

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

TM 11-2019

DEPARTMENT OF THE AIR FORCE TECHNICAL ORDER

TO 33A1-12-15-1

**TEST SETS I-49, I-49A
AND I-49B AND
RESISTANCE BRIDGES
ZM-4A/U AND ZM-4B/U**

This copy is a reprint which includes current
pages from Changes 1 and 3.

DEPARTMENTS OF THE ARMY AND THE AIR FORCE

17 OCTOBER 1957

Changes now in force: C1 and C3

TECHNICAL MANUAL

TEST SETS I-49, I-49-A, AND I-49-B AND RESISTANCE BRIDGES ZM-4A/U AND ZM-4B/U

TM 11-2019

CHANGE NO. 3

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., 19 September 1963

TM 11-2019, 17 October 1957, is changed as follows:

Note: The parenthetical reference to previous changes (example: C2, 14 Oct 58) indicates that pertinent material was published in that change.

Page 5. Add paragraph 1.1 after paragraph 1.

1.1. Index of Publications

Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to your equipment. DA Pam 310-4 is an index of current technical manuals, technical bulletins, 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.

Delete paragraph 2 (as changed by C2, 14 Oct 62) and substitute:

2. Forms and Records

a. Reports of Maintenance and Unsatisfactory Equipment. Use equipment forms and records in accordance with instructions in TM 38-750.

b. Report of Damaged or Improper Shipment. Fill out and forward DD Form 6 (Report of Damaged or Improper Shipment) as prescribed in AR 700-58 (Army), NAVSANDA Publication 378 (Navy), and AFR 71-4 (Air Force).

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

Page 15, paragraph 15h (as changed by C2, 14 Oct 58). Delete the first two sentences and substitute:

It has been determined (par. 13b) that a cable pair in a length of spiral-four cable is shorted. The cable temperature is 68°F. and the resistance per loop mile of loaded spiral-four cable at 68°F. is 92.6 ohms.

•This change supersedes C2, 14 October 1958.

Page 18. paragraph 18g(2) (as changed by C2. 14 Oct 58). In the equation, change “-Bg” to: -BRg.

Page 19. paragraph 18j(5) (as changed by C2. 14 Oct 58). In the equation. change:

$$\frac{A(R + Rb - BRg)}{A + B} \text{ to: } \frac{A(R + Rb) - BRg}{A + B}$$

Page 33. figure 17, caption (as changed by C2. 14 Oct 1958). Change “Figure 17” to: Figure 11.

Paragraph 29c(2). Change to:

(2) Distance from test point to ground , 61.6 x 89,9, 5,538 feet

Paragraph 29c(3) (as changed by C2, 14 Oct 62). Change to:

(3) Distance from far end to ground , 61.6 x 22,5 , 1.386 feet

Page 36. paragraph 33a, chart (as changed by C2. 14 Oct 58). In the right-hand column, second item. change “17.4 per 100 ft)” to: (17.4 per 1,000 ft).

In footnote b. line 3 change “6-milliheavies” to: 6-millihenries. Paragraph 33b chart (as changed by C2, 14 Oct 58). Right-hand column. Change the heading to: Maximum dc res per loop mi at 68°F.(ohms)^a.

Add the following footnote below the table.

^aActual conductor resistance may be lower because of manufacturing variation. For exact resistance either refer to station records or use the test set to measure the resistance of a known length of the conductor and use the measurement to compute the resistance per loop mile.

Page 38. Delete section I and substitute:

SectionI. PREVENTATIVE MAINTENANCE

35. Scope of Maintenance

The maintenance duties assigned to the operator and organizational repairman of the test set are listed below together with a reference to the paragraphs covering the specific maintenance function. The duties assigned require the use of tools and test equipment listed in TM 11-6625-249-12P.

- a. Daily preventive maintenance checks and services (par. 38).
- b. Weekly preventive maintenance checks and services (par. 38.1).
- c. Cleaning (par. 38.2).
- d. Monthly preventive maintenance checks and services (par. 38.4).
- e. Touchup painting (par. 38.5).

36. 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 37 through 38.5 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 (pars. 38, 38.1 and 38.4) outline functions to be performed at specific intervals. These checks and services are to maintain Army electronic equipment in a combat serviceable condition; that is, in good general (physical) condition and in good operating condition. To assist operators in maintaining combat serviceability, the charts indicate what to check, how to check, and what the normal conditions are the

References column lists the illustrations paragraphs, or manuals that contain detailed repair or replacement procedures. If the defect cannot be remedied by performing the corrective actions listed, higher echelon maintenance or repair is required. Records and reports of these checks and services must be made in accordance with the requirements set forth in TM 38-750.

Delete section II heading.

Delete paragraphs 37 and 38, (as changed by C2, 14 Oct 58) and substitute:

37. Preventive Maintenance Checks and Services Periods

Preventive maintenance checks and services of the test set are required daily, weekly, and monthly. Paragraphs 38, 38.1 and 38.4 specify the items to be checked and serviced. In addition to the routine daily, weekly and monthly checks and services, the equipment should be rechecked and serviced immediately before going on a mission and as soon after completion of the mission as possible.

38. Daily Preventive Maintenance Checks and Services Chart

Sequence No.	Item	Procedure	References
1	Completeness -----	Be sure the equipment is complete.	TM 11-6625-249-12P.
2	Cleanliness -----	Clean dirt and moisture from exposed surfaces of housing cabinet, control panel, and the meter window.	Par. 38.2
3	Knobs, dials, and switches -----	During operation (items 5 below), observe that the mechanical action of each knob, dial, and switch is smooth and free of external or internal binding.	
4	Meter movement ----	During operation (item 5 below), check for sticking galvanometers movement.	
5	Operation -----	Operate the equipment according to paragraph 40.	Par. 40.

38.1. Weekly Preventive Maintenance Checks and Services Chart

Sequence No.	Item	Procedure	References
1	Handle, hinges, and latch -----	Hand check for looseness of the handle, latch, and hinges.	
2	Batteries -----	Inspect dry batteries for leakage.	
3	Preservation -----	Inspect exposed metal surfaces for rust and corrosion. If present, touchup paint the bare spots.	Par. 38.5.

38.2. Cleaning

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