5	42.5	68.2	137.2
30°.....	16.8	26.0	41.7	66.8	134.5
40°.....	16.0	25.5	40.9	65.5	131.8
50°.....	15.7	24.9	40.0	64.2	129.1
60°.....	15.4	24.4	39.2	62.8	126.4
70°.....	15.0	23.9	38.4	61.5	123.7
80°.....	14.6	23.4	37.5	60.1	120.9
90°.....	14.3	22.8	36.6	58.8	118.2

b. Resistance Measurement (Wheatstone Bridge). An external Wheatstone bridge may also be used to measure the resistance to the cable fault. Battery may be supplied to the Wheatstone bridge from the TS-816/U by connecting the BRDG. BAT. binding posts of the TS-816/U to the external battery binding posts of the Wheatstone bridge. Depress the REV switch to reverse the polarity of the bridge battery. Operate the Wheatstone bridge in accordance with the applicable technical manual.

c. Buzzer Test.

(1) Operate the LINE SHORT switch to either ± or ∓.

(2) Operate the BRKDWN-OHM-BUZ switch to the BUZ position.

(3) Set the voltage selector switch to the 4.5 position; then operate the switch, one step at a time, to the next higher voltage until the buzzer tone is audible at the cable through the exploring coil.

CAUTION

Do not operate the buzzer at a higher voltage than necessary because it may set up interference on other pairs in the cable.

(4) Locate the cable fault with the exploring coil as described in TM 11-372. Use the Fibre-Glass Pruner Pole and Safe Exploring Coil (para 7) to hold the exploring coil against the aerial cable.

NOTE

If the TS-816/U must be left unattended during the buzzer test, replace the cover and hand the test set on the pole high enough to prevent unauthorized persons from tampering with it.

16. Operation Under Adverse Weather Conditions

a. Arctic Climates.

(1) Handle the TS-816/U and the cables carefully to prevent breaking them during extreme cold weather.

(2) Operate the equipment in a splicer's tent if one is available.

(3) When the TS-816/U that has been exposed to extreme cold is brought into a heated room, condensation will form on it until it reaches room temperature. Dry the equipment thoroughly after condensation stops forming.

WARNING

Be sure that the equipment is completely dry before attempting to perform a high-voltage breakdown test. The operator may be injured by electrical shock, and arcing inside the TS-816/U may cause serious damage.

b. Tropical Climates. Keep the equipment thoroughly dry and clean.

c. Desert Areas.

(1) Do not remove the TS-816/U from the truck compartment until it is to be used.

(2) Place the TS-816/U in a shaded area (shade of the truck, splicer's tent, or shade of a telephone pole) to protect it from the direct rays of the sun.

(3) Replace the TS-816/U cover as soon as possible to prevent dust, dirt, and sand from entering it.

CHAPTER 3
OPERATOR'S MAINTENANCE

17. Scope

a. General. The operator's maintenance of this equipment is limited to inspecting and cleaning the control panel and the battery compartment, checking the switches for freedom of movement, proper operation, and replacing the batteries and fuse.

b. Materials Required. Cleaning compound and a lint-free cloth are the only materials required by the operator to perform preventive maintenance service on the test set.

18. Preventive Maintenance

a. DA Form 11-266. Items 1 through 5, 7, and 9 through 11 on DA Form 11-266 (fig. 5 and 6) constitute the preventive maintenance checklist to be used by the operator. Items not applicable to the TS-816/U are lined out in figures 5 and 6. References in the ITEM block 'in the figure are to paragraphs that contain additional information pertinent to the particular item. Instructions for the use of the form appear on the form.

b. Items. Information in this subparagraph is supplementary to DA Form 11-266. The item numbers correspond to the ITEM numbers on the form.

Item	Maintenance procedure
2	Check to be sure that the connector on the test cable assembly fits properly into the LINE receptacle.
3	Check the voltage selector switch for proper detent action at each setting.
4	Check to be sure that the buzzer operates intermittently or continuously as indicated by the control setting. Check to be sure that the meter operates properly and can be adjusted to zero.
5	Check to be sure that the test clips and the rubber boots are not damaged.
6	check the batteries to be sure that all connectors are properly seated.

