TM 11-6625-273-12

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATION AND ORGANIZATIONAL MAINTENANCE

INSULATION BREAKDOWN TEST SET AN/GSM-6

This copy is a reprint which includes current pages from Changes 2 and 3.

HEADQUARTERS, DEPARTMENT OF THE ARMY
APRIL 1959

WARNING

EXTREMELY HIGH VOLTAGES EXIST IN THIS EQUIPMENT

Serious injury or death may result if safety precautions
are not observed

DON'T TAKE CHANCES!

VOLTAGES AS HIGH AS 40,000 VOLTS MAY EXIST AT
THE FOLLOWING PLACES:

OUTPUT TERMINALS
OUTPUT CABLE
TEST SPECIMEN

TM 11-6625-273-12
C3
HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, *26 January 1985*

CHANGE
NO. 3

OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL INSULATION BREAKDOWN TEST SETS AN/GSM-6 AND AN/GSM-6A (NSN 6625-00-542-1331)

TM 11-6625-273-12, 7 April 1959, is changed as follows:

The title of this manual is changed as shown above.

Page 2: Paragraphs 1-1 and 2 are superseded as follows:

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

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

2. 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 DA Pam 738-750 as contained in the Maintenance Management Update.

b. Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.73A/AFR 400-54/MCO 4430.3F.

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 4610.33C/AFR 75-18/MCO P4610.19D/DLAR 4500.15.

Add the following paragraph after paragraph 2.

2.1 Reporting Errors and Recommending Improvements

You can help improve this manual. If you find any 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), to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007. In either case, a reply will be furnished direct to you.

Page 6: Add the following caution after paragraph log:

CAUTION

Before servicing this equipment, check prior maintenance records and consult with your safety office to ensure that the oil has not been contaminated with Poly - chlorinated Biphenyls (PCB) during the item's life. PCB'S are a potential safety and environmental hazard if improperly handled or disposed.

Page 18: Add the following caution after paragraph 25c:

CAUTION

Before servicing this equipment, check prior maintenance records and consult with your safety office to ensure that the oil has not been contaminated with Poly - chlorinated Biphenyls (PCB) during the item's life. PCB'S are a potential safety and environmental hazard if improperly handled or disposed.

Page 19: Appendix I is changed as follows:

Change "DA Pam 310-4 Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders," to read "DA Pam 310-1 Consolidated Index of Army Publications and Blank Forms."

Change "TM 9-213 Painting Instructions for Field Use:" to read "TM 43-0139 Painting Instructions for Field Use."

Change "TM 11-6625-273-12P Operator's and Organizational Maintenance Repair Parts and Special Tools List for Test Set, Insulation Breakdown AN/GSM-6" to read "TM 11-6625-273-20P Organizational Maintenance Repair Parts and Special Tools List Insulation Breakdown Test set AN/GSM-6 and AN/GSM-6A (NSN 6625-00-542 -1331)."

Change "TM 38-750 The Army Equipment Record System and Procedures" to read "DA Pam 738-750 The Army Maintenance Management System (TAMMS)."

By Order of the Secretary of the Army:

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

Official:

MILDRED E. HEDBERG
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:
To be distributed in accordance with DA Form 12-36 literature requirements for AN/GSM-6, -6A.

TECHNICAL MANUAL

Operation and Organizational Maintenance

INSULATION **BREAKDOWN TEST SETS AN/GSM-6 AND AN/GSM-6A**

TM 11-6625-273-12)
CHANGE No. 2

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., 26 *September 1963*

TM 11-6625-273-12, 7 April 1959, is changed as indicated so that the manual also applies to the following equipment:

Nomenclature	*Order No*
Insulation Breakdown Test Set AN/GSM-6A	15762-PP-62

Change the title of the manual to: OPERATION AND ORGANIZATIONAL MAINTENANCE, INSULATION BREAKDOWN TEST SETS AN/GSM-6 AND AN/GSM-6A.

Page 2. Add the following note below the title of chapter 1:

Note. Insulation Breakdown Test Set AN/GSM-6A is similar to Insulation 'Breakdown Test Set AN/GSM-6. Information in this manual applies to both test sets unless otherwise specified.

Add and AN/GSM-6A after "AN/GSM-6" in the following places:

Page 2, Paragraph 1, line 2.
Paragraph 3a, line 2.
Page 3, figure 1, caption.
Page 4, paragraph 5, heading.
Page 5, paragraph 6, chart, first item.
Page 18, paragraph 26a, line 3.

Add paragraph 1.1 after paragraph 1.

1.1. Index of Publications

Refer to the latest issue of DA PAM 3104 to determine whether there are new editions, changes, or additional publications pertaining to the equipment. DA Pam 3104 is an index of current technical manuals, technical bulletins, supply bulletins, lubrication orders, and modification work orders available through publications supply channels. 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, 23 Jul 59) 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 Shiprment 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 714 (Air Force),

c. *Reporting of Equipment Manual Improvements.* The direct reporting by the individual user, of errors, omissions, and recommendations for improving this manual is authorized and encouraged. DA Form 2028 (Recommended changes to DA technical manual parts lists or supply manual 7, 8 or 9) will be used for reporting these improvements. This form will be completed in triplicate using pencil, pen, or typewriter. The original and one copy will be forwarded direct to: Commanding Officer, U.S. Army Electronics Materiel Support Agency, ATTN: SELMS-MP, Fort Monmouth, N. J., 07703. One information copy will be furnished to the individual's immediate supervisor (officer, noncommissioned officer, supervisor, etc.).

Page 4, paragraph 5, chart, first item. Add and TS-928A/G, after "TS-928/G."

Page 5, paragraph 6, chart, second item. Add and TS–928A/G after "TS-928/G."

Page 15, Delete paragraphs 21 and 22 (as changed by C 1, 23 Jul 59) and substitute:

21. Scope of Maintenance

The maintenance duties assigned to the operator and organizational repairman of the equipment

● **This change supersedes C 1, 23 July 1959.**

are listed below together with a reference to the paragraphs covering the specific maintenance functions.

a. Daily preventive maintenance checks and services (par. 22.2).

b. Weekly preventive maintenance checks and services! (par. 22.3).

c. Monthly preventive maintenance checks and services (par. 22.4).

d. Quarterly preventive maintenance checks and services (par. 22.5).

e. Cleaning (par. 22.6).

f. Touchup painting (par. 22.7).

22. 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, 22.1 through 22.7 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 charts (pars. 22.2 through 22.5) 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, paragraphs, or manuals that contain detailed repair or replacement procedures. 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 set forth in TM 38--750.

22.1. Preventive Maintenance Checks and Services Periods

Preventive maintenance checks and services of the equipment are required daily, weekly, monthly and quarterly.

a. Paragraph 22.2 specifies the checks and services that must be accomplished daily (or at least once each week if the equipment is maintained in standby condition).

b. Paragraphs 22.3, 22.4, and 22.5 specify addtitional checks and services that must be performed on a weekly, monthly, and quarterly basis, respectively.

22.2. Daily Preventive Maintenance Checks and Services Chart

Warning: **Perform the following steps (except 4 and 5) with the input voltage removed and the high voltage caution plate in lowered position.**

Sequence No.		Procedure	References
1	Completeness	See that the equipment is complete (TM 11-6625 273-12P).	None.
2	Exterior surfaces	Clean the exterior surfaces, including the panel and meter glasses (para 22.6). Check all meter glasses and indicator lenses for cracks.	None.
3	Connectors --	Check the tightness of all connectors---	None.
4	Controls and indicators	While making the operating checks (item 5), observe that the mechanical action of each knob, dial, and switch is smooth and free of external or internal binding, and that there is no excessive looseness. Also, check the meters for sticking or bent pointers.	None.
5	Operation	Operate the equipment according to paragraph 23.	Par. 23.

22.3. Weekly Preventive Maintenance Checks and Services Chart

Warning: **Perform the following steps with the input voltage removed and the high voltage caution plate in the lowered position.**

Sequence No.	Item	Procedure	References
1	**Cables**	**Inspect cords, cables, and wires for chafed, cracked, or frayed insulation. Replace connectors that are broken, acred, stripped, or worn excessively.**	**None.**
2	**Hinges and latches.**	**Inspect latches and hinges for looseness. Replace or tighten as necessary.**	**None.**
3	**Metal surfaces**	**Inspect exposed metal surfaces for rust and corrosion. Clean and touchup paint as required (par. 22.7).**	**None.**

22.4. Monthly Preventive Maintenance Checks and Services Chart

Warning: **Perform the following steps with the input voltage removed and the high voltage caution plate in lowered position.**

Sequence No.	Item	Procedure	References
1	Pluckout items ----------	Inspect seating of pluckout items. Make sure that tube clamps grip tube bases tightly.	None.
2	Relay ----------	Inspect the relay for dirt, corrosion, and burned contacts.	None.
3	Jacks ----------	Inspect jacks for snug fit and good contact-. -----	None.
4	Transformer terminals- --------	Inspect the terminals on the power transformer. All nuts must be tight. There should be no evidence of dirt or corrosion.	None.
5	Terminal blocks ----------	Inspect terminal blocks for loose connections and cracked or broken insulation.	None.
6	Resistors and capacitors -----	Inspect the resistors and capacitors for cracks, blistering, or other detrimental defects.	None.
7	Insulator----------	Inspect insulators, bushings, and sleeves for cracks, chipping, and excessive wear.	None
8	Interior ----------	Clean interior of chassis and cabinet. . . . . ..-	None

22.5. Quarterly Preventive Maintenance Checks and Services Chart

Sequence No.	Item	Procedure	References
1	**Publications** - - - - - - - --	See that all publications are complete, serviceable, and current.	DA Pam 310-4.
2	**Modifications** - - - - - - - - - - - - -	Check DA Pam 310-4 to determine if new applicable MWO'S have been published. All URGENT MW0's must be applied immediately. All NORMAL MWO'S must be scheduled.	TM 38-750 and DA Pam 310-4.
3	**Spare parts**-- - - - - - - - -	Check all spare parts (operator and organizational) for general condition and method of storage. There should be no evidence of overstock and all shortages must be on valid requisitions.	TM 11-6625-273-12P.

