TM 11-2056

WAR DEPARTMENT TECHNICAL MANUAL

TEST UNIT I-236

RESTRICTED. *DISSEMINATION OF RESTRICTED MATTER.* No person is entitled solely by virtue of his grade or position to knowledge or possession of classified matter. Such matter is entrusted only to those individuals whose official duties require such knowledge or possession. (See also paragraph 23b, AR 380-5, 15 March 1944.)

WAR DEPARTMENT

17 JANUARY 1945

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TM 11-2056

TEST UNIT I-236

WAR DEPARTMENT 17 JANUARY 1945

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WAR DEPARTMENT,
WASHINGTON 25, D. C., 17 January, 1945.

TM 11-2056, Test Unit I-236, is published for the information and guidance of all concened.

[A. G. 300.7 (1 Nov 44).]

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Chief of Staff.

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(For explanation of symbols see FM 21-6).

TECHNICAL MANUAL

TEST UNITS I–236 AND I–236–A

CHANGES No. 1

DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., *9 June 1949*

TM 11–2056, 17 January 1945, is changed as follows:

The title of the manual is changed to read—TEST UNITS I–236 AND I–236–A.

PART ONE
INTRODUCTION

Note (added). Test Unit I–236–A is identical in physical appearance, operation, and maintenance to Test Unit I–236. Wherever Test Unit I–236 appears in the manual, with the exception of figures 5 and 12, add I–236–A.

---

4. Description of Major Components

Test Unit I–236 **or I–236–A** is composed of one major unit, and is housed in a steel case with a hinged cover and convenient carrying handle (fig. 2). The complete unit * * * approximately 2 pounds. The only other components are two flexible test leads equipped with pin-tip plugs and test prods (fig. 3). **On Test Unit I–236 the test leads are 4 feet long, while those on Test Unit I–236–A are 2½ feet long.** There is a space * * * a similar manner.

Figure 4. Test Unit I–236 **or I-236-A,** *packing of test leads and power cord.*

8. Use of Test Unit I–236 and I–236–A to Differentiate Between A–C and D–C Voltages

The equipment to * * * for this test.

* * * * * * *

d. If neither plate * * * the test prods.

Note. Rescinded.

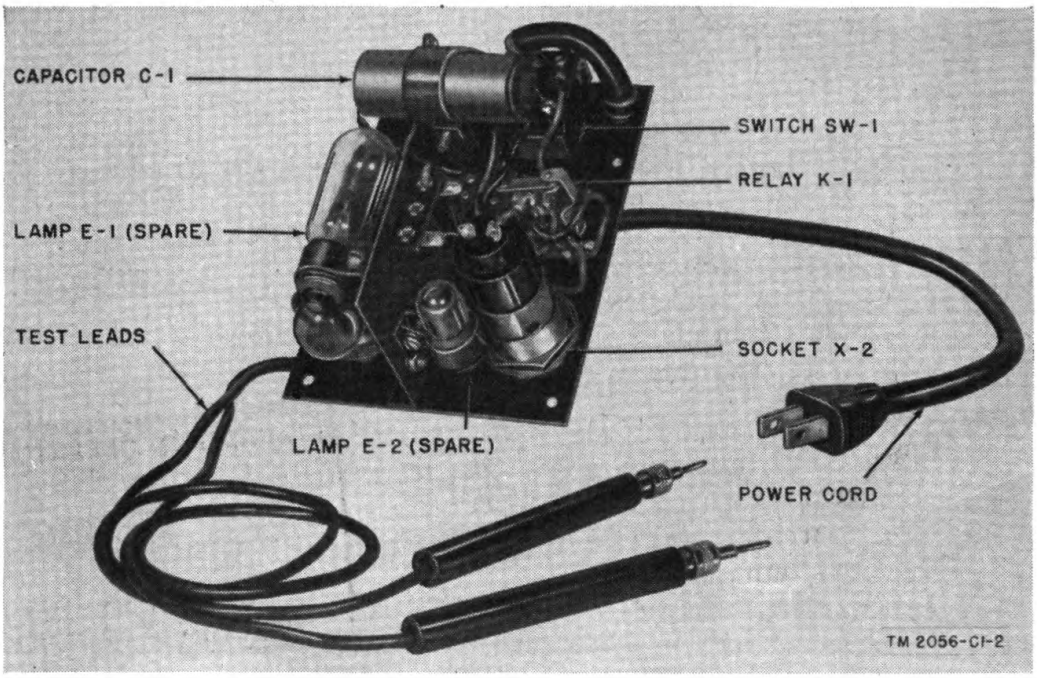


Figure 5.1 (Added.) *Test Unit I–236–A, under side of panel with case removed, showing mounting of neon lamps.*

