DEPARTMENT OF THE ARMY TECHNICAL MANUAL

ORGANIZATIONAL, DS, GS, AND DEPOT MAINTENANCE MANUAL STATIC RINGING GENERATORS TA-248/TT AND TA-248A/TT (INCLUDING REPAIR PARTS AND SPECIAL TOOL LISTS)

Headquarters, Department of the Army, Washington, D. C. 20315
10 September 1965

WARNING

Be careful when working on the 115-volt ac line connections. Serious injury or death may result from contact with these terminals.

DON'T TAKE CHANCES!

This copy is a reprint which includes current pages from Changes in force C2 and C3

• This manual supersedes TB SIG 203, 10 October 1953; TM 11-5805-298-12P, 5 July 1961; and TM 11-5805-298-35P, 5 July 1961, including Cl, 9 November 1962.

TM 11-5805-298-15
*C-3

Change
No. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC 10 August 1983

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE MANUAL GENERATOR'S, RINGING STATIC TA-248/TT AND TA-248A/TT (NSN 5805-00-503-1482)

TM 11-5805-298-15 is changed as follows:

NOTE

The parenthetical reference to previous changes (para 1-1 of C 1) indicates that pertinent materiel was published in that change.

Page .5. Paragraph 1-1 (page 1 of C 1). Delete the last sentence and substitute:

A maintenance allocation chart is provided in appendix III, and repair parts and special tool lists are provided in appendix IV.

Page 5. Paragraph 1-2 (page 1 of C 1) is superseded as follows:

1-2. Consolidated Index of Army Publications and Blank Forms

Refer to the latest issue 01 DA Pam 310-1 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

Page 5. Paragraph 1-3 (page 1 of C2) is superseded as follows:

1-3. Maintenance Forms, Records, and Reports

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System (Army).

b. Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-1 1-2/DLAR 4140.55/NAVMAT-INST 4355.73/AFR 400.54/MCO 4430.3E.

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 NAVSUP-INST 4610.33B/AFR 75-18/MCO P4610.19C/DLAR 4500.15.

Page 5. Paragraph 1-3.1 (page 1 of C1). Delete and substitute

1-3.1 Reporting Errors and Recommending Improvement

You can help improve this manual. If you find an mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. In either case, a reply will be furnished direct to you.

Page 5. Paragraph 1-3.2 is added after paragraph 1-3.1

1-3.2 Reporting Equipment Improvement Recommendations (EIR)

If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. We'll send you a reply.

Page 5. Paragraph 1-3.3 is added after paragraph 1-3.2

1-3.3 Administrative Storage

Administrative Storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage the PMCS should be performed to assure operational readiness. Disassembly and repacking of equipment for shipment or limited storage are covered in TM 740-90-1.

Page 5. Paragraph 1-3.4 is added after paragraph 1-3.3

1-3.4 Destruction of Army Electronics Materiel

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

Page 10. Chapter 3, Section 1 (page 1, para 3-1, 3-2, 3-3 and 3-5 of C2) is delered and substituted as follows:

*This change supersedes C 1, 19 Dec 73.

3-1. General

NOTE

Refer to TM 750-244-2 for proper procedures for destruction of this equipment to prevent enemy use.

a. Operator/crew preventive maintenance is the systematic care, servicing and inspection of equipment to prevent the occurrence of trouble, to reduce downtime, and to maintain equipment in serviceable condition. To be sure that your Static Generator is always ready for your mission, you must do scheduled preventive maintenance checks and services (PMCS).

(1) BEFORE OPERATION, perform your B PMCS to be sure that your equipment is ready to go.

(2) When an item of equipment is reinstalled after removal, for any reason, perform the necessary B PMCS to be sure the item meets the readiness reporting criteria.

(3) Use the ITEM NO. column in the PMCS table to get the number to be used in the TM ITEM NO. column on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) when you fill out the form.

b. Routine checks like CLEANING, LUBRICATION, DUSTING, WASHING, CHECKING FOR FRAYED CABLES, STOWING ITEMS NOT IN USE, COVERING UNUSED RECEPTACLES, CHECKING FOR LOOSE NUTS AND BOLTS AND CHECKING FOR COMPLETENESS are not listed as PMCS checks. They are things that you should do any time you see they must be done. If you find a routine check like one of those listed in your PMCS, it is because other operators reported problems with this item.

3-2. Operator/Crew Preventive Maintenance Checks and Services

B – Before

Item No.	Interval B	Item to be Inspected	Procedures – Check for and have repaired or adjusted as necessary	Equipment is Not Ready/Available If:
1	•	Completeness	Check for completeness and satisfactory condition of the equipment. Report missing items.	Major operational component is missing.
2	•	Generator Ringing Static	Perform an equipment operation check. Using the telephone central office equipment listen for the 20 cps output. It should be clear and uninterrupted.	Equipment fails to operate properly

*Do this check before each deployment to a mission location. This will permit any existing problems to be corrected before the mission starts. the check does not need to be done again until redeployment.

Page 11. Paragraph 3-5 (page 2 of C2) is deleted. Paragraph 3-8 (page 2 of C2) is superseded as follows:

3-8. Scope of Organizational Maintenance

The maintenance duties assigned to the organizational repair technician are listed below, together with a reference to the paragraphs covering the specific maintenance functions. The required materials are listed in paragraph 3-9.

a. Paragraph 3-8a. deleted.

b. Touchup painting (para 3-13).

c. Replacement of fuses (para 3-14).

Page 12. Paragraph 3-10 (page 2 of C2) is superseded as follows:

3-10. Organizational Preventive Maintenance Checks and Services.

There are no organizational preventive maintenance checks and service on this equipment. The operator will perform general maintenance and scheduled PMCS.

Page 12. Paragraph 3-11 and 3-12 (page 3 of C2). Deleted.

Page 19. Appendix 1 REFERENCES. Add the following:

TM-740-90-1 Administrative Storage of Equipment

By Order of the Secretary of the Army:

JOHN A. WICKHAM, JR.
General, United States Army
Chief of Staff

Official:

ROBERT M. JOYCE
Major General, United States Army
The Adjutant General

DISTRIBUTION:

To be distributed in accordance with DA Form 12-36, Organizational Maintenance requirements for AN/TSQ-70.

CHANGE
No. 2

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, DC 5 November 1979

Operator's, Organizational, Direct Support, General Support, and Depot Maintenance Manual GENERATORS, RINGING STATIC TA-248/TT AND TA-248A/TT (NSN 5805-00-503-1482)

TM 11-5805-298-15, 10 September 1965, is changed as follows:
The title of the manual is changed as shown above.

Page 5. Paragraph 1-1, line 7. Delete "; and repair parts and special tool lists are provided in appendix IV."

Paragraph 1-3 is superseded as follows:

1-3. Forms and Records

a. *Reports of Maintenance and Uusatisfactory* ***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. *Reports 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 DLAR 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 1-3.1, line 6. "US Army Electronics Command, ATTN: AMSEL-MA-C," is changed to read "US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ."

Page ***10.*** Paragraphs 3-1, 3-2, and 3-3 are superseded as follows:

3-1. Scope of Operator's Maintenance

The maintenance duties assigned to the operator are listed below, together with a reference to the paragraphs covering the specific maintenance functions. The required materials are listed in paragraph 3-4.

a. Operator's preventive maintenance checks and services (para 3-5).

b. Cleaning (para 3-7).

3-2. Operator's 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 in serviceable condition. To assist in maintaining serviceability, the chart (para 3-5) indicates what to check, how to check, and what the normal conditions are. If the defect cannot be remedied, higher category maintenance or repair is required. Records and reports of these checks and services must be made in accordance with the requirements set forth in TM 38-750. The procedures given in paragraph 3-5 cover routine systematic care and cleaning for proper upkeep and operation of the equipment.

3-3. Operator's Preventive Maintenance Checks and Service Periods

a. To be sure that your static ringing generator is ready for your mission, you must do scheduled preventive maintenance checks and services (PMCS) as follows:

(1) BEFORE OPERATION, perform your (B) PMCS to be sure that your equipment is ready to **go.**

(2) WEEKLY (W) and MONTHLY (M) PMCS are important checks you make to keep serious problems from suddenly happening.

NOTE

Routine checks like cleaning, dusting, washing, checking for frayed cables, stowing items not in use, covering unused receptacles and checking for loose nuts and bolts are not listed as PMCS checks. They are things that you should do anytime you see they must be done.

b. If you find a routine check like one of those above listed in your PMCS, it was listed because other operators reported problems with this item. When you are doing any PMCS or routine checks, keep in mind the warnings and cautions.

NOTES

If your equipment must be kept in continuous operation, check and service those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

Use the ITEM NO column in your PMCS table as a source of numbers for the TM ITEM NO. column on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) in recording results of PMCS.

Page 11. Paragraph 3-5 is superseded as follows:

3-5. Operator's Preventive Maintenance Checks and Services Chart

NOTE

When organizational maintenance duties are the same as the equipment operator, organizational maintenance will perform the operator's PMCS.

Perform the following checks before operation and weekly if
(1) You are the assigned operator and have not operated the item since the last weekly.
(2) You are operating the items for the first time.
(W) Weekly

Item No.	Interval W	Item to Be Inspected	Procedures	Equipment is not ready/ Available If
1	x	Equipment Operation	Perform an equipment operation check check by using the telephone central office equipment as the power source and listen to the 20-cps output. The output should be clear and interrupted.	Equipment fails to operate properly.

Paragraph 3-8 is superseded as follows:

3-8. Scope of Organizational Maintenance

The maintenance duties assigned to the organizational repair technician are listed below, together with a reference to the paragraphs covering the specific maintenance functions. The required materials are listed in paragraph 3-9.

a. Organizational preventive maintenance checks and services (para 3-12).

b. Touchup painting (para 3-13).

c. Replacement of fuses (para 3-14).

Page 12. Paragraphs 3-10.3-11, and 3-12 are superseded as follows:

3-10. Organizational 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 in serviceable condition. To assist in maintaining serviceability, the chart (para 3-12) indicates what to check, how to check, and what the normal conditions are. If the defect cannot be remedied, higher category maintenance or repair is required. Records and reports of these checks and services must be made in accordance with the requirements set forth in TM 38-750.

