TECHNICAL MANUAL

OPERATOR AND ORGANIZATIONAL MAINTENANCE MANUAL

TEST SET, LASER INFRARED OBSERVATION DEVICE TS-3620/GVS-5 (NSN 5860-01-052-9477)

HEADQUARTERS, DEPARTMENT OF THE ARMY
MARCH 1979

This test equipment is used to test a rangefinder containing a pulse (Q-switched) Neodymium YAG laser transmitter. Severe eye damage may result if the rangefinder is fired in an unauthorized area or at flat glass surfaces unless proper eye protection is provided.

Any personnel without proper eye protection who may have been in the vicinity of a laser firing must obtain an eye examination by an ophthalmologist to be sure no eye damage has been done.

Eye protection: Goggles, Safety Laser (NSN 4240-00-258-2054).

Medical surveillance is required for maintenance personnel as stated in paragraph 1-5d(6), AR 40-46.

TECHNICAL MANUAL
No. 11-6625-2684-12

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC *30 March 1979*

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REPORTING OF ERRORS

You can improve this manual by recommending improvements using DA Form 2028-2 located in the back of the manual. Simply tear out the self-addressed form, fill it out as shown on the sample, fold it where shown, and drop it in the mail.

If there are no blank DA Forms 2028-2 in the back of your manual, use the standard DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forward to the Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703.

In either case a reply will be furnished direct to you.

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1-1. Scope

This manual contains instructions for operator and organizational maintenance for Test Set, Laser Infrared Observation Device TS-3620/GVS-5 (LR Test Set). It includes instructions for installing, operating and maintaining the LR Test Set. It also lists tools, materials and test equipment for operator and organizational maintenance.

1-2. Indexes of Publications

a. DA Pam 310-4. Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

b. DA Pam 310-7. Refer to DA Pam 310-7 to determine whether there are modification work orders (MWOs) pertaining to the equipment.

1-3. Forms and Records

a. Reports of Maintenance and Unsatisfactory Equipment. Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750.

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Packaging Improvement Report) as prescribed in AR 700-58/NAVSUPINST 4030.29/AFR 71-13/MCO P4030.29A, and DLAR 4145.8.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33B/AFR 75-18/MCO P4610.19C and DLAR 4500.15.

1-4. Administrative Storage

Administrative storage information is contained in TM 740-90-1.

1-5. Destruction of Army Materiel to Prevent Enemy Use

Instructions for destruction of Army materiel to prevent enemy use are contained in TM 750-244-2.

1-6. Reporting Equipment Improvement Recommendations (EIR's)

EIR's will be prepared using Standard Form 368, Quarterly Deficiency Report. Instructions for preparing EIR's are provided in TM 38-750, the Army Maintenance Management System. EIR's should be mailed to the Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. A reply will be furnished direct to you.

1-7. Calibration

The LR Test Set will be calibrated as indicated on the calibration decal.

1-8. Hand Receipts

Hand receipts for End Item/Components of End Item (COEI), Basic Issue Items (BII), and Additional Authorized List (AAL) items are published in Hand Receipt Manual TM 11-6625-2684-12-HR. This manual is published to aid in property accountability and is available through: Commander, US Army Adjutant General Publication Center, ATTN: AGDL-OD, 1655 Woodson Road, St. Louis, MO 63114.

Section II. DESCRIPTION AND DATA

1-9. Purpose and Use

The LR Test Set provides a rapid GO NO-GO test of Laser Infrared Observation Device MX-9838/GVS-5 (LR) at the direct support level of maintenance. It is also used as a troubleshooting device and provides calibrated optical signals to check the ranging accuracy and to monitor the transmitted laser output from the LR.

1-10. Description

The LR Test Set (fig. l-l) is a portable, self-contained unit housed in a combination transit and

test case. The cover of the case is detachable and contains two storage compartments, one for the ac power cable assembly and the other for the adapter cable assembly. Threaded bosses are provided on the cover of the ac power cable compartment for securing the alinement bracket assembly, using its own captive screws. The bottom half of the case contains the electronic test set assembly including the front panel (LR Tester). The front panel contains a threaded boss for mounting the alinement bracket assembly which in turn mounts the LR. Optical windows, on the front panel directly under the LR when it is mounted, provide a means for laser energy to safely enter the LR Tester and for optical signals from the LR Tester to enter the LR. The front panel also contains the switches, indicator lights and connectors which control the functions of the LR Tester and the electrical interface with external test equipment.

