FIELD MANUAL
No. 11-31V1/2

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 21 October 1981

Soldier's Manual

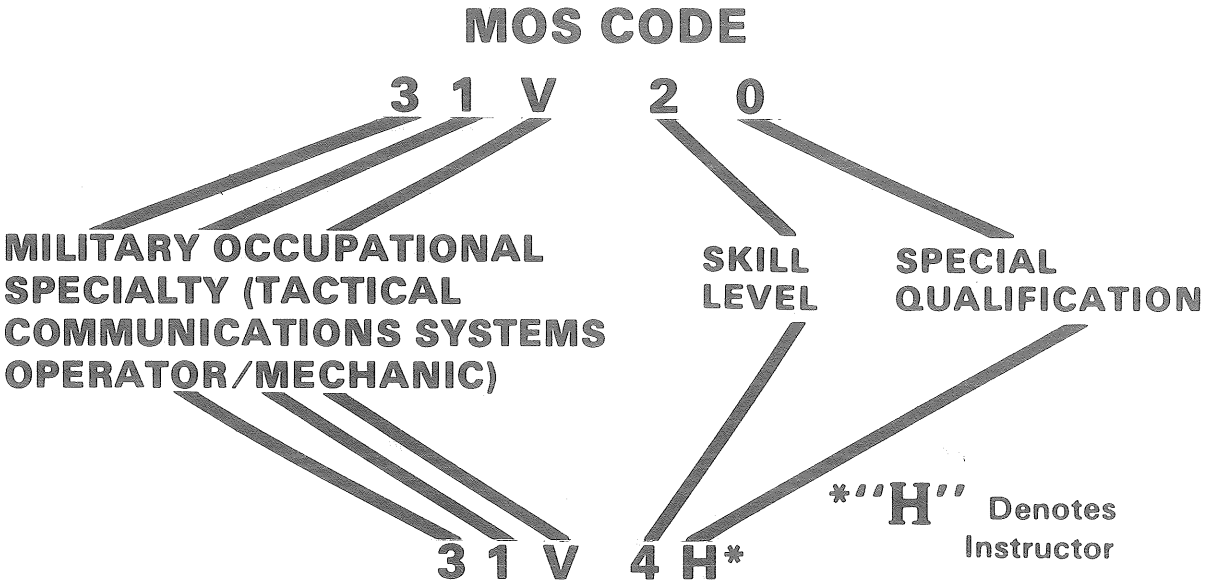
MOS 31V, TACTICAL COMMUNICATIONS SYSTEMS OPERATOR/MECHANIC SKILL LEVELS 1 AND 2

Table of Contents

*This publication supersedes FM 11-31V1/2, 19 July 1979.

SKILL LEVELS

The skill level is a way of showing your level of experience and knowledge in your MOS. The Army uses five skill levels and each is identified by the fourth character of the MOS code. 1 indicates MOS 31V Skill Level 1 (E1 through E4). 2 indicates MOS 31V Skill Level 2 (E5).



Skill Level 1 is the first step in your MOS; this is where you start as a helper. You will be able to do the simple tasks on your own, the hard tasks you will do under close supervision of your NCO.

Skill Level 2 is the second step in your MOS; the tasks you did in Skill Level 1 should be easy now. Only the harder tasks will be performed under the general supervision of your NCO.

The following paragraphs list the duties of MOS 31V at Skill Levels 1 and 2.

Skill Level 1 (AR 611-201):

1. Installs, operates, and performs operator and organizational level maintenance on radio and wire communications systems equipment.

2. Positions, secures, and interconnects communications security and associated tactical communications system equipment.

3. Installs power generators.

4. Tests and aligns radio and associated equipment.

5. Recognizes electronic countermeasures and applies electronic counter-countermeasures.

6. Performs preventive maintenance on communications and associated power equipment

7. Troubleshoots equipment using maintenance manuals, cabling, and schematic diagrams, tools, and test and measurement equipment.

8. Performs minor repairs and replacement of parts and components.

9. Prepares and maintains equipment maintenance records.

10. Maintains prescribed load list.

Skill Level 2 (AR 611-201):

1. Performs the duties of Tactical Communications Systems Operator/ Mechanic 31V10.

2. Provides technical guidance and supervision to Tactical Communications Systems Operator/Mechanic 31V10.

3. Maintains equipment records.

4. Prepares and maintains records involved with prescribed load list.

CONTENTS OF YOUR SOLDIER'S MANUAL

In order to use your soldier's manual you will have to know some of the terms used in it. These terms are listed below:

Critical Skill Level Task: A task which you must perform to do your job.

Common Task: A task common to every soldier in the Army at a given skill level, regardless of MOS. These tasks are contained in FM 21-2, The Soldier's Manual of Common Tasks.

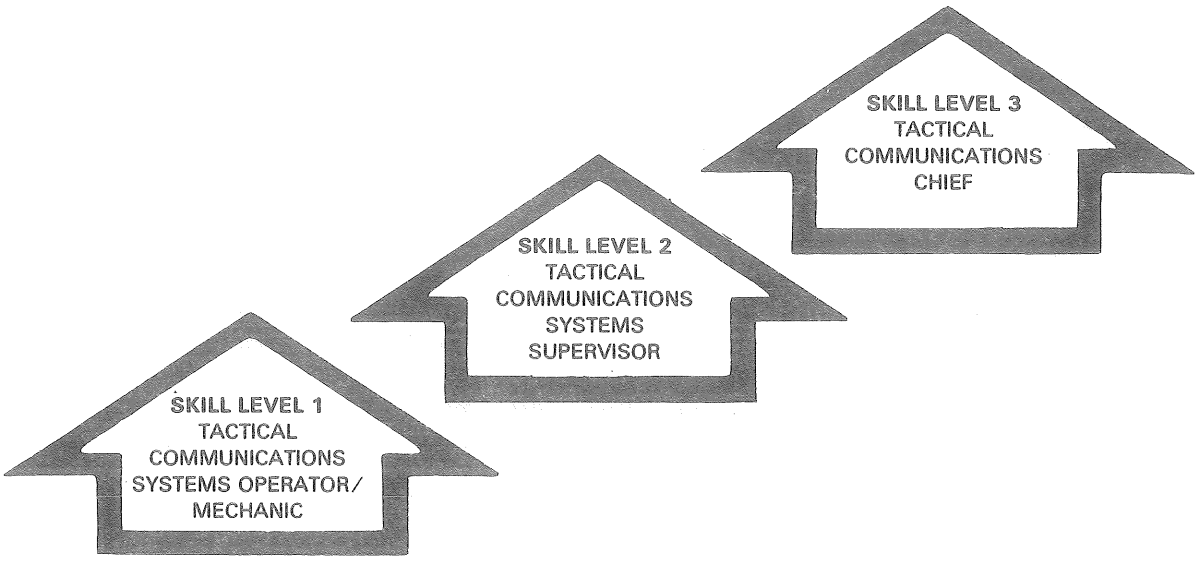
Shared Task: A task which is not specifically designed for your branch of service (that is, the task is not a Signal designed task) but which you are still responsible to do as part of your MOS. Not all soldiers are required to do these tasks as they are not common tasks. These tasks are "shared" among the different branches of service. For Signal

soldiers, these tasks begin with a number other than 113. For example, task number 101-530-3008, Prepare DA Form 2404 (Equipment and Maintenance Worksheet) is a task many signal soldiers must do, but the task is not written by the Signal Center.

GO-NO-GO: These terms are used in testing. If you are graded GO, you have passed; a NO-GO means you have failed.

Job: The tasks performed by you in order to do your job.

Duty Position: This is a job in an MOS.



The manual lists and describes the critical tasks for Skill Level 1 and Skill Level 2 of your MOS. The following breakdown shows the grades for the skill levels in your manual:

SKILL LEVELS	GRADES
1	E1-E4
2	E5

At the beginning of chapter 2 Skill Level Tasks in your soldier's manual, there is a list of critical tasks and their titles. These tasks are the most important parts of your job.

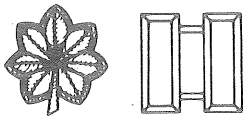
Each task is split into these parts:

TASK:	A statement of what you must be able to do, for example: Evaluate the Operation of Radio Set, AN/PRC-25/77
CONDITIONS:	The situation in which you must be able to do the task; e.g., a tactical or a nontactical situation under all weather conditions. It also lists the equipment and references that will be used.
STANDARDS:	A statement of how well or how accurately you must do the task.
PERFORMANCE MEASURES:	An outline of what you must know and do to complete the task.
REFERENCES:	The written material needed to complete the task. These sources are ARs, FMs, TMs, etc. If you want to find out more about the performance measure, you should go to that reference.

YOUR MANUAL AND YOUR LEADERS

You are not the only one who will use this manual. Who else uses it?

COMMANDER
Plans your training, makes available training time and insures availability of training resources.



COMMAND SERGEANT MAJOR
Participates in the planing of your training.

FIRST SERGEANT
Participates in the planning of your training.

PLATOON SERGEANT
Participates in your actual training.

MAINTENANCE SUPERVISOR
Participates in your actual training.

Your training managers and trainers have a guide book, in addition to the soldier's manual, which lists the critical tasks you are required to perform and the methods of training that can help you learn those tasks. It is called the Trainer's Guide. The trainer's guide provides your training managers and trainers with a means to help you with a training program. The soldier's manual and the trainer's guide are also designed to assist them in evaluating your skills. Your ability to do your job will be based on how well you do the tasks listed in your soldier's manual.

HOW TO USE YOUR SOLDIER'S MANUAL

You should begin to use your soldier's manual by studying, practicing, and mastering the tasks listed for Skill Level 1. You learned most of them in AIT. You learned others while working on the job. It really doesn't matter where or when you first learned a task. The important question is: how well can you do it now?

If you do not understand a certain task, ask your supervisor to explain it and to assist you in getting the right study aids and references. The senior NCOs and officers in your unit use the soldier's manual to help them plan your training and to evaluate your skills. Ask them for advice and help. They want to help you.

When you are sure that you have mastered all the Skill Level 1 tasks, proceed to the Skill Level 2 tasks. Continue to study and practice until you have mastered all the tasks for both Skill Levels 1 and 2.

Once you have been promoted to E5, you should immediately begin to master the Skill Level 3 tasks.

Two points to remember about the tasks in your soldier's manual:

To qualify for promotion, you must master the tasks for the grade in which you are now serving.

As you progress to higher skill levels, you remain responsible for all the tasks listed for the lower skill levels.

ENLISTED PERSONNEL MANAGEMENT SYSTEM (EPMS)

The Army has adopted the EPMS to give you a better opportunity for attaining and maintaining skills through improved training programs. If you want to be successful, you must perform your assigned duties efficiently, take advantage of opportunities for training and promotion, and establish personal career goals.

One of the aims of EPMS is to provide a logical path of career development for soldiers. It also establishes a system of career-long training that prepares a soldier to take on duties at the next higher grade. The training consists of AIT for Skill Level 1, and periods of on-the-job experience (OJE) or formal training under the Noncommissioned Officer Education System (NCOES) for Skill Levels 2 through 5.

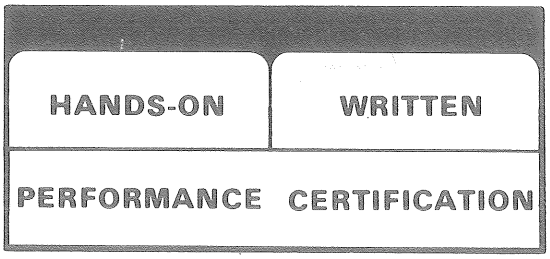
EPMS provides you with a fair and reasonable promotion system. Under EPMS, you must receive a passing score on your skill qualification test (SQT) before you can be considered for promotion. However, a passing score on your SQT does not guarantee promotion. You must be

recommended by your commander and satisfy all administrative requirements (e.g., time in grade, time in service, etc.). Your best recommendation is the manner in which you do your job and your personal behavior and efforts.

SKILL QUALIFICATION TEST (SQT)

The SQT is a performance-oriented test of your ability to do your job. The SQT will be composed of scorable units or subtests. The SQT score is based upon the number of scorable units you pass, e.g., if a scorable unit consists of four questions, you may be required to answer three correctly to get a GO or passing score for the unit. You will be informed of the standard for each scorable unit in your SQT Notice.

The SQT may be composed of three major components:



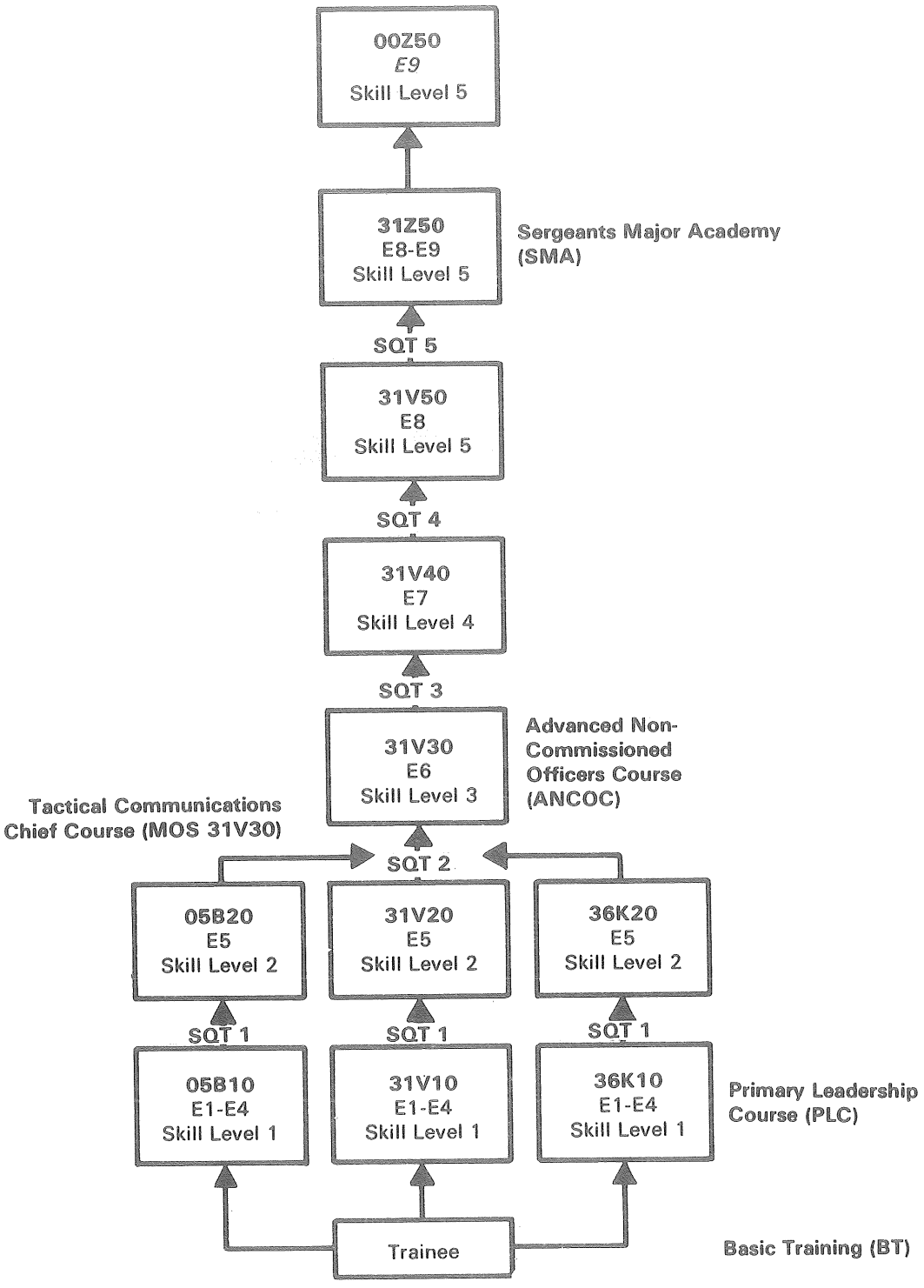
The Hands-On Component (HOC) is designed to test your ability to perform certain critical tasks using real equipment or training aids.

The Skill Component (SC) will be groups of multiple choice questions designed to test your ability to perform certain critical tasks.

The Job Site Component (JSC) will be an evaluation, made by your training manager, trainer, or supervisor, of your ability to perform certain critical tasks. The type tasks to be placed in the JSC are those that require physical skills and a great amount of time to perform, or those which cannot be tested by the HOC or SC.

Some SQTs may not have three components because they will be evaluating a low-density MOS, or there is not enough equipment, or not enough MOS holders at one location. This may change from year to year and you will be informed of such changes in your SQT Notice.

SKILL AND TRAINING PROGRESSION FOR MOS 31V



After the SQT has been taken and scored, you will receive a report showing your score and telling you which scorable units received a NO-GO during your test.

The SQT score is used to verify your current skill level. Skill Level 1 MOS holders will take SQT-1 which will be composed of Skill Level 1 tasks. Skill Level 2 MOS holders will take SQT-2 which will consist of Skill Level 1 and 2 tasks.

Approximately 60 to 90 days before you are tested, you will receive an SQT Notice. This notice will list the tasks to be tested in each component of the SQT, and where you can find the tasks in the soldier's manual. It will give you examples of the type questions that will appear in the skill component and the performance tests that will appear in the hands-on and job site components.

> IF YOU DO NOT RECEIVE YOUR SQT NOTICE AT LEAST 60 DAYS PRIOR TO THE TEST DATE, CONTACT YOUR SUPERVISOR OR COMMANDER.

ENLISTED EVALUATION SYSTEM

This system evaluates your ability to do your job, your attitude toward the military service in general, and your potential for increased responsibility and eventual promotion. As a soldier in grades E1 through E4, you will be evaluated by means of the SQT and a local (unit) evaluation. The evaluation gives your commander an indication of your attitude toward your job, how well you work with others, and your possible leadership ability. Using the results of the SQT and the evaluation, your commander can compare you with all soldiers in the unit having the same MOS, skill level, and pay grade. Your commander can determine your eligibility for:

Keeping your present MOS and skill level.
Promotion to the next higher grade.
Reenlistment.
Schooling.

As a soldier in grade E5, you will be evaluated by means of the SQT and the Senior Enlisted Evaluation Report (SEER). The SEER is used by your supervisor to report information about your duty performance that cannot be measured by the SQT. Your attitude toward your job, how well you work with others as a team member, and your leadership ability are among the rated characteristics. If you get along with others and do your job satisfactorily, your SEERs will be good.

Your SQT and SEER scores will be important factors in your Army career. They will be used to compare you with all other soldiers in the Army having the same MOS, skill level, and pay grade. They will have a part in determining your eligibility for:

Keeping your present MOS and skill level.

Promotion to the next higher skill level.

Reclassification into a different MOS.

Staying in the Army.

Reenlistment.

Military and civilian schooling.

SUMMARY

Your soldier's manual provides the basic parts of mutual interest to you and the Army--the critical tasks that you must be able to perform to be a successful soldier. Follow the step-by-step procedure as outlined and you will open the door to advancement.

STEP ONE: Use your soldier's manual and keep it updated.

STEP TWO: Know your MOS, skill level, and duty position.

STEP THREE: Find the critical tasks that you must master and use the references listed for each task. Refer to appendix B for tips in planning your training program.

STEP FOUR: Study and practice the critical tasks until you are sure you have mastered them. Ask the officers and NCOs in your unit for help.

STEP FIVE: Once you have mastered the critical tasks for your present MOS, skill level, and duty position, prepare for your SQT by studying and practicing the tasks listed in the SQT Notice.

STEP SIX: When you are promoted, obtain your next higher soldier's manual from your training manager.

If you follow the above steps, you will be able to progress through a rewarding Army career. The Army wants and needs well-trained soldiers who desire to advance through the ranks. This manual and the willing assistance of your NCOs are tools you can use to your advantage.

You are encouraged to submit recommendations or comments to improve this manual. Key your comments to the specific page, paragraph, and line of text for which the change is recommended. Provide reasons for each comment to insure understanding and complete evaluation. Use DA Form 2028 (Recommended Changes to Publications and Blank Forms) if available. However, if DA Form 2028 is not available, a letter will be acceptable. Address form or letter to:

Commander
US Army Signal Center and Fort Gordon
ATTN: ATZH-TDA
Fort Gordon, Georgia 30905

Chapter 2
SKILL LEVEL TASKS

There are many tasks or jobs which you must do in your MOS. This chapter deals with those technical tasks and certain nontechnical tasks which have been identified as critical to Tactical Communications Systems Operator/Mechanic. Skill Level 1 and Skill Level 2 tasks are included. It is your duty to master all the tasks for Skill Level 1. When you feel that you can perform these tasks, you should start on the tasks for Skill Level 2.

TASK LIST

SKILL LEVEL 1

TASK

113-571-1003

Establish, Enter, or Leave a Radio Net

CONDITIONS

This task is performed under all weather conditions in a field or a garrison location. Your team chief will provide you with a CEOI, ACP 124(C), ACP 125(D), and ACP 126(B), as required. Supervision and assistance will be available.

STANDARDS

Task standard has been met when you have established, entered, or left a radio net in accordance with performance measures 1 through 3.

PERFORMANCE MEASURES

1. Establish a radio net. (Refer to ACP 124(C), chap 1, sec I, para 101 thru 110, pp 1-1 thru 1-5, and ACP 125(D), chap 3, para 301 thru 321, pp 3-1 thru 3-25; and ACP 126(B), chap 2, sec 1, para 201 thru 206, pp 2-1 thru 2-7.)

   a. Extract appropriate call signs, suffixes, and frequency from the CEOI.

   b. Prepare and operate the appropriate radio set.

   c. Identify the net structure and determine the answering sequence, and make the appropriate response to the individual stations (fig 1).

2. Enter a radio net. (Refer to ACP 124(C), chap 1, sec I, para 101 thru 110, pp 1-1 thru 1-5; ACP 125(D), chap 1, para 101 thru 110, pp 1-1 thru 1-6; and ACP 126(B), chap 2, sec 1, para 201 thru 205, pp 2-1 thru 2-6.)

   a. Upon direction of the NCS and when no confusion will result, call signs other than the net call sign may be abbreviated by omitting their first two characters.
   b. Authenticate when challenged by the NCS.
   c. If you fail to answer your call sign in sequence, wait for the NCS to call your station individually.

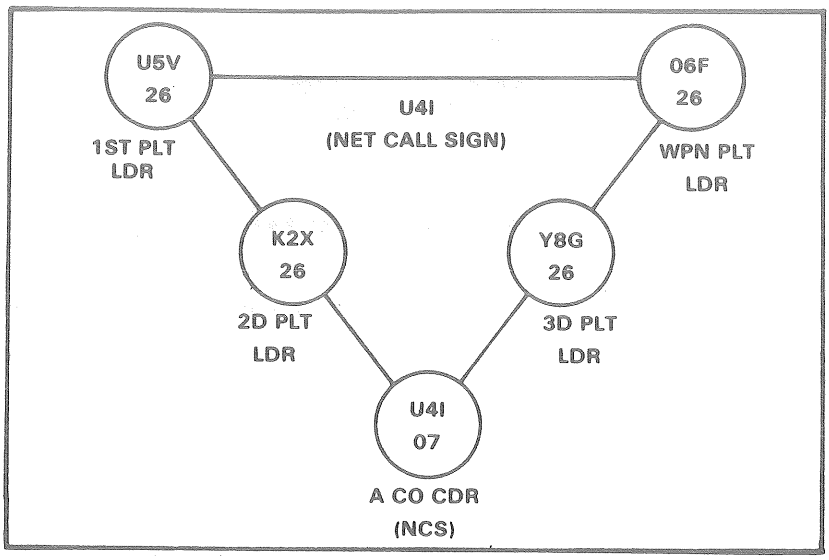


Figure 1. Simple radio net diagram.

d. If you are unable to communicate with the NCS due to faulty equipment, wrong codes, unsuitable location, etc., you must render a report to the NCS as soon as possible by means other than radio.

e. To enter a radio net in which you do not normally operate, you should refer to FM 11-05C1/2, task 113-573-8008, performance measure 4.

3. To leave a radio net. (Refer to ACP 124(C), chap 3, sec I thru III, para 301 thru 321, pp 3-1 thru 3-10.)

a. Request permission to leave the net from the NCS.

b. Inform the NCS of the reason you are leaving the net.

c. Authenticate upon direction of the NCS prior to leaving the net.

REFERENCES

ACP 124(C), Communication Instructions Radiotelegraph Procedures.

ACP 125(D), Communication Instructions Radiotelephone Procedures.

(C)ACP 126(B), Communication Instructions Teletypewriter (Teleprinter) Procedure.

TASK

113-573-6001

Recognize Electronic Countermeasures (ECM) and Implement Electronic Counter-Countermeasures (ECCM)

CONDITIONS

This task is performed in a tactical or nontactical situation under all weather conditions, and may be performed in an NBC environment. Given a requirement and--

1. Radio set.
2. Applicable operator's TM.
3. CEOI extract.

Supervision is normally available.

STANDARDS

Task standard has been met when you have determined that EW is directed at your station, and you have employed ECCM for continued operation according to performance measures 1 through 4 below.

PERFORMANCE MEASURES

1. Determine if ECM is being employed.
   a. Accidental or unintentional interference. (Refer to FM 32-30, chap 2, p 2-2.)
      (1) Friendly units on the same frequency.
      (2) Faulty components or circuits in the radio set.
      (3) Bad weather conditions.

(4) Poor insulators on high power electric lines.

(5) Nearby generator.

(6) Ignition noise from nearby vehicles.

b. Intentional interference. (Refer to FM 32-30, chap 6, p 6-1.)

(1) Meaconing - the process of altering navigational signals so that aircraft and ships do not arrive at the intended target or destination.

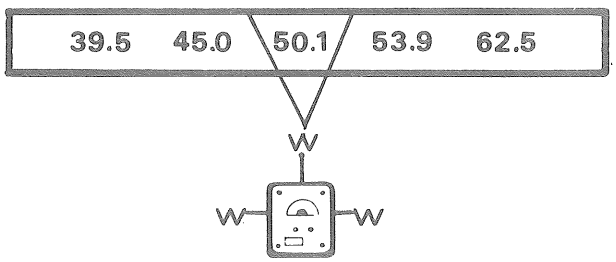
(2) Intrusion - the entrance of false information into friendly signal paths so that operators react to the enemy's tactical advantage.

(a) Imitative communications deception. (Refer to FM 32-30, chap 3, p 3-8.) Friendly communications networks are entered using call signs, radio procedures, and instructions to cause friendly forces to react for a tactical disadvantage.

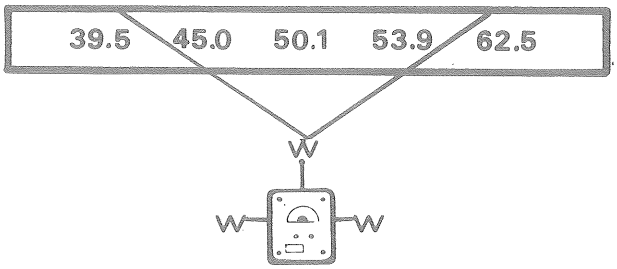
(b) Nuisance intrusion. (Refer to FM 32-30, chap 3, p 3-10.) Friendly communications networks are entered in a preplanned effort to disrupt or at least confuse both voice and hard copy transmissions. Plaintext messages, random texts resembling cipher, or combinations of texts and headings taken from previous transmissions are received.

(3) Jamming - a signal transmitted for the purpose of jamming electronic emitters. The signal may be varied in amplitude, frequency, or pulse by an almost unlimited variety of modulating signals. Jamming is subtle enough that operators will often not know they are being jammed.

(a) Spot jamming - deliberate interference on a specific frequency or channel.



(b) Barrage jamming - simultaneous jamming of all receivers within the bandwidth of the jammer.



(4) Interference - any electrical or electronic noise or clutter whose source cannot be quickly and positively identified.

2. Initiate operator's procedures. (Refer to FM 24-1, app H, p H-1; FM 32-30, chap 2, pp 2-2 and 2-3.)

a. Check the equipment ground to insure that the interference is not caused by a buildup of static electricity.

b. Disconnect the antenna.

(1) If the noise persists, the problem is within the radio receiver.

(2) If the noise diminishes, then the noise is being received.

c. Identify the type of noise.

(1) Generator set operating nearby, check the grounding and line connections.

(2) Atmospheric conditions.

(a) Lightning.

(b) Hot wind blowing in desert or arid areas.

(3) Vehicle engine (gasoline, not diesel) running nearby, check the generator/alternator connections and spark plug wire shielding.

d. Move the receiver, or re-orient the antenna, if possible, and listen or look for variations in the strength of the disturbance.

e. Tune the receiver a few kilohertz above or below the normal frequency. If such detuning causes the intensity of the interfering signal to drop sharply, it can be assumed that the interference is the result of spot jamming.

3. Identify jamming signals. (Refer to FM 32-30, chap 2, pp 2-3 thru 2-6.)

NOTE: The word description of the different types of jamming signals have been asterisked (*) if that particular type of jamming signal can be unintentional.

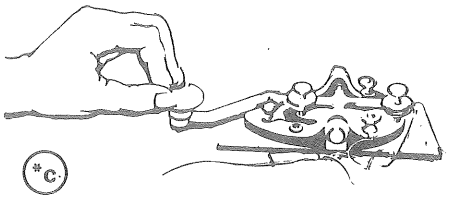
TYPES OF JAMMING SIGNALS

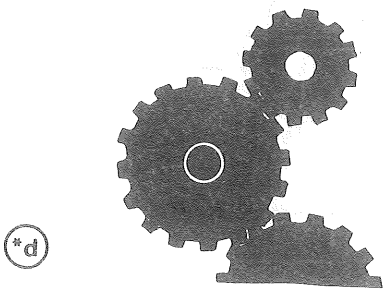
*a. Babbled voice. This signal is composed of mixed voices engaged in simultaneous conversations, preferably in the same language, with voice characteristics similar to those found in the victims communications net.

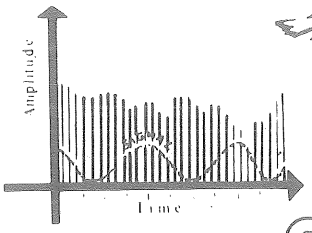
*b. Tone. This signal is a single frequency of constant tone. It is used to jam manually-keyed Morse code, voice, and radio carrier circuits.

*c. Random-keyed Morse code. This signal is produced by keying a Morse signal at random and mixing the keyed signal with spark noise. It is effective against voice and Morse code communications.

*d. Pulse. This signal resembles the monotonous rumble of rotating machinery. Pulse jamming signals produce a nuisance effect on voice communications circuits.







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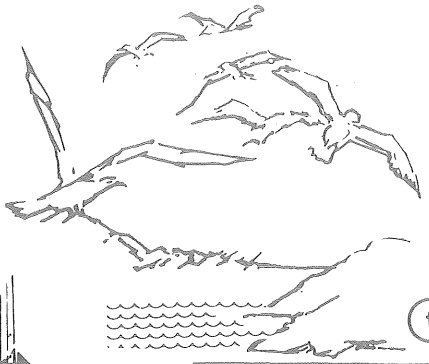

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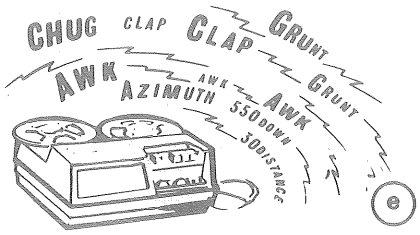

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e. Recorded sounds. Any audible sound, especially of a variable nature, that can be used to distract operators and disrupt communications circuits. Music, screams, applause, whistles, machinery noise, and laughter are examples.

f. Gulls. The gull signal is generated by a quick rise and slow fall of a variable audio frequency and is similiar to the cry of a sea gull. It produces a nuisance effect on voice circuits.

g. Random noise. This is synthetic radio noise which is rndom in amplitude and frequency. It is similar to the normal background noise and can be used to degrade all types of signals.

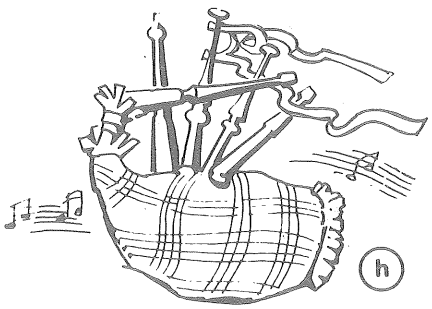
h. Stepped Tones. These are tones transmitted in increasing pitch, producing an audible effect similar to the sound of bagpipes. Stepped tones are normally used against single-channel AM and FM voice circuits.

i. Random Pulse. Pulses of varying amplitude, duration, and rate are generated and transmitted to disrupt teletypewriter, radar, and all types of data transmission systems.

j. Spark. This signal is easily produced and is one of the most effective for jamming. Bursts are of short duration and high intensity, repeated at a rapid rate. The time required for receiver circuitry and the human ear to recover after each spark burst makes this signal effective in disrupting all types of radio communications.

k. Wobbler. The wobbler signal is a single frequency varied by a low and slowly varying tone. The result is a howling sound which causes a nuisance effect on voice communications.

l. Rotary. The rotary signal is produced by a low-pitched, slowly varying audio frequency, resulting in grunting sounds. It is used against voice communications.



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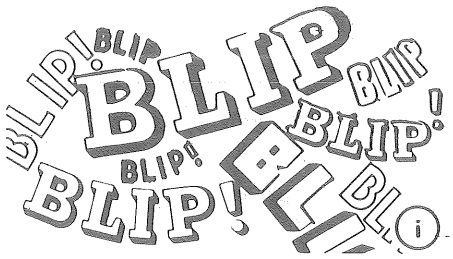

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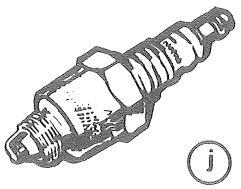

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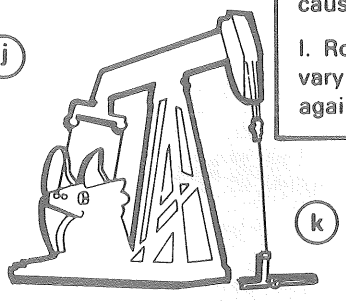

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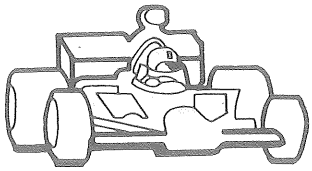

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4. Employ antijamming measures. (Refer to FM 24-1, app H, p H-1.)

NOTE: Antijamming measures have been designed to allow radio operators to work effectively through intentional interference. Regardless of the nature of the interfering signal, radio operators will not reveal in the clear the possibility or success of enemy jamming.

a. When jamming is suspected, the following antijamming measures will be taken:

(1) Remain calm.

(2) Continue to operate.

(3) Do not admit to being jammed and observe radio discipline at all times.

(4) Adjust the fine tuning gain (or volume) control, bandwidth (or volume) control, bandwidth selector, crystal filter, and other controls peculiar to the equipment being used.

(5) Increase transmitter power.

(6) Re-orient or resite the antenna; or change antenna polarization.

(7) Reduce transmission speed.

b. If antijamming measures are unsuccessful, the operator should contact the C-E officer and request a spare frequency.

c. Prepare and submit a report of the incident promptly, regardless of whether or not the radio operator is successful in working through the interference.

REFERENCES

FM 24-1 (HTF), Combat Communications.

FM 32-30, Electronic Warfare, Tactics of Defense.

TASK

113-573-7017

Prepare/Submit Operator's (M1J1) Report

CONDITIONS

This task is performed in a tactical or nontactical situation and may be performed in an NBC environment. Given a requirement to operate in a radio net, an interfering signal of undesignated origin, and --

1. KTC 1400(*) Numeral Cipher/Authentication System.
2. CEOI extract, including supplemental instructions.
3. Pencil and paper.
4. Homing Loop Antenna, AT-784/PRC (if available).
5. Compass or terrain oriented map (if available).
6. Watch or other method of determining time.

STANDARDS

Task standards have been met when the operator's initial M1J1 report has been prepared and submitted through the Net Control Station (NCS) by the best available means and the supplemental information assembled for the follow-up M1J1 Report.

PERFORMANCE MEASURES

1. Prepare the initial M1J1 report. (Refer to fig 1 and CEOI item 112.)

   NOTE 1: If the initial M1J1 report is submitted over non-secure radio, items 1, 2, 4, and 5 must be encrypted using the KTC-1400(*) Numeral Cipher/Authentication System.

NOTE 2: Write the report on a separate sheet of paper (not the CEOI).

a. Item 1 - Type report. (Encrypt) The numeral 22 will be used as the first item of the report. This informs the NCS that the message is a M1J1 report.

b. Item 2 - Frequency or channel affected. (Encrypt) The frequency only needs to be sent if it is different than the frequency being used for transmission of the M1J1 report.

c. Item 3 - Victim designation and call sign. Only the abbreviated call sign and suffix of the affected station, and then only if it is different than the reporting station.

d. Item 4 - Type emission or audio characteristic of M1J1. Encrypt appropriate number.)

1. Babbled voice.

2. Constant tone.

3. Random keyed Morse Code.

4. Pulse (monotonous rumble of rotating machinery).

5. Gulls (cry of sea gull).

6. Stepped tones (bagpipes).

7. Random noise.

8. Random pulse.

9. Spark.

10. Wobbler (howling).

11. Rotary (grunting sound).

12. Music, screams, random machinery noise.

13. Unidentified English voice, chatter, traffic.

14. Unidentified foreign voice, chatter, traffic.

15. Deliberate attempt by unauthorized station to enter net and/or pass traffic.

16. Meaconing (false navigational signals).

e. Item 5 - Coordinates of affected station. (Encrypt) The coordinates need to be included only if unknown to the Net Control Station.

2. Submit the initial M1J1 report.

a. Initial M1J1 reports are submitted to the NCS by the best available means as soon as the tactical and/or operating conditions permit.

b. Regardless of the reporting means chosen, every effort must be made to conceal the fact that a M1J1 report is being submitted.

c. The NCS will immediately report all M1J1 to the unit C-E Officer, Intelligence Officer, or Electronic Warfare Officer, as available.

3. Assemble additional information for the follow-up M1J1 report. (Refer to fig 2 and CEOI item 112.)

NOTE 1: A follow-up report is required within 12 hours of the initial report. In many instances, the operator who submitted the initial report will be the only source of information for the follow-up report.

NOTE 2: The item numbers listed below relate to the item numbers of the follow-up report. Do not confuse these items with the initial M1J1 report.

a. Item 4 - weather conditions. (Encrypt appropriate number.)

1. Clear.

2. Scattered clouds.

3. Overcast.

4. Heavy overcast.

5. Storm clouds.

6. Rain, drizzle, etc.

(PROTECTIVE MARKING)

KAV SUP Series INITIAL MIJI REPORT 112

Refer to the instructions on pages 7 and 8 before completing this report form or transmitting any MIJI information.

ITEM 1.-Type Report. _____

ITEM 2.-Frequency or channel affected. _____

ITEM 3.-Victim designation and call sign. _____

_____

ITEM 4.-Type emission or audio characteristic of MIJI. _____

_____

ITEM 5.-Coordinates of affected station. _____

_____

INITIAL MIJI REPORT 112

Figure 1. Operator's initial MIJI report.

(PROTECTIVE MARKING)

KAV SUP Series FOLOW-UP MIMI REPORT 112

For instructions regarding the preparation of this report refer to pages 8 thru 11 of this CEOI Item.

ITEM 1G.-Victim designation and call sign. _____

ITEM 1H.-Victim functions (Surveillance, GCI, Communications, etc.): _____

ITEM 1L.-Parent organization (when applicable): _____

_____

ITEM 2.-Type incident: _____

ITEM 3.-Operator's name and function: _____

ITEM 4.-Weather conditions: _____

ITEM 5.-Nomenclature of equipment affected: _____

_____

ITEM 6.-Scope photos/drawings or signal recordings: _____

_____

ITEM 7.-Date/time (Z)/Coordinates MIJI began: _____

_____

FOLLOW-UP MIJI REPORT 112

(PROTECTIVE MARKING)

KAV SUP Series FOLLOW-UP MIJI REPORT 112

ITEM 8.-Date/time (Z)/Coordinates MIJI most effective: _____

_____

ITEM 9.-Date/Time (Z)/Coordinates MIJI ended: _____

_____

ITEM 10.-Bearing(s) to MIJI source with corresponding time (Z) and victim coordinates: _____

ITEM 11.-Frequency or channel affected: _____

ITEM 12D.-Type emission or audio characteristics of MIJI: _____

_____

ITEM 4F.-SUMMARIZATION-Effects of MIJI, ECCM action, and any other comments: _____

_____

FOLLOW-UP MIJI REPORT 112

Figure 2. Organizational follow-up MIJI report.

b. Item 5 - Nomenclature of equipment affected. (Encrypt numerical portion of equipment designation.)

c. Item 6 - Scape photos/drawings or signal recordings. If made, drawings should include azimuth, heading, range mark values, and other orientation data, along with identification of scape used to obtain the photos/drawings. Signal (tape) recording containers should be annotated to show recording speed, date/time of incident, unit affected, etc.

> NOTE: For electrically transmitted reports, the operator will simply state that item 6 information is being "passed separately," or is "not applicable."

d. Item 7 - Date/time (ZULU)/coordinates M1J1 began. (Encrypt)

> NOTE: Grid zone letters need to be included in messages only when they are necessary to the positive location of the reporting element.

e. Item 8 - Date/time (ZULU)/coordinates M1J1 most effective. (Encrypt) Include as appropriate. If omitted, the report recipient may assume that the information is the same as item 7.

f. Item 9 - Date/time (ZULU)/coordinates M1J1 ended. (Encrypt) Include as appropriate. If omitted, the report recipient may conclude that the M1J1 is ongoing or that the affected station has changed to another frequency.

g. Item 10 - Bearing(s) to M1J1 source with corresponding time and victim coordinates.

> NOTE: Use AT-784/PRC with FM radio systems (if available). If a directional homing loop antenna is not available, hold the radio whip antenna horizontal and walk it in a circle around the radio. The loudest signal will be broadside to the antenna. Determine the azimuth using the compass or map.

REFERENCES

CEOI Supplemental Instructions.

TASK

113-587-1052

Install Radio Set AN/PRC-77 or AN/PRC-25 (AN/GRC-160 or AN/GRC-125 Assembled for Manpack Operation)

CONDITIONS

This task is performed in a tactical or nontactical situation, and may be performed in an NBC environment. Given a requirement and

1. Receiver-Transmitter RT-841/PRC-77 or RT-505/PRC-25.
2. Harness, ST-138/PRC-25.
3. Accessory Bag CW-503/PRC-25 w/handset and antennas.
4. Battery, BA-4386/U.

STANDARDS

Task standard has been met when the battery has been installed, receiver-transmitter mounted on the harness, and the handset and proper antenna connected within 10 minutes.

PERFORMANCE MEASURES

WARNINGS:

1: Do not permit manpack or vehicular whip antennas to come in contact with high power lines or other sources of electricity; injury or death could result. Observe the requirements of TB SIG 291 which illustrates the dangers of permitting an antenna to contact other sources of power.

2: Remove the Battery, BA-4386/U, from the battery box when the radio is not being used. The pressure relief valve must be installed and functional in the Battery Box, CY-2562/PRC-25, to help vent the hydrogen gas produced by the BA-4386/U. An explosive hazard exists when the battery is in use.

1. Install battery. (Refer to TM 11-5820-667-12, chap 2, para 2-2, pp 2-2 and 2-3; or TM 11-5820-398-12, chap 2, para 2-2, p 2-3.)

   a. Release the two clamps (fig 1) and remove the battery box.

   b. Inspect the radio connector; if it is damaged or loose, the receiver-transmitter must be repaired.

   c. Check the function of the pressure relief valve (fig 1) by blowing and then sucking through the valve. The valve must allow venting of the battery box.

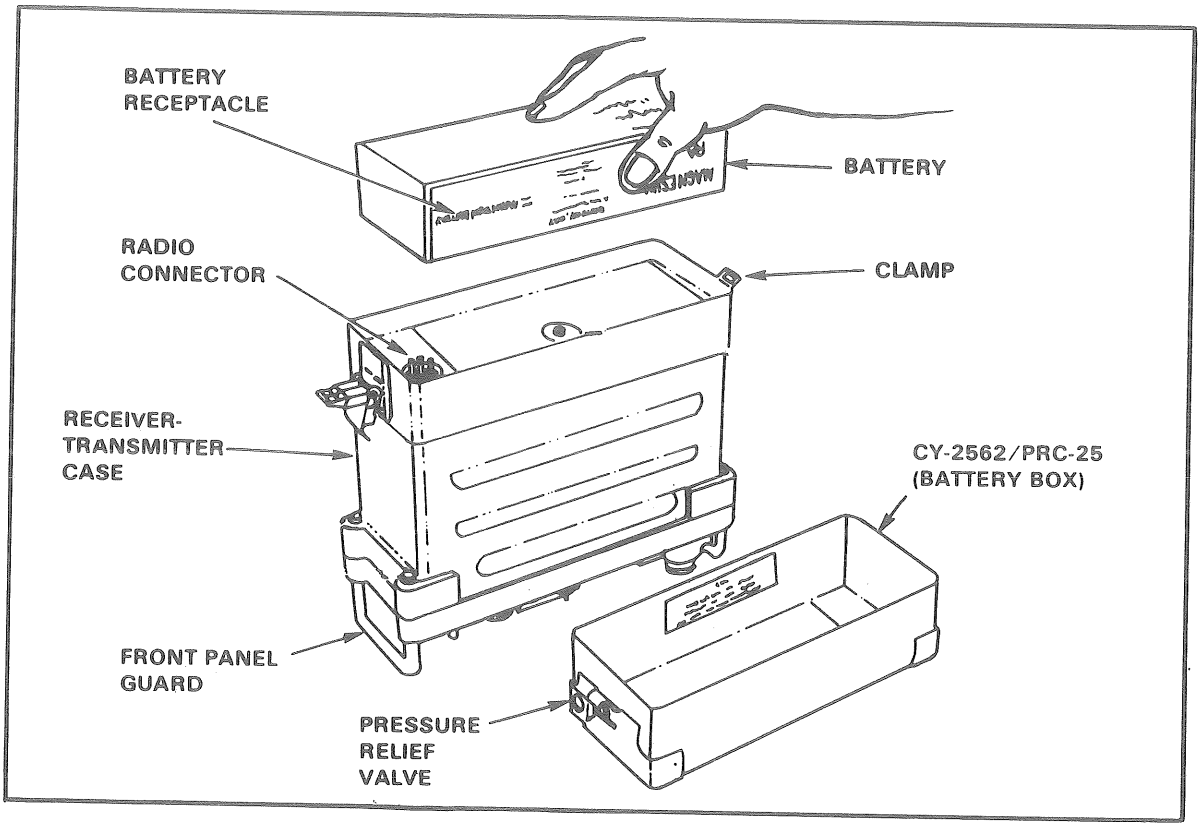


Figure 1. Installing battery in receiver-transmitter.

   d. Position the battery receptacle over the radio connector, taking care not to damage the battery receptacle.

   e. Replace the battery box and tighten the two clamps.

2. Assemble for manpack operation. (Refer to fig 2 and TM 11-5820-667-12, chap 2, para 2-5, pp 2-3 thru 2-5; or TM 11-5820-398-12, chap 2, para 2-5, pp 2-2 thru 2-4.)

   a. Mount the receiver-transmitter on the harness.

      (1) Place the harness on a level surface with the metal braces facing up.

      (2) Place the receiver-transmitter on the harness with the front panel towards the top and the battery box resting in the metal braces.

      (3) Strap the receiver-transmitter to the harness with the retaining straps.

      (4) Clip the accessory bag (CW-503/PRC-25) to the loops on the upper retaining strap.

   b. Install the correct antenna. (Refer to fig 2 and TM 11-5820-667-12, chap 2, para 2-6, p 2-5; or TM 11-5820-398-12, chap 2, para 2-6, p 2-5.)

      (1) Use the AT-892/PRC-25 (short antenna) when maximum range is not required or when operating in densely foliated terrain.

          NOTE: When folding the AT-892/PRC-25, always fold the blade section toward the concave side.

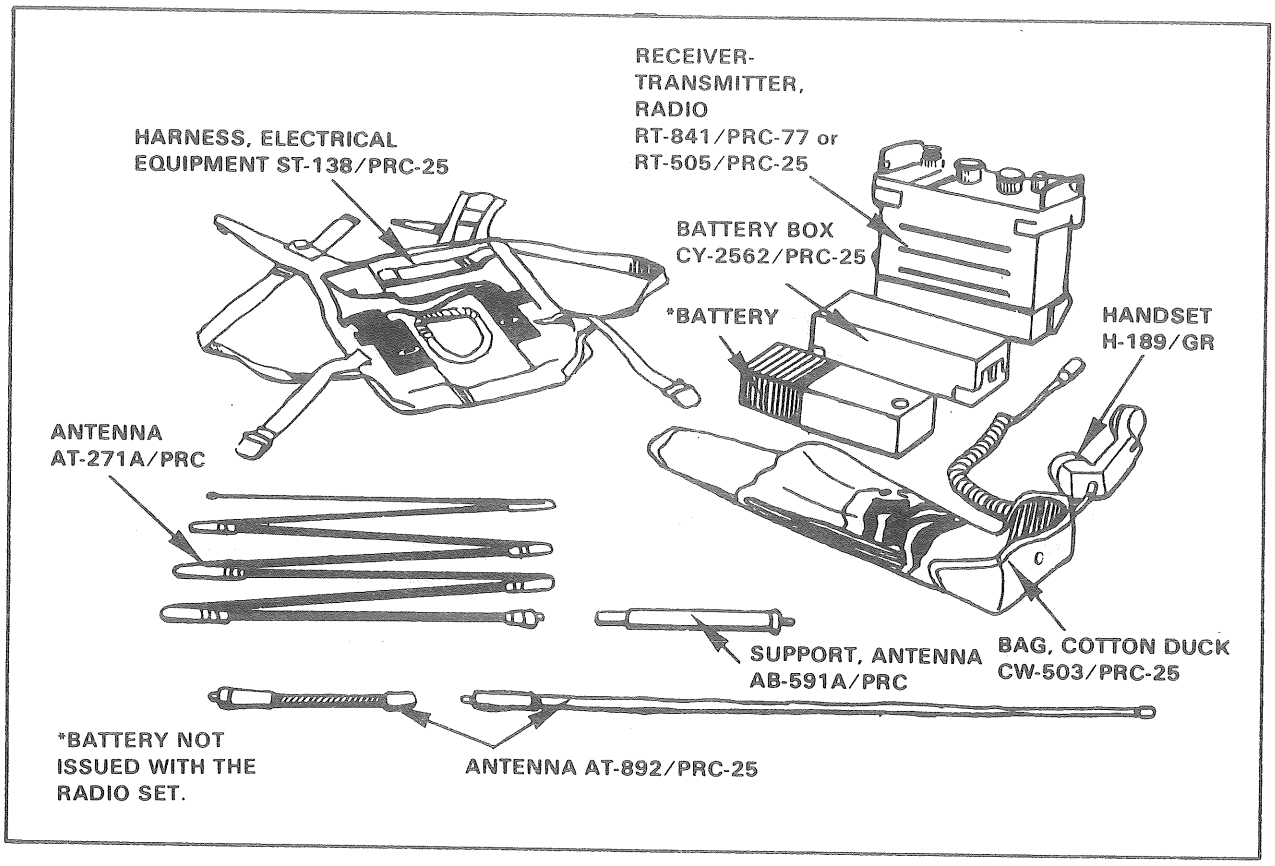


Figure 2. Components.

(2) Use the AT-271A/PRC (long antenna) when maximum range is required.

CAUTION: If as little as 1/16-inch gap is allowed between the top of the antenna mount and the flat bottom of the antenna, the antenna may break at this point, leaving the threaded portion in the antenna mount. To safeguard the antenna, periodically tighten the antenna on the antenna mount.

c. Connect the handset to one of the audio connectors.

3. Mount the assembled radio set on your back.

NOTE: Combat harness is not required when the operator is carrying the radio set.

a. Place the harness, with the receiver-transmitter mounted, on your back.

b. Adjust the shoulder straps for a comfortable fit and good balance.

c. Hook the belt straps to the combat belt.

d. Hook the ammo pouch straps to the shoulder strap rings.

NOTE: The hooks on the metal braces are to be used with the combat pack, when it is carried.

REFERENCES

TB SIG 291, Safety Measures to be Observed When Installing and Using Whip Antennas, Field Type Masts, Towers, Antennas, and Metal Poles That Are Used with Communication, Radar, and Direction Finder Equipment.

TM 11-5820-398-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tool Lists): Radio Set AN/PRC-25.

TM 11-5820-667-12, Operator's and Organizational Maintenance Manual: Radio Set AN/PRC-77 (Including Receiver-Transmitter RT-841/ PRC-77).

TEC Lesson 201-113-4501-F Preparation of AN/PRC-77 for Operation, Part 1: Installation.

TASK

113-587-2044

Operate Radio Set AN/PRC-77 or AN/PRC-25 (AN/GRC-160 or AN/GRC-125 Assembled for Manpack Operation)

CONDITIONS

This task is performed in a tactical or nontactical situation and may be performed in an NBC environment. Given a requirement and

1. Receiver-Transmitter RT-841/PRC-77 or RT-505/PRC-25 mounted on manpack harness, with battery installed.
2. CEOI extract.
3. Operational radio net.

STANDARDS

Task standard has been met when the radio set has been operated in accordance with the performance measures within 5 minutes.

PERFORMANCE MEASURES

WARNINGS:

1. Do not permit manpack or vehicular whip antennas to come in contact with high power lines or other sources of electricity; injury or death could result. Observe the requirements of TB SIG 291 which illustrates the dangers of permitting an antenna to contact other sources of power.
2. Remove the battery, BA-4386/U from the battery box when the radio is not being used. The pressure relief valve must be installed and functional in the Battery Box, CY-2562/PRC-25, to help vent the hydrogen gas produced by the BA-4386/U. An EXPLOSIVE HAZARD exists when this battery is in use.

1. Set operator's switches and controls. (Refer to fig 1 and TM 11-5820-667-12, chap 3, para 3-4, p 3-4; or TM 11-5820-398-12, chap 3, para 3-4, p 3-4.)

   CAUTION: Do not change channels or the frequency band while the radio is keyed for transmission (handset push-to-talk switch depressed). Damage to the radio modules may result or the wrong channel frequency may be set up, thus preventing radio communication.

   a. Turn the receiver-transmitter function switch (1 on fig 1) to ON, or SQUELCH, as authorized in the unit SOP.

   b. Adjust the VOLUME control 2 to the desired listening level.

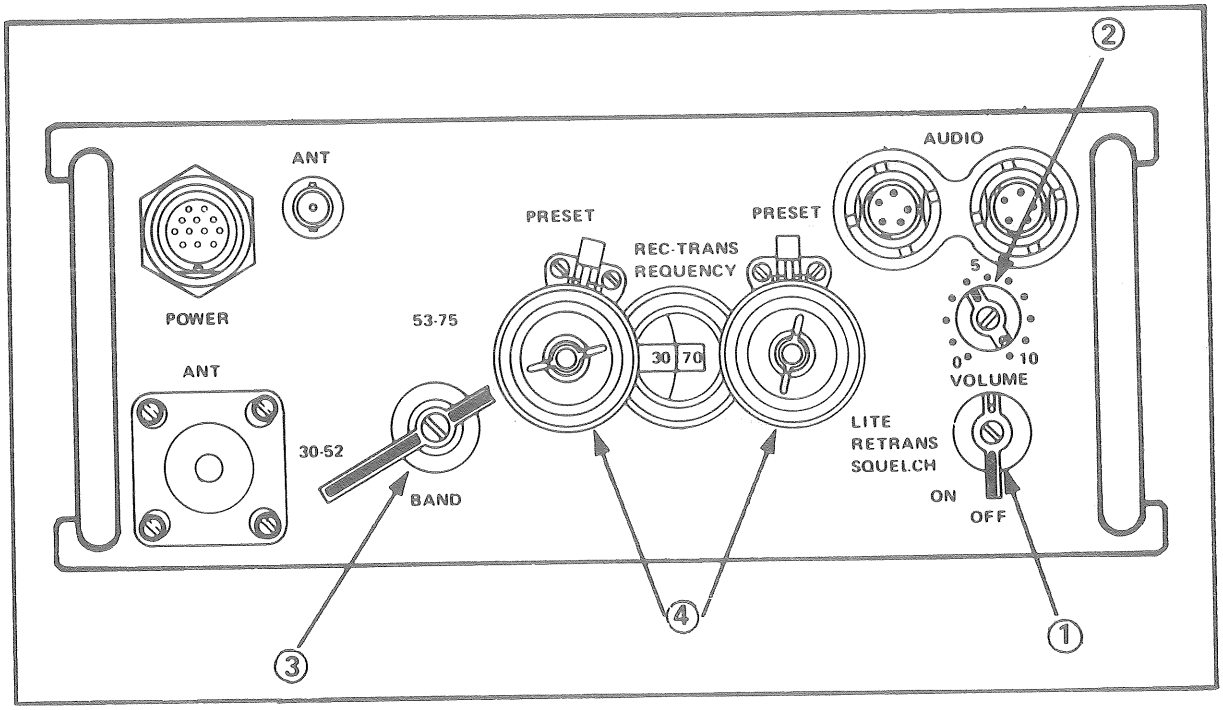


Figure 1. Receiver-Transmitter controls, indicators, and connectors.

c. Refer to the CEOI extract to determine the operating frequency of the net.

(1) Set the BAND switch 3 to the band of the operating frequency.

(2) Set the REC-TRANS FREQUENCY controls 4 to the authorized operating frequency.

NOTE: If frequencies are to be preset, refer to performance measure 2.

2. Preset channel frequencies. (Refer to figs 1 and 2, and TM 11-5820-667-12, chap 3, para 3-2, pp 3-1 thru 3-4; or TM 11-5820-398-12, chap 3, para 3-2, pp 3-1 thru 3-4.)

NOTE: When presetting the controls, the two frequencies to be set must be considered the lower and higher frequencies; and the sections of each tuning control as the lower (next to the front panel) and upper sections (fig 2).

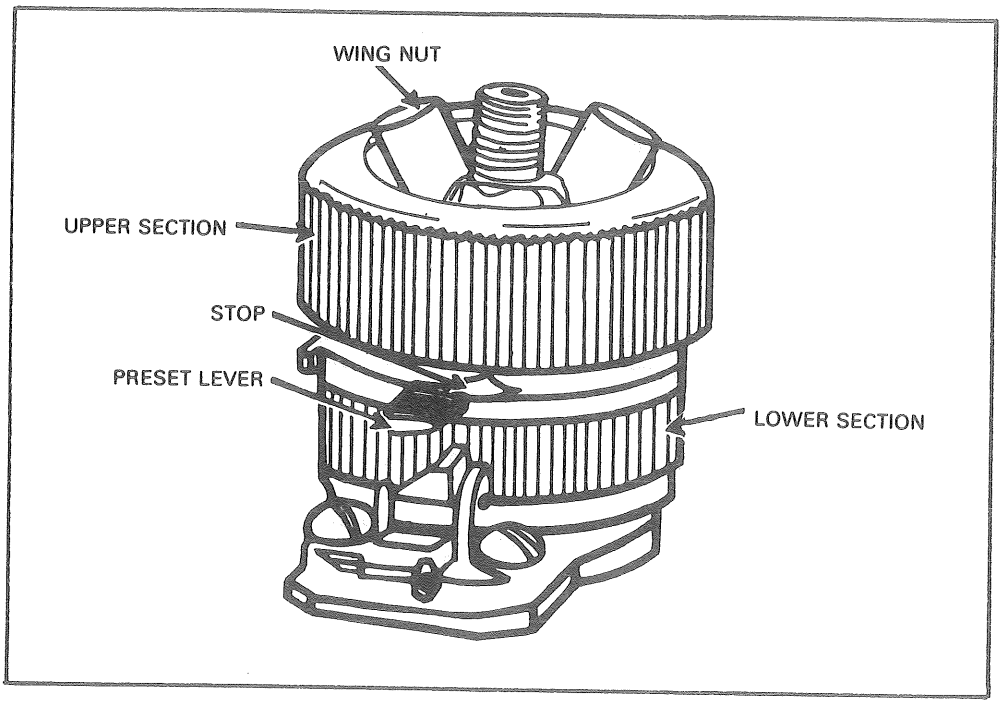


Figure 2. Presetting mc and kc tuning controls.

NOTE: The frequencies 59.35 and 39.70 are used as samples in order to clarify the steps.

a. Preset kc tuning control before the mc control.

(1) Determine the lower (.35 in 59.35) and higher (.70 in 39.70) kc frequencies.

(2) Set the preset lever away from the kc control.

(3) Set the kc control so that the lower frequency (--.35) appears in the channel dial.

(4) Set the preset lever forward against the control and loosen the wingnut on the control.

(5) Pull up on the lower section of the control and turn it counterclockwise until the stop on the lower section strikes the preset lever. Tighten the wingnut.

(6) Set the preset lever away from the kc control.

(7) Set the kc control so that the higher frequency (--.70) appears in the channel dial.

(8) Set the preset lever forward against the control and loosen the wingnut on the control.

(9) Pull up on the upper section of the control and turn it clockwise until the step on the upper section strikes the preset lever. Tighten the wingnut.

(10) Check the setting by turning the control counterclockwise for the lower kc frequency and clockwise for the higher kc frequency.

b. Preset the mc tuning control after the kc control.

(1) For mc frequencies in the same band, repeat the procedures for the kc control.

(2) For mc frequencies in different bands, set the lower section of the control to the mc frequency that is lower in its band. (Example: 59.-- is lower in BAND B (6 clicks) than 39.-- is in BAND A (9 clicks).)

3. Establish communications with a distant station.

NOTE: Refer to the CEOI extract to determine the call signs to be used on the designated net.

a. Use the push-to-talk switch on the handset to key the radio for talking and release it to listen.

b. Use correct radio procedure to call the distant station.

c. If you cannot reach the distant station, use various combinations of the siting and operating techniques (fig 3).

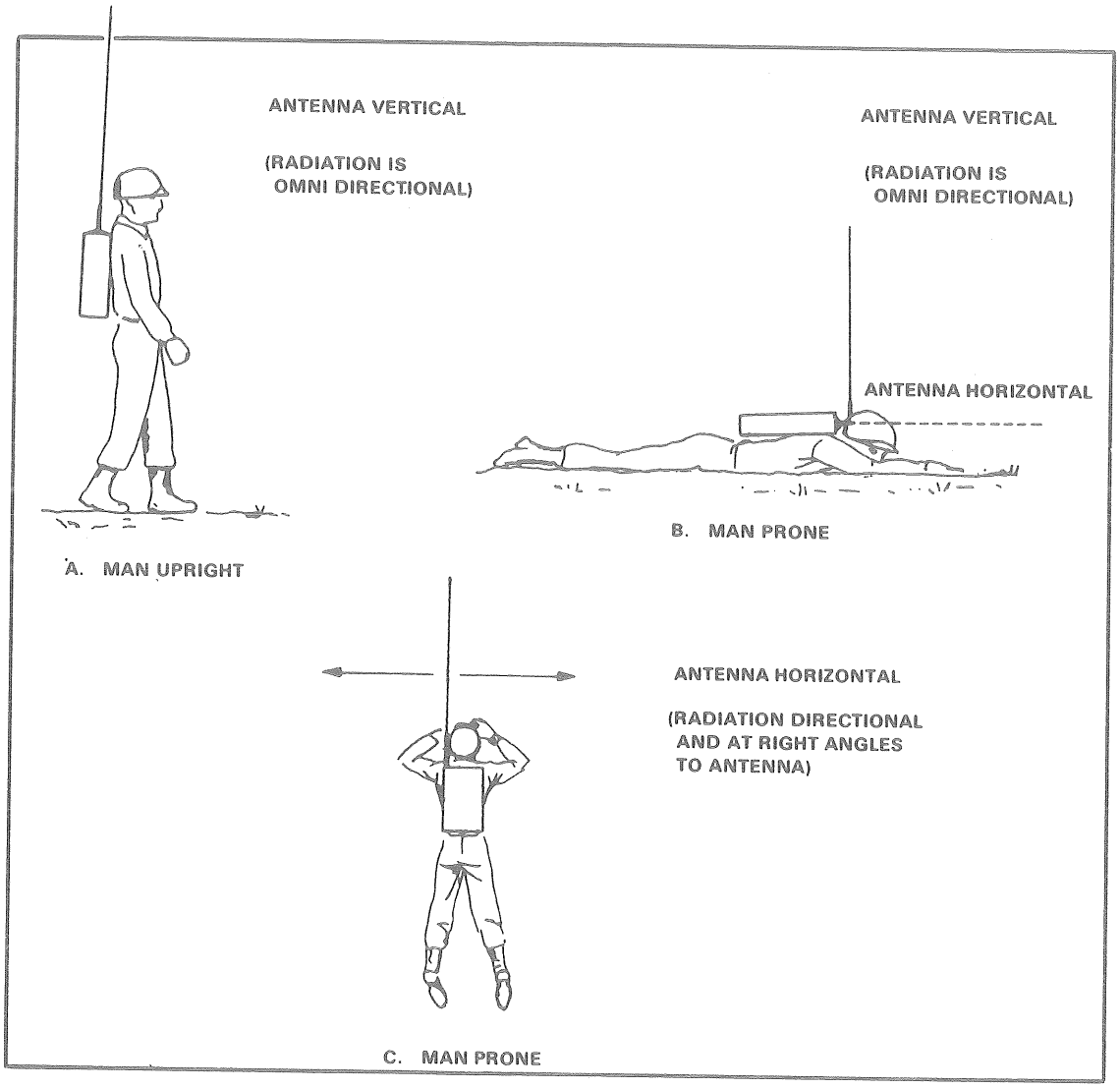


Figure 3. Orientation of antenna in various positions on operator.

(1) To get the best operating distance, keep the antenna vertical to the ground (figs 3A and 3B).

(2) With the antenna horizontal (fig 3C), turn until the antenna is at right angles to the distant station.

(3) If possible, avoid hills, power lines, bridges, buildings, or forested areas.

(4) In general, the higher up you are, the better the odds for long range and good communications.

WARNING: The tactical situation must be considered at all times and every effort made to prevent the opposing forces from receiving or interfering with your signals.

4. Perform shut-down procedures.

a. Set the receiver-transmitter function switch to OFF.

b. Set the timing controls to either 30.00 or 53.00.

c. If the radio is not to be operated again for an extended period of time, remove the battery from the battery box (task 113-587-1052, this manual).

REFERENCES

TB SIG 291, Safety Measures to be Observed When Installing and Using Whip Antennas, Field Type Masts, Towers, Antennas, and Metal Poles That Are Used With Communication, Radar, and Direction Finder Equipment.

TM 11-5820-398-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tool Lists): Radio Set AN/PRC-25.

TM 11-5820-667-12, Operator's and Organizational Maintenance Manual: Radio Set AN/PRC-77 (Including Receiver-Transmitter RT-841/PRC-77).

TEC Lesson, 201-113-4502-F, Preparation of AN/PRC-77 for Operation, Part 2: Operator's Checks.

TEC Lesson, 201-113-4503-F, Preparation of AN/PRC-77 for Operation, Part 3: Pre-sets.

TASK

113-587-3071

Perform Operator's Preventive Maintenance Checks and Services (PMCS) on Radio Set AN/PRC-77 or AN/PRC-25

CONDITIONS

This task is performed in a tactical or nontactical situation and may be performed in an NBC environment. Given a requirement to operate or perform preventive maintenance and

1. Radio Set AN/PRC-77 or AN/PRC-25.
2. Clean, lint-free cloth and brush.
3. Trichloroethane.
4. Initiated DA Form 2404.
5. TM 11-5820-667-12 or TM 11-5820-398-12.

STANDARDS

Task standard has been met when the preventive maintenance checks and services have been performed in accordance with the performance measures.

PERFORMANCE MEASURES

1. Perform routine checks. (Refer to TM 11-5820-667-12 or TM 11-5820-398-12, chap 4, para 4-2 and 4-3, pp 4-1 and 4-5.)

   NOTE: Routine checks are not listed as PMCS checks. They are things that you should do anytime you see they must be done. The cleaning operations should be performed daily. If the equipment is not used daily, the cleaning operations must be performed before operation after any extended shutdown, or once a week while the equipment is in standby condition.

a. Remove dust and loose dirt with a clean, soft cloth or brush.

b. Remove grease, oil, fungus and ground-in dirt with a cloth dampened (not wet) with trichloroethane.

> WARNING: The fumes of trichloroethane are toxic. Provide thorough ventilation whenever it is used; avoid prolonged or repeated breathing of vapor. Do not use near an open flame or hot surface; trichloroethane is nonflammable but heat converts the fumes to a highly toxic phosgene gas which, if inhaled, could result in serious injury or death. Prolonged or repeated skin contact with trichloroethane can cause skin inflammation. When necessary, use gloves, sleeves, and aprons which the solvent cannot penetrate.

c. Clean the dial window and other plastic or nonmetalic items with a clean, soft cloth. If it is difficult to remove any dirt, dampen the cloth with water; mild soap may be used to make the cleaning more effective.

d. Clean the canvas items with a brush moistened with trichloroethane.

e. Clean the contacts of the AUDIO connectors and the handset connector with a pencil eraser.

2. Perform Operator's Daily Preventive Maintenance Checks and Services. (Refer to TM 11-5820-667-12 or TM 11-5820-398-12, chap 4, table 4-1, pp 4-2 thru 4-4.)

> NOTE: The PROCEDURES column in the PMCS chart (table 4-1) instructs you to "CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY." Carefully follow these instructions and, if tools are needed or the chart instructions tell you, get organizational maintenance (COMMO) to do the necessary work.

a. Before operating the radio set, perform the before (B) PMCS (table 4-1).

NOTE: If the equipment must be kept in constant operation, check and service only those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

b. While operating the radio set, perform the during (D) PMCS. The reporting and recording of the (D) PMCS is done while performing the after (A) PMCS (table 4-1).

NOTE: If the equipment fails in communication, refer to TM 11-5820-667-12 or TM 11-5820-398-12, chap 4, para 4-4, pp 4-5 and 4-6.

c. After operating the radio set, and before placing it in a stand-by or storage condition, perform the after (A) PMCS.

3. Perform Operator's Weekly Preventive Maintenance Checks and Services. (Refer to TM 11-5820-667-12 or TM 11-5820-398-12, chap 4, table 4-1, pp 4-2 thru 4-4.)

NOTE: If the equipment was not used during the week, perform the routine checks and the (B), (D), and (A) PMCS together with the weekly (W) PMCS (table 4-1).

4. Update DA Form 2404. (Refer to TM 38-750, chap 3, para 3-4, pp 3-7 thru 3-12.)

a. Use the ITEM NO. column of the PMCS table (table 4-1) to get the numbers for the TM ITEM NO. column on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) when filling out the form.

b. Any trouble or defective equipment that cannot be corrected by the operator shall be referred to organizational maintenance.

REFERENCES

TM 11-5820-398-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tool Lists): Radio Set AN/PRC-25.

TM 11-5820-667-12, Operator's and Organizational Maintenance Manual: Radio Set AN/PRC-77 (Including Receiver-Transmitter RT-841/PRC-77).

TM 38-750, The Army Maintenance Management System (TAMMS).

TASK

113-574-2061

Evaluate FM Transmitters Using Test Set, Radio Frequency, Power, AN/URM-182

CONDITIONS

This task is done in a tactical or nontactical situation, under all weather conditions, and may be done in an NBC environment. This task is done as part of the evaluation of FM radio sets, or as directed by your supervisor. You will be provided with the following:

1. An FM radio set installed in a tactical or combat vehicle.
2. Radio Frequency Power Test Set AN/URM-182 or TS-2609/U.
3. AN/URM-182 worksheet with list of frequencies to be tested.

STANDARDS

This task has been performed correctly when, within 30 minutes, the FM transmitter has been evaluated; performance measures 1 through 18 have been completed, and an AN/URM-182 worksheet has been completed and given to your supervisor.

PERFORMANCE MEASURES

1. Turn the radio set primary power switch OFF.

   CAUTION: Do not start vehicle engine and/or unplug radio set items with radio set turned ON.

2. Unplug Antenna Cable CG-1773, from receiver-transmitter antenna jack.

3. Secure the AN/URM-182 to the receiver-transmitter guard closest to the antenna jack.

4. Connect Antenna Cable CG-1773 plug to the bottom BNC jack of the AN/URM-182.

5. Connect the short AN/URM-182 RF cable as follows:

   a. One end to the receiver-transmitter antenna jack.

   b. Other end to the upper BNC jack of the AN/URM-182.

6. Start vehicle engine.

   NOTE: To obtain a valid test, the vehicle should be in a clear area of approximately 25-foot radius of the receiver-transmitter antenna. (Surrounding structures inside this radius may affect AN/URM-182 readings.)

7. Turn the receiver-transmitter on as follows:

   a. For an AN/VRC-53/64 or AN/GRC-125/160, set AM-2060 POWER switch and receiver-transmitter function switch to ON.

   b. For an RT-524 or RT-246, turn POWER switch to HIGH.

8. Set the receiver-transmitter tuning controls to the first frequency listed on the worksheet. (31.10 MHz.)

9. Set the AN/URM-182 selector switch to 100 FWD.

10. Key the receiver-transmitter and then observe the AN/URM-182 reading.

    a. When the reading is 10 or more, record the reading at "a" on the worksheet, for the frequency being checked. Check to see if the receiver-transmitter needs to be unkeyed before changing switch positions.

b. When the reading is less than 10, hold the AN/URM-182 selector switch in 10 FWD, observe the AN/URM-182 reading, and then record the reading at "a" on the worksheet, for the frequency being checked.

11. With the receiver-transmitter keyed, turn the AN/URM-182 selector switch to 100 RFL, and then observe the AN/URM-182 reading.

a. When the reading is 10 or more, record the reading at "b" on the worksheet for the frequency being checked.

b. When the reading is less than 10, hold the AN/URM-182 selector switch in 10 RFL, observe the reading, and then record the reading at "b" on the worksheet, for the frequency being checked.

12. One at a time, tune the receiver-transmitter to the 9 other frequencies listed on the worksheet and record the forward (FWD) and reflected (RFL) readings.

a. For radio sets AN/VRC-53/64 or AN/GRC-125/160, set the AM-2060 ANT FREQ CONTROL switch according to the receiver-transmitter frequency setting.

b. At each frequency setting, repeat the actions of performance measures 10, 11, and 12.

c. For an RT-524 or RT-246, after completing performance measure 12b, turn the power switch to LOW and repeat performance measures 10 and 11. Instead of recording the AN/URM-182 reading at "a" on the worksheet, record it at "d" on the worksheet.

CAUTION: DO NOT change frequencies when the receiver-transmitter is keyed.

13. After all worksheet a, b, and d readings have been made and recorded, turn the radio set off and then turn the vehicle engine off.

14. For each frequency setting, divide the FWD reading (a) by 3 and record the result at "c" on the worksheet.

    Example:

				c.	13.3	
1.	31.10	3	a.	40		
				FWD		

15. For each frequency setting, compare the number recorded for "c" with the number recorded for "b" on the worksheet.

    a. When, for each frequency setting, the number recorded for "c" is greater than the number recorded for "b," the receiver-transmitter antenna is okay. Proceed to performance measure 17.

    Example:

				c.	13.3			
1.	31.10	3	a.	40		b.	10	
				FWD			RFL	

    c. (13.3) is greater than b(10)

    b. When, for one or more of the frequency settings, the number recorded for "c" is less than the number recorded for "b," the receiver-transmitter antenna is bad. Proceed to performance measure 18.

    Example:

				c.	13.3			
1.	31.10	3	a.	40		b.	20	
				FWD			RFL	

16. Look at the numbers recorded for "a" (all frequency settings) and "d" on the worksheet.

    a. For an RT-524 or RT-246, the numbers recorded for "a" should be greater than 35; and for "d," between 0.5 and 10. When they are not, proceed to performance measure 18. When they are, proceed to performance measure 17.

    b. For an AN/VRC-53/64 and AN/GRC-125/160 the numbers recorded for "a" should be between 0.5 and 4. When they are not, proceed to performance measure 18. When they are, proceed to performance measure 17.

17. In the remarks portion of the worksheet, write "Satisfactory;" and give the worksheet to your supervisor.

18. In the remarks portion of the worksheet, write "Unsatisfactory;" and give the worksheet to your supervisor.

REFERENCES

None.

RECEIVER-TRANSMITTER SERIAL NO. _____

FREQ		FREQ	
1. 31.10	3 [c. / a. FWD] b. RFL	6. 73.55	3 [c. / a. FWD] b. RFL
2. 35.15	3 [c. / a. FWD] b. RFL	7. 67.60	3 [c. / a. FWD] b. RFL
3. 39.20	3 [c. / a. FWD] b. RFL	8. 62.75	3 [c. / a. FWD] b. RFL
4. 44.35	3 [c. / a. FWD] b. RFL	9. 58.80	3 [c. / a. FWD] b. RFL
5. 50.40	3 [c. / a. FWD] b. RFL	10. 54.95	3 [c. / a. FWD] b. RFL

d. _____ (RT-542 or RT-246 ONLY)
LOW FWD

Remarks _____

_____ _____
SIGN HERE

Figure 1

TASK

113-587-0025

Repair Radio Set AN/PRC-25/77

CONDITIONS

This task is done in a tactical or nontactical situation in a sheltered facility and may be done in an NBC environment. Task is performed when the operation of the radio set has been evaluated, and abnormal indications have been listed on DA Form 2404. You will be provided with:

1. Radio Set AN/PRC-25/77.
2. Tool Kit TK-101/G.
3. Multimeter AN/USM-223 or equivalent.
4. Test Set Battery AN/PSM-13.
5. TM 11-5820-667-12 or TM 11-5820-398-12.
6. DA Form 2404 with columns a and c completed.
7. DA Form 2407.

STANDARDS

This task has been done correctly when you have repaired Radio Set AN/PRC-25/77; performance measures 1 through 4 have been completed; and DA Forms 2404 and 2407, listing all corrective actions, have been completed and submitted to your supervisor.

NOTE: New procedures will probably be coming with the fielding of the new FM tester.

PERFORMANCE MEASURES

1. Review column c of DA Form 2404 for abnormal indications listed and then troubleshoot to find the faulty component or accessory according to the troubleshooting chart.

2. Complete DA Form 2404.

   a. Complete administrative position.

   b. For a defective accessory, record the defective accessory and its NSN in column d.

   c. For a defective component, record the defective component number and DA Form 2407 (Spt) in column d to indicate that the item requires direct support maintenance.

3. Return completed DA Form 2404 and, when applicable, DA Form 2407 to your immediate supervisor.

4. Complete DA Form 2407 for items requiring direct support maintenance.

REFERENCES

TM 11-5820-667-12, Operator's and Organizational Maintenance Manual: Radio Set AN/PRC-77 (Including Receiver-Transmitter, Radio RT-841/PRC-77)

TM 11-5820-398-12, Operator's and Organizational Maintenance Manual: (Including Repair Parts and Special Tool Lists: Radio Set AN/PRC-25 (including Receiver-Transmitter, RT-505/PRC-25)

TROUBLESHOOTING CHART

STEP	ABNORMAL INDICATOR		ACTION	INDICATOR	CORRECTIVE ACTION
1	No input power and dial light.	a.	Check battery using Test Set Battery AN/PSM-13. (Refer to TM 11-6625-823-15, chap 2, sec II, para 2-3 & 2-4, pp 2-2 thru 2-4.	RED for one or more checks	Replace battery
				GREEN for all checks	Proceed to step 1 b
		b.	Check Dummy Connector Power Plug P3 (J3) to insure jumper connection wires are in place and secure.	Missing or loose connector jumper wires	Repair
				Connector Power Plug P3(J3) is in place and all jumper wires are secure	Evacuate RT to DSU
2	No rushing noise	a.	Circuit disturb handset H-189's plug, pins A and B using Multimeter AN/URM-105 ohms (RX1). Listen for clicks in earphone (TM 11-5965-280-15, fig 5, p 7).	No clicks	Proceed to step 2 b
				Clicks	Evacuate RT to DSU
		b.	Circuit disturb handsets earphone element (RX1). Pins 2 and 3. (Refer to TM 11-5965-280-15, para 9c, p 3, fig 5, p 7).	No clicks	Replace earphone element
				Clicks	Evacuate handset to DSU
3	No reception	a.	Check antenna AT-892 or AT-271A to see if it is loose, broken or bent. (TM 11-5820-667-12, chap 4, table 4-1, item 4, p 4-3, & chap 1, sec II, fig 1-2.)	Antenna is broken or bent	Repair or replace
				Antenna is loose	Tighten antenna
				Antenna is serviceable	Go to step 4
4	No squelch control				Evacuate RT to DSU
5	No squelch sensitivity in receive mode				Evacuate RT to DSU

6	No keying	a.	Key handset and using Multimeter AN/URM-105, ohms RX1 scale, measure resistance of handsets plug, pins A to C.	Infinity ohms Zero ohms	Evacuate handset to DSU Evacuate RT to DSU
7	No transmission				Evacuate RT to DSU
8	No voice sidetone	a.	Key handset and circuit disturb handset's plug, pins A and D (RX10). Listen for clicks in microphone element. (Refer to TM 11-5965-280-15, fig 5, p 7.)	No clicks Clicks	Proceed to Step 8 b Evacuate RT to DSU
		b.	Circuit disturb handsets microphone element (RX10) pins 1 and 4. (Refer to TM 11-5965-280-15, para 9a, p 3 and fig 5, p 7.)	No clicks Clicks	Replace microphone element Evacuate RT to DSU
9	No 150 Hz modulation				Evacuate RT to DSU

TASK

113-587-0027

Systems Troubleshoot Radio Set, AN/GRC-125/160 to a Defective Component, Cable, or Accessory

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when an operator reports a malfunction or as directed by your supervisor. You will be provided with the following:

1. Radio Set, AN/GRC-125/160, installed in a tactical vehicle.
2. TM 11-5820-498-12.
3. Tool Kit, TK-101/G.
4. Multimeter AN/USM-223 or equivalent.
5. DA Form 2404.
6. Test Set, Radio Frequency AN/URM-182 or TS-2609/U.

STANDARDS

This task has been performed correctly when within 20 minutes, systems troubleshooting of Radio Set AN/GRC-125/160 has been completed; performance measures 1 through 3 have been completed; and DA Form 2404 listing the faulty item(s) in column d has been submitted to your supervisor.

PERFORMANCE MEASURES

1. Evaluate operation of radio set to determine indication of fault(s). (Refer to this manual, task 113-587-3020.)

2. Isolate the defective component, cable, or accessory using the abnormal indication you found in performance measure 1. Refer to the attached troubleshooting charts.

3. Enter in column d of the DA Form 2404 the faulty item identified in performance measure 2 and give the DA Form 2404 to your immediate supervisor.

REFERENCES

TM 11-5820-498-12, Operator's and Organizational Manitenance Manual: 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.

TROUBLESHOOTING CHARTS

1. VISUAL INSPECTION.

a. Before operating the equipment for troubleshooting purposes, inspect it for visible defects. This saves repair time and may prevent futher 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 printed wiring boards.

(3) Main frame wiring dress for possible shorts (especially after handling or repairing the equipment).

b. If the visual inspection does not locate the trouble, proceed to the troubleshooting chart below.

2. TROUBLESHOOTING.

a. General. When the equipment failure is unknown, perform an operational check applicable to the installation you are troubleshooting. (Refer to TM 11-5820-498-12.)

b. Procedure.

(1) When the receiver-transmitter is defective, refer it to higher maintenance category for troubleshooting and repair.

(2) To test the amplifier-power, an MT-1029/VRC with a vehicular battery or equivalent source of 22 to 28 volts dc (such as power supply PP-2953/U) and a receiver-transmitter with an antenna are required.

(3) When an item substitution is recommended, use an item known to be good. After the substitution, check the equipment for proper operation.

c. Man-pack Operation. When substitution of an item is recommended, either substitute the item in another set, or substitute an item from another set known to be good, in the inoperative set.

ITEM NO.	INDICATION	PROBABLE TROUBLE	PROCEDURE
1	Unable to transmit and receive.	a. Incorrect frequency setting.	a. Set the MC and KC tuning dials on assigned frequency. If preset controls of MC and KC tuning dials are being used, check the setting of the controls.
		b. Defective handset.	b. Substitute handset.
		c. Defective battery.	c. Substitute a new battery.
		d. Defective squelch circuit.	d. Attempt communication without squelch operation. (Set the function switch to ON). If still unable to communicate, higher maintenance category troubleshooting required.
2	Unable to transmit; reception is satisfactory.	a. Defective handset.	a. Substitute handset.
		b. Defective battery.	b. Substitute a new battery.
		c. Function switch set to ON and distant station is operating with it's squelch in ON condition.	c. Arrange to communicate without operation at both stations.
		d. Defective receiver-transmitter.	d. Higher maintenance category troubleshooting required.

