TM 11-6940-210-14-2&P

TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT, AND
GENERAL SUPPORT MAINTENANCE MANUAL
INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS
(INCLUDING DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS)
FOR

GENERATOR, INTERFERENCE

SG-886A-T/UR

(NSN 6940-00-474-9495)

This copy is a reprint which includes current pages from Change 1.

HEADQUARTERS, DEPARTMENT OF THE ARMY

SEPTEMBER 1976

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No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *15 October 1980*

Operator's, Organizational, Direct Support, and General Support Maintenance Manual Including Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for GENERATOR, INTERFERENCE SG-886A-T/UR (NSN 6940-00-474-9495)

TM 11-6940-210-14-2&P, 21 September 1976, is changed as follows:

1. New or changed material is indicated by a vertical bar in the margin of the page.
2. Remove old pages and insert new pages as indicated below:

Remove	*Insert*
None	Warning page (front of manual)
i and ii	i and ii
1-1 and 1-2	1-1 and 1-2.1/(1-2.2 blank)
1-6 and 16	1-5 and 1-6
C1 and 4-2	4-1 and 4-2
5-1 and 5-2	5-1 and 5-2
A-1 and A-2	A-1 and A-2
None	D-1 and D-2
None	E-1 and E-2
None	F-1 and F-2

3. File this change sheet in front of the publication for reference purposes.

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ARNG: None
USAR: None
For explanation of abbreviations used, see AR 310-50.

TECHNICAL MANUAL
No. 11-6940-210-14-2&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *21 September 1976*

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT- MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS (INCLUDING DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS) FOR GENERATOR, INTERFERENCE SG-886A-T/UR (NSN 6940-00-474-9495)

Current as of May 1976

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS
You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), direct to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. A reply will be furnished direct to you.

Table of Contents

List of Illustrations

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1-1. Scope

a This manual describes Generator, Interference SG-886A-T/UR and provides instructions for operation, organizational maintenance, and direct and general support. Instructions are provided for the operator and organizational repairman for installation, operation, preventive maintenance, and replacement of parts available for organizational maintenance. Circuit functioning, troubleshooting, and instructions for replacement of maintenance parts of the equipment are included for direct and general support categories.

b. The repair parts and special tools lists are included in appendix B and the maintenance allocation chart is included in appendix C.

1-2. 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 DA Pam 310-7 to determine wheter there are modification work orders (MWO's) pertaining to the equipment.

1-3. Maintenance Forms, Records, and Reports

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System.

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Packaging Improvement Report) as prescribed in AR 735-11-2/NAVSUPINST 4440.127E/AFR 400-54/MCO 4430.3E and DSAR 4140.55.

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 4610.33B/AFR 75-18/MCO P4610.19C and DLAR 4600.15.

1-3.1. Administrative Storage

Administrative storage of equipment issued to and used by Army activities shall be in accordance with TM 740-90-1.

1-3.2. Destruction of Army Electronics Materiel

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

1-3.3. Hand Receipts

Hand receipts for Components of End Item (COED and Additional Authorization List (AAL) items are published in a hand receipt manual, TM 11-6940-210-14-2&P-HR. This manual is published to aid in property accountability and is available through Commander, US Army Adjutant General Publication Center, ATTN: AGDL-OD, 1655 Woodson Road, St. Louis, MO 63114.

Section II. DESCRIPTION AND DATA

1-4. Purpose and Use

(fig. 1-1 and 1-5)

Generator, Interference SG-886A-T/UR is designed for use as an electronic counter-countermeasures (ECCM) training device that will noise- or tone-modulate standard Army voice communications sets such as the AN/VRC-12, AN/PRC-25, and AN/GRC-106. This training device can convert such equipments to communications jammers with the noise or tone modulation provided from the device. Also any external modulation received by these communications radios can be fed through the device to modulate radios and provide additional jammer modulation for ECCM training. The SG-886A-T/UR is designed for use with the radio sets mentioned above that limit, by filtering, any input modulation to approximately 3 kHz bandwidth when connected to the audio connectors of the radio set. The SG-886A-T/UR should not be used with radio sets that do not have filtering at the audio input to the transmitter, except when the equipment is utilized as a communications jammer. The device is used to train communication personnel to follow proper procedures when communications are disrupted by accidental interference (friendly source) or

intentional interference (enemy jammer). It is also intended to improve the ability of the operator to recognize types of jamming, distinguish between accidental and intentional interference, and copy-through interference that does not completely disrupt communications.

1-5. Tabulated Data

Signal output data:

Types of output and level:
Mode 1 ..... Audio: Tone approx. 980 Hz; 7 to 40 millivolts rms max output. Random noise -4 to 57 millivolts rms mu output. (Both outputs variable from zero to max.
Mode 2 ..... Audio: Tone - approx 860 Hz; 15 to 90 millivolts rms max output. Random noise -9 to 87 millivolts rms max output. (Both out puts variable from zero to max.)
Number of bands 1
Power requirements:
Voltage ..... .12.15 vols dc
Current drain ..... Mode 1, approximately 2.8 milliamperes.
Mode 2, approximately 4.6 milliamperes.
Battery type ..... Battery, Dry BA-1363/U
Rated battery life ..... .250 milliampere-hours
Operational battery life ..... Mode 1 - approximately 89.5 hours.
Mode 2 - approximately 54.5 hours.
Operation with external signal source ..... No internal power required unless NOISE-OFF-TONE switch is used to key the transmitter.

1-6. Items Comprising An Operable Equipment

(Fig. 1-1)

Qty	Item	Dimensions (in.)			Weight
		Height	Length	Width	
1	Generator, Interference SG-886A-T/UR consisting of:				
1	Transit case and panel assemblies	4-5/16	9-3/8	5-3/4	Approx. 5 lb.
1	Harriess Assembly A3W1 (attached to panel assembly and terminated with connectors and P2).		54		
1	Transmitter adapter cable assembly W1 (labeled TO XMTR).		12 (with connectors)		
1	Receiver adapter cable assembly W2 labeled FROM RCVR).		12 (with connectors).		
2	Dry Battery BA-1363/U (1 operational and 1 spare (See NOTE below.)				

NOTE

Dry batteries shown are used with equipment, but are *not* considered part of equipment. They will *not* be preshipped automatically, but are to be requisitioned in quantities necessary for the particular organization, in accordance with SB 11-6.

1-7. Description of Equipment

(fig. 1-1)

Generator, Interference SG-886A-T/UR consists of a panel assemby secured in its own transit case. Two harness assemblies are associated with the panel assembly. Harness assembly A3W1 extends from its storage area within the transit case. Harness assembly A3W2 is internal to the panel assembly. Two adapter cable assemblies, W1 and W2, are also included in the transit case. The operational and spare batteries are not included as part of the basic issue. A physical description of each assembly provided in the basic issue is given in *a, b,* and *c* below:

a. Transit Case (fig. 1-2).

(1) The transit case consists of a case cover assembly hinged to a case weldment assembly. The two assemblies may be separated by prying open the strike portion of the hinges that mate with their associated catches. Both the case cover assembly and the case weldment assembly are constructed of aluminum alloy.

(2) An electrical housing is installed within the case weldment assembly to mount and enclose the panel assembly, thereby separating the components of the panel assembly from the cable assemblies stored in the open area adjacent to the panel assembly (cable storage compartment). Ten floating nuts riveted to the electrical housing flange accommodate screws for securing the panel assembly.

(3) The exterior of the transit case is equipped with two strikes mounted on the case cover assembly and two catches mounted on the case weldment assembly in addition to the hinged strikes and catches (c below). One end of the case weldment assembly is equipped with a belt clip assembly to allow the SG-886A-T/UR to be fastened to the operator's belt for carrying purposes.

(4) The case cover assembly fits over the top of the case weldment assembly to protect the components of the SG-886A-T/UR. When the two strikes *(c* below) are secured to the two catches, the transit case is secured and ready for transit. A spare battery mounting bracket is also provided on the inside surface of the case cover assembly. A caution plate is affixed to the inside surface of the case cover assembly adjacent to the spare battery mounting bracket.

b. Panel Asssembly (fig. 1-8).

(1) The panel assembly includes a voltmeter, two rotary switches, a potentiometer, a battery retainer assembly with cover, a telephone jack with cover, and a printed circuit board assembly. A harness assembly extends from the printed circuit

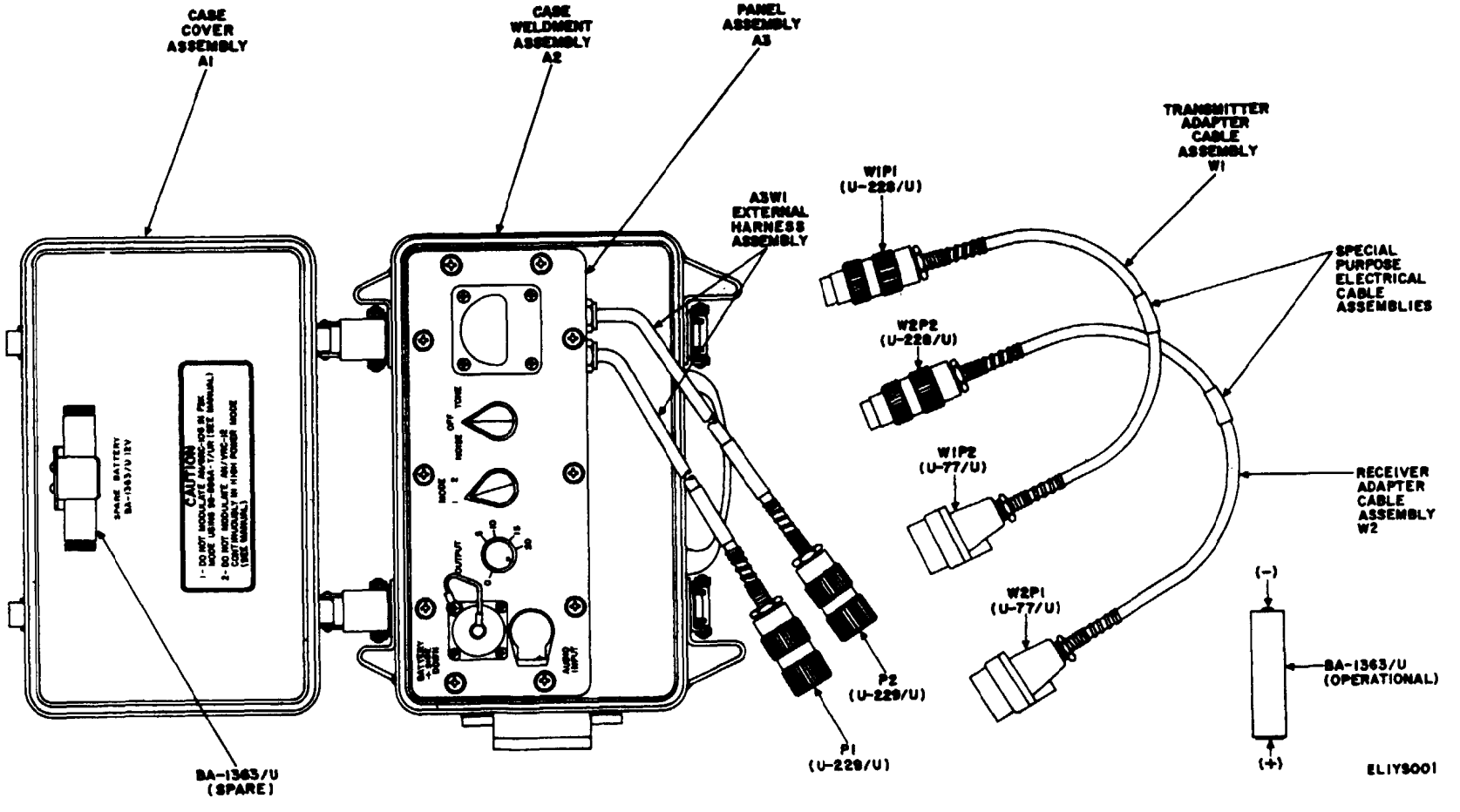
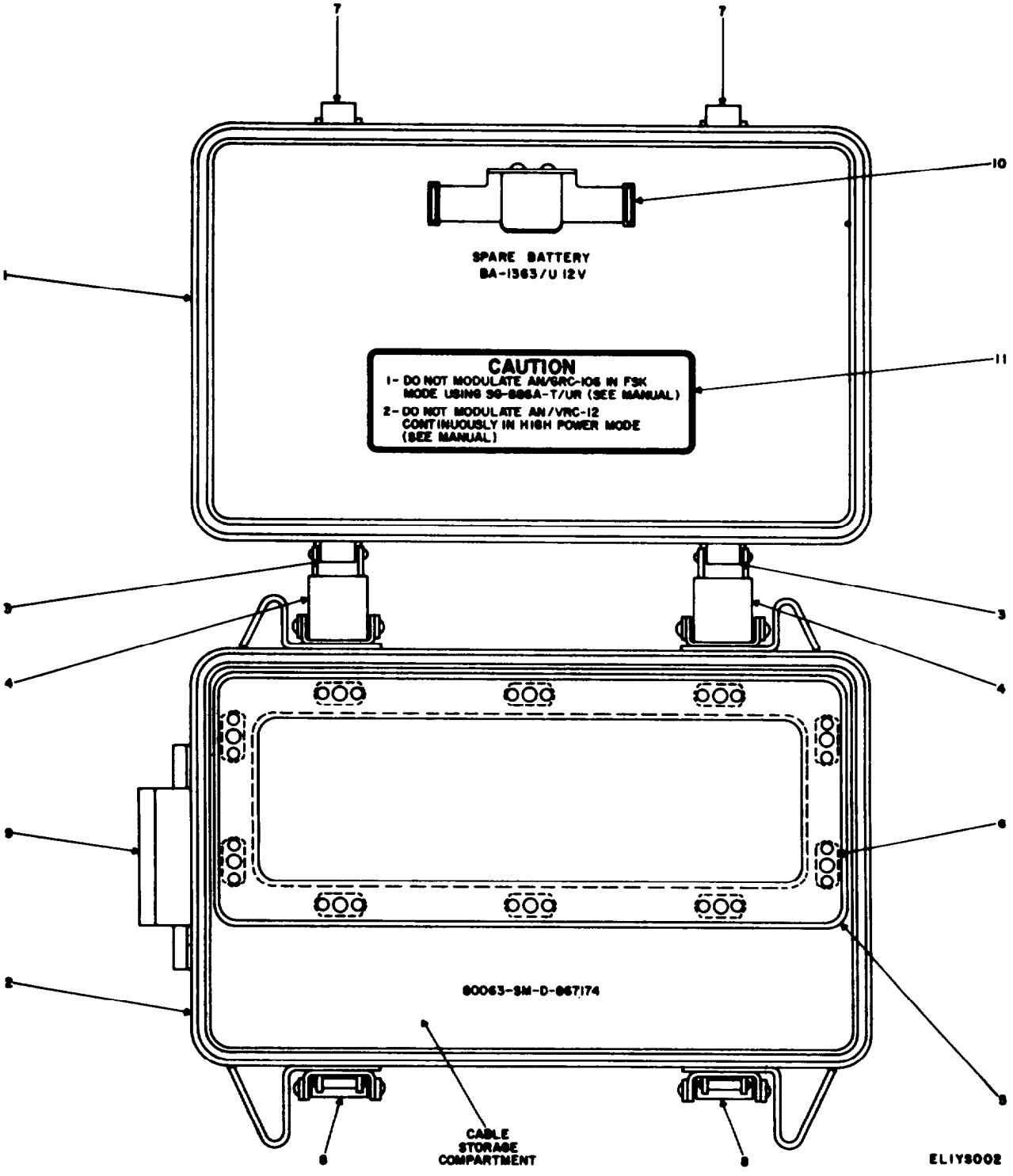


Figure 1-1. Components of SG-866A-TUR.



1. Case cover assembly A1.
2. Case weldment assembly A2.
3. Hinged strike.
4. Hinged catch.
5. Electrical housing.
6. Floating nut.
7. Strike.
8. Catch.
9. Belt clip assembly.
10. Spare battery mounting bracket.
11. Caution plate.

Figure 1-2. Transit case.

board assembly for connection to the radio equipment with which the SG-886A-T/UR is used.

(2) The voltmeter, the two rotary switch knobs, the potentiometer control knob, the battery retainer cover, and the telephone jack cover are visible from the front of the panel assembly. The battery retainer cover is held captive by a nylon cord. The cord is secured at the other end to one of the screws which mounts the battery retainer assembly. The telephone jack cover is mounted by the same nut that mounts the telephone jack to the panel assembly.

(3) The panel assembly is used as the source of noise or tone signals to modulate the transmitter in the training setup and thereby provide jamming modulation. If an internal-modulation type of operation is desired, this assembly will provide noise or tone modulation by simply connecting the external harness assembly A3W1 plug P1 to the audio or microphone jack of the transmitter and placing both the SG-886A-T/UR and the transmitter into operation. If an external-modulation type of operation is desired, the panel assembly provides a means of connecting an external interference source, such as an auxiliary receiver that is receiving a suitable or desired type of interference. External modulation is accomplished by connecting the external harness assembly A3W1 plug P2 to the audio jack of the receiver. The signal then passes through the panel assembly, through the transmitter leg of the external harness assembly, and modulates the transmitter. In this setup, the level of external modulation is controlled by adjusting the receiver volume control. The panel assembly is set to NOISE or TONE to key the transmitter, and the OUTPUT control is set to zero. However, if noise or tone is desired alongwith external modulaion, the panel assembly OUTPUT control may be turned clockwise. This will provide modulation combinations of the receiver audio output and the noise or tone modulation of the SG-886A-T/UR. For accomplishing external modulation without the use of an auxiliary receiver, an external recorder may be plugged into audio input jack J1 located on the panel assembly. The level of modulation is controlled by adjusting the recorder volume control. The panel assembly is set to NOISE or TONE to key the transmitter, and the OUTPUT control is set to zero. For combined modulation, the panel assembly OUTPUT control may be tuned clockwise. This adjustment will mix the recorder audio output and the noise or tone output of the SG-886A-T/UR. The voltmeter indicates satisfactory battery output or the need for battery replacement.

c. Harness and Adapter Cable Assemblies (fig. 1-1). Two harness assemblies and two adapter cable assemblies are included in the SG-886A-T/UR, and are described in (1) through (4) below.

(1) External harness assembly A3W1 extends from the panel assembly during operation of the SG-886-T/UR. It is approximtely 54 inches long and is terminated by plugs P1 and P2. Both plugs are type U-229/U and are identified with marker bands TO XMTR and FROM RCVR. Both plugs are designed to mate with the transmitter and receiver receptacles of the AN/VRC-12 series radio set, and any other radio sets providing the same connector and pin terminations. For a complete listing of all applicable sets and their limitations, refer to paragraph 1-9.

(2) Internal harness assembly A3W2 connects the components mounted on the panel assembly to the printed circuit board assembly behind the panel assembly.

(3) Transmitter adapter cable assembly W1, identified with maker band TO XMTR, is approximately 12 inches long. It is terminated by plug type U-228/U at one end and by plug type U-77/U at the other end. It is used to adapt external harness assembly A3W1 so that the SG-886A-T/UR can be used in conjunction with the transmitter of Radio Set AN/GRC-106. For a complete listing of all applicable sets and their limitations, refer to paragraph 1-9.

(4) Receiver adapter cable assembly W2, identified with marker band FROM RCVR, is approximately 12 inches long. It is terminated the same way as W1. It is used to adapt external harness assembly A3W1 so that the SG-886A-T/UR can be used in conjunction with the receiver of radio set AN/GRC-106. For a complete listing of all applicable sets and their limitations, refer to paragraph 1-9.

1-8. System Application

a. Introduction Figure 1-4 illustrates a typical field communication network where T1 can either be a command post or field unit, transmitting messages to field units located at R1 and R2 on assigned frequency F1. Transmitter T2 is located within the radio propagation area and can be either a friendly or unfriendly transmitting unit, which also is radiating a signal on the same frequency F1 or within the bandwidth that will interfere with F1. Depending on the relative signal strength of the signals reaching R1 and R2, the operator at each of these two locations will be able to copy the wanted signal from T1 with little difficulty great difficulty, or not at all. The primary pur-

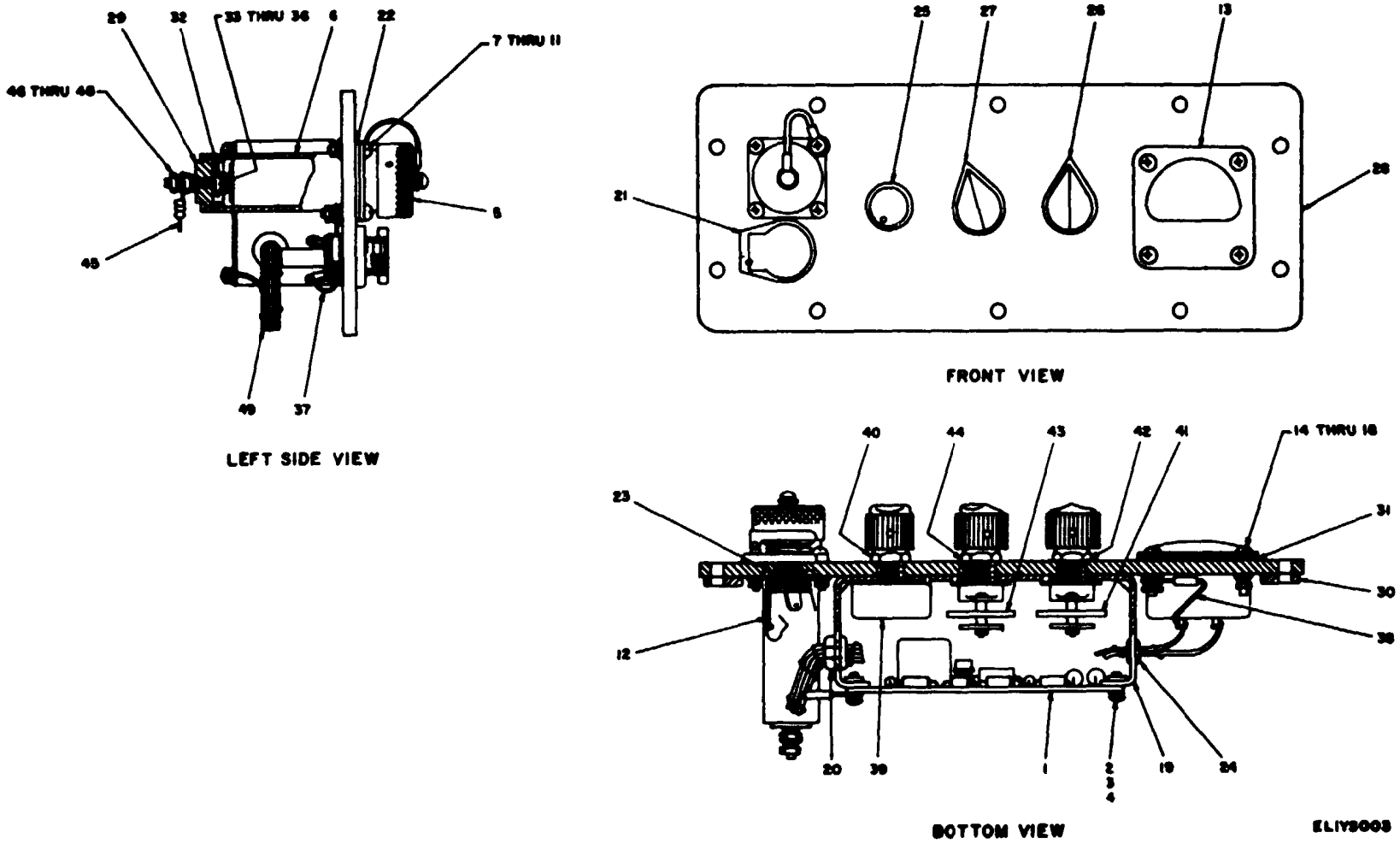


Figure 1-3. Panel assembly A3.

