

TM 9-4925-225-10

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

**OPERATOR'S MANUAL
TESTER, IGNITER
CIRCUIT
(SIMPSON ELECTRIC COMPANY
MODEL ITS)
(4925-712-0205)**

**HEADQUARTERS, DEPARTMENT OF THE ARMY
OCTOBER 1966**

TAGO 5970B

**HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., 11 October 1966**

TM 9-4925-225-10 is published for the use of all concerned.

By Order of the Secretary of the Army:

HAROLD K. JOHNSON,
*General, United States Army,
Chief of Staff,*

Official:

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

Distribution:

Active Army:

DCSLOG (1)	USAAMC (1)
CNGB (1)	USACDCEC (10)
CofEngrs (1)	Fort Knox FLDMS (10)
Dir/Trans (1)	LEAD (2)
CofSptS (1)	PUAD (2)
TSG (1)	LBAD (2)
USCONARC (2)	USAMICOM (1)
ARADCOM (2)	USACGMS (5)
ARADCOM Rgn (2)	USASETAF (1)
OS Maj Comd (3)	USARJ (2)
LOGCOMD (2)	USARYIS (2)
USAWECOM (75)	White Sands PG (3)
USAMC (2)	Units org under fol TOE:
USAAVCOM (2)	(2 cys each)
USACOMZEUR (1)	6-615
USATMC (1)	6-617
Armies (2) except	9-51
Seventh (4)	9-87
Eighth (4)	9-377
USAAMS (2)	9-500 (FD)

NG: None

USAR: None

For explanation of abbreviations used, see AR 320-50.

☆U.S. Government Printing Office: 1966-250-616/5970B

CHANGE

No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 24 July 1973

**Operator's Manual
TESTER, IGNITER CIRCUIT
(SIMPSON ELECTRIC COMPANY MODEL ITS)
(4925-712-0205)**

TM 9-4925-225-10, 11 October 1966, is changed as follows:
Page 4. Add the following paragraphs:

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: Commander, US Army Weapons Command, ATTN: AMSWE-MAS-SP, Rock Island, IL 61201.

Components of the End Item

Parts included with the end item and considered as components of the end item configuration are listed in the following table:

Table 1. Components of the End Item

<i>Components</i>	<i>Part No.</i>	<i>(FSCM)</i>	<i>Qty</i>
BATTERY, MERCURY:	RM12RT2	(90303)	1
LEAD, TEST: Set of 2	10-830167	(55026)	1

Page 15. The appendix is superseded as follows:

**APPENDIX
BASIC ISSUE ITEMS LIST
AND
ITEMS TROOP INSTALLED OR AUTHORIZED
LIST**

The basic issue items and items troop installed or authorized lists are not applicable.

TAGO 3063B

By Order of the Secretary of the Army:

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

Official

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

Distribution:

Active Army:

DCSLOG (3)
CNGB (1)
TSG (1)
COE (5)
Dir of Trans (1)
OCC-E (1)
CONARC (2)
AMC (5)
ARADCOM (2)
ARADCOM Rgn (2)
Armies (3) except:
 Seventh (5);
 Eighth (5).
OS Maj Comd (2)
LOGCOMD (2)
WECOM (10)
MICOM (1)
MUCOM (2)
AVSCOM (2)
Ft Knox FLDMS (10)
LEAD (2)
LBAD (2)
USACOMZEUR (1)
USAFAS (2)
USACDCEC (10)
USAMMCS (5)
USASETAF (1)
USARJ (2)
USARYIS (2)
Units Org under fol TOE:
 6-615 (2);
 6-617 (2).

NG: None

USAR: None

For explanation of abbreviations used, see AR 310-50.

