DEPARTMENT OF THE ARMY SUPPLY MANUAL

DUMMY LOAD
TS-234/UP

This reprint Includes ail change in effect at the time of publication; changes 4 and 5.

HEADQUARTERS, DEPARTMENT OF THE ARMY
NOVEMBER 1957

The following Pen and Ink Changes have NOT been incorporated into this manual and should be made before the manual is reviewed.

Changes in force: C 4 and C 5.

TM 11-1263
C 5

CHANGE
No. 5

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *17 October 1975*

DUMMY LOADS TS-234/UP AND TS-234B/UP
INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS

TM 11-1263, 12 November 1957, is changed as follows:

Page 1-1. Paragraph 1.2 is superseded as follows:

1-2. Forms and records

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

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

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

Paragraph 1-3 is added after paragraph 1-2.

1.3. Reporting of Errors

Report 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-Q, Fort Monmouth, NJ 07703.

Paragraph 2 is superseded as follows:

2. Equipment Supplied
(fig. 1-1, 1-1.1, and 1-2)

Items comprising an operable Dummy Load TS-234/UP and TS-234B/UP are listed in table 1-1. Equipment required but not supplied is listed in table 1-2.

Table 1-1 is superseded as follows:

Table 1-1. Items Comprising an Operable Equipment

NSN	QTY	Nomenclature, part No., and mfr code	Weight (lbs)	Dimensions (in.)			Fig. No.
				Height	Width	Length	
		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.**					
6625-00-280-3479		Dummy Load TS-234/UP Dummy Load TS-234B/UP Consisting of Cable Assembly, Radio Frequency CG-40A/TPS-1 (used on TS-234B/UP only)	15.31	9.18	8	18.5	1-1 1-1.1

Page 5-4. Appendix B is deleted in its entirety.

By Order of the Secretary of the Army:

FRED C. WEYAND
General, United States Army
Chief of Staff

Official:

PAUL T. SMITH
Major General, United States Army
The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-32, Direct and General Support maintenance requirements for AN/FPS-36, AN/FPS-69, AN/FPS-71 and AN/FPS-75 System.

Changes in force: C 4

CHANGE
No. 4

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *5 March 1970*

DUMMY LOADS TS-234/UP AND TS-234B/UP

INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS

TM 11-1263, 12 November 1957, is changed as follows:

The title of the manual is changed as shown above.

Page 1-0. Add figure 1-1.1 after figure 1-1.

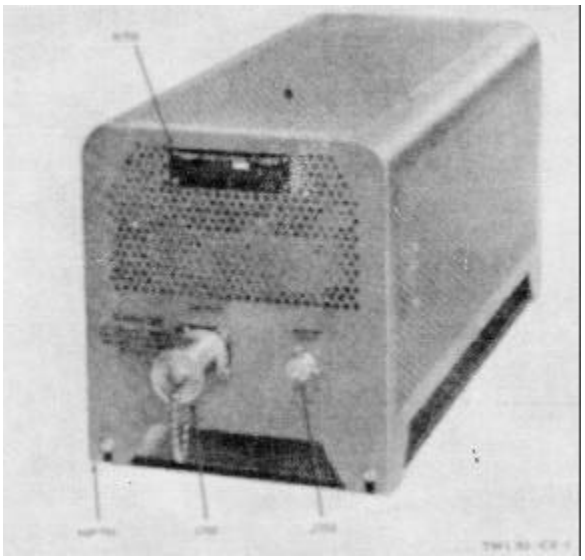

Figure 1-1.1. Dummy Load S-234B/UP.

Page 1-1. Make the following changes:

Add the following "Note" below the title of SECTION 1.

NOTE
Dummy Load TS-234B/UP is similar to Dummy Load TS-234/UP. Information in this manual applies to both units unless otherwise specified.

Add paragraphs 1.1 and 1.2 after paragraph 1.

1.1. 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 the latest issue of DA Pam 310-7 to determine whether there are modification work orders (MWO's) pertaining to the equipment.

1.2. 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 Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700-58 (Army), NAVSUP Pub 378 (Navy), AFR 714 (Air Force), and MCO P4030.29 (Marine Corps).

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 (Army), NAVSUP Pub 459 (Navy), AFM 75-34 (Air Force), and MCO P4610.19 (Marine Corps).

This change supersedes C 1, 10 January 1964, C 2, 9 December 1966, and C 3, 19 March 1968.

d. Reporting of Equipment Publication Improvements. 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 forwarded direct to Commanding General, U.S. Army Electronics Command, ATTN: AMSEL-ME-NMP-EM, Fort Monmouth, N. J., 07703.

Paragraph 3, line 9. Add "Dummy Load TS-234/UP only" after "MEASURE PULSE jack."

Table 1-2, "Required characteristics" column. Change requirements to: One end, alligator clips for attachment to Dummy Load TS-234/UP or UG-260/U plug for attachments to Dummy Load TS 234B/UP, and other end to suit test oscilloscope.

Page 1-2. Add paragraph 3.1 after paragraph 3.

3.1. Differences in Models

Dummy Load TS-234B/UP differs from earlier models in the following details:

a. Dummy Load TS-234B/UP is supplied with cord CG-40A/TSP-1.

b. The MEASURE PULSE jack is a type UG-290/U panel receptacle.

Page 2-1. Add figure 2-1.1 after figure 2-1.

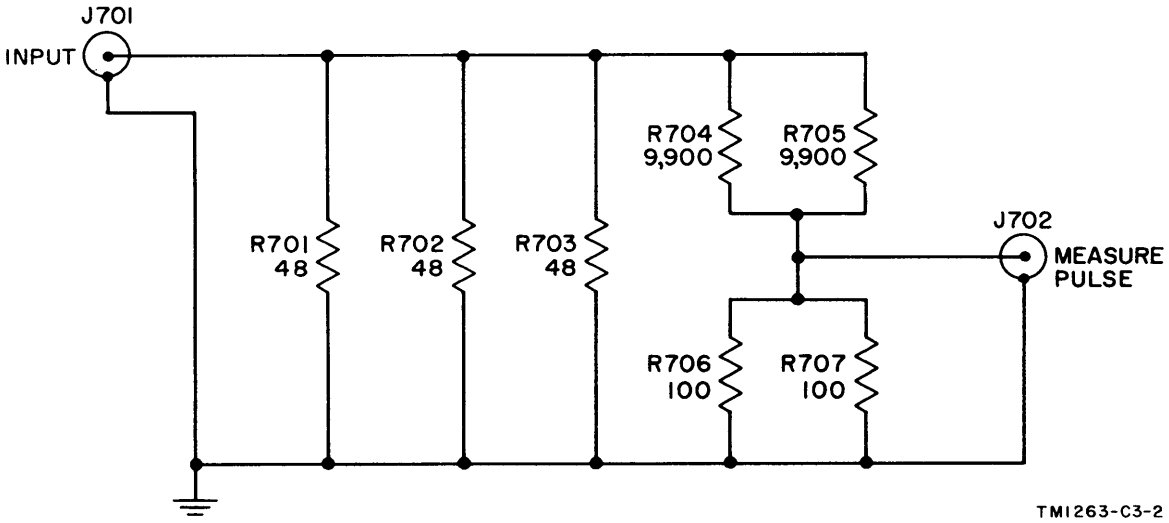

Figure 2-1.1. Dummy Load S-234B/UP, schematic diagram.

Page 3-0. Add figure 3-1.1 after figure 3-1.

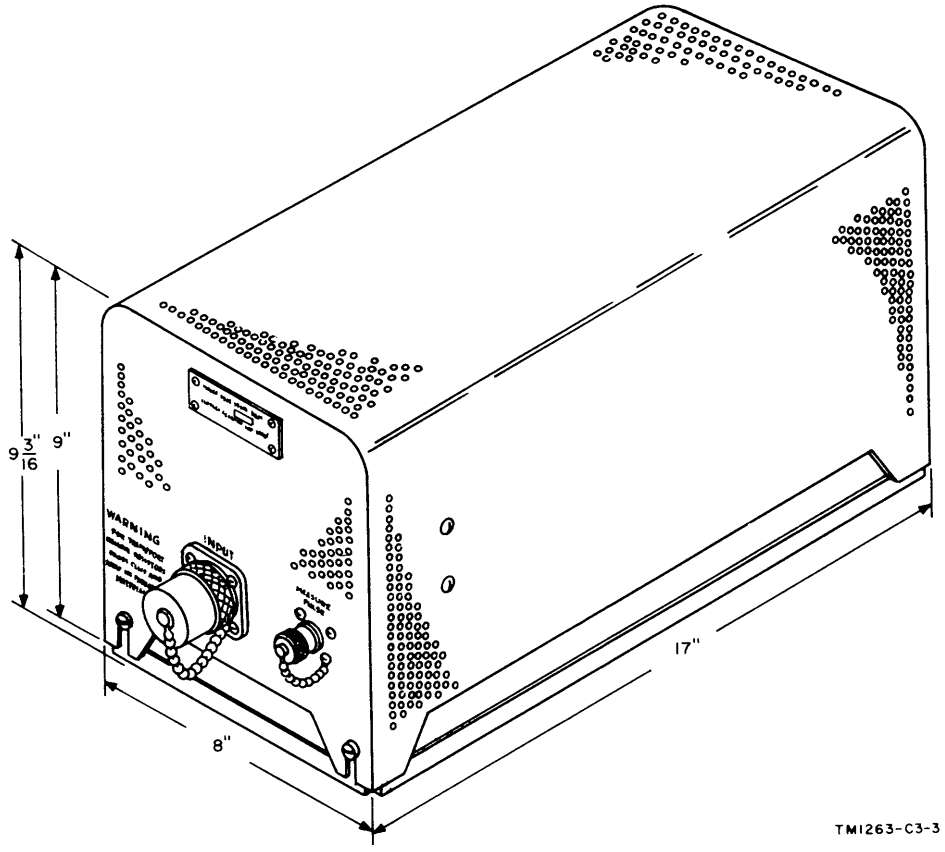

Figure 3-1.1. Dummy Load TS-234B/UP, outline dimensions.

Page 3-1. Add section 3.1 after section 3:

SECTION 3.1

MAINTENANCE INSTRUCTIONS

3.1-1. Scope of Operator's Maintenance

The maintenance duties assigned to the operator of Dummy Load TS-234/UP are listed below together with a reference to the paragraphs covering the specific maintenance functions. The duties assigned require no special tools or test equipment.

a. Daily preventive maintenance checks and services (para 3.1-5).

b. Weekly preventive maintenance checks and services (para 3.1-6).

c. Cleaning (para 3.1-4).

3.1-2. Operator's Preventive Maintenance

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

a. Systematic Care. The procedures given in paragraphs 3.1-4, 3.1-5, and 3.1-6 cover routine systematic care and cleaning essential to proper upkeep and operation of the equipment.

b. Preventive Maintenance Checks and Services.

The preventive maintenance checks and services chart (para 3.1-5 and 3.1-6) outlines 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 chart indicates what to check, how to check, and the normal conditions. 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 category maintenance or repair is required. Records and reports of these checks and services must be made in accordance with the requirements set forth in TM 38-750.

3.1-3. Preventive Maintenance Checks and Services Periods

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

a. Paragraph 3.1-5 specifies the checks and services that must be accomplished daily or at least once each week if the equipment is maintained in a standby condition.

b. Paragraph 3.1-6 specifies *additional* checks and services that must be performed weekly.

3.1-4. Cleaning

Inspect the exterior of the equipment. The exterior surfaces should be free of dust, dirt, grease, and fungus.

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

WARNING

The fumes of trichloroethane are toxic. Provide thorough ventilation whenever used. DO NOT use near an open flame. Trichloroethane is not flammable, but exposure of the fumes to an open flame converts the fumes to highly toxic, dangerous gases.

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

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

NOTE

The daily preventive maintenance checks and services must be performed *only* when Dummy Load TS-234/UP is not in operation (no power applied).

3.1-5. Daily Preventive Maintenance Checks and Services Chart

Sequence No.	*Item to be inspected*	*Procedure*	*References*
1	Dummy Load TS-234/UP....	Inspect equipment (supplied and not supplied, but required) for completeness.	Fig. 1-1 and 1-2 and tables 1-1 and 1-2.
2	Case exterior.....	**WARNING** **The fumes of trichloroethane are toxic, provide thorough ventilation whenever used. DO NOT use near an open flame. Trichloroethane is not flammable, but exposure of the fumes to an open flame converts the fumes to highly toxic, dangerous gases.** Inspect for cleanliness. Remove loose dust and dirt with a clean cloth. Remove other dirt with a cloth dampened with trichloroethane. Wipe surface with a clean, lint-free cloth.	Fig. 1-1 and 1-2
3	Operation	When performing operational test on associated equipment, check operation of dummy load.	Fig. 1-1 and 1-2

3.1-6. Weekly Preventive Maintenance Checks and Services Chart

NOTE
The daily preventive maintenance checks and services must be performed only when Dummy Load TS-234/UP is not in operation (no power applied).