18.1 (Added.) Weatherproofing

a. General. Signal Corps equipment, when operated under severe climatic conditions such as prevail in tropical, arctic, and desert regions, requires special treatment and maintenance. Fungus growth, insects, dust, corrosion, salt spray, excessive moisture, and extreme temperatures are harmful to most materials.

b. Tropical Maintenance.

(1) *General.* A special moistureproofing and fungiproofing treatment has been devised which, if properly applied, provides a reasonable degree of protection. This treatment is fully explained in TB SIG 13, Moistureproofing and Fungiproofing Signal Corps Equipment, and TB SIG 72, Tropical Maintenance of Ground Signal Equipment.

(2) *Test Unit I–236 and I–236–A.* Remove the neon and Mazda lamps (both those in use and the spares), the test leads, and the power cord. Clean the unit and remove rust and corrosion. Mask the relay and switch contacts, the lamp sockets, terminals, and the openings around the toggle switches. Thoroughly dry the equipment. Apply moistureproofing and fungiproofing varnish with a spray gun or brush. When the varnish is thoroughly dry, carefully scrape or burnish any contacts or terminals which have particles of masking tape adhering to them or which have been coated with

lacquer. Replace the components that have been removed and check the equipment to be sure that it is operating properly. Mark the equipment with the date of treatment, for example: MFP 15 Feb 49.

c. WINTER MAINTENANCE.

(1) *General.* Special precautions necessary to prevent poor performance or total operational failure of equipment in extremely low temperatures are fully explained in TB SIG 66, Winter Maintenance of Signal Equipment.

(2) *Test Unit I–236 and I–236–A.* The test unit will perform satisfactorily in low temperatures provided precautions are taken to prevent equipment failure. House and use the test set in a heated shelter or building whenever possible. On the march, protect the equipment from the wind by wrapping it in blankets. Perform PM (preventive maintenance) routines more frequently to keep the equipment as moisture-free as possible.

d. DESERT MAINTENANCE.

(1) *General.* Special precautions necessary to prevent equipment failure in areas subject to extremely high temperatures, low humidity, and excessive sand and dust are fully explained in TB SIG 75, Desert Maintenance of Ground Signal Equipment.

(2) *Test Unit I–236 and I–236–A.* Special dust-proofing treatment is not necessary for the test unit. Take precautions to prevent dirt, dust, sand, and other foreign matter from filtering into the equipment. Keep the cover in place when the test set is not in use and, if possible, keep the set in a tight cabinet or drawer or cover the equipment with canvas or other material when it is not to be used immediately. Perform PM routines frequently to keep the equipment clean.

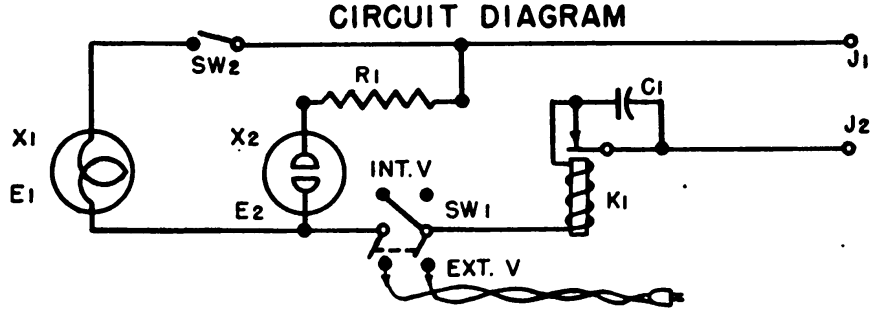
20. General

a. Test Unit I–236 **or I–236–A** consists of an ordinary test lamp equipped with switching and protective features to increase its usefulness. The test unit * * * and d-c voltages.