The procedures given in paragraph 3-12 cover routine systematic care and cleaning for proper upkeep and operation of the equipment.

3-11. Organizational Preventive Maintenance Checks and Service Periods

a. To be sure that your static ringing generator is ready for your mission, you must do scheduled preventive maintenance checks and services (PMCS) quarterly.

NOTE

Routine checks like cleaning, dusting, washing, checking for frayed cables, stowing items not in use, covering unused receptacles and checking for loose nuts and bolts are not listed as PMCS checks. They are things that you should do anytime you see they must be done.

b. If you find a routine check like one of those above listed in your PMCS, it was listed because other operators reported problems with this item. When you are doing any PMCS or routine checks, keep in mind the warnings and cautions.

NOTES

If your equipment must be kept in continuous operation, check and service those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

Use the ITEM NO column in your PMCS table as a source of numbers for the ITEM NO. column on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) in recording results of PMCS.

3-12. Organizational Preventive Maintenance Checks and Services Chart

NOTE

Perform checks (Q) Quarterly.

ITEM NO.	INTERVAL Q	ITEM TO BE INSPECTED	PROCEDURES
1	x	Modifications	Check DA Pam 310-7 to determine whether new applicable MWO's have been published. All URGENT MWO's must be applied immediately. All NORMAL MWO's must be scheduled.

Page 19. Appendix is superseded as follows:

APPENDIX I
REFERENCES

The following is a list of applicable references available to maintenance personnel of Static Ringing Generators TA-248/TT and TA-248A/TT.

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8, and 9), Supply Bulletins and Lubrication Orders.
DA Pam 310-7	US Army Index of Modification Work Orders.
SB 11-573	Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment.
TB SIG 222	Solder and Soldering.
TB 43-0118	Field Instructions for Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters.
TM 11-2064	Panels BD-132, BD-132A, and Power Switchboard SB-361/TT.
TB 11-6625-366-15	Operator's, Organizational, DS, GS, and Depot Maintenance Manual: Multimeter TS-352B/U.
TM 38-750	The Army Maintenance Management System (TAMMS).

Page 22. Appendix III is superseded as follows:

APPENDIX III
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

A3-1. General

This appendix provides a summary of the maintenance operations for TA-248/TT and TA-248A/TT. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

A3-2. Maintenance Function

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition; i.e., to clean (decontaminate), to preserve, to drain, to paint, or to teplenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. *Align.* To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

h. Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipments/components.

A3-3. Column Entries

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subas-

semblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, *Maintenance Functions.*. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, *Maintenance Category*. Column 4 specifies, by the listing of a "work time" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "work time" figures will be shown for each category. The number of task-hours specified by the "work time" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

C — Operator/Crew
O —Organizational
F — Direct Support
H — General Support
D — Depot

e. Column 5, Tools and Equipment. Column 5 specifies by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f: ***Column 6, Remarks.*** Column 6 contains an alphabetic code which leads to the remark in section IV, Remarks, which is pertinent to the item opposite the particular code.

A3-4. Tool and Test Equipment Requirements (See III).

a. ***Tool or Test Equipment Code.*** The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. *Maintenance Category*. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. *Nomenclature.* This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. *National/NATO Stock Number.* This column lists the National/NATO stock number of the specific tool or test equipment.

e. *Tool Number.* This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

A3-5. Remarks (See IV).

a. Reference Code. This code refers to the appropriate item in section II, column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in section II.

Page 26. Appendix IV is deleted in its entirety.

SECTION II MAINTENANCE ALLOCATION CHART
FOR

STATIC RINGING GENERATOR TA-248/TT AND TA-248A/TT

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
00	STATIC RINGING GENERATOR TA-248/TT AND TA-248A/TT	Inspect		0.2					
		Test		0.2					A
		Test			0.5			3	
		Service		0.5				1	
		Repair		0.5				1	B
		Repair			1.0			2,3	
		Overhaul					5.0	2,3	

SECTION III TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR

STATIC RINGING GENERATOR TA-248/TT AND TA-248A/TT

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	O,F,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-101/G	5180-00-064-5178	
2	F,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-00-610-8177	
3	F,D	MULTIMETER TS-352(*)/U	6625-00-242-5023	

SECTION IV. REMARKS

REFERENCE CODE	REMARKS
A	Organizational test is limited to equipment operation.
B	Organizational repair will be limited to replacement of fuses F1 and F2, electrical cap, and incadescent lamp R1.

By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

Official:

J. C. PENNINGTON
Major General, United States Army
The Adjutant General

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USAICS (3)
MAAG (1)
USARMIS (1)
USAERDAA (1)
USAERDAW (1)
Fort Gordon (10)
Fort Carson (5)
Army Dep (1) except
LBAD (14)
SAAD (30)
TOAD (14)
SHAD (3)
Fort Gillem (10)
USA Dep (1)
Sig Sec USA Dep (1)
Fort Richardson (CERCOM Ofc) (2)
Unis org under fol TOE:
(2 copies each unit)
29-207
29-610
(1 copy each unit)
11-16
11-97
11-98
11-117
11-302
11-500 (AA-AC)
29-134
29-136

NG & USAR: None

For explanation of abbreviations used, see AR 310-50.

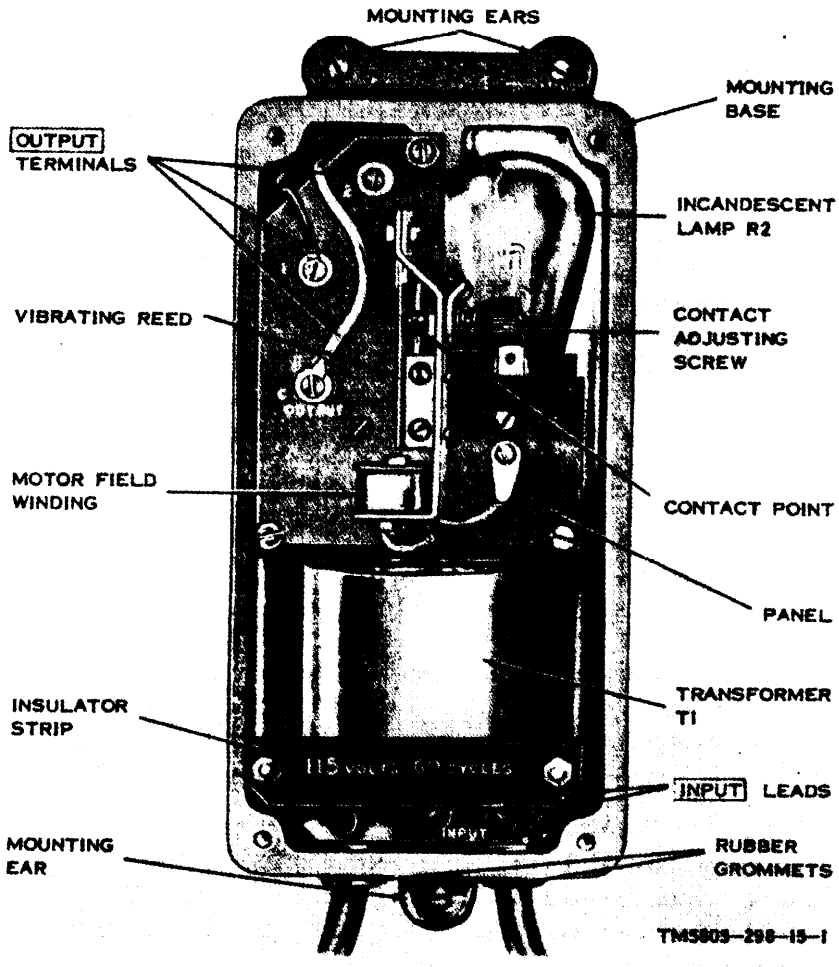

Figure 1-1. *Static Ringing Generator TA-248/TT, cover removed.*

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

This manual describes Static Ringing Generators TA-248/TT (fig. 1-1 and 1-2) and TA-248A/TT (fig. 1-2 and 1-3) and contains installation, operation, and maintenance instructions. A basic issue items list is provided in appendix II; a maintenance allocation chart is provided in appendix III; and repair parts and special tool lists are provided in appendix IV.

1-2. Forms and Records

a. Reports of Maintenance and Unsatisfactory Equipmentent. Use equipment forms and records in accordance with the 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. *Reporting of Equipment Manual Improvements.* The direct reporting of errors, omissions, and recommendations for improving this equipment manual by the individual user is authorized and encouraged. DA Form 2028 will be used for reporting these improvements. This form may be completed using pencil, pen, or typewriter. DA Forms 2028 will be completed by the individual using the manual and forwarded direct to Commanding General, U. S. Army Electronic Command, ATTN: AMSEL-MR-(NMP)-MA, Form Monmouth, New Jersey 07703.

1-3. Index of Equipment publications

Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment. Department of the Army Pamphlet No. 310-4 is an index of current technical manuals, technical bulletins, supply manuals (types 7, 8, and 9), supply bulletins, lubrication orders, and modification work orders available through supply channels. The index lists the individual parts (-10, -20, -35P, etc.) and the latest changes to and revisions of each equipment publication.

Section II. DESCRIPTION AND DATA

1-4. Purpose and Use

Static Ringing Generators TA-248/TT and TA-248A/TT are the vibrating-reed type of frequency converters for supplying 30 watts of power at 90 volts and 20 cycles per second (cps) alternating current (at) to ringing equipment from a 110- to 115-volt ac, 60-cps power source in the telephone central office equipment installation. The TA-248/TT and TA-248A/TT are used in telephone central office equipment; however, in some applications, the units are furnished independently and can be mounted on a wall a short distance from the equipment with which the unit is to be used.