ITEM NO.	INDICATION	PROBABLE TROUBLE	PROCEDURE
3	Unable to receive from distant terminal; transmission is satisfactory.	a. Defective handset.	a. Substitute handset.
		b. Defective battery.	b. Substitute a new battery.
		c. Function switch set to squelch; other station may be transmitting using it's nonsquelch condition.	c. Arrange to communicate with or without squelch at both stations.
		d. Defective receiver-transmitter.	d. Higher maintenance category troubleshooting required.
4	Reception is weak or getting weaker.	a. Defective battery.	a. Substitute a new battery.
		b. Defective handset.	b. Substitute handset.
		c. Defective antenna or other station is too far distant.	c. Substitute 10-foot antenna for the short antenna.
		d. Defective receiver-transmitter.	d. Higher maintenance category troubleshooting required.
d. Vehicle Operation. Not provided with intercom system.			
1	Unable to transmit and receive.	a. Defective handset.	a. Substitute handset.

ITEM NO.	INDICATION	PROBABLE TROUBLE	PROCEDURE
		b. PWR switch on amplifier-power supply not in ON position.	b. Set the switch to ON position.
		c. Connections to vehicular battery incorrect or loose.	c. Check for tight and correct battery polarity connections.
		d. Link in MT-1029/VRC incorrectly positioned.	d. Position the link between E23 and E24.
		e. Defective antenna system.	e. If the whip antenna is tied down, let it stand upright; move the vehicle while attempting to establish communications. If this does not correct the trouble; substitute the CX-4722/VRC. In the AT-912/VRC, substitute the AB-719/VRC; in the AS-1729/VRC, substitute the MX-6707/VRC. Replace the mast sections one at a time. Substitute the CG-1773/U.
		f. No dc power applied to MT-1029/VRC.	f. Check the vehicular battery to determine it's voltage. Make the measurement at the vehicular battery terminals with the vehicle engine at idle and accelerated. The voltage indication should be between 22 and 28 volts dc.

ITEM NO.	INDICATION	PROBABLE TROUBLE	PROCEDURE
			(1) Remove the battery cable CX-4720/VRC from the MT-1029/VRC. Measure vehicle battery voltage between pins B (+) and A (-) of the cable connector. If positive voltage is obtained at pin A, reverse the connections of the cable on the vehicle battery. NOTE: When the battery polarity has been reversed, usually the amplifier-power supply is damaged, or some pins in J24 of MT-1029/VRC are destroyed. (2) If the battery voltage indications are correct, reconnect the cable to the MT-1029/VRC, and measure the vehicle battery voltage between pins B (+) and A (-) of cable connector J24 on the MT-1029/VRC. If the vehicle battery voltage is not obtained, check the fuse in the junction box of the MT-1029/VRC. If the fuse is good, refer the MT-1029/VRC to higher maintenance category for troubleshooting.

ITEM NO.	INDICATION	PROBABLE TROUBLE	PROCEDURE
		g. Defective amplifier-power supply.	g. On the AM-2060/GRC, set the PWR switch to ON and check the output voltages of the amplifier-power supply. Between B(+) and A(-) measure for 22-28 V dc. Between J(+) and A(-) measure for 22-28 V dc. If voltage indications are incorrect, refer the amplifier-power supply to higher maintenance category for troubleshooting. If the voltage indications are correct, replace the CX-4655/GRC on the SET POWER connector on the amplifier-power supply. Measure the voltages in the cable connector at the same pin terminals as listed for the set power connector. If voltage indications are incorrect, replace the CX-4655/GRC. If the voltage indications are still correct, refer the receiver-transmitter to higher maintenance category for troubleshooting.
2	Unable to transmit; reception is satisfactory.	a. Defective handset.	a. Substitute handset.
		b. Function switch set to SQUELCH and distant station is operating with it's squelch in off condition.	b. Arrange to communicate with or without squelch operation at both stations.

ITEM NO.	INDICATION	PROBABLE TROUBLE	PROCEDURE
		c. Defective amplifier-power supply.	c. See item 1g above.
		d. Defective receiver-transmitter.	d. Higher maintenance category trouble-shooting required.
3	Unable to receive; distant station indicates trans-mission received.	a. Defective handset.	a. Substitute handset.
		b. Function switch set to squelch.	b. Set the switch to ON. If reception is still not obtained, higher main-tenance category troubleshooting required.
		c. ANT FREQ CONTROL on amplifier-power supply not set to position in which operating frequency of receiver-transmitter is set.	c. Set to proper position.
		d. Defective antenna system.	d. See item 1e above.
		e. Defective receiver-transmitter.	e. Higher maintenance category trouble-shooting required.
4	No reception heard on loudspeaker of amplifier-power sup-ply; reception on receiver-transmitter satisfactory.	a. SPKR switch in OFF position.	a. Set the switch to ON position.

ITEM NO.	INDICATION	PROBABLE TROUBLE	PROCEDURE
		b. Defective amplifier-power supply.	b. Higher maintenance category troubleshooting required.
e. Vehicle Operation. Provided with intercom system.			
1	Unable to communicate on radio from any crewmember control box.	a. Defective audio accessory.	a. Substitute audio accessory. Refer to publication covering the audio accessory. (TM 11-5820-498-12; para 6-5 thru 6-8.)
		b. Defective MT-1029/VRC, amplifier-power supply, or receiver-transmitter.	b. Connect an audio accessory to AUDIO connector on the receiver-transmitter. If radio communication is unsatisfactory, substitute audio accessory. If radio communication is satisfactory, proceed to c below.
		c. Defective cable or crewmember control box.	c. Connect an audio accessory to each crewmember control box. Set up all equipment to provide radio communication from the crewmember control boxes. Proceed as follows: (1) While attempting to establish radio communication at each crewmember control box, remove, in turn, the cable from the AM-1780/VRC to each crewmember control box.

ITEM NO.	INDICATION	PROBABLE TROUBLE	PROCEDURE
			(2) When radio communication is restored, substitute the cable which removal restored radio communication. (3) If radio communication ceases when the cable is connected to the crewmember control box, substitute the crewmember control box. (4) When substitute of the crewmember control box does not restore communication, substitute the AM-1780/VRC.
2	Unable to transmit or receive from any crewmember control box.	a. Defective audio accessory.	a. Substitute audio accessory.
		b. Defective cable or control box.	b. Substitute the cable between the AM-1780/VRC and the particular crewmember control box. Substitute the control box.
3	Unable to communicate on intercom from any crewmember control box.	Defective cable or control box.	Use the procedures given in item 1c above, except set up the crewmember to communicate on intercom and make the communication checks on the intercom system.

ITEM NO.	INDICATION	PROBABLE TROUBLE	PROCEDURE
4	Unable to communicate between the C-2297/VRC and C-2296/VRC or intercom.	Defective cable or crewmember control box.	Substitute the CX-7055/VRC or CX-7057/VRC. Substitute the C-2297/VRC and C-2296/VRC. Require that vehicle interconnection system between the C-2297/VRC and C-2296/VRC be checked for defective connections.

TASK

113-587-0032

Systems Troubleshoot Radio Set AN/VRC-12 Including Control Frequency Selector C-2742/VRC to a Defective Component, Cable, or Accessory

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when an operator reports an equipment malfunction or as directed by your supervisor. You will be provided with the following:

1. Radio Set AN/VRC-12 installed.
2. TM 11-5820-401-12.
3. DA Form 2404.
4. Tool Kit TK-101/G.
5. Multimeter AN/USM-223 or equivalent.
6. Test Set, Radio Frequency AN/URM-182.
7. Control Frequency Selector C-2742/VRC.

STANDARDS

This task has been performed correctly when, within 30 minutes, systems troubleshooting of Radio Set AN/VRC-12 with C-2742 has been completed; performance measures 1 through 3 have been completed; and all faults found have been recorded on DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Evaluate the operation of Radio Set AN/VRC-12 to determine indication of fault(s). (Refer to this manual, task 113-587-3028.)

2. Find the abnormal indication you entered in column c of the DA Form 2404 in the troubleshooting chart and then follow the procedures listed to isolate the defective component, cable, or accessory. (Refer to TM 11-5820-401-12, chap 5, sec 2, para 5-9, pp 5-13 thru 5-15.)

3. Enter in column d of the DA Form 2404 the faulty item identified in performance measure 2 and submit the DA Form 2404 to your supervisor.

REFERENCES

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): AN/VRC-12 Series Radio Sets.

TASK

113-587-0042

Systems Troubleshoot Radio Set AN/VRC-49 Including C-2299/VRC to a Defective Component, Cable, or Accessory

CONDITIONS

This task is performed in a tactical or nontactical environment under all weather conditions and may be performed in an NBC situation. This task is performed when an operator reports an equipment malfunction or as directed by your supervisor. Your supervisor will provide you with the following:

1. Radio Set AN/VRC-49 installed.
2. TM 11-5820-401-12.
3. DA Form 2404.
4. Tool Kit TK-101/G.
5. Multimeter AN/URM-223 or equivalent.
6. Test Set, Radio Frequency AN/URM-182 or TS-2609/U.

STANDARDS

This task has been performed correctly when, within 15 minutes, systems troubleshooting on Radio Set AN/VRC-49 with C-2299 has been completed, performance measures 1 through 3 have been completed and all faults found have been recorded on DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Evaluate the operation of radio set to determine indication of faults. (Refer to this manual, task 113-587-3042.)

2. Find the abnormal indication you entered in column c of the DA Form 2404 in the troubleshooting chart and then follow the procedures listed to isolate the defective component, cable or accessory. (Refer to TM 11-5820-401-12, chap 5, sec II, para 5-9, pp 5-13 through 5-16.)

3. Enter in column d of the DA Form 2404 the faulty item identified in performance measure 2 and give the DA Form 2404 to your supervisor.

REFERENCES

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): AN/VRC-12 Series Radio Sets.

TASK

113-587-1013

Verify Installation of Radio Set AN/GRC-125/160 in a Tracked Vehicle

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed upon receipt of a new combat vehicle, on the return of a combat vehicle from direct support maintenance, or as directed by your supervisor. You will be provided with the following:

1. Radio Set AN/GRC-125/160 in a combat tracked vehicle.
2. Applicable TM 11-2300 series manuals.
3. DA Form 2404.
4. Tool Kit TK-101/G.
5. TM 11-5820-498-12.

STANDARDS

This task has been performed correctly when, within 30 minutes, the installation of Radio Set AN/GRC-125/160 in a tracked vehicle has been verified; performance measures 1 through 6 have been completed; and a DA Form 2404 listing all discrepancies has been prepared and submitted to your immediate supervisor.

PERFORMANCE MEASURES

1. Check antenna mounting bolts to insure they are tight. (Refer to TM 11-5820-498-12, chap 2, sec II, para 2-5, p 2-5.)
2. Check the Intercommunication Set AN/VIC-1(V) components.
   a. Tighten all bolts on control boxes to include Amplifier AM-1780/VRC. (Refer to TM 11-5820-498-12, chap 6, sec I, para 6-1 thru 6-4, p 6-1.)

b. Tighten all cables and insure they are strapped to the vehicle.

CAUTION: Do not overtighten.

3. Check installation of Mounting MT-1029/VRC and Power Cable CX-4720.

a. Insure the mount link is in the proper position. Power to the radio set is controlled by the Amplifier AM-1780 (fig 1).

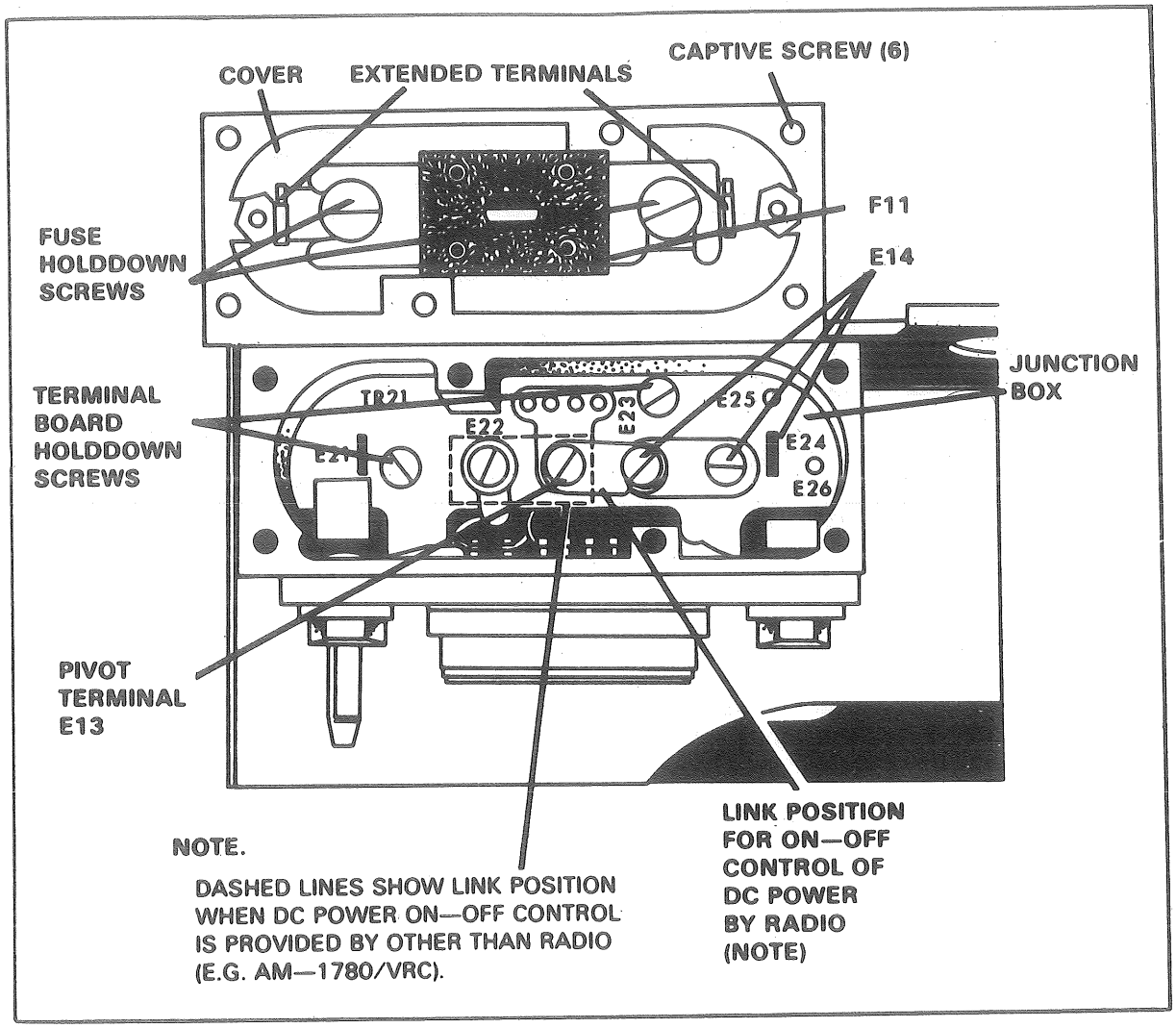


Figure 1. MT-1029 Junction Box (Link).

b. Tighten all mounting bolts on the mount.

c. Insure the Power Cable CX-4720 is correctly connected between the mount and the vehicle's power supply and that it is strapped to the vehicle (If Suppressor, Electrical Transient, MX-7778(*)/GRC, is installed, connect the Power Cable CX-4720 to it instead of directly to vehicle's power supply).

4. Check installation of radio set. (Refer to TM 11-5820-498-12, chap 2, sec II, para 2-5, pp 2-3 thru 2-6.)

a. Tighten clamp assemblies finger tight on the Amplifier AM-2060 and Mounting MT-1029.

b. Connect Cable Assembly CX-4722 from antenna matching unit to the back of Amplifier AM-2060.

c. Connect Cable CG-1773 from the receiver-transmitter to the antenna matching unit.

5. Check the ground straps.

a. Insure that the ground strap is secure on the antenna matching unit to a ground point on the vehicle.

b. Insure that the two ground straps are on the Mounting MT-1029 and secured.

6. Record any faults noted and corrective actions taken on DA Form 2404 and submit the completed form to your immediate supervisor.

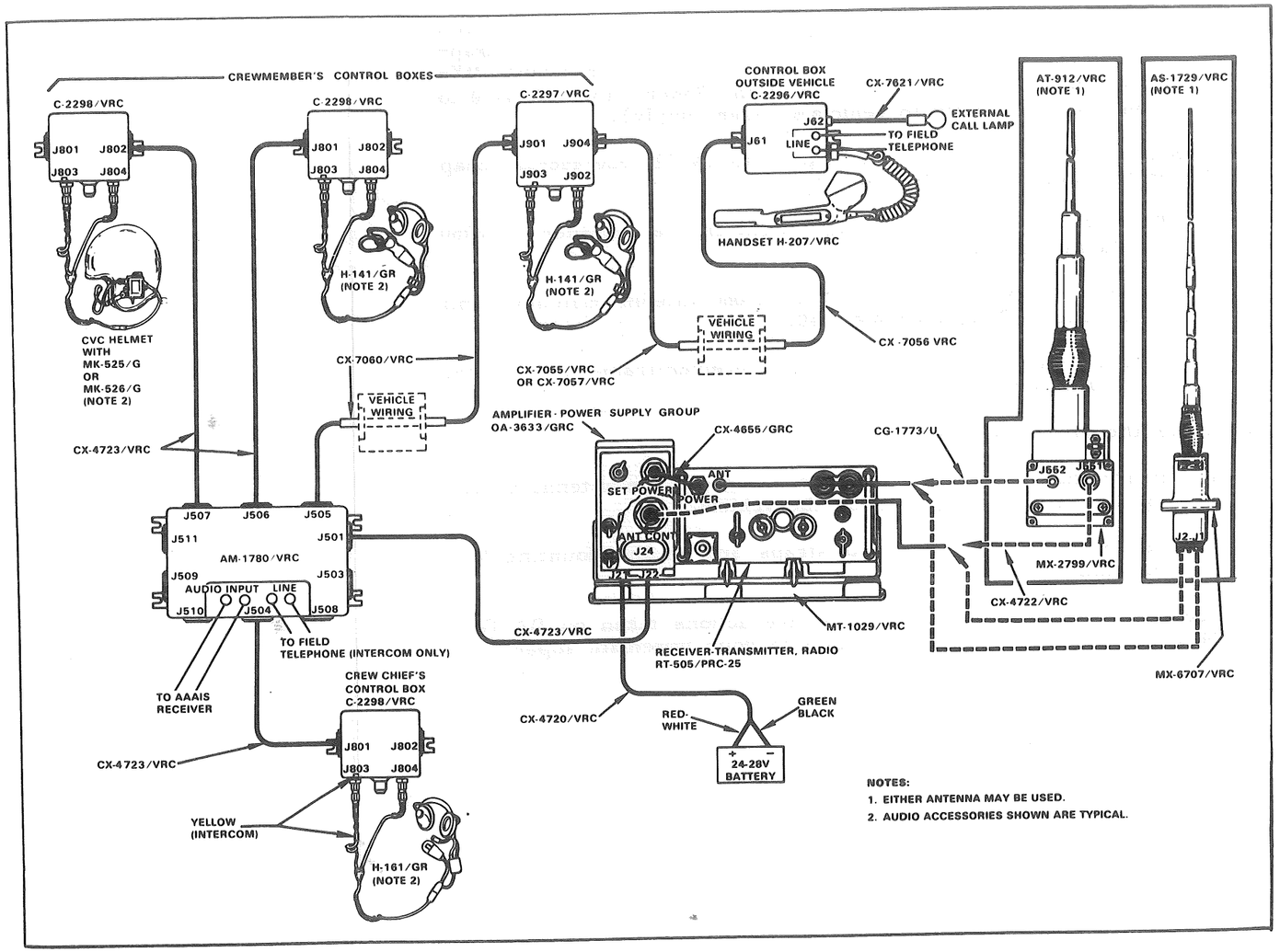


Figure 2. Cabling Diagram Radio Set AN/GRC-125/160.

REFERENCES

Applicable TM 11-2300 Series Manuals.

TM 11-5820-498-12, Operator's and Organizational Maintenance Manual: 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.

TASK

113-587-1019

Verify Installation of Radio Set AN/VRC-12 in a Tracked Vehicle

CONDITIONS

This task is performed in a tactical or nontactical situation under all weather conditions, and may be performed in an NBC environment. Task is performed upon receipt of a new combat tracked vehicle or upon return of a combat tracked vehicle from DS maintenance. You will be provided with the following:

1. Radio Set AN/VRC-12 installed in a tracked vehicle.
2. Installation instructions from applicable installation kit.
3. DA Form 2404.
4. Tool Kit TK-101.
5. TM 11-5820-401-12.

STANDARDS

This task has been performed correctly when, within 30 minutes, the installation of Radio Set, AN/VRC-12, in a tracked vehicle has been verified; performance measures 1 through 7 have been completed; and all faults found have been recorded on DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Check antenna mounting bolts to insure they are tight. (Refer to TM 11-5820-401-12, chap 2, sec II, para 2-7, p 2-5.)
2. Check the Intercommunication Set AN/VIC-1(V) components. (Refer to TM 11-5820-401-12, chap 6, sec I, para 6-1 thru 6-4, pp 6-1 thru 6-3.)

a. Tighten all bolts on control boxes including Amplifier AM-1780.

b. Tighten all cables and insure they are strapped to the vehicle.

3. Check installation of Mountings MT-1029 and MT-1898 and Power Cable CX-4720 (fig 1).

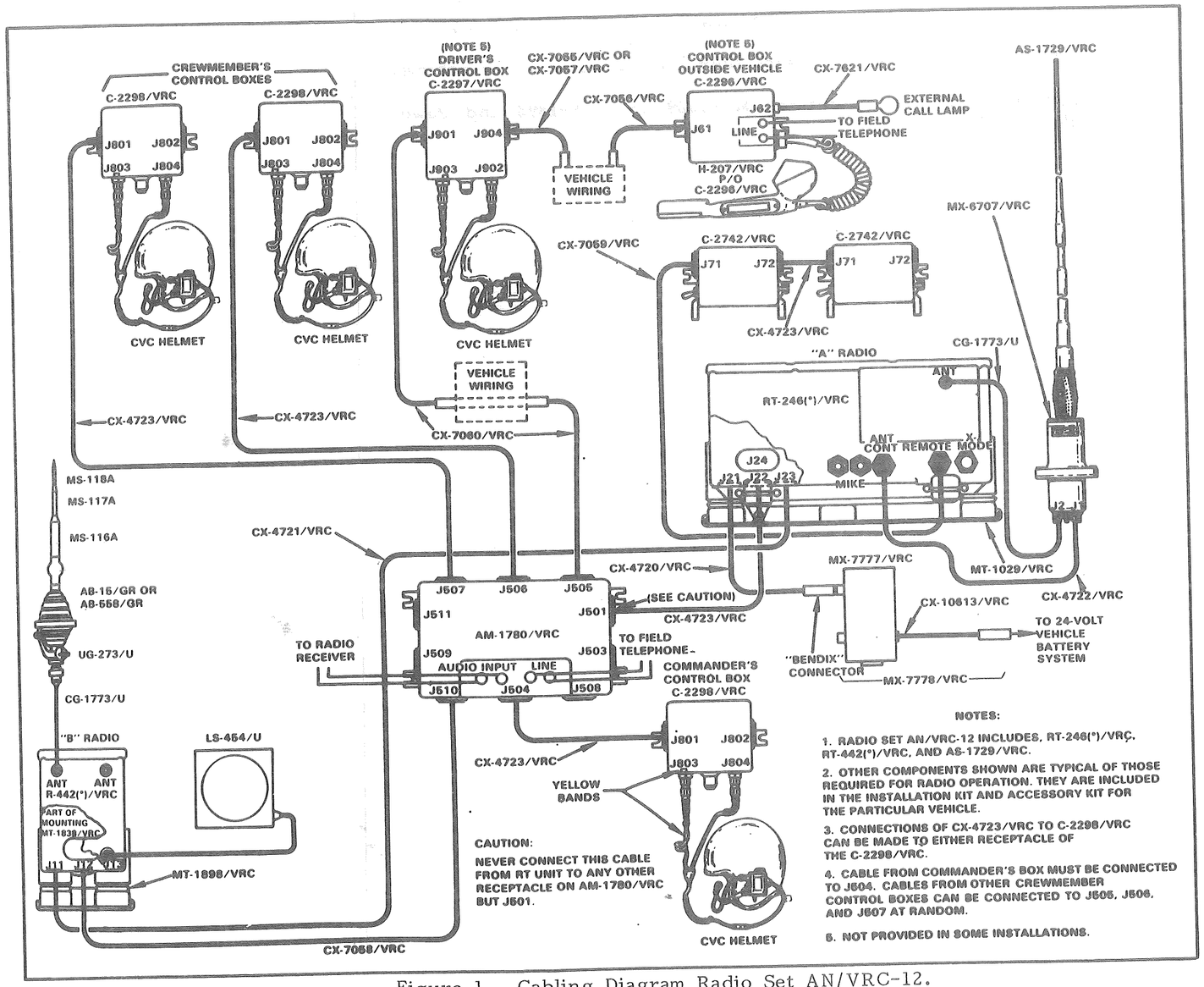


Figure 1. Cabling Diagram Radio Set AN/VRC-12.

a. Insure that the mount links are in the proper position. Power to the radio set is controlled by the Amplifier AM-1780 (fig 2).

b. Tighten all mounting bolts on the Mountings MT-1029 and MT-1898.

c. Insure the Power Cable CX-4720 is correctly connected from the mount to the vehicle power supply and is strapped to the vehicle (fig 1). (If Suppressor Electrical Transient MX-7778(*)/GRC is installed, connect Power Cable CX-4720 to it, instead of directly to vehicle's power supply.)

d. Check the Cable CX-4721 to insure that it is connected from mount-to-mount.

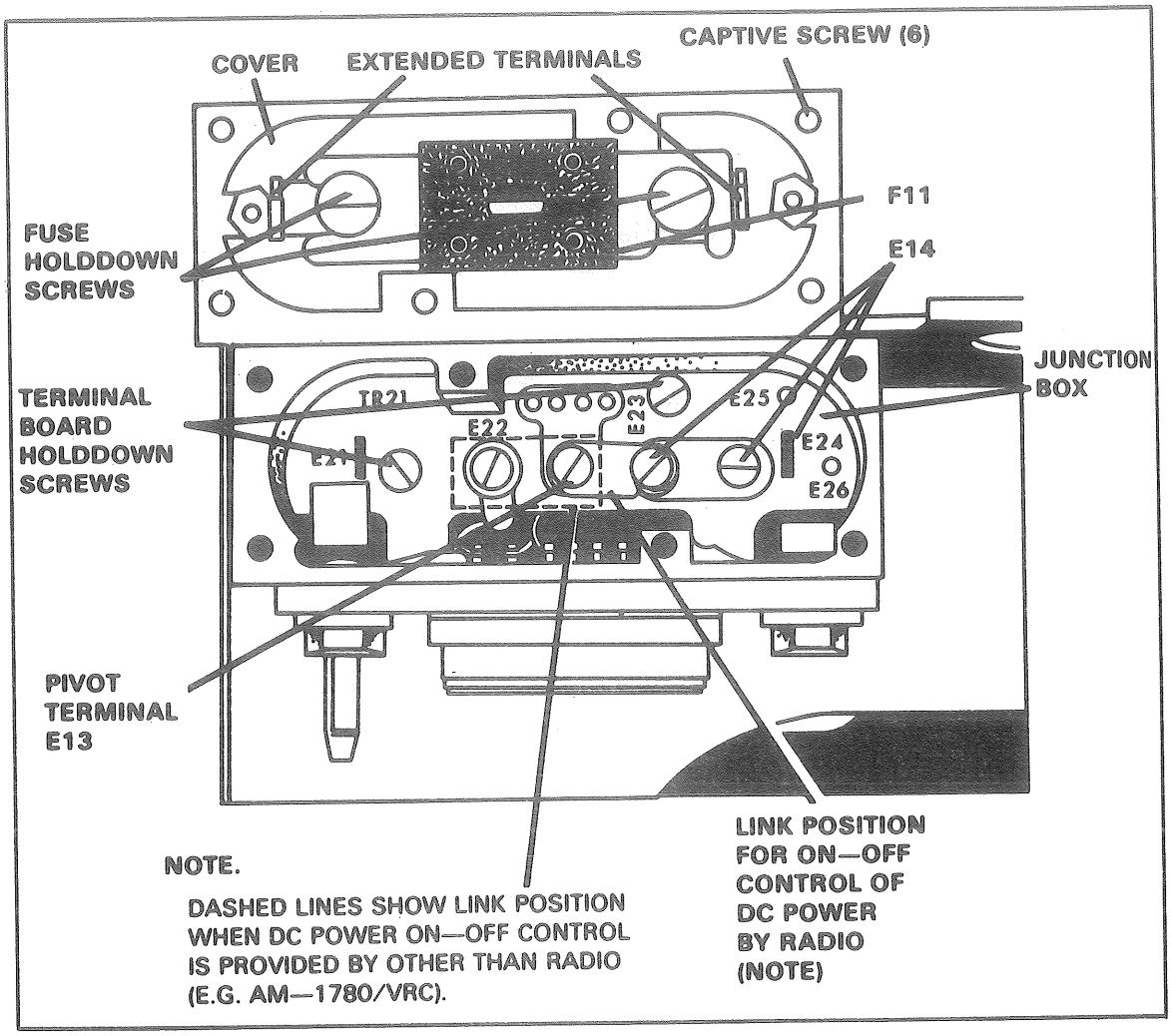


Figure 2. MT-1029 Junction Box (Link).

4. Check installation of radio set. (Refer to TM 11-5820-401-12, chap 2, sec II, para 2-4 thru 2-6, pp 2-2 thru 2-4.)

   a. Tighten clamp assemblies finger tight on the Mountings MT-1898 and MT-1029 to insure that radio is secured in mounts.

   b. Connect Cable CX-4722 from antenna matching unit to Receiver-Transmitter (fig 1).

   c. Connect Cables CG-1773 from receiver-transmitter to antenna matching unit and from receiver to receiver antenna.

5. Check the ground straps. (Refer to TM 11-5820-401-12, chap 2, sec II, fig 2-3, p 2-8; fig 2-9, p 2-15.)

   a. Insure that the ground strap is connected between the antenna matching unit and a ground point on the vehicle.

   b. Insure that the ground straps on the Mounting MT-1029 are secured.

   c. Insure that the ground straps on the Mounting MT-1898 are secured.

6. Record any faults noted and corrective action taken on DA Form 2404.

7. Submit the completed DA Form 2404 to your supervisor.

REFERENCES

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual: (Including Repair Parts and Special Tools List): AN/VRC-12 Series Radio Sets.

TASK

113-587-1027

Verify Installation of Radio Set AN/VRC-46 in a Tracked Vehicle

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. Task is performed upon receipt of a new combat tracked vehicle or upon return of a combat tracked vehicle from DS maintenance. You will be provided with the following:

1. Radio Set AN/VRC-46 installed in a tracked vehicle.
2. Installation instructions from applicable installation kit.
3. DA Form 2404.
4. Tool Kit TK-101.
5. TM 11-5820-401-12.

STANDARDS

This task has been performed correctly when, within 30 minutes, the installation of Radio Set AN/VRC-46 in a tracked vehicle has been verified; performance measures 1 through 7 have been completed; and all faults found have been recorded on DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Check antenna mounting bolts to insure they are tight. (Refer to TM 11-5820-401-12, chap 2, sec II, para 2-7, p 2-5.)
2. Check the Intercommunication Set AN/VIC-1(V) components. (Refer to TM 11-5820-401-12, chap 6, sec I, para 6-1 thru 6-4, pp 6-1 thru 6-3.)

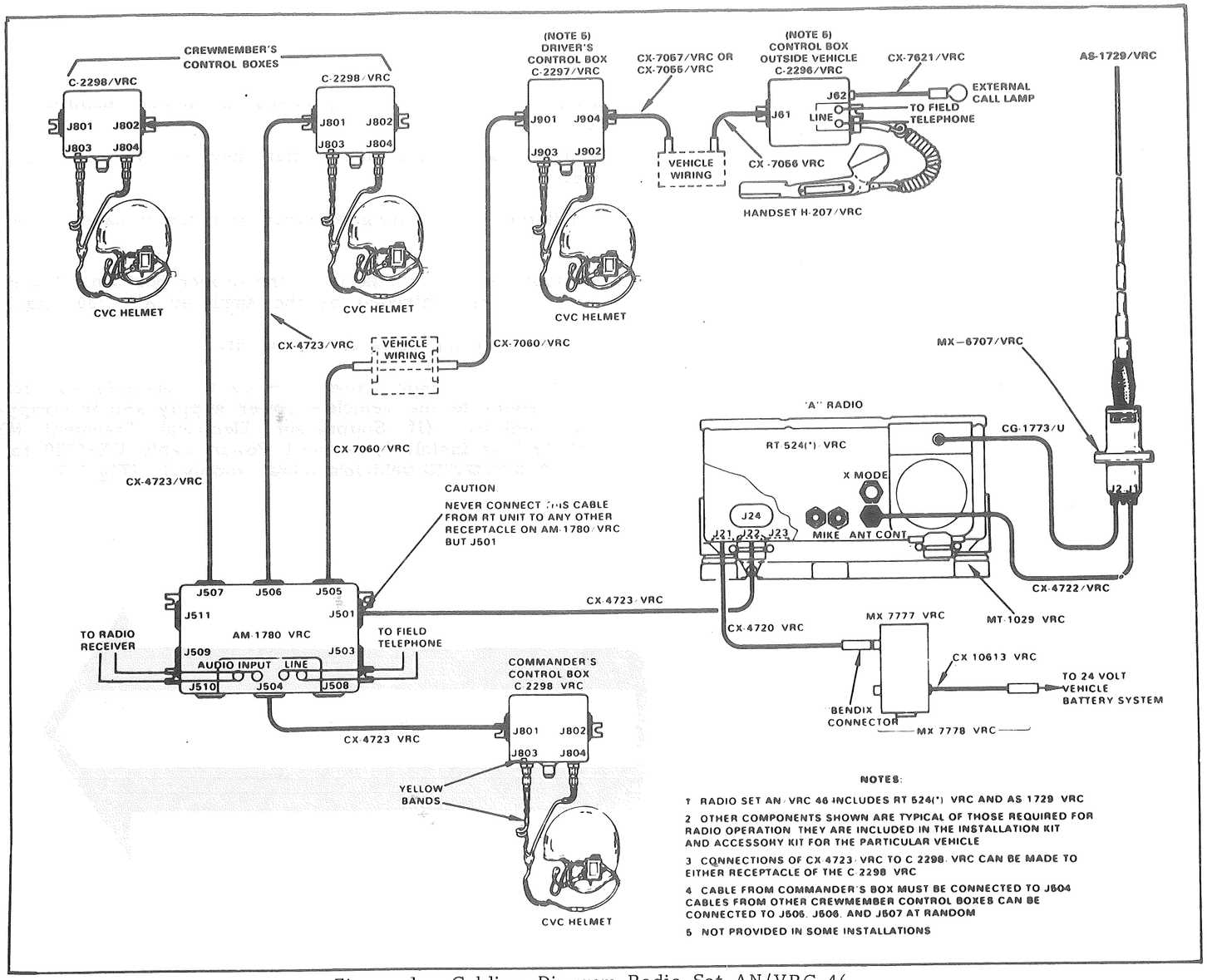


Figure 1. Cabling Diagram Radio Set AN/VRC-46.

a. Tighten all bolts on control boxes to include Amplifier AM-1780.

b. Tighten all cables and insure that they are strapped to the vehicle.

3. Check installation of Mounting MT-1029 and Power Cable CX-4720 (fig 1).

a. Insure that the mount link is in the proper position. Power to the radio set is controlled by the Amplifier AM-1780 (fig 2).

b. Tighten all mounting bolts on the mount.

c. Insure that the Power Cable CX-4720 is correctly connected from the mount to the vehicle's power supply and is strapped to the vehicle. (If Suppressor Electrical Transient MX-7778(*)/GRC is installed, connect Power Cable CX-4720 to it instead of directly to vehicle's power supply.) (Fig 1.)

Figure 2.

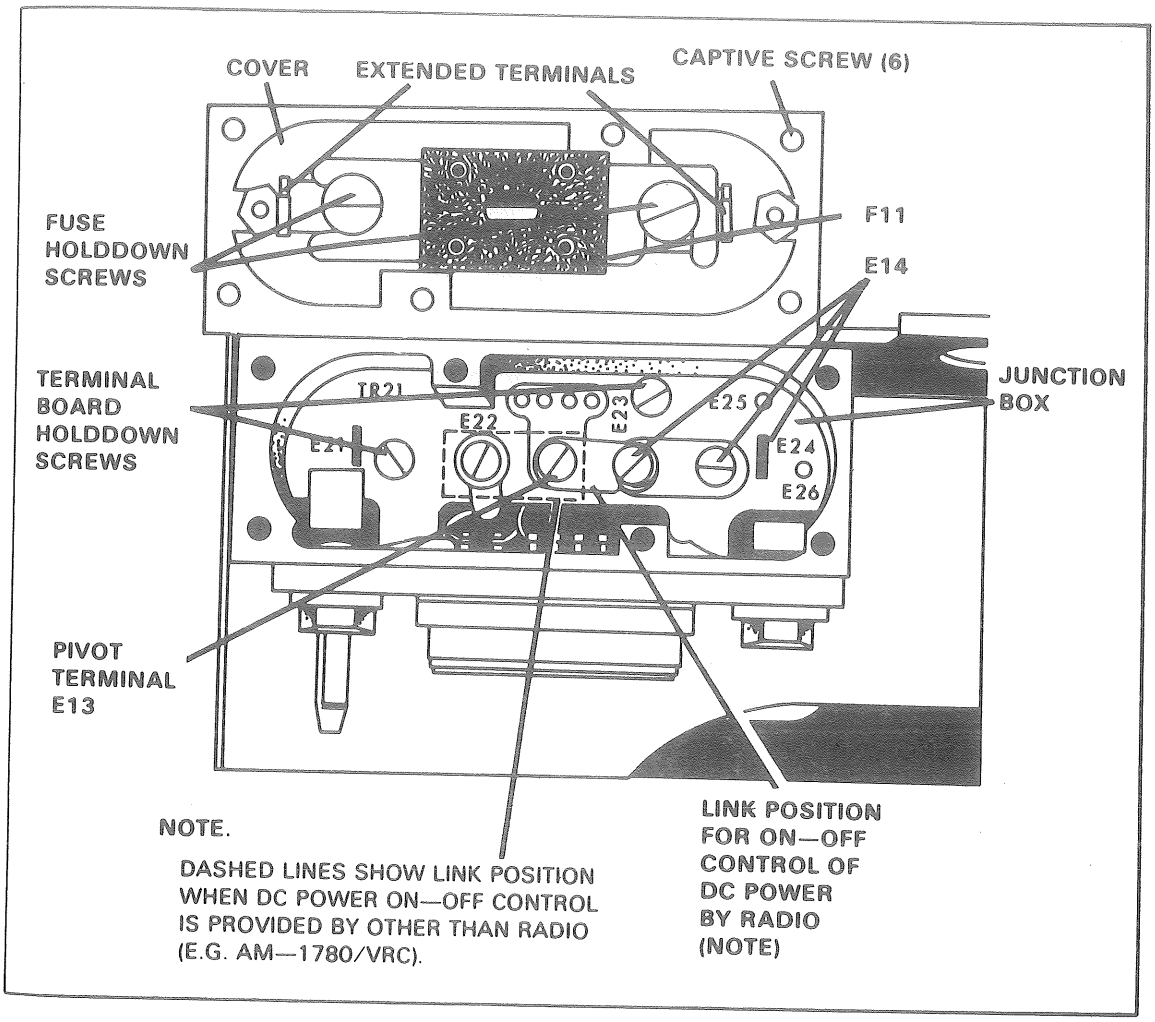


Figure 2. MT-1029 Junction Box (Link).

4. Check installation of radio set. (Refer to TM 11-5820-401-12, chap 2, sec II, para 2-4 thru 2-6, pp 2-2 thru 2-4.)

   a. Tighten clamp assemblies finger tight on the Mounting MT-1029 to insure that radio is secured in mount.

   b. Connect Cables CX-4722 and CG-1773 from antenna matching unit to receiver-transmitter.

5. Check the ground straps. (Refer to TM 11-5820-401-12, chap 2, sec II, fig 2-3, p 2-8.)

   a. Insure that the ground strap is connected between the antenna matching unit and a ground point on the vehicle.

   b. Insure that the ground straps on the Mounting MT-1029 are secured.

6. Record any faults noted and corrective action taken on DA Form 2404.

7. Submit the completed DA Form 2404 to your supervisor.

REFERENCES

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools List): AN/VRC-12 Series Radio Sets.

TASK

113-587-1033

Verify Installation of Radio Set AN/VRC-49 in a Tracked Vehicle

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. Task is performed upon receipt of a new combat tracked vehicle or upon return of a combat tracked vehicle from DS maintenance. You will be provided with the following:

1. Radio Set AN/VRC-49 installed in a tracked vehicle.
2. Installation instructions from applicable installation kit.
3. DA Form 2404.
4. Tool Kit TK-101.
5. TM 11-5820-401-12.

STANDARDS

This task has been performed correctly when, within 30 minutes, the installation of Radio Set AN/VRC-49 in a tracked vehicle has been verified; performance measures 1 through 7 have been completed; and all faults found have been recorded on DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Check antenna mounting bolts to insure that they are tight. (Refer to TM 11-5820-401-12, chap 2, sec II, para 2-7, p 2-5.)

   CAUTION: Do not overtighten.

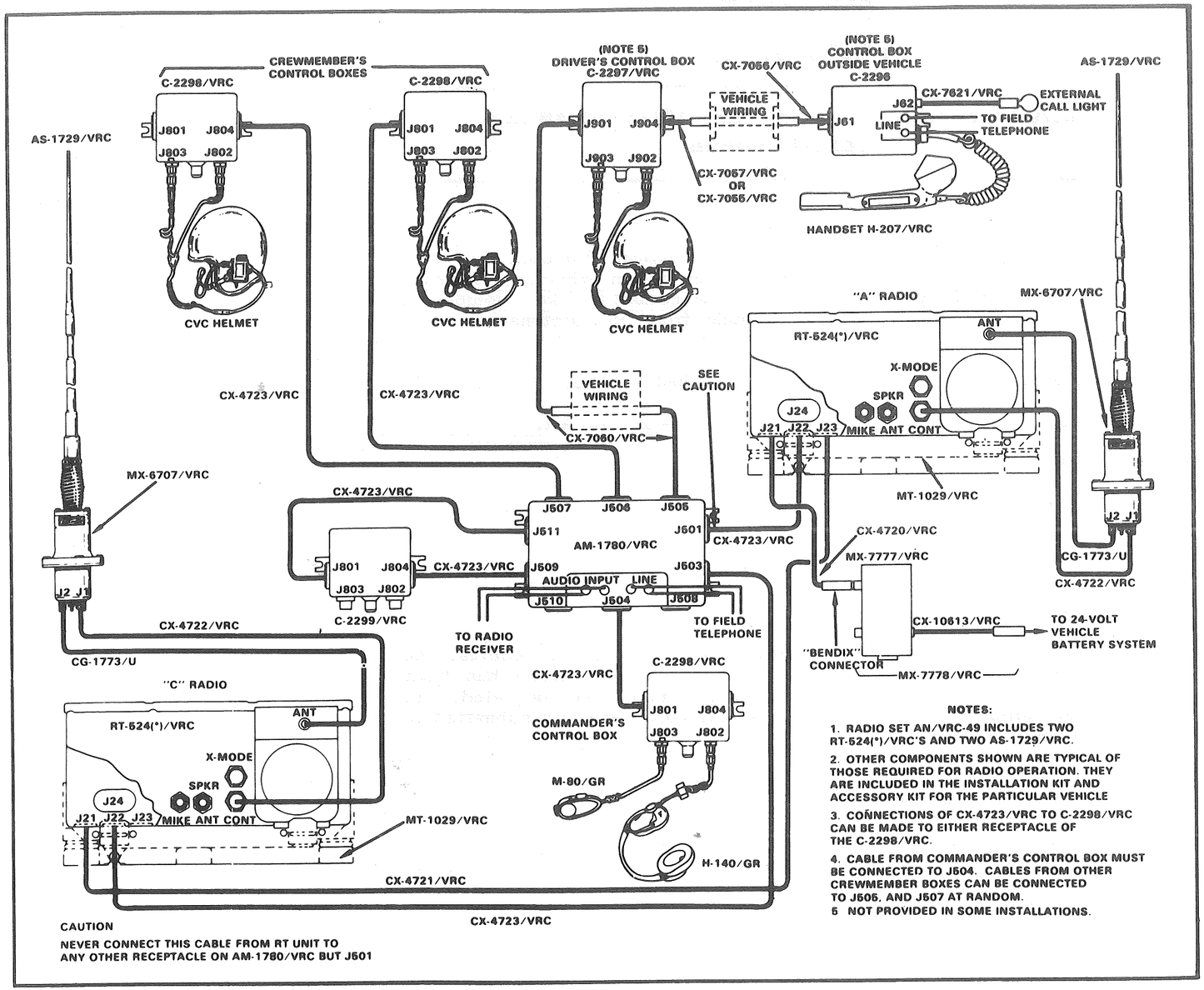


Figure 1. Cabling Diagram for Radio Set AN/VRC-49.

2. Check the Intercommunication Set AN/VIC-1(V) components. (Refer to TM 11-5820-401-12, chap 6, sec I, para 6-1 thru 6-4, pp 6-1 thru 6-3.)

   a. Tighten all bolts on control boxes to include Amplifier AM-1780/VRC.

   b. Tighten all cables and insure that they are strapped to the vehicle.

3. Check installation of Mounting MT-1029 and Power Cable CX-4720 (fig 1).

   a. Insure that the power links in both mounts are positioned so that the power is controlled by the Amplifier AM 1780 (fig 2).

   b. Tighten all mounting bolts on the mounts.

   c. Insure that the Power Cable CX-4720 is connected between the mount and the vehicle power supply, and is strapped to the vehicle. (If Suppressor Electrical Transient MX-7778(*)/GRC is installed, connect Power Cable CX-4720 to it instead of directly to vehicle's power supply.)

   d. Insure that the Power Cable CX-4721 is connected from mount to mount (female end goes into the mount receiving power; male end goes into J23 receptacle supplying power).

4. Check installation of radio set. (Refer to TM 11-5820-401-12, chap 2, sec II, para 2-4 thru 2-6, pp 2-2 thru 2-4.)

   a. Tighten clamp assemblies finger tight on the Mount MT-1029.

   b. Connect Cables CX-4722 and CG-1773 from antenna matching units to receiver-transmitters.

5. Check ground straps. (Refer to TM 11-5820-401-12, chap 2, sec II, fig 2-3, p 2-8, fig 2-9, pp 2-15.)

   a. Insure that the ground straps are secured on the antenna matching units to a ground point on the vehicle.

   b. Insure that the ground straps on the mounts are secured.

6. Record any faults noted and corrective actions taken on DA Form 2404.

7. Submit completed DA Form 2404 to your supervisor.

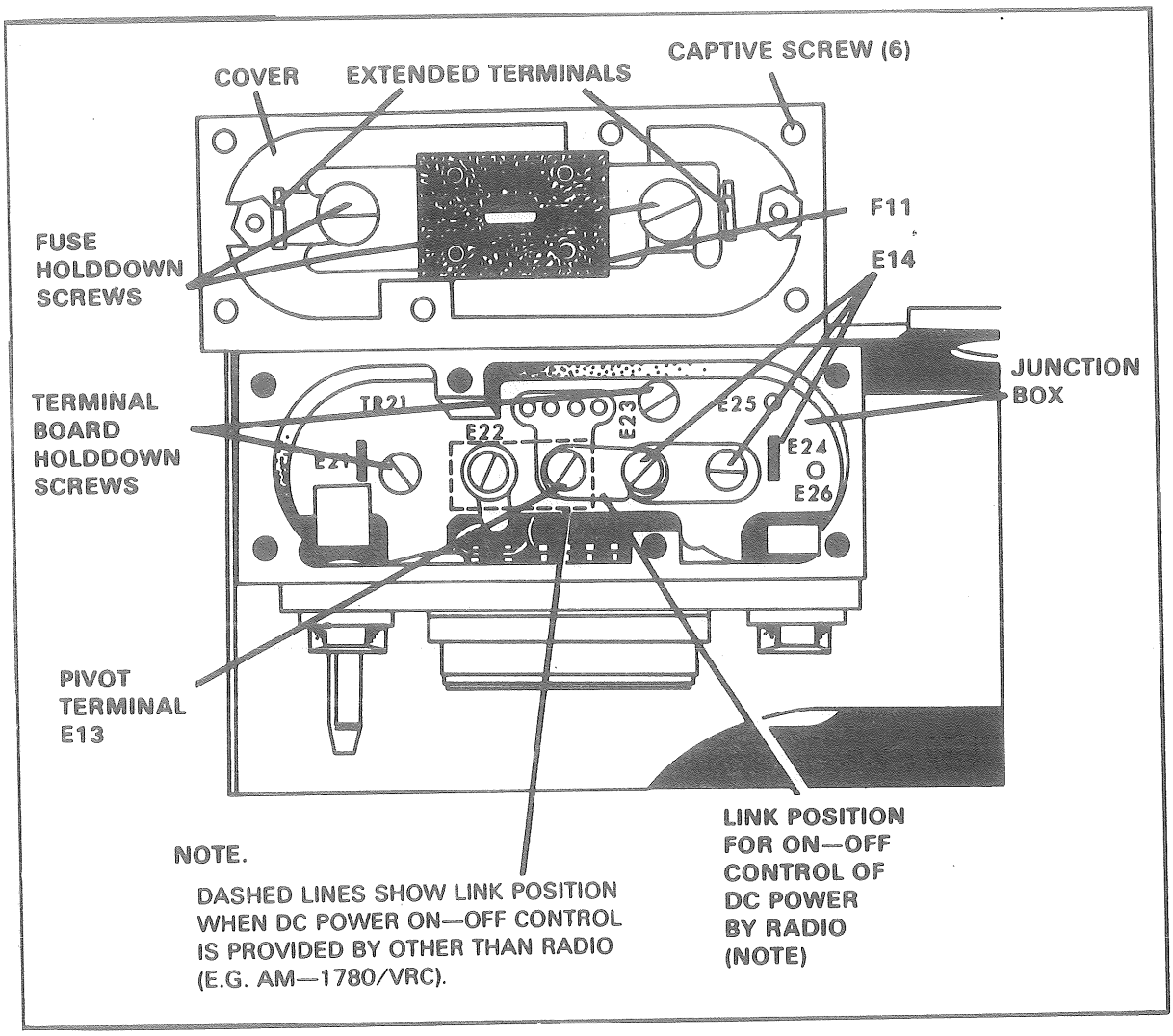


Figure 2. MT-1029 Junction Box (Link).

REFERENCES

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): AN/VRC-12 Series, Radio Sets.

TASK

113-587-1039

Install/Reinstall Installation Kit MK-1221/VRC-12 in 1/4-Ton Utility Truck (4x4) M151

CONDITIONS

This task is performed in a tactical or nontactical situation, in a sheltered facility, and may be performed in an NBC environment. Task is performed when directed by your supervisor. You will be provided with the following items:

1. Installation Kit MK-1221.
2. Tool Kit TK-101/G.
3. Multimeter AN/USM-223 or equivalent.
4. Truck Utility, 1/4-Ton M151.
5. Special tools from No. 1 Common Tool Set of the unit motor maintenance section.
   a. One 3/8-inch electric drill.
   b. One 1/16 inch to 3/8-inch drill bit set.
   c. Center punch.
   d. Chassis punch.
   e. One 50-foot extension cord.
   f. Inch pound torque wrench.
6. Hammer.
7. Matching Unit MX-6707/VRC.
8. TM 11-5820-401-12.

STANDARDS

This task has been performed correctly when the Installation Kit MK-1221 has been installed/reinstalled; and performance measures 1 through 8 have been completed. This task should be completed within 3 hours.

PERFORMANCE MEASURES

1. Install and secure antenna mount assembly. (Refer to fig 1.)

   a. Remove two reflectors from rear (roadside) of vehicle.

   b. Remove footman loops from rear (roadside) of vehicle.

   c. Using antenna mount bracket as template, drill required antenna mounting holes in vehicle body.

   d. Assemble antenna mount assembly using supplied hardware.

   e. Secure antenna mount assembly to vehicle using supplied hardware.

   f. Relocate and secure two reflectors on rear (roadside) of vehicle using supplied hardware.

2. Install and secure MX-6707 and AB-15/GR. (Refer to TM 11-2300-351-15-2 and TM 11-5820-401-12, chap 2, sec II, para 2-9d, pp 2-10 and 2-11.)

   CAUTION: Do not exceed 100-inch pounds of torque.

3. Install and secure Mounting MT-1029 and MT-1898 base. (Refer to fig 2.)

   a. Check MT-1029 and MT-1898 power control link and insure that it is in its direct (radio ON-OFF control) position. (Refer to TM 11-2300-351-15-2 and TM 11-5820-401-12, chap 2, sec II, para 2-10b(1)(b), pp 2-13 and 2-14.)

      NOTE: At this time, the MT-1029 and MT-1898 do not have power applied.

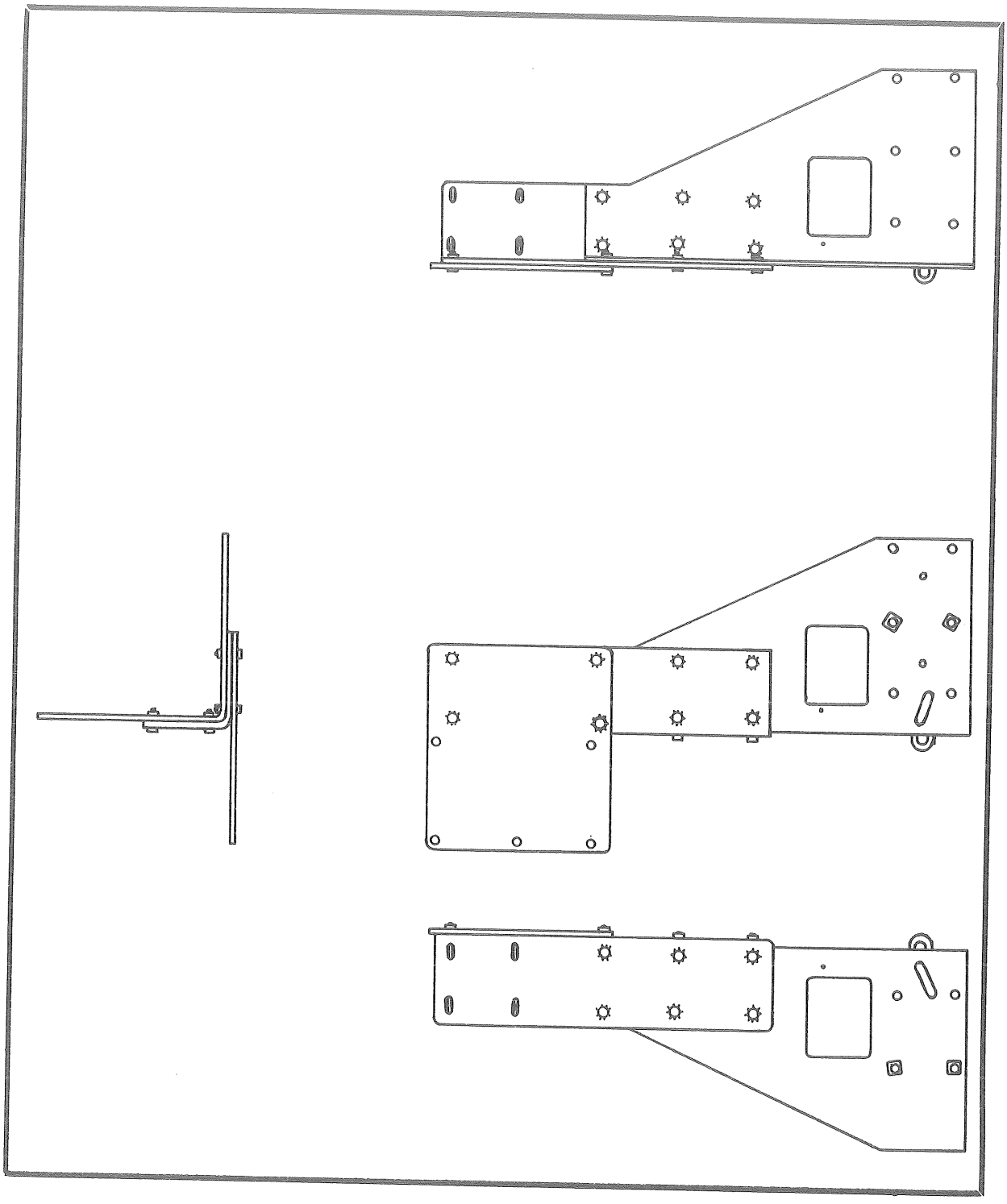


Figure 1. Antenna mount assembly.

b. Disassemble MT-1029 and MT-1898. (Refer to TM 11-5820-401-12, chap 2, sec II, para 2-10a(1) thru (3), pp 2-12 and 2-13.)

c. Secure support bracket to MT-1029 and MT-1898 bases using supplied hardware.

d. Secure mount brace to support bracket (MT-1029) using supplied hardware.

e. Using support brackets and mount brace as templates, drill required support brackets securing holes in vehicles roadside sponson (fenderwell).

f. Secure support bracket (including MT-1029 and MT-1898 bases) and mount brace to vehicle sponson (roadside) using supplied hardware.

NOTE: Check all antenna mount assemblies MX-6707 and AB-15; MT-1029 and MT-1898 mounting bolts for completeness and tightness.

4. Install C-2742/VRC. (Refer to fig 2.)

5. Install C-2299/VRC. (Refer to fig 2.)

6. Install speaker mounting brackets. (Refer to fig 2.)

7. Route, strap, and connect cables. (Refer to fig 2, 3, 4, and 5.)

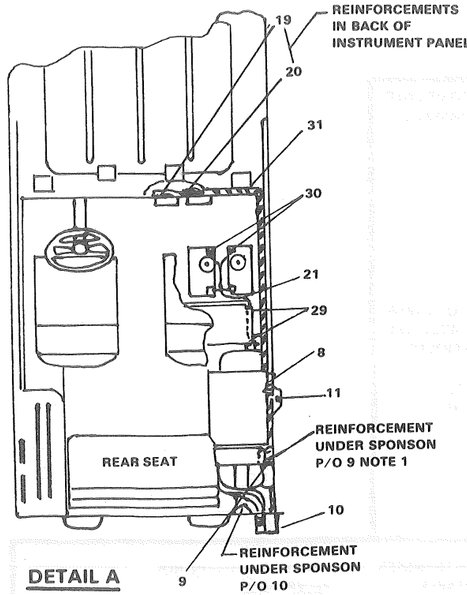
a. Connect CX-4722 cable plug to jack on base of MX-6707 and then route to MT-1029 base.

b. Connect CG-1773 cable plug to jack on base of MX-6707 and then route to MT-1029 base.

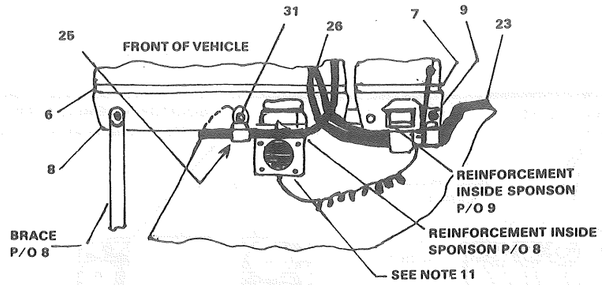
c. Connect CG-1773 cable plug to jack on base of AB-15 and then route to MT-1898 base.

d. Connect CX-4721 cable plug to J11 jack on base of MT-1898 and then route to jack J23 on MT-1029 base.

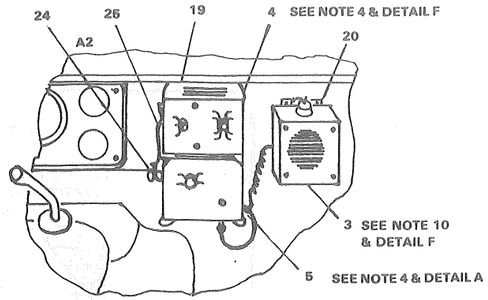
e. Connect CX-4723 cable plug to J701 jack on C-2299 and then route to J22 jack on MT-1029 base.



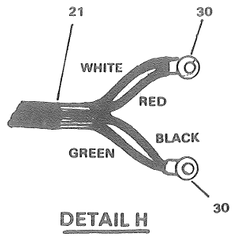
DETAIL A



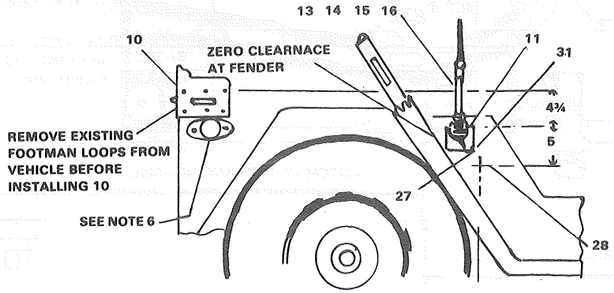
DETAIL C



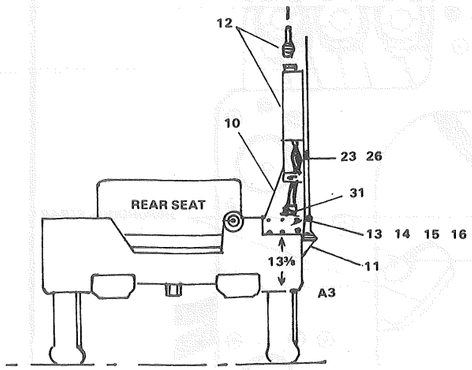
DETAIL G



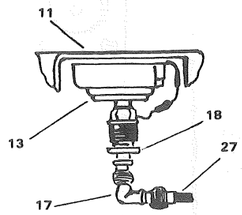
DETAIL H



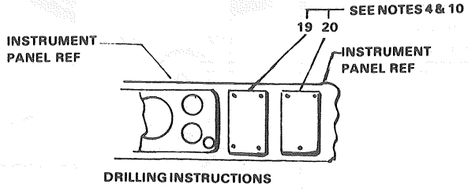
DETAIL D



DETAIL B



DETAIL E



DETAIL F

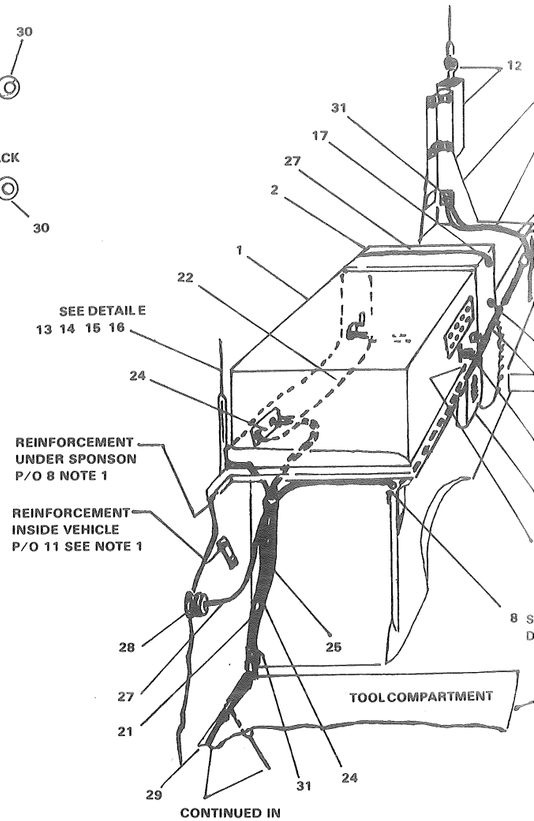
Figure 2. Overall cabling, routing, and installation diagram.

NOTES:

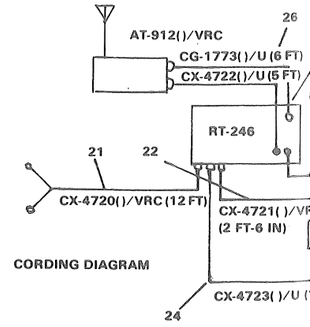
1. *INSTALL MOUNTING MT-1029( )/VRC 6 ON SUPPORT BRACKET 8 AND MOUNTING MT-1898( )/VRC 7 ON BRACKET 9 . LOCATE ASSEMBLIES ON CURBSIDE SPONSON AS SHOWN IN DETAIL A & C. USING SUPPORT BRACKET 8 & BRACKET 9 AS TEMPLATES DRILL REQUIRED HOLES IN VEHICLE.*
2. *MOUNT BRACE ON SUPPORT BRACKET 8 . LOCATE HOLE REQUIRED ON VERTICAL SPONSON FOR SECURING BOTTOM OF BRACE.*
   3 LOCATE HOLES REQUIRED IN VEHICLE FOR ANTENNA MOUNT 11 & ANTENNA MOUNT 11 BY USING 10 & 11 AS DRILLING TEMPLATES: SEE DETAILS A, B, & D.
4. *TO LOCATE CONTROL BOXES 4 & 5. PLACE REINFORCEMENT 19 ON INSTRUMENT PANEL 1 IN TO RIGHT OF INSTRUMENT CLUSTER & 5/16 IN. UP FROM BOTTOM OF INSTRUMENT PANEL & USE AS TEMPLATE FOR DRILLING 4 HOLES. SEE DETAIL F.*
5. *CUT CLAMP STRAP KIT MATERIAL INTO REQUIRED LENGTHS FOR CABLE CLAMPING. LOCATE CLAMPS APPROXIMATELY AS SHOWN.*
6. *RELOCATE REFLECTOR 2½ IN. DOWN FROM ORIGINAL POSITION FOR MOUNTING USE HARDWARE SUPPLIED IN CLAMP STRAP KIT 31. USE REFLECTOR AS TEMPLATE FOR DRILLING HOLES IN VEHICLE. SEE DETAIL D.*
7. *ANTENNA MOUNT 10 CAM BE MOUNTED IN UPPER OR LOWER POSITION.*
8. *UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES*
9. *ALL COMPONENTS ARE FURNISHED WITH NECESSARY MOUNTING HARDWARE.*
10. *TO LOCATE SPEAKER 3 PLACE REINFORCEMENT 20 ON INSTRUMENT PANEL 11½ IN. TO RIGHT OR INSTRUMENT CLUSTER & 5/16 IN. UP FROM BOTTOM OF INSTRUMENT PANEL & USE AS TEMPLATE FOR DRILLING 3 HOLES. DETAIL F.*
11. *LOCATE REAR SPEAKER ON CURBSIDE VERTICAL SPONSON.*
12. *IF ANTENNA AS-1729/VRC IS SUPPLIED IN INSTALLATION UNIT INSTALL PER SC-D-189022.*

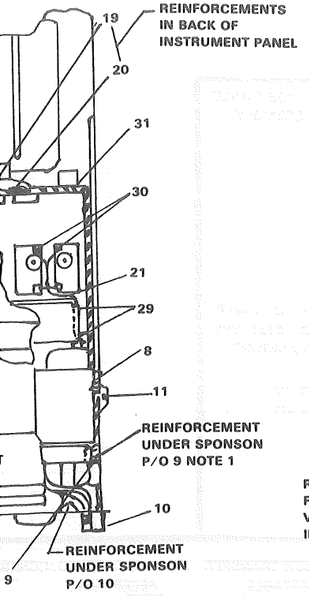
1 Radio Receiver-Transmitter RT-246/VRC
2 Radio Receiver R-442/VRC
3 Loudspeaker LS-454/U (2)
4 Control; Frequency Selector C-2742/VRC
5 Control, Radio Set, C-2299/VRC
6 Mounting MT-1029/VRC
7 Mounting MT-1898/VRC
8 Support bracket (SC-DL-48676)
9 Bracket (SC-D-446058)
10 Antenna mount assy (note 3) (SC-DL-48632)
11 Antenna mount (note 3) (SC-DL-48528)
12 Antenna AT-912/VRC or AS-1729/VRC (note 12)
13 Mast Base AB-15/GR
14 Mast Section MS-161-A
15 Mast Section MS-117-A
16 Mast Section MS-118-A
17 Adapter UG-306/U (2)

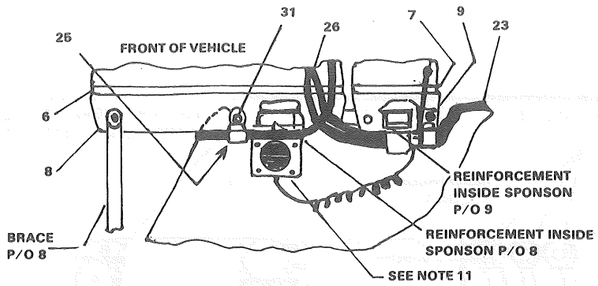
18 Adapter UG-273/U
19 Reinforcement (SC-B-75287)
20 Reinforcement assy, (SC-C-48477)
21 Cable Assy, Power Elect. CX-4729/VRC (10)
22 Cable Assy, Special Purpose Elect. CX-4721 (2 ft, 6 in)
23 Cable Assy, Special Purpose, Elect. CX-4722/U (5 ft)
24 Cable Assy, Special Purpose, Elect. CX-4723/U (10 ft)
25 Cable Assy, Special Purpose, Elect, CX-7059/VRC (11 ft)
26 Cord CG-1773/U (rf cable assy) (6 ft)
27 Cord CG-1773/U (rf cable assy) (5 ft)
28 Insulator IF-2/U
29 Grommet, rubber (2)
30 Terminal lug (2)
31 Clamp strap kit (note 5) (3)



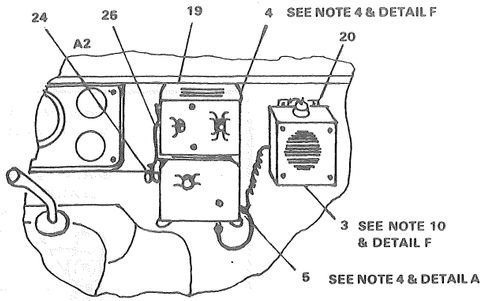
CONTINUED IN DETAIL A



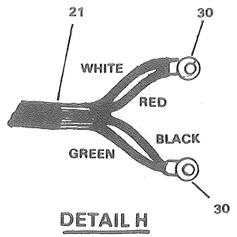




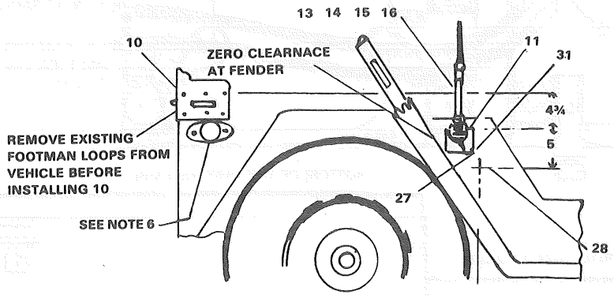
DETAIL C



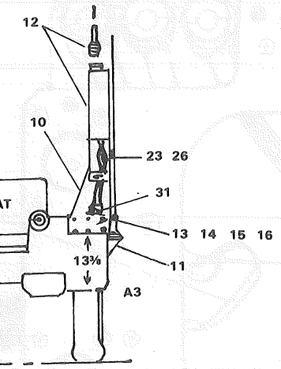
DETAIL G

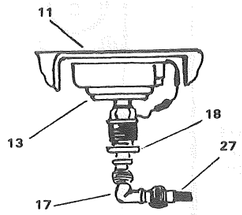


DETAIL H

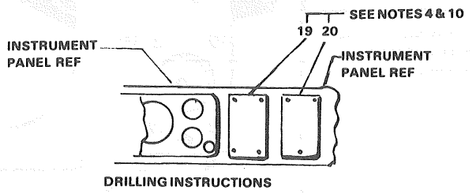


DETAIL D





DETAIL E



DETAIL F

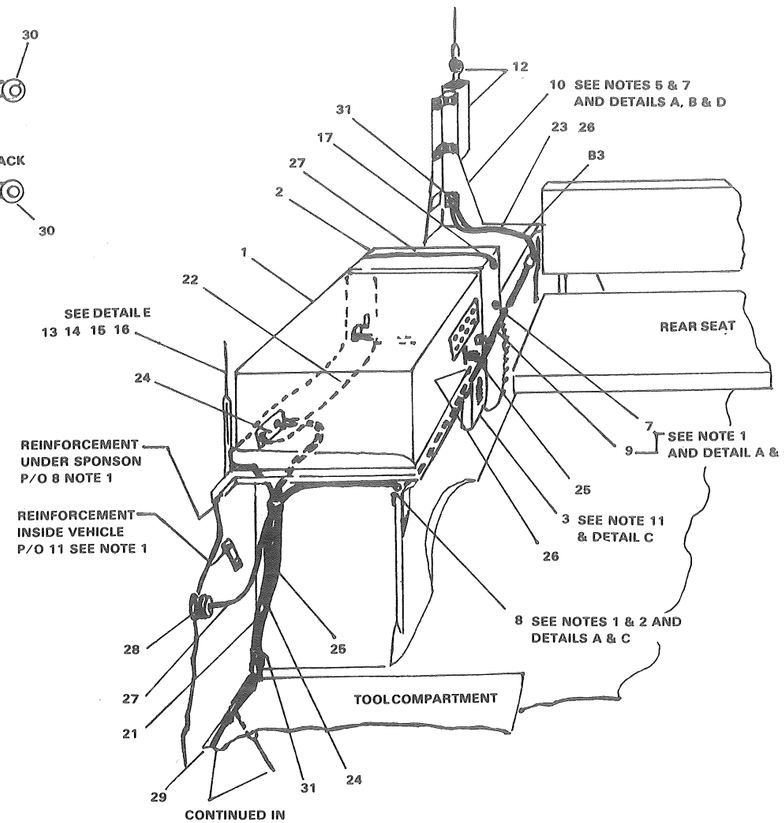
Overall cabling, routing, and installation diagram.

NOTES:

1. *INSTALL MOUNTING MT-1029( )/VRC 6 ON SUPPORT BRACKET 8 AND MOUNTING MT-1898( )/VRC 7 ON BRACKET 9 . LOCATE ASSEMBLIES ON CURBSIDE SPONSON AS SHOWN IN DETAIL A & C. USING SUPPORT BRACKET 8 & BRACKET 9 AS TEMPLATES DRILL REQUIRED HOLES IN VEHICLE.*
2. *MOUNT BRACE ON SUPPORT BRACKET 8 . LOCATE HOLE REQUIRED ON VERTICAL SPONSON FOR SECURING BOTTOM OF BRACE.*
   3 LOCATE HOLES REQUIRED IN VEHICLE FOR ANTENNA MOUNT 11 & ANTENNA MOUNT 11 BY USING 10 & 11 AS DRILLING TEMPLATES: SEE DETAILS A, B, & D.
4. *TO LOCATE CONTROL BOXES 4 & 5. PLACE REINFORCEMENT 19 ON INSTRUMENT PANEL 1 IN TO RIGHT OF INSTRUMENT CLUSTER & 5/16 IN. UP FROM BOTTOM OF INSTRUMENT PANEL & USE AS TEMPLATE FOR DRILLING 4 HOLES. SEE DETAIL F.*
5. *CUT CLAMP STRAP KIT MATERIAL INTO REQUIRED LENGTHS FOR CABLE CLAMPING. LOCATE CLAMPS APPROXIMATELY AS SHOWN.*
6. *RELOCATE REFLECTOR 2½ IN. DOWN FROM ORIGINAL POSITION FOR MOUNTING USE HARDWARE SUPPLIED IN CLAMP STRAP KIT 31. USE REFLECTOR AS TEMPLATE FOR DRILLING HOLES IN VEHICLE. SEE DETAIL D.*
7. *ANTENNA MOUNT 10 CAM BE MOUNTED IN UPPER OR LOWER POSITION.*
8. *UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES*
9. *ALL COMPONENTS ARE FURNISHED WITH NECESSARY MOUNTING HARDWARE.*
10. *TO LOCATE SPEAKER 3 PLACE REINFORCEMENT 20 ON INSTRUMENT PANEL 11½ IN. TO RIGHT OR INSTRUMENT CLUSTER & 5/16 IN. UP FROM BOTTOM OF INSTRUMENT PANEL & USE AS TEMPLATE FOR DRILLING 3 HOLES. DETAIL F.*
11. *LOCATE REAR SPEAKER ON CURBSIDE VERTICAL SPONSON.*
12. *IF ANTENNA AS-1729/VRC IS SUPPLIED IN INSTALLATION UNIT INSTALL PER SC-D-189022.*

1 Radio Receiver-Transmitter RT-246/VRC
2 Radio Receiver R-442/VRC
3 Loudspeaker LS-454/U (2)
4 Control; Frequency Selector C-2742/VRC
5 Control, Radio Set, C-2299/VRC
6 Mounting MT-1029/VRC
7 Mounting MT-1898/VRC
8 Support bracket (SC-DL-48676)
9 Bracket (SC-D-446058)
10 Antenna mount assy (note 3) (SC-DL-48632)
11 Antenna mount (note 3) (SC-DL-48528)
12 Antenna AT-912/VRC or AS-1729/VRC (note 12)
13 Mast Base AB-15/GR
14 Mast Section MS-161-A
15 Mast Section MS-117-A
16 Mast Section MS-118-A
17 Adapter UG-306/U (2)

18 Adapter UG-273/U
19 Reinforcement (SC-B-75287)
20 Reinforcement assy, (SC-C-48477)
21 Cable Assy, Power Elect. CX-4729/VRC (10)
22 Cable Assy, Special Purpose Elect. CX-4721 (2 ft, 6 in)
23 Cable Assy, Special Purpose, Elect. CX-4722/U (5 ft)
24 Cable Assy, Special Purpose, Elect. CX-4723/U (10 ft)
25 Cable Assy, Special Purpose, Elect, CX-7059/VRC (11 ft)
26 Cord CG-1773/U (rf cable assy) (6 ft)
27 Cord CG-1773/U (rf cable assy) (5 ft)
28 Insulator IF-2/U
29 Grommet, rubber (2)
30 Terminal lug (2)
31 Clamp strap kit (note 5) (3)



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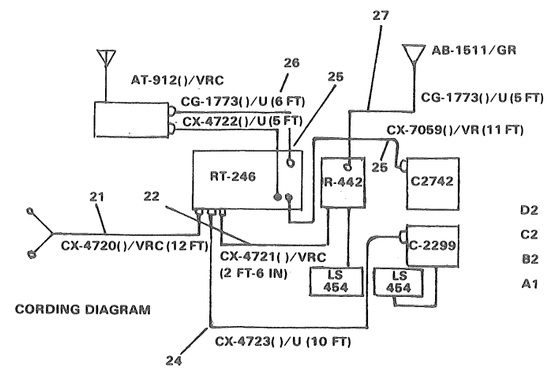
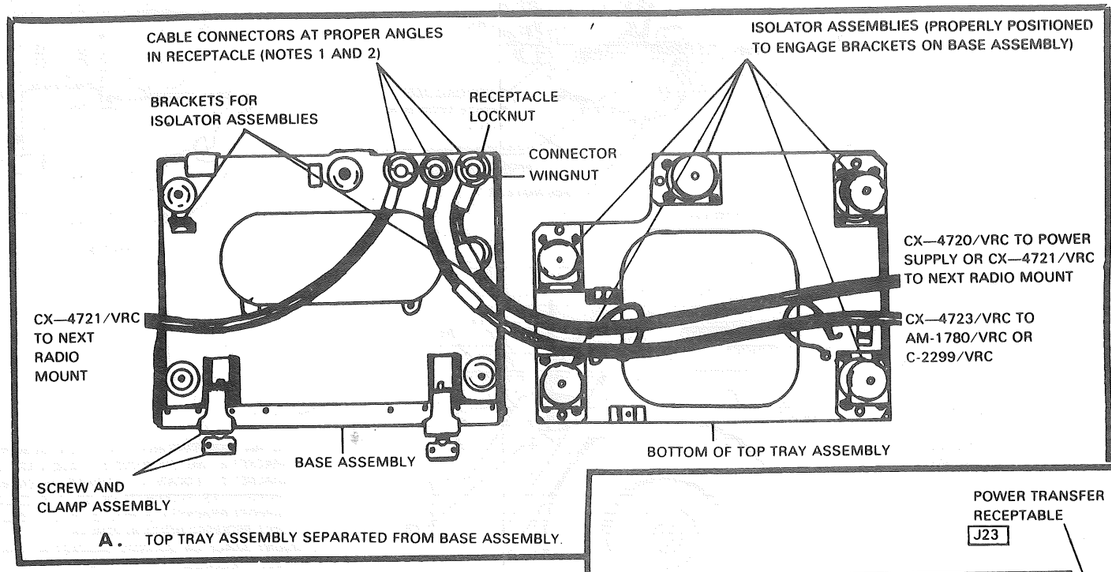


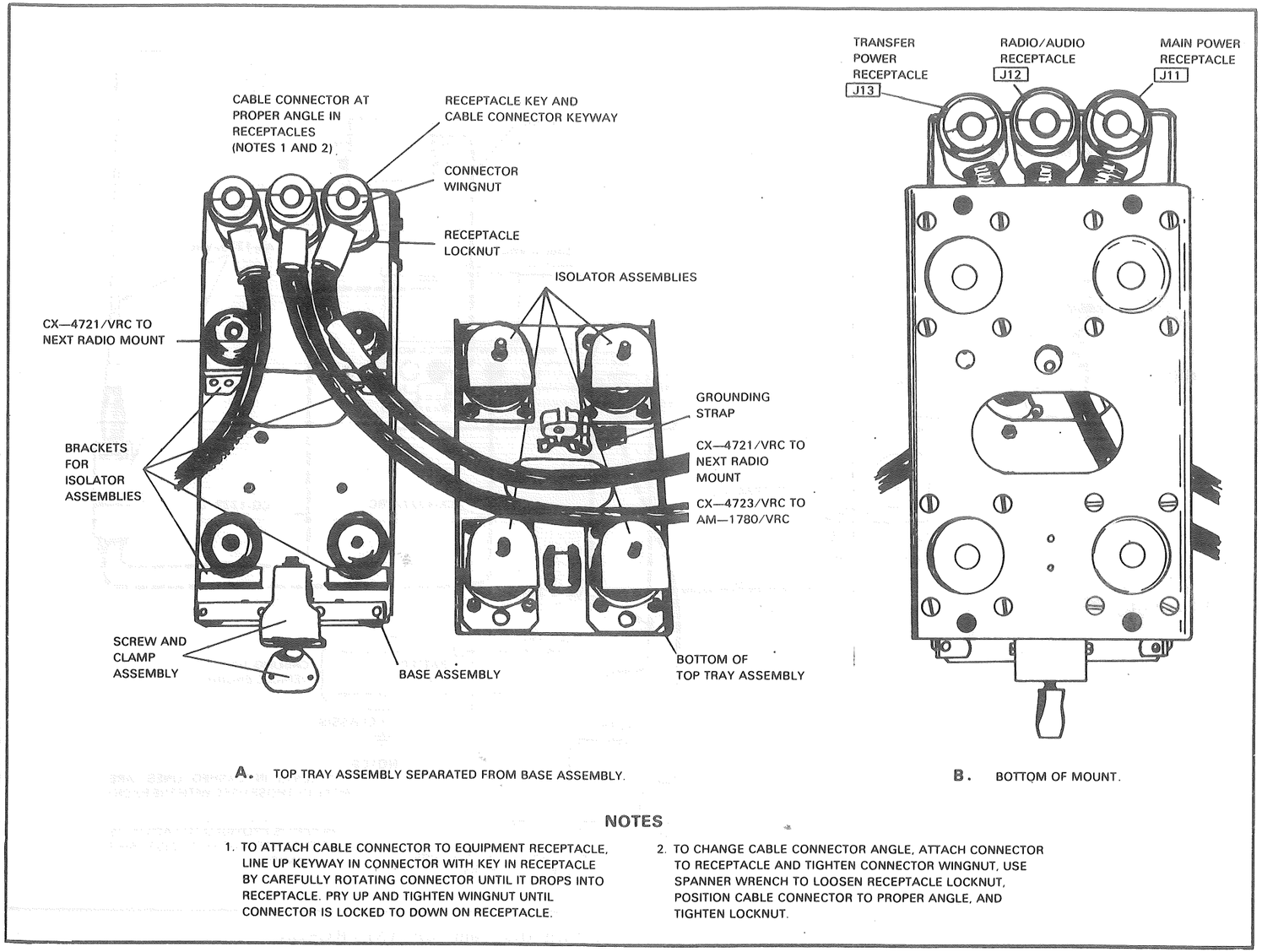


NOTES

1. TO ATTACH CABLE CONNECTOR TO EQUIPMENT RECEPTACLE LINE UP KEYWAY IN CONNECTOR WITH KEY IN RECEPTACLE BY CAREFULLY ROTATING CONNECTOR UNIT IT DROPS INTO RECEPTACLE. PRY UP AND TIGHTEN WINGNUT UNTIL CONNECTOR IS LOCKED TO DOWN ON RECEPTACLE.