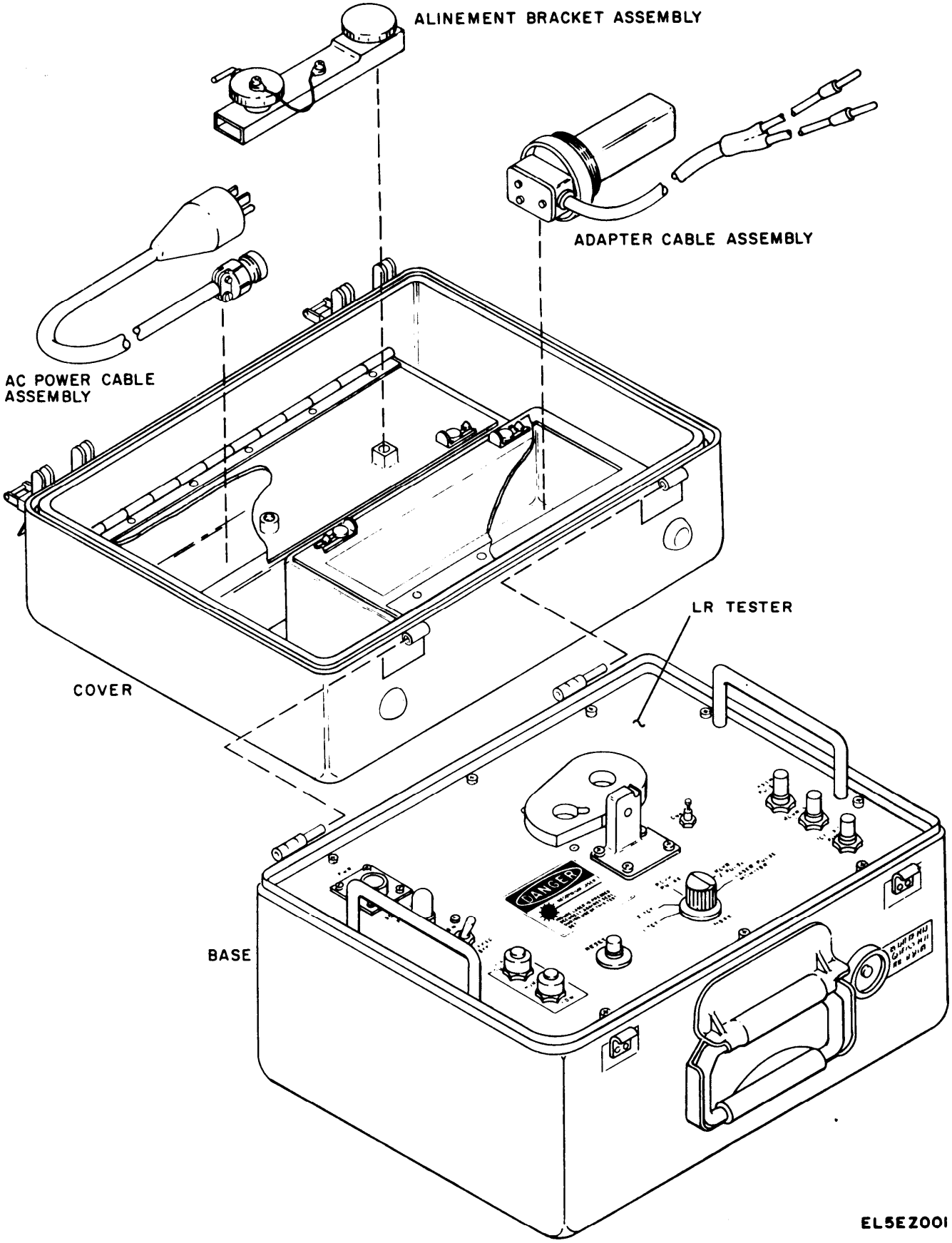


Figure 1-1. LR Test Set.

1-11. Tabulated Data

The physical, functional, and performance data is listed in table l-1.

Table 1-1. Tablated Data

Weight	30 pounds (13.6 kg)
Size	15.06 in. x 11.56 in. x 9.50 in. 38.25 cm x 29.36 cm x 24.13 cm
Ambient temperature limits	
a. Operating	32° F to 131° F (0° C to 55° C)
b. Nonoperating	-70° F to 160° F (-57° C to 71° C)
Altitude	
a. Operating	Up to 10,000 ft (3,000 m) above sea level
b. Transit	Up to 40,000 ft (12,000 m) above sea level
Relative humidity	
Operating and nonoperating	Up to 94 percent
Input power requirement	115 v, 0.5 amperes, 50-420 Hz
Optical pulse output	
MODE 1 TGT with a 1.06 micron laser pulse input	Width = 10ns + 5ns Power 15-35 nW Delay 4,800 meters ±200 meters
MODE 2 TGT with a 1.06 micron laser pulse input	Width = 10 ns ± 5ns Power 15-35 nW Delay 4,800 meters ±200 meters Spacing 100 meters ±50 meters
MODE RCVR 1 PULSE	Width = 10 ns ± 5 ns Power 30-70 nW PRF 50 Hz ±10 percent
MODE RCVR 2 PULSE	Width = 10 ns ± 5 ns Power 15-35 nW PRF 50 Hz ±10 percent Spacing 100 meters ±50 meters
MODE LASER PULSE MONITOR	Approximately 1 volt into 50 ohms at J2 Width = 20 ns

CHAPTER 2
SERVICE UPON RECEIPT AND INSTALLATION

2-1. Site Requirements

The LR Test Set is intended solely to support the LR. It is completely self contained and easily transportable by one person. The site requires a l15v, 0.5 amperes, 50-420 Hz power source and sufficient space to perform operations and maintenance functions.

2-2. Unpacking and Checking Equipment (Fig. l-l)

Upon receipt, the LR Test Set will be packed in cushioning material ant] enclosed in a standard commercial cardboard box, in accordance with MIL-STD-746A. Use standard procedure for unpacking.

NOTE

Press the relief valve on the equipment case in accordance with instructions on the case. Carefully release the two latches on the cover and open the cover.

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on DD Form 6 in accordance with paragraph 1-3.

b. Check the equipment against the component listing on the equipment cover and the packing slip to see if the shipment is complete. Report all discrepancies in accordance with paragraph 1-3. The equipment should be placed in service even though a minor assembly or part that does not affect proper functioning is missing.

c. Check to see whether the equipment has been modified. (Equipment which has been modified will have the MWO number on the cover, near the nomenclature plate.) Check also to see whether all currently applicable MWOs have been applied. (Current MWOs applicable to the equipment are listed in DA PAM 310-7.)

