

TM 9-4935-483-34

TECHNICAL MANUAL

DS AND GS MAINTENANCE MANUAL TEST SET, GUIDED MISSILE INFRARED TRACKER

AN/TSM 114

This copy is a reprint which includes current pages from Changes 1 and 2.

HEADQUARTERS, DEPARTMENT OF THE ARMY
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DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL
 TEST SET, GUIDED MISSILE INFRARED TRACKER
 AN/TSM 114

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PART NUMBER CONFIGURATION STATUS TABLE

This table is provided to enable maintenance personnel to determine if all authorized configuration changes have been incorporated in the equipment. The table is organized in figure number sequence as arranged in this manual. Beside each equipment item listed you will find the part number history of the item. The latest part number will be listed first with previous part numbers following in descending order. After the part number history is a list of all applicable Modification Instructions (MI's) pertaining to the item. Maintenance personnel are urged to constantly refer to this table in order to keep their equipment up-to-date. Part numbers will be removed from the schematic diagrams by future manual changes. Therefore, the part number configuration status table will become your source for the latest part number information.

When manual change pages are published as a result of approved configuration changes, the TM change transmittal sheet will indicate the applicable MI(s) and the affected pages. Be sure to retain the old pages until the modification has been applied to all of your equipment then insert the new change pages.

FIG.NO.	ITEM	PART NO. HISTORY	APPLICABLE MI'S
1-1	Test Set Guided Missile Infrared Tracker-AN/TSM 114.	10277970	
2-23	Optical Alignment Fixture	10277942	
2-24	OAC Optical Functions	10220300	----
2-25	Monitor Unit	10277941	-----
2-26	Electronic Component Assem- bly 1A1A1	10276959/10219959	
2-27	Circuit Card Assembly 1A1A2	10276593/102783510	MI 07461A-40/1
2-28	Circuit Card Assembly 1A1A3	10278354	----
2-29	Circuit Card Assembly 1A1A4	10277931	-----
2-30	Circuit Card Assembly 1A1A5	10277934	----
2-31	Circuit Card Assembly 1A1A6	10277929	-----
2-32	Circuit Card Assembly 1A1A7	10277935	-----
2-33	Circuit Card Assembly 1A1A8	10278379	-----
2-34	Circuit Card Assembly 1A1A9	10278384	-----
2-35	Circuit Card Assembly 1A1A10	10278326	----

FIG. NO.	ITEM	PART NO. HISTORY	APPLICABLE MI'S
2-36	Electronic Component Assem- bly 1A1A11	10276958/10278393	----
2-38	Circuit Card Assembly 1A2A1	10277940	----
2-39	Optical Alignment Collimator	10220300	----
2-39	Circuit Card Assembly 1A3A1	10220296	----
2-40	Circuit Card Assembly 1A4A1	10278213	----
3-2	Circuit Card Assembly 1A1A2A1	10278352	----
3-3	Circuit Card Assembly 1A1A2A2	10220043	----
3-3	Circuit Card Assembly 1A1A2A2A1	10276592/10278311	----
3-4	Circuit Card Assembly 1A1A3A1	10278355	----
3-5	Circuit Card Assembly 1A1A3A2	10220049	----
3-6	Circuit Card Assembly 1A1A4A1	10220054	----
3-7	Circuit Card Assembly 1A1A4A2	10278362	----
3-8	Circuit Card Assembly 1A1A5A1	10278365	----
3-9	Circuit Card Assembly 1A1A5A2	10277937	----
3-10	Circuit Card Assembly 1A1A6A1	10277925	----
3-11	Circuit Card Assembly 1A1A6A2	10277927	----
3-12	Circuit Card Assembly 1A1A7A1	10278375	----
3-13	Circuit Card Assembly 1A1A7A2	10277936	----
3-14	Circuit Card Assembly 1A1A8A1	10278382	----
3-15	Circuit Card Assembly 1A1A8A2	10278380	----
3-16	Circuit Card Assembly 1A1A9A1	10278385	----
3-17	Circuit Card Assembly 1A1A9A2	10278387	----
3-18	Circuit Card Assembly 1A1A10A1	10220090	----
3-19	Circuit Card Assembly 1A1A10A2	10278327	----
3-20	Circuit Card Assembly 1A1A11A1	10278394	----
4-1	Optical Alignment Fixture Base - Disassembly and Assembly	10278309	----

SAFETY SUMMARY

The following are general safety precautions that personnel must understand and apply during operation and maintenance.