Note (added). The relay in Test Units I–236 and I–236–A will act as a circuit breaker and thus protect the Mazda lamp in case the test prods are applied to a portion of a circuit having an abnormally high difference of potential.

* * * * * * *

TEST UNIT I-236-A
CIRCUIT DIAGRAM



FOR USE OF CIRCUITS IN FIGS. 2 TO 4 INCL. SEE TM 11-2056

FIG. 2

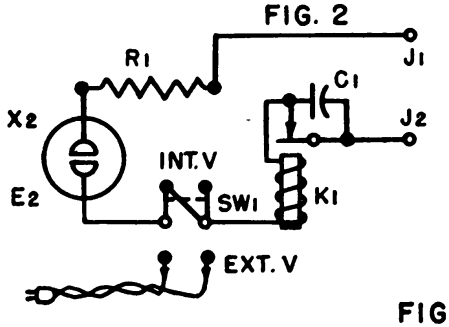


FIG. 3

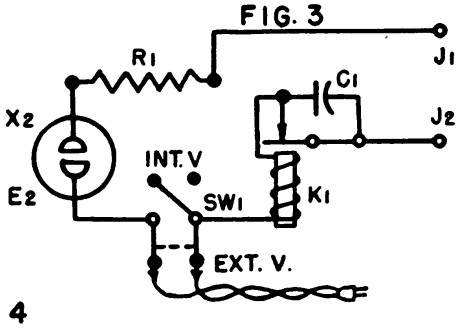
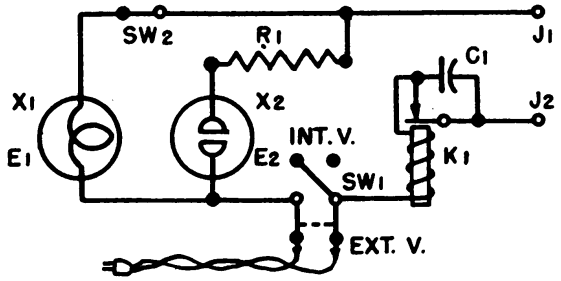


FIG. 4



APPARATUS LEGEND

REF SYM	S.C. TYPE NO. OR DWG. NO.	DESCRIPTION	JAN. SPEC. OR MANUFACTURER *	JAN OR MFR'S TYPE NO.	QUAN
C_1		CAPACITOR, FIXED,	CORNELL DUBILIER CO.	CP25AIEF504K	1
E_1		LAMP, MAZDA, 15W, 115V,	GENERAL ELECTRIC CO.	15T 7N	1
E_2		LAMP, NEON, 25W, 115V,	GENERAL ELECTRIC CO.	T4 1/2 D.C. BAY	1
J_1-J_2		CONNECTOR,	AMERICAN PHENOLIC COR.	78-1P	2
K_1		RELAY	ALLIED CONTROL CO. INC.	AR3D32	1
R_1		RESISTOR,	JAN R-11 AMEND .1	RC30AF303J	1
SW_1		SWITCH, TOGGLE, DPDT	JAN S-23	ST23N	1
SW_2		SWITCH, TOGGLE, SPST	JAN S-23	ST13A	1
X_1		LAMPHOLDER	NOMA ELECTRIC CO.	1-915	1
X_2		LIGHT, INDICATOR	DIAL LIGHT OF AMERICA	9200-D.C.	1
* MANUFACTURER INDICATED OR EQUAL AND INTERCHANGEABLE WITH ITEM SPECIFIED					

TM 2056-C1-3

Figure 12.1 (Added.) *Test Unit I–236–A, circuit label.*

21. Circuit Used to Differentiate Between A–C and D–C Voltages

* * * * * * *

b. Test Unit I–236 **or I–236–A** is connected so that the neon lamp E_2 is used to test a live circuit connected at jacks J_1 and J_2 through the test leads. If the voltage * * * plates of neon lamp E_2. Capacitor C_1 is * * * the neon lamp.

22. Circuit Used to Test Fuses and Capacitors

* * * * * * *

b. The voltage for * * * capacitor under test. **Resistor** R_1 and capacitor C_1 have the same functions as described in paragraph 21*b*.

25. Voltohmmeter Tests

* * * * * * *

b. Using the voltohmmeter * * * the relay coil. The resistance should measure between **30 and 32** ohms.