19. Troubleshooting and Repairs

The operator' s troubleshooting is limited to the performance of the preoperational tests (para 11). These tests will indicate whether or not all circuits in the TS-816/U are operating properly. The corrective measures that can be performed by the operator are limited to those procedures given in *a* through *d* below.

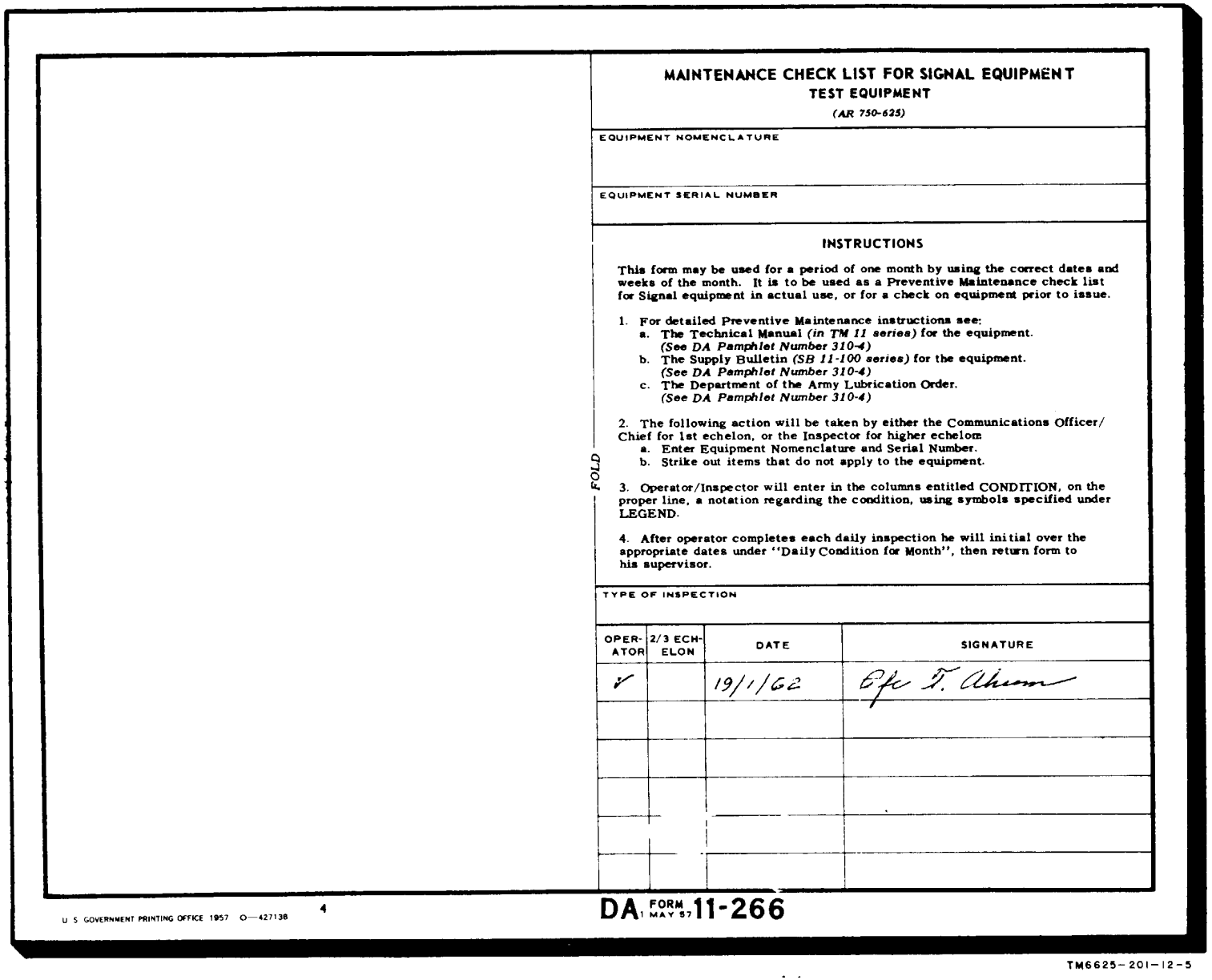
a. Replacement of Batteries BA-63. When the 630-volt circuit fails to provide adequate power to burn in a trouble, test each Battery BA-63 (para 11*c*) and replace all batteries that do not provide an indication of at least 2 amperes.

