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DEPARTMENT OF THE ARMY TECHNICAL MANUAL

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OPERATOR'S AND ORGANIZATIONAL MAINTENANCE REPAIR PARTS  
AND SPECIAL TOOLS LIST AND MAINTENANCE ALLOCATION CHART FOR  
RESISTANCE BRIDGES ZM-4A/U AND ZM-4B/U

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Headquarters, Department of the Army, Washington 25, D. C.  
30 June 1959

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**SECTION I**  
**INTRODUCTION**

**1. Scope**

a. This manual lists items supplied for initial operation. The list includes all items authorized for basic operator maintenance of the equipment. End items of equipment are issued on the basis of allowances prescribed in equipment authorization tables and other documents that are a basis for requisitioning.

b. The columns are defined as follows:

- (1) *Federal or technical service stock number.* This column lists the 11-digit Federal stock number.
- (2) *Repair parts source, maintenance, and*

- recoverability code.* Not used.
- (3) *Designation by model.* Not used.
- (4) *Description.* Nomenclature or the standard item name and brief identifying data for each item are listed in this column. When requisitioning, enter the nomenclature and description on the requisition.
- (5) *Unit of issue.* The unit of issue is the supply medium by which the individual item is counted for procurement, storage, requisitioning, allowances, and issue purposes.

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\*This manual supersedes TM 11-6625-249-12P, 10 October 1958.

- (6) *Expendability.* Expendable items are indicated by the letter X; nonexpendable items are indicated by NX.
- (7) *Quantity authorized.* Under "Items Comprising an Operable Equipment" the column lists the quantity of items supplied for the initial operation of the equipment.
- (8) *Illustration.* Not used.

## 2. Stockage

No parts are authorized for stockage at second echelon level.

## 3. Batteries

Dry batteries indicated are used with the equipment but are not considered part of the equipment. They will not be preshipped auto-

matically but are to be requisitioned in quantities necessary for the particular organization, in accordance with SB 11-6.

## 4. References

Additional instructions concerning maintenance of this equipment are contained in TM 11-2019, Test Sets I-49, I-49A, and I-49B, and Resistance Bridges ZM-4A/U and ZM-4B/U.

## 5. Comments or Suggestions

Any comments concerning omissions and discrepancies in this manual will be prepared on DA Form 2028 and forwarded direct to Commanding Officer, U. S. Army Signal Equipment Support Agency, Fort Monmouth, N. J., ATTN : SIGFM/ES-ML.

CHANGE

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington, DC, 16 July 1984

No. 1

OPERATOR'S AND ORGANIZATIONAL MAINTENANCE REPAIR PARTS  
AND SPECIAL TOOLS LIST AND MAINTENANCE ALLOCATION CHART FOR  
RESISTANCE BRIDGES ZM-4A/U AND ZM-4B/U  
(6625-00-500-0937)

TM 11-6625-249-12P, 30 June 1959, is changed as follows:

Page 8, Section II.1 is added after Section II.

## SECTION II.1

CROSS REFERENCE INDEX. The Cross-Reference Index is a cross-reference listing of part number to National Stock Number.

a. Use of Cross-Reference Index . To order a part listed in the Cross-Reference Index, note part number and then cross-reference that part number to the National Stock Number in the cross-reference index. Then order through normal ordering channels.

b. Ordering Part Numbers Without National Stock Number . If the part number does not have a National Stock Number, then order the part through normal ordering channels using the part number and the FSCM.

CROSS REFERENCE INDEX FORMAT

PARTS WITH AN FSN

FSN	NEW NSN	FSCM	PART NUMBER
61351201020	6135001201020	80058	BA-30
66255705722	6625005000937	80058	ZM-4A,B/U

By Order of the Secretary of the Army:

Official:

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

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

DISTRIBUTION:

To be distributed in accordance with DA Form 12-36B,  
Operator/Crew Maintenance requirements for ZM-4A and B/U.

## SECTION II

## SECTION II. FUNCTIONAL PARTS LIST

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
FEDERAL OR TECHNICAL SERVICE STOCK NUMBER	REPAIR PARTS SOURCE, MAINTENANCE AND RECOVERABILITY CODE	DESIGNATION BY MODEL	DESCRIPTION	UNIT OF ISSUE	EXPENDABILITY	QUANTITY AUTHORIZED	ILLUSTRATION FIGURE NO.	ITEM NO.
			ITEMS COMPRISING AN OPERABLE EQUIPMENT RESISTANCE BRIDGE ZM-4A,B/U					
6625-570-5722			RESISTANCE BRIDGE ZM-4A,B/U: 0.1 OHM TO 1 MEG RANGE: ±0.1%: DC OPERATION: MIL SPEC MIL-R 1:729 (SIGC)	EA	NX			
ORDER THRU AGC			TECHNICAL MANUAL TM11-2019	EA	X	2		
			BARE UNIT: FOR RESISTANCE BRIDGE ZM-4A/U: ZM-4B/U	EA	NX	1		
6135-120-1020			BATTERY BA-30	EA	X	3		
			RUNNING SPARES AND ACCESSORY ITEMS RESISTANCE BRIDGE ZM-4A,B/U NO PARTS AUTHORIZED FOR STOCKAGE AT FIRST ECHELON					