Section XI. IDENTIFICATION TABLE OF PARTS

Note (added). The fact that an item appears in this technical manual is not sufficient basis for requisitioning the part. Requisitions must cite an authorized basis, such as T/O&E, T/E, T/A, T/BA, SIG 6, SIG 7 & 8, SIG 7–8–10, SIG 10, list of allowances of expendable material, or another authorized supply basis. The Department of the Army Supply Catalog pamphlet applicable to the equipment covered in this technical manual is listed in paragraph 29.

29. (Superseded) Maintenance Parts for Test Units I–236 and I–236–A

The following information was compiled on 28 October 1948. The appropriate pamphlet of the Department of the Army Supply Catalog is *Organizational Maintenance Allowances, and Field and Base Maintenance Stockage Guide SIG 7 & 8–I–236*. For an index of available catalog pamphlets, see the latest issue of Department of the Army Supply Catalog SIG 1.

29.1 (Added.) Identification Table of Parts for Test Units I–236 and I–236–A

Ref symbol	Name of part and description	Function of part	Signal Corps stock No.
	TEST SET, teletypewriter: Sig C Test Unit I–236, I–236–A; steel case, OD finish; operates from 115–120 v ac or dc; differentiates between a-c and d-c voltages in following ranges: dc, 90 and 130 v ac, 55 and 130 v; 5 13/32″ lg x 3⅞″ h x 4 3/32″ wd overall; Sig C dwg SC-D-12759.	Testing unit for checking continuity of circuits and for differentiating between a-c and d-c voltages.	3F4470–236
	BOARD, terminal: bakelite; 1⅛″ lg x ⅜″ wd x 3/32″ thk overall; Cinch part/dwg #152.0.	Mounting for resistor	2Z9402.37
	CABLE, power: 2 #18 AWG stranded cond; 5,000 v working; Alpha Wire part/dwg #1951.	To connect test set to power supply when testing circuits requiring power from an external source.	1B3018–2.18
C–1	CAPACITOR, fixed: paper dielectric; 500,000 mmf +10%; 600 vdcw; 2 3/16″ lg x 1 1/16″ diam; JAN type CP28A1EF504K.	D-C test circuit	3DA500–604
	CLAMP: cable; ¾″ lg x 5/16″ wd overall; Cinch part/dwg #292–S.	Clamp for test leads	2Z2643.66
J–1, J–2	CONNECTOR: single round female contact; for 0.080″ phone tip; ¾″ lg x ⅜″ diam body; Amphenol #78–7P.	Pin jack	2Z5581–12
	CONNECTOR, single round male cont: black phenolic handle; 1″ lg x 5/16″ diam; Birnbach #412.	Pin tip on test lead	2Z3021–58
	CONNECTOR, male cont: 2 spring type parallel blades; Allied Elec Prod #105–F.	Power cord	2Z3022–41

	GROMMET: rubber; fits 7/16" hole; hole 0.25" ID x 1.16" wd groove, 3/16" wd x 5/8" diam overall; Atlan India Rub #AH931–4–7.	Power cord bushing	2Z8495.5
E–2	LAMP, glow: 115 v, 25 w; T–4½ clear; double cont bayonet base; GE part/dwg #NE–48.	Alone, used to determine type of voltage and to check fuses and capacitors. With incandescent lamp, used to check continuity of circuits.	2Z5889–3
E–1	LAMP, incandescent: 115 v, 15 w; intermediate screw base; GE part/dwg #15T7N.	In conjunction with neon lamp, used to test continuity of circuits.	6Z6820–2
X–1	LAMP HOLDER: intermediate screw base; 250 v, 1.25 w; 1 5/16" lg x 1" diam overall; octagonal; Rodale #318.	For incandescent lamp	6Z8359–5
	LENS, indicator light: clear; 1" diam smooth lens; holder 1⅛" OD, ⅜" shank with OD, anodized lusterless finish; Dialco part/dwg #910–JSH.	For incandescent lamp	2Z8359–5
X–2	LIGHT, indicator: 1" diam clear lens; T–4½ bulb, double cont bayonet base; 2⅞" lg x 1⅛" diam overall; Dialco part/dwg #9200 DC.	For neon lamp	2Z5991–25
	PROD, test: 3" lg solderless tip prod; Birnbach part/dwg #410 special.	Makes contact with terminals of the circuit or part to be tested so that there will be a continuous circuit through the test unit.	3F3705–4
K–1	RELAY, armature: SPDT, normally closed; contact rating 12 v dc, 5 amp; single winding, 31 v, 6 amp; 1⅝" lg x 1 5/16" wd x 1 3/16" h; Allied Cont part/dwg #AR–3D32.	Acts as circuit breaker	2Z7585–106
R–1	RESISTOR, fixed: carbon; 30,000 ohms ±5%; 1 w; 0.750" lg x 0.280" diam; JAN type RC30BF303J.	Resistance for neon pilot lamp	3RC30BF303J