2. TO CHANGE CABLE CONNECTOR ANGLE, ATTACH CONNECTOR TO RECEPTACLE AND TIGHTEN CONNECTOR WINGNUT: USE SPANNER WRENCH TO LOOSEN RECEPTACLE LOCKNUT, POSITION CABLE CONNECTOR TO PROPER ANGLE, AND TIGHTEN LOCKNUT.

Figure 3. Mounting MT-1029/VRC disassembled and with typical cables attached to receptacles.



A. TOP TRAY ASSEMBLY SEPARATED FROM BASE ASSEMBLY.

B. BOTTOM OF MOUNT.

NOTES

1. TO ATTACH CABLE CONNECTOR TO EQUIPMENT RECEPTACLE, LINE UP KEYWAY IN CONNECTOR WITH KEY IN RECEPTACLE BY CAREFULLY ROTATING CONNECTOR UNTIL IT DROPS INTO RECEPTACLE. PRY UP AND TIGHTEN WINGNUT UNTIL CONNECTOR IS LOCKED TO DOWN ON RECEPTACLE.
2. TO CHANGE CABLE CONNECTOR ANGLE, ATTACH CONNECTOR TO RECEPTACLE AND TIGHTEN CONNECTOR WINGNUT, USE SPANNER WRENCH TO LOOSEN RECEPTACLE LOCKNUT, POSITION CABLE CONNECTOR TO PROPER ANGLE, AND TIGHTEN LOCKNUT.

Figure 4. Mounting MT-1898/VRC disassembled and with typical cables attached to receptacles.

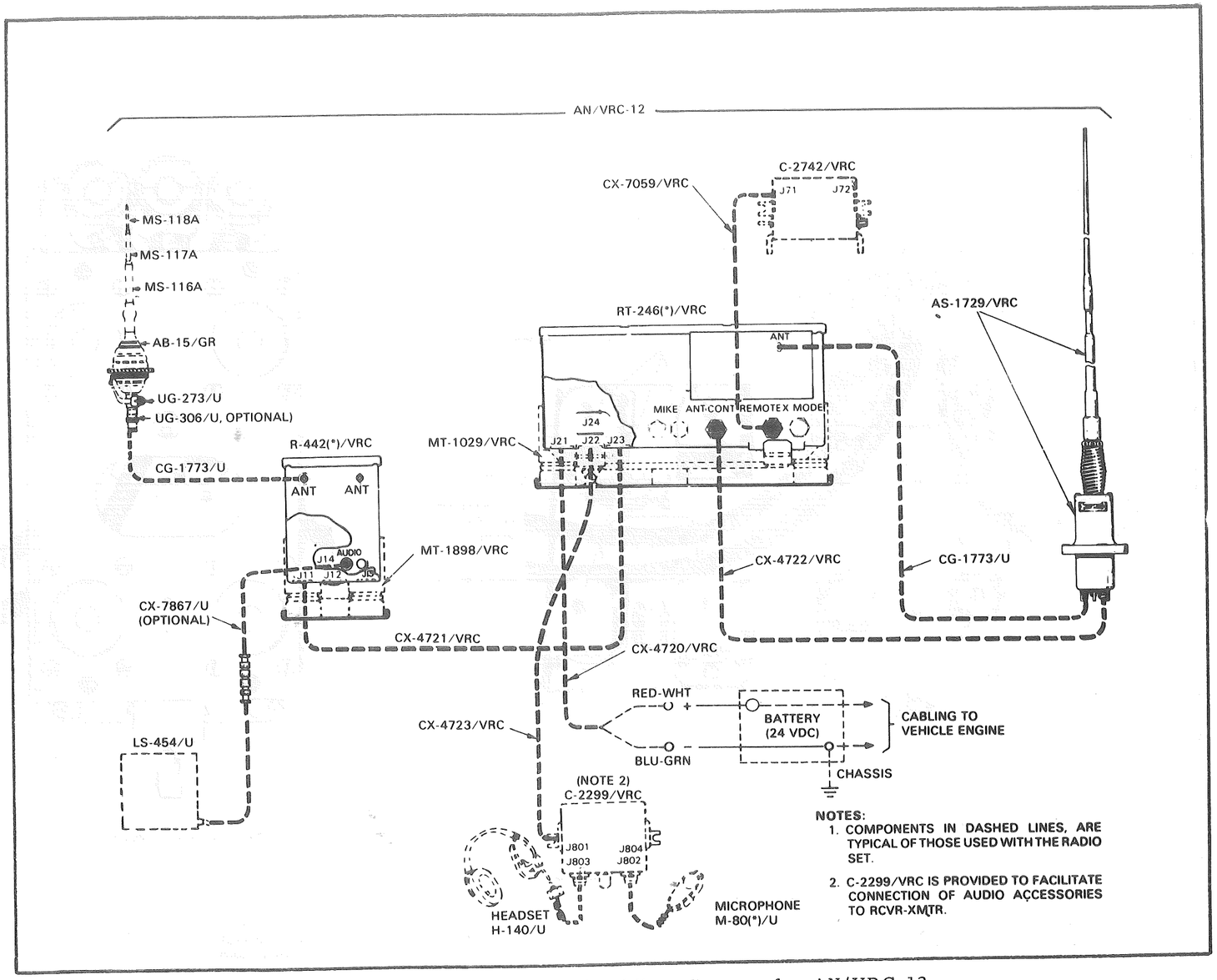


Figure 5. Typical cabling diagram for AN/VRC-12.

f. Connect CX-7059 cable plug to J71 jack on C-2742 and then route to MT-1029 base.

NOTE: Insure that enough cable slack is at the MT-1029 and MT-1898 bases for connection to radio components.

g. Strap CG-1773, CX-4722, CX-4723, and CX-7059 to vehicle sponson using supplied hardware. (Drill holes as required.)

h. Connect CX-4720 cable plug to MT-1029s top tray jack J21.

i. Route CX-4720 cable out right-underside of MT-1029 top of tray.

j. Reassemble MT-1029 and MT-1898 by reversing the procedures of performance measure 3b.

k. Route CX-4720 cable to vehicle battery using supplied rubber grommets (#2295).

l. Strap CX-4720 to vehicle using supplied hardware. (Drill holes as required.)

m. Solder terminal lugs (#316) to CX-4720 leads.

n. Secure CX-4720 terminal lug with red/white wires to positive (+) terminal of vehicle battery. (Refer to fig 6.)

o. Secure CX-4720 terminal lug with green/black wires to negative (-) terminal of vehicle battery. (Refer to fig 6.)

8. Measure dc voltage at MT-1029 jack J24 and MT-1898 jack J14.

a. Set up multimeter for measuring dc voltage of at least 30 V dc.

b. Insert negative probe tip of multimeter into J24 (MT-1029) pin A.

c. Insert positive probe tip of multimeter into J24 (MT-1029) pin B; 22 to 30 V dc should be measured.

d. Move positive probe tip of multimeter from J24 pin B to J24 pin J; 22 to 30 V dc should be measured.

e. Repeat steps b through d for MT-1898 J14.

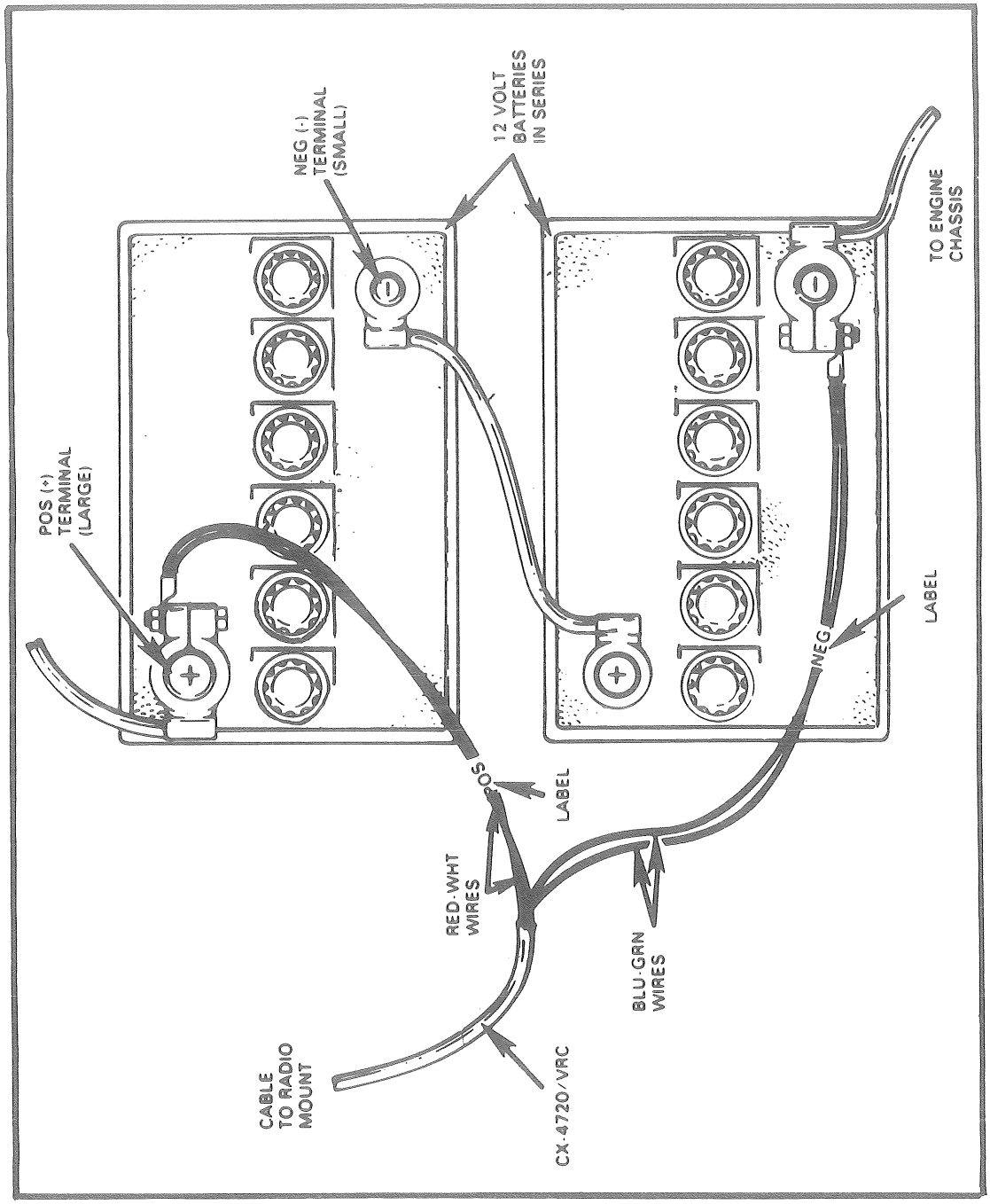


Figure 6. Connecting CX-4720/VRC to vehicle battery

REFERENCES

TM 11-2300-351-15-2, Operator's, Organizational, DS, GS, and Depot Maintenance Manual: Instructions for Installating Radio Set AN/VRC-12 Installation Unit in Truck Utility, ¼-ton, 4x4, M151 or M151A1.

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual, (Including Repair Parts and Special Tools List): AN/VRC-12 Series Radio Sets.

TASK

113-587-1040

Install/Reinstall Installation Kit MK-1234 in 1/4-Ton Utility Truck (4x4) M151

CONDITIONS

This task is performed in a tactical or nontactical situation, in a sheltered facility, and may be performed in an NBC environment. Task is performed when directed by your supervisor. You will be provided with the following:

1. Installation Kit MK-1234.
2. 1/4-Ton Utility Truck (4x4) M151.
3. Antenna Matching Unit MX-6707/VRC.
4. Tool Kit TK-101/G.
5. Multimeter AN/USM-223 or equivalent.
6. Special tools from No. 1 Common Tool Set of the unit moter maintenance section.
   a. One 3/8-inch electrical drill.
   b. One 1/16-inch to 3/8-inch drill bit set.
   c. Center punch.
   d. One 50-foot extension cord.
   e. Inch pound torque wrench.
7. TM 11-2300-351-14 & P-22.
8. TM 11-5820-401-12.
9. Hammer.

STANDARDS

This task has been performed correctly when the Installation Kit MK-1234 has been installed/reinstalled and performance measures 1 through 5 have been completed.

PERFORMANCE MEASURES

1. Install and secure antenna mount assembly. (Refer to TM 11-2300-351-15-4, chap 2, sec II, para 2-4, p 8, fig 2-5.)

   a. Remove two reflectors from rear (roadside) of vehicle.

   b. Remove footman loops from rear (roadside) of vehicle.

   c. Using antenna mount bracket as template, drill required antenna mounting holes in vehicle body.

   d. Assemble antenna mount assembly using supplied hardware.

   e. Secure antenna mount assembly to vehicle using supplied hardware.

   f. Relocate and secure two reflectors on rear (roadside) of vehicle using supplied hardware.

2. Install and secure Antenna Matching Unit MX-6707. (Refer to TM 11-2300-351-15-4, chap 2, sec II, para 2-4, p 13, fig 2-3.)

   CAUTION: Do not exceed 100-inch pounds of torque.

3. Install and secure Mounting MT-1029 base.

   a. Check MT-1029 power control link and insure that it is in its direct (radio ON-OFF control) position (between pivot and E24).

      NOTE: At this time, the MT-1029 does NOT have power applied.

   b. Disassemble MT-1029. (Refer to TM 11-5820-401-12, chap 2, sec II, para 2-10a(1) thru (3), pp 2-12 and 2-13.)

   c. Secure support bracket to MT-1029/VRC base using supplied hardware.

   d. Secure mount brace to support bracket using supplied hardware.

e. Using support bracket and mount brace as templates, drill required support bracket securing holes in vehicle roadside sponson (fenderwell).

f. Secure support bracket (including MT-1029/VRC base) and mount brace to vehicle sponson (roadside) using supplied hardware.

NOTE: Check all antenna mount assemblies, MX-6707 mounting, and MT-1029/VRC mounting bolts for completeness and tightness.

4. Route, strap, and connect cables. (Refer to TM 5820-401-12, chap 2, sec II, p 2-15, fig 2-9; p 2-32, fig 2-24.)

a. Connect CX-4722 cable plug to jack on base of MX-6707 and then route cable to MT-1029 base.

b. Connect CG-1773 cable plug to jack on base of MX-6707 and then route cable to MT-1029 base.

NOTE: Insure that enough cable slack is at MT-1029 base for connection to radio components.

c. Strap CG-1773 and CX-4722 to vehicle sponson using supplied hardware. (Drill holes as required.)

d. Connect CX-4720 cable plug to MT-1029's top tray jack J21.

e. Route CX-4720 cable out right-underside of MT-1029 top tray.

f. Reassemble MT-1029/VRC.

g. Route CX-4720 cable to vehicle battery using supplied rubber grommets (#2295).

h. Strap CX-4720 cable to vehicle using supplied hardware. (Drill holes as required.)

i. Solder terminal lugs (#316) to CX-4720 cable leads.

j. Secure one CX-4720 cable terminal lug with red/white wires to the positive terminal of the vehicle battery.

k. Secure one CX-4720 cable terminal lug with green/black wires to the negative terminal of the vehicle battery.

5. Measure dc voltage at MT-1029 jack J24.

   a. Set up multimeter for measuring dc voltage of at least 30 V dc.

   b. Insert negative probe tip of multimeter into J24 pin A.

   c. Insert positive probe tip of multimeter into J24 pin B; 22 to 30 V dc should be measured.

   d. Move positive probe tip of multimeter from J24 pin B to J24 pin J; 22 to 30 V dc should be measured.

REFERENCES

TM 11-2300-351-14+P-22, Operator's Organizational, DS, and GS Maintenance Manual (Including Repair Parts and Special Tools List): for Installation Kit Electronic Equipment MK-1234/GRC in Truck Utility, $\frac{1}{4}$ Ton, 4x4, M151, M151A1 or M151A2 for Radio Sets AN/GRC-125, AN/GRC-160, AN/VRC-46, AN/VRC-53 and AN/VRC-64.

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): Radio Sets AN/VRC-12 Series.

TASK

113-587-1041

Install/Reinstall Installation Kit MK-1224/VRC-49 in 1/4-Ton Utility Truck (4x4) M151

CONDITIONS

This task is performed in a tactical or nontactical situation, in a sheltered facility, and may be performed in an NBC environment. Task is performed when directed by your supervisor. You will be provided with the following:

1. Installation Kit MK-1224/VRC-49.
2. Tool Kit TK-101/G.
3. Multimeter AN/USM-223 or equivalent.
4. Truck Utility, 1/4-ton M151.
5. Special tools from No 1 Common Tool Set of the unit motor maintenance section.
   a. One 3/8-inch electric drill.
   b. One 1/16- to 3/8-inch drill bit set.
   c. Center punch.
   d. Chassis punch.
   e. One 50-foot extension cord.
   f. Inch pound torque wrench.
6. TM 11-2300-351-15-6.
7. TM 11-5820-401-12.
8. Hammer.

9. Two Antenna Matching Units MX-6707/VRC.

STANDARDS

This task has been performed correctly when the Installation Kit MK-1224 has been installed/reinstalled; and performance measures 1 through 6 have been completed.

PERFORMANCE MEASURES

1. Install and secure antenna mount assemblies. (Refer to TM 11-2300-351-15-6, chap 2, sec II, para 2-4, fig 2-1 thru 2-3, p 3-10.)

   a. Remove spare tire.

   b. Remove reflectors from rear of vehicle (for vehicles with bolt-on reflectors).

   c. Remove footman loops from rear of vehicle.

   d. Using antenna mount brackets as templates, drill required antenna mounting holes in vehicle body.

   e. Assemble antenna mount assemblies using supplied hardware.

   f. Secure antenna mount assemblies to vehicle using supplied hardware.

   g. Relocate and secure two reflectors on rear (roadside) of vehicle using supplied hardware.

2. Install and secure Antenna Matching Units MX-6707/VRC. (Refer to TM 11-2300-351-15-6 and TM 11-5820-401-12, chap 2, sec II, para 2-7a(1) and (2), p 2-5.)

   CAUTION: Do not exceed 100-inch pounds of torque.

3. Install and secure Mounting MT-1029 bases. (Refer to TM 11-2300-351-15-6 and TM 11-5820-401-12, chap 2, sec II, para 2-10, pp 2-11 thru 2-18.)

   a. Check MT-1029 power control links and insure that it is in its direct (radio ON-OFF control) position.

      NOTE: At this time, the MT-1029 does NOT have power applied.

b. Disassemble MT-1029. (Refer to TM 11-5820-401-12, chap 2, sec II, para 2-10a(1) thru (3), pp 2-12 and 2-13.)

c. Secure support brackets to MT-1029 bases using supplied hardware.

d. Secure mount braces to support brackets using supplied hardware.

e. Using support brackets and mount braces as templates, drill required support bracket securing holes in vehicle sponsons (fenderwell).

f. Secure support brackets (including MT-1029 bases) and mount braces to vehicle sponsons using supplied hardware.

NOTE: Check all antenna mount assemblies, MX-6707 mounting, and MT-1029 mounting bolts for completeness and tightness.

4. Install Control C-2299/VRC. (Refer to TM 11-2300-351-15-6, chap 2, sec II, para 2-4, p 11, fig 2-4.)

5. Route, strap, and connect cables. (Refer to TM 11-2300-351-15-6 and TM 11-5820-401-12, chap 2, sec II, para 2-13, pp 2-22 thru 2-27.)

a. Connect CX-4722 cable plug to jack on base of MX-6707 and then route to MT-1029 bases.

b. Insure that the ground straps on mounting MT-1029 are secured.

c. Connect CG-1773 cable plug to jack on base of MX-6707 and then route to MT-1029 bases.

NOTE: Insure that enough cable slack is left at MT-1029 bases for connection to radio components.

d. Connect CX-4721 cable plug to jack J21 on base of MT-1029 and then route to J23 jack on other MT-1029.

e. Connect two each CX-4723 cable plugs to jacks J701 and J702 on C-2299 and then route to J22 jacks on each MT-1029.

f. Strap CG-1773, CX-4723, CX-4722, and CX-4721 to vehicle sponsons using supplied hardware. (Drill holes as required.)

g. Connect CX-4720 cable plug to MT-1029 top tray jack J21.

h. Route CX-4720 cable out the right-underside of MT-1029 top tray.

i. Reassemble MT-1029.

j. Route CX-4720 cable to vehicle battery using supplied rubber grommets.

k. Strap CX-4720 to vehicle using supplied hardware. (Drill holes as required.)

l. Solder terminal lugs (#316) to CX-4720 leads.

m. Secure CX-4720 terminal lug with red/white wires to positive terminal of vehicle battery.

n. Secure CX-4720 terminal lug with green/black wires to negative terminal of vehicle battery.

6. Measure dc voltage at MT-1029 jack J24.

a. Set up multimeter for measuring dc voltage of at least 30 V dc.

b. Insert negative probe tip of multimeter into J24, pin A.

c. Insert positive probe tip of multimeter into J24, pin B 22 to 30 V dc should be measured.

d. Move positive probe tip of multimeter from J24, pin B to J24, pin J 22 to 30 V dc should be measured.

e. Repeat steps b through d for other MT-1029.

REFERENCES

TM 11-2300-351-15-6, Installation of Radio Set AN/VRC-49 in Truck, Utility, ¼-Ton, 4x4, M151 or M151A.

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): AN/VRC-12 Series Radio Sets.

TASK

113-587-3016

Evaluate the Operation of Radio Set AN/PRC-25/77

CONDITIONS

This task is done in a tactical or nontactical situation, under all weather conditions, and may be done in an NBC environment. This task is done when you have received a report of failure, or as directed by your supervisor. You will be provided with the following items:

1. Radio Set AN/PRC-25/77.
2. TM 11-5820-667-12 or TM 11-5820-398-12.
3. DA Form 2404.
4. Distant operational compatible radio set.

STANDARDS

This task has been performed correctly when the operation of Radio Set AN/PRC-25/77 has been evaluated, performance measures 1 through 4 have been completed, and DA Form 2404, listing all faults found, has been prepared and submitted to your supervisor.

PERFORMANCE MEASURES

1. Perform the preliminary steps in table 1. (Refer to table 1.)

TABLE 1 PREOPERATIONAL CHECK FOR RADIO SET AN/PRC-25/77

INITIAL ADJUSTMENTS

Turn the RT unit (RT-841/PRC-77) function switch to OFF.

Turn the RT unit volume control to 5.

Tune the RT unit to an authorized frequency (provided by your supervisor).

INSTALLATION

Refer to TM 11-5820-667-12, chapter 2, paragraph 2-3 through 2-6, pages 2-2 through 2-7; or TM 11-5820-398-12, chapter 2, paragraph 2-4 through 2-6, pages 2-2 through 2-61; and check the proper installation all items. AT THIS TIME do not connect the handset.

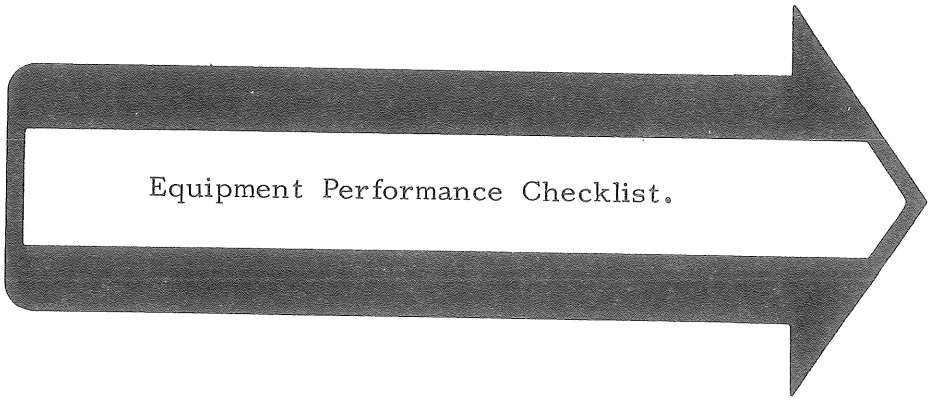
CABLING

Clean the handset's audio plug contacts and the RT's audio jack contacts, using a pencil eraser, and then connect the handset plug to the RT's audio jack.

Secure the RT unit POWER jack cover. (Refer to TM 11-5820-667-12, chap 3, p 3-2, fig 3-1 and para 3-1, p 3-1, "POWER connector.")

2. Perform the steps in the Equipment Performance Checklist.

Equipment Performance Checklist.



EQUIPMENT PERFORMANCE CHECKLIST TABLE 2

STEP	FUNCTION	ACTION	NORMAL INDICATION	NOTES
1	INPUT POWER AND DIAL LAMP	Turn the RT unit function switch to LITE and hold it in position.	The RT unit dial lamp should light.	
2	RUSHING NOISE	Turn the RT function switch to ON; then hold the handset at arms length.	Rushing noise should be clearly heard.	
3	RECEPTION	Have distant station transmit a radio check.	Rushing noise should be eliminated and a loud voice signal should be heard when the distant station transmits.	
4	SQUELCH CONTROL	Turn the RT function switch to SQUELCH.	Rushing noise should cease.	
5	SQUELCH SENSITIVITY IN THE RECEIVE MODE	With the RT function switch in SQUELCH, repeat action of step 3: receive a signal from the distant radio set.	A loud, clear voice signal should be heard.	
	DIRECTION: Return the RT function switch to ON.			
6	KEYING	Key the RT unit.	The RT unit key (relays click).	

STEP	FUNCTION	ACTION	NORMAL INDICATION	NOTES
7	TRANSMISSION	Key the RT unit and transmit a radio check to the distant radio set.	A loud clear voice signal should be heard at the distant radio set.	
8	VOICE SIDETONE	Key and modulate the RT unit.	Voice sidetone should be heard in Handset H-189.	
9	150 Hz GENERATION	Turn the RT function switch to SQUELCH, then key and unkey the RT unit.	A burst of rushing noise should be heard in the handset as the keying relay goes from transmit to receive.	

3. Record symptoms of trouble on DA Form 2404.

   a. In column a, record the Equipment Performance Checklist (EPC) step number that, when done, produced an abnormal indicator.

   b. In column c, to the right of the EPC step number of column a, write a brief discription of the trouble observed.

4. Complete DA Form 2404 and give it to your immediate supervisor.

REFERENCES

TM 11-5820-667-12, Operator's and Organizational Maintenance Manual: Radio Set AN/PRC-77 (Including Receiver-Transmitter, Radio RT-841/PRC-77).

TM 11-5820-398-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tool Lists): Radio Set, AN/PRC-25 (Including Receiver-Transmitter, Radio, RT-505/PRC-25).

TASK

113-587-3017

Perform Organizational Quarterly Preventive Maintenance on Radio Set AN/PRC-25/77

CONDITIONS

This task is performed in a tactical or nontactical situation in a sheltered facility and may be performed in an NBC environment. This task is performed when directed by your supervisor. You will be provided with:

1. Radio Set AN/PRC-25/77.
2. TM 11-5820-667-12 or TM 11-5820-398-12.
3. DA Pam 310-7.
4. Tool Kit TK-101/G.
5. Silicone compound.
6. Graphite grease.
7. Epoxy.
8. Paint and brush.
9. DA Form 2404.

STANDARDS

This task has been performed correctly when organizational quarterly preventive maintenance for Radio Set AN/PRC-25/77 has been performed; performance measures 1 through 3 have been completed; and DA Form 2404, listing all faults found, has been prepared and submitted to your supervisor. Task should be completed within 30 minutes.

PERFORMANCE MEASURES

1. Except for item 2, perform the checks and services as listed in the Checks and Services Table. (Refer to TM 11-5820-667-12, chap 5, sec II, para 5-3, table 5-1.)

2. Record all faults found and the corrective actions taken for each on DA Form 2404.

3. Complete DA Form 2404 and give it to your immediate supervisor.

REFERENCES

TM 11-5820-398-12, Operator's and Organizational Maintenance Manual (Including Repair Parts Special Tool Lists): Radio Set, AN/PRC-25 (Including Receiver-Transmitter, Radio RT-505/PRC-25).

TM 11-5820-667-12, Operator's and Organizational Maintenance Manual: Radio Set AN/PRC-77 (Including Receiver-Transmitter, Radio RT-841/PRC-77).

TASK

113-587-3020

Evaluate the Operation of Radio Set AN/GRC-125/160

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is done as an evaluation prior to troubleshooting, as a final check after repair, or as directed by your supervisor. You will be provided with the following:

1. Radio Set AN/GRC-125/160 mounted in a tactical vehicle.
2. Test Set, Radio Frequency AN/URM-182 or TS-2609/U.
3. TM 11-5820-498-12
4. DA Form 2404.

STANDARDS

This task has been performed correctly when Radio Set AN/GRC-125/160 has been evaluated; performance measures 1 through 5 have been performed; and a DA Form 2404, listing all abnormal indications, has been submitted to your supervisor.

PERFORMANCE MEASURES

1. Install AN/URM-182 to receiver-transmitter. (Refer to this manual task 113-574-2061.)
2. Perform steps in the operating instructions. (Refer to TM 11-5820-498-12, chap 3, sec I, para 3-1 thru 3-4, pp 3-1 thru 3-3.)
3. Evaluate the receiver-transmitter using AN/URM-182. (Refer to this manual, task 113-574-2061.)

4. Record all abnormal indications on a DA Form 2404.

   a. In column a, record the item number from the Equipment Performance Checklist.

   b. In column c, record a brief description of the abnormal indication.

5. Submit the completed DA Form 2404 to your immediate supervisor.

REFERENCES

TM 11-5820-498-12, Operator's and Organizational Maintenance Manual: 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.

TASK

113-587-3021

Perform Organizational Quarterly Preventive Maintenance on Radio Set AN/GRC-125/160

CONDITIONS

This task is performed in a tactical or nontactical situation, in a sheltered facility, and may be performed in an NBC environment. Your supervisor has directed you to perform scheduled organizational quarterly PM service on Radio Set AN/GRC-125/160. The following items will be made available to you:

1. Radio Set AN/GRC-125/160 with assigned vehicle.
2. Tool Kit TK-101/G.
3. Paint and brush.
4. Silicone compound.
5. Trichloroethane cleaning compound.
6. Epoxy.
7. Fine sandpaper and soft cloth.
8. TM 11-5820-498-12.
9. TM 11-5985-262-15.
10. DA Form 2404.
11. DA Pam 310-7.

STANDARDS

This task has been performed correctly when organizational quarterly PM service has been performed for Radio Set AN/GRC-125/160; performance measures 1 through 13 have been completed, and a DA Form 2404, listing all faults has been prepared and submitted to your supervisor.

PERFORMANCE MEASURES

1. Check equipment for completeness. (Refer to TM 11-5820-498-12, chap 1, sec II, para 1-6, p 1-8.)

2. Check equipment for cleanliness.

3. Check surfaces for evidence of rust or corrosion; remove and spot paint bare surfaces. (Refer to TM 11-5820-498-12, chap 5, sec II, para 5-11, p 5-7.)

4. Check to determine if new applicable MWOs have been published. ALL URGENT MWOs must be applied immediately; NORMAL MWOs are scheduled for application. (Refer to DA Pam 310-7, sec II thru IV.)

5. Check all gaskets for moisture; oil saturation; and brittle, broken, cracked, loose, pinched, mismatched, or missing sections.

6. Remove RT unit cover and inspect chassis case and battery case CY-2562/PRC-25 for hydrogen gas. (Refer to TM 11-5820-498-12, chap 5, sec II, para 5-13, p 5-9.)

7. Check to see that all hardware (nuts, bolts, washers, etc.) are properly tightened. (Refer to TM 11-5820-498-12, chap 2, sec II, para 2-5, p 2-3.)

8. Check to see that the AM-2060 is properly installed on MT-1029, and that RT-841/505 is properly installed on AM-2060. See that AS-1729/VRC is properly installed. (Refer to TM 11-5985-262-15, chap 2, sec I, para 2-4, pp 2-1 thru 2-4, fig 2-1 and 2-2.)

9. Check to be sure all plugs and jacks are serviceable, clean, intact, and that all connections are tight and properly connected.

   NOTE: Insure that all unused jacks have dust covers.

10. Check to see that the mechanical action of all controls are smooth and free of external and internal binding.

11. Correct all faults that you are authorized to correct. (Refer to TM 11-5820-498-12, chap 5, sec I, para 5-3, p 5-1.)

12. Record all faults that you found on a DA Form 2404.

13. Complete DA Form 2404 and submit to your immediate supervisor.

REFERENCES

TM 11-5820-498-12, Operator's and Organizational Maintenance Manual: 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 11-5985-262-15, Operator's, Organizational, Direct Support, General Support, and Depot Maintenance Manual: Antenna AS-1729/VRC.

DA Pam 310-7, Military Publications: US Army Equipment Index of Modification Work Orders.

TASK

113-587-3028

Evaluate the Operation of Radio Set AN/VRC-12

CONDITIONS

This task is performed as an evaluation of the radio set prior to troubleshooting; as a final check after repair; or as directed by your supervisor. It may be performed in a tactical or nontactical situation and may be performed in an NBC environment. You will be provided with the following:

1. Radio Set AN/VRC-12 with Control C-2742/VRC mounted in a tactical vehicle.
2. Distant operational compatible FM Radio Set.
3. Test Set, Radio Frequency AN/URM-182 or TS-2609/U.
4. TM 11-5820-401-12.
5. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 45 minutes, Radio Set AN/VRC-12 has been evaluated; performance measures 1 through 3 have been completed; and all faults, that you found, have been recorded on a DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Install the AN/URM-182 to the receiver-transmitter. (Refer to TM 11-5820-401-12, chap 5, sec II, para 5-7, pp 5-7 and 5-9.)
2. Perform the steps in the Equipment Performance Checklist. (Refer to TM 11-5820-401-12, chap 5, sec II, para 5-8a, b and d, pp 5-9, 5-10, 5-12, and 5-13.)

3. Record all faults that you found on DA Form 2404 and report them to your immediate supervisor.

REFERENCES

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): AN/VRC-12 Series Radio Sets.

TASK

113-587-3029

Perform Organizational Quarterly Preventive Maintenance on Radio Set AN/VRC-12

CONDITIONS

This task is performed in a tactical or nontactical situation; in a sheltered facility; and may be performed in an NBC environment. This task is performed as scheduled maintenance becomes due or as directed by your supervisor. You will be provided with the following:

1. Radio Set AN/VRC-12 with assigned vehicle.
2. TM 11-5820-401-12.
3. Tool Kit TK-101/G.
4. Paint and brush.
5. Insulating silicone compound.
6. Graphite grease.
7. Fine sandpaper.
8. DA Form 2404.
9. DA Pam 310-7.

STANDARDS

This task has been performed correctly when, within 30 minutes, organizational quarterly preventive maintenance has been performed on Radio Set AN/VRC-12, performance measures 1 through 10 have been completed; and all faults found have been recorded on DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Check that all applicable DA modification work orders have been performed or are scheduled to be performed. (Refer to DA Pam 310-7.)

2. Perform maintenance on receiver-transmitter antenna. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, pp 5-2 and 5-3.)

   a. Remove rust and corrosion from external metal surfaces. Paint bare metal surfaces.

   b. Bend spring section of the matching unit and inspect the cable inside the spring. There should be no evidence of damage to the cable or the insulation on the cable.

   c. Identify painted surface or hairline cracks in the plastic top section of the MX-6707/VRC.

   d. Tighten three set screws at the top of matching unit.

   e. Tighten loose nuts and bolts on mounting bracket that holds matching unit to vehicle.

   f. Identify missing or broken ground strap on matching unit.

   g. Remove moisture drain screw from base of matching unit, drain moisture, reinstall screw.

   h. Tighten all loose screws, cables, and receptacles on matching unit.

      CAUTION: On the MX-6707/VRC, do not overtighten the eight assembly screws (fig 1) that hold the top plastic body to the bottom section beyond a snug tightness. Overtightening can cause hairline cracks in the plastic body or loosen the helicoils that hold the four mounting bolts in some hull vehicles.

   i. Put a small amount of silicone grease on the "O" ring and on the control cable receptacle of the matching unit.

   j. Identify missing or broken safety wire on antenna matching unit.

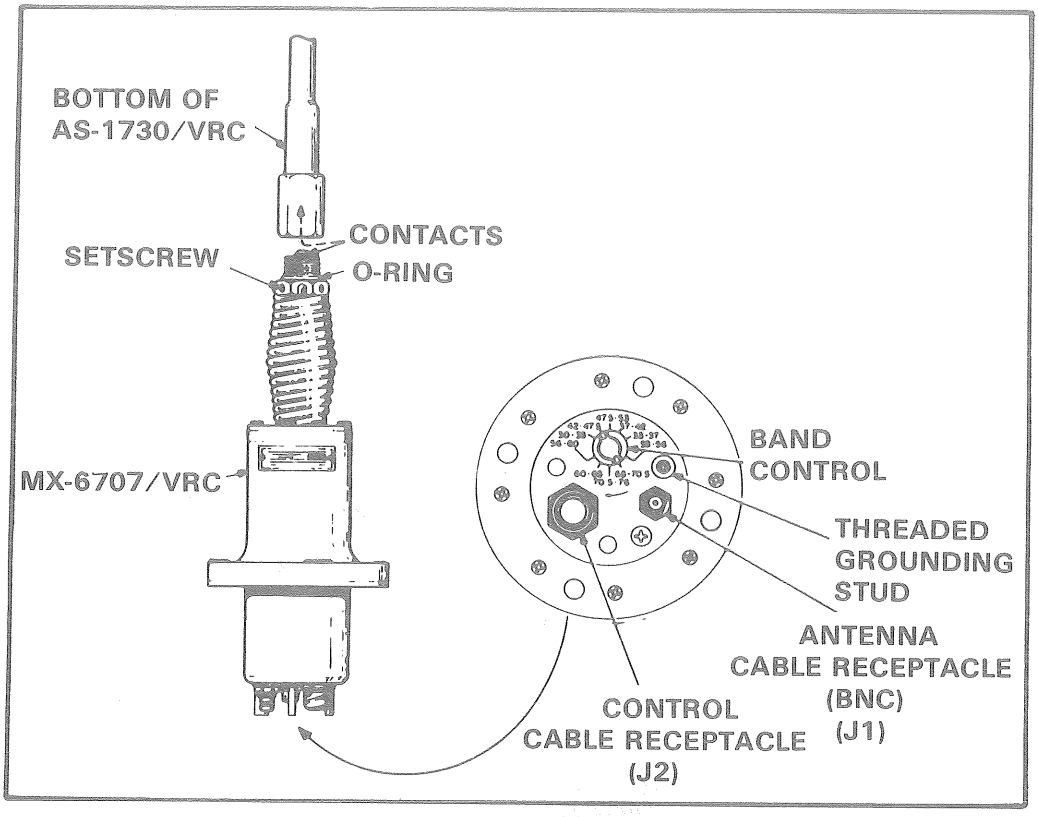


Figure 1. AS-1729/VRC (Not shown: AT-1095/VRC).

3. Perform maintenance on receiver antenna. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, p 5-2.)

   a. Clean out mast section receptacle on top of mast base.

   b. Identify any damage to mast base ceramic insulator.

   c. On the AB-15/GR, tighten two insulator sections on mounting hole.

   d. On the AB-558/GR, tighten to snug fit any loose mounting bolts.

   e. Tighten any loose screws and nuts on the mounting brackets that hold mast base to vehicle.

   f. If Right-Angle Adapter UG-306/U is required, position it in place on the Adapter UG-273/U or attach it to the Antenna Cable CG-1773/U.

g. Tighten Adapter UG-273/U to mast base receptacle.

h. Identify broken ground strap or clamp and lock it to the UG-273/U.

4. Perform maintenance on audio accessories. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, p 5-2.)

a. Put a light coat of silicone grease on the "O" ring in the cable connectors (fig 2).

CAUTION: When applying insulating compound, avoid contamination of electrical contacts.

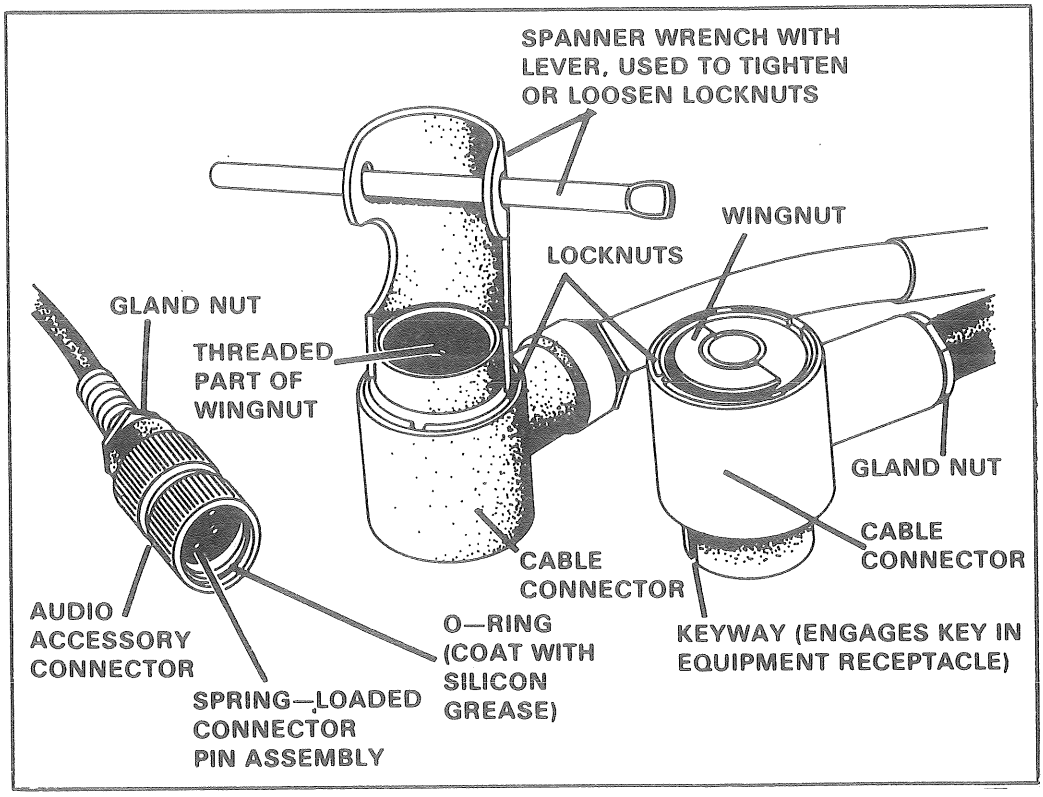


Figure 2. Detail of cable connectors.

b. Identify audio accessories in which cable insulation or any part is broken.

c. Accessory connector.

(1) Tighten gland nut, if provided (fig 2).

(2) Properly position and tighten spring-loaded connector pin assembly (fig 2).

(3) Identify any of the three small keys that are broken.

5. Perform maintenance on receiver-transmitter. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, pp 5-2 and 5-3.)

a. Remove rust and corrosion from external surfaces. Paint bare metal surfaces.

b. Tighten all screws on covers, sides, and controls. Replace missing screws.

c. Identify broken or missing CALL indicator lens caps or bulbs.

d. Correctly position dial lamps and holders; identify defective bulbs.

e. Identify any missing protective nut on ANT receptacle and tighten loose protective ANT nuts.

f. Identify ANT receptacles that are so damaged that the Antenna Cable CG-1773/U cannot be locked onto the receptacle.

g. If Right-Angle Adapter UG-306/U is required, position it in place on the ANT receptacle or attach it to the Antenna Cable CG-1773/U.

h. Clean the heat exchanger (fig 3). The operation is optional.

(1) In dusty areas, the cleaning should be performed more often than quarterly.

(2) In dry, cold, or nondusty areas, this operation may be performed at quarterly intervals.

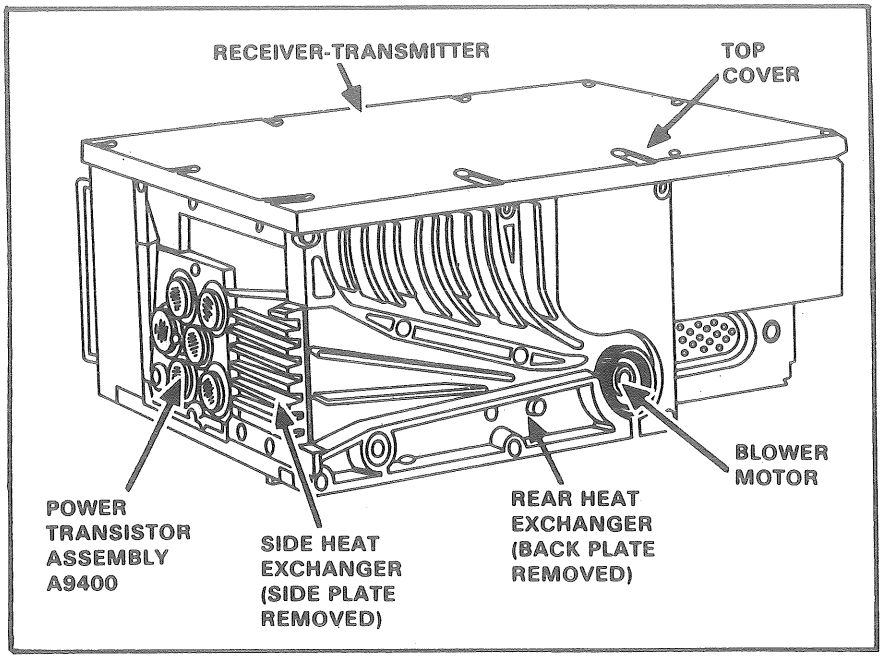


Figure 3. Heat exchanger on RT-524/246.

6. Perform maintenance on receiver. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, p 5-3.)

   a. Remove rust and corrosion from external surfaces. Paint bare metal surfaces.

   b. Tighten all screws on covers, sides, and controls. Replace missing screws.

   c. Identify broken or missing CALL indicator lens caps or bulbs.

   d. Identify ANT receptacles that are so damaged that the antenna cable(s) cannot be locked onto the receptacle.

   e. If Right-Angle Adapter UG-306/U is required, position it in place on the ANT receptacle or attach it to the Antenna Cable CG-1773/U.

   f. Correctly position dial lamps and holders; identify defective bulbs.

7. Perform maintenance on mounts. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, p 5-3.)

a. Remove rust and corrosion from external surfaces; paint bare metal surfaces.

b. Tighten all loose screws holding the radio mounts to the vehicle and on the mount.

8. Perform maintenance on control boxes. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, p 5-3.)

a. Remove rust and corrosion from external surfaces; paint bare metal surfaces.

b. Tighten all loose screws and mounting bolts.

c. Tighten all loose cable receptacle locknuts with spanner wrench (fig 2).

d. Tighten loose audio accessories.

9. Record all faults noted and corrective actions taken on DA Form 2404.

10. Complete DA Form 2404 and submit it to your immediate supervisor.

REFERENCES

DA Pam 310-7, Military Publications: US Army Equipment Index of Modification Work Orders.

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): AN/VRC-12 Series Radio Sets.

TASK

113-587-3036

Evaluate the Operation of Radio Set AN/VRC-46

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. Task is performed prior to troubleshooting, as a final check after repair; or when directed by your supervisor. You will have available to you:

1. Radio Set AN/VRC-46 mounted in a tactical vehicle.
2. Test Set, Radio Frequency Power AN/URM-182 or TS-2609/U.
3. Distant compatible FM radio set.
4. TM 11-5820-401-12.
5. DA Form 2404.

STANDARDS

This task is performed correctly when, within 45 minutes, you have evaluated the operation of Radio Set AN/VRC-46; completed performance measures 1 through 3; recorded abnormal indications on DA Form 2404 and submitted it to your supervisor.

PERFORMANCE MEASURES

1. Connect Radio Frequency Power Test Set AN/URM-182 to the receiver-transmitter. (Refer to TM 11-5820-401-12, chap 5, sec II, para 5-7, fig 5-2, p 5-8.)
2. Perform steps of the Equipment Performance Checklist. (Refer to TM 11-5820-401-12, chap 5, sec II, para 5-8a, pp 5-9 and 5-10.)
3. Record all abnormal indications on DA Form 2404 and submit them to your immediate supervisor.

REFERENCES

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools List) AN/VRC-12 Series Radio Sets.

TASK

113-587-3037

Perform Organizational Quarterly Preventive Maintenance on Radio Set AN/VRC-46

CONDITIONS

This task is performed in a tactical or nontactical situation; in a sheltered facility and may be performed in an NBC environment. This task is performed as scheduled maintenance becomes due or as directed by your supervisor. You will be provided with the following:

1. Radio Set AN/VRC-46 with assigned vehicle.
2. TM 11-5820-401-12.
3. Tool Kit TK-101/G.
4. Paint and brush.
5. Insulating silicone compound.
6. Graphite grease.
7. Fine sandpaper.
8. DA Form 2404.
9. DA Pam 310-7.

STANDARDS

This task has been performed correctly when, within 30 minutes, organizational quarterly preventive maintenance has been performed on Radio Set AN/VRC-46, performance measures 1 through 8 have been completed; and all faults found have been recorded on DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Check that all applicable DA modification work orders (MWO) have been performed or are scheduled to be performed. (Refer to DA Pam 310-7.)

2. Perform maintenance on reciever-transmitter antenna. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, pp 5-2 and 5-3.)

   a. Remove rust and corrosion from external metal surfaces. Paint bare metal surfaces.

   b. Bend spring section of the matching unit and inspect the cable inside the spring. There should be no evidence of damage to the cable or the insulation on the cable.

   c. Identify painted surface or hairline cracks in the plastic top section of the MX-6077/VRC.

   d. Tighten three set screws at the top of matching unit.

   e. Tighten loose nuts and bolts on mounting brackets that holds matching unit to vehicle.

   f. Identify missing or broken ground strap on matching unit.

   g. Remove moisture drain screw from base of matching unit, drain moisture, and reinstall screw.

   h. Tighten all loose screws and cables of receptacles on matching unit.

      CAUTION: On the MX-6707/VRC, do not tighten the eight assembly screws (fig 1) that hold the top plastic body to the bottom section beyond a snug tightness. Overtightening can cause hairline cracks in the plastic body. Also, do not tighten the four mounting bolts beyond a snug tightness. Overtightening can cause hairline cracks in the plastic body or loosen the helicoils that hold the four mounting bolts in some hull vehicles.

   i. Put a small amount of silicone grease on the "O" ring and on the control cable receptacle of the matching unit.

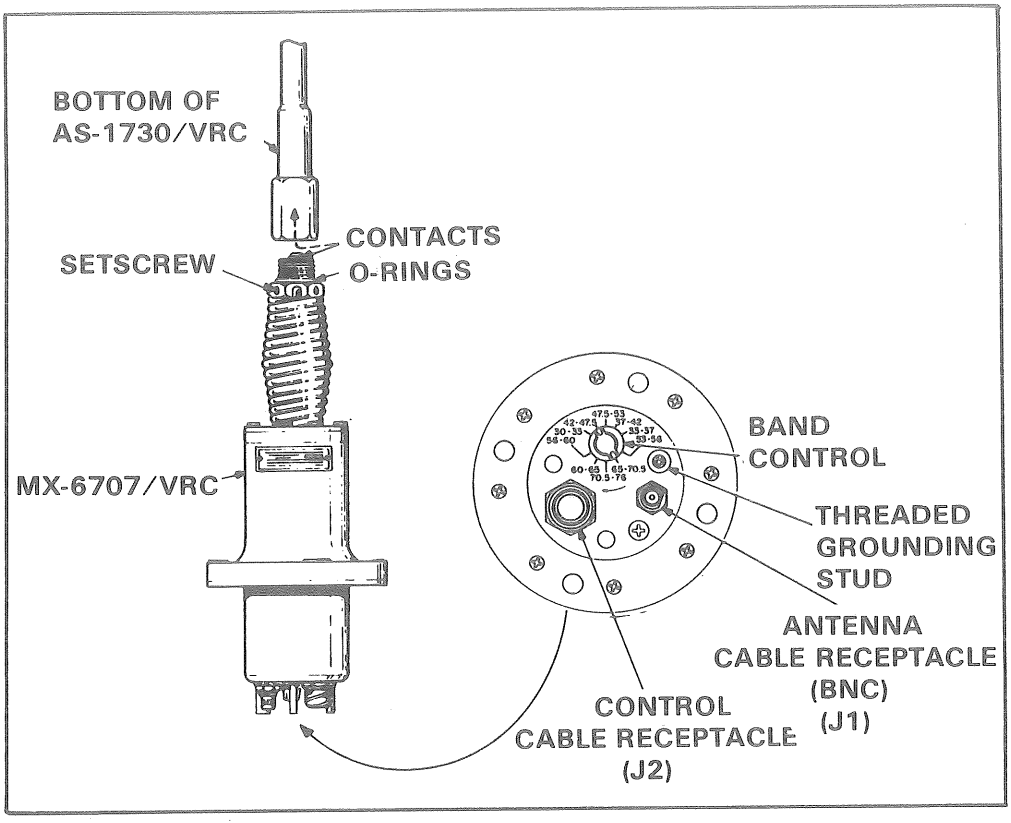


Figure 1. AS-1729/VRC (Not Shown: AT-1095/VRC).

j. Identify missing or broken safety wire on antenna matching unit.

3. Perform maintenance on audio accessories. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, p 5-2.)

a. Put a light coat of silicone grease on the "O" rings in the cable connectors (fig 2).

CAUTION: When applying insulating compound, avoid contamination of electrical contacts.

b. Identify audio accessories in which cable insulation or any part is broken.

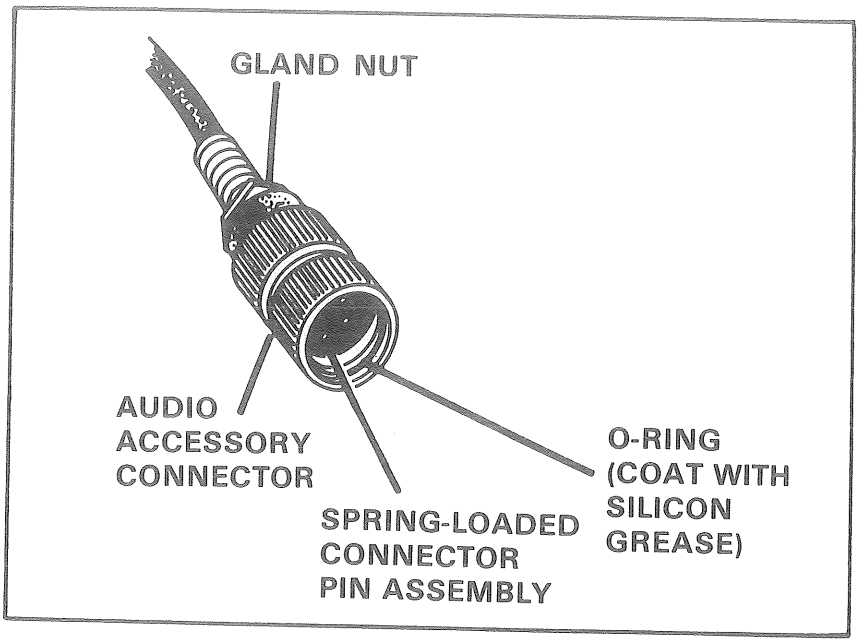


Figure 2. Detail of audio accessory connector.

4. Perform maintenance on audio accessories and accessory connector. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, p 5-2.)

   a. Tighten gland nut, if provided (fig 2).

   b. Properly position and tighten spring-loaded connector pin assembly (fig 2).

   c. Identify any of the three small keys that are broken (fig 2).

5. Perform maintenance on receiver-transmitter. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, pp 5-2 and 5-3).

   a. Remove rust and corrosion from external surfaces. Paint bare metal surfaces.

   b. Tighten all screws on covers, sides, and controls. Replace missing screws.

   c. Identify broken or missing CALL indicator lens caps or bulbs.

   d. Correctly position dial lamps and holders; identify defective bulbs.

   e. Identify any missing protective nut on ANT receptacle and tighten loose protective ANT nuts.

f. Identify ANT receptacles that are so damaged that the Antenna Cable CG-1773/U cannot be locked onto the receptacle.

g. If Right-Angle Adapter U-306/U is required, position it in place on the ANT receptacle or attach it to the Antenna Cable CG-1773/U.

h. Clean the heat exchanger (fig 3). This operation is optional:

(1) In dusty areas, the cleaning should be performed more often than quarterly.

(2) In dry, cold, or nondusty areas, this operation may be performed at quarterly intervals.

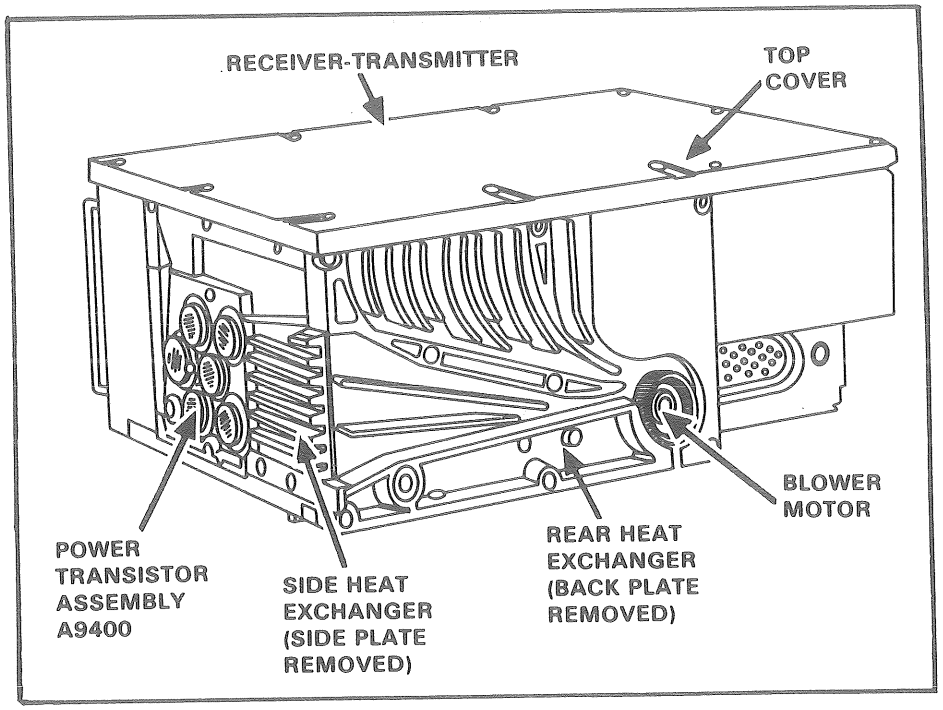


Figure 3. Heat exchanger of receiver-transmitter.

6. Perform maintenance on mounts. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, p 5-3.)

a. Remove rust and corrosion from external surfaces; paint bare metal surfaces.

b. Tighten all loose screws holding the radio mounts to the vehicle and on the mount.

7. Record all faults noted and corrective actions taken on DA Form 2404.

8. Complete DA Form 2404 and submit it to your supervisor.

REFERENCES

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): AN/VRC-12 Series Radio Sets.

DA Pam 310-7, Military Publications: US Army Equipment Index of Modification Work Orders.

TASK

113-587-3042

Evaluate the Operation of Radio Set AN/VRC-49

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed as an evaluation of the radio set prior to troubleshooting, as a final check after repair, or as directed by your supervisor. You will be provided with the following:

1. Radio Set AN/VRC-49 mounted in a tactical vehicle.
2. Test Set, Radio Frequency AN/URM-182 or TS-2609/U.
3. Distant operational compatible FM radio set.
4. TM 11-5820-401-12.
5. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 45 minutes, Radio Set AN/VRC-49 has been evaluated, performance measures 1 through 5 have been completed, and all faults found are recorded on DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Install AN/URM-182 to receiver-transmitter No. 1. (Refer to TM 11-5820-401-12, chap 5, sec II, para 5-7, pp 5-7 and 5-9.)
2. Perform the steps in the Equipment Performance Checklist. (Refer to TM 11-5820-401-12, chap 5, sec II, para 5-8a, pp 5-8 thru 5-9 and para 5-8c, pp 5-11 and 5-12.)

3. Install AN/URM-182 to receiver-transmitter No. 2. (Refer to TM 11-5820-401-12, chap 5, sec II, para 5-7, pp 5-7 and 5-9.)

4. Perform the steps in the Equipment Performance Checklist. (Refer to TM 11-5820-401-12, chap 5, sec II, para 5-8a, pp 5-8 thru 5-9; and para 5-8c, pp 5-11 and 5-12.)

5. Record all abnormal indications on a DA Form 2404 and submit it to your supervisor.

REFERENCES

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools List): AN/VRC-12 Series Radio Sets.

TASK

113-587-3043

Perform Organizational Quarterly Preventive Maintenance on Radio Set AN/VRC-49

CONDITIONS

This task is performed in a tactical or nontactical situation, in a sheltered facility, and may be performed in an NBC environment. This task is performed as scheduled maintenance becomes due or as directed by your supervisor. You will be provided with the following:

1. Radio Set AN/VRC 49 with assigned vehicle.
2. TM 11-5820-401-12.
3. Tool Kit TK-101/G.
4. Paint and brush.
5. Insulating silicone compound.
6. Graphite grease.
7. Fine sandpaper.
8. DA Form 2404.
9. DA Pam 310-7.

STANDARDS

This task has been performed correctly when organizational quarterly preventive maintenance has been performed on Radio Set AN/VRC-49, performance measures 1 through 8 have been completed; and all faults found have been recorded on DA Form 2404 and submitted to your supervisor. Task should be completed in 30 minutes.

PERFORMANCE MEASURES

1. Check that all work, on applicable DA modification work orders, has been performed or are scheduled to be performed. (Refer to DA Pam 310-7.)

2. Perform maintenance on reciever-transmitter antenna. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, pp 5-2 and 5-3.)

   a. Remove rust and corrosion from external metal surfaces. Paint bare metal surfaces.

   b. Bend spring section of the matching unit and inspect the cable inside the spring. There should be no evidence of damage to the cable or the insulation on the cable.

   c. Identify painted surface or hairline cracks in the plastic top section of the MX-6077/VRC.

   d. Tighten three set screws at the top of matching unit.

   e. Tighten loose nuts and bolts on mounting brackets that holds matching unit to vehicle.

   f. Identify missing or broken ground strap on matching unit.

   g. Remove moisture drain screw from base of matching unit, drain moisture, and reinstall screw.

   h. Tighten all loose screws and cables of receptacles on matching unit.

      CAUTION: On the MX-6707/VRC, do not tighten the eight assembly screws (fig 1) that hold the top plastic body to the bottom section beyond a snug tightness. Overtightening can cause hairline cracks in the plastic body. Also, do not tighten the four mounting bolts beyond a snug tightness. Overtightening can cause hairline cracks in the plastic body or loosen the helicoils that hold the four mounting bolts in some hull vehicles.

   i. Put a small amount of silicone grease on the "O" ring and on the control cable receptacle of the matching unit.

   j. Identify missing or broken safety wire on antenna matching unit.

3. Perform maintenance on audio accessories. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, p 5-2.)

a. Put a light coat of silicone grease on the "O" rings in the cable connectors (fig 2).

CAUTION: When applying insulating compound, avoid contamination of electrical contacts.

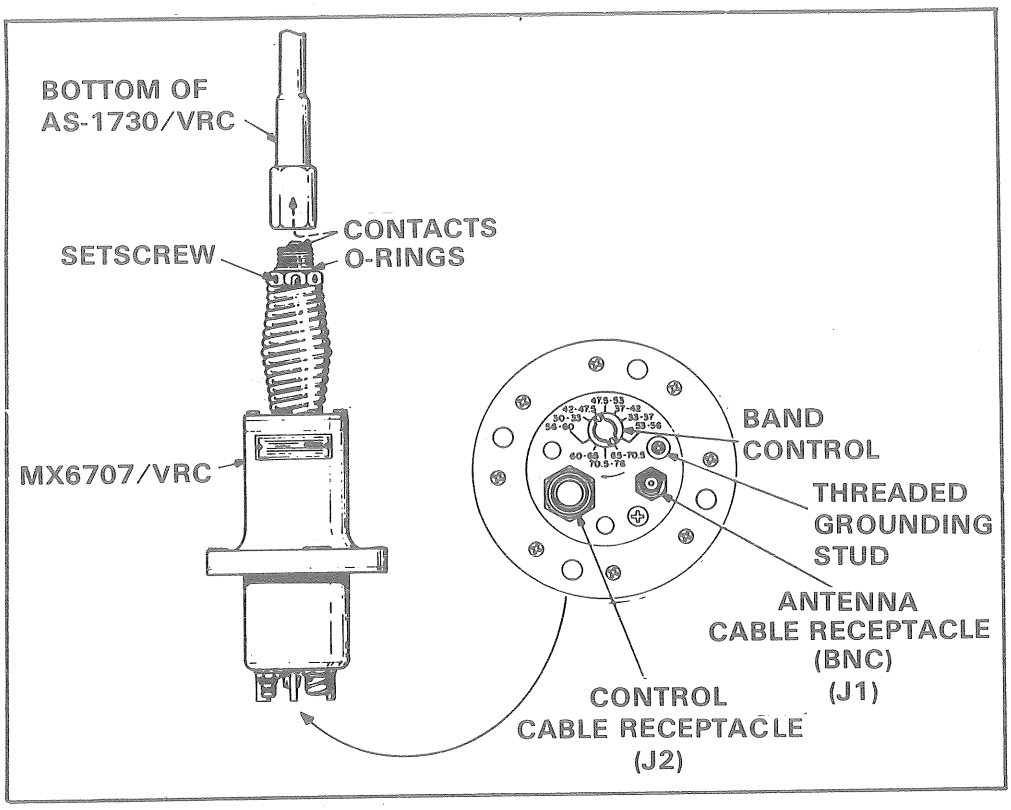


Figure 1. AS-1729/VRC (Not shown: AT-1095/VRC).

b. Identify audio accessories in which cable insulation or any part is broken.

c. Accessory connector.

(1) Tighten gland nut, if provided (fig 2).

(2) Properly position and tighten spring-loaded connector pin assembly (fig 2).

(3) Identify any of the three small keys that are broken (fig 2).

4. Perform maintenance on receiver-transmitters. (Refer to TM 11-5820-401-12, chap 5, sec II, para 5-2, pp 5-2 and 5-3.)

   a. Remove rust and corrosion from external surfaces. Paint bare metal surfaces.

   b. Tighten all screws on covers, sides, and controls. Replace missing screws.

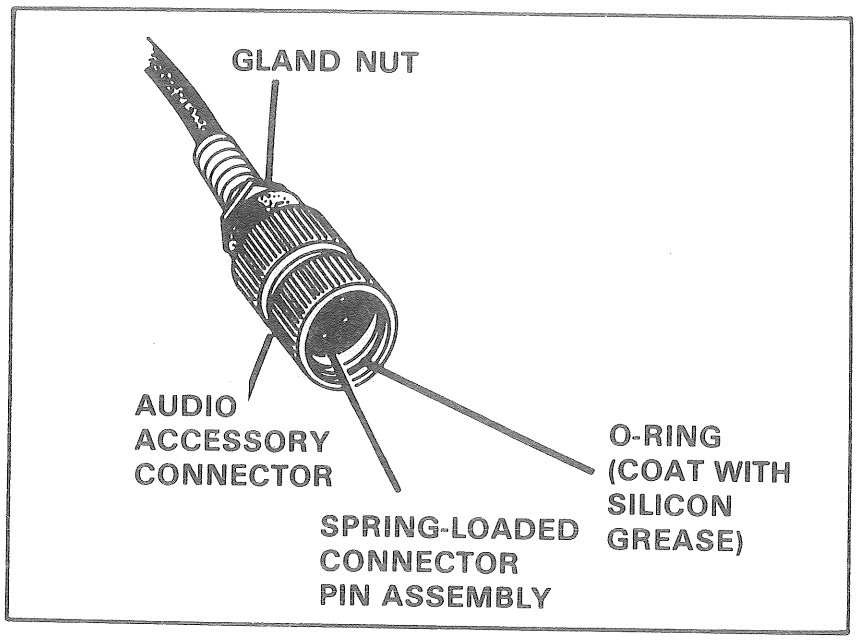


Figure 2. Detail of audio accessory connector.

   c. Identify broken or missing CALL indicator lens caps or bulbs.

   d. Correctly position dial lamps and holders; identify defective bulbs.

   e. Identify any missing protective nut on ANT receptacle and tighten loose protective ANT nuts.

   f. Identify ANT receptacles that are so damaged that the Antenna Cable CG-1773/U cannot be locked onto the receptacle.

   g. If Right-Angle Adapter U-306/U is required, position it in place on the ANT receptacle or attach it to the Antenna Cable CG-1773/U.

   h. Clean the heat exchanger (fig 3). This operation is optional.

(1) In dusty areas, the cleaning should be performed more often than quarterly.

(2) In dry, cold, or nondusty areas, this operation may be performed at quarterly intervals.

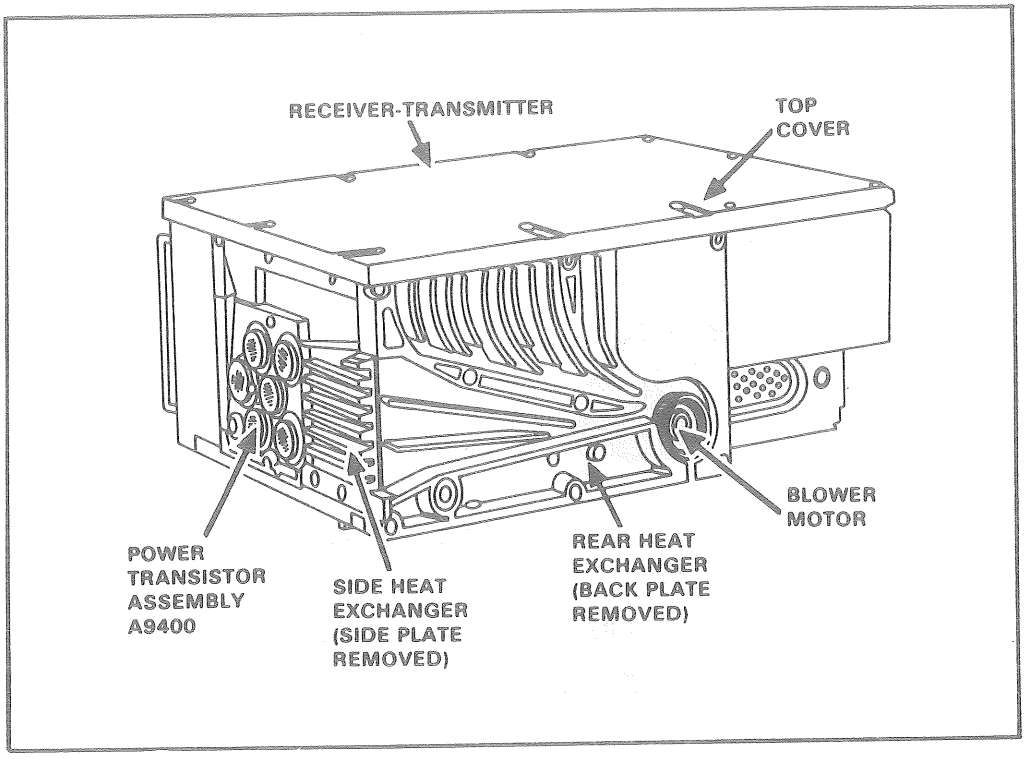


Figure 3. Heat exchanger and power transistor assembly of receiver-transmitter.

5. Perform maintenance on mounts. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, p 5-3.)

   a. Remove rust and corrosion from external surfaces; paint bare metal surfaces.

   b. Tighten all loose screws holding the radio mounts to the vehicle and on the mount.

6. Perform maintenance on control box. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, pp 5-3 and 5-4.)

   a. Remove rust and corrosion from external surfaces; paint bare metal surfaces.

b. Tighten all loose screws and mounting bolts.

c. Tighten all loose cable receptacle lock nuts with spanner wrench.

d. Tighten loose audio accessories.

7. Record all faults noted and corrective actions taken on DA Form 2404.

8. Complete DA Form 2404 and submit it to your supervisor.

REFERENCES

DA Pam 310-7, Military Publications: US Army Equipment Index of Modification Work Orders.

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools List): AN/VRC-12 Series Radio Sets.

TASK

113-587-3073

Evaluate the Operation of Radio Set AN/VRC-47

CONDITIONS

This task is performed as an evaluation of the radio set prior to troubleshooting, as a final check after repair, or as directed by your supervisor. It may be performed in a tactical or nontactical situation and may be performed in an NBC environment. You will be provided with the following:

1. Radio Set AN/VRC-47 mounted in a tactical vehicle.
2. Distant operational compatible FM Radio Set.
3. Test Set, Radio Frequency AN/URM-182 or TS-2609/U.
4. TM 11-5820-401-12.
5. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 45 minutes, Radio Set AN/VRC-47 has been evaluated, performance measures 1 through 3 have been completed and all faults that you found have been recorded on a DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Install the AN/URM-182 to the receiver-transmitter. (Refer to TM 11-5820-401-12, chap 5, sec II, para 5-7, pp 5-7 and 5-9.)
2. Perform the steps in the Equipment Performance Checklist. (Refer to TM 11-5820-401-12, chap 5, sec II, para 5-8a, and d, pp 5-9, 5-10, 5-12, and 5-13.)

3. Record all faults that you found on DA Form 2404 and report them to your immediate supervisor.

REFERENCES

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): AN/VRC-12 Series Radio Sets.

TASK

113-587-3074

Evaluate the Operation of Radio Set AN/VRC-53/64

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when you have received a report of failure, or as directed by your supervisor. You will be provided with:

1. Radio Sets AN/VRC-53/64.
2. Distant operational compatible radio set.
3. DA Form 2404.
4. Test Set, Radio Frequency Power AN/URM-182 or TS-2609/U.

STANDARDS

This task has been performed correctly when, within 20 minutes, the operation of Radio Sets AN/VRC-64/53 has been evaluated, performance measures 1 through 5 have been completed, and a DA Form 2404 with all faults found has been prepared and submitted to your supervisor.

PERFORMANCE MEASURES

1. Install AN/URM-182 to receiver-transmitter. (Refer to task 113-574-2061 of this Manual.)
2. Evaluate the receiver-transmitter using AN/URM-182. (Refer to task 113-574-2061 of this Manual.)
3. Perform steps in the equipment performance checklist.

NOTE: In Equipment Performance Checklist, Radio Sets AN/VRC-53/64, AN/GRC-125, and 160 will include Amplifier-Power Supply Groups OA-3633/GRC, and OA-3633A/GRC.

Preset Controls

(1) Turn the RT unit volume control fully counterclockwise.

(2) Tune the RT unit to the authorized frequency.

(3) Set the AM-2060 SPKR Switch at OFF.

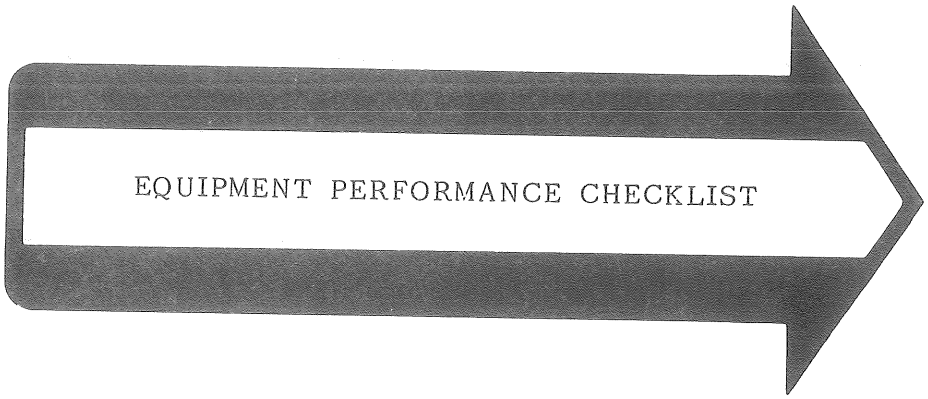
(4) Turn the AM-2060 ANT. FREQ. Control to 30-33.

4. Record all abnormal indications on DA Form 2404.

5. Submit completed DA Form 2404 to your supervisor.

REFERENCES

None.



EQUIPMENT PERFORMANCE CHECKLIST

Step	Function Checked	Action	Normal Indication
1	Input power and dial light	Set the Am-2060 PWR switch at ON; then turn the RT unit function switch to, and hold it in, the LITE position.	The RT unit dial lamp should light.
2	Rushing noise	Turn the RT unit function switch to ON; then turn the RT unit VOLUME control to 10.	Loudness of rushing noise should increase; at the 10 setting, rushing noise should be normal.
3	Reception	Receive a signal from the test set.	Rushing noise should be eliminated and a loud voice signal should be heard.
4	Squelch control	Turn the RT unit function switch to SQUELCH.	Rushing noise should be eliminated.
5	Squelch sensitivity (receive)	With the RT unit function switch in SQUELCH, receive a signal from the test set.	A loud, clear voice signal should be heard.
6	a. Keying b. RF output	Key the RT unit.	a. The RT unit should b. The rushing noise at the test set should be eliminated.
7	Transmitter frequency accuracy	Key the RT unit.	The rushing noise at the test set should be eliminated.
8	a. Voice sidetone b. Voice modulation	Key and modulate the the RT unit.	a. Voice sidetone should be heard. b. A loud, clear voice signal should be heard at the test set.

EQUIPMENT PERFORMANCE CHECKLIST (CONTINUED)

Step	Function Checked	Action	Normal Indication
9	Squelch sensitivity (transmit)	Turn the RT unit function switch to SQUELCH; then key and unkey the RT unit.	A burst of rushing noise should be heard.
10	150-Hz modulation	Key and unkey the RT unit being checked.	A burst of rushing noise should be heard at the test set.
11	Speaker output	Set the AM-2060 SPKR switch at ON.	A loud rushing noise should be heard at the speaker.
12	Speaker muting	Key and modulate the RT unit.	Sidetone should not be heard at the AM-2060 speaker.
13	AM-2060 and MX-6707 antenna frequency control	Tune the RT unit to the frequencies listed below, one at a time. After tuning the RT unit to a frequency setting, turn the AM-2060 ANT. FREQ. CONTROL to the appropriate	As the ANT. FREQ. CONTROL is rotated from one frequency range to another, an audible switching sound should be heard. The dummy load should light at at each frequency.
14		frequency range. At each frequency setting, key the RT unit. a. 32.50 MHz b. 35.50 MHz c. 39.50 MHz d. 44.50 MHz e. 50.50 MHz f. 54.50 MHz g. 58.50 MHz h. 62.50 MHz i. 68.50 MHz j. 72.50 MHz	range selected when the RT unit is keyed.

Note. If the automatic frequency range switching does not occur when you perform step 13, disconnect cable CX-4722 from the AM-2060 and the MX-6707 and mannually select the correct frequency range at the MX-6707.

TASK

113-587-3075

Perform Organizational Quarterly Preventive Maintenance on Radio Set AN/VRC-47

CONDITIONS

This task is performed in a tactical or nontactical situation, in a sheltered facility, and may be performed in an NBC environment. This task is performed as scheduled maintenance becomes due or as directed by your supervisor. You will be provided with the following:

1. Radio Set AN/VRC-47 with assigned vehicle.
2. TM 11-5820-401-12.
3. Tool Kit TK-101/G.
4. Paint and brush.
5. Insulating silicone compound.
6. Graphite grease.
7. Fine sandpaper.
8. DA Form 2404.
9. DA Pam 310-7.

STANDARDS

This task has been performed correctly when, within 30 minutes, organizational quarterly preventive maintenance has been performed on Radio Set AN/VRC-47, performance measures 1 through 3 have been completed; and all faults found have been recorded on DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Check that all applicable DA modification work orders have been performed or are scheduled to be performed. (Refer to DA Pam 310-7.)

2. Perform maintenance on receiver-transmitter antenna. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, pp 5-1, 5-2 and 5-3.)

   a. Remove rust and corrosion from external metal surfaces. Paint bare metal surfaces.

   b. Bend spring section of the matching unit and inspect the cable inside the spring. There should be no evidence of damage to the cable or the insulation on the cable.

   c. Identify painted surface or hairline cracks in the plastic top section of the MX-6707/VRC.

   d. Tighten three set screws at the top of matching unit.

   e. Tighten loose nuts and bolts on mounting bracket that holds matching unit to vehicle.

   f. Identify missing or broken ground strap on matching unit.

   g. Remove moisture drain screw from base of matching unit, drain moisture, and reinstall screw.

   h. Tighten all loose screws, cables, and receptacles on matching unit.

      CAUTION: On the MX-6707/VRC, do not overtighten the eight assembly screws (fig 1) that hold the top plastic body to the bottom section beyond a snug tightness. Overtightening can cause hairline cracks in the plastic body. Do not tighten plastic body or loosen the helicoils that hold the four mounting bolts in some hull vehicles.

   i. Put a small amount of silicone grease on the "O" ring and on the control cable receptacle of the matching unit.

   j. Identify missing or broken safety wire on antenna matching unit.

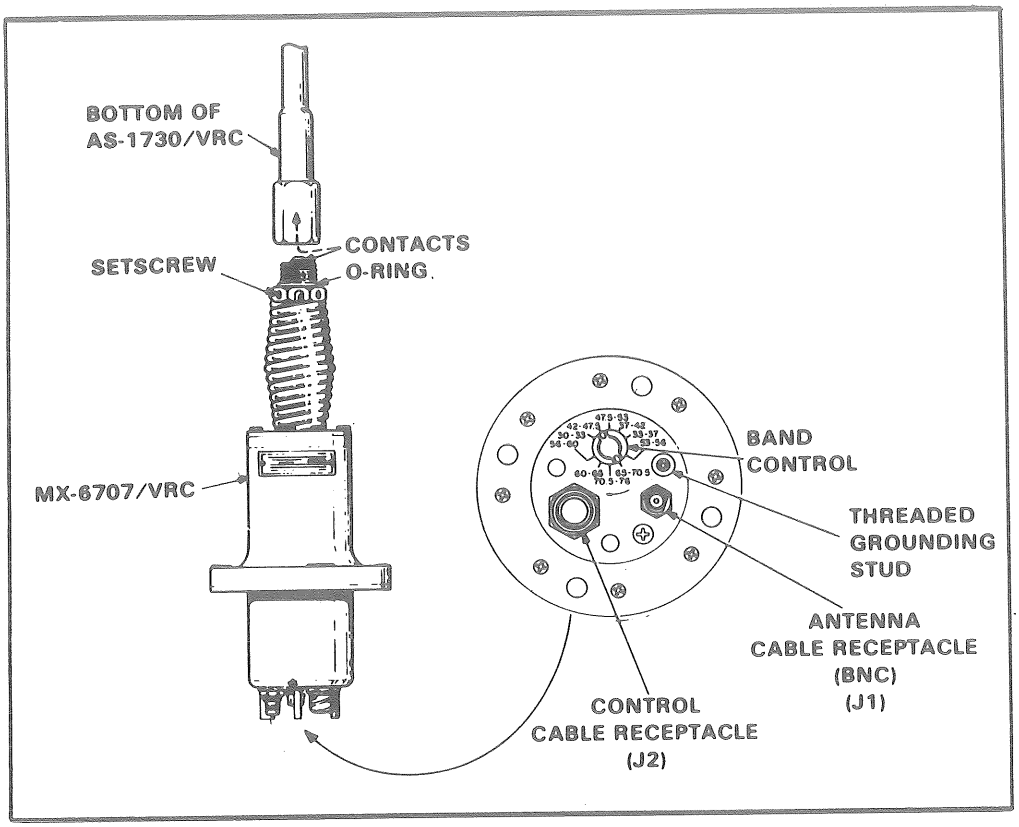


Figure 1. AS-1729/VRC (Not shown: AT-1095/VRC).

3. Perform maintenance on receiver antenna. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, p 5-2.)

   a. Clean out mast section receptacle on top of mast base.

   b. Identify any damage to mast base ceramic insulator.

   c. On the AB-15/GR, tighten two insulator sections on mounting hole.

   d. On the AB-558/GR, tighten to snug fit any loose mounting bolts.

   e. Tighten any loose screws and nuts on the mounting brackets that hold mast base to vehicle.

   f. If Right-Angle Adapter UG-306/U is required, position it in place on the Adapter UG-273/U or attach it to the Antenna Cable CG-1773/U.

g. Tighten Adapter UG-273/U to mast base receptacle.

h. Identify broken ground strap or clamp and lock it to the UG-273/U.

4. Perform maintenance on audio accessories. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, p 5-2.)

a. Put a light coat of silicone grease on the "O" ring in the cable connectors (fig 2).

CAUTION: When applying insulating compound, avoid contamination of electrical contacts.