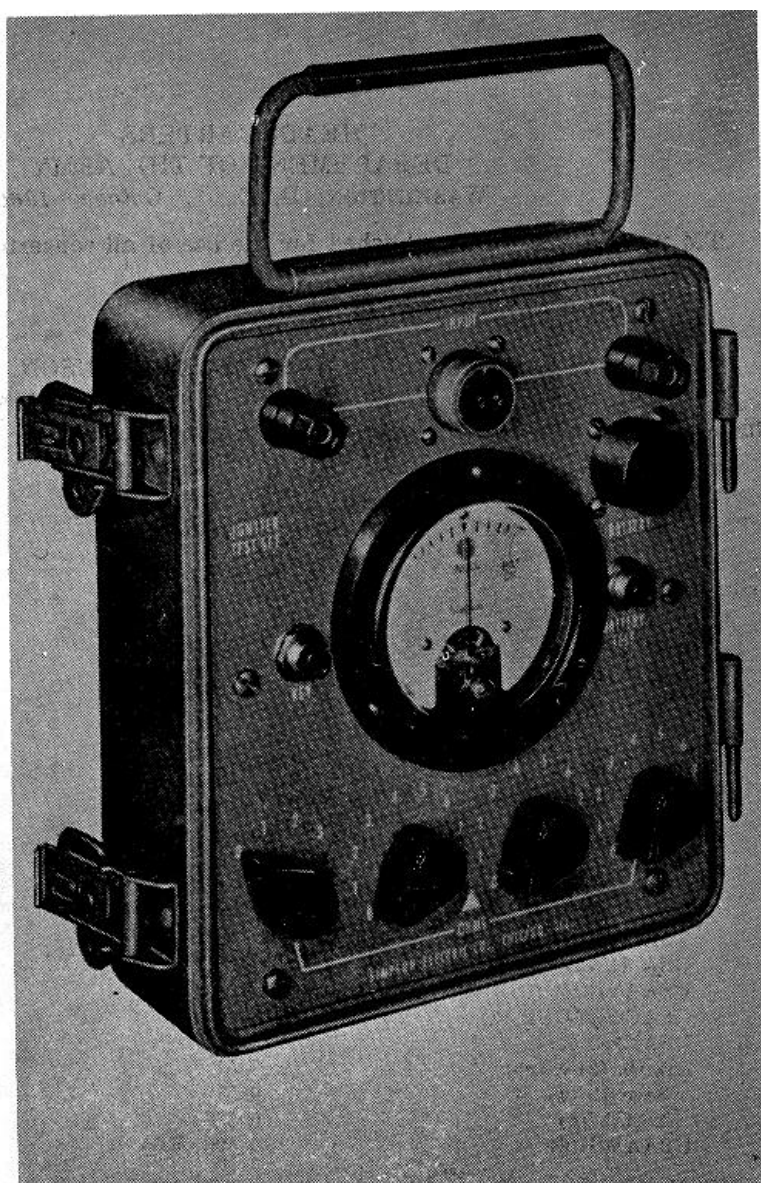


FIGURE 1. SIMPSON IGNITER TEST SET MODEL ITS.

CONTENTS

	Page
Specifications	4
General Description	4
Theory of Operation	4
Operation	6
Maintenance	8
Replaceable Parts List	11
APPENDIX	15