1-5.Description

a. Static Ringing Generator TA-248/TT (fig. 1-1 and 1-2). The TA-248/TT is inclosed in a cast-aluminum housing 10 inches long, *4-3/8* inches wide, and 4-1/8 inches deep, and weighs 7-1/2 pounds. The housing consists of a removable cover and mounting base. The base can be mounted on an adapter plate. The two 5-ampere cartridge fuses are mounted on a fuse block on the rear of the adapter mounting plate. Two holes, one for inserting the input leads and the other for the output leads, are located at the bottom of the base. The transformer and panel assembly are mounted

on the base. The vibrating-reed assembly consists of an L-shaped metal support on which are mounted the motor field winding, the reed, the contact-adjusting screw, and the machine screw with a thumbnut to hold the support stationary. The resistors, capacitors, radiofrequency (rf) choke coil, incandescent lamp (10-watt, 2-candlepower (cp)), and the associated circuit wiring are mounted on the rear of the panel (fig. 1-2). The incandescent lamp provides current limiting when the vibrating-reed contacts are closed and during periods of current overload or short-circuit conditions on the line. Two screened ventholes are located in the case behind the panel and transformer, through which the light from the incandescent lamp can be observed when an overload condition exists on the line. The circuit components are accessible when the panel is pulled forward. Before the front panel can be pulled forward, the three screws securing it to the base must be removed. The input terminals are located beneath the removable insulator strip at the lower end of the transformer. Two leads on one end of a 12-inch, two-conductor cable terminate on the two input terminals. The two leads on the end of a second two-conductor cable terminate on OUTPUT terminals C and 2 located on the front side of the panel (fig. 1-1).

b. Static Ringing Generator TA-248A/TT (fig. 1-2 and 1-3). The TA-248A/TT is similar to the TA-248/TT except for the fusing arrangement and method of mounting. The TA-248A/TT has two extractor post-type fuseholders (fig. 1-3) located at the bottom of the mounting base. Two 3-ampere, cartridge-type fuses are used in the TA-248A/TT.

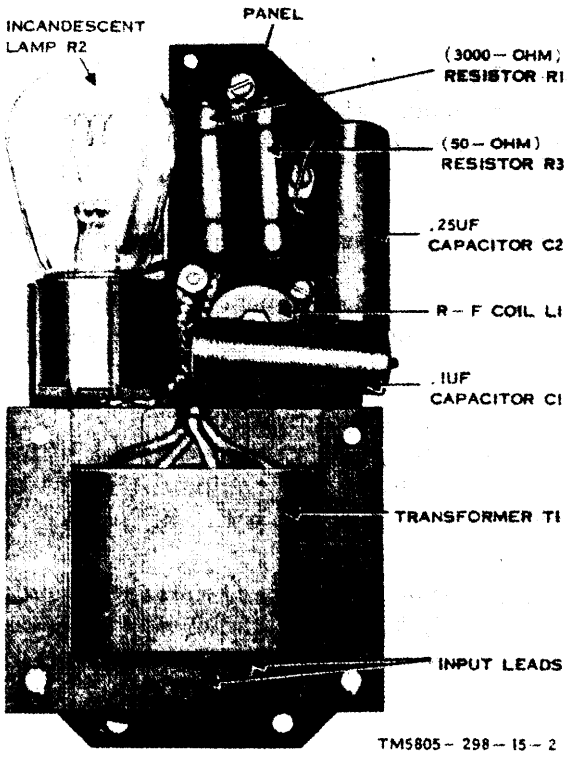

Figure 1-2. Static Ringing Generator TA-248/TT or TA-248A/TT, rear view, cover removed.

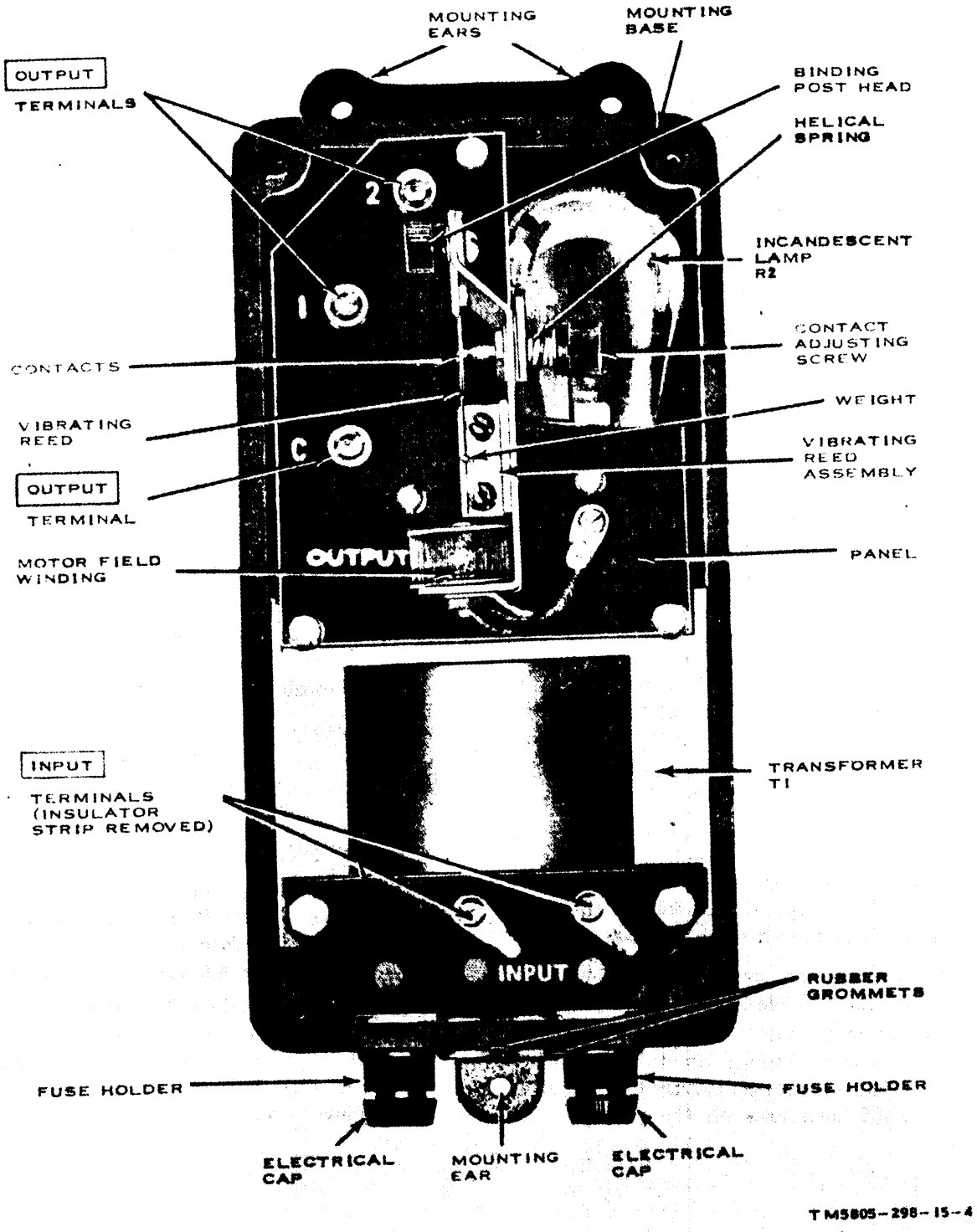

Figure 1-3. Static Ringing Generator TA-248A/TT, front view, cover removed.

CHAPTER 2

INSTALLATION

2-1. Mounting of TA-248/TT or TA-248A/TT

a. *Mounting. Select* a location to mount the TA-248/TT or TA-248A/TT on a wall near the equipment with which it is to be used (fig. 2-1). Make certain that the selected location is Sufficiently high to assure that personnel do not accidentally disturb the operation of the TA-248/TT or TA-248A/TT by coming in contact with it. Mount the TA-248/TT or TA-248A/TT as fallows:

(1) Position the TA-248/TT or TA-248A-TT at the selected location on the wall.

(2) Insert a No. 8 roundhead screw (either 1-inch or 1-1/2 inch, depending on the wall thickness) into one of the holes in the mounting bracket. Tighten the screw to secure the unit to the wall.

(3) Repeat the procedure given in (2) above for each of the other mounting screws. Tighten each of the mounting screws (located at the top and bottom of the mounting base) until the base is seated securely against the wall.

2-2. Connections

a. TA-248A/TT *(fig.* 1-3). To connect the TA-248A/TT for operation, follow the procedures in steps (1) through (8) below.

(1) Remove the cover from the housing of the TA-248A/TT.

(2) Connect a pair of No. 18 AWG stranded wires (Federal Stock No. 6145-160-6212) of proper length to the OUTPUT terminals on the panel. (Use OUTPUT terminals 2 and C for 90-volt ringing signals).

(3) Thread the two output wires through the left rubber grommet on the bottom of the mounting base

(4) Connect the other ends of the output wire pair to the appropriate terminals of the associated equipment.

(5) Remove the mounting strip below transformer T1 to expose the INPUT terminal lugs.

(6) Connect a pair of No. 18 AWG stranded wires of proper length to the INPUT terminal lugs.

(7) Thread the two input wires through the right rubber grommet on the bottom of the mounting base.

(8) Connect the other ends of the input wires to an appropriate ac power connector or receptacle.

b. TA-248/TT (fig. 1-1). To connect the TA-248/TT for operation, follow the procedures in steps (1) through (3) below.

(1) Perform the procedures given in *b (1)* through (7) above.

(2) Connect the other ends of the INPUT wires to the left sides of fuses F1 and F2 on the fuse block located on the rear of the adapter mounting panel.

(3) Connect a pair of No. 18 AWG stranded wires of the proper lengths from the right sides of fuses F1 and F2 on the fuse bock to an appropriate ac power connector or receptacle.