(1) Remove the battery compartment cover.
(2) Disconnect each of the BA-63's and remove it from the battery compartment.
(3) Test each battery as indicated in paragraph 11*c*.
(4) Install new BA-63's for all batteries that provide less than 2 amperes.

b. Replacement of Batteries BA-27. If the buzzer fails to operate properly when the voltage selector is set to either 4.5 or 9.0, replace Batteries BA-27. Remove the battery compartment cover, disconnect the leads from the batteries, remove the batteries from the battery compartment, and install new batteries (para 10*c*).

c. Replacement of Battery BA-15-A. If the ohmmeter cannot be adjusted to zero, replace the BA-15-A. Remove the battery compartment cover, disconnect the BA-15-A, and remove it from the battery compartment. Install a new BA-15-A (para 10*b*).

d. Replacement of Fuse. If the ammeter fails to provide an indication, unscrew the fuse cap, remove the fuse, and install a new fuse. If the meter still fails to provide an indication, higher echelon maintenance is required.



MAINTENANCE CHECK LIST FOR SIGNAL EQUIPMENT
TEST EQUIPMENT
(AR 750-625)

EQUIPMENT NOMENCLATURE

EQUIPMENT SERIAL NUMBER

INSTRUCTIONS

This form may be used for a period of one month by using the correct dates and weeks of the month. It is to be used as a Preventive Maintenance check list for Signal equipment in actual use, or for a check on equipment prior to issue.

1. For detailed Preventive Maintenance instructions see:
   a. The Technical Manual *(in TM 11 series)* for the equipment. *(See DA Pamphlet Number 310-4)*
   b. The Supply Bulletin *(SB 11-100 series)* for the equipment. *(See DA Pamphlet Number 310-4)*
   c. The Department of the Army Lubrication Order. *(See DA Pamphlet Number 310-4)*

2. The following action will be taken by either the Communications Officer/ Chief for 1st echelon, or the Inspector for higher echelon
   a. Enter Equipment Nomenclature and Serial Number.
   b. Strike out items that do not apply to the equipment.

3. Operator/Inspector will enter in the columns entitled CONDITION, on the proper line, a notation regarding the condition, using symbols specified under LEGEND.

4. After operator completes each daily inspection he will initial over the appropriate dates under "Daily Condition for Month", then return form to his supervisor.