SPECIFICATIONS

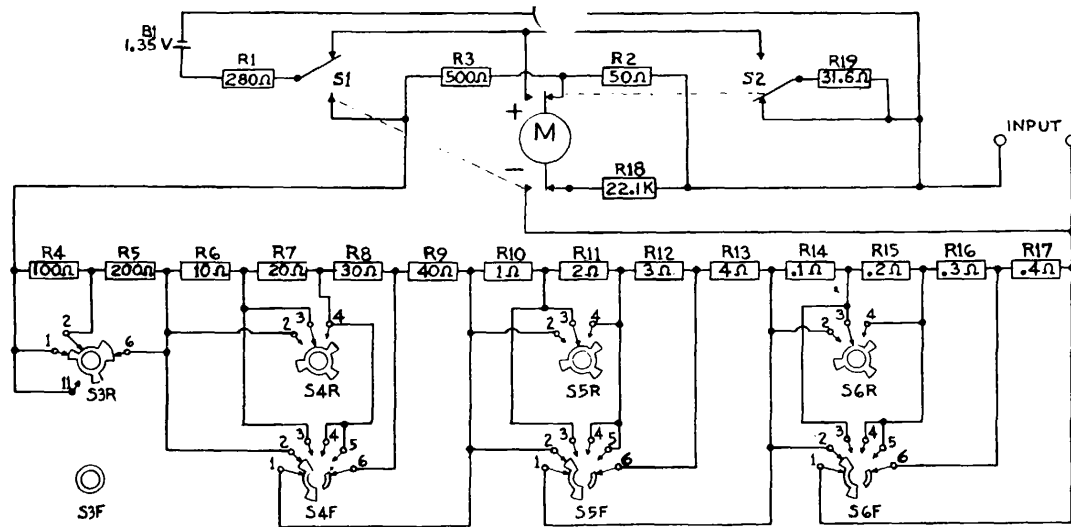
Range	0-30 Ohms
Accuracy	0-5 Ohms: ± 0.02 Ohm 5-30 Ohms: ± 0.05 Ohm
Maximum Output Current	5 Milliampere
Battery	BA 1105/U (FSN 6135-725-3941) or (Mallory RM-12-RT)
Size	7" x 8" x 4-1/4" deep
Weight	Less than 4 pounds

GENERAL DESCRIPTION

The Simpson Igniter Test Set is a rugged, easy to operate, precision instrument specifically designed to make extremely accurate resistance measurements for continuity testing of rocket and JATO aircraft igniter circuits. It is enclosed in a waterproof aluminum case that affords maximum protection. To provide portability an internal battery, easily replaceable, is used to furnish power for all measurements. To provide maximum accuracy, precision components are used throughout and a mirror on the meter dial at the null point eliminates errors due to parallax. Further, means have been provided to check the battery quickly and accurately each time the instrument is used. By exercising normal care in handling and use, the Simpson Igniter Test Set will provide a long life of accurate measuring.

THEORY OF OPERATION

The basic measuring circuit, as shown in figure 2, is a Wheatstone Bridge. The igniter circuit under test forms the unknown arm of the bridge while resistors R4 through R17 form the balancing arm. Bridge arms R2 and R3 are in the ratio of 1 to 10; therefore, when the bridge is balanced the unknown resistance is one-tenth the resistance of the balancing arm.



NOTES:

K = 1000 OHMS

LAST RESISTOR IS R19

M = METER

B1 = BATTERY

LAST SWITCH IS S6

SWITCHES: S3 S4 S5, & S6, ARE SHOWN

IN COUNTERCLOCKWISE POSITION

S1 & S2 ARE PUSH BUTTON SWITCHES

FIGURE 2. SCHEMATIC DIAGRAM

When the key (S1) is depressed, power from the battery is applied to the bridge. If an unknown resistance, within the range of the tester's measuring capability, is connected to the input of the tester, the Ohms Controls (S3 to S6) can be adjusted so that there is zero potential difference across the galvanometer. In this state, the meter is at its' null point and the unknown resistance is one-tenth that of the balancing arm.

When the Battery Test switch (S2) is depressed, power from the battery is applied to resistor R19 and the meter is placed across R19 to measure the voltage drop. By this method the condition of the battery may be determined.

Resistor R1 has been placed in series with the battery to limit the amount of current that may be drawn from the battery. Resistor R18 is used to shunt the meter, thus providing a damping action, when the tester is not in use.

OPERATION

To obtain the most accurate results when using the Simpson Igniter Test Set to measure igniter circuit continuity, the following procedure should be followed.

1. Check to see that the meter pointer is at its nullpoint or center before any measurements are made with the test set. If the pointer is not centered turn the adjustment screw located on the meter until this condition is obtained.
2. Depress the Battery Test Button to check the condition of the internal battery. If the pointer does not deflect into the Battery O.K. region of the scale the battery must be replaced immediately. Do not attempt to make measurements with a weak battery.
3. Connect the igniter circuit under test to the input of the test set-either the binding posts or receptacle may be used.