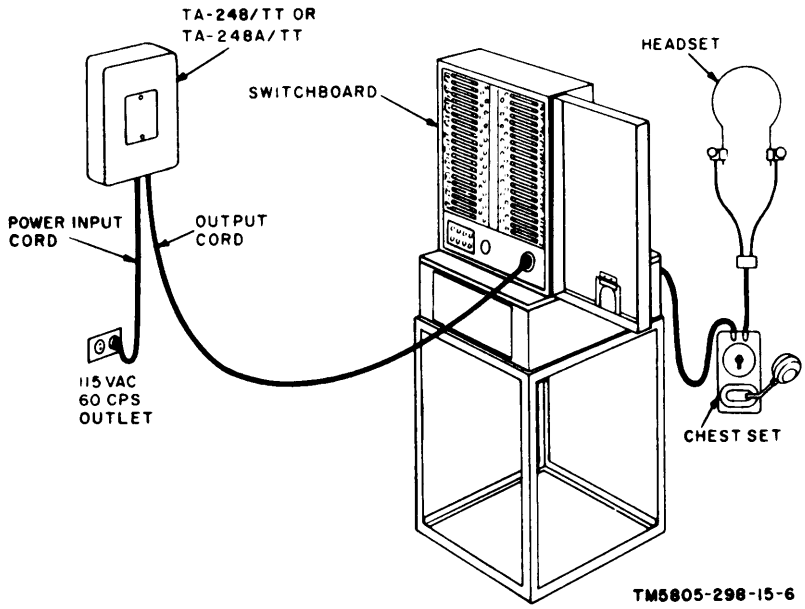

Figure 2.1. *Typical installation when not mounted as part of telephone central office equipment.*

CHAPTER 3

OPERATOR'S AND ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. OPERATOR'S MAINTENANCE

3-1. Scope of Operator's Maintenance

The maintenance duties assigned to the operator are listed below, together with a reference to the paragraphs covering the specific maintenance functions. The required materials are listed in paragraph 3-4.

a. Operator's daily preventive maintenance checks and services (para 3-5).

b. Operator's weekly preventive maintenance checks and services (para 3-6).

c. Cleaning (para 3-7).

3.2. Preventive Maintenance

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

a. Systematic Care. The procedure given in paragraphs 3-5, 3-6, and 3-7 cover routine systematic care and cleaning essential to proper upkeep and operation of the unit.

b. *Preventive Maintenance Checks and Services.* The preventive maintenance checks and services charts (para 3-5 and 3-6) outline functions to be performed at specific intervals. 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 charts indicate what to check, how to check, and what the normal conditions are; the *References* column lists the illustrations or paragraphs that contain supplementary information. If the defect cannot be remedied by the operator, higher level of maintenance or repair is required. Records and reports of these checks and services must be made in accordance with the requirements set forth in TM-38-750.

3-3. Preventive Maintenance Checks and Services Periods

Preventive maintenance checks and services of the equipment are required on a daily and weekly basis.

a. Paragraph 3-5 specifies the checks and services that must be accomplished daily and under the following conditions:

(1) When the equipment is initially installed.

(2) When the equipment is reinstalled after removal for any reason.

(3) At least once each week if the equipment is maintained in a standby condition.

b. Paragraph 3-6 specifies the checks and services that must be accomplished weekly.

3-4. Materials Required

The following materials are required for op erator's preventive maintenance:

u. Brush, paint l/2-inch width (Federal Stock No. 8020-262-9084).

b. Cleaning Compound (Federal stock No. 7930-395-9542).

c. Lint-free cloth.

3-5. Operator's Daily Preventive Maintenance Checks and Services

Sequence	Item	Procedure	References
1	Case exterior	Warning: Prolonged breathing of cleaning compound is dangerous; make certain that adequate ventilation is provided. Cleaning compound is flammable; do not use near a flame. Avoid contact with the skin; wash off any that spills on your hands. Inspect for cleanliness. Remove loose dust and dirt with a clean dry cloth or brush. Remove other dirt with a cloth dampened (not wet) with cleaning compound. Wipe cleaned surface with a clean dry cloth.	Para 3-7
2	Mounting screws and washers	Inspect for loose mounting screws, washers, or bolts.	None.
3	Operation	Listen to the 20-CPS output. It should be clear and uninterrupted.	None.

3-6. Operator's Weekly Preventive Maintenance Checks and Services

Sequence No.	Item	Procedure	References
1	Case exterior	a. Inspect exterior surfaces for signs of rust and corrosion. Refer to higher level maintenance for refinishing. *b.* Inspect for bent, dented, or otherwise damaged surfaces.	a. *None.* b. None.
2	Fuses and fuseholders	Inspect fuses for proper size and type. Inspect fuseholder for cracked or loose cap or holder.	Fig. 1-1, 1-2, and 1-3.
3	Input and output wiring	Inspect input and output wire pairs for frays, cracks, looseness, or breaks. Inspect for loose or broken connections.	Fig. 1-1, 1-2, and 1-3.

3-7. Cleaning

Inspect exterior surfaces of the TA-248/TT and TA-248A/TT. The exterior surfaces should be free of dust, dirt grease, and fungus

a. Remove dust and loose dirt with a clean lint-free cloth or brush,

b. Remove grease, fungus, and ground-in dirt from the cases; use a cloth dampened (not wet) with cleaning compound.

Section Il. ORGANIZATIONAL MAINTENANCE

3-8. Scope of Organizational Maintenance

a. Paragraphs 3-9 through 3-14 contain instructions covering organizational maintenance of the equipment and includes instructions for performing preventive maintenance services and repair functions to be accomplished by the organizational repairman.

b. Organizational maintenance of the equipment consists of the following:

(1) Inspection and cleaning of interior Surfaces.

(2) Visual inspection of vibrator operation,

(3) Replacement of defective fuses.

(4) Touchup painting.

3-9. Materials Required.

a. Cleaning compound.

b. Lint-free cloth.

c. Fine sandpaper, #000.

d. Paint, Enamel, Black, semigloss (Federal Stock No. 8010-844-4792) *or* Paint Enamel, Black, Lusterless (Federal Stock No. 8010-887-3636).

e. Brush. paint, l/2-inch width (Federal Stock No. 8020-262-9084) .

3-10. Organizational Preventive Maintenance

a. Preventive maintenance is the systematic care, inspection, and servicing of the equipment to maintain it in serviceable condition, prevent breakdowns, and assure maximum operational capability. Preventive maintenance is the responsibility of all levels concerned with the equipment and includes the inspection, testing, and repair of the equipment parts that tests indicate would probably fail before the next scheduled periodic service. Preventive maintenance checks and services of the equipment at the organizational level are made at monthly intervals unless otherwise specified by the commanding officer. The preventive maintenance checks and services should be scheduled concurrently with the periodic services schedule of the associated equipment in the system.

b. Maintenance forms and records to be used and maintained on this equipment are specified in TM 38-750.

3-11. Monthly Maintenance

Perform the maintenance functions indicated in the monthly preventive maintenance checks and services chart (para 3-12) once each month. A month is defined as approximately 30 calendar days of 8-hour-per-day operation. If the equipment is operated 16 hours per day, the monthly preventive maintenance checks and services should be performed at M-day intervals. Adjustment of the maintenance intervals must be made to compensate for any unusual operating conditions. Equipment maintained in a standby (ready for immediate operation) condition must have monthly preventive maintenance checks and services performed on it. Equipment in limited storage does not require monthly preventive maintenance, but does require services before operation.

3-12. Organizational Monthly Preventive Maintenance Checks and Services

Sequence No.	Item	Procedure	References
1	Case interior	Warning: Prolonged breathing of cleaning compound is dangerous; make certain that adequate ventilation is provided. Cleaning compound is flammable; do not use near a flame. Avoid contact with the skin; wash off any that spills on your hands.	
		a. Inspect for cleanliness. Clean as required.	a. Fig. 1-1, 1-2, and 1-3; and para 3-7.
		b. Inspect interior surfaces for rust or corrosion, Remove rust and corrosion, and repaint metal surfaces as required.	b.. Fig. 1-1, 1-2, and 1-3; and para 3-13; and TB SIG 364.
2	Wiring and components	Inspect wiring and components for broken, shorted, or open connections or other damage.	Fig. 1-1, 1-2, and 1-3.
3	Terminals, terminal lugs, and component mounting screws	*Caution: Do* not disturb the position of the contact-adjusting screw. Inspect for completeness and proper tightness,	Fig. 1-1, 1-2, and 1-3.
4	Incandescent lamp	Inspect the incandescent lamp for secure mouny ing in the socket.	Fig. 1-1, 1-2, and 1-3.
6	Transformer, choke, resistors, and capacitors	Inspect for signs of damage (leaks, bulges, or 'charred insulation).	Fig. 1-1, 1-2, and 1-3.
6	Terminal mounting board	Inspect for loose connections and cracked or broken insulation.	Fig. 1-1, 1-2, and 1-3.
7	Publications	Check to see that all publications are complete serviceable, and in usable condition.	DA Pam 310-4.
8	Modifications	Check DA Pam 310-4 to determine whether new applicable MWO's have been published. All urgent MWO's must be applied immediately All NORMAL MWO's must be scheduled.	DA Pam 310-4. and TM 38-760.

3-13. Touchup Painting

Remove rust and corrosion from metal surfacez by lightly sanding them with fine sandpaper. Brush two thin coats of paint on the bare metal to protect it from further corrosion. Refer to the applicable cleaning and refinishing practices specified in TB SIG 364. Refer to paragraph 3-9 and SB 11-573 for applicable Federal Stock numbers.

3-14. Fuse Replacement

a.. Replacement of Fues (TA-248/TT). *To replace* the cartridge-type fuses mounted in the fuseholder on the mounting plate, proceed as follows :

(1) Remove the 115-volt ac, 60-cps power from the unit.

(2) Reach behind the mounting plate and remove the fuse from its mounting in the block-type fuseholder.

(3) Replace the fuse with one of the correct rating (5-ampere, 250-volt).

(4) Apply 115-volt ac, 60-cps power to the unit.

b. Replacement of Fuses, (TA-248A/TT) *(fig.* 1-3). To replace the 3-ampere, 250-volt cartridge fuses in the TA-248A/TT, proceed as follows :

(1) Remove the 115-volt ac, 60-cps power from the unit.

(2) Depress the fuseholder cap toward the fuseholder and turn the cap one-fourth turn counterclockwise.

(3) Pull the fuseholder cap away from the fuseholder.

(4) Remove the cartridge-type fuse from the fuseholder cap and replace the fuse with a new 3-ampere, 250-volt fuse.

(5) Replace the fuseholder cap on the fuseholder. Depress and turn the cap one-fourth turn in a clockwise direction.