KEY to fig. 1-3:

1 Printed circuit board assembly A3A1.
2 Screw, pan head (6-32 x (¾) A3A1H4.
3 Washer, lock (#6) A3A1H4.
4 Washer, flat (#6) A3A1H4.
5 Cover assembly A3A2.
6 Retainer assembly A3A3.
7 Screw, pan head (4-40 x ⅛) A3A3H4.
8 Washer, seal A3A3H4.
9 Washer, flat (#4) A3A3H4.
10 Washer, lock (#4) A3A3H4.
11 Nut, hex (#4) A3A3H4.
12 Telephone jack A3J1.
13 Voltmeter A3M1
14 Screw, pan head (4-40 x ⅝) A3M1H4.
15 Washer, seal A3M1H4.
16 Washer, flat (#4) A3M1H4.
17 Washer, lock (#4) A3M1H4.
18 Nut, hex (#4) A3M1H4.
19 Mounting bracket A3MP1.
20 Bushing A3MP2.
21 Jack cover A3MP3.
22 Connector gasket A3MP4.
23 Jack gasket A3MP5.
24 Rubber grommet A3MP6.
25 Knob A3MP7.
26 Knob A3MP8.
27 Knob A3MP9.
28 Plate A3MP10.
29 Spring retainer A3MP11.
30 Panel seal A3MP12.
31 Panel seal A3MP13.
32 Helical spring A3MP14.
33 Screw, pan head (4-40 x ¾) A3MP14H1.
34 Washer, flat (#4) A3MP14H1.
35 Washer, lock (#4) A3MP14H1.
36 Nut, hex (#4) A3MP14H1.
37 Wire, jumper A3MP15.
38 Wire, jumper A3MP16.
39 Variable resistor A3R7.
40 Seal nut A3R7H1.
41 Rotary switch A3S1.
42 Seal nut A3S1H1.
43 Rotary switch A3S2.
44 Seal nut A3S2H1.
45 Harness assembly A3W2.
46 Nut, hex (#4) A3W2H1.
47 Washer, lock (#4) A3W2H1.
48 Washer, flat (#4) A3W2H1.
49 Harness assembly A3W1.

pose of the SG-886A-T/UR is to train operators to be come acquainted with the conditions described above, so that they will be able to copy-through interference, or know what antijamming measures to take when they are unable to copy-through interference. The SG-886A-T/UR may also be used in a system to intentionally jam a radio network of unfriendly units.

b. Basic System Use. The conditions described in a above can be simulated either in the field or in a class room. This is done by using the SG-886A-T/UR with the transmitter located at T2 (fig. 1-4) in a field setup, or by simulating such a network in the classroom. It should be noted that the setups described here will be typical; specific setups will be tailored by the user organization to fit the tactical communications network in use. Two types of training are described: copy-through interference training to improve the ability of operator to copy-through interference and anitjamming training to provide the operator with a type of condition that will require him to follow antijamming procedures as directed by his local, standard, operating procedures. Various types of interference will be discussed, which fall into the categories of internal modulation that is within the internal capabilities of the SG-886A-T/UR and external modulation that uses the SG-886A-T/UR with signals from an external source.

c. Copy-Through Interference. Figure 1-5 illustrates a typical setup to improve the ability of operators to copy-through interference that does not completely disrupt communications. This will provide operators with experience in the identification of interference and enable them to increase their proficiency in copying through various levels of interference. Their ability to copy-through interference will improve as they are systematically exposed to higher levels of interference.

(1) *Internal modulation.* Various levels of tone or noise interference can be simulated by use of the SG-886A-T/UR and a standard communications set (transmitter). In this basic setup, the SG-886A-T/UR is connected to one of the handset receptacles of the transmitter and a handset is connected to the other available handset receptacle. Normal network message signals are used to modulate the transmitter by voice into the handset. At the same time, the SG-886A-T/UR can be used to inject noise or tone modulation at various levels, starting at minimum, and gradually increasing the levels as the operator at the receiving training position becomes more proficient. The instructor at the jamming source can adjust the amount of noise or tone from the SG-886A-T/UR by listening to the sidetone in the handset.

(2) *External modulation.* Various types of interference can be simulated by the use of the SG-886A-T/UR, a standard communications set (transmitter), and a standard communication receiver. In this optional setup, the SG-886A-T/UR remains connected to one of the handset receptacles of the transmitter and a handset remains connected to the other. Normal network message signals are used to modulate the transmitter by voice into the handset. At the same time, the SG-886A-T/UR is set to NOISE or TONE to key the transmitter with the SG-886A-T/UR OUTPUT control set to minimum. In this setup, signals that modulate the transmitter are fed through the SG-886A-T/UR from the standard communications receiver. These receiver signals can be voice, continuous wave (cw), frequency-shift keying (fsk), teletypewriter, bagpipes, music or whatever the receiver is picking up. The level of interference signal in this setup is adjusted by setting the receiver volume control and listening to the sidetone in the handset. It should also be noted that noise or tone signals can be mixed with the external signals by setting the SG-886A-T/UR OUTPUT control to maximum. In addition, rather than searching through the receiver bands for an appropriate interference signal, either a transmitter or a signal generator can be used to provide the standard communication receiver with the interference to be simulated This latter optional arrangement is also illustrated in fig. 1-5. Another means of external modulation is the use of an external recorder. When the recorder output is applied to the SG-886A-T/UR, it can either serve as the sole source for modulating the transmitter, or the output can be mixed with the noise or tone output of the

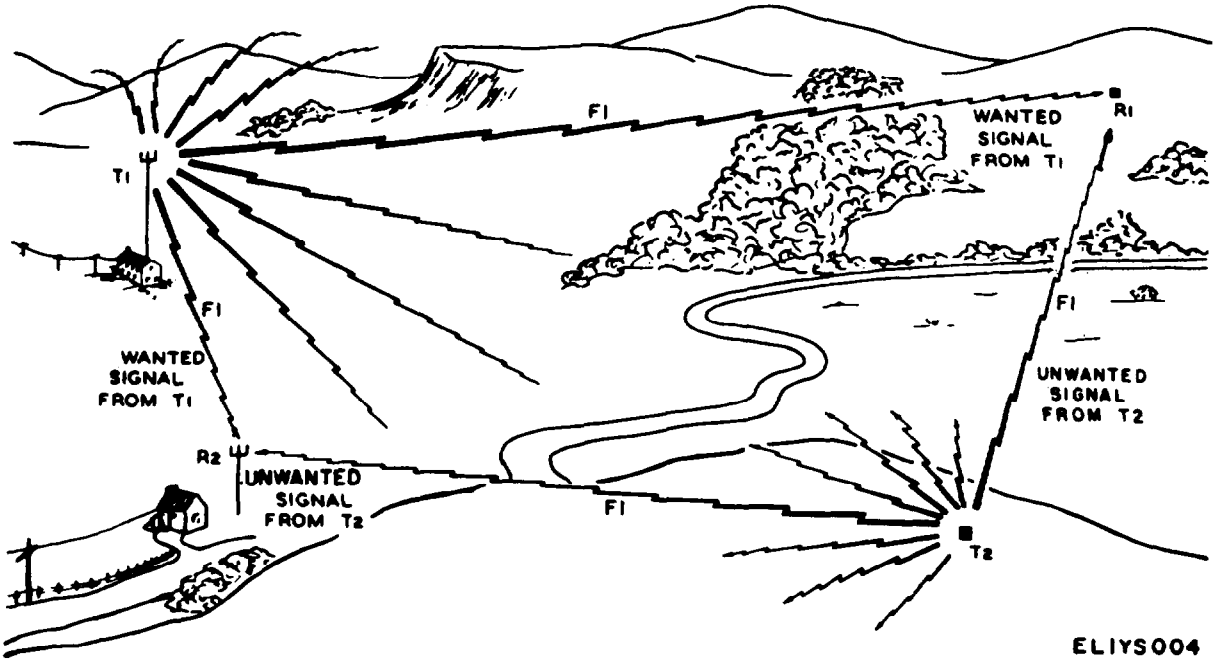


Figure 1-4. Unconfined nature of radio propagation.

SG-886A-T/UR This arrangement is also illustrated in figure 1-5.

d. Antijamming. Antijamming training setups are similar to copy-through interference setups described in *c* above, the difference being that the simulated jamming source does not mix interference with the message network signals in the same transmitter. In this setup, the network is illustrated in figure 1-6. R/T1, R/T2, R/T3, and R/T4 are in a network, communicating with each other, or from any two units to each other, depending on the tactical situation. The simulated jamming source is placed at a suitable location that will jam selected units of the network. An effective method is to place the jamming source on a vehicle that can move to a suitable location for jamming. The basic and optional equipment arrangement for the simulated jamming source remains as illustrated in A, of figure 1-5. in the operation of the jamming source, the object is to radiate maximum interference so that the receiver training positions are unable to copy the wanted signal.

e. Classroom. Either copy-through interference or antijamming training can be conducted in a classroom as illustrated in figure 1-7. The basic and optional arrangements in A, figure 1-5 remain the same, except that the jamming source transmitter is terminated in a dummy load. The training position receiver can receive the simulated interference signal by placing a pickup antenna wire near the transmitter dummy load. Note that in this arrangement, only one training position receiver is used with a distribution arangement, whereby a number of operator headsets can be connected to train a group in a classroom. In this setup, copy-through interference training is conducted as described in *c* above. Antijamming training can be simulated by sending interference at a maximum level with no message.

1-9. Additional Equipment Required.

a. General. The SG-866A-T/UR is designed for use in a system; therefore, it requires two or more standard communications sets, one to be used as the interference source position and one or more to be used as the network training positions (fig. 1-4.) If an external source is to simulate various types of interference, a suitable source such as a communications receiver is also required in addition to the standard communication sets. Additional pieces of optional equipment that may be used are illustrated in figure 1-5 and 1-7.

b. Standard Communications Set.

(1) Listed in the following chart (unless otherwise

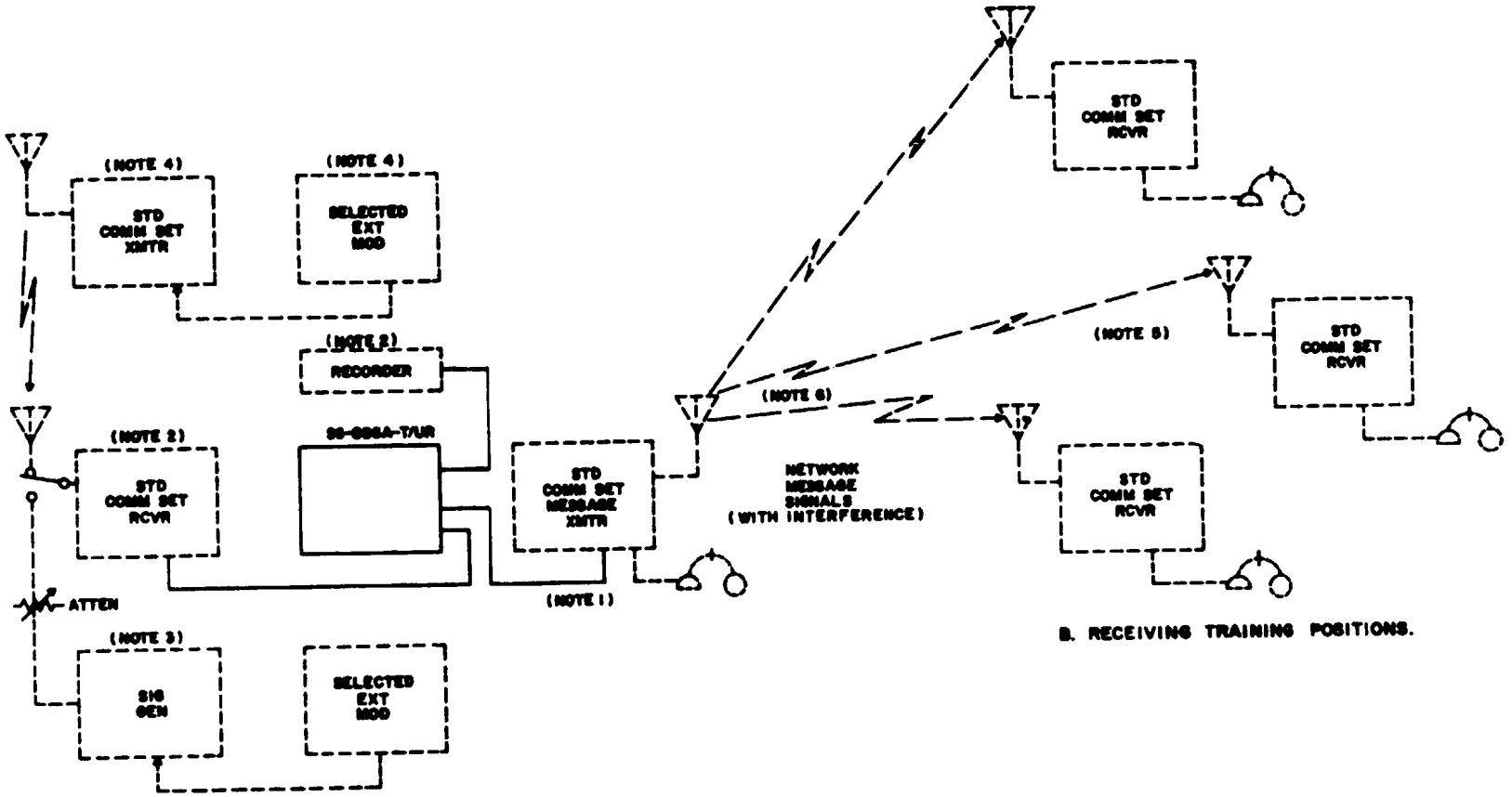


Figure 1-5. Simulated copy-through interference training setup.

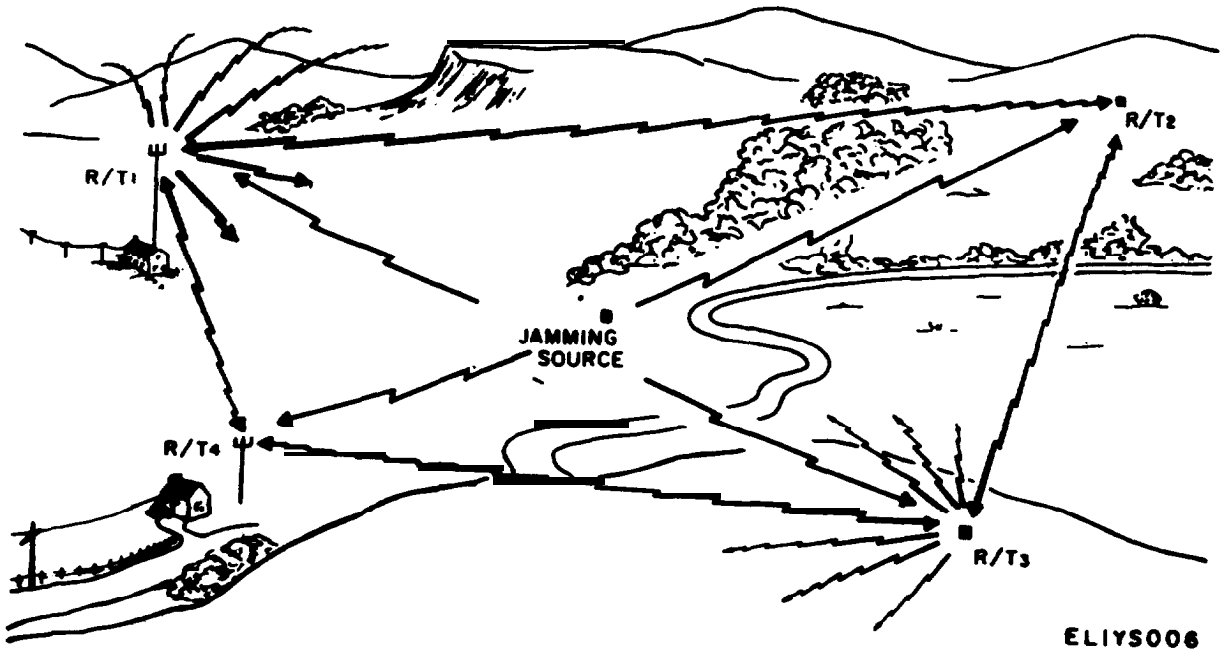


Figure 1-6. Field training for antijamming.

noted) are typical Army standard communications sets equipped with five-pin, audio input connectors that mate with the U-229/U connector on the SG-886A-T/UR

CAUTION

The SG-886A-T/UR should not be wed with the radio sets listed below in high-powered mode (35 watts), because these radio sets are not designed to operate continuously at high power(using a 28-volt supply). To operate the radio sets at high power, the power source that powers these radios (where applicable) should be reduced from 28 volts to 23 volts direct current. A radio set that has been designed to operate continuously is the AN/GRC-163. This radio set uses an alternating current (ac) generator and a direct current (dc) converter to provide 23 volts dc to power the AN/VRC-12 receiver-transmitter unit. Any of the above radio sets can we this means of operation. When operated from 23 volts dc, the radio sets provide 25 to 30 watts continuously.

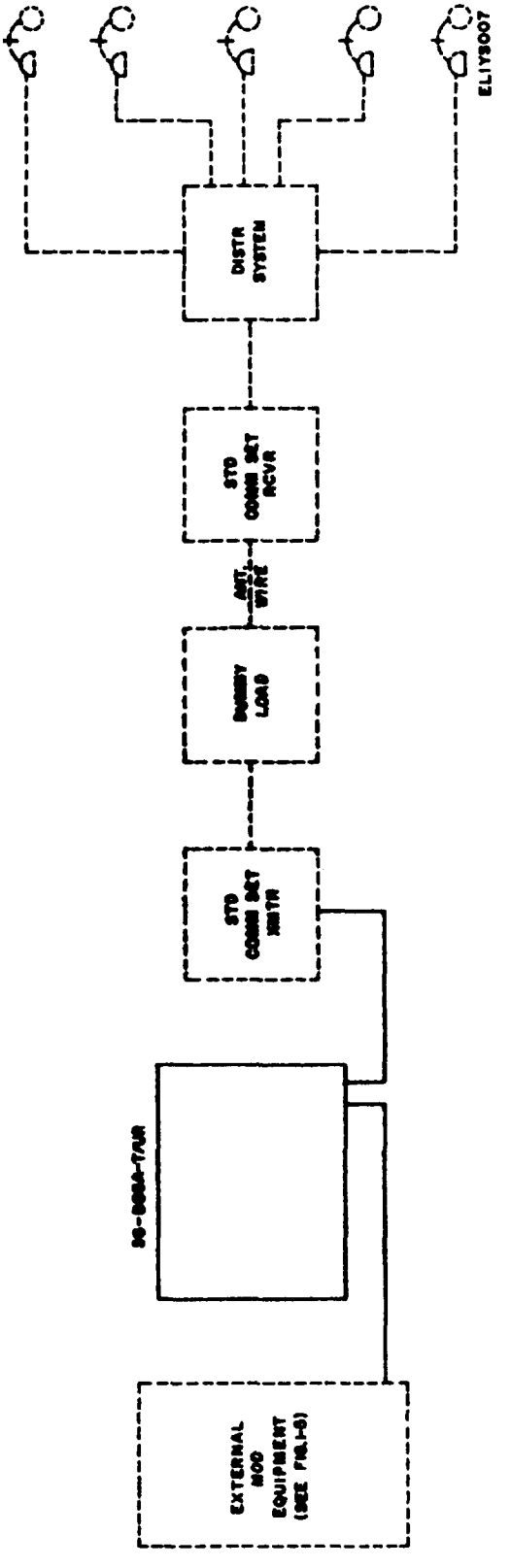


Figure 1-7. Classroom training setup.

Equipment	Frequency range	Power output (watts)	References
Radio Sets AN/VRC-12; AN/VRC-43. -44, -45, -46. -47. -48. and -49; and AN/GRC-163	30 to 75.95 MHz	Low 1 to 3 High 35	TM 11-5820-401-12
Radio Set AN/ARC-114	30 to 75.95 MHz	Receive only	TM 11-5821-259-20
Radio Set AN/PRC-25	30 to 75.95 MHz	1.1 to 2	TM 11-5820-398-12
Radio Sets AN/VRC-53 and AN/GRC-125	30 75.95	1.1 to 2	TM 11-5820-498-12

***This equipment is not to be modulated by the SG-886A-T/UR. It is listed for typical airborne receiving training positions suitable for training airborne radio operators. In this application, the ground radios listed above can be modulated by the SG-886A-T/UR and used as the jamming or copy-through interference source and transmit to the airborne receiving positions.**

(2) The following chart lists (unless other-wise noted) typical Army standard communications sets equipped with 10-pin, audio input connectors that mate with the U-77/U connector on the adapter cable assemblies used with the SG-886A-T/UR.

CAUTION

The radio sets listed below should not be operated in the fsk mode using noise interference generated from the SG-886A-T/UR, because the power amplifier used with the RT-662/GRC may be damaged. The AN/GRC-106 can be modulated with the SG-886A-T/UR *only* in the AM and SSB modes.

Equipment	*Frequency range*	*Power output (watts)*	*References*
Radio Sets AN/GRC-106	**2-30 MHz**	**Ssb (400 W pep) am. (200 W avg) fsk, cw**	TM 11-5820-520-12
Radio Teletypewriter Sets:*			
AN/GRC-122	**2-30 MHz**	**Same as above**	TM 11-5815-334-12
AN/GRC-142	**2-30 MHz**	**Same as above**	TM 11-5815-334-12
AN/VSC-2	**2-30 MHz**	**Same as above**	TM 11-5815-331-14
AN/VSC-3	**2-30 MHz**	**Same as above**	TM 11-5815-331-14
Radio Set AN/PRC-74	**2-11.999 MHz**	**15 Ssb**	TM 11-5820-590-12

***These equipments are primarily for use to acquaint the operator with fsk (two-tone) interference. They may be used in external-modulation type operation where the modulating signal from the auxilliary receiver is fed through the SG-886A-T/UR to modulate the transmitter being used as the interference source. The SG-886A-T/UR should not be used to modulate these equipments directly with noise interference.**

c. Dry Battery BA-1363/U. One battery is used and another one is kept as a spare. However, these two dry batteries must be requisitioned separately since they are not supplied as part of the basic equipment.

1-10. Differences in Models

a. Configuration. The SG-886A-T/UR is an improved version of the SG-886T/UR. However, there are significant differences in the assemblies and piece parts between the two models. Therefore, similar components in the two models are not interchangeable. To determine these differences precisely, compare the repair parts and special tools list provided in appendix B with its counterpart in TM 11-6940-210-14-1 (to be published).

b. Function. There are two basic functional differences between the two models. In the SG-886A-T/UR, there is an additional means of external modulation through a panel mounted AUDIO INPUT jack which provides for an input from an external recorder. A panel-mounted meter is provided to monitor the condition of the battery in the SG-886A-T/UR model only.

c. Physical. The addition of the two front panel components indicated in *b* above has caused a noticable difference in the front panel layout between models. Physical differences also exist in the layout of the printed circuit (PC) board which prevents the interchangeability of this item. Certain differences exist in individual component values and circuitry. The wired-in cable harnesses are also physically different.

NOTE

Note that the icu employed in the two models are not interchangeable. It is therefore important to order the exact replacement if this becomes necessary.

CHAPTER 2

INSTALLATION

2-1. Unpacking

(fig. 2-1)

a. Packing Data. When packed for shipment, SG-886A-T/UR is sealed in a single, metal-stayed, corrugated-cardboard carton with corrugated-card board fillers on all six inside surfaces. The carton is reusable in conformance with Federal Specification PPP-B-665. The outside dimensions of the carton are 12 inches long by 9 inches wide by 6 inches high The volume of the carton less the cardboard fillers is approximately 538 cubic inches. The weight of the carton and its contents is approximately 5½ pounds.

b. Removing Contents. Remove the sealing tape joining the cover of the carton to the base of the carton, and remove the cover. The tape is easily removable and does not require the insertion of a sharp or pointed tool between the seam where the cover joins the base. Do not discard either the carton or any of the fillers included therein. Retain this material for later use in the event that reshipment of the SG-886A-T/UR is necessary.

2-2. Checking Unpacked Equipment

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage in accordance with paragraph 1-3*a*

b. See that the equipment is complete as listed on the packing slip. If a packing slip is not available, check the equipment against the items comprising an operable equipment (para 1-6). Report all discrepancies in accordance with paragraph 1-3.

2-3. Siting

The SG-886A-T/UR may be deployed in a communications network or a simulated network for training purposes. The location of the interference source position depends on the power outputs of the communications sets being used, radio propagation, type of training to be performed, and is subject to experimentation

a. Power of Equipment.

(1) The characteristics of fm transmission are such that the fm receiver will select the stronger of two incoming signals. In fm sets that are modulated by the SG-886A-T/UR, voice transmission is usually quite noisy at low levels of input signal to noise. In ssb and amplitude-modulated radio sets, the detection of the signal is degraded sooner than in fm sets due to the narrow bandwidth used in transmission. Only through training can the radio operator improve his efficiency to copy-through at degraded levels of interference. Interference training is depicted in figures 1-5 and 2-2.