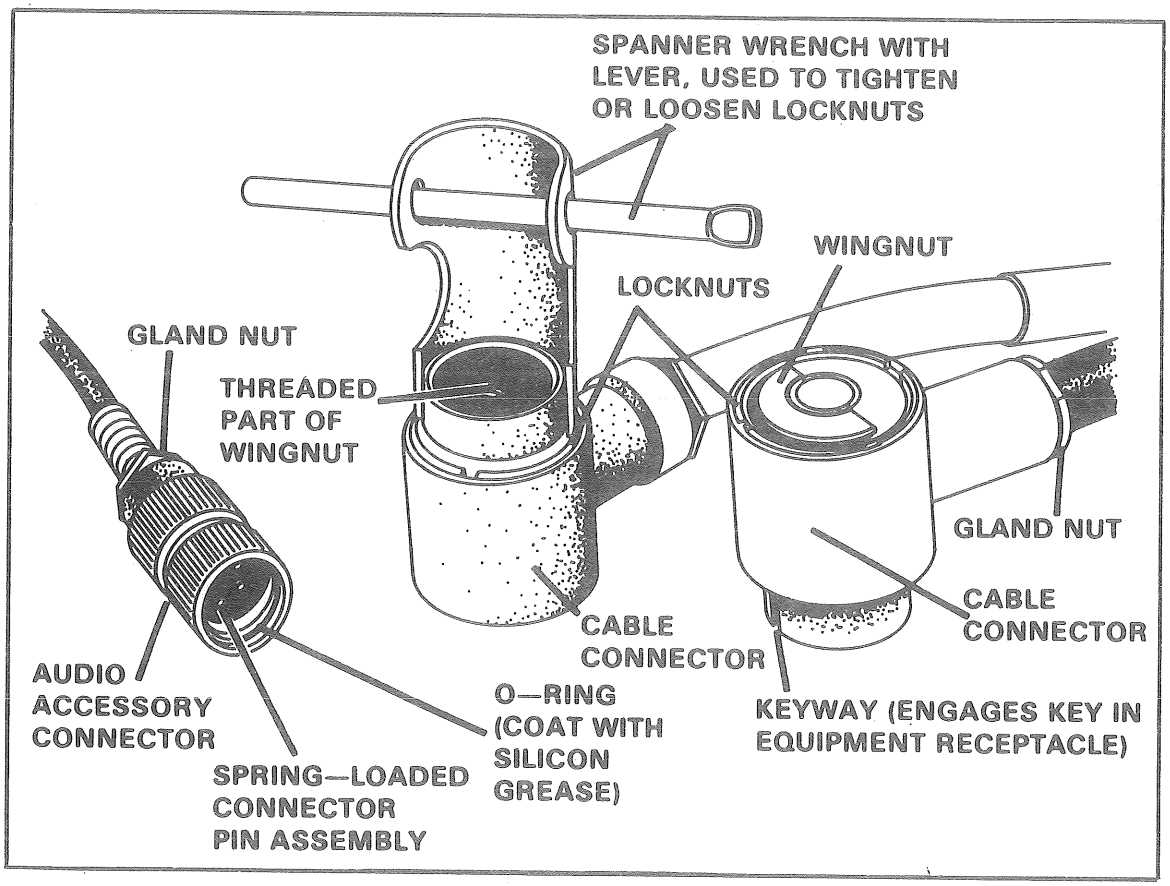


Figure 2. Detail of cable connectors.

b. Identify audio accessories in which cable insulation or any part is broken.

c. Accessory connector.

(1) Tighten gland nut, if provided (fig 2).

(2) Properly position and tighten spring-loaded connector pin assembly (fig 2).

(3) Identify any of the three small keys that are broken.

5. Perform maintenance on receiver-transmitter. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, pp 5-2 and 5-3.)

a. Remove rust and corrosion from external surfaces. Paint bare metal surfaces.

b. Tighten all screws on covers, sides, and controls. Replace missing screws.

c. Identify broken or missing CALL indicator lens cap or bulbs.

d. Correctly position dial lamps and holders; identify defective bulbs.

e. Identify any missing protective nut on ANT receptacle and tighten loose protective ANT nuts.

f. Identify ANT receptacles that are so damaged that the Antenna Cable CG-1773/U cannot be locked onto the receptacle.

g. If Right-Angle Adapter UG-306/U is required, position it in place on the ANT receptacle or attach it to the Antenna Cable CG-1773/U.

h. Clean the heat exchanger (fig 3). The operation is optional.

(1) In dusty areas, the cleaning should be performed more often than quarterly.

(2) In dry, cold, or nondusty areas, this operation may be performed at quarterly intervals.

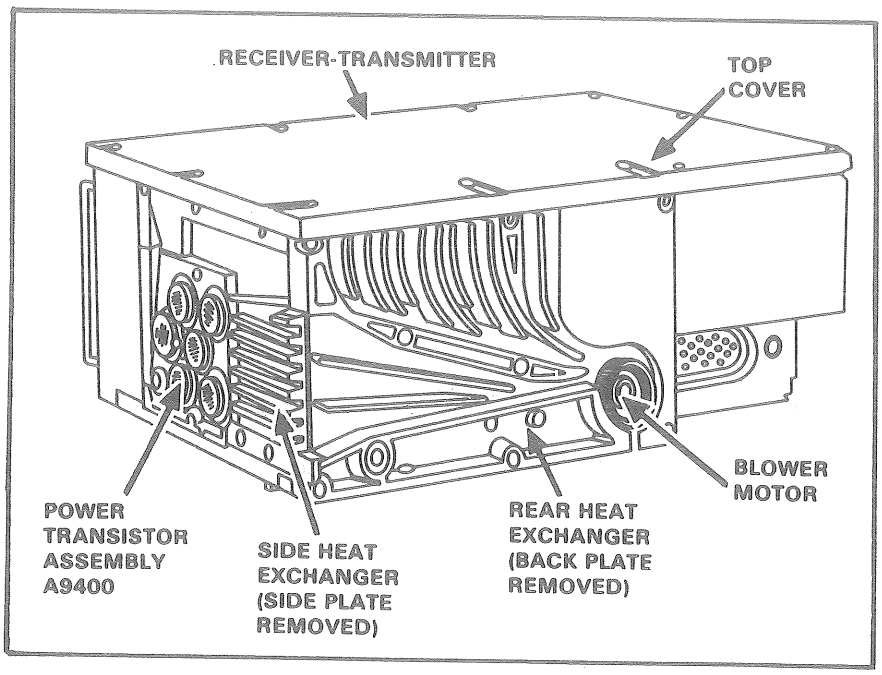


Figure 3. Heat exchanger on RT-524/246.

6. Perform maintenance on receiver. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, p 5-3.)

   a. Remove rust and corrosion from external surfaces. Paint bare metal surfaces.

   b. Tighten all screws on covers, sides, and controls. Replace missing screws.

   c. Identify broken or missing CALL indicator lens caps or bulbs.

   d. Identify ANT receptacles that are so damaged that the antenna cable(s) cannot be locked onto the receptacle.

   e. If Right-Angle Adapter UG-306/U is required, position it in place on the ANT receptacle or attach it to the Antenna Cable CG-1773/U.

   f. Correctly position dial lamps and holders; identify defective bulbs.

7. Perform maintenance on mounts. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, p 5-3.)

a. Remove rust and corrosion from external surfaces; paint bare metal surfaces.

b. Tighten all loose screws holding the radio mounts to the vehicle and on the mount.

8. Perform maintenance on control boxes. (Refer to TM 11-5820-401-12, chap 5, sec I, para 5-2, p 5-3 and 5-4.)

a. Remove rust and corrosion from external surfaces; paint bare metal surfaces.

b. Tighten all loose screws and mounting bolts.

c. Tighten all loose cable receptacle locknuts with spanner wrench (fig 2).

d. Tighten loose audio accessories.

9. Record all faults noted and corrective actions taken on DA Form 2404.

10. Complete DA Form 2404 and submit it to your immediate supervisor.

REFERENCES

DA Pam 310-7, Military Publications: US Army Equipment Index of Modification Work Orders.

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): AN/VRC-12 Series Radio Sets.

TASK

113-587-3076

Perform Organizational Quarterly Preventive Maintenance on Radio Set AN/VRC-53/64

CONDITIONS

This task is performed in a tactical or nontactical situation, in a sheltered facility, and may be performed in an NBC environment. Your supervisor has directed you to perform scheduled organizational quarterly PM service on Radio Sets AN/VRC-53/64. The following items will be made available to you:

1. Radio Sets AN/VRC-53/64 with assigned vehicle.
2. Tool Kit TK-101/G.
3. Paint and brush.
4. Silicone compound.
5. Trichloroethane cleaning compound.
6. Epoxy.
7. Fine sandpaper and soft cloth.
8. TM 11-5820-498-12.
9. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 20 minutes, organizational quarterly preventive maintenance has been performed for Radio Set AN/VRC-53/64, performance measures 1 through 4 have been completed, and a DA Form 2404 with all faults found and corrective action taken have been prepared and submitted to your supervisor.

PERFORMANCE MEASURES

1. Perform organizational quarterly preventive maintenance in accordance with TM 11-5820-498-12, chapter 5, section II, paragraph 5-5, pages 5-1 through 5-2.1.

2. Correct all faults that you are authorized to correct.

3. Record all faults found on DA Form 2404.

4. Complete DA Form 2404 and submit it to your supervisor.

REFERENCES

TM 11-5820-498-12, Operator's and Organizational Maintenance Manual: 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.

TASK

113-587-4058

Repair Radio Set AN/GRC-19

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor. You will be provided with:

1. Radio Set AN/GRC-19.
2. DA Form 2404.
3. DA Form 2407.

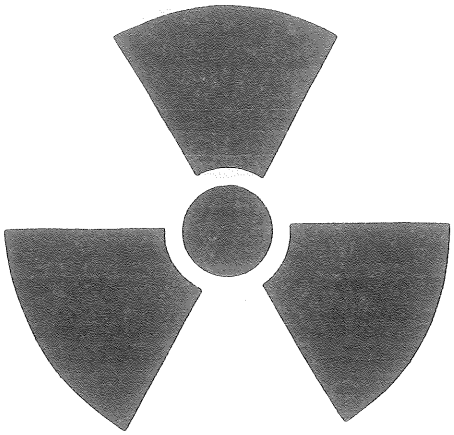
STANDARDS

This task has been performed correctly when, within 30 minutes, you have completed repair of Radio Set AN/GRC-19, performance measures 1 through 4 have been completed, and a DA Form 2404 with all faults noted and corrective actions taken have been given to your supervisor. (DA Form 2407 should be initiated if higher category maintenance is required.)

PERFORMANCE MEASURES

1. Visually inspect the radio set for obvious defects.

WARNING
RADIATION HAZARD



RADIOACTIVE MATERIAL
CONTROLLED DISPOSAL REQUIRED
ACCOUNTABILITY NOT REQUIRED

Ammeter	Ra226	0.59uCi	6625-00-569-0243
Ammeter	Ra226	1.0uCi	6625-00-538-9700
Meter	Ra226	0.69uCi	6625-00-669-0769
	Electron Tube	OA2WA	5960-00-503-4880
EEVC	U238	0.1uCi	
CBS Hytron	Ni63	0.5uCi	
Raytheon	Co60	0.2uCi	

Radiation Hazard Information: The following radiation hazard information must be read and understood by all personnel before operating or repairing Radio Sets AN/GRC-19, AN/GRC-19A, AN/GRC-19B, and R-392/URR.

The components are potentially hazardous when broken. See qualified medical personnel and the local Radiological Protection Officer (RPO) immediately if you are exposed to or cut by broken components. First aid instructions are contained in TB 43-0116, TB 43-0122, and AR 755-15.

NEVER place radioactive components in your pocket.

Use extreme care NOT to break radioactive components while handling them.

NEVER remove radioactive components from cartons until you are ready to use them.

If any of these components are broken, notify the local RPO immediately. The RPO will survey the immediate area for radiological contamination and will supervise the removal of broken components. The above listed radioactive components will not be repaired or disassembled.

Disposal of broken, unserviceable, or unwanted radioactive components will be accomplished in accordance with the instructions in AR 755-15.

Before starting a detailed examination of the component parts, check for the following common troubles.

CAUTION: When servicing the transmitter, be careful with the power-supply circuits and the plate circuits. The high voltages in these circuits can cause serious injury or death. When the transmitter is taken out of its case for servicing, connect a ground wire to the main frame before connecting the power cable. Use #12 AWG wire (or larger) for the ground wire. Make sure that the transmitter is turned off and disconnected from the power source before working on any high-voltage circuits. Discharge the high-voltage capacitors by shorting them to ground with a grounding rod. The grounding rod should have an insulated handle. Use a strong alligator clip and a copper-braid strap to make a good ground connection.

a. Improper setting of the switches and controls.

b. Improper connection of the cables, headset cord, or antenna lead-in wire.

c. Worn, broken, or disconnected cables, plugs, or headset cord.

d. Grounded or broken antenna or antenna lead-in wire.

e. Poor ground connections.

f. Transmitter interlock switch S611 open. (Transmitter case is not screwed on tightly.)

g. Burned-out fuses. (This usually indicates other troubles.)

h. Loose or broken wires.

i. Improper seating of cables (between the subchassis) in the transmitter or in the receiver.

j. Check for defective tubes or transistorized audio module in some receivers.

k. If a transistor that was used on a voice or continuous wave (CW) circuit is installed on a circuit using FSK operation, see that plug P801 is in jack J101 and that plug P601 is in jack J620 in the transmitter.

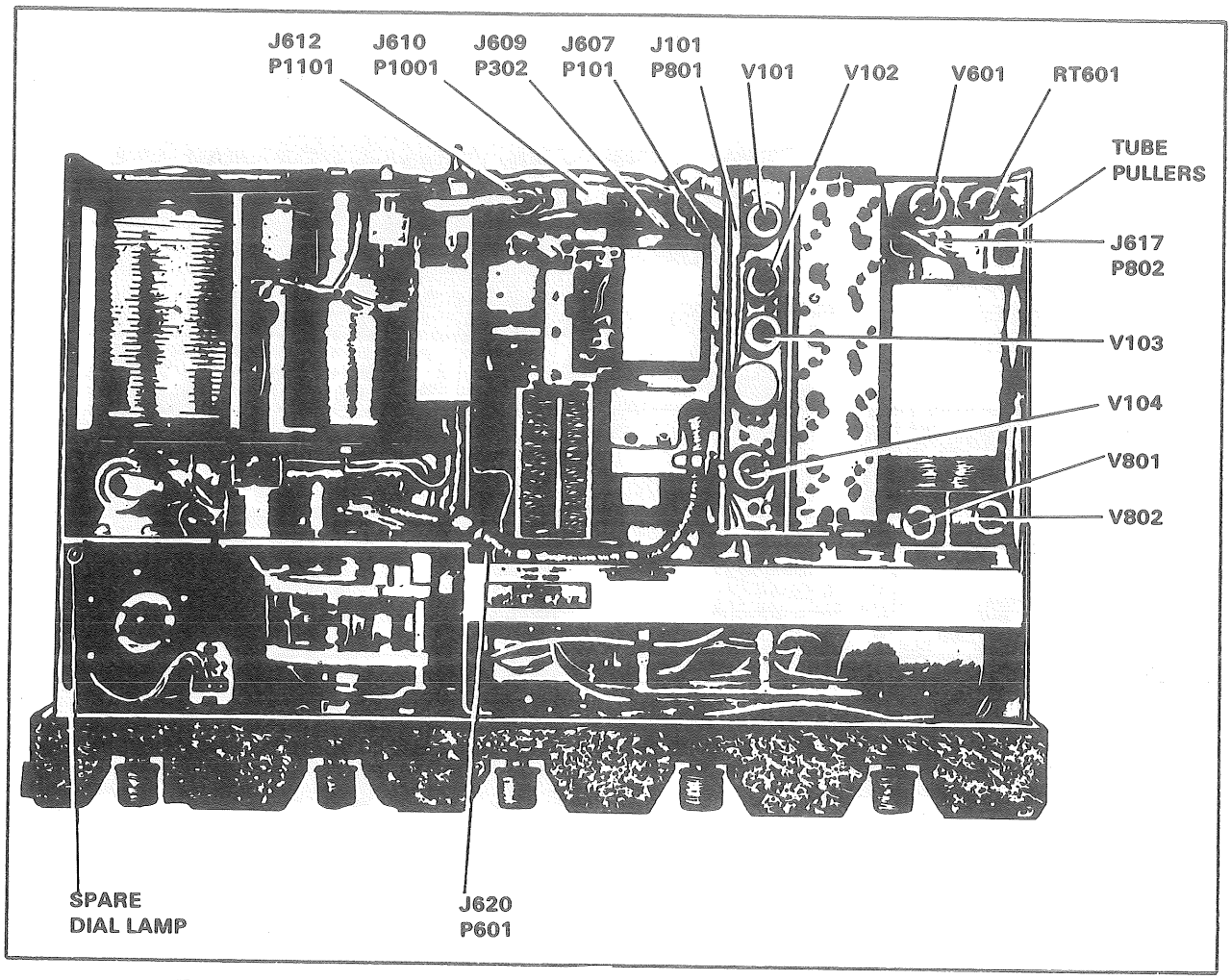


Figure 1. Transmitter tube and plug locations, top view.

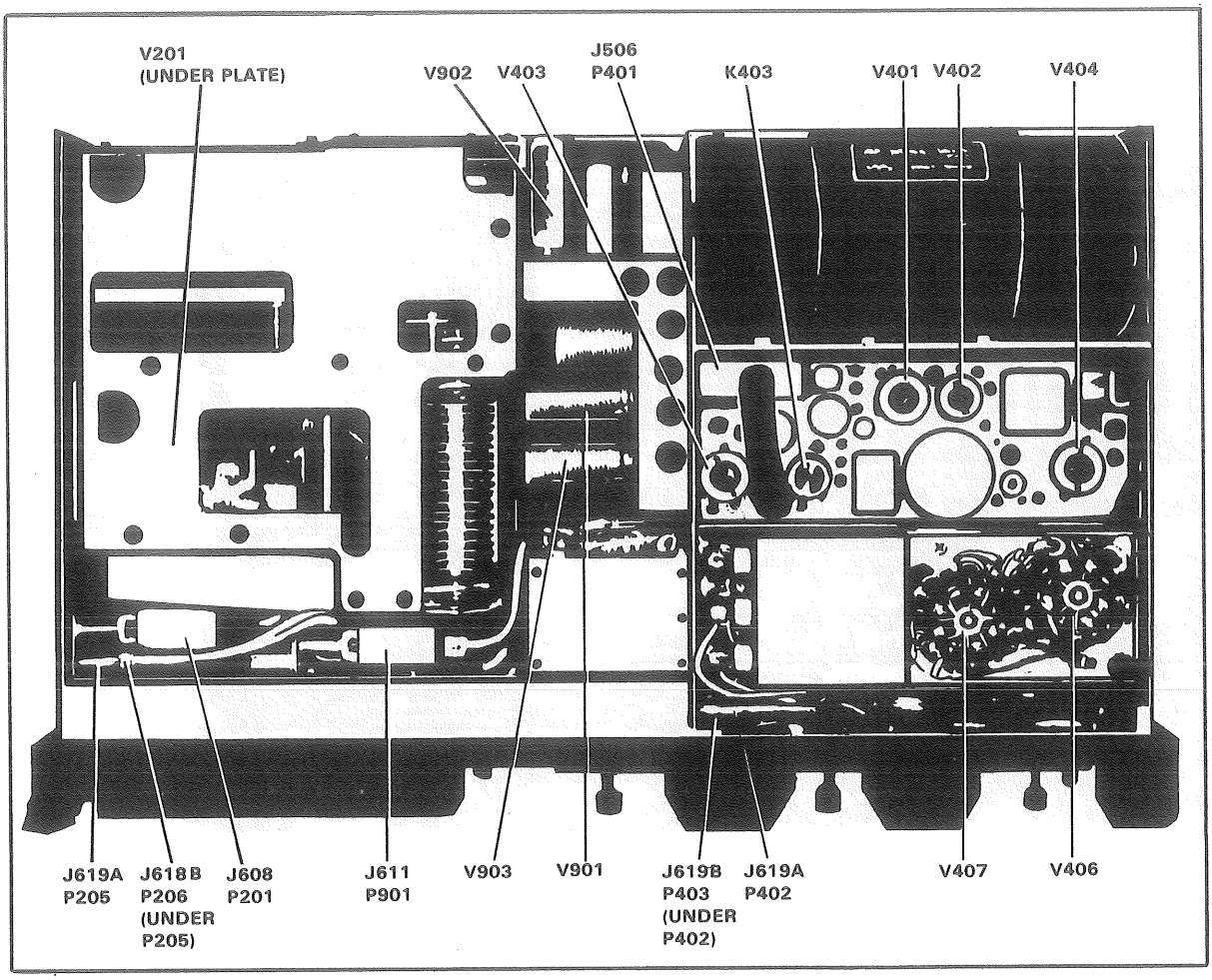


Figure 2. Transmitter tube and plug locations, bottom view.

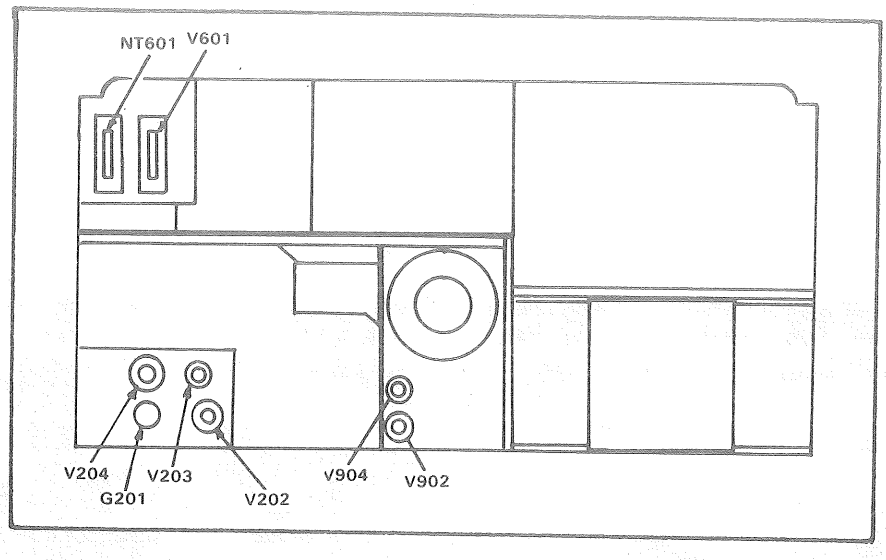


Figure 3. Transmitter tube and plug locations, rear view.

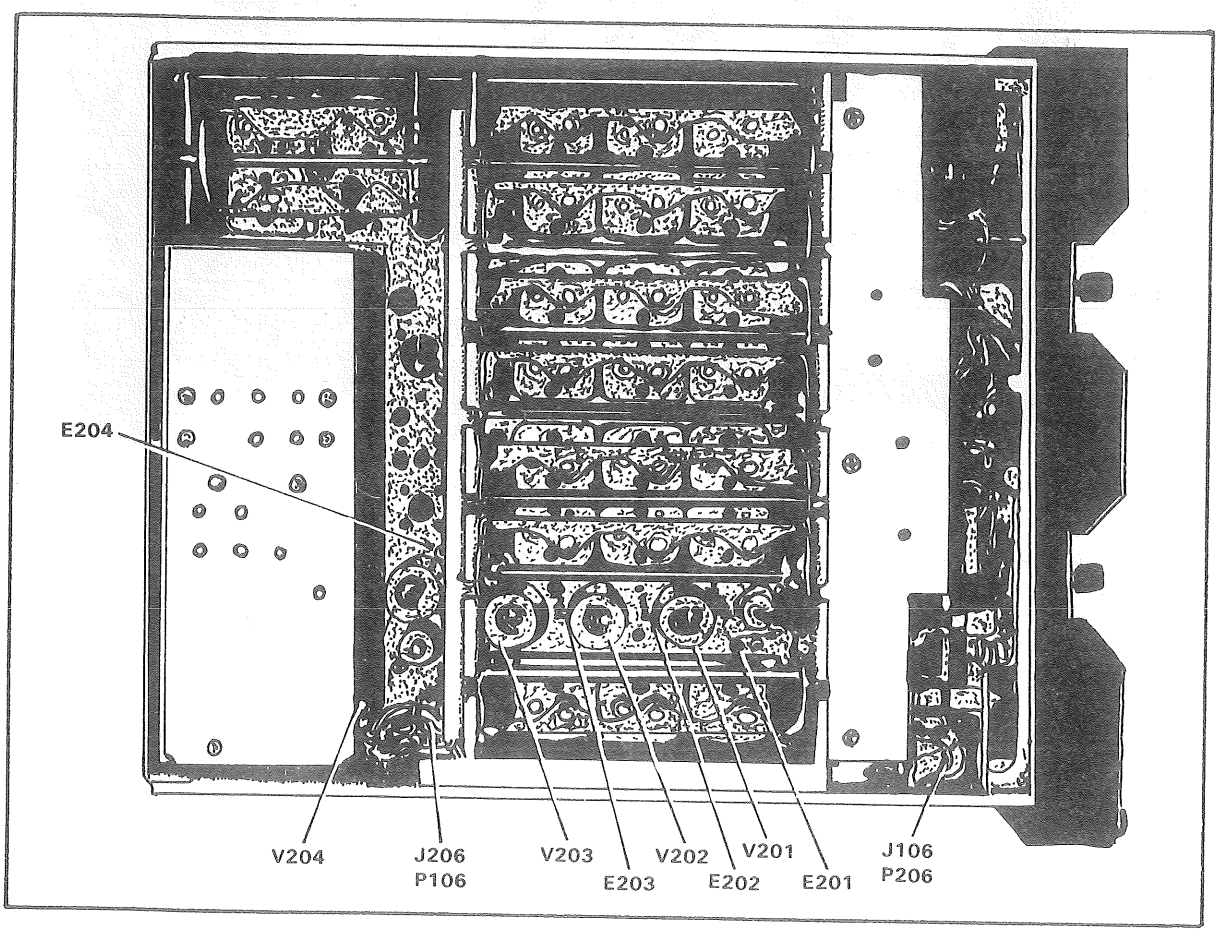


Figure 4. Receiver tube, plug, and test point locations, top view.

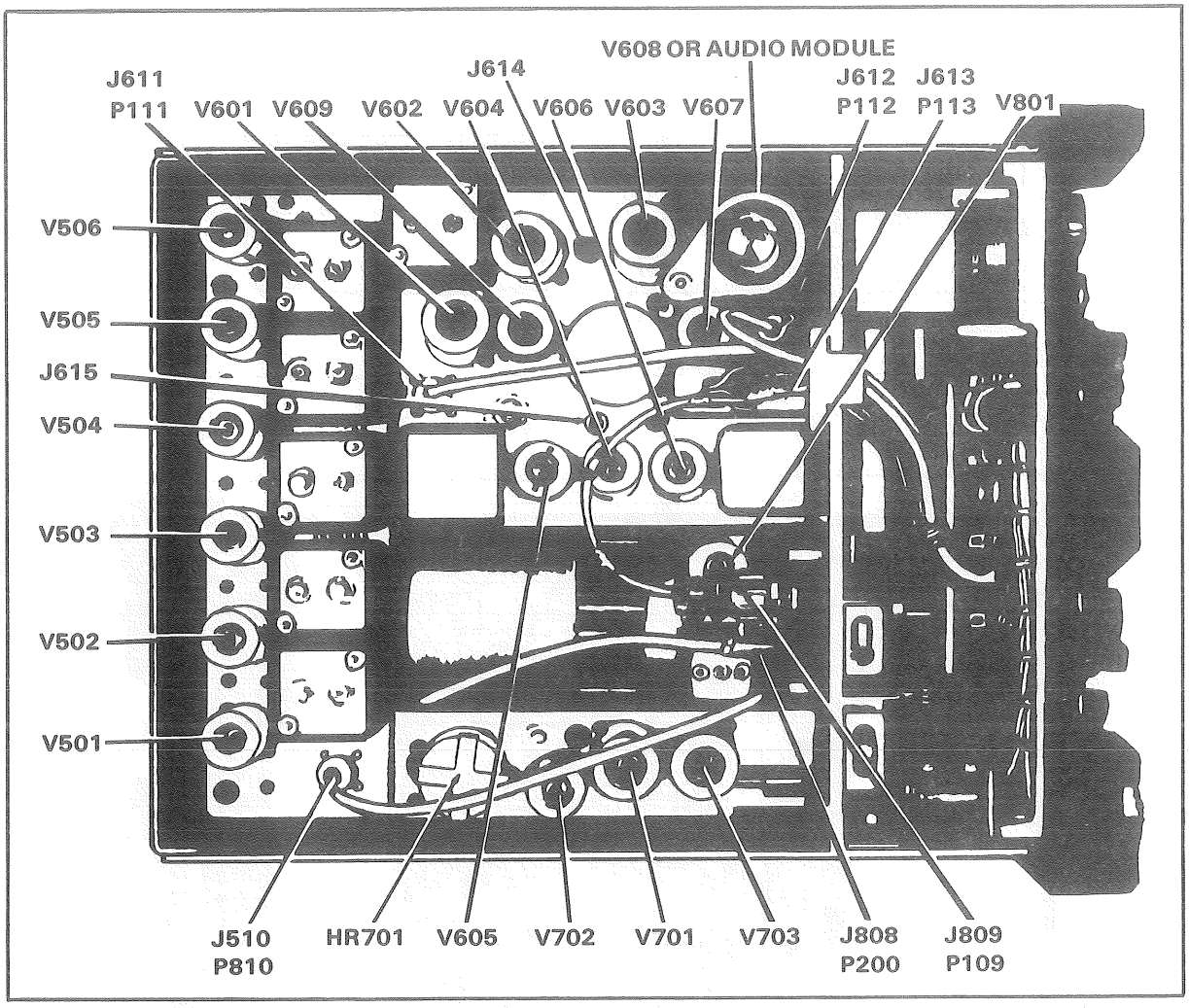


Figure 5. Receiver tube, plug, and test point locations, bottom view.

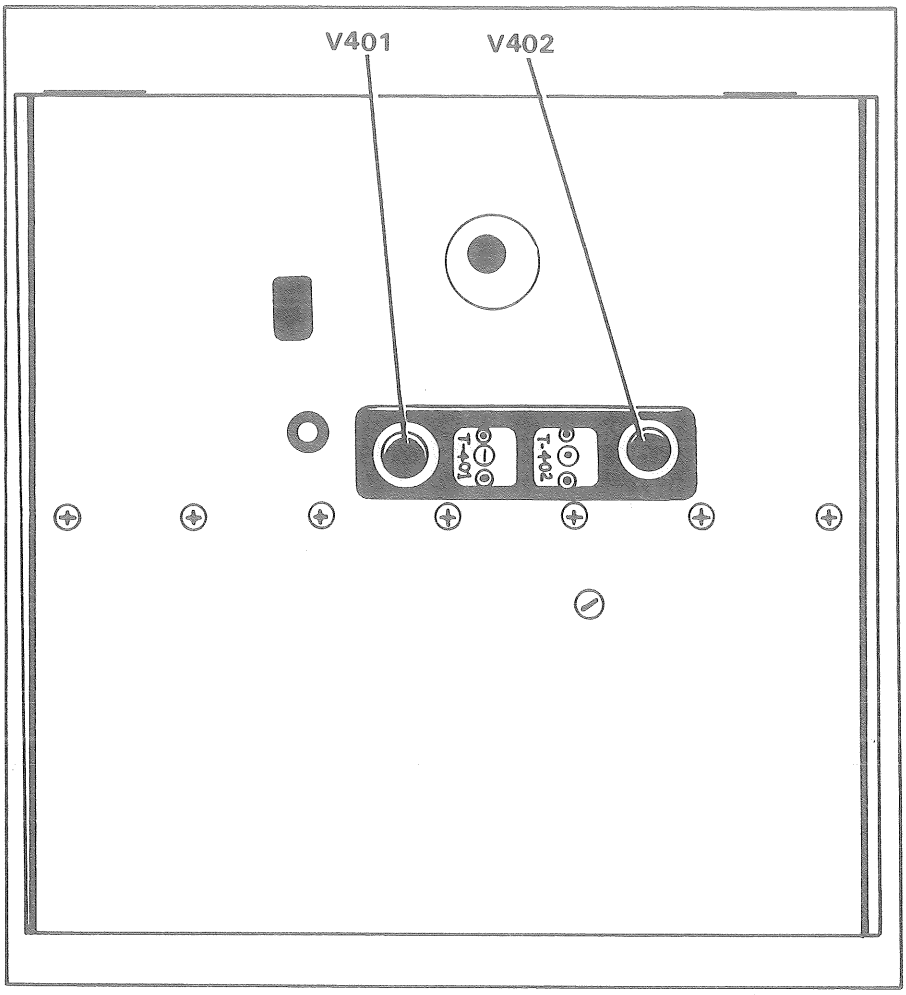


Figure 6. Receiver tube locations, rear view.

2. Troubleshoot and initiate repair of Radio Set AN/GRC-19.

   a. Check Radio Set AN/GRC-19 as described in TABLE 1 below.

   b. Check Transmitter Control C-882/GRC-19 as described in TABLE 2 below.

> CAUTION 1: Before the transmitter is turned on for troubleshooting or testing, make sure that it is connected to an antenna or a dummy antenna.
>
> CAUTION 2: A transistorized audio module is used in place of V608 in some receivers. Do not short circuit module terminals to ground in a receiver having an audio module. Transistors are very sensitive to improper voltages; short circuits may damage the audio module. Remove the audio module from the receiver before measuring resistances in the receiver; the use of an ohmmeter may damage the audio module.

TABLE 1. EQUIPMENT PERFORMANCE CHECKLIST RADIO SET AN/GRC-19

STEP	UNIT	ACTION OR CONDITION	NORMAL INDICATION	CORRECTIVE ACTIONS
1	Transmitter	Set the SERVICE SELECTOR switch at OFF.		
2	Transmitter	Set the DIAL DIM switch at FULL.		
3	Transmitter	Set the RELAY NORMAL DUPLEX switch at NORMAL.		
4	Transmitter	Set the TEST METER switch at BATT.		
5	Transmitter	Lock the locking bar on the BAND SELECTOR switch.		
6	Transmitter	Lock the locking bar on the TUNING CONTROL.		
7	Transmitter	Set the PRESET CHANNELS switch at the desired channel.		
8	Receiver	Set the function switch at OFF.		
9	Receiver	Set the BFO switch at OFF.		
10	Receiver	Set the AGC switch at ON.		
11	Receiver	Set the AF GAIN control at the center of its range.		
12	Receiver	Set the BAND WIDTH switch at 8.		

STEP	UNIT	ACTION OR CONDITION	NORMAL INDICATION	CORRECTIVE ACTIONS
13	Receiver	Set the DIAL DIM switch at ON.		
14	Receiver	Turn the RF GAIN control all the way to the right (clockwise).		
15	Receiver	Set the function switch to NORMAL	Dial lamps light	Check dial lamps. Check DIAL DIM switch. Check Fuse F102. Check for proper seating of P206 in J106 (fig 4). Check Fuse F101. Check for proper seating of P113 in J613 (fig 5).
		Turn the AF GAIN fully clockwise	CARRIER LEVEL meter gives maximum indication momentarily.	
		If a signal or rushing noise is heard, omit steps 16 through 23 and continue with step 24.	A signal or rushing noise is heard in the headset, and the CARRIER LEVEL meter shows the strength of the received signal or noise.	Check the headset. Check the RF cable connections and the antenna connections.
		If the CARRIER LEVEL meter indicates normal when MEGACYCLES and KILOCYCLES controls are turned to receive a signal, but no signal is heard in the headset the trouble is isolated to steps 16 through 19.	Note. Tune the receiver to receive a strong signal. The CARRIER LEVEL meter will not indicate on weak signals.	
		If meter reading is normal and audio signal is normal when MEGACYCLES and KILOCYCLES controls are adjusted to receive a signal, omit steps 16 through 30 and continue with step 31.		

STEP	UNIT	ACTION OR CONDITION	NORMAL INDICATION	CORRECTIVE ACTIONS
16	Receiver	Touch ohmmeter leads (Rx1 range) between test jack J615 (fig 5) and chassis. Repeat if necessary.	A clicking sound is heard in the headset.	Check V603, V606, V607, V608 or the transistorized audio module (fig 5) by substitution.
17	Receiver	Remove P810 from J510 (fig 5) and touch the ohmmeter leads between the center conductor of J510 and chassis; momentarily reverse the meter leads and again touch the center conductor of J510. Repeat if necessary. Reconnect P810 and J510 after this step has been completed.	A clicking sound is heard in the headset If a clicking sound is heard in the headset omit steps 18 through 23 and continue with step 24.	Check V501 through V506 (fig 5) by sub_titution.
18	Receiver	Remove and replace V506 (fig 6) rapidly. Repeat if necessary.	A clicking sound is heard in the headset	Check tube V506 (fig 5) by substitution.
19	Receiver	Remove and replace V505 (fig 5) rapidly. Repeat if necessary.	A clicking sound is heard in the headset	Check tube V505 (fig 5) by substitution.
20	Receiver	Remove and replace V504 (fig 5) rapidly. Repeat if necessary.	A clicking sound is heard in the headset	Check tube V504 (fig 5) by substitution.
21	Receiver	Remove and replace V503 (fig 5) rapidly. Repeat if necessary.	A clicking sound is heard in the headset	Check tube V503 (fig 5) by substitution.
22	Receiver	Remove and replace V502 (fig 5) rapidly. Repeat if necessary.	A clicking sound is heard in the headset	Check tube V502 (fig 5) by substitution.
23	Receiver	Remove and replace V501 (fig 5) rapidly. Repeat if necessary.	A clicking sound is heard in the headset	Check tube V501 (fig 5) by substitution.
24	Receiver	Remove P208 from J808 (fig 6) and touch ohmmeter leads between center conductor of J808 and chassis. Repeat if necessary. Reconnect P208 and J808 after this step has been completed.	A clicking sound is heard in the headset	Check tube V801 by substitution. Check for proper seating of P109 in J809 (fig 5).

STEP	UNIT	ACTION OR CONDITION	NORMAL INDICATION	CORRECTIVE ACTIONS
25	Receiver	Touch ohmmeter leads between test point E204 (fig 4) and chassis.	A clicking sound is heard in the headset.	Check tube V204 (fig 4) by substitution.
26	Receiver	Touch ohmmeter leads between test point E203 and chassis (fig 4). Note. The receiver must be set to a frequency below 8 mcs for this test.	A clicking sound is heard in the headset	Check tubes V203 and V402 (fig 4 and 6) by substitution.
27	Receiver	Touch ohmmeter leads between test points E202 and chassis (fig 4).	A clicking sound is heard in the headset	Check tube V202 (fig 4) by substitution.
28	Receiver	Touch ohmmeter leads between test point E201 and chassis (fig 4).	A clicking sound is heard in the headset.	Check tube V201 (fig 4) by substitution.
29	Receiver	Touch ohmmeter leads between ANT. terminal and chassis.	A clicking sound is heard in the headset	Check for proper seating of P206 in J106 (fig 4).
30	Receiver	Adjust the KILOCYCLES and MEGACYCLES controls to receive a strong signal.	A strong, clear signal is heard in the headset and the CARRIER LEVEL meter shows signal strength	Check tubes V609 and V602 (fig 5) by substitution.
31	Receiver	Set the BFO switch at ON. Adjust the MEGACYCLES and KILOCYCLES control until a cw signal is heard in the headset.	Sharp, clear cw signals are heard in the headset	Check tube V604 (fig 5) by substitution. Check for proper seating of P112 in J612 (fig 5).
32	Receiver	Turn the BFO PITCH control through its entire range.	The tone of the cw signal changes	Higher echelon repair required.
33	Receiver	Set the AGC switch at CAL Turn the KILOCYCLES control through its entire range.	A beat note is heard in the headset, and the CARRIER LEVEL meter pointer moves at every 100-kc-point on the frequency indicator below 20 mc.	Check V701, V702, and V703 (fig 5) by substitution. If calibration checkpoints are heard at 200-kc multiples only, check V701. If calibration is not possible on higher frequencies, check V703. If calibration is unstable and off frequency, check V702.

STEP	UNIT	ACTION OR CONDITION	NORMAL INDICATION	CORRECTIVE ACTIONS
34	Receiver	Set the function switch at SQ Turn the RF GAIN control to the left (counterclockwise) so that the signal heard in the headset disappears. Rotate the control clockwise until the signal is barely heard. Turn the KILOCYCLES control through its entire range.	Minimum noise is heard as the receiver is tuned between stations (or when listening to AM signals) and the receiver is quiet between transmissions.	Check V602 and V605 (fig 5) by substitution.
35	Transmitter	Set the SERVICE SELECTOR switch at CALIB. (Allow the equipment to warm up for 5 minutes.)	Test meter indicates normal battery voltage and the dial lamps light.	If there is no indication, check front-panel fuse 15 AMP, 24 VOLT, power cable connections, and dial lamps. If the fuse keeps burning out, the transmitter is probably defective. Refer to TM 11-806. If the meter reading is incorrect, check the voltage of the power source. (Adjust to 28.5 volts.)
			Movement of air is felt at the air vents	Check for proper seating of P1101 in J610 and P1101 in J612 (fig 1).
			LV dynamotor or LV transistor-type power supply starts after 40 seconds ±10 seconds.	Make sure that the interlock switch is closed by tightening the 16 Allen-head screws. Check for proper seating of P401 in J606 (fig 2). Check dynamotor or LV transistor-type power supply fuse F602 (10 amp).

STEP	UNIT	ACTION OR CONDITION	NORMAL INDICATION	CORRECTIVE ACTIONS
36	Transmitter	Set the TEST METER switch at PA GRID.	Test meter indicates within the shaded area marked PA GRID	Check for proper seating of P801 in J101 (fig 1) P101 in J607, P802 in J617, and P201 in J608 (fig 1 and 2). If the test meter reading is low, check by substitution: V801, V802, V101, V102, V103, V104, V601 and V201 (fig 1 and 2).
37	Transmitter	Set the PRESET CHANNELS switch at M. Unlock the locking bar on the BAND SELECTOR switch. Unlock the locking bar on the TUNING CONTROL Turn the BAND SELECTOR switch to each of the 10 bands in turn, and, while on each band, turn the TUNING CONTROL to the low and high ends of each band.	Test meter indicates within the shaded area marked PA GRID.	Check V101, V102, and V103 (fig 1) by substitution.
38	Transmitter	Set the SERVICE SELECTOR switch at CW.	The HV dynamotor or transistor-type power supply starts within seconds.	Check high voltage fuse F603.
39	Transmitter	Set the TEST METER switch at PA CATH.	Test meter indicates zero	Check tube V202 by substitution (fig 3).

STEP	UNIT	ACTION OR CONDITION	NORMAL INDICATION	CORRECTIVE ACTIONS
40	Transmitter	Hold the TEST KEY at ON.	TUNING INDICATOR lights, goes out, lights again, and remains lighted after a slight delay of not more than 30 seconds. Note. If the transmitter has been manually tuned from one frequency to another in another band, the TUNING INDICATOR may not light or may light and remain lighted. In this case, switch the BAND SELECTOR switch to an adjacent band and back again, and wait for the tuning cycle to be completed.	Check the TUNING INDICATOR lamp. Check the antenna and ground connections. Check for proper seating of: P101 in J607, P302 in J609 (fig 1), P901 in J611, P201 in J608, P205 in J618-A, and P206 in J618-B (fig 2). Check by substitution: V201, V202, V203, V204, V901, V902, V903, and V904 (fig 2 and 3). If Antenna Group AN/GRA-12 is being used, change the length of the antenna slightly.
41	Transmitter	Turn the BAND SELECTOR switch to each one of the 10 bands in turn, and while on each band, turn the TUNING CONTROL to the low and high end of each band. Hold the transmitter TEST KEY at the ON position after each frequency setting. (Wait until each tuning cycle is finished for each frequency setting before proceeding to the next one.)	After the tuning cycle is finished the test meter indicates within the shaded area marked PA CATHODE. The TUNING INDICATOR will stay lighted and the 400-cycle sidetone is heard in the headset. Note. Refer to the note in step 40.	Same as for step 40.
42	Transmitter	Release the TEST KEY	The TUNING INDICATOR is not lighted. The test meter reads zero. The 400-cycle sidetone is not heard in the headset.	

STEP	UNIT	ACTION OR CONDITION	NORMAL INDICATION	CORRECTIVE ACTIONS
43	Telegraph key	Hold the telegraph key closed.	The test meter indicates within the shaded area marked PA CATHODE. The TUNING INDICATOR stays lighted. Note. Refer to the note in step 40 above. The 400-cycle sidetone is heard in the headset.	Check the telegraph key and the telegraph key cable.
44 45	Telegraph Transmitter	Release the telegraph key. Set the SERVICE SELECTOR switch at STANDBY.	The dynamotor or transistor-type power supplies stop. The test meter reads zero. The TUNING INDICATOR is not lighted. No sound is heard in the headset.	
46	Transmitter	Set SERVICE SELECTOR switch at VOICE/FSK.	The dynamotors or transistor-type power supplies do not start. The TUNING INDICATOR is not lighted. The test meter reads zero.	
47	Microphone	Press the microphone switch	The dynamotors or transistor-type power supplies start. The TUNING INDICATOR stays lighted. Note. Refer to the note in step 40.	Check for proper seating of P401 in J608 (fig 2).
		Talk into the microphone Speak normally and hold the the microphone about 2 inches from the lips	The test meter indicates in shaded area marked PA CATHODE, and the pointer moves slightly while the operator is talking. The audio level meter reads up to 100 on the peaks. The voice sidetone signal is heard in the headset.	Check by substitution: V401, V402, V403, V404, V406, and V407 (fig 2). Check the microphone and the microphone cord.

STEP	UNIT	ACTION OR CONDITION	NORMAL INDICATION	CORRECTIVE ACTIONS
48	Transmitter	Lock the locking bar on the BAND SELECTOR switch. Lock the locking bar on the TUNING CONTROL. Press the reminder spring on the PRESET CHANNELS switch. Turn the switch from the M position to each of the positions which have channels preset. At each position, check for accuracy of the reading on the frequency indicator. (Wait until the drive motor stops before turning the PRESET CHANNELS switch to a new channel.)	As the switch is set at each channel, the BAND SELECTOR switch and the TUNING CONTROL will turn. This will tune the transmitter to a frequency that is shown on the frequency indicator. Within limits, the reading on the frequency indicator will agree with the frequency written on the chart for each channel.	If the frequency indicator shows a frequency that differs by more than 20 kc from the frequency assigned to the channel, or if there is any doubt as to the true output frequency, recalibrate the channel.
49	Transmitter	Set the DIAL DIM switch at OFF	The dial lamps are not lighted.	
50	Transmitter	Set the DIAL DIM switch at DIM	The dial lamps light dimly.	Replace the lamps that do Replace the lamps that do light.
51	Transmitter	Set the DIAL DIM switch at ON	The dial lamps light fully	Replace the lamps that do light.
52	Transmitter	Set the SERVICE SELECTOR switch at OFF.	The transmitter is shut off	Higher echelon repair required.
53	Receiver	Set the function switch at OFF.	The receiver is shut off	Higher echelon repair required.

TABLE 2. Equipment performance checklist for Control C-822/GRC-19.

STEP	UNIT	ACTION OR CONDITION	NORMAL INDICATION	CORRECTIVE ACTIONS
1		Set SERVICE SELECTOR switch at OFF.		
2		Set SERVICE SELECTOR switch at VOICE.	Movement of air is felt at the air vents.	Check the interconnecting cable between the transmitter REMOTE CONT receptacle and the Transmitter Control C-822/GRC-19.
3		Set PRESET CHANNELS switch at a position for which a channel has been preset.	BAND SELECTOR switch and TUNING CONTROL will turn. This will tune the transmitter to the frequency indicator.	Check the interconnecting cable between the transmitter REMOTE CONT receptacle and the Transmitter Control C-822/GRC-19.
4		Press the microphone switch.	The dynamotors start. The TUNING INDICATOR stays lighted.	Check the interconnecting cable between the transmitter Control C-822/GRC-19 and the TUNING INDICATOR lamp.
5		Talk into the microphone.	The test meter indicates in the shaded area marked PA CATHODE, and the pointer moves slightly while the operator is talking. The audio level meter reads up to 100 on the peaks. The voice sidetone signal is heard in the headset.	Check the interconnecting cable between the transmitter REMOTE CONT receptacle and the Transmitter Control C-822/GRC-19.
6		Set SERVICE SELECTOR switch at OFF.		

3. Record any faults noted and corrective action taken on DA Form 2404 and submit it to your supervisor.

4. Initiate DA Form 2407 if higher category maintenance is required. (Task 113-623-3003.)

REFERENCES

None.

TASK

113-594-0011

Repair Switchboard, Telephone, Manual SB-22(*)/PT

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions in a sheltered facility, and may be performed in an NBC environment. This task is performed when an operator reports a malfunction or as directed by your supervisor. You will be provided with the following:

1. Installed Switchboard, Telephone, Manual SB-22(*)/PT.
2. TM 11-5805-262-12.
3. Tool Kit TK-101/G.
4. DA Form 2404 with abnormal indications listed in columns a and c.
5. DA Form 2407.

STANDARDS

This task has been performed correctly when, within 30 minutes, the Switchboard, Telephone, Manual SB-22(*)/PT has been repaired, performance measures 1 through 4 have been performed, a completed DA Form 2404 given to your supervisor and a DA Form 2407 prepared on those items requiring evacuation to support maintenance.

PERFORMANCE MEASURES

1. Locate the abnormal indication on the equipment performance checklist, then follow the corrective action procedures listed in the troubleshooting chart. (Refer to TM 11-5805-262-12, chap 4, sec II, para 45, pp 35 and 36.)

2. Enter the corrective action performed on DA Form 2404.

3. For items requiring support maintenance, prepare a DA Form 2407.

4. Submit completed DA Form 2404 and as applicable, DA Form 2407 to your immediate supervisor.

REFERENCES

TM 11-5805-262-12, Operator's and Organizational Maintenance Manual: Switchboards, Telephone, Manual, SB-22/PT and SB-22A/PT.

TASK

113-594-3012

Perform Organizational Monthly Preventive Maintenance on Switchboard, Telephone, Manual SB-22(*)/PT

CONDITIONS

This task is performed in tactical or nontactical situation, under all weather conditions in a sheltered facility, and may be performed in an NBC environment. This task is performed once each month as scheduled on DD Form 314 or as directed by your supervisor. You will be provided with the following:

1. Complete Switchboard, Telephone, Manual SB-22(*)/PT installed.
2. Tool Kit TK-101/G.
3. TM 11-5805-262-12.
4. Light sandpaper.
5. DA Pam 310-7.
6. Paint and paint brush.
7. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 30 minutes, organizational monthly preventive maintenance on Switchboard, Telephone, Manual SB-22(*)/PT has been performed; performance measures 1 through 12 have been performed; and DA Form 2404 lists all faults noted and corrective actions taken and submitted to your immediate supervisor.

PERFORMANCE MEASURES

1. Check that work on applicable modification work orders (DA Pam 310-7) has been performed or is scheduled to be performed. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, item 3, p 7.)

2. Check the switchboard. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, step 1, p 7.)

   a. Remove rust, corrosion, or dirt from external metal surfaces. Paint bare metal surfaces.

   b. Tighten loose screws and nuts.

   c. Identify if the operator's cord is frayed.

   d. Identify chipped, cracked, or bent plugs and jacks.

3. Check pluck-out items. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, step 6, p 7.)

   a. Straighten any line, trunk, or operator's packs that are not inserted all the way.

   b. Identify any missing or bent captive screws or clamps.

4. Identify any broken or cracked external connections, terminals, binding posts, and binding post springs. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, step 7, p 8.)

5. Remove any dirt, grease, corrosion, or fungus on the ground rod. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, step 8, p 8.)

6. Check switches, handles, and generator crank. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, step 9, p 8.)

   a. Identify any switches that do not have smooth movement without binding.

   b. Identify chipped, cracked, bent, or missing handles.

7. Remove dirt, corrosion, or excess markings from designation strips. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, step 10, p 8.)

8. Check batteries, battery case, and spring contacts. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, step 11, p 8.)

   a. Clean corrosion or dirt from batteries, battery box, and tube.

   b. Identify broken spring contacts.

9. Perform test operation. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, step 12, p 8.)

10. Inspect switchboard and spare parts for completeness. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, step 14, p 8.)

11. Record all faults noted and corrective action taken on DA Form 2404.

12. Complete DA Form 2404 and give to your immediate supervisor.

REFERENCES

DA Pam 310-7. Military Publications: US Army Equipment Index of Modification Work Orders.

TM 11-5805-262-12 Operator's and Organizational Maintenance Manual: Switchboards, Telephone, Manual, SB-22/PT and SB-22A/PT.

TASK

113-594-3016

Evaluate the Operation of Switchboard, Telephone, Manual SB-22(*)/PT

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be done in an NBC environment. This task is done as an evaluation of the switchboard prior to repair, as a final check after repair, as a part of periodic checks and services, or as directed by your supervisor. You will be provided with the following:

1. Installed Switchboard, Telephone Manual SB-22(*)/PT.
2. Telephone Set TA-312/PT.
3. DA Form 2404.
4. 12 to 15 inches of WD-1/TT Field Wire.

STANDARDS

This task has been done correctly when, within 20 minutes, the Switchboard, Telephone Manual SB-22(*)/PT has been evaluated; performance measures 1 through 4 have been completed; and a DA Form 2404, with all abnormal indications recorded, has been given to your supervisor.

PERFORMANCE MEASURES

1. Make the following preliminary steps:
   a. Strip the insulation ($\frac{1}{2}$-inch) off the ends of the field wire.
   b. Connect one end of the field wire to the line binding posts of line pack 12 on the rear of the switchboard.

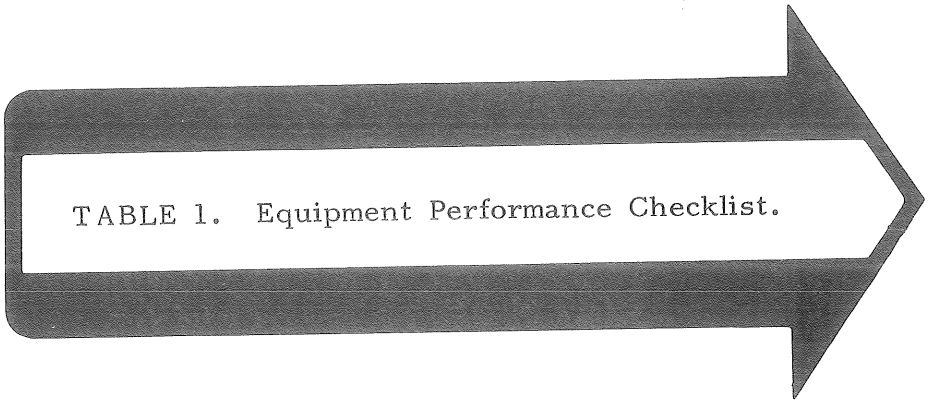
c. Connect the other end of the field wire to the line binding posts of the TA-312/PT.

d. Remove and clean the audio plug on the operator's headset-handset and clean the receptacle on the operator's pack with a pencil eraser.

e. Reconnect the audio plug to the receptacle.

f. Place the operator's cold plug into the jack on the operator's pack.

2. Perform the checks in the equipment performance checklist of Table 1.



3. Record all abnormal indications on a DA Form 2404.

a. In column a, record the item number from the equipment performance checklist.

b. In column c, record a brief description of the abnormal indication.

4. Return completed DA Form 2404 to your supervisor.

REFERENCES

None.

TABLE 1. Equipment Performance Checklist.

STEP	UNIT	ACTION	NORMAL INDICATION
1	Handset-Headset	Depress PTT switch 0	Voice sidetone should not be heard in the earpiece
2	Handset-Headset	Remove operator's jack from operator's pacw	Voice sidetone should be head in the earpiece
3	OPR Pack	Pull LITE-OUT NA-IN cover outward	Lamp should light
4	OPR Pack	Push in LITE-OUT NA-IN	Lamp should go out
5	Line pack 12 OPR Pack	Place visual and audible alarm switch to VIS and turn hand crank on TA-312/PT	Visual signal should drop on line pack 12 LITE-OUT NA-IN lamp should lite
6	OPR Pack	Place visual and audible alarm switch to AUD	Buzzing should be heard
7	OPR Pack Line Pack 12	Place OPR's plug in jack on line Pack 12	Buzzing should stop Visual sig should return to black

STEP	UNIT	ACTION	NORMAL INDICATION
8	OPR Pack	Move and hold ringing switch to the ring back position then turn the ringing generator handcrank	Buzzer on the TA-312/PT should sound
9	OPR Pack	Release the ringing switch	Switch should return to center position
10	Line Pack	Depress PTT switch on operator's pack headset/handset Depress PTT switch on TA-312/PT	Voice head in earpiece on TA-312/PT Voice heard in earpiece on operator's headset/handset
NOTE: 1. Remove the operator's jack from line pack 12 and insert it into the jack on line pack 11. 2. Insert the line plug from line pack 11 into the jack on line pack 12.			
11	OPR Pack	Turn crank handle of operator's pack	TA-312/PT should ring
12	Line Pack	Depress PTT on OPR's headset/handset	Voice heard in earpiece of TA-312/PT
13	Line Pack	Depress PTT switch on TA-312/PT	Voice heard in earpiece of OPR headset

STEP	UNIT	ACTION	NORMAL INDICATION
14	Line Pack	Remove OPR plug from line pack 11 and crank TA-312 hand generator	Visual signal drops on line pack 11
15	Line Pack	Insert plug from line pack 10 into jack on line 11	Visual signal returns to black
16	Line Pack	Insert OPR plug into jack on line pack 10	
17	Line Pack	Depress PTT switch on OPR's handset	Voice sidetone is heard in earpiece of TA-312/PT
18	Line Pack	Depress PTT switch on TA-312/PT	Voice sidetone is heard in earpiece of OPR's headset/ handset
19	Line Pack	Remove OPR plug from line pack 10 and crank TA-312/PT hand generator	Visual signal drops on line pack 10
20	Line Packs	Repeat step 16 thru 20 for each line pack	Indication will be the same as in steps 16 thru 20

TASK

113-594-3017

Perform Organizational Quarterly Preventive Maintenance on Switchboard, Telephone, Manual SB-22(*)/PT

CONDITIONS

This task is performed in tactical or nontactical situation, under all weather conditions in a sheltered facility, and may be performed in an NBC environment. This task is performed once each month as scheduled on DD Form 314 or as directed by your supervisor. You will be provided with the following:

1. Complete Switchboard, Telephone, Manual SB-22(*)/PT installed.
2. Tool Kit TK-101/G.
3. TM 11-5805-262-12.
4. Light sandpaper.
5. DA Pam 310-7.
6. Paint and paint brush.
7. DA Form 2404.

STANDARD

This task has been performed correctly when within 30 minutes organizational quarterly preventive maintenance on Switchboard, Telephone, Manual SB-22(*)/PT has been performed; performance measures 1 through 13 have been performed; and DA Form 2404, with all faults noted and corrective actions taken, and submitted to your immediate supervisor.

PERFORMANCE MEASURES

1. Check that work on applicable modification work orders (DA Pam 310-7) has been performed or is scheduled to be performed.

2. Check the switchboard.

   a. Remove rust, corrosion, or dirt from external metal surfaces. Paint bare metal surfaces.

   b. Tighten loose screws and nuts.

   c. Identify if the operator's cord is frayed.

   d. Identify chipped, cracked, or bent plugs and jacks.

3. Check pluck-out items. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, step 6, p 7.)

   a. Straighten any line, trunk, or operator's packs that are not inserted all the way.

   b. Identify any missing or bent captive screws or clamps.

4. Identify any broken or cracked external connections, terminals, binding posts, and binding post springs. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, step 7, p 8.)

5. Remove any dirt, grease, corrosion, or fungus on the ground rod. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, step 8, p 8.)

6. Check switches, handles, and generator crank. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, step 9, p 8.)

   a. Identify any switches that do not have smooth movement without binding.

   b. Identify chipped, cracked, bent, or missing handles.

7. Check gaskets. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, step 4, p 7.)

8. Remove dirt, corrosion, or excess markings from designation strips. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, step 10, p 8.)

9. Check batteries, battery case, and spring contacts. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, step 11, p 8.)

   a. Clean corrosion or dirt from batteries, battery box, and tube.

   b. Identify broken spring contacts.

10. Perform test operation. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, step 12, p 8.)

11. Inspect switchboard and spare parts for completeness. (Refer to TM 11-5805-262-12, chap 4, sec I, para 44.1, step 14, p 7.)

12. Record all faults noted and corrective action taken on DA Form 2404.

13. Complete DA Form 2404 and give to your immediate supervisor.

REFERENCES

DA Pam 310-7, Military Publications: US Army Equipment Index of Modification Work Orders.

TM 11-5805-262-12 Operator's and Organizational Maintenance Manual: Switchboards, Telephone, Manual, SB-22/PT and SB-22A/PT.

TASK

113-596-4004

Replace BNC Connector on Coaxial Cable

CONDITIONS

This task is performed in a tactical or nontactical situation, in a sheltered facility, and may be performed in an NBC environment. This task is performed when an operator reports a cut or broken coaxial cable or when directed by your supervisor. You will be provided with the following:

1. Tool Kit TK-101/G.
2. Multimeter AN/USM-223 or equivalent.
3. Thin electrical pressure tape.
4. BNC connector with cable.

STANDARDS

This task has been performed correctly when, within 15 minutes, a BNC connector has been replaced; performance measures 1 through 13 have been completed; and the cable has been tested for shorts and opens.

PERFORMANCE MEASURES

1. Cut coaxial cable at nut of BNC connector making sure cut is clean and square.
2. Remove 5/16 inch of outer jacket, exposing shield (fig 1).

   CAUTION: Do not nick shield.

3. Comb out shield. Use care to prevent breaking shield strands (fig 1).

4. Strip dielectric (white insulation) to 3/16 inch from edge of jacket, exposing center conductor (fig 1).

CAUTION: Do not nick center conductor.

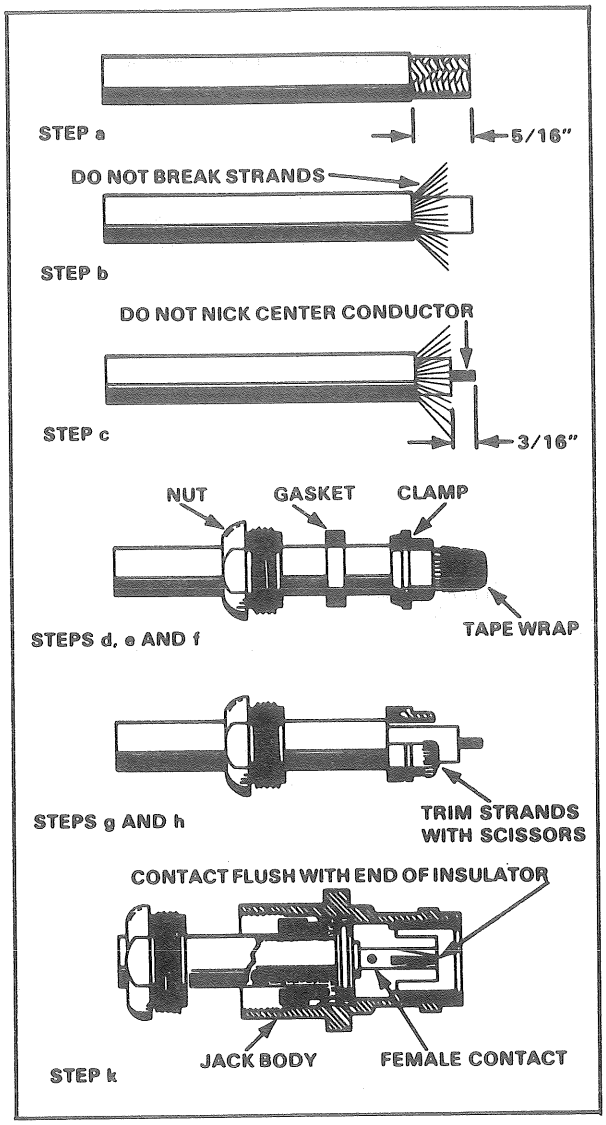


Figure 1. Installing a BNC connector.

5. Disassemble nut, groove, gasket, and sleeve clamp from plug (fig 1).

6. Taper shield toward center conductor and wrap a piece of thin pressure tape wide enough to cover the combed out shield (one layer is sufficient) around the shielding, forming a cone with the narrow end toward the conductor (fig 1).

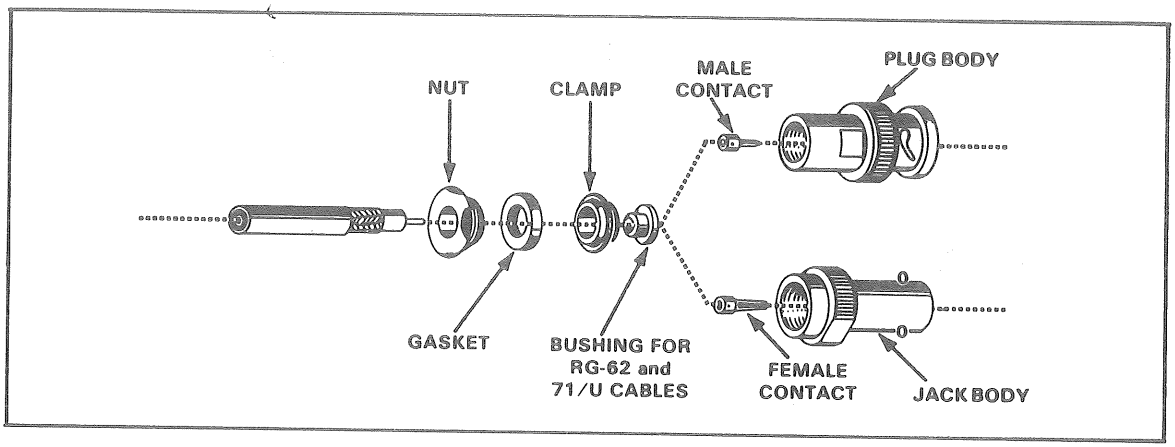


Figure 2. Exploded view of BNC connector and coaxial cable.

7. Slide nut and gasket (V-groove away from nut) in that order over tapered shield onto jacket (fig 1).

8. Remove tape from shield, comb shield back smoothly over sleeve clamp, and trim to 3/32 inch (fig 1).

9. Trim dielectric to 1/8 inch from shield and cut off center conductor to 1/8 inch from edge of dielectric (fig 1).

10. Tin center conductor shown in fig 3A. Tin inside of contact as shown in figure 3B.

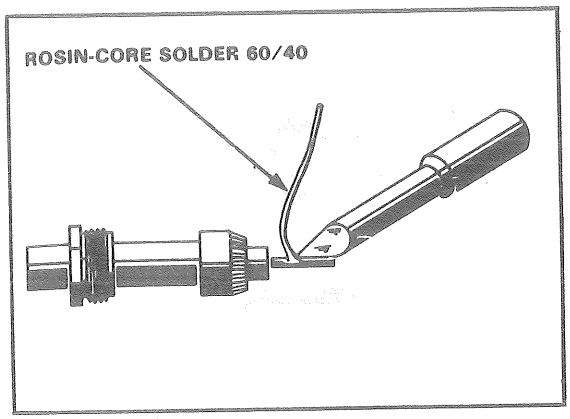


Figure 3A. Tinning center conductor.

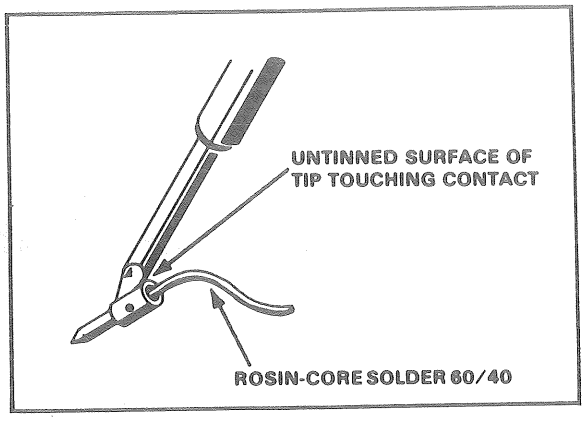


Figure 3B. Tinning Inside of Contact.

11. Slip contact over center conductor so that contact butts flush against dielectric. Solder, using a clean, well tinned soldering iron. Contact must be flush against dielectric after solder has cooled; if it is not, remake joint (fig 2).

12. Push cable assembly into connector body as far as it will go. Make sure gasket is properly seated, with sharp edge of sleeve clamp entering gasket groove. Slide nut into connector body and fasten. Start nut by hand and tighten with end wrench until enough pressure is applied to make a good seal by splitting the gasket (fig 2).

13. Make a continuity test using multimeter to guard against a shorted or open circuit.

REFERENCES

None.

TASK

113-599-0004

Systems Troubleshoot Radio Teletypewriter Set AN/GRC-142(*) to a Defective Subsystem

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when an operator reports an equipment malfunction or as directed by your supervisor. You will be provided with the following:

1. Installed AN/GRC-142.
2. Multimeter AN/USM-223 or equivalent.
3. TM 11-5815-334-12.
4. DA Form 2404.

STANDARDS

This task has been performed correctly when within 30 minutes, systems troubleshooting procedures on Radio Teletypewriter Set AN/GRC-142 to a defective subsystem have been performed, performance measures 1 through 6 have been completed and any faults found have been recorded on DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Check out power system. (Refer to TM 11-5815-334-12, chap 5, sec II, para 5-6, pp 5-4 thru 5-6.)
   a. Test for 27.5 V dc at dc entrance box with multimeter.
   b. Test for 110 V ac at ac entrance box with multimeter.
2. Check out OWR-DX SEND TT loop circuit. (Refer to TM 11-5815-334-12, chap 5, sec II, para 5-6, p 5-6, item 3.)

WARNING: Dangerous voltages (100 volts dc, regulated) exist in the loop circuits. Be extremely careful when working near these circuits.

a. Place ON-OFF switch (MD-522A/GRC) to ON or MODE SELECTOR switch to 85 Hz (MD-522/GRC).

b. Place METER FUNCTION switch to REGULATED DC and visually check TEST METER for a 27.5 V dc reading.

c. Place METER FUNCTION switch in DC LOOP No. 1 and visually check meter for a 20 milliamp current indication.

3. Check out Radio System (AN/GRC-106(*)). (Refer to TM 11-5815-334-12, chap 5, sec II, para 5-6, p 5-7, item 9 thru 12.)

a. Place TEST METER switch on AM-3349/GRC to PRIM PWR and visually check for a green (top) scale reading on the TEST METER.

b. Place TEST METER switch on AM-3349/GRC to POWER OUT.

c. Place SERVICE SELECTOR switch on RT-662 or RT-834 to NSK.

d. Place SEND/RCV switch on MD-522(*)/GRC to SEND and visually check TEST METER on AM-3349/GRC for a gray scale (bottom) reading.

e. Place SEND/RCV switch on MD-522(*)/GRC to RCV.

4. Check out Teletypewriter TT-98(*)/FG. (Refer to TM 11-5815-334-12, chap 5, sec II, para 5-6, pp 5-6 thru 5-8.)

a. Place MOTOR and LIGHT switches to ON and SEND/LOCK (fig 1) or SEND/REC switch to SEND on TT-98(*)/FG (fig 1).

b. Place switches on TT-76(*)/GGC as follows (fig 2).

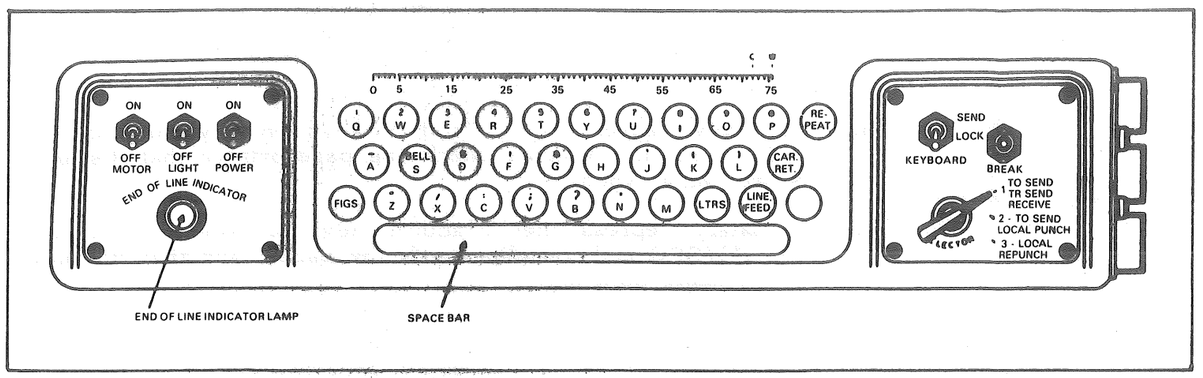


Figure 1. TT-98(*)/FG Keyboard.

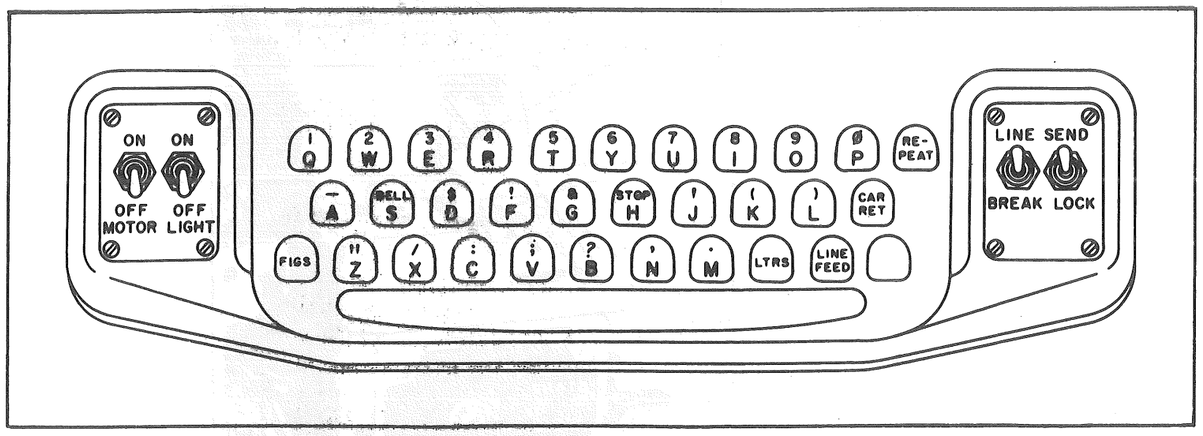


Figure 2. TT-76(*)/GGC Keyboard.

(1) SELECTOR switch to position 2.

(2) SEND-LOCK to SEND.

(3) POWER to ON.

(4) LIGHT to ON.

(5) MOTOR to ON.

c. Place switch on TT-523(*)/GGC to TD SEND-LOCAL PUNCH-LOCAL REPUNCH position.

d. Alternately depress the R and Y keys on keyboard of the TT-98(*)/FG and visually check the page printer that R's and Y's are being typed.

e. Alternately depress the R and Y keys on keyboard of the TT-76(*)/GGC and visually check the paper tape that R's and Y's are being punched.

NOTE: This tape will be used as a TEST TAPE.

f. Tear off perforated tape of R's and Y's and position it on the Transmitter Distributor (fig 3).

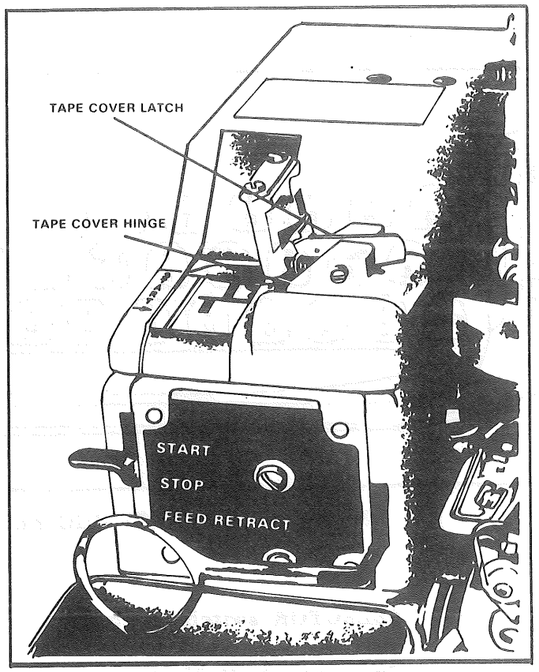


Figure 3. Transmitter-distributor, tape cover lubrication points.

g. Place SELECTOR switch to position 3 on TT-76(*)/GGC.

h. Raise the START-STOP-LEVER to the START position and visually check the paper tape that R's and Y's are being punched on.

i. Lower START-STOP lever to the STOP position and reposition TEST TAPE.

j. Place SELECTOR switch to position 2 and raise START-STOP lever to START position.

k. Visually observe the page printer of the TT-98(*)/FG that Rs and Ys are being printed.

l. Lower START-STOP lever to STOP position.

m. Place SELECTOR switch to position 1 and alternately press R and Y keys on keyboard of TT-76(*)/GGC.

n. Visually check that R's and Y's are being punched on the paper tape and printed on the page printer of the TT-98(*)/FG.

o. Alternately press the R and Y keys on the key of the TT-98(*)/FG and repeat step n above.

5. Record identified symptoms on DA Form 2404.

6. Submit completed DA Form 2404 to your supervisor.

REFERENCES

TM 11-5815-334-12, Operator's and Organizational Maintenance Manual: Radio Teletypewriter Sets AN/GRC-142, AN/GRC-142A, AN/GRC-142B, AN/GRC-122, AN/GRC-122A, and AN/GRC-122B.

TASK

113-599-0005

Systems Troubleshoot Radio Teletypewriter Set AN/GRC-142(*) With Communications Security Equipment TSEC/KW-7 Installed to a Defective Subsystem

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when an operator reports an equipment malfunction or as directed by your supervisor. You will be provided with the following:

1. Installed AN/GRC-142, w/TEC KW-7.
2. Multimeter AN/USM-223 or equivalent.
3. TM 11-5815-334-12.
4. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 30 minutes, systems troubleshooting procedures on Radio Teletypewriter Set AN/GRC-142 to a defective subsystem have been performed, performance measures 1 through 7 have been completed and any faults found have been recorded on DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Check out power system. (Refer to TM 11-5815-334-12, chap 5, sec II, para 5-6, pp 5-4 thru 5-6.)
   a. Test for 27.5 V dc at dc entrance box with multimeter.
   b. Test for 110 V ac at ac entrance box with multimeter.

2. Check out OWR-DX SEND TT loop circuit. (Refer to TM 11-5815-334-12, chap 5, sec II, para 5-6, p 5-6, item 3.)

   WARNING: Dangerous voltages (100 volts dc, regulated) exist in the loop circuits. Be extremely careful when working near these circuits.

   a. Place ON-OFF switch (MD-522A/GRC) to ON or MODE SELECTOR switch to 85 Hz (MD-522/GRC).

   b. Place METER FUNCTION switch to REGULATED DC and visually check TEST METER for a 27.5 V dc reading.

   c. Place METER FUNCTION switch in DC LOOP No. 1 and visually check meter for a 20 milliamp current indication.

3. Check out Radio System (AN/GRC-106(*)). (Refer to TM 11-5815-334-12, chap 5, sec II, para 5-6, p 5-7, item 9 thru 12.)

   a. Place TEST METER switch on AM-3349/GRC to PRIM PWR and visually check for a green (top) scale reading on the TEST METER.

   b. Place TEST METER switch on AM-3349/GRC to POWER OUT.

   c. Place SERVICE SELECTOR switch on RT-662 or RT-834 to NSK.

   d. Place SEND/RCV switch on MD-522(*)/GRC to SEND and visually check TEST METER on AM-3349/GRC for a gray scale (bottom) reading.

   e. Place SEND/RCV switch on MD-522(*)/GRC to RCV.

4. Check out Teletypewriter TT-98(*)/FG. (Refer to TM 11-5815-334-12, chap 5, sec II, para 5-6, pp 5-6 thru 5-8.)

   a. Place MOTOR and LIGHT switches to ON and SEND/LOCK (fig 1) or SEND/REC switch to SEND on TT-98(*)/FG (fig 1).

   b. Place switches on TT-76(*)/GGC as follows (fig 2).

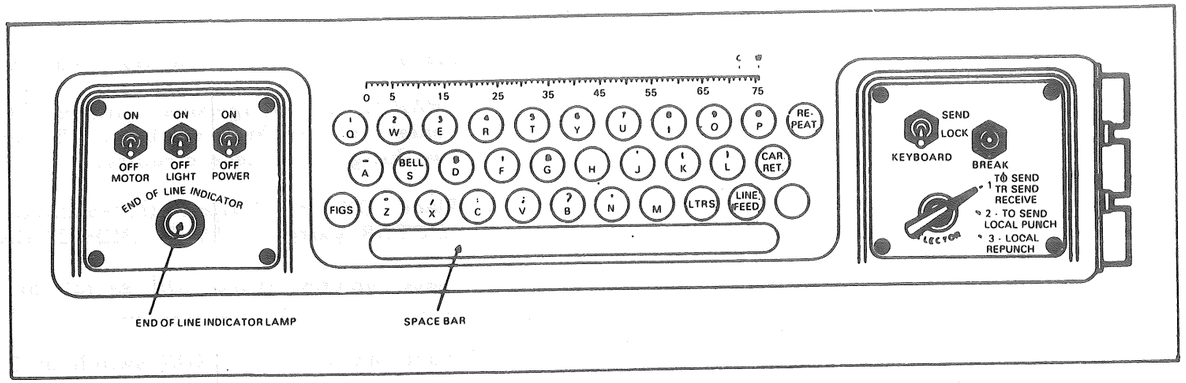


Figure 1. TT-98(*)/FG Keyboard.

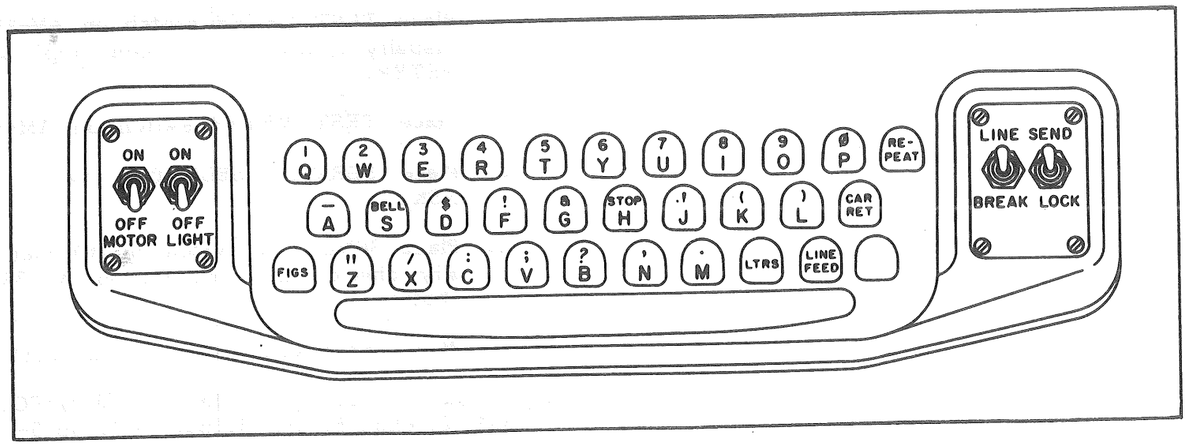


Figure 2. TT-76(*)/GGC Keyboard.

(1) SELECTOR switch to position 2.

(2) SEND-LOCK to SEND.

(3) POWER to ON.

(4) LIGHT to ON.

(5) MOTOR to ON.

2. Check out OWR-DX SEND TT loop circuit. (Refer to TM 11-5815-334-12, chap 5, sec II, para 5-6, p 5-6, item 3.)

   WARNING: Dangerous voltages (100 volts dc, regulated) exist in the loop circuits. Be extremely careful when working near these circuits.

   a. Place ON-OFF switch (MD-522A/GRC) to ON or MODE SELECTOR switch to 85 Hz (MD-522/GRC).

   b. Place METER FUNCTION switch to REGULATED DC and visually check TEST METER for a 27.5 V dc reading.

   c. Place METER FUNCTION switch in DC LOOP No. 1 and visually check meter for a 20 milliamp current indication.

3. Check out Radio System (AN/GRC-106(*)). (Refer to TM 11-5815-334-12, chap 5, sec II, para 5-6, p 5-7, item 9 thru 12.)

   a. Place TEST METER switch on AM-3349/GRC to PRIM PWR and visually check for a green (top) scale reading on the TEST METER.

   b. Place TEST METER switch on AM-3349/GRC to POWER OUT.

   c. Place SERVICE SELECTOR switch on RT-662 or RT-834 to NSK.

   d. Place SEND/RCV switch on MD-522(*)/GRC to SEND and visually check TEST METER on AM-3349/GRC for a gray scale (bottom) reading.

   e. Place SEND/RCV switch on MD-522(*)/GRC to RCV.