(6) Apply 115-volt, 60-cps power to the unit.

CHAPTER 4

DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

4-1. Maintenance Procedures

a. The following procedures are required at the direct, support, general support, and depot maintenance levels.

b. The vibrator contacts are the most likely source of trouble. If the vibrator contacts become dirty, they will disrupt the vibrating frequency of the reed and will distort the output. The vibrator contacts should be burnished at weekly intervals to assure proper operation of the vibrator. If the vibrating frequency of the reed is erratic or distorted, burnish the contacts as indicated in paragraph 4-2. If the unit remains inoperative after the contacts have been burnished, perform the adjustment procedures given in paragraph 43.

4-2. Burnishing Vibrator Contacts

a. Disconnect the 115-volt ac, 60-cps power from the unit.

b. Remove the cover from the TA-248/TT or TA-248A/TT.

c. Burnish the vibrator contacts very lightly with a burnishing tool.

Caution: Never file the contact points. Filing will damage the contact surfaces.

d. Reconnect the 115-volt ac, 60-cps power to the unit.

e. Observe the reed vibration. If the reed fails to vibrate or the frequency remains erratic and distorted, adjust the contact-adjusting screw as indicatedd in paragraph 43.

4-3. Contact-Adjusting Screw Adjustment

a. General. The only adjustment that is required in the TA-248/TT or TA-248A/TT is the contact-adjusting screw adjustment. The TA-248/TT and TA-248A/TT are preadjusted before they are received by the using organization. Additional initial adjustment is usually not necessary. Do not make this adjustment unless it is obvious that it is necessary. Adjustment of the contact-adjusting screw is necessary when the reed vibrates in a surging or intermittent manner or when the sparking occurs between the contact points. If the adjustment is required, only a slight clockwise or counterclockwise turn of the contact-adjusting screw is required (refer to *b* below for the adjustment procedures). The adjustment of the contacts of these units is different from the adjustment of contacts of similar vibrator power ringers, since, in these units, the contact gap must be kept as tide as possible. Closing the contact gap will not increase the output frequency or amplitude, but will cause sparking and rf interference and can prevent restarting of the ringer. If adjustment is required, refer to the adjustment procedures given in *b below.*

b. Adjustment.

Caution: A weight of the pendulum type (fig. 1-3) is attached to the lower end of the reed. Never attempt to change the position of the weight on the reed. The weight is properly positioned to insure efficient pendulum action.

(1) Remove the cover from the TA-248/-TT or TA-248A/TT.

(2) Carefully turn the contact-adjusting screw slightly clockwise or counterclockwise until the vibrating-reed frequency is uniform and the reed vibrates continuously.

(3) After the adjustment has been made, remove the 115-volt ac, 60-cps power from the unit.

(4) Reapply power to the unit.

(5) Observe that the reed vibrates upon reapplication of power to the unit; if it does not, readjust the contact-adjusting screw slightly ((2) above).

(6) Repeat the procedures given in (3), (4), and (5) above. If the reed fails

to vibrate after the readjustment, perform the troubleshooting procedure indicated in paragraph 4-4.

4-4. Trouble-shooting Procedures

a. Remove the 115-volt ac, 60-cps power from the unit.

b. Check fuses F1 and F2 (para 3-14). Make certain that the fuses are not defective, and are of the correct rating (appx II). Make certain that the fuses are secured in their fuseholders.

c. Make certain that the incandescent lamp is securely tightened in its socket.

d. Check the ac power cord and plug for loose or frayed wires or loose or broken pins.

4-5. Parts Replacement

a. *Replacement of Reed in Vibrator-Reed Assembly (TA-248/TT or TA-248A/TT)* (fig. 1-1 and 1-3).

(1) Remove the 115-volt ac, 60-cps power from the unit.

(2) Remove the binding post head from the retaining screw.

(3) Remove the reed from the retaining screw.

(4) Install a new reed and secure it in position with the binding post head and retaining screw.

(5) Make certain that the reed touches, and is in exact alignment with, the contact of the oontact-adjusting straw.

(6) Apply 115-volt ac, 60-cps power to the unit.

(7) Adjust the contacts of the vibrating-reed assembly by backing out the contact-adjusting screw until the reed is motionless; then slowly turn the contact-adjusting screw in until the contacts just meet and the reed vibrates steadily without sparking (para 4-3).

b. Replacement of Contact-Adjusting Screw and Spring (TA-248/TT or TA-248A/TT) (fig. 1-1 and 1-3).

(1) Remove the 115-volt ac, 60-cps power from the unit.

(2) Remove the contact-adjusting screw by turning it counterclockwise. Remove the spring with the contact-adjusting screw.

(3) Place a new spring on the contact-adjusting screw and replace the contact-adjusting screw by turning it in a clockwise direction.

(4) Apply 115-volt ac, 60-cps power to the unit.

(5) Adjust the contacts by slowly turning the contact-adjusting screw until the contacts just meet and the reed vibrates steadily without sparking (para 4-3).

e. *Replacement of Incandescent Lamp (TA-248/TT or TA-248A/TT)* (fig. 1-2).

(1) Remove the 115-volt ac, 60-CPS power from the unit.

(2) Remove the cover from the unit.

(3) Turn the lamp in a counterclockwise direction and remove it from its socket.

(4) Place a new lamp in the socket and turn it in a clockwise direction to secure it in its socket.

(5) Replace the cover and secure it in position over the unit.

(6) Apply 115-volt ac, 60-cps power to the unit.

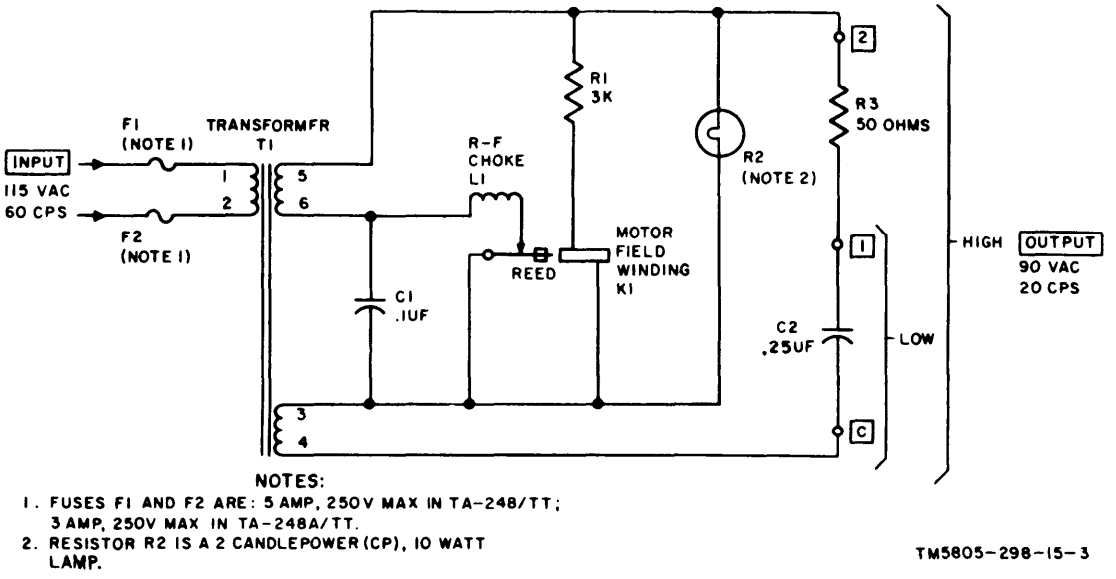

Figure 4-1. *Static Ringing Generator TA-248/TT or TA-248A/TT, schematic diagram.*

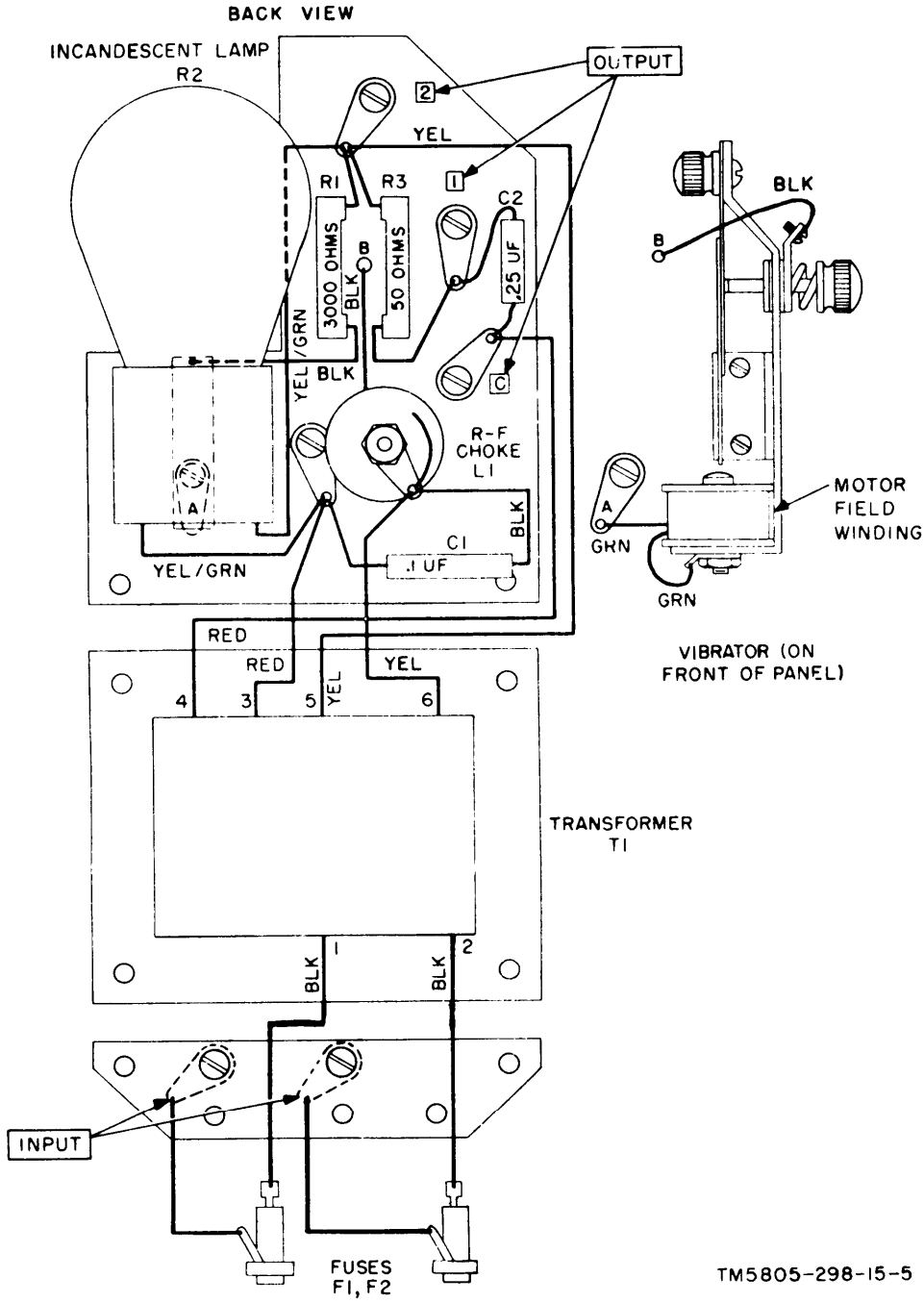

Figure 4-2. Static Ringing Generator TA-248/TT or TA-248A/ TT, wiring diagram.