29.1 (Added.) Identification Table of Parts for Test Units I–236 and I–236–A

Ref symbol	Name of part and description	Function of part	Signal Corps stock No.
	RING, retainer: ring clamp for ¼'' diam cable; Belden part/dwg #SP–308.	Strain relief for service cable	2Z2643.39
SW–1	SWITCH, toggle: DPDT; 125 v, 5 amp—250 v, 2 amp resistive load; 1 9/32'' lg x 23/32'' wd x 23/32'' d; JAN type ST23N.	INT V and EXT V circuits	3Z9863–23N
SW–2	SWITCH, toggle: SPST; 125 v, 5 amp—250 v, 2 amp resistive load; 1 9/32'' lg x 23/32'' wd x 23/32'' d; JAN type ST13A.	Neon and incandescent lamp circuits	3Z9863–13A
	WIRE, electrical: single cond; #20 AWG stranded cond; #20 AWG stranded cord 0.140'' OD; Buna S insulation; 10,000 v break-down test; Alpha Wire part/dwg #1635.	Test leads	1B820.177

[AG 300.7 (31 Mar 49)]

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For explanation of distribution formula, see SR 310–90–1.

U. S. GOVERNMENT PRINTING OFFICE: 1949

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LIST OF ILLUSTRATIONS

DESTRUCTION NOTICE

WHY — To prevent the enemy from using or salvaging this equipment for his benefit.

WHEN — When ordered by your commander.

HOW — 1. Smash — Use sledges, axes, handaxes, pickaxes, hammers, crowbars, heavy tools.

2. Cut — Use axes, handaxes, machetes.

3. Burn — Use gasoline, kerosene, oil, flame throwers, incendiary grenades.

4. Explosives — Use firearms, grenades, TNT.

5. Disposal — Bury in slit trenches, fox holes, other holes. Throw in streams. Scatter.

USE ANYTHING IMMEDIATELY AVAILABLE FOR DESTRUCTION OF THIS EQUIPMENT.

WHAT — 1. Smash — Entire unit.