(2) If antijamming training is to be performed and the same type (power output) of equipment is to be used at training and interference locations, it is important to locate the interference source in a position in relation to the training positions so that the jamming signal will be stronger than the desired signal. This may be accomplished by placing the interference source station in an area (A, fig. 2-2) between the two training stations. The distance from the interference source to either training position should be less than the distance between the training positions that are communicating with each other. If a more powerful transmitter is used for the interference source than is used for the training position, its location in relation to the training positions may not be critical. The rule of stronger jamming signal in relation to received signal should be considered for effective jamming of voice transmission

CAUTION

When the AN/VRC-12 transmitter is operated continuously on high-output mode, the power source should be reduced to 23 volts dc to prevent equipment damage. The voltage can be obtained from a suitable ac power supply, such as that used in the AN/GRC-163.

(3) When a more powerful transmitter is used for the interference source than is used for the training positions, its location in relation to the training positions can be varied from the midway position. For example, in, applications using fm transmission, the AN/VRC-12 series radio set provides a high output power (25-30 watts) (see caution above) to override other AN/VRC-12's using 1.5 watts in low power or other radio sets in the same series such as the AN/PRC-25. The AN/VRC-12 series radio sets have not only a power flexibility advantage for use in the interference source, but they may be easily and quickly moved to desirable locations in relation to the network training positions. In amplitude modulated and ssb transmission, high-output power is used; antijamming training and deployment of equipment can cover a wider communication range than fm radio sets.

b. Type of Training to be Performed. When antijamming training is to be performed, the interference source should be located so that the interfering signal is stronger than the desired incoming signal. This is

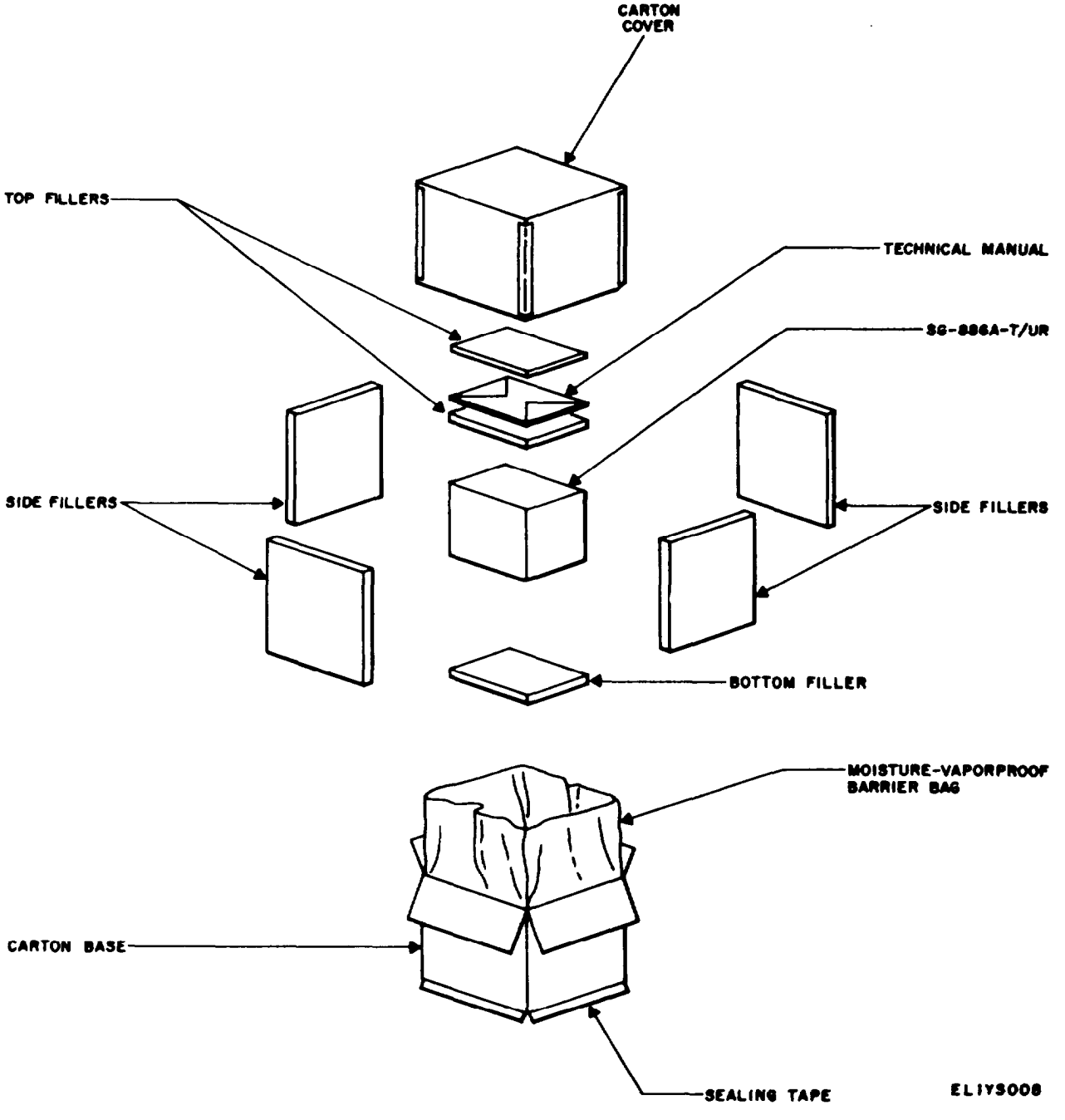


Figure 2-1. Typical packaging.

necessary to completely disrupt communications between network stations. When copythrough interference training is to be performed, the interference source (B, fig. 2-2) may be located in the network in place of any one of the network stations or in a suitable location that is able to transmit to all the network stations where training is to be performed,

2-4. Installation of Equipment

(fig. 2-3 and 2-4)

Installation of the SG-886A-T/UR requires no special tools or test equipment. The installation procedure

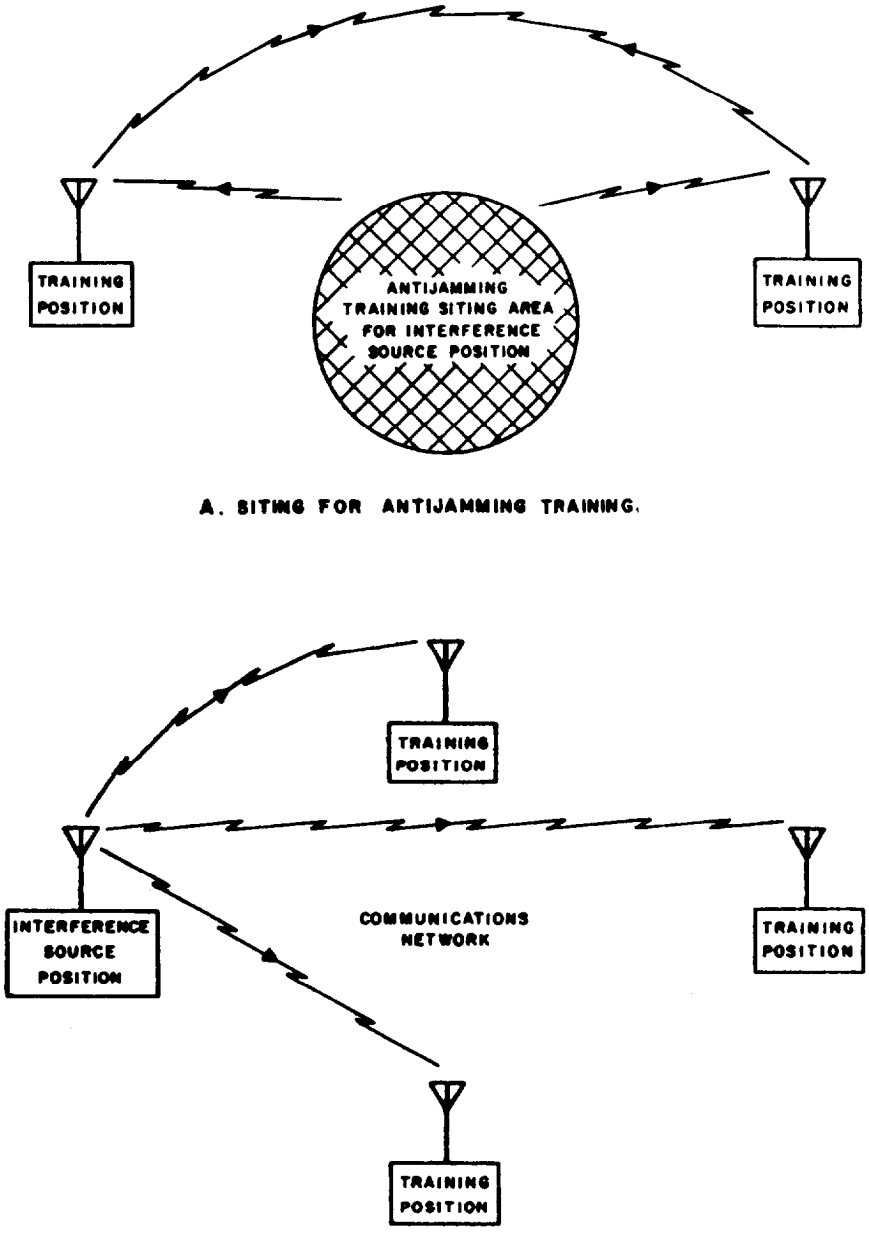


Figure 2-2. Siting requirements

will vary with the two basic types of operation (para 1-8), internal modulation or external modulation. Installation procedures given below assume that a communications network has been installed and is operating. These procedures give the steps required to install an SG-886A-T/UR in a typical network. Perform the procedures given in *a* below for the AN/VRC-12 series radio sets; *b* below for the AN/GRC-106.

a. Installation with AN/VRC-12 Series Radio Sets. Perform (1) through (3) below for internal-modulation operation; (1) through (4) below for external-modulation operation.

(1) Open the transit case and install the battery as described in paragraph 2-5, if required. Battery condition can be checked by observing the voltmeter.

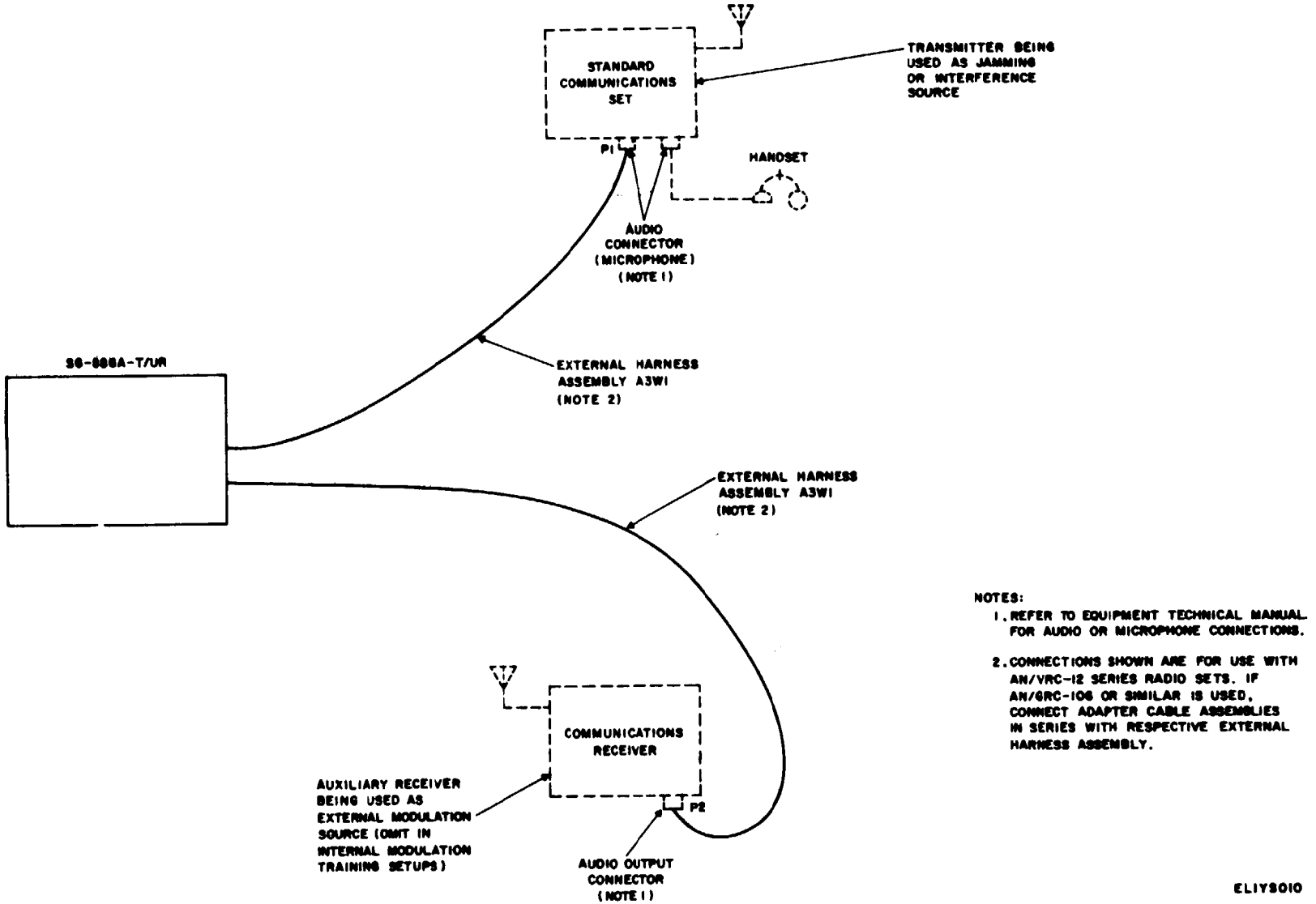


Figure 2-3. External harness assembly connections.

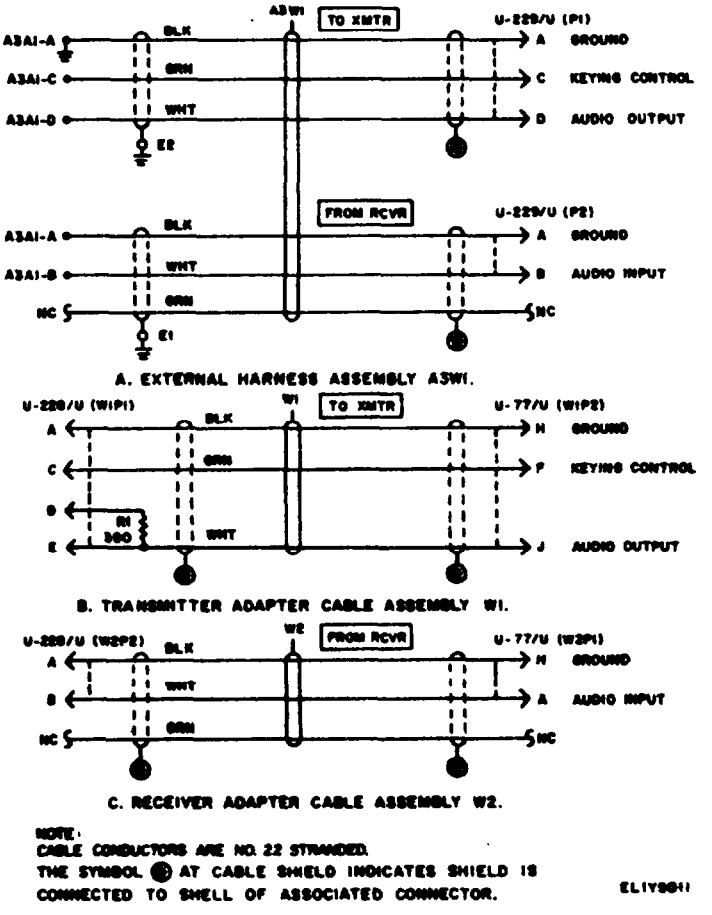


Figure 2-4. External harness assembly and adapter cable assembly terminations.

(2) Remove extenal harness assembly A3W1 from the storage compartment and position connector P1 in line so that it mates with one of the handset receptacles of the standard communications set in use. Secure it to the receptacle.

(3) Connect the handset to the remaining handset receptacle on the communications set.

(4) From external harness assembly A3W1, position connector P2 in line so that it mates with the audio output connector of the communications receiver (auxiliary receiver) being used as the external signal source; secure it to the receptacle.

b. Installation With AN/GRC-106 Radio Sets. Perform (1) through (5) below for internal-modulation operation; (1) through (7) below for external-modulation operation.

(1) Open the transit case and install the battery as described in paragraph 2-5, if required. Battery condition can be checked by observing the voltmeter (by placing the NOISEOFF-TONE switch in the NOISE or TONE position).

(2) Remove both adapter cable assemblies from

their storage compartment

(3) Connect the transmitter adapter cable assembly to the external harness assembly A3W1 at plug P1.

(4) Position the U-77/U connector at the end of the transmitter adapter cable assembly in line so that it mates with the receptacle of the standard communications set being used; secure it to the receptacle.

(5) Connect the handset to the remaining handset receptacle on the communications set.

(6) Connect the receiver adapter cable assembly to the external harness assembly A3W1 at plug P2.

(7) Position the U-77/U connector at the end of the receiver adapter cable assembly in line so that it mates with the receptacle of the communications receiver (auxiliary receiver) being used as the external signal source; secure it to the receptacle.

2-5. Installation of Battery (fig. 2-5)

The procedure below describes battery removal and replacement in the SG-886A-T/UR. The procedure assumes that a battery has been installed prior to receipt of the equipment.

a. Set the NOISE-OFF-TONE switch to OFF.

b. Unscrew and remove the battery cap.

c. Remove the battery from the battery holder.

d. Insert the replacement battery, positive end first, into the battery holder.

e. Position the battery cap over the battery holder, secure in place.

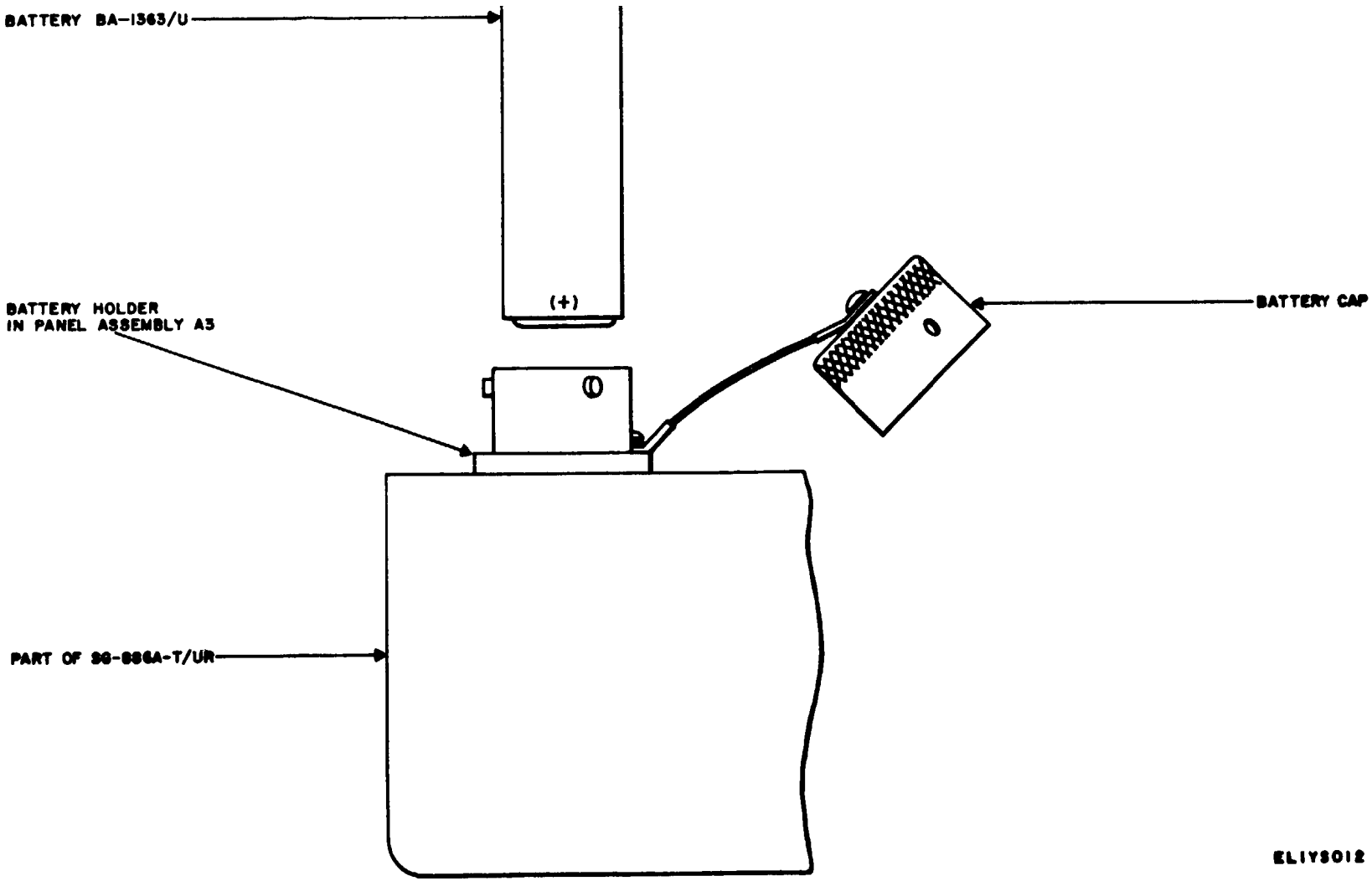


Figure 2-5. Battery installation.

CHAPTER 3

OPERATING INSTRUCTIONS

3-1. General

This chapter contains operator controls functioning, and operating procedures under usual and unusual conditions. Operating procedures are given for basic types of operation; local training requirements may all for variations of these procedures. Operating instructions are given for the interference position$_1$ operator response to interference or jamming is outlined in FM 24 -18, which coven field radio techniques.

3-2. Controls, Switches, and Connectors

fig. 1-1)

Control switches and connectors	Function
NOISE-OFF-TONE switch	Serves as power on-off. equipment switch, and transmitter keying. *Pos* — *Use* OFF — Removes battery power from panal assembly circuits. The transmitter to which the SG-886A-T/UR is connected is not keyed in this position NOISE — Applies battery power to panel assembly circuits and makes necessary internal connections to apply noise modulation to the transmitter to which the SC-886A-T/UR is connected. The transmitter is keyed to transmit in this position. TONE — Applies battery power to the panel assembly circuits and makes necessary internal connections to apply tone modulation to the transmitter to which the SG-886A-'T/UR is connected. The transmitter is keyed to transmit in this position.
MODE switch	Provides necessary signal for two general types of associated equipment. It should be noted that where lower levels of interference are desired MODE switch in position 1 can be used with the AN/GRC-106. although normally position 2 is recommended. *Pos* — *Use* 1 — Provides necessary signal (output) for use with AN/VRC-12 series radio sets and other radio sets which are compatible with the connector and its terminations (para 1-9). This position should be used when the SG-886A-T/UR modulates any model transmitter that is used as a communications jammer (exclusive of interference and antijamming training), since there is less battery drain in this mode of operation. 2 — Provides necessary signal (output) for use with AN/GRC-106 and other radio sets which are compatible with the connector and its terminations (para 1-9).
OUTPUT concontrol.	Serves as a continuous output level control of the panel assembly from zero to maximum output as set by MODE switch above (pos 1 or 2).
Voltmeter	Indicates either satisfactory or unsatisfactory battery output. Dial reads either OPERATIONAL or REPLACE BATTERY (only when the NOISE-OFF-TONE switch is in the NOISE or TONE position).
AUDIO INPUT jack	Provides input from external recorder for modulating transmitter.
Leg of external harness assembly, marked XMTR.	Connects directly to the handset connector jack of the AN/VRC-12 series radio sets (para 1-9) (transmitter) for operation. Contains transmitter modulating signal and keying connections.
Leg of external harness assembly marked FROM RCVR.	Serves as a connector for the external signal cable when using an external signal source (AN/VRC-l2 series receivers) (para 1-9). The external signal is fed through the SG-886A-T/UR and through the external harness assembly.
Transmitter adapter cable assembly, marked TO XMTR	Used to mate with the external harness assembly to enable the SG-886A-T/UR to be used with the AN/GRC-106.
Receiver adapter cable assembly, marked FROM RCVR,	Used to mate with the external harness assembly to enable the SB-886A-T/UR to be used with the AN/GRC-106.
BATTERY cap.	Provides a means of operator replacement of the battery from the front panel (spare is provided in battery clip on underside of the cover).

