DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR AND ORGANIZATIONAL

MAINTENANCE MANUAL

TEST SET, RECEIVER, RADIO

AN/ARM-71

This reprint includes all changes in effect at the time of publication; changes 1 and 2.

HEADQUARTERS, DEPARTMENT OF THE ARMY'

22 JUNE 1964

Changes in force: C 1 and C 2

CHANGE
NO. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 31 July 1974

Operator and Organizational Maintenance Manual
TEST SET, RECEIVER, RADIO AN/ARM-71

TM 11-6625-583-12, 22 June 1964, is changed as follows:

Page 3, paragraph 2. Delete paragraph 2 and substitute:

2. Indexes of Publications

a. DA Pam 310-4. 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.

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

Paragraph 3. Delete paragraph 3 and substitute:

3. Forms and Records

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

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700-58/NAVSUP PUB 378/AFR 71-4/MCO P4030.29, and DSAR 4145.8.

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

Paragraph 3.1. Add paragraph 3.1.

3.1. Reporting of Errors

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

Page 4, paragraph 6. Delete the second sentence in the note.

After paragraph 6 add:

6.1. Items Comprising an Operable Equipment

FSN	*Qty*	*Nomenclature, part No., and mfr code*	*Fig. No.*
6625-965-1341		Test Set, Receiver, Radio AN/ARM-71 consisting of: **NOTE** The part number is followed by the applicable 5-digit Federal supply code for manufacturers (FSCM) identified in SB 708-42 and used to identify manufacturer, distributor, or Government agency, etc.	1
6625-965-1342	1	Cover, Test Set, Receiver, Radio CW-744/ARM-71: Fiberglass; natural (gray) dim. 18-3/8 in. lg x 11-3/4 in. w x 5-1/2 in. h; two hinges cables and technical manuals stored in cover; 702-027, 82050	1
6625-985-7861	1	Cable Assembly, Power, Electrical CX-9727/ARM-71 (5 ft): Cable consisting of 2 conductor 18 AWG, stranded, rubber	1

FSN	Qty	Nomenclature, part No., and mfr code	Fig. No.
		insulation 5 ft lg first end, Connector Plug MS3106A-10SL-38, on second end 1 battery clip Mueller #24X and red insulator; 1 battery clip Mueller 024C and black clip Mueller #24C and black insulator; 702-022; P2050. (Stored in equip) CW-744/ARM-71	
6995-985-7860	2	Cable Assembly, Radio Frequency CG-2950/U (5 ft): 50 ohms nominal impedance, type ident RG-58A/U with 1 ea Connector Plug UG-88E/U on first end, 1 ea Connector Plug MX-1684/U; 702-023: 82050. (Stored in equip) CW-744/ARM-71	1
6625-985-7862	1	Cable Assembly, Special Purpose, Electrical CX-9725/ ARM-71: Cable consisting of 22 conductor, 22 AWG vinyl covered, 5 ft lg first end consist of 1 ea Connector Plug, Bendix No. PT-06-SE-16-26S (SR); Second end 1 each Connector Plug, Bendix No. PT-06-SE-16-26S (SR) 702-020; 82050. (Stored in equip) CW-744/ARM-71	1
6625-985-7863	1	Cable Assembly, Special Purpose, Electrical CX-9726/ ARM-71: Cable consisting of 22 conductors stranded 22 AWG vinyl; 5 ft lg; terminal fittings first end 1 ea Connector Plug, Bendix No. PT-06-26S (SR) second end 1 ea Connector Plug Bendix No. PT-06-SE-16-26S (SR); 702-021, 82050; (Stored in equip) CW-744/ARM-71	1
6625-073-9354	1	Extender, Module MX-6365/ARM-71: Cable consisting of 8 conductors stranded No. 22 AWG vinyl covered with Cannon Connectors DEM-9S one end DEM-9P and (2) hoods DE5128-1, 702-026, 82050. (Stored in equip) CW-744/ARM-71	1
6625-073-9357	1	Simulator, Receiver, Radio SM-380/ARM-71: Type of test; VSWR aircraft audio circuitry, glidescope and marker beacon indicator, marker panel; oper data; Sig Gen. 332.0 mc, 75.0 mc 1.0 kc. opr power 27.5 volts dc w/o carrying case housed in transit case for shipment. 702-004, 82050	1
6625-073-9355	1	Extender, Module MX-6363/ARM-71: Cable consisting of RG-188/U and 13 conductors, Stranded No. 22 AWG vinyl covered cable 17 in. lg o/a, with Cannon Connectors DD-A-38C2S, one end DD-A-38C2P and two (2) hoods DD-51216-1, 702-024, 82050. (Stored in equip} CW-744/ ARM-71	1
6625-073-9356	1	Extender, Module MX-6364/ARM-71: Cable consisting of RG-188/U and 5 conductors stranded No. 22 AWG vinyl covered cable 17 in. lg o/a, with Cannon Connectors DB-C21C1S and DBL-21C1P and 2 hoods DB-51212-1, 82050. (Stored in equip) CW-744/ARM-71	1
6625-965-1340	1	Test Set, Receiver, Radio TS-2077/ARM-71: Type of test; receiver current consumption, glidescope freq. flag current, deviation current marker beacon, marker beacon aural; opr. power 27.5 volts dc; housed in fiberglass transit case; 702-628, 82050	1

Page 9, paragraph 12, subparagraph a. Delete "b" from the second sentence.

Subparagraph b. Delete the second sentence and substitute: If no packing list accompanies the equipment, use the items comprising an operable equipment chart (para. 6.1) and report any overages or shortages on DD Form 6.

Page 33, appendix III. Delete appendix III.

By Order of the Secretary of the Army:

CREIGHTON W. ABRAMS
General, United States Army
Chief of Staff

Official:

VERNE L. BOWERS
Major General, United States Army
The Adjutant General

Distribution:
To be distributed in accordance with DA Form 12-36A (qty rqr block No. 788), Organizational maintenance requirements for avionics literature, AN/ARM-71.

CHANGE
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., 7 April 1965

Operator and Organizational Maintenance Manual

TEST SET, RECEIVER RADIO AN/ARM-71

TM 11-6625-583-12, 22 June 1964, is changed as follows:

Page 3, paragraph 3c, line 15. Change AMSEL-MR-MP-P, to AMSEL-MR-(NMP)-MA.

Page 28, APPENDIX I. Add the following references:

SB 11-573	Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment.
TB SIG 364	Field Instructions for Painting and Preserving Electronics Command Equipments.

Page 33, APPENDIX III. Delete and substitute.

APPENDIX III

BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

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.

2. Columns

Columns are as follows:

a. Federal stock number. This column lists the 11-digit Federal stock number.

b. Designation by model. Not 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. Expandability. 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 "Figure No." column lists the figure and reference numbers used for identification of the items in the illustration.

SECTION II. FUNCTIONAL PARTS LIST

FEDERAL STOCK NUMBER	DESIGNATION BY MODEL	DESCRIPTION	UNITS OUFE	EXP	AUTHORIZED QTY	ILLUSTRATIONS FIGURE NO.	ILLUSTRATIONS ITEM NO.
6625-965-1341		TEST SET, RECEIVER, RADIO AN/ARM-71: Provides aircraft with simulated instrument landing systems (ILS) reception and normal conditions of aircraft wiring 28 volts dc, test R-844/ARM-58, Babcock No. 702-001.		NX			
		ITEMS COMPRISING AN OPERABLE EQUIPMENT					
Ord thru AGC		TECHNICAL MANUAL TM 11-6625-583-12				2	
6625-965-1342		COVER, TEST SET, RECEIVER, RADIO CW-744/ARM-71: Fiberglass: natural (gray) dim. 18 3/8 in. lg x 11-3/4 in. w x 5-1/2 in h; two hinges cables and technical manuals stored in cover; Mfr Babcock #702-027		1		1	
6625-985-7861		CABLE ASSEMBLY, POWER, ELECTRICAL CX9727/ARM-71 (5 ft): Cable consisting of 2 conductor 18 AWG, stranded, rubber insulation 5 ft lg. first and Connector Plug MS3106A-100L-38, on second and 1 battery slip Mueller #24X and red insulator: 1 battery slip Mueller #24C and black clip Mueller #24C and black insulator; Babcock #702-022. (Stored in equip) CW-744/ARM-71		1		1	
5995-985-7860		CABLE ASSEMBLY, RADIO FREQUENCY CO-2950/U (5 ft): 50 ohms nominal impedance, type ident RG-58A/U with 1 ea Connector Plug UG-88K/U on first end, 1 ea Connector Plug MX-1684/U; Babcock #7020-023, (Stored in equip) CW-744/ARM-71		2		1	
6625-985-7862		CABLE ASSEMBLY, SPECIAL PURPOSE ELECTRICAL CX-9725/ARM-71: Cable consisting of 22 conductor, 22 AWG vinyl covered, 5 ft lg first end consist of 1 ea Connector Plug, Bendix No. PT-06-SE-16-26S (SR); Second end 1 ea Connector Plug, Bendix No. PT 06-SE-16-26S (SR) Babcock #702-021 (Stored in equip) CW-744/ARM-7		1		1	
6625-985-7863		CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-9726/ARM-71: Cable consisting of 22 conductors stranded 22 AWG vinyl; 5 ft. lg; terminal fittings first end 1 ea Connector Plug, Bendix No. PT-06-SE-16-26S (SR) second end 1 ea Connector Plug Bendix No. PT-06-SE-16-26S (SR) Mfr. Babcock #702-021 (Stored in equip) CW-744/ARM-71		1		1	
6625-073-9355		EXTENDER, MODULE MX-6363/ARM-71: Cable consisting of RG-188/U and 13 conductors, Stranded No. 22 AWG vinyl covered cable 17 in. lg o/a, with Cannon Connectors DD-A-28C2S, one end DD-A-38C2P and two (2) hoods DD-51216-1, Babcock #702-024. (Stored in equip) CW-77/ARM-71		1		1	
6625-073-9356		EXTENDER, MODULE MX-6364/ARM-71: Cable consisting of RG-188/U and 5 conductors stranded No. 22 AWG vinyl covered cable 17 in. lg o/a with Canon Connectors DD-021C1S and DBL-21C1P and 2 hoods DB-51212-1, Babcock #702-025, (Stored in equip) CW-744/ARM-71		1		1	
6625-073-9354		EXTENDER, MODULE MX-6365/ARM-71: Cable consisting of 8 conductors stranded No. 22 AWG vinyl covered cable with Cannon Connectors DEM-9S on end DEM-9F other end two (2) hoods DE5128-1, Babcock No. 702-026. (Stored in equip) CW-744/ARM-71		1		1	
6625-073-9357		SIMULATOR, RECEIVER, RADIO SM-380/ARM-71: Type of test; VSWR aircraft audio circuitry, glideslope and marker beacon indicator, marker panel; oper data; sig gen. 332.0 mc, 75.0 mc 1.0 kc. opr power 27.5 volts dc w/o carrying case housed in transit case for shipment. Babcock #702-004.		1		1	
6625-965-1340		TEST SET TS-2077/ARM-71: Type of test; receiver current consumption, glidescope freq, flag current, deviation current marker beacon, marker beacon aural; opr. power 27.5 volts dc; housed in fiberglass transit case; Babcock #702-628		1		1	
		RUNNING SPARE ITEMS					
6240-155-7836		LAMP, INCANDESCENT: 28 volts, 1 watt GE #327		6		1	

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:

To be distributed in accordance with DA Form 12-36 requirements for operator and crew (Unclas) maintenance literature for the CV-2A aircraft.