22.6. Cleaning

Inspect the exterior of the insulation breakdown test set. The exterior surfaces should be clean, and free of dust, dirt, grease, and fungus.

a. Remove dust and loose dirt with a clean soft cloth.

Warning: Cleaning compound is flammable and its fumes are toxic. Provide adequate ventilation. Do not use near a flame

b. Remove grease, fungus, and ground-in dirt from the cases; use a cloth dampened (not wet) with cleaning compound (Federal stock No. 7930–395-9542). After cleaning, wipe dry with a cloth.

c. Remove dust or dirt from plugs and jacks with a brush.

Caution: Do not press on the meter faces (glass) when cleaning; the meters may become damaged.

d. Clean the front panels, meters, and control knobs; use a soft clean cloth. If necessary, dampen the cloth with water; mild soap may be used .

22.7. Touchup Painting Instructions

Remove rust and corrosion from metal surfaces 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 TM 9-213.

Delete figures 7 and 8 (as added by C 1, 23 July 1959).

Page 16, paragraph 23c chart, item 4 "Action or Condition" column, line 2 (As changed by C 1, 23 July 1959). Change "positive (+)" to negative (−).

Page 19. Add appendix I after chapter 5.

APPENDIX I

REFERENCES

Following is a list of applicable publications available to the operator and the repairman of the equipment:

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders.
TM 9-213	Painting Instructions for Field Use.
TM 11-6625-273-12P	Operator's and Organizational Maintenance Repair Parts and Special Tools List for Test Set, Insulation Breakdown AN/GSM-6.
TM 38-750	The Army Equipment Record System and Procedures.

Page *20.* Change "APPENDIX" to: APPENDIX II.

By Order of the Secretary of the Army:

EARLE G. WHEELER,
General, *United Statea Army,*
Chief of Staff.

Official:

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

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USATC Engr (2)
USATC Inf (2)
USATC Armor (2)
USATC (5)
Instl (2) except
Ft Monmouth (65)
Svc colleges (2)
Br Svc Sch (2) except
GENDEP (OS) (2)
Sig Dep (OS) (12)
Sig Sec, GENDEP (5)
Army Dep (2) except
Ft Worth (8)
Lexington (12)
Sacramento (28)
Tobyhanna (12)
Raritan Arsenal (5)
USA Elct RD Acty, White Sands (13)
USA Elct RD Acty, Ft Huachuca (2)
USA Trans Tml Cored (1)
Army Tml (1)
POE (1)
USAOSA (1)
AMS (1)
WRAMC (1)
AFIP (1)
Army Pic Cen (2)
USA Mbl Spt Cen (1)
USA Elct Mat Agcy (12)
Chicago Proc Dist (1)
USARCARIB Sig Agcy (1)
Sig Fld Maint Shop (3)
Units org under fol TOE (2 cy ea UNOINDC):
11-7
11-16
11-57
11-97
11-98
11-117
11-155
11-157
11-500 (Tins AA-AE) (4)
11-557
11-587
11-592
11-597

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: 1983 - *664-028/6170*

Technical MANUAL
No. 11-6625-273-12

HEADQUARTERS,
DEPARTMENT OF THE ARMY
Washington 25, D. C., 7 *April* 1959

INSULATION BREAKDOWN TEST SET AN/GSM-6

502748O—59

CHAPTER 1

INTRODUCTION

Section 1. GENERAL

1. Scope

a. This manual describes Insulation Breakdown Test Set AN/GSM-6 and covers its installation, operation, and first and second echelon maintenance. It includes operation under usual and unusual conditions, instructions for cleaning and inspection of the equipment, and replacement of parts available to first and second echelon maintenance.

b. The appendix contains the Maintenance Allocation Chart.

2. Forms and Records

a. Unsatisfactory Equipment Reports.

(1) Fill out and forward DA Form 468 (Unsatisfactory Equipment Report) to the Commanding Officer, U.S. Army Signal Equipment Support Agency, Fort Monmouth, N. J., as prescribed in AR 700-38.

(2) Fill out and forward AF TO Form 29 (Unsatisfactory Report) to the Commander, Air Materiel Command, Wright-Patterson Air Force Base, Ohio, as prescribed in AF TO 00-35D-54.

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), Navy Shipping Guide, Article 1850-4 (Navy), and AFR 71-4 (Air Force).

c. Parts List Form. Forward DA Form 2028 (Recommended Changes to DA Technical Manual Parts List or Supply Manuals 7, 8, and 9) direct] to the Commanding Officer, U.S. Army Sign. Equipment Support Agency, Fort Monmouth, N. J., with comments on parts listings in the appendix.

d. Comments on Manual. Forward all other comments on this publication directly to the Commanding Officer, U.S. Army Signal Publications Agency, Fort Monmouth, NJ.

Section II. DESCRIPTION AND DATA

3. Purpose and Use

a. *Purpose.* insulation Breakdown Test Set AN/GSM-6 (fig. 1) supplies high direct current (de) voltages for testing the insulating qualities of electrical insulation,

b. Use. The test set is used for testing specimens such as insulating materials, insulating structures, and the insulation of a complete electrical component. The insulation of the test specimen is subjected to high dc voltages, comparable to those that would be impressed on the test specimen under operating conditions.

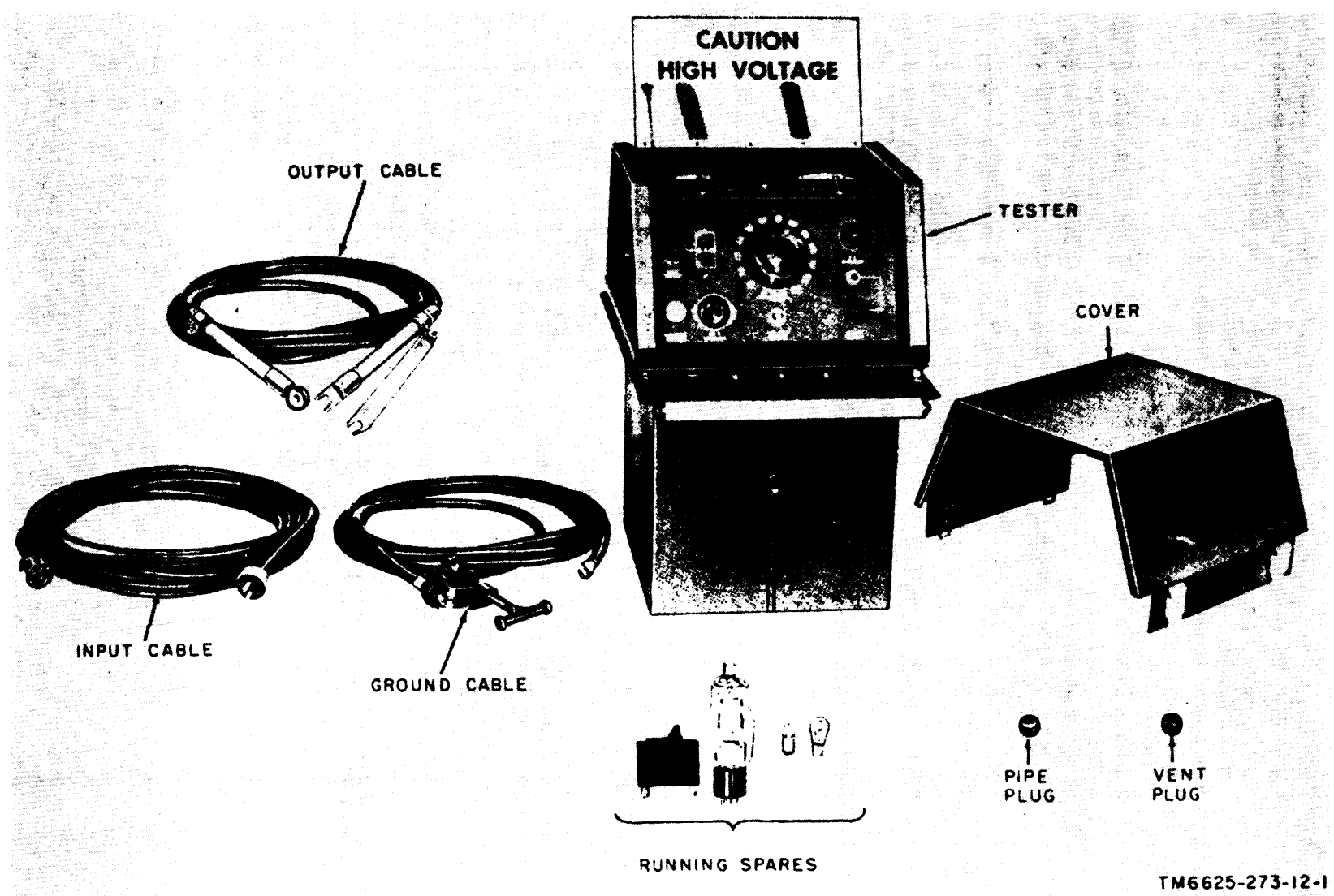

Figure 1. Insulation breakdown test set AN/GSM-6.