3-3. Preliminary Operating Procedures

a. Check to see that SG-886A-T/UR NOISE-OFF-TONE switch is at OFF.

b. Set the SG-866A-T/UR OUTPUT control fully counterclockwise.

c. Set the MODE switch to correspond with the radio set being used. (Refer to the function of this switch in paragraph 2 -4.)

d. Install the equipment as directed in paragraph 2-4.

e. Refer to the applicable technical manual and prepare the communications set (transmitter) to which the SG-886A-T/UR is installed for operation. Follow the procedures to the point where the transmitter is to be keyed for transmission.

f. If used, prepare the auxiliary receiver for use as

an external modulation source.

g. Follow procedures in paragraph 3-4 for antijamming training, and in paragraph 3-5 for copy-through interference training.

3-4. Operation for Antijamming Training

a. Perform the procedures in paragraph 3-3. (Connections for external modulation can be utilized for this type of training.)

b. Check to see that the SG-866A-T/UR NOISE-OFF-TONE switch is at OFF and the OUTPUT control is set to desired level.

c. When jamming is desired, set the SG-866A-T/UR NOISE-OFF-TONE switch to NOISE or TONE.

3-5. Operation for Copy-Through Interference Training

Procedures for copy-through interference training are given separately for internal tone or noise modulation *(a* below) and external modulation *(b* below).

a. Internal Modulation

(1) Perform the procedures in paragraph 3-3 (make connections for internal modulation (para 2-4*a*(1), (2). and (3) or *b*(1) through (5)).

(2) Check to see that SG-886A-T/UR NOISE-OFF-TONE switch is at OFF and that the OUTPUT control is set fully counterclockwise.

(3) Set the SG-886A-T/UR NOISE-OFF-TONE switch to NOISE or TONE as desired

(4) Adjust the SG-886A-T/UR output control to the desired modulation level; listen to the sidetone in the handset to obtain indication of desired modulation level. It may be possible that the desired modulation level cannot be obtained by various settings of the OUTPUT control. To overcome this condition, the operator must either speak loudly or softly into the microphone, or hold the microphone either closer to or farther away from the mouth while speaking, in order to achieve the desired results

b. External Modulation.

(1) Perform the procedures in paragraph 3-3 (make connections for external modulation (para 2-4*a*1) through (4) or *b*(1) through (7)).

(2) Check to see that the SG-886A-T/UR NOISE OFF-TONE switch is at OFF and that the OUTPUT control is set fully counterclockwise.

(3) Operate the external signal source to obtain the desired type of interference to be used to modulate the transmitter, then set the volume or output level on the external source to minimum.

(4) Key the transmitter either by setting the SG-886A-T/UR NOISE-OFF-TONE switch to TONE or NOISE or by pressing the handset push-to-talk switch.

(5) Adjust the external signal source volume or OUTPUT control to obtain desired modulation level; listen to the sidetone in the handset to obtain indication of desired modulation level.

3-6. Operation in Low Temperature

The SG-886A-T/UR will not operate for extended periods at temperatures below 32° F because the battery will not produce required power after it has reached this temperature and below. Perform the procedures in *a* through *e* below for operation at low temperatures.

a. Prior to operation as outlined in paragraphs 3-2 through 3-5, remove the battery from the SG-886A-T/UR (para 2-5*a, b,* and *c)* and place the battery and the spare battery in a warm place. (In the field where a heater is not available, use an inner pocket of the operator's uniform; body temperature will provide necessary heat.)

b. Install warmed battery (para 2 -5 *d* and *e).*

c. Operate equipment (para 3-2 through 3-5) as in normal conditions for a period not to exceed 1 hour.

d. Remove the cold battery (para 2-5*a, b,* and *c)* and place it in a warm place; install warmed spare battery (para 2 -5*d* and *e)* and continue operation.

e. Repeat the procedures in *c* and *d* above, rotating cold to warm batteries.

3-7. Operational Checks

The output of the SG-886A-T/UR can be monitored by listening to the sidetone in the handset connected to the transmitter with which the SG-886A-T/UR is used. If no output is heard or tone or noise modulation cannot be produced, proceed as follows:

a Check to see that the procedures in paragraphs 3-3 through 3-6 have been correctly followed.

b. Replace the batter (para 2-5); make sure to observe polarity.

c. If the above procedures do not correct the trouble, refer the equipment to a higher category of maintenance.

CHAPTER 4

OPERATOR/CREW MAINTENANCE INSTRUCTIONS

4-1. Scope of Maintenance

Operator/crew maintenance procedures for the equipment are listed below together with a reference to the paragraph covering the specific maintenance function. The duties assigned do not require tools or test equipment other than those issued with the equipment.

a. Daily preventive maintenance checks and services (para 4-4).

b. Weekly preventive maintenance checks and services (para 4-5).

c. Cleaning (para 4-6).

4-2. Preventive Maintenance

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

a. Systematic Care. The procedures given in paragraphs 4-3 through 4-6 cover routine systematic are and cleaning essential to proper upkeep of this equipment

b. Preventive Maintenance Checks and Services. The preventive maintenance checks and services (para 4-4 and 4-5) outline functions to be performed at specific intervals for the equipment These checks and services are to maintain Army electronic equipment in a combat-serviceable condition; that is, in good general (physical) condition. To assist maintenance personnel in maintaining combat serviceability, the chart indicates what to check, how to check, and the normal conditions; the *References* column lists the illtions, paragraphs, or manuals that contain detailed repair or replacement procedures If the defect cannot be remedied by organizational maintenance, a higher category of maintenance or repair is required. Records and reports of these checks and services must be made in accordance with TM 38-750.

4-3. Preventive Maintenance Checks and Services Periods

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

a. Paragraph 4-4 specifies checks and services that must be accomplished daily and under the special conditions listed below.

(1) When the equipment is initially installed.

(2) When the equipment is reinstalled after removal for any reason.

(3) At least once each week if the equipment is maintained in standby condition.

b. Paragraph 4-5 specifies additional checks and services that must be performed on a weekly basis.

c. Paragraph 4-6 includes cleaning procedure.

4-4. Daily Preventative Maintenance Checks and Services Chart

Sequence No.	Items to be inspected	Procedures	References
1	Transit case	Inspect the following item for war. cracks and loose or missing hardware. Handle. Catches. Latches. Latch protectors. Panel screws. Knobs. Connectors. Cover seal. Hinged chassis clip	Refer defects that cannot be corrected to higher category of maintenance.
2	Intercabling and connectors.	Tighten interconnecting cables and connectors between the SG-886A-T/UR and associated equipment.	Refer defects that cannot be corrected to higher category of maintenance. Check connections according to paragraph 2-4.
3	Switches and OUTPUT control.	Check for proper mechanical action. Set each switch to each setting and check to see that action is positive without slippage.	Refer defects that cannot be corrected to higher category of maintenance.
4	Cleanliness	Check to see that all exterior surface of all components are clean. dry, and free of	Paragraph 4-6.

Sequence No.	Item to be inspected	Procedure	References
		grease, dirt, and fungus.	
5	Completeness.	See that the equipment is complete.	Paragraph 1-6.
6	Operation.	Check to see that equipment operates in accordance with referenced procedures.	Paragraphs 3-3 through 3-6.

4-5. Weekly Preventative Maintenance Checks and Services Chart

Sequence No.	Item to be inspected	Procedure	References
1	Transit case.	Inspect all items listed in sequence 1 of paragraph 4-4.	Refer defects that cannot be corrected to higher category of maintenance.
2	Intercabling and connector.	Tighten all interconnecting cables on the equipment. Check for proper connections.	Paragraph 2-4.
3	Switches and OUTPUT control.	Check for proper mechanical operation, with no blacklash or slippage.	
4	Cleanliness.	Clean all exterior surfaces of all components	Paragraph 4-6.
5	Completeness.	Check equipment completeness.	Paragraph 1-6
6	Operation.	Operate equipment in accordance with referenced procedures.	Paragraph 3-3 through 3-6.

4-6. Cleaning

a. Materials required:

(1) Lint-free cloth (item 2, app. F)

(2) TRICHLOROTRIFLUOROETHANE (item 1, app. F)

(3) Soft bristle brush (item 3, app. F)

b. Remove dust and loose dirt from the exterior surface and front panel of each component of the system with a clean cloth. Dampen the cloth with water and a mild detergent to make the cleaning more effective.

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIF-LUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided.

When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

c. Remove grease, fungus, and ground-in dirt with a clean dampened (not wet) with TRICHLOROTRIFLUOROETHANE.

d. Remove dust and dirt from plugs, jacks, controls, and terminal boards with a sash (soft bristle) brush.

e. Remove cables from the storage compartment and remove dust and dirt from the compartment with a sash (soft bristle) brush.

CHAPTER 5

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. GENERAL

5-1. Scope of Organizational Maintenance

Organizational maintenance of the SG-886A-T/UR consists of the following

a. Preventive maintenance (para 5-3).
b. Visual inspection (para 5-6).
c. Troubleshooting (para 5-7).

5-2. Organizational Test Equipment, Tools, and Materials Required

A list of parts normally stocked for organizational maintenance is contained in appendix B. The tools, materials, and test equipment required for organizational maintenance are listed below.

a. Tools and Equipment.
(1) Tool Kit, Electronic Equipment TK-101/G.
(2) TRICHLOROTRIFLUOROETHANE
b. Test Equipment. Multimeter AN/URM-105.

5-3. Organizational Preventive Maintenance

a. Preventive maintenance is the systematic care, inspection, and servicing of the equipment to maintain it in serviceable condition, prevent breakdowns, and assure maximum operational capability. Preventive maintenance is the responsibility of all categories of maintenance concerned with the equipment and includes the inspection, testing, ,and repair or replacement of parts subassemblies or units that inspection and test indicate would probably fail before the next scheduled periodic service. Preventive maintenance service and inspection of the equipment at the organizational category are made at quarterly intervals unless otherwise directed by the commanding officer.

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

5-4. Organizational Quarterly Maintenance

Quarterly maintenance on the equipment will be scheduled in accordance with the requirements in TM 38-750. All deficiencies or shortcomings will be recorded and those not corrected during the inspection and service will be immediately reported to higher category of maintenance by use of forms and procedures specified in TM 38-750. Perform all the services listed in the quarterly preventive maintenance checks and service chart (para 5-5) in the sequence listed.

5-5. Organizational Quarterly Preventive Maintenance Checks and Services Chart

Sequence No.	Items to be inspected	Procedure	References
1	Completeness.	Check to see that the equipment is complete.	Paragraph 1-6.
2	Cleanliness.	Check to see that the equipment is clean.	Paragraph 4-6.
3	Preservation.	Check surfaces for evidence of rust or corrosion; remove and spot-paint bare surfaces.	TB 43-0118.
4	Publications.	Check to see that all publications are complete, serviceable and current.	DA Pam 310-4.
5	Modifications.	Check DA Pam 310-7 to determine if new applicable MWO's have been published. All URGENT MWO's must be applied immediately; NORMAL MWO's are scheduled for application.	DA Pam 310-7 and TM 38-760.
6	Panel seal.	Check seal for moisture, oil saturation. and brittle broken, cracked. loose. pinched. mismatched or missing section.	Refer replacement, if necessary, to higher category of maintenance.
7	Battery.	Inspect the BA-1363/U for leakage, corrosion, or swelling replace as necessary. Check the spare battery by trying it in the equipment	Paragraph 2-5.
8	Transit case.	Check to see that all hardware (latches, handle, screws, nuts, bolts, washers, etc.)	None.

Sequence No.	Item to be inspected	Procedure	References
		are correctly positioned and properly tightened.	
9	External harness assembly, adapter cable assemblies and connections.	Check to be sure that all plugs and receptacles are clean, intact,. and see that all connections are tight and properly connected.	Paragraph 2-4.
10	Switched and OUTPUT control.	Check to see that the mechanical action of both switches and control are smooth and free of external or internal binding.	Refer defects that cannot be corrected to higher category of maintenance.

Section II. TROUBLESHOOTING

5-6. Visual Inspection

a. Before operating the equipment for troubleshooting purposes, inspect it for visible defects. This action saves repair time and may prevent further damage. Do not inspect any item with the power on. Inspect the following for obvious defects.

(1) The seating of all connectors.

(2) Cracked or broken external harness assembly and adapter cable assemblies.

(3) Check for proper battery polarity; try the spare battery in the event the operational battery is defective.

b. If the visual inspection does not locate the trouble, proceed to the troubleshooting procedure (para 5-7).

5-7. Troubleshooting Procedure

Organizational maintenance personnel is limited to internal defects that can be seen visually or by making continuity measurements Broken connections to switches, controls, etc, can be resoldered. When equipment failure is unknown, use the operational checks described in paragraph 3-7. Proceed as described in *a* through *m* below until the trouble is corrected, or refer to higher category of maintenance, as necessary.

a. Check battery voltage with the AN/URM-105 of both the operational and the spare battery to make sure they are not defective (this is not a final check, as they may indicate good under no load). The SG-886A-T/UR is equipped with a panel assembly meter to check the condition of an installed battery. If a battery known to be good is installed but the meter does not give proper indication, perform procedures in *d* through *h* below. (To obtain voltmeter indication, the NOISE-OFF-TONE switch must be set to NOISE or TONE.)

b. If the SG-886A-T/UR modulates an AN/VRC-12 but not an AN/GRC-106, the transmitter adapter cable assembly is defective. Refer to higher category of maintenance for repair or replacement.

c. If the SG-886A-T/UR operates normally in the external modulation type of operation with an AN/VRC-12 receiver, but not an AN/GRC-106, the receiver adapter cable assembly is defective. Refer to higher category of maintenance for repair or replacement. If the external modulation type of operation is normal with the adapter cable assemblies but not with a recorder input through the AUDIO INPUT jack, parform procedures in *d* through *h* below.

d. Set the NOISE-OFF-TONE switch to OFF.

e. Remove the 10 panel screws that secure the panel assembly to the case.

CAUTION

It may be necessary to feed the external harness assembly from the storage compartment into the component compartment of the case when separating the panel assembly from the case. The external harness assembly will than have to be carefully pulled out of the component compartment as the panel assembly is replaced in the case.

f. Remove the panel assembly from the case and separate them so that the panel assembly can be worked on without the case being in the way.

g. Set the panel assembly on a suitable working surface.

h. Check visually for broken wiring between the switches, control, battery holder, AUDIO INPUT jack, voltmeter wiring, and the printed circuit board. Correct as necessary, including replacement of the volt meter or AUDIO INPUT jack, if necessary.

i. Check visually for broken wires from the external harness assembly to the printed circuit board. Correct as necessary.

j. Check external harness assembly for continuity (fig. 2-4) using the AN/URM-105.

k. If trouble is corrected replace the panel assembly in the case; be careful to pull the external harness assembly out of the component compartment as the panel assembly is inserted.

l. Replace and secure the 10 panel screws removed in *e* above.

m. If trouble is not corrected, perform procedures in *k* and *l* above and refer equipment to higher category of maintenance.

CHAPTER 6

EQUIPMENT FUNCTIONING

Section I. BLOCK DIAGRAM FUNCTIONING

6-1. General

a. The SG-886A-T/UR provides internal noise or tone modulation and has provisions to apply external modulation to the transmitter of either the AN/VRC-12 series radio sets or the AN/GRC-106 radio set. It can also perform these functions for any transmitter that has compatible connector and microphone input circuits with the AN/VRC-12 or AN/GRC-106 radio sets. The internal and external functions of the SG-886A-T/UR enable these radio sets to be used as a jammer or an interference source for use in an antijamming or copy-through-inter ference training program.

b. In addition to its use as a source of noise or tone modulation, the SG-866A-T/UR keys the radio set it is used with to place it in a transmit condition; this is done by setting the NOISE-OFF-TONE switch to either NOISE or TONE. The source of noise or tone modulation within the SG-886A-T/UR is adjustable at two levels. MODE 1 provides the required modulation for the AN/VRC-12 series while MODE 2 provides the necessary level for the AN/GRC-106; in both modes, OUTPUT control is provided to allow the operator to simulate varying levels of interference. MODE 1 is recommended when using the equipment as a jammer (exclusive of training purposes) to conserve on battery power.

c. When the SG-886A-T/UR is used to apply external modulation, the unit acts as an adapter from the external source to the transmitter being used as the jammer or interference source. In this type of operation, the SG-886A-T/UR is connected to a receiver in the AN/VRC-12 series radio sets (A receiver adapter cable is provided to enable the SG-886A-T/UR to receive external modulation from the AN/GRC-106 radio sets.) The external modulation is picked up by this auxiliary receiver and applied through the SG-886A-T/UR to the transmitter that is connected as it normally is for internal modulation. Normally, the SG-886A-T/UR is set to TONE or NOISE and the OUTPUT control to zero for external modulation operation; however, the internal modulation function of the SG-886A-T/UR may also be used to mix with the external modulation signal.

d. The SG-886A-T/UR is equipped with a voltmeter for monitoring battery output, and a jack for providing external recorder audio input. External modulation from the recorder is applied to the transmitter in a similar manner as from an auxiliary receiver, except for the use of the audio input jack. The NOISE-OFF-TONE and OUTPUT controls may be set the same way as they would normally be for internal modulation operation. The internal modulation function of the SG-866A-T/UR may also be used by adjusting the OUTPUT control to some value other than zero.

6-2. Block Diagram Analysis

(fig. 6-1)

The SG-886A-T/UR may be divided into two basic functional circuits and additional miscellaneous circuits that are associated with the overall functioning of the unit. The two basic functional circuits are used for internal modulation and for purposes of description will be identified as the noise generation and the tone generation circuits. The miscellaneous circuits will be identified as the battery power supply, transmitter keying, and the external modulation keying.

a. Internal Modulation. The SG-886A-T/UR uses an integrated circuit unit (icu) and associated external circuitry that are combined to provide the noise or tone generator functions. The icu consists of three separate amplifier stages to which is connected necessary external circuitry by means of the NOISE-OFF-TONE switch to produce either noise or tone.

(1) *Tone generation.* The tone generation circuit, uses stage 2 of U1 as an audio oscillator. This is accomplished by setting S1 to TONE, which connects a phase shift feedback circuit to stage 2 of U1. The output of stage 2 then is applied to the OUTPUT control which can be adjusted from a zero level to the maximum level applied to the control. The tone signal then is applied to stage 3 of U1 that acts as buffer-amplifier. The tone signal is coupled to the output through impedance matching transformer T1, through the transmitter cable assembly to the jamming transmitter. The overall level of the tone signal is set by MODE switch S2, which applies the required voltage *(b* (3) below) to the stages of U1 as necessary to provide one level for AN/VRC-12 series radio sets and a higher level for AN/GRC-106 radio sets.

(2) *Noise generation.* The noise generation circuit uses stage 1 of U1 as a noise generator. This generates a signal whenever the SG-886A-T/UR is turned on; however, the signal output is not connected until NOISE-OFF-TONE switch S1 is set to NOISE. The out-

put in this setting of S1 is connected to stage 2 of U1 that, because of the removal of the phase shift feedback circuit used in (1) above by S1, now acts as an amplifier. Except for a slight difference in the output of stage 2 of U1, the remainder of the noise generation circuit functions similar to that of the tone generation circuit ((1) above).

b. Miscellaneous Circuits. The miscellaneous circuits provide added functions of transmitter keying and external modulation for the SG-886A-T/UR as well as supporting functions to the internal modulation function described in a above. The circuits are described in (1) (2). and (3) below.

(1) *Transmitter keying.* The transmitter keying is part of S1 and provides a ground for the transmitter keying line. The ground is provided in both the NOISE and TONE position of S1.

(2) *External modulation.* The external modulation circuit provides input from an auxiliary receiver with necessary isolation and connections to terminate both the receiver at the input end and the transmitter at the output end. During this operation, the transmitter is keyed by the transmitter handset or by the SG-886A-T/UR as desired. To key the transmitter by the SG-886A-T/UR, NOISE-OFF-TONE switch S1 must be set to either NOISE or TONE.

(3) *Battery power supply.* The battery power supply is used when internal modulation *(a* above) is provided by the SC-886A-T/UR to provide two levels of voltages to make the SG-886A-T/UR compatible with the radio set transmitters with which the equipment is used. The two levels are selected by MODE switch S2. In MODE 1, the SG-886A-T/UR provides the level of modulation for the AN/VRC-12 series radio sets; while in MODE 2, the equipment provides the required level for the AN/GRC-106 radio sets. This circuit is also provided with a protective diode (CR1) so that the equipment circuitry will not be damaged by incorrect battery replacement (installed backwards).

Section II. CIRCUIT FUNCTIONING

6-3. Tone Generation

(fig. 6-2)

The tone generation circuit provides two basic levels (para 1-5) of audio frequency signals as one of the internal modulation signals produced by the SG-886A-T/UR. This circuit includes stages 2 and 3 of U1, NOISEOFF-TONE switch S1, OUTPUT control R7, T1, components of the power supply, and other external circuitry associated with ICU U1.

a. Stage 2 Tone Oscillator. In the TONE position of S1, stage 2 of U1 is connected to the necessary external circuitry that enables it to perform as a resistor-capacitor (rc), phase shift audio oscillator. This is accomplished by closing contacts 2 and 3 of S1 at the output of stage 2 and contacts 5 and 6 of S1 at the input of stage 2. This part of S1 inserts a three section rc network (R3, C5, R2, C4, and C3) from the output of stage 2 to the input. This network provides the necessary 180-degree phase shift (60 degrees for each section) to sustain oscillations. The output of stage 2 is coupled through C6 and R4 to OUTPUT control R7.

b. Stage 3 Buffer-Amplifier. From OUTPUT control R7, the tone signal is applied through C8 to stage 3 of U1 that serves as a buffer-amplifier between the tone oscillator *(a* above) and the output of the SG-886A-T/UR. The signal then is coupled to the transmitter that is being modulated by the SG-886A-T/UR through impedance matching transformer T1. From T1, the signal is connected through transmitter cable assembly A3W1 to the input circuit of the transmitter across pins D and A of the U-229/U cable connector. This enables the SG-886A-T/UR to he used with the AN/VRC-12 series radio sets. If the AN/GRC-106 is being used as the transmitter, the transmitter adapter cable assembly W1 is used so that the output is terminated on pins J and H of a U-77/U cable connector which mates with the input of the AN/GRC-106.

c. Signal Level. The signal level of the tone generation circuit is made compatible to the radio sets being used by means of MODE switch S2 and two series dropping resistors that are between battery B1 and the tone generation circuit. In the MODE 1 position of S2, R8 is used to provide a lower output level necessary to modulate the AN/VRC-12 series radio sets. In the MODE 2 position of S2, R9 is used to provide more output than in MODE 1 to enable the SG-886A-T/UR to be used to modulate the AN/GRC-106 radio sets. Both of these mode selections are applied through CR1 and S1 to the stages of U1. The signal level set by the MODE switch is further adjustable by R7 *(a* and *b* above) which allows a zero to maximum output setting.

6-4. Noise Generation

(fig. 6-2)

The noise generation circuit provides two basic (para 6-3) levels of random noise (para 1-5) as the other of the two internal modulation signals produced by the SG-886A-T/UR. This circuit includes all three stages of U1, NOISE-OFF-TONE switch S1, OUTPUT control R7, T1, components of the power supply, and other external circuitry associated with ICU U1.

a. Stage 1 Noise Generator. In the NOISE position of S1, stage 1 is connected into the circuit. It normally is operating whenever NOISE-OFF-TONE switch S1 is not at OFF; however, its output is not connected to stage 2 unless S1 is at NOISE. Stage 1 generates audio-frequency random noise, the gain of which is limited by resistor R1. The output of stage 1 is coupled through C1 and contacts 4 and 5 of S1 to the input of stage 2.

b. Stage 2 Noise Amplifier. With S1 at NOISE, stage 2 of U1 serves as an amplifier as the rc phase shift network used to make it an oscillator *(a* above) is disconnected. As an amplifier, it couples the output through C6 to the OUTPUT control, through contacts 1 and 2 of S1 (in the NOISE position). This output circuit of stage 2 differs somewhat from its arrangement in tone generation (para 6-3); R4 is not in the circuit. This allows greater output from stage 2 to be applied to the OUTPUT control because the available level of noise is not as great as the level of tone.

c. Similar Circuits. The remainder of the noise generation circuits is similar to that described in paragraph 6-3*b* and *c* above. The only difference is that the output is noise instead of tone, with output level differences, specified in paragraph 1-5.