Technical Manual
No. 11-6625-583-12

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., 22 June 1964

TEST SET, RECEIVER, RADIO AN/ARM-71

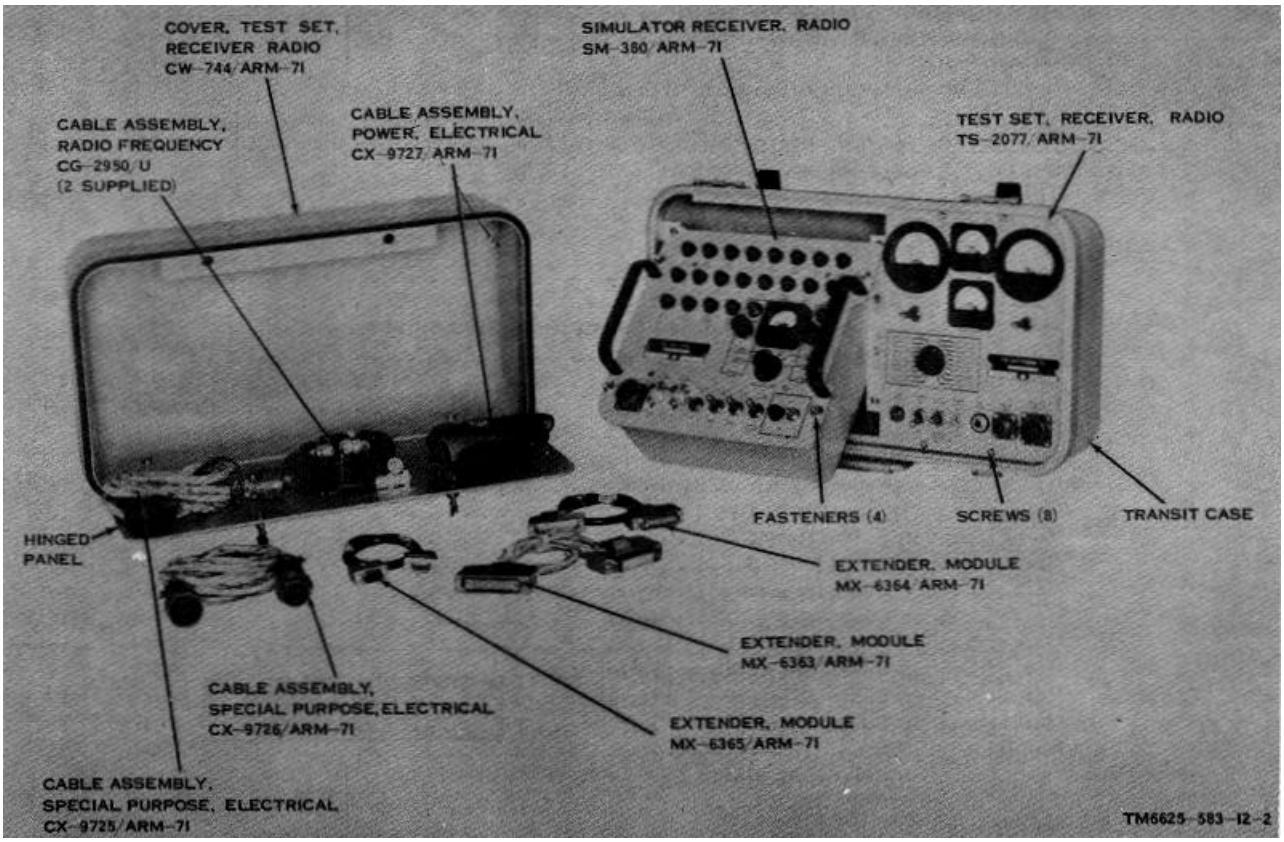

Figure 1. Test Set, Receiver, Radio AN/ARM-71.

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. Scope

This manual describes Test Set, Receiver, Radio AN/ARM-71 (fig. 1) and covers its operation and the operator's and organizational maintenance. The maintenance includes preventive maintenance checks and services, cleaning, preservation, and replacement of indicator lamps.

2. Index of Publications

Refer to the latest issue of DA Pamphlet 310-4 to determine whether there are new editions, changes, or additional publications pertaining to this equipment. Department of the Army Pamphlet 310-4 is an index of current technical manuals, technical bulletins, supply manuals, supply bulletins, lubrication orders, and modification work orders which are 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.

3. 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 Damage or Improper Shipment. Fill out and forward DD Form 6, Report of Damage 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, by the individual user, of errors, omissions, and recommendations for improving this equipment manual is authorized and encouraged. DA Form 2028 will be used for reporting these improvements. This form may be completed by the use of pencil, pen, or typewriter. DA Form 2028 will be completed in triplicate and forwarded by the individual using the manual. The original and one copy will be forwarded to: Commanding General, U. S. Army Electronics Command, ATTN: AMSEL-MR-MP-P, Fort Monmouth, New Jersey, 07703. One information copy will be provided to the individual's immediate supervisor (officer, noncommissioned officer, supervisor, etc).

Section II. DESCRIPTION AND DATA

4. Purpose and Use (fig. 1)

a. Purpose. Test Set, Receiver, Radio AN/ARM-71 includes Test Set, Receiver, Radio TS-2077/ARM-71 and Simulator, Receiver, Radio SM-380/ARM-71, mounted in a single transit case. These units provide simulated signals and metering facilities which are used to test and align Receiver, Radio R-844/ARN-58 (the glide slope and marker beacon receiver portion of Radio Receiving Set AN/ARN-58, T.O.12R5-2ARN58-2).

b. Use. The TS-2077/ARM-71 normally remains mounted in the transit case during operation and is used to troubleshoot and align the R-844/ARN-58 on a test bench. The SM-380/ARM-71 may be removed from the transit case and is used to troubleshoot the R-844/ARN-58 antennas, control panel, course indicator, and cabling in an aircraft. The TS-2077/ARM-71 and the SM-380/ARM-71 can also be connected together with the cables supplied so that a self-checkout procedure can be performed (para 45).

5. Technical Characteristics

a. T S-2077/ARM-71.

Input voltage and current .....27.5 volts dc at 750 milliamperes with full load.

Panel meter:

DEVIATION

CURRENT .....100-0-100 microamperes, 2 percent error at full-scale deflection.

FLAG

CURRENT.....0-500 microamperes, 2 percent error at full-scale deflection.

LINE

VOLTAGE .....0-50 volts direct current, 2 percent error at full-scale deflection.

LINE

CURRENT .....0-1 ampere, 2 percent error at full-scale deflection.

b. SM-380/ARM-71.

Input voltage and current . .....27.5 volts dc at 750 ma with full load.

Outputs:

Glide slope signal .....332 megacycles at 125 milliwatts.

Marker beacon signal .....75 megacycles at 200 milliwatts.

Dc voltage .....27.5 volts dc.

Test meter .....0-25 microamperes, 2 percent error at full-scale deflection.

6. Components of Test Set, Receiver, Radio AN/ARM-71

Note:

This listing is based on the original shipment by the contractor on Contract No. AF 33(657) 10017. For the current official listing of components of individual models, see the basic issue items list, appendix III.

Quantity	Item	Height (in.)	Depth (in.)	Width (in.)	Unit Weight (lb)	Fig. No.
1	Test Set:, Receiver., Radio TS-2077/ARM-71.	5-1/2	11-1/8	9-3/8	8	1
1	Simulator, Receiver, Radio SM-384)/ARM-71.	5-1/2	9-1/8	9-7/8	6.5	1
1	Cable Assembly, Special Purpose, Electrical CX-9725/ARM-7-1. (5'0" lg),	- - - - -	- - - - -	- - - - -	0.6	1
1	Cable Assembly, :Special Purpose, Electrical CX-9726/ARM-71 (5'0" lg).	- - - - -	- - - - -	- - - - -	0.6	1
1	Cable Assembly, Power, Electrical CX-9727/ARM-71 (5'0" lg).	- - - - -	- - - - -	- - - - -	0.5	1
2	Cable Assembly, Radio Frequency CG-2950/U (5'0" lg).	- - - - -	- - - - -	- - - - -	0.2	1
1	Extender, Module MX-6363/ARM-71 (17" lg).	- - - - -	- - - - -	- - - - -	0.3	1
1	Extender, Module MX-6364/ARM-71 (17" lg).	- - - - -	- - - - -	- - - - -	0.1	1
1	Extender, Module MX-6365/ARM-71 (17" lg)	- - - - -	- - - - -	- - - - -	0.1	1
1	Cover, Test Set, Receiver, Radio CW-744/ARM-71.	.5-1/4	10-1/2	18-3/8	5.25	1

7. Common Names

The nomenclature and assigned common names are listed below.

Common name	Nomenclature
Test set	Test Set, Receiver, Radio AN/ARM-71.
Receiver	Receiver, Radio R-844/ ARN-58.
Test panel	Test Set, Receiver, Radio TS-2077/ARM-71.
Receiver simulator	Simulator, Receiver, Radio SM-380/ARM-71.
Cable W1	Cable Assembly, Special Purpose, Electrical CX-9725/ARM-71.
Cable W2	Cable Assembly, Special Purpose, Electrical CX-9726/ARM-71.
Cable W3	Cable Assembly, Power, Electrical CX-9727/ ARM-71.
Cable W4	Cable Assembly, Radio Frequency CG-2950-U.
Module extender W5	Extender, Module MX-6363/ ARM-71.
Module extender W6	Extender, Module MX-6364/ ARM-71.
Module extender W7	Extender, Module MX-6365/ ARM-71.
Transit case cover	Cover, Test Set, Receiver, Radio CW-744/ARM-71.

8. Description of Test Panel and Receiver Simulator (fig. 1)

a. General. The test set consists of the test panel, the receiver simulator, the transit case and cover, four cables, and three module extenders. The test panel and the receiver simulator are mounted in the lightweight transit case. The units are not interconnected in any way, but are used as separate pieces of test equipment.

b. Test Panel. The test panel is attached to the transit case by eight screws, and remains mounted during use. Connectors are provided on the front panel for connection to the receiver power supply and to the receiver being tested. Four meters, indicator lights, and associated switches and controls are also located on the front panel (fig. 4) to facilitate operation.

c. Receiver Simulator. The receiver simulator is secured in the transit case by four press-to-release fasteners. Two handles, one on each end of the panel, allow easy removal of the unit from the transit case. The front panel (fig. 5) contains one meter, indicator lights, connectors, switches, and controls for operation.

9. Description of Minor Components

The minor components of the test set include the transit case and cover, five cables, and three module extenders.

a. Transit Case and Cover (fig. 1). The molded fiberglass transit case is a lightweight, rectangular-shaped, waterproof container, sealed by a rubber gasket which makes the interior moisture-proof. The transit case cover, hinged at the back, has a rubber seal installed in the extruded aluminum edge molding. Two twist-lock clamps (fig. 3) on the front of the transit case cover hold the transit case closed. The hinges are separable, which allows the cover to be removed. A pressure-relief valve (fig. 3) equalizes inside to outside pressure. A hinged panel (fig. 1) on the inside of the transit case cover is opened and closed by two quick-disconnect fasteners. The hinged panel provides storage space for the cables and module extenders. A spring-loaded handle is mounted on the latch side of the case to facilitate carrying.

b. Cables and Module Extenders (fig. 2). Five cables (W1 through W4) and three module extenders (W5, W6, and W7) are provided with the AN/ARM-71. The cables and module extenders are banded with the "W" numbers.

(1) *Cable W1.* Twenty-two-conductor vinyl-covered cable, 5 feet long, with a Bendix Scintilla PT06SE (SR)-16-26S connector on each end.

(2) *Cable W2.* Twenty-two-conductor vinyl-covered cable, 5 feet long, with a Bendix Scintilla PT01SE (SR)-16-26P connector on one end and a Bendix Scintilla PT06SE (SR)16-26S connector on the other end.

(3) *Cable W3.* Two-conductor rubber covered cable, 5 feet long, with an MS3106E 10SL-3S connector on one end and two battery clips on the other end.