4. Check out Teletypewriter TT-98(*)/FG. (Refer to TM 11-5815-334-12, chap 5, sec II, para 5-6, pp 5-6 thru 5-8.)

   a. Place MOTOR and LIGHT switches to ON and SEND/LOCK (fig 1) or SEND/REC switch to SEND on TT-98(*)/FG (fig 1).

   b. Place switches on TT-76(*)/GGC as follows (fig 2).

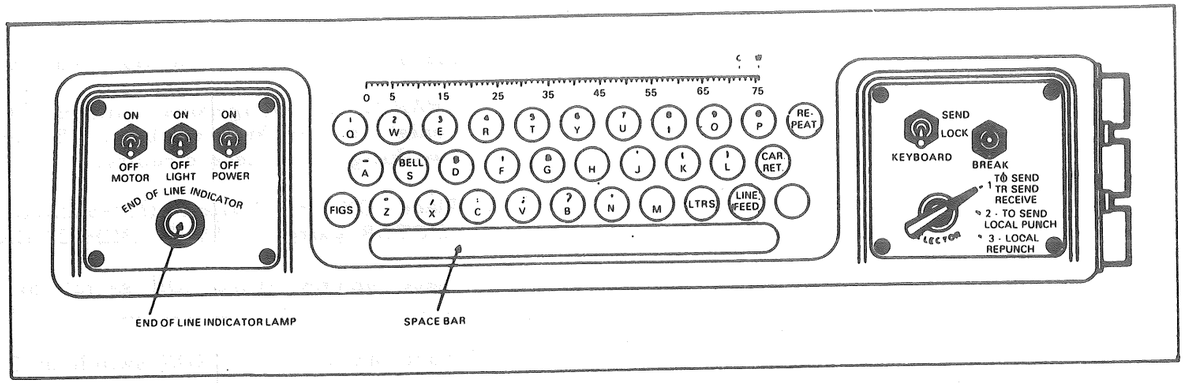


Figure 1. TT-98(*)/FG Keyboard.

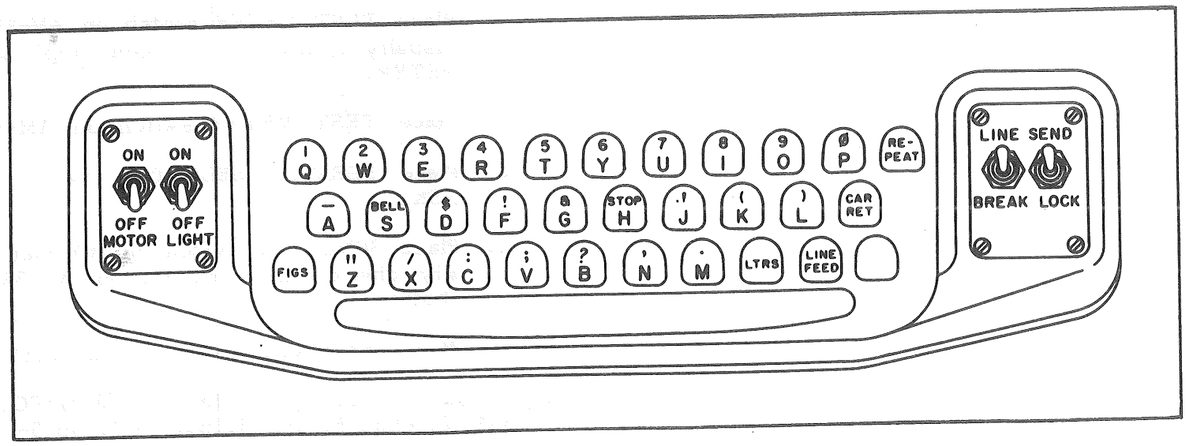


Figure 2. TT-76(*)/GGC Keyboard.

(1) SELECTOR switch to position 2.

(2) SEND-LOCK to SEND.

(3) POWER to ON.

(4) LIGHT to ON.

(5) MOTOR to ON.

c. Place switch on TT-523(*)/GGC to TD SEND-LOCAL PUNCH-LOCAL REPUNCH position.

d. Alternately depress the R and Y keys on keyboard of the TT-98(*)/FG and visually check the page printer that R's and Y's are being typed.

e. Alternately depress the R and Y keys on keyboard of the TT-76(*)/GGC and visually check the paper tape that R's and Y's are being punched.

NOTE: This tape will be used as a TEST TAPE.

f. Tear off perforated tape of R's and Y's and position it on the Transmitter Distributor (fig 3).

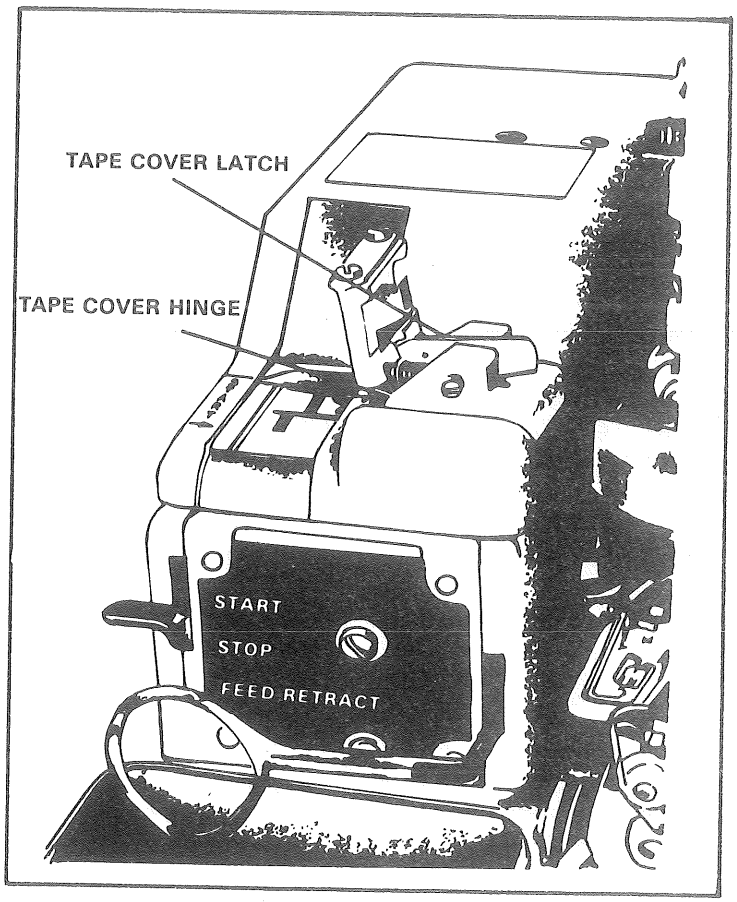


Figure 3. Transmitter-distributor, tape cover lubrication points.

g. Place SELECTOR switch to position 3 on TT-76(*)/GGC.

h. Raise the START-STOP-LEVER to the START position and visually check the paper tape that R's and Y's are being punched on.

i. Lower START-STOP lever to the STOP position and reposition TEST TAPE.

j. Place SELECTOR switch to position 2 and raise START-STOP lever to START position.

k. Visually observe the page printer of the TT-98(*)/FG that Rs and Ys are being printed.

l. Lower START-STOP lever to STOP position.

m. Place SELECTOR switch to position 1 and alternately press R and Y keys on keyboard of TT-76(*)/GGC.

n. Visually check that R's and Y's are being punched on the paper tape and printed on the page printer of the TT-98(*)/FG.

o. Alternately press the R and Y keys on the key of the TT-98(*)/FG and repeat step n above.

5. Troubleshoot TSEC/KW-7.

NOTE: Information about this device is classified. Your COMSEC CUSTODIAN or COMSEC SECURITY OFFICER must obtain the pertinent document and SAFEGUARD same.

6. Record identified symptoms on DA Form 2404.

7. Submit completed DA Form 2404 to your supervisor.

REFERENCES

TM 11-5815-334-12, Operator's and Organizational Maintenance Manual: Radio Teletypewriter Sets AN/GRC-142, AN/GRC-142A, AN/GRC-142B, AN/GRC-122, AN/GRC-122A, and AN/GRC-122B.

TASK

113-599-0007

Systems Troubleshoot Radio Teletypewriter Set AN/VSC-2 to a Defective Subsystem

CONDITIONS

This task is performed in a tactical or nontactical environment under all weather conditions, and may be performed in an NBC situation. This task is done when you have received a report of failure or as directed by your supervisor. Your supervisor will provide you with:

1. Defective Radio Teletypewriter Set AN/VSC-2 installed.
2. TM 11-5815-331-14.
3. Multimeter AN/USM-223 or equivalent.
4. Distant compatible radio teletypewriter set.
5. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 30 minutes, performance measures 1 through 5 have been completed; troubleshooting procedures have been performed, all faults identified and recorded on a DA Form 2404; and submitted to your supervisor.

PERFORMANCE MEASURES

1. Check out power system. (Refer to TM 11-5815-331-14, chap 5, sec II, para 5-6c, item 1, p 5-3.)
   a. Place power switch ON on POWER DISTRIBUTION BOX.
   b. Check DC VOLTS METER for 27.5 V dc reading.

2. Check out TT LOOP circuit.

   a. Place ON-OFF switch (MD-522A/GRC) to ON or MODE SELECTOR switch to 85 Hz (MD-522/GRC).

   b. Place METER FUNCTION switch to regulated dc and visually check TEST METER for a 27.5 V dc reading on the TEST METER.

   c. Place METER FUNCTION switch in DC LOOP NO. 1 and visually check meter for a 20 milliamp loop current indication.

3. Check out Radio System AN/GRC-106(*).

   a. Place TEST METER switch on AM-3349/GRC to PRIM PWR and visually check for a green (top) scale reading on the TEST METER.

   b. Place TEST METER switch on AM-3349/GRC to POWER OUT.

   c. Place SERVICE SELECTOR switch on RT-662 or RT-834 to NSK.

   d. Place SEND/RCV switch on MD-522(*)/GRC to SEND and visually check TEST METER on AM-3349/GRC for a gray scale (bottom) reading.

   e. Place SEND/RCV switch on MD-522(*)/GRC to RCV.

4. Check out Teletypewriter TT-4/FG.

   a. Place MOTOR switch to ON.

   b. Alternately press the R and Y keys on keyboard and visually check that R's and Y's are being typed.

5. Record identified symptoms on a DA Form 2404.

REFERENCES

TM 11-5815-331-14, Operator's, Organizational, DS and GS Maintenance Manual: Radio Teletypewriter Set AN/VSC-2.

TASK

113-599-0011

Repair Radio Teletypewriter Set AN/GRC-142(*) Power Circuit

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is done when you have received a report of failure, or as directed by your supervisor. You will be provided with:

1. Radio Teletypewriter Set AN/GRC-142(*) with a defective power circuit.
2. TM 11-5815-334-12.
3. Multimeter AN/USM-223 or equivalent.
4. DA Form 2404.
5. DA Form 2407.

STANDARDS

This task has been performed correctly when troubleshooting procedures have been performed, performance measures 1 through 4 have been completed; and DA Form 2404 has been completed and submitted to your supervisor, or a DA Form 2407 has been prepared for items that require evacuation to support maintenance. Task should be completed within 30 minutes.

PERFORMANCE MEASURES

1. Identify trouble symptom.
2. Locate trouble symptom in troubleshooting chart. (Refer to TM 11-5815-334-12, chap 5, sec II, para 5-6, pp 5-4 thru 5-8.)

3. Correct the trouble and complete DA Form 2404.

4. Prepare DA Form 2407 if higher category of maintenance is required; complete DA Form 2404.

REFERENCES

TM 11-5815-334-12, Operator's and Organizational Maintenance Manual: Radio Teletypewriter Sets AN/GRC-142, AN/GRC-142A, AN/GRC-142B, AN/GRC-122, AN/GRC-122A and AN/GRC-122B.

TASK

113-599-0012

Repair Radio Teletypewriter Set AN/GRC-142(*) Transmit-Receive Circuit (AN/GRC-106)

CONDITIONS

This task is done in a tactical or nontactical situation, under all weather conditions, and may be done in an NBC environment. This task is done when the evaluation of the operation of an unsecure AN/GRC-142(*) denotes one or more of the EPC steps 4 through 29 are abnormal. You will be provided the following:

1. A nonsecure Radio Teletypewriter Set AN/GRC-142(*) with radio set portion (AN/GRC-106(*)) defective.
2. Tool Kit TK-101/G.
3. Multimeter AN/USM-223 or equivalent.
4. DA Form 2404 with columns a and c completed.
5. DA Form 2407.

STANDARDS

This task has been done correctly when, within 30 minutes, Radio Teletypewriter Set AN/GRC-142(*) Transmit-Receive Circuit (AN/GRC-106) has been repaired; performance measures 1 through 4 have been completed; and a DA Form 2404 has been prepared and given to your immediate supervisor; or a DA Form 2407 has been prepared for items that require evacuation to support maintenance and given to your immediate supervisor.

PERFORMANCE MEASURES

1. Troubleshoot and initiate repair for a defective radio set portion (AN/GRC-106) of an AN/GRC-142(*) as follows:

   a. Read the symptom of trouble recorded on DA Form 2404, columns a and c. (Refer to this Manual, task 113-599-3016.)

   b. Find the DA Form 2404 symptom of trouble in the EPC step and symptom listing of chart 1.

   c. For the EPC step and symptom listing, do the actions indicated to determine repair.

2. Complete DA Form 2404.

   a. Complete administrative portion.

   b. For a defective accessory and cable, record the defective item and its NSN in column d.

   EXAMPLE:

TM ITEM NO a	STATUS b	DEFICIENCIES AND SHORTCOMINGS	CORRECTIVE ACTION d	INITIAL WHEN CORRECTED e
14		No AM transmit RF indicated on SLM.	Replace CG-409 NSN 5995-00-578-6353	

   c. For a defective radio component (see note below), record AN/GRC-106, then DA Form 2407 (SPT).

   EXAMPLE:

TM ITEM NO a	STATUS b	DEFICIENCIES AND SHORTCOMINGS	CORRECTIVE ACTION d	INITIAL WHEN CORRECTED e
4		No receiver rushing noise	AN/GRC-106, DA FORM 2407 (SPT)	

NOTE: When either radio component of Radio Set AN/GRC-106(*) requires support maintenance, turn in both the RT unit (RT-662 or RT-834) and AM-3349 to include their interface cables.

d. For a defective audio accessory that has an uncorrectable fault, record accessory's nomenclature, then DA Form 2407 (SPT).

EXAMPLE:

TM ITEM NO. a	STATUS b	DEFICIENCIES AND SHORTCOMINGS	CORRECTIVE ACTION	INITIAL WHEN CORRECTED
10		No speaker output	LS-1166, DA FORM 2407 (SPT)	

3. Complete DA Form 2407 for items that require support maintenance.

4. Return completed DA Form 2404, and when required, DA Form 2407 to your immediate supervisor.

REFERENCES

None.

CHART 1. TROUBLESHOOTING RADIO SET PORTION (AN/GRC-106) OR AN AN/GRC-142(*)
(STEPS 1 AND 2 APPLY TO AN/GRC-142(*) ONLY)

EPC STEP	SYMPTOM	ACTION	RESULT OF ACTION	CORRECTIVE ACTION
3	No RT input power	1. Check amp RT unit fuse continuity (RX10)	zero ohms	Proceed to 2
			infinity ohms	Replace fuse (see note)
		NOTE: If replacement RT unit fuse blows, evacuate radio set to DSU.		
		2. Unplug W-33 from RT POWER jack; then check E from pin A (pos) to pin C (neg); pin B (pos) to pin D (neg) of W-33 plug.	22 to 30V DC	Evacuate to DSU
			Not 22 to 30V DC	Proceed to 3.
		3. Check E at power distribution terminal board, TB2(+) to TB1(-).	22 to 30V DC	Replace W-33
			Not 22 to 30V DC	Evacuate AN/GRC-142(*) to DSU
4	No receiver rushing noise	1. Unplug CX-10099 (dog bone); then repeat EPC step 4.	normal	Proceed to 2.
			abnormal	Proceed to 3.
		2. Check continuity of CX-100099 plug pin T to pin D	infinity ohms	Evacuate radio set to DSU
			less than infinity ohms	Replace CX-10099
		3. Unplug handset; check continuity of audio plug pin H to pin F (P-T-T switch released)	infinity ohms	Proceed to 4.
			less than infinity ohms	Evacuate handset to DSU
		4. Circuit disturb handset audio plug, pins B and A (RX100).	clicks	Evacuate to DSU
			no clicks	proceed to 5
		5. Remove handset earphone element; then circuit disturb earphone ter minals (TM 11-5965-202-35)	clicks	Evacuate handset to DSU
			no clicks	Replace earphone element.
5	Abnormal RT turret drive	Evacuate radio set to DSU.		

EPC STEP	SYMPTOM	ACTION	RESULT OF ACTION	CORRECTIVE ACTION
6	No antenna circuit disturbance	NOTE: To disturb the test points indicated by the following steps, use an AN/URM-105 test lead to tap the test point and listen for a change in sound at the handset phone, called disturbance.		
		1. Unplug CG-2568 from ME-165 INPUT jack; then disturb center-pin of CG-2568 plug.	Disturbance sound No disturbance	Evacuate ME-165 to DSU Proceed to 2.
		2. Unplug CG-2568 from AM-3349, hold antenna switch to right; then disturb center-pin of 50 OHM LINE jack.	Disturbance sound No disturbance	Replace CG-2568 Proceed to 3.
		3. Release antenna switch; then disturb center-pin of whip antenna jack.	Disturbance sound No disturbance	Evacuate radio set to DSU. Proceed to 4.
		4. Unplug CG-409 from AM-3349 RCVR ANT jack; then disturb center pin of CG-409 plug.	Disturbance sound No disturbance	Evacuate radio set to DSU. Proceed to 5.
		5. Unplug CG-409 from RT RECEIVER IN jack; then disturb center pin of RECEIVER IN jack.	Disturbance sound No disturbance	Replace CG-409. Evacuate to DSU.
7 9	No reception thru any service	Check for continuity between whip and RCVR ANT connectors.	Continuity No continuity	Replace CG-409H/U Evacuate radio set to DSU
10	No speaker output	1. Unplug speaker from RT AUDIO jack; then circuit disturb speaker audio plug pin L to B (RX100).	Clicks No clicks	Evacuate radio set to DSU Evacuate LS-166 to DSU
11 12	No squelch and sensitivity and/or control	1. Check presets (specifically RT tuning): then repeat EPC steps 11 12.	normal abnormal	none, continue EPC evacuate radio set to DSU
13	No RT keying	1. Unplug handset; then check continuity of audio plug pin H to F (P-T-T switch pressed).	zero ohms more than zero ohms	Evacuate radio set to DSU Evacuate handset to DSU

EPC STEP	SYMPTOM	ACTION	RESULT OF ACTION	CORRECTIVE ACTION
14	No AM transmit	1. Unplug CG-409 from RT RF DRIVE jack; then repeat EPC step 14.	normal	Proceed to 2.
			abnormal	Evacuate radio set to DSU
		2. Unplug CG-409 from AM-3349 RF DRIVE jack; then check continuity of center-pin to collar of one of the BNC plugs.	infinity ohms	Evacuate radio set to DSU
			less than infinity ohms	Replace CG-409.
15	No voice modulation	1. Unplug handset from RT AUDIO jack; then check R from pin E to C of audio plug. (RX10; press P-T-T switch; whistle into mike.)	R changes	Evacuate radio set to DSU
			No R change	Proceed to 3
		2. Check R from pin D to C of audio plug. (RX10; press P-T-T switch; whistle into mike.	R changes	Evacuate handset to DSU
			No R change	Proceed to 3.
		3. Remove mike element of handset; then check R of element. (RX10; whistle into mike, refer to TM 11-5965-202-35).	R changes	Evacuate handset to DSU.
			No R change	Replace mike element.
16	No VOX and/or keying			Evacuate radio set to DSU.
17				
18	No CW transmit			Evacuate radio set to DSU.

NOTE: This completes the troubleshooting of the RT unit. When the RT unit requires support maintenance, evacuate the whole radio set to support, i.e., the RT unit and the AM-3349/GRC-106.

19a	No AM-3349 input power	1. Unplug W34 from AM-3349 PRIM PWR jack; then check E from pin A (pos) to pin C (neg); pin B (pos) to pin D (neg) of W34 plug.	22 to 30V DC	Proceed to 2.
			Not 22 to 30V DC	Proceed to 4.
		2. Unplug CX-10099 from RT and AM-3349 CONTROL jacks; then check continuity of pin N of one CX-100099 plug to other plug, pin N.	zero ohms	Proceed to 3.
			more than zero ohms	Replace CX-10099.
		3. Check continuity of pin P of one CX-10099 plug to other plug, pin P.	zero ohms	Evacuate radio set to DSU.
			more than zero ohms	Replace CX-10099

STEP	EPC SYMPTOM	ACTION	RESULT OF ACTION	CORRECTIVE ACTION
		4. Check E at power distribution terminal board, TB2 (pos) to TB1 (neg).	22 to 30V DC Not 22 to 30V DC	Replace W34 Evacuate AN/GRC-142(*) to DSU.
19b	No Prim VOLTS	Unplug CX-10099 from RT and AM-3349 CONTROL jacks; then check continuity of pin P of one CX-10099 plug to other plug, pin P.	zero ohms more than zero ohms	Evacuate radio set to DSU. Replace CX-10099
20a	Low Voltage without keying			Evacuate radio set to DSU.
20b	No Keying and/or abnormal LOW VOLTS			Evacuate radio set to DSU.
	No RT keying; AM-3349, OK	Unplug CX-10099 from RT and AM-3349 CONTROL jacks; then check continuity other plug, pin T.	zero ohms more than zero ohms	Evacuate radio set to DSU. Replace CX-10099.
	Zero RT SLM reading	Unplug CX-10099 from RT and AM-3349 CONTROL jacks; then check continuity of pin M of one CX-10099 plug to other plug, pin M.	zero ohms more than zero ohms	Evacuate radio set to DSU.
21	No AM-3349 turret sync.	Unplug CX-10099 from RT and AM-3349 CONTROL jacks; then check continuity of following pins of CX-10099 plug to other plugs same pin: R to R, E to E. S to S. U to U. V to V.	all zero ohms one or more pins more than zero ohms	Evacuate radio set to DSU. Replace CX-10099
	RF output more than 80 watts	Unplug CX-10099 from RT and AM-3349 CONTROL jacks; then check continuity of pin B of one CX-10099 plug to other plug, pin B.	zero ohms more than zero ohms	Evacuate radio set to DSU.
	RF output less than 40 watts	Closely examine the results of EPC steps 22 - 26.		
22	No High Voltage			Evacuate radio set to DSU.
23	No Driver current			Evacuate radio set to DSU.

EPC STEP	SYMPTOM	ACTION	RESULT OF ACTION	CORRECTIVE ACTION
24	No or low grid drive	Unplug RF cable CG-409 from RT and AM-3349 RF DRIVE jacks. Check continuity from center pin of one BNC plug to center pin of other plug (should be zero ohms) then check continuity from collar of one BNC plug to collar of other plug (should be zero ohms); lastly, check one BNC plug to collar of other plug continuity from collar of one BNC plug to center pin of the same plug (should be infinity ohms).	All continuity checks OK One or more continuity checks are bad	Evacuate radio set to DSU. Replace RF drive cable CG-409.
25	No or low PA current			Evacuate radio set to DSU.
26	Excessive RF output	Unplug CX-10099 from RT and AM-3349 CONTROL jacks; then check continuity of pin C of one CX-10099 plug to the other plug, pin C.	zero ohms more than zero ohms	Evacuate radio set to DSU. Replace CX-10099.
27	No AM-3349 keying (OPERATE)			Evacuate radio set to DSU.
28	No keying lock out			Evacuate radio set to DSU.
29	No AM-3349 blower with RT in STANDBY	Unplug CX-10099 from RT and AM-3349 CONTROL jacks; then check continuity of pin N of one CX-10099 plug to other plug, pin N.	zero ohms more than zero ohms	Evacuate radio set to DSU. Replace CX-10099.

TASK

113-599-0013

Repair Radio Teletypewriter Set AN/GRC-142(*) OWR-DX SEND TT Loop Circuit

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be done in an NBC environment. This task is done when the evaluation of the operation of an unsecure AN/GRC-142(*) (task 113-599-3016, this manual) denotes one or more of the following abnormal situations exists:

a. Both TT's run open and no TT loop current exists.

b. One or both TT's run open and 20 mA OWR-DX SEND TT Loop current exists.

c. No transmission from TT-98 Keyboard, TT-76 Keyboard, and/or TD sender and both TT's run closed.

You will be provided with the following:

1. A nonsecure AN/GRC-142(*) with a defective OWR-DX SEND TT loop circuit displaying one or more of the abnormal situations listed above.

2. Multimeter AN/USM-223 or equivalent.

3. Tool Kit TK-101/G.

4. TM 11-5815-334-12.

5. DA Form 2404.

6. DA Form 2407.

STANDARDS

This task has been performed correctly when, within 50 minutes, repair actions have been completed for a defective AN/GRC-142(*) OWR-DX SEND TT loop circuit, performance measures 1 through 6 have been completed; and DA Form 2404 has been completed and given to your supervisor.

PERFORMANCE MEASURES

1. Evaluate the operation of the AN/GRC-142(*) Teletypewriter Set subsystem. (Refer to this manual, task 113-599-3016).

2. Record symptoms of trouble on DA Form 2404.

   a. In column a, record the Equipment Performance Checklist (EPC) step number that, when checked, produced an abnormal indicator.

   b. In column c, to the right of the EPC step number of column a, write a brief description of the trouble observed.

3. Review column c of DA Form 2404 for the abnormal indications listed below and then troubleshoot to find the faulty component or cable from the troubleshooting chart indicated.

   a. Both TT's run open and no (ØA) TT loop current exists: Use chart 1.

   b. One or both TT's run open and OWR-DX SEND TT loop current exists (20 mA): Use chart 2.

   c. Cannot send from TT-98 keyboard, TT-76 keyboard, and/or TD sender; and both TT's run closed: Use chart 5.

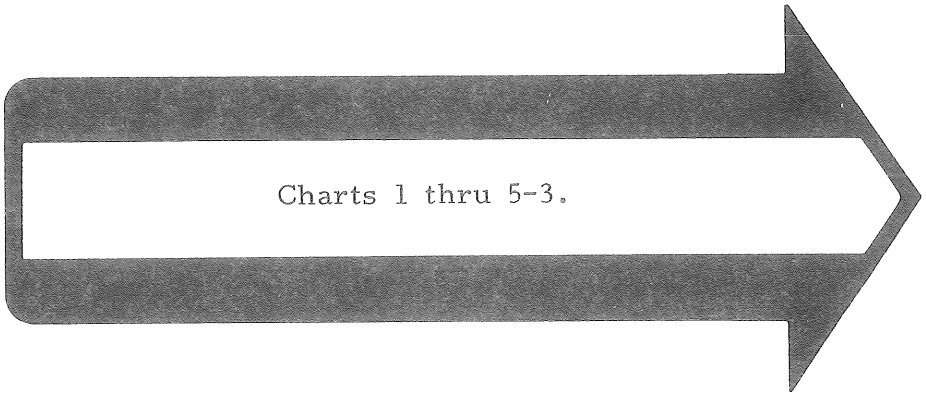


Chart 1. Troubleshooting Flow Charts for Locating Faulty Components and Cables When Both TTYs Run Open and no (ØA) TTY Loop Current Exists.

Sectionalizing Trouble to the Upper or Lower Loop.

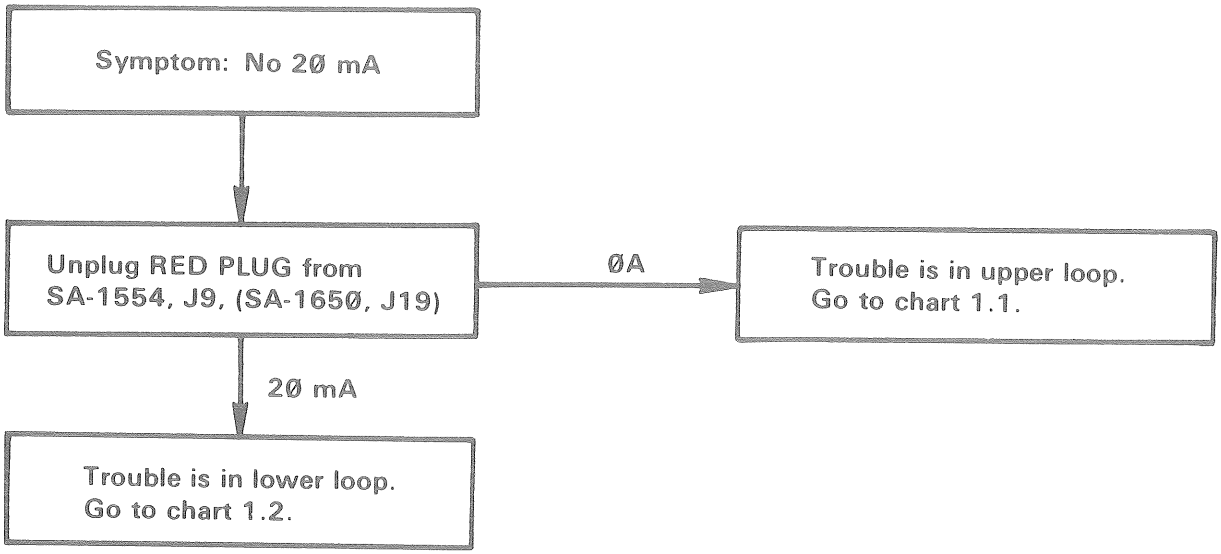


Chart 1.1 Troubleshooting Flow Chart for Locating Adverse Open Circuits in the Upper Loop.

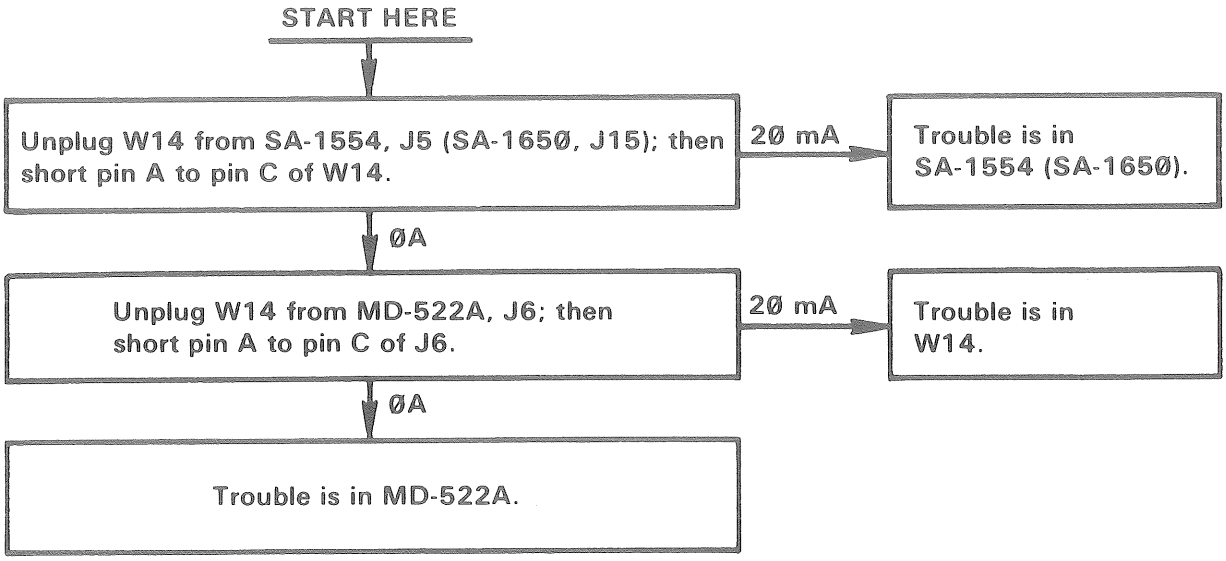


Chart 1.2 Troubleshooting Flow Chart for Locating Adverse Open Circuits in the Common Section or Sectionalizing a Trouble to the Receive or Transmit Sections of the Lower Loop.

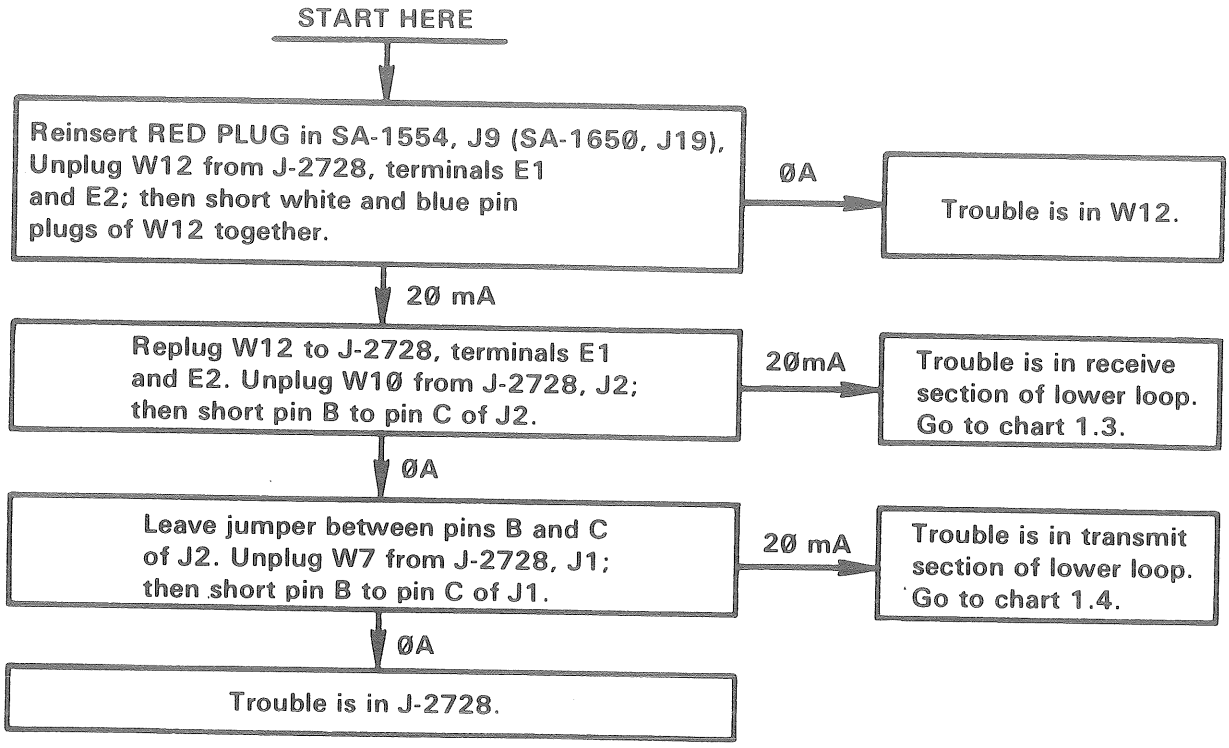


Chart 1.3 Troubleshooting Flow Chart for Locating Adverse Open Circuits in the Receive Section of the Lower Loop.

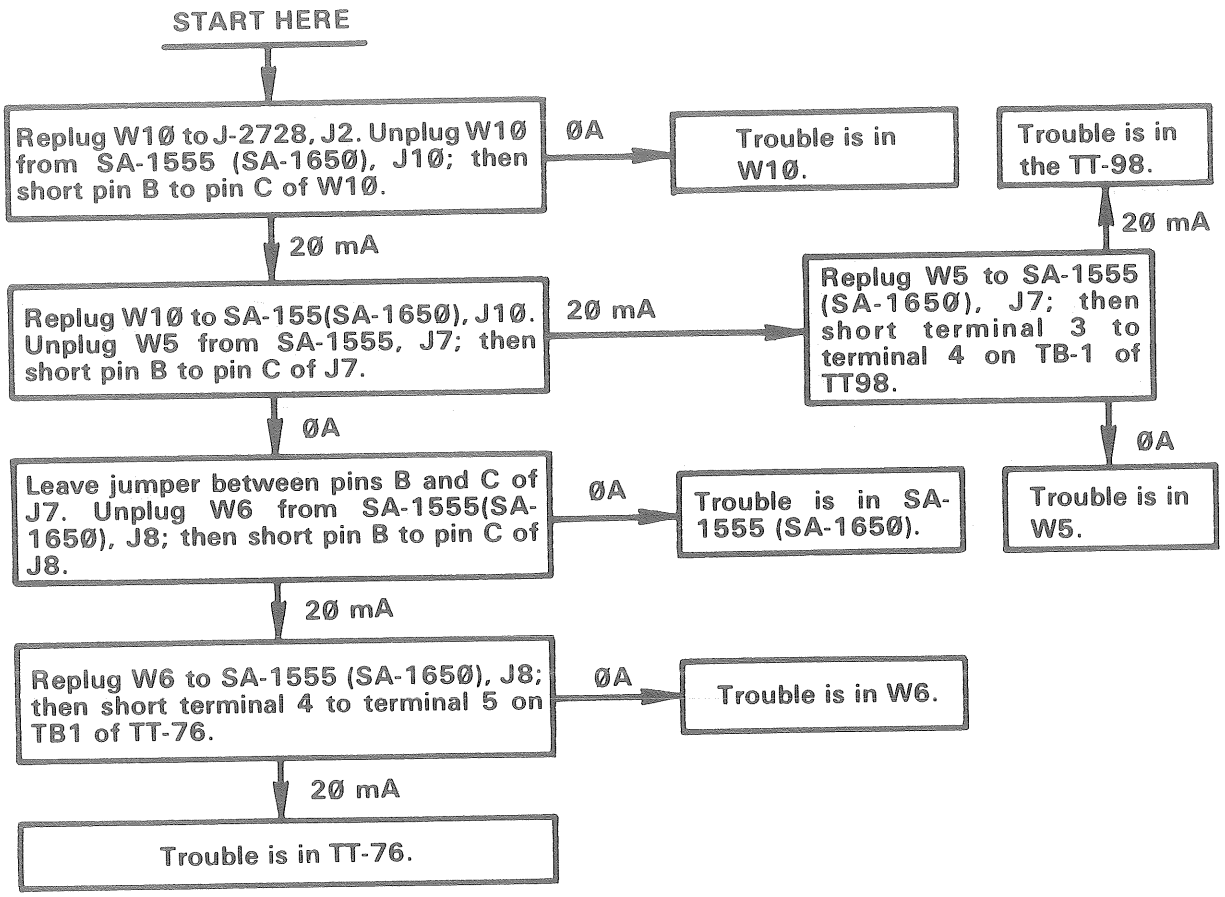


Chart 1.4 Troubleshooting Flow Chart for Locating Adverse Open Circuits in the Transmit Section of the Lower Loop.

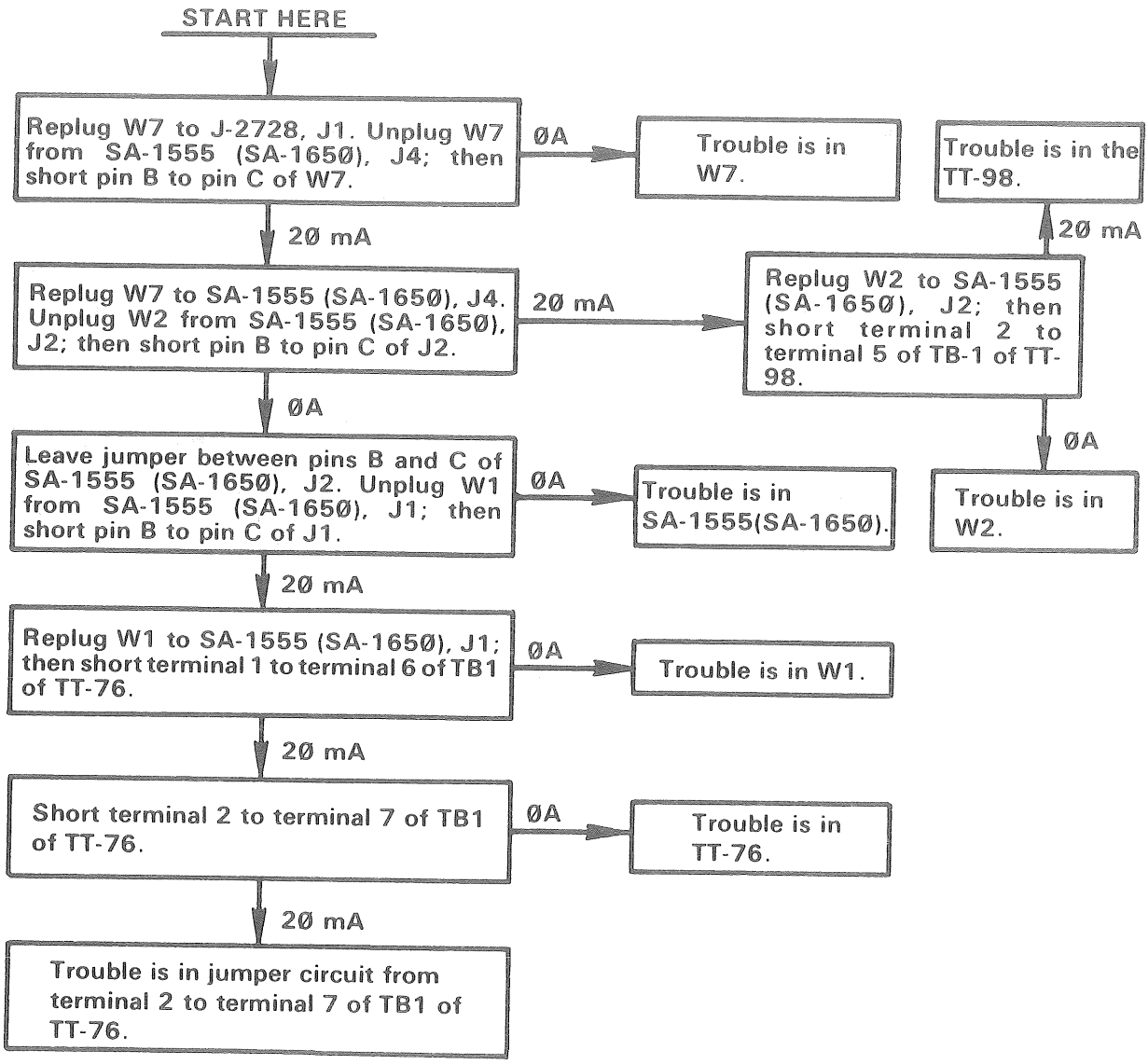


Chart 2. Troubleshooting Flow Charts for Locating Faulty Components and Cables When One or Both TT's Run Open and OWR-DX SEND TT Loop Current Exists (20 mA). Determine Short or Reversal.

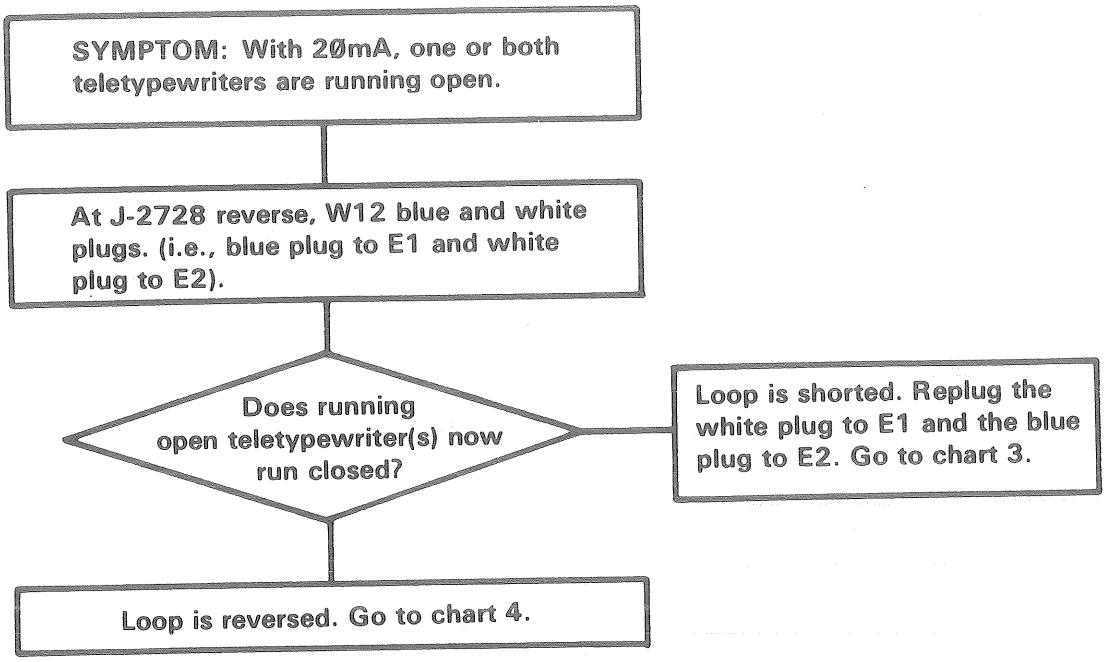


Chart 3. Troubleshooting Flow Charts for Locating Adverse Shorts Affecting the TT Receive Function.

Symptom:	Use Chart
TT-98 and TT-76 run open	3.1
TT-98 only runs open	3.2
TT-76 only runs open	3.3

Chart 3.1 Locating Adverse Shorts Affecting Both the TT-98 and TT-76 Receive Functions.

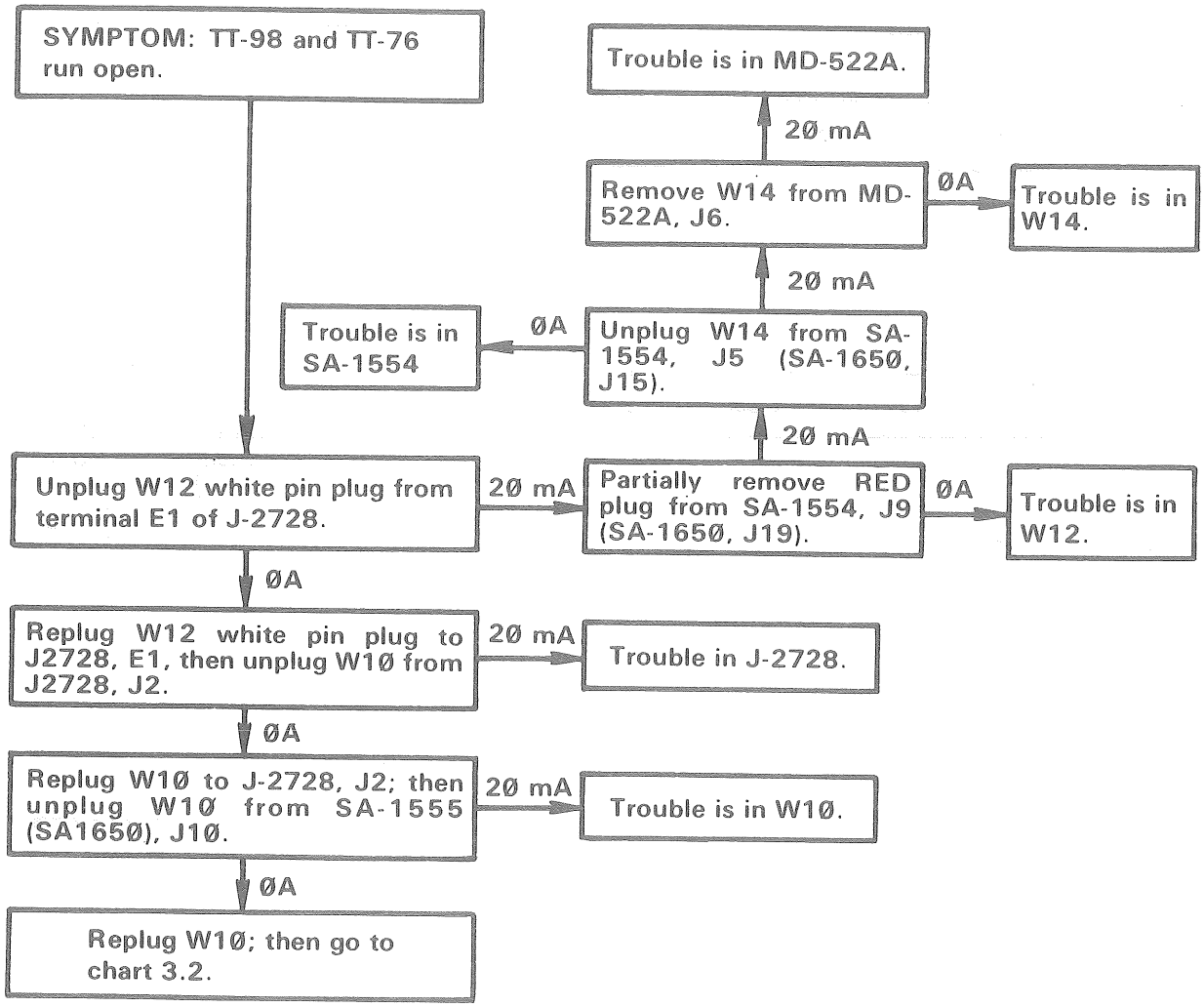


Chart 3.2 Locating Adverse Shorts Affecting the TT-98 Receive Function.

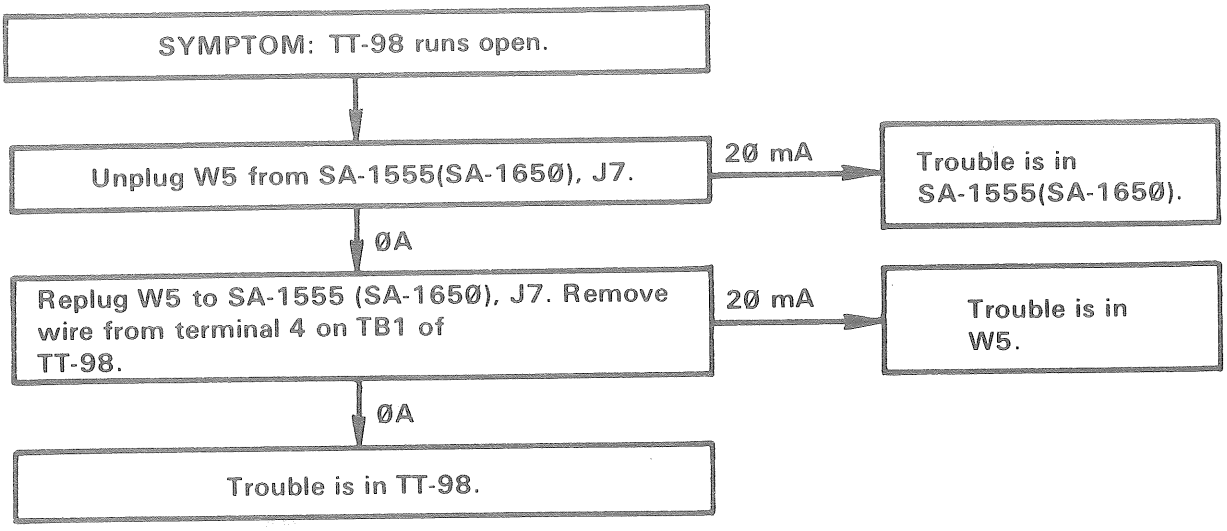


Chart 3.3 Locating Adverse Shorts Affecting the TT-76 Receive Function.

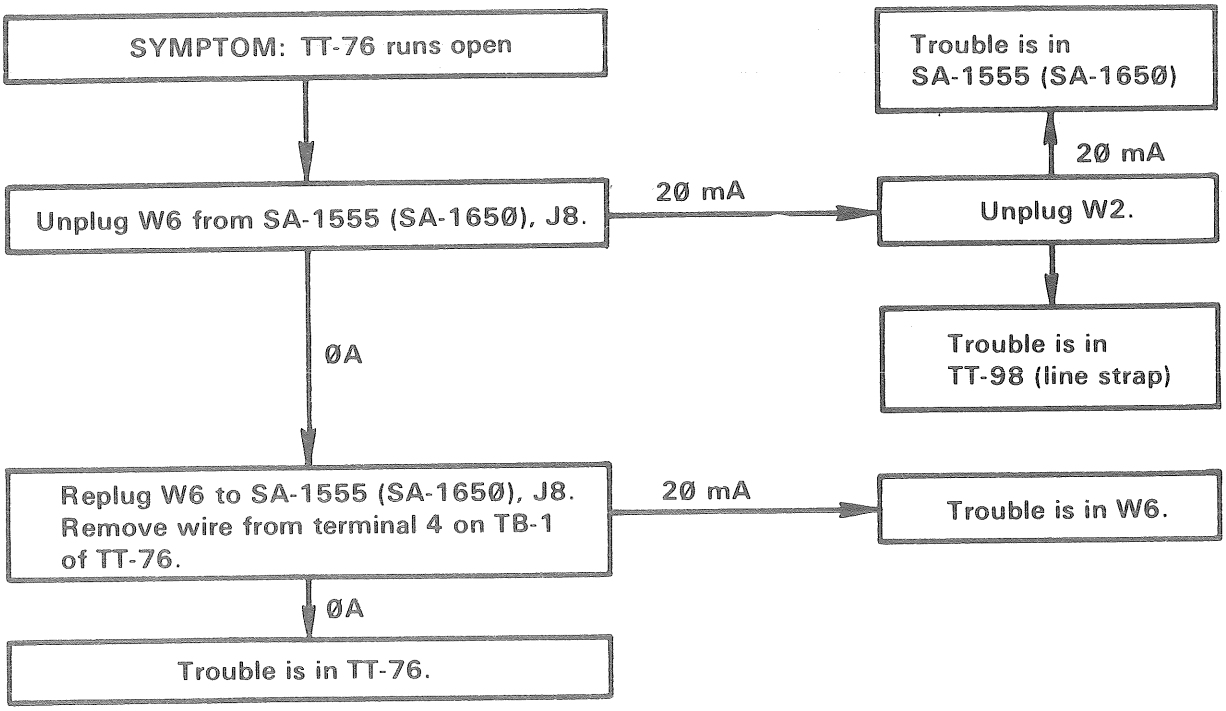


Chart 4. Troubleshooting Flow Charts for Locating Adverse Reversal Affecting the TT Receive Function.

Symptom: With 20 mA the ---	Use Chart
TT-76 and TT-98 are running open	4.1
TT-98 only is running open	4.2
TT-76 only is running open	4.3

Chart 4.1 Locating Adverse Reversals Affecting Both the TT-76 and TT-98 Receive Functions.

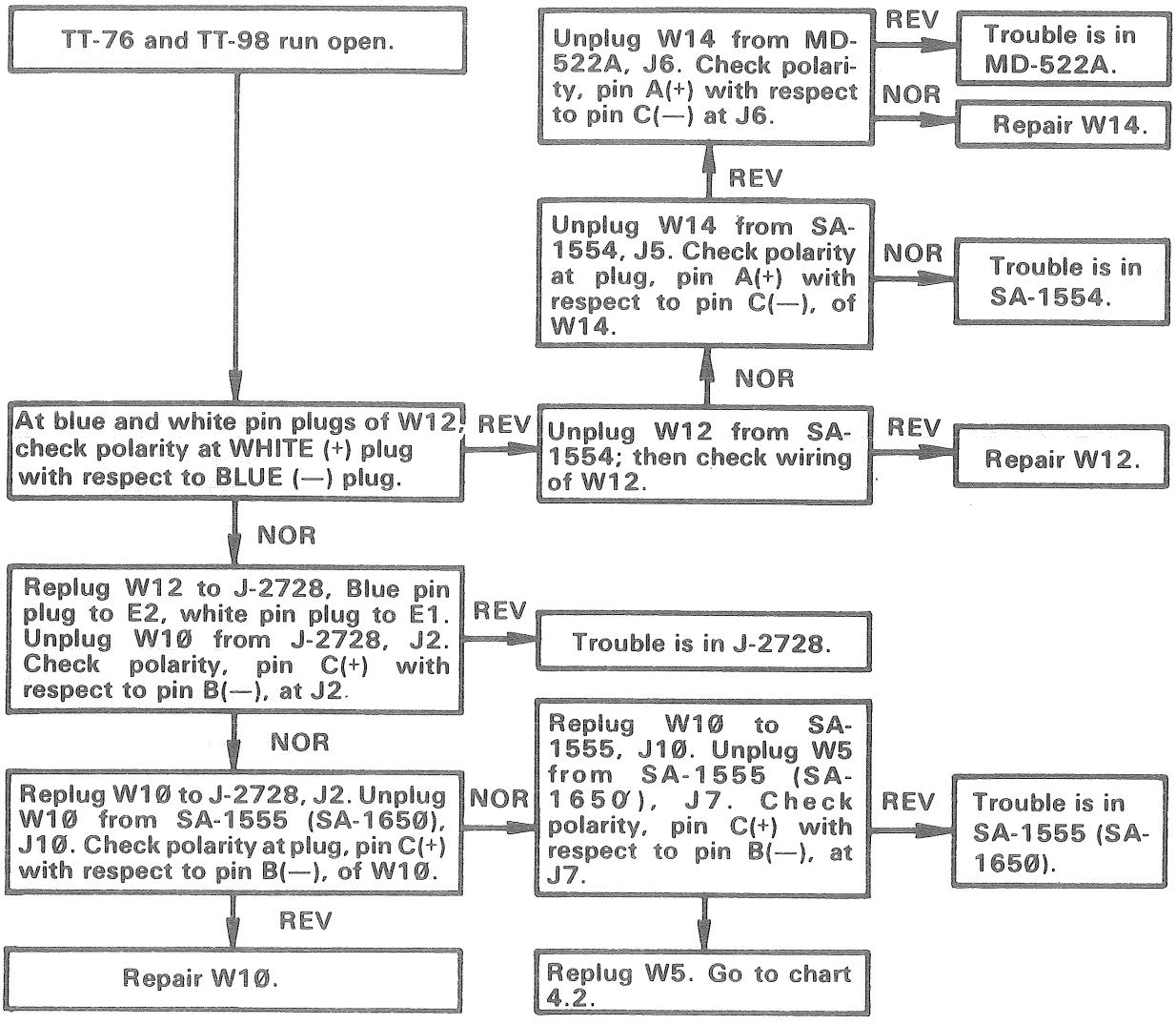


Chart 4.2 Locating Adverse Reversals Affecting the TT-98 Receive Function.

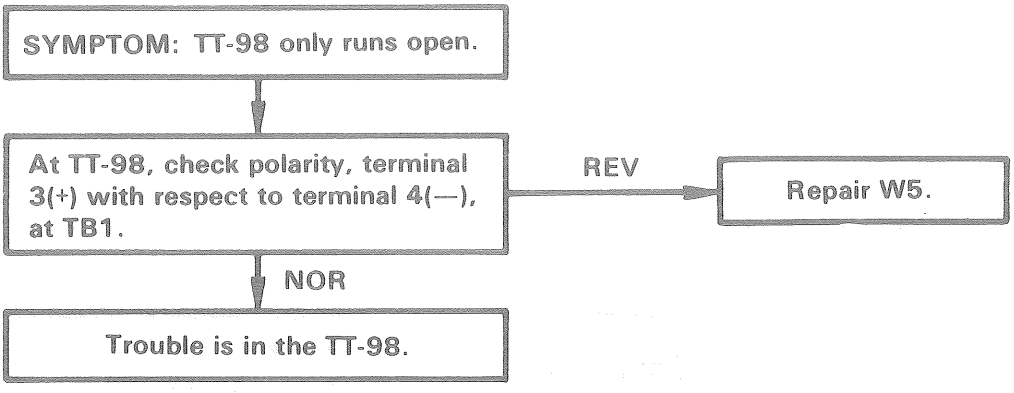


Chart 4.3 Locating Adverse Reversals Affecting TT-76 Receive Function.

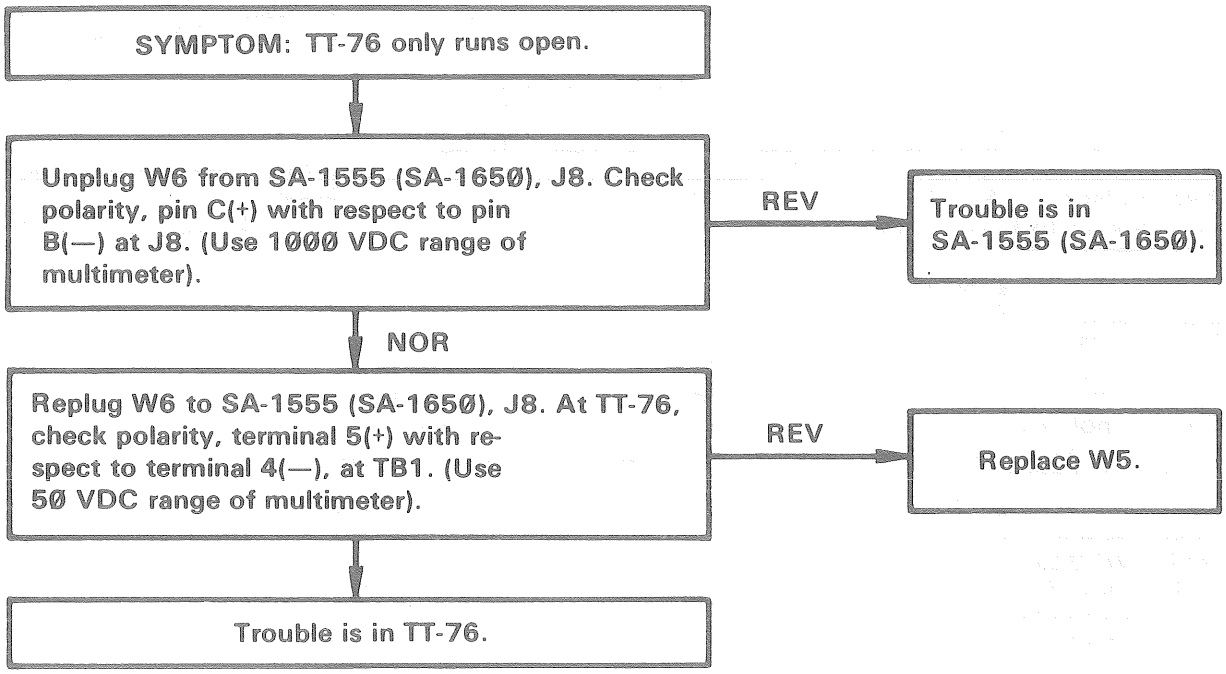


Chart 5 Troubleshooting Flow Charts for Locating Faulty Components and Cables When the TT-98 Keyboard, TT-76 Keyboard, and/or TD Sender Will Not Send.

Symptom:	Use Chart
Cannot send from TT-76 and TT-98	5.1
Cannot send from TT-76 or TD Sender	5.2
Cannot send from TT-98	5.3

Chart 5.1 Troubleshooting Flow Chart for Locating Adverse Shorted Circuits in the Common Section of the Lower Loop.

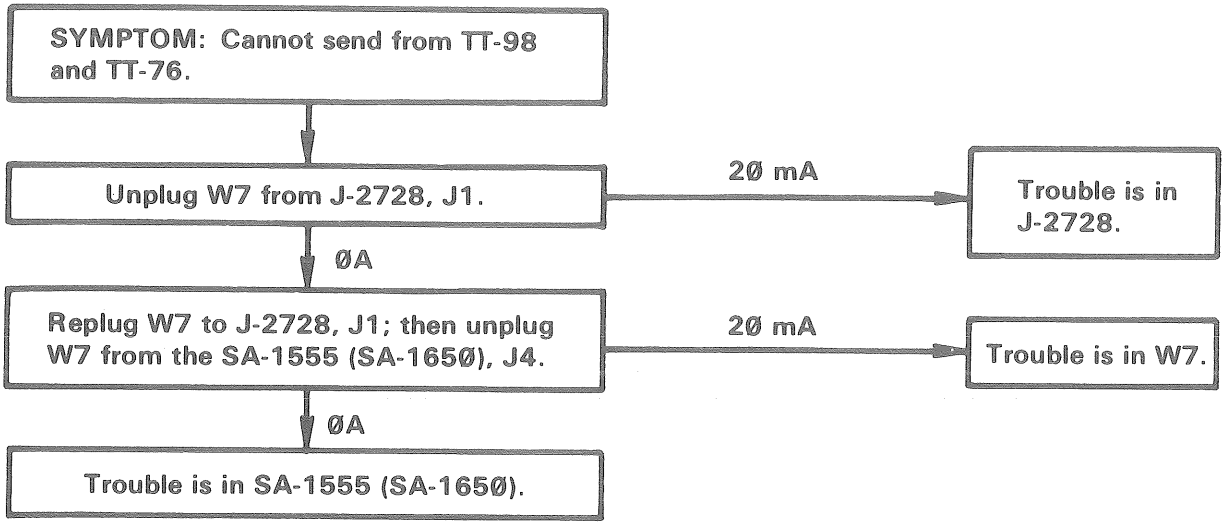


Chart 5.2 Troubleshooting Flow Chart for Locating Adverse Shorted Circuits in the Transmit Section of the Lower Loop.

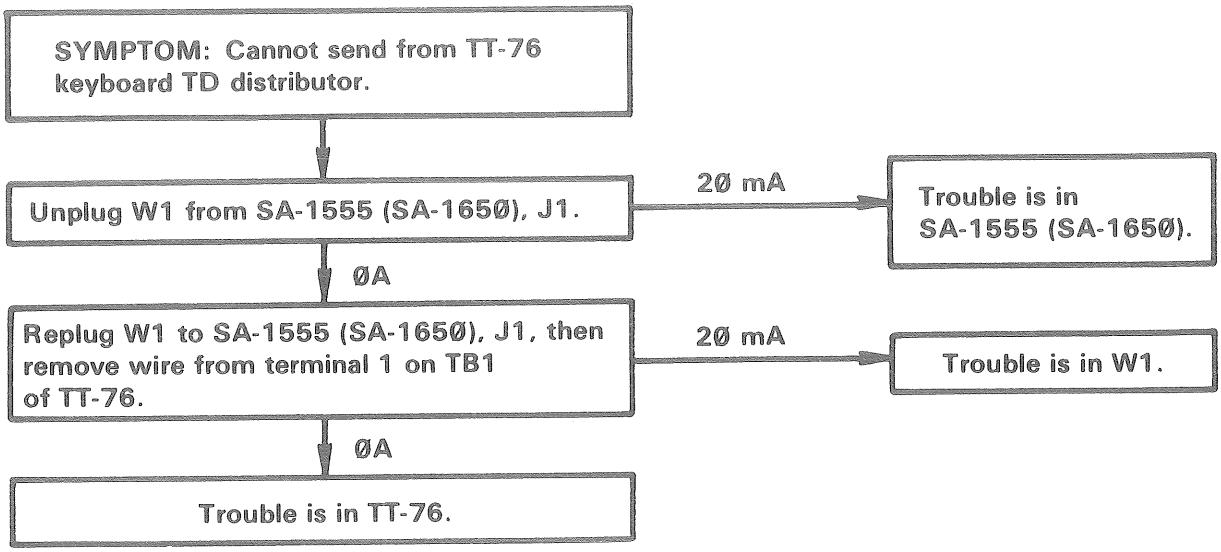
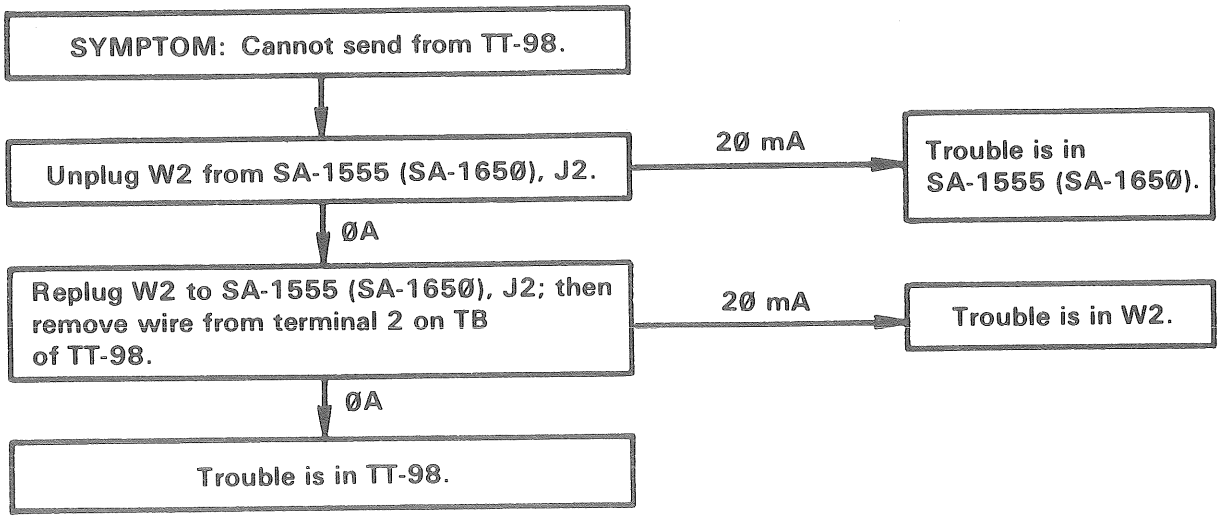


Chart 5.3 Troubleshooting Flow Chart for Locating Adverse Shorted Circuits in the Transmit Section of the Lower Loop.



EXAMPLE:

TM ITEM NO a	STATUS b	DEFICIENCIES AND SHORTCOMINGS	CORRECTIVE ACTION d	INITIAL WHEN CORRECTED c
		Both TTYs Run open and	Replaced	
		no (ØA) TTY loop current	W14, ex-10517/G (4ft.)	
		exists.	NSN 5995-00-937-8467	H.S.

d. For a defective component, record the defective component number and DA Form 2407 (SPT) in column d to indicate that the item requires direct support maintenance and then proceed to performance measure 5.

EXAMPLE:

TM ITEM NO a	STATUS b	DEFICIENCIES AND SHORTCOMINGS	CORRECTIVE ACTION d	INITIAL WHEN CORRECTED c
		TT-98 and TT-76 Run open;		
		Loop current OKAY.	TT-76; DA FORM 2407 (SPT)	H.S.

4. Complete DA Form 2404.

   a. Complete administrative portion.

   b. For a defective cable, record the defective cable numbers and its NSN in column d and then proceed to performance measure 6. (Refer to TM 11-5815-334-12, chap 1, sec I, para 1-6 and 1-7, pp 1-5 thru 1-7.)

5. For defective typewriter, switch assembly, junction box, and modem prepare DA Form 2407 and then proceed to performance measure 6.

6. Return completed DA Form 2404 and, when applicable, DA Form 2407, to your immediate supervisor.

REFERENCES

TM 11-5815-334-12, Operator's and Organizational Maintenance Manual: Radio Teletypewriter Sets AN/GRC-142, AN/GRC-142A, AN/GRC-142B, AN/GRC-122, AN/GRC-122A and AN/GRC-122B.

TASK

113-599-0014

Repair Radio Teletypewriter Set AN/VSC-3 Power Circuit

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is done when you have received a report of failure or as directed by your supervisor. You will be provided with:

1. Defective Radio Teletypewriter Set AN/VSC-3.
2. TM 11-5815-332-15.
3. Multimeter AN/USM-223 or equivalent.
4. DA Form 2404.
5. DA Form 2407.

STANDARDS

This task has been performed correctly when, within 30 minutes, repair actions have been completed for a defective AN/VSC-3 power circuit; performance measures 1 and 2 have been completed; DA Form 2404 has been completed and submitted to your supervisor; and for a defective component, a DA Form 2407 has been prepared and given to your supervisor.

PERFORMANCE MEASURES

1. Identify malfunction. (Refer to troubleshooting chart, TM 11-5815-332-15, chap 5, sec II, para 5-6c, pp 5-3 and 5-4.)

2. Perform prescribed action.

   a. Replace defective cable and complete DA Form 2404.

   b. Prepare DA Form 2407 when a higher category of maintenance is required.

REFERENCES

TM 11-5815-332-15, Operator's Organizational, DS, GS, and Depot Maintenance Manual: Radio Teletypewriter Set, AN/VSC-3

TASK

113-599-0017

Repair Radio Teletypewriter Set AN/VSC-2 TT Loop Circuit

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is done when you have received a report of failure or as directed by your supervisor. You will be provided with:

1. Radio Teletypewriter Set AN/VSC-2.
2. Tool Kit TK-101/G.
3. Multimeter AN/USM-223, or equivalent.
4. DA Form 2404.
5. DA Form 2407.

STANDARDS

This task has been performed correctly when performance measures 1 through 5 have been completed, repair actions have been taken, all faults identified and recorded on a DA Form 2404 and submitted to your supervisor. This task should be completed within 20 minutes. (Prepare DA Form 2407 if support maintenance is required.)

PERFORMANCE MEASURES

WARNING: Dangerous voltages (100 volts dc, regulated) exist in the loop circuits. Be extremely careful when working near these circuits.

1. Sectionalize trouble to upper or lower loop.

   a. Disconnect cable (W4) from control box.

b. Test for 100-volt indication between pins A and C of the control box dummy connector with multimeter.

c. Reconnect W4 cable.

2. Troubleshoot upper loop.

a. Disconnect W5 cable at control box.

b. Test for 100-volt indication between pins A and C on W5 cable with multimeter.

c. Reconnect W5 cable.

d. Disconnect W5 at MD-522(*)/GRC.

e. Test for 100-volt indication between pins A and C on MD-522(*)/GRC.

f. Reconnect W5 cable to modem.

g. Disconnect WHITE and BLUE banana jacks from DUMMY BOX.

h. Short WHITE and BLUE banana jacks and observe for 20-milliamp reading on TEST METER of MD-522(*)/GRC.

3. Troubleshoot lower loop.

a. Disconnect W8 from DUMMY BOX and TT-4.

b. Check cable for open or shorted circuits using multimeter.

c. Disconnect W9 from DUMMY BOX and TT-4.

d. Check cable for open or shorted circuits using multimeter.

4. Record all faults noted on DA Form 2404.

5. Prepare a DA Form 2407 on equipment if support maintenance is required.

REFERENCES

None.

TASK

113-599-0059 (RC)

Systems Troubleshoot Radio Teletypewriter Set AN/GRC-46(*) to a Defective Component, Cable or Accessory

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. Task is performed when directed by your supervisor. You will be provided with:

1. Radio Teletypewriter Set AN/GRC-46(*).

2. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 30 minutes, systems troubleshooting of Radio Teletypewriter Set AN/GRC-46 to a defective component, cable, or accessory; performance measures 1 through 3 have been completed; and a DA Form 2404, listing all faults and corrective actions taken, has been given to your supervisor.

PERFORMANCE MEASURES

1. Check radio teletypewriter set for obvious faults. Before operating the equipment, inspect it. This will save repair time and also avoid further damage to the equipment. Inspect the following for obvious defects:

   a. Proper settings of switches and controls.

   b. Proper cables and cords making good contact in the correct jack or connectors.

c. Fuses. (A burned-out fuse usually indicates some other defect.)

d. Bad ground connections.

e. Low voltage.

f. Defective tubes.

2. Evaluate the operation of radio teletypewriter set. (Refer to this manual, task 113-599-3022.)

3. Record identified faults and corrective measures taken on DA Form 2404.

REFERENCES

None.

TASK

113-599-0061

Systems Troubleshoot Radio Set AN/VRC-47 to a Defective Component, Cable, or Accessory

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when an operator reports an equipment malfunction or as directed by your supervisor. You will be provided with the following:

1. Radio Set AN/VRC-47 installed.
2. TM 11-5820-401-12.
3. DA Form 2404.
4. Tool Kit TK-101/G.
5. Multimeter AN/USM-223 or equivalent.
6. Test Set, Radio Frequency AN/URM-182.

STANDARDS

This task has been performed correctly when, within 30 minutes, systems troubleshooting of Radio Set AN/VRC-47 has been completed; performance measures 1 through 3 have been completed; and all faults found have been recorded on DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Evaluate the operation of Radio Set AN/VRC-47 to determine indication of fault(s). (Refer to TM 11-5820-401-12, chap 5, sec II, para 5-8a and d, pp 5-9, 5-10, 5-12, and 5-13.)

2. Find the abnormal indication you entered in column c of the DA Form 2404 in the troubleshooting chart and then follow the procedures listed to isolate the defective component, cable, or accessory. (Refer to TM 11-5820-401-12, chap 5, sec II, para 5-9 and 5-11, pp 5-13 thru 5-15 and 5-19 thru 5-21.)

3. Enter in column d of the DA Form 2404 the faulty item identified in performance measure 2 and submit the DA Form 2404 to your supervisor.

REFERENCES

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): AN/VRC-12 Series Radio Sets.

TASK

113-599-0062

Systems Troubleshoot Radio Set AN/VRC-53/64 to a Defective Component, Cable, or Accessory

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when an operator reports a malfunction or as directed by you supervisor. You will be provided with the following:

1. Radio Set AN/VRC-53/64.
2. TM 11-5820-498-12.
3. Tool Kit TK-101/G.
4. Multimeter AN/USM-223 or equivalent.
5. Test Set, Radio Frequency Power AN/URM-182 or TS-260A/U.
6. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 30 minutes, systems troubleshooting of Radio Set AN/VRC-53/64 has been completed, performance measures 1 through 3 have been completed, and a DA Form 2404 with all faults found and corrective actions taken has been completed and submitted to your supervisor.

PERFORMANCE MEASURES

1. Evaluate the operation of the radio set to determine indication of faults. (Refer to task 113-587-3074 of the Manual.)
2. Isolate the defective component, cable, or accessory using the abnormal indication you found in performance measure 1. (Refer to the troubleshooting chart in TM 11-5820-498-12, chap 5, sec II, para 5-9 thru 5-12, pp 5-3 thru 5-9.)

3. Enter in column d of the DA Form 2404 the faulty item identified in performance measure 2 and give the DA Form 2404 to your supervisor.

REFERENCES

TM 11-5820-498-12, Operator's and Organizational Maintenance Manual: 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.

TASK

113-599-1014

Repair Radio Teletypewriter Set AN/VSC-3 Transmit-Receive Circuit (AN/GRC-106)

CONDITIONS

This task is performed in a tactical or nontactial situation, under all weather conditions, and may be performed in an NBC environment. This task is done when you have received a report of failure or as directed by your supervisor. You will be provided with:

1. An installed Radio Teletypewriter Set AN/VSC-3 with a defect in the transmit-receive circuit. A DA Form 2404 prepared by the operator, identifying the symptom.
2. TM 11-5815-332-15.
3. TM 11-5820-520-12.
4. Multimeter AN/USM-223 or equivalent.
5. DA Form 2404.
6. DA Form 2407.

STANDARDS

This task has been performed correctly when, within 30 minutes, repair actions have been completed for a defective AN/VSC-3 transmit-receive circuit; performance measures 1 through 3 have been completed; and DA Form 2404 or DA Form 2407, if required, has been completed and submitted to your supervisor.

PERFORMANCE MEASURES

1. Locate symptom in troubleshooting chart, TM 11-5815-332-15, chapter 5, section III, paragraph 5-6, pages 5-2 and 5-3; or troubleshooting chart 5-2, TM 11-5820-520-12, chapter 5, section II, pages 5-3 through 5-6.

2. Record probable trouble on DA Form 2404.

3. Perform the prescribed corrective measures. (Refer to TM 11-5815-332-15, chap 5, sec III, para 5-6, pp 5-2 and 5-3.)

   a. Correct the trouble and complete DA Form 2404.

   b. Prepare DA Form 2407 if a higher category of maintenance is required. Complete DA Form 2404.

REFERENCES

TM 11-5815-332-15, Operator's, Organizational, DS, GS, and Depot Maintenance Manual: Radio Teletypewriter Set AN/VSC-3.

TM 11-5820-520-12, Operator's and Organizational Maintenance Manual: Radio Sets AN/GRC-106 and AN/GRC-106A.

TASK

113-599-1015

Repair Radio Teletypewriter Set AN/VSC-3 TT Loop Circuit

CONDITIONS

This task is performed in a tactical or nontactial situation under all weather conditions and may be performed in an NBC environment. This task is done when you have received a report of failure or as directed by your supervisor. You will be provided with:

1. Defective Radio Teletypewriter Set AN/VSC-3.
2. Multimeter AN/USM-223 or equivalent.
3. Tool Kit TK-101/G.
4. DA Form 2404.
5. DA Form 2407.

STANDARDS

This task has been performed correctly when, within 50 minutes, repair actions have been completed for a defective AN/VSC-3 OWR-DX SEND TT loop circuit, performance measures 1 through 5 have been completed; DA Form 2404 has been completed and given to your supervisor, and for a defective component, a DA Form 2407 has been prepared and given to your supervisor.

PERFORMANCE MEASURES

1. Sectionalize trouble to upper or lower loop.

   WARNING: Dangerous voltages (100 volts dc, regulated) exist in the loop circuits. Be extremely careful when working near these circuits.

   a. Disconnect cable W15 from control box.

   b. Test for 100-volt indication between pins A and C at control box (DUMMY CONNECTOR).

   c. Reconnect W15 cable.

2. Troubleshoot upper loop.

   a. Disconnect W3 cable at control box.

   b. Test for 100-volt indication between pins A and C on W3 cable.

   c. Reconnect W3 cable.

   d. Disconnect W3 cable at MD-522/GRC.

   e. Test for 100-volt indication between pins A and C on MD-522(*)/GRC.

   f. Reconnect W3 cable to MD-522(*)/GRC.

   g. Disconnect WHITE and BLUE banana jacks on DUMMY BOX.

   h. Short WHITE and BLUE banana jacks and observe for 20-milliamp reading on TEST METER of MD-522(*)/GRC.

3. Troubleshoot lower loop.

   a. Disconnect W7 cable at DUMMY BOX (loop in) and control box (loop in).

   b. Check cable for open or shorted circuit using multimeter.

   c. Disconnect W6 cable at DUMMY BOX (loop out) and control box (loop out).

d. Check cable for open or shorted circuit.

e. Disconnect W16 cable at control box (TT-76 SEND) and at TT-76 (TB #+6 and #-1).

f. Check cable for open or shorted circuit.

g. Disconnect W17 cable at control box (TT-76 REC) and at TT-76 (TB #+5 and #-4).

h. Check cable for open or shorted circuit.

i. Disconnect W18 cable at control box (TT-98 SEND) and at TT-98 (TB #+5 and #-2).

j. Check cable for open or shorted circuit.

k. Disconnect W19 at control box (TT-98 REC) and at TT-98 (TB #+3 and #-4).

l. Check cable for open or shorted circuit.

4. Record all faults noted on DA Form 2404.

5. Initiate DA Form 2407 on radio teletypewriter set, if necessary.

REFERENCES

None.

TASK

113-599-3016

Evaluate the Operation of Radio Teletypewriter Set AN/GRC-142(*)

CONDITIONS

This task is done in a tactical or nontactical situation, under all weather conditions, and may be done in an NBC environment. This task is done as part of organizational monthly preventive maintenance, when an operator reports an uncorrected fault, or as directed by your supervisor. You will be provided with the following:

1. Radio Teletypewriter Set AN/GRC-142(*) nonsecure.
2. Radio teletypewriter operator to assist.
3. TM 11-5815-334-12.
4. DA Form 2404.

STANDARD

This task has been done correctly when, within 45 minutes, the AN/GRC-142(*) has been evaluated; performance measures 1 through 10 have been completed; and DA Form 2404 (with all symptoms of trouble recorded on it) has been prepared and given to your immediate supervisor.

PERFORMANCE MEASURES

CAUTION: Before you begin the evaluation, check to see that the assigned operator has done the following:

Properly grounded the shelter.

Properly erected the whip antenna.

Opened the rear door vent.

Installed the exhaust pipe hose to vent the vehicle exhaust fumes away from the shelter.

Properly vented the shelter gasoline heater, when equipped and used.

1. Prepare the power distribution subsystem for DC evaluation as follows:

   a. In the interest of safety, make the following initial adjustments:

      (1) Set the power distribution panel (SB-3358 for A and B models; SB-3018 for plain models) switches as follows:

         (a) DC MAIN circuit breaker to OFF (pull out).

         (b) POWER slector switch to DC. (On SB-3358 for A and B models; on J-2776 for plain models.)

         (c) All remaining SB-3358 circuit breakers or SB-3018 switches at OFF (7 ea on SB-3358 and 6 ea on SB-3018).

      (2) Set two AC entrance box circuit breakers at OFF. (Plain models only.)

      (3) Set the PP-4763 circuit breaker at OFF.

      (4) Turn the RT-662 or RT-834 SERVICE SELECTOR switch to OFF.

      (5) Turn the AM-3349 PRIM PWR switch to OFF.

      (6) Turn the AM-3349 HV RESET switch to OPERATE.

      (7) Set the MD-522A ON-OFF switch at OFF.

      (8) Set the TT-98 POWER switch at OFF.

      (9) Set the TT-76 POWER switch at OFF.