2. Cut — As many wires and cables as time permits.

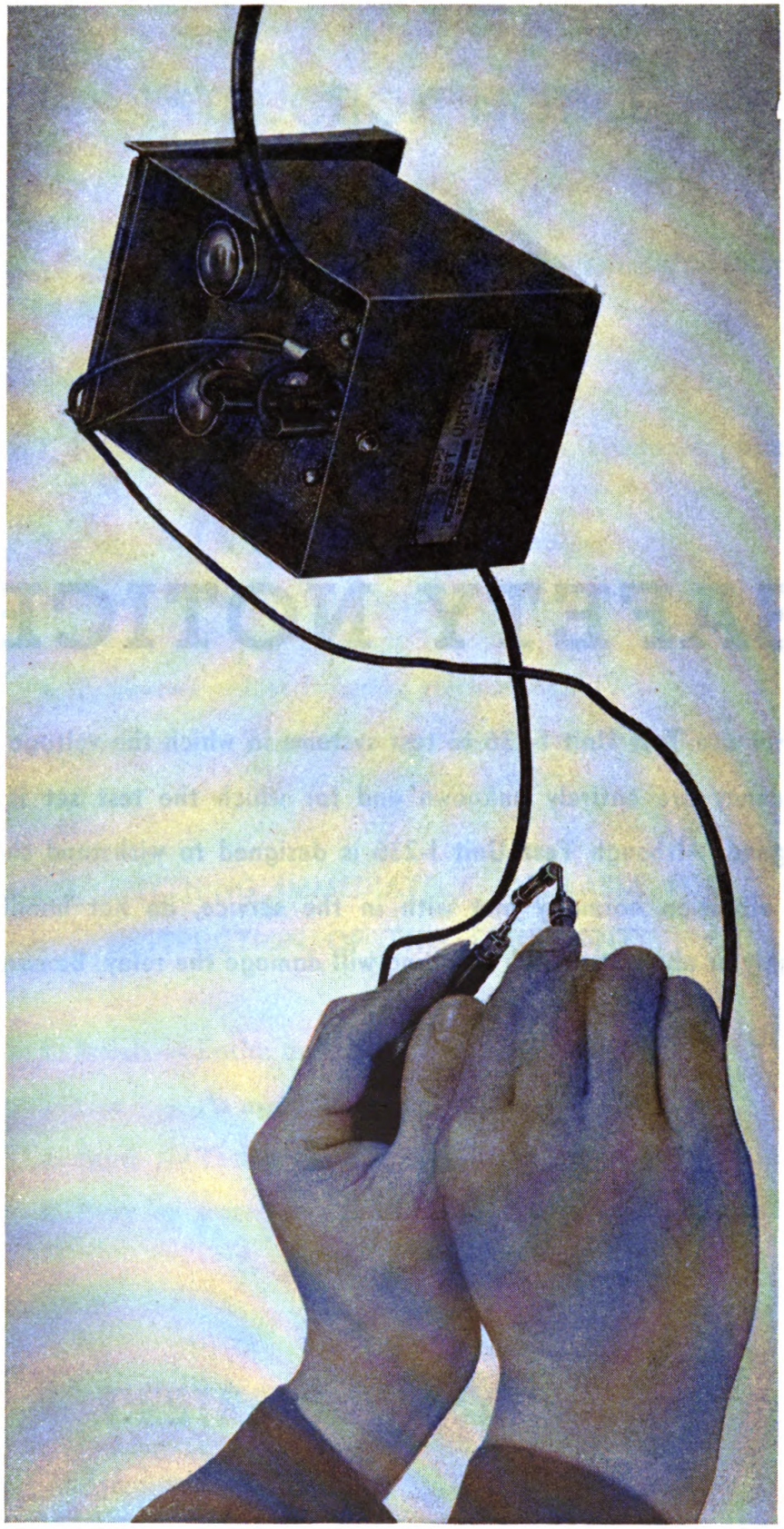
3. Burn — Technical manuals and circuit label.

4. Bury or scatter — All of the above pieces after destroying their usefulness.

DESTROY EVERYTHING

SAFETY NOTICE

Do not use Test Unit I-236 to test systems in which the voltage and frequency are entirely unknown and for which the test set is not designed. Although Test Unit I-236 is designed to withstand shocks and vibration normally met with in the service, do not handle it roughly or abuse it. Rough handling will damage the relay. Be careful.



TL 50539-S

Figure 1. Test Unit I-236 in use.

PART ONE
INTRODUCTION

SECTION I
DESCRIPTION OF TEST UNIT I-236

1. GENERAL.

Test Unit I-236 is a portable, self-contained test instrument designed primarily for use in testing teletypewriter equipment. This unit replaces the multimeter formerly supplied as a component of Tool Equipment TE-50-A. Test Unit I-236 is used to check continuity of circuits, to differentiate between a-c and d-c voltages, to check fuses, and to test capacitors (fig. 1).

2. APPLICATION.

Test Unit I-236 may be used for checking circuits, fuses, and capacitors found in teletypewriter equipment such as printers, perforators, reperforators, transmitter-distributors, rectifiers, power units, and other related equipment. Tests are made by observing the reaction of either or both of two lamps when Test Unit I-236 is connected to a circuit, fuse, or capacitor under test.

3. TECHNICAL CHARACTERISTICS OF TEST UNIT I-236.

a. Power input: 115 to 130 volts, ac or dc. (Alternate power supply from live circuits of equipment under test.)

b. Range for fuse tests: fuses with current-carrying capacity of 2 milliamperes and higher.

c. Starting voltage of neon lamp: 55 volts ac, 90 volts dc.