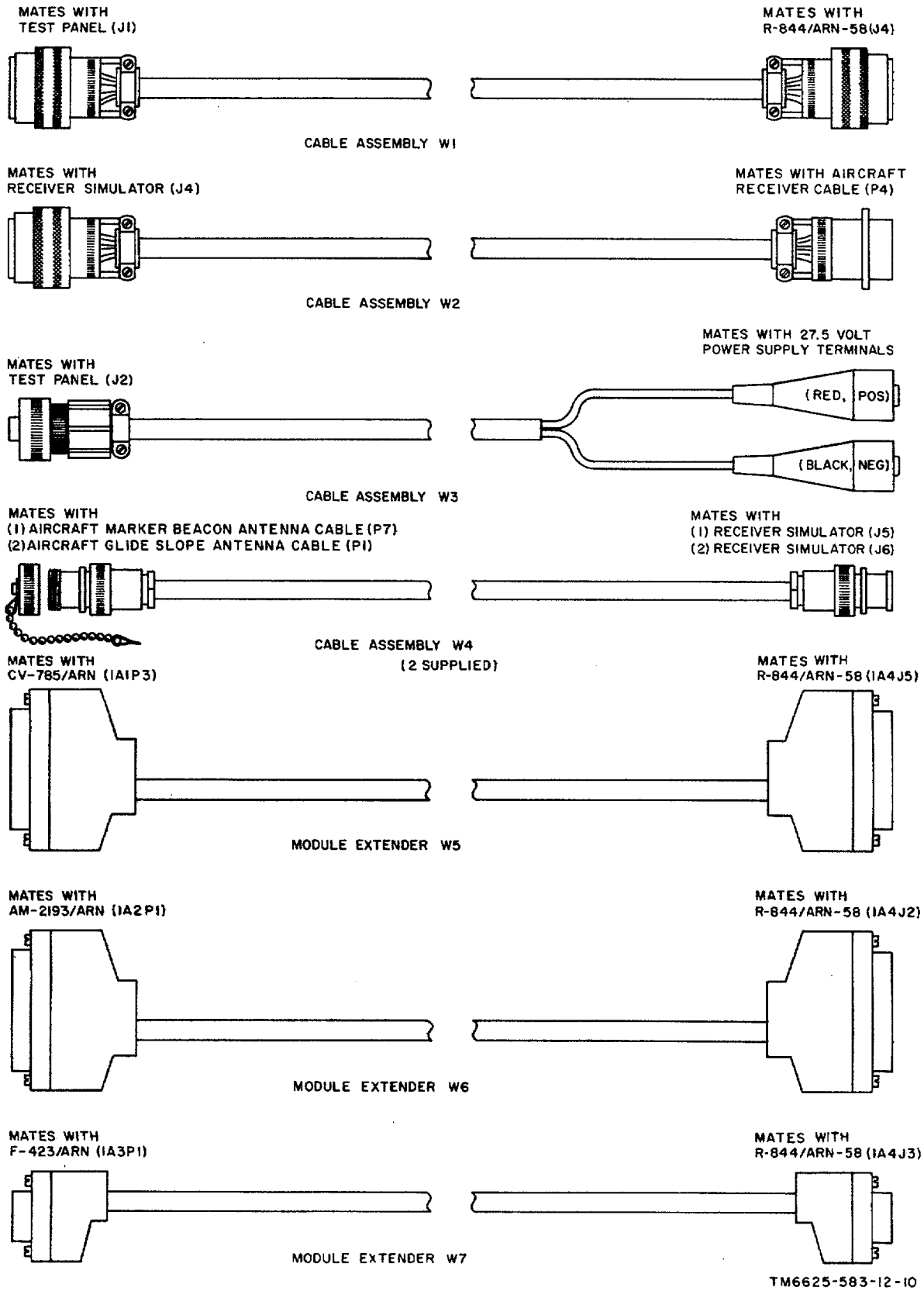

Figure 2. Cables W1 through W4, and module extenders W5, W6, and W7.

(4) *Cable W4 (two supplied).* Single conductor Radio Frequency Cable, RG-58A/U 5 feet long, with Radio Frequency Plug UG-88C/U on one end, and Elbow, Waveguide UG-898/U with Connector Cover CW-123A/U on the other end.

(5) *Module extender W5*. Fifteen-conductor vinyl-covered cable, 17 inches long, with a Cannon DD-A38C2P connector on one end and a Cannon DD-A38C2S connector on the other end.

(6) *Module extender W6.* Five-conductor vinyl-covered cable, 17 inches long, with a Cannon DBM-21W1P connector on one end and a Cannon DBM-21W1S connector on the other end.

(7) *Module extender W7.* Eight-conductor vinyl-covered cable, 17 inches long, with a Cannon DEM-9P connector on one end and a Cannon DEM-9S connector on the other end.

10. Additional Equipment Required

The following equipment is not supplied as part of the test set, but is needed for use with it during bench testing of the R-844/ARN-58.

a. 27.5- Volt Dc Power Supply. A 27.5-volt direct-current (dc) power supply is required to supply power.

b. Test Set, Glide Slope AN/GPM-4. The AN/GRM-4 (T.O. 33A1-8-3-1) (or equivalent) is required to provide standard glide slope signals.

c. Generator, Signal AN/USM-44. The AN/USM-44 is required to provide 75-megacycle (mc) marker beacon signals.

d. Fixed Attenuators. Two 6-decibel (db), 50-ohm fixed attenuators are required to isolate the R-844/ARN-58 from the AN/GRM-4 and the AN/USM-44.

e. Voltmeter, Electronic TS-505A/U and Voltmeter, Electronic ME-30C/U. This equipment is required to measure the output voltages of the R-844/ARN-58.

f. Oscillator, Audio TS-382F/U. The TS-382F/U is required to supply an audio signal to modulate the AN/USM-44.

g. Frequency Meter AN/USM-26. The AN/USM-26, tog e the r with Converter, Frequency Electronic CV-394/USA-5 and Transfer Oscillator AN/USM-144 to extend the range of the AN/USM-26, is required to measure frequencies during test procedures.

h. Headset. An electrical headset is required to obtain aural signals from the test panel.

i. Antenna Termination. A 50-ohm antenna termination (Federal stock No. 5985623-7219) is required as a load when checking the standing wave ratio (voltage) (swr) measuring capabilities of the receiver simulator.

j. Two 1,500-Ohm, 1/4-Watt Resistors. The resistors are used as loads during receiver alignment.

CHAPTER 2

OPERATION

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

11. Unpacking

a. Packaging Data. All components of the AN/ARM-71 are contained within the transit case. When packed for shipment, the AN/ARM-71 is placed within a corrugated carton and protected by soft filler material. The size of the shipping carton is 20 by 12-1/2 by 12-1/2 inches; its volume is 1.8 cubic feet, and, when ready for shipment, it weighs 30 pounds. A typical shipping carton and its contents are shown in figure 3.

b. Removing Contents.

(1) Open the corrugated carton.

(2) Remove the filler material from around the test set.

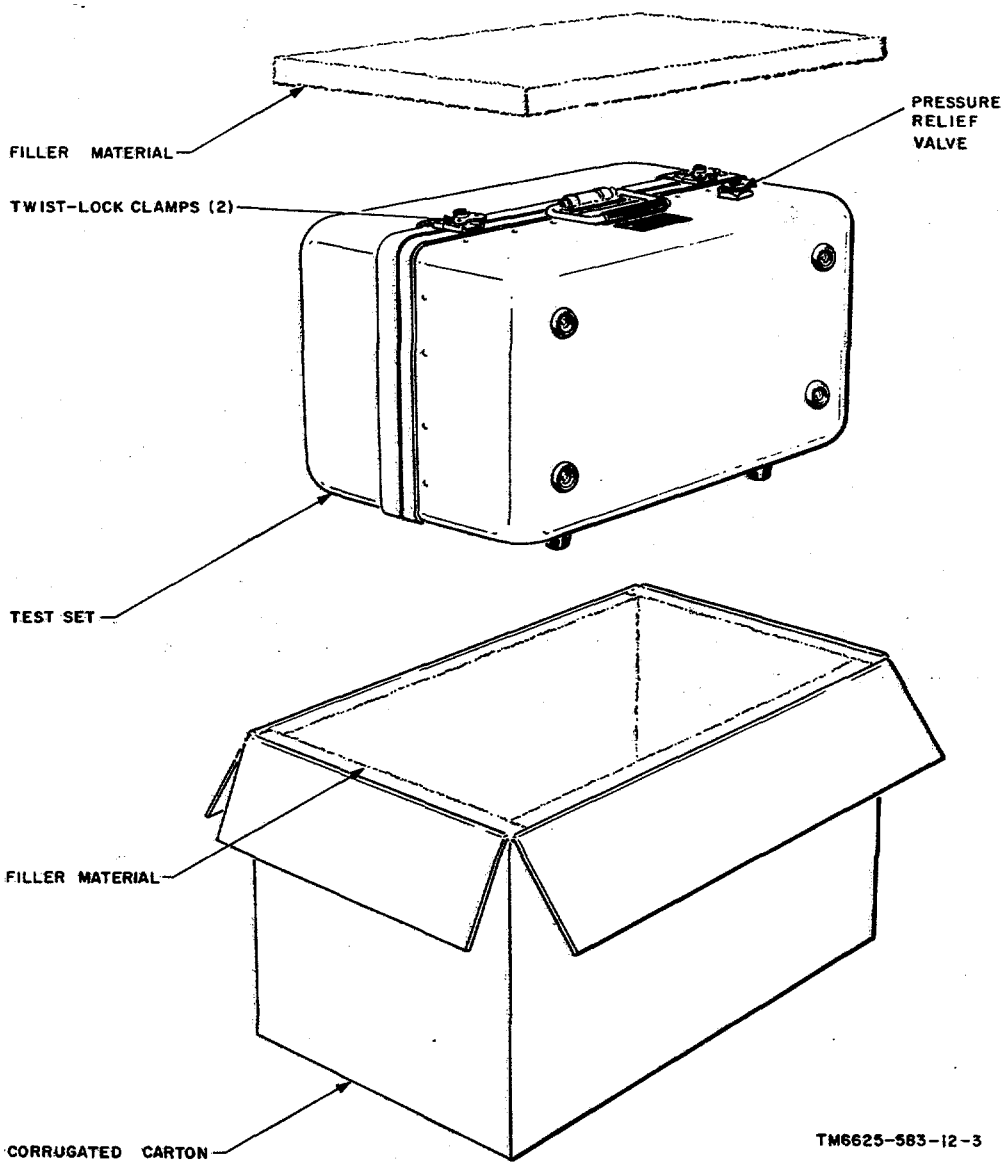

Figure 3. Typical packaging.

(3) Lift the test set from the corrugated carton.

(4) Depress the pressure-relief valve on the front of the transit case to equalize the air pressure.

(5) Unscrew and unfasten the transit case twistlock clamps, and open the transit case cover.

(6) Loosen the two quick-disconnect fasteners that hold the hinged panel to the transit case cover.

(7) As required, remove the cables and module extenders stored between the hinged panel and the transit case cover.

12. Checking Unpacked Equipment

a. Inspect the equipment for damage during shipment. If the equipment has been damaged, refer to paragraph 3*b.*

b. Check the equipment against the packing list. If no packing list accompanies the equipment, use the basic issue item list (appx III) and report any overages or shortages on DD Form 6 (para. 3*b*).

c. If the equipment has been used or reconditioned, see whether it has been changed by a modification work order (MWO); if it has been modified, an MWO number will appear on the front panel, near the nomenclature plate. Check to see whether the MWO number and appropriate notations concerning the modification have been annotated in this manual.

Note: The current MWO's applicable to the equipment are listed in DA Pamphlet 310-4.

Section II. OPERATOR'S CONTROLS AND INDICATORS

13. Test Panel

(fig. 4)

The following chart lists the test panel indicators, switches, jacks, and connectors and their functions.