      (10) Turn the ME-165 function switch to OPERATE.

   b. Check to see that all components are properly mounted and that all cables and accessories are properly connected. (Refer to TM 11-5815-334-12, chap 1, sec I, fig 1-1 and 1-2, pp 1-5 and 1-6, chap 6, fig 6-2 and 6-3, pp 6-5 thru 6-7.)

CAUTION: To prevent damage to the radio set, be sure the shelter whip antenna is properly connected to the AM-3349 WHIP antenna jack.

2. Check the operation of the DC power distribution subsystem. (Refer to Chart 1.1.)

Chart 1.1 Equipment Performance Checklist for DC Power Distribution System.

NOTE: Have assigned team member start vehicle engine.

STEP	FUNCTION CHECKED	ACTION	NORMAL INDICATION
1	Shelter DC input power	Push in power distribution panel DC MAIN ckt bkr	Power panel voltmeter should read 28V DC. DC power lamp should light.

NOTE: Adjust vehicle throttle for a meter reading of 28V DC. As loads are added, readjust vehicle throttle to maintain a meter reading of 28V DC.

Close rear door or pull out (over ride) black out switch; then at power distribution panel:

STEP	FUNCTION CHECKED	ACTION	NORMAL INDICATION
2	Power Distribution	a. Set BLO & LIGHTS switches (ckt bkr) to ON.	a. Two interior shelter lamps should light. Exhaust blower should run.
		b. For SB-3358, move BLO HI/ OFF/LO switch thru its three positions.	b. Blower should change speed according to switch setting.
		c. Set INVERTERS OWR switch (ckt bkr) to ON.	c. OWR inverter should run.

3. Prepare the radio set subsystem for evaluation as follows:

a. Preset the following RT unit controls:

(1) Turn the SERVICE SELECTOR switch to OVEN ON.

(2) Turn the MANUAL RF GAIN control fully clockwise.

(3) Turn the AUDIO GAIN control to approximately midrange.

(4) Turn the VOX switch to PUSH TO TALK.

(5) Turn the SQUELCH switch to OFF.

(6) Turn the BFO control to approximately midrange.

(7) Turn the FREQ VERNIER control to OFF.

(8) Tune the RT unit to 2.5 MHz.

NOTE: If the RT unit has a noise blanker, turn the NOISE BLANKER switch to OFF.

b. Preset the following AM-3349 controls:

(1) Turn the TEST METER switch to PRIM VOLT.

(2) From the AM-3349 antenna tuning and loading chart for a whip antenna, determine the setting of the ANT TUNE and ANT LOAD controls for a frequency of 2.5 MHZ. Adjust the controls according to the chart.

c. Make the following cable changes:

(1) Unplug W-17, receiver-transmitter audio cable, from the RT unit AUDIO jack.

(2) Clean the handset audio plug contacts and the RT unit AUDIO jack contacts (using a pencil erasure) and then connect the handset to the RT unit AUDIO jack.

(3) Unplug the whip antenna cable from the AM-3349 WHIP jack and then connect the M-165 RF cable, CG-2568A/U, to the AM-3349 50 OHM LINE jack.

CAUTION: To prevent damage to the radio set, be sure the M-165 RF cable, CG-2568A/U is securely connected to the ME-165 INPUT jack and the AM-3349 50 OHM LINE jack.

4. Check the operation of the radio set subsystem. (Refer to Chart 1.2.)

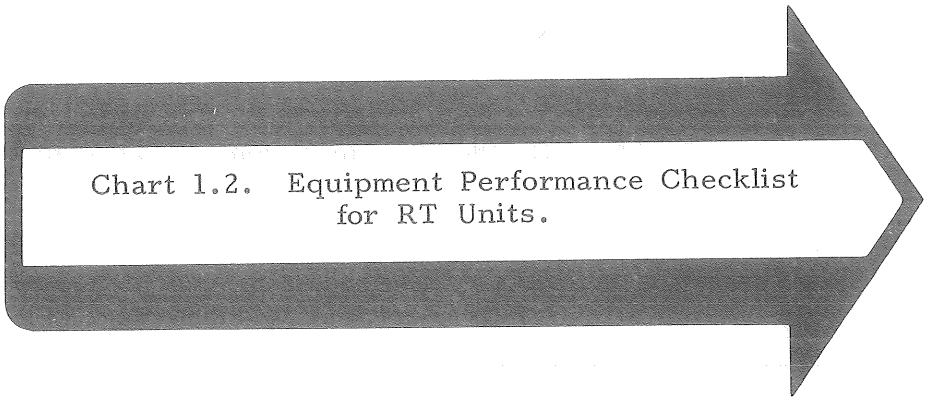


Chart 1.2 Equipment Performance Checklist for RT Units

NOTE: To stabilize operation, a 10-minute warm-up is required.

WARNING: Dangerous voltages exist in this equipment. RF voltages as high as 10,000 volts exist when operating radio frequency amplifier AM-3349.

STEP	FUNCTION CHECKED	ACTION	NORMAL INDICATION
3	RT unit input power	Turn RT SERVICE SELECTOR switch to STANDBY. (Allow 1 minute for warm-up.)	RT signal level meter (SLM) should deflect upscale.
4	Receiver rushing noise	Turn RT SERVICE SELECTOR switch to SSB/NSK.	SLM should return to 0, and normal rushing noise should be heard.
5	RT unit turret drive	Change position of RT MHz tuning control.	Turret drive motor should be heard as MHZ control is turned.
6	Receive signal path.	Tap center contact of ME-165 OUTPUT jack with a wire. (Test lead)	Circuit disturbance should be heard at handset.
7	Preset the following: 1. Tune RT unit to 4.9996 MHz. 2. Disconnect CG-409 cable from RT unit RECEIVER IN jack. 3. Turn ME-165 function switch to POWER.		
	SSB/NSK receive	a. Connect an RF cable between RT FREQ STD and RECEIVER IN jacks.	a. SLM should deflect upscale.
		b. Vary RT FREQ VERNIER control.	b. Audio note changing in pitch should be heard at handset.

NOTE: Return FREQ VERNIER control to OFF (RT-834) or to +6 (RT-662).

STEP	FUNCTION CHECKED	ACTION	NORMAL INDICATION
8	FSK and AM receive	Turn RT SERVICE SELECTOR switch through FSK to AM.	At handset, audio note should be heard at FSK and AM positions.
9	CW receive and BFO	a. Turn RT SERVICE SELECTOR switch to CW.	a. Audio note should be heard at handset.
		b. Vary setting of RT BFO control.	b. At handset, pitch of audio note should vary.
	Turn speaker switch to VEHICULAR set use.		
10	Speaker audio output	Connect a speaker to one of RT AUDIO jacks.	Audio note should be heard at speaker.
11	Preset the following: 1. Turn RT unit SERVICE SELECTOR switch to AM. 2. Unplug speaker from the RT unit.		
	Squelch sensitivity	Turn RT SQUELCH switch to ON.	No change in audio note should be heard at handset.
12	Preset the following: 1. Unplug RF cable from receiver IN and FREQ STD jacks. 2. Tune RT unit to your authorized frequency.		
	Squelch control	Turn SQUELCH switch to OFF, then to ON, then to OFF.	At handset, rushing noise should be loudest when SQUELCH switch is in OFF position.
13	Push to Talk Keying	Press and release handset switch several times.	RT should key each time handset switch is pressed.

STEP	FUNCTION CHECKED	ACTION	NORMAL INDICATION
14	AM transmit	Press handset switch.	SLM should deflect upscale.
	Turn RT unit SERVICE SELECTOR switch to SSB/NSK.		
15	Modulation	Press handset switch, and then speak into microphone.	SLM should indicate modulation.
16	Turn RT unit VOX switch to PUSH TO VOX.		
	PUSH TO VOX keying	Press handset switch, and then speak into microphone.	RT should key when you speak into microphone.
17	Turn RT unit VOX switch to VOX.		
	VOX keying	Speak into microphone.	RT should key when you speak into microphone.
18	Preset the following: 1. Turn RT unit VOX switch to PUSH TO TALK. 2. Turn RT unit SERVICE SELECTOR switch to CW.		
	CW transmit	Press handset switch	SLM should deflect upscale and CW sidetone should be heard at handset. (BFO control may have to be vary to obtain a tone.)

STEP	FUNCTION CHECKED	ACTION	NORMAL INDICATION
19	Preset the following: 1. Reconnect RF cable, CG-409, between RT unit RECEIVER IN jack and AM-3349 RCVR ANT jack. 2. Turn RT unit SERVICE SELECTOR switch to SSB/NSK. 3. Tune RT unit to 2.5 MHZ.		
	CAUTION: To prevent damage to the radio set, be sure the ME-165 function switch is at POWER and that the ME-165 is properly cabled to the AM-3349.		
	AM-3349 input power	Turn AM-3349 PRIM PWR switch to ON. CAUTION: If internal or external blower motors do not start, turn PRIM PWR switch to OFF	AM-3349 blower motors should run. After 60 seconds, AM-3349 test meter should deflect to center scale.
20	Keying and low volts	a. Turn AM-3349 TEST METER switch to LOW VOLT.	a. AM-3349 TEST METER pointer should return to zero.
	CAUTION: When the AM-3349 HV RESET switch is turned to TUNE, tuning of the AM-3349 must be done within 2 minutes. (Step 21)		
		b. Turn AM-3349 HV RESET switch to TUNE.	b. AM-3349 TEST METER pointer should indicate within area of two dark green wedges (top scale). RT should key. (Rushing noise should be eliminated.) RT SLM should deflect upscale.
	CAUTION: If, when you do step 21, meter readings are erratic, turn PRIM PWR switch to OFF, and then check AM-3349 to ME-165 conections.		

STEP	FUNCTION CHECKED	ACTION	NORMAL INDICATION
21	Amplifier loading and turret synchronization for 2.5-, 3.5-, and 4.5- MHz.	a. Turn AM-3349 ANT LOAD control in direction necessary to bring AM-3349 ANT LOAD meter to center scale.	a. AM-3349 ANT LOAD meter pointer should adjust to center scale.
		b. While keeping AM-3349 ANT LOAD meter at center scale with AM-3349 ANT LOAD control, adjust ANT TUNE control until the AM-3349 ANT TUNE meter is at center scale.	b. AM-3349 ANT TUNE and ANT LOAD meters should adjust to center scale. ME-165 should indicate RF power output of between 40 and 80 watts.
	Tune RT unit to 3.5 MHz.		
		c. Repeat actions of a and b above.	c. ME-165 should indicate RF power output of between 40 to 80 watts
	Tune RT unit to 4.5 MHz.		
		d. Repeat actions of a and b above.	d. ME-165 should indicate RF power output of between 40 to 80 watts.
22	High voltage	Turn AM-3349 TEST METER switch to HIGH VOLT.	AM-3349 TEST METER pointer should indicate within the area of the two dark green wedges (top scale).
23	Driver current	Turn AM-3349 TEST METER switch to DRIVER CUR.	AM-3349 TEST METER pointer should indicate within area of two dark green wedges (top scale).

STEP	FUNCTION CHECKED	ACTION	NORMAL INDICATION
24	Grid drive	Turn AM-3349 TEST METER switch to GRID DRIVE.	AM-3349 TEST METER pointer should indicate just below gray wedges (bottom scale).
25	Power amplifier current	Turn AM-3349 TEST METER switch to PA CUR.	AM-3349 TEST METER pointer should indicate just below or in gray wedges (bottom scale).
26	RF output power	Turn AM-3349 TEST METER switch to POWER OUT.	AM-3349 TEST METER pointer should indicate just below or in gray wedges (bottom scale).
27	Turn AM-3349 HV RESET switch to OPERATE.		
	Keying mode	Key handset and then speak into microphone	TEST METER should indicate RF output and modulation.
28	Keying lockout	Change position of MHZ tuning control and then press handset switch.	AM-3349 should NOT key.
29	Radio set subsystem shutdown	a. Turn RT SERVICE SELECTOR switch to STANDBY.	a. Blowers of AM-3349 should continue to operate.
	NOTE: Before proceeding, wait 2 minutes for AM-3349 to cool.		
		b. Turn AM-3349 PRIM PWR switch to OFF.	b. AM-3349 should stop operating.
		c. Turn RT SERVICE SELECTOR switch to OVEN ON.	c. RT should stop operating.

NOTE: Reconnect shelter whip antenna to AM-3349 WHIP antenna jack.

5. Prepare the teletypewriter subsystem for evaluation as follows:

   a. Set the RT unit controls in accordance with performance measure 3a.

   b. Set the SA-1554 and SA-1555 (plain models) or SA-1650 (A and B models) switches to their upward positions.

   c. Preset the following MD-522A controls:

      (1) Turn the AUTO MARK HOLD switch to ON.

      (2) Turn the RECEIVE switch to NORM.

      (3) Turn the DC LOOP NO 1 switch to 20 MA.

      (4) Turn the SQUELCH SENS control fully counterclockwise.

      (5) Turn the SCOPE INTENSITY control fully counterclockwise.

      (6) Turn the METER FUNCTION switch to REGULATED DC.

      (7) Turn the BFO control slightly to the right of midscale.

      (8) Turn the ONE WAY - DUPLEX switch to ONE WAY.

      (9) Turn the AUDIO GAIN control fully counterclockwise.

      (10) Turn the MODE SELECTOR switch to VOICE.

      (11) Turn the RCV-SEND switch to RCV.

   d. Remove the TT-98 cover, preset the following TT-98 controls, and then replace the cover.

      (1) Turn the LINE SELECTOR switch to 20.

      (2) Set and lock the DC POWER switch at OFF.

      (3) Set the MOTOR switch at ON.

(4) Set the LIGHT switch at ON.

(5) Set the SEND-LOCK switch at SEND.

e. Open the TT-76 cover, preset the following TT-76 controls, and then close the cover.

(1) Set the SIGNAL/BIAS switch at 20 MA.

(2) Set and lock the INPUT 115V-230V switch in 115V.

(3) Set the MOTOR switch at ON.

(4) Set the LIGHT switch at ON.

(5) Set the KEYBOARD switch at SEND.

(6) Turn the SELECTOR switch to position 1.

f. Move the handset from the RT unit to the VOICE-KEY jack of the SA-1554 or SA-1650.

g. Connect cable W-17 between the RT unit AUDIO jack and the MD-522A RCVR TRANS AUDIO jack.

6. Check the operation of the teletypewriter subsystem. (Refer to Chart 1.3.)

Chart 1.3 Equipment Performance Checklist for Teletypewriters and Modem.

STEP	FUNCTION CHECKED	ACTION	NORMAL INDICATION
30	MD-522A DC power input and regulated 20V DC	Set MD-522A power ON-OFF switch at ON.	MD-522A meter should indicate 20V DC.
31	20 ma loop current	Turn MD-522A METER FUNCTION switch to DC LOOP NO 1.	MD-522A meter should indicate 20 ma.
32	TT-98 power input and selector magnet current.	Set TT-98 POWER switch at ON.	TT-98 lamps should light, motor should run; TT-98 receive circuit should run closed.
33	TT-76 power input and selector magnet current.	Set TT-76 POWER switch at ON.	TT-76 lamps should light, motor should run; TT-98 receive circuit should run closed.
34	TT-98 keyboard sending	Using TT-98 keyboard, type one line of R's and Y's. (When TT-98 margin signal bell rings, press CAR RET, then LTRS, and then LINE FEED keys.)	TT-76 and TT-98 should print R's and Y's.

STEP	FUNCTION CHECKED	ACTION	NORMAL INDICATION
35	TT-76 keyboard sending	Using TT-76 keyboard, type one line of R's and Y's. (When TT-76 END OF LINE indicator lights, press CAR RET, then LTRS, and then LINE FEED keys.)	TT-76 and TT-98 should print R's and Y's.
36	Preset the TD sender as follows: 1. Place START/STOP lever in FEED RETRACT. 2. Raise TD tape cover. 3. Insert tape through ring on tight tape lever, into tape guide, and close tape cover.		
	TD (transmitter distributor) sending	a. Set TD start/stop lever at STOP and then check tape seating.	a. Tape should not slip in TD sender tape head.
		b. Set TD start/stop lever at START.	b. TT-98 and TT-76 should print R's and Y's.
		c. Set TD start/stop lever at STOP	c. TT-98 and TT-76 should stop printing.
37	Turn the TT-76 SELECTOR switch to position 2.		
	TD send with local repunch.	a. Type one line of R's and Y's, using TT-76 keyboard.	a. TT-76 should print R's and Y's.

STEP	FUNCTION CHECKED	ACTION	NORMAL INDICATION
		b. Set TD sender start/stop lever at START, and, while TD sender is transmitting, type one line of R's and Y's, using TT-76 keyboard.	b. TT-98 and TT-76 should print R's and Y's.
		c. Gently lift TD sender tape lever upward.	c. TD sender should stop operating.
		d. Set TD start/stop lever at STOP.	d. TD sender should stop operating.
38	Turn TT-76 SELECTOR switch to position 3.		
	TT-76 local repunch	a. Set TD sender START/STOP switch to START.	a. TT-76 should print tape copy exactly like tape in TD sender.
		b. Set TD sender start/stop lever at FEED RETRACT.	b. TT-76 should stop printing.
39	Preset the following: 1. Remove tape from TD sender. 2. Turn TT-76 SELECTOR switch to position 1. 3. Turn RT unit SERVICE SELECTOR switch to SSB/NSK. 4. Turn RT unit AUDIO GAIN control to maximum clockwise position.		
	MD-522A voice squelch control	a. Turn MD-522A AUDIO GAIN control to maximum clockwise position.	a. At handset, rushing noise loudness should increase.
		b. Slowly turn MD-522A SQUELCH SENS control clockwise.	b. AT handset, rusing noise should be drastically reduced.

STEP	FUNCTION CHECKED	ACTION	NORMAL INDICATION
40	Preset the following: 1. Tune RT unit to 04.9980 MHz. 2. Turn RT unit AUDIO GAIN control to midpoint. 3. Turn MD-522A meter function switch to RCV level. 4. Unplug CG-409 cable from RT unit RECEIVE ANT jack. 5. Connect an RF cable between RT unit FREQ STD and RECEIVE IN jacks.		
	MD-522A audio input and squelch sensitivity	Adjust RT AUDIO GAIN control until MD-522A meter indicates within RCV portion of meter scale.	MD-522A meter should indicate within RCV, wedge-shaped area. Audio note should be heard at handset.
41	MD-522A voice signal path	Turn MD-522A MODE SELECTOR switch from VOICE to 85 HZ diversity and then to 85 HZ + VOICE, pausing at each position.	At handset, audio note should be heard at all three positions of MD-522A MODE SELECTOR switch
42	Turn RT unit SERVICE SELECTOR switch to FSK.		
	MD-522A 850 HZ signal path	a. Turn MD-522A MODE SELECTOR switch to 850 HZ.	a. Audio note should be heard at handset.
		b. Turn MD-522A METER FUNCTION switch to DISCRIMINATOR.	b. MD-522A meter should indicate to left.
		c. Turn MD-522A AUTO MARK HOLD switch to OFF.	c. TT-98 and TT-76 should run closed.

STEP	FUNCTION CHECKED	ACTION	NORMAL INDICATION
		d. Adjust MD-522A SCOPE INTENSITY control to obtain a scope trace. CAUTION: To minimize damage to scope, keep intensity at minimum visible level.	d. Trace should appear on the scope.
		e. Adjust MD-522A BFO control for a space trace.	e. MD-522A scope should display a space trace, meter should deflect to right, and teletypewriters sould run open.
		f. Adjust MD-522A BFO control for a mark trace.	f. MD-522A scope should display a mark trace, meter should deflect to left, and teletypewriters should run closed.
43	MD-522A 85 HZ signal path	a. Turn MD-522A MODE SELECTOR switch to 85 HZ.	a. Audio note should be heard at handset.
	Tune RT unit to 4.9970 MHZ.		
		b. Adjust RT unit FREQ VERNIER for space deflection on MD-522A meter.	b. MD-522A meter should deflect to right, and teletypewriters should run open.
		c. Adjust RT unit FREQ VERNIER for mark deflection on MD-522A meter.	c. MD-522A meter should deflect to left, and teletypewriters should run closed.

STEP	FUNCTION CHECKED	ACTION	NORMAL INDICATION
44	MD-522A receive rev-norm	a. Turn MD-522A RECEIVE switch to REV	a. Teletypewriters should run open.
		b. Turn MD-522A RECEIVE switch to NORM.	b. Teletypewriters should run closed.
		c. Turn MD-522A SCOPE INTENSITY control fully counterclockwise.	c. SCOPE TRACE should disappear.
		d. Set TT-76 and TT-98 MOTOR switches at OFF.	d. TT-76 and TT-98 motors should stop operating.
45	Preset the following: 1. Unplug RF cable from RECEIVER IN and FREQ STD jacks on RT unit. 2. Turn MD-522A MODE SELECTOR switch to 850 Hz. 3. Tune RT unit to your AUTHORIZED FREQUENCY.		
	MD-522A transmit	a. Set RCV-SEND switch at SEND.	a. SLM should deflect upscale.
		b. Turn MD-522A MODE SELECTOR switch to 85 Hz.	b. SLM should remain upscale.
		c. Turn MD-522A MODE SELECTOR switch to 85 Hz DIVERSITY.	c. SLM should remain upscale.
		d. Turn MD-522A MODE SELECTOR switch to 85 Hz + VOICE.	d. SLM should remain upscale.
		e. Press handset switch, and speak into microphone.	e. Modulation should not be indicated on RT SLM.
		f. Hold switch assembly (SA-1554 or SA-1650) LOCKOUT/OVER RIDE switch in OVER RIDE; then repeat action of e. above.	f. Modulation should be indicated on RT SLM.

STEP	FUNCTION CHECKED	ACTION	NORMAL INDICATION
45 (cont)	Preset the following: 1. Set MD-522A RCV-SEND switch to RCV. 2. Turn MD-522A MODE SELECTOR switch to VOICE.		
		g. Hold switch assembly LOCKOUT/ OVER RIDE switch in OVER RIDE; then press handset switch, and speak into microphone.	g. Modulation should be indicated on RT unit SLM.
46	TTY subsystem shutdown	a. Set TT-98 and TT-76 POWER switches at OFF.	a. TT-98 and TT-76 should stop operating, and lights should go out.
		b. Set MD-522A power ON-OFF switch at OFF.	b. MD-522A should stop operating.
		c. Turn RT unit SERVICE SELECTOR switch to OFF.	c. RT unit should stop operating.
		d. Set power distribution panel INVERTER OWR switch (ckt bkr) to OFF	d. OWR inverter should stop running.

7. Prepare the power distribution subsystem for AC evaluation as follows.

   NOTE: At this point, check to see that the assigned operator has the AC generator power applied to shelter.

   a. Set the PP-4763 circuit breaker at ON.

   b. Set inside (right one) AC entrance box circuit breaker at ON. (Plain model only.)

   c. Set SB-3358 (A and B models only) circuit breakers as follows:

      (1) AC MAIN to ON.

      (2) PWR SUP to ON.

8. Check the operation of the AC power distribution subsystem. (Refer to Chart 1.4.)

Chart 1.4 Equipment Performance Checklist for AC Power Distribution System.

STEP	FUNCTION CHECKED	ACTION	NORMAL INDICATION
47	DC shutdown	Pull out DC MAIN circuit breaker	a. Power panel voltmeter should read zero.
			b. DC power lamps should go OFF.
			c. Shelter lamps should go OFF.
			d. Exhaust blower should stop running.
48	Shelter AC input power and initiate distirubtion	Set POWER selector switch to AC. (On SB-3358 for A and B models; on J-2776 for plain models.)	a. Shelter lamps should light.
			b. AC voltmeter should read 110V AC to 120V AC. (Same as DC meter for A and B models. On shelter wall for plain models.)
			c. SB-3358 AC power lamp should light. (A and B models only.)
			d. Exhaust blower should run.

STEP	FUNCTION CHECKED	ACTION	NORMAL INDICATION
			e. PP-4763 voltmeter should read 28V DC. (Current meter reading depend on loads.)
	NOTE: As loads are added, the PP-4763 current meter reading should increase; but voltmeter reading should remain at 28V DC.		
49	RT unit input power	Turn SERVICE SELECTOR switch to standby	SLM should deflect upscale.
50	AM-3349 input power	Turn PRIM PWR switch to ON.	Blown motors should run.
51	TTY sub-system input power	a. Set MD-522A power switch at ON.	a. With METER FUNCTION switch at REGULATED DC, meter should indicate 20V DC.
		b. Set TT-98 POWER switch at ON.	b. TT-98 motor should run.
		c. Set TT-76 POWER switch at ON.	c. TT-76 motor should run.
52	AC shut-down	a. Set TT-76 POWER switch at OFF.	a. TT-76 motor should stop running.
		b. Set TT-98 POWER switch at OFF.	b. TT-98 motor should stop running.
		c. Set MD-522A power switch at OFF.	c. MD-522A TEST meter should indicate zero.
		d. Set AM-3349 PRIM PWR switch to OFF.	d. AM-3349 blower should stop running.
		e. Turn RT unit SERVICE SELECTOR switch to OFF.	e. SLM should indicate zero
		f. Set PP-4763 circuit breaker OFF	f. PP-4763 volt and current meter should indicate zero.

NOTE: For complete shutdown, set AC main circuit breaker OFF. (AC main ckt bkr is on SB-3358 for A and B models or on inside AC entrance box for plain models.

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9. Record symptoms of trouble on DA Form 2404.

   a. In column a, record the EPC step number, that when done, produced an abnormal indication.

   b. In column c, to the right of the EPC step number, write a brief description of the abnormal indication.

EXAMPLE:

TM ITEM NO. a	STATUS b	DEFICIENCIES AND SHORTCOMINGS c
5		RT unit turret drive motor won't work.

10. Return completed DA Form 2404 to your supervisor.

REFERENCES

TM 11-5815-334-12, Operator's and Organizational Maintenance Manual: Radio Teletypewriter Sets AN/GRC-142, AN/ GRC-142A, AN/GRC-142B, AN/GRC-122, AN/GRC-122A and AN/GRC-122B.

TASK

113-599-3017

Perform Organizational Monthly Preventive Maintenance on Radio Teletypewriter Set AN/GRC-142(*)

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor. You will be provided with:

1. Radio Teletypewriter Set AN/GRC-142(*).
2. TM 11-5815-334-12.
3. DA PAM 310-7.
4. Tool Kit TK-101/G.
5. Multimeter AN/USM-223 or equivalent.
6. Adjustable wrench, 10-inch.
7. Trichloroethane.
8. Grease graphite.
9. Grease lubricating.
10. Low temperature oil.
11. Silicone compound.
12. DA Form 2404.

STANDARDS

This task has been performed correctly when organizational monthly preventive maintenance for Radio Teletypewriter Set AN/GRC-142(*) has been performed; performance measures 1 through 3 listed below have been completed; and DA Form 2404, listing all faults found, has been prepared and submitted to your supervisor. Task should be completed within 30 minutes.

PERFORMANCE MEASURES

1. Perform monthly preventive maintenance checks and services. (Refer to TM 11-5815-334-12, chap 5, sec I, para 5-3, table 5-1, p 5-1.)

   a. Check vehicle installation.

      (1) Shelter is positioned on vehicle.

      (2) Tie-down cables are tightly secured.

   b. Check shelter and antenna installation.

      (1) Ground strap is securely fastened to both shelter and ground rod.

      (2) Whip antenna is erected with sheath tip and tie-down bracket installed.

      (3) Whip antenna consists of three masts MS-116, one mast MS-117, and one mast MS-118.

   c. Remove rust and corrosion from Mast Base AB-652/GR; coat corrosive parts with silicone compound.

      WARNING: Before checking Mast Base AB-652/GR, for rust and corrosion, make sure your equipment is turned off.

   d. Identify modification work orders that should have been applied (DA Pam 310-7).

   e. Identify missing components or cables.

   f. Identify loose or broken black out switches.

g. Lubricate door.

h. Identify broken or damaged chair, safety belts, or chair latch.

i. Identify power panel fuses (only for AN/GRC-142) that are not correct value.

j. Tighten all loose bolts and mounting brackets.

k. Tighten loose cable connections.

l. Identify ventilating fan brushes worn to 1/4-inch or less.

m. Check major components.

(1) PP-4763(*)/GRC.

(2) AN/GRC-106.

(3) MD-522(*)/GRC.

(4) AN/GRA-6.

(5) TT-98(*)/FG.

(6) TT-76(*)/GGC.

(7) TA-312/PT.

n. Perform systems checkout by operating AN/GRC-142(*) in all modes of operation.

2. Record all action faults on DA Form 2404.

3. Report all faults not correctable by you on DA Form 2404 and give it to your immediate supervisor.

REFERENCES

DA Pam 310-7. Military Publications: US Army Equipment Index of Modification Work Orders.

TM 11-5815-334-12, Operator's and Organizational Maintenance Manual: Radio Teletypewriter Sets AN-GRC-142, AN/GRC-142A, AN/GRC-142B, AN/GRC-122, AN/GRC-122A and AN/GRC-122B.

TASK

113-599-3018

Evaluate the Operation of Radio Teletypewriter Set AN/VSC-3

CONDITIONS

This task is performed in a tactical or nontactial situation, under all weather conditions, and may be performed in an NBC environment. This task is done as an evaluation of the Radio Teletypewriter Set AN/VSC-3 prior to repair, as a final check after repair, as a part of periodic checks and services, or as directed by your supervisor. You will be provided with:

1. Radio Teletypewriter Set AN/VSC-3.
2. TM 11-5815-332-15.
3. Distant compatible radio teletypewriter set.
4. DA Form 2404.

STANDARDS

This task has been performed correctly when the Radio Teletypewriter Set AN/VSC-3 has been evaluated; performance measures 1 through 7 have been completed; and a DA Form 2404 with all abnormal conditions recorded, has been given to your supervisor. Task should be completed within 30 minutes.

PERFORMANCE MEASURES

1. Perform preliminary operating procedures. (Refer to TM 11-5815-332-15, chap 3, sec II, para 3-8, p 3-7.)

CAUTION:

Before applying primary power to the AN/VSC-3, start the M577A1 engine or auxiliary power unit. Failure to do the above can cause serious damage to the radio equipment.

When teletypewriter transmission is not taking place, the auxiliary RCV/SEND switch, the MD-522(*)/GRC SEND-RCV switch, and the remote control RCV-SEND switch must be set to RCV to prevent transmitter from being continuously keyed.

2. Perform teletypewriter starting procedures. (Refer to TM 11-5815-332-15, chap 3, sec II, para 3-9, pp 3-7 and 3-8.)

3. Perform Radio Set AN/GRC-106(*) starting and tuning procedures. (Refer to TM 11-5815-332-15, chap 3, sec II, para 3-10, pp 3-8 and 3-8.1.)

4. Check radio teletypewriter set for local operation. (Refer to TM 11-5815-332-15, chap 3, sec II, para 3-12, p 3-8.2.)

5. Perform stopping procedures. (Refer to TM 11-5815-332-15, chap 3, sec II, para 3-13, p 3-9.)

6. Prepare DA Form 2404 on all faults noted by you.

7. Give completed DA Form 2404 to your immediate supervisor.

REFERENCES

TM 11-5815-332-15, Operator's Organizational DS, GS, and Depot Maintenance Manual: Radio Teletypewriter Set AN/VSC-3.

TASK

113-599-3019

Perform Organizational Monthly Preventive Maintenance on Radio Teletypewriter Set AN/VSC-3

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor. You will be provided with:

1. Radio Teletypewriter Set AN/VSC-3.
2. TM 11-5815-332-15.
3. Tool Kit TK-101/G.
4. Multimeter AN/USM-223 or equivalent.
5. Silicone compound.
6. Trichloroethane.
7. Wire brush.
8. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 30 minutes, organizational monthly preventive maintenance for Radio Teletypewriter Set AN/VSC-3 has been performed; performance measures 1 through 3 have been completed; and all uncorrected faults have been recorded on a DA Form 2404 and reported to your immediate supervisor.

PERFORMANCE MEASURES

1. Perform the monthly preventive maintenance checks and services. (Refer to TM 11-5815-332-15, chap 5, sec I, para 5-3, pp 5-1 and 5-2.)

   WARNING: Before checking Mast Base AB-652/GR, for moisture, rust, and corrosion, make sure your equipment is turned off.

   a. Check Mast Base AB-652/GR for moisture, rust, or corrosion.

   b. Identify any components or cables incorrectly installed.

   c. Identify any modification work orders that have not been applied.

   d. Identify dirty or damaged binding posts both inside and outside vehicle.

   e. Identify missing equipment.

   f. Identify loose or missing nuts and bolts from equipment mountings.

   g. Check out auxiliary power supply for serviceability.

   h. Identify any defective light switches, fixtures, or bulbs.

   i. Identify loose or broken meter faces (glass).

   j. Identify loose or missing ground straps.

   k. Remove grease, dirt, and moisture from cable insulation and connectors; tighten cable connectors.

   l. Identify discharged or empty fire extinguishers or extinguishers with broken or missing wire seals or triggers.

   m. Perform operational check on radio teletypewriter set.

2. Record all faults noted and corrective measures taken on DA Form 2404.

3. Submit DA Form 2404 to your immediate supervisor.

REFERENCES

TM 11-5815-332-15, Operator's Organizational DS, GS, and Depot Maintenance Manual: Radio Teletypewriter Set, AN/VSC-3.

TASK

113-599-3020

Evaluate the Operation of Radio Teletypewriter Set AN/VSC-2

CONDITIONS

This task is performed in a tactical or nontactical situation under all weather conditions and may be performed in an NBC environment. This task is done as an evaluation of the Radio Teletypewriter Set AN/VSC-2 prior to repair, as a final check after repair; as a part of periodic checks and services; or as directed by your supervisor. You will be provided with:

1. Installed, operational Radio Teletypewriter Set AN/VSC-2.
2. TM 11-5815-331-14.
3. Distant compatible radio teletypewriter set.
4. DA Form 2404.

STANDARDS

This task has been performed correctly when the Radio Teletypewriter Set AN/VSC-2 has been evaluated; performance measures 1 through 7 have been completed; and a DA Form 2404, with all abnormal conditions recorded, has been given to your supervisor. This task should be completed within 30 minutes.

PERFORMANCE MEASURES

1. Perform preliminary starting procedures. (Refer to TM 11-5815-331-14, chap 3, sec II, para 3-3, pp 3-4 thru 3-6.1.)
2. Preset Radio Teletypewriter Set AN/VSC-2. (Refer to fig 1 and TM 11-5815-331-14, chap 3, sec II, para 3-3, pp 3-4 thru 3-6.1.)

STEP	UNIT	CONTROL OR SWITCH POSITION
1	Power Distribution box (fig. 3-1) ..	BLOWER INVERTER circuit breaker: OFF MAIN circuit breaker: OFF
2	Control box (fig. 3-3)	LOCAL-REMOTE switch: LOCAL TTY-VOICE switch: VOICE LINE CURRENT control: Completely clockwise during *clear* operation.
3	Modem (TM 11-5805-387-15-1, or TM 11-5805-387-15-2	MODE SELECTOR switch: PWR OFF RECEIVE ONE/WAY DUPLEX switch: ONE WAY METER FUNCTION switch: REC.LEVEL SCOPE INTENSITY control: Fully clockwise BFO control: Midrange RECEIVE-REVERSE-NORMAL switch: NORMAL AUDIO GAIN: Fully clockwise SEND-RCV switch: RCV
4	Loudspeaker (fig. 1-3)	FIELD OR PACK SET USE-VEHICULAR SET USE switch: VEHICULAR SET USE
5	TT-4C/TG (fig. 1-2)	MOTOR switch: OFF LINE INCREASE control: Completely counter clockwise.
6	106rt (TM 11-5820-520-12)	SERVICE SELECTOR switch: OFF
7	106pa (TM 11-5820-520-12)	HV RESET switch: OPERATE PRIM. PWR switch: OFF

**The HV RESET switch must be in OPERATE position, whenever the AN/GRC-106 or AN/GRC-106A is turned OFF or ON.*

Figure 1. Operator's preset chart for Radio Teletypewriter Set AN/VSC-2.

3. Perform tuning procedures. (Refer to TM 11-5815-331-14, chap 3, sec II, para 3-3c thru d(13).)

4. Adjust for local 85 Hz teletypewriter operation. (Refer to TM 11-5815-331-14, chap 3, sec II, para 3-4, p 3-6.4.)

5. Perform stopping procedure. (Refer to TM 11-5815-331-14, chap 3, sec II, para 3-5, p 3-7.)

   a. When the equipment is to be turned off for periods of 1 hour or less, place it in a STANDBY position by following these procedures.

(1) Turn the TT-4(*)/TG MOTOR switch to OFF.

(2) Set the power distribution box BLOWER INVERTER circuit breaker to OFF.

(3) Turn the 106RT SERVICE SELECTOR switch to STANDBY.

(4) Turn the modem MODE SELECTOR switch to PWR OFF.

(5) If operating in secure mode, turn off the security equipment.

b. When the equipment is to be turned off 1 hour or longer, follow these procedures.

(1) Set the TT-4(*)/TG MOTOR switch to OFF.

(2) Set the power distribution box inverter circuit breaker to OFF.

(3) Turn the RT-662/834 SERVICE SELECTOR switch to STANDBY. Allow the AM-3349 to cool for 2 minutes.

(4) Turn the AM-3349 PRIM PWR switch to OFF.

(5) Turn the RT-662/834 SERVICE SELECTOR switch to OFF.

(6) Turn the modem MODE SELECTOR switch to PWR OFF.

(7) Set the power distribution box MAIN circuit breaker to OFF.

(8) Turn the M151A1 ignition switch to OFF.

6. Emergency stopping. (Refer to TM 11-5815-331-14, chap 3, sec II, para 3-5, p 3-7.) To turn off the AN/VSC-2 in an emergency, set the power distribution box MAIN circuit breaker to OFF.

7. Record all faults on DA Form 2404 and give it to your supervisor.

REFERENCES

TM 11-5815-331-14, Operator's, Organizational, DS and GS Maintenance Manual: Radio Teletypewriter Set AN/VSC-2.

TASK

113-599-3021

Perform Organizational Monthly Preventive Maintenance on Radio Teletypewriter Set AN/VSC-2

CONDITIONS

This task is performed in a tactical or nontactical situation under all weather conditions and may be performed in an NBC environment. This task is performed when you have received a report of failure or as directed by your supervisor. You will be provided with:

1. Radio Teletypewriter Set AN/VSC-2.
2. TM 11-5815-331-14.
3. Tool Kit TK-101/G.
4. Multimeter AN/USM-223, or equivalent.
5. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 30 minutes, organizational quarterly preventive maintenance for Radio Teletypewriter Set AN/VSC-2 has been performed; performance measures 1 through 3 have been completed; and all uncorrected faults have been recorded on DA Form 2404 and reported to your immediate supervisor.

PERFORMANCE MEASURES

1. Perform the monthly maintenance checks and services. (Refer to TM 11-5815-331-14, chap 5, sec II, para 5-4, table 5-1, pp 5-1 thru 5-3.)

   a. Identify modification work orders that have not been applied.

b. Check mountings.

(1) Tighten loose bolts and nuts.

(2) Identify cracked, bent, or broken mounting brackets.

c. Identify torn or worn black out curtains.

d. Perform monthly maintenance on AN/GRC-106.

e. Perform monthly maintenance on MD-522/GRC.

f. Perform monthly maintenance on TT-4(*)/TG.

g. Perform monthly maintenance on AN/GRA-50.

h. Test operate AN/VSC-2. (Refer to this manual, task 113-599-3020.)

2. Record all faults noted and corrective measures taken on DA Form 2404.

3. Submit DA Form 2404 to your supervisor.

REFERENCES

TM 11-5815-331-14, Operator's, Organizational, DS and GS Maintenance Manual: Radio Teletypewriter Set AN/VSC-2.

TASK

113-599-3022 (RC)

Evaluate the Operation of Radio Teletypewriter Set AN/GRC-46(*)

CONDITIONS

This task is performed in a tactical or nontactical situation under all weather conditions and may be performed in an NBC environment. Task is performed when directed by your supervisor. You will be provided with:

1. Radio Teletypewriter Set AN/GRC-46(*).
2. TM 11-5815-204-20.
3. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 30 minutes, you have evaluated Radio Teletypewriter Set AN/GRC-46 and performance measures 1 through 4 have been completed.

PERFORMANCE MEASURES

1. Perform preparatory steps. (Refer to TM 11-5815-204-20, chap 2, sec II, para 18, pp 13 thru 17.)
2. Perform equipment performance steps. (Refer to TM 11-5815-204-20, chap 2, sec II, para 18, pp 17 thru 25.)
3. Perform stopping steps. (Refer to TM 11-5815-204-20, chap 2, sec II, para 17, p 25.)
4. Record all faults noted on DA Form 2404 and submit completed DA Form 2404 to your immediate supervisor.

REFERENCES

TM 11-5815-204-20, Organizational Maintenance Manual: Radio Teletypewriter Sets AN/GRC 46, AN/GRC-46A, AN/GRC-46B, AN/GRC-46C, and AN/VRC-29.

TASK

113-599-3023 (RC)

Perform Organizational Monthly Preventive Maintenance on Radio Teletypewriter Set AN/GRC-46(*)

CONDITIONS

This task is performed in a tactical or nontactial situation under all weather conditions and may be performed in an NBC environment. Task is performed when directed by your supervisor. You will be provided with:

1. Radio Teletypewriter Set AN/GRC-46(*).
2. Tool Kit TK-101/G.
3. Cleaning cloth.
4. Grease graphite.
5. Fine sandpaper.
6. Cleaning compound.
7. TM 11-5815-204-20.
8. DA Form 2404.

STANDARDS

This task has been performed correctly when you have performed organizational monthly preventive maintenance on Radio Teletypewriter Set AN/GRC-46(*) and performance measures 1 through 3 have been completed. This task should be completed within 30 minutes.

PERFORMANCE MEASURES

1. Perform organizational monthly preventive maintenance on Radio Teletypewriter Set AN/GRC-46(*).

   a. Use a clean cloth to remove dust, dirt, moisture, and grease from the antenna mount, microphone headset, and front panel controls. If necessary, wet the cloth with cleaning compound and wipe the parts dry with a clean cloth. Use a soft-bristled brush to clean the teletypewriter mechanism.

   b. Remove all rust from components and touch up bare spots with paint.

   c. Cover any cuts in the insulation with rubber tape and then with friction tape. Replace or repair all broken cords and cables.

   d. All control knobs should work smoothly and be tight on the shaft. Tighten all loose knobs; make sure that they do not rub against the panel.

   e. Check to see that the black out switch on door frame operates properly. Check ventilation fan blower; make sure that it is clean and tightly fastened.

      WARNING: Cleaning compound is flammable, and its fumes are toxic. Do not use near a flame. Provide adequate ventilation.

2. Perform test operation of Radio Teletypewriter Set AN/GRC-46(*). (Refer to TM 11-5815-204-20, chap 2, sec II, para 18, pp 13 thru 15; and this manual, task 113-599-3022.)

3. Record on DA Form 2404 any uncorrected faults and report to your immediate supervisor.

REFERENCES

TM 11-5815-204-20, Organizational Maintenance Manual: Radio Teletypewriter Sets AN/GRC-46, AN/GRC-46A, AN/GRC-46B, AN/GRC-46C, and AN/VRC-29.

TASK

113-599-4006

Systems Troubleshoot Radio Teletypewriter Set AN/VSC-3 to a Defective Subsystem

CONDITIONS

This task is performed in a tactical or nontactial situation, under all weather conditions, and may be performed in an NBC environment. This task is done when you have received a report of failure or as directed by your supervisor. You will be provided with:

1. Radio Teletypewriter Set AN/VSC-3.
2. TM 11-5815-332-15.
3. Multimeter AN/USM-223 or equivalent.
4. DA Form 2404.

STANDARDS

This task has been performed correctly when all checks and services in the troubleshooting procedures have been performed; performance measures 1 through 5 have been completed; all faults have been isolated to a defective subsystem; and DA Form 2404 has been completed and submitted to your supervisor. Task should be completed within 30 minutes.

PERFORMANCE MEASURES

1. Check out power system. (Refer to TM 11-5815-332-15, chap 5, sec III, para 5-6c, pp 5-2 and 5-3.)
   a. Place main power circuit breaker to ON position.
   b. Observe dc voltmeter for reading of 27.5 V dc.

2. Check out TT loop circuit.

   a. Place ON-OFF switch (MD-522A/GRC) to ON or MODE SELECTOR switch to 85 Hz (MD-522/GRC).

   b. Place METER FUNCTION switch to REGULATED DC and visually check TEST METER for a 27.5V DC reading.

   c. Place METER FUNCTION switch in DC LOOP No. 1 and visually check meter for a 20-milliamp current indication.

3. Check out radio system (AN/GRC-106(*)).

   a. Place TEST METER switch on AM-3349/GRC to POWER OUT.

   b. Place SERVICE SELECTOR switch on RT-662 or RT-834 to NSK.

   c. Place SEND/RCV switch on MD-522(*)/GRC to SEND and visually check TEST METER on AM-3349/GRC for a gray scale (bottom) reading.

   d. Place SEND/RCV switch on MD-522(*)/GRC to RCV.

4. Check out Teletypewriter TT-98(*)/FG.

   a. Place MOTOR and LIGHT switches to ON and SEND/LOCK or SEND/REC switch to SEND on TT-98(*)/FG (fig 1).

   b. Place switches on TT-76(*)/GGC as follows (fig 2).

      (1) SELECTOR switch to position 2.

      (2) SEND-LOCK to SEND.

      (3) POWER to ON.

      (4) LIGHT to ON.

      (5) MOTOR to ON.

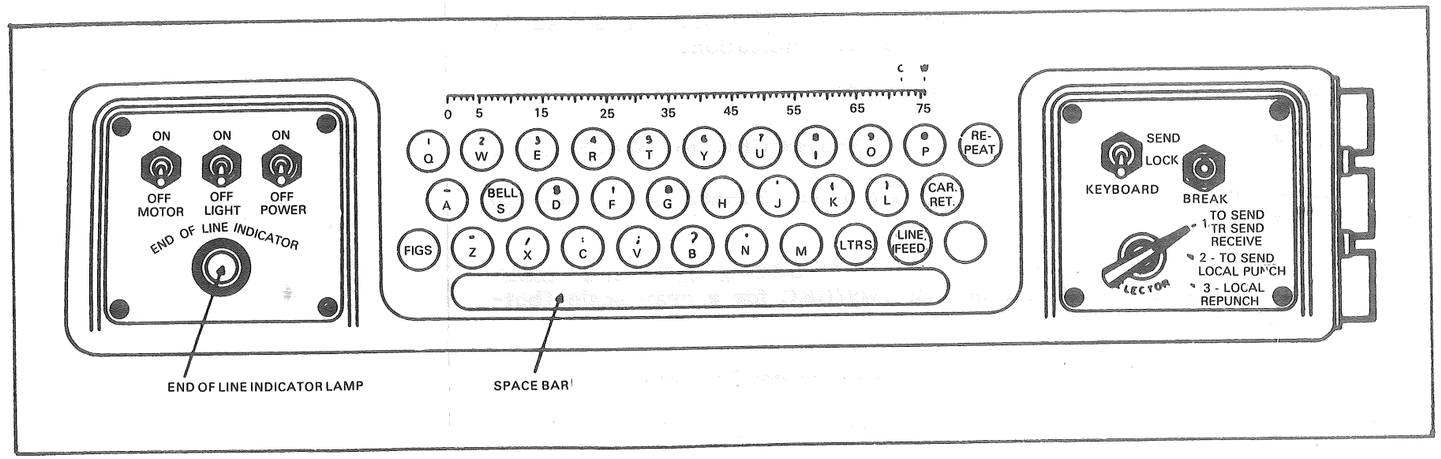


Figure 1. TT-98(*)/FG Keyboard.

c. Place switch on TT-523(*)/GGC to TD SEND-LOCAL PUNCH-LOCAL REPUNCH position.

d. Alternately press the R and Y keys on keyboard of the TT-98(*)/FG and visually check the page printer to insure that R's and Y's are being typed.

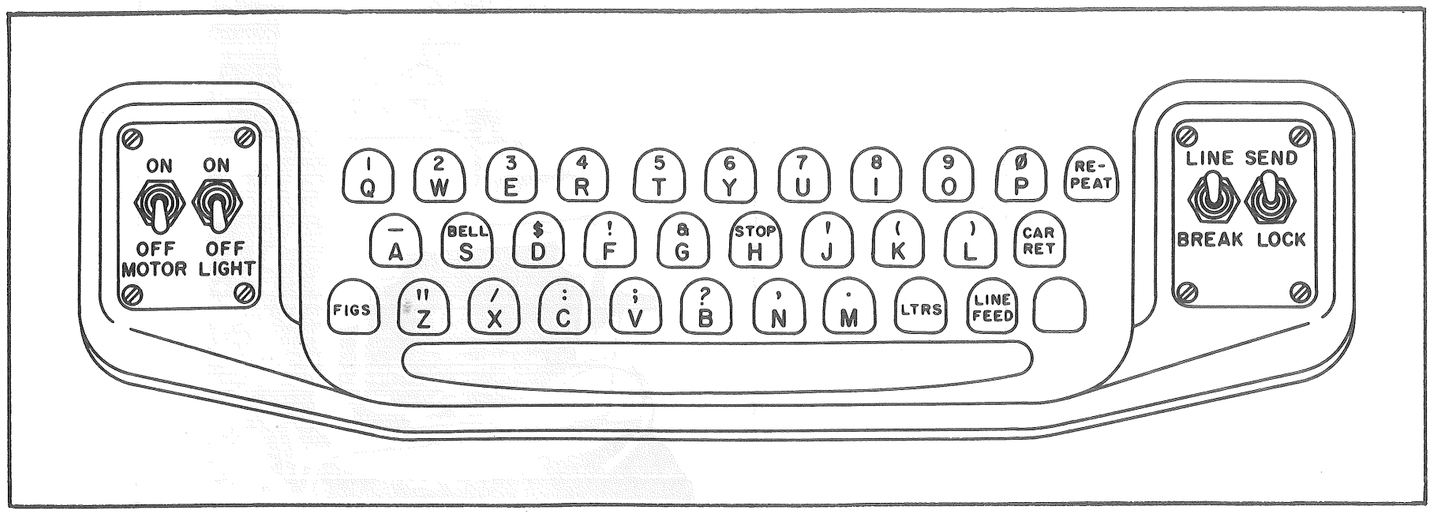


Figure 2. TT-76(*)/GGC Keyboard.

e. Alternately press the R and Y keys on keyboard of the TT-76(*)/GGC and visually check the paper tape to insure that R's and Y's are being punched.

NOTE: This tape will be used as a TEST TAPE.

f. Tear off reperforated tape of R's and Y's and position it on the transmitter-distributor (fig 3).

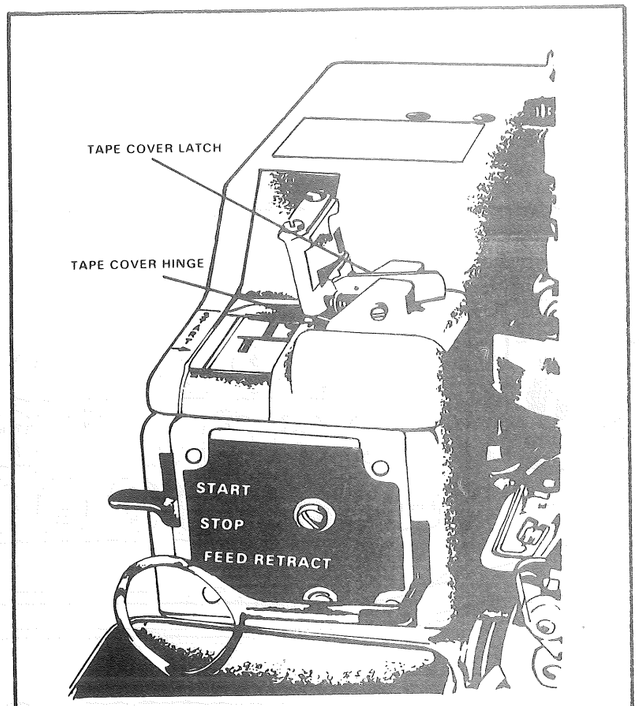


Figure 3. Transmitter-Distributor, tape cover.

g. Place SELECTOR switch to position 3 on TT-76(*)/GGC.

h. Raise the START-STOP-LEVER to the START position and visually check the paper tape on which R's and Y's are being punched.

i. Lower START-STOP lever to the STOP position and reposition test tape.

j. Place SELECTOR switch to position 2 and raise START-STOP lever to START position.

k. Visually observe the page printer of the TT-98(*)/FG to insure that R's and Y's are being printed.

l. Lower START-STOP lever to STOP position.

m. Place SELECTOR switch to position 1 and alternately depress R and Y keys on keyboard of TT-76(*)/GGC.

n. Visually check to insure that R's and Y's are being punched on the paper tape and printed on the page printer of the TT-98(*)/FG.

o. Alternately press the R and Y keys on the keyboard of the TT-98(*)/FG and repeat step n above.

5. Record identified symptoms on DA Form 2404.

REFERENCES

TM 11-5815-332-15, Operator's Organizational, DS, GS, and Depot Maintenance Manual; Radio Teletypewriter Set, AN/VSC-3

TASK

113-607-4002

Repair Power Supply PP-2953(*)/U

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when an operator reports a malfunction or as directed by your supervisor. You will be provided with the following:

1. Power Supply PP-2953(*)/U.
2. TM 11-6130-233-12.
3. Multimeter AN/USM-223 or equivalent.
4. DA Form 2404 with abnormal indications entered in columns a and c.
5. DA Form 2407.

STANDARDS

This task has been performed correctly when, within 15 minutes, the Power Supply PP-2953(*)/U has been repaired; performance measures 1 through 4 have been completed; and a DA Form 2404, with corrective action taken entered in column d, and a DA Form 2407 have been prepared as required to correct faults requiring direct support maintenance.

PERFORMANCE MEASURES

1. Find the trouble symptom in troubleshooting chart, then perform the corrective action indicated. (Refer to TM 11-6130-233-12, chap 4, para 4-7, p 13.)
2. Record corrective actions taken in column d of DA Form 2404.

3. For faults requiring repair at direct support maintenance, prepare a DA Form 2407.

4. Submit completed DA Form 2404 and, as applicable, DA Form 2407 to your immediate supervisor.

REFERENCES

TM 11-6130-233-12, Operator and Organizational Maintenance Manual: Power Supplies PP-2953/U, PP-2953A/U, PP-2953B/U, and PP-2953C/U.

TASK

113-607-1003

Install Power Supply PP-2953(*)/U

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, in a sheltered facility and may be performed in an NBC environment. This task is performed as directed by your supervisor. You will be provided with the following:

1. Power Supply PP-2953(*)/U complete.
2. Cable assembly CX-4720/VRC (10 ft).
3. Cable assembly CX-4721/VRC (3 ft).
4. TM 11-6130-233-12.
5. Tool Kit TK-101/G.
6. Multimeter AN/USM-223 or equivalent.
7. 24 V dc battery or 110 V ac.
8. Mounting MT-1029/VRC.

STANDARDS

This task has been performed correctly when, within 12 minutes, the Power Supply PP-2953(*)/U has been installed and performance measures 1 through 9 have been completed.

PERFORMANCE MEASURES

1. Check to see that fuses on the front panel assembly have the correct value.

   NOTE: B and C models have circuit breakers; not fuses.

a. The fuse next to the ac power receptacle J1 is a dc 32 volt 10 AMP fuse.

b. The other four fuses are 250 volt, 3 AMP.

2. Position voltage selector switch. (Refer to TM 11-6130-233-12, chap 2, para 2-36, p 8.)

a. If power source is 230 volts ac, set the switch to 230 V 50-60 CPS.

b. If the power source is 115 volts ac, set the selector switch to 115 V 50-60 CPS.

CAUTION: Serious damage will result if the power source voltage is not identical with that indicated by the voltage selector switch setting.

3. Open the front cover by loosening the two captive screws. (Refer to TM 11-6130-233-12, chap 2, para 2-3c, p 8.)

4. Set the POWER switch to OFF. (Refer to TM 11-6130-233-13, chap 2, para 2-3d, p 8.)

5. If an ac power source is used, connect the CX-4524/U to the proper power source and to the ac power connector. (Refer to TM 11-6130-233-12, chap 2, para 2-3c, p 8.)

6. If a dc power source is used, connect the CX-4720/VRC between the BATTERY IN connector and a 24-volt 10-ampere dc source. (Refer to TM 11-6130-233-12, chap 2, para 2-3f, p 8.)

7. Connect the CX-4721/VRC from the POWER OUT (J3) connector to the Mounting MT-1029 (J21).

8. Turn on power supply and insure that the AC/NORM indicator lamp(s) light.

9. Measure output voltage for a reading of 24.5 V dc.

NOTE: If you have a reading other than 24.5 V dc, loosen the top cover captive screws, remove cover and adjust R11 variable resistor until you obtain 24.5 V dc.

REFERENCES

TM 11-6130-233-12, Operator's and Organizational Maintenance Manual: Power Supplies PP-2953/U, PP-2953A/U, PP-2953B/U, and PP-2953C/U.

TASK

113-607-3005

Perform Organizational Quarterly Preventive Maintenance on Power Supply PP-2953(*)/U

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, in a sheltered facility, and may be performed in an NBC environment. This task is performed as scheduled or as directed by your supervisor. You will be provided with the following:

1. Power Supply PP-2953 complete.
2. TM 11-6130-233-12.
3. Tool Kit TK-101/G.
4. Multimeter AN/USM-223 or equivalent.
5. Cleaning compound.
6. Clean cloth.
7. Paint and paint brush.
8. DA Form 2404.

STANDARDS

This task has been performed correctly when within 30 minutes, organizational quarterly preventive maintenance has been performed; performance measures 1 through 3 have been completed; and a DA Form 2404 listing all faults noted and corrective actions taken has been prepared and submitted to your supervisor.

PERFORMANCE MEASURES

1. Perform the preventive maintenance checks and services. (Refer to TM 11-6130-233-12, chap 4, para 4-2 and 4-3, p 12.)

2. Record all faults and corrective action taken on DA Form 2404.

3. Submit DA Form 2404 to your immediate supervisor.

REFERENCES

TM 11-6130-233-12, Operator and Organizational Maintenance Manual: Power Supplies PP 2953/U, PP-2953A/U, PP-2953B/U, and PP-2953C/U.

TASK

113-609-0099

Systems Troubleshoot Communications Security Equipment TSEC/KY-57 Installed in 1/4-Ton Vehicle With Radio Set AN/VRC-12 or AN/VRC-47

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions and may be performed in an NBC environment. This task is performed when directed by your supervisor. You will be provided with the following:

1. (O)TM 11-5810-312-12.
2. Radio Set AN/VRC-12 or AN/VRC-47 installed in a M151 with properly filled TSEC/KY-57.
3. DA Form 2404.
4. Tool Kit TK-101/G.
5. Multimeter AN/USM-223 or equivalent.
6. Special purpose bypass Cable CX-13100/U.

STANDARDS

This task has been performed correctly when systems troubleshooting procedures have been completed on TSEC/KY-57, performance measures 1 through 5 have been completed; and a DA Form 2404 with all faults found has been given to your supervisor.

PERFORMANCE MEASURES

1. Perform visual inspection. (Refer to (O)TM 11-5810-312-12, chap 4, sec II, para 4-14b, p 4-9.)

2. Perform test operating procedures. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15 thru 5-17, pp 5-20 thru 5-22.)

3. Use the symptoms identified in test operating procedure (step 2) and troubleshooting chart to identify defective component. (Refer to (O)TM 11-5810-312-12, chap 4, sec II, para 4-14c,d, pp 4-10 thru 4-21.)

4. Record all faults found on DA Form 2404.

5. Submit the DA Form 2404 to your supervisor.

REFERENCES

(O)TM 11-5810-312-12, Operator's and Organizational Maintenance Manual Installation Kits for Communications Security Equipment, TSEC/KY-57 (U).

TASK

113-609-0102

Systems Troubleshoot Communications Security Equipment TSEC/KY-57 Installed in 1/4-Ton Vehicle M151 With Radio Set AN/VRC-46

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor. You will be provided with the following:

1. (O)TM 11-5810-312-12.
2. Radio Set AN/VRC-46 installed in an M151 with properly filled TSEC/KY-57.
3. DA Form 2404.
4. Tool Kit TK-101/G.
5. Multimeter AN/USM-223 or equivalent.
6. Special purpose bypass Cable CX-13100/U.

STANDARDS

This task has been performed correctly when systems troubleshooting procedures have been completed on TSEC/KY-57; performance measures 1 through 5 have been completed; and a completed DA Form 2404 with all faults found has been given to your supervisor.

PERFORMANCE MEASURES

1. Perform visual inspection. (Refer to (O)TM 11-5810-312-12, chap 4, sec II, para 4-14b, p4-9.)
2. Perform test operating procedures. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15 thru 5-17, pp 5-20 thru 5-22.)

3. Use the symptoms identified in test operating procedure (step 2) and troubleshooting chart to identify defective component. (Refer to TM 11-5810-312-12, chap 4, sec II, para 4-14c, pp 4-10 thru 4-21.)

4. Record all faults found on DA Form 2404.

5. Submit the completed DA Form 2404 to your supervisor.

REFERENCES

(O)TM 11-5810-312-12, Operator's and Organizational Maintenance Manual Installation Kits for Communications Security Equipment, TSEC/KY-57 (U).

TASK

113-609-1034

Install COMSEC Equipment TSEC/KY-57

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor. You will be provided with the following:

1. COMSEC Equipment TSEC/KY-57.
2. (O)TM 11-5810-312-12.
3. Installation Kit MK-1838/VRC installed in an M151.

STANDARDS

This task has been performed correctly when a TSEC/KY-57 has been installed and performance measures 1 through 5 have been completed.

PERFORMANCE MEASURES

1. Attach Vehicular Power Adapter HYP-57/TSEC to back of TSEC/KY-57. (Refer to (O)TM 11-5810-312-12, chap 2, sec II, para 2-15, p 2-10.)
2. Place TSEC/KY-57 with HYP-57/TSEC attached on MT-4626/VRC and slide unit towards back until edge of HYP-57/TSEC is under MT-4626/VRC top lip. (Refer to (O)TM 11-5810-312-12, chap 2, sec III, para 2-21c, p 2-25.)
3. Connect Cable CX-13061/U to TSEC/KY-57 front panel radio receptacle. Also connect CX-13063/U to power receptacle located on back of HYP-57/TSEC. (Refer to (O)TM 11-5810-312-12, chap 2, sec III, para 2-21, p 2-25.)
4. Secure cables to vehicle using universal cable clamping kit. (Refer to (O)TM 11-5810-312-12, chap 2, sec III, para 2-21e, p 2-25.)

5. Perform an operational checkout. (Refer to (O)TM 11-5810-312-12, chap 2, sec III, para 2-22, p 2-25.)

REFERENCES

(O)TM 11-5810-312-12, Operator's and Organizational Maintenance Manual Installation Kits for Communications Security Equipment, TSEC/KY-57 (U).

TASK

113-609-1059

Install Installation Kit, MK-1839 Used With Radio Set AN/VRC-47 or AN/VRC-12 in Utility Truck, 1/4-Ton (4x4) M151

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor. You will be provided with the following:

1. (O)TM 11-5810-312-12.
2. Drill and bits.
3. Tool Kit TK-101/G.
4. Multimeter AN/USM-223 or equivalent.
5. Radio Set AN/VRC-47 or AN/VRC-12 installed in M151.
6. Installation Kit MK-1839.
7. DA Form 2404.
8. Speech Security Equipment TSEC/KY-57 (2 each).
9. Vehicular Power Adapter HYP-57/TSEC (2 each).
10. Handset H-189/GR (1 each).

STANDARDS

This task has been performed correctly when you have installed Installation Kit MK-1839 on a tactical vehicle with a Radio Set AN/VRC-47 or AN/VRC-12 and performance measures 1 through 10 have been completed.

PERFORMANCE MEASURES

NOTE: Shortages of minor parts or assemblies that do not affect the function of equipment should not prevent usage of equipment.

1. Insure that Installation Kit MK-1221/VRC-12 and Radio Set AN/VRC-12 or MK-1306/VRC-47 and AN/VRC-47 have been previously installed in vehicle in the prescribed configuration. (Refer to (O)TM 11-5810-312-12, chap 2, sec IV, para 2-23a, p 2-29.)

2. Insure that RT unit and auxiliary receiver are set for secure (X-Mode) operation. (Refer to (O)TM 11-5810-312-12, chap 2, sec II, para 2-7, p 2-3.)

3. Remove Receiver-Transmitter (RT-524 or RT-246) and Receiver (R-442) from mounts. (Refer to (O)TM 11-5810-312-12, chap 2, sec IV, para 2-24, p 2-29.)

4. Install the Interconnection Box J-3513/U. (Refer to (O)TM 11-5810-312-12, chap 2, sec II, para 2-12, p 2-5.)

   NOTE: Make sure all cables are connected to J-3513/U during its installation.

5. Install Interconnection Box J-3514/U. (Refer to (O)TM 11-5810-312-12, chap 2, sec II, para 2-13, p 2-7.)

   NOTE: Make sure that all cables are connected to J-3514/U during its installation.

6. Install support assembly.

   a. Assemble support assembly using 10 sets of 5/16-inch diameter screws, nuts, flatwashers and lockwashers provided in the cloth bag. (Refer to (O)TM 11-5810-312-12, chap 2, sec IV, para 2-27a, p 2-29.)

   b. Place assembled support assembly on radio support bracket and align four mounting holes with holes previously used to mount MT-1029/VRC. (Refer to (O)TM 11-5810-312-12, chap 2, sec IV, para 2-27, p 2-29; and chap 1, sec II, fig 1-9, p 1-13.)

      NOTE: Make sure that support assembly identifying number (painted or stamped on top plate) is facing inside of vehicle.

c. Place MT-1029/VRC inside support assembly and align base assembly mounting holes with holes aligned with support assembly. (Refer to (O)TM 11-5810-312-12, chap 2, sec IV, para 2-27, p 2-29.)

d. Secure MT-1029/VRC and support assembly to radio support bracket using four sets of 5/16-inch diameter screws, nuts, flatwashers and lockwashers provided in the cloth bag.

NOTE: Do not use center rear mounting hole on MT-1029/VRC base assembly.

7. Install Mounting Base, Electrical Equipment MT-4626/URC.

a. Place each MT-4626/URC on top plate of installed support assembly with thumbscrews toward inside of vehicle and align all mounting holes. (Refer to (O)TM 11-5810-312-12, chap 2, sec IV, fig 2-9, p 2-30.)

b. Secure each MT-4626/URC to support assembly using 5/16-inch diameter mounting hardware provided in the cloth bag. Place a lockwasher under each screw head and nut and tighten securely. (Refer to (O)TM 11-5810-312-12, chap 2, sec IV, para 2-28, p 2-29.)

8. Install speech security equipment.

a. Attach Vehicular Power Adapter HYP-57/TSEC to back of each TSEC/KY-57. (Refer to (O)TM 11-5810-312-12, chap 2, sec II, para 2-15, pp 2-10 thru 2-23.)

b. Place each TSEC/KY-57, with HYP-57/TSEC attached, on an MT-4626/URC and slide the unit towards back until edge of each HYP-57/TSEC is under MT-4626/URC top lip. (Refer to (O)TM 11-5810-312-12, chap 2, sec IV, para 2-29, p 2-29.)

c. Engage MT-4626/URC retaining bracket with TSEC/KY-57 hold-down bar and tighten thumbscrew securely. (Refer to (O)TM 11-5810-312-12, chap 1, sec II, fig 1-13, p 1-19.)

d. Connect Cable CX-13061/U to TSEC/KY-57 front panel radio receptacle and Cable CX-13062/U to audio receptacle. Also connect Cable CX-13063/U to power receptacle located on back of HYP-57/TSEC. (Refer to (O)TM 11-5810-312-12, chap 2, sec II, fig 2-7, p 2-12.)

e. Secure cables to vehicle using universal cable clamping kit. (Refer to (O)TM 11-5810-312-12, chap 1, sec II, fig 1-16, p 1-22.)

9. Perform an operational check. (Refer to (O)TM 11-5810-312-12, chap 2, sec IV, para 2-30, pp 2-31 and 2-32.)

10. Record damaged or missing parts on DA Form 2404.

REFERENCES

(O)TM 11-5810-312-12, Operator's and Organizational Maintenance Manual Installation Kits for Communications Security Equipment, TSEC/KY-57 (U).

TASK

113-609-2010

Evaluate the Operation of Common Fill Device KYK-13/TSEC

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions and may be performed in an NBC environment. This task is performed as an evaluation prior to troubleshooting, as a final check after repair, or when directed by your supervisor. You will be provided with the following:

1. (O)TM 11-5810-312-12.
2. Vinson installed with an AN/VRC-46 in a tactical vehicle.
3. KOI-18/TSEC.
4. DA Form 2404.
5. Test station and test frequencies.

STANDARDS

This task has been performed correctly when you have evaluated the operation of Common Fill Device KYK-13/TSEC; performance measures 1 through 19 have been completed; and any faults found have been recorded on DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Connect the Handset H-189/GR or equivalent to Interconnection Box J-3513/U receptacle J-5 located in MT-1029/VRC. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15a, p 5-20.)
2. Turn radio set and TSEC/KY-57 power switches to OFF position. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15a, p 5-20.)

3. Set KYK-13/TSEC mode switch to OFF/check position. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15a, p 5-20.)

4. Connect a Filler KYK-13/TSEC to TSEC/KY-57 fill receptacle directly or through fill cable. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15a, p 5-20.)

5. Set the TSEC/KY-57 mode switch to C position. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15a, p 5-20.)

6. Set the radio set and TSEC/KY-57 power switches to ON position. A continuous beeping (crypto alarm) and background noise should be heard. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15a, p 5-20.)

7. Clear the alarm by activating the push-to-talk switch on the handset. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15a, p 5-20.)

8. Set TSEC/KY-57 mode switch to LD position. A constant tone indicates an empty storage register. A beep indicates that a cryptovariable is already stored in the storage register. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15a, p 5-20.)

9. Set KYK-13/TSEC mode switch on position. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15a, p 5-20.)

   NOTE: Loading a register that already contains fill will automatically replace the old fill.

10. Set TSEC/KY-57 fill switch to the number of the storage register to be filled. (Refer to (O)TM 11-5810-312-12, chap 2, sec II, para 2-15a, pp 2-10 thru 2-23.)

11. Set KYK-13/TSEC fill switch to the number of storage register containing the cryptovariable to be transferred to the TSEC/KY-57. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15, pp 5-20 and 5-21.)

12. Activate the push-to-talk switch on the hand set or push-to-talk switch simulator pushbutton on J-3514/U. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15, pp 5-20 and 5-21.)

    NOTE: Do not press the KYK-13/TSEC initiate button. The KYK-13/TSEC parity indicator lamp will flash and a beep will be heard in the handset when the fill has been successfully transferred. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15, pp 5-20 and 5-21.)

13. Record the station identifying information for the variable loaded on the TSEC/KY-57 writing surface located on the top front. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15, pp 5-20 and 5-21.)

14. Repeat steps 10 through 13 until all variables are loaded. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15, pp 5-20 and 5-21.)

15. Set the KYK-13/TSEC mode switch to OFF/check position. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15, pp 5-20 and 5-21.)

16. Set the TSEC/KY-57 mode switch to C position. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15, pp 5-20 and 5-21.)

17. Disconnect the KYK-13/TSEC (and fill cable) from the TSEC/KY-57. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-15, pp 5-20 and 5-21.)

18. Record any faults noted on DA Form 2404.

19. Submit completed DA Form 2404 to your supervisor.

REFERENCES

TM 11-5810-312-12, Operator's and Organizational Maintenance Manual Installation Kits for Communications Security(U).

TASK

113-609-2029

Evaluate the Operation of Common Fill Device KOI-18/TSEC

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed as an evaluation prior to troubleshooting, as a final check after repair, or when directed by your supervisor. You will be provided with the following:

1. (O)TM 11-5810-312-12.
2. Vinson installed with an AN/VRC-46 in a tactical vehicle.
3. DA Form 2404.
4. Test station and test frequency.
5. KOI-18/TSEC.

STANDARDS

This task has been performed correctly when you have evaluated the operation of Common Fill Device KOI-18/TSEC; performance measures 1 through 18 have been completed; and any faults found have been recorded on DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Insure equipment is properly installed. (Refer to (O)TM 11-5810-312-12, chap 5, sec II, para 5-14, p 5-19.)
2. Connect the handset to Interconnection Box J-3513/U receptacle J-5.

3. Set the radio set and TSEC/KY-57 power switches to OFF position.

4. Using a fill cable, connect KOI-18/TSEC to TSEC/KY-57 fill receptacle.

5. Set TSEC/KY-57 mode switch to C position.

6. Set radio set and TSEC/KY-57 power switches to ON position. (A continuous beeping (crypto alarm) and background noise should be heard.)

7. Clear alarm by activating push-to-talk switch on handset.

8. Set TSEC/KY-57 mode switch to LD position. (A constant tone when entering load mode indicates an empty storage register. A beep indicates that a cryptovariable is stored in the storage register.)

9. Set TSEC/KY-57 fill switch to the number of the storage register to be filled.

10. Raise the KOI-18/TSEC tape load cover and insert tape leader into slot marked IN. Make sure tape feed holes line up with white dots on KOI-18/TSEC.

11. Press and release push-to-talk switch on the handset.

12. Pull the tape through KOI-18/TSEC at a steady rate. A beep should be heard when fill has been successfully transferred. If the beep is not heard, repeat steps 9 and 10.

13. Record the station identifying information for the variable load on TSEC/KY-57 writing surface located on the top front.

14. Repeat steps 9 through 13 until all desired variables are loaded.

15. Set the TSEC/KY-57 mode switch to C position.

16. Disconnect fill cable from KOI-18/TSEC and TSEC/KY-57.

17. Record any faults noted on DA Form 2404.

18. Submit the completed DA Form 2404 to your supervisor.

REFERENCES

(O)TM 11-5810-312-12, Operator's and Organizational Maintenance Manual Installation Kits for Communications Security Equipment, TSEC/KY-57 (U).

TASK

113-609-3061

Perform Organizational Quarterly Preventive Maintenance on Communications Security Equipment TSEC/KY-57

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions and may be performed in an NBC environment. This task is performed as scheduled preventive maintenance becomes due. You will be provided with the following:

1. (O)TM 11-5810-312-12.
2. Tool Kit TK-101/G.
3. Brush.
4. Clean cloth.
5. Trichloroethane.
6. Multimeter AN/USM-223 or equivalent.
7. Vinson test cable.
8. Vinson installed with a AN/VRC-46 in a tactical vehicle.
9. DA Form 2404.
10. DA Pam 310-4.
11. DA Pam 310-7.
12. (C)DA Pam 310-9.

STANDARDS

This task has been performed correctly when organizational quarterly preventive maintenance on COMSEC Equipment TSEC/KY-57 has been performed; performance measures 1 through 8 have been completed; and any faults found have been recorded on DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Check to see equipment is properly installed. (Refer to (O)TM 11-5810-312-12, chap 2.)

2. Perform an operational check of equipment and replace defective component or record defect on DA Form 2404. (Refer to (O)TM 11-5810-312-12, chap 5.)

3. Check all interconnecting cables and connectors for cracks and breaks. Replace cable assemblies or record on DA Form 2404 cables that have cracks or broken connectors.

4. Remove any fungus, rust, or corrosion from surfaces of equipment. Spot paint if required. (Refer to (O)TM 11-5810-312-12, chap 4, sec I, para 4-6, p 4-2.)

5. Check to see that all publications are complete, serviceable, and current, or ordered. (Refer to DA PAM 310-4.)

6. Determine whether MWOs are required. If any are required, record them on DA Form 2408-5. All urgent MWOs must be applied immediately. All normal MWOs must be scheduled. (Refer to DA Pam 310-7.)

   NOTE: Check (C)DA Pam 310-9 to determine whether classified publications are required on the equipment.

7. Record any faults found on DA Form 2404.

8. Submit the completed DA Form 2404 to your supervisor.

REFERENCES

(O)TM 11-5810-312-12, Operator's and Organizational Maintenance Manual Installation Kits for Communications Security Equipment, TSEC/KY-57 (U).

DA Pam 310-4, Index of Technical Manuals, Techanical Bulletins, Supply Manual (Type 7, 8, and 9), Supply Bulletins and Lubrication Orders.

DA Pam 310-7, Military Publications: US Army Equipment Index of Modification Work Orders.

(C)DA Pam 310-9, Index of Communications Security (COMSEC) Publications (U).

TASK

113-609-4133

Systems Troubleshoot a Secure FM Radio Set

CONDITIONS

This task is done in a tactical or nontactical situation and may be performed in an NBC environment. Task is performed when directed by your supervisor. You will be provided with the following:

1. An installed secure FM radio set.
2. Tool Kit TK-101/G.
3. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 20 minutes, you have completed systems troubleshooting a secure FM radio set; completed performance measures 1 through 3 recorded all faults identified on DA Form 2404; and given the completed DA Form 2404 to your supervisor.

PERFORMANCE MEASURES

1. Find symptom of trouble in Table 1 and perform the corrective measure prescribed.
2. Record all faults identified on DA Form 2404.
3. Complete DA Form 2404 and give it to your supervisor.

TABLE 1. Troubleshooting Procedures.

Symptom	Probable troubles	Corrective measure
Does not receive in cipher, rushing noise heard in receiver.	Improper key	Turn power off. Check settings on key gun/code changer. Reinsert key in COMSEC equipment.
Receives satisfactorily but does not transmit.	Defective transmitter Defective COMSEC equipment. Defective x-mode cable Defective microphone. Low power. Grounded antenna. Band-pass filter.	Determine whether RT unit or COMSEC equipment is defective by bypassing COMSEC. Perform the following: a. Remove interconnecting cables between audio and x-mode connectors of RT unit and radio connector on COMSEC unit. b. Remove audio interconnecting cable form "audio" connector on COMSEC unit and connect it to the audio connector on RT unit. c. Attempt to establish communications in the clear. d. If unsuccessful, replace radio. e. If successful, replace octopus cable with new one and recheck cipher communications after replacing COMSEC equipment in the system. f. Check setting of x-mode switch on the unit and check band-pass filter for operation in wide-band mode. g. If still unsuccessful, replace COMSEC equipment with known good one.
Be-bop effect is heard (KY-8)	COMSEC equipment in alarm	Check position of alarm check control. Replace COMSEC equipment. Higher maintenance level repair is required.
Be-bop effect is heard through COMSEC equipment (KY-38).	Weak battery Incorrect or zeroized key No adapter card installed (TSEC/KY-8). Local-remote switch in remote position.	Replace battery in COMSEC equipment. Check key settings in key gun. Insure proper adapter card installed. Check local-remote switch position.
No sound is heard, unable to communicate.	One or more major components are not turned on. Defective power cables Low or dead batteries	Repeat turn-on procedures. Check circuit breakers or fuses. Insure all power cables are properly and securely fastened. Replace batteries.
Does not transmit or receive but all major components indicate proper operation.	Antenna disconnected Deffective handset Dirty contacts on augio connectors Band-pass filter in RT-246 or RT-524.	Check antenna system insuring all cables are secured and antenna properly seated. Replace. Clean contacts with a rubber eraser. Insure band-pass filter is set for wide-band operation.

NOTE:

For additional organizational troubleshooting of the radio equipment, remove the COMSEC equipment from system and refer to Chapter 5, TM 11-5820-401-12.

REFERENCES

None.

TASK

113-620-0017

Systems Troubleshoot Radio Set AN/GRC-106(*) to Defective Component, Cable, or Accessory

CONDITIONS

This task is performed in a tactical or nontactical environment in a sheltered facility and may be performed in an NBC situation. This task is performed when an operator reports a malfunction in the radio set or as directed by your supervisor. Your supervisor will provide you with the following:

1. A complete Radio Set, AN/GRC-106(*).
2. DA Form 2404 with columns a and c completed.
3. Multimeter AN/USM-223 or equivalent.
5. Tool Kit, TK-101/G.

STANDARDS

This task has been performed correctly when, within 30 minutes, systems troubleshooting of Radio Set, AN/GRC-106 to a defective component, cable, or accessory has been done; performance measures 1 through 3 have been completed; and any faults found have been recorded on DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Check the symptom of trouble recorded on DA Form 2404, columns a and c, then find the DA Form 2404 symptom of trouble in the EPC step and symptom listing on Chart 1.

Chart 1. Troubleshooting Radio Set, AN/GRC-106.

EPC

STEP	SYMPTOM	ACTION	NORMAL INDICATION
1	No RT input power.	1. Check 2 amp RT unit fuse continuity (Rx10).	Zero ohms.
		2. Unplug CX-10071/U from RT power jack; then check E from pin A (pos) to pin C (neg) and pin B (pos) to pin D (neg) or CX-10071/U plug.	22 to 30 V dc.
		3. Evacuate radio set to DSU.	
2	No receiver rushing.	1. Unplug CX-10099 (dog bone); then repeat EPC step 2.	Normal
		2. Check continuity of CX-10099 plug pin T to pin D.	Infinity ohms.
		3. Unplug handset; check continuity of audio plug H to pin F (P-T-T switch released).	Infinity ohms.
		4. Circuit disturb handset audio plug, pins B and A (RX 100).	Clicks.
		5. Remove handset earphone element; then circuit disturb earphone terminals.	Clicks.
		6. Evacuate radio set to DSU.	
3	Abnormal RT turret drive.	Evacuate radio set to DSU. NOTE: To disturb the test points indicated by the following steps, use an AN/URM-105 test lead to tap the test point and listen for a change in sound at the handset phone, called disturbance.	
4	No antenna circuit distrubance.	1. Release antenna switch; then disturb center pin of whip antenna jack.	Disturbance sound.
		2. Unplug CG-409 from AM-3349 RCVR ANT jack; then disturb center pin of CG-409 plug.	Disturbance sound.
		3. Unplug CG-409 from RT RECEIVER IN jack; then disturb center pin RECEIVER IN jack.	Disturbance sound.
		4. Evacuate radio set to DSU.	
5 thru 7	No reception any service.	Evacuate radio set to DSU.	

2. For the EPC step and symptom listing do the actions indicated to determine the cause of trouble.

3. Record abnormal indications in column d of DA Form 2404.

   a. Complete administrative portion.

   b. For a defective accessory or cable, record the defective item in column d.

   c. Return completed DA Form 2404 to your supervisor.

REFERENCES

None.

TASK

113-620-0022

Systems Troubleshoot Radio Set AN/PRC-74(*) to a Defective Component, Cable, or Accessory

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and performed in an NBC environment. Task is performed when directed by your supervisor. You will be provided with:

1. Radio Set AN/PRC-74(*) with dry cell battery pack.
2. Multimeter AN/USM-223 or equivalent.
3. Tool Kit TK-101/G.
4. DA Form 2404.

STANDARDS

This task has been completed correctly when, within 30 minutes, you have completed systems troubleshooting Radio Set AN/PRC-74(*) to a defective component, cable, or accessory, and performance measures 1 through 4 have been completed.

PERFORMANCE MEASURES

CAUTION: Do not operate the radio set in a transmit condition unless it is connected to an antenna.

1. Perform troubleshooting procedures as outlined below:

   a. Perform operational check and proceed through items until an abnormal condition or result is observed. (Refer to this Manual, task 113-120-3036.)

b. If receiver-transmitter cannot be operated as described in operational test, check

(1) Fuses F1 or F2 and replace if needed. (Refer to performance measure 2a.)

(2) Low source voltage. (Refer to performance measure 2b.)

2. Supplementary RT Unit Troubleshooting Information.

a. Troubleshooting of the RT unit at organizational maintenance category consists of a power supply voltage test and the replacement of fuses. If the power supply voltage is not as specified or the replacement of fuses does not correct the trouble, the RT unit must be replaced and forwarded to higher category maintenance personnel.

b. Power Supply Voltage Test. When troubleshooting the RT unit is required, the RT unit case must be removed to reach the test points. The dry battery must be used as a power source during this test. Check the receiver-transmitter power supply as follows:

(1) Release the latches that attach the RT unit to the power source. Remove the RT unit.

(2) Release the latches that attach the RT unit front panel to the case.

(3) Using the handles on each side of the RT unit front panel, remove the RT unit from the case.

> CAUTION: When the dry battery is used, the RT unit and the dry battery may be connected and placed flat with the test points facing upward. Avoid excessive movement of the RT unit and the battery to prevent damage to the connectors.

(4) Set the OFF-ON-TUNE switch in the TUNE position and use the multimeter to make the following dc measurements:

(a) TB 201 pin 7: +8.4 to +9.6 volts.

(b) TB 201 pin 5: +10.5 to +17.0 volts.

(c) TB 201 pin 3: +39.0 to +44.0 volts.

(5) If the readings in (4) above are normal and the radio set does not operate normally, higher category of maintenance is required. If any of the readings in (4) above are not normal, check F1 and F2 in the power supply module (c) below. If fuse replacement does not correct the trouble, higher category of maintenance is required.