4. Technical Characteristics

Power requirements.	115 volts, 50 to 60 Cps, single-phase, 60 to 700 volt-amperes.
Circuit, breaker... --	Rated at 4.8 amperes.
Output voltage-	Adjustable from .5 to 40 kilovolts.
Output current-	3 ma at 40,000 volts. 13 ma at 20,000 volts. 18 ma at 10,000 volts.
Output polarity. ---	Negative (–) or positive (+) with reference to ground.
Capacitance of rectifier unit.	.05 microfarad.
Internal resistance of rectifier unit.	Approximately .7 megohm.
Ripple in output--	Less than 1 percent with 5-megohm resistive load
Oil capacity of rectifier unit.	15 quarts.
Number of electron tubes.	2.
Kilovoltmeter:	
Ranges --------	0 to 5 kilovolts, 0 to 10 kilovolts, 0 to 25 kilovolts, and 0 to 50 kilovolts.
Accuracy- --- _ -	± 3 percent of full scale
Microammeter:	
Ranges --------	0 to 50 microamperes, 0 to 500 microamperes, 0 to 5,000 microamperes, and 0 to 50,000 microamperes.
Accuracy- -----	± 3 percent of full scale.

5. Components of Insulation Breakdown Test Set AN/GSM-6

(fig. 1)

a. Components.

Quantity	Item	Dimensions (in.)			Unit weight (lb)
		Height	Depth	Width	
1	Insulation Breakdown Test Set TS–928/G (tester) including	20½	20	13½	1
1	Cover				
1	Vent plug	½ in. NPT*			
1	Pipe plug	½ in. NPT			
1	Electrical Power Cable Assembly CX–4696/G (input cable)	50 ft lg			3. 3
1	Special Purpose Electrical Cable Assembly CX–4697/G (ground cable).	15 ft lg			3. 7
1	Test Lead CX–4698/G (output cable)	25 ft lg			3. 7
1 Set	Running spares (*b* below).				
				Total weight	130. 7

*NPT—National pipe thread.

b. Running Spares.

Quantity	Item
1	Rectifier tube, type 8013A.
1	Circuit breaker switch.
1	Lamp, type NE 48.
1	Lamp, type 6S6.

6. Common Names

Nomenclature	Common name
Insulation Breakdown Test Set AN/GSM-6.	Test Set.
Insulation Breakdown Test Set TS-928/G.	Tester.
Electrical Power Cable Assembly CX-4696/G (50 ft) .	Input cable.
Special Purpose Electrical Cable Assembly CX-4697/G (15 ft).	Ground cable.
Test Lead CX-4698/G (25 ft) --------	Output cable.

7. Description of Test Set

The test set (fig. 1) is a transportable unit. The major components of the test set are the tester and the interconnection cables.

a. Tester. The tester is divided into two sections: a control unit and a rectifier unit.

(1) *Control unit.* The control unit, the upper portion of the tester, contains the controls and indicators. When the equipment is not in use, the control unit is protected by a detachable cover. The control unit is provided with a transparent high-voltage caution plate.

(2) *Rectifier unit.* The rectifier unit, the lower portion of the tester, is a heavy-duty metal tank containing the oil-immersed high-voltage components. The output terminals, the ground terminal, and the guard terminal are at the rear of the tester (fig. 4), The vent plug is provided for the rectifier unit to prevent build-up of pressure. During storage or shipment, the pipe plug replaces the vent plug to prevent oil spillage.

b. Interconnection Cables (fig. 1). Three interconnection cables are provided with the test set.

(1) *Input cable.* The input cable, used to connect the test set to a power source, is terminated at one end by a parallel-blade male plug and on the other end by a Twistlock female connector.

(2) *Output cable.* The output cable is a coaxial-shielded cable. The center conductor connects the high voltage from the positive or negative output terminal of the test set to the test specimen. The shield, or outer conductor, connects to the guard terminal of the tester. The other end of the shield may also be connected to a guard terminal on the test specimen.

(3) *Ground cable.* The ground cable is terminated at one end with a spade lug and at the other end with a clamp. The spade lug is connected to the ground terminal of the tester and the clamp to the grounded frame or sheath of the test specimen to provide common ground to all components.

CHAPTER 2

SERVICE UPON RECEIPT OF EQUIPMENT

8. Unpacking

(fig. 2)

a. Packaging Data. When packed for shipment, the components of 'the test set are placed in cartons and packed in a wooden case 23 by 23 by 16 inches; the weight is 143 pounds, and the volume is 4.8 cubic feet.

b. Unpacking.

(1) Cut and fold back the metal straps.

(2) Remove the nails from the wooden cover and from the front side panel of the wooden case with a nail puller. Do not attempt to pry off the wooden cover or panel; prying may damage the equipment.

(3) Remove the wooden cover and the front side panel from the wooden case.

(4) Remove the outer carton and its contents from the wooden case.

(5) Open the outer carton and expose the moisture-vaporproof barrier.

(6) Slit the moisture-vaporproof barrier and expose tile inner carton.

(7) Open the inner carton and remove the contents

9. Checking Unpacked Equipment

(figs. 1 and 2)

a. Inspect the equipment for possible shipping damage, such as bent panels, loose knobs, broken meter faces, and cut or damaged cables. If the equipment has been damaged, refer to paragraph 2.

b. Check the equipment received against the packing list. When no packing list accompanies the equipment, use the table of components (par. 5) as a general check.

10. Installation

To install the test set, proceed as follows:

a. Select a site that is within 50 feet of a power source (115 volts ac), and close enough to the test specimen so that the ground and the high-voltage connections can be made. DO NOT CONNECT THE EQUIPMENT TO THE POWER SOURCE.

b. Be sure that the site for the equipment is clean, dry, and free of traffic and personnel.

c. Place the equipment on a foundation or floe that is free of vibration.

d. Post HIGH VOLTAGE warning signs in the test area. The signs should be visible at a distance of 50 feet.

e. Remove the cover (fig. 1) from the tester.

f. Check the rear of the control unit (fig. 4) for loose or faulty connections, damaged wires, dirt, and moisture.

g. Use a clean lint-free cloth and remove all traces of dirt and moisture. Be sure that the output terminals, the guard strap and terminal, and the ground terminal are clean.

h. Remove the pipe plug (fig. 1) from behind tile guard terminal, and replace it with the vent plug (fig. 4).

Note. Do not discard the pipe plug. It will be replaced in the tester when the equipment is moved or stored.

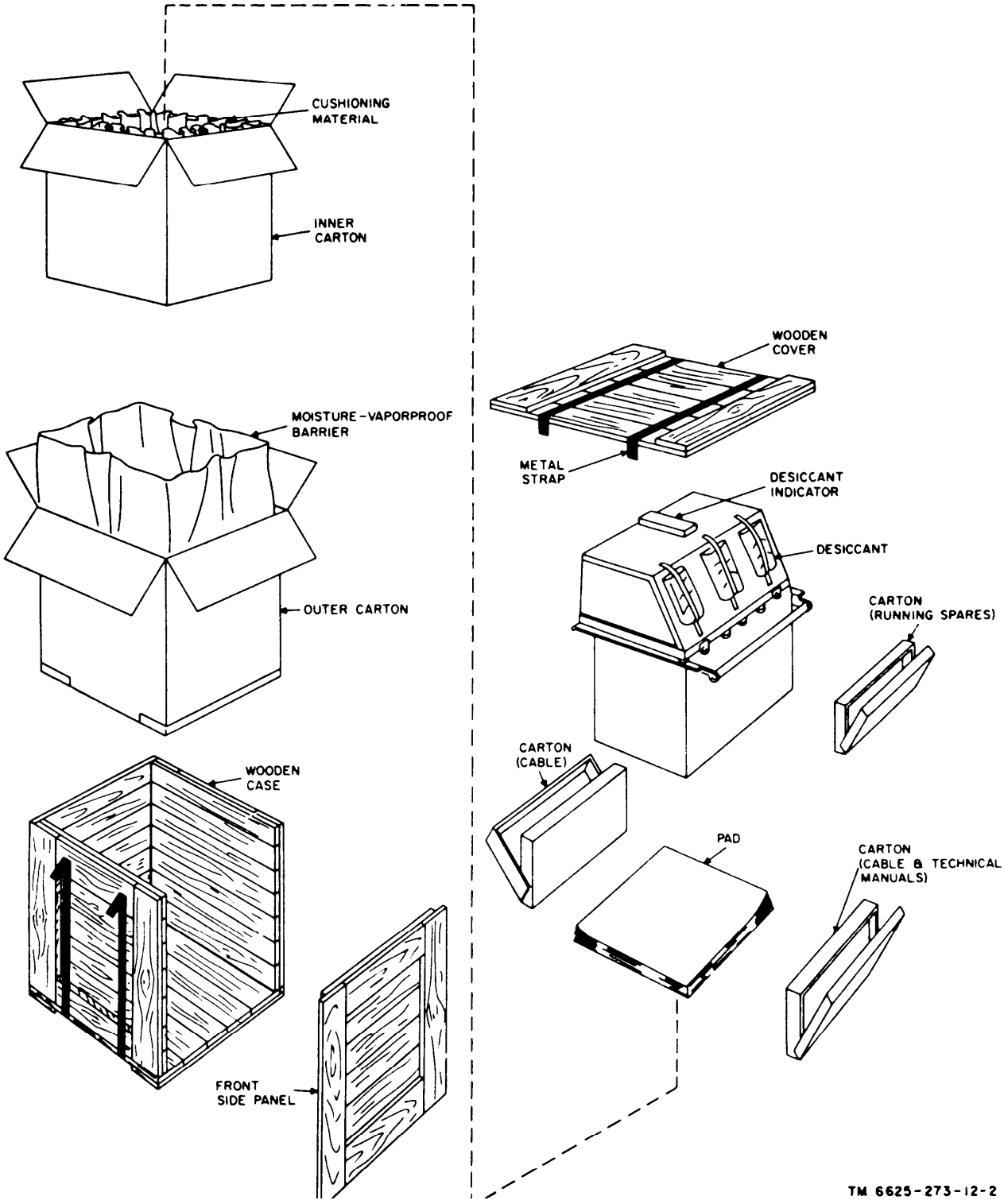

Figure 2. Packaging diagram.