Indicator, switch, jack, or connector	Function
LINE VOLTAGE meter.	Indicates amount of voltage applied to test panel and receiver under test when POWER circuit breaker is set to ON.
LINE CURRENT meter.	Indicates amount of current being drawn by test panel and receiver being tested.
FLAG CURRENT meter.	Indicates amount of flag current produced by receiver being tested.
FLAG CURRENT switch.	At X1, allows meter to indicate actual amount of flag current. At X2, meter indicates one-half of flag current value.
DEVIATION CURRENT meter.	Indicates amount of deviation current produced by receiver being tested.
DEVIATION CURRENT switch.	At X1, allows meter to indicate actual amount of deviation current. At X2, meter indicates one-half of deviation current.
FREQUENCY SELECTOR switch (20-position rotary switch).	Selects one of the standard glide slope frequencies and its corresponding standard localizer frequency (not used with R-844/ARN-58) for Indicator, switch, jack, or connector Function checkout of crystals in the receiver being tested.
MB LIGHT indicator light, amber.	Lights when marker beacon signal in excess of threshold is applied to test panel from receiver being tested.
MB SENS switch	At HI, selects high, and at LOW, selects low marker beacon sensitivity of receiver being tested.
GS switch (3-position toggle switch).	Controls application of power to glide slope receiver. *Switch pos* — *Action* ON(28V) (up) — Applies 27.5 volts dc to pin Y of connector J1. (For receivers used with Control Panel C-436A/ARN-30E.) OFF (center) — No power is applied to receiver under test. ON(GRD) (down). — Applies ground to pin Y of connector J1. (For receivers using Control Panel C-1464/ARN.)
POWER circuit breaker.	Turns test panel on when set to ON and provides thermal

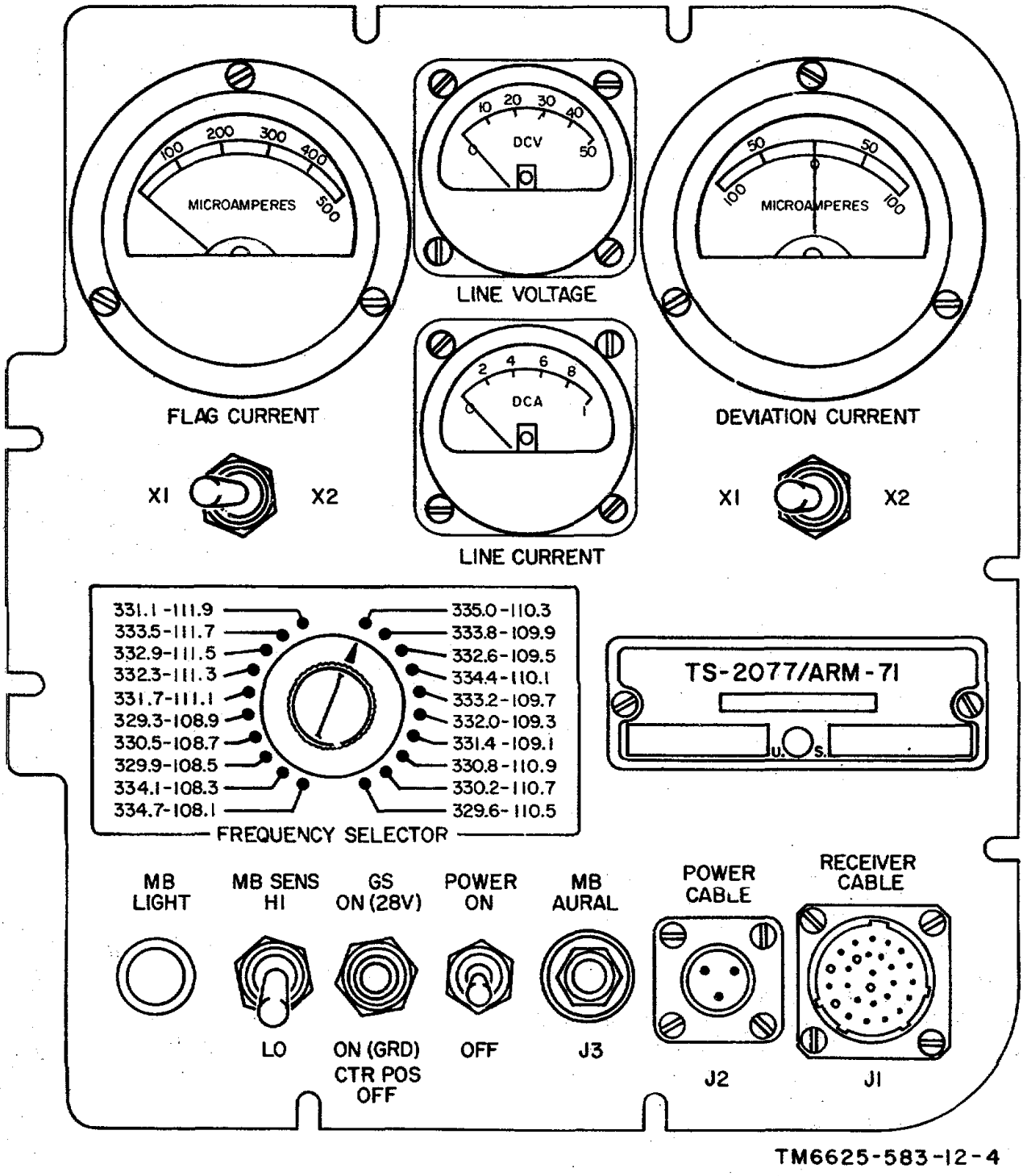

Figure 4. Test panel controls, indicators, and connectors.

Indicator, switch, jack, or connector	Function
	overload protection. Turns off power when set to OFF.
MB AURAL jack J3.	Provides headphone connection for detection of marker beacon aural signal.
POWER CABLE connector J2.	Provides for electrical connection between power source and test panel.
RECEIVER CABLE connector J1.	Provides for electrical connection between test panel and receiver being tested.

14. Receiver Simulator

(fig. 5)

The following chart lists the receiver simulator indicators, switches, jacks, and connectors, and their functions.

Control, indicator, switch, or connector	Function
Indicator lights, red (20). *Note*: Localizer frequency (upper number, not used with R-844/ARN-58) and glide slope frequency (lower number) are panel marked under each light.	Lamp lights when frequency corresponding to panel marking below lamp is selected on aircraft control panel being tested.
HI SENS (MARKER BEACON) indicator light, amber.	Lights when marker beacon sensitivity switch on aircraft control panel being tested is in high-sensitivity position.
Marker beacon voltage swr calibration control.	Adjusts current through test meter to provide reference indication for marker beacon antenna swr measurement.
ON (GLIDE SLOPE) indicator light.	Lights when glide slope receiver switch on aircraft control panel being tested is turned on.
Glide slope voltage swr calibration control.	Adjusts current through test meter to provide reference indication, for glide slope antenna swr measurement.
TEST SELECTOR switch (6-position rotary switch).	Selects operating and signal voltages to be measured by test meter. *Switch pos* — *Function* VSWR READ (MARKER BEACON). — Value of marker beacon swr is measured by test meter. VSWR CALIBRATE (MARKER BEACON). — Value of marker beacon swr reference signal is measured by test meter. OFF - - - - - - — Turns off swr function of receiver simulator. 27. 5V - - - - - — Value of receiver simulator voltage source is measured by test meter. VSWR CALIBRATE (GLIDE SLOPE). — Value of glide slope swr reference signal is measured by test meter. VSWR READ (GLIDE SLOPE). — Value of glide slope swr is measured by test meter.
Test meter - - - -	Indicates values of various signals selected by TEST SELECTOR switch.
AIRCRAFT CABLE connector J4.	Provides for electrical connection between receiver simulator and aircraft cable normally connected to receiver under test.
GS ANTENNA connector J6.	Provides for electrical connection for receiver simulator to glide slope antenna of receiver being tested.
MB LIGHT switch	At ON, applies 27. 5 volts dc power to aircraft marker beacon light and 1-kc signal to headsets in aircraft.
GS FLAG switch (3-position toggle switch).	At SHOW (up), no signal or limited signal is applied to flag indicator of aircraft glide slope indicator being tested. At MASK, (down), applies simulated reliable glide slope signal to flag indicator. Center position is off.
GS DEV switch (3-position toggle switch).	At UP, applies standard off-course signal to cause aircraft glide slope indicator being tested to give an above-glide-slope (down) indication. At DOWN, applies standard off-course signal to cause aircraft glide slope indicator being tested to give a below-glide-slope (up) indication. Center position is off.

Control, indicator, switch, or connector	Function
GS switch (3-position toggle switch).	At ON(28V) (up), 27.5 volts do is applied to relay K2 in receiver simulator to activate ON (GLIDE SLOPE) indicator light. At ON(GRD) (down), ground potential is applied to activate ON (GLIDE SLOPE) indicator light., Center position is *off*. Position of switch depends on potential applied to pin Y of AIRCRAFT CABLE connector J4 from receiver control panel in aircraft.
POWER circuit breaker.	At ON, turns receiver simulator power on and provides thermal overload protection. At OFF, turns power off.
POWER indicator light, green.	Lights when POWER circuit breaker is set at ON and power is supplied.

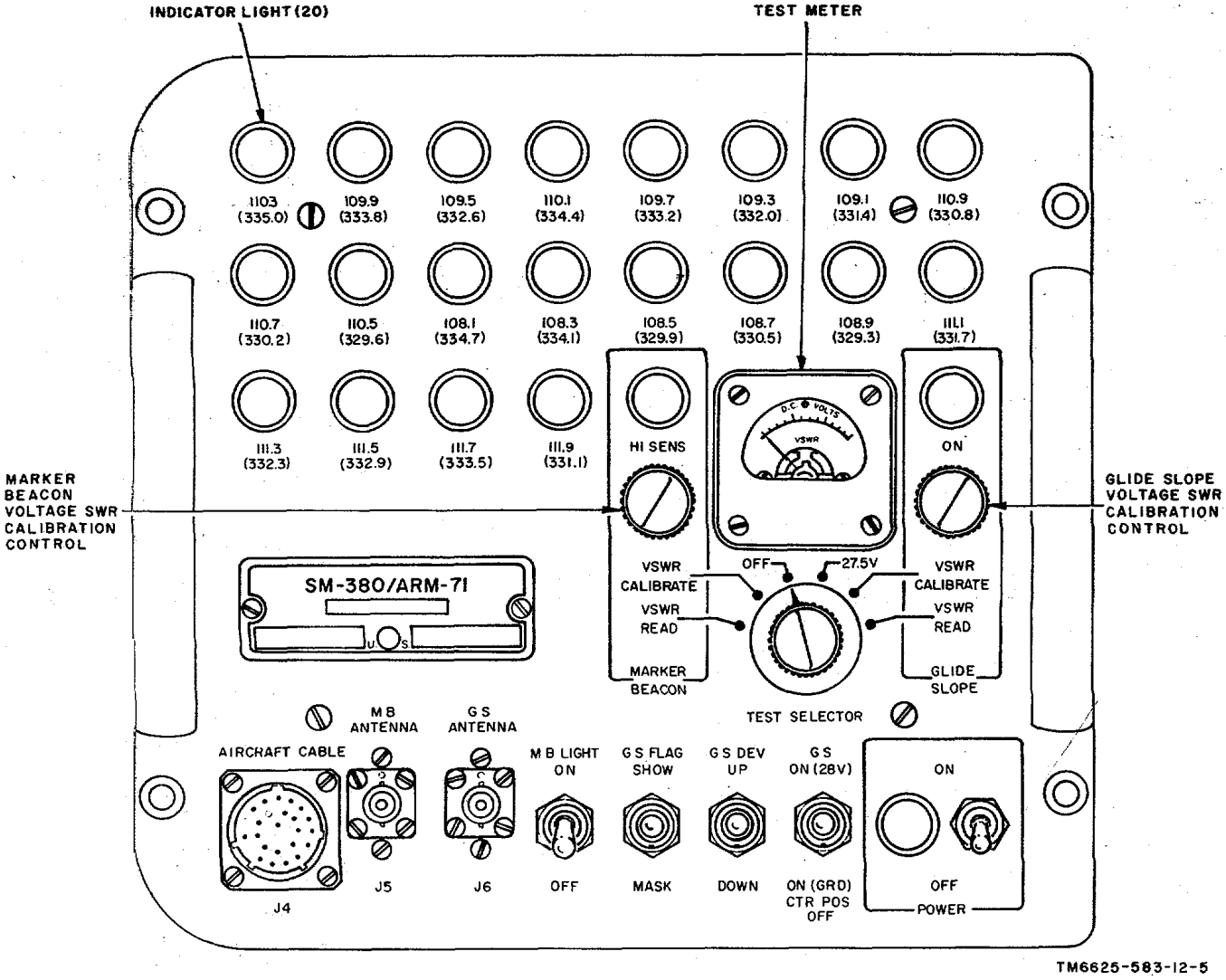

Figure 5. Receiver simulator controls, indicators, and connectors.

Section III. OPERATION OF TEST PANEL

15. Types of Operation

a. The test panel is used to perform the following bench tests on Receiver, Radio R-844/ARN-58:

(1) Glide slope receiver alignment and instrumentation adjustments (para. 17).