Sequence No.	*Item to be inspected*	*Procedure*	*References*
1	Cord CG-40/TSP-1	Inspect for cuts, kinks, frays, cracks, or other signs of damage or deterioration. Inspect chain securing connector adapter to cord for bent, broken, or otherwise damaged condition.	Fig. 1-2.
2	Cabinet exterior	Inspect cabinet exterior for paint chips, rust, or corrosion. Refer equipment to higher category for refinishing.	Fig. 1-1.
3	Connectors and jacks	Inspect connectors and jacks for loose, missing, or bent center conductor. Inspect rubber insulation for signs of deterioration.	Fig. 1-1 and 1-2.

Add section 3.2 after section 3.1:

SECTION 3.2

ORGANIZATIONAL MAINTENANCE

3.2-1. Scope of Organizational Maintenance

a. This section contains instructions covering organizational maintenance of Dummy Load TS-234/UP. It includes instructions for performing preventive and periodic maintenance services and repair functions to be accomplished by the organizational repairman.

b. Organizational maintenance of Dummy Load TS-234/UP consists of monthly preventive maintenance checks and services (para 3.2-5).

3.2-2. Materials Required

The materials required for organizational maintenance are listed below:

a. Trichloroethane.

b. Cleaning cloth.

c. Fine sandpaper No. 000.

d. Paint, proper type.

e. Brush, paint

3.2-3. Organizational Preventive Maintenance

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

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

3.2-4. Monthly Maintenance

Perform the maintenance functions indicated in the monthly preventive maintenance checks and services chart (para 3.2-5) once each month. A month is defined as approximately 30 calendar days of 8-hour-per-day operation. If the equipment is operated 16 hours a day, the monthly preventive maintenance checks and services should be performed at 15-day intervals. 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 service before operation; it does not require monthly preventive maintenance.

3.2-5. Monthly Preventive Maintenance Checks and Services Chart

NOTE

The daily preventive maintenance checks and services must be performed only when Dummy Load TS-234/UP is not in operation (no power applied).

Sequence No.	*Item to be inspected*	*Procedure*	*References*
1	Interior of cases	**WARNING** **The fumes of trichloroethane are toxic. Provide thorough ventilation whenever used. DO NOT use near an open flame. Trichloroethane is not flammable, but exposure of the fumes to an open flame converts the fumes to highly toxic, dangerous gases.**	
		a. Inspect interior surfaces for cleanliness. Clean as required.	a. Fig. 4-1.
		b. Inspect interior surfaces for paint chips, rust, or corrosion. Remove rust and corrosion and repaint as required.	b. Fig. 4-1 and para 3.2-6.
2	Resistor mounting assembly..	Inspect mounting clamps for proper clamp tension.	Fig. 4-1 and 4-2.
3	Load resistors.....	Inspect for cracks, breaks, or loose metal contacts.	Fig. 4-1.
4	Wring	Inspect for broken, shorted, open, or loose connections.	Fig. 4-1.
5	Mounting screws, nuts, and washers	Inspect for completeness and tightness.	Fig. 4-1 and 4-2.
6	Publications.....	Check to see that all publications are complete, serviceable, and current.	DA Pam 310-4.
7	Modifications	Check DA Pam 310-7 to determine if new applicable MWO's have been published. All URGENT MWO's must be applied immediately. All NORMAL MWO's must be scheduled.	TM 38-750 and DA Pam 310-7.

3.2-6. 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 and TB 746-10.

Page 4-0. Add figure 4-1.1 after figure 4-1:

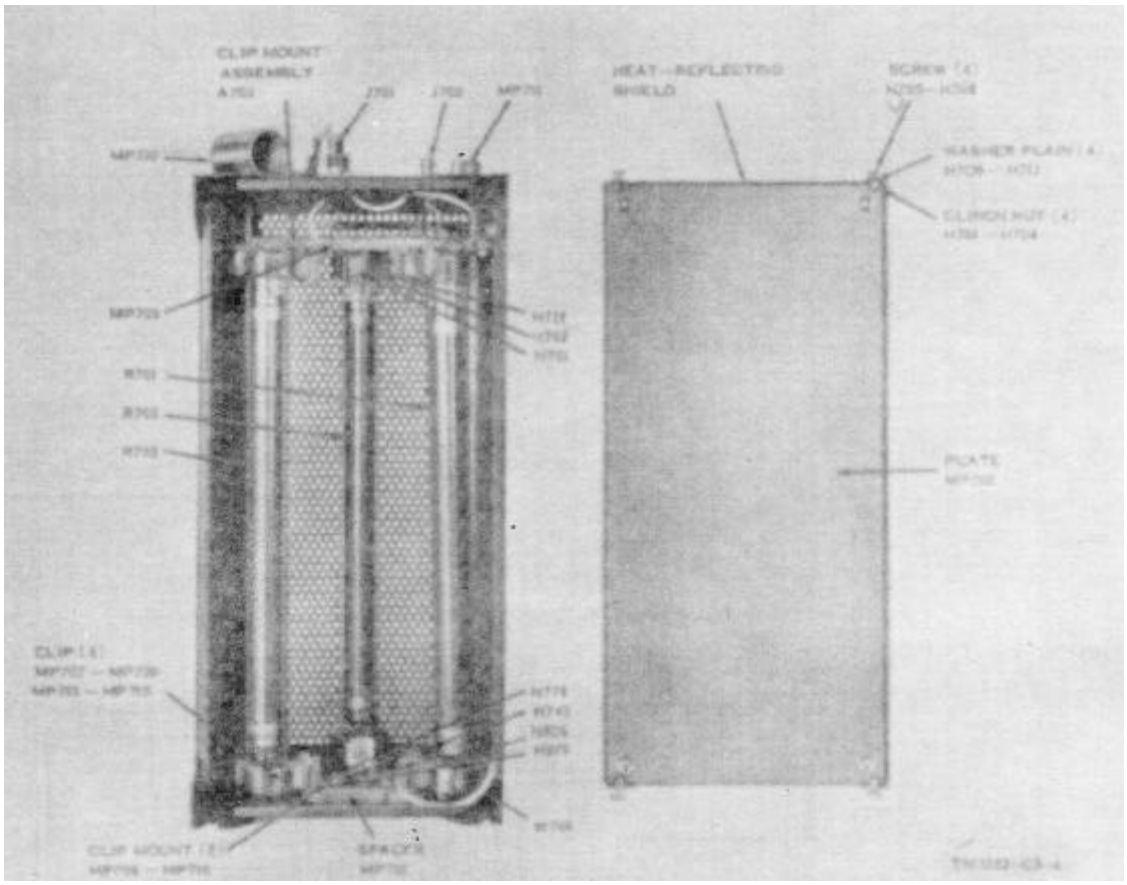

Figure 4-1.1. Dummy Load TS-234B/UP, internal view.

Page 4-1. Section 4, heading. Change heading to: FIELD MAINTENANCE

Paragraph 1. Make the following changes: Delete subparagraph *c* and substitute.

c. Resistors R-704 and R-705. With the three large load resistors removed, measure the parallel resistance of resistors R-704 and R-705. On Dummy Load TS-234/UP, this resistance is measured between the inner conductor of the INPUT jack and the left-hand (hot) pin of the MEASURE PULSE jack. On Dummy Load TS-234B/UP, this resistance is measured between the inner conductor of the INPUT jack and the inner conductor of the MEASURE PULSE jack. The value should be approximately 4,950 ohms. This will check the high-voltage leg of the voltage divider.

Delete subparagraph *d* and substitute:

d. Resistors R-706 and R-707. With the three large load resistors removed, measure the parallel resistance of R-706 and R-707. On Dummy Load TS-234/UP, this resistance is measured between the two pins of the MEASURE PULSE jack. On Dummy Load TS-234B/UP, this resistance is measured between the inner conductor and outer sleeve of the MEASURE PULSE jack. The value should be approximately 50 ohms. This will check the low-voltage leg of the voltage divider.

Page 4-2. Add figure 4-2.1 after figure 4-2:

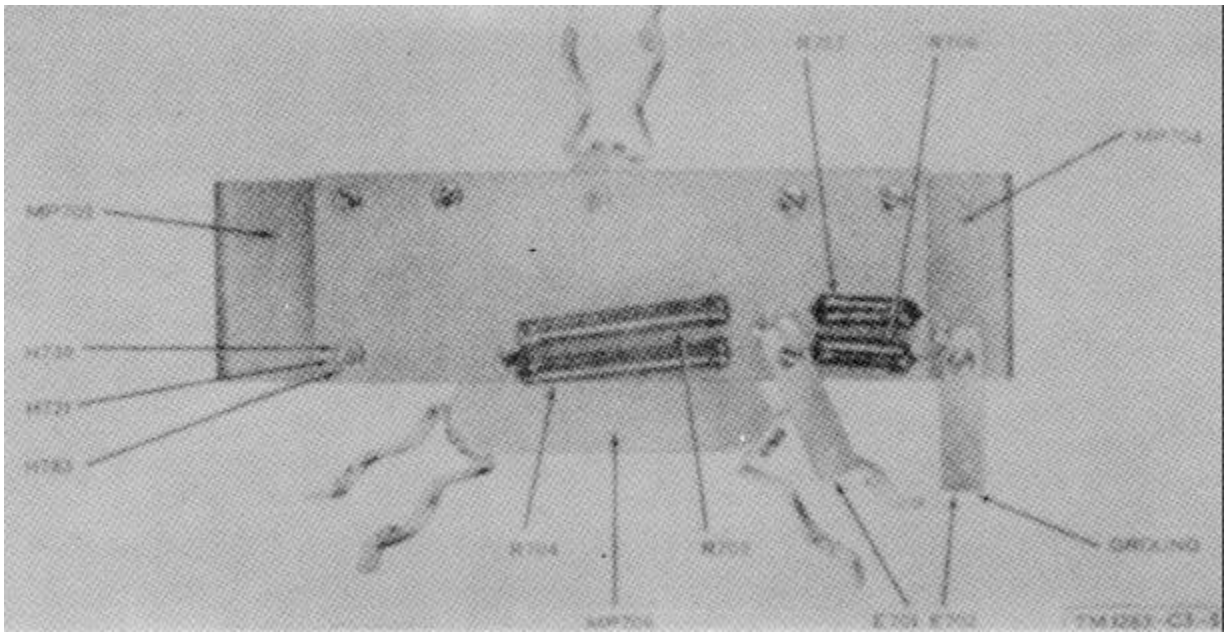

Figure 4-2.1. Dummy Load TS-234B/UP, clip mount assembly.

Add figure 4-3.1 after figure 4-3:

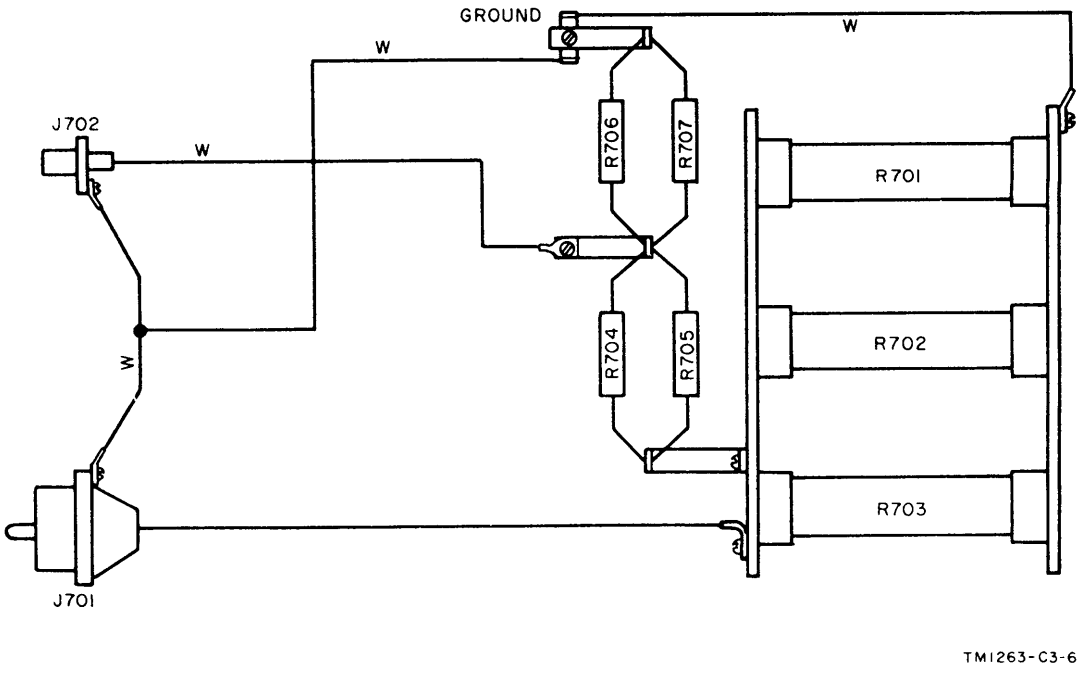

Figure 4-3.1. Dummy Load TS-234B/UP, wiring diagram.