(6) After the test has been completed, place the RT unit in the upright position and disconnect it from the battery pack.

(7) Insert the RT unit in the case and secure it with the latch located on each side of the case.

(8) Connect the RT unit to the power source and secure it with the latch located on each side of the case.

c. Fuse Replacement. To replace the RT unit fuses, remove the RT unit from the case (b(1) and (3) above) and proceed as follows:

(1) Remove the three screws that secure the power supply module cover.

(2) Replace fuse F1 and/or F2 as required.

(3) Replace the power supply module cover and secure it with the three screws removed in (1) above.

(4) Replace the RT unit in its case (b(6), (7), and (8) above).

NOTE: If the replaced fuse blows, higher category of maintenance is required.

3. Dry Battery Replacement.

CAUTION: Do not expose the dry batteries to excessive heat or moisture. If the dry battery carrier assembly is to be placed in storage for long periods of time (2 months or more), remove the dry batteries from the battery carrier assembly.

a. Release the latch on each side of the RT unit carrier assembly.

b. Lift the RT unit from the battery box.

c. Release the latch on each side of the battery box and remove the battery cover assembly.

d. Replace batteries in Battery Box CY-6314/PRC-74 as follows:

(1) Loosen the four wingnuts at the bottom of the four battery retaining rods.

CAUTION: Do not damage cable attached to each battery retainer and the battery case base assembly.

(2) Lift the lower battery retainer to unplug the lower battery.

(3) Slide the lower battery from the lower battery retainer.

(4) Disconnect the upper battery from the upper battery retainer.

(5) Replacement batteries are type BA-4386/U or equivalent. Insert one new battery and connect to the upper battery retainer.

(6) Slide the lower battery between the upper battery and rods and the lower retainer and connect this battery to the lower retainer.

(7) Secure the batteries with the four wingnuts at the bottom of the four battery retaining rods.

e. Replace batteries in Battery Box CY-6314A/PRC-74 as follows:

(1) Release the latch at the side of the battery housing assembly.

(2) Rotate the battery case base assembly up away from the batteries.

(3) Disconnect the upper battery from the battery divider.

(4) Rotate the battery divider upward and disconnect the lower battery.

(5) Replacement batteries are type BA-4386/U or equivalent. Connect a new battery to the underside of the battery divider and rotate the battery divider down onto the battery housing assembly.

(6) Connect a new battery to the topside of the battery divider.

(7) Rotate the battery case base assembly down onto the upper battery and secure the latch at the side of the battery housing assembly.

f. Replace the battery cover assembly and secure the latches.

g. Replace the RT unit carrier assembly to its mounting position on top of the battery box base assembly and secure the side latches.

4. Prepare DA Form 2404 for uncorrected faults and any parts used and report to your immediate supervisor.

REFERENCES

None.

EPC STEP	SYMPTOM	ACTION	NORMAL INDICATION
8	No speaker output.	1. Unplug speaker from RT audio jack; then circuit disturb speaker audio plug pin L to B (RX100).	Clicks.
		2. Evacuate radio set to DSU.	
9 and 10	No squelch sensitivity and/or control.	1. Check presets (specifically RT tuning); then repeat EPC steps 9 and 10.	Normal.
		2. Evacuate radio set to DSU.	
11	No RT keying.	1. Unplug handset; then check continuity of audio plug pin H to F (P-T-T switch pressed).	Zero ohms.
		2. Evacuate radio set to DSU.	
12	No AM transmit.	1. Unplug CG-409 from RT RF DRIVE jack; then repeat EPC step 12.	Normal.
		2. Unplug CG-409 from AM-3349 RF DRIVE jack; then check continuity of center pin to collar of one of the BNC plugs.	Infinity ohms.
		3. Evacuate radio set to DSU.	
13	No voice modulation.	1. Unplug handset from RT AUDIO jack; then check R from pin E to C of audio plug. (Rx10; press P-T-T switch; whistle into mike.)	R changes.
		2. Check R from pin D to C of audio plug. (Rx10; press P-T-T switch; whistle into mike.)	R changes.
		3. Remove mike element of handset; then check R of element. (Rx10; whistle into mike.)	R changes.
14 and/or 15	No VOX keying.	Evacuate radio set to DSU.	
16	No CW transmit.	Evacuate radio set to DSU.	
17a	No AM-3349 input power.	1. Unplug CX-10071/U from AM-3349 PRIM PWR jack; then check E from pin A (pos) to pin C (neg); pin B (pos) to pin D (neg) of W34 plug.	22 to 30 V dc.
		2. Unplug CX-10099 from RT and AM-3349 CONTROL jacks; then check continuity of pin N of one CX-10099 plug to other plug, pin N.	Zero ohms.
		3. Check continuity of pin P of one CX-10099 plug to other plug, pin P.	Zero ohms.
17b	No prim volts.	Unplug CX-10099 from RT and AM-3349 CONTROL jacks; then check continuity of pin P of one CX-10099 plug to other plug, pin P.	Zero ohms.

18a	Low voltage without keying.		
18b	No keying and/or abnormal low volts.		
	No RT keying; AM-3349, OK.	Unplug CX-10099 from RT and AM-3349 CONTROL jacks; then check continuity of pin T of one CX-10099 plug to other plug, pin T.	Zero ohms.
	Zero RT SLM reading.	Unplug CX-10099 from RT and AM-3349 CONTROL jacks; then check continuity of pin M of one CX-10099 plug to other plug, pin M.	Zero ohms.
19	No AM-3349 turret sync.	Unplug CX-10099 from RT and AM-3349 CONTROL jacks; then check continuity of following pins of CX-10099 plug to other plug's same pin: R to R, E to E, S to S, U to U, and V to V.	All zero ohms.
	RF output more than 80 watts.	Unplug CX-10099 from RT and AM-3349 CONTROL jacks; then check continuity of pin B of one CX-10099 plug to other plug, pin B.	Zero ohms.
	RF output less than 40 watts.	Closely examine the results of EPC steps 20-24.	
20	No high voltage.		
21	No driver current.		
22	No or low grid drive.	Unplug RF cable CG-409 from RT and AM-3349 RF DRIVE jacks. Check continuity from center pin of one BNC plug to center pin of other plug (should be zero ohms); then check continuity from collar of one BNC plug to collar of other plug (should be zero ohms); lastly, check continuity from collar on one BNC plug to center pin of the same plug (should be infinity ohms).	All continuity checks okay.
23	No or low PA current.		
24	Excessive RF output.	Unplug CX-10099 from RT and AM-3349 CONTROL jacks; then check continuity of pin C of one CX-10099 plug to other plug, pin C..	Zero ohms.
25	No AM-3349 keying (operate).		
26	No keying lock out.		
27	No AM-3349 blower with RT in STANDBY.	Unplug CX-10099 from RT and AM-3349 CONTROL jacks; then check continuity of pin N of one CX-10099 plug to other plug, pin N.	Zero ohms.

TASK

113-620-1006

Install/Reinstal Installation Kit MK-1373/GRC-106 in 1/4-Ton Utility Truck (4x4) M151

CONDITIONS

This task is performed in a tactical or nontactical situation, in a sheltered facility, under all weather conditions. This task is performed upon receipt of a new vehicle on which the radio set is to be mounted, on an existing vehicle when a new radio set is received, or on the return of an existing vehicle from direct support maintenance. You will be provided with the following:

1. Installation Kit MK-1373/GRC-106.
2. Tool Kit TK-101/G.
3. Multimeter AN/USM-223 or equivalent.
4. Special tools from common tool set of unit motor maintenance section.
   a. One 3/8-inch electric drill.
   b. One 1/16-inch to 3/8-inch drill bit set.
   c. Center punch.
   d. Chassis punch.
   e. One 50-foot extension cord.
   f. Hammer.
5. Truck, Utility $\frac{1}{4}$-ton M151.
6. TM 11-2300-351-15-1.
7. TM 11-5820-520-12.

STANDARDS

This task has been performed correctly when the Installation Kit MK-1373/GRC-106 has been installed and performance measures 1 through 6 have been completed.

PERFORMANCE MEASURES

1. Mark the place where holes are to be drilled by using the template or by positioning the components on the vehicle, one at a time. (Refer to TM 11-2300-351-15-1, chap 2, sec II, p 9, fig 2-4.)

2. Drill holes to specification outlined in mounting diagram. (Refer to TM 11-2300-351-15-1, chap 2, sec II, p 9, fig 2-4.)

3. Install Mounting Base MT-3140(*)/GRC-106. (Refer to TM 11-2300-351-15-1, chap 2, sec II, p 9, fig 2-4.)

4. Install antenna mount assembly. (Refer to TM 11-2300-351-15-1, chap 2, p 6, fig 2-1; TM 11-5820-520-12, chap 2, para 2, p 9, fig 2-4.)

5. Install all cables. (Refer to TM 11-2300-351-15-1, chap 2, sec II, p 9, fig 2-4.)

   a. Route all cables according to cabling diagram.

   b. Connect power cables (CX-10071/U) leads to vehicle battery.

6. Test voltage at the power cables for 27 volts dc ±3 between pins A and B or C and D.

REFERENCES

TM 11-2300-351-15-1, Installation of Radio Set AN/GRC-106 in Truck, ¼-Ton, 4x4, M151.

TM 11-5820-520-12, Operator's and Organizational Maintenance Manual: Radio Sets AN/GRC-106 and AN/GRC-106A.

TASK

113-620-3021

Evaluate the Operation of Radio Set AN/GRC-106(*)

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed as part of organizational quarterly maintenance; when an operator reports a malfunction, or as directed by your supervisor. You will be provided with the following:

1. Radio Set AN/GRC-106(*).
2. Radio operator to assist.
3. TM 11-5820-520-12.
4. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 25 minutes, the AN/GRC-106(*) has been evaluated, performance measures 1 through 6 have been completed, and DA Form 2404 has been completed and submitted to your supervisor.

PERFORMANCE MEASURES

CAUTION: Before you begin the evaluation, check to see that the assigned operator has performed the following:

Properly grounded the radio set.

Properly erected the whip antenna.

1. Prepare the power distribution for dc evaluation as follows: (Refer to TM 11-5820-520-12, chap 2, sec II, para 2-6, p 2-4.1.)

a. In the interest of safety, make the following initial adjustments:

(1) Turn the RT-662 or RT-834 SERVICE SELECTOR switch to OFF.

(2) Turn the AM-3349 PRIM PWR switch to OFF.

(3) Turn the AM-3349 HV RESET switch to OPERATE.

b. Check to see that all components are properly mounted and that all cables and accessories are properly connected.

CAUTION: To prevent damage to the radio set, be sure the whip antenna is properly connected to the AM-3349 WHIP antenna jack.

2. Check the operation of the dc power distribution.

a. Have assigned radio operator start the vehicle engine.

b. Adjust the vehicle engine throttle to maintain a meter needle indication in the GREEN portion of vehicle's GENERATOR gauge.

NOTE: When using a separate 3 KW dc generator set, adjust dc power output for 28V reading, on the scale. As loads are added, readjust reading to maintain 28 V dc.

3. Prepare the radio set for evaluation as follows: (Refer to TM 11-5820-520-12, chap 3, sec II, para 3-5, p 3-7.)

a. Preset the following RT-unit controls:

(1) Turn the SERVICE SELECTOR switch to OVEN ON.

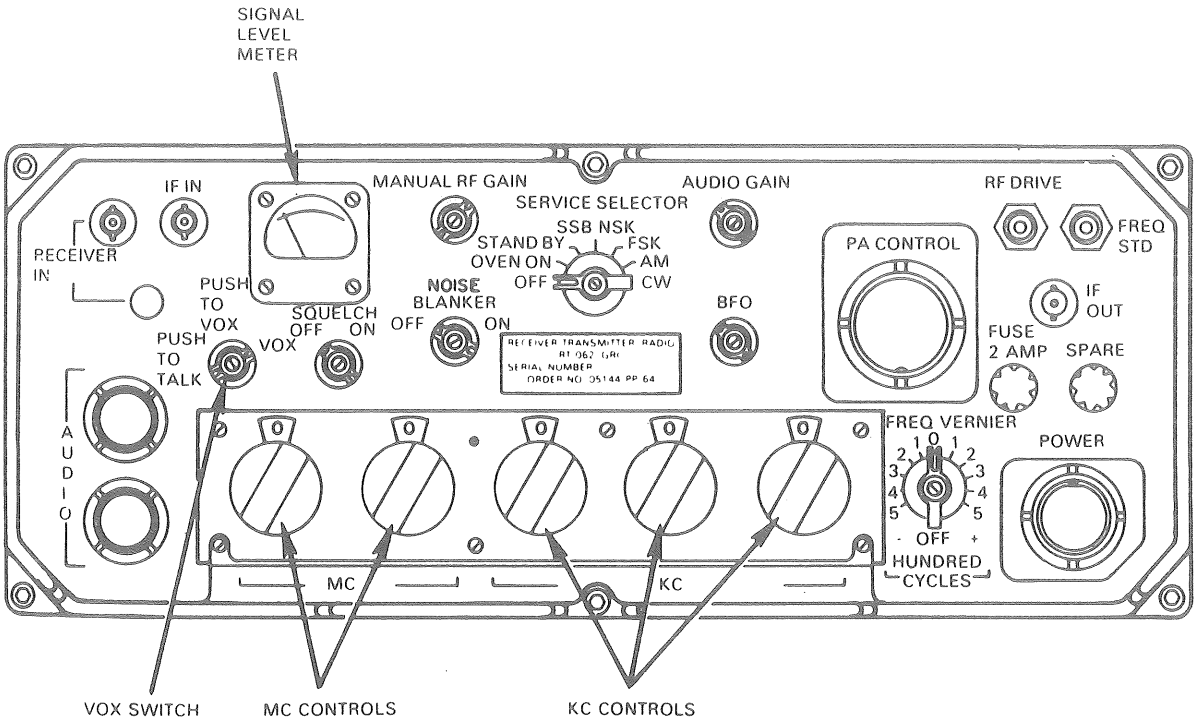
(2) Turn the MANUAL RF GAIN control fully clockwise.

(3) Turn the AUDIO GAIN control to approximately midrange.

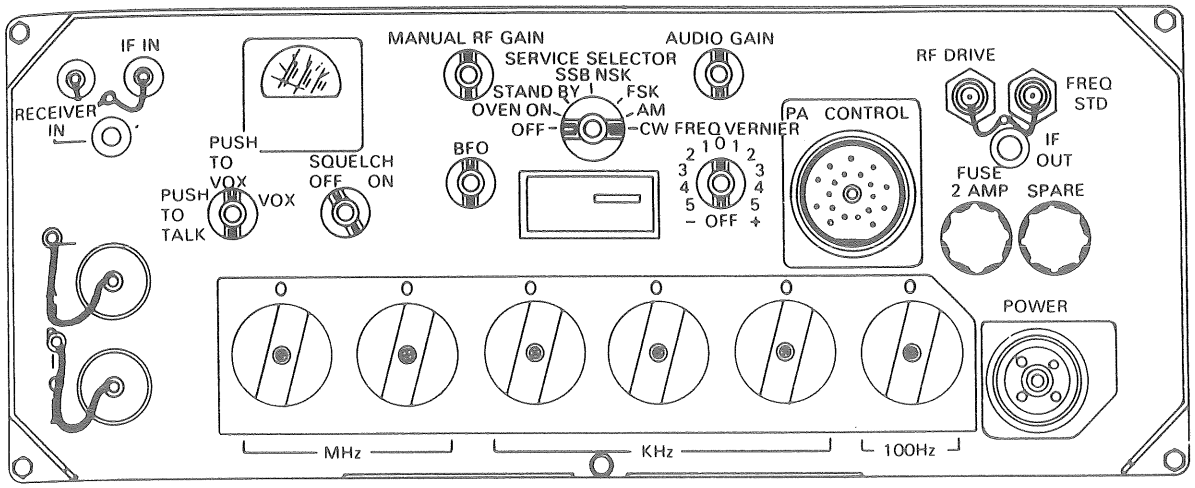
(4) Turn the VOX switch to PUSH TO TALK.

(5) Turn the SQUELCH switch to OFF.

(6) Turn the BFO control to approximately midrange.



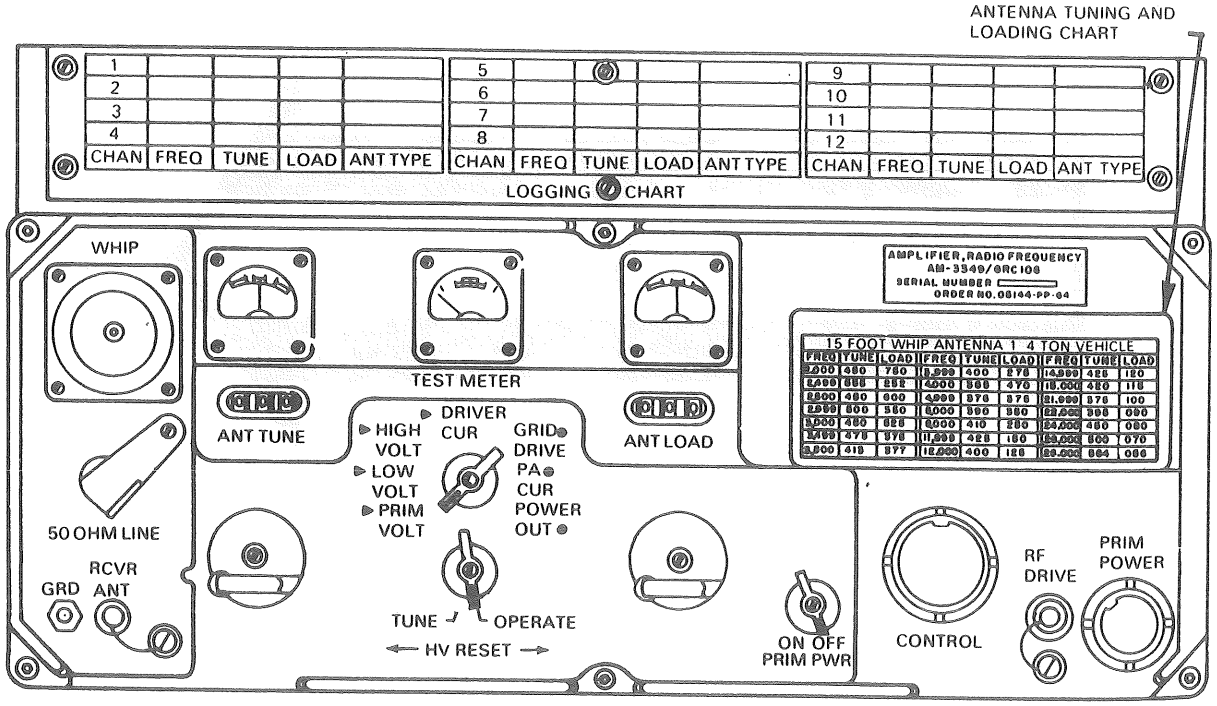
Receiver-Transmitter, Radio RT-834/GRC, controls, indicators, and connectors.



Receiver-Transmitter, Radio RT-662/GRC, controls, indicators, and connectors.

STEP	UNIT	CONTROL OR SWITCH POSITION	ACTION OR INDICATION
1	RT-662 GRC or RT-834 GRC	SERVICE SELECTOR switch OVEN ON	Allow a minimum of 10 minutes for warmup.
2	RT-662/GRC or RT-834 GRC	MANUAL RF GAIN control Fully clockwise	None
3	RT-662/GRC or RT-834 GRC	AUDIO GAIN control Approximately midrange	None
4	RT-662/GRC or RT-834 GRC	SQUELCH switch OFF	None
5	RT-662/GRC or RT-834 GRC	FREQ VERNIER control OFF	None
6	RT-662/GRC or RT-834 GRC	VOX switch PUSH TO TALK	None
7	RT-662/GRC or RT-834 GRC	BFO control Approximately midrange	None
8	RT-662/GRC	NOISE BLANKER OFF	None
9	AM-3349/GRC-106	HV RESET switch OPERATE	None
10	AM-3349/GRC-106	PRIM PWR switch OFF	None

Operator presets for Radio Set AN/GRC-106(*).



Amplifier, Radio Frequency AM-3349/GRC-106 controls, indicators, and connectors.

(7) Turn the FREQ VERNIER control to OFF.

(8) Tune the RT-unit to 2.5 MHz.

(9) Clean the handset audio plug contacts and the RT-unit AUDIO jack contacts (using a pencil erasure) and then connect the handset to the RT-unit AUDIO jack.

b. Preset the following AM-3349 controls:

(1) Turn the TEST METER switch to PRIM VOLT.

(2) From the AM-3349's antenna tuning and loading chart, for a whip antenna, determine the setting of the ANT TUNE and ANT LOAD controls for a frequency of 2.5 MHz. Adjust the controls according to the chart.

NOTE: If the RT-unit has a noise blanker, turn the NOISE BLANKER switch to OFF.

4. Check the operation of the radio set.

Chart 1. Equipment Performance Checklist for RT-Unit

NOTE: To stablize operation, a 10-minute warm-up is required.

WARNING: Dangerous voltages exist in this equipment. RF voltages as high as 10,000 volts exist when operating radio frequency amplifier AM-3349.

STEP	Function Checked	Action	Normal indication
1.	RT-unit input power	Turn RT SERVICE SELECTOR switch to STANDBY. (Allow 1 minute for warm-up.)	RT's signal level meter (SLM) should deflect upscale.
2.	Receiver rushing noise	Turn RT SERVICE SELECTOR switch to SSB/NSK.	SLM should return to 0, and normal rushing noise should be heard.
3.	RT-unit turret drive	Change position of RT MHz tuning control.	Turret drive motor should be heard as MHz control is turned.
	Remove RF coaxial cable from WHIP antenna jack of AM-3349.		
4.	Receive signal path.	Tap center contact of AM-3349 WHIP antenna jack with a wire. (Test lead)	Circuit disturbance should be heard at handset.

Step	Function checked	Action	Normal indication
5.	Preset the following: 1. Tune RT-unit to 4.9996 MHz. 2. Disconnect CG-409 cable from RT-unit RECEIVER IN jack.		
	SSB/NSK receive	a. Connect an RF cable between RT FREQ STD and RECEIVER IN jacks.	a. SLM should deflect deflect upscale.
		b. Vary RT's FREQ VERNIER control.	b. Audio note changing in pitch should be heard at handset.
6.	FSK and AM receive	Turn RT's SERVICE SELECTOR switch through FSK to AM.	At handset, audio note should be heard at FSK and AM positions.
NOTE:	Return FREQ VERNIER control to OFF (RT-834) or to +6 (RT-662).		
7.	CW receive and BFO	a. Turn RT's SERVICE SELECTOR switch to CW.	a. Audio note should be heard at handset.
		b. Vary setting of RT's BFO control.	b. At handset, pitch of audio note should vary.
8.	Speaker audio output	Connect a speaker to one of RT's AUDIO jacks.	Audio note should be heard at speaker.
9.	Preset the following: 1. Turn RT unit SERVICE SELECTOR switch to AM. 2. Unplug speaker from the RT-unit.		
	Squelch sensitivity	Turn RT's SQUELCH switch to ON.	No change in audio note should be heard at handset.
10.	Preset the following; 1. Unplug RF cable from receiver IN and FREQ STD jacks. 2. Tune RT-unit to your authorized frequency.		

Step	Function checked	Action	Normal indication
	Squelch control	Turn SQUELCH switch to OFF, then to ON, then to OFF.	At handset, rushing noise should be loudest when SQUELCH switch is in OFF position.
11	Push to Talk Keying	Press and release handset switch several times.	RT should key each time handset switch is pressed.
12	AM transmit	Press handset switch.	SLM should deflect upscale.
13	Turn RT unit SERVICE SELECTOR switch to SSB/NSK.		
	Modulation	Press handset switch, and then speak into micro-phone.	SLM should indicate modulation.
14	Turn RT unit VOX switch to PUSH TO VOX.		
	PUSH TO VOX keying	Press handset switch, and then speak into microp-phone.	RT should key when you speak into micro-phone.
15	Turn RT unit VOX switch to VOX.		
	VOX keying	Speak into microphone.	RT should key when you speak into micro-phone.
16.	Preset the following: 1. Turn RT unit's VOX switch to PUSH TO TALK. 2. Turn RT unit's SERVICE SELECTOR switch to CW.		
	CW transmit	Press handset switch	The SLM should deflect upscale and CW sidetone should be heard at handset. (BFO control may have to be varied to obtain a tone.)

Step	Function checked	Action	Normal indication
17	Preset the following: 1. Reconnect RF cable, CG-409, between RT unit RECEIVER IN jack and AM-3349 RCVR ANT jack. 2. Reconnect whip RF antenna lead in cable, CX-10171/U to whip jack at AM-3349. 3. Turn RT unit SERVICE SELECTOR switch to SSB/NSK. 4. Tune RT unit to 2.5 MHZ.		
	AM-3349 input power	Turn AM-3349 PRIM PWR switch to ON. CAUTION: If internal or external blower motors do not start, turn PRIM PWR switch to OFF.	AM-3349 blower motors should run. After 60 seconds, AM-3349 TEST METER should deflect to center scale.
18.	Keying and low volts	a. Turn AM-3349 TEST METER switch to LOW VOLT.	a. AM-3349 TEST METER pointer should return to zero.

CAUTION: When the AM-3349 HV RESET switch is turned to TUNE, tuning of the AM-3349 must be done within 2 minutes. (step 21)

		b. Turn AM-3349 HV RESET switch to TUNE.	b. AM-3349 TEST METER pointer should indicate within area of two dark green wedges (top scale). RT should key. (Rushing noise should be eliminated.) RT's SLM should deflect upscale.

CAUTION: If, when you do step 19 meter readings are erratic, turn PRIM PWR switch to OFF, and then check AM-3349 antenna connections.

Step	Function checked	Action	Normal indication
19.	Amplifier loading and turret synchronization for 2.5-, 3.5-, and 4.5- MHz.	a. Turn AM-3349 ANT LOAD control in direction necessary to bring AM-3349 ANT LOAD meter to center scale.	a. AM-3349 ANT LOAD meter pointer should adjust to center scale.
		b. While keeping AM-3349 ANT LOAD meter at center scale with AM-3349 ANT LOAD control, adjust ANT TUNE control until the AM-3349 ANT TUNE meter is at center scale.	b. AM-3349 ANT TUNE and ANT LOAD meters should adjust to center scale.
	Tune RT unit to 3.5 MHz.		
		c. Repeat actions of a and b above.	c. same as b. above.
	Tune RT unit to 4.5 MHz.		
		d. Repeat actions of a and b above.	d. same as b. above
20	High voltage	Turn AM-3349 TEST METER switch to HIGH VOLT.	AM-3349 TEST METER pointer should indicate within the area of the two dark green wedges (top scale).
21	Driver current	Turn AM-3349 TEST METER switch to DRIVER CUR.	AM-3349 TEST METER pointer should indicate within area of two dark green wedges (top scale).
22	Grid drive	Turn AN-3349 switch to GRID DRIVE.	AM-3349 TEST METER pointer should indicate just below gray wedges (bottom scale).

Step	Function checked	Action	Normal indication
23.	Power amplifier current	Turn AM-3349 TEST METER switch to PA CUR.	AM-3349 TEST METER pointer should indicate just below or in gray wedges (bottom scale).
24.	RF output power	Turn AM-3349 TEST METER switch to POWER OUT.	AM-3349 TEST METER pointer should indicate just below or in gray wedges (bottom scale).
25.	Turn AM-3349 HV RESET switch to OPERATE.		
	Keying mode	Key handset and then speak into microphone.	TEST METER should indicate RF output and modulation.
26.	Keying lockout	Change position of MHz tuning control and then press handset switch.	AM-3349 should NOT key.
27.	Radio set shutdown	a. Turn RT SERVICE SELECTOR switch to STANDBY.	a. Blowers of AM-3349 should continue to operate.
		NOTE: Before proceeding, wait 2 minutes for AM-3349 to cool.	
		b. Turn AM-3349 PRIM PWR switch to OFF.	b. AM-3349 should stop operating.
		c. Turn RT SERVICE SELECTOR switch to OFF.	c. RT should stop operating.

5. Record any symptoms or trouble on DA Form 2404.

6. Submit completed DA Form 2404 to your supervisor.

REFERENCES

TM 11-5820-520-12, Operator's and Organizational Maintenance Manual: Radio Sets AN/GRC-106 and AN/GRC-106A.

TASK

113-620-3022

Perform Organizational Monthly Preventive Maintenance on Radio Set AN/GRC-106(*)

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. Task is performed as scheduled on DD Form 314 or as directed by your supervisor. You will be provided with:

1. TM 11-5820-520-12.
2. Cleaning compound (Trichloroethane).
3. Multimeter AN/USM-223 or equivalent.
4. Tool Kit TK-101/G.
5. DA Form 2404.
6. Complete Radio Set AN/GRC-106(*).

STANDARDS

This task has been performed correctly when performance measures 1 through 3 have been completed, organizational monthly preventive maintenance checks and services have been performed, and all uncorrected faults have been recorded on DA Form 2404 and reported to your immediate supervisor.

PERFORMANCE MEASURES

1. Perform monthly preventive maintenance checks and services. (Refer to TM 11-5820-520-12, chap 5, sec I, para 5-4, p 5-1, and fig 1.)
2. Complete DA Form 2404.

Sequence No.	Item to be inspected	Procedure
1	Modification ----------	Check DA Pam 310-7 to determine if new applicable MWOs have been published. All URGENT MWOs must be applied immediately.
2	Completeness ----------	Insure that the equipment is complete.
3	Installation ----------	See that the equipment is properly installed. See that all bolts, nuts, and washers are correctly positioned and properly tightened.
4	Publications ----------	See that all publications are complete, serviceable, and current.
5	Mounting ----------	Inspect seating and stability of mounting. Check for loose or missing hardware.
6	Antenna ----------	Inspect the antenna for defects. Check to see if the whip section is bent or damaged. Warning: Do not perform repairs on an antenna while it is mounted.
7	Accessible pluck-out items	Check seating of lamps and fuses. Firmly seat if necessary.
8	Preservation ----------	Check all surfaces for evidence of fungus. Remove rust and corrosion, and spot-paint bare spots.
9	External blower (AM-3349/GRC-106)	Check the blower for cleanliness and effectiveness in exchanging air.
10	Operational check -------	Check the equipment by operating it.

Figure 1

3. Report all uncorrectable defects.

   a. Notify your immediate supervisor of all uncorrectable faults found.

   b. Submit completed DA Form 2404 to your supervisor.

REFERENCES

TM 11-5820-520-12, Operator's and Organizational Maintenance Manual: Radio Sets, AN/GRC-106 and AN/GRC-106A.

TASK

113-620-3028 (RC)

Perform Organizational Quarterly Preventive Maintenance on Radio Set AN/GRC-19

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. Task is performed when directed by your supervisor. You will be provided with:

1. Radio Set AN/GRC-19.
2. TM 11-5820-295-20.
3. Soft brush.
4. DA PAM 310-7.
5. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 30 minutes, you have performed organizational preventive maintenance on Radio Set AN/GRC-19; performance measures 1 through 3 have been completed; and all faults noted and corrective actions taken have been recorded on DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Perform quarterly maintenance checks and services. (Refer to TM 11-5815-295-20, chap 1.2, para 8.7, p 4 of ch 3.)
   a. Inventory components.
      (1) Identify missing components.
      (2) Identify damaged components.

b. Identify modification work orders that have not been applied.

c. Clean exterior surfaces.

d. Seat loose tubes and tighten loose lamp, fuses, crystals, and connectors.

e. Clean interior with soft brush.

f. Tape cut or frayed insulation on internal wiring.

g. Check Mounting MT-851/GRC-19.

(1) Tighten loose mounting bolts.

(2) Identify bent or broken mounting bracket.

h. Tape cut or frayed insulation of external cables.

i. Test operate radio set.

2. Record all faults noted and corrective action taken on a DA Form 2404.

3. Complete DA Form 2404 and give it to your supervisor.

REFERENCES

TM 11-5820-295-20, Organizational Maintenance For Radio Set, AN/GRC-19

DA PAM 310-7, Military Publications: US Army Equipment Index of Modification Work Orders

TASK

113-620-3036

Evaluate the Operation of Radio Set AN/PRC-74(*)

CONDITIONS

This task is performed in a tactical or nontactical situation under all weather conditions, and may be performed in an NBC environment. Task is performed when directed by your supervisor. You will be provided with:

1. Radio Set AN/PRC-74(*).

2. DA Form 2404.

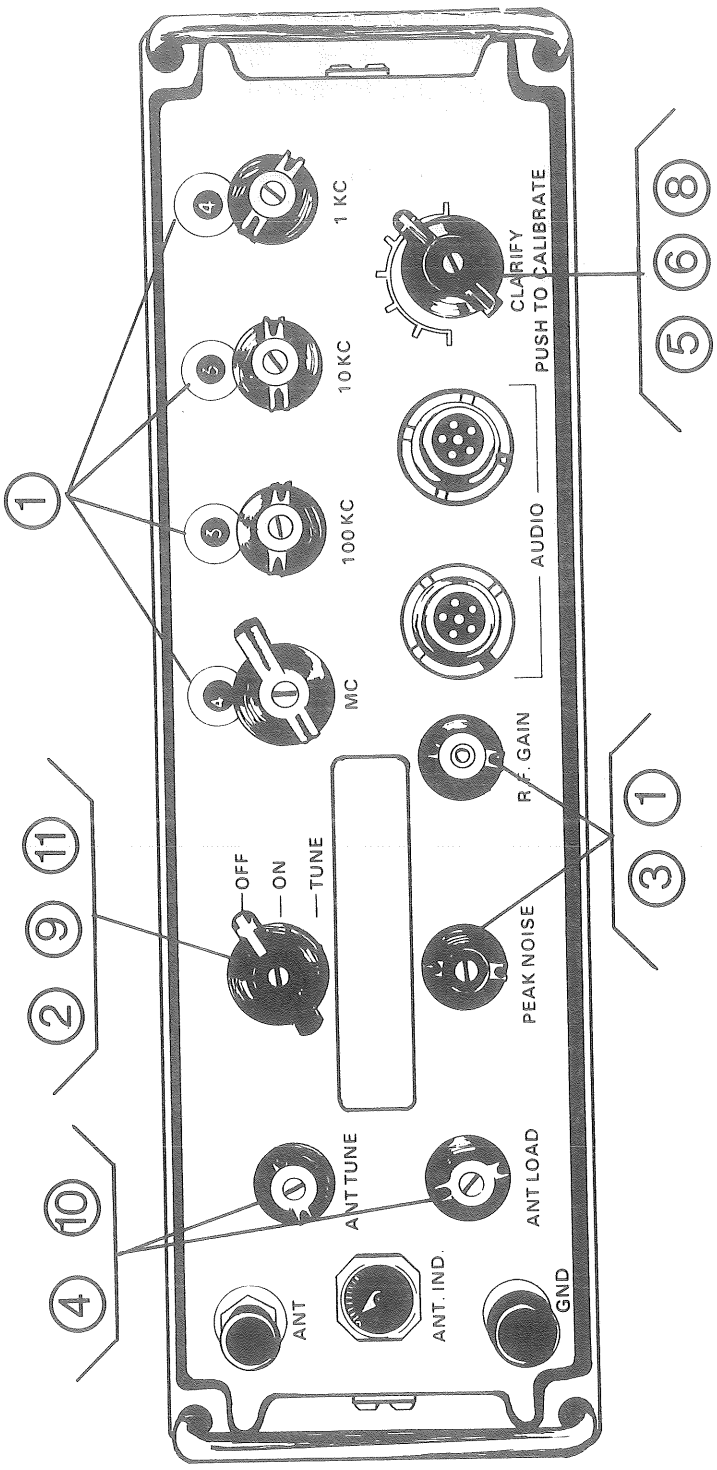
STANDARDS

Task has been performed correctly when, within 15 minutes, you have test operated Radio Set AN/PRC-74(*); performance measures 1 through 3 have been completed; and faults noted and corrective actions taken have been recorded on a DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

WARNING: Operator and maintenance personnel should be familiar with the requirements of TB SIG 291 before attempting installation or operation of equipment covered in this manual. Failure to follow requirements of TB SIG 291 could result in injury or DEATH.

1. Operate Radio Set AN/PRC-74(*) in Receive Mode.



Radio Set AN/PRC-74(*) operating controls.

Receive Mode:

a. Attach whip antenna mounting bracket to receiver-transmitter.

b. Install whip antenna and adjust to desired frequency range.

c. Attach lead wire from whip antenna to front panel ANT terminal.

d. Connect headset to either front panel AUDIO jack.

e. The numbers, (1) through (8) below, are the same as the numbers on the diagram.

(1) Set front panel MHz, 100 kHz, 10 kHz, and 1 kHz selector knobs to the desired frequency.

(2) Turn OFF-ON-TUNE switch to ON position.

(3) Set RF GAIN control to maximum and adjust PEAK NOISE control for a definite, noticeable increase in noise heard in the headset.

(4) Set ANT TUNE to midrange and ANT LOAD for maximum noise heard in headset.

(5) Press in CLARIFY/PUSH TO CALIBRATE knob and adjust so that a zero beat condition is observed in the headset.

(6) Release the CLARIFY/PUSH TO CALIBRATE knob and reset the pointer to midscale.

(7) Set RF GAIN control for desired volume of received signal.

(8) Adjust CLARIFY knob so that quality of received voice signals is natural.

WARNING: AVOID RF BURNS. Do not touch the antenna when the radio set is being tuned or is transmitting.

CAUTION: Do not attempt to tune the radio set without a suitable antenna connected. Remember that during tuning, the radio set transmits a signal and therefore breaks radio silence.

CAUTION: Do not use whip antenna at 3.5 MHz or below.

2. Operate Radio Set, AN/PRC-74(*), in transmit mode.

Transmit Mode:

a. Perform steps outlined above, do not perform steps (7) and (8) if no received signal is present.

b. Connect either microphone or key (depending on mode of operation desired) to the remaining audio jack.

c. The numbers, (9) through (11) below, are the same as the numbers on the diagram.

(9) Turn OFF-ON-TUNE switch to the TUNE position and listen for tone in headset.

(10) Adjust ANT TUNE knob to mid position. Adjust ANT LOAD knob until a maximum reading is obtained on ANT IND meter. Adjust ANT TUNE knob until a maximum reading is obtained on ANT IND meter.

(11) Release OFF-ON-TUNE knob and allow to return to ON position.

NOTE: Repeat step c each time transmitting frequency is changed.

d. Press microphone button and speak directly into the microphone.

3. Prepare DA Form 2404 for any uncorrected faults and report to your immediate supervisor.

REFERENCES

None.

TASK

113-620-3037

Perform Organizational Monthly Preventive Maintenance Checks and Services on Radio Set AN/PRC-74(*)

CONDITIONS

This task is performed in a tactical or nontactical situation under all weather conditions, and may be performed in an NBC environment. Task is performed when directed by your supervisor. You will be provided with:

1. Radio Set AN/PRC-74(*).
2. TM 11-5820-590-12-1.
3. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 30 minutes, you have performed organizational monthly preventive maintenance checks and services on Radio Set AN/PRC-74(*) and performance measures 1 and 2 have been completed.

PERFORMANCE MEASURES

1. Perform monthly preventive checks and services.
   a. Perform checks in weekly preventive maintenance checks and services chart. (Refer to Chart No. 1 and TM 11-5820-590-12-1, chap 4, para 4-5, p 4-2.)

CHART 1

SEQUENCE NO	ITEMS TO BE INSPECTED	PROCEDURE
1	Exterior	Check all equipment surfaces for rust surfaces and corrosion. Clean as required.
2	Cables	Check power supply and battery charger cables for cuts, cracks, fraying, deterioration, or corrosion. Refer to higher category of maintenance as required.
3	Connectors	Check all equipment connectors for evidence of damage to connectors of pins. Refer to higher category of maintenance as required.
4	Antenna kit	Checks antennas for evidence of kinks, breaks, or strain. Refer to higher category of maintenance as required.
5	Batteries	Check for evidence of condensation, metallic dust, or corrosion. Clean as required.

b. Perform checks in monthly preventive maintenance checks and services chart. (Refer to Chart No. 2 and TM 11-5820-590-12-1, chap 5, sec II, para 5-5, p 5-2.)

2. Prepare DA Form 2404 for any uncorrected faults and report to your immediate supervisor.

CHART 2

Sequence No.	Items to be Inspected	Procedure
1	Exterior	Check all equipment surfaces for evidence of fungus, rust, corrosion, and other foreign materials. Spot paint bare spots.
2	Knobs, dials, and switches	Observe that the mechanical action of each knob, dial, and switch is smooth, and free of external or internal binding. Replace lost or defective knobs as required.
3	Fuses	Check for blown or damaged fuses. See that all operating fuses are of the proper values. Replace as required.
4	Cables and connections	Check all cables for breaks, cracks, and damage to connectors. Clean all module connections and plugs, and check for damage to pins or connectors.
5	Battery cases	Check interiors of battery cases for evidence of water leakage, condensation, and corrosion. Clean as required.
6	Batteries	Test batteries under load. Wet battery voltage is between 11 and 17 volts. Charge as required. Dry battery voltage should be at least 11 volts.

REFERENCES

TM 11-5820-590-12-1, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tool Lists): Radio Sets, AN/PRC-74B and AN/PRC-74C; Power Supplies PP-4514/PRC-74 and PP-4514A/PRC-74; Battery Boxes, CY-6121/PRC-74, CY-6314/PRC-74 and CY-6314A/PRC-74.

TASK

113-620-3038

Perform Organizational Quarterly Preventive Maintenance Checks and Services on Radio Set AN/PRC-74(*)

CONDITIONS

This task is performed in a tactical or nontactical situation under all weather conditions and may be performed in an NBC environment. Task is performed when directed by your supervisor. You will be provided with:

1. Radio Set AN/PRC-74(*).
2. TM 11-5820-590-12-1.
3. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 30 minutes, you have performed organizational quarterly preventive maintenance checks and services on Radio Set AN/PRC-74(*), and performance measures 1 and 2 have been completed.

PERFORMANCE MEASURES

1. Perform quarterly preventive maintenance checks and services.
   a. Perform checks in weekly preventive maintenance checks and services chart. (Refer to Chart No. 1 and TM 11-5820-590-12-1, chap 4, para 4-5, p 4-2.)
   b. Perform checks in monthly preventive maintenance checks and services chart. (Refer to Chart No. 2 and TM 11-5820-590-12-1, chap 5, sec II, para 5-5, p 5-2.)
   c. Perform checks in quarterly preventive maintenance checks and services chart. (Refer to Chart No. 3 and TM 11-5820-590-12-1, chap 5, sec II, para 5-6, p 5-2.)

2. Prepare DA Form 2404 for any uncorrected faults and report to your immediate supervisor.

CHART 1

Sequence No.	Items to be Inspected	Procedure
1	Exterior	Check all equipment surfaces for rust surfaces and corrosion. Clean as required.
2	Cables	Check power supply and battery charger cables for cuts, cracks, fraying, deterioration, or corrosion. Refer to higher category of maintenance as required.
3	Connectors	Check all equipment connectors for evidence of damage to connectors or pins. Refer to higher category of maintenance as required.
4	Antenna kit	Check antennas for evidence of kinks, breaks, or strain. Refer to higher category of maintenance as required.
5	Batteries	Check for evidence of condensation, metallic dust, or corrosion. Clean as required.

CHART 2

Sequence No.	Items to be Inspected	Procedure
1	Exterior	Check all equipment surfaces for evidence of fungus, rust, corrosion, and other foreign materials. Spot paint bare spots.
2	Knobs, dials, and switches	Observe that the mechanical action of each knob, dial, and switch is smooth, and free of external or internal binding. Replace lost or defective knobs as required.
3	Fuses	Check for blown or damaged fuses. See that all operating fuses are of the proper values. Replace as required.
4	Cables and connections	Check all cables for breaks, cracks, and damage to connectors. Clean all module connections and plugs, and check for damage to pins or connectors.
5	Battery cases	Check interiors of battery cases for evidence of water leakage, condensation, and corrosion. Clean as required.
6	Batteries	Test batteries under load. Wet battery voltage is between 11 and 17 volts. Charge as required. Dry battery voltage should be at least 11 volts.

CHART 3

Sequence No.	Items to be Inspected	Procedure
1	Completeness	Insure that the equipment is complete
2	Installation	Insure that the equipment is properly installed
3	Cleanliness	Insure that the equipment is clean
4	Preservation	Check all surfaces for evidence of fungus. Remove rust and corrosion, and spot paint bare spots.
5	Publications	Insure that all publications are complete, serviceable, and current.
6	Modifications	Check DA Pam 310-4 to determine whether new applicable MWOs have been published. All URGENT MWOs must be applied immediately. All NORMAL MWOs must be scheduled.
7	Mounting	Insure that all bolts, nuts, and washers are correctly positioned and properly tightened.
8	Spare parts	Check all spare parts (operator and organizational) for general condition and method of storage. There should be no evidence of overstock, and all shortages must be on valid requisitions.
		Receiver-Transmitter Radio RT-794B/PRC-74
9	Operational check	Operate the rt unit as specified in paragraphs 3-2 and 3-3 of TM 11-5820-590-12-1.
		Power Supply PP-4514/PRC-74
10	External power supply operational check	Connect the rt unit to the external power supply as outlined in paragraph 2-3b or c of TM 11-5820-590-12-1 (depending on the source power available). Perform the procedures specified in paragraph 3-2a and b of TM 11-5820-590-12-1.
11	Battery charger operational check	Operate the battery charger as outlined in paragraph 3-6 of TM 11-5820-590-12-1.

REFERENCES

TM 11-5820-590-12-1, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): Radio Sets, AN/PRC-74B and AN/PRC-74C; Power Supplies PP-4514/PRC-74 and PP-4514A/PRC-74; Battery Boxes, CY-6121/PRC-74, CY-6314/PRC-74 and CY-6314A/PRC-74.

TASK

113-622-0005

Systems Troubleshoot Intercommunication Set AN/VIC-1(V) to a Defective Circuit

CONDITIONS

This task is performed in a tactical or nontactical situation under all weather conditions and may be performed in an NBC environment. This task is done when a crew chief of a vehicle (usually a combat vehicle) reports intercom problems or as directed by your supervisor. Your supervisor will provide you with the following:

1. A tactical or combat vehicle equipped with a defective intercommunications Set AN/VIC-1(V).
2. Handset H-189 or equivalent.
3. DA Form 2404.

STANDARDS

This task has been done correctly when, within 20 minutes you have completed systems troubleshooting of the AN/VIC-1(V) to a defective circuit; completed performance measures 1 through 9 below; identified and entered on a DA Form 2404 the defective circuit information, and given the completed DA Form 2404 to your supervisor.

PERFORMANCE MEASURES

1. Make initial adjustment according to paragraph 1 of chart 1.
2. Verify the installation of the vehicles communication system according to paragraph 2 of chart 1.
3. Preset the communication system controls according to paragraph 3 of chart 1.

4. Complete the communications system cabling according to paragraph 4 of chart 1.

5. Check the operation of the intercommunication set.

NOTE: For some combat vehicles, the master panel power switch, turret power switch, and MX-7777 circuit breaker must be turned on before doing the Equipment Performance Checklist (EPC).

CHART 1
OPERATIONAL CHECK FOR INTERCOMMUNICATION SET AN/VIC-1(V) IN COMBINATION WITH A TACTICAL FM RADIO SET

1. INITIAL ADJUSTMENT

a. When radio set is part of installation, turn *all* radio set power switch(es) to OFF.
b. Set AM-1780 POWER CKT BKR at OFF and turn its MAIN PWR to OFF

2. INSTALLATION

Refer to radio set's technical manual to install or verify installation of all components and cables. At this time, DO NOT connect audio accessories.

3. PRESET CONTROLS

a. Set AM-1780 INT ACCENT at OFF.
b. Turn AM-1780 RADIO TRANS to CDR + CREW.
c. Set AM-1780 INSTALLATION SWITCH as follows:
   - When operating power is applied to J508 (no radio mount), turn to INT ONLY.
   - When operating power is from MT-1029, turn to OTHER.
   - For relay radio set, turn to RETRANS.
d. Make sure AM-1780 lamp lens cover is open (counterclockwise to stop).
e. When a C-2297 is part of installation, turn its signal switch OFF.

4. CABLING

a. When radio set is part of installation, check that the antenna system (or dummy antenna load) is connected to RT units.
b. A handset (e.g., H-189) is required to check operation of this communications system. Check that the handset is good and its audio plug contacts are clean.

Note. Before connecting handset's audio plug to a component jack, clean jack contacts.

c. If required, insert DC power plug into DC outlet.

6. Record on DA Form 2404 all abnormal indications observed when doing the Equipment Performance Checklist (EPC) as follows:

   a. In column a, record the EPC step number that, when done, produced an abnormal indication.

   b. In column c, to the right of the EPC step number, write a brief description of the abnormal indications.

   EXAMPLE:

TM ITEM NO. a.	STATUS b	DEFICIENCIES AND SHORTCOMINGS c	CORRECTIVE ACTION d	INITIAL WHEN CORRECTED e
2a		With handset keyed,		
		AM-1780 Relays don't click		
2b		No CDR Box sicktone		

7. Analyze the abnormal indications recorded in column c of DA Form 2404 and classify the problem to one of the following circuits: (Refer to EPC function column of chart 1.)

   a. Intercom power input circuit (step 1).

   b. Intercom keying circuit (steps 2a, 2c, 3a, 3c, 4a, 4c, and 6a).

   c. Intercom talk/listen circuit (steps 2b, 3b, 4b, and 6b).

   d. C-2297 and C-2296 signaling circuit (step 5).

   e. Radio remote/intercom return power circuit (steps 7, 16, and 17).

   f. "A" RT muted monitoring circuit (step 8a).

   g. "A" RT unmuted monitoring circuit (step 8d).

h. "A" RT keying circuit (steps 8b, 8c, 9c, and 12).

i. "A" RT modulation circuit (steps 8c and f).

j. "B" Receiver muted monitoring circuit (step 9a).

k. "B" Receiver unmuted monitoring circuit (step 9b).

l. "C" Receiver muted monitoring circuit (step 10a).

m. "C" Receiver unmuted monitoring circuit (step 10b).

n. "C" RT muted monitoring circuit (step 11a).

o. "C" RT unmuted monitoring circuit (step 11b).

p. "C" RT keying circuit (step 11c).

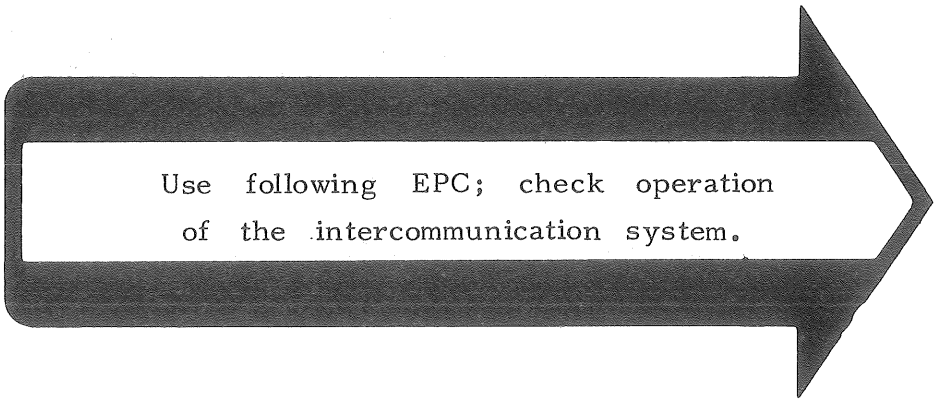
q. "C" RT modulation circuit (step 11d).

r. Commander (CDR) only RT keying circuit (steps 13a and 14b).

s. Listing silence circuit (steps 13b and 14a).

t. Intercom accent circuit (step 15).

EQUIPMENT PERFORMANCE CHECKLIST (EPC)



5. EQUIPMENT PERFORMANCE CHECKLIST (EPC)
Using following EPC, check operation of the intercommunication system.

Step	Function	Action	Normal Indication	Notes
1	Intercom input power	At AM-1780:	AM-1780 POWER lamp should:	
		a. Set POWER CKT BKR at ON.	a. Not light.	
		b. Turn MAIN PWR to INT ONLY.	b. Light.	
2	**DIRECTIONS.** 1. Connect handset to Commander's box INT jack (yellow band). 2. Turn Commander's box VOLUME fully clockwise (maximum).			
	Commander's:	At Commander's box:	For each position of MONITOR switch:	
	a. Intercom keying.	a. Key handset.	a. AM-1780 relays should click.	
	b. Intercom talk/listen	b. Speak into mike.	b. Sidetone should be heard.	
	DIRECTIONS. 1. Move handset to RAD jack. 2. Turn MONITOR to INT ONLY.			
	c. INT ONLY keying, talk/listen	c. Key handset; speak into mike.	c. AM-1780 relays should click; sidetone should be heard.	
3	**DIRECTIONS.** 1. When installation *does not* have crewmember boxes, skip step 3; go to step 4. 2. When installation has crewmember boxes, in turn, one at a time, check crewmember intercom according to step 3. a. Move handset to crewmember's box INT jack (yellow band). b. Turn crewmember's box VOLUME fully clockwise (maximum).			
	Crewmember's	At each crewmember box:	For each position of MONITOR switch, *except C*:	
	a. Intercom keying.	a. Key handset.	a. AM-1780 relays should click.	
	b. Intercom talk/listen	b. Speak into mike.	b. Sidetone should be heard.	
	DIRECTIONS. 1. Move handset to RAD jack. 2. Turn MONITOR to INT ONLY.			
	c. INT ONLY keying, talk/listen	c. Key handset; speak into mike.	c. AM-1780 relays should click; sidetone should be heard.	

Step	Function	Action	Normal Indication	Notes
4	**DIRECTIONS.** 1. Move handset to Driver's box INT jack (yellow band). 2. Turn Driver's box VOLUME fully clockwise (maximum). 3. When Driver's box is C-2297, signal switch should be OFF. *NOTE.* For M-109's check intercom for ALL position, of MONITOR switch only.			
	Driver's:	At Driver box:	For each position of MONITOR switch, *except C*:	
	a. Intercom keying.	a. Key handset.	a. AM-1780 relays should click.	
	b. Intercom talk/listen	b. Speak into mike.	b. Sidetone should be heard.	
	DIRECTIONS. 1. Move handset to RAD jack. 2. Turn MONITOR to INT ONLY.			
	c. INT ONLY keying, talk/listen	c. Key handset; speak into mike.	c. AM-1780 relays should click; sidetone should be heard.	
5	**DIRECTIONS.** 1. When Driver's box is C-2298, 2. When Driver's box is C-2297, make sure lamp lens is open (counterclockwise to stop) and complete step 5 and 6.			
	C-2297 signaling	Turn signal switch as follows:	Signal lamp should:	
		a. OFF.	a. Not light.	
		b. EXT.	b. Light.	
		c. SIG.	c. Light (see note below).	
	Note. SIG position also checks C-2296 signal lamp. **DIRECTION.** Return C-2297 signal switch to EXT.			
6	**DIRECTION.** Turn C-2296 VOLUME fully clockwise (maximum).			
	C-2296:	At C-2296:	With C-2296 switch at INT:	
	a. Intercom keying.	a. Key H-207	a. AM-1780 relays should click.	
	b. Intercom talk/listen	b. Speak into mike.	b. Sidetone should be heard.	

Step	Function	Action	Normal Indication	Notes
7	**DIRECTIONS.** 1. When system includes a radio set, complete this step. 2. When system is an intercom only, go to step 17.			
	Radio remote and intercom return power.	a. At radio set, turn all power switches ON.	a. Radio components should *not* come on.	
		b. Slowly turn AM-1780 MAIN PWR to NORM.	b. AM-1780 POWER lamp should momentarily go off (blink); then it and radio set should come on.	
1	**DIRECTIONS.** Preset *all* radio components: a. SQUELCH to ON. b. VOLUME fully clockwise (maximum). c. Tune to *unassigned* frequency. d. Install wattmeter to *A* RT.			
2	Move handset from Driver's box to Commander box's RAD jack; then turn VOLUME fully clockwise (maximum).			
8	*A* RT:	At control box:		
	a. Muted monitoring	a. Turn MONITOR to *ALL*; then turn *A* RT's SQUELCH OFF.	a. *Loud* rushing noise should be heard.	
	b. RT keying (*ALL* position)	b. Key handset.	b. *A* RT's relays should click; RF signal should be indicated.	
	c. Modulation (*ALL* position)	b. Speak into mike.	c. Voice sidetone should be heard.	
	d. Unmuted monitoring	d. Turn MONITOR to *A*.	d. Rushing noise should be heard.	
	e. RT keying (*A* position)	e. Key handset.	e. Same as b above.	
	f. Modulation (*A* position)	f. Speak into mike.	f. Same as c above.	
	DIRECTIONS. 1. Return *A* RT's SQUELCH to ON. 2. When system includes but *one RT* (e.g., AN/VRC-43, -46 or AN/VRC-64), in turn, one at a time; *check each control box:* a. Connect handset to RAD jack of control box to be checked. b. Turn control box's VOLUME fully clockwise (maximum). c. At each control box, except for C-2296, repeat step 8 above; then go to step 12. 3. When system includes *auxiliary receivers* (e.g., AN/VRC-12, -44, -47, -48) *go to step 9 below.* 4. When system includes a *second RT* (e.g., AN/VRC-45, -49) skip steps 9 and 10, *go to step 11 below.*			

Step	Function	Action	Normal Indication	Notes
9	*B* receiver:	At control box:		
	a. Muted monitoring	a. Turn MONITOR to *ALL*; then turn *B* receiver's SQUELCH OFF.	a. *Loud* rushing noise should be heard.	
	b. Unmuted monitoring	b. Turn MONITOR to *B*.	b. Rushing noise should be heard.	
	c. *A* RT keying (*B* position)	c. Key handset.	c. *A* RT's relays should click; RF signal should be indicated.	
	DIRECTIONS. 1. Return *B* receivers SQUELCH to ON. 2. When system includes *one RT and one auxiliary receiver* (e.g., AN/VRC-12, -47), in turn, one at a time, *check each control box:* a. Connect handset to RAD jack of control box to be checked. b. Turn control box's VOLUME fully clockwise (maximum). c. At each control box, except for C-2296, repeat steps 8 and 9; then go to step 12. 3. When system includes a *second auxiliary receiver* (e.g., AN/VRC-44, -48); *go to step 10 below.*			
10	*C* receiver:	At control box:		
	a. Muted monitoring	a. Turn MONITOR to ALL; then turn C receiver SQUELCH OFF.	a. Loud rushing noise should be heard.	
	b. Unmuted monitoring	b. Turn MONITOR to *C*.	b. Rushing noise should be heard.	
	DIRECTIONS. 1. Return *C* receiver's SQUELCH to ON. 2. When system includes *one RT and two auxiliary receivers* (e.g., AN/VRC-44, -48), in turn, one at a time, *check each control box:* a. Connect handset to RAD jack of control box to be checked. b. Turn control box's VOLUME fully clockwise (maximum). c. At each control box, except for C-2296, repeat steps 8, 9, and 10; then go to step 12.			
11	**DIRECTION.** Move dummy antenna lamp (wattmeter) from *A* RT to *C* RT.			
	C RT:	At control box:		
	a. Muted monitoring	a. Turn MONITOR to ALL; then turn *C* RT's SQUELCH OFF.	a. Loud rushing noise should be heard.	
	b. Unmuted monitoring	b. Turn MONITOR to *C*.	b. Rushing noise should be heard.	

Step	Function	Action	Normal Indication	Notes
11 cont	c. RT keying (*C* position)	c. Key handset.	c. *C* RT relays should click; RF signal should be indicated.	
	d. Modulation	d. Speak into mike.	d. Voice sidetone should be heard.	
	DIRECTIONS. 1. Return *C* RT's SQUELCH to ON. 2. When system includes *two RTs* (e.g., AN/VRC-45; -49), in turn, one at a time, *check each control box*: a. Connect handset to RAD jack of control box to be checked. b. Turn control box's VOLUME fully clockwise (maximum). c. At each control box, except C-2296, repeat steps 8 and 11; then go to step 12.			
12	**DIRECTIONS.** 1. Move handset to Driver's control box RAD jack. 2. Turn Driver's MONITOR to *ALL*. 3. When Driver's box is C-2298, skip the rest of this step; go to step 13. 4. When Driver's box is C-2297, go to C-2296 and complete this step.			
	A RT keying	At C-2296, hold switch in RAD; then key H-207.	*A* RT should key.	
13	**DIRECTION.** Turn AM-1780 RADIO TRANS to CDR ONLY; then return to Driver's box.			
	Driver's radio keying:	At Driver's box:	*A* RT should:	
	a. CDR ONLY RT keying	a. Key handset.	a. *Not* key.	
	DIRECTION. Turn AM-1780 RADIO TRANS to LISTENING SILENCE.			
	b. No RT keying	b. Key handset.	b. *Not* key.	
14	**DIRECTIONS.** 1. Move handset to Commander's control box RAD jack. 2. Turn Commander's MONITOR to *ALL*.			
	Commander's radio keying:	At Commander's box:	*A* RT should:	
	a. No RT keying	a. Key handset.	a. *Not* key.	
	DIRECTION. Turn AM-1780 RADIO TRANS TO CDR ONLY.			
	b. CDR ONLY RT keying.	b. Key handset.	b. Key.	

Step	Function	Action	Normal Indication	Notes
15	**DIRECTIONS.** 1. Move handset to Commander's box INT jack (yellow band). 2. Turn Commander's box VOLUME fully clockwise (maximum). 3. Turn AM-1780 INT ACCENT to ON. 4. Turn *A* RT's SQUELCH OFF.			
	Intercom Accent	At Commander's box:		
		Key handset.	Rushing noise should decrease.	
DISTANCE CHECK. The final check of a communication system that contains a radio set is a distance check. To do this check, place the radio set in its operational environment and establish communications with a test station located the prescribed (planning) distance away.				
16	Radio remote power.	Turn *A* radio's main power OFF.	All radio components and AM-1780 should go off.	
17	Intercom power.	Slowly turn AM-1780 MAIN PWR to OFF.	AM-1780 POWER lamp should blink on then off.	
DIRECTION. Set AM-1780 POWER CKT BKR at OFF.				

8. Record in column d of DA Form 2404 the probable defective circuit (determined in 7 above).

EXAMPLE:

TM ITEM NO. a.	STATUS b	DEFICIENCIES AND SHORTCOMINGS c	CORRECTIVE ACTION d	INITIAL WHEN CORRECTED e
		Both TTYs Run open and	Replaced	
		No (ØA) TTY Loop Current	W14, EX-10517/G (4ft)	
		exists	NSN 5995-00-937-8467	HS

9. Return your DA Form 2404 to your supervisor.

REFERENCES

None.

TASK

113-622-0006

Systems Troubleshoot Radio Set Control Group AN/GRA-39(*) to a Defective Component, Cable, or Accessory

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when you have received a report of failure or as directed by your supervisor. You will be provide with the following items:

1. Radio Set Control Group AN/GRA-39(*) with an FM radio set.
2. Multimeter AN/USM-223 or equivalent.
3. Tool Kit TK-101/G.
4. An operator at local and remote site.
5. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 30 minutes, you have performed systems troubleshooting on Radio Set Control Group AN/GRA-39(*); completed performance measures 1 through 3; and DA Form 2404 has been completed and submitted to your supervisor.

PERFORMANCE MEASURES

1. Evaluate the operation of the AN/GRA-39(*) Radio Control Group. (Refer to task 113-622-3009 of this Manual.)
2. Find the abnormal indication(s) you entered in column c of DA Form 2404 on the Troubleshooting Chart, Table 1, and then follow the chart to find the faulty item.

TROUBLESHOOTING CHART
(TABLE 1)

	ABNORMAL INDICATOR	ACTION	INDICATOR	DEFECTIVE ITEM OR DIRECTION
1	No radio rush noise	Circuit disturb pins A & B of the handset audio plug (RX1)	No clicks Clicks	Defective handset Defective radio
2	No radio keying	Check continuity, pin A to C of handset audio plug: Make sure the push-to-talk switch is pressed. (RX1)	Zero Ø ohms Infinity ohms	Defective radio Defective handset
3	No radio sidetone	Circuit disturb pins A & D of the handset audio plug: Make sure the push-to-talk switch is pressed. (RX1)	No clicks Clicks	Defective handset Defective radio
4	No rushing noise at local	Clean audio plug & jack contacts with a pencil erasure. Make sure audio plugs are properly seated.	No rush Noise	Defective local control unit
5	No rushing noise at local	Turn power switch off & then back ON	No rush Noise	Defective local control unit
6	No radio keying from local	Measure the battery voltage at the local control unit. (10 vdc)	Above 6.6 vdc Below 6.6 vdc	Defective local control unit Defective battery(ies)
7	No local sidetone	Hold the mode switch in the radio position, key handset; then speak into microphone	No sidetone	Defective local control unit
8	No local sidetone	Hold the mode switch in the TEL position; key handset; then speak into microphone	No sidetone	Defective local control unit
9	No buzz sidetone in local handset	Measure the ac ring voltage at the line binding post. (50 vac)	No ac reading ac reading	Defective local control unit Reconnect WD-1 & go to the remote control unit; see step #13

	ABNORMAL INDICATOR	ACTION	INDICATOR	DEFECTIVE ITEM OR DIRECTION
10	Buzz sidetone is heard. remote does not answer	Have the local operator stand by while you go to the remote control unit for further troubleshooting		Go to step 14
11	No buzzer at the local unit	Check to see if you hear the buzzer signal in the local handset when the remote operator presses his ringer	Heard None heard	Defective local control unit Defective remote control unit
12	No radio keying from remote	Measure the incoming 3900 cps at the line binding post of the local control unit. (2.5 vac)	Voltage present No voltage present	Defective local control unit Defective remote control unit
13	No buzz sidetone in handset good reading at line binding post, step #9	Disconnect the WD-1 field wire from the remote line binding post & make a continuity check of the wire. (RX100)	More than Ø, less than infinity Ø or infinity	Defective remote control unit Defective WD-1 field wire
14	From step #10	Put the remote mode switch in the TEL position, key the handset, speak into the microphone and check your sidetone	Sidetone No sidetone	Defective remote control unit. (buzzer) Go to step #15
15	No remote sidetone step #14	Circuit disturb pins A & B of the remote handset audio plug. (RXI)	No clicks Clicks	Defective handset See step #16
16	From step #15	Circuit disturb pins A & D of the handset audio plug. (RX1) NOTE: Press & release the push-to-talk switch to hear the clicks.	No clicks Clicks	Defective handset Defective remote control unit

3. Enter in column d of the DA Form 2404 the faulty item discovered in performance measure 2. Then give the DA Form 2404 to your immediate supervisor.

REFERENCES

None.

TASK

113-622-3007

Perform Organizational Quarterly Preventive Maintenance on Intercommunication Set AN/VIC-1(V)

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed as scheduled or when directed by your supervisor. You will be provided with:

1. AN/VIC-1(V) installed in a tracked vehicle.
2. TM 11-5830-340-12.
3. DA PAM 310-7.
4. Tool Kit TK-101.
5. Graphite grease.
6. Insulating silicone compound.
7. DA Form 2404.

STANDARDS

Task has been performed correctly when, within 30 minutes, performance measures 1 through 3 have been completed; quarterly preventive maintenance has been performed; and all faults and corrective actions taken have been recorded on DA Form 2404 and given to your supervisor.

PERFORMANCE MEASURES

1. Check DA PAM 310-7 to see whether modification work orders are required for AN/VIC-1(V) components. (Refer to TM 11-5830-340-12, chap 5, sec I, table 5-1, p 5-1.)

2. Perform organizational quarterly preventive maintenance on the following items. (Refer to TM 11-5830-340-12, chap 5, sec I, table 5-1, item No. 3, 5 thru 8, p 10.)

   a. Perform preventive maintenance on audio accessories.

   b. Perform preventive maintenance on MX-7778.

   c. Perform preventive maintenance on AM-1780.

   d. Perform preventive maintenance on C-2298/VRC and C-2297/VRC.

   e. Perform preventive maintenance on C-2298/VRC and C-2297/VRC.

   f. Perform preventive maintenance on C-2299/VRC.

   g. Perform preventive maintenance on radio-intercom system cabling.

3. Record all faults noted and corrective action taken on DA Form 2404.

REFERENCES

TM 11-5830-340-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): Intercommunication Set, AN/VIC-1(V).

DA Pam 310-7, Military Publications: US Army Equipment Indec of Modification Work Orders.

TASK

113-622-3008

Evaluate the Operation of Intercommunication Set AN/VIC-1(V) with a Radio Set Installed

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. Task is performed when directed by supervisor. You will be provided with:

1. AN/VIC-1(V) with a radio set.
2. Radio set for transmitting and receiving.
3. TM 11-5820-401-12.
4. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 15 minutes, the operation of Intercommunication Set AN/VIC-1(V) with a radio set has been evaluated; performance measures 1 through 5 have been completed; and any faults found have been recorded on DA Form 2404 and submitted to your supervisor.

PERFORMANCE MEASURES

1. Check electrical power system. (Refer to TM 11-5820-401-12, chap 3, sec II, para 3-14b, p 3-15.)
2. Perform starting and stopping procedures. (Refer to TM 11-5820-401-12, chap 3, sec II, para 3-14(b)(2).)
3. Check antennas. (Refer to TM 11-5820-401-12, chap 3, sec II, para 3-14c, p 3-16).)

4. Check operation. (Refer to TM 11-5820-401-12, chap 3, sec II, para 3-14d, p 3-16.)

5. Record faults noted on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) as a daily maintenance form and submit to your supervisor.

REFERENCES

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): AN/VRC-12 Series Radio Sets.

TASK

113-622-3009

Evaluate the Operation of Radio Set Control Group AN/GRA-39(*)

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when you have received a report of failure, as an evaluation before troubleshooting, as a final check after repair, or as directed by your supervisor. You will have available to you:

1. Installed AN/GRA-39(*) with compatible radio set.
2. An operator at the remote control site.
3. Distant compatible radio station with operator.
4. TM 11-5820-477-12.
5. DA Form 2404.

STANDARDS

This task has been performed correctly when the operation of Radio Set Control Group AN/GRA-39(*) has been evaluated, performance measures 1 through 7 have been completed; and DA Form 2404, listing all faults found, has been prepared and submitted to your supervisor.

PERFORMANCE MEASURES

1. Perform the following initial adjustments:
   a. Turn radio power switch OFF.
   b. Turn local unit power switch to OFF.

2. Check for proper installation of all items. (Refer to TM 11-5820-477-12, chap 2, para 2-3 thru 2-5, pp 2-1 thru 2-4.)

   NOTE: Do not connect the handset at this time.

3. Preset controls as follows:

   a. Set the radio to desired frequency.

   b. Set local control unit buzzer volume to midrange.

4. Clean the handset's audio plug contacts, local control unit audio contacts and radio audio contacts using a pencil eraser. Then connect the handset plug to the radio jack.

5. Perform the checks in Equipment Performance Checklist (EPC).

Equipment Performance Checklist.
(See page 2-379 and 2-380)

6. Record symptoms of trouble on DA Form 2404.

   a. In column a, record the Equipment Performance Checklist (EPC) step number that produced an abnormal indication.

   b. In column c, write a brief description of the trouble observed.

7. Complete DA Form 2404 and give it to your supervisor.

REFERENCES

TM 11-5820-477-12, Operator's and Organizational Maintenance Manual; Radio Set Control Groups AN/GRA-39, AN/GRA-39A, and AN/GRA-39B.

EQUIPMENT PERFORMANCE CHECKLIST

STEP	UNIT	ACTION	NORMAL INDICATION
1	RADIO	Turn radio on with SQUELCH OFF. (Set the Volume Control for a good listening level).	Rushing noise should be heard in the handset
2	RADIO	Key the handset and speak into the microphone.	Radio should key Sidetone should be heard in handset
3	LOCAL	Disconnect the handset from the radio and connect it to the local control unit; connect the local to the radio by means of the radio cable connector.	Rushing noise should be heard in the handset
4	LOCAL	Turn the local power ON.	Rushing noise should still be heard
5	LOCAL	HOLD MODE switch in RADIO position and key the handset. (Press push-to-talk switch.)	Radio should key
6	LOCAL	Repeat step 5, speak into the microphone and make radio check. (Set radio volume control for good listening level.)	Radio voice sidetone should be heard Distant radio operator should answer
	NOTE:	Unplug the radio cable connector	
7	LOCAL	Hold MODE switch in TEL position; key the handset; speak into microphone.	TEL sidetone should be heard in the handset

STEP	UNIT	ACTION	NORMAL INDICATION
8	LOCAL AND REMOTE	Press ringer several times while listening at the handset.	A weak buzzing signal should be heard in the earphone Remote operator should answer. (Tell operator to stand by)
	NOTE:	Reconnect the radio cable connector and turn the radio SQUELCH ON.	
9	LOCAL AND REMOTE	Repeat step 7 and step 8 then ask the remote operator to ring the local.	Local buzzer should buzz Local operator should hear a weak buzzing signal in the earphone
10	LOCAL AND REMOTE	Repeat step 7 and ask remote operator to make a radio check.	Radio should key and radio voice sidetone should be heard in the local handset

TASK

113-622-3010

Perform Organizational Quarterly Preventive Maintenance on Radio Set Control Group AN/GRA-39(*)

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed once each quarter as scheduled. You will be provided with:

1. Installed AN/GRA 39(*), complete with radio.
2. TK-101/G.
3. Cleaning compound.
4. Trichloroethane.
5. Operator assistant with RT for operational check.
6. TM 11-5820-477-12.
7. Soft brush.
8. DA Form 2404.
9. Insulating compound.

STANDARDS

This task has been performed correctly when, within 30 minutes, performance measures 1 through 3 have been completed; organizational quarterly preventive maintenance checks and services have been performed on Radio Set Control Group AN/GRA-39(*); and all faults and corrective measures taken have been recorded on DA Form 2404 and reported to your supervisor.

PERFORMANCE MEASURES

1. Perform organizational quarterly maintenance checks and services. (Refer to TM 11-5820-477-12, chap 5, sec I, para 5-5, p 5-2.)

   a. Identify missing parts or components.

   b. Identify modification work orders that have not been applied.

   c. Clean interior of remote and local units.

   d. Identify leaking or corroded batteries.

   e. Clean battery compartment contacts with a pencil eraser.

   f. Identify cracks, loose connections, or breaks on printed circuit boards.

   g. Identify cracked, chipped, discolored, or blistered resistors.

   h. Identify leaking, bulging, or corroded capacitors.

   i. Identify brittle or broken gaskets.

   j. Test operate remote control group.

2. Record all identified faults on a DA Form 2404.

3. Record all faults that you could not correct on DA Form 2404 and give it to your immediate supervisor.

REFERENCES

TM 11-5820-477-12, Operator's and Organizational Maintenance Manual: Radio Set Control Groups, AN/GRA-39, AN/GRA-39A, and AN/GRA-39B.

Enter submitting unit's location

Unit commander's signature on 01-08

MAINTENANCE REQUEST
For use of this form, see TM 38-750; the proponent agency is DCSLOG.

PAGE NO. 1 | NO. OF PAGES | REQUIREMENT CONTROL SYMBOL CSGLD-1047(R1)

SECTION I – EQUIPMENT DATA

CONTROL NUMBER	WORK ORDER NUMBER	WESDC	ORG PD	PD AUTHENTICATION
484359		B7	Ø2	CPT John Wayne

☒ WORK REQUEST ☐ MWO ☐ WARRANTY CLAIM

1a. ORGANIZATION	b. LOCATION	c. UNIT IDENT CODE
57th Transportation Co.	Ft. Lee, Va 23801	W265AA

2. SERIAL NO.	3. NOUN NOMENCLATURE	4. LINE NO.	5. MODEL	6. NATIONAL STOCK NUMBER
04H 6972	Truck	X40009	M-35A2	2320-00-077-1617

7. MAINTENANCE ACTIVITY	a. LEVEL	8. UTILIZATION CODE	9. MCSR ITEM	a. ERC	b. PACING ITEM	10. HOURS	11. MILES	12. ROUNDS	13. STARTS
83rd HEMCo (DS)	F	ON	Yes				36,650		

14. FAILURE DETECTED DURING *(Select one - use √ or X)*
☐ A Scheduled Maintenance ☐ B Handling ☐ C Test ☒ D Normal Op ☐ E Storage ☐ F Inspection ☐ G Flight ☐ H Other

15. FIRST INDICATION OF TROUBLE *(Select one - use √ or X)*
☒ 088 Inoperative ☐ 008 Noisy ☐ 269 Overheating ☐ 387 Low Performance ☐ 790 Out of Adjustment ☐ Other

16. DESCRIBE DEFICIENCIES OR SYMPTOMS ON THE BASIS OF COMPLETE CHECKOUT AND DIAGNOSTIC PROCEDURE IN EQUIPMENT TM *(Do not prescribe repairs)*

Brakes Inoperative

SAMPLE

16a. REMARKS

Phone #1264

PREPARATION INSTRUCTIONS

(Prior to using this form, read TM 38-750 for detailed preparation instructions)

(1) Place a "√" or an "X" in the box for the type action required.

(2) Enter the WESDC if the item is Materiel Condition Status Reportable.

(3) Enter the priority designator as determined from the urgency of need and force activity designator.

(4) The Unit Commander, Chief of TDA activity or their designated representative will authenticate, by signature, a priority of 01 through 08.

(5) Block 1a. Enter the name of the organization submitting the request.

(6) Block 1b. Enter the unit submitting the request; units overseas enter APO only.

(7) Block 1c. Enter the unit identification code of the unit in block 1a.

(8) Block 2. Enter the equipment serial no. For ammunition, enter the lot number. For administrative use vehicles enter the USA registration number.

(9) Block 3. Enter the noun abbreviation of the item.

(10) Block 4. Enter the item line number if applicable.

(11) Block 5. Enter

(12) Block 6. Ente number of the item list

(13) Block 7. Enter the name of the support activity.

(14) Block 7a. Enter the symbol of the maintenance category *(O, F, H, D or L)*

(15) Block 8. Enter the utilization code.

(16) Block 9. Enter the word "yes" if the item is Materiel Condition Status Reportable.

(17) Block 9a. Enter the equipment readiness code, if applicable.

(18) Block 9b. Enter the word "yes" if the item is a pacing item.

(19) Block 10. Enter the hour reading if applicable

(20) Block 11. Enter the mileage from the odometer if applicable.

(21) Block 12. Enter the total rounds fired if applicable.

(22) Block 13. For turbine engines, enter the number of hot starts.

(23) Block 14. Enter a "√" or "X" in the proper block.

(24) Block 15. Enter a "√" or "X" in the proper block.

(25) Block 16. Describe briefly the fault or symptoms needing correction.

Authorized individual signature and Julian date

Accepting individual's signature (at support unit and Julian date unit) and Julian date

23. SUBMITTED BY	24. RECEIVED BY
B. Bass	J Daniels
JULIAN DATE	JULIAN DATE
ØØØ7	ØØØ7

DA FORM MAY 81 2407 EDITION OF JUL 79 IS OBSOLETE. RECEIPT COPY 1

Figure 2. DA Form 2407 (Maintenance Request).

MAINTENANCE REQUEST
For use of this form, see TM 38-750; the proponent agency is DCSLOG

PAGE NO.	NO. OF PAGES	REQUIREMENT CONTROL SYMBOL
1		CSGLD-1047(R1)

SECTION I – EQUIPMENT DATA

CONTROL NUMBER	WORK ORDER NUMBER	WESDC	ORG PD	PD AUTHENTICATION
484360			Ø5	CPT John Wayne

WORK REQUEST / MWO / WARRANTY CLAIM	1a. ORGANIZATION	b. LOCATION	c. UNIT IDENT CODE
☒ MWO	57th Trans Co.	Ft. Lee, Va. 23801	W265AA

2. SERIAL NO.	3. NOUN NOMENCLATURE	4. LINE NO.	5. MODEL	6. NATIONAL STOCK NUMBER
				2320-00-077-1617

7. MAINTENANCE ACTIVITY	a. LEVEL	8. UTILIZATION CODE	9. MCSR ITEM	a. ERC	b. PACING ITEM	10. HOURS	11. MILES	12. ROUNDS	13. STARTS
							36,650		

14. FAILURE DETECTED DURING *(Select one - use √ or X)*
[ ] A Scheduled Maintenance [ ] B Handling [ ] C Test [ ] D Normal Op [ ] E Storage [ ] F Inspection [ ] G Flight [☒] H Other

16. FIRST INDICATION OF TROUBLE *(Select one - use √ or X)*
[ ] 068 Inoperative [ ] 008 Noisy [ ] 258 Overheating [ ] 387 Low Performance [ ] 790 Out of Adjustment [☒] Other

16. DESCRIBE DEFICIENCIES OR SYMPTOMS ON THE BASIS OF COMPLETE CHECKOUT AND DIAGNOSTIC PROCEDURE IN EQUIPMENT TM *(Do not prescribe repairs)*

Apply DAMWO 9-2320-209-30

Enter at time of delivery to support unit

Enter DAMWO number(s)

16a. REMARKS
Phone #1264

SAMPLE

PREPARATION INSTRUCTIONS

(Prior to using this form, read TM 38-750 for detailed preparation instructions)

(1) Place a "√" or an "X" in the box for the type action required.

(2) Enter the WESDC if the item is Materiel Condition Status Reportable.

(3) Enter the priority designator as determined from the urgency of need and force activity designator.

(4) The Unit Commander, Chief of TDA activity or their designated representative will authenticate, by signature, a priority of 01 through 08.

(5) Block 1a. Enter the name of the organization submitting the request.

(6) Block 1b. Enter the unit submitting the request; units overseas enter APO only.

(7) Block 1c. Enter the unit identification code of the unit in block 1a.

(8) Block 2. Enter the equipment serial no. For ammunition, enter the lot number. For administrative use vehicles enter the USA registration number.

(9) Block 3. Enter the noun abbreviation of the item.

(10) Block 4. Enter the item line number if applicable.

(11) Block 5. Enter the model number.

(12) Block 6. Enter the national stock number of the item listed in block 3.

(13) Block 7. Enter the name of the support activity.

(14) Block 7a. Enter the symbol of the maintenance category *(O, F, H, D or L)*

(15) Block 8. Enter the utilization code.

(16) Block 9. Enter the word "yes" if the item is Materiel Condition Status Reportable.

(17) Block 9a. Enter the equipment readiness code, if applicable.

(18) Block 9b. Enter the word "yes" if the item is a pacing item.

(19) Block 10. Enter the hour reading if applicable

(20) Block 11. Enter the mileage from the odometer if applicable.

(21) Block 12. Enter the total rounds fired if applicable.

(22) Block 13. For turbine engines, enter the number of hot starts.

(23) Block 14. Enter a "√" or "X" in the proper block.

(24) Block 15. Enter a "√" or "X" in the proper block.

(25) Block 16. Describe briefly the fault or symptoms needing correction.

23. SUBMITTED BY	24. RECEIVED BY
B. Bass	J. Daniels
JULIAN DATE	JULIAN DATE
ØØØ7	ØØØ7

DA FORM MAY 81 2407 EDITION OF JUL 79 IS OBSOLETE. RECEIPT COPY 1

Figure 3. DA Form 2407 (Maintenance Request) prepared for a modification work order.

MAINTENANCE REQUEST
For use of this form, see TM 38-750; the proponent agency is DCSLOG.

PAGE NO. | NO. OF PAGES | REQUIREMENT CONTROL SYMBOL CSGLD—1047(R1)

SECTION I — EQUIPMENT DATA

CONTROL NUMBER	WORK ORDER NUMBER	WESDC	ORG PD	PD AUTHENTICATION
484361	GA Ø23 -Ø2	B7	Ø2	CPT John Wayne

☐ WORK REQUEST ☐ MWO ☐ WARRANTY CLAIM

1a. ORGANIZATION: 57th Trans Co.

b. LOCATION

c. UNIT IDENT CODE

2. SERIAL NO.	3. NOUN NOMENCLATURE	4. LINE NO.
ØH6972	Truck	X4ØØØ9

7. MAINTENANCE ACTIVITY	a. LEVEL	8. UTILIZATION CODE	9. MCSR ITEM	a. ERC
83rd HEM Co (DS)				

14. FAILURE DETECTED DURING (Select one - use √ or X)
☐ A Scheduled Maintenance ☐ C Test ☐ E Storage ☐ G Flight
☐ B Handling ☒ D Normal Op ☐ F Inspection ☐ H Other

15. FIRST INDI ☒ 068 Inopal ☐ 008 Noisy ☐ 387 Low Performance ☐ Other

UMBER | IUNDS | 13. STARTS | of Adjustment

Illustrates Not Mission Capable Supply (NMCS) and Not Mission Capable Maintenance (NMCM) data provided to equipment owner for a Material Readiness Reportable item. This information will be recorded on the Preventive Maintenance Schedule (DD Form 314).