CHAPTER 3

OPERATING INSTRUCTIONS

Warning: **Be careful when operating this equipment. Voltages as high as 40,000 volts may be present. Stand clear of the high-voltage output terminals and connections. Be sure that the equipment is dry. Follow all operating instructions in detail. Serious injury or death may result from contact with the high voltage. DON'T TAKE CHANCES.**

Section I. OPERATION UNDER USUAL CONDITIONS

11. General Instructions

Haphazard operation or improper setting of the controls may cause injury to the operator and damage to the equipment. Do not operate the test set until the function of all controls (par. 12), meters, and all operating procedures (pars, 13-16), are understood. Before operating the equipment for any type of teat, perform the procedures in paragraph 13.

12. Controls, Indicators, Terminals, and Connector

(figs. 3 and 4)

Control, indicator, terminal, or connector	Function
Circuit breaker switch	Single-pole, single-throw switch. In ON position, applies ac power and acts as circuit breaker to protect against overload. In OFF position, disconnects tester from power source.
High-voltage push switch	Push-type (spring return) switch. Applies input power to voltage control, and causes OUTPUT VOLTAGE indicator (red) to light.
115 V 50–60 CPS connector (power connector.)	Receives female Twistlock connector of input cable.
Voltage control	Adjusts output voltage of tester. *Note.* Control dial is calibrated to indicate input voltage being applied to high-voltage rectifier with power input of 115 volts ac.
EXT. INST. 1 mv/ua	Female connector. May be used for connection to dc amplifier, recorder, or other auxiliary measuring instrument.
INPUT VOLTAGE indicator (green)	Lights when circuit breaker switch is in ON position.
INCORRECT POLARITY indicator (white).	Lights when poliarity of input cable voltage is wrong (circuit breaker switch open).
OUTPUT VOLTAGE indicator (red)	Lights when voltage has been applied (by high-voltage push switch) to rectifier unit; *indicates that output terminals are energized.*
DC OVERLOAD indicator (glow lamp)	Warning light. Lights when tester is overloaded. Shunts overload current around microammeter.
Kilovoltmeter	Indicates output voltage of tester in kilovolts.
Microammeter	Indicates output (charging) current or discharging current of tester in microamperes.
VOLTMETER RANGE switch	Four-position rotary switch: *Position* — *Action*: 5 — Sets up kilovoltmeter for 0 to 5 KILOVOLTS range. 10 — Sets up kilovoltmeter for 0 to 10 KILOVOLTS range. 25 — Sets up kilovoltmeter for 0 to 25 KILOVOLTS range. 50 — Sets up kilovoltmeter for 0 to 50 KILOVOLTS range.

Control, indicator, terminal, or connector	Function
MMETER MULTIPLIER switch	Four-position rotary switch:
	Position / *Action* 1 — Sets up microammeter for 0 to 50 MICROAMPERES range. 10 — Sets up microammeter for 0 to 500 MICROAMPERES range. 100 — Sets up microammeter for 0 to 5,000 MICROAMPERES range. 1000 — Sets up microammeter for 0 to 50,000 MICROAMPERES range.
Kilovoltmeter polarity switch	Matches kilovoltmeter polarity to output polarity.
Microammeter polarity switch	Sets up microammeter to measure either charging or discharging current: When switch position matches output polarity, microammeter measures charging current. When switch position does not match output polarity, microammeter measures discharging current (to be done only with circuit breaker switch in OFF position).
(+) output terminal	Supplies positive (+) output voltage (negative (−) output terminal connects to guard terminal).
(−) output terminal	Supplies negative (−) output voltage (positive (+) output terminal connects to guard terminal).
Guard terminal	Prevents surface leakage currents from being measured by microammeter.
Guard strap	Connects output terminal (+ or −) to guard terminal.
Ground terminal	Connects tester, through ground cable, to earth ground.
High-voltage caution plate	Prevents operation of tester when lowered against output terminals. Permits operation of tester when raised to vertical position.
Metal shorting bars	Short circuits output terminal to ground.

13. Preoperational Procedures

***Warning:* Perform the preoperational procedures listed below before each test, in the sequence given. Do not connect the output cable to the tester when performing the preoperational procedures. Deviation from this procedure may result in injury or death to operating personnel.**

a. Place the circuit breaker switch (fig. 3) in the OFF position.

b. Turn the voltage control to 0.

c. Clean the output terminals (fig. 4) with a clean lint-free cloth.

d. Connect the spade lug end of the ground cable to the ground terminal (fig. 5). Clamp the other end of the cable to the ground frame or sheath of the test specimen.

***Warning:* Be sure that the ground frame or sheath of the test specimen is securely connected to earth ground. Inadequate ground connections will expose operating personnel to high voltages.**

e. Determine whether the output voltage will require a positive (+) or negative (—) polarity. The polarity of the output voltage is determined by the requirements of the test specimen.

Note. Voltage and current (polarity and value) information may be obtained from the test specimen name plate, manufacturer's specifications, or from other literature relative to the insulation of the test specimen. If the information is given as an alternating current (ac) value, multiply the ac value by 1.4 to obtain the required dc value.

Exarmple: Ac voltage given = 14,285 volts.
14,285 X 1.4 = 20,000 volts dc

(1) If a negative output-voltage polarity is required, connect the guard strap from the guard terminal to the positive (+) output terminal (fig, 5).

(2) If a positive output-voltage polarity is required, connect the guard strap from the guard terminal to the negative (—) output terminal (fig. 4).

j. Set the kilovoltmeter polarity switch (fig. 3) and the microammeter polarity switch to the polarity that matches the output voltage (e above).

g. Connect the input cable to the tester and to the power source (fig. 5).

Note. If the INCORRECT POLARITY (white) indicator (fig. 3) lights, reverse the position of the male plug of the input cable at the power source.

h. Place the VOLTMETER RANGE switch to the maximum range to be used during the test (e above).

i. Place the AMMETER MULTIPLIER switch in the 1 position.

j. Raise the high-voltage caution plate (fig. 4) and secure it in place with the chain assembly.

k. Place the circuit breaker switch (fig. 3) in

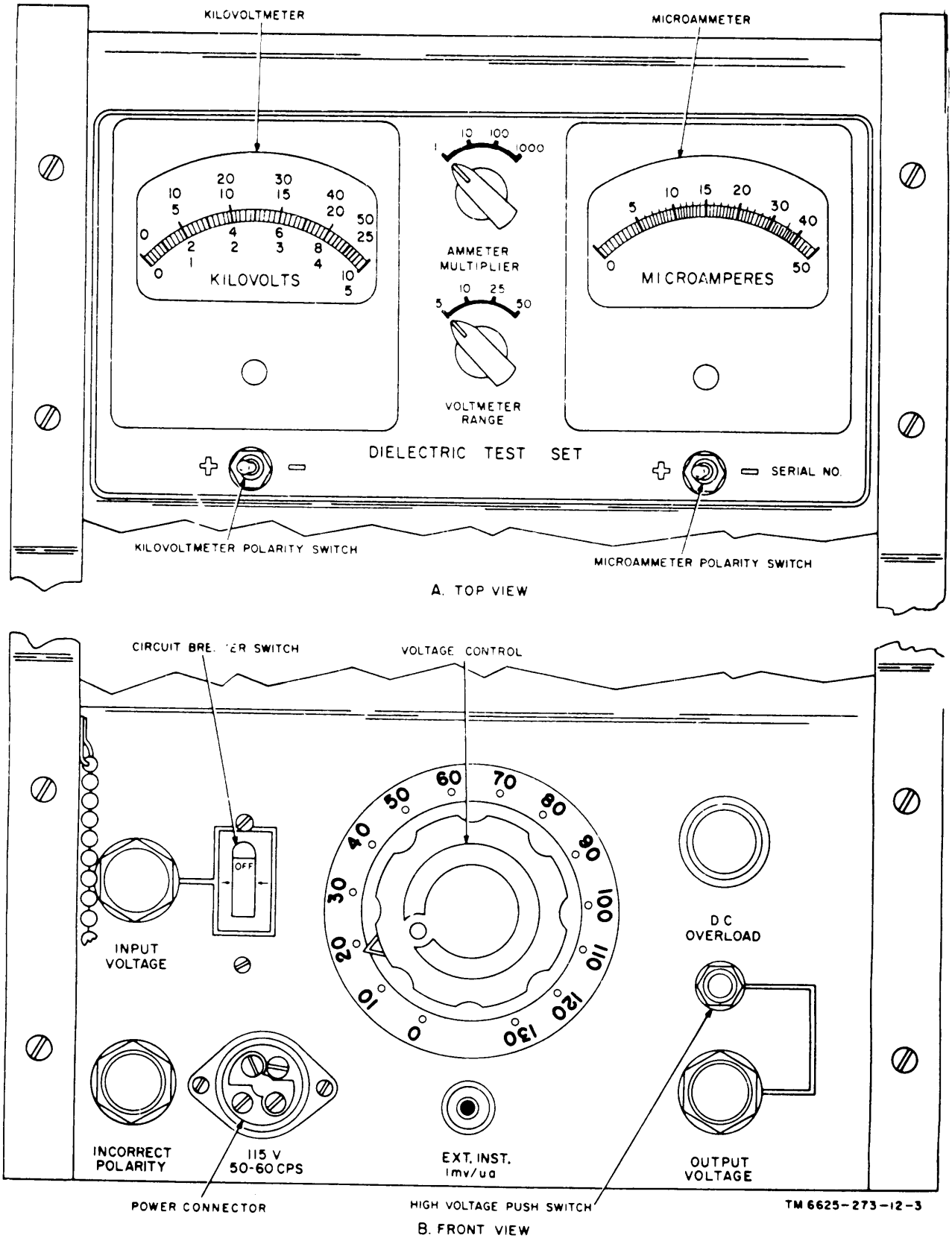

Figure 3. Insulation breakdown test set TS-928/G, control unit, controls and indicators.