6-5. Miscellaneous Circuits

(fig. 6-2)

The miscellaneous circuits of the SG-886A-T/UR provide a means of keying the transitter being modulated, connections for external modulation of the transmitter, and a battery power supply for the internal modulation circuits of the equipment. These circuits include part of S1, R8, R9, CR1, C9, R5, and R6.

a. Transmitter Keying Circuit. The transmitter which is being modulated by the SG-886A-T/UR is keyed when S1 is either at NOISE or TONE. Contact 8 is grounded through contact 9 in the TONE position and contact 7 in the NOISE position. This action grounds pin C of the transmitter cable assembly connector (U-229/U) for AN/VRC-12 series radio sets. When the AN/GRC-106 radio sets are used, the transmitter adapter cable assembly connector (U-77/U) is grounded at pin F.

b. External Modulation Circuit. To use external modulation, the SG-886A-T/UR is equipped with a receiver cable assembly terminated in a U-229/U connector for use with the receiver of the AN/VRC-12 series radio sets. The audio is connected across terminals B and A of the receiver cable assembly through normally closed contacts B and E of the AUDIO INPUT jack J1 connector which is tied to R6 and ground, respectively. The AUDIO INPUT jack disconnects the receiver input when a plug is inserted and substitutes the external recorder as another source of modulation for the transmitter. The R6 and R5 arrangement provides isolation and impedance matching between the receiver output and transmitter input circuits. From the junction of R5 and R6, the receiver signal is applied to terminal D of the transmitter cable assembly which is the modulation input for the transmitter. If an AN/GRC-106 receiver is being used as the external modulation source, the receiver adapter cable assembly is terminated with a U-77/U that will mate with that receiver output. The audio input is across terminal A to H of the U-77/U for audio input and ground, respectively.

c. Battery Power Supply Circuit. The battery power supply is used to supply voltage to the internal modulation circuits (para 6-3) of the SG-886A-T/UR. The source of power is battery B1, which is dry Battery BA-1363/U, and supplies a terminal voltage of 12.15 volts dc. It is connected to MODE switch S2 to provide the two levels of operating voltages necessary to make the internal modulation compatible to the two types of radio sets being used (para 6-3). From each stationary contact of S2 is tied R8 for low level and R9 for high level (compatible for the AN/VRC-12 and AN/GRC-106, respectively) MODES. The junction of R8 and R9 connects the supply through CR1 which serves as a protective diode if the battery installation is incorrect. The supply is then connected through part of S1 which serves as the on-off switch. Contacts 10 and 11 apply power in the NOISE position, while contacts 11 and 12 apply power to the TONE position. From S1, the power is applied across bypass capacitor C9 to the necessary terminals that require plus voltage (through T1 to pin 7 of stage 3, and pin 9 of stage 2, and stage 1). Battery output is monitored by voltmeter M1 through isolation resister R11 when the NOISE-OFF-TONE switch is either in the NOISE or TONE position.

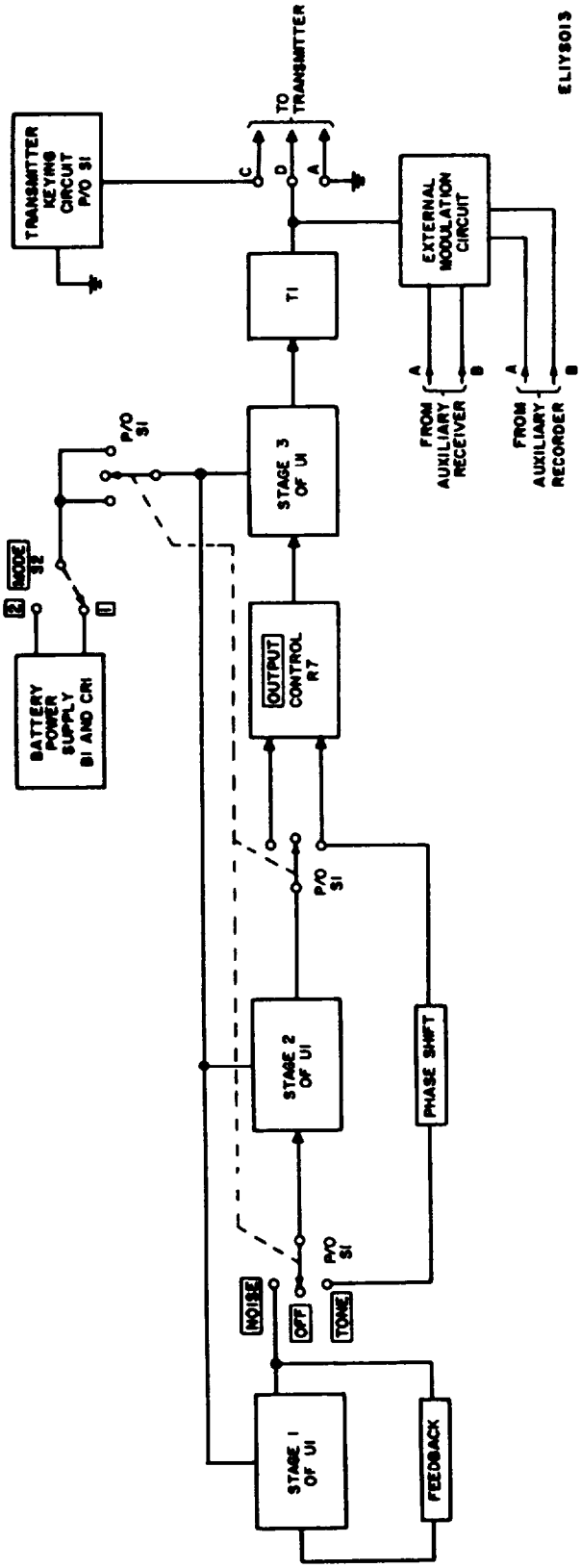


Figure 6-1. Block diagram.

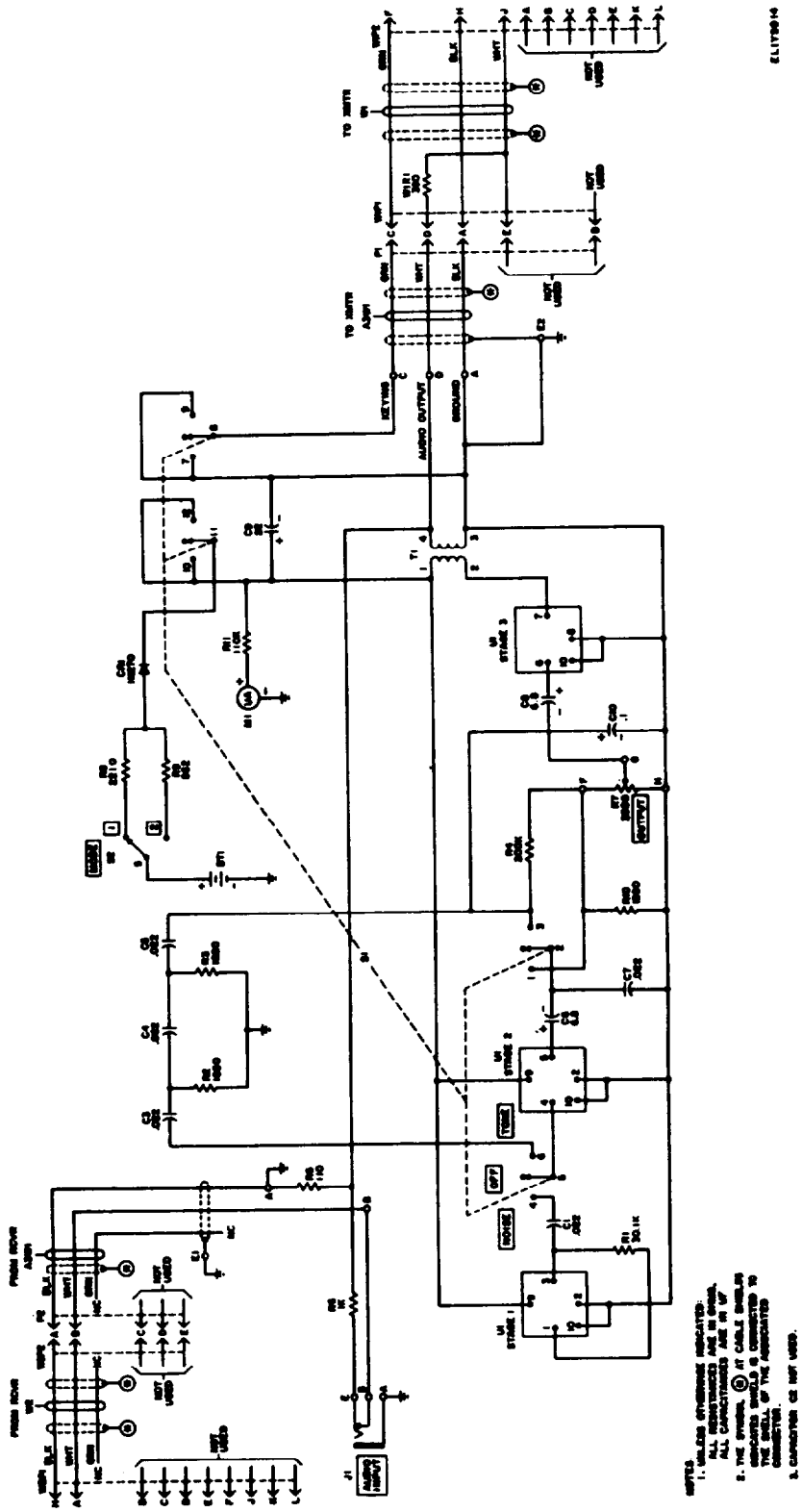


Figure 6-2. Schematic diagram.

CHAPTER 7

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE

Section I. GENERAL TROUBLESHOOTING TECHNIQUES

7-1. Scope of Maintenance

NOTE

Although both direct support and general support categories have been combined here, maintenance functions have been allocated to general support only (app C).

a. The maintenance procedures in this chapter are applicable to direct support (DS) and general support (GS) maintenance facilities and supplement the organizational maintenance procedures described in chapter 5. The systematic troubleshooting procedures that begin with the operation check (para 3-7) and organizational troubleshooting procedures (para 5-6 and 5-7) are carried to a higher category in this chapter.

b. Refer to appendix A for a list of publications that cover the equipment used in conjunction with the SG-886A-T/UR

7-2. Organization of Troubleshooting Procedures

a. General. The first step in servicing a defective SG-886A-T/UR is to operate the equipment and note what operations can and cannot be accomplished. This will help to localize the trouble to a particular circuit or stage of the SG-886A-T/UR. The second step is to isolate the fault, which means tracing the fault to a defective part responsible for the abnormal operation. Some faults, such as burned-out resistors, broken printed circuit board wiring or wires that connect between control, switches, battery holder, or cable assemblies and the printed circuit board can often be located by sight. The majority of the faults, however, must be isolated by checking voltage and resistance.

b. Visual Inspection. The purpose of visual inspection is to locate faults without testing or measuring circuits All visual signs should be observed and an attempt made to localize the fault to a particular area or isolate it to a particular component.

c. Testing Procedures. After any repair of the SG-886A-T/UR always test it for satisfactory performance of all circuits before returning the equipment to the user or placing it in repaired stock. Refer to paragraph 7-8 for testing procedures. These procedures can also be used to check the performance of the equipment before starting to troubleshoot it as this may localize the trouble to a particular stage or circuit.

7-3. Direct Support and General Support Test Equipment, Tools, and Materials Required

a. Test Equipment Required

Item	*Reference*
Generator, Signal AN/URM-25F	TM 11-5551E
Generator, Signal AN/URM-103	TM 11-6625-586-12
Multimeter AN/URM-103	TM 11-6625-203-12
Multimeter ME-26D/U	TM 11-6625-200-15
Oscilloscope AN/USM-117	TM 11-6625-640-15
Voltmeter, Electronic ME-30D/U	TM 11-6625-320-12

b. Tools and Material Required.

(1) Tool Kit, Electronic Equipment TK-101/G.

(2) Battery, Dry BA-1363/U.

(3) Dual banana to BNC, NSN 5935-00-053-9454.

(4) U-228/U to BNC (fabricate by connecting pin D of U-228/U to center pin of BNC female; pin A of U-228/U to housing of BNC female.)

(5) Standard plug for mating with telephone jack A3J1 (P/N SM-B-354840) on panel assembly.

Section II. TROUBLESHOOTING PROCEDURES

7-4. Troubleshooting SG-886A-T/UR

a. The troubleshooting technique described here is a systematic approach and outlines a method that is used when the trouble is unknown. It may be possible that, if the symptom is known and after some experience, the repairman will be able to skip some or all of the procedures given here to locate the defect. Before removing the panel assembly, be sure to check for proper battery polarity (fig 2-5) and then replace the battery with a known good one.

b. The troubleshooting chart in paragraph 7-5 pro vides procedures based on symptoms of trouble and recommended procedures that will aid in localizing and finally isolating the trouble. Starting with the operating procedures (para 3-3 through 3-6), be sure to check all modes and types of operation (MODE 1 and 2, internal and external modulation) as sometimes an equipment may be referred to higher maintenance for any trouble, including only a part of its total functions. The performance of complete operating procedures will reveal symptoms indicated in the troubleshooting chart (para 7-5). Indications of improper operations can generally be revealed by listening to the sidetone of the transmitter being modulated by the SG-886A-T/UR.

NOTE

If the corrective action indicated in the chart below does not correct the trouble symptom, refer the unit to depot maintenance.

7-5. Troubleshooting Chart

Item	Symptom	Probable cause	Corrective action
1	Equipment cannot be used with AN/GRC-106 radio sets for external modulation; other types of operation normal.	Receiver adapter cable assembly defective.	Check continuity of cable assembly (para 7-6); replace if necessary.
2	Equipment cannot be used with AN/GRC-106 radio sets for internal modulation; other types of operation normal.	Transmitter adapter cable assembly defective.	Check continuity of cable assembly (para 7-6); replace if necessary.
3	Equipment cannot be used for external modulation with any radio set; other types of operation normal.	External harness assembly, associated circuit wiring and components or printed circuit board (pcb) assembly.	Check continuity of harness assembly (para 7-6) and associated circuits (fig. 7-2); repair if loose connection; replace external harness or pcb assembly. if necessary.
4	Equipment does not operate normally for NOISE modulation; other types of operation normal.	Defective pcb assembly or associated circuit wiring and components.	Perform resistance measurements (para 7-7). repair if loose connection; replace pcb assembly, if necessary.
5	Equipment does not operate normally for TONE modulation; other types of operation normal.	Defective pcb assembly or associated circuit wiring and components.	Perform resistance measurements (para 7-7). repair if loose connection; replace pcb assembly. if necessary.
6	Equipment operates in either MODE 1 or 2 but not both; other types of operation normal.	Defective panel assembly components or associated circuit wiring and components. A defective pcb assembly also may cause this symptom.	Perform resistance measurements (para 7-7). repair if loose connection; replace pcb assembly, if necessary.
7	Equipment does not operates in both TONE and NOISE; external modulation normal.	Most circuits within the panel assembly of the equipment will cause this.	Set equipment for TONE modulation. a. Perform voltage checks (para 7-7); this will localize trouble to the pcb assembly and panel assembly. b. Check at pin F of R7 with the AN/USM-117 (para 7-8); abnormal indication will localize trouble to the pcb assembly. c. Check at pin D. audio output, with the AN/USM-117 (pan 7-8); abnormal indication will localize trouble to the pcb assembly. d. Perform resistance measurements (para 7-7) to isolate to a particular component after a, b, or c, above. Repair if loose connection; replace defective pcb assembly. if necessary.
8	SG-886A-T/UR does not key transmitter in TONE or VOICE or both.	S1 or associated keying circuits (cable assemblies).	Check continuity of S1 (contacts 8 to 9 in TONE position, 7 to 8 in NOISE position. Check continuity of external harness assembly (pin C) or transmitter adapter cable assembly (fig. 2-5). Repair if loose connection replace cable assemblies, if necessary.

7-6. Continuity and Short Circuit Tests for Harness Assemblies and Adapter Cable Assemblies

Use Multimeter ME-26D/U as an ohmmeter to check for continuity and short circuits in the wiring of the harness assemblies and the adapter cable assemblies. Refer to figure 2-4 for external harness assembly A3W1 connection points. Refer to figure 7-2 for internal harness assembly A3W2 connection points. Refer to figure 2-4 for the wiring of the adapter cable assemblies. Figure 6-2 provides a complete schematic diagram as needed.

7-7. Voltage and Resistance Measurements

Perform resistance measurements as described in a below; voltage measurements as described in *b* below.

a. Resistance measurements for the equipment are listed below. Use figures 7-1 and 7-2 to locate components and points where resistance measurements are to be taken. Before making resistance measurements, remove the battery (para 2-5). Note that the position of S1 will affect resistance readings. Note also, with reference to figure 6-2, that measurements of R1, R5, R7, R10, and T1 have shunt components that will affect their values. In checking capacitors that are connected to the icu, do not assume an open circuit, as the icu has shunt paths internally that will vary in resistance values that may differ with meter polarity. The charts below list resistance measurements across indicated points and components.

(1) *S1 measurements.*

S1 set to TONE			S1 set to NOISE		
From	To	Ohms	From	To	Ohms
S1-2	S1-3	0	S1-1	S1-2	0
S1-5	S1-6	0	S1-4	S1-5	0
S1-8	S1-9	0	S1-7	S1-8	0
S1-8	S1-7	0	S1-7	S1-9	0
S1-7	S1-9	0	S1-8	S1-9	0
S1-11	S1-10	0	S1-10	S1-11	0
S1-11	S1-12	0	S1-10	S1-12	0
S1-10	S1-12	0	S1-11	S1-12	0

(2) S2 measurements.

S1 Set to MODE 1..... S2-1 to S2-5 0 ohms
S2 Set to MODE 2..... S2-2 to S2-5 0 ohms

(3) R7 measurements.

R7 set fully counterclockwise			R7 set fully clockwise		
From	To	Ohms	From	To	Ohms
R7-F	grd	900	R7-F	grd	900
R7-G	grd	0	R7-F	grd	900

(4) *T1 Measurements.*

From	To	Ohms
2	grd	6,200
2	grd	9,000
3	grd	0
4	grd	3.4

(5) CR1 *measurements.* CR1 measures over 50-to-1 ratio with meter connected across one way, and then reversed. Type of meter and scale used will affect readings.

(6) Icu *measurements.* All measurements are taken with reference to ground. Values may vary from unit to unit, with differences in meter and scale used.

From	*Ohmn*
1	9,650
2	0
3	5,620
4	6,600
5	5,800
6	4,530
7	9,000
8	0
9	8,200
	0

b. Voltage measurements for the equipment are listed below. Use figures 7-1, 7-2, and 7-3 to locate components and points where voltage measurements are to be taken. Before making voltage measurements, check to see that the battery is properly installed (para 2-5). Measurements are taken with reference to ground.

Condition	*From*	*Volts (approx)*
Any	B1 -plus	12.15
Any	S2-5	12.15
MODE 1	S1-10	5.6
MODE 1	T1-1	5.6
MODE 1	T1 -2	4.22
MODE 1	U1-7	4.22
MODE 1	U1-9	5.6
MODE 2	S1-10	9.42
MODE 2	T1-1	9.42
MODE 2	T1-2	6.43
MODE 2	U1-7	6.43
MODE 2	U1-9	9.42

7-8. Signal Level Test

The signal waveforms and levels at useful points in the SG-886A-T/UR are shown in figure 7-5 and in the chart below. These waveshapes and signal levels will not only be useful when troubleshooting the equipment, but will provide standard performance tests to refer to after the equipment has been repaired. Connect the equipment as shown in figure 7-4. Readings are taken with reference to ground.

Conditions	Test point	Indication (millivolts RMS)
MODE 1, TONE, OUTPUT control from minimum to maximum.	Pin D of the TO XMTR connector.	0-7 min 0-40 max
MODE 2, TONE, OUTPUT control from minimum to maximum	Pin D of the To XMTR connector.	0-15 min 0-90 max
MODE 1, NOISE, OUTPUT control from minimum	Pin D of the To XMTR connector.	0-4 min

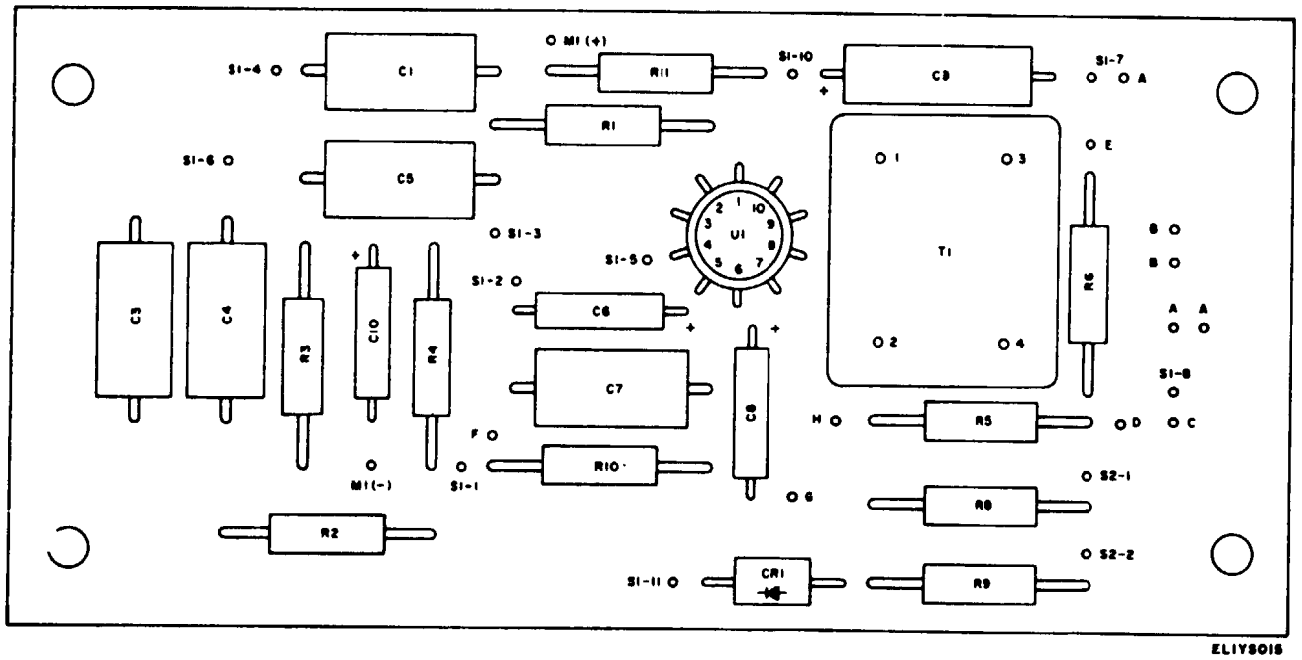


Figure 7-1. Printed circuit board assembly A3A1, component side.

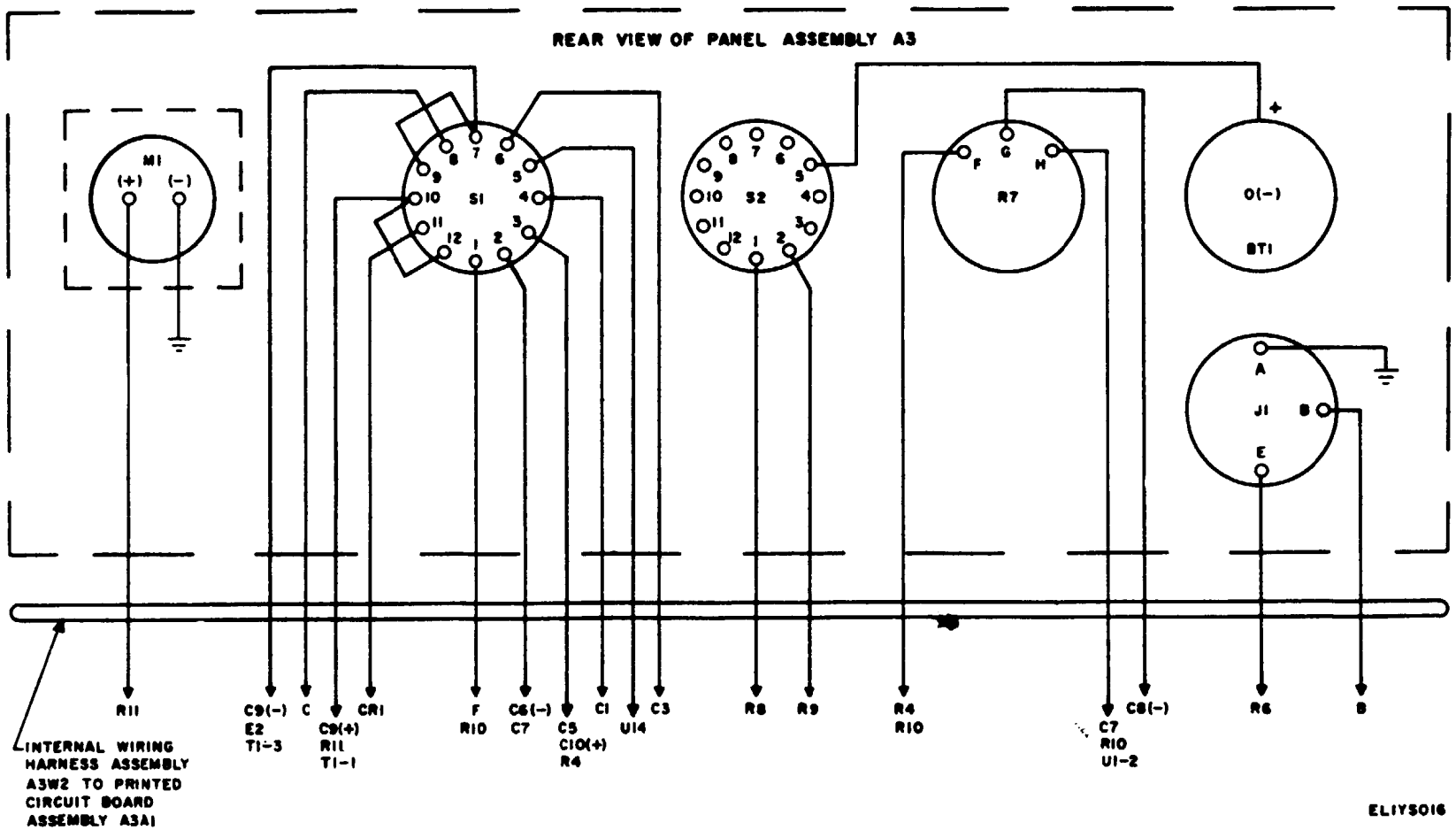


Figure 7-2. Panel assembly A3, wiring diagram.