FOLD

TYPE OF INSPECTION

OPER-ATOR	2/3 ECH-ELON	DATE	SIGNATURE
✓		19/1/62	Opr T. Ahern

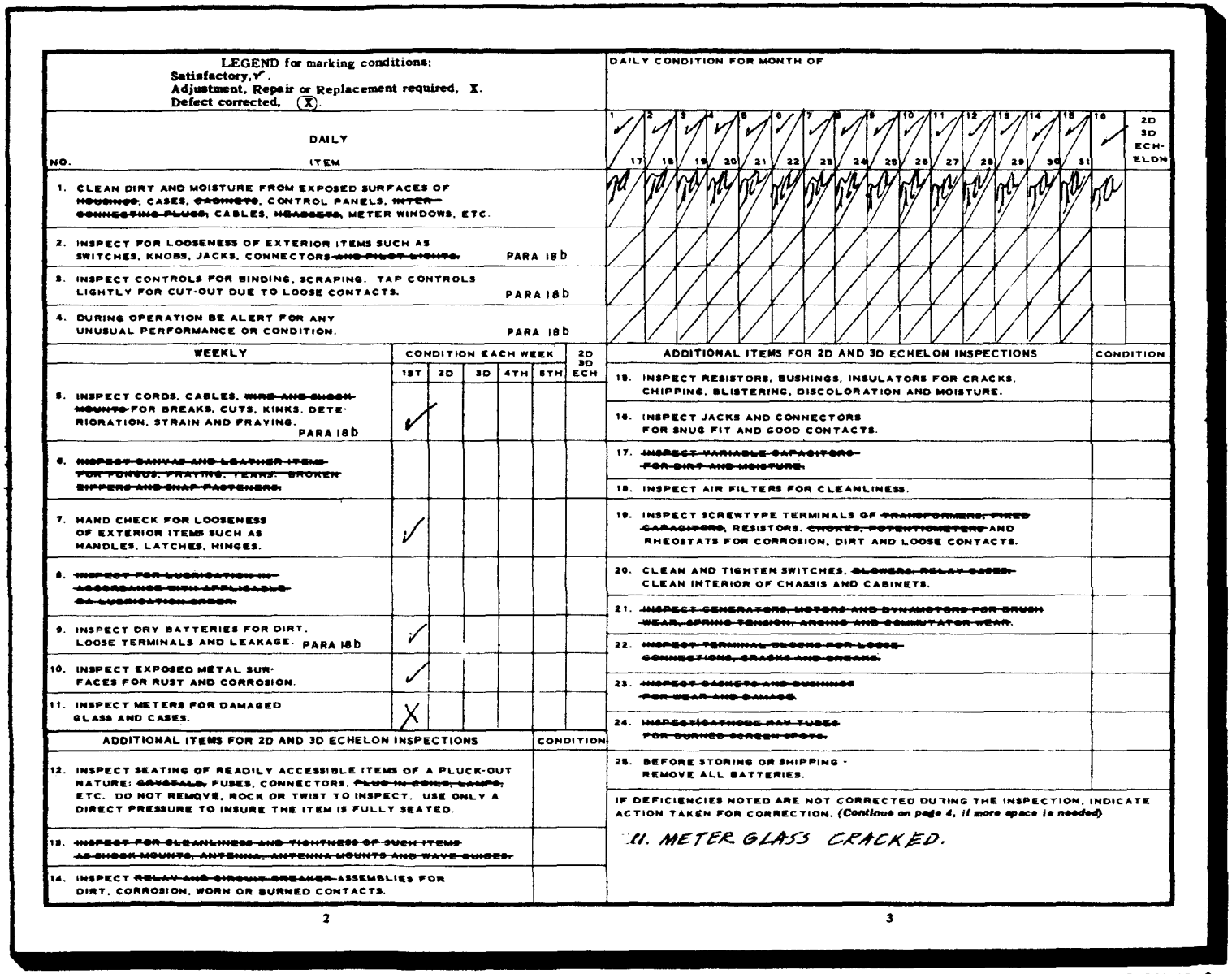
4

U S GOVERNMENT PRINTING OFFICE 1957 O—427138

DA FORM 1 MAY 57 11-266

TM6625-201-12-5

Figure 5. DA Form 11-266, pages 1 and 4.



LEGEND for marking conditions:
Satisfactory, ✓.
Adjustment, Repair or Replacement required, X.
Defect corrected, (X).

DAILY CONDITION FOR MONTH OF

NO.	DAILY ITEM	1 17	2 18	3 19	4 20	5 21	6 22	7 23	8 24	9 25	10 26	11 27	12 28	13 29	14 30	15 31	16	2D 3D ECH-ELON
1.	CLEAN DIRT AND MOISTURE FROM EXPOSED SURFACES OF ~~HOUSINGS~~, CASES, ~~CABINETS~~, CONTROL PANELS, ~~INTER-CONNECTING PLUGS~~, CABLES, ~~HEADSETS~~, METER WINDOWS, ETC.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
2.	INSPECT FOR LOOSENESS OF EXTERIOR ITEMS SUCH AS SWITCHES, KNOBS, JACKS, CONNECTORS ~~AND PILOT LIGHTS~~. PARA 18b																	
3.	INSPECT CONTROLS FOR BINDING, SCRAPING. TAP CONTROLS LIGHTLY FOR CUT-OUT DUE TO LOOSE CONTACTS. PARA 18b																	
4.	DURING OPERATION BE ALERT FOR ANY UNUSUAL PERFORMANCE OR CONDITION. PARA 18b																	