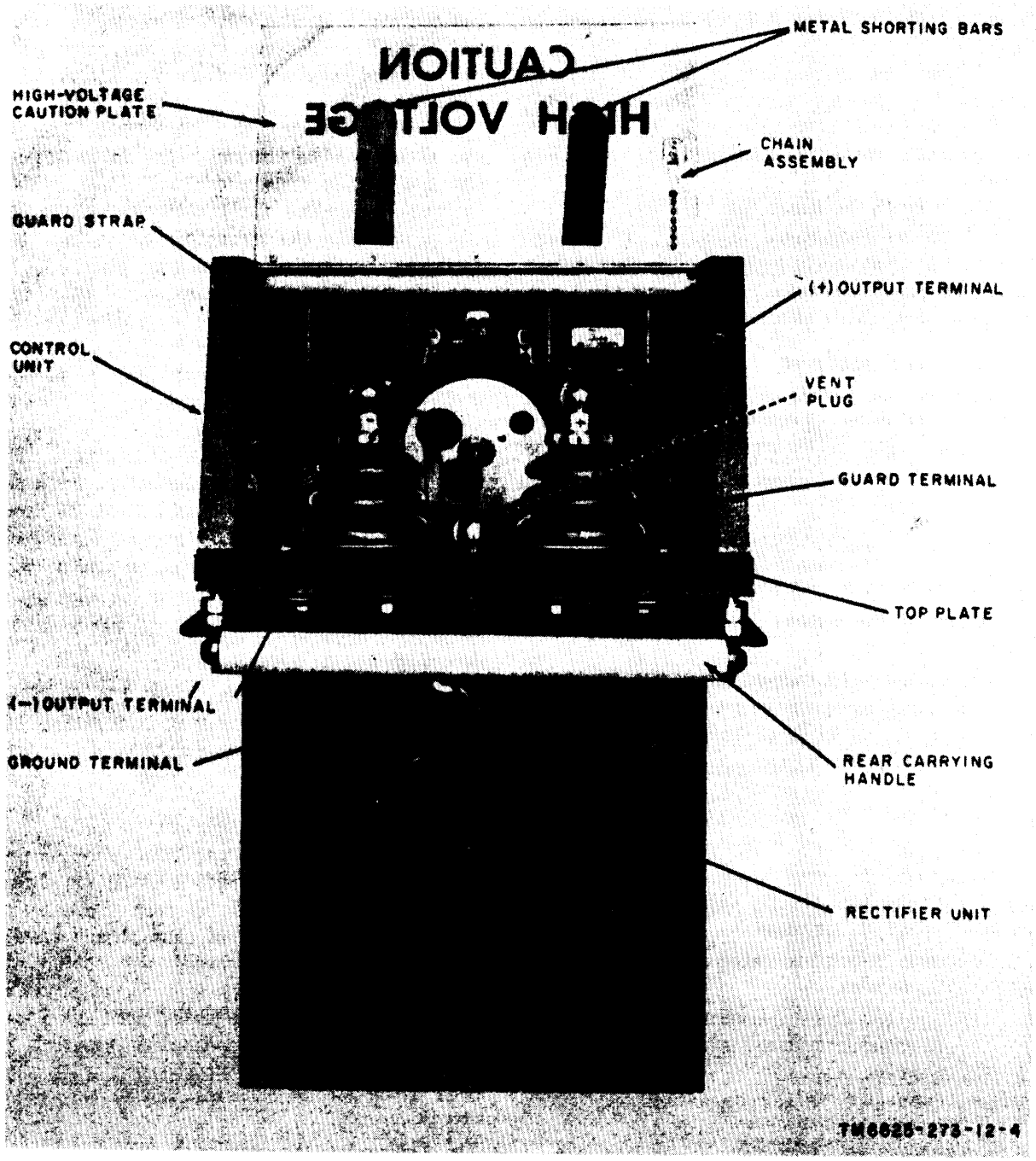

Figure 4. Insulation breakdown test set TS-928/G, rear view.

the ON position. The INPUT VOLTAGE indicator (green) will light.

l. Press the high-voltage push switch. The OUTPUT VOLTAGE indicator (red) will light.

Note. If the circuit breaker switch opens (OFF), hold it momentarily in the ON position.

m. Turn the voltage control slowly clockwise (increase) while observing the kilovoltmeter and the microammeter. Continue turning the voltage control until the maximum dc voltage to be used during the test (*e* above) is reached.

Caution: **If the DC OVERLOAD indicator (glow lamp) lights, a short circuit exists in the tester. Shut down the test set (par. 17) to avoid further damage. Turn in the equipment for repair.**

n. Observe (DO NOT TOUCH) the output terminals (fig. 4) for either corona formation or flashover.

o. Check the microammeter (fig. 3) for an indication of leakage current. For other than small amounts of charging current, at changes in voltage, the microammeter should show no leakage current.

p. Shut down the tester (par. 17a-d).

q. If corona formation, flashover, or leakage current was observed *(n* and *o* above), thoroughly clean the output terminals (fig. 4) and the surrounding area with a clean lint-free cloth.

14. Starting Procedures

Note. Each time that the equipment is to be operated, it must be started from complete shut-down.

a. Turn the AMMETER MULTIPLIER switch (fig. 3) to the highest range position needed for the test (par. *13e).*

Note. If the amount of current that will be drawn by the test specimen is not known, place the AMMETER MULTIPLIER switch in the 1000 position.

b. Connect the output cable to the tester as follows :

(1) Connect the output connector (fig. 5) to either the positive (+) output terminal or the negative (—) output terminal, as determined by the polarity requirements of the test specimen (par. *13e).*

(2) Connect the terminal strap to the output terminal which is connected to the guard strap (par. *13e).*

c. Lower the high-voltage caution plate (fig. 3) against the output terminal.

d. Connect the output cable (fig. 5) to the test specimen as follows:

(1) Connect the high-voltage connector to the conductor of the test specimen.

(2) Connect a guard wire from the guard connector to the insulation (or guard terminal) of the conductor.

Note. The guard wire must be at least 1 foot from both the high-voltage connector and from all ground connections.

(3) Connect all other components of the test specimen to ground.

15. Withstand Test

During the withstand test, a predetermined voltage is applied to the insulation of the test specimen. The voltage is held constant for 5 minutes, and the insulation (charging) current (as indicated on the microammeter) is watched for a sudden increase which may indicate approaching failure. Perform the withstand test as follows:

Caution: Perform the step-voltage test (par. 16) rather than the withstand test, if it is suspected that the applied voltage will cause the insulation to break down and damage the specimen.

a. Determine the maximum dc voltage to be applied to the test specimen (par. *13e).*

b. Perform the starting procedures (par. 14).

c. Perform the procedures in paragraph *13j, k,* and *l.*

d. Turn the voltage control (fig. 3) clockwise until the desired output voltage *(a* above) is applied to the test specimen.

Caution: If the DC OVERLOAD indicator lights, the test specimen is defective. Shut down the test set (par. 17) to avoid further damage.

e. Maintain the output voltage for 5 minutes.

Note. Opening of the circuit breaker switch, lighting of the DC OVERLOAD indicator, or increased wavering of the microammeter pointer, are indications that the insulation is defective (an excessive amount of current is flowing through the test specimen).

j. Shut down the tester (par. 17) at the end of the 5-minute period, or upon an indication the the insulation is defective *(e* above),

16. Step-Voltage Test

During the step-voltage test, a series of predetermined voltages are applied to the test specimen. Each voltage is held constant for a period of time (step) and then the next higher voltage is applied. At the end of each step, before the next higher voltage is applied, the current value is recorded (on a chart (fig. 6), if available). Perform the step-voltage test as follows:

Note. The step-voltage test should be a two-man operation. One man to operate the controls and call out the meter indications, the other man to time each step and record the results.

a. Determine the maximum dc voltage to be applied to the test specimen (par. *13e).*

b. Divide the maximum dc voltage *(a* above) into increments of 10 percent.