Conditions	Test point	Indications (millivolts RMS)
to maximum		0-57 max
MODE 2. NOISE, OUTPUT control from minimum to maximum	Pin D of the TO XMTR connector.	0-9 min 0-87 max
MODE 1, TONE.....	R7-F.....	.75 (approx)
MODE 2, TONE	R7-F.....	1.25 (approx)
MODE 1, NOISE	R7-F.....	.35 (approx)
MODE 2, NOISE.....	R7-F.....	.5 (approx)

NOTE

When testing for acceptance levels, set OUTPUT control to maximum and check as follows: (Indications at R7-F with the OUTPUT control set at maximum are as shown above.)

Conditions	Test point	Indication (millivolts RMS)
MODE 1, TONE	Pin D of TO XMTR connector.....	7-40
MODE 2, TONE	Pin D of TO XMTR connector.. . . .	15-90
MODE 1, NOISE	Pin D of TO XMTR connector	4-47
MODE 2, NOISE	Pin D of TO XMTR connector.. . . .	9-87

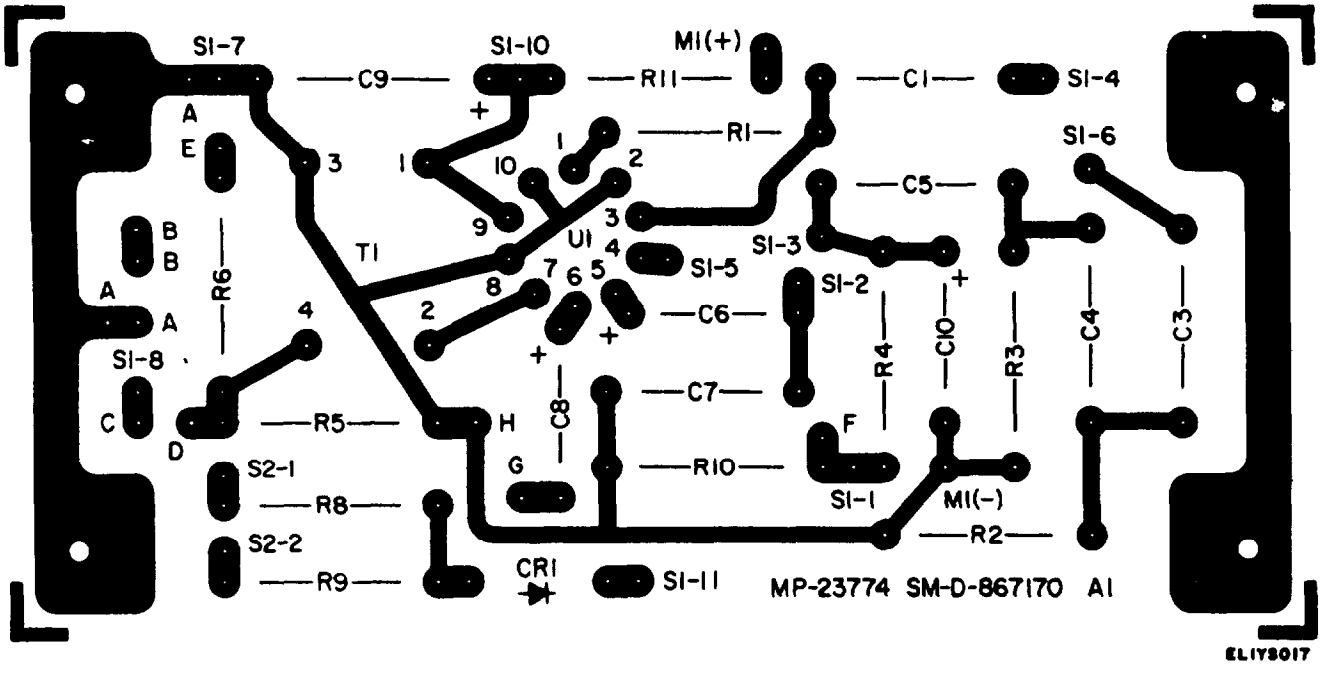


Figure 7-3. Printed circuit board, wiring side.

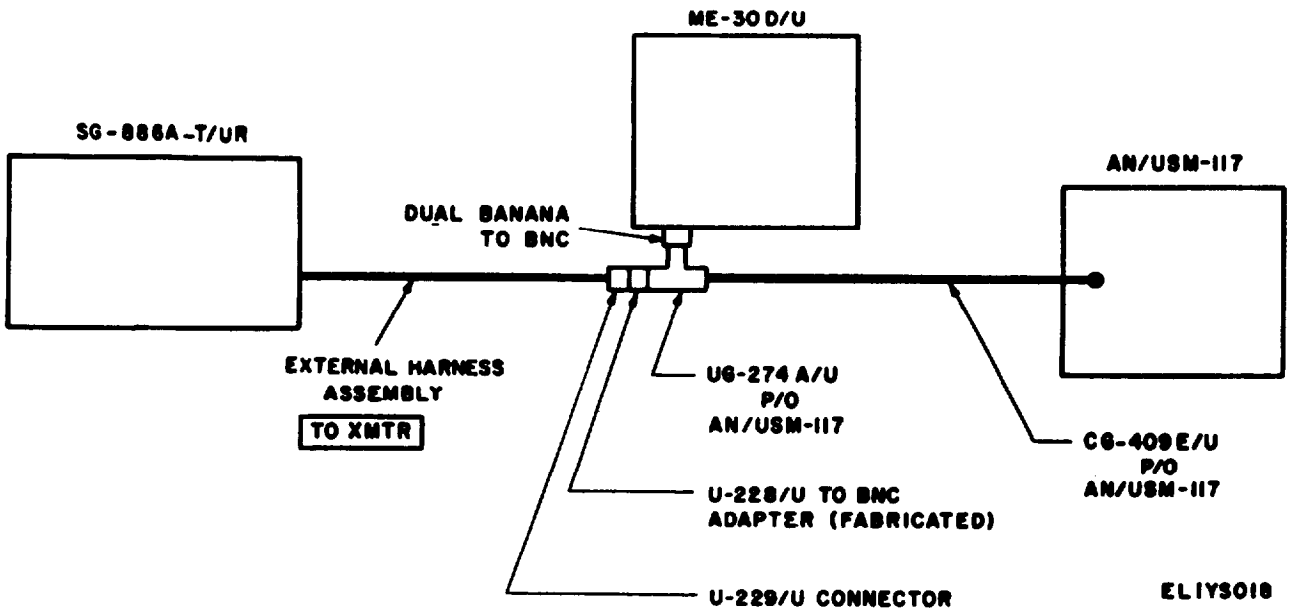


Figure 7-4. Test setup.

7-9. **Removal and Replacement of Components.**

the removal and replacement of parts in the SG-886A-T/UR require the usual care that must be afforded components in equipment that contain printed circuit wiring. The removal and replacement of the panel assembly is described in paragraph 5-7. Replacement of switches and controls on the panel assembly and components on the printed circuit board require the separation and removal of the printed circuit board from the panel assembly. To accomplish this, proceed as follows:

a. Removal

(1) Remove the panel assembly from the transit case as described in paragraph 5-7 and place it on a suitable working surface.

(2) Remove the four retaining screws and washer (2, 3 ,4, fig. 1-3) that secure the printed circuit board to the panel assembly.

(3) Carefully separate the printed circuit board assembly from the panel assembly as far as wiring allows.

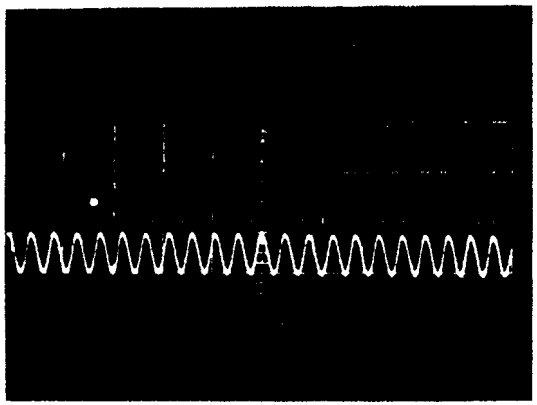
6. Replacement.

(1) carefully place the printed circuit it board assembly on the panel assembly.

(2) Replace the four retaining screws and washers removed in a(2) above.

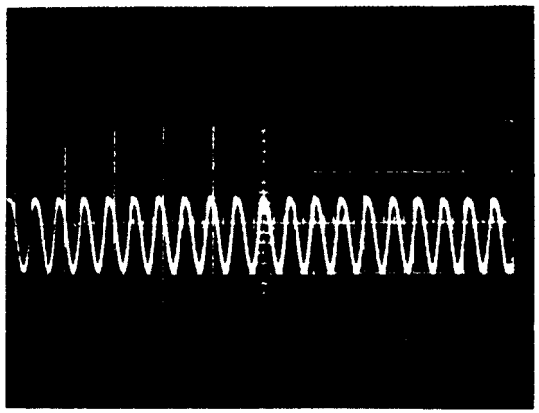
(3) Replace the panel assembly into the transit case as described in paragraph 5 -7.

MILLIVOLTS (RMS)
0-7 MIN
0-40 MAX

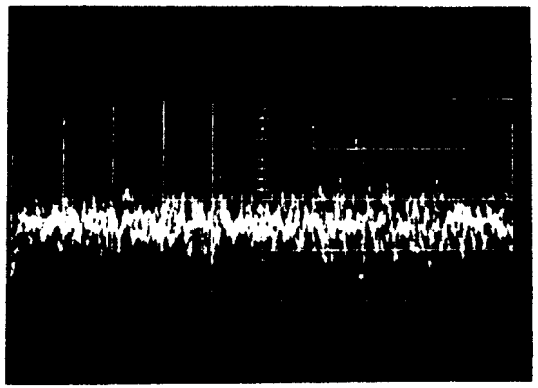


A. TONE OUTPUT PIN D, MODE 1.

MILLIVOLTS (RMS)
0-15 MIN
0-90 MAX

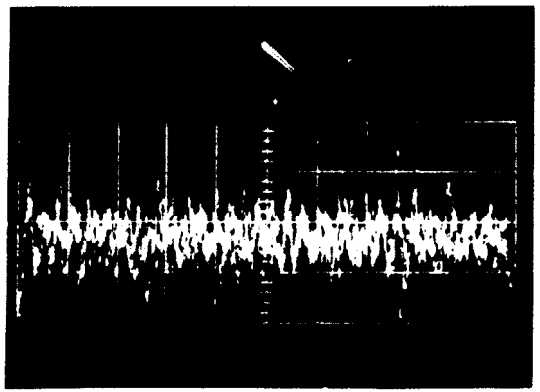


MILLIVOLTS (RMS)
0-4 MIN
0-57 MAX



C. NOISE OUTPUT PIN D, MODE 1.

MILLIVOLTS (RMS)
0-9 MIN
0-87 MAX



D. NOISE OUTPUT PIN D, MODE 2.

ELIYS019

Figure 7-5. Typical waveforms.

APPENDIX A

REFERENCES

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	US Army Index of Modification Work Orders.
FM24-18	Field Radio Techniques.
TB 43-0118	Field Instructions for Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters
TM43-0139	Painting Instructions for Field Use.
TM 11-5551E	RF Signal Generator AN/URM-25F
TM 11-5815-331-14	Operator's, Organizational, Direct Support, and General Support Maintenance Manual: Radio Teletypewriter Set AN/VSC-2.
TM 11-5815-334-12	Operator and Organizational Maintenance Manual Including Repair Parts and Special Tool Lists: Radio Teletypewriter Sets AN/GRC-142, AN/GRC-142A, AN/GRC-142B, AN/GRC-122, AN/GRC-122A, and AN/GRC-122B.
TM 11-5820-398-12	Operator and Organizational Maintenance Manual Including Repair Parts and Special Tool List: Radio Set AN/PRC-25 (Including Receiver-Transmitter, Radio RT-505/PRC-25).
TM 11-5820-401-12	Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools List: Radio Sets AN/VRC-12 (5820-00-223-7412), AN/VRC-43 (5820-00-223-7415), AN/VRC-44 (5820-00-223-7417), AN/VRC-45 (5820-00-223-7418), AN/VRC-46 (5820-00-223-7433), AN/VRC47 (5820-00-223-7434), AN//VRC-48 (5820-00-223-7435), AN/VRC-49 (5820 -00 -223 -7437), AN/VRC-54 (5820-00-223-7567). and AN/VRC 55 (5820 -00 -402 -2265; Mounting MT-1029/VRC (5820-00-893-1323) and Mounting MT-1898/VRC (5820-00-893-1324); Antenne AT-912/VRC (6820-00-897-6357); Control, Frequency Selector C-2742/VRC (5820-00-892-3343) and Control Radio Set C-2299/VRC (5820-00-892-3340).
TM 11-5820-498-12	Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools Lists: Radio Sets AN/VRC-53, AN/VRC-64, AN/GRC-125, and AN/GRC-160 and Amplifier-Power Supply Groups OA-3633/GRC and OA-3633A/GRC.
TM 11-5820-520-12	Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools List Radio Sets AN/GRC-106 and AN/GRC-106A.
TM 11-5820-520-34	Direct Support and General Support Maintenance Manual: Including Repair Parts and Special Tools List: Radio sets AN/GRC-106 (NSN 5820-00-167-8003) and AN/GRC-106A (NSN 5820-00-147-8005).
TM 11-5820-590-12	Operator and Organizational Maintenance Manual Including Repair Parts and Special Tool Lists Radio Sets AN/PRC-74 and AN/PRC-74A and Power Supply PP-4514/PRC-74.
TM 11-5821-259-20	Organizational Maintenance Manual: Radio Sets AN/ARC-114 and AN/ARC-114A; Network, Impedance Matching CU-1794/ARC-114; Network, Impedance-Matching-Quadrature, Hybrid CU-1796/ARC-114.
TM 11-6625-200-15	Operator's, Organizational, DS, GS, and Depot Maintenance Manual: Multimeters ME-26A/U, ME-26B/U, ME-26C/U, and ME-26D/U.
TM 11-6625-203-12	Operator and Organizational Maintenance: Multimeter AN/URM-105 and AN/URM-105C Including Multimeter ME-77/U.
TM 11-6625-320-12	Operator's and Organizational Maintenance Manual: Voltmeter, Meter ME-3OA/U and Voltmeters, Electronic ME-30B/U, ME-30C/U and ME-30E/U.
TM 11-6625-586-12	Operator and Organizational Maintenance Manual Including Repair Parts and Special Tool Lists: Generator, Signal AN/URM-103.
TM 11-6625-640-15	Operator's Organizational DS, GS, and Depot Maintenance Manual Including Re

	pair Parts and Special Tool Lists: Oscilloscope AN/USM-117, AN/UM-117A, AN/USM-117B, and AN/USM-117C.
TM 11-6940-210-14-2&P-HR	Hand Receipt Manual for Generator, Interference SG-886A-T/UR (NSN 6940-00-474-9496).
TM 38-750	The Army Maintenance Management System (TAMMS).
TM 740-90-1	Administrative Storage of Equipment.
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command).

APPENDIX B

OPERATOR'S ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

B-1 Scope

This appendix lists repair parts required. for performance of organizational, direct support, and general sup port maintenance of the SG-886A-T/UR

B-2. General

This Basic Issue Items, Items Troop Installed or Au thorized, and Repair Parts List is divided into the following sections:

a Section II. Basic Issue Items List. Not applicable

b. Section III. Items Troop Installed or Authorized List. Not applicable.

c. Section IV. Repair Parts List. A list of repair parts authorized for use in the performance of mainte nance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending numerical sequence, with the parts in each group listed in figure and item number sequence.

d. Section V. Special Took List. Not applicable.

e. Section VI. National Stock Number and Part Number Index. A list, in ascending numerical sequence, of all National stock numbers appearing in the listings, followed by a list in alphameric sequence, of all part numbers appearing in the listings National stock number and part numbers are cross-referenced to each illustration figure and item number appearance.

B-3. Explanation of Columns

The following provides an explanation of columns found in the tabular listings:

a Illustration. This column is divided as follows:

(1) *Figure number.* Indicated the figure number of the illustration in which the item is shown

(2) *Item number.* The number used to identify each item called out in the illustration

b. Source, Maintenance, and Recoverability Codes (SMR).

(1) *Source code.* Source codes are assigned to support items to indicate the manner of acquiring support items for maintenance, repair, or overhaul of end items. Source codes are entered in the first and second positions of the Uniform SMR Code format as follows:

Code	*Explanation*
PA	Item procured and stocked for anticipated or known usage.
XA	Item is not procured or stocked because the requirements for the item will result in the replacement of the next higher assembly.
XB	Item is not procured or stocked. If not available through salvage, requisition.
XD	A support item that is not stocked. When required, item will be procured through normal supply channels.

NOTE

Cannibalization or salvage may be used as a source of supply for any items source coded above except those coded XA, XD, and air craft support items as restricted by AR 700-42.

(2) *Maintenance code.* Maintenance codes are assigned to indicate the levels of maintenance author ized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the Uniform SMR Code format as follow:

(a) The maintenance code entered in the third position will indicate the lowest maintenance level authorized to remove, replace, and use the support item. The maintenance code entered in the third position will indicate one of the following levels of maintenance.

Code	*Application/Explanation*
O	support item is removed, replaced, used at the organizational level.
D	Support item is removed, used at the depot, mobile depot, specialized repair activity only.
H	Support item is removed, replaced, wed at the general support level.

(b) The maintenance code entered in the fourth position indicates whether the item is to be repaired and identifies the lowest maintenance level with the capability to perform complete repair (i.e., all authorized maintenance functions). This position will contain one of the following maintenance codes:

Code	*Application/Explanation*
D	The lowest maintenance level capable of complete repair of the support item is the depot level, per formed by depot
Z	Nonreparable No repair is authorized.

(3) *Recoverability code.* Recoverability codes are

assigned to support items to indicate the disposition action on unserviceable items The recoverability code is entered in the fifth position of the Uniform SMR Code format as follows:

Recoverability Codes — *Definition*

D–Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal not authorized below depot level

Z–Nonreparable item. When unserviceable, condemn and dispose at the level indicated in position 3.

L–Reparable item. Repair, condemnation, and die posal not authorized below depot/specialized repair activity level.

c. National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

d. Part Number. Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specification standards, and inspection requirements, to identify an item or range of items.

e. Federal Supply Code for Manufacturer (FSCM). The FSCM is a 5-digit numeric code listed in SB 708-42, which is used to identify the manufacturer, distributor, or Government agency.

f. Description. Indicates the Federal item name and, if required, a minimum description to identify the item.

g. Unit of Measure (U/M). Indicates the standard of the basic quantity of the listed item as used in per forming the actual maintenance function This measure is expressed by a two-character alphabetical abbreviation (eg., ea, in, pr, etc). When the unit of measure differs from the unit of issue, the lowest unit of iambs that will satisfy the required units of mesaure will be requisitioned.

h. Quantity Incorporated in Unit. Indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly.

B-4. Special information

Not applicable.

R-S. How to Locate Repair Parts

a. When National stock number or part number is unknown

(1) *First.* Using the table of contents, determine the functional group within which the repair parts belongs This is necessary since illustrations are prepared for functiotial groups and listings are divided into the same groups

(2) *Second.* Find the illustration covering the functional group to which the repair part below

(3) *Third.* Identify the repair part on the illutration and note the illustration figure and item number of the repair part

(4) *Fourth* Using the Repair Parts Listing, find the figure and item number noted on the ill&ration

b. When National stock number or part number is known

(1) *First.* Using the Index of National Stock Numbers and Part Numbers, find the pertinent National stock number or part number. This index is in ascending NSN sequence followed by a list of part numbers in ascending alphameric sequence, cross-referenced to the illustration figure number and item number.

(2) *Second.* After finding the figure and item number, locate the figure and item number in the repair parts list.

B-6. Abbreviations

Not applicable.