SECTION III  
MAINTENANCE ALLOCATION

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6. General

a. The maintenance allocation chart assigns maintenance functions and repair operations to be performed by the lowest appropriate maintenance echelon. It also specifies the tools and other equipment authorized at each echelon to perform the assigned maintenance functions.

b. Columns in the Maintenance Allocation chart are defined as follows:

- (1) *Part or component.* Only the nomenclature or standard item name is annotated in this column. Additional descriptive data is included only where clarification is necessary to identify the part. Components and parts comprising a major end item are listed alphabetically. Assemblies and subassemblies are in alphabetical sequence with their components listed alphabetically immediately below the assembly listing.
- (2) *Maintenance function.* This column indicates the various maintenance functions allocated to the echelon capable of performing the operation. These are defined as follows:
  - (a) *Service.* To clean, to preserve, and to replenish fuel and lubricants.
  - (b) *Inspect.* To verify serviceability and to detect incipient electrical or mechanical failure by scrutiny.
  - (c) *Test.* To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages and meters.
  - (d) *Replace.* To substitute serviceable assemblies, subassemblies, and parts for unserviceable components.
  - (e) *Repair.* To restore to a serviceable condition by replacing unserviceable parts or by any other action required utilizing tools equipment, and skills available, to include weld-

ing, grinding, riveting, straightening, adjusting, etc.

- (f) *Aline.* To adjust two or more components of an electrical system so that their functions are properly synchronized.
  - (g) *Calibrate.* To determine, check, or rectify the graduation of an instrument, weapon, or weapons system, or components of a weapons system.
  - (h) *Rebuild.* To restore to a condition comparable to new by disassembling the item to determine the condition of its component parts and reassembling it using serviceable, rebuilt, or new assemblies, subassemblies, and parts.
- (3) *1st, 2d, 3d, 4th, and 5th echelon.* The symbol X indicates the echelon responsible for performing that particular maintenance operation, but does not necessarily indicate that repair parts will be stocked at that level. Echelons higher than the echelon marked by X are authorized to perform the indicated operation.
  - (4) *Tools required.* The numbers in column 8 indicate the tool, test, and maintenance equipment required to perform the maintenance functions. These numbers are identified in the Allocation of Tools for Maintenance Functions portion.
  - (5) *Remarks.* This column contains any notations necessary to clarify the data cited in the preceding columns.
- c. Columns in the Allocation of Tools for Maintenance Functions portion are defined as follows :
- (1) *Tools required for maintenance functions.* Column 1 lists tool and test equipment required to perform the maintenance functions.
  - (2) *1st, 2d, 3d, 4th, 5th echelon.* A dag-



ger (†) indicates that the tool or test equipment is allocated to that echelon.

- (3) *Tool code.* The numbers in column 7 are code numbers that stand for the associated tool equipment and are used in the Maintenance Allocation to refer to the indicated item.
- (4) *Remarks.* This column is used for explanatory notes.

#### 7. Maintenance by Using Organizations

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

## MAINTENANCE ALLOCATION CHART

(1) PART OR COMPONENT	(2) RELATED OPERATION	(3) 1st ECH	(4) 2nd ECH	(5) 3rd ECH	(6) 4th ECH	(7) 5th ECH	(8) REPAIR FACILITIES CODE	(9) REMARKS
RESISTANCE BRIDGE ZM-4A/U; ZM-4B/U	service inspect test repair align calibrate rebuild	X		X		X X	1 1,2,3 1,2,3 1,2,3 1,2,3	
CASE, TEST SET	inspect repair rebuild	X		X		X	3 3	
BATTERY	inspect replace	X X						
BATTERY BOX	inspect rebuild			X	X		3	
BRACKETS	inspect replace			X	X		3	Not stocked, fabricate
CHAIN, BEAD	inspect replace	X		X			3	Not stocked, obtain from salvage
CONTACTS	inspect replace			X	X		3	Not stocked, fabricate
COVER, BATTERY BOX	inspect replace			X	X		3	Not stocked, fabricate
FASTENERS	inspect replace	X		X			3	Not stocked, obtain from salvage
GASKET	inspect replace			X	X		3	Not stocked, fabricate
GROMMETS	inspect replace	X		X			3	Included in Maintenance Kit
HANDLE, CASE	inspect replace			X	X		3	Not stocked, fabricate
HINGE	inspect replace	X		X			3	Not stocked, obtain from salvage
INSERT, SCREW THREAD	inspect replace	X		X			3	Not stocked, obtain from salvage
LABEL, INSTRUCTIONS	inspect replace	X		X			3	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
PART OR COMPONENT	RELATED OPERATION	1st ECH	2nd ECH	3rd ECH	4th ECH	5th ECH	REPAIR FACILITIES CODE	REMARKS
ZM-4A/U; ZM-4B/U (continued)								
NAMEPLATE	inspect				X			
	replace					X	3	
SCHEMATIC DIAGRAM	inspect				X			
	replace					X	3	
FRONT PANEL ASSEMBLY	inspect	X						
	replace			X			3	
	repair				X		3	
	rebuild					X	3	
GALVANOMETER	inspect			X				
	test				X		2	
	replace				X		3	
KNOBS	inspect	X						
	replace			X			3	
MAGNET	replace			X			3	Included in Maintenance Kit
NUTS	replace						3	Included in Maintenance Kit
PANEL	inspect			X				
	replace				X		3	Not stocked, obtain from salvage
PLATE, SPACING	inspect			X				
	replace				X		3	Not stocked, fabricate
POST, BINDING	inspect	X						
	replace			X			3	
RESISTOR	test				X		2	
	replace				X		3	
SCREWS	replace			X			3	Included in Maintenance Kit
SPACERS	replace				X		3	Not stocked, fabricate
SWITCH, PUSH	inspect			X				
	replace			X			3	
SWITCH, ROTARY	inspect			X				
	replace				X		3	
TERMINAL LUGS	replace			X			3	Included in Maintenance Kit
WIRE	replace				X			Included in Maintenance Kit

## ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS

(1) FACILITIES REQUIRED FOR MAINTENANCE OPERATIONS	(2) 1st ECH	(3) 2nd ECH	(4) 3rd ECH	(5) 4th ECH	(6) 5th ECH	(7) REPAIR FACIL- ITIES CODE	(8) REMARKS
ZM-4A/U; ZM-4B/U							
DECADE BOX TS-679/U				†	†	1	Second level of maintenance is performed at third
MULTIMETER ME-77/U				†	†	2	Second level of maintenance is performed at third
TOOL EQUIPMENT TK-21/G			†	†	†	3	Second level of maintenance is performed at third

ZM-4A/U; ZM-4B/U

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

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

Official:

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

Distribution

*Active Army:*

ASA (2)  
 CONGR (1)  
 Technical Stff, DA (1)  
 except CSigO (30)  
 DISCOMARC (5)  
 ICSA Artv Rd (1)  
 ICSA Armor Rd (1)  
 ICSA Inf Rd (1)  
 ICSA Air Def Rd (1)  
 ICSA Abn & Flet Rd (1)  
 ICSA Avn Rd (1)  
 ICSA Armor Rd Test Sec (1)  
 ICSA Air Def Rd Test Sec (1)  
 ICSA ATR (1)  
 ICS ARADCOM (2)  
 ICS ARADCOM Rgn (2)  
 OS Mai Comd (5)  
 OS Race Comd (5)  
 Log Comd (5)  
 ICSA Ord Mel Comd (3)  
 MDW (1)  
 Armies (5) except First ICS  
 Army (7)  
 Corps (2)  
 Div (2)  
 Sur Colleges (5)  
 Rg Sur Sch (5) except  
 ICSASCS (25)  
 Ger Depot (2) except Atlanta  
 Ger Depot (1)  
 Sic Sec Ger Depot (1)  
 Sic Depot (17)  
 William Beaumont AF (5)  
 Fitzsimmons AF (5)  
 WRAMC (1)  
 ICSATC (1)  
 Engl Main Ctr (1)  
 Army Pictoria Ctr (2)  
 Post o Fml (OS) (2)  
 Tran Terminal Comd (1)  
 Army Terminal (1)  
 OS Snt Agcy (2)

Fld Comd, Det Atomic Spt Agcy (5)  
 JSA Comm Agcy (2)  
 JSA Sig Engr Agcy (1)  
 JSA Sig Eqp Spt Agcy (2)  
 JSA Sig Msl Spt Agcy (13)  
 JSA Sig Pubs Agcy (8)  
 IASSA (15)  
 Midwestern Rgn Jtc (IASSA) (1)  
 Benicia Arsenal (5)  
 Fran Arsenal (5)  
 Pine Bluff Arsenal (5)  
 Raritan Arsenal (5)  
 Redstone Arsenal (5)  
 Yuma Test Sta (2)  
 Dugway PG (1)  
 USA Elct PG (1)  
 AFIP (1)  
 AMS (1)  
 Sig Fld Maint Shops (3)  
 USA Med Rsch Lab (5)  
 Sig Lab (5)  
 USASig Sv Team (1)  
 Mil Dist (1)  
 USA Corps (Res) (1)  
 Sector Comd, USA Corps (1)  
 JBUSMC (2)

Units org under to: TOE:

6-100 (2)	11-150 (2)
6-120 (2)	11-150 (2)
6-120 (2)	11-150 (2)
6-300 (2)	11-500 AA-AE (2)
6-310 (2)	11-580 (2)
6-310 (2)	11-590 (2)
6-570 (2)	11-590 (2)
6-570 (2)	44-140 (2)
11-7 (2)	44-140 (2)
11-10 (2)	44-440 (2)
11-20 (2)	44-440 (2)
11-20 (2)	44-440 (2)
11-40 (2)	44-530 (2)
11-40 (2)	44-530 (2)
11-50 (2)	44-540 (2)
11-90 (2)	44-540 (2)
11-110 (2)	

MC Stat. AC (3)

ICRAR None

For explanation of abbreviation used see AF 320-50