Example: Maximum dc voltage = 20,000 volts
10% of 20,000= 2,000 volts.
Result: 10 steps of 2,000 volts per step

c. Perform the starting procedure (par. 14).

d. Perform the procedures in paragraph *13j, k,* and *l.*

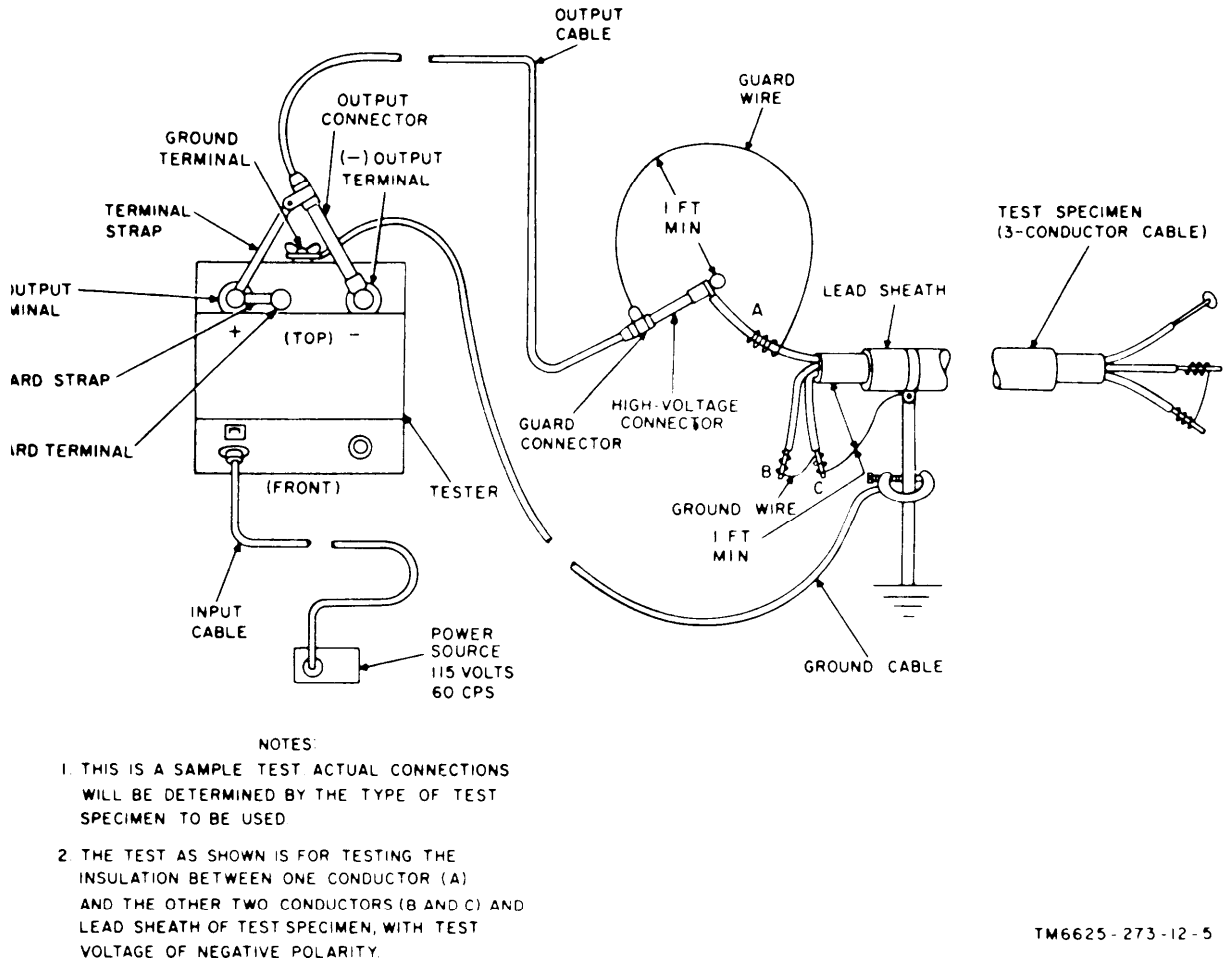

Figure 5. Sample cabling diagram, showing tester (top view) connected to test specimen

e. Turn the voltage control (fig. 3) clockwise until the first step-voltage value (b above) is applied to the test specimen. The output voltage (as indicated by the kilovoltmeter) should remain at this value for 1 minute. At the end of the 1-minute period, record the current value indicated by the microammeter.

Note. The voltage must be applied to the test specimen for a minimum of 1 minute. If the voltage is applied for more than 1 minute, each subsequent step-voltage value must be applied for the same increased period of time.

f. Chart the current values as the step-voltage tests are recorded, and note the direction of the slope:

(1) A sharp increase in current (line 1, fig. 6) and lighting of the DC OVERLOAD indicator (fig, 3) as the voltage is increased, indicates that the insulation is defective and the test must be stopped immediately (par. 17).

(2) A linear increase (line 2, fig. 6) in current as the voltage is increased indicates normal insulation. A gradual decrease (line 3, fig. 6) in current as the voltage is increased (caused by the capacitance of the test specimen) also indicates normal insulation.

g. Shut down the equipment (par. 17).

17. Stopping Procedure

To shut down the equipment, proceed as follows:

a. Turn the voltage control (fig. 3) to the 0 posit ion.

b. Place the circuit breaker switch in the OFF position.

c. Permit the tester to remain in this condition so that it may discharge (through its internal resistance).

Warning: Do not touch any of the high-voltage components on the tester or on the test specimen.

High voltages are still present and may cause serious injury or death.

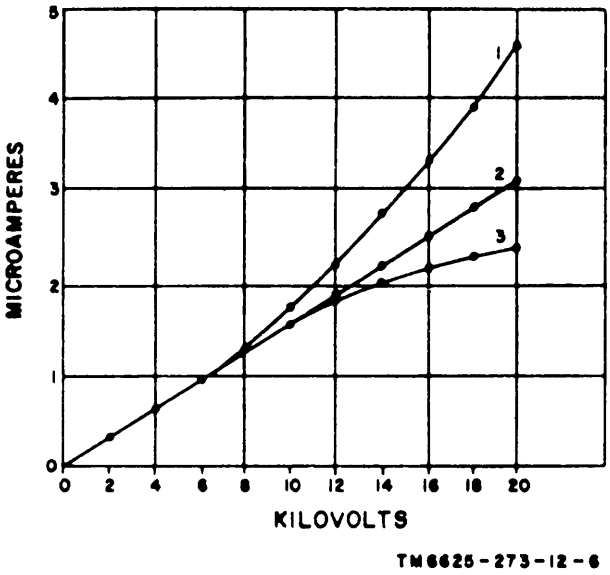

Figure 6. *Sample step-voltage test chart.*

d. While the tester is discharging (c above), observe the kilovoltmeter. When the kilovoltmeter indication is nearly 0, short the output terminals by lowering the high-voltage caution plate so that the metal shorting bars touch both output terminals.

Caution: **Do not short the output terminals when the kilovoltmeter indicates full voltage. Shorting the output terminals under fall voltage conditions may damage the meters.**

e. Disconnect the input cable (fig. 5) from the tester and from the power source.

f. Allow the tester and the test specimen to continue discharging (through the metal shorting bars) for a time that is at least equal to the time that the tester was in the operating (charging) condition (par. 15 or 16).

g. Disconnect the output cable from the tester and from the test specimen.

h. Disconnect the ground cable and all other ground connections.

Section II. OPERATION UNDER UNUSUAL CONDITIONS

Caution: Do **not operate the equipment unless all exposed surfaces are dry. Arcing will occur on wet surfaces and damage the equipment.**

18. Operation at Low Temperatures

The test set is intended for indoor use. When possible, store and use the equipment in a heated shelter. If the tester has been exposed to the cold, it will sweat until it reaches room temperature. Sweating also occurs when the equipment warms up during the day after exposure during a cold night. When the tester has reached room temperature, dry it thoroughly.

19. Operation Under Tropical Conditions

In tropical climates, store and operate the tester in a building or shelter if possible. High relative humidity climates cause condensation or moisture on the equipment. Clean the equipment frequently to keep it free from rust, corrosion, and fungus growth. Keep the equipment dry.

20. Operation in Desert Climates

a. Conditions similar to those encountered in tropical climates (par. 19) often prevail in desert areas. In desert areas, high temperature during the day followed by a drop in temperature during the night causes condensation to form on equipment. Use the same precautions for storage and operation in desert climates as in tropical climates (par. 19).

b. Provide means for keeping dust and sand from entering the equipment. Be sure that the test set cover is properly closed and latched when the equipment is not in use, If possible, protect the equipment from the direct rays of the sun.

CHAPTER 4

MAINTENANCE INSTRUCTIONS

21. General

The procedures outlined in this chapter are to be performed by the operator or the organizational maintenance personnel. Organizational maintenance of the test set is limited to preventive maintenance and minor repairs. No special tools or test equipment is required.

22. Preventive Maintenance

a. Daily Maintenance.

(1) Remove dirt and moisture from exposed surfaces of the tester.

(2) Wipe the output terminals, the ground terminal, and guard terminals (fig. 4), with a clean lint-free cloth. Check to see that all terminal nuts are tight.

(3) Inspect the controls and switches (fig. 3) for binding or faulty operation.

(4) Check for normal operation (par. *23c)*. Be alert for any unusual performance or condition.

b. Weekly Maintenance.

(1) Inspect the tester and cover (fig. 1) for breaks, cracks, or any other signs of damage.

(2) Inspect the cables for cuts, breaks, fraying, or deterioration,

(3) Inspect the connectors (fig. 4) at the rear of the tinter for snug fit and good contact.