4. Set the Ohms controls approximately to the resistance expected. Depress the key and adjust the Ohms controls until the pointer is centered. Read the resistance directly from the settings of the Ohms controls.

EXAMPLE: Figure 3 shows the Igniter Test Set Ohms controls adjusted for a value of 23.53 ohms.

NOTE: If the pointer initially deflects to the left when the key is depressed, the igniter circuit resistance is greater than the value set on the Ohms controls. If the pointer deflects to the right, the igniter circuit resistance is less than the value set on the Ohms controls.

5. When the input is applied to the binding posts through test leads, the resistance of the leads must be subtracted from the value obtained in step 4. To measure the test lead resistance, short the free ends of the leads together and proceed as in step 4. The resistance value obtained will be the lead resistance.

NOTE: In any case where a very low value of resistance is being measured, the pointer will react slowly, because of the low resistance shunting the meter. This is normal. Approximately 15 seconds should be allowed for the pointer to reach its final position after the Ohms controls have been adjusted.

CAUTION

Do not make measurements with the Simpson Igniter Test Set in any circuit where voltage is present. This voltage could result in a reading error or damage to the tester.

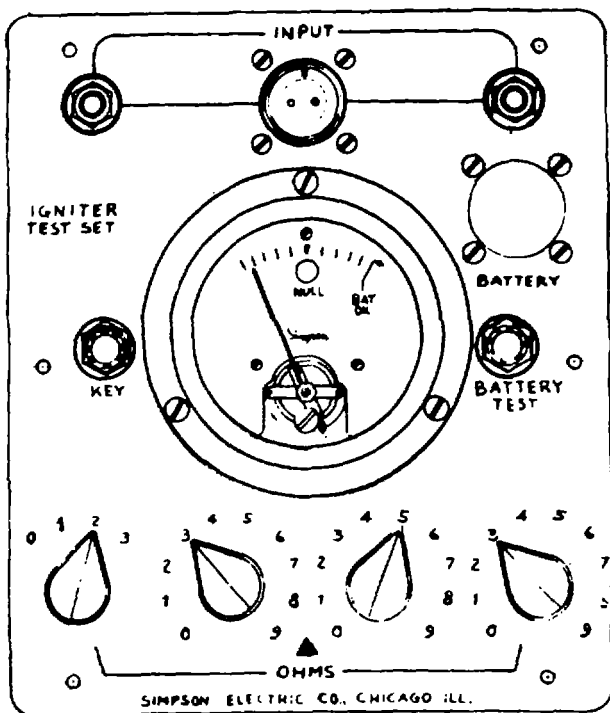


FIGURE 3. EXAMPLE OF OHMS CONTROL SETTING

MAINTENANCE

No periodic maintenance is required beyond replacement of the battery, adjustment of the mechanical zero, and visual inspection of the tester and test leads.

If the Battery Test indicates a weak battery, the battery may be replaced as follows:

1. Unscrew the cap, located on the panel, from the battery holder assembly.
2. Remove defective battery.
3. Replace with a new battery by inserting it in the holder so that the "plus" end is up.

4. Screw the cap in place.

If visual inspection reveals that the galvanometer is not at the null-point with the tester not in use, adjustment of the mechanical zero can be accomplished by means of the screwdriver adjustment at the front of the meter. Turn the screw clockwise or counterclockwise until the pointer is at the null-point.

In the event a test lead becomes defective the entire lead should be replaced with a new one.

If a malfunction should occur in the bridge circuit repair may be made as follows:

1. Remove the six screws that hold the panel assembly in the case.
2. Remove the panel assembly from the case.
3. Determine which component or components are defective and replace with the proper replacement part.
4. Replace the panel assembly and tighten the six mounting screws. No further calibration is necessary to return the instrument to its initial accuracy.