KEEP AWAY FROM LIVE CIRCUITS

Operating personnel must observe safety regulations at all times. Do not replace components or make adjustments inside the equipment with high voltage present. Under certain conditions, dangerous potentials may exist when the power control is in the off position. To avoid injury, remove power and discharge and ground a circuit before touching it.

DO NOT SERVICE OR ADJUST ALONE

Under no circumstances should any person reach into the enclosure for the purpose of servicing or adjusting the equipment except in the presence of someone who is capable of rendering aid.

RESUSCITATION

Personnel working with or near high voltages should be familiar with modern methods of resuscitation.

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Purpose and Scope.

This manual contains a description of, and instructions for, the direct support and general support maintenance of the Test Set, Guided Missile Infrared Tracker, AN/TSM 114, (fig. 1-1). It is to be used in conjunction with TM 9-4935-480-14. Hereafter in this manual the Tracker Test Set will be identified as the TTS.

1-2. Troubleshooting Procedures.

Troubleshooting and testing of the TTS and subassemblies will be accomplished by the procedures contained in chapter 3.

1-3. Forms, Records, and Reports.

All personnel and organizations responsible for operating and/or maintaining this equipment are also responsible for the preparation and disposition of appropriate forms, records, and reports.

1-4. Security Responsibilities.

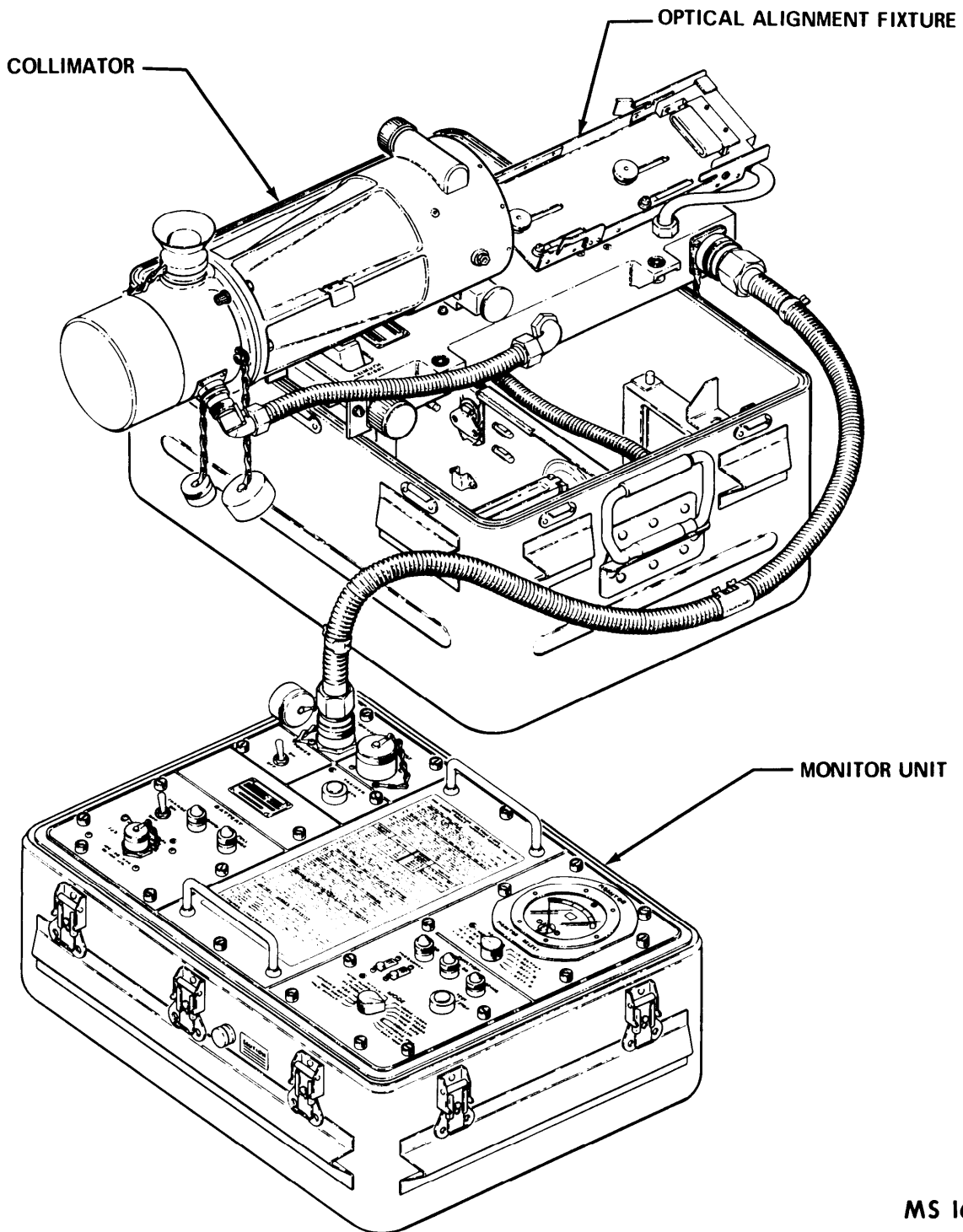
a. The security classification of the DRAGON Weapon System Equipment is UNCLASSIFIED. Portions of data relative to the DRAGON system are classified.