CHAPTER 5

DEMOLITION OF MATERIEL TO PREVENT ENEMY USE

5-1. Authority for Demolition

Demolition of the equipment will be accomplished only upon the order of the commander. The destructing procedures outlined in paragraph 5-2 will be usd to prevent further use of the equipment,

5-2. **Methods of Destruction**

Use any of the following methods to destroy the equipment:

a. Smasin.. Smash the capacitors, transformer, resistors, incandescent lamp, choke, fuseholders, fuses, terminal boards, and case.

b. Cut. Cut the output and input wires and cables and the circuit wiring.

c. *Burn.* Burn the cords and technical manuals.

d. Bend. Bend the panel, the cover, and the base.

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

e. *Explode.* If necessary, use explosives.

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

APPENDIX I

REFERENCES

The following is a list of applicable references available to the operator, organizational, direct and general support, and depot maintenance personnel of Static Ringing Generators TA-248/TT and TA-248A/TT.

AR 750-5	Organization, Policies, and Responsibilities for Maintenance Operations.
DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8, and 9), Supply Bulletins, Lubrication Orders, and Modification Work Orders.
SB 11-183	Tool Equipment TE-49.
SB 11-573	Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment.
TA 11-17	Signal Field Maintenance Shops.
TA 11-100 (11-17)	Allowances of Signal Corps Expendable. Supplies for Signal Field Maintenance Shops (Continental United States).
TA 11-101 (11-158)	Allowances of Signal Corps Expendable Supplies for Signal Depot Company.
TB SIG 222	Solder and Soldering.
TB SIG 364	Field Instructions for Painting and Preserving Electronics Command Equipment.
TM 11-2064	Panels BD-132, BD-132-A, and Power Switchboard SB-361/TT.
TM 11-5527	Multimeters TS-352/U, T'S-352A/U, and TS-352B/U.
TM 38-75C	Army Equipment Record Procedures.
TOE 11-158D	Signal Depot Company.

APPENDIX II

BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

A2-1. General

This appendix lists items supplied for initial operation and for running spares. The list includes tools, 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

A2-2. Columns

Columns are as follows:

a. Federal Stock Number. This column lists the 1 l-digit Federal stock number.

b. Designation by Model. The dagger (T) indicates model in which the part is used.

c. *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.

d. Unit of Issue. The unit of issue is each unless otherwise indicated and is the supply term by which the individual item is counted for procurement, storage, requisitioning, allowances, and issue purposes.

e. *Expendability.* Nonexpendable items are indicated by NX. Expendable items are not annotated.

f. 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 Spare 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.

g. *Illustration.* The "Item No." column lists the reference designations that appear on the part in the equipment. These same designations are used on any illustrations of the equipment. The numbers in the "Figure No." column refer to the illustration where the part is shown.

(1) RCE NANCE ND RABILITY DE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL		(4) DESCRIPTION	(5) UNIT OF ISSUE	(6)	(7) QUANTITY AUTHORIZED	(8) ILLUSTRATIONS FIGURE NO.	(9) ITEM NO.
	5805-503-1482	1	2	GENERATOR, RINGING, STATIC TA-218 TT, TA-218A TT					
				ITEMS COMPRISING AN OPERABLE EQUIPMENT					
				NOTE: Model Column 1 refers to TA-218 TT; Model Column 2 refers to TA-218A TT					
				GENERATOR, RINGING STATIC TA-218 TT; TA-218A TT: Subcycle ringing converter type; 30v, 350 ma, 20 cycle, Aluminum Case, 10 in h x 1 3 8 in w x d o/a; oper power 115v, 60 c ac; Telcor Model R, type B or BG Z; Sig dwg SC-DI 142121		NX			
	Ord thru AGC	*	*	TECHNICAL MANUAL TM 11-5805-298-15			2		
		*	*	GENERATOR, RINGING, STATIC: TA 218 TT, TA 218A TT (BASIC COMPONENT)			1	11-1-3	
				RUNNING SPARE ITEMS					
				GENERATOR, RINGING, STATIC TA-218 TT, TA-218A TT					
	5920-010-6652		*	FUSE CARTRIDGE: 3 amp, 250 v max; MIL type FO2G3R00A. Sig dwg SM-B-143172			5		F1, F2

APPENDIX III

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

A3-1. General

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

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 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 categories.

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

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

(c) *Inspect.* To verify serviceability and 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 com-

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

(3) *Operator, organization, direct support, general support, and depot. The sym*bol X indicates the categories responsible for Performing that particular maintenance operation, but does not necessarily indicate that repair parts will be stocked at that level. Categories higher than those 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 column.

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) *Operator, organization, direct support, general support, and depot.* The dagger (†) symbol indicates the categories normally allocated the facility.

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

(4) *Remarks.* Not used.

A3-2. Maintenance by Using Organizations

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

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(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 9C	(4) O	(5) DS	(6) GS	(7) D	(8) TOOLS REQUIRED	(9) REMARKS
GENERATOR, RINGING, STATIC TA-248/TT, TA-248A/TT	service		X					Interior
		X						Exterior
	adjust			X			1,2	Vibrator reed
	inspect		X					Interior
		X						Exterior
	test			X			1	All tests
	repair			X			2	
	rebuild					X	2	
VIBRATOR UNIT	adjust			X			2	
	repair			X			2	

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) O/C	(3) C	(4) D	(5) I-S	(6) I	(7) TOOL CODE	(8) REMARKS
TA-248/TT; TA-248A/TT (continued)							
MULTIMETER TS-352/U			+	+	+	1	
TOOL EQUIPMENT TE-19			+	+	+	2	

APPENDIX IV

REPAIR PARTS AND SPECIAL TOOL LISTS

Section I. INTRODUCTION

A4-1. General

a. This appendix includes organizational, direct and general support and depot maintenance special tool lists.

(1) The organizational maintenance repair parts and special tool lists list the quantities of repair parts authorized for organizational maintenance and is a basis for requisitioning by organizations which are authorized the major item of 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,

(2) Direct and general support and depot maintenance repair parts and special tool lists list the quantities of repair parts authorized for direct and general support maintenance and is a basis for requisitioning authorized parts. It is a guide for depot maintenance in establishing initial leveis of spare parts.

b. Columns are as follows:

(1) Source, *maintenance, and recoverability code.* Source, maintenance, and recoverability codes indicate the technical service responsible for supply, the maintenance categories at which an item is stocked, categories at which an item is installed or repaired, and whether an item is repairable or salvageable. The source code column is divided into four parts.

(a) Column A. This column indicates the materiel code and designates the area of responsibility for supply. AR 310-1 defines the basic numbers used to identify the materiel code. If the part is Signal materiel responsibility, the column is left blank.

(b) Column B. This column indicates the point within the maintenance system where the part is available. "P" indicates that the repair part is a high mortality part; procured by technical services, stocked in and supplied from the technical service depot system and authorized for use at indicated maintenance categories.

(c) Column C. This column indicates the lowest maintenance category authorized to install the part.

"O''-Organizational maintenance (operator and organizational).
"F''-Direct support maintenance,

(d) *Column D.* Not used.

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

(3) *Designation by model. The* dagger (†) indicates model in which the part is 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 each unless otherwise indicated and 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 incorporated in unit.* This column lists the quantity of each part found in a given assembly, component, or equipment.

(8) *Organizational.* The quantities indicated in this column are maximum levels of repair parts authorized to be kept on hand by units performing organizational maintenance. The quantities are based on 100 equipments to be maintained for a 15-day period.

(9) Direct *support.* This column indicates quantities of repair parts authorized for initial stockage for use in the direct support maintenance and in supply support to organization. The quantities are based on 100 equipments to be maintained for a 15-day period.

(10) *General support.* The numbers in this column indicate quantities of repair parts authorized for initial stockage for use in general support maintenance. The quantities are based on 100 equipments to be maintained for a 15-day period.

(11) Depot. The numbers in this column indicate quantities of repair parts authorized for depot maintenance and for initial stockage for maintenance, and for supply support to lower categories. The entries are based on the quantity required for rebuild of 100 equipments,

(12) *Figure.* The numbers in this column indicate the figure on which the item is illustrated.

(13) ltem. This column indicates item number designations.

A4-2. Parts for Maintenance

When this equipment is used by signal service organizations organic to the theater headquarters or communication zones to provide theater communications, those repair parts authorized up to and including general support are authorized for stockage by the organization operating this equipment.

A4-3. Additional Repair Parts Authorization

An asterisk (*) indicates that an item is not authorized for stockage but, if required, may be requisitioned for immediate use only.