2-3. Preparation for Use

a. The LR Test Set can be located on any flat surface within reach of a suit able power outlet. Remove cover (fig. l-l). Remove the alinement bracket assembly from the cover and install it on the front panel (fig. 2-l).

NOTE

Set the ON/TRIPPED OFF circuit breaker to TRIPPED OFF, before connecting the ac power cable assembly to the power source.

b. Remove the ac power cable assembly (fig. l-l) from the cover and connect it to the PWR 115V, 50-420 HZ connector on the front panel. Connect the power cable assembly to the 115 vac source.

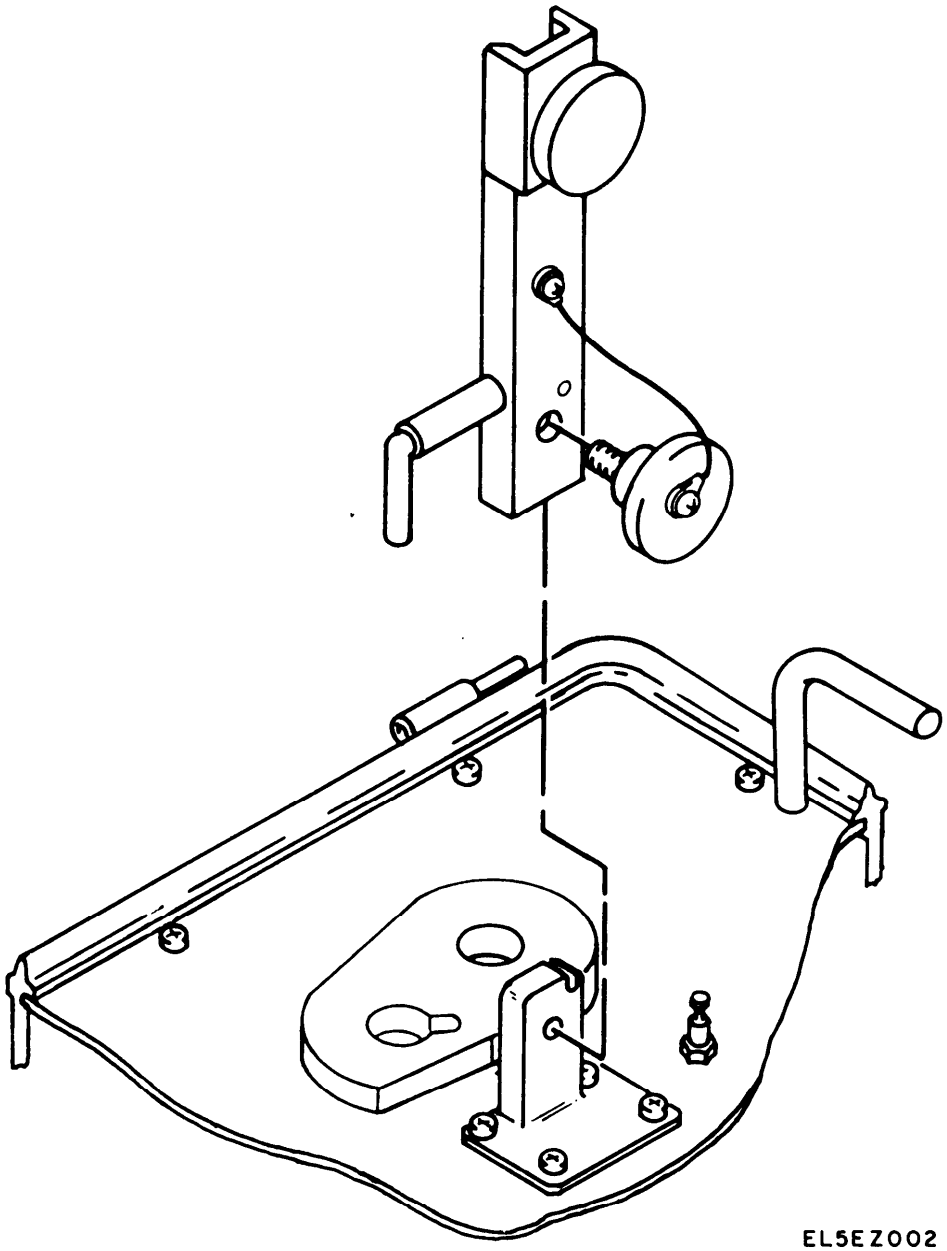
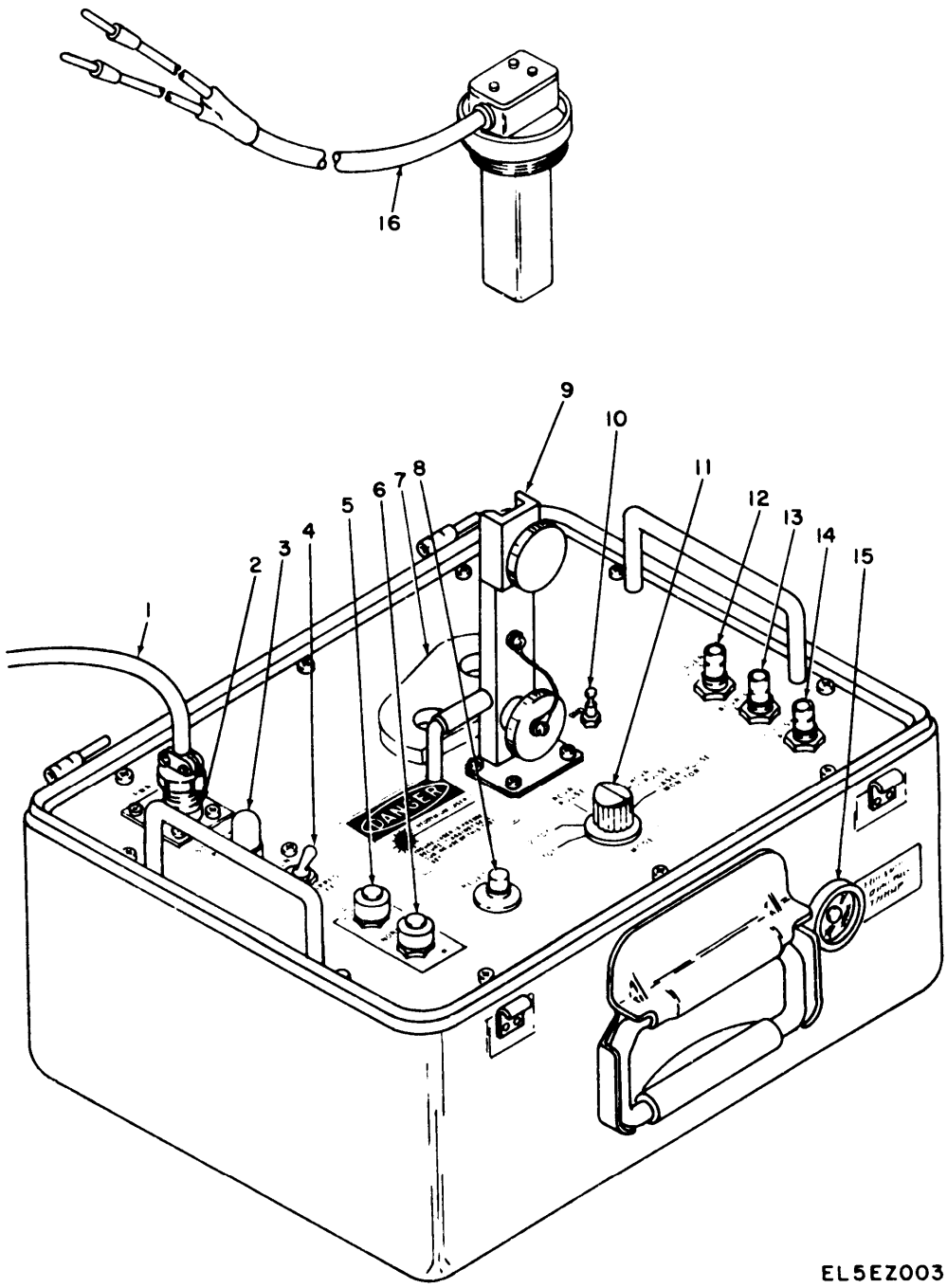