b. The importance of security of classified material cannot be overemphasized. Security is an individual, as well as a command, responsibility.

c. Installation security and safeguarding of classified material will be in accordance with current directives.

1-5. Reports of Equipment Manual Improvements.

Reports of errors, omissions, and recommendations for improving this publication by the individual user are encouraged. U. S. Marine Corps reports should be submitted on Form NAVMC 10772 in accordance with MCO 5600.41 . All others should be submitted on DA Form 2028, Recommended Changes to Publications, and forward directly to: Commander, U. S. Army Missile Command, ATTN: DRSMI-NPMS, Redstone Arsenal, Alabama 35809.



MS 161,572 A

Figure 1-1. Test set guided missile infrared tracker, AN/TSM 114 (10277930)

1-6. Shipment and Storage.

Data related to the shipment and storage of the TTS are contained in TM 9-4935-480-14.

Section II. DESCRIPTION AND DATA

1-7. Physical Description.

a. The TTS is a crew portable, battery operated, test set designed for field use with the DRAGON system. The TTS tests the Infrared Tracker, GM, SU-36/P, Launch Effects Trainer, GM, M54 and Monitoring Set, GM, Training, AN/TSQ-T1.

b. The TTS is composed of three major subassemblies as depicted in figure 1-1.

(1) The optical alignment fixture (OAF) is a channeled metal platform for mounting the tracker. It has mechanical provisions for mounting and aligning the infrared visual alignment collimator, hereafter called the (OAC) with reference to the tracker. The OAF electrically interconnects the monitor unit with the OAC and the tracker. It also houses printed circuit card 2A1. The OAF has light intensity controls used during self-test and testing. The OAF is stored in the case cover and is rigidly mounted on the inverted cover during testing.

(2) The OAC is a cylindrical metal object, housing an objective lens assembly, a collimator reticle assembly, an eyepiece assembly, an electronics assembly (printed circuit card 3A1), and the infrared (IR) diodes utilized to stimulate the tracker during test. The objective lens is used to focus the IR source onto the detector assembly of the tracker, and is adjusted by a mechanical knob located on the top forward end of the OAC. The reticle cell contains a reticle with five aim points and horizontal and vertical crosshairs graduated in milliradians. The eyepiece assembly presents the reticle to the operator and is adjusted by a focusing ring to adapt the optics to the individual operator's eyesight. The two IR diodes, a self-test light, and a reticle backlight are located in the aft end of the OAC.

(3) The monitor unit contains the unit power system, stimuli electronics, monitoring electronics, and a control panel.

c. Complete physical data and further description of the TTS are contained in TM 9-4935-480-14.

1-8. Functional Description.

a. The TTS is used to provide operational go or no go checks of the DRAGON tracker and, if the tracker is defective, to identify the failed test mode. Go or

no go checks of the tracker is accomplished by stimulating the tracker detector assembly with an IR source modulated at known frequencies, and evaluating the electrical outputs of the tracker. It also checks the output of the tracker firing mechanism. The TTS provides the capability for an operational evaluation, by the operator, of the launch effects trainer (LET) and the trainer monitoring set (MTS).

b. The TTS has self-test capabilities, which provide a check of the test set batteries, voltage regulators, and IR source. When operating on fully charged batteries with no external power applied, it can check approximately 14 trackers and perform four self tests without battery recharging.

Section III. DEMOLITION TO PREVENT ENEMY USE

1-9. Methods of Destruction.

If capture or abandonment of the TTS to an enemy is imminent, the responsible unit commander may decide to destroy it. Based on this decision, the TTS may be rendered inoperable by one of the following means:

- a. Placing 1/2 pound of composition explosive in direct contact with the piece to be destroyed and detonating with a safety fuse.
- b. Weapon fire.
- c. Manually smashing with any available heavy object.
- d. Disassembly, scattering and concealment.

1-10. Items to be Destroyed.

When the TTS is to be destroyed, regardless of method, the following priority should be used:

- a. Optical alignment collimator.
- b. Monitor unit.
- c. Optical alignment fixture.