A4-4. Requisitioning Information

(Organizational)

a. The allowance factors are W on 100 equipments. In order to determine the number of parts authorized for the specific number of equipments supported, the following formula will be used and carried out to two decimal places.

$$\text{Specific number of equipments supported} \times \frac{\text{allowance factor}}{100} = \text{Number of parts authorized.}$$

b. Fractional values obtained from above computation will be rounded to whole numbers as follows :

(1) When the total number of parts authorized is less than one, the quantity authorized will be one.

(2) For all values above one, fractional values below 0.5 will revert to the next lower number, fractional values of 0.5 or larger will advance to the next higher whole number.

c. The number of parts authorized, determined after- application of a and b above, represent one prescribed load for a 15day period. The items and computed quantities thereof must be on hand or on order at all times.

d. Major commanders will determine the number of prescribed loads organizational units wi]] carry. Units and organizations authorized additional prescribed loads will utilize the formula explained in u above but will multiply the number of equipments supported by the number of authorized prescribed loads before completing the formula. Fractional values will be rounded to whole numbers as described above.

A4-5. Requisitioning Information (Direct and General Support Maintenance)

a. The allowance factors are based on 100 equipments. In order to determine the number

of parts authorized for initial stockage for the specific number of equipments supported, the following formula will be used and carried out to two decimal places.

$$\text{Specific number of equipments supported} \times \frac{\text{allowance factor}}{100} = \text{Number of parts authorized for initial stockage.}$$

b. Fractional values obtained from above computation will be rounded to whole numbers as follows :

(1) When the total number of parts authorized is less than 0.5, the quantity authorized will be zero.

(2) When the total number of parts authorized is between 0.5 and 1.0, the quantity authorized will be one.

(3) For all values above one, fractional values below 0.5 will revert to the next lower whole number and fractional value 0.5 and above will advance to the next higher whole number.

c. The quantities determined in accordance with the above computation represent the initial stockage for a 15-day period.

(1) SOURCE MAINTENANCE AND RECOVERABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPENDABILITY	(7) QUANTITY INCORPORATED IN UNIT	(8) ORGANIZATIONAL 15 DAYS MAINTENANCE ALLOWANCE PER 100 EQUIPMENTS	(9) ILLUSTRATIONS FIGURE NO	(10) ILLUSTRATIONS ITEM NO
		1 2	GENERATOR, RINGING, STATIC TA-248/TT, TA-248A/TT						
			NOTE: Model Column 1 refers to TA-248/TT; Model Column 2 refers to TA-248A/TT						
	5805-503-1482		GENERATOR, RINGING, STATIC: TA-248/TT, TA-248A/TT Subcycle ringing converter type; 90 v, 350 MA, 20 cycles; Aluminum case, 10 in h x 4 3/8 in w x 4 1/8 in d o/a; oper power 115v, 60 c AC; Telcor Telering Model R, type B or BG-2; Sig dwg SC-DL-142421		NX			1-1, 1-2, 1-3	
	5920-244-5150	†	CAP ELECTRICAL: Retains 3 amp fuse in holder; Buss type No. 9435-1/2		NX	2	*	1-3	
	5920-010-6652	†	FUSE CARTRIDGE: 3 amp, 250 v max; MIL type F02G3R00A; Sig dwg SM-B-143172			2	20.6		F1, F2
	5920-296-0679	†	FUSE, CARTRIDGE: 5 amp, 250 v max; MIL type F03G5R00A			2	20.6		F1 F2
	6240-266-9941	† †	LAMP, INCANDESCENT: Screw base; 2 cp, 115 v; Nalco No. S-14; Sig dwg SM-B-143173			1	*	1-2	R2

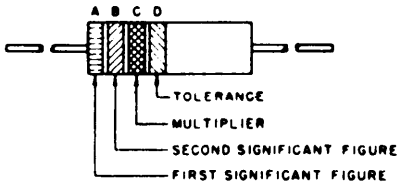
Section III. DIRECT AND GENERAL SUPPORT AND DEPOT MAINTENANCE FUNCTIONAL PARTS LISTS

(1) SMR CODE				(2) FEDERAL STOCK NUMBER	(3) MODEL		(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) CATEGORY OF MAINTENANCE	(7) QUANTITY INCORPORATED IN UNIT	(8) 15 DAYS MAINTENANCE ALLOWANCE PER 100 EQUIPS		(10) DEPOT QUANTITY REQUIRED FOR REBUILD OF 100 EQUIPS	(11) ILLUSTRATIONS	
											DS	GS		FIGURE NO	ITEM NO
A	B	C	D		1	2	GENERATOR, RINGING, STATIC TA-248 TT, TA-248A TT								
							NOTE: Model Column 1 refers to TA-248 TT; Column 2 refers to TA-248A TT								
				6805-503-1482			GENERATOR, RINGING, STATIC: TA-248 TT, TA-248A TT Subcycle ringing converter type; 90 v, 350 ma, 20 cycles; Aluminum Case 10 in h x 1 3-8 in w x 1 1-8 in d o a; oper power 115v, 60 c ac; Telcor Telering Model R, type B or BG-2; Sig dwg 142421		NX					1-1,1-2, 1-3	
	P	F		5920-241-5150		†	CAP, ELECTRICAL: Retains 3 amp fuse in holder; Buss type No. 9135 1 2			2	1.7	1.0	20.0	1-3	
	P	F		5910-112-7643	†	†	CAPACITOR, FIXED, PAPER DIELECTRIC: Spark reduser; MIL-C-25, type CP26A1EF104M; 100,000 uuf			1	0.7	0.4	8.0	1-2	C1
	P	F		5910-112-7633	†	†	CAPACITOR, FIXED, PAPER DIELECTRIC: Provides normal load termination; MIL-C 25A, type CP26A1EF254M; 250,000 uuf			2	1.1	0.7	16.0	1-2	C2
	P	F		5950-646-4127	†	†	COIL, RADIO FREQUENCY: Prevents AC interference in radio equipment; Telcor Inc part No. 1005; Sig dwg SM B 113152			1	0.4	0.2	3.0	1-2	L1
	P	F		5305-378-5395	†	†	CONTACT, ELECTRICAL: Used with and permits adjustment of gap in vibrating reed; Telcor Inc part No. 6010; Sig dwg SM-B 113153			1	0.7	0.4	10.0	1-1,1-3	
	P	O		5920-010-6652		†	FUSE, CARTRIDGE: 3 amp, 250 v max; MIL type FO2G3R00A; Sig dwg SM B 113172			2	8.8	7.3	200.0		F1,F2
	P	O		5920-296-0679	†		FUSE, CARTRIDGE: 5 amp, 250 v max; MIL-F-15160, type No. FO3G5R00A			2	8.8	7.3	200.0		F1,F2

(1) SOURCE MAINTENANCE AND RECOVERABILITY CODE				(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPENDABILITY	(7) QUANTITY INCORPORATED IN UNIT	(8) 15 DAYS MAINTENANCE ALLOWANCE PER 100 EQUIPS		(10) DEPOT QUANTITY REQUIRED FOR REBUILD OF 100 EQUIPS	(11) ILLUSTRATIONS	
										DS	GS		FIGURE NO	ITEM NO
					1 2	TA-248 TT, TA-248A TT (continued)								
	P	F		5920-285-0755		FUSEHOLDER: 15 amp, 250 v; Sig dwg SC B-72703			2	1.1	0.7	9.0		
	P	F		5920-577-8849		FUSEHOLDER: 30 amp, 250 v; Littlefuse Inc. part No. 357002			1	0.7	0.4	4.0		
	P	F		5325-281-6611		GROMMET, RUBBER: Protection for input wire leads. Hofield part No. 8701			2	2.5	1.0	12.0	1-1,1-3	
	P	O		6240-266-9941		LAMP, INCANDESCENT: Screw base; 2 cp, 10 w, 115 v; Nalco part No. S-11; Sig dwg SM-B-143173			1	2.0	1.3	75.0	1-2	R2
	P	F		6250-171-8849		LAMPHOLDER: Medium screw base; 250 v, 660 w; Telcor Inc. part No. 1026; Sig dwg SM-B-143154			1	0.5	0.3	10.0	1-2	
	P	F		5305-356-3645		REED, VIBRATING: Oscillates for 20 cycle AC; Telcor Inc. part No. 1044; Sig dwg SM-B-143155			1	1.7	1.0	50.0	1-1,1-3	
	P	F		5905-171-2713		RESISTOR, FIXED, WIRE WOUND: 50 ohm, ±5%; Controls output voltage; 50 ohm ±5%; MIL-R-26B, type No. RW296500; Sig dwg SM-B-143156			1	0.7	0.4	9.0	1-2	R3
	P	F		5905-279-5320		RESISTOR, FIXED, WIRE WOUND: Current limiter; 3000 ohm, ±5%; Clarostat type No. 10 F			1	0.7	0.4	9.0	1-2	R1
	P	F		5805-597-9846		SPRING, HELICAL, COMPRESSION: Used on contact adjusting screw; Telcor Inc. part No. 1045; Sig dwg SM-B-143175			1	1.0	0.6	5.0	1-1,1-3	
	P	F		595C-648-1730		TRANSFORMER, POWER, STEP-UP AND STEP-DOWN: Power input transformer; Telcor Inc. part No. 1067; Sig dwg SM-B-143158			1	0.7	0.4	5.0	1-1,1-3	T1
	P	F		6105-356-1955		WINDING, MOTOR FIELD: Excites vibrating reed; Telcor Inc. part No. 1006; Sig dwg SM-B-143159			1	0.5	0.3	3.0	1-1,1-3	L1

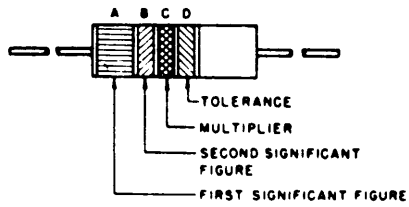
COLOR CODE MARKING FOR MILITARY STANDARD RESISTORS