Figure 2-1. Alinement Bracket Assembly Installation.

CHAPTER 3
OPERATING INSTRUCTIONS

3-1. Operator Controls and Indicators

Figure 3-1 shows the location of front panel components. Table 3-1 is keyed to figure 3-1 and lists the controls, indicators, and their functions.



1 AC power cable assernbly
2 PWR 115V 50-420HZ (connector)
3 PWR ON (indictor)
4 ON/TRIPPED OFF (circuit breaker)
5 LASER OUTPUT NORMAL (indicator)
6 LASER OUTPUT LOW (indicator)
7 Shroud, optical
8 RESET (switch)
9 Alinement bracket assembly
10 GND (terminal)
11 MODE (switch)
12 LASER PULSE (connector)
13 RCVR SYNC PULSE (connector)
14 TGT SYNC PULSE (connector)
15 Relief valve
16 Adapter cable assembly

Table 3–1. LR Test Set, Controls and Indicators

Table 3L-1, LR Test Set, Controls and Indicators

Item	Control/Indicator	Function
1	AC power cable assembly	Provides the connection to a power source to operate the LR Tester.
2	PWR 115V 50-420 HZ (connector)	Provides the connection for the ac power cable.
3	PWR ON (indicator-red)	Comes on when power is applied.
4	ON/TRIPPED OFF (circuit breaker)	Applies and removes power. Trips to TRIPPED OFF when an overload occurs in the internal circuitry.
5	LASER OUTPUT NORMAL (indicator-green)	Comes on when the LR pulse output power is within power operating limit,
6	LASER OUTPUT LOW (indicator-red	Comes on when the LR pulse output power is below the proper operating limit.
7	Shroud optical	Prevents laser light leakage when LR is mounted on LR Tester.
8	RESET (pushbutton switch)	When pressed, resets the LASER OUTPUT NORMAL or LASER OUTPUT LOW indicator to off.
9	Alinement bracket assembly	Provides the correct alinement between the LR and the LR Tester.
10	GND (terminal)	Provides a common ground between the associated test equipment and the LR Tester.
11	MODE (5 position rotary switch)	Selects the type of optical pulse transmission when the LR is being tested.
	a. 1 TGT position	*a.* Transmits a single optical pulse to the LR for each received pulse.
	b. 2 TGT position	*b.* Transmits a pair of optical pulses to the LR for each received pulse.
	c. RCVR 1 PULSE position	*c.* Allows optical pulses to be transmitted to the LR.
	d. RCVR 2 PULSE position	*d.* Allows a pair of optical pulses, spaced 0.3 microsecond apart, to be transmitted to the LR.
	e. LASER PULSE MONITOR position	*e.* Allows monitoring the LR output at the LASER PULSE connector.
12	LASER PULSE connector	Provides a voltage waveform representative of the transmitted LR optical pulse.
13	RCVR SYNC PULSE connector	Provides an output sync pulse for each optical pulse from the LR.
14	TGT SYNC PULSE connector	Provides an output sync pulse for each optical pulse or pulse pair transmitted to the LR.
15	Relief valve	Automatically balances internal and external air pressure.
16	Adapter cable assembly	Provides the connection to a dc power source to operate the LR being tested.