Add section 4.1 after section 4:

SECTION 4.1

DEPOT OVERHAUL STANDARDS

4.1-1. Applicability of Depot Overhaul Standards

The tests outlined in this section are designed to measure the performance capability of a repaired equipment. Equipment that is to be returned to stock should meet the standards given in these tests.

4.1-2. Applicable References

a. Repair Standards. Applicable procedures of the depots performing these tests and the general standards for repaired electronic equipment given in TB SIG 355-1, TB SIG 355-2, and TB SIG 355-3 form a part of the requirements for testing this equipment.

b. Modification Work Orders. Perform all modification work orders applicable to this equipment before making the tests specified. DA Pam 310-7 lists all available MWO's.

4.1-3. Test Facilities Required

The following items are required for depot testing:

Item	*Stock No.*	*Common name*	*Quantity required*	*Applicable literature*
Multimeter TS-352B/U.....	6625-553-0142	Multimeter	2	TM 11-6625-366-15
Transformer, Variable Power TF-171/USM.	5950-503-0632	Variac	1	N/A
Ammeter, ac, 60 cps	6625-272-9916	Ammeter	1	N/A
Resistor, variable, 0-19.5 ohms, 500 watts.	5905-194-9335	Rheostat	1	N/A

4.1-4. General Test Requirements

All tests will be performed under the conditions given below:

a. All tests will be performed at normal room temperature.

b. The ac input voltage shall be 115 volts ±5 percent at 60 cycles.

c. A 15-minute warm-up period is needed to establish the proper dummy load resistances.

d. Set up the equipment for tests as shown in figure 4.1-1.

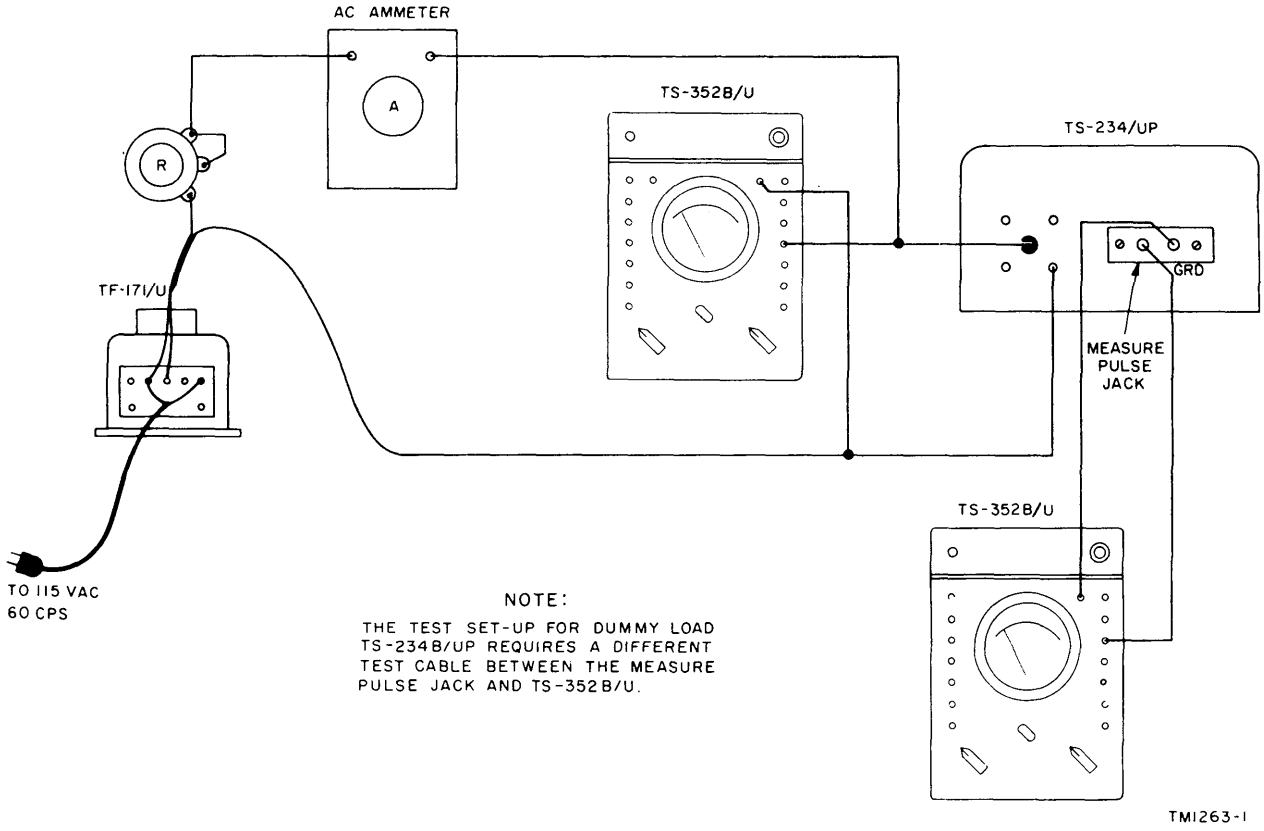

Figure 4.1-1. Load test.

4.1-5. Electrical Load Test

a. Set up the equipment as shown in figure 4.1-1.

b. Adjust the rheostat until Ammeter ME-65/U indicates 8.9 amperes.

c. The input voltmeter of the TS-352B/U should indicate 135 volts ±10 percent.

4.1-6. Electrical Voltage Divider Test

a. Adjust the TF-171/USM for an indication of 135 volts on the TS-352B/U.

b. The voltage reading on the TS-352B/U output voltmeter shall be 1.35 volts ±10 percent

NOTE

The voltage divider of the TS-234/UP and TS-234B/UP has a resistance ratio of 100 to 1.

c. Restore all equipment to original condition.

Page 5-1. Delete section 5 and substitute appendixes A, B, and C.

APPENDIX A

REFERENCES

Following is a list of references available to maintenance personnel of Dummy Loads TS-234/UP and TS-234B/UP.

AR 70-10	Test and Evaluation During Research and Development of Materiel.
AR 310-25	Military Terms, Abbreviations, and Symbols: Dictionary of United States Army Terms.
AR 310-50	Military Terms, Abbreviations, and Symbols: Authorized Abbreviations and Brevity Codes.
AR 750-5	Maintenance of Supplies and Equipment Organization, Policies, and Responsibilities for Maintenance Operations.
DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8, and 9), Supply Bulletins, and Lubrication Orders.
DA Pam 310-7	U.S. Army Equipment Index of Modification Work Orders.
TB SIG 355-1	Depot Inspection Standard for Repaired Signal Standard.
TB SIG 355-2	Depot Inspection Standard for Refinishing Repaired Signal Equipment.
TB SIG 355-3	Depot Inspection Standard for Moisture and Fungus Resistant Treatment.
TM 9-213	Painting Instructions for Field Use.
TM 11-6625-366-15	Organizational, DS, GS, and Depot Maintenance Manual: Multimeter TS-352B/U.
TM 11-6625-366-25P	Organizational, DS, GS, and Depot Maintenance Repair Parts: Multimeter TS-352B/U.
TM 38-750	Army Equipment Record Procedures.

APPENDIX B

BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

B-1. Scope

This appendix lists items which accompany the TS-234/UP and TS-234B/UP or are required for installation, operation, or operator's maintenance.

B-2. General

This Basic Issue Items List is divided into the following sections:

a. Basic Issue Items - Section II. A list of items which accompany the TS-234/UP and TS-234B/UP and are required by the operator/crew for installation operation, or maintenance.

b. Maintenance and Operating Supplies - Section III. Not applicable.

B-3. Explanation of Columns

The, following provides an explanation of columns in the tabular list of Basic Issue Items, Section II.

a. Source, Maintenance, and Recoverability Codes (SMR), Column 1.

(1) Source code indicates the selection status and source for the listed item. Source codes are -

Code *Explanation*

P - Repair parts which are stocked in or supplies from the GSA/DSA, or Army supply system, and authorized for use at indicated maintenance categories.

P2 - Repair parts which are procured and stocked for insurance purposes because the combat or military essentiality of the end item dictates that a minimum quantity be available in the supply system.

P9 - Assigned to items which are NSA design controlled: unique repair parts, special tools, test, measuring and diagnostic equipment, which are stocked and supplied by the Army COMSEC logistic system, and which are not subject to the provisions of AR 380-41.

P10- Assigned to items which are NSA design controlled: special tools, test, measuring and diagnostic equipment for COMSEC support, which are accountable under the provisions of AR 380-41, and which are stocked and supplied by the Army COMSEC logistic system.

M - Repair parts which are not procured or stocked, but are to be manufactured in indicated maintenance levels.

A - Assemblies which are not procured or stocked as such, but are made up of two or more units. Such component units carry individual stock numbers and descriptions, are procured and stocked separately and can be assembled to form the required assembly at indicated maintenance categories.

X - Parts and assemblies which are not procured or stocked and the mortality of which normally is below that of the applicable end item or component. The failure of such part or assembly should result in retirement of the end item from the supply system.

X1 - Repair parts which are not procured or stocked. The requirement for such items will be filled by use of the next higher assembly or component.

X2 - Repair parts which are not stocked. The indicated maintenance category requiring such repair parts will attempt to obtain same through cannibalization. Where such repair parts are not obtainable through cannibalization, requirements will be requisitioned with accompanying justification, through normal supply channels.

C - Repair parts authorized for local procurement. Where such repair parts are not obtainable from local procurement, requirements will be requisitioned through normal supply channels accompanied by a supporting statement of nonavailability from local procurement.

G - Major assemblies that are procured with PEMA funds for initial issue only as exchange assemblies at DSU and GSU level. These assemblies will not be stocked above DS and GS level or returned to depot supply level.

(2) Maintenance code indicates the lowest category of maintenance authorized to install the listed item. The maintenance level codes are -

Code *Explanation*

C ..... Operator/crew
O..... Organizational maintenance

(3) Recoverability code indicates whether unserviceable items should be returned for recovery or salvage. Items not coded are expendable. Recoverability codes are -

Code	*Explanation*
R -	Repair parts and assemblies that are economically repairable at DSU and GSU activities and are normally furnished by supply on an exchange basis.
S-	Repair parts and assemblies which are economically repairable at DSU and GSU activities and which normally are furnished by supply on an exchange basis. When items are determined by a GSU to be uneconomically repairable, they will be evacuated to a depot for evaluation and analysis before final disposition.
T -	High dollar value recoverable repair parts which are subject to special handling and are issued on an exchange basis. Such repair parts normally are repaired or overhauled at depot maintenance activities.
U -	Repair parts specifically selected for salvage by reclamation units because of precious metal content, critical materials, or high dollar value reusable casings or castings.

b. Federal Stock Number Column 2. This column indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. Description, Column 3. This column indicates the Federal item name and any additional description of the item required A part number or other reference number is followed by the applicable five-digit Federal supply code for manufacturers in parentheses.

d. Unit of Measure (U/M), Column 4. A 2-character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based, e.g., ft, ea, pr, etc.

e. Quantity Incorporated in Unit, Column 5. This column indicates the quantity of the item used in the AN TS-234/UP and TS-234B/UP. A "V" appearing in this column in lieu of a quantity indicates that a definite quantity cannot be indicated (e.g., shims, spacers, etc.).

f. Quantity Furnished With Equipment, Column 6. This column indicates the quantity of an item furnished with the equipment.

g. Illustration, Column 7. This column is divided as follows:

(1) *Figure Number, Column 7a.* This column indicates the figure number of the Illustration in which the item is shown.

(2) *Item Number, Column 7b.* This column indicates the callout number used to reference the item in the illustration.

B-4. Explanation of Columns in the Tabular List of Maintenance and Operating Supplies -Section III

Not applicable.