(2) Marker beacon receiver alignment (para. 18).

(3) General receiver performance tests, as follows:

(*a*) Input current (para. 20).

(*b*) Glide slope selectivity (para. 21).

(*c*) Glide slope linearity (para. 22).

(*d*) Glide slope automatic gain control (agc) (para. 23).

(*e*) Glide slope rf sensitivity (para. 24).

(*f*) Marker beacon selectivity (para. 25).

(*g*) Marker beacon audio power output (para. 26).

(*h*) Marker beacon audiofrequency response (para. 27).

(*i*) Marker beacon lamp activation (para. 32).

(*j*) Marker beacon agc (para. 28).

(*k*) Marker beacon input threshold ratio (para. 29).

(*l*) Marker beacon audio noise level (para. 30 and 31).

b. For any type of operation, perform the following procedures:

(1) Starting procedure (para. 16).

(2) Procedure for desired type of operation (*a* above).

(3) Stopping procedure (para. 33).

16. Starting Procedure

a. Preliminary. Set the front panel controls as follows:

Control (fig. and 5)	Position
FREQUENCY SELECTOR switch.	332.0-109.3
POWER circuit breaker	OFF
GS switch	off (center position)
MB SENS switch.....	LO
FLAG CURRENT switch	X1
DEVIATION CURRENT switch.	X1

b. Test Connections. Listed below are the cables and module extenders and their connection points for bench testing.

Cable	Connects	
	From	To
W1	Test panel connector J1.	R-844/ARN-58 connector 1A4J4.
W3	Test panel connector J2.	Power supply output terminals (red to positive and black to negative).
W5	CV-785/ARN connector 1ALP3.	R-844/ARN-58 connector 1A4J5.
W6	AM-2193/ARN connector 1A2P1.	R-844/ARN-58 connector 1A4J2.
W7	F-423/ARN	R-844/ARN-58

(1) Remove Receiver, Radio R-844/ARN-58 from Case, Receiver CY2599/ARN-58.

(2) Connect the test panel and test equipment, as required by the test procedure, to the R-844/ARN-58 as shown in figure 6. Connect cable W3 to test panel POWER CABLE connector J2 and to the power supply. Observe the polarity when connecting the cable battery clips (red to positive, and black to negative). Connect cable W1 to test panel connector J1 and R-844/ARN-58 connector 1A4J4.

c. Starting.

(1) Adjust the power supply and apply 27.5-volt dc power to the test panel.

Caution: **Check the receiver wiring at pins Y and b of POWER connector J4 before setting the GS switch (para. 13).**

(2) Set the GS switch on the test panel to either ON(28V) or ON(GRD), in accordance with the receiver wiring for glide slope operation.

(3) Set the POWER circuit breaker on the test panel to the ON position and observe that the LINE VOLTAGE meter indicates 27.5 (±2.75) volts dc.

17. Glide Slope Receiver Alignment and Instrumentation Adjustments

a. Perform the starting procedure as outlined in

paragraph 16, connecting only the test panel, the power supply, the AN/GRM-4, the 6-db fixed attenuator, and the TS-505A/U to the R-844/ARN-58, as shown in figure 6. Connect the AN/GRM-4, through the 6-db, 52-ohm fixed attenuator, to receiver connector 1A4J1, and connect the TS-505A/U to J5 of Amplifier Module, Intermediate Frequency AM-2193/ARN. After turning the equipment on, allow the R-844/ARN-58 to warm up for 5 minutes. Set the AN/GRM-4 and the R-844/ARN-58 to 332.0 mc. The TS-505A/U should indicate approximately 7.8 volts dc. Check the frequency of the AN/GRM-4 with the AN/USM-26, together with the CV-394/USA-5 and the AN/USM-144.

b. Increase the output of the AN/GRM-4 until the indication on the TS-505A/U increases 0.5 volt dc from its reference indication (*a* above).

c. Adjust the oscillator collector tank circuit (L7 and C23) of Mixer-Oscillator Module, Radio Frequency CV-785A/ARN for maximum indication on the TS-505A/U. Use the alignment tool supplied with the R-844/A: RN-58 for this purpose.

d. Adjust the preselector coils (L1 through L4) of the CV-785A/ARN for maximum indication on the TS-505A/U. During tuning of the individual preselector tuned circuits, the adjacent coils must be shunted with a 1,500-ohm resistor between the appropriate test point connector (J3, J4, J5, and J6) and ground, while maintaining 0.5 volt above the reference indication on TS-505A/U. For example, when tuning coil L2, connect the 1,500-ohm resistors from J3 and J5 to ground.

e. Adjust the output of the AN/GRM-4 to obtain an 80-microampere (ua) indication on the FLAG CURRENT meter of the test panel.

f. Reduce the intermediate-frequency (if.) gain by turning potentiometer R22 of the AM-193/ARN fully counterclockwise.

g. Increase the if. gain by turning potentiometer R22 of the AM-2193/ARN clockwise until no further increase in the FLAG CURRENT meter indication is noted.

h. Set the AN/GRM-4 to deliver a standard glide slope on-course signal, and adjust the output to 700 microvolts (uv).

i. Adjust flag alarm control R13 of Filter Module, Band Pass F-423/ARN for maximum indication on the FLAG CURRENT meter of the test panel.

j. Adjust audio gain control R1 of the F-423/ARN to produce a 350-ua indication on the FLAG CURRENT meter.

k. Adjust balance control R11 of the F-423/ARN to produce a zero deflection on the DEVIATION CURRENT meter of the test panel.

l. Set the AN/GRM-4 to deliver a35-uv on-course signal, and adjust flag alarm control R13 of the F-423/ARN for a 280-ua indication on the FLAG CURRENT meter of the test panel.

m. Adjust the AN/GRM-4 for a standard glide slope off-course deflection signal of 700 uv.

n. Adjust deflection sensitivity control R12 of the F-423/ARN to produce a 78-ua deflection of the DEVIATION CURRENT meter of the test panel.

o. Repeat the procedures given in k, m, and n above, using the modulation ratios listed below until the characteristics listed are obtained.

Modulation ratio (db)	Rf input	DEVIATION CURRENT meter indication	FLAG CURRENT meter indication
0 db (on-course).....	700 uv	0 ua ±3	
90 cps greater than 150 cps by 2 db.	700 uv	78 ua ±3	
150 cps greater than 90 cps by 2 db.	700 uv	78 ua ±3	
0 db (on-course).....	35 uv	.....	280 ua ±3

p. Perform the stopping procedure (para. 33).

18. Marker Beacon Receiver Alignment

a. Perform the starting procedure as outlined in paragraph 16, connecting only the test panel, the power supply, the AN/USM-44, the 6-db fixed attenuator, and the TS-505A/U to the R-844/ARN-58, as shown in figure 6. Connect the AN/USM44, through the fixed attenuator, to receiver connector 1A4J7, and connect the TS-505A/U to J7 of Amplifier Module, Intermediate-Radio Frequency AM-2191/ARN. Connect the TS-382F/U to the AN/USM-44. Set the AN/USM-44 to 75 mc. After turning the equipment on, allow it to warm up for 5 minutes. Check the frequency of the AN/GRM-4 with

the AN/USM-26, together with the CV-394/USA-5 and the AN/USM-144.

b. Apply a 75-mc signal from the AN/USM-44, modulated 95 percent with 1,300 cycles per second (cps) from the TS382F/U, and increase the output of the AN/USM-44 until the TS-505A/U indicates 8 volts dc. Maintain this output level of the AN/USM-44 throughout the alignment procedure.

c. Tune the radiofrequency (rf) coils (L1, L2, L3, and L6) of the AM-2191/ARN for maximum indication on the TS-505A/U. Use the alignment tool supplied with the R-844/ARN-58 for this purpose.

d. Set the MB SENS switch on the test panel to the HI position.

e. Set the AN/USM-44 to deliver a 75-mc signal, modulated 95 percent at 1,300 cps, and 500-uv output.

f. Turn high-sensitivity control potentiometer R16 of the AM-2191/ARN counterclockwise until the MB LIGHT indicator on the test panel extinguishes.

g. Turn high-sensitivity control R16 of the AM-2191/ARN clockwise until the MB LIGHT indicator light on the test panel lights. This establishes the high-sensitivity threshold at 500 uv.

h. Set the MB SENS switch on the test panel to the LO position.

i. Use the same procedure as given in e through g above to adjust low-sensitivity control R12 of the AM-2191/ARN so as to produce a threshold sensitivity of 1,500 microvolts.

j. Connect the ME-30C/U to MB AURAL jack J3 on the test panel. Set audio gain control R18 of the AM-2192/ARN to produce a 3-volt ac output (60 milliwatts) at the rf threshold.

k. Perform the stopping procedure (para. 33).

19. General Performance Tests

Paragraphs 20 through 32 provide instructions for general performance tests for the glide slope and marker beacon portions of the receiver as listed in paragraph 15*a*(3). Perform the tests in sequence, making only those test equipment connections specified. Measure the frequency of the AN/USM-44 and the AN/GRM-4 with Frequency Meter AN/USM26, together with the CV-394/USA-5 and the AN/USM-144, to extend the range of the frequency meter.

20. Input Current

a. Perform the starting procedure as outlined in paragraph 16, connecting all test equipment except the AN/GRM-4 as shown in figure 6. Connect the TS-382F/U to the AN/USM-44, through the fixed attenuator, to receiver connector 1A4J1, and the TS-505A/U to J5 of the AM-2193/ARN. Use the AN/USM-26, with the CV394/USA-5 and the AN/USM-144, to accurately tune the AN/USM-44 to 332 mc. Allow the equipment to warm up for 5 minutes before measuring the frequency.

b. Set the FREQUENCY SELECTOR switch on the test panel to the 332.0109.3 position.

c. Reduce the output of the AN/USM-44 to zero.

d. The LINE CURRENT meter indication on the test panel should not exceed 300 milliamperes.

21. Glide Slope Selectivity

a. Using no modulation from the TS382F/U, set the AN/USM-44 output level to zero and note the age voltage indicated on the TS-505A/U.

b. Adjust the rf input level on the AN/USM-44 to produce a 0.5-volt dc increase in age voltage level above the no-signal voltage measured in *a* above. Note this value.

c. Double the rf signal input.

d. Detune the AN/USM-44 to each side of the resonant frequency until 0.5-volt dc above age voltage level is indicated on the TS-505A/U. Measure the signal generator frequency with the AN/USM-26, the CV-394/USA-5, and the AN/USM-144. The sum of the frequency deviation above and below the resonant frequency given in *b* above should not be less than 135 kilocycles (kc). These frequencies are the 6-db points.

22. Glide Slope Linearity

a. Disconnect the TS-382F/U and the AN/USM-44 from 1A4J1, and connect the AN/GRM-4 to this

connector on the R-844/ARN-58. Set the DEVIATION CURRENT switch to the X2 position.

b. Apply a standard glide slope signal of 332.0 mc at a level of 700 uv from the AN/GRM-4.

c. Adjust the modulation ratio of the AN/GRM-4 so that 90 cps is greater than 150 cps, by 4 db.

d. The DEVIATION CURRENT meter on the test panel should indicate 78 ua ±7.8; when multiplied by 2, this is an actual deviation c current indication of 156 ua ±15.6.

e. Repeat the procedures given in *c* and *d* above at the modulation ratios listed in the chart below, with the DEVIATION CURRENT switch at the X1 position; observe the DEVIATION CURRENT meter on the test panel for the indication listed. Set the DEVIATION CURRENT switch to the X2 position when the current exceeds 100 ua.