3-2. Operating Procedures

Place the LR Test Set in operation as follows:

a. Perform the preparation for use procedure (para 2-3).

NOTE

The LR Tester requires a 20 minute stabilization period.

b. Set the ON/TRIPPED OFF circuit breaker to ON. If the circuit breaker trips to the TRIPPED OFF position, proceed to the troubleshooting procedures in Table 5-, malfunction 1.

c. Observe that the PWR ON indicator comes on. If the indicator does not come on, proceed to the troubleshooting procedures in Table 5-2, malfunction 2.

d. Press the LASER OUPUT NORMAL and LASER OUTPUT LOW indicators, and observe that each comes on when pressed. If the indicators do not come on, proceed to the troubleshooting procedures in Table 5-2, malfunction 3.

e. If the adapter cable assembly is to be used, connect it to a 0-40 vdc power supply and adjust the power supply voltage for +24v.

f. Test for 23.0 to 23.5 vdc by placing the multimeter test leads between the center terminal of the battery adapter and its cap. If the output voltage is not 23.0 to 23.5 vdc, send the adapter cable assembly to direct support maintenance.

g. Refer to TM 11-5860-201-30 for instructions on:

(1) Mounting the LR to the alinement bracket assembly.

(2) Troubleshooting the LR.

(3) Using the adapter cable assembly with the LR.

3-3. Operating Modes

a. 1 TGT MODE. In this mode the LR Tester transmits a single optical pulse for each received optical pulse. This mode tests the LR ranging function.

b. 2 TGT MODE. In this mode the LR Tester transmits a pair of optical pulses for each received

optical pulse. The transmitted pulses have a predetermined delay and pulse spacing. This mode tests the LR multiple target function.

c. RCVR 1 MODE. In this mode the LR Tester generates and transmits optical pulses. These pulses are repeated at a rate of 50 pulses per second.

d. RCVR 2 MODE. In this mode the LR Tester generates and transmits two optical pulses separated by 0.33 microseconds. The pulses are repeated at a rate of 50 pulses per second.

e. LASER MONITOR MODE. In this mode the LR Tester allows the transmitted LR optical pulse to be monitored as an aid in troubleshooting the LR.

3-4. Procedure for shutdown

NOTE

The LR must be removed from the LR Tester prior to shutdown. Refer to TM 11-5860-201-30 for instructions.

a. Set the ON/TRIPPED OFF circuit breaker to TRIPPED OFF.

b. If used, turn off then disconnect the 0-40 vdc power supply from its power source.

c. If used, disconnect and return the adapter cable assembly to its storage location in the cover.

d. Disconnect the ac power cable assembly and return it to its storage location in the cover.

e. Remove the alinement bracket assembly from the front panel and install it in its storage location in the cover.

f. Install and close the cover. Secure the two latches. Return the LR Test Set to storage.

CHAPTER 4
OPERATOR/CREW MAINTENANCE INSTRUCTIONS

4-1. General

The following guidelines shall be observed in performing PMCS:

a. Before you operate. Always keep in mind the CAUTIONS and WARNINGS. Perform your before (B) PMCS.

b. While you operate. Always keep in mind the CAUTIONS and WARNINGS. Perform your during (D) PMCS.

c. After you operate. Be sure to perform your after (A) PMCS.

d. If your equipment fails to operate. Troubleshoot with proper equipment. Report any fault using the proper forms; see TM 38-750.

4-2. Lubrication

There is no lubrication requirement for the LR Test Set.

4-3. Preventive Maintenance Checks and Services

To ensure that the LR Test Set is always ready for operation, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance checks and services to be performed are listed and described in table 4-1. The item numbers indicate the sequence of inspection. Routine checks and services, such as inspection for external damage, dirt or corrosion, functioning of controls, tightening knobs and checking for completeness should be done prior to using the PMCS table. Defects discovered during operation of the unit will be noted for future correction to be made as soon as operation has ceased. Records all faults together with the corrective action taken on DA Form 2404. Use the ITEM NO. column in your PMCS table to get the numbers for the TM ITEM NO. column on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) when you fill out the form.

4-4. Troubleshooting Procedures

There are no troubleshooting procedures performed by the operator. Any damage, fault, or malfunction of the equipment will be reported to the next higher category of maintenance.

Table 4 -1. Operator/Crew Preventive Maintenance Checks and Services

NOTE

Within designated intervals, these checks are to be performed in the order listed

B—Before D—During A—After

Item No.	Interval B	Interval D	Interval A	Item to be Inspected	Procedures Check for and have repaired as necessary	For readiness reporting equipment is not ready/ available if
1	•			ON/TRIPPED OFF circuit breaker	Check for proper mechanical operation.	Circuit breaker cannot be turned on or trips off.
2	•	•	•	PWR ON indicator	Check that the indicator lamp comes on when the ON/TRIPPED OFF circuit breaker is set to ON.	PWR ON indicator will not come on.
3	•			Laser output indicators	Press to test the indicator lamp.	Indicator lamp will not come on.
4	•	•		MODE switch	Check the ease of operation as the switch is rotated through the different mode positions.	Switch jams or will not detent positively into each position.
5	•		•	Alinement bracket	Check alinement bracket assembly for completeness.	Mounting hardware missing, threads worn out or stripped, or interlock inoperative.
6	•	•		Shroud, optical	If damaged, notify next higher category of maintenance.	Any splits, holes, or damage within ¼ inch of transmitter aperture (hole with notch).
7	•		•	Cable assemblies *a.* Adapter cable *b.* Power cable	Check cables for cuts or frayed condition. Check cable connectors for bent or broken pins. If there is damage notify next higher category of maintenance.	Cables damaged beyond serviceability.