SECTION II. BASIC ISSUE ITEMS

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION Reference Number & Mfr Code	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC. IN UNIT	(6) QTY FURN WITH EQUIP	(7) (a) FIG. NO.	(7) (b) ITEM NO. OR REFERENCE DESIGNATION
		DUMMY LOAD TS-234/UP: (This item is nonexpendable)					1-1	
	6625-280-3479	DUMMY LOAD TS-234B/UP: (This item is nonexpendable)					1-1.1	
		TM 11-1263		ea	1	1		
		Requisition through pinpoint account number if assigned; otherwise through nearest Adjutant General facility.						
		A quantity of 1 technical manual is packed with each equipment. Where a valid need exists, additional copies may be requisitioned and kept on hand.						
P-O	5905-642-4781	RESISTOR FIXED FILM: D169449; 64959	2 1	ea		3	4-1.1 4-1	R701
A-O-R		CABLE ASSEMBLY RADIO FREQUENCY CG-40A/TPS-1	2	ea	1	1		W1001
		NO BASIC ISSUE ITEMS AE MOUNTED IN OR ON THIS EQUIPMENT						
		NO ACCESSORIES TOOLS OR TEST EQUIPMENT ARE TO BE ISSUED WITH THIS EQUIPMENT						

APPENDIX C

DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

C-1. Scope

This appendix lists repair parts and special tools required for the performance of direct support, general support, and depot maintenance of the TS-234/UP and TS-234B/UP.

C-2. General

This Repair Parts and Special Tools List is divided into the following sections:

a. Repair Parts -Section II. A list of repair parts authorized for the performance of maintenance at the direct support, general support, and depot level.

b. Special Tools, Test and Support Equipment - Section III. Not applicable.

NOTE

All indexes noted below are cross-referenced to index numbers. The index numbers appear in ascending sequence in column 1 of the repair parts list. The index number for the particular item will be the same for the item in all sections of this appendix.

c. Federal Stock Number Cross-Reference to Index Number - Section IV. A list of Federal stock numbers in ascending numerical sequence cross-referenced to index (sequence) numbers.

d. Figure and Item Number Cross-Reference to Index Numbers - Section V. A list of Illustration figure numbers in numerical sequence, cross-referenced to item number (reference designation) and index numbers.

e. Reference Designation Cross-Reference to Index Number - Section VI. A list of reference designations (or item numbers) to index numbers.

C-3. Explanation of Columns

The following provides an explanation of columns in the tabular lists.

a. Source, Maintenance, and Recoverability Codes (SMR), Column 1.

(1) Source code indicates the selection status and source for the listed item.

Source codes are -

Code	*Explanation*
P -	Repair parts which are stocked in or supplied from the GSA/DSA, or Army supply system, and authorized for use at indicated maintenance categories.
P2 -	Repair parts which are procured and stocked for insurance purposes because the combat or military essentiality of the end item dictates that a minimum quantity be available in the supply system.
P9 -	Assigned to items which are NSA design controlled: unique repair parts, special tools, test, measuring and diagnostic equipment, which are stocked and supplied by the Army COMSEC logistic system, and which are not subject to the provisions of AR 380-41.
P10 -	Assigned to items which are NSA design controlled: special tools, test, measuring and diagnostic equipment for COMSEC support, which are accountable under the provisions of AR 380-41, and which are stocked and supplied by the Army COMSEC logistic system.
M -	Repair parts which are not procured or stocked, but are to be manufactured in indicated maintenance levels.
A -	Assemblies which are not procured or stocked as such, but are made up of two or more units. Such component units carry individual stock numbers and descriptions, are procured and stocked separately and can be assembled to form the required assembly at indicated maintenance categories.

X - Parts and assemblies which are not procured or stocked and the mortality of which normally is below that of the applicable end item or component. The failure of such part or assembly should result in retirement of the end item from the supply system.

X1 - Repair parts which are not procured or stocked. The requirement for such items will be filled by use of the next higher assembly or component.

X2 - Repair parts which are not stocked. The indicated maintenance category requiring such repair parts will attempt to obtain same through cannibalization. Where such repair parts are not obtainable through cannibalization, requirements will be requisitioned, with accompanying justification, through normal supply channels.

G - Major assemblies that are procured with PEMA funds for initial issue only as exchange assemblies at DSU and GSU level. These assemblies will not be stocked above DS and GS level or returned to depot supply level.

(2) Maintenance code indicates the lowest category of maintenance authorized to install the listed item. The maintenance level codes are -

Code	*Explanation*
C	Operator/crew
O	Organizational maintenance
F	Direct support maintenance
H	General support maintenance
D	Depot maintenance

(3) Recoverability code indicates whether unserviceable items should be returned for recovery or salvage. Items not coded are expendable. Recoverability codes are -

Code *Explanation*

R - Repair parts and assemblies that are economically repairable at DSU and GSU activities and are normally furnished by supply on an exchange basis.

S - Repair parts and assemblies which are economically repairable at DSU and GSU activities and which normally are furnished by supply on an exchange basis. When items are determined by a GSU to be uneconomically repairable, they will be evacuated to a depot for evaluation and analysis before final disposition.

T - High dollar value recoverable repair parts which are subject to special handling and are issued on an exchange basis. Such repair parts normally are repaired or overhauled at depot maintenance activities.

U - Repair parts specifically selected for salvage by reclamation units because of precious metal content, critical materials, or high dollar value reusable casings or castings.

b. Federal Stock Number, Column 2. This column indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. Description, Column 3. This column indicates the Federal item name and any additional description of the item required. A part number or other reference number is followed by the applicable five-digit Federal supply code for manufacturers in parentheses.

d. Unit of Measure (U/M), Column 4. A 2-character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based; e.g., ft, ea, pr, etc.

e. Quantity Incorporated in Unit Column 5. This column indicates the quantity of the item used in the TS-234/UP and TS-234B/UP. A "V" appearing in this column in lieu of a quantity indicates that a definite quantity cannot be indicated (e.g., shims, spacers, etc.).

f. 30-Day DS/GS Maintenance Allowances, Columns 6 and 7

NOTE
Allowances in GS column are for GS maintenance only.

(1) The allowance columns are divided into three subcolumns. Indicated in each subcolumn, opposite the first appearance of each item, is the total quantity of items authorized for the number of equipments supported. Subsequent appearances of the same item will have the letters "REF" in the applicable allowance columns. Items authorized for use as required but not for initial stockage are identified with an asterisk in the allowance column.

(2) The quantitative allowances for DS/GS levels of maintenance will represent initial stockage for a 30-day period for the number of equipments supported.

(3) Determination of the total quantity of parts required for maintenance of more than 100 of these equipments can be accomplished by converting the equipment quantity to a decimal factor by placing a decimal point before the next to last digit of the number to indicate hundredths, and multiplying the decimal factor by the parts quantity authorized in the 51-100 allowance column. Example, authorized allowance for 51-100 equipments is 40; for 150 equipments multiply 40 by 1.50 or 60 parts required.

g. 1-Year Allowances Per 100 Equipments /Contingency Planning Purposes, Column 8. This column indicates opposite the first appearance of each item the total quantity required for distribution and contingency planning purposes. The range of items indicates total quantities of all authorized items required to provide for adequate support of 100 equipments for 1 year.

h. Depot Maintenance Allowance Per 100 Equipments, Column 9. This column indicates opposite the first appearance of each item, the total quantity authorized for depot maintenance of 100 equipments. Subsequent appearances of the same item will have the letters "REF" in the allowance column. Items authorized for use as required but not for initial stockage are identified with an asterisk in the allowance column.

i. Illustration, Column 10. This column is divided as follows:

(1) Figure Number Column 10a. Indicates the figure number of the illustration in which the item is shown.

(2) Item Number, Column 10b. Indicates the callout number used to reference the item in the illustration.

C-4. Special Information

a. Identifications of the usable on codes included in column 3 of this appendix are -

Code	*Used on*
1	TS-234/UP
2	TS-234B/UP

b. Repair parts mortality is computed from failure rates derived from experience factors with the individual parts in a variety of equipments. Variations in the specific application and periods of use of electronics equipment, the fragility of electronic piece parts, plus intangible material and quality factors intrinsic to the manufacture of electronic parts, do not permit mortality to be based on hours of end item use. However, long periods of continuous use under adverse conditions are likely to increase repair parts mortality.

C-5. Location of Repair Parts

a. This appendix contains three cross-reference indexes (sec. IV, V, and VI) to be used to locate a repair part when either the Federal stock number, reference number (manufacturer's part number), figure number, or reference designation is known. The first column in each cross-reference index is prepared, as applicable, in numerical or alphanumerical sequence. The last column of each cross-reference index lists the index number assigned to the part.

b. Refer to the appropriate cross-reference index (para C-2*c*, *d*, *e*) and note the index number in the last column; then refer to the repair parts list to locate the index number which is listed in ascending order in column 1 of the repair parts list.

C-6. Federal Supply Code for Manufacturers

Code	*Manufacturer*
06473	Amphenol Corp. Amphenol Space and Missile Systems Division
21962	Vectron Corp.
64959	Western Electric Co. Inc.
72962	Elastic Stop Nut Corp of America
80053	Beckman Instrument Inc. Electronic Instruments Division Offner Operation
80058	Joint Electronic Type Designation System
80063	Army Electronics Command
81349	Military Specifications
81350	Joint Army-Navy Specifications
92194	Alpha Wire Corp.
96906	Military Standards

SECTION II. REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE

(1) SMR CODE / INDEX NO.	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION / REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC. IN UNIT	(6) 30-DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30-DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG. NO.	(b) ITEM NO.
A001		DUMMY LOAD T-234/P: (This item is nonexpendable)												1-1	
A002	6625-280-3479	DUMMY LOAD TS-234B/UP: (This item is nonexpendable)	2	ea	1									1-1.1	
M-D A003		COVER ASSEMBLY: SMD389449; (80063)	2	ea	1									1-1.1	MP701
A-F-R A004		PLATE ASSEMBLY: SMD389465; (80063)	2	ea	1									4-1.1	MP702
P-F A005	5305-989-6265	SCREW MACHINE: MS35207-262; (96906)	2	ea	4	*	2	2	*	2	2	16	10	4-1.1	H705 thru H708
P-F A006	5310-809-8546	WASHER FLAT: MS27183-8; (96906)	2	ea	4	*	2	2	*	2	2	14	8	4-1.1	H709 thru H712
M-D A007		PLATE: SMD389465-1; (80063)	2	ea	1									4-1.1	MP702
P-H A008		CLINCH NUT: F22NC1-82; (72962)	2	ea	4				*	2	2	14	12	4-1.1	H701 thru H704
A-F-R A009		CLIP MOUNT ASSEMBLY: SMD389456; (80063)	2	ea	1									4-1.1	A703
P-F A010	5305-989-6265	SCREW, MACHINE: SAME AS A005	2	ea	4									4-1.1	H713
P-F A011	5310-809-8546	WASHER FLAT: SAME AS A006	2	ea	4										H717 thru H720
P-F A012		WASHER LOCK: MS35338-43; (96906)	2	ea	4	*	2	2	2	2	2	29	20	4-2.1	H721
P-F A013		NUT, PLAIN HEXAGONAL: MS35650-202; (96906)	2	ea	4	*	2	2	2	2	2	29	21		H725 thru H728
M-D A014		INSULATION BOARD THERMAL: SMB389459; (80063)	2	ea	1									4-1. 1	MP703
M-D A015		BRACKET: SMB389458; (80063)	2	ea	1									4-2.1	MP704
M-D A016		BRACKET: SMB389457; (80063)	2	ea	1									4-2.1	MP705
M-D A017		CLIP MOUNT: SMC389462; (80063)	2	ea	1									4-2.1	MP706
M-D A018		TERMINAL: SMB389455; (80063)	2	ea	2									4-2.1	E701, E702
P-F A019		CLIP, ELECTRICAL: V66-605-1; (21962)	2	ea	3	*	2	2	2	2	2	31	18	4-1.1	MP707 thru MP709
P-F A019.1		CLIP, ELECTRICAL: BL-441553; (64959)	1	ea	6	*	2	2	*	2	2	11	6		0701
P-F A020	5905-258-7361	RESISTOR, FIXED, WIREWOUND: RW55V101; (81349)	2	ea	4	*	2	2	*	2	2	11	6	4-2 4-2.1	R706, R707 R706, R707
P-F A022	5905-581-1970	RESISTOR, FIXED, FILM: RN80B1002F; (81349)	2	ea	4	*	2	2	*	2	2	11	6	4.2.1 4-2.1	R704, R705 R704, R705
P-F A024		TERMINAL, LUG: MS35431-112; (96906)	3	ea	5	*	2	2	2	2	2	31	18		E703 thru E707
P-F A025	5305-054-6648	SCREW, MACHINE: MS51957-24; (96906)	2	ea	3	*	2	2	*	2	2	16	9		H729 thru H731
P-F A026	5305-054-6671	SCREW, MACHINE: 51957-46; (96906)	2	ea	5	*	2	2	2	2	2	23	15		H732 thru H736
P-F A027	5305-993-1848	SCREW MACHINE: MS35207-265; (96906)	2	ea	6	*	2	2	2	2	2	23	15	4-2.1	H738
P-F A028	5310-045-4007	WASHER LOCK: MS35338-41; (96906)	2	ea	3	*	*	2	*	*	2	8	3	4-1.1	H743
P-F A029	5310-045-3299	WASHER LOCK: MS35338-42; (96906)	2	ea	3	*	2	2	*	2	2	16	9		H746 thru H748
P-F A030		WASHER LOCK: SAME AS A012	2	ea	9										H749 thru H757