Modulation ratio	DEV CURRENT meter indication
90 cps greater than 150 cps at 2 db.	78 ±7.8
90 cps greater than 150 cps at 0.5 db.	19.5 ±3.0
0 db (on-course).....	0 ±1.0
150 cps greater than 90 cps at 0.5 db.	19.5 ±3.0
150 cps greater than 90 cps at 2 db.	78 ±7.8
150 cps greater than 90 cps at 4 db.	156 ±15.6

23. Glide Slope Automatic Gain Control

a. Apply a standard on-course signal of 35 uv.

b. The DEVIATION CURRENT meter on the test panel should indicate zero ua ±6.

c. The FLAG CURRENT meter on the test panel should indicate not less than 240 ua.

d. Repeat the procedures given in *a, b*, and *c* above with standard on-course signals of 700, 14,000 and 30,000 uv. The DEVIATION CURRENT and FLAG CURRENT meters should read the same as in *b* and *c* above.

e. Set the DEVIATION CURRENT switch to X1 and apply the standard off-course signals as listed in the chart below. The 16 DEVIATION CURRENT meter should indicate within the limits listed in the chart for the corresponding input.

Input (uv)	DEV CURRENT meter indication (ua)
35	62-78
700	75-81
14,000	69-87
30,000	69-87

24. Glide Slope Rf Sensitivity

a. Apply a standard off-course signal with the 90-cps component greater than the 150-cps component.

b. Reduce the input signal level until the DEVIATION CURRENT meter. indicates 62 ua.

c. Note that the input signal level does not exceed 35 uv.

d. Repeat the instructions given in *a, b*, and *c* above for each of the remaining frequency positions of the FREQUENCY SELECTOR switch on the test panel.

25. Marker Beacon Selectivity

a. Disconnect the AN/GRM-4 and connect the TS-382F/U, through the AN/USM44, to the connector 1A4J7 of the R-844/ARN-58.

b. Remove the five screws that secure the cover plate to the AM-2191/ARN, and remove the cover plate.

c. Turn on the AN/USM-44 and set it to 75 mc.

d. Remove the TS-505A/U connection from J5 of the AM-2193/ARN, and connect the TS-505A/U to J7 of the AM-2191/ARN.

e. Check the AN/USM-44 with the AN/USM-26 to obtain an output at exactly 75 mc.

f. Set the MB SENS switch on the test panel to H1.

g. Set the AN/USM-44 to provide a 200-uv output.

h. Note the dc voltage obtained on the TS505A/U.

i. Increase the rf output level of the AN/USM-44 to 400 uv.

j. Detune the AN/USM-44 to each side of resonance until the reference voltage noted in h above is obtained. Measure the frequency at which the reference voltage is reached with the AN/USM-26.

The difference between the two frequencies as measured by the AN/USM-26 should be not less than 40 kc. These frequencies are the 6-db points.

k. Increase the output of the AN/USM-44 to 200,000 uv.

l. Repeat the procedure given in *j* above. The difference between the frequencies should not exceed 250 kc.

26. Marker Beacon Audio Output

a. Set the MB SENS switch on-the test panel to the LO position.

b. Adjust the AN/USM-44 and the TS382F/U to provide a 75-mc signal, modulated 95 percent with 1,300 cps.

c. Connect the ME-30C/U to the MB AURAL jack on the test panel.

d. Adjust the output level of the AN/USM-44 to that level which just causes the MB LIGHT indicator light on the test panel to illuminate, and note the value of the output level.

e. The audio output level indicated on the ME-30C/U should be not less than 3 volts alternating current (ac).

27. Marker Beacon Audiofrequency Response

a. Adjust the AN/USM-44 and the TS382F/U for a 75-mc signal, modulated 95 percent with 1,000 cps.

b. Increase the output level of the AN/USM-44 to 10 times the value noted in paragraph 26 *d.* The new setting should be at 15,000 uv.

c. Obtain a reference level on the ME30C/U at 1,000 cps.

d. Vary the audiofrequency, and record the audio output indicated on the ME -30C/U in db at 400, 1,000, 1,300, and 3,000 cps. The audio power output indications should not vary from the reference level by more than ±3 db. Note that the MB LIGHT indicator light on the test panel is illuminated at 400, 1,000, 1,300, and 3,000 cps.

28. Marker Beacon Automatic Gain Control

a. Adjust the AN/USM-44 and the TS382F/U for a 75-mc signal, modulated 95 percent with 1,300 cps.

b. Adjust the output level of the AN/USM-44 to that level which just causes the MB LIGHT indicator light on the test panel to illuminate.

c. Record the db indication on the ME30C/U.

d. Adjust the output level of the AN/USM-44 to 10,000, 100,000 and 200,000 microvolts and record the db indication on ME-30C/U. The power output in db should not exceed the value recorded in *c* above by more than 6 db.

29. Marker Beacon Input Threshold Ratio

a. Decrease the output level of the AN/USM-44 to zero.

b. Slowly increase the output level of the AN/USM-44 until the MB LIGHT indicator light on the test panel just illuminates. Record the output level value of the AN/USM-44; then increase the output level of the AN/USM-44 to 10 times the recorded value.

c. Slowly decrease the output level of the AN/USM-44 until the MB LIGHT indicator light on the test panel just goes out. Record the output level value of the AN/USM-44.

d. Compare the output level values recorded in *b* and *c* above. The ratio between the two levels should not be greater than 2:1.

30. Marker Beacon No-Signal Audio Noise Level

a. Adjust the AN/USM-44 and the TS382F/U for a 75-mc signal, modulated 95 percent with 1,300 cps.

b. Increase the output level of the AN/USM-44 to 10 times the value noted in paragraph 26*d.* The new setting should be at 15,000 uv.

c. Record the db output for a reference level.

d. Disconnect the AN/USM-44 from connector 1A4J7 of the R-844/ARN-58 and connect the 50-ohm antenna termination (Federal stock No. 5985-623-7219) to the connector.

e. Record the audio power drop in db. The drop should be not less than 35 db from the reference level recorded in *c* above.

31. Marker Beacon Audio Noise Level with Signal

a. Disconnect the antenna termination from 1A4J7

of the R-844/ARN-58 and connect the AN/USM-44 to it.

b. Adjust the AN/USM-44 and the TS382F/U for a 75-mc signal, modulated 95 percent: with 1,300 cps.

c. Increase the output level of the AN/USM-44 to that level which just causes MB LIGHT indicator light on the test panel to illuminate and record the audio power output level in db indicated on the ME30C/U.

d. Repeat the instruction given in *c* above for 10,000- and 200,000-uv input signal levels.

e. Remove the modulation signal.

f. Record the power drop in db at each of the rf levels in *c* and *d* above. The audio output drop obtained should not be less than 20 db for each rf level.

32. Marker Beacon Lamp Activation

a. Adjust the AN/USM-44 output level to 15,000 microvolts.

b. Turn the AN/USM-44 modulation on and off at a rate of once per second.

c. Observe that the MB LIGHT indicator light on the test panel follows the pattern of the AN/USM-44 keying.

33. Stopping Procedure

a. Set the POWER circuit breaker to the OFF position.

b. To shut down the equipment, disconnect the power, and remove all cables from the equipment and return them to the storage facilities. Return all equipment to the proper standby locations.

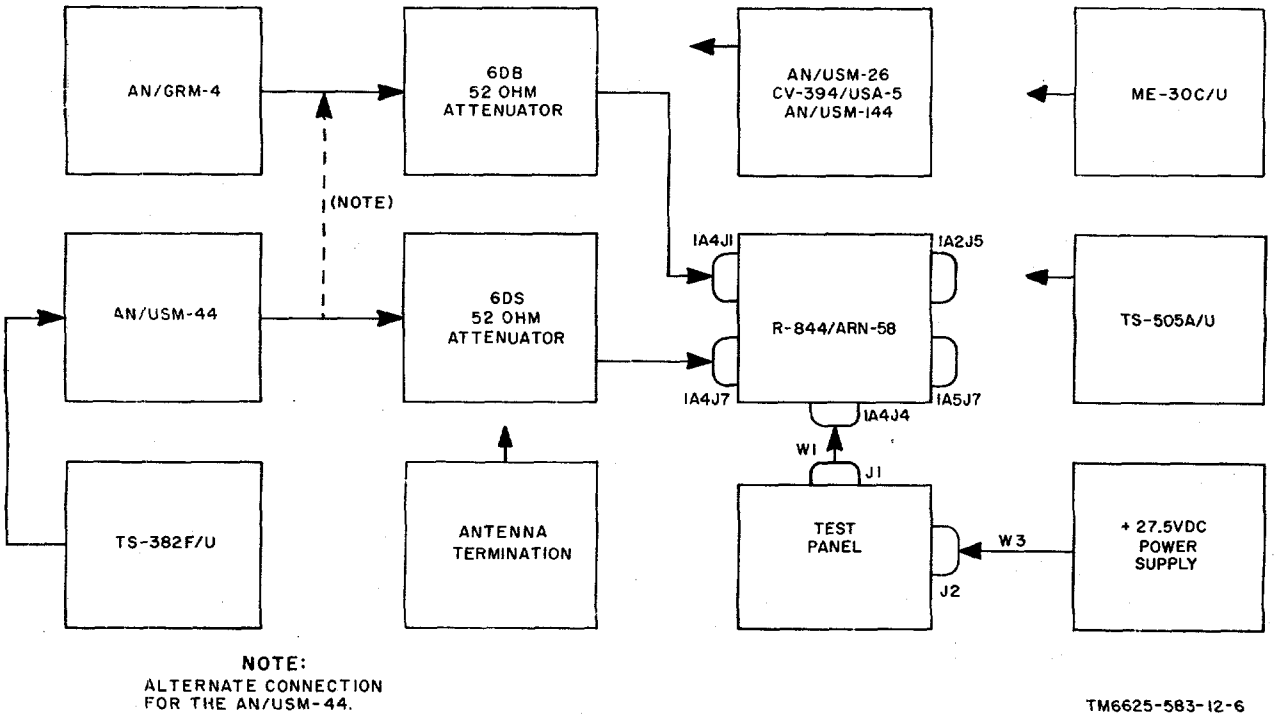

Figure 6. Test panel test setup diagram.

Section IV. OPERATION OF RECEIVER SIMULATOR

34. Types of Operation

a. The receiver simulator maybe operated to perform the following in-aircraft tests of the R-844/ARN-58 associated aircraft mounted equipment.

(1) Check the power delivered by the aircraft power supply (para. 35*d*).

(2) Measure the voltage swr of the glide slope antenna (para. 36*a*).

(3) Measure the voltage swr of the marker beacon antenna.

(4) Check the frequency selection of the receiver control panel (para. 36*b*).

(5) Check the operation of the glide slope signal reliability flag (para. 36*c*).

(6) Check the operation of the glide slope deviation indicator (para. 36*c*).

(7) Check the operation of the marker beacon indicators (para. 36*d*).

b. For all types of operation, perform the following procedures:

(1) Starting procedure (para. 35).

(2) Procedure for desired type of operation (*a* above).

(3) Stopping procedure (para. 37).

35. Starting Procedure

a. Preliminary. Remove the receiver simulator from the transit case and set the front panel controls as follows:

Control	Position
GS switch.....	off (center position)
POWER circuit breaker.....	OFF
GS DEV switch	off (center position)
GS FLAG switch	off (center position)
MB LIGHT switch	OFF

b. Test Connections.

(1) Listed below are the cables supplied with the test set for in aircraft testing.

Cable	Connects	
	From	To
W2[a]	Receiver simulator connector J4.	Aircraft receiver cable connector P4.
W4(1)[a]	Receiver simulator connector J5.	Aircraft marker beacon antenna cable connector P7.
W4(2)[a]	Receiver simulator connector J6.	Aircraft glide slope antenna cable connector P1.

[a] Cables are used as extensions if aircraft cabling is not long enough to be connected directly to recover simulator.

(2) Disconnect the aircraft cable connected to R-844/ARN-58 Connector 1A4J4, and connect this cable to AIRCRAFT CABLE connector J4 on the receiver simulator. Disconnect the aircraft marker beacon and glide slope antenna cables from the R-844/ARN-58 and connect them to MB ANTENNA connector J5 and GS ANTENNA connector J6 on the receiver simulator.

c. Auxiliary Power. Apply auxiliary 27.5-volt do power to the aircraft. Refer to the aircraft technical manuals for instructions.

d. Starting.

(1) Turn on the aircraft power switches and the R-844/ARN-58 control panel power switch.

(2) Set the GS switch on the receiver simulator to either the ON(28V) or ON(GRD) position, depending on the control panel used with the R-844/ARN-58 (para. 13).

(3) Set the POWER circuit breaker on the receiver simulator to ON and observe that the GLIDE SLOPE ON lamp is illuminated.