CHAPTER 5
ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

5-1. Tools and Equipment

Tools and test equipment prescribed for use at the organizational level for the LR Test Set are listed in appendix E of this manual.

5-2. Painting

Painting of the LR Test Set consists of touching up damaged areas to prevent rust and corrosion (refer to TB 43-0118). All paints and finishes are listed in SB 11-573, Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment.

CAUTION

Do not paint over stenciling, labels, warning notices, or the optical windows.

a. Combinatim Case.

(1) Lightly sand the area on the case that requires touchup.

(2) Apply two thin coats of gray enamel per MIL-E-15090.

b. Control Panel Rivet Heads.

(l) Lightly sand the rivet head that requires touchup.

(2) Apply two thin coats of black epoxy-polyamide, MIL-C-22750, class 1, color 37038, FED-STD-595.

c. *Adapter Cable Threaded Cap.*

(l) Lightly sand the area on the cap that requires touchup.

(2) Apply a thin pretreatment coating (dry film) per MIL-P-15328.

(3) Prime and paint using MIL-P-23377 and MIL-C-81773, color No. 37038, per FED-STD-595.

5-3. Optical Window Cleaning Instructions

Warning

The lens cleaning compound is poisonous if taken internally.

a. Carefully remove all loose dirt from the optical windows on the LR Tester.

b. Dampen a folded lens tissue with lens cleaning compound (1 and 2, App. D). Lightly and slowly wipe the optical windows. After one stroke, discard the tissue. Repeat this procedure until the glass surfaces are clean.

5-4. Preventive Maintenance Checks and Services

To ensure that the LR Test Set is always ready for operation, it must be inspected systematically so that faults may be discovered and corrected before they result in serious damage or failure. The necessary preventive maintenance checks and services to be performed are listed and described in table 5-1. The item numbers indicate the sequence of inspection. Faults discovered during checks of the unit will be noted and corrected as soon as possible. Record all faults together with the corrective action taken on DA Form 2404.

Table 5–1. Organizational Preventive Maintenance Checks and Services
Quarterly Schedule

Item No.	Item to be Inspected	Procedures
1	Base	
	a. Case	Check that case is not broken or dented. Inspect metal areas for rust and corrosion. See paragraph 5-2 for paint touch up instructions.
	b. Handle	Check that handle is securely attached to case.
	c. Latches	Check that latches are securely attached to case.
	d. Relief valve	Check relief valve for proper operation.

Item No.	Item to be Inspected	Procedures
	e. Mounting post, power connector, ground terminal	Check the mounting hardware for looseness. Tighten if necessary.
	f. Front panel, switches, optical shroud, warning decals, optical windows	Check switches for ease of mechanical operation. Check the optical shroud for damage and that it is securely attached to panel. Check the warning decals for tears and readability. Replace if damaged (para 5-7). Check optical windows for cracks or chips. If necessary, clean the optical window, in accordance with paragraph 5-3, If any of the above items requires repair or replacement, notify the next higher category of maintenance.
2	Cover	
	a. Case	Check that cover is not broken or dented. Inspect metal areas for rust and corrosion. See paragraph 5-2 for paint touch up instructions.
	b. Storage compartments	Check latches and hinges for proper operation. Check that the operating instruction decal is not damaged. Replace if necessary (para 5-7).
3	Alinement bracket assembly	Check the knurled knobs for thread damage. Check the interlock defeat arm for mechanical operation, Replace if damaged.
4	AC power cable assembly	Check connectors for bent or broken pins. Check the cable for cut, broken, or frayed conditions. Replace if damaged.
5	Adapter cable assembly	Check the decal for damage. Replace if necessary (para 5-7). Check the cable for damage. Check the adapter for dents and cracks. Check the cap for mechanical rotation and thread damage. Replace if damaged.

5-5. Troubleshooting Procedures

To troubleshoot the LR Test Set perform the operating procedures in paragraph 3-2. If a malfunction occurs, refer to table 5-2, Troubleshooting the LR Test Set. Perform the corrective action indicated in the chart. Any malfunction requiring maintenance beyond the scope of organizational maintenance will be referred to direct support maintenance.

5-6. Indicator Lamps, Removal and Replacement

a. Removal

(1) Unscrew and remove the lens cap.

(2) Remove the faulty lamp from the lens cap.

b. Replacement

(1) Install a new lamp in the lens cap.

(2) Install the lens cap.

5-7. Decal, Removal and Replacement

a. Removal

(1) Carefully peel the decal from its mounting surface.

(2) Remove any adhesive residue remaining on the mounting surface with methyl alcohol (3, App D).

b. Replacement

(1) Peel the protective backing from the decal.

(2) Properly position it on the mounting surface and press firmly in place.

Table 5-2. Troublshooting the LR Test Set

Malfunction	Probable Cause	Corrective Action
1. Circuit breaker trips to OFF.	Internal overload.	Set to ON. If it trips a second time, forward to direct support maintenance.
2. PWR ON indicator dots not come on.	*a.* Fault lamp.	*a.* Replace lamp (para 5-6).
	b. Faulty ac power cable assembly.	*b.* Perform continuity check on the ac power cable assembly.