SECTION II. REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE (CONT)

(1) SMR CODE / INDEX NO.	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION / REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC. IN UNIT	(6) 30-DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30-DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG. NO.	(b) ITEM NO.
P-F A031	5310-934-9757	NUT PLAIN HEXAGONAL: MS35649-282; (96906)	2	ea	5	*	2	3	2	2	2	53	36	4-1.1	H762
P-F A032	5310-934-9751	NUT PLAIN HEXAGONAL: MS35650-302; (96906)	2	ea	9	*	2	2	2	2	2	34	27	4-2.1	H762
P-F A033	5305-989-6265	SCREW MACHINE: SAME AS A005	2	ea	3										H771, H772, H773
M-D A034		PLATE IDENTIFICATION: SMB389446; (80063)	2	ea	1									1-1.1	N701
P-F A035	5935-877-5954	CONNECTOR, RECEPTACLE, ELECTRICAL: 24300; (06473)	2	ea	1	*	*	2	*	*	2	8	4	4-1.1	J701
P-F A035.1		CONNECTOR RECEPTACLE: D-167823; (64959)	1	ea	1	*	*	2	*	*	2	8	4	1-1	J701
P-F A036	5935-838-8470	CONNECTOR PLUG ELECTRICAL: UG290U; (80058)	2	ea	1	*	*	2	*	*	2	8	4	4-1.1	J702
P-F A036.1		CONNECTOR, RECEPTACLE: BP-432861; (64959)	1	ea	1	*	*	2	*	*	2	8	4	1-1	J702
X1-F A036.2		CONTACT, CONNECTOR: BP-432860; (64959)	1	ea	1										J702A
P-F A037		COVER: V66-605-3; (21962)	2	ea	1	*	*	2	*	*	2	8	3	4-1.1	MP710
P-F A038	5935-254-5131	COVER: CW123U; (80053)	2	ea	1	*	*	2	*	*	2	8	3	4-1.1	MP711
P-O A039	5905-642-4781	RESISTOR FIXED FILM: D169449; (64959)	2 1	ea	3	*	2	2	*	2	2	16	9	4-1.1 4-1	R701, R702, R703
P-F A042		SPACER: SMB389460; (80063)	2	ea	1	*	*	*	*	*	*	5	2	4-1.1	MP712
P-F A043		CLIP, ELECTRICAL: SAME AS A019	2	ea	3									4-11	MP713, MP714, MP715
M-D A044		CLIP, MOUNT: SAME AS A017	2	ea	1									4-1.1	M716
P-F A045	5305-889-3118	SCREW, MACHINE: M35206-203; (96906)	2	ea	4	*	2	2	*	2	2	18	12		H774 thru H777
P-F A046	5305-054-6667	SCREW, MACHINE: MS51957-44; (96906)	2	ea	7	*	2	2	2	2	2	34	21	4-1.1	H778
P-F A047	5305-989-6265	SCREW, MACHINE: SAME AS A005	2	ea	3										H786, H787, H788
P-F A048	5310-543-5060	WASHER, LOCK: MS35338-39;(96906)	2	ea	4	*	*	2	*	*	2	8	4		H789 thru H792
P-F A049	5310-045-3299	WASHER, LOCK: SAME AS A029	2	ea	7										H793 thru H799
P-F A050		WASHER, LOCK: SAME AS A012	2	ea	7										H800 thru H806
P-F A051	5310-045-4007	WASHER, LOCK: SAME AS A028	2	ea	1										H807
P-F A052	5310-809-8544	WASHER, FLAT: MS27183-7; (96906)	2	ea	3	*	2	2	*	2	2	16	9	4-1.1	H808
P-F A053	5310-934-9738	NUT, PLAIN HEXAGONAL: MS35649,-222; (96906)	2	ea	4	*	2	2	*	2	2	18	12		H811 thru H814
P-F A054	5310-934-9757	NUT, PLAIN HEXAGONAL: SAME AS A031	2	ea	7									4-1.1	H815
P-F A055		NUT, PLAIN HEXAGONAL: SAME AS A013	2	ea	3										H822 thru H824
P-F A056		TERMINAL LUG: SAME AS A024	2	ea	1										E708
P-F A057	5940-271-7258	TERMINAL LUG: MS35431-5; (96906)	2	ea	1	*	*	2	*	*	2	8	3		E709

SECTION II. REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT, AND DEPOT MAINTENANCE (CONT)

(1) SMR CODE / INDEX NO.	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION / REFERENCE NUMBER & MFR CODE	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC. IN UNIT	(6) 30-DAY DS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(7) 30-DAY GS MAINT ALLOWANCE (a) 1-20	(b) 21-50	(c) 51-100	(8) 1 YR ALW PER EQUIP CNTGCY	(9) DEPOT MAINT ALW PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIG. NO.	(b) ITEM NO.
P-F A058	5940-614-0537	TERMINAL LUG: MS35431-1; (96906)	2	ea	1	*	*	2	*	*	2	8	3		E710
P-F A059		SCREW, MACHINE: SMD389447-6; (80063)	2	ea	3	*	2	2	*	2	2	16	9		H825, H826, H827
P-F A060		SCREW, MACHINE: SMD389447-1; (80063)	2	ea	1	*	*	2	*	*	2	8	3		H828
P-F A061	5305-054-6648	SCREW, MACHINE: SAME AS A025	2	ea	1										H829
P-F A062		WASHER, LOCK: SMD389447-8; (80063)	2	ea	4	*	2	2	*	2	2	18	12		H830 thru H833
P-F A063		NUT, PLAIN HEXAGONAL: SMD389447-9; (80063)	2	ea	1	*	*	2	*	*	2	8	3		H834
P-F A064		WIRE: 1884; (92194)	2	ft	1	*	*	*	*	*	*	5	2	4-1.1	W701
A-O-R A065		CABLE ASSEMBLY, RADIO FREQUENCY CG-40A/TPS-1	2	ea	1										W1001
A-O-R A065.1		CABLE ASSEMBLY, RADIO FREQUENCY CG-40/TPS-1		ea	1										W1001
M-H A066		BAND MARKER CABLE: SCB-34065; (80063)	2	ea	2										MP1001, MP1002
P-H A067	5935-149-3049	CONNECTOR PLUG ELECTRICAL: UG-180A/U; (80058)	1,2	ea	1				*	*	2	6	3	1-2	P1002
P-H A068	5935-644-6718	CONNECTOR PLUG ELECTRICAL: UG-182A/U; (80058)	1,2	ea	1				*	*	2	6	3	1-2	P1001
P-H A069	6145-161-0915	CABLE RF: RG-64A/U; (81350)	1,2	ft	6				*	2	2	14	12		W1002
P-H A070	5935-310-2201	ADAPTER CONNECTOR: V66-605-2; (21962)	1,2	ea	1				*	*	2	6	4	1-2	H1001

SECTION IV. INDEX-FEDERAL STOCK NUMBER CROSS REFERENCE TO INDEX NUMBER

FEDERAL STOCK NUMBER	INDEX NO.
5305-054-6648	A025
5305-054-6669	A046
5305-054-6671	A026
5305-889-3118	A045
5305-989-6265	A005
5305-993-1848	A027
5310-045-3299	A029
5310-045-4007	A028
5310-543-5060	A048
5310-809-8544	A052
5310-809-8546	A006
5310-934-9738	A053
5310-934-9751	A030
5310-934-9757	A031
5905-258-7361	A020
5905-581-1970	A022
5905-642-4781	A039
5935-149-3049	A067
5935-254-5131	A038
5935-310-2201	A070
5935-644-6718	A068
5935-838-8470	A036
5935-877-5954	A035
5940-271-7258	A057
5940-614-0537	A058
6145-161-0915	A069
6625-280-3479	A002

REF. NUMBER	INDEX NUMBER
BL-441553	A019.1
BP-432860	A036.2
BP-432861	A036.1
CG-40/TPS-1	A065.1
CG-40A/TPS-1	A065
D-167823	A035.1

REF NUMBER	INDEX NO.
F22NC1-82	A008
MS35338-43	A012
MS35431-112	A024
MS35650-202	A013
SCB34065	A066
SMB389446	A034
SMB389455	A018
SMB389457	A016
SMB389458	A015
SMB389459	A014
SMB389460	A042
SMC389462	A017
SMD389447-1	A060
SMD389447-6	A059
SMD389447-8	A062
SMD389447-9	A063
SMD389449	A003
SMD389456	A009
SMD389465	A004
SMD389465-1	A007
V66-605-1	A019
V66-605-3	A037
1884	A064

FEDERAL STOCK NUMBER	INDEX NO.

SECTION V. INDEX-FIGURE AND ITEM NUMBER CROSS REFERENCE TO INDEX NUMBER

FIG. NO.	ITEM NO. OR REFERENCE DESIGNATION	INDEX NO.
1-1	J701	A035.1
	J702	A036.1
1-1.1	N701	A034
	MP701	A003
1-2	M1001	A070
	P1001	A068
	P1002	A067
4-1	R701, R702, R703	A039
4-1.1	A703	A009
	H701 thru H704	A008
	H705 thru H708	A005
	H709 thru H712	A006
	H713	A010
	H743	A028
	H762	A031
	H778	A046
	H808	A052
	H815	A054
	K701	A035
	J702	A036
	MP702	A004, A007
	MP703	A014
	MP707, MP708, MP709	A019
	MP710	A037
	MP711	A038
	MP712	A042
	MP713, MP714, MP715	A043
	MP716	A044
	R701, R702, R703	A039
	W701	A064
4-2	R704, R705	A022
	R706, R707	A020
4-2.1	E701, E702	A018
	H721	A012
	H738	A027
	H762	A030
	MP704	A015
	MP705	A016
	MP706	A017
	R704, R705	A022
	R706, R707	A020

SECTION VI. INDEX-REFERENCE DESIGNATION CROSS REFERENCE TO INDEX NUMBER

REFERENCE DESIGNATION	INDEX NO.
A703	A009
E701, E702	A018
E703 thru E707	A024
E708	A056
E709	A057
E710	A058
H701 thru H704	A008
H705 thru H708	A005
H709 thru H712	A006
H713	A010
H717 thru H720	A011
H721	A012
H725 thru H728	A013
H729, H730, H731	A025
H732 thru H736	A026
H738	A027
H743	A028
H746, H747, H748	A029
H749 thru H757	A030
H762	A030, A031
H771, H772, H773	A033
H774 thru H777	A045
H778	A046
H786, H787, H788	A047
H789 thru H792	A048
H793 thru H799	A049
H800 thru H806	A050
H807	A051
H808	A052
H811 thru H814	A053
H815	A054
H822, H823, H824	A055
H825, H826, H827	A059
H828	A060
H829	A061
H830 thru H833	A062
H834	A063
H1001	A070
J701	A035 A035.1
J702	A036, A036.1
J702A	A036.2
MP701	A003
MP702	A004, A007
MP703	A014
MP704	A015
MP705	A016
MP706	A017
MP707, MP708, MP709	A019
MP710	A037
MP711	A038
MP712	A042
MP713, MP714, MP715	A043
MP716	A044
MP1001, MP1002	A066
N701	A034
0701	A019.1
P1001	A068
P1002	A067
R701, R702, R703	A039
R704, R705	A022
R706, R707	A020
W701	A064
W1001	A065, A065.1
W1002	A069

By Order of the Secretary of the Army:

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General, United States Army,
Chief of Staff.

Official:

KENNETH G. WICKHAM,
Major General, United States Army,
The Adjutant General.

Distribution:

To be distributed in accordance with DA Form 12-32, Depot maintenance requirements for AN/FPS-36, AN/FPS-56, AN/FPS-69, AN/FPS-71, and AN/FPS-75 systems.

FRONT MATTER **Contents**

TECHNICAL MANUAL)
)
NO. 11-1263)

HEADQUARTERS,
DEPARTMENT OF THE ARMY
Washington 25, D. C., 12 November 1957

DUMMY LOAD TS-234/UP

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SAFETY NOTICE

WARNING

This equipment employs voltages which are dangerous and which may be fatal if contacted by operating personnel. It also reaches high temperatures and presents the hazard of serious burns. Extreme caution should be exercised when working with the equipment.

While all practicable safety precautions have been incorporated in the design of the equipment, the following rules must be strictly observed:

KEEP AWAY FROM LIVE CIRCUITS:
Operating personnel must at all times observe all safety regulations. Do not remove the cover or attempt to change resistors inside the equipment with power on or with the unit hot.