(4) Set the TEST SELECTOR switch on the receiver simulator to the 27.5V position and read the voltage indication on the upper scale of the test meter to verify that the aircraft power source is supplying 27.5 volts dc ±2.75.

36. Test Procedures

a. Measuring Standing Wave Ratio of Glide Slope and Marker Beacon Antennas.

(1) Set the TEST SELECTOR switch to VSWR CALIBRATE for the antenna being tested (glide slope on marker beacon).

Note: Inability to attain full-scale deflection of the test meter through adjustment of the swr calibration control knob indicates an extreme mismatch of the antenna under test. A shorted or open circuit condition may exist.

(2) Adjust the voltage swr calibration control knob, corresponding to the antenna being

tested, until the test meter indicates full-scale deflection.

(3) Set the TEST SELECTOR switch to the VSWR READ position for the antenna being tested.

(4) Read the voltage swr direct from the test meter.

(5) Return the TEST SELECTOR switch to the OFF position.

b. Checking Receiver Control Panel Frequency Selection.

(1) Set the frequency selection control on the receiver control panel in the aircraft to the lowest frequency setting.

(2) Observe that the indicator lamp corresponding to the selected frequency is illuminated.

(3) Repeat the procedure given in (1) and (2) above until all frequency selections have been checked.

c. Checking Glide Slope Indicators of Course Indicator.

(1) Set the GS DEV switch to the UP position and observe that the glide slope needle of the course indicator provides an above-glide-slope indication.

(2) Set the GS DEV switch to the DOWN position and observe that the glide slope needle of the course indicator provides a below-glide-slope indication.

(3) Return the GS DEV switch to off (center position).

(4) Set the GS FLAG switch to the MASK position and observe that the signal reliability flag on the course indicator is out of sight.

(5) Set the GS FLAG switch to the SHOW position and observe that the signal reliability flag is in full view.

(6) Return the GS FLAG switch to off (center position).

d. Checking Marker Beacon Light Indicator Operation.

(1) Set the MB LIGHT switch to the ON position and verify that the marker beacon light indicator is illuminated and a 1-kc aural tone is heard in the aircraft headsets.

(2) Return the MB LIGHT switch to the OFF position.

37. Stopping Procedure

a. To return the receiver simulator to a standby condition, set the POWER circuit breaker to the OFF position.

b. To shut down the equipment completely, remove the aircraft cable, the glide slope antenna cable, and the marker beacon antenna cable from the connectors on the front panel, and remount the receiver simulator in the transit case.

Note: Both operator and organizational maintenance is performed by the operator.

38. Scope of Maintenance

The maintenance duties assigned to the operator of the test set are listed below, together with a reference to the paragraphs covering the specific maintenance functions. These procedures do not require special tools or test equipment other than those allocated.

a. Daily preventive maintenance checks and services (para. 41).

b. Cleaning (para. 43).

c. Monthly preventive maintenance checks and services (para. 44).

d. Preservation (para. 46).

e. Quarterly preventive maintenance checks and services (para. 47).

f. Replacement of defective lamps (para. 49).

39. Tool and Materials Required for Maintenance

The tool and materials required for operator and organizational maintenance are as follows:

a. Tool Kit, Radio Repair TK-115/G.

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

c. Cleaning cloth.

d. Soft-bristled brush.

e. Sandpaper, extra fine, #000.

40. Preventive Maintenance

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

a. Systematic Care. The procedures given in paragraphs 41 through 49 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 (para. 42, 45, and 48) outline the functions to be performed at specific intervals. These checks and services maintain Army 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 paragraphs that contain detailed repair or replacement procedures. If the defect cannot be remedied by the operator, higher level of maintenance is required. Records and reports of these checks and services must be made in accordance with TM 38-750.

41. Daily Preventive Maintenance Checks and Services

Maintenance service and inspections of the test set are required on a daily basis. Paragraph 42 specifies preventive maintenance checks and services that must be performed daily or under the special following conditions:

a. When the equipment is initially installed.

b. When the equipment is returned after higher level of repair.

c. At least once each week if the equipment is maintained in a standby condition.

42. Daily Preventive Maintenance Checks and Services Chart

Sequence NO.	Item	Procedure	References
1	Exterior surfaces	Clean test set panels and meter glasses. Check for broken meter glass.	Para. 43

Sequence NO.	Item	Procedure	References
2	Exterior items	Check for looseness of exterior items, such as jacks, switches, controls, and meter mountings. Tighten all loose mounting screws and nuts.	
3	Knobs and switches	Check to see that mechanical action of switches and knobs is smooth, and free of binding and scraping. Reset binding knobs.	
4	Operation - - - - - - -	During operation, be alert for unusual or faulty operation.	

43. Cleaning

Inspect the exterior of the test set. The exterior surfaces should be clean, and free .of dirt, grease, and fungus. Perform the following procedures as specified in the daily preventive maintenance checks and services chart.

a. Remove loose dirt with a clean cloth.

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

b. Remove grease, fungus, and ground-in dirt from the exterior surfaces of the test set; use a cloth dampened (not wet) with cleaning compound. Wipe dry with a clean, dry, lint-free cloth.

c. Remove dirt from the connectors with a soft-bristled brush.

d. Clean the front panels with a soft clean cloth.

44. Monthly Preventive Maintenance Checks and Services

Perform the maintenance functions indicated in the monthly preventive maintenance checks and services chart (para. 45) once each month in addition to the daily preventive maintenance checks and services (para. 42). A month is defined as approximately 30 calendar days of 8-hour-per-day operation. Adjustment of the maintenance interval 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 (requires services before operation) does not require monthly preventive maintenance. During the power-on inspection, if pilot lamps fail to light (items 6 through 32 below), refer to paragraph 49 for the replacement procedures. Equipment with a deficiency that cannot be corrected by the operator should be deadlined in accordance with TM 38-750.

45. Monthly Preventive Maintenance Checks and Services Chart

Sequence NO.	Item	Procedure	References
		POWER-OFF INSPECTION	
1	Cables and module extenders.	Check cabling for breaks, cuts, kinks, fraying, and broken connectors; replace defective cables.	
2	Jacks and connectors	Inspect jacks and connectors on test set for snug fit and good contacts.	
3	Handles, latches, and hinges.	Check handles, latches, and hinges on test set for looseness and defects.	
4	Metal surfaces	Check all exposed metal surfaces for rust and corrosion.	Para. 46.
		POWER-ON INSPECTION	
5	Preliminary	*a*. Connect P2 of cable W3 to J2 of test panel.	

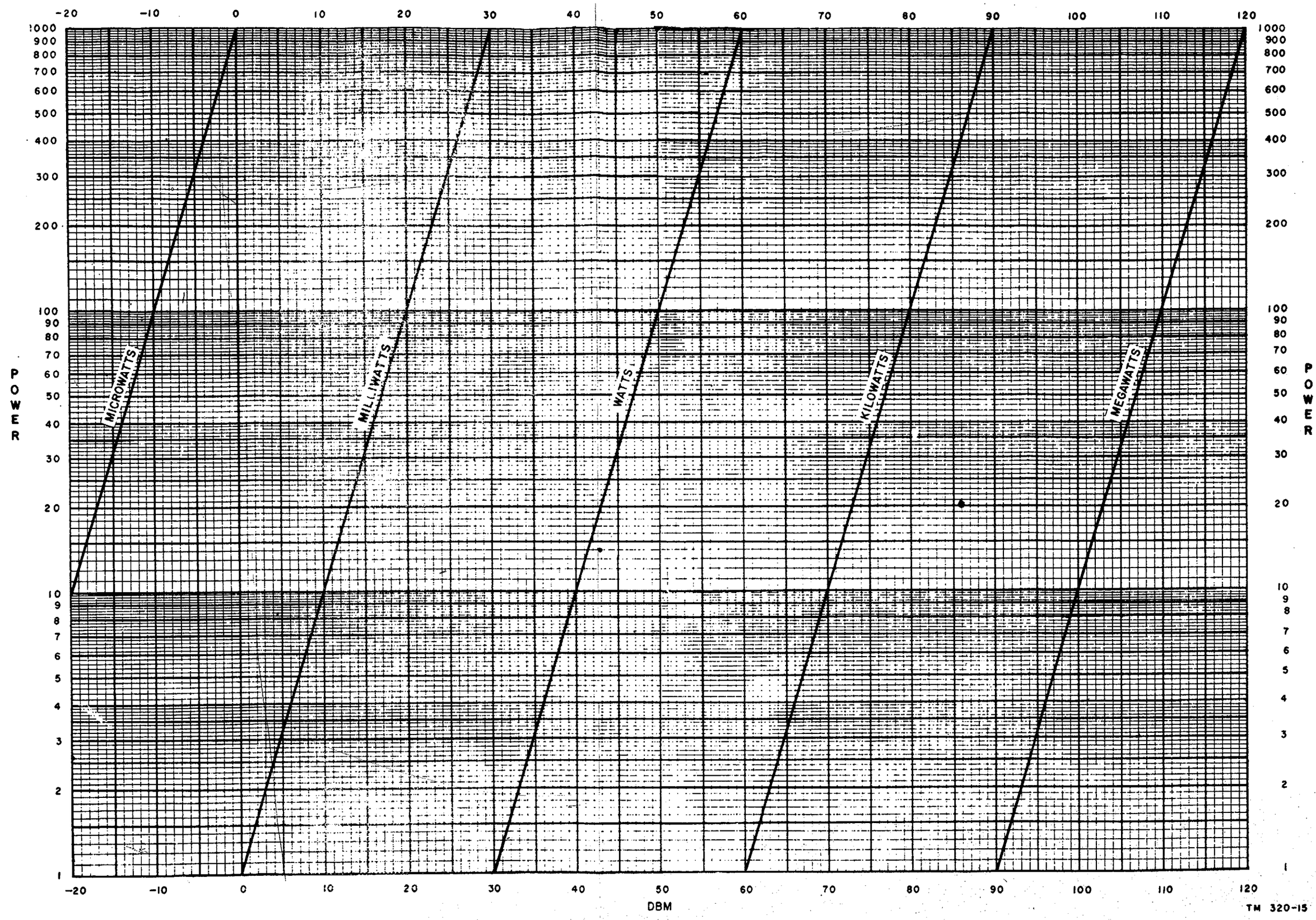

Figure 5. Relation of power and dbm.

Sequence No.	Item	Procedures	References
		b. Connect battery clips of cable W3 to proper terminals of a 27.5-vdc power supply, observing polarity (red to positive, and black to negative). *c*. Connect P4 of cable W1 to J4 of receiver simulator. *d.* Connect P1 of cable W1 to J1 of test panel. *e*. Turn test panel FREQUENCY SELECTOR switch to 335.0-110.3. *f*. Set test panel POWER circuit breaker to OFF. *l.* Turn test panel GS switch off (center position). *h*. Set test panel MB SENS switch to LO. *i.* Set test panel FLAG CURRENT switch to X2. *j.* Set test panel DEVIATION CURRENT switch to X2. *k.* Set receiver simulator POWER circuit breaker to OFF. *l.* Set receiver-simulator GS switch to OFF. *m*. Turn receiver simulator GS DEV switch off (center position). *n.* Turn receiver simulator GS FLAG switch off (center position). *o.* Set receiver simulator MB LIGHT switch to OFF. *p.* Turn receiver simulator TEST SELECTOR switch to OFF. *q.* Turn power supply on and adjust output to 27.5 vdc. *r.* Plug headset into MB AURAL jack J3 on test panel.	
6	POWER circuit breaker on test panel.	Set POWER circuit breaker to ON. LINE VOLTAGE meter indicates 27.5 vdc.	
7	POWER circuit breaker on receiver simulator.	Set POWER circuit breaker to ON. POWER and 110.3 (335.0) indicator lamps light.	
8	GS switch on test panel	Set GS switch to ON(28V).	
9	GS switch on receiver simulator.	Set GS switch to ON(GRD). GLIDE SLOPE ON lamp lights.	
10	GS switch on receiver simulator.	Set GS switch to ON(28V). GLIDE SLOPE ON lamp goes out.	
11	GS switch on test panel	Set GS switch to ON(GRD) position. GLIDE SLOPE ON indicator lamp on receiver simulator lights.	
12	GS switch on receiver simulator.	Turn GS switch off (center position). GLIDE SLOPE ON light goes out.	
13	GS switch on test panel	Set GS switch to OFF (center position).	
14	TEST SELECTOR switch on receiver simulator.	Turn TEST SELECTOR switch to 27. 5V. Test meter indicates 27.5 vdc on upper scale.	
15	FREQUENCY SELECTOR switch on test panel.	Turn FREQUENCY SELECTOR switch to each frequency position. Corresponding frequency indicator on receiver simulator lights.	
16	GS DEV switch on receiver simulator.	Set GS DEV switch to UP. DEVIATION CURRENT meter on test panel indicates 39 ua to right.	
17	DEVIATION CURRENT switch on test panel.	Set DEVIATION CURRENT switch to X1. DEVIATION CURRENT meter indicates 78 ua to right.	
18	GS DEV switch on receiver simulator.	Set GS DEV switch to DOWN. DEVIATION CURRENT meter indicates 78 ua to left.	
19	GS FLAG switch on receiver simulator.	Set GS FLAG switch to SHOW. FLAG CURRENT meter on test panel indicates 120 ua.	
20	FLAG CURRENT switch on test panel.	Set FLAG CURRENT switch to X1. FLAG CURRENT meter indicates 240 ua.	
21	GS FLAG switch on receiver simulator.	Set GS FLAG switch to MASK. FLAG CURRENT meter on test panel indicates 250 ua.	