WEEKLY	CONDITION EACH WEEK 1ST	2D	3D	4TH	5TH	2D 3D ECH
5. INSPECT CORDS, CABLES, ~~WIRE AND SHOCK MOUNTS~~ FOR BREAKS, CUTS, KINKS, DETERIORATION, STRAIN AND FRAYING. PARA 18b	✓					
6. ~~INSPECT CANVAS AND LEATHER ITEMS FOR FUNGUS, FRAYING, TEARS. BROKEN ZIPPERS AND SNAP FASTENERS.~~						
7. HAND CHECK FOR LOOSENESS OF EXTERIOR ITEMS SUCH AS HANDLES, LATCHES, HINGES.	✓					
8. ~~INSPECT FOR LUBRICATION IN ACCORDANCE WITH APPLICABLE LO LUBRICATION ORDER.~~						
9. INSPECT DRY BATTERIES FOR DIRT, LOOSE TERMINALS AND LEAKAGE. PARA 18b	✓					
10. INSPECT EXPOSED METAL SURFACES FOR RUST AND CORROSION.	✓					
11. INSPECT METERS FOR DAMAGED GLASS AND CASES.	X					

ADDITIONAL ITEMS FOR 2D AND 3D ECHELON INSPECTIONS	CONDITION
12. INSPECT SEATING OF READILY ACCESSIBLE ITEMS OF A PLUCK-OUT NATURE: ~~CRYSTALS~~, FUSES, CONNECTORS, ~~PLUG-IN COILS, LAMPS~~, ETC. DO NOT REMOVE, ROCK OR TWIST TO INSPECT. USE ONLY A DIRECT PRESSURE TO INSURE THE ITEM IS FULLY SEATED.	
13. ~~INSPECT FOR CLEANLINESS AND TIGHTNESS OF SUCH ITEMS AS SHOCK MOUNTS, ANTENNAS, ANTENNA MOUNTS AND WAVE GUIDES.~~	
14. INSPECT ~~RELAY AND CIRCUIT BREAKER~~ ASSEMBLIES FOR DIRT, CORROSION, WORN OR BURNED CONTACTS.	

ADDITIONAL ITEMS FOR 2D AND 3D ECHELON INSPECTIONS	CONDITION
15. INSPECT RESISTORS, BUSHINGS, INSULATORS FOR CRACKS, CHIPPING, BLISTERING, DISCOLORATION AND MOISTURE.	
16. INSPECT JACKS AND CONNECTORS FOR SNUG FIT AND GOOD CONTACTS.	
17. ~~INSPECT VARIABLE CAPACITORS FOR DIRT AND MOISTURE.~~	
18. INSPECT AIR FILTERS FOR CLEANLINESS.	
19. INSPECT SCREWTYPE TERMINALS OF ~~TRANSFORMERS, FIXED CAPACITORS~~, RESISTORS. ~~CHOKES, POTENTIOMETERS~~ AND RHEOSTATS FOR CORROSION, DIRT AND LOOSE CONTACTS.	
20. CLEAN AND TIGHTEN SWITCHES. ~~BLOWERS, RELAY GASES~~. CLEAN INTERIOR OF CHASSIS AND CABINETS.	
21. ~~INSPECT GENERATORS, MOTORS AND DYNAMOTORS FOR BRUSH WEAR, SPRING TENSION, ARCING AND COMMUTATOR WEAR.~~	
22. ~~INSPECT TERMINAL BLOCKS FOR LOOSE CONNECTIONS, CRACKS AND BREAKS.~~	
23. ~~INSPECT GASKETS AND BUSHINGS FOR WEAR AND DAMAGE.~~	
24. ~~INSPECT CATHODE RAY TUBES FOR BURNED SCREEN SPOTS.~~	
25. BEFORE STORING OR SHIPPING - REMOVE ALL BATTERIES.	

IF DEFICIENCIES NOTED ARE NOT CORRECTED DURING THE INSPECTION, INDICATE ACTION TAKEN FOR CORRECTION. *(Continue on page 4, if more space is needed)*

11. METER GLASS CRACKED.

2 3

TM6625-201-12-6

Figure 6. DA Form 11-266, pages 2 and 3.