(4) Inspect the meters (fig. 3) for damaged glass and cases.

(5) Inspect accessible wiring for cuts, breaks, and loose or unsoldered connections.

(6) Check all accessible components for insecure mounting.

(7) Inspect the high-voltage caution plate and the metal shorting bars for cracks, breaks, or damage.

23. Equipment Performance Checklist

a. General. The equipment performance checklist provides a procedure for systematically checking equipment performance. All corrective measures that the operator or the organizational maintenance man can perform are given in the Corrective measures column. When using the checklist, start at the beginning and follow each step in order. If the corrective measure indicated does not fix the equipment, trouble shooting is required by higher echelon. Note on the repair tag how the equipment performed and the corrective measures that were taken.

b. Procedure. Place the test set in operation as shown in the checklist *(c* below).

C. Checklist

Warning: Perform the steps in the sequence given. DO NOT perform any corrective measure until the equipment has been shut down (par. 17). Deviation from the listed sequence, or failure to properly shut down the equipment may result in serious injury or death to maintenance personnel.

	Step	Action or condition	Normal indication	Corrective measures
PREPARATORY	1	Install equipment (par. 10).		
	2	Connect ground cable (fig. 5) to tester and to earth ground.		
	3	Place circuit breaker switch (fig. 3) at OFF and voltage control at 0.		
	4	Connect guard strap (fig. 5) to positive (+) output terminal.		
	5	Set kilovoltmeter and microammeter switches (fig. 3) in + position.		
	6	*a*. Connect input cable (fig. 5) to tester and to power source.	INCORRECT POLARITY indicator does not light.	Reverse position of male plug at power source.
		b. If INCORRECT POLARITY indicator did not light (*a* above), reverse plug at power source.	INCORRECT POLARITY indicator should light.	Replace lamp (par. 24*a*). Check ground cable connections. Replace ground cable. Replace input cable. Higher echelon repair required.
		Note. Insert plug correctly (step 6*a*) before proceeding with further steps.		
	7	Place VOLTMETER RANGE switch (fig. 3) in 25 position.		
	8	Place AMMETER MULTIPLIER switch in 1 position.		
	9	Raise and secure high-voltage caution plate.		
	10	Place circuit breaker switch in ON position.	INPUT VOLTAGE indicator lights.	Replace lamp (par. 24*a*).
			Circuit breaker switch remains in ON position.	Higher echelon repair required.
	11	Press high-voltage push switch.	OUTPUT VOLTAGE indicator lights.	Replace lamp (par. 24*a*).
	12	Turn voltage control clockwise to midposition.	Microammeter indicates small amount of leakage current (par. 13*o*).	Clean output terminals (fig. 4).
			DC OVERLOAD indicator *does not* light.	Higher echelon repair required.
			Note. If DC OVERLOAD indicator lights, short circuit exists in tester. Shut down equipment immediately (par. 17).	
			Circuit breaker switch remains in ON position (par. 13*l*).	Higher echelon repair required.
			Note. If circuit breaker switch does not remain in ON position, short circuit exists in tester. Shut down equipment immediately (par. 17).	*Note.* If DC OVERLOAD indicator did not light before circuit breaker switch opened, replace lamp (par. 24*b*), and repeat step 12.
	13	Shut down equipment (par. 17*a*-*d*).	Kilovoltmeter pointer gradually falls to 0 position.	Higher echelon repair required.

	Step	Action or condition	Normal indication	Corrective measures
EQUIPMENT PERFORMANCE START	14	Connect output cable to tester (fig. 5). *Note.* Be sure that high-voltage connectoron end of output cable does not touch ground. Connect guard connector to a ground rod.		
	15	Place AMMETER MULTIPLIER switch in 1000 position.		
	16	Raise high-voltage caution plate and secure with chain assembly.		
	17	Place circuit breaker switch in ON position.	INPUT VOLTAGE indicator lights.	
	18	Press high-voltage push switch.	OUTPUT VOLTAGE indicator lights.	
	19	Turn voltage control slowly to midposition.	Kilovoltmeter indicates output voltage; microammeter indicates small current value (par. 13*o*).	Higher echelon repair required.
			DC OVERLOAD indicator does not light.	Replace output cable.
			Caution: If DC OVERLOAD indicator lights, output cable is shorted. Shut down equipment immediately (par. 17).	Higher echelon repair required.
	20	Return voltage control to 0 position and place microammeter polarity switch in negative (−) position.	Kilovoltmeter indicator and microammeter indicator gradually fall to 0.	Higher echelon repair required.
STOP	21	Place circuit breaker switch in OFF position.	INPUT VOLTAGE indicator goes out.	Higher echelon repair required.
	22	Lower high-voltage caution plate to short ground output terminals and permit equipment to discharge (par. 17*d*, *e*, and *f*).	OUTPUT VOLTAGE indicator goes out.	Higher echelon repair required.
	23	Disconnect ground cable, input cable, and output cable from equipment.		

24. Repairs

(fig. 3)

Warning: Do not make repairs to the test set during operation or when it is connected to the power source; shut down the equipment (par. 17). High voltages are present in the equipment.

a. Replacement of INCORRECT POLARITY, INPUT VOLTAGE, or OUTPUT VOLTAGE Indicator Lamp.

(1) Unscrew the lens from the indicator lamp assembly.

(2) Remove the defective lamp by unscrewing it from the base.

(3) Screw the replacement lamp into the base.

(4) Screw the lens into the indicator lamp assembly.

b. Replacement of DC OVERLOAD Indicator Lamp.

(1) Unscrew the lens from the indicator lamp assembly.

(2) Press in on the lamp, turn it counterclockwise, and pull it out of the base.

(3) Insert the replacement lamp in the base, push the lamp in, and turn it clockwise to lock.

(4) Screw the lens onto the indicator lamp assembly.

CHAPTER 5

SHIPMENT, LIMITED STORAGE, AND DEMOLITION TO PREVENT ENEMY USE

Section I. SHIPMENT AND LIMITED STORAGE

25. Disassembly of Equipment

To prepare the test set for shipment or storage, proceed as follows:

a. Remove the input cable from the power source and teat set. Disconnect the output 'cable and ground cable from the test set and from the teat specimen.

b. Coil the cables individually and tie them with twine. Secure the cables to the lifting handles of the tester.

c. Place and fasten the cover on the tester.

d. Remove the vent plug and replace it with the pipe plug.

26. Repacking for Shipment

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 circumstances permit. The information concerning the original packing (par. 8) will also be helpful.

a. Material Requirements. The following materials are required for packing insulation breakdown test set AN/GSM-6. For stock numbers of materials, consult SB-100 (Preservation, Packaging and Packing Materials, Supplies, and Equipment used in the Army).

Material	Quantity
Metal strapping	18 ft
Gummed tape	75 ft
Cotton twine	20 ft
Cushioning material (filler).	9 lb
Corrugated cardboard	40 ft

b. Packaging. Package the items of the test set as outlined below.

(1) Tape desiccant bags and desiccant indicator, if available, on the cover of the tester with gummed tape, Cushion the tester on all surfaces with cushioning material. Wrap the cushioned unit with corrugated cardboard and bind with gummed tape.

(2) Wind each cable assembly into a coil of convenient dimensions and tie with cotton twine. Wrap each cable with corrugated cardboard and bind with gummed tape.

c. Packing.

(1) Place the tester in a suitable wooden case; then place the wrapped cables in available open space.

(2) Stuff cushioning material around the wrapped cables and tester to prevent shifting during shipment.

(3) Nail all sides of the wooden case and secure the metal straps.

Section II. DEMOLITION OF MATERIEL TO PREVENT ENEMY USE

27. Authority for Demolition

Demolition of the equipment will be accomplished only upon the order of the commander. The destruction procedures (par. 28) will be used to prevent further use of the equipment.

28. Methods of Destruction

Any or all of the methods of destruction given below may be used. The time available is the major factor when determining destruction methods.

a. Smash. Smash the controls knobs, meters, switches, control unit, and rectifier unit; use sledges, axes, pickaxes, hammers, crowbars, or other heavy tools.

b. Cut. Cut the cables and the internal wiring; use handaxes, axes, or machetes.

c. Burn. Burn the instruction manuals and wiring; use gasoline, kerosene, oil, flamethrowers, or incendiary grenades.

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

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

e. Dispose. Bury or scatter the destroyed parts or throw them into nearby waterways.

APPENDIX

MAINTENANCE ALLOCATION CHART

Section I. MAINTENANCE ALLOCATION

1. General

The maintenance allocation portion of this manual assigns maintenance functions and repair operations to be performed by the lowest appropriate maintenance echelon. It also specifies the facilities authorized at each echelon to perform the assigned maintenance function.

2. Columns in Allocation of Maintenance Functions

a. Part or component. Only the nomenclature or standard item name is annotated in this column. Additional descriptive data are included only where clarification is necessary to identify the part. Components and parts comprising a major end item are listed alphabetically. Assemblies and subassemblies are in alphabetical sequence with their components listed alphabetically immediately below the assembly listing.

b. Maintenance function. This column indicates the various maintenance functions allocated to the echelon capable of performing the operation.

(1) *Service.* To clean, to preserve, and to replenish fuel and lubricants.

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

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

(4) *Replace*. To substitute serviceable assemblies, subassemblies, and parts for unserviceable components.

(5) *Repair*. To restore to a serviceable condition by replacing unserviceable parts or by any other action utilizing tools, equipment, and skills available, to include welding, grinding, riveting, straightening, adjusting, etc.