Sequence No.	Item	Procedures	References
22	GS FLAG and GS DEV switches on receiver simulator.	Turn GS FLAG and GS DEV switches off (center positions). FLAG CURRENT and DEVIATION CURRENT meters on test panel return to zero indication.	
23	MB SENS switch on test panel.	Set MB SENS switch to HI. HI SENS indicator lamp on receiver simulator lights.	
24	MB SENS switch on test panel.	Set MB SENS switch to LO. HI SENS indicator lamp on receiver simulator goes out.	
25	MB LIGHT switch on receiver simulator.	Set MB LIGHT switch to ON. MB LIGHT indicator lamp on test panel lights.	
26	MB AURAL jack on test panel.	Distinct 1-kc tone is heard in headphones connected to MB AURAL jack.	
27	TEST SELECTOR switch, marker beacon swr calibration control, and test meter on receiver simulator.	Attach 50-ohm antenna termination (Fed stk No. 5985-623-7219) to MB ANTENNA connector J5. Set TEST SELECTOR switch to VSWR CALIBRATE (MARKER BEACON.). Adjust marker beacon voltage swr calibration control until test meter just indicates full-scale deflection.	
28	Test meter and TEST SELECTOR switch on receiver simulator.	Set TEST SELECTOR switch to VSWR READ (MARKER BEACON). Test meter indicates swr of less than 1.2.	
29	TEST SELECTOR switch, glide slope voltage swr calibration control, and test meter on receiver simulator.	Attach a 50-ohm antenna termination (Fed stk No. 5985-623-7219) to GS ANTENNA connector J6. Set TEST SELECTOR switch to VSWR CALIBRATE (GLIDE SLOPE). Adjust glide slope swr calibration control until test meter just indicates full-scale deflection.	
30	Test meter and TEST SELECTOR switch on receiver simulator.	Set TEST SELECTOR switch to VSWR READ (GLIDE SLOPE). Test meter indicates vswr of less than 1.2.	
31	POWER circuit breaker on test panel.	Set to OFF. LINE VOLTAGE meter reads 0-volt.	
32	POWER circuit breaker on receiver simulator.	Set to OFF. POWER lamp goes out and frequency light goes out. Turn off power supply switch and disconnect battery clips of cable W3.	

46. Preservation

Remove rust and corrosion from metal surfaces by lightly sanding them with sandpaper #000. 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.

47. Quarterly Preventive Maintenance Checks and Services

Perform the maintenance functions indicated in the quarterly preventive maintenance checks and service chart (para 48) once each 3-month (quarterly) interval in addition to the daily and monthly maintenance checks and services. A quarterly interval is defined as approximately 90 calendar days of 8-hour-per-day operation. All deficiencies or shortcomings will be recorded, and those not corrected during the maintenance service .and inspection will be immediately reported to higher level by use of forms and procedures specified by TM 38-750. Equipment with a deficiency that cannot be corrected at the organizational level should be deadlined in accordance with TM 38-750.

48. Quarterly Preventive Maintenance Checks and Services Chart

Sequence No.	Item	Procedures	References
1	Completeness - - - - - -	See that equipment is complete	Appendix III.
2	Publications - - - - - - -	Check to see that all pertinent publications are available. This technical manual must be complete and in usable condition, without missing pages. All Changes pertinent to this publication must be on hand.	DA Pam 310-4.
3	Modification work orders.	Check to see that all URGENT MWO's have been applied to equipment and that all ROUTINE MWO's have been scheduled.	DA Pam 310-4.

49. Replacement of Pilot Lamps

a. Unscrew the plastic indicator light lens.

b. Remove the defective lamp from the inside of the lens and replace it with a new lamp.

c. Screw the indicator light lens into place.

CHAPTER 4

SHIPMENT, LIMITED STORAGE, AND DEMOLITION TO PREVENT ENEMY USE

Section I. SHIPMENT AND LIMITED STORAGE

50. Disassembly of Equipment

Prepare the test set for shipment and storage as follows:

a. Disconnect all cables.

b. Coil the cables, place them behind the hinged panel of the transit case cover (fig. 1), and secure the quick-disconnect fasteners to hold the hinged panel in place.

c. If the receiver simulator has been removed from the transit case, place the unit in the transit case and secure the four press-to-latch fasteners.

d. Close and secure the transit case cover, using the two twistlock clamps.

51. Repackaging for Shipment and Limited Storage

The exact procedure for repackaging depends on the materials available and the conditions under which the equipment is to be shipped (b below) or stored (c below). Adapt the procedures outlined below whenever circumstances permit. The information concerning the original packaging (para 11) will also be helpful.

a. Material Requirements. The following materials are required for packaging the test set for shipment. For stock numbers of materials, consult SB 38-100.

Material	Quantity
Carton, corrugated PPP-B-636, type 1, class II.	20 x 12-1/2 x 12-1/2 inches
Material, filler PPP-C-843A, type 2, class A.	5 lb
Tape, gummed-paper.	12 feet

b. Packaging for Shipment. Cushion the transit case on all outside surfaces with pads of filler material. Place the cushioned unit within a corrugated carton. Secure the carton with gummed tape.

c. Packaging for Limited Storage. The transit case provides adequate protection for its contents during limited storage.

Section II. DEMOLITION OF MATERIEL TO PREVENT ENEMY USE

52. Authority for Demolition

The demolition procedures given in paragraph 53 will be used to prevent the enemy from using or salvaging this equipment. Demolition of the equipment will be accomplished only upon the order of the commander.

53. Methods of Destruction

Any of the methods of destruction given below may be used. The time available and the tactical situation will determine the method to be used when destruction of the equipment is ordered.

a. Smash. Smash the interior units of the equipment; use sledges, axes, hammers, crowbars, or other heavy tools available.

(1) Smash the connectors, the meters, the knobs, indicator lights, and switches.

(2) Remove the back cover from the receiver simulator and smash as many exposed parts as possible.

Be sure to smash the solid-state oscillators.

b. Cut. Cut the cabling, cording, and wiring; use axes, handaxes, machetes, or similar tools. Cut the electrical cables with a heavy axe or machete. Cut all cords and cables in a number of places. If time permits, slash the internal cabling and wiring harnesses.

c. Burn. Burn the technical manuals first. Burn as much of the equipment as is flammable; use gasoline, oil, flame-throwers, and similar materials. Pour gasoline on the cut cables and internal wiring and ignite it. Use a flamethrower to burn the spare parts, or pour gasoline on the spares and ignite it. Use incendiary grenades to complete the destruction of unit interiors.

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

d. Explode. Use explosives to complete demolition or to cause maximum damage when time does not permit complete demolition by other means. Powder charges, fragmentation grenades, or incendiary grenades may be used. Incendiary grenades are usually most effective if destruction of small parts and wiring is desired.

e. Dispose. Bury or scatter the destroyed parts, or throw them into nearby waterways. This is particularly important if a number of parts have not been completely destroyed.

APPENDIX I

REFERENCES

Following is a list of applicable references available to the operator and organizational maintenance repairman of the test set.

DA Pamphlet 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 4, 6, 7, 8, and 9), Supply Bulletins, Lubrication Orders, and Modification Work Orders.
SB 38-100	Preservation, Packaging, and Packing Materials, Supplies, and Equipment Used by the Army.
TM 9-21.3	Painting Instructions for Field Use.
TM 11-5057	Frequency Meter AN/USM-26.
TM 11-6625-239-12	Operator's and Organizational Maintenance Manual: Electronic Multimeters TS-505A/U and TS-505B/U and Multimeters TS-505C/U and TS-505D/U.
TM 11-6625-261-12	Operator's and Organizational Maintenance Manual: Audio Oscillators TS-382A/U, TS-382B/U, TS-382D/U, TS-382E/U, and TS-382F/U.
TM 11-6625-320-12	Operator's and Organizational Maintenance Manual: Voltmeter, Meter ME-30A/U and Voltmeters, Electronic ME-30B/U and ME-30C/U.
TM 11-6625-508-10	Operator's Manual: Signal Generators AN/USM-44 and AN/USM-44A.
TM 38-750	Army Equipment Record Procedures.

APPENDIX II

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

1. General

a. This appendix assigns maintenance functions to be performed on components, assemblies, and subassemblies by the lowest appropriate maintenance 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 that are part of a component are listed immediately below that component, and the subassemblies that 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 to detect incipient electrical or mechanical failure by scrutiny.

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

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

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

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

(*h*) *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.

(3) *1st, 2d, 3d, 4th, 5th echelons (operator, organization, direct support, general support, and depot).* The symbol X indicates the maintenance category 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) *1st, 2d, 3d, 4th, 5th echelons (operator, organization, direct support, general support, and depot).* The dagger (†) symbol indicates the maintenance category normally allocated the facility.

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

2. Maintenance by Using Organizations

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

Section II. MAINTENANCE ALLOCATION CHART

PART OR COMPONENT	MAINTENANCE FUNCTION	1ST ECH. •	2ND ECH. •	3RD ECH. •	4TH ECH. •	5TH ECH. •	TOOLS REQUIRED	REMARKS
TEST SET, RADIO AN/ARM-71	service		X				7	
	adjust		X					Calibrate VSWR meter
	inspect		X					
	test		X				7	
	repair		X				7	Repair power cable assemblies
	overhaul				X		1,2,3,4,5,6,8	
CABLE ASSEMBLIES	inspect		X					
	replace		X					
	repair		X				7	

Section III. ALLOCATION OF TOOLS FOR MAINTENENACE FUNCTIONS

CODE	PART OR COMPONENT	ECHELON 1 •	2 •	3 •	4 •	5 •	TOOL CODE	REMARKS
	AN/ARM-71 (continued)							
	GENERATOR, SIGNAL AN/USM-44				†	†	1	
	GENERATOR, SIGNAL TS-382/U				†	†	2	
	HEADSET (600 impedance)				†	†	3	
	MULTIMETER ME-26/U				†	†	4	
	TOOL KIT RADAR AND RADIO REPAIRMAN TK-87/U				†	†	5	
	TOOL KIT, SUPPLEMENTARY RADAR AND RADIO REPAIR TK-88/U				†	†	6	
	TOOL AND TEST EQUIPMENT NORMALLY AVAILABLE TO THE REPAIRMAN USER BECAUSE OF HIS ASSIGNED MISSION		†				7	
	TEST SET, TRANSISTOR TS-1836/U				†	†	8	

SELMS 005 TF
1 Jun 63

Army - Ft Monmouth, NJ.MON 2135-63

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The Metric System and Equivalents

Linear Measure

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

Weights

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

Liquid Measure

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

Square Measure

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

Cubic Measure

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

Approximate Conversion Factors

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

Temperature (Exact)

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

PIN: 017341-000