16. DESCRIBE DEFICIENCIES OR SYMPTOMS ON THE BASIS OF COMPLETE CHECKOUT AND DIAGNOSTIC PROCEDURE IN EQUIPMENT TM (Do not prescribe repairs)

Brakes Inoperative

16a. REMARKS: Phone #1264

	From	To
NMCS	ØØØ7	ØØ12
NMCM	ØØ12	ØØ12

SECTION II — WORK ACCOMPLISHED

17a. REPAIR ORGANIZATION/ACTIVITY: 83rd HEM Co (DS)
b. LOCATION: Ft. Lee, Va 23801
c. UNIT IDENT CODE: WD8MAA
18. TYPE ORGANIZATION/ACTIVITY ACCOMPLISHING WORK (Select one - use √ or X): ☒ 1 TOE ☐ 2 TD ☐ 3 CONTRACTOR
19. AMS ACCOUNT CODE

20a. ACT CODE	FAILURE CODE b	c. COMPONENT/PART NOUN, SVC, OR MWO NO. d. CB CODE	e. REF DESIGNATOR	f. MFR CODE	MANHOURS (Hrs & tenths) g	NATIONAL STOCK NUMBER h	PART SOURCE CODE i	QTY j	PARTS COST k
F		Initial Inspection			1.Ø				
A	927	Replaced Brake Line			2.5	232Ø-ØØ-5Ø7 ØØ42		4	
A	Ø2Ø	Spring			1.Ø	156Ø-ØØ-Ø37-1414		4	
G		Final Inspection			1.Ø				

DISPOSITION:
Copy 4 (blue) will be returned to the requesting unit upon completion of work
This form will be retained for 90 days.

SAMPLE

l. TOTAL MANHOURS	m. TOTAL MANHOURS COST	n. TOTAL PARTS COST
5.5	$	$

21. DELAY (Select one) ☒ 1 Parts ☐ 2 Manpower ☐ 3 Facilities ☐ 4 Funds ☐ 5 Tools
22. ☐ DATA TRANSCRIBED

23. SUBMITTED BY	24. RECEIVED BY	25. WORK STARTED BY	26. INSPECTED BY	27. ACCEPTED BY
B. Bass	J. Daniels	TW Harper	SJ Johnson	B. Bass
JULIAN DATE ØØØ7	JULIAN DATE ØØØ7	JULIAN DATE ØØ12	JULIAN DATE ØØ12	JULIAN DATE ØØ12

28. DISPOSITION (Select one)
☒ A To User ☐ C Salvaged
☐ B To Stock ☐ D Evacuated
☐ E Cannibalization

DA FORM MAY 81 2407 — EDITION OF JUL 79 IS OBSOLETE. — ORGANIZATION COPY 4

Figure 4. DA Form 2407 (Maintenance Request) (Organization copy).

DD FORM 314 PREVIOUS EDITIONS OF THIS FORM MAY BE USED. PREVENTIVE MAINTENANCE SCHEDULE AND RECORD

1980 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

REGISTRATION NUMBER	ADMINISTRATION NO.	NOMENCLATURE	MODEL	ASSIGNED TO

JAN 0 0 0 0 0 S S S X

FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC

Note:
S indicates material readiness reportable equipment in support supply - NMCS. "X" indicates material readiness reportable equipment in support maintenance - NMCM.

REMARKS

SAMPLE

DATE RECEIVED	RECEIVED FROM		DISPOSITION	
5139				
REGISTRATION NUMBER	**ADMINISTRATION NO.**	**NOMENCLATURE**	**MODEL**	**ASSIGNED TO**
Ø4H6972	HQ-3	HFX4ØØØ9 Trk, Cgo 2½T	M-35A2	57th TransCo

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

MAINTENANCE REQUEST
For use of this form, see TM 38-750; the proponent agency is DCSLOG.

PAGE NO. 1 | NO. OF PAGES | REQUIREMENT CONTROL SYMBOL CSGLD-1047(R1)

SECTION I – EQUIPMENT DATA

CONTROL NUMBER	WORK ORDER NUMBER	WESDC	ORG PD	PD AUTHENTICATION
484362	GAØ23-Ø2	B7	Ø2	CPT John Wayne

☒ WORK REQUEST ☐ MWO ☐ WARRANTY CLAIM

1a. ORGANIZATION: 57th Trans Co.

2. SERIAL NO.: Ø4H6972

3. NOUN NOMENCLATURE:

4. LIN:

7. MAINTENANCE ACTIVITY: 83rd HEM Co(DS)

a. LEVEL: F

8. UTILIZATION CODE:

9. MCSR ITEM:

a. ER:

14. FAILURE DETECTED DURING (Select one - use ✓ or X)
☐ A Scheduled Maintenance ☐ C Test ☐ E Storage ☐ G Flight ☐ I
☐ B Handling ☒ D Normal Op ☐ F Inspection ☐ H Other ☐ J

15. FI

16. DESCRIBE DEFICIENCIES OR SYMPTOMS ON THE BASIS OF COMPLETE (prescribe repairs)

Brakes Inoperative

SAMPLE

Note:
Illustrates Not Mission Capable Supply (NMCS) and Not Mission Capable Maintenance (NMCM) data provided to equipment over for Material Readiness Reportable item. This information will be recorded on the Preventive Maintenance Schedule (DD Form 3140. Schedule (DD Form 314).

16a. REMARKS: Phone# 1264

	From	To
NMCS	Ø ØØ7	ØØ 12
NMCM	ØØ12	ØØ 12

Figure 5. DD Form 314 (Preventive Maintenance Schedule and Record) showing posting of support NMCS and NMCM data.

REFERENCE

TM 38-750, The Army Maintenance Management System (TAMMS).

TASK

113-623-3020

Prepare Uncorrected Fault Record, DA Form 2408-14

CONDITIONS

This task is performed in a tactical or nontactical situation, in a sheltered facility, and may be performed in an NBC environment. Task is performed when uncorrected faults and deferred maintenance actions listed on DA Form 2404 that have not been accomplished are transcribed to DA Form 2408-14. You will have available to you:

1. A prepared DA Form 2404 listing uncorrected faults requiring deferred maintenance actions.
2. DA Form 2408-14.
3. TM 38-750.

STANDARDS

This task has been performed correctly when, within 10 minutes, you have prepared a DA Form 2408-14 (fig 1), completed performance measures 1 through 9; and have submitted the completed DA Form 2408-14 and the DA Form 2404 to your supervisor.

PERFORMANCE MEASURES

1. Enter the noun nomenclature of the equipment in block 1. (Refer to TM 38-750, chap 4, para 4-13c(2), p 4-50.)
2. Enter the equipment model number in block 2. (Refer to TM 38-750, chap 4, para 4-13c(3), p 4-50.)
3. Enter the serial number of the equipment in block 3. If item does not have a serial number, enter "NONE." (Refer to TM 38-750, chap 4, para 4-13c(4), p 4-50.)

4. Enter the equipment status symbol in column a.

   NOTE: Do not record uncorrected faults, status symbol "X", which cause equipment to be inoperable and are scheduled on DA Form 2404 or DA Form 2407 for repair at organizational or support maintenance.

5. Enter the fault in column b as it appears in column c of the DA Form 2404. (Refer to TM 38-750, chap 4, para 4-13c(6)(a), p 4-50.)

6. Enter a short statement indicating the reason for delay of corrective action in column c. (Refer to TM 38-750, chap 4, para 4-13c (7), p 4-53.)

   NOTE: In instances where repair is delayed or deferred due to shop backlog, enter the work request number. Where a replacement part is the reason for delay, enter the supply request number, Julian date, the part that was requested, and NSN or part number.

7. Enter the calendar date the entry is being transcribed to the DA Form 2408-14 in column d. (Refer to TM 38-750, chap 4, para 4-13c(8), p 4-53.)

   NOTE: The commanding officer or designated representative will enter their signature in column e. (Refer to TM 38-750, chap 4, para 4-13c(9), p 4-53.)

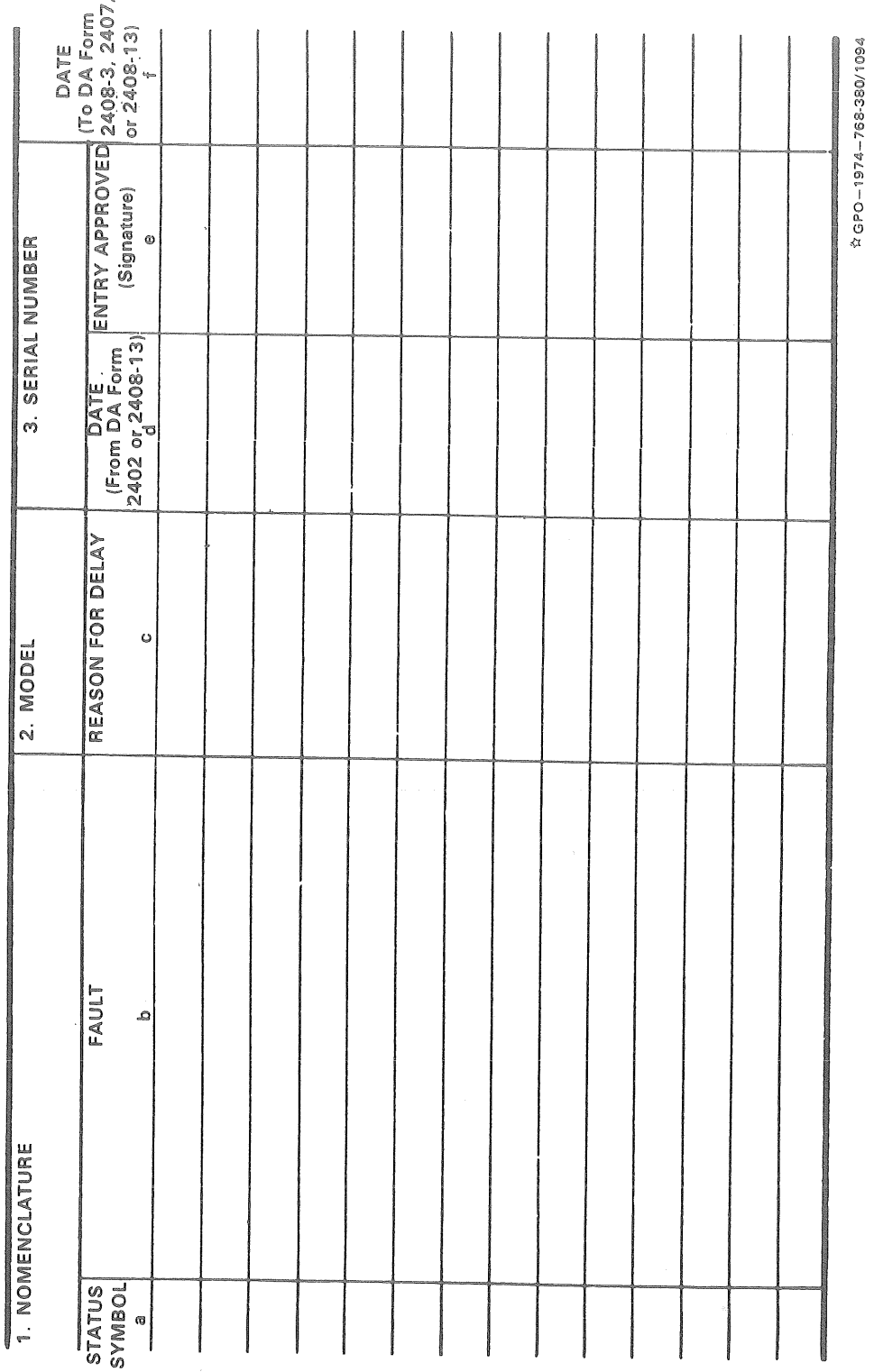
8. When the fault is corrected, enter the calendar date the fault was corrected in column f. (Refer to TM 38-750, chap 4, para 4-13c (10), p 4-53.)

   NOTE: if you are the individual correcting the fault, enter your last name and initial over the status symbol in column a.

9. Submit the completed DA Form 2408-14, with the completed DA Form 2404 to your supervisor.

REFERENCES

TM 38-750, The Army Maintenance Management System (TAMMS).



1. NOMENCLATURE		2. MODEL	3. SERIAL NUMBER			
STATUS SYMBOL a	FAULT b	REASON FOR DELAY c	DATE (From DA Form 2402 or 2408-13) d	ENTRY APPROVED (Signature) e	DATE (To DA Form 2408-3, 2407, or 2408-13) f

☆GPO—1974—768-380/1094

Figure 1. Uncorrected Fault Record, DA Form 2408-14.

TASK

113-623-3022

Prepare Equipment Inspection and Maintenance Worksheet, DA Form 2404 (Organizational)

CONDITIONS

This task is performed in a tactical or nontactical situation, in a sheltered facility, and may be performed in an NBC environment. Task is performed when organizational maintenance services are performed. You will be provided with the following:

1. DA Form 2404.
2. TM 38-750.

STANDARDS

This task has been performed correctly when, within 15 minutes, you have completed performance measures 1 through 13, and have submitted the DA Form 2404 (fig 1) to your supervisor.

PERFORMANCE MEASURES

1. Enter your unit organization designation in block 1. (Refer to TM 38-705, chap 3, para 3-4, fig 3-4, p 3-9.)
2. Enter equipment noun nomenclature and model in block 2. (Refer to TM 38-750, chap 3, para 3-14, fig 3-4, p 3-9.)
3. Enter the serial number of the equipment being evaluated in block 3. (Refer to TM 38-750, chap 3, para 3-4c(2)(c), fig 3-4, p 3-9.)
4. Enter the current calendar date in block 5. (Refer to TM 38-750, chap 3, para 3-4, fig 3-4, p 3-9.)
5. Enter the type of inspection (monthly, quarterly, technical, etc.) in block 6. (Refer to TM 38-750, chap 3, para 3-4, fig 3-4, p 3-9.)

6. Enter the equipment technical manual(s) (TM) and TM date(s) in block 7. (Refer to TM 38-750, chap 3, para 3-4, fig 3-4, p 3-9.)

7. Enter your signature in block 8a and the time you signed the form in block 8b. (Refer to TM 38-705, chap 3, para 3-4, fig 3-4, p 3-9.)

EQUIPMENT INSPECTION AND MAINTENANCE WORKSHEET

For use of this form, see TM 38-750; the proponent agency is the Office of the Deputy Chief of Staff for Logistics.

1. ORGANIZATION		2. NOMENCLATURE AND MODEL				
3. REGISTRATION/SERIAL/FSN	4a. MILES	b. HOURS	c. ROUNDS FIRED	d. HOT STARTS	5. DATE	6. TYPE INSPECTION

7. APPLICABLE REFERENCE			
TM NUMBER	TM DATE	TM NUMBER	TM DATE

INSTRUCTIONS - Perform each check listed in the TM applicable to the inspection performed. Following the sequence listed in pertinent TM, complete form as follows:

COLUMN a - Enter TM item number.

COLUMN b - Enter the applicable condition status symbol.

COLUMN c - Enter deficiencies and shortcomings.

COLUMN d - Show corrective action for deficiency or shortcoming listed in Column c.

COLUMN e - Individual ascertaining completed corrective action initial in this column.

ALL INSPECTIONS AND EQUIPMENT CONDITIONS RECORDED ON THIS FORM HAVE BEEN DETERMINED IN ACCORDANCE WITH DIAGNOSTIC PROCEDURES AND STANDARDS IN THE TM CITED HEREON.

8a. SIGNATURE *(Person(s) performing inspection)*	8b. TIME	9a. SIGNATURE *(Maintenance Supervisor)*	9b. TIME	10. MANHOURS REQUIRED

TM ITEM NO. a	STATUS b	DEFICIENCIES AND SHORTCOMINGS c	CORRECTIVE ACTION d	INITIAL WHEN CORRECTED e

DA FORM 1 JAN 64 2404

Figure 1. Equipment Inspection and Maintenance Worksheet, DA Form 2404.

8. Enter the TM item number. (Refer to TM 38-750, chap 3, para 3-4, fig 3-4, p 3-9.)

9. Enter equipment status symbol in column b. (Refer to TM 38-750, para 4-2c, p 4-1.)

10. Enter the equipment faults in column c. (Refer to TM 38-750, chap 3, para 3-4, fig 3-4, p p 3-9 and 3-10.)

11. Enter your corrective actions taken in column d. (Refer to TM 38-750, chap 3, para 3-4, fig 3-4 and 3-5, pp 3-9 and 3-10.)

12. Enter your initials in column e. (Refer to TM 38-750, chap 3, para 3-4, fig 3-4, p 3-9.)

13. Submit the completed DA Form 2404 to your supervisor.

REFERENCES

TM 38-750, The Army Maintenance Management System (TAMMS).

TASK

113-587-7016

Check Performance of Operator's Preventive Maintenance on Radio Set AN/PRC-25/77

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed as directed by your supervisor or as scheduled to insure that preventive maintenance is correctly performed. You will be provided with:

1. Radio Set AN/PRC-25/77.
2. Completed DA Form 2404.
3. TM 11-5820-667-12.

STANDARDS

Task has been performed correctly when, within 15 minutes, you have completed job performance measures 1 through 5, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of DA Form 2404. Any faults found during the performance of operator's preventive maintenance should have been recorded.
2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to TM 11-5820-667-12, chap 4, para 4-2, table 4-1, p 4-2.)
3. Record any faults not identified by the operator on DA Form 2404.

4. Instruct your operator to correct faults.

5. When faults are not corrected, report them to your immediate supervisor.

REFERENCES

TM 11-5820-667-12, Operator's and Organizational Maintenance Manual: Radio Set AN/PRC-77 (Including Receiver-Transmitter, Radio RT-841/ PRC-77).

TASK

113-587-7017

Check Performance of Organizational Preventive Maintenance on Radio Set AN/PRC-25/77

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor or as scheduled to insure that organizational preventive maintenance is correctly performed. You will be provided with:

1. Radio Set AN/PRC-25/77.

2. Completed DA Form 2404.

STANDARDS

Task has been performed correctly when, within 15 minutes, you have completed performance measures 1 through 5, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of DA Form 2404. Any faults found during the performance of organizational preventive maintenance should have been recorded.

2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to task 113-587-3017 of this manual.)

3. Record any faults not identified by the mechanic on DA Form 2404.

4. Instruct your mechanic to correct faults.

5. When faults are not corrected, report them to your immediate supervisor.

REFERENCES

None.

TASK

113-587-7024

Check Performance of Operator's Preventive Maintenance on Radio Set AN/GRC-125/160

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed as directed by your supervisor or as scheduled to insure that preventive maintenance is correctly performed. You will be provided with:

1. Completed DA Form 2404.
2. Radio Set AN/GRC-125/160.
3. TM 11-5820-498-12.

STANDARDS

Task has been performed correctly when, within 15 minutes, you have completed performance measures 1 through 5, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries on columns a through e of DA Form 2404. Any faults found during the performance of operator's preventive maintenance should have been recorded.
2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to TM 11-5820-498-12, chap 4, para 4-4, pp 4-2 thru 4-6.)
3. Record any faults not identified by the operator on DA Form 2404.

4. Instruct your operator to correct faults.

5. When faults are not corrected, report them to your immediate supervisor.

REFERENCES

TM 11-5820-498-12, Operator's and Organizational Maintenance Manual: Radio Sets AN/VRC-53, AN/VRC-64, AN/GRC-125, AN/GRC-160 and Amplifier-Power Supply Groups OA-3633/GRC and OA-3633A/GRC

TASK

113-587-7025

Check Performance of Organizational Preventive Maintenance on Radio Set AN/GRC-125/160

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor or as scheduled to insure that organizational preventive maintenance is correctly performed. You will be provided with:

1. Radio Set AN/GRC 125/160.

2. Completed DA Form 2404.

STANDARDS

Task has been performed correctly when, within 15 minutes, you have completed performance measures 1 through 5, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of DA Form 2404. Any faults found during the performance of organizational preventive maintenance should have been recorded.

2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to task 113-587-3021 of this Manual.)

3. Record any faults not identified by the mechanic on DA Form 2404.

4. Instruct your mechanic to correct faults.

5. When faults are not corrected, report them to your immediate supervisor.

REFERENCES

None.

TASK

113-587-7029

Check Performance of Operator's Preventive Maintenance on AN/VRC-12 Series Radio Sets

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed as directed by your supervisor or as scheduled to insure that preventive maintenance is correctly performed. You will be provided with:

1. Completed DA Form 2404.
2. Radio Sets AN/VRC-12, AN/VRC-46, or AN/VRC-49.
3. TM 11-5820-401-12.

STANDARDS

Task has been performed correctly when, within 15 minutes, you have completed performance measures 1 through 5, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of DA Form 2404. Any faults found during the performance of operator's preventive maintenance should have been recorded.
2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to TM 11-5820-401-12, chap 4, sec I, para 4-2, table 4-1, pp 4-1 thru 4-4.)
3. Record any faults not identified by the operator on DA Form 2404.

4. Instruct your operator to correct faults.

5. When faults are not corrected, report them to your immediate supervisor.

REFERENCES

TM 11-5820-401-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): AN/VRC-12 Series Radio Sets.

TASK

113-587-7040

Check Performance of Organizational Preventive Maintenance on AN/VRC-12 Series Radio Sets

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor or as scheduled to insure that organizational preventive maintenance is correctly performed. You will be provided with:

1. Completed DA Form 2404.

2. Radio Sets AN/VRC-12, AN/VRC-47, or AN/VRC-49.

STANDARDS

Task has been peformed correctly when, within 15 minutes, you have completed performance measures 1 through 5, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of DA Form 2404. Any faults found during the performance of organizational preventive maintenance should have been recorded.

2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to task 113-587-3029 of this Manual.)

3. Record any faults not identified by the mechanic on DA Form 2404.

4. Instruct your mechanic to correct faults.

5. When faults are not corrected, report them to your immediate supervisor.

REFERENCES

None.

TASK

113-594-7023

Check Performance of Organizational Preventive Maintenance on Switchboard, Telephone, Manual SB-22(*)/PT

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor or as scheduled to insure that organizational preventive maintenance is correctly performed. You will be provided with:

1. Completed DA Form 2404.

2. Switchboard SB-22(*)PT.

STANDARDS

Task has been performed correctly when, within 15 minutes, you have completed performance measures 1 through 5, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of DA Form 2404. Any faults found during the performance of organizational preventive maintenance should have been recorded.

2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to task 113-594-3012 of this Manual.)

3. Record any faults not identified by the mechanic on DA Form 2404.

4. Instruct your mechanic to correct faults.

5. When faults are not corrected, report them to your immediate supervisor.

REFERENCES

None.

TASK

113-599-7004 (RC)

Check Performance of Operator's Preventive Maintenance on Radio Teletypewriter Set AN/GRC-46(*)

CONDITIONS

This task is performed in a tactical or nontactical situation under all weather conditions and may be performed in an NBC environment. This task is performed as directed by your supervisor or as scheduled to insure that preventive maintenance is correctly performed. You will be provided with:

1. Completed DA Form 2404.
2. Radio Teletypewriter Set AN/GRC-46(*).
3. TM 11-5815-204-10.

STANDARDS

Task has been performed correctly when within 15 minutes you have completed performance measures 1 through 5 and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of DA Form 2404. Any faults found during the performance of operator's preventive maintenance should have been recorded.
2. Check the equipment and compare the maintenance status of the equipment with the entries on the DA Form 2404. (Refer to TM 11-5815-204-10, chap 3, para 34.1 and 34.2, p 5.)
3. Record any faults not identified by the operator on DA Form 2404.

4. Instruct your operator to correct faults.

5. When faults are not corrected, report them to your immediate supervisor.

REFERENCES

TM 11-5815-204-10, Operator's Manual Radio Teletypewriter Sets, AN/GRC-46, AN/GRC-46A, AN/GRC-46B, AN/GRC-46C, and AN/VRC-29.

TASK

113-599-7011

Check Performance of Operator's Preventive Maintenance on Radio Teletypewriter Set AN/VSC-3

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed as directed by your supervisor or as scheduled to insure that preventive maintenance is correctly performed. You will be provided with:

1. Completed DA Form 2404.
2. Radio Teletypewriter Set AN/VSC-3.
3. TM 11-5815-332-15.

STANDARDS

Task has been performed correctly when, within 15 minutes, you have completed performance measures 1 through 5, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of DA Form 2404. Any faults found during the performance of operator's preventive maintenance should have been recorded.
2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to TM 11-5815-332-15, para 4-1, table 4-1, p 4-1.)
3. Record any faults not identified by the operator on DA Form 2404.

4. Instruct your operator to correct faults.

5. When faults are not corrected, report them to your immediate supervisor.

REFERENCES

TM 11-5815-332-15, Operator's Organizational DS, GS, and Depot Maintenance Manual: Radio Teletypewriter Set, AN/VSC-3.

TASK

113-599-7012

Check Performance of Organizational Preventive Maintenance on Radio Teletypewriter Set AN/VSC-3

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor or as scheduled to insure that organizational preventive maintenance is correctly performed. You will be provided with:

1. Completed DA Form 2404.
2. Radio Teletypewriter Set AN/VSC-3.

STANDARDS

Task has been performed correctly when, within 15 minutes, you have completed performance measures 1 through 5, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of DA Form 2404. Any faults found during the performance of operator's preventive maintenance should have been recorded.
2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to Task 113-599-3019 of this Manual.)
3. Record any faults not identified by the mechanic on DA Form 2404.

4. Instruct your mechanic to correct faults.

5. When faults are not corrected, report them to your immediate supervisor.

REFERENCES

None.

TASK

113-599-7016

Check Performance of Operator's Preventive Maintenance on Radio Teletypewriter Set AN/VSC-2

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed as directed by your supervisor or as scheduled to insure that preventive maintenance is correctly performed. You will be provided with:

1. Completed DA Form 2404.
2. TM 11-5815-331-14.
3. Radio Teletypewriter Set AN/VSC-2.

STANDARDS

Task has been performed correctly when, within 15 minutes, you have completed performance measures 1 through 5, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of DA Form 2404. Any faults found during the performance of operator's preventive maintenance should have been recorded.
2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to TM 11-5815-331-14, chap 4, para 4-3, table 4-1, p 4-2.)
3. Record any faults not identified by the operator on DA Form 2404.

4. Instruct your operator to correct faults.

5. When faults are not corrected, report them to your immediate supervisor.

REFERENCES

TM 11-5815-331-14, Operator's, Organizational, DS, and GS Maintenance Manual: Radio Teletypewriter Set, AN/ VSC-2.

TASK

113-599-7017

Check Performance of Organizational Preventive Maintenance on Radio Teletypewriter Set AN/VSC-2

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor or as scheduled to insure that organizational preventive maintenance is correctly performed. You will be provided with:

1. Completed DA Form 2404.
2. Radio Teletypewriter Set AN/VSC-2.

STANDARDS

Task has been performed correctly when, within 15 minutes, you have completed performance measures 1 through 5, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of DA Form 2404. Any faults found during the performance of organizational preventive maintenance should have been recorded.
2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to Task 113-599-3021 of this Manual.)
3. Record any faults not identified by the mechanic on DA Form 2404.

4. Instruct your mechanic to correct faults.

5. When faults are not corrected, report them to your immediate supervisor.

REFERENCES

None.

TASK

113-599-7018

Check Installation of Radio Teletypewriter Set AN/GRC-142(*) on Tactical Vehicles

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. Task is performed upon installation of Radio Teletypewriter Sets AN/GRC-142(*) on tactical vehicles. You will be provided with:

1. AN/GRC-142(*) installed on tactical vehicle.

2. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 30 minutes, you have verified that an AN/GRC-142(*) has been installed in accordance with instructions in the installation kit and performance measures 1 through 3 have been completed. Have any uncorrected faults reported to your immediate supervisor.

PERFORMANCE MEASURES

1. Check that shelter is correctly secured to truck.

   a. Sling hooks should be securely hooked to each of the four tie-down eyes on shelter.

   b. Sling assembly holding plates are secured under each fender and sling hooks attached.

   c. Turnbuckles are tight.

NOTE: To prevent shelter from twisting in the truck body, all turnbuckles should be tightened equally.

2. Check to see that dc power cable is connected to dc input connector on shelter, and route cable through rear of truck, through the battery box and connect to truck battery.

3. Prepare a list (DA Form 2404) of any faults found and have them corrected or reported to your immediate supervisor.

REFERENCE

None.

TASK

113-599-7021

Check Performance of Operator's Preventive Maintenance on Radio Teletypewriter Set AN/GRC-142(*)

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed as directed by your supervisor or as scheduled to insure that preventive maintenance is correctly performed. You will be provided with:

1. Completed DA Form 2404.
2. Radio Teletypewriter Set AN/GRC-142(*).
3. TM 11-5815-334-12.

STANDARDS

Task has been performed correctly when, within 15 minutes, you have completed performance measures 1 through 5, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of DA Form 2404. Any faults found during the performance of operator's preventive maintenance should have been recorded.
2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to TM 11-5815-334-12, chap 4, para 4-4, table 4-1, p 4-1.)
3. Record any faults not identified by the operator on DA Form 2404.

4. Instruct your operator to correct faults.

5. When faults are not corrected, report them to your immediate supervisor.

REFERENCES

TM 11-5815-334-12, Operator's and Organizational Maintenance Manual: Radio Teletypewriter Sets AN/GRC-142, AN/GRC-142A, AN/GRC-142B, AN/GRC-122, AN/GRC-122A, and AN/GRC-122B.

TASK

113-599-7022

Check Performance of Organizational Preventive Maintenance on Radio Teletypewriter Set AN/GRC-142(*)

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor or as scheduled to insure that organizational preventive maintenance is correctly performed. You will be provided with:

1. Completed DA Form 2404.

2. Radio Teletypewriter Set AN/GRC-142.

STANDARDS

Task has been performed correctly when, within 15 minutes, you have completed performance measures 1 through 5, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of DA Form 2404. Any faults found during the performance of organizational preventive maintenance should have been recorded.

2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to task 113-599-3017 of this Manual.)

3. Record any faults not identified by the mechanic on DA Form 2404.

4. Instruct your mechanic to correct faults.

5. When faults are not corrected, report them to your immediate supervisor.

REFERENCES

None.

TASK

113-609-7033

Check Installation of Installation Kit MK-1839, Used With Radio AN/VRC-47 or AN/VRC-12 in Utility Truck, 1/4-Ton, 4x4, M151

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor. You will be provided with the following:

1. (O)TM 11-5810-312-12.
2. Installation Kit MK-1839 installed in M151.
3. Radio Set AN/VRC-47 or AN/VRC-12 installed in M151.
4. Speech Security Equipment TSEC/KY-57 (2 each).
5. Vehicular Power Adapter HYP-57/TSEC (2 each).
6. Handset H-189/GR (1 each).
7. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 20 minutes, you have checked the installation of Installation Kit MK-1839 on a tactical vehicle with a Radio Set AN/VRC-47 or AN/VRC-12; performance measures 1 through 9 have been completed, and a DA Form 2404 with all faults noted and corrective actions taken has been given to your supervisor.

PERFORMANCE MEASURES

NOTE: Shortages of minor parts or assemblies that do not affect the function of equipment should not prevent usage of equipment.

1. Check that Installation Kit MK-1221/VRC-12 and Radio Set AN/VRC-12 or MK-1306/VRC-47 and AN/VRC-47 have been previously installed in vehicle in the prescribed configuration. (Refer to (O)TM 11-5810-312-12, chap 2, para 2-23a, p 2-29.)

2. Check that RT unit and auxiliary receiver are set for secure (X-MODE) operation. (Refer to (O)TM 11-5810-312-12, chap 2, para 2-7, p 2-3.)

3. Check that the Interconnection Box J-3513/U has been installed according to prescribed instructions in (O)TM 11-5810-312-12, chapter 2, paragraph 2-12, page 2-5.

4. Check that the Interconnecting Box J-3514/U has been installed according to prescribed instructions in (O)TM 11-5810-312-12, chapter 2, paragraph 2-13, page 2-7.

5. Check installation of support assembly.

   a. Check that support assembly has been assembled using 10 sets of 5/16-inch diameter screws, nuts, flatwashers and lockwashers provided in the cloth bag. (Refer to (O)TM 11-5810-312-12, chap 2, para 2-27a, p 2-29.)

   b. Check that assembled support assembly has been placed on radio support bracket and aligned with the mounting holes previously used to mount MT-1029/VRC. (Refer to (O)TM 11-5810-312-12, chap 2, para 2-27, fig 2-9(2), p 2-31.)

      NOTE: Make sure that support assembly identifying number (painted or stamped on top plate) is facing inside of vehicle.

   c. Check that MT-1029/VRC has been placed inside support assembly and that the base assembly holes have been aligned with support assembly holes. (Refer to (O)TM 11-5810-312-12, chap 2, para 2-27, p 2-29.)

   d. Check that MT-1029/VRC and support assembly have been secured to radio support bracket using four sets of 5/16-inch diameter screws, nuts, flatwashers and lockwashers provided in the cloth bag.

NOTE: Make sure that center rear mounting hole on the MT-1029/VRC base assembly has not been used.

6. Check that Mounting Base, Electrical Equipment MT-4626/VRC has been installed.

   a. Check that each MT-4626/VRC has been placed on top plate of installed support assembly with thumbscrews toward inside of vehicle and all mounting holes have been aligned. (Refer to (O)TM 11-5810-312-12, chap 2, fig 2-9(3), p 2-30.)

   b. Check that each MT-4626/VRC is secured to support assembly using 5/16-inch diameter mounting hardware provided in the cloth bag. Check that a lockwasher has been placed under each screw head and nut and tightened securely. (Refer to (O)TM 11-5810-312-12, chap 2, para 2-28, p 2-29.)

7. Check installation of speech security equipment.

   a. Check that Vehicular Power Adapter HYP-57/TSEC has been attached to the back of each TSEC/KY-57. (Refer to (O)TM 11-5810-312-12, chap 2, para 2-15, p 2-10.)

   b. Check that each TSEC/KY-57, with HYP-57/TSEC attached, has been placed on a MT-4626/VRC and the unit has been slid towards the back until the edge of each HYP-57/TSEC is under MT-4626/VRC top lip. (Refer to (O)TM 11-5810-312-12, chap 2, para 2-29, p 2-29.)

   c. Check that MT-4626/VRC retaining bracket has been engaged with TSEC/KY-57 hold-down bar and tightened thumbscrew securely. (Refer to (O)TM 11-5810-312-12, chap 1, fig 1-13, p 1-19.)

   d. Check that Cable CK-13061/U has been connected to TSEC/KY-57 front panel radio receptacle and Cable CX-13063/U to power receptacle located on back of HYP-57/TSEC. (Refer to (O)TM 11-5810-312-12, chap 2, fig 2-7, pp 2-12 thru 2-23.)

   e. Check that cables to vehicle have been secured using universal cable clamping kit. (Refer to (O)TM 11-5810-312-12, fig 1-16, p 1-22.)

8. Record all faults noted and corrective actions taken on DA Form 2404.

9. Give completed DA Form 2404 to your immediate supervisor.

REFERENCES

(O)TM 11-5810-312-12, Operator's and Organizational Maintenance Manual Installation Kits for Communications Security Equipment, TSEC/KY-57.

TASK

113-609-7034

Check Installation of COMSEC Equipment, TSEC/KY-57 and Radio Set AN/VRC-46 in Utility Truck, 1/4-Ton 4x4 M151

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor. You will be provided with the following:

1. (O)TM 11-5810-312-12.
2. Installation Kit MK-1838 installed in M151.
3. Radio Set AN/VRC-46.
4. DA Form 2404.

STANDARDS

This task has been performed correctly when, within 15 minutes, you have checked the installation of COMSEC equipment TSEC/KY-57 in a tactical vehicle; performance measures 1 through 6 have been completed, and a DA Form 2404 with all faults noted and corrective actions taken has been given to your immediate supervisor.

PERFORMANCE MEASURES

1. Check that Vehiclular Power Adapter HYP-57/TSEC has been attached to the back of TSEC/KY-57. (Refer to (O)TM 11-5810-312-12, chap 2, para 2-15, p 2-10.)
2. Check that TSEC/KY-57 with HYP-57/TSEC attached, has been placed on MT-4626/VRC and the unit has been slid towards the back until edge of HYP-57/TSEC is under MT-4626/VRC top lip. (Refer to (O)TM 11-5810-312-12, chap 2, para 2-21c, p 2-25.)

3. Check that Cable CK-13061/U has been connected to TSEC/ KY-57 front panel radio receptacle. Also check that CX-13063/U has been connected to power receptacle located on back of HYP-57/ TSEC. (Refer to (O)TM 11-5810-312-12, chap 2, para 2-21, p 2-25.)

4. Check that cables to vehicle are secured using universal cable clamping kit. (Refer to (O)TM 11-5810-312-12, chap 2, para 2-21e, p 2-25.)

5. Record all faults noted and corrective actions taken on DA Form 2404.

6. Give completed DA Form 2404 to your immediate supervisor.

REFERENCES

(O)TM 11-5810-312-12, Operator's and Organizational Maintenance Manual Installation Kits for Communications Security Equipment, TSEC/ KY-57(U).

TASK

113-609-7035

Check Performance of Organizational Quarterly Preventive Maintenance on Communications Security Equipment, TSEC/KY-57

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor. You will be provided with the following:

1. (O)TM 11-5810-312-12.
2. Vinson installed with an AN/VRC-46 in a tactical vehicle.
3. DA Form 2404.
4. DA Pam 310-4.
5. DA Pam 310-7.
6. (C)DA Pam 310-9.

STANDARDS

This task has been performed correctly when, within 20 minutes, you have checked the performance of organizational quarterly preventive maintenance on Communications Security Equipment TSEC/KY-57; performance measures 1 through 9 have been completed; and a DA Form 2404 with all faults noted and corrective actions taken has been given to your immediate supervisor.

PERFORMANCE MEASURES

1. Check that the equipment has been properly installed. (Refer to (O)TM 11-5810-312-12, chap 2, pp 2-1 thru 2-152.)

2. Check that the equipment is operational and that defective component(s) have been replaced or recorded on DA Form 2404. (Refer to (O)TM 11-5810-312-12, chap 4, para 4-13, p 4-9.)

3. Check that all interconnecting cables and connectors have no cracks or breaks and that any cable assemblies that have cracks or breaks have been replaced or recorded on DA Form 2404.

4. Check that any fungus, corrosion, or rust has been removed from the surface of the equipment. (Refer to (O)TM 11-5810-312-12, chap 4, para 4-13, p 4-9.)

5. Check to see that all publications are complete, serviceable, and current or on order. (Refer to DA Pam 310-4.)

6. Check that any required MWOs have been recorded on DA Form 2408-5 and have been applied or scheduled as applicable. (Refer to DA Pam 310-7.)

7. Check that any applicable classified publications required on the equipment are on hand and secure. (Refer to (C)DA Pam 310-9.)

8. Check that all equipment power has been turned off.

9. Give completed DA Form 2404 with all faults noted and corrective actions taken to your immediate supervisor.

REFERENCES

(O)TM 11-5810-312-12, Operator's and Organizational Maintenance Manual Installation Kits for Communications Security Equipment TSEC/KY-57.

DA Pam 310-4, Index of Techincal Manuals, Technical Bulletins, Supply Manuals (type 7, 8, and 9), Supply Bulletins and Lubrication Orders.

DA Pam 310-7, Military Publications: US Army Equipment Index of Modification Work Order.

(C)DA Pam 310-9, Index of Communications, Secuity (COMSEC) Publications(U).

TASK

113-620-7011

Check Installation of Radio Set AN/GRC-106(*) in Tactical Vehicles

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. Task is performed upon installation of Radio Set AN/GRC-106 in tactical vehicles. You will be provided with:

1. Radio Set AN/GRC-106(*) installed in a tactical vehicle.
2. Installation instructions for applicable vehicle.
3. DA Form 2404.

STANDARDS

Task has been performed correctly when, within 30 minutes, you have verified that Radio Set AN/GRC-106 is installed in accordance with instructions in the installation kit, and performance measures 1 through 7 have been completed. Have any faults noted, corrected, and reported to your immediate supervisor.

PERFORMANCE MEASURES

1. Check equipment and verify that it has been installed in accordance with instructions in installation kit.
2. Push up on amplifier. If it moves, seat radio set on mount and adjust crossbar assembly.
3. Check mounting bolts on antenna brackets. Tighten if loose.
4. Insure that antenna tip and tie-down are installed.

5. Check cable routing. Insure grommets are in place and serviceable where cables pass through walls of vehicle.

6. Insure that cables are strapped down.

7. Correct and record on DA Form 2404 faults noted, and report to your immediate supervisor.

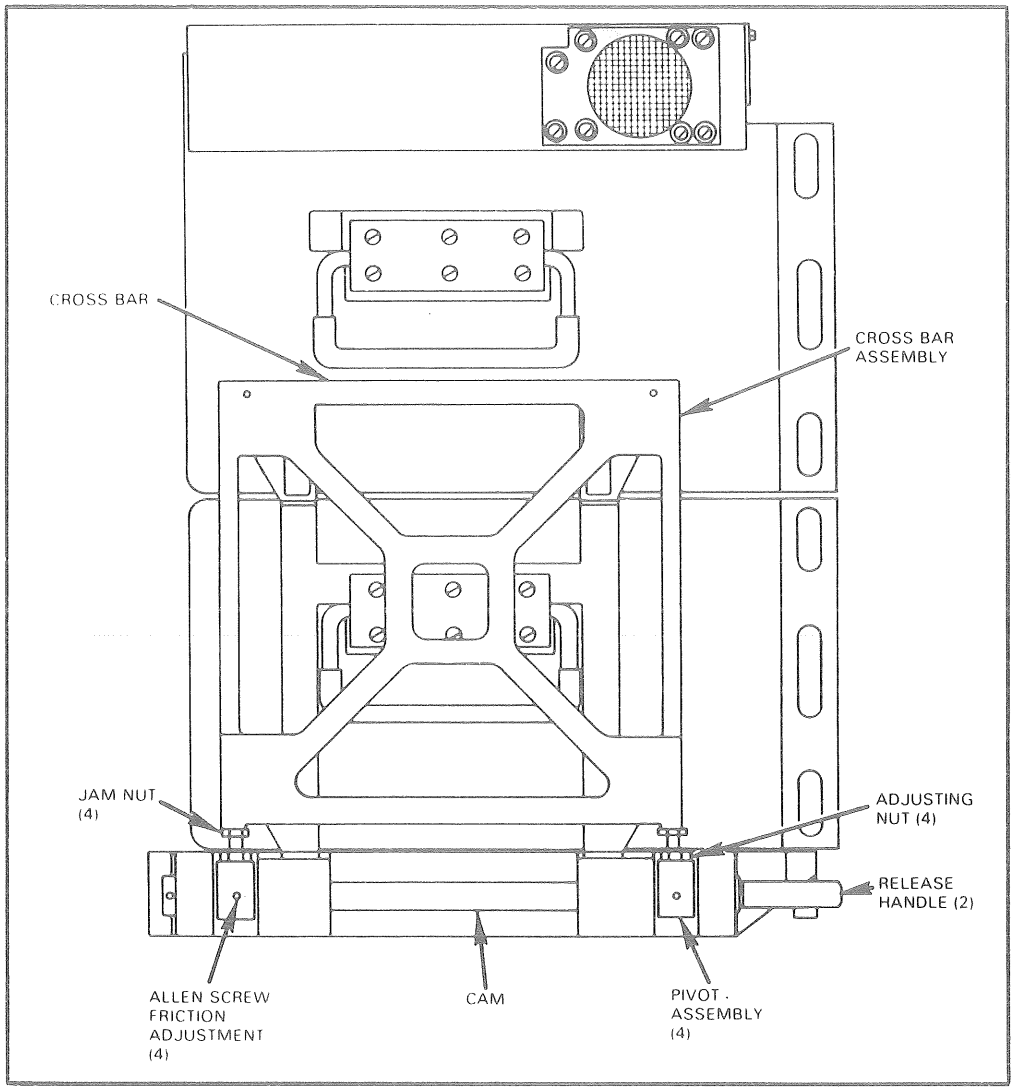


Figure 1. Radio Set AN/GRC-106(*), typical installation mounting details.

REFERENCES

None.

TASK

113-620-7013

Check Performance of Operator's Preventive Maintenance on Radio Set AN/GRC-106(*)

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed as directed by your supervisor or as scheduled to insure that preventive maintenance is correctly performed. You will be provided with:

1. Complete DA Form 2404.
2. Radio Set AN/GRC-106(*).
3. TM 11-5820-520-12.

STANDARDS

Task has been performed correctly when, within 15 minutes, you have completed performance measures 1 through 5, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of DA Form 2404. Any faults found during the performance of operator's preventive maintenance should have been recorded.
2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to TM 11-5820-520-12, chap 4, para 4-2, table 4-1, pp 4-1 and 4-2.)
3. Record any faults not identified by the operator on DA Form 2404.
4. Instruct your operator to correct faults.

5. When faults are not corrected, report them to your immediate supervisor.

REFERENCES

TM 11-5820-520-12, Operator's and Organizational Maintenance Manual: Radio Sets, AN/GRC-106 and AN/GRC-106A.

TASK

113-620-7014

Check Performance of Organizational Preventive Maintenance on Radio Set AN/GRC-106(*)

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor or as scheduled to insure that organizational preventive maintenance is correctly performed. You will be provided with:

1. Completed DA Form 2404.
2. Radio Set AN/GRC-106(*).
3. TM 11-5820-520-12.

STANDARDS

Task has been performed correctly when, within 15 minutes, you have completed performance measures 1 through 5, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of DA Form 2404. Any faults found during the performance of organizational preventive maintenance should have been recorded.
2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to TM 11-5820-520-12, chap 5, para 5-4, table 5-1, p 5-2.)
3. Record any faults not identified by the mechanic on DA Form 2404.

4. Instruct your mechanic to correct faults.

5. When faults are not corrected, report them to your immediate supervisor.

REFERENCES

TM 11-5820-520-12, Operator's and Organizational Maintenance Manual: Radio Sets, AN/GRC-106 and AN/GRC-106A.

TASK

113-622-7007

Check Performance of Operator's Preventive Maintenance on Intercommunication Set AN/VIC-1(V)

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed as directed by your supervisor or as scheduled to insure that preventive maintenance is correctly performed. You will be provided with:

1. Completed DA Form 2404.
2. Intercommunication Set AN/VIC-1(V) installed.
3. TM 11-5830-340-12.

STANDARDS

Task has been performed correctly when, within 15 minutes, you have completed performance measures 1 through 5, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of the operator's DA Form 2404. Any faults found during the performance of operator's preventive maintenance should have been recorded.
2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to TM 11-5830-340-12, chap 4, sec I, para 4-2, table 4-1, pp 4-2 and 4-3.)
3. Record any faults not identified by the operator on DA Form 2404.

4. Instruct your operator to correct faults.

5. When faults are not corrected, report them to your immediate supervisor.

REFERENCES

TM 11-5830-340-12, Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): Intercommunication Set, AN/VIC-1(V).

TASK

113-622-7008

Check Performance of Organizational Preventive Maintenance on Intercommunication Set AN/VIC-1(V)

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor or as scheduled to insure that organizational preventive maintenance is correctly performed. You will be provided with:

1. Completed DA Form 2404.

2. Intercommunication Set AN/VIC-1 installed.

STANDARDS

Task has been performed correctly when, within 15 minutes, you have completed performance measures 1 through 4, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of DA Form 2404. Any faults found during the performance of organizational preventive maintenance should have been recorded.

2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to Task 113-622-3007 of this Manual.)

3. Record any faults not identified by the mechanic on DA Form 2404.

4. Instruct your mechanic to correct faults.

REFERENCES

None.

TASK

113-622-7010

Check Performance of Operator's Preventive Maintenance on Radio Set Control Group AN/GRA-39(*)

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed as directed by your supervisor or as scheduled to insure that preventive maintenance is correctly performed. You will be provided with:

1. Completed DA Form 2404.
2. Radio Set Control Group AN/GRA-39(*).
3. TM 11-5820-477-12.

STANDARDS

Task has been performed correctly when, within 15 minutes, you have completed performance measures 1 through 5, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of operator's DA Form 2404. Any faults found during the performance of operator's preventive maintenance should have been recorded.
2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to TM 11-5820-477-12, chap 4, para 4-4, p 4-1.)
3. Record any faults not identified by the operator on DA Form 2404.

4. Instruct your operator to correct faults.

5. When faults are not corrected, report them to your immediate supervisor.

REFERENCES

TM 11-5820-477-12, Operator's and Organizational Maintenance Manual: Radio Set Control Groups AN/GRA-39, AN/GRA-39A, and AN/GRA-39B.

TASK

113-622-7011

Check Performance of Organizational Preventive Maintenance on Radio Set Control Group AN/GRA-39(*)

CONDITIONS

This task is performed in a tactical or nontactical situation, under all weather conditions, and may be performed in an NBC environment. This task is performed when directed by your supervisor or as scheduled to insure that organizational preventive maintenance is correctly performed. You will be provided with:

1. Completed DA Form 2404.

2. Radio Set Control Group AN/GRA-39(*).

STANDARDS

Task has been performed correctly when, within 15 minutes, you have completed performance measures 1 through 4, and reported any uncorrected faults to your immediate supervisor.

PERFORMANCE MEASURES

1. Check entries in columns a through e of DA Form 2404. Any faults found during the performance of organizational preventive maintenance should have been recorded.

2. Check the equipment and compare the maintenance status of the equipment with entries on DA Form 2404. (Refer to task 113-622-3010 of this Manual.)

3. Record any faults not identified by the mechanic on DA Form 2404.

4. Instruct your mechanic to correct faults.

REFERENCES

None.

TASK

113-623-3019

Prepare Preventive Maintenance Schedule and Record, DD Form 314

CONDITIONS

This task is performed in a tactical or nontactical situation, in a sheltered facility, and may be performed in an NBC environment. Task is performed when initiating a new DD Form 314, when recording scheduled and performed organizational maintenance and lubrication service and recording of nonavailable time (NORS/NORM). You will be provided with:

1. DD Form 314.

2. TM 38-750.

STANDARDS

This task has been performed correctly when, within 15 minutes, DD Form 314 has been prepared, performance measures 1 through 10 have been completed, and the completed form submitted to your supervisor.

PERFORMANCE MEASURES

(For performance measures 1 - 6 entries may be made in either the blocks at the top or bottom of the form.)

1. Enter the current calendar year in the shaded area adjacent to the days of the month. (Refer to TM 38-750, chap 3, para 3-3c(4)(a),p 3-4.)

2. Enter the serial number of the item of equipment for which the form is initiated in the registration number block. (Refer to TM 38-750, chap 3, para 3-3c(4)(b), p 3-4.)

NOTE: If several like items are scheduled for maintenance on the same form i.e., TA-312/PT, list the serial numbers in the REMARKS block. (Refer to TM 38-750, chap 3, para 3-3c(1), pp 3-3 and 3-4.)

3. Enter the administration number (i.e., bumper number) if applicable in the ADMINISTRATIVE NUMBER block. (Refer to TM 38-750, chap 3, para 3-3c(4)(c), p 3-4.)

4. Enter the noun nomenclature of the equipment for which the form is initiated in the NOMENCLATURE block. (Refer to TM 38-750, chap 3, para 3-3c(4)(d), p 3-4.)

   NOTE: When the equipment is reportable on a DA Form 2406, enter the Equipment Category Code (ECC) and Line Item Number (LIN) along with the noun nomenclature in the NOMENCLATURE block.

5. Enter the model designation of the equipment in the MODEL block. (Refer to TM 38-750, chap 3, para 3-3c(4)(e), p 3-4.)

6. Enter the section or organization that the equipment is assigned to in the ASSIGNED TO block. (Refer to TM 38-750, chap 3, para 3-3c(4)(f), p 3-4.)

7. Enter any pertinent service data and NORS/NORM downtime in the REMARKS block, in pencil. (Refer to TM 38-750, chap 3, para 3-3c(4)(g), p 3-4.)

8. Schedule preventive maintenance services at least 1 month or 1 service in advance, in pencil, in the appropriate MONTH/DATE blocks. (Refer to TM 38-750, chap 3, para 3-3c(2), p 3-4.)

9. Insert the appropriate visual signal in the next scheduled SERVICE DUE DATE block along the bottom of the form. If the equipment is out of service, place a RED signal in the lower right-hand corner. (Refer to TM 38-750, chap 3, para 3-3c(7), p 3-7.)

10. Submit prepared form to your supervisor.

REFERENCES

TM 38-750, The Army Maintenance Management System (TAMMS).

Appendix A
REFERENCES

ALLIED COMMUNICATIONS PUBLICATIONS (ACP)

124(C)	Communication Instructions Radiotelegraph Procedure
125(D)	Communciation Instructions Radiotelephone Procedure
126(B)	Communication Instructions Teletypewriter (Teleprinter) Procedure

ARMY REGULATIONS (AR)

611-201	Enlisted Career Management Fields and Military Occupational Specialities

DEPARTMENT OF THE ARMY PAMPHLETS (DA PAM)

310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (Type 7, 8 and 9), Supply Bulletins and Lubrication Orders.
310-7	Military Publications: US Army Equipment Index of Modification Work Orders.
(C)310-9	Index of Communications Security (COMSEC) Publications(U).

FIELD MANUALS (FM)

21-2	Soldier's Manual of Common Tasks, Skill Level 1
21-3	Soldier's Manual of Common Tasks, Skill Levels 2, 3 and 4
24-1(HTF)	Combat Communications (How to Fight)
32-30	Electronic Warfare, Tactics of Defense

TECHNICAL MANUALS (TM)

11-2300-Series	Installation of Radio Sets in Tracked Military Vehicles (DA PAM 310-4)
11-2300-351-14+P-22	Operator's Organizational, DS, and GS Maintenance Manual (Including Repair Parts and Special Tools List) for Installation Kit, Electronic Equipment MK-1234/GRC in Truck Utility, ¼ Ton, 4x4, M151, M151A or M151A2 for Radio Sets AN/GRC-125, AN/GRC-160, AN/VRC-46, AN/VRC-53 and AN/VRC-64

11-2300-351-15-1	Installation of Radio Set AN/GRC-106 in Truck, ¼-Ton, 4x4, M151
11-2300-351-15-2	Operator's Organizational, DS, GS, and Depot Maintenance Manual Instructions for Installing Radio Set AN/VRC-12 Installation Unit in Truck Utility, ¼-Ton, 4x4, M151 or M151A1
11-2300-351-15-6	Installation of Radio Set AN/VRC-49 in Truck, Utility, ¼-Ton, 4x4, M151 or M151A
11-5805-262-12	Operator's and Organizational Maintenance Manual: Switchboards, Telephone, Manual, SB-22/PT and SB-22A/PT
(O) 11-5810-312-12	Operator's Organizational Maintenance Manual: Installation Kits for Communications Security Equipment, TSEC/KY-57(U)
11-5815-204-10	Operator's Manual: Radio Teletypewriter Sets, AN/GRC-46, AN/GRC-46A, AN/GRC-46B, AN/GRC-46C, and AN/VRC-29
11-5815-204-20	Organizational Maintenance Manual: Radio Teletypewriter Sets, AN/GRC-46, AN/GRC-46A, AN/GRC-46B, AN/GRC-46C, and AN/VRC-29
11-5815-331-14	Operator's Organizational, DS and GS Maintenance Manual: Radio Teletypewriter Set AN/VSC-2
11-5815-332-15	Operator's Organizational, DS, GS, and Depot Maintenance Manual: Radio Teletypewriter Set, AN/VSC-3
11-5815-334-12	Operator's and Organizational Maintenance Manual: Radio Teletypewriter Sets AN/GRC-142, AN/GRC-142A, AN/GRC-142B, AN/GRC-122, AN/GRC-122A and AN/GRC-122B
11-5820-295-20	Organizational Maintenance for Radio Set, AN/GRC-19
11-5820-398-12	Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tool Lists): Radio Set, AN/PRC-25 (Including Receiver-Transmitter, Radio, RT-505/PRC-25)
11-5820-401-12	Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools List): AN/VRC-12 Series Radio Sets
11-5820-477-12	Operator's and Organizational Maintenance Manual: Radio Set Control Groups AN/GRA-39, AN/GRA-39A, and AN/GRA-39B
11-5820-498-12	Operator's and Organizational Maintenance Manual: 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
11-5820-520-12	Operator's and Organizational Maintenance Manual: Radio Sets AN/GRC-106 and AN/GRC-106A

11-5820-590-12-1	Operator's and Organizational Maintenance Manual (including Repair Parts and Special Tools Lists): Radio Sets AN/PRC-74B and AN/PRC-74C: Power Supplies PP-4514/PRC-74 and PP-4514A/PRC-74: Battery Boxes CY-6121/PTC-74, CY-6314/PRC-74 and CY-6314A/PRC-74
11-5820-667-12	Operator's and Organizational Maintenance Manual: Radio Set AN/PRC-77 (Including Receiver-Transmitter, Radio RT-841/PRC-77)
11-5830-340-12	Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): Intercommunication Set, AN/VIC-1(V)
11-5985-262-15	Operator's, Organizational, Direct Support, General Support and Depot Maintenance Manual: Antenna, AS-1729/VRC
11-6130-233-12	Operator and Organizational Maintenance Manual: Power Supplies PP-2953/U, PP-2953A/U, PP-2953B/U and PP-2953C/U
38-750	The Army Maintenance Management System (TAMMS)

TRAINING EXTENSION COURSE (TEC) LESSONS

201-113-4501-F	Preparation of AN/PRC-77 for Operation, PT 1: Installation
201-113-4502-F	Preparation of AN/PRC-77 for Operation, PT 2: Op Checks
201-113-4503-F	Preparation of AN/PRC-77 for Operation, PT 3: Pre-Sets

TECHNICAL BULLETINS (TB)

Sig 291	Safety Measures to be Observed When Installing and Using Whip Antennas, Field Type Masts, Towers, Antennas, and Metal Poles That are Used with Communication, Radar, and Direction Finder Equipment

FM 11-31V1/2

21 OCTOBER 1981

By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

Official:

ROBERT M. JOYCE
Brigadier General, United States Army
The Adjutant General

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3 ways to key

1 By your handreceiver

2 Send button

3 Test key three ways to key the test transmitter

TASK

101-539-1304

Request Repair or Modification of Equipment

CONDITIONS

You are an equipment records and parts specialist responsible for requesting maintenance or modification of equipment. This task is performed in all environments. Materials required: a blank Maintenance Request, a partially prepared Equipment Inspection and Maintenance Worksheet, and TM 38-750.

STANDARDS

You must complete all performance measures for one item of equipment requiring repair or application of a Department of the Army modification work order without error.

PERFORMANCE MEASURES

1. Process equipment for turn-in that requires service or repair by support maintenance. (See fig 1.)

   a. Notify maintenance supervisor that the item must be prepared for turn-in.

   b. Complete Equipment Inspection and Maintenance Worksheet. (See fig 1.)

2. Prepare a Maintenance Request for maintenance or application of a Department of Army Modification Work Order (DAMWO). (See fig 2 and 3.)

   NOTE: For MWO request, these procedures will be followed unless otherwise directed.

3. Assemble and forward appropriate documents and equipment requiring repair or service to support maintenance.

EQUIPMENT INSPECTION AND MAINTENANCE WORKSHEET

For use of this form, see TM 38-750; the proponent agency is the Office of the Deputy Chief of Staff for Logistics.

1. ORGANIZATION				2. NOMENCLATURE AND MODEL			
57th Trans Co				Truck M-35A2			
3. REGISTRATION/SERIAL/FSN	4a. MILES	b. HOURS	c. ROUNDS FIRED	d. HOT STARTS	5. DATE	6. TYPE INSPECTION	
Ø4H 6972	36,65Ø				7 Jan 8Ø	Daily	

7. APPLICABLE REFERENCE

TM NUMBER	TM DATE	TM NUMBER	TM DATE
9-232Ø-2Ø9-10/1	29 Oct 76		

INSTRUCTIONS - Perform each check listed in the TM applicable to the inspection performed. Following the sequence listed in pertinent TM, complete form as follows:

COLUMN a - Enter TM item number.

COLUMN b - Enter the applicable condition status symbol.

COLUMN c - Enter deficiencies and shortcomings.

COLUMN d - Show corrective action for deficiency or shortcoming listed in Column c.

COLUMN e - Individual ascertaining completed corrective action initial in this column.

ALL INSPECTIONS AND EQUIPMENT CONDITIONS RECORDED ON THIS FORM HAVE BEEN DETERMINED IN ACCORDANCE WITH DIAGNOSTIC PROCEDURES AND STANDARDS IN THE TM CITED HEREON.

8a. SIGNATURE (Person(s) performing inspection)	8b. TIME	9a. SIGNATURE (Maintenance Supervisor)	9b. TIME	10. MANHOURS REQUIRED
Billy Bass SP/5		SAMPLE		

TM ITEM NO. a	STATUS b	DEFICIENCIES AND SHORTCOMINGS c	CORRECTIVE ACTION d	INITIAL WHEN CORRECTED e
		2 Jan 8Ø		HW
		3 Jan 8Ø		HW
		4 Jan 8Ø		HW
		5 Jan 8Ø		HW
31	X	Generator not charging.	Cleaned and tightened battery cables	BB
25	X	Engine oil pressure sending unit burned out.	Replaced sending unit	BB
27	X	Brakes inoperative	DA Form 24Ø7 (Spt)	BB

Indicates dates equipment used or inspected with no faults found

Initials in col "e" indicates that an action has been indicated or completed

Corrective action shown

NOTE: When equipment requires repair or service at support maintenance

DA FORM 1 JAN 84 2404

Figure 1. DA Form 2404 (Equipment Inspection and Maintenance Worksheet).

NOTE: The equipment log book will accompany the item of equipment to support maintenance.

4. Obtain receipt for equipment turned in to support maintenance. (See fig 2.)

5. File receipt copy (copy 1) of Maintenance Request in unit file.

6. Sign for equipment upon notification that the equipment has been repaired or serviced. Receive equipment and organization copy (copy 4) of the Maintenance Request. (See fig 4.)

7. Post not mission capable supply (NMCS) and not mission capable maintenance (NMCM) information to Preventive Maintenance Schedule and Record. (See fig 5.)

8. File organization copy (copy 4) of Maintenance Request in unit file.

See figures 2 through 5.

Appendix B
TIPS FOR PLANNING YOUR TRAINING PROGRAM

This group of charts will assist you in planning your MOS training program. These charts may be used to help you through the maze of references listed for each task. They will lead you to the best training material for your program.

The charts are designed to show major task areas. Some task areas are common to all soldiers, other areas are for administration and procedures, and some relate to the main types of equipment used within your MOS. Under each major area, you will find modules containing one or more job tasks. The modules may cover a single piece of equipment or a group of procedures within your field. For each module, there is a list of the best training material available to you in your unit. Sometimes supporting material is listed that you may find useful as a substitute if the best training material is not available. It would be a good idea to glance over one of the charts before you proceed.

To make up your training plan, start on the left-hand side of each chart and check off those modules in which you feel you should be better qualified. There may be some modules listed on the chart in which you are well qualified. The task modules you have checked form your plan. After going through each chart and selecting the modules you need, go back and list the modules in an order that will do you the most good.

Before you finish your training plan, go over it with your supervisor. Your supervisor can help you find the training material and give you more ideas on improving your job performance. After you have decided what training you need and in what order, you will be able to come up with an overall training calendar for yourself. When you have accomplished this, you can start on your training and manage your own program.

Once you start a training module, follow the lessons or material as they are listed. Don't skip around within a training module.

Your training plan will be as good as the time you spend using it. Knowing your job is something no one can take away from you.

Common Tasks

Task Groups
Skill Level 1

Module 1

Establish, Enter, or Leave a Radio Net

113-571-1003

Module 2

Recognize Electronic Countermeasures (ECM) and Implement Electronic Counter-Countermeasures (ECCM)

113-573-6001

Module 3

Prepare an Interference (MIJI) Report

113-573-7001

Module 4

Radio Sets AN/PRC-77, or AN/PRC-25

113-587-1052
113-587-2044
113-587-3071

Task Numbers

Training Extension Course Lessons

201-113-4552-E/A
Establishing a Net

936-061-0113-F
RTP, Part 6: Enter Leave Radio Net, Authenticate

Field Manuals

24-1
Combat Communications

32-20
Electronic Warfare, Tactics of Defense

Field Manual

24-16
C-E Operations, Orders, Records and Reports

KTV 600 Series, CEOI

Technical Manuals

11-5820-667-12
Operator's and Organizational Maintenance Manual including an PRC-77 (Including Receiver-Transmitter, Radio RT-841/PRC-77

11-5820-398-12
Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): Radio Set, AN/PRC-25 (Including Receiver-Transmitter, Radio, RT-505/PRC-25)

Training Extension Course Lessons

201-113-4501-F
Prep of Radio Set AN/PRC-77 for Operation, Part 1 Inst.

201-113-4502-F
Prep of Radio Set AN/PRC-77 for Operation Part 2 - Operation

201-113-4503-F
Prep of Radio Set AN/PRC-77 for Operation, Part 3 - Presets

Technical Bulletins

SIG 291
Safety Measures to be Observed When Installing and Using While Antennas, Field Type Masts, Towers, Antennas, and Metal Poles that are used with Communication, Radar, and Direction Finder Equipment

STOP

Related Training Material

Module		Title
1	ACP 124(C)	Radiotelegraph Procedures
	ACP 125(D)	Radiotelegraph Procedures
	ACP 126(B)	Teletypewriter Procedures
	SSO 470	The Automated CEOI
2	TC 32-05-2	ECCM
	TC 32-11	How to Get Out of a Jam
	FM 24-18	Field Radio Technique
4	SS9 735	Operation of Radio Set AN/PRC-77
	SSO 470	The Automated CEOI
	TM 38-750	TAMMS

Guide:

1. Task groups may be taken in any order.
2. TEC lessons within each task group must be taken in order.

Common Tasks

Task Groups
Skill Level 1

Module 1

Establish, Enter, or Leave a Radio Net

113-571-1003

Module 2

Recognize Electronic Countermeasures (ECM) and Implement Electronic Counter-Countermeasures (ECCM)

113-573-6001

Module 3

Prepare an Interference (MIJI) Report

113-573-7001

Module 4

Radio Sets AN/PRC-77, or AN/PRC-25

113-587-1052
113-587-2044
113-587-3071

Task Numbers

Training Extension Course Lessons

201-113-4552-E/A
Establishing a Net

936-061-0113-F
RTP, Part 6: Enter Leave Radio Net, Authenticate

Field Manuals

24-1
Combat Communications

32-20
Electronic Warfare, Tactics of Defense

Field Manual

24-16
C-E Operations, Orders, Records and Reports

KTV 600 Series, CEOI

Technical Manuals

11-5820-667-12
Operator's and Organizational Maintenance Manual Including an PRC-77 (Including Receiver-Transmitter, Radio RT-841/PRC-77

11-5820-398-12
Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): Radio Set, AN/PRC-25 (Including Receiver-Transmitter, Radio, RT-505/PRC-25)

Training Extension Course Lessons

201-113-4501-F
Prep of Radio Set AN/PRC-77 for Operation, Part 1 Inst.

201-113-4502-F
Prep of Radio Set AN/PRC-77 for Operation Part 2 - Operation

201-113-4503-F
Prep of Radio Set AN/PRC-77 for Operation, Part 3 - Presets

Technical Bulletins

SIG 291
Safety Measures to be Observed When Installing and Using While Antennas, Field Type Masts, Towers, Antennas, and Metal Poles that are used with Communication, Radar, and Direction Finder Equipment

STOP

Related Training Material

Module		Title
1	ACP 124(C)	Radiotelegraph Procedures
	ACP 125(D)	Radiotelegraph Procedures
	ACP 126(B)	Teletypewriter Procedures
	SSO 470	The Automated CEOI
2	TC 32-05-2	ECCM
	TC 32-11	How to Get Out of a Jam
	FM 24-18	Field Radio Technique
4	SS9 735	Operation of Radio Set AN/PRC-77
	SSO 470	The Automated CEOI
	TM 38-750	TAMMS

Guide:

1. Task groups may be taken in any order.
2. TEC lessons within each task group must be taken in order.

CRITICAL MOS TASK
TASK GROUPS
SKILL LEVEL 1

Module 10

Switchboard, Field Manual, SB-22/PT

113-694-3016
113-694-3012
113-694-3017
113-694-0011
113-694-7023

Technical Manuals

11-5805-262-12
Operator's and Organizational Maintenance Manual: Switchboards, Telephone, Manual SB-22/PT and SB-22A/PT

38-750
The Army Maintenance Management System (TAMMS)

Training Extension Course Lessons

580-113-6603-A
Operation of SB-22/PT, Part 1

580-113-6604-A
Operation of SB-22/PT, Part 2

580-113-6605-A
Operation of SB-22/PT, Part 3

Army Correspondecne Course Program

SSO 438
Installation, Operation, and Maintenance of Telephone and Local Battery Switchboards

Module 11

Radio Set AN/GRC-19

113-587-4058
113-620-3028

Technical Manuals

11-5820-295-10
Operator's Manual Radio Set, AN/GRC-19

11-5820-295-20
Organizational Maintenance: Radio Set AN/GRC-19

Module 12

AM Radio Sets AN/GRC-106

113-620-1006
113-620-3021
113-620-3022
113-620-0017
113-620-7011
113-620-7013
113-620-7014

Technical Manuals

11-2300-351-15-1
Installation of Radio Set AN/GRC-106 in Truck, ¼-Ton, 4x4, M151

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

38-750
The Army Maintenance Management System (TAMMS)

Training Extension Course Lessons

201-113-4509-F
AN/GRC-106 Operator Maintenance and Troubleshooting Procedures

Army Correspondence Course Program

SSO 730
Radio Set AN/GRC-196(*) Operation

Module 13

AM Radio Teletypewriter Sets AN/GRC-142

113-599-3016
113-599-3017
113-599-0004
113-599-0011
113-599-0012
113-599-0013
113-599-7018
113-599-7021
113-599-7022
113-599-0005

Technical Manuals

11-5815-334-12
Operator's and Organizational Maintenance Manual, Including Repair Parts and special Tools Lists: Radio Teletypewriter Sets AN/GRC-142, AN/GRC-142A, AN/GRC-142B, AN/GRC-122, AN/GRC-122A and AN/GRC-122B

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

38-750
The Army Maintenance Management System (TAMMS)

Army Correspondence Course Program

SSO 733
Radio Teletypewriter Sets AN/GRC-142(*) and AN/GRC-122(*)

Module 14

Radio Teletypewriter Set AN/GRC-46

113-599-0059
113-599-3022
113-599-3023
113-599-7004

Technical Manuals

11-5815-204-10
Operator's Manual Radio Teletypewriter Sets, AN/GRC-46, AN/GRC-46A, AN/GRC-46B, AN/GRC-46C, and AN/VRC-29

11-5815-204-20
Organizational Maintenance Manual: Radio Teletypewriter Sets: AN/GRC-46, AN/GRC-46A, AN/GRC-46B and AN/VRC-29

38-750
The Army Maintenance Management System (TAMMS)

Module 15

Radio Teletypewriter Sets AN/VSC-3

113-599-3018
113-599-3019
113-599-4006
113-599-0014
113-599-1015
113-599-7011
113-599-7012

Technical Manuals

11-5815-332-15
Operator's Organizational, DS, GS, and Depot Maintenance Manual Including Repair Parts and Special Tools Lists: Radio Teletypewriter Set AN/VSC-3

11-5820-520-12
Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools List: Radio Sets AN/GRC-108 and AN/GRC-106A

38-750
The Army Maintenance Management System (TAMMS)

Module 16

Radio Teletypewriter Sets AN/VSC-2

113-599-3020
113-599-3021
113-599-0007
113-599-0017
113-599-7016
113-599-7017

Technical Manuals

11-5815-331-14
Operator, Organizational, DS and GS Maintenance Manual: Radio Teletypewriter Set AN/VSC-2

38-750
The Army Maintenance Management System (TAMMS)

Training Extension Course Lesson

201-113-4619-F
Operator Preventive Maintenance Checks, Services, Troubleshooting Procedures for Radio Teletypewriter Set, AN/VSC-2

Module 17

Power Supply PP-29

113-607-1003
113-607-3005
113-607-4016

Technical Manu

11-6130-233-1
Operator and Organizat Maintenance Manual Inc Repair Parts List: Pow Supplies PP-2953/U 2953A/U, PP-2953B/U 2953C/U

38-750
The Army Maintenan Management System (TA

STOP

MOS TASK GROUPS LEVEL 1

Module 14

ewriter Set
C-46

0059
3022
3023
7004

Module 15

Radio Teletypewriter Sets AN/VSC-3

113-599-3018
113-599-3019
113-599-4006
113-599-0014
113-599-1015
113-599-7011
113-599-7012

Module 16

Radio Teletypewriter Sets AN/VSC-2

113-599-3020
113-599-3021
113-599-0007
113-599-0017
113-599-7016
113-599-7017

Module 17

Power Supply PP-2953/U

113-607-1003
113-607-3005
113-607-4016

Module 18

The Army Maintenance Management System (TAMMS)

113-625-3001
113-625-3002
113-623-3020
113-623-3022
113-623-3019

Task Numbers

Manuals

-204-10
anual Radio
ets, AN/GRC-
6A, AN/GRC-
C-46C, and
C-29

-204-20
Maintenance
Teletypewriter
46, AN/GRC-
C-46B and
C-29

750
aintenance
stem (TAMMS)

Technical Manuals

11-5815-332-15
Operator's Organizational, DS, GS, and Depot Maintenance Manual Including Repair Parts and Special Tools Lists: Radio Teletypewriter Set AN/VSC-3

11-5820-520-12
Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools List: Radio Sets AN/GRC-108 and AN/GRC-106A

38-750
The Army Maintenance Management System (TAMMS)

Technical Manuals

11-5815-331-14
Operator, Organizational, DS and GS Maintenance Manual: Radio Teletypewriter Set AN/VSC-2

38-750
The Army Maintenance Management System (TAMMS)

Training Extension Course Lesson

201-113-4619-F
Operator Preventive Maintenance Checks, Services, Troubleshooting Procedures for Radio Teletypewriter Set, AN/VSC-2

Technical Manuals

11-6130-233-12
Operator and Organizational Maintenance Manual Including Repair Parts List: Power Supplies PP-2953/U, PP-2953A/U, PP-2953B/U and PP-2953C/U

38-750
The Army Maintenance Management System (TAMMS)

Technical Manual

38-750
The Army Maintenance Management System (TAMMS)

Training Extension Course Lessons

510-091-6459-F
Preparing, Maintaining and Using DA Form 2407, Part 1

510-091-6460-F
Preparing, Maintaining and Using DA Form 2407, Part 2

510-091-6461-F
Preparing, Maintaining and Using DA Form 2407, Part 3

510-091-6462-F
Preparing, Maintaining and Using DA Form 2407, Part 4

510-091-6474-F
Preparing, Maintaining and using DA Form 2408-14

510-091-6464-F
Preparing, Maintaining and Using DA Form 314, Part 1

510-091-6465-F
Preparing, Maintaining and Using DD Form 314, Part 2

OP

Related Training Material

Module		Title
1	TM 11-5820-401-12	VRC-12 Series Radios
3	TM 11-5965-280-15	Operator's Organizational, DS, GS, and Depot Maintenance Manual Including Repair Parts and Special Tools List: Handset, H-189/GR

Guide:

1. Task groups may be taken in any order.
2. TEC lessons within each task group must be taken in order.

Critical MOS Task

Task Groups

Module 1

Test Sets

113-574-2061

Technical Manual

11-6625-2718-14&P

Operator's Organizational, Direct Support, and General Support Maintenance Manual Including Repair Parts and Special Tools List: Test Set, Radio Frequency Power AN/URM-182 (NSN 6625-00-148-9371)

Module 2

Radio Set Control Groups AN/GRA-39

113-622-3009
113-622-3010
113-622-0006
113-622-7010
113-622-7011

Technical Manuals

11-5820-401-12

Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tool Lists for AN/VRC-12 Series Radio Sets

11-5820-477-12

Operator's and Organizational Maintenance Manual: Radio Set Control Groups AN/GRA-39, AN/GRA-39A and AN/GRA-39B

38-750

The Army Maintenance Management System (TAMMS)

Module 3

Radio Set AN/PRC-74(*)

113-620-0022
113-620-3036
113-620-3037
113-620-3038

Technical Manuals

11-5820-590-12-1

Operators and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): Radio Sets AN/PRC-74B and AN/PRC-74C Power Supplies PP-4514/PRC-74 and PP-4514A/PRC-74: Battery Boxes CY-6121/PRC-74, CY-6314, PRC-74 and CY-6314/PRC-74

11-5820-590-12

Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools Lists): Radio Sets AN/PRC-74 and AN/PRC-74A and Power Supply, PP-4514/PRC-74

Module 4

Radio Set AN/PRC-77

113-587-3016
113-587-3017
113-587-0026
113-587-7016
113-587-7017

Technical Manuals

11-5820-667-12

Operator's and Organizational Maintenance Manual Including Repair Parts Lists: Radio Set AN/PRC-77 (Including Receiver Transmitter, Radio RT-841/PRC-77)

11-5965-280-15

Operator's Organizational, DS, GS, and Depot Maintenance Manual Including Repair Parts or Special Tools List: Handset, H-189/GR

11-6625-823-15

Operator, Organizational, Direct Support, General Support and Depot Maintenance Manual Including Repair Parts and Special Tools Lists: Test Set Battery AN/PSM-13

38-750

The Army Maintenance Management System (TAMMS)

Army Correspondence Course Program

SSO 734

Tactical FM Radio Sets

SS9 736

Organizational Troubleshooting of Radio Set AN/PRC-77 (SOJT)

Module 5

FM Radio Set AN/GRC-125/160

113-587-1040
113-587-1013
113-587-3020
113-587-3021
113-587-0027
113-587-7024
113-587-7025

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Military Publications: US Army Equipment Index of Modification Work Orders

Technical Manuals

Applicable TM 11-2300 Series

11-2300-351-15-4

Operator's, Organizational, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Installation Kit, Electronic Equipment MK-1234/GRC (NSN 5820-00-460-6804) in Truck Utility, ¼-Ton, 4x4, M151, M151A1 or M151A2 for Radio Sets AN/GRC-125, AN/GRC-160, AN/VRC-46, AN/VRC-53 and AN/VRC-64

11-5820-401-12

Operator's and organizational Maintenance Manual Including Repair Parts and Special Tool Lists for AN/VRC-12 Series Radio Sets

11-5820-498-12

Operator's and Organizational Maintenance Manual: Radio Set Control Groups AN/GRA-39, AN/GRA-39A and AN/GRA-39B

Module 6

FM Radio Set AN/VRC-53/64

113-599-0062
113-587-3074
113-587-3076

Technical Manual

11-5820-498-12

Operator's and Organizational Maintenance Manual: 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

11-5985-262-15

Operator's Organizational, Direct Support, General Support and Depot Maintenance Manual: Antenna, AS-1729/VRC (NSN 5985-00-985-9024)

38-750

The Army Maintenance Management System (TAMMS)

Army Correspondence Course Program

SS9 736

Organizational Troubleshooting of Radio Set AN/PRC-77 (SOJT)

Module 7

FM Radio Sets AN/VRC-12 Ser

113-587-1039
113-587-1019
113-587-3028
113-587-3029
113-587-0032
113-587-1027
113-587-3036
113-587-3037
113-587-1041
113-587-1033
113-587-3042
113-587-3043
113-587-0042
113-587-4004
113-587-7029
113-587-7040
113-587-3073
113-587-0061
113-587-3075

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310-7

Military Publications: US Equipment Index of Modi Work Orders

Technical Manu

11-2300-351-15

Operator, Organizational, and Depot Maintenance M Instructions for Installing Set AN/VRC-12 Installati in Truck, Utility, ¼-Ton, M151 or M151A

11-2300-351-15

Installation of Radio AN/VRC-49 in Truck U ¼-Ton, 4x4, M151 or M

11-5820-401-10

Operator's Manual: Radi AN/VRC-12, AN/VRC AN/VRC-44, AN/VRC AN/VRC-46, AN/VRC AN/VRC-48 and AN/VR (Used Without Intercom S

STOP

Critical MOS Task

Task Groups

ule 5

**dio Set
125/160**

7-1040
7-1013
7-3020
7-3021
7-0027
7-7024
7-7025

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of Modification
Orders

Manuals

**TM 11-2300
ries**

351-15-4

nizational, Direct
General Support
anual (Including
d Special Tools
on Kit, Electronic
1234/GRC (NSN
6804) in Truck
, 4x4, M151,
51A2 for Radio
GRC-125,
, AN/VRC-46,
nd AN/VRC-64

0-401-12

l organizational
lanual Including
nd Special Tool
C-12 Series Radio
ets

0-498-12

l Organizational
anual: Radio Set
s AN/GRA-39,
nd AN/GRA-39B

11-5985-262-15
Operator's Organizational, Direct Support, General Support and Depot Maintenance Manual: Antenna, AS-1729/VRC (NSN 5985-00-985-9024)

38-750
The Army Maintenance Management System (TAMMS)

Army Correspondence Course Program

SS9 736
Organizational Troubleshooting of Radio Set AN/PRC-77 (SOJT)

Module 6

FM Radio Set AN/VRC-53/64

113-599-0062
113-587-3074
113-587-3076

Technical Manual

11-5820-498-12
Operator's and Organizational Maintenance Manual: 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

Module 7

FM Radio Sets AN/VRC-12 Series

113-587-1039
113-587-1019
113-587-3028
113-587-3029
113-587-0032
113-587-1027
113-587-3036
113-587-3037
113-587-1041
113-587-1033
113-587-3042
113-587-3043
113-587-0042
113-587-4004
113-587-7029
113-587-7040
113-587-3073
113-587-0061
113-587-3075

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Military Publications: US Army Equipment Index of Modification Work Orders

Technical Manuals

11-2300-351-15-2
Operator, Organizational, DS, GS, and Depot Maintenance Manual: Instructions for Installing Radio Set AN/VRC-12 Installation Unit in Truck, Utility, ¼-Ton, 4x4, M151 or M151A

11-2300-351-15-6
Installation of Radio Set AN/VRC-49 in Truck Utility, ¼-Ton, 4x4, M151 or M151A

11-5820-401-10-1
Operator's Manual: Radio Sets AN/VRC-12, AN/VRC-43, AN/VRC-44, AN/VRC-45, AN/VRC-46, AN/VRC-47, AN/VRC-48 and AN/VRC-49 (Used Without Intercom System)

11-5820-401-10-2
Operator's Manual: Radio Sets, AN/VRC-12, AN/VRC-43, AN/VRC-44, AN/VRC-45, AN/VRC-46, AN/VRC-47, AN/VRC-48, AN/VRC-49 (Used With Intercom Systems)

11-5820-401-12
Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tool Lists for AN/VRC-12 Series Radio Sets

11-5985-262-15
Operator's Organizational, Direct Support, General Support and Depot Maintenance Manual: Antenna, AS-1729/VRC (NSN 5985-00-985-9024)

38-750
The Army Maintenance Management System (TAMMS)

Army Correspondence Course Program

SSO 712
Organizational Maintenance of Radio Set AN/VRC-12

SSO 734
Tactical FM Radio Sets

Module 8

FM Radio Sets Secure Systems Equipment

113-609-0099
113-609-0102
113-609-1034
113-609-1059
113-609-2010
113-609-2029
113-609-3061
113-609-4133
113-609-7033
113-609-7034
113-609-7035

Department of the Army Pamphlets

310-4
US Army Index of Technical Manuals, Technical Bulletins, Supply Manuals, Supply Bulletins and Lubrication Orders

310-7
US Army Equipment Index of Modification Work Orders

310-9
US Army Index of COMSEC Publications

Technical Manuals

11-5810-312-12
Operator's and organizational Maintenance Manual Installation Kits for Communications Security Equipment, TSEc/KY-57

11-5810-256-OP-2
Operating Procedures for Communications Security Equipment TSEC/KY-57 in Manpack Operations

11-5810-256-OP-3
Operating Procedures for Communications Security Equipment TSEC/KY-57 in Wheeled Vehicles

11-5810-256-OP-4
Operating Procedures for Communications Security Equipment TSEC/KY-57 in Tracked Vehicles

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Module 9

Intercommunications Set AN/VIC-1(V)

113-622-3008
113-622-3007
113-622-0005
113-622-7007
113-622-7008

Technical Manuals

11-5820-401-10-2
Operator's Manual: Radio Sets, An/VRC-12, AN/VRC-43, AN/VRC-44, AN/VRC-45, AN/VRC-46, AN/VRC-47, AN/VRC-48, AN/VRC-49 (Used With Intercom Systems)

11-5820-401-12
Operator's and Organizational Maintenance Manual Including Repair Parts and special Tool Lists for AN/VRC-12 Series Radio Sets

11-5830-340-12
Operator's and Organizational Maintenance Manual Including Repair Parts and Special Tools Lists: Intercommunication Set AN/VIC-1(V)

38-750
The Army Maintenance Management System (TAMMS)

Task Numbers

STOP

Guide:

1. Task groups may be taken in any order.
2. TEC lessons within each task group must be taken in order.