CHAPTER 4
SHIPMENT AND LIMITED STORAGE AND DEMOLITION TO PREVENT ENEMY USE

Section I. SHIPMENT AND LIMITED STORAGE

20. Disassembly

a. Remove the batteries and secure the battery compartment cover in place.

b. Check to be sure that all switch handle and control knobs are securely tightened on the shafts.

c. Neatly coil the test cable assembly and the battery test cable and secure them to the battery compartment cover with tape.

21. Repacking of Test Set, Telephone TS-816/U

The exact procedure for repacking depends on the material available and the conditions under which the equipment is to be shipped or stored. Adapt the procedures outlined below whenever possible. The information concerning the original packaging (para 9) will also be helpful.

a. Materials Required. The following materials are required for packaging Test Set, Telephone TS-816/U. For stock numbers of materials, consult SB 38-100, Preservation, Packaging, and Packing Materials, Supplies, and Equipment Used by the Army.

Material	Quantity
Waterproof paper	6 sq ft
Waterproof tape	2 ft
Corrugated cardboard	6 sq ft
Pressure-sensitive tape	2 ft
Filler material	1 lb
Dessicant	1/2 lb

b. Packaging.

(1) Wrap the TS-816/U, including the desiccant, with waterproof paper. Secure with waterproof tape.

(2) Cushion the TS-816/U with pads of filler material. Place the cushioned unit within a wrap of cardboard. Secure the wrap with pressure sensitive tape.

Section II. DEMOLITION TO PREVENT ENEMY USE

22. Authority for Demolition

Demolition of the TS-816/U will be accomplished only upon the order of the commander. The destruction procedures outlined in paragraph 23 will be used to prevent further use of the equipment.

23. Methods of Destruction

Use any or all of the following methods to destroy the TS-816/U:

a. Smash. Smash the front panel, meter, controls, and case; use sledges, axes, handaxes, pickaxes, or crowbars.

b. Cut. Cut all cables and cords; use axes, handaxes, or machetes.

c. Burn. Burn cords and technical manuals; use gasoline, kerosene, oil, flame-throwers, or incendiary grenades.

d. Bend. Bend panel and case.

WARNING

Be extremely careful with explosives and incendiary devices. Use these items only when the need is urgent.

e. Explode. If explosives are necessary, use firearms, grenades, or TNT.

f. Dispose. Bury or scatter the destroyed parts in slit trenches or foxholes, or throw them into streams.

APPENDIX I
REFERENCES

Following is a list of references applicable and available to the operator and organizational maintenance personnel of Test Set, Telephone TS-816/U.

DA Pamphlet 310-4	Military Publications: Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders.
SB 11-6	Dry Battery Supply Data.
SB 38-100	Preservation, Packaging, and Packing Materials, Supplies, and Equipment Used by the Army.
TM 11-372	Lead Sheath Telephone Cable Splicing.
TM 11-2262	Outside Plant Wire; Construction and Maintenance.

APPENDIX II
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

1. General

a. This appendix assigns maintenance functions to be performed on components, assemblies, and subassemblies by the lowest appropriate maintenance echelon.

b. Columns in the maintenance allocation chart are as follows:

(1) *Part or component.* This column shows only the nomenclature or standard item name. Additional descriptive data are included only where clarification is necessary to identify the component. Components, assemblies, and subassemblies are listed in top-down order. That is, the assemblies which are part of a component are listed immediately below that component, and the subassemblies which are part of an assembly are listed immediately below that assembly. Each generation breakdown (components, assemblies, or subassemblies) is listed in disassembly order or alphabetical order.

(2) *Maintenance function.* This column indicates the various maintenance functions allocated to the echelons.

(a) Service. To clean, to preserve, and to replenish lubricants.

(b) Adjust. To regulate periodically to prevent malfunction.

(c) Inspect. To verify serviceability and to detect incipient electrical or mechanical failure, by scrutiny.

(d) Test. To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment, such as gages, meters, etc.

(e) Replace. To substitute serviceable components, assemblies, or subassemblies, for unserviceable components, assemblies, or subassemblies.

(f) Repair. To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function includes, but is not limited to, welding, grinding, riveting, straightening, and replacement of parts other than the trial-and-error replacement of running spare type items, such as fuses, lamps, or electron tubes.

(g) Align. To adjust two or more components of an electrical system so that their functions are properly synchronized.