Malfunction	Probable Cause	Corrective Action
	c. Faulty power source.	*c.* Check the voltage output of the external ac power source.
	d. Faulty LR Test Set.	*d.* Send to direct support maintenance.
3. NORMAL/LOW indicaters do not come on when pressed.	*a.* Faulty lamp	*a.* Replace lamp (para 5-6).
	b. Faulty LR Test Set.	*b.* Send to direct support maintenance.

5-8. Operational Readiness Check

To check the operational readiness of the LR Test Set perform the operating procedures in paragraph 3-2.

APPENDIX A
REFERENCES

The following list of references is applicable to the LR Test Set.

AR 40-46	Control of Health Hazards from Lasers and Other High Intensity Optical Sources
AR 700-58	Packaging Improvement Report
DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8, and 9), Supply Bulletins and Lubrication Orders
DA Pam 310-7	Index of Modification Work Orders (MWOs) Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment
SB1l-573	Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment
TB 43-0118	Field Instruction for Painting and Preserving Electronics Command Equipments Including Camouflage Pattern Painting of Electronic Equipment Shelters
TM 11-5860-201-30	Direct Support Maintenance Manual for Laser Infrared Observation Set AN/GVS-5 (NSN 5860-01-062-3543)
TM 11-6625-2684-12-HR	HAND RECEIPT MANUAL COVERING THE END ITEM/ COMPONENTSOF END ITEM (COEI), BASIC ISSUE ITEMS (BII), AND ADDITIONAL AUTHORIZATION LIST (AAL) RELATED TO: Test Set, Laser Infrared Observation Device TS-3620/GVS-5 (NSN 5860-01-052-9477)
TM 38-750	The Army Maintenance Management System (TAMMS)
TM 740-90-1	Administrative Storage of Equipment
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command)

APPENDIX B
COMPONENTS OF END ITEM LIST

Section I. INTRODUCTION

B-1. Scope

This appendix lists integral components of and basic issue items for the LR Test Set to help you inventory items required for safe and efficient operation.

B-2. General

This Components of End Item List is divided into the following sections:

a. Section *II. Integral Components of the End Item.* These items, when assembled, comprise the and must accompany it whenever it is transferred or turned in. The illustrations will help you identify these items.

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

B-3. Explanation of Columns

a. Illustration. This column is divided as follows:

(1) Figure number. Indicates the figure number of the illustration on which the item is shown.

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

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

c. Description. Indicates the Federal item name and, if required, a minimum description to identify the item. The part number indicates the primary number used by the manufacturer, which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items. Following the part number, the Federal Supply Code for Manufacturers (FSCM) is shown in parentheses.

d. Location. The physical location of each item listed is given in this column. The lists are designed to inventory all items in one area of the major item before moving on to an adjacent area.

e. Usable on Code. Not applicable.

f. Quantity Required (Qty Reqd). This column lists the quantity of each item required for a complete major item.

g. Quantity. This column is left blank for use during an inventory. Under the Rcvd column, list the quantity you actually receive on your major item. The Date columns are for your use when you inventory the major item.

B-4. Special Information

National stock numbers (NSN's) that are missing from section II have been applied for and will be added to this TM by future Change/Revision when they are entered in The Army Master Data File (AMDF). Until the NSN's are established and published, submit exception requisitions to: Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-MM, Fort Monmouth, NJ 07703 for the part required to support your equipment.

(Next printed page is B-2)