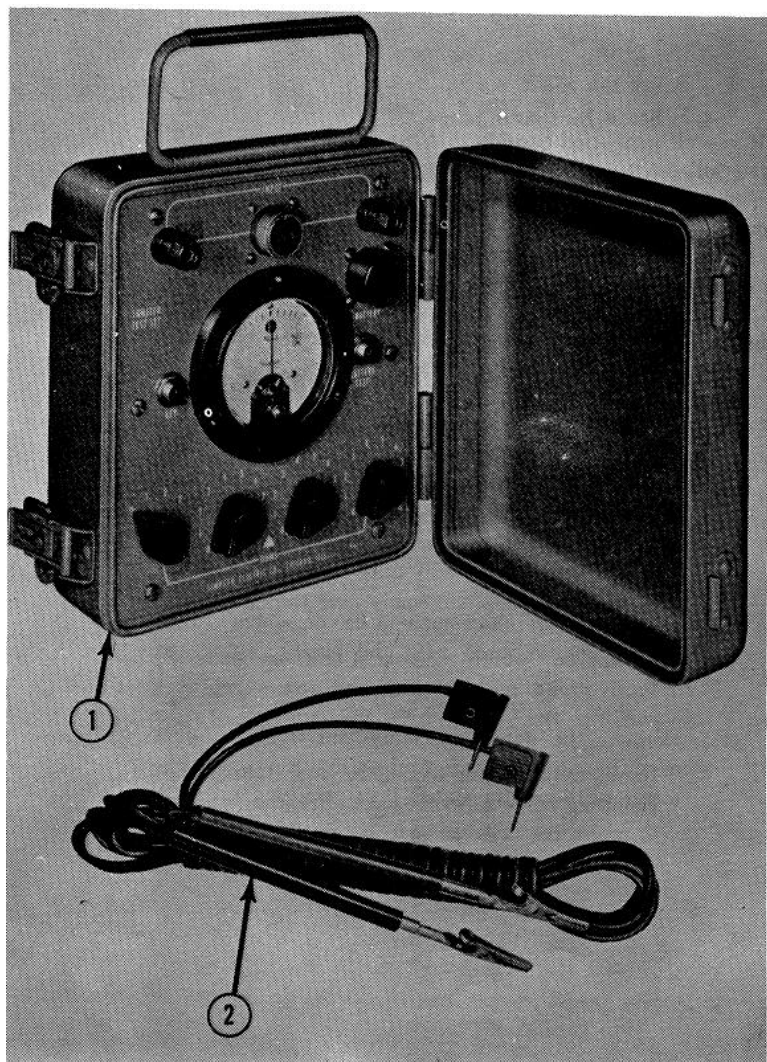


FIGURE 4. SIMPSON IGNITER TEST SET

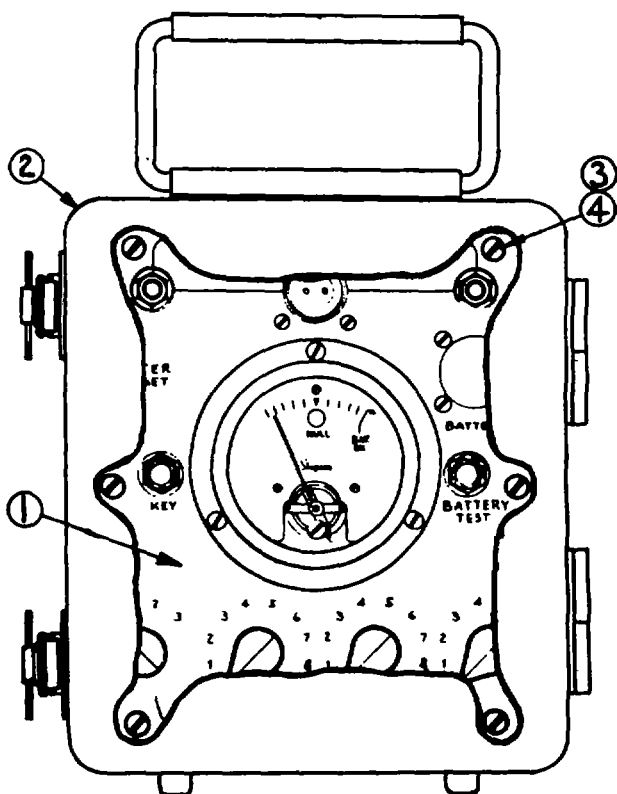


FIGURE 5. TESTER ASSEMBLY

REPLACEMENT PARTS LIST

Fig. And Item No.	Simpson Part No.	Description	Qty. Per Ass'y
4-	4-000ITS	Igniter Test Set	
4-1	10-861175	Tester Assembly (see Fig. 5)	1
4-2	10-830167	Test Lead Set	2
5-	10-861175	Tester Assembly	
5-1	10-861174	Panel Sub-Assembly (see Fig. 6)	1
5-2	5-110485	Carrying Case	1
5-3	1-181505	Screw, #6-32 x 5/16", F.H. Brass, M.S.	6

REPLACEMENT PARTS LIST

Fig. And Item No.	Simpson Part No.	Description	Qty. Per Ass'y
5-4	1-186083	Lockwasher, #6 int. tooth, Phosphor Bronze	6
6-	10-861174	Panel Sub-Assembly	
6-1	5-110486	Panel, Machined & Finished	1
6-2	10-861173	Decade, Sub- Assembly (see Fig. 7)	1
6-3	1-119847	Binding Post, Black Nylon, Banana Jack.	2
6-4	5-110487	Connector, Receptacle	1
6-5	1-182169	Screw, #4-40 x 5/16" Rd. Hd. Steel, M.S.	4
6-6	1-117858	Nut, Hex, #4-40 x 3/16" A.F. Steel Cadmium Plated, M.S.	4
6-7	1-187206	Lockwasher, #4 split, Phosphor Bronze	4
6-8	10-861117	Holder, Battery Assembly	1
6-9	1-182772	Screw, #6-32 x 1/2", Rd. Hd. Brass, M.S.	4
6-10	1-181539	Nut, Hex, #6-32 x 3/32 x 1/4" A.F. Brass, M.S.	7
6-11	1-186083	Lockwasher, #6 int. tooth, Phosphor Bronze	4
6-12	Spec-7480	Meter, 25-0-25 ua	1
6-13	1-181151	Nut, Hex, #1/4 - 28 x 3/8 x 3/32" Thick, Brass.	2