(h) Calibrate. To determine, check, or rectify the graduation of an instrument, weapon, or weapons system, or components of a weapons system.

(i) Overhaul. To restore an item to completely serviceable condition as prescribed by serviceability standards developed and published by heads of technical services. This is accomplished through employment of the technique of "Inspect and Repair Only as Necessary" (IROAN). Maximum utilization of diagnostic and test equipment is combined with minimum disassembly of the item during the overhaul process.

(j) Rebuild. To restore an item to a standard as near as possible to original or new condition in appearance, performance, and life expectancy. This is accomplished through the maintenance technique of complete disassembly of the item, inspection of all

parts or components, repair or replacement of worn or unserviceable elements using original manufacturing tolerances and/or specifications and subsequent reassembly of the item.

(3) *1st, 2d, 3d, 4th, 5th echelon.* The symbol X indicates the echelon responsible for performing that particular maintenance operation, but does not necessarily indicate that repair parts will be stocked at that level. Echelons higher than the echelon marked by X are authorized to perform the indicated operation.

(4) *Tools required.* This column indicates codes assigned to each individual tool equipment, test equipment, and maintenance equipment referenced. The grouping of codes in this column of the maintenance allocation chart indicates the tool, test, and maintenance equipment required to perform the maintenance function

(5) *Remarks.* Entries in this column will be utilized when necessary to clarify any of the data cited in the preceding columns.

c. Columns in the allocation of tools for maintenance functions are as follows:

(1) *Tools required for maintenance functions.* This column lists tools, test, and maintenance equipment required to perform the maintenance functions.

(2) *1st, 2d, 3d, 4th, 5th echelon.* The dagger (t) symbol in these columns indicates the echelons normally allocated the facility.

(3) *Tool code.* This column lists the tool code assigned.

2. Maintenance by Using Organizations

When this equipment is used by signal service organizations organic to theater headquarters or communications zones to provide theater communications, those maintenance functions allocated up to and including fourth echelon are authorized to the organization operating this equipment.

Section II. MAINTENANCE ALLOCATION CHART

(1) PART OR COMPONENT	(2) MAINT. FUNCTION	(3) 1ST ECH.	(4) 2ND ECH.	(5) 3RD ECH.	(6) 4TH ECH.	(7) 5TH ECH.	(8) TOOLS REQUIRED	(9) REMARKS
TEST SET, TELEPHONE TS-816/T								
	service	x					5	
	inspect	x						Visual only
	test				x		1,2	
	repair			X			3	
	rebuild					X	4	
	overhaul				x		4	

TS-816/U 2

Section III. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	1ST ECH	2ND ECH	3RD ECH	4TH ECH	5TH ECH	TOOL CODE	REMARKS
TS-816/U (continued)							
FREQUENCY METER AN/TSM-16i				*	*	1	
MULTIMETER TS-352/U				*	*	2	
TOOL EQUIPMENT TE-19			*			3	
TOOL EQUIPMENT TE-111				*	*	4	
TOOLS AND TEST EQUIPMENT NORMALLY AVAILABLE TO THE REPAIRMAN USER BECAUSE OF HIS ASSIGNED MISSION	*	*				5	

APPENDIX III
BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

1. General

a. This appendix lists items supplied for initial operation and for running spares. The list includes tools, accessories, parts, and material issued as part of the major end item. The list includes all items authorized for basic operator maintenance of the equipment. End items of equipment are issued on the basis of allowances prescribed in equipment authorization tables and other documents that are a basis for requisitioning.

b. The columns are as follows:

(1) *Source, maintenance, and recoverability code.* Not used.

(2) *Federal stock number.* This column lists the 11-digit Federal stock number.

(3) *Designation by model.* Not used.

(4) *Description.* Nomenclature or the standard item name and brief identifying data for each item are listed in this column. When requisitioning, enter the nomenclature and description.

(5) *Unit of issue.* The unit of issue is the supply term by which the individual item is counted for procurement, storage, requisitioning, allowances, and issue purposes.

(6) *Expendability.* Nonexpendable items are indicated by NX. Expendable items are not annotated.