KEEP AWAY FROM THE DUMMY LOAD DURING TESTS:
Take any necessary precautions to prevent the operator or other personnel from being burned by the hot cover while the unit is at high temperature as a result of load dissipation.

DON'T PERFORM TESTS ALONE:
Under no circumstances should any person operate this equipment without the immediate presence or assistance of another person capable of rendering aid.

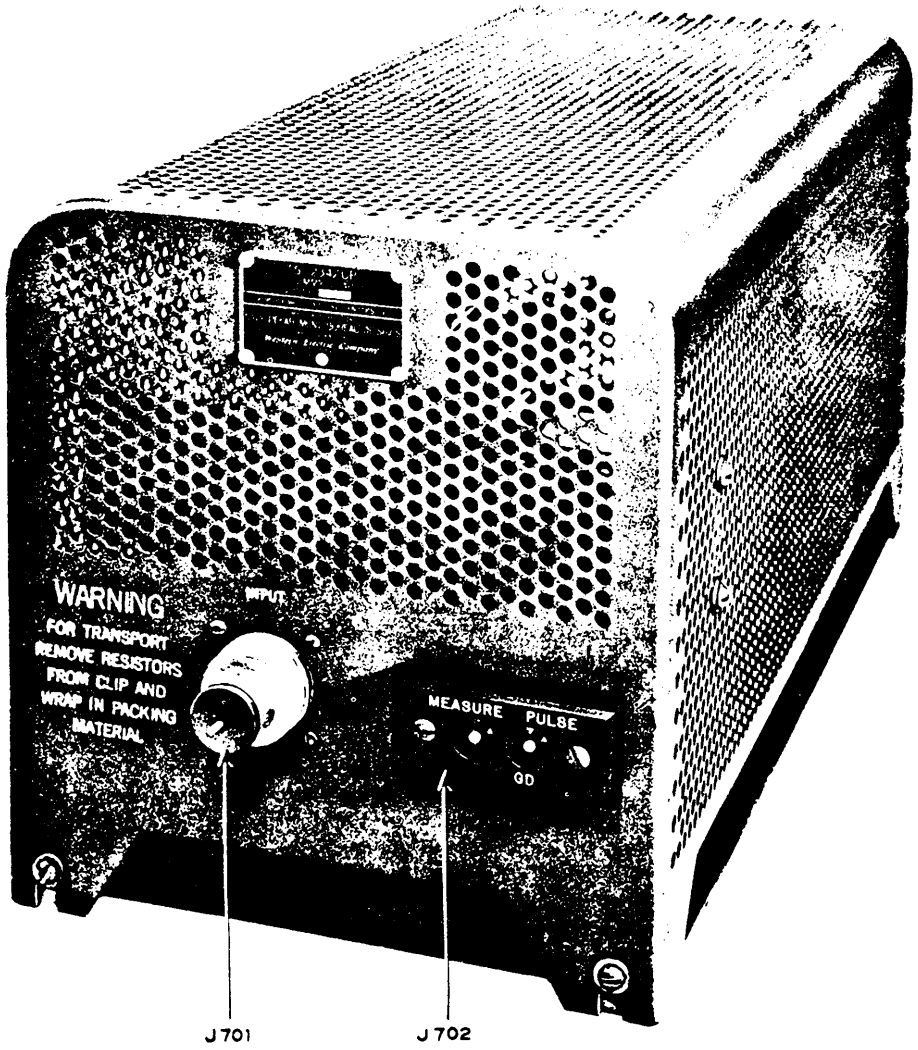

Figure 1-1. Dummy Load TS-234/UP

SECTION 1

GENERAL DESCRIPTION

1. PURPOSE.

Dummy Load TS-234/UP absorbs power pulses from modulators of radars. It is used to terminate the modulator output during radar performance tests. The dummy load presents a 16-ohm resistance to pulse voltage. The unit contains a voltage divider circuit connected to a meter jack on the front panel. This meter circuit affords a convenient means of measuring and viewing the output pulse of the modulator with an oscilloscope.

2. EQUIPMENT SUPPLIED.

The two component parts of Dummy Load TS-234/UP are listed in Table 1-1. A meter cable, which is not supplied with the dummy load, will be needed for connecting an oscilloscope to the MEASURE PULSE jack. It is identified in Table 1-2. The physical appearance of the dummy load is shown in Figure 1-1, and the cord is shown in Figure 1-2.

3. GENERAL CHARACTERISTICS.

Dummy Load TS-234/UP is enclosed in a metal cover, perforated to allow ventilation. It is not weatherproof. An extra heat-reflecting steel panel is located in the bottom of the case. Radiant heat from the resistors in the dummy load is directed upward by this shield, and the deck or floor underneath the unit is thus protected from scorching or the hazard of fire. On the front end of the case are an INPUT jack for the coaxial cord and a two-pin MEASURE PULSE jack for the meter or oscilloscope connection. The right-hand pin of the MEASURE PULSE jack, marked GD., is grounded to the case and to the shield of the cord.

a. ELECTRICAL COMPONENTS. - The dummy load provides a 16-ohm ± 5-percent termination into which the modulator can work. Three special 48-ohm resistors are connected in parallel to form this load resistance. They are carbon-coated ceramic rods

TABLE 1-1. EQUIPMENT SUPPLIED

Quantity per Equip-ment	*Name of Unit*	*Navy Type Designation*	*Over-All Dimensions*				
			Height	*Width*	*Length*	*Volume*	*Weight*
1	Dummy Load	TS-234/UP	9 3/16 inches	8 inches	18 1/2 inches	0.8 cu. ft.	15 lb. 5 oz.
1	Cord	CG-40/TPS-1			6 ft.		

TABLE 1-2. EQUIPMENT REQUIRED BUT NOT SUPPLIED

Quantity per Equip-ment	*Name of Unit*	*Required Use*	*Required Characteristic*
1	Meter Cable	Connects oscilloscope or other test equipment to meter circuit of dummy load.	One end, alligator clips for attachment to dummy load, and other end to suit test oscilloscope.

enclosed in heat-resisting glass tubes. Metal caps on the ends of the tubes provide mounting and electrical connections. The metal caps are snapped into clips inside the metal cover of the unit.

b. A 5000-ohm voltage divider is connected in parallel with the three load resistors. It is tapped at the point 50 ohms from the ground side. This tap and the ground connection afford a meter connection with a ratio of 1:100 to the load voltage. As a safety measure, each leg of the voltage divider is made up of two resistors in parallel. The 4,950-ohm leg employs two 9,900-ohm resistors, and the 50-ohm leg employs two 100-ohm resistors. Failure of any one of these components would alter the test readings, but would not subject the meter circuit to full pulse voltage.

c. The dummy load is capable of dissipating 1,800 watts (rms) of power input at a peak voltage of 5,000 volts.

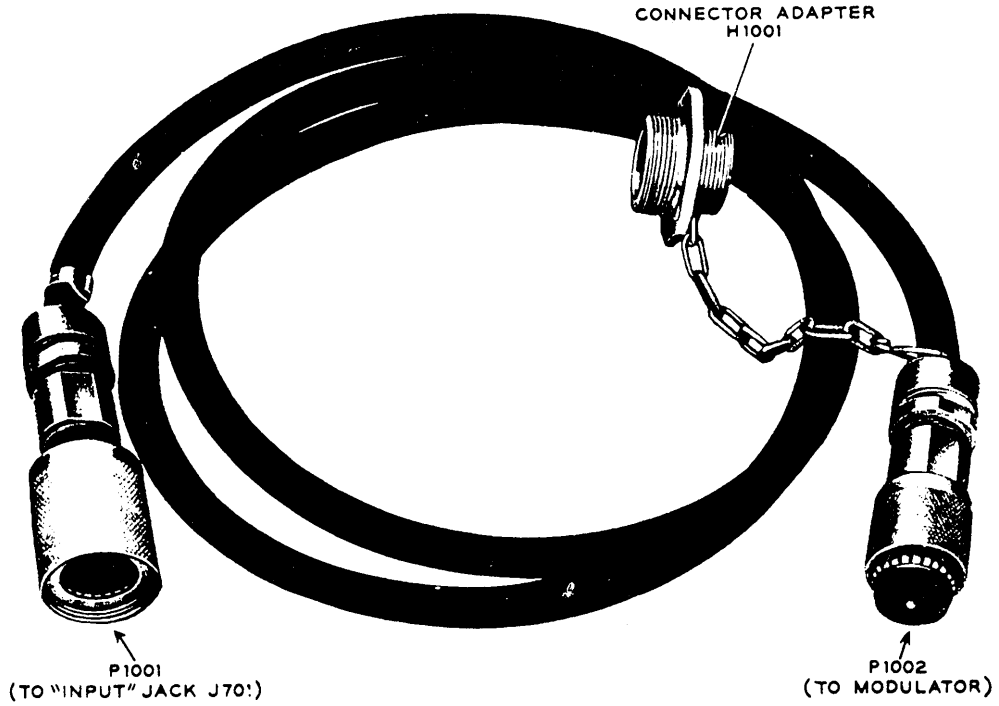

Figure 1-2. Cord CG-40/TPS-1

SECTION 2

THEORY OF OPERATION

1. ELECTRICAL CIRCUIT.

Figure 2-1 is a schematic of Dummy Load TS-234/UP. Resistors R-701, R-702, and R-703 in parallel form a heat-dissipating load for the modulator pulses. They are grounded to the case on the side of the circuit that is connected to the shield of the input cord.

Resistors R-704, R-705, R-706, and R-707 form the voltage divider for the MEASURE PULSE output. The use of two separate resistors (R-706 and R-707) across the MEASURE PULSE jack is a safety measure. A failure resulting in an open circuit at either R-706 or R-707 would change the voltage ratio from 100:1 to approximately 50:1. This can be detected by the discrepancy in measurements and should be corrected immediately, whereas a completely open circuit across R-706 and R-707 would impose full pulse voltage on the MEASURE PULSE jack and on any connected instrument.

2. ACCURACY.

All the resistors in the dummy load combined give the load resistance a value of 16 ohms ± 0.8 ohm (± 5%) at working temperature. The ratio of MEASURE PULSE voltage to modulator output voltage is 1:100 ± 5 percent.

The value of load resistance is within its tolerance range only after the unit has operated for 10 or 15 minutes. The carbon resistors have the characteristic of changing in resistance value with temperature change. At room temperature, the unit's load resistance will measure about 18 ohms. However, after being heated up thoroughly from dissipating modulator output, the resistors will change their values to bring the unit within ± 5 percent of 16 ohms.