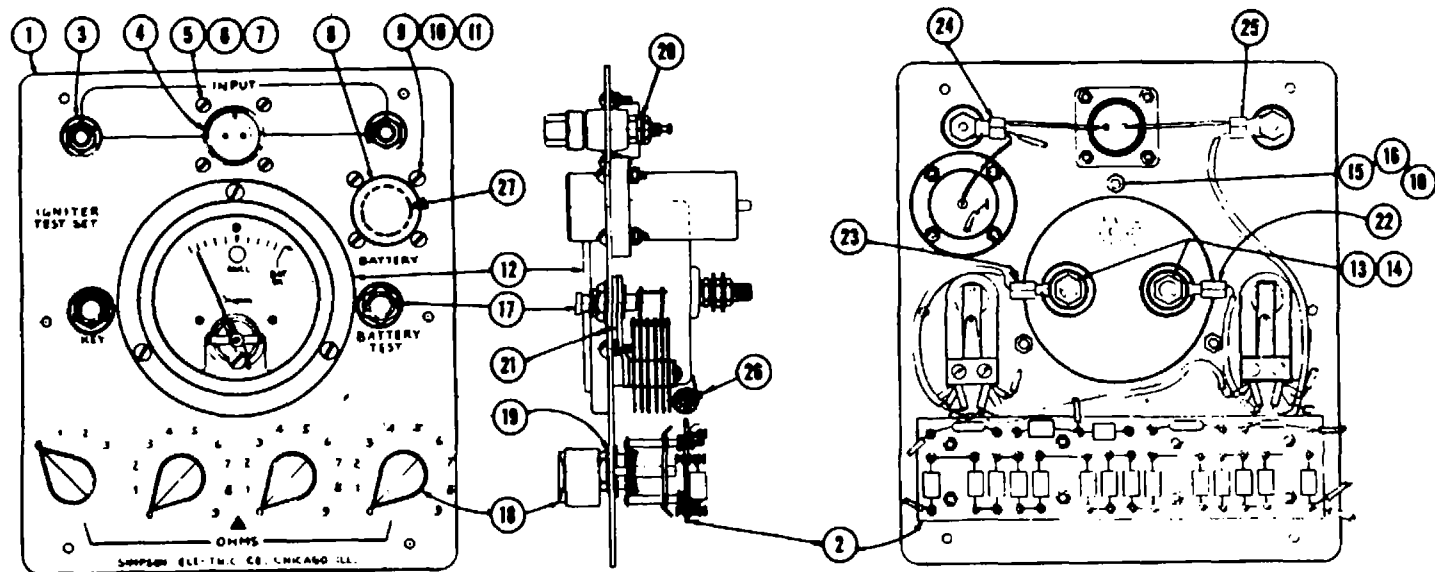


FIGURE 6. PANEL SUB-ASSEMBLY

REPLACEMENT PARTS LIST

Fig. And Item No.	Simpson Part No.	Description	Qty. Per Ass'y
6-14	1-181579	Washer, Flat, .260" ID 1/2" OD x .040" Thick, Brass	2
6-15	1-152765	Screw, #6-32 x 5/8" Rd. Hd. Brass, M.S.	3
6-16	1-182000	Lockwasher, #6 split, Phosphor Bronze	3
6-17	5-110488	Switch, Push Button, with Mtg. Hardware	2
6-18	5-110489	Knob, Black, W/2 set screws	4
6-19	1-134961	Washer, Flat, 3/8" ID, 5/8" OD, x .020" Thick, Brass.	4
6-20	1-188482	Lockwasher, #10 split, Phosphor Bronze	2
6-21	1-182328	Lockwasher 3/8" ID, 11/16" OD, int tooth	2
6-22	10-830168	Lead, Meter Negative, Assembly	1
6-23	10-830169	Lead, Meter Positive, Assembly	1
6-24	10-830170	Lead, Battery-Post, Assembly	1
6-25	10-830171	Lead, Switch-Post, Assembly	1
6-26	5-110257	Tie, Cable, White Plastic	10
6-27	5-110483	Battery, Mercury, 1.35V, Mallory Type RM-12-RT	1

APPENDIX BASIC ISSUE ITEMS LIST

Section I. PREFACE

1. General

This appendix is a list of basic issue items. It is composed of those items which make up the major end item of equipment and the operator's tools and equipment that are issued with the equipment and are required for stockage.

2. Requisitioning a Part to Which FSN Has Not Been Assigned

When requisitioning a C source (local procurement) item identified only by a manufacturer's part number, it is mandatory that the following information be furnished the supply officer:

a. Manufacturer's code number (5 digit No. preceding the colon in the descriptive colm).

b. Manufacturer's part number (the No., and sometimes letters, following the colon, (a above). Dashes, commas, or other marks must be included exactly as listed.

c. Nomenclature exactly as listed herein, including dimensions if necessary.

d. Name of manufacturer of the end item (from cover of TM or manufacturer's nameplate).

e. Federal stock number (from TM).

f. Manufacturer's model number (from TM or name/data plate, preferably name/data plate).

g. Manufacturer's serial number (from name/data plate).

h. Any other information such as type, frame number, and electrical characteristics, if applicable.

i. If DD Form 1348 is used, fill in all blocks except 4, 5, and 6, and Remarks field, in accordance with AR 725-50. Complete form as follows:

- (1) In blocks 4, 5, and 6, list manufacturer's code and manufacturer's part number (as listed in description colm).
- (2) In Remarks field, list noun name (repair part), end item application (FSN of end item), manufacturer, model number (end item), serial number (end item), and any other pertinent information such as frame number, type, etc.

3. Explanation of Columns

a. *Source, Maintenance, and Recoverability Code* (coln 1).

(1) *Materiel numerical code* (coln 1a). This column is not required.