(Next printed page is B-4)

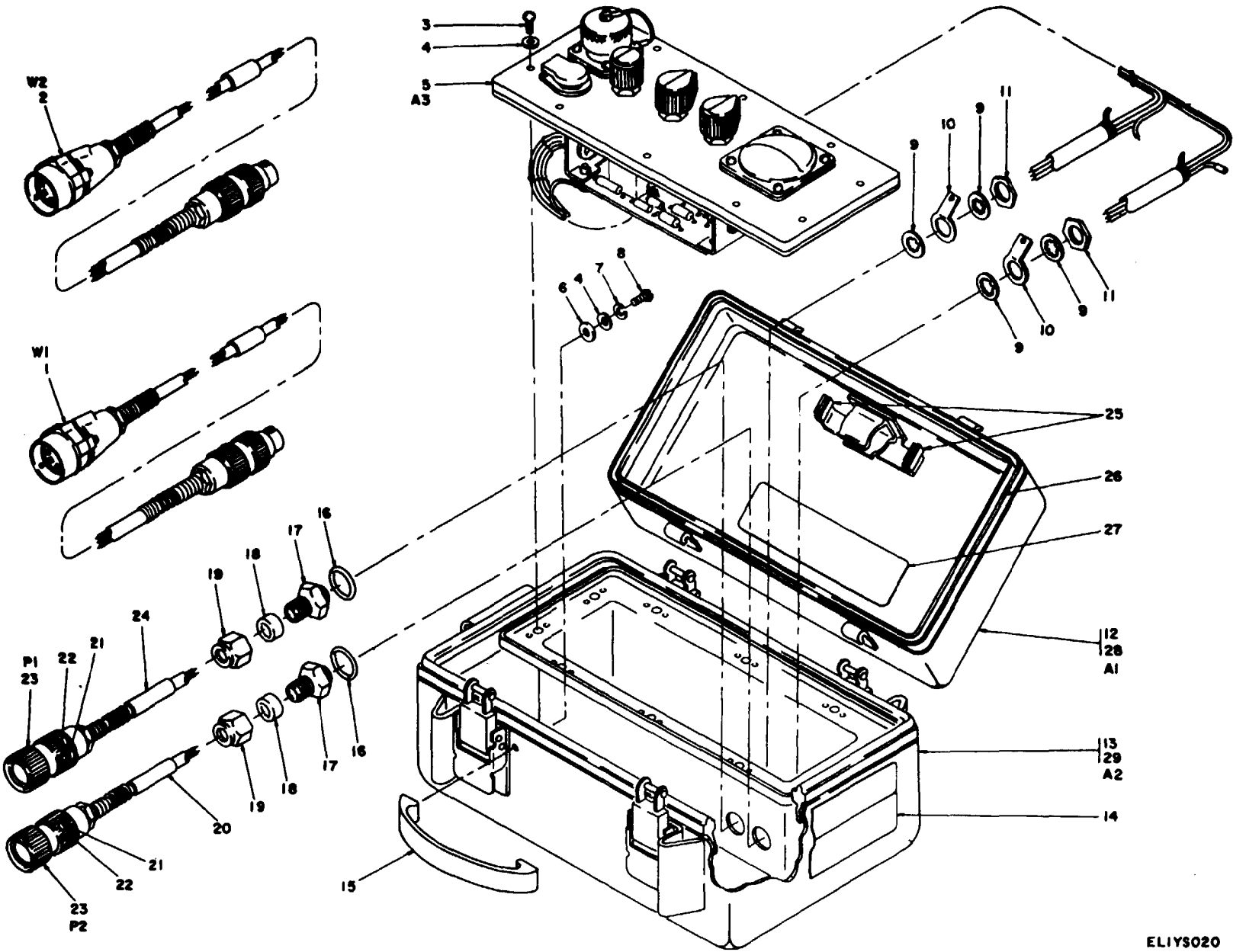


Figure B-1. Generator, Interference SG-886A-TYUR

(1) ILLUSTRATION (A) FIG. NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FCSM	(6) DESCRIPTION USABLE ON CODE	(7) UNIT OF MEAS	(8) QTY INC IN UNIT
						GROUP: 00 GENERATOR, INTERFERENCE SG-886A-T/UR		
B-1	1	PAODL		SMD867171	80063	CABLE ASSEMBLY, SPECIAL PURPOSE	EA	1
B-1	2	PAODL		SMD867171	80063	CABLE ASSEMBLY, SPECIAL PURPOSE	EA	1
B-1	3	PADZZ	5305-00-059-8478	MS35216-44	96906	SCREW, MACHINE	EA	10
B-1	4	PADZZ	5310-00-880-5978	MS15795-807	96906	WASHER, FLAT	EA	14
B-1	5	PAHDD		SMD867169	80063	PANEL, ASSEMBLY	EA	1
B-1	6	XDDZZ		NAS152308B	80205	WASHER, SEAL	EA	4
B-1	7	XBDZZ		MS35337-80	96906	WASHER, LOCK	EA	4
B-1	8	XBDZZ		MS35216-40	96906	SCREW, MACHINE	EA	4
B-1	9	XBDZZ	5310-00-261-7153	AN936A716S	88044	WASHER, LOCK	EA	4
B-1	10	XBDZZ		SMB867178	80063	TERMINAL, LUG	EA	2
B-1	11	XBDZZ		MS25082-8	96906	NUT, PLAIN, HEXAGON	EA	2
B-1	12	PAODL		SMD867173	80063	COVER, ASSEMBLY, CASE	EA	1
B-1	13	PAHDL		SMD867174	8063	CASE WELDMENT ASSEMBLY	EA	1
B-1	14	XDDZZ		SMC867180	80063	PLATE, IDENTIFICATION	EA	1
B-1	15	XDDZZ		SMC867179	80063	HANDLE	EA	1
B-1	16	XDDZZ	5330-00-248-3840	MS29513-014	96906	PACKING, PREFORMED	EA	2
B-1	17	XBDZZ		SMC867175	80063	BUSHING, STUFFING TUBE	EA	2
B-1	18	XDDZZ		SMB867176	80063	GASKET, STUFFING TUBE	EA	2
B-1	19	XDDZZ		SMB867177	80063	NUT, STUFFING TUBE	EA	2
B-1	20	XDDZZ		SMC867219-3	80063	BAND, IDENTIFICATION	EA	1
B-1	21	PADZZ		SMB867227	80063	GASKET, CONNECTOR	EA	2
B-1	22	PADZZ		SMB867224	80063	CONTACT, SHIELD	EA	2
B-1	23	PADZZ		U229U	81349	CONNECTOR, PLUG, ELECTRICAL	EA	2
B-1	24	XDDZZ		SMC867219-4	80063	BAND, IDENTIFICATION	EA	1
						GROUP: 01 A1 COVER ASSEMBLY, CASE		
B-1	25	XDDZZ		SMB867184	80063	INSULATION, BATTERY	EA	2
B-1	26	XDDZZ		SMC867182	80063	SEAL, CASE COVER	EA	1
B-1	27	XDDZZ		SMC867183	80063	PLATE, CAUTION	EA	1
B-1	28	XDDZZ		SMD867181	80063	COVER WELDMENT ASSEMBLY, CASE	EA	1
						GROUP: 02 A2 CASE WELDMENT ASSEMBLY		
B-1	29	PAHDL		SMD867174	80063	CASE WELDMENT ASSEMBLY	EA	1

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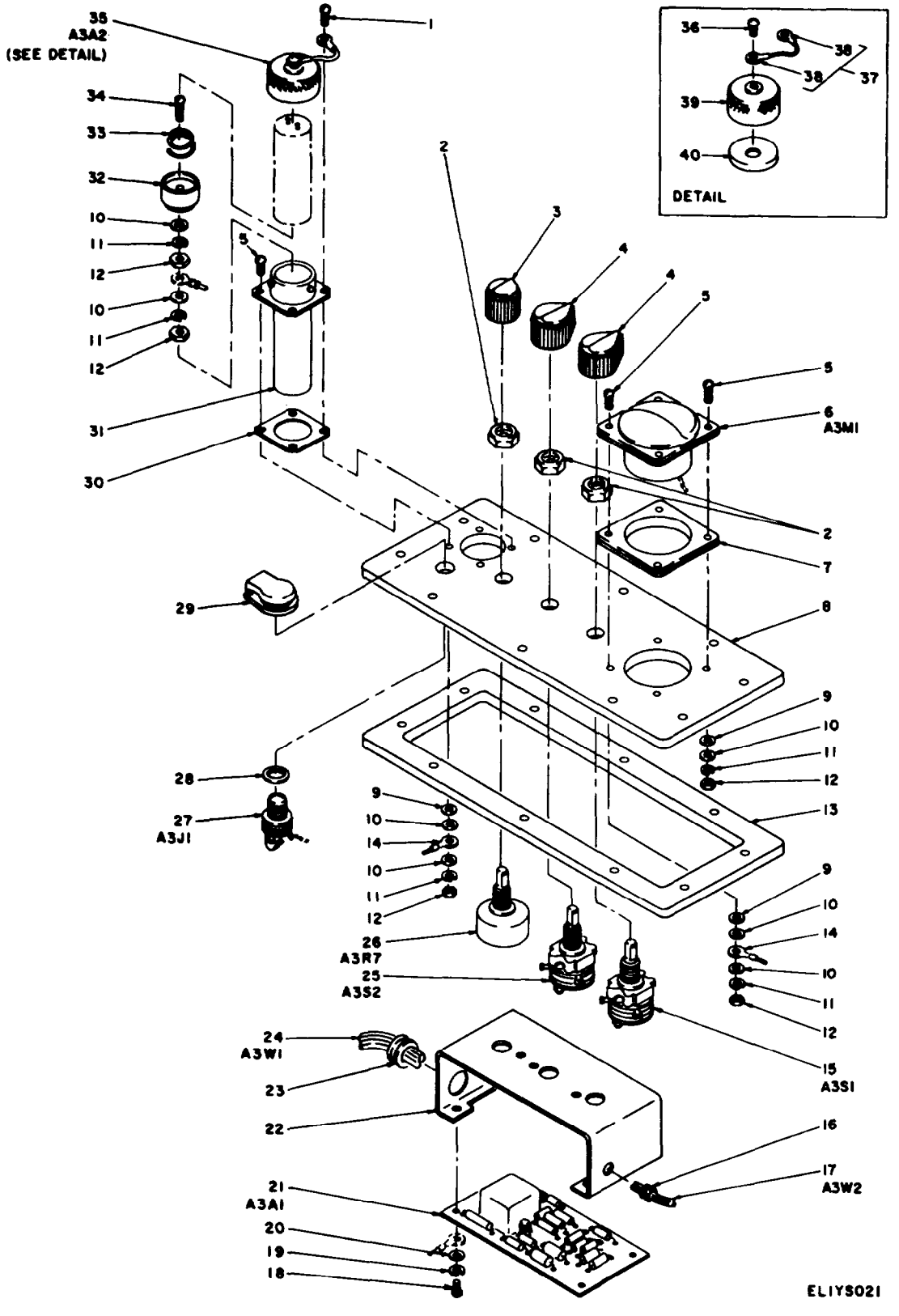

Figure B-2. A3 panel assembly.

SECTION IV REPAIR PARTS LIST (CONTINUED)

(1) ILLUSTRATION (A) FIG NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(9) FSCM	(6) DESCRIPTION USABLE ON CODE	(7) UNIT OF MEAS	(8) QTY INC IN UNIT
						GROUP: 03 A3 PANEL ASSEMBLY		
B-2	1	PADZZ	5305-00-059-8451	MS 35216-16	96906	SCREW, MACHINE	EA	1
B2	2	PADZZ	5930-00-823-0482	MS 423-09-02	81349	NUT, SEAL	EA	3
B-2	3	PAOZZ	5355-00-965-4891	MS 91528-1C2B	96906	KNOB	EA	1
B-2	4	PAOZZ	5355-00-616-9604	MS 91528-1P2B	96906	KNOB	EA	2
B-2	5	PADZZ	5305-00-054--5652	MS 35216-17	96906	SCREW, MACHINE	EA	7
B-2	6	PAOZZ		SMC86 7200	80063	VOLTMETER	EA	1
B-2	7	PADZZ		SMC86 7201	80063	SEAL, PANEL	EA	1
B-2	8	XADZZ		SMD86 7192	80063	PLATE	EA	1
B-2	9	PADZZ		SMB 8867223	80063	WASHER, SEALING	EA	8
B-2	10	PADZZ	5310-00-595-6211	MS 15795-803	96906	WASHER, FLAT	EA	12
B-2	11	PADZZ	5310-00-734-5661	MS 35337-78	96906	WASHER, LOCK	EA	10
B-2	12	PADZZ	5310-00-934-9748	MS 35649-244	96906	NUT, PLAIN, HEXAGON	EA	10
B-2	13	PADZZ		SMC867193	80063	SEAL, PANEL	EA	1
B-2	14	XBDZZ		SMB 867225	80063	WIRE, JUMPER	EA	2
B-2	15	PADZZ		5-24331-788	76854	SWITCH, ROTARY	EA	1
B-2	16	PAOZZ	5325-00-286-6047	MS 35489-1	96906	GROMMET, RUBBER	EA	1
B-2	17	XBDZZ		SMD867220	80063	HARNESS, ASSEMBLY	EA	1
B-2	18	PADZZ	5305-00-459-3460	MS 35216-25	96906	SCREW, MACHINE	EA	4
B-2	19	PADZZ	5310-00-043-1754	MS 35337-79	96906	WASHER, LOCK	EA	4
B 2	20	PADZZ	5310-00-722-5998	MS 15795-805	96906	WASHER, FLAT	EA	1
B-2	21	PAHDL		SMS867170	80063	PCB ASSEMBLY	EA	1
B-2	22	XDDZZ		SMD867196	80063	BRACKET, MOUNTING	EA	1
B-2	23	XDDZZ		SMB 867221	80063	BUSHING	EA	1
B-2	24	XDDZZ		SMD867204	80063	HARNESS ASSEMBLY	EA	1
B-2	25	PADZZ		511181-787	768564	SWITCH, ROTARY	EA	1
B-2	26	PADZZ	5905-00-581-6892	RV4NAYSD252C	81349	RESISTOR, VARIABLE	EA	1
B-2	27	PAOZZ	5935-00-192-4789	MS 35216-18	81349	JACK, TELEPHONE	EA	1
B-`2	28	PAOZZ		SMB 867199	80063	GASKET, JACK	EA	1
B-2	29	XDOZZ	5935-00-333-9112	SMB 110075	80063	COVER, JACK	EA	1
B-2	30	PADZZ		SMC336792-5	80063	GASKET, CONNECTOR	EA	1
B-2	31	PAZDZZ		SMC867194	80063	RETAINER ASSEMBLY	EA	1
B-2	32	PADZZ		SMB 867202	80063	RETAINER, SPRING	EA	1
B-2	33	PADZZ		SMC867203	80063	SPRING, HELICAL, COMPRESSION	EA	1
B-2	34	PADZZ	5305-00-059-8453	MS 35216-18	96906	SCREW, MACHINE	EA	1
B-2	35	XDOZZ		SMC867195	80063	COVER ASSEMBLY	EA	1
B-2	36	XBOZZ	5305-00-253-5617	MS 21318-23	96906	SCREW, DRIVER	EA	1
B-2	37	XDOZZ		SMB 867211	80063	LINK ASSEMBLY	EA	1
B-2	38	XBDZZ		SMB 867213	80063	TERMINAL, LUG	EA	2
B-2	39	XDOZZ		SMC 867209	80063	COVER WELDED ASSEMBLY	EA	1
B-2	40	XBDZZ		SMC867210-2	80063	DISK, RUBBER	EA	1

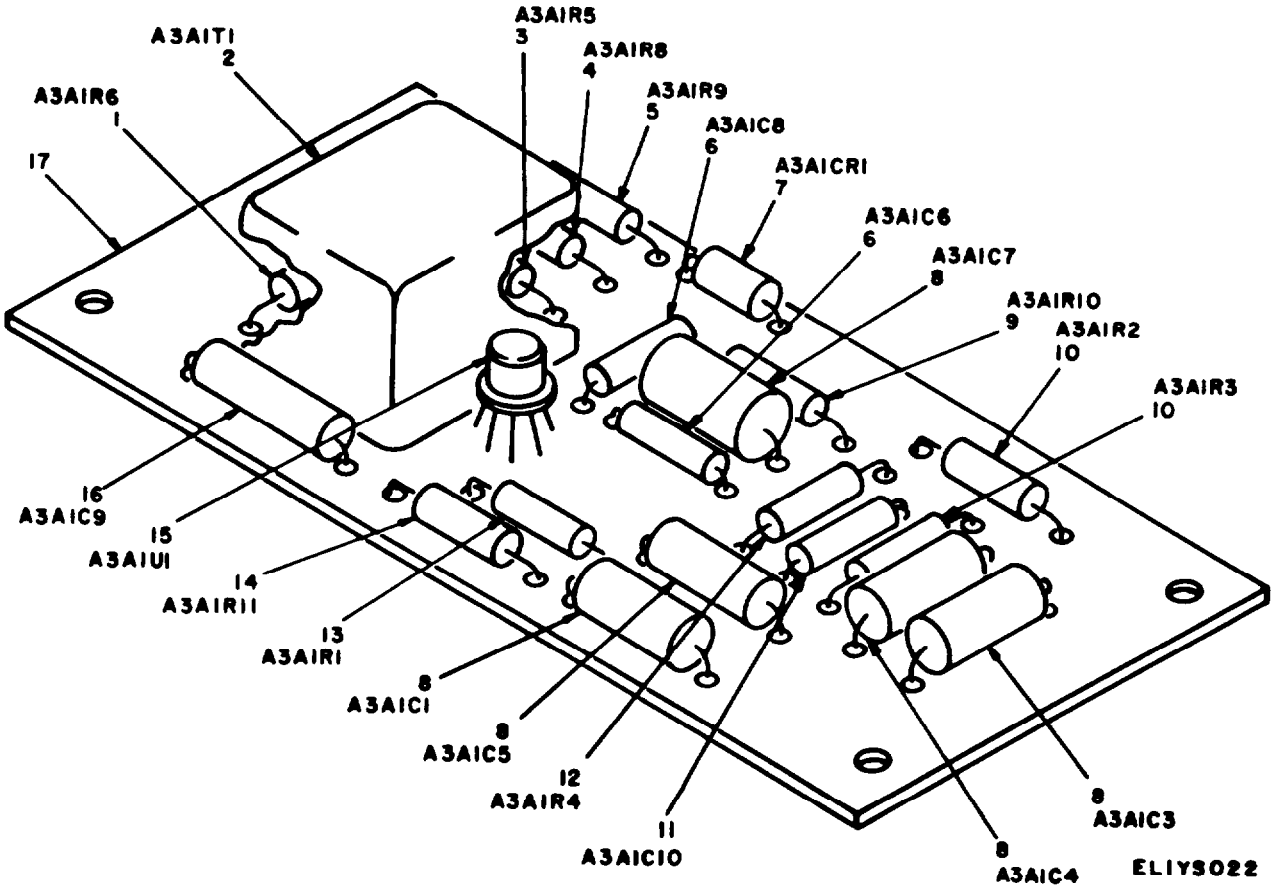

Figure B-3. A3A1 printed circuit board assembly.

SECTION IV REPAIR PARTS LIST (CONTINUED)

(1) ILLUSTRATION (A) FIG NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER		(6) DESCRIPTION USABLE ON CODE	(7) UNIT OF MEAS	(8) QTY INC IN UNIT
						GROUP: 0301 A3Al PCB ASSEMBLY		
B-3	1	PADZZ	5903-00-356-6585	RNR60C1001FM	81349	RESISTOR, FIXED, FILM	EA	1
B-3	2	PADZZ		SMC867215	80063	TRANSFORMER, AUDIO FREQUENCY	EA	1
B-3	3	PADZZ	5905-00-461-8993	RNR60C1100FM	81349	RESISTOR, FIXED, FILM	EA	1
B-3	4	PADZZ		RNR60C2211FM	81349	RESISTOR, FIXED, FILM	EA	1
B-3	5	PADZZ	5905-00-839-4375	RNR60C5620FM	81349	RESISTOR, FIXED, FILM	EA	1
B-3	6	PADZZ	5910-00-91-1331	M39003-01-2002	81349	CAPACITOR, FIXED, ELECTROLYTIC	EA	2
B-3	7	PADZZ	5961-00-793-4071	1N270	81349	SEMICONDUCTOR DEVICE, DIODE	EA	1
B-3	8	PADZZ	5910-00-050-5252	CK14BX223K	81349	CAPACITOR, FIXED, CERAMIC DIELECTRIC	EA	5
B-3	9	PADZZ		RNR60C1501FM	8l349	RESISTOR, FIXED, FILM	EA	1
B-3	10	PADZZ		RNR60C1821FM	81349	RESISTOR, FIXED, FILM	EA	2
B-3	11	PADZZ		M39003-01-2098	8l349	CAPACITOR, FIXED, ELECTROLYTIC	EA	1
B-3	12	PADZZ		RNR60C2003FM	81349	RESISTOR, FIXED, FILM	EA	1
B-3	13	PADZZ	5905-00-111-6068	RNR60C3012FM	81349	RESISTOR, FIXED, FILM	EA	1
B-3	14	PADZZ	5905-00-409-7307	RNR60C1103FM	81349	RESISTOR, FIXED, FILM	EA	1
B-3	15	PADZZ		SMA867226	80063	MICROCIRCUIT,. SELECTED	EA	1
B-3	16	PADZZ	5910--00-996-0532	M39003-01-2031	81349	CAPACITOR, FIXED, ELECTROLYTIC	EA	1
B-3	17	PADZZ		SMD867214	80063	PC WIRING BOARD	EA	1

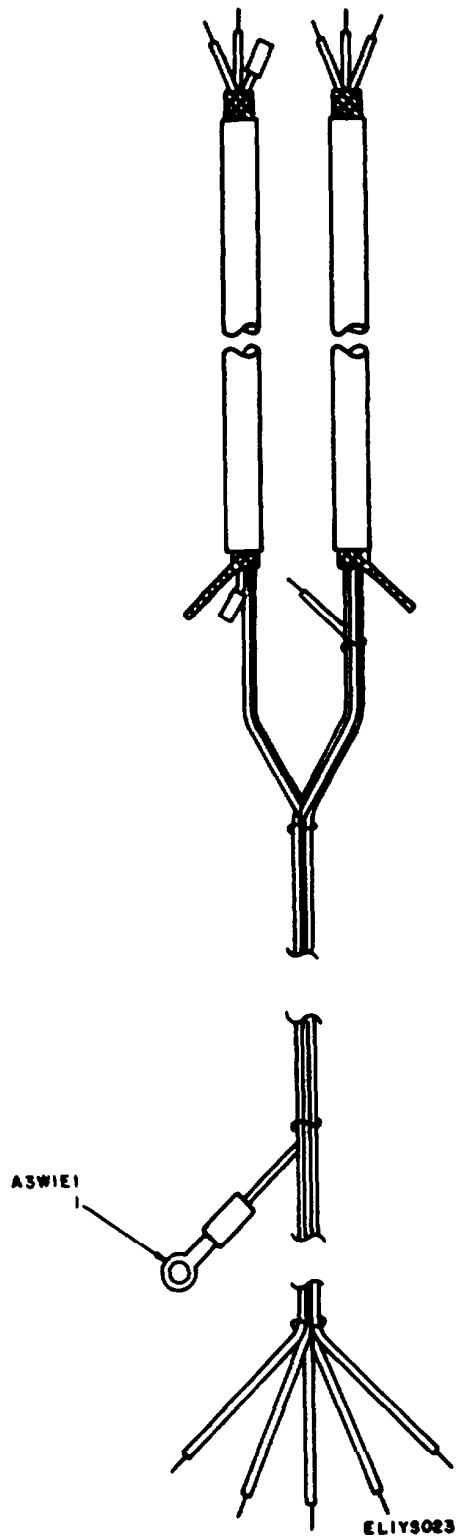

Figure B-4. A3W1 harness assembly (wire in).

SECTION IV REPAIR PARTS LIST (CONTINUED)

(1) ILLUSTRATION (A) FIG NO.	(1) ILLUSTRATION (B) ITEM No.	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	(6) DESCRIPTION USABLE ON CODE	(7) UNIT OF MEAS	(8) QTY INC IN UNIT
						GROUP: 0302 A3W1 HARNESS ASSEMBLY		
B-4	1	XBDZZ	5940-00-557-3807	MS 25036-145	96 906	TERMINAL, LUG	EA	1

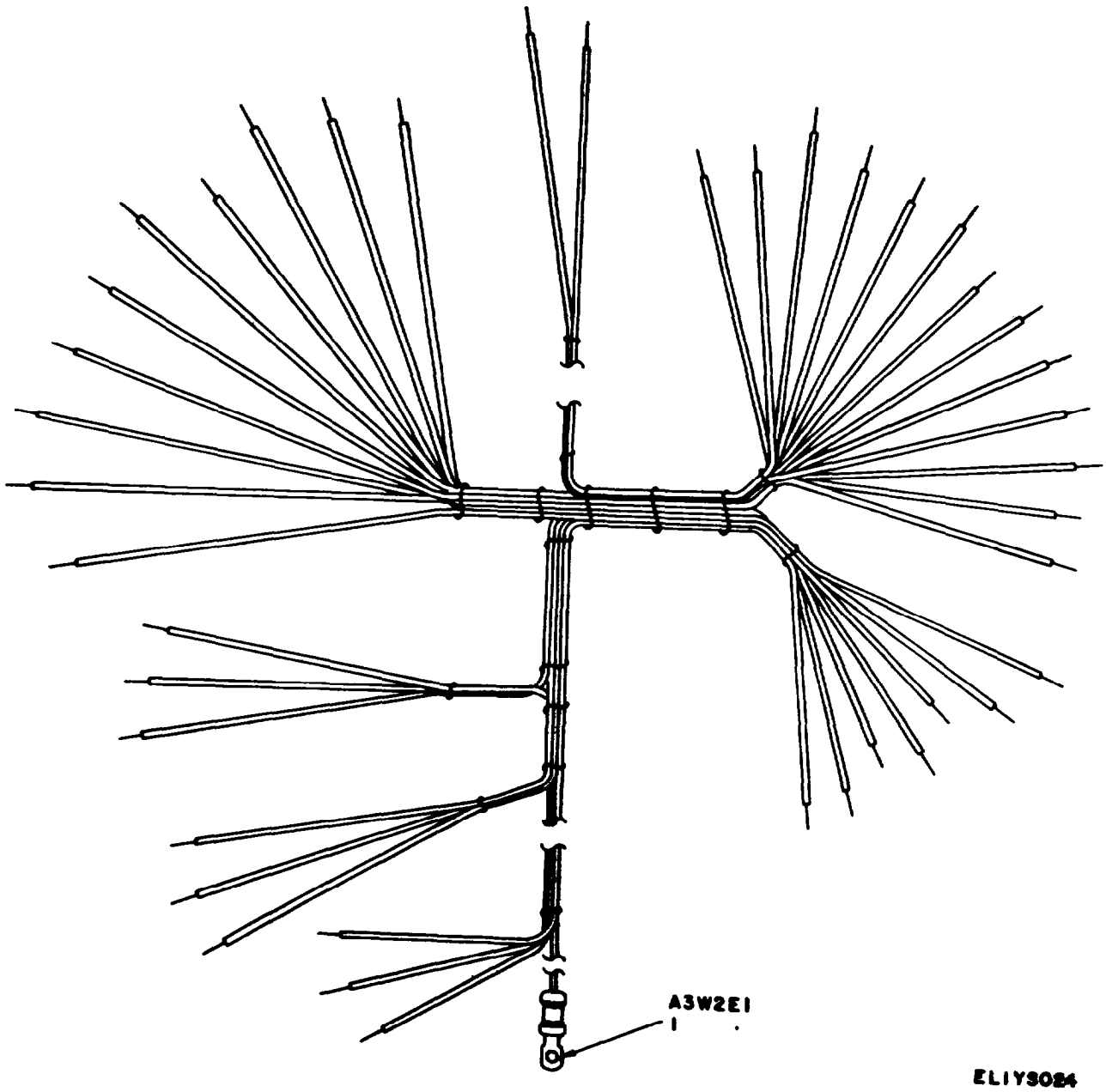

Figure B-5. A3W2 harness assembly (wired in).