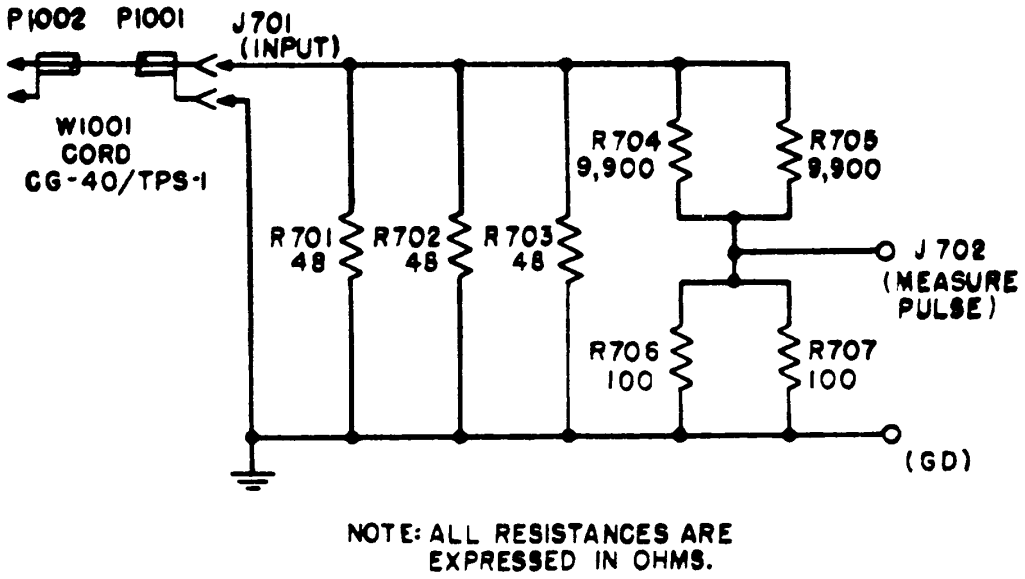

Figure 2-1. Dummy Load TS-234/UP, Schematic

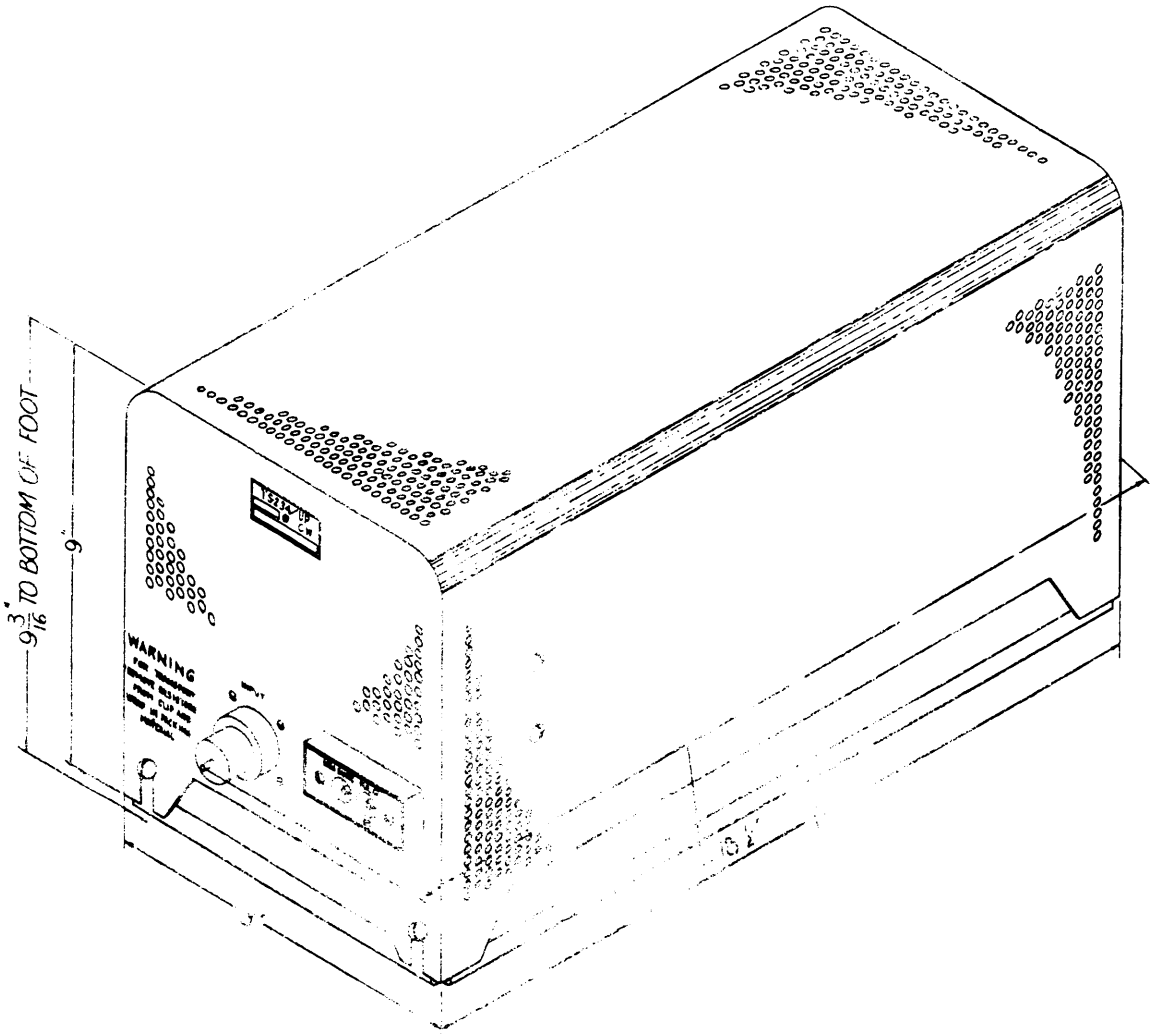

Figure 3-1. Dummy Load TS-234/UP; Outline Dimensions

SECTION 3

OPERATION

Note

Dummy Load TS-234/UP is designed to be used with radar modulators having a power output of 1,800 warts (rms) maximum and developing pulses of 5,000 volts maximum when working into a 16-ohm load.

1. PREPARATION.

Look inside the case to verify that the three large glass-encased resistors are in place. They may have been removed for transportation. If so, loosen the four screws that secure the case to the unit's base, turn the case over, and snap the resistors into their mounting clips. Connect the dummy load to the modulator under test with the high-voltage connecting cable, Cord CG-40/TPS-1. Connect an oscilloscope, capable of displaying video pulses, to the MEASURE PULSE jack. Place the dummy load where adequate circulation of air will be available for cooling. Leave at least one foot of space between the nearest bulkhead, wall, or other equipment and the test set. Also, locate it out of the way of all personnel who must move about in the vicinity. This precaution is to prevent accidental contact with the hot cover.

WARNING

The metal cover of Dummy Load TS-234/UP becomes very hot when the load resistors are up to operating temperature. To avoid serious burns, take care not to touch the unit while it is hot.

2. OPERATING PROCEDURE.

Operate the radar modulator in accordance with the operating instructions applying to the specific equipment being tested. Allow at least ten minutes' operation to heat the resistance units before performing any measurements.

Note

It is important that the dummy load be permitted to warm up thoroughly, because the load resistors must be heated to attain their rated resistance values.

a. Adjust the oscilloscope to display the modulator pulse clearly with convenient vertical and horizontal scales. Observe that the pulse wave shape is satisfactory. It should comply with the data in the appropriate radar instruction handbook.

b. Observe or mark the voltage of the pulse as the height of the image on the oscilloscope. Disconnect the oscilloscope input from the dummy load. Apply a reference d-c voltage (verified by an accurate d-c voltmeter in parallel) to the vertical deflection input of the oscilloscope. Using this reference d-c voltage to establish the oscilloscope calibration, calculate the voltage that corresponds to pulse image height. Multiply the result by 100 to obtain modulator pulse voltage. The pulse voltage should comply with data in the appropriate radar instruction book.

3. PRECAUTIONS AFTER OPERATION.

Turn off the radar modulator. Remove the dummy load connections from the radar and the oscilloscope. Restore the radar cabling to the appropriate jacks if desired.

a. Allow the dummy load to cool. Take any necessary precautions, such as erecting a temporary barricade and posting a warning sign, to prevent accidental contact with the hot cover while the unit is cooling.

b. If the dummy load is to be transported to another location or handled by untrained personnel, remove the three load resistors from their clips. Pack them carefully to prevent damage during shipment or storage.

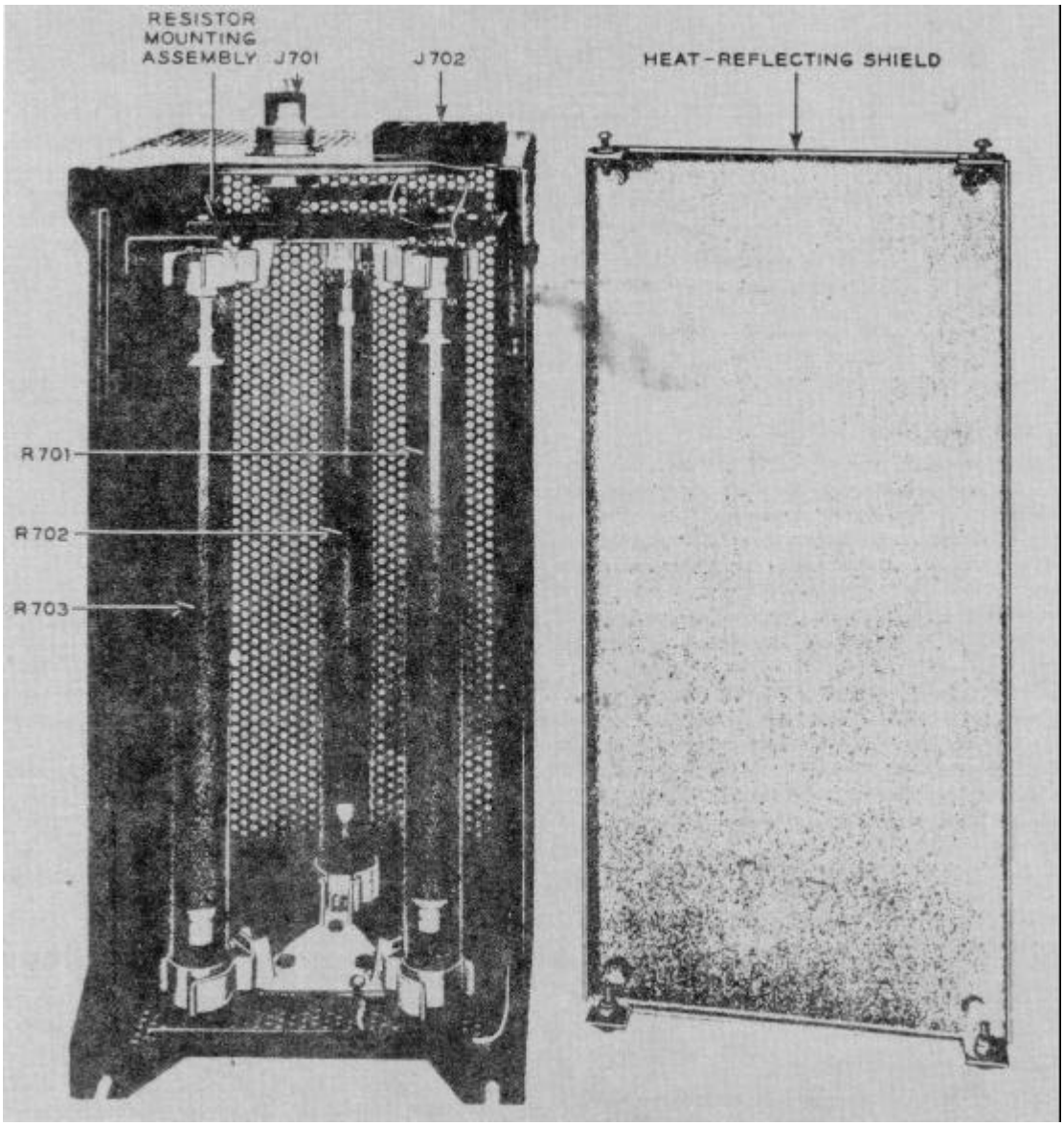

Figure 4-1. Dummy Load TS-234/UP, Internal View

SECTION 4

MAINTENANCE

1. ROUTINE CHECKS.

Make the following visual and ohmmeter checks before using Dummy Load TS-234/UP if it is operated rarely, or once per week if it is operated frequently.

a. VISUAL INSPECTION.-Remove the cover and inspect the interior of the cue. Look for loose connections, loose resistor clips, charred wiring, dirt, etc. Inspect the load resistors for cracks in their glass tubes and check for signs of overheating on the voltage divider resistors. Clean the heat reflector on the base if it is dirty.

b. RESISTORS R-701, R-702, AND R-703.-With an ohmmeter, measure the resistance between the inner conductor and the outer sleeve of the INPUT jack. The value should be approximately 18 ohms. This will check all the load resistors.

c. RESISTORS R-704 AND R-705.-With the three large load resistors removed, measure the resistance between the inner conductor of the INPUT jack and the left-hand (hot) pin of the MEASURE PULSE jack. The value should be approximately 4,950 ohms. This will check the high-voltage leg of the voltage divider.

d. RESISTORS R-706 AND R-707.-With the three large load resistors removed, measure the resistance between the two pins of the MEASURE PULSE jack. The value should be approximately 50 ohms. This will check the low-voltage leg of the voltage divider.

CAUTION

It is dangerous to operate the dummy load if the low-voltage leg of the voltage divider reads substantially more than 50 ohms. Replace R-706 or R-707, or repair faulty connection immediately.

2. TROUBLE SHOOTING.

The dummy load, because of its simplicity, is subject to relatively few types of failures. Bad resistors, open circuits, shorted connections, loose screws or broken parts are about the only troubles that can be encountered. Visual inspection and electrical measurements against the schematic in Figure 2-1 should suffice for locating difficulties. Figures 4-1 and 4-2 show the correct arrangement of wiring and internal parts. Figure 4-3 is the wiring diagram.

a. In the event of failure of any one of the routine checks enumerated in paragraph 1 of this section, remove all the resistors indicated, and check them separately. Their resistances should be approximately the values listed in Table 4-1 when measured at room temperature. Discard and replace each resistor that differs by more than the specified tolerance from the correct resistance value.

TABLE 4-1.
RESISTOR VALUES AT ROOM TEMPERATURE

Resistor	*Function*	*Resistance (ohms)*
R-701, R-702, R-703	Load Resistors	53 ± 5%
R-704, R-705	Voltage Divider	9,900 ± 1%
R-706, R-707	Voltage Divider	100 ± 1%

b. Large discrepancies in modulator pulse voltage measured with the dummy load may indicate trouble in the dummy load itself. This is especially likely if the apparent error is roughly in the order of 2:1 or 3:2.