(2) *Source* (coln 1b). This column indicates the selection status and source for the listed item. Source codes used in this list are-

Code	Explanation
C.....	Obtain through local procurement. If not available from local procurement, requisition through normal supply channels with a supporting statement of nonavailability from local procurement.

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

(3) *Maintenance level* (coln 1c). This column dictates the category of maintenance authorized to install the listed item. Maintenance level code used in this list is-

Code	Explanation
C.....	Operator and crew maintenance

(4) *Recoverability* (coln 1d). This column indicates whether unserviceable items should be returned for recovery or salvage. When no code is indicated, the item will be considered expendable. Recovery code used in this list is-

Code	Explanation
R.....	Items which are economically repairable at direct and general support maintenance activities and normally furnished by supply on an exchange basis.

b. *Federal Stock Number* (coln 2). Self-explanatory.

c. *Description* (coln 3). This column indicates the Federal item name and any additional description required for supply operations. The manufacturer's code and part number are also included for reference.

Code	Explanation
55026.....	Simpson Electric Co.
72665.....	Mallory Battery Co.

d. *Unit of Issue* (coln 4), *Quantity Authorized* (coln 5), and *Illustrations* (coln 6). Self-explanatory.

4. Errors, Comments, and/or Suggestions

Reports of errors, comments, and/or suggestions are encouraged. They should be submitted on DA Form 2028 (Recommended Changes to DA Publications) and forwarded direct to Commanding General, Headquarters, U.S. Army Weapons Command, ATTN: AMSWESMM-TE, Rock Island Arsenal, Rock Island, Ill., 61201.


Section II. BASIC ISSUE ITEMS LIST

(1) Source maintenance, and recoverability code				(2) Federal stock No.	(3) Description	(4) Unit of Issue	(5) Quantity authorized	(6) Illustration	
(a) Material Code	(b) Source	(c) Maint Level	(d) Recov- erability					(a) Figure No.	(b) Item No.
			R	4925-712-0205	MAJOR COMBINATION The following item is to be requisitioned for initial use only. TESTER, IGNITER CIRCUIT: (Simpson Electric Company Model ITS) (4925-712-0205). COMPONENTS OF MAJOR COMBINATION: None authorized SPARE PARTS: None authorized				
	P	C	----	6135-725-3941	TOOLS AND EQUIPMENT FOR: TESTER, IGNITER CIRCUIT (55026:ITS) BATTERY, MERCURY: cylindrical, 1.35 v (72665: XRM-12-RT2).	EA	1	6	27
	C	C	----		LEAD, TEST: set of 2, one black lead, one red lead, pencil type terminal with alligator clip one end, drive pin terminal other end (55026:10-830167).	SET	1	4	2

AGO 5970B

☆ U.S. GOVERNMENT PRINTING OFFICE: 1977-233-846

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



THEN...JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT. FOLD IT AND DROP IT IN THE MAIL.

SOMETHING WRONG WITH PUBLICATION

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER

PUBLICATION DATE

PUBLICATION TITLE

BE EXACT

PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.

IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT.

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER

SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

PIN: 008539-000

This fine document...

Was brought to you by me:



[Liberated Manuals -- free army and government manuals](#)

Why do I do it? I am tired of sleazy CD-ROM sellers, who take publicly available information, slap “watermarks” and other junk on it, and sell it. Those masters of search engine manipulation make sure that their sites that sell free information, come up first in search engines. They did not create it... They did not even scan it... Why should they get your money? Why are not letting you give those free manuals to your friends?

I am setting this document FREE. This document was made by the US Government and is NOT protected by Copyright. Feel free to share, republish, sell and so on.

I am not asking you for donations, fees or handouts. If you can, please provide a link to liberatedmanuals.com, so that free manuals come up first in search engines:

<A HREF=<http://www.liberatedmanuals.com/>>Free Military and Government Manuals

- Sincerely
Igor Chudov
<http://igor.chudov.com/>
- [Chicago Machinery Movers](#)