(7) *Quantity authorized.* Under "Items Comprising an Operable Equipment", the column lists the quantity of items supplied for the initial operation of the equipment. Under "Running Spares and Accessory Items", the quantities listed are those issued initially with the equipment as spare parts. The quantities are authorized to be kept on hand by the operator for maintenance of the equipment.

(8) *Illustrations*. The "Item No." column lists the reference symbols used for identification of the items in the illustration or text of the manual.

2. Batteries

Dry batteries shown are used with the equipment but are not considered part of the equipment. They will not be preshipped automatically, but are to be requisitioned in quantities necessary for the particular organization, in accordance with SB 11-6.

Section II. FUNCTIONAL PARTS LIST

(1) SOURCE MAINTENANCE AND RECOVERABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPEND-ABILITY	(7) QUANTITY AUTHO-RIZED	(8) ILLUSTRATION FIGURE NO.	(9) ILLUSTRATION ITEM NO.
	6625-669-1217		TEST SET, TELEPHONE TS-816/U: locates resistance faults in exchange cables; measures DC current 0 to 5 amps, measures resistances from 0 to 2,000 ohms, 0 to 2 meg ohms; 500 cycle tone; operating power requirements, internal battery source, 630 v connected in series; w/carrying case, steel case, 16-13/16 in lg x 11 in wd x 7-3/4 dp					
			ITEMS COMPRISING AN OPERABLE EQUIPMENT					
	Ord thru AGC		TECHNICAL MANUAL TM 11-6625-201-12			2		
			TEST SET, TELEPHONE TS-816/U (BASIC COMPONENT)		NX	1		
	6135-120-1025		BATTERY BA-15A: 1.5 v; MIL. type BA-15A			1		B18
	6135-120-1022		BATTERY BA-27: 4.5 v; MIL type BA-27			2		B16,B17
	6135-178-9506		BATTERY BA-63: 45 v; MIL type BA-63			15		B1 thru B15
	6625-502-1304		CABLE ASSEMBLY, POWER ELECTRICAL: 18 in lg; SigC dwg SM-B-189424			1		W2
	6625-502-1305		CABLE ASSEMBLY, POWER ELECTRICAL: 31 ft; SigC dwg No. SM-B-189425			1		W1
	6625-668-5573		COVER, TEST SET: SigC dwg No SM-D-189441			1		
	5920-232-3703		FUSE, CARTRIDGE: 0.031 amp; 250 v; MIL type F01GR031A			1		F1
			RUNNING SPARES AND ACCESSORY ITEMS					
	5920-232-3703		FUSE, CARTRIDGE: 0.031 amp; 250 v; MIL type F01GR031A			5		F1

By Order of Secretary of the Army:

G. H. DECKER,
General, United States Army,
Chief of Staff.

Official

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Major General, United States Army,
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USAOMC (3)
Svc Colleges (2)
Br Svc Sch (2)
GENDEP (2)
Sig Sec, GENDEP (5)
Sig Dep (12)
WRAMC (1)
USA Trans Tml Comd (1)
Army Tml (1)
POE (1)
OSA (1)
CMLCMATCOM (5)
Granite City Engr Dep (5)
Blue Grass Ord Dep (5)
Pueblo Ord Dep (5)
Sioux Ord Dep (5)
Tooele Ord Dep (5)
USAEPG (2)
AFIP (1)
AMS (1)
Army Pictorial Cen (2)
EMC (1)
Yuma Test Sta (2)
USACA (3)
USASSA (20)
USASSAMOR (1)
USASEA (1)
USA Caribbean Sig Agcy (1)
USA Sig Msl Spt Agcy (13)
Sig Fld Maint Shops (3)
USA Corps (3)
JBUSMC (2)
Def Log Svc Cen (1)
Units org under fol TOE:
11-7 (2)
11-16 (2)
11-57 (2)
11-97 (2)
11-117 (2)
11-155 (2)
11-157 (2)
11-500 (AA-AE) (4)
11-557 (2)
11-587 (2)
11-592 (2)
11-597 (2)

NG: State AG (3); Units-Same as Active Army except allowance is one copy to each unit.
USAR: None.
For explanation of abbreviations used, see AR 320-50.

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P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 decagram = 10 grams = .35 ounce
1 hectogram = 10 decagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

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