COMPOSITION-TYPE RESISTORS



BAND A— Equal Width Band Signifies Composition-Type

WIREWOUND-TYPE RESISTORS

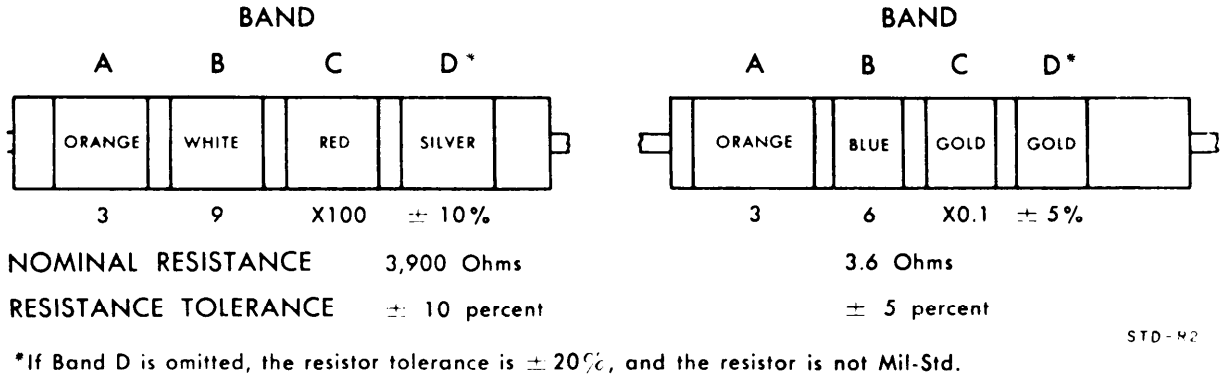


BAND A— Double Width Signifies Wire-wound Resistor

COLOR CODE TABLE

BAND A		BAND B		BAND C		BAND D*	
COLOR	FIRST SIGNIFICANT FIGURE	COLOR	SECOND SIGNIFICANT FIGURE	COLOR	MULTIPLIER	COLOR	RESISTANCE TOLERANCE (PERCENT)
BLACK	0	BLACK	0	BLACK	1		
BROWN	1	BROWN	1	BROWN	10		
RED	2	RED	2	RED	100		
ORANGE	3	ORANGE	3	ORANGE	1,000		
YELLOW	4	YELLOW	4	YELLOW	10,000	SILVER	± 10
GREEN	5	GREEN	5	GREEN	100,000	GOLD	± 5
BLUE	6	BLUE	6	BLUE	1,000,000		
PURPLE (VIOLET)	7	PURPLE (VIOLET)	7				
GRAY	8	GRAY	8	SILVER	0.01		
WHITE	9	WHITE	9	GOLD	0.1		

EXAMPLES OF COLOR CODING

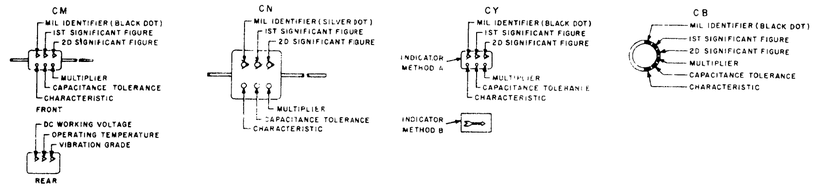


*If Band D is omitted, the resistor tolerance is ± 20%, and the resistor is not Mil-Std.

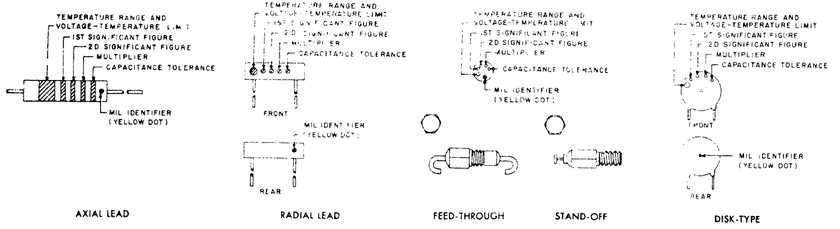
Figure 5-1. MIL-STD resistor color-code marking.

COLOR CODE MARKING FOR MILITARY STANDARD CAPACITORS

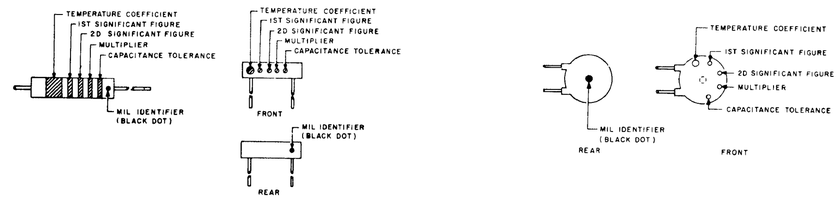
GROUP I Capacitors, Fixed, Various-Dielectrics, Styles CM, CN, CY, and CB



GROUP II Capacitors, Fixed Ceramic-Dielectric (General Purpose) Style CK



GROUP III Capacitors, Fixed, Ceramic-Dielectric (Temperature Compensating) Style CC



COLOR CODE TABLES

TABLE I – For use with Group I, Styles CM, CN, CY and CB

COLOR	MIL ID	1st SIG FIG	2nd SIG FIG	MULTIPLIER[1]	CAPACITANCE TOLERANCE				CHARACTERISTIC[2]				DC WORKING VOLTAGE	OPERATING TEMP. RANGE	VIBRATION GRADE
					CM	CN	CY	CB	CM	CN	CY	CB	CM	CM	CM
BLACK	CM, CY CB	0	0	1			± 20%	± 20%		A				−55° to +70°C	10–55 cps
BROWN		1	1	10					B	E		B			
RED		2	2	100	± 2%		± 2%	± 2%	C		C			−55° to +85°C	
ORANGE		3	3	1,000		± 30%			D			D	300		
YELLOW		4	4	10,000					E					−55° to +125°C	10–2,000 cps
GREEN		5	5		± 5%				F				500		
BLUE		6	6											−55° to +150°C	
PURPLE (VIOLET)		7	7												
GREY		8	8												
WHITE		9	9												
GOLD				0.1			± 5%	± 5%							
SILVER	CN				± 10%	± 10%	± 10%	± 10%							

TABLE II – For use with Group II, General Purpose, Style CK

COLOR	TEMP. RANGE AND VOLTAGE – TEMP. LIMITS[3]	1st SIG FIG	2nd SIG FIG	MULTIPLIER[1]	CAPACITANCE TOLERANCE	MIL ID
BLACK		0	0	1	± 20%	
BROWN	AW	1	1	10	± 10%	
RED	AX	2	2	100		
ORANGE	BX	3	3	1,000		
YELLOW	AV	4	4	10,000		CK
GREEN	CZ	5	5			
BLUE	BV	6	6			
PURPLE (VIOLET)		7	7			
GREY		8	8			
WHITE		9	9			
GOLD						
SILVER						

TABLE III – For use with Group III, Temperature Compensating, Style CC

COLOR	TEMPERATURE COEFFICIENT[4]	1st SIG FIG	2nd SIG FIG	MULTIPLIER[1]	CAPACITANCE TOLERANCE		MIL ID
					Capacitances over 10uuf	Capacitances 10uuf or less	
BLACK	0	0	0	1		± 2.0uuf	CC
BROWN	−30	1	1	10	± 1%		
RED	−80	2	2	100	± 2%	± 0.25uuf	
ORANGE	−150	3	3	1,000			
YELLOW	−220	4	4				
GREEN	−330	5	5		± 5%	± 0.5uuf	
BLUE	−470	6	6				
PURPLE (VIOLET)	−750	7	7				
GREY		8	8	0.01			
WHITE		9	9	0.1	± 10%		
GOLD	+100					± 1.0uuf	
SILVER							

1. The multiplier is the number by which the two significant (SIG) figures are multiplied to obtain the capacitance in uuf.
2. Letters indicate the Characteristics designated in applicable specifications: MIL–C–5, MIL–C–91, MIL–C–11272, and MIL–C–10950 respectively.
3. Letters indicate the temperature range and voltage-temperature limits designated in MIL–C–11015.
4. Temperature coefficient in parts per million per degree centigrade.

STD–C2

Figure 5-2. MIL-STD capacitor color-code marking.

By Order of the Secretary of the Army:

HAROLD K. JOHNSON,
General, *United States Army*
Chief of Staff.

Official:

J. C. LAMBERT,
Major General United States Army,
The Adjutant General.

Distribution:

Active Army:

USASA (2)
CNGB (1)
OCC-E (7)
Dir of Trans (1)
CofEngrs (1)
TSG (1)
CofSptS (1)
USACDCCEA (1)
USACDCCEA, Ft Monmouth (1)
USACDCCBRA (1)
USACDCOA (1)
USACDCQMA (1)
USACDCTA (1)
USACDCADA (1)
USACDCARMA (1)
USACDCAVNA (1)
USACDCARTYA (1)
USACDCSWA (1)
USAMC (5)
USCONARC (5)
ARADCOM (2)
ARADCOM Rgn (2)
OS Maj Comd (4)
LOGCOMD (2)
MDW (1)
Armies (2)
Corps (2)
USAC (3
USAMICOM (4)
USASMC (2)
USASCC (4)
11th Air Assault Div (3)
Svc Colleges (2)
Br Svc Sch (2)
USASCS
USATC AD (2)
USATC Armor (2)
USATC Engr (2)
USATC Inf (2)
USASTC (2)
WRAMC (1)
USA Pic Cen (2)
Instl (2) except Ft Monmouth (70)
Ft Hancock (4) Ft Gordon (10)
Ft Hauchuca (10) WSMR (5) Ft Carson (25)
Army Dep (2) except LBAD, TOAD (14)
SAAD (30) FTWOAD (10) LEAD, NAAD, SVAD (5) ATAD (4) SHAD, CHAD (3)
GENDEP (2)
Sig Sec, GENDEP (5)
Sig Dep (12)
Sig Fld Maint Shops (2)
AMS (1)
USAERDAA (2)
USAERDAW (13)
Units org under fol TOE: (2 ea UNOINDC)
11-16
11-57
11-97
11-98
11-117
11-155
11-157
11-337
11-500 AA-AE (4)
11-557
11-587
11-592
11-597

NG: None.

USAR: None.

For explanation of abbreviations used, see AR 320-50.

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