(1) A measurement of double the expected voltage indicates a probable failure or open circuit at R-706 or R-707.

(2) A measurement of half the expected voltage indicates a probable failure or open circuit at R-704 or R-705.

(3) A measurement of roughly three halves of the expected voltage may indicate a loose connection or failure at R-701, R-702, or R-703.

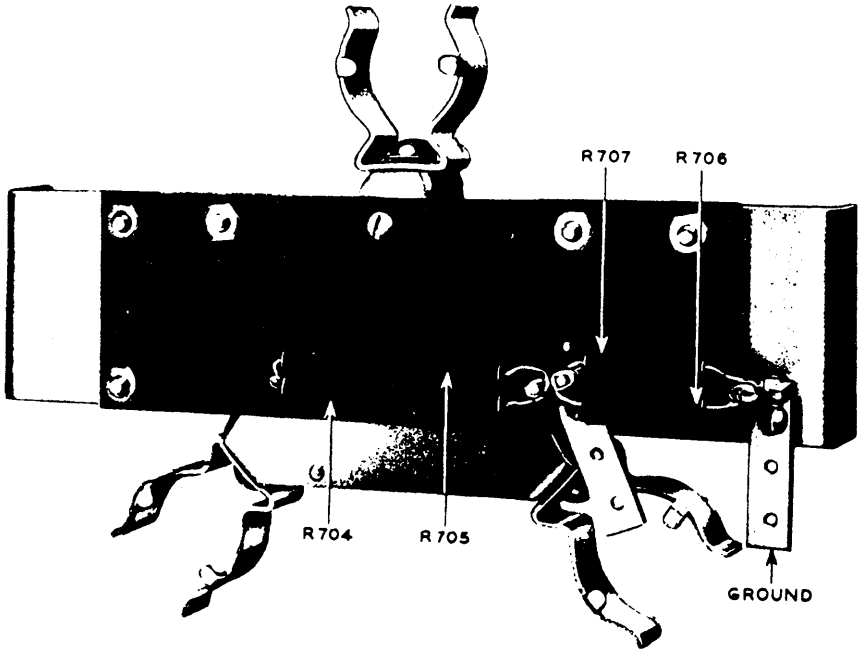

Figure 4-2. Dummy Load TS-234/UP, Resistor Mounting Assembly

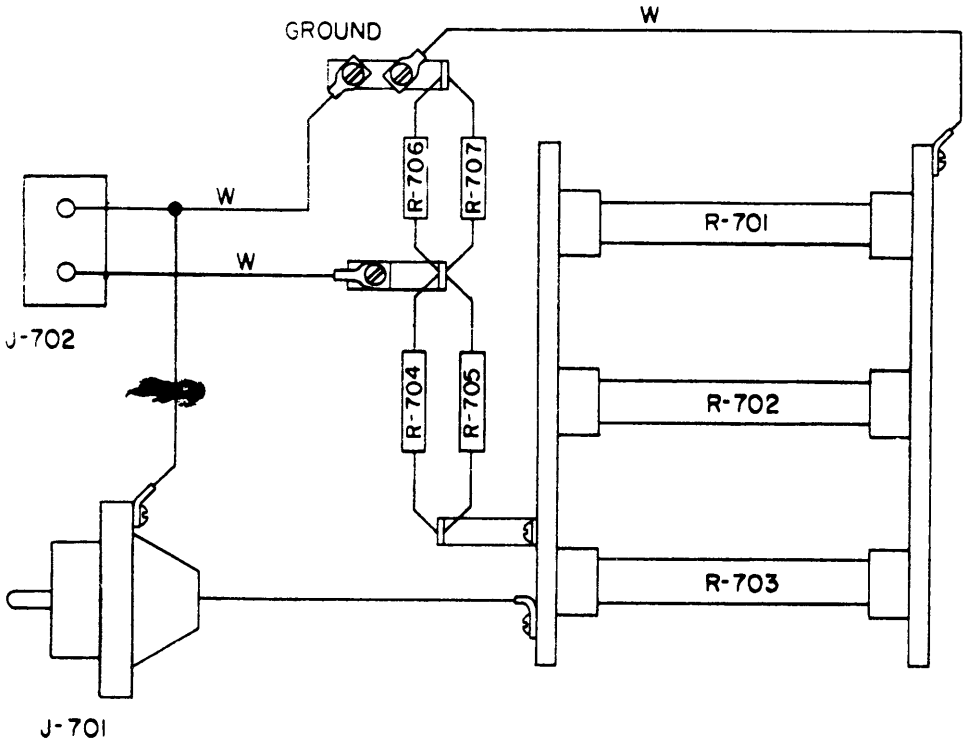

Figure 4-3. Dummy Load TS-234/UP, Wiring Diagram

SECTION 5
PARTS LIST

TABLE 5-1 PARTS LIST

SYMBOL DESIG.	NAME OF PART AND DESCRIPTION	FUNCTION	JAN AND (NAVY TYPE) NO.	FEDERAL AND (SIGNAL CORPS) STOCK NO.	MANUFACTURER AND MFR'S DESIG.	CONTRACTOR'S DRAWING AND PART NO.	ALL SYMBOL DESIGNATIONS INVOLVED	TOTAL PER EQUIP
H-1001	SHELL, connector: A one piece threaded protective plug for the connector ends of the CG-40/TPS-1 cable assembly; consists of a double-ended threaded male plug equipped with a short length of link chain and a retaining ring for attaching to the cable; hexagon shaped central portion with 1-3/6"-18 thd on one end, 1/2"-20 thd on other end with a 27/32" diam hole through the axis; O/a dims. 1" lg x 1-3/16" across flats of hexagon portion; mtd by the threaded ends.	Part of W-1001, joins connectors on ends of Cable CG-40/TPS-1 for protection during storage and handling.	**		WECo BA-417647	WECo BA-94296	H-1001	1
J-701	CONNECTOR, receptacle: One round male contact .080" diam x 1/4" lg; straight; 1-1/2" x 1-1/2" flange, 2-7/16" lg less contact and connecting cable; anodized aluminum body; 1-3/16"-18 N.E.F. 2 male thd for plug; synthetic rubber insert; four .120" diam mounting hole on flange 1-5/32" x 1-5/32" mtg/c; flexible cable #16 AWG stranded copper wire with synthetic rubber insulation 0.308" OD projects 3-1/2" from inner end of body, other end of cable stripped and solder dipped for 1/2".	Load input, provides termination for Cord CG-40/TPS-1	UG-525/U (UG-525/U)	(1F4W1-103.3.5)	WECo D-167823	WECo BA-94295	J-701	1
J-702	CONNECTOR, receptacle: Two round male contacts, 1/8" diam x 5/16" lg straight; 2-1/2" lg x 1-1/8" wd x 9/16" thk O/a less contacts; one rect. phenol fibre body; two 0.152" diam mtg holes on 1-3/4" mtg/c; contact positions marked "GD" and "MEASURE PULSE".	Part of J-702 "MEASURE PULSE" connector	UG-524/U (UG-524/U)		WECo BP-432861 BP-432860	WECo BP-94297	J-702A	1
J-702A	CONTACT, connector: Binding post for alligator clips on oscilloscope lead; brass silver plated; male contact 1/8" diam x 5/16" lg, 5/16" hex flange, #8-32 thd for mounting, 1" lg O/a.	Part of J0702 "MEASURE PULSE" connector	**		WECo BP-432860	WECo BP-432860	J-702A	2
O-701	CLIP, resistor: Phosphor bronze Fed spec QQ-B-746, silver plated; 3/4" lg x 1-1/8" wd x 1-15/32" h O/a; .240" diam mounting hole; two spring contact lips; for 1.225" diam ferrule.	Mechanical mounting and electrical connection for load resistor	**		WECo BL-441553	WECo BL-441553	O-701	6

TABLE 5-1 PARTS LIST

SYMBOL DESIG.	NAME OF PART AND DESCRIPTION	FUNCTION	JAN AND (NAVY TYPE) NO.	FEDERAL AND (SIGNAL CORPS) STOCK NO.	MANUFACTURER AND MFR'S DESIG.	CONTRACTOR'S DRAWING AND PART NO.	ALL SYMBOL DESIGNATIONS INVOLVED	TOTAL PER EQUIP
P-1001	CONNECTOR, plug: One female contact, molded on one end of W-1001.	Joins W-1001 to J0701					P-1001	1
P-1001A	SHELL, connector: Shell for jack end of CG-40/TPS-1 cable assembly; consists of shell assembly (WECo BP-105566), coupling nut (WECo BA-106759) and several spring washer; cylindrical shape; 1-1/4" OD x approx 2-1/8" long; provided with 3/4" cable hole and 7/8"-20 external thread for engaging the cable clamping nut, 1-3/16"-18 internal thread on the coupling nut for attaching to mating connector.	Mechanical coupling part of P-1001	**		WECo BL-105702	WECo BA-94294		
P-1002	CONNECTOR, plug: One male contact, molded on one end of W-1001.	Joins W-1001 to modulator under test					P-1002	1
P-1002A	SHELL, connector: Shell for plug end of CG-40/TPS-1 cable assembly; consists of shell assembly (WECo BP-105282), coupling nut (WECo BA-106726) and several spring washer; cylindrical shape; 1-1/16" OD x 1-11/16" long; provided with 0.613" diam cable hole and 3/4"-20 external thread for engaging the cable clamping nut, 1"-20 internal thread on the coupling nut for attaching to mating connector.	Mechanical coupling part of P-1002	**		WECo BL-105703	WECo BA-94298		
R-701	RESISTOR, fixed: Ceramic core with deposited carbon resistance element; 48 ohms ±5% while dissipating 400 watts at ambient temp 25° ±5°C; 600 watts; E characteristic; 13" lg less ferrules x 1-1/8" diam; element sealed in gas-filled glass tube, immersion resistant, metal ferrules at ends 1.225" OD, one 3/4" lg and one 7/8" lg, each has 1/4" x 1/8: diam protruding pin at end; for pulses 5000V peak.	Load resistor	(-632803-5)	(3Z6004A8-3)	WECo D-169449	D-169449	R-701 R-702 R-703	
R-702	RESISTOR, fixed: Same as R-701.	Load resistor						
R-703	RESISTOR, fixed: Same as R-701.	Load resistor						

TABLE 5-1 PARTS LIST

SYMBOL DESIG.	NAME OF PART AND DESCRIPTION	FUNCTION	JAN AND (NAVY TYPE) NO.	FEDERAL AND (SIGNAL CORPS) STOCK NO.	MANUFACTURER AND MFR'S DESIG.	CONTRACTOR'S DRAWING AND PART NO.	ALL SYMBOL DESIGNATIONS INVOLVED	TOTAL PER EQUIP
R-704	RESISTOR, fixed: Ceramic core with helical ribbon of deposited carbon; 9,900 ohms ±1%; 1 watt; E characteristic; 2-1/16" lg x 17/64" wd x 17/64" thk; insulated and wax dipped, moisture resistant; two axial wire leads; stable with respect to aging under HV conditions.	High voltage leg of voltage divider	(-632775-1)	(3Z6599-1)	WECo D-169025A 9,900 ohms	D-169025A (9,900 ohms)	R-704 R-705	2
R-705	RESISTOR, fixed: Same as R-704.	High voltage leg of voltage divider						
R-706	RESISTOR, fixed: Wire wound; 100 ohms ±1%; 1/4 watt; body dimen 1" lg x 5/16" diam; enclosed in phenolic fiber tube; resistant to humidity; axial wire leads.	Low voltage leg of voltage divider	(-632770-1)	(3Z6010-56-1)	WECo D-164886A (100 ohms)	D-164886A (100 ohms)	R-706 R-707	
R-707	RESISTOR, fixed: Same as R-706	Low voltage leg of voltage divider						
W-1001	CABLE ASSEMBLY, RF: Army-Navy type cord CG-40/TPS-1; uses Army-Navy type cable RG-64/U; 5-1/2 ft lg excluding terminations; 6 ft lg O/a; type D receptacle (P-1001) WECo part/dwg BL-105702, with coupling nut WECo part/dwg ESP-660569-2 molded on one end and type D plug (P-1002) WECo part/dwg BL-105703 with coupling nut WECo part/dwg BP-100512-2 molded on other end.	Input connection from modulator under test	CG-40/TPS-1 (CG-40/TPS-1) 6'-0" ** = No Navy Type Number Assigned	(1F430-40.72)	WECo D-164189	WECo BXX-415041-11	W-1001	1

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  - 11-16
  - 11-57
  - 11-127
  - 11-128
  - 11-500(AA-AE)
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  - 11-587
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  - 44-316
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  - 44-416
  - 44-445
  - 44-446

NG: State AG; units-same as Active Army.
USAR: None.
For explanation of abbreviations used, see AR 320-50.

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