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

(7) *Rebuild*. To restore to a condition comparable to new by disassembling the item to determine the condition of its component parts and reassembling it using serviceable, rebuilt, or new assemblies, subassemblies, and parts.

c. 1st, 2d, 3d, 4th, 5th echelon. The symbol "X" indicates that the echelon designated and higher echelons are responsible for the indicated maintenance function, Repair parts may not necessarily be stocked at the echelon indicated; refer to the applicable repair parts and special tools list.

d. Tools required. The numbers in this column indicate the tool and test equipments required to perform the related maintenance function. These numbers are identified under Allocation of Tools for Maintenance Functions.

e. Remarks. This column contains any notations necessary to clarify the data in the preceding columns.

3. Columns in Allocation of Tools for Maintenance Functions

a. Tools Required for Maintenance Functions. This column lists tools and test equipments required to perform the maintenance functions.

b. 1st, 2d, 3d, 4th, 5th echelon. The dagger (†) symbol indicates the echelon to which the tool or test equipment is allocated.

Note. First and second echelon (cols. 2 and 3) are authorized the use of tools and test equipment normally available to the repairman-user because of his assigned mission.

(3) Tool code. The numbers in this column are code numbers used in the chart to refer to the indicated item.

(4) Remarks. (Not used.)

4. Maintenance by Using Organizations

When this equipment is used by signal service organizations organic to theater headquarter or communication 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. ALLOCATION OF MAINTENANCE FUNCTIONS

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH	(4) 2ND ECH	(5) 3RD ECH	(6) 4TH ECH	(7) 5TH ECH	(8) TOOLS REQUIRED	(9) REMARKS
TEST SET, INSULATION BREAKDOWN AN/GSM-6	service	X						
	inspect	X						Visual only
	test				X		1	
	repair				X		2	
	calibrate					X		
	rebuild					X	2	
CABLE ASSEMBLY, POWER, ELECTRICAL	repair		X					
CABLE, POWER, ELECTRICAL	replace		X					
CONNECTOR	replace		X					
CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL	repair			X				
CABLE, SPECIAL PURPOSE, ELECTRICAL	replace			X				
CLAMP, C	replace		X					
CLAMP, LOOP	replace			X				Available in Maintenance Equipment ME-9
TERMINAL, LUG	replace			X				Available in Maintenance Equipment ME-9
TEST SET, INSULATION BREAKDOWN	repair				X			
	rebuild					X		
AMMETER	replace				X			
	repair				X			
BOARD, ELECTRON TUBE MOUNTING	replace					X		Fabricate if required
BRACKETS (Component Mounting)	replace					X		Fabricate if required
BRUSH, ELECTRICAL CONTACT (Variable Transformer)	replace				X			
CABLE, RADIO FREQUENCY	replace				X			
CAPACITORS	replace				X			
CARRYING HANDLE ASSEMBLY (Test Set Case)	replace					X		Fabricate if required
CASE, TEST SET	replace					X		Obtain from salvage if required
CATCH, LUGGAGE	replace				X			
CHAIN ASSEMBLY, SINGLE LEG	replace		X					
CIRCUIT BREAKER	replace			X				
CLIP, ELECTRICAL (Tube Plate)	replace				X			
CONNECTORS	replace			X				
CONTACT AND SOCKET SUB-ASSEMBLY	repair			X				
CONTACT, ELECTRICAL	replace			X				
LAMPHOLDER	replace			X				
SCREWS, MACHINE (Common Hardware)	replace			X				Available in Maintenance Equipment MF-9 and Hardware Kit MK-41/U

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH	(4) 2ND ECH	(5) 3RD ECH	(6) 4TH ECH	(7) 5TH ECH	(8) TOOLS REQUIRED	(9) REMARKS
AN/GSM-6 (continued)								
SUPPORT, ELECTRODE	replace				X			Fabricate if required
TERMINAL BOARD	replace				X			Fabricate if required
LAMPS	replace	X						
COVER, TEST SET	replace					X		Fabricate if required.
FASTENER ASSEMBLY (Camloc type)	repair		X					
GROMMET, METALLIC (Camloc Fastener)	replace			X				
RECEPTACLE, FASTENER (Camloc type)	replace		X					
RING, RETAINING (Camloc Fastener)	replace			X				
STUD ASSEMBLY (Camloc Fastener)	replace			X				
RACK, ELECTRICAL EQUIPMENT	replace					X		Fabricate if required
GASKET (Test Set Case)	replace				X			
GUARD, STRAP (Polarity)	replace				X			Fabricate if required
INSULATORS (High Voltage)	replace				X			
KNOBS	replace		X					
LAMP, INCANDESCENT	replace	X						
LIGHTS, INDICATOR	repair			X				
LENS, INDICATOR LIGHT	replace		X					
LIGHTS, INDICATOR (Less Lens)	replace			X				
MOUNTING ASSEMBLY (High Voltage Insulator)	replace				X			
NUTS, MACHINE	replace				X			
NUTS, MACHINE (Common Hardware)	replace			X				Available in Maintenance Equipment MF-9 and Hardware Kit MK 41/U
NUTS, SPHERICAL (High Voltage Insulator)	replace		X					
PANELS, BLANK (Component Mounting)	replace					X		Fabricate if required
PANEL, TEST, ELECTRICAL	replace					X		Obtain from salvage if required

(1) PART OR COMPONENT	(2) MAINTENANCE FUNCTION	(3) 1ST ECH	(4) 2ND ECH	(5) 3RD ECH	(6) 4TH ECH	(7) 5TH ECH	(8) TOOLS REQUIRED	(9) REMARKS
AN/GSM-6 (continued)								
PLATE, ELECTRICAL SHIELD (Plexiglass)	replace		X					
RELAY	replace				X			
RESISTORS	replace				X			
RETAINERS, CAPACITOR	replace				X			
RETAINERS, ELECTRON TUBE	replace				X			
SCREWS, MACHINE	replace				X			
SCREWS, MACHINE (Common Hardware)	replace			X				Available in Maintenance Equipment ME-9 and Hardware Kit MK-41/U
SOCKETS, ELECTRON TUBE	replace				X			
SPACERS, SLEEVE	replace					X		Fabricate if required
SPRING (Guard Circuit)	replace				X			
SPRING, LEAF (Shorting Spring)	replace				X			Fabricate if required
SWITCH, PUSH	replace			X				
SWITCHES, TOGGLE	replace				X			
SWITCHES, ROTARY	repair				X			
TERMINAL BOARDS	replace				X			Fabricate if required
TRANSFORMERS	replace				X			
TUBES, ELECTRON	replace				X			
VOLTMETER	replace repair				X X			
WASHERS, FLAT	replace				X			
WASHERS, FLAT (Common Hardware)	replace			X				Available in Maintenance Equipment ME-9 and Hardware Kit MK-41/U
WASHERS, LOCK (Common Hardware)	replace			X				Available in Maintenance Equipment ME-9 and Hardware Kit MK-41/U

Section III. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS

(1) TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	(2) 1ST ECH	(3) 2ND ECH	(4) 3RD ECH	(5) 4TH ECH	(6) 5TH ECH	(7) TOOL CODE	(8) REMARKS
AN/GSM-6							
MULTIMETER AN/URM-105				↑		1	
TOOL EQUIPMENT TK-21/G				↑		2	

[AC 413.44 (31 Mar 59)]

By Order of Wilber M. Brucker, Secretary of the Army:

MAXWELL D. TAYLOR,
General, United States Army,
Chief of Staff.

Official:

R. V. LEE,
Major General, United States Army,
The Adjutant General.

Distribution:

Active Army:

ASA (2)
CNGB (1)
Tech Stf, DA (1) except CSigO (30)
Tech Stf Bd (1)
USA Arty Bd (1)
USA Armor Bd (1)
USA Inf Bd (1)
USA AD Bd (1)
USA Abn & Elct Bd (1)
USA Avn Bd (1)
USA Armor Bd Test Sec (1)
USA AD Bd Test Sec (1)
USA Arctic Test Bd (1)
USCONARC (5)
US ARADCOM (2)
US ARADCOM Rgn (2)
OS Maj Cored (5)
OS Base Cored (5)
Log Cored (5)
MDW (1)
Armies (5) except First US Army (7)
Corps (2)
Div (2)
USATC (2)
Svc Colleges (5)
Br Svc Sch (5) except USASCS (25)
Gen Dep (2)
Sig See, Gen Dep (12)
Sig Dep (19)
Army Pictorial Cen (2)
Engr Maint Cen (1)
USA Ord Msl Cored (3)
Fld Cored, AFSWP (5)
TASSA (15)
Mid-Western Rgn Ofc (TASSA) (1)
USA Sig Pub Agcy (8)
USA Sig Engr Agcy (1)
USA Comm Agcy (2)
USA Sig Eqp Spt Agcy (2)
USA Sig Msl Spt Agcy (13)
WRAMC (1)
AFIP (1)
AMS (1)
Ports of Emb (OS) (2)
Trans Terminal Cored (1)
Army Terminals (1)
OS Sup Agcy (2)
Yuma Test Sta (2)
USA Elct PG (1)
Sig Lab (5)
Sig Fld Maint Shops (3)
Mil Dist (1)
USA Corps (Res) (1)
Sector Cored, USA Corps (Res) (1)
JBUSMC (2)
Units organized under following TOE's:
11-7 (2)
11-16 (2)
11-57 (2)
11-500 (AA-AE) (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.

*U.S. GOVERNMENT PRINITING OFFICE: 1994 - 300-421/82685