SECTION IV REPAIR PARTS LIST (C0NTINUED)

(1) ILLUSTRATION (A) FIG NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	(6) DESCRIPTION USABLE ON CODE	(7) UNIT OF MEAS	(8) QTY INC IN UNIT
						GROUP: 0303 A3W2 HARNESS ASSEMBLY		
B-5	1	XBDZZ	5940-00-113-9828	MS 25034-148	96 906	TERMINAL, LUG	EA	1

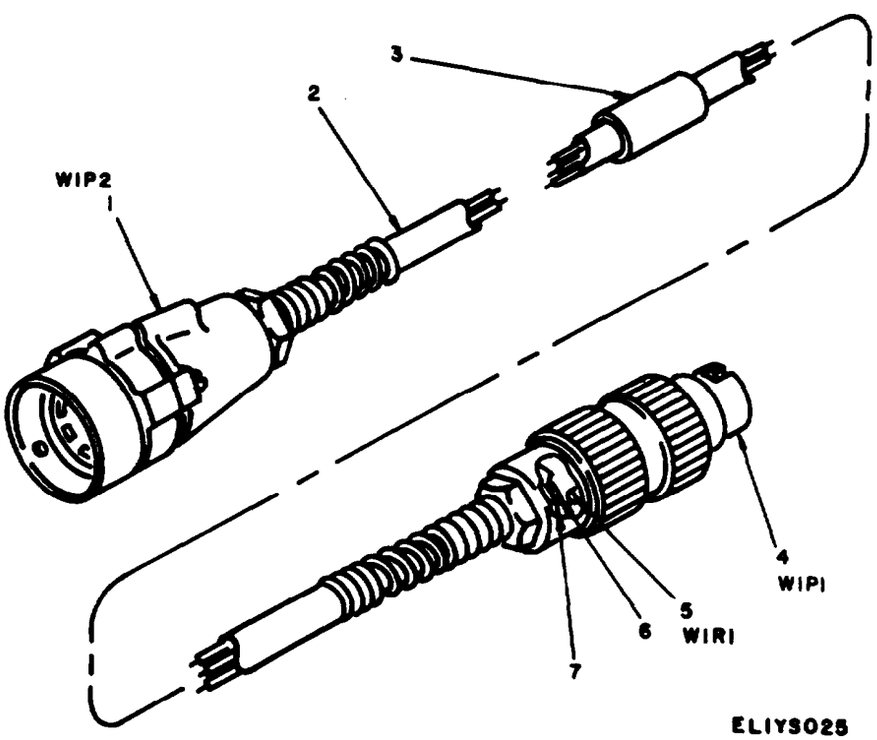

Figure B-6. W1 cable assembly, special purpose.

SECTION IV REPAIR PARTS LIST (CONTINUED)

(1) ILLUSTRATION (A) FIG No.	(1) ILLUSTRATION (B) ITEM No	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) PART NUMBER	(5) FSCM	(6) DESCRIPTION USALBE ON CODE	(7) UNIT OF MEAS	(8) QTY INC IN UNIT
						GROUP: 04 W1 CABLE ASSEMBLY, SPECIAL PURPOSE		
B-6	1	PADZZ	5935-00-283-2950	U7U7	81349	CONNECTOR, PLUG, ELECTRICAL;	EA	1
B-6	2	XBDZZ		C003LGF3-22SSJ2050	81349	CABLE, SPECIAL PURPOSE, ELECTRICAL	EA	1
B-6	3	XDDZZ		SMC86 7219-2	80063	BAND, IDENTIFICATION	EA	1
B-6	4	PADZZ		U228U	81349	CONNECTOR, PLUG, ELECTRICAL	EA	1
B-6	5	PADZZ	5905-00-773-0881	RCR0 7G391JM	81349	RESISTOR, FIXED, COMPOSITION	EA	1
B-6	6	PADZZ		SMB867227		GASKET, CONNECTOR	EA	1
B-6	7	PADZZ		SMB 867224		CONTACT, SHIELD	EA	1

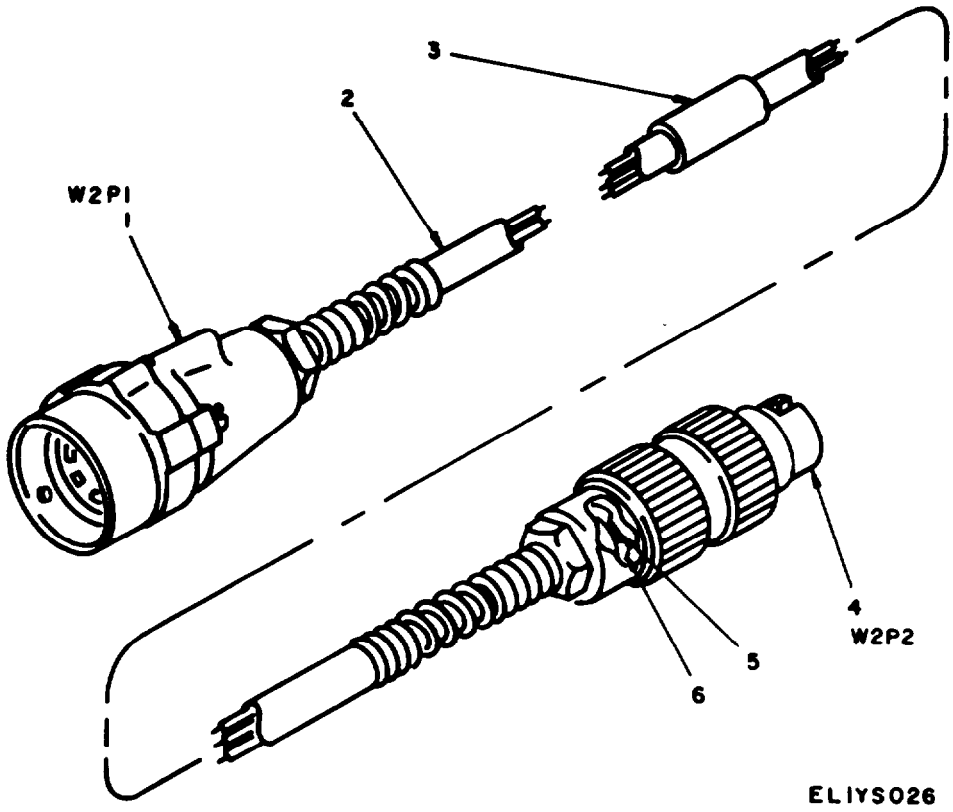

Figure B-7. W2 cable assembly, special purpose.

SECTION IV REPAIR PARTS LIST (CONTINUED)

(1) ILLUSTRATION (A) FIG NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4 PART NUMBER	(5) FSCM	(6) DESCRIPTION USABLE ON CODE	(7) NIT OF MEAS	(8) QTY INC IN UNIT
						GROUP: 05 W2 CABLE ASSEMBLY SPECIAL PURPOSE		
B-7	1	PADZZ	5935-00-283-2950	U77U	81349	CONNECTOR, PLUG. ELECTRICAL	EA	1
B-7	2	XBDZZ		C003LGF3-22SSJ0250	81349	CABLE, SPECIAL PURPOSE, ELECTRICAL	EA	1
B-7	3	XDDZZ		SMC867219-1	80063	BAND, IDENTIFICATION	EA	1
B-7	4	PADZZ		U228U	81349	CONNECTOR, PLUG, ELECTRICAL	EA	1
B-7	5	PADZZ		SMB 867227	80063	GASKET, CONNECTOR	EA	1
B-7	6	PADZZ		SMB 867224	80063	CONTACT, SHIELD	EA	1

SECTION IV NATIONAL STOCK NUMBER AND PART NUMBER INDEX

STOCK NUMBER	FIG. No.	ITEM NO.
5305-00-054-5652	B-2	5
5305-00-059-8451	B-2	1
5305-00-059-8453	B-2	34
5305-00-059-8460	B-2	18
5305-00-059-8478	B-1	3
5305-00-253-5617	B-2	36
5310-00-043-1754	B-2	19
5310-00-261-7153	B-1	9
5310-00-595-6211	B-2	10
5310-00-722-5998	B-2	20
5310-00-734-5661	B-2	11
5310-00-880--5978	B-2	4
5310-00-934-9748	B-2	12
5325-00-286-6047	B-2	16
5330-00-248-3840	B-1	16
5355-00-616-9604	B-2	4
5355-00-965-4891	B-2	3
5905-00-111-6068	B-3	13
5905-00-356-6585	B-3	1
5905-00-409-7307	B-3	14
5905-00-4618995	B-3	3
5905-00-581-6892	B-3	21
5905-00-773-0881	B-3	5
5905-00-839-4375	B-3	5
5910-00-050-5252	B-3	8
5910-00-936-1331	B-3	6
5910-00-936-4765	B-3	11
5910-00-996-0532	B-3	16
5930-00-823-0482	B-3	2
5935-00-192-4789	B-3	2
5935-00-293-2950	B-3	1
5935-00-283-2950	B-3	1
5935-00-333-9112	B-3	2
5940-00-113-9828	B-3	1
5940-00-577-3807	B-3	1
5961-00-793-4071	B-3	7

PART NUMBER	FSCM	FIG. NO.	ITEM NO.
AN936A716S	88044		
CK 14BX223X	81349	B-3	8
C003LGF3-22SSJ0250	81349	B-6	2
C003LGF3-22SSJ0250	81349	B-7	2
MS 15795-803	96906	B-2	10
MS 15795-805	96906	B-2	20
MS 15795-807	96906	B-1	4
MS21318-23	96906	B-2	36
MS 25036-145	96906	B-4	1
MS25036-148	96906	B-5	1
MS 25082-8	96906	B-1	11
MS 29513-014	96906	B-1	16
MS 35216-16	96906	B-2	1
MS 35216-17	96906	B-2	5
MS 35216-18	96906	B-2	34
MS 35216-25	96906	B-2	18
MS 35216-40	96906	B-1	8
MS 35216-44	96906	B-1	3
MS 35337-78	96906	B-2	11
MS 35337-79	96906	B-2	19
MS35337-80	96906	B-1	7
MS 35489-1	96906	B-2	16
MS 35649-244	96906	B-2	12
MS 91528-1C2B	96906	B-2	3
MS 91528-1P2B	96906	B-2	4
M39003-01-2002	81349	B-3	6
M39003-01-2031	981349	B-3	16
M39003-01-2098	81349	B-3	11
M5423-09-02	81349	B-2	2
M541-12-1	81349	B-2	27
NAS 152308B	80205	B-1	6
RCR07G391JM	81349	B-6	5
RNR60C1001FM	81349	B-3	1
RNR60C1100FM	81349	B-3	3
RNR60C1103FM	81349	B-3	14
RNR60C1501FM	81349	B-3	9
RNR60C1821FM	81349	B-3	10
RNR60C2003FM	81349	B-3	12
RNR60C2211FM	81349	B-3	4
RNR60C3012FM	81349	B-3	13
RNR60C5620C	81349	B-3	5
RV4NAYSD252C	81349	B-2	26
SMA 8767226	80063	B-3	15
SMB 110075	80063	B-2	29
SMB 867176	80063	B-1	18
SMB 867177	80063	B-1	19
SMB 867178	80063	B-1	10
SMB 867184	80063	B-1	25
SMB 867199	80063	B-2	28
SMB 867202	80063	B-2	32
SMB 867211	80063	B-2	37
SMB 867213	80063	B-2	38
SMB 867221	80063	B-2	23
SMB 867223	80063	B-2	9
SMB 8677224	80063	B-1	22
SMB 867224	80063	B-6	7
SMB 867224	80063	B-7	6
SMB 867225	80063	B-2	14
SMB 867227	80063	B-1	21
SMB 867227	80063	B-6	6
SMB 867227	80063	B-7	5
SMC336792-5	80063	B-2	30
SMC867175	80063	B-1	17
SMC867179	80063	B-1	15
SMC867180	80063	B-1	14
SMC867182	80063	B-1	26
SMC867183	80063	B-1	27
SMC867193	80063	B-2	13
SMC867194	80063	B-2	31
SMC867195	80063	B-2	35
SMC867200	80063	B-2	b
SMC867201	80063	B-2	7
SMC867203	80063	B-2	33
SMC867209	80063	B-2	39
SMC867210-2	80063	B-2	40
SMC867215	80063	B-3	2
SMC867219-1	80063	B-7	3
SMC867219-2	80063	B-6	3
SMC867219-3	80063	B-1	20
SMC867219-4	80063	B-1	24
SMD867169	80063	B-1	5
SMD867170	80063	B-2	21
SMD867171	80063	B-1	1
SMD867172	80063	B-1	2
SMD867173	80063	B-1	12
SMD867174	80063	B-1	13
SMD867174	80063	B-1	29
SMD867181	80063	B-1	29
SMD867192	80063	B-2	0
SMD867196	80063	B-2	22
SMD867204	80063	B-2	26
SMD867214	80063	B-3	I7
SMD867220	80063	B-2	17
U228U	81349	B-6	4
U228U	81349	B-7	6
U229U	81349	B-1	23
U77U	81349	B-6	1
U77U	81349	B-7	1
1N270	81349	B-3	7
5-11181-787	76854	B-2	25
5-24331-788	76854	B-2	I5

APPENDIX C

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

C-l. General

This appendix provides a summary of the maintenance operations for the SG-886A-T/UR. It authorizes cate gories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function This appendix may be used as an aid in planning maintenence operations.

C-2. Maintenance Function.

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean, preserve, drain, paint or to replenish fuel/lubricants/hydraulic fluids or compressed air supplies.

d. Adjust. Maintain within prescribed limits by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specified variable elements of an item to about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipment used in precision measurement Consists of the comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment/system.

h. Replace. The act of substituting a serviceable like-type part, subassembly, model (component or assembly) for an unserviceable counterpart

i. Repair. The application of maintenance services (inspect, test, service, adjust, align calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correct ing specific damage, fault, malfunction, or failure in a part, subassembly, modulel/componenet/assembly, assembly, end item or system This function does not include the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes,

j. Ouerhaul That periodic maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (e.g., DMWR) in appro priate technical publications. Overhaul is normally the highest degree of maintenence performed by the Army. Overhaul does not normally return an item to like-new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipment/components.

C-3. Column Entries

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is selely for the purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "worktime" figure in the appropriate subcolumn (s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "worktime" figures will be shown for each category. The number of task-hours specified by the

"worktime" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditiona This time includes preparation time, troubleshooting time and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart Subcolumns of column 4 are as follows

C–Orerator/Crew
O–Organizational
F–Direct Support
H–General Support
D–Depot

e. Column5, Tools and Equipment. Column 5 Specified by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

C-4. Tool and Test Equipment Requirements (Table 1)

a. Tool or Teat Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equip ment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated the tool or testequipment

c. Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functiona

d. National/NAT0 Stock Number.. This column lists the National/NATO stock number of the specific tool or test equipment

e. Tool Number. This column lists the manu facturers part numbers of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parenthese.

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	0	F	H	D	(5) TOOLS AND EQUIPMENT
00	GENERATOR, INTERFERENCE SG-886A-T/UR	Inspect		0.5				
		Test				1.0		1 thru 7
		Test		0.5				3,7
		Adjudt		0.5				3,7
		Replace[1]	0.3					
		Repair				2.0		1 thru 7
		Overhaul					10.0	1 thru 7
01	A1 COVER, ASSEMBLY, CASE	Inspect		0.5				
		Adjust		0.5				7
		Replace		1.0				7
		Repair					1.0	7
02	A2 CASE WELDMENT ASSEMBLY	Inspect		0.5				
		Replace				1.0		7
		Repair					2.0	7
03	A3 PANEL ASSEMBLY	Inspect		0.5				
		Test		0.5				3
		Replace				2.0		3,7
		Repair					3.0	1 thru 7
		Repair[2]		1.0				
0301	A3A1 PCB ASSEMBLY	Inspect				0.5		
		Test				1.0		3,7
		Replace				1.0		3,7
		Repair					2.0	1 thru 7
0302	A3W1 HARNESS (WIRED IN)	Inspect		0.5				
		Test		0.5				3,7
		Replace						3,7
		Replace				1.0	2.0	3,7
0303	A3W2 HARNESS ASSEMBLY (WIRED IN)	Inspect						
		Test		0.5				3,7
		Replace		0.5		1.0		3,7
		Repair					2.0	3,7
04	W1 CABLE ASSEMBLY, SPECIAL PURPOSE	Inspect		0.5				
		Test		0.5				3,7
		Replace	0.3					
		Repair					2.0	3,7
05	W2 CABLE ASSEMBLY, SPECIAL PURPOSE			0.5				
				0.5				3,7
			0.3					
							2.0	3,7

(1) Operator/crewman replaces batteries and special purpose cables.
(2) Replacement of knobs, voltmeter, telephone jack, hardware as indicated in repair parts list.

TABLE 1 TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR
GENERATOR, INTERFERENCE SG-886A-T/UR

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	H,D	GENERATOR, SIGNAL AN/URM-103	6625-00-868-8353	
2	H,D	GENERATOR, SIGNAL AN/URM-25F	6625-00-643-1548	
3	O,H,D	MULTIMETER AN/URM-105	6625-00-581-2030	
4	H,D	OSCILLOSPCOE AN/USM-117	6625-00-787-0304	
5	H,D	VOLTMETER, ELECTRONIC ME-26D/U	6625-00-360-2493	
6	H,D	VOLTMETER, ELETRONIC ME-30/U	6625-00-643-1670	
7	O,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-101/G	5180-00-064-5178	

APPENDIX D
COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

Section I. INTRODUCTION

B-1. Scope

This appendix lists components of end item and basic issue items for the SG-886A-T/UR to help you inventory items required for safe and efficient operation.

B-2. General

The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. Section II. Components of End Item. This listing in for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or ship ment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. Section III. Basic Issue Items. (Not applicable.)

B-3. Explanation of Columns

The following provides an explanation of columns found in the tabular listings:

a. Column (1) - Item Number (Item No.). This column indicates the number of the item shown in the illustration above the componenta of end item listings(s).

b. Column (2) - National Stock Number. Indicates the Natonal stock number assigned to the item and will be used for requisitioning purposes

c. Column (3) - Description. Indicates the National item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.

d. Column (4) - Unit of Measure (U/M). Indicates- the measure used in performing the actual operational/maintenance function. The measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).

a. Column (5) - Quantity required (Qty rqr). Indicates the quantity of the item authorized to be used with/on the equipment.

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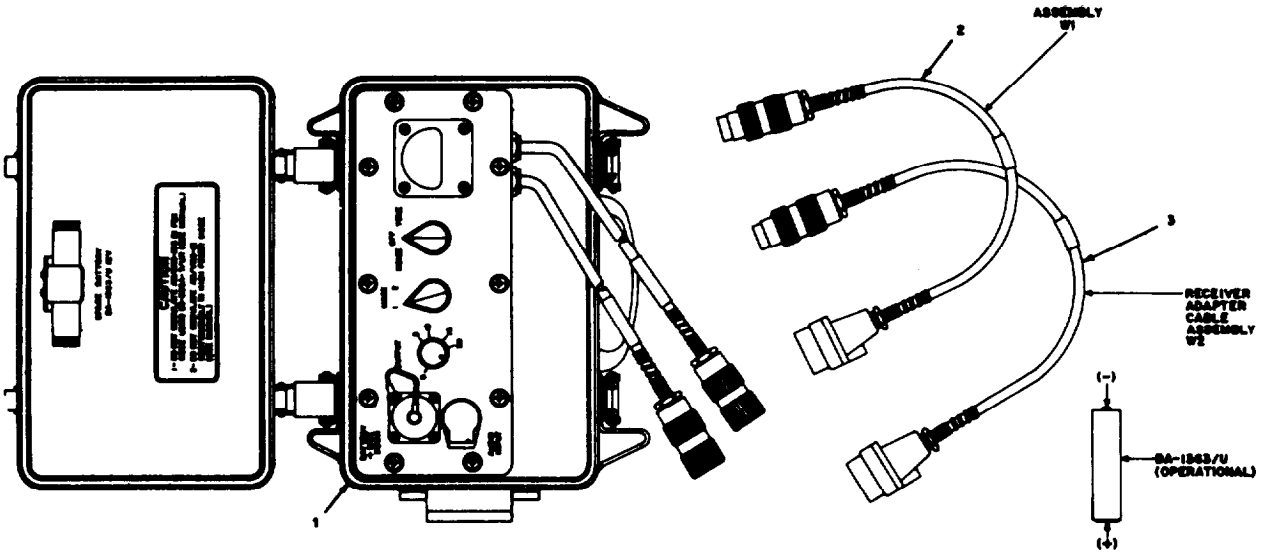

SECTION II COMPONENTS OF END ITEM

(1) ITEM No.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION (FSCM) AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY REQD
1	6940-00-474-9495	GENERATOR, INTERFERENCE (80058) SG-886A-T/UR		EA	1
2	5995-01-016-8388	CABLE ASSEMBLY, SPECIAL PURPOSE (STOWED IN CASE) (80063) SM-D-867171		EA	1
3	5995-01-016-8241	CABLE ASSEMBLY, SPECIAL PURPOSE (STOWED IN CASE) (80063) SM-D-867172		EA	1

APPENDIX E
ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

E-1. scope

This appendix lists additional items you are authorized for the support of the Generator, Interference SG-886A-T/UR.

E-2. General

This list identifies items that do not have to accompany the SG-886A-T/UR and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, JTA, AR, or SB.

E-3. Explanation of Listing

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional iems you require to support this equipment. The items are listed in alphabetical sequence by item name under the type document (i.e., CTA, MTOE, TDA, or JTA) which authorizes the item(s) to you.

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SECTION II ADDITIONAL LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION PART NUMBER AND FSCM	USABLE CODE	(3) UNIT OF MEAS	(4) QTY AUTH
	SB 11-6 AUTHORIZED ITEM			
6135-00-557-8309	BATTERY BA1363/U (80058)		EA	2

APPENDIX F
EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

F-1. Scope

This appendix lists expendable supplies and materials you will need to operate and maintain the SG-886A-T/UR. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

F-2. Explanation of Columns

a. Column 1 - Item number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning compound, item 5, App. D").

b. Column 2 - Level. This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew

c. Column 3 -National Stock Number. This is the National stock number assigned to the item; use it to request or requisition the item.

d. Column 4 - Description Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses following by a part number.

e. Column 5 - Unit of Measure (UIM). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

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(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION PART NO. AND FSCM	(5) UNIT OF MEAS
1	C	6850-00-105-3084	CLEANING COMPOUND TRICHLOROTRIFLUOROETHANE FREON TYPE TF	PT
2	C	8305-00-222-2423	CLOTH, COTTON (CHEESECLOTH) 20 YARD BOLT CCC-C-440E (81348)	YD
3	C	8020-00-205-6511	BRUSH, SOFT BRISTLE 801457	EA

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

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ARNG & USAR: None.
For explanation of abbreviation used, see AR310-50.

Units org under fol TOE: 1 ea.
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RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL MANUALS

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Stateside, N.J. 07703

DATE 10 July 1975

PUBLICATION NUMBER	DATE	TITLE
TM 11-5840-340-12	23 Jan 74	Radar Set AN/MPQ-76

BE EXACT. . .PIN-POINT WHERE IT IS

PAGE NO.	PARAGRAPH	FIGURE NO.	TABLE NO.	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
2-25	2-28			Recommend that the installation antenna alignment procedure be changed throughout to specify a 2° IFF antenna lag rather than 1°. REASON: Experience has shown that with only a 1° lag, the antenna servo system is too sensitive to wind gusting in excess of [illegible] knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 2° without degradation of operation
3-10	3-3		3-1	Item 5, Function column. Change "2 db" to "3db." REASON: The adjustment procedure for the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to light the TRANS POWER FAULT indicator.
5-6	5-8			Add new step f.1 to read, "Replace cover plate removed in step e.1, above." REASON: To replace the cover plate.
		F03		Zone C 3. On J1-2, change "+24 VDC to "+5 VDC." REASON: This is the output line of the 5 VDC power supply. + 24 VDC is the input voltage.

TYPED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
SSG I. M. DeSpiritof 999-1776

SIGN HERE: SSG I. M. DeSpiritof

DA FORM 1 AUG 74 2028-2 (TEST)

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HISA 1686-75

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