4. DESCRIPTION OF MAJOR COMPONENTS.

Test Unit I-236 is composed of one major unit, and is housed in a steel case with a hinged cover and convenient carrying handle (fig. 2). The complete unit is 3¾ inches high by 3¾ inches wide by 5½ inches deep and weighs approximately 2 pounds. The only other components are two 4-foot flexible test leads equipped with pin-tip plugs and test prods (fig. 3). There is space between the panel and the cover of Test Unit I-236 in which the

test leads and the power cord may be stowed when not in use (fig. 4). Two 15-watt, 115-volt, clear Mazda lamps (one installed, one spare) and two ¼-watt, 115-volt, neon lamps (one installed, one spare) are furnished with Test Unit I-236. The panel to which all of the parts are attached may be removed for servicing by loosening four screws on the face of the panel. Spare neon and Mazda lamps may be reached in a similar manner.

5. PACKAGING.

Test Unit I-236 is supplied only as a component of Tool Equipment TE-50-A and is not packaged separately. The test unit occupies a space in Case CS-78 which was formerly used for the multimeter.

Figure 2. Test Unit I-236, exterior view with cover closed.

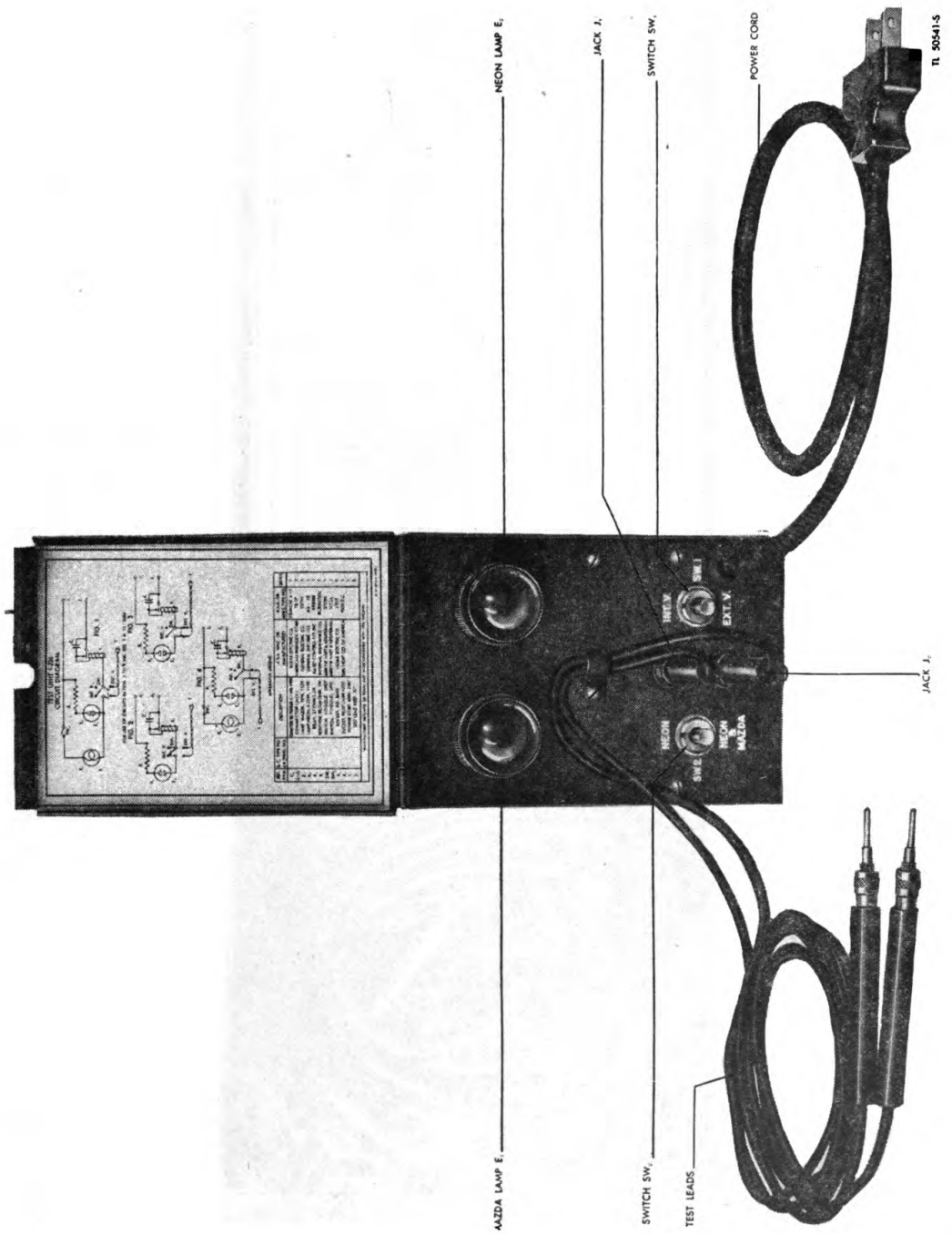
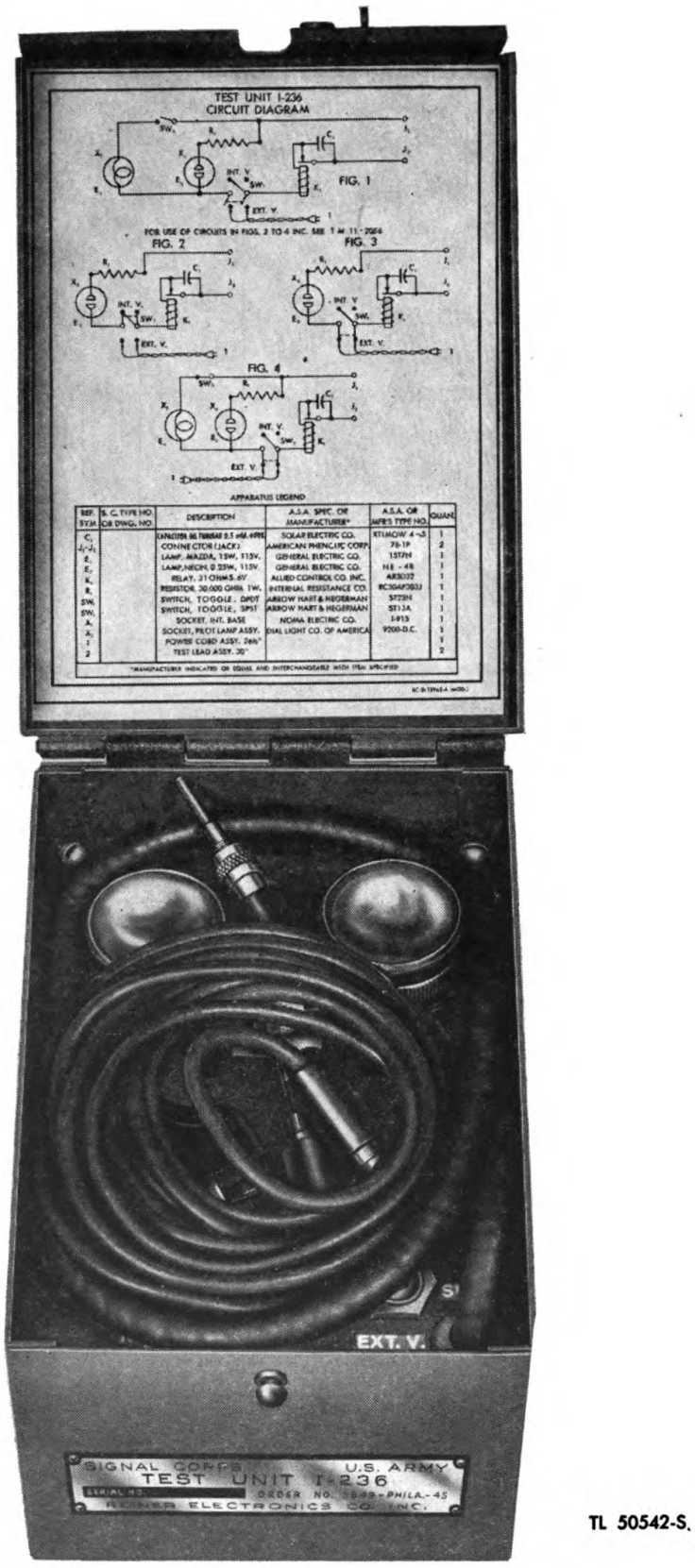


Figure 3. Test Unit I-236, front view with cover open.



TL 50542-S.

Figure 4. Test Unit I-236, packing of test leads and power cord between cover and panel.