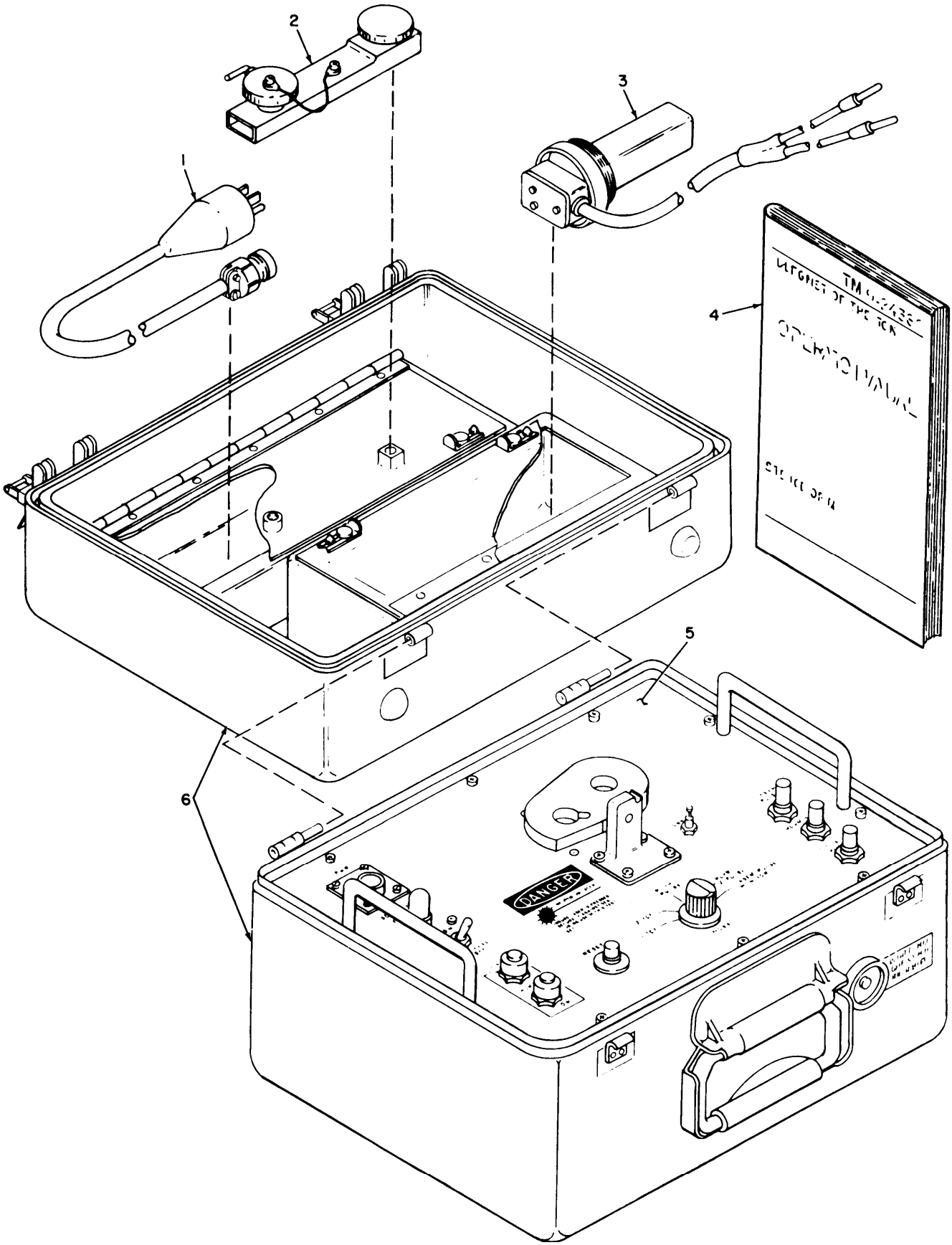


Figure B-1. Components of LR Test Set

Section II. INTEGRAL COMPONENTS OF END ITEM

(1) ILLUSTRATION (A) FIG NO,	(1) ILLUSTRATION (B) ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION PART NUMBER	(3) (FSCM)	(4) LOCATION	(5) USABLE ON CODE	(6) QTY REQD	(7) QUANTITY RCVD	(7) QUANTITY DATE
B1	1		AC Power Cable Assembly MS2548-2	(96906)			1		
	2		Alinement Bracket Assembly SM-D-852374	(80063)			1		
	3		Adapter Cable Assembly SM-D-852433	(80063)			1		
	4		Publication TM 11-6625-2684-12				1		
	5		Electronic Test Set Assembly SM-D-852483	(80063)			1		
	6		Combination Case Assembly SM-D-852384	(80063)			1		

APPENDIX C
ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

C-1. Scope

This appendix lists additional items you are authorized for the support of the LR Test Set.

C-2. General

This list identified items that do not have to accompany the LR Test Set and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

C-3. Explanation of Listing

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment.

Section II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION PART NUMBER AND FSCM	USABLE ON CODE	*(3)* UNIT OF MEAS	*(4)* QTY AUTH
	Goggles, Industrial (Laser Safety Goggles)			

APPENDIX D
EXPENDABLE SUPPLIES AND MATERIALS LIST

SECTION I. INTRODUCTION

D-1. Scope

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

D-2. Explanation of Columns

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

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

C-Operator/Crew

O-Organizational Maintenance

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

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

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

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NO.	*(2)* LEVEL	*(3)* NATIONAL STOCK NUMBER	*(4)* DESCRIPTION PART NUMBER AND FSCM	(5) UNIT OF MEAS
1	0	6640-00-597-6745	Lens Cleaning Tissue (80058)	pkg
2	0	6850-00-392-9751	Lens Cleaning Compound (80058)	2 oz
3	0	6810-00-753-4783	Methyl Alcohol (81348)	pt

APPENDIX E
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

E-1. General

This appendix provides a summary of the maintenance operations for TS-3620/GVS-5. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

E-2. Maintenance Function

Maintenance functions will be limited to and defined as follows:

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

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

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

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

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

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

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

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

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

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

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

E-3. Column Entries

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

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

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without

maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "worktime" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "worktime" figures will be shown for each category. The number of task-hours specified by the "worktime" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

C-Operator/Crew

O-Organizational

F-Direct Support

H-General Support

D-Depot

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

f. Column 6, *Remarks.* Column 6 contains an alphabetic code which leads to the remark in section IV, Remarks, which is pertinent to the item opposite the particular code.

E-4. Tool and Test Equipment Requirements (Sect. Ill)

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

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

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

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

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

E-5 Remarks (Sect. IV)

a. Reference Code. This code refers to the appropriate item in section 11, column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in Section II.

(Next printed page is E-3)

Section II. MAINTENANCE ALLOCATION CHART

FOR

TEST SET, LASER INFRARED OBSERVATION DEVICE TS-3620/GVS-5

TM 11-6625-2684-12

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQPT.	(6) REMARKS
00	Test Set, Laser Infrared Observation Device TS-3620/GVS-5	Inspect	0.4	1.0				10	
		Test			0.9			1-7	
		Test					1.5	1-7 8,9	
		Service		0.3					
		Calibrate					4.0	8,9,10	
		Repair		0.1				10	a
		Repair			1.5			1-7,11,12	b
		Repair					8.0	8,9	c
		Overhaul					40.0	8,9	
01	Electronic Test Set Assembly	Test			0.9			1-7	
		Repair		0.1				10	a
		Repair			1.5			1-7,11,12	b,d
		Repair					8.0	1-9,11,12	c
0101	Electronic Board Assy A2	Test			0.5			1,2,3,6	
		Replace			0.4			4,11	f
		Repair					4.0	2,4,7,8,9, 11	
0102	Power Supply BD Assy A3	Test			0.6			1,2,3,6,	
		Replace			0.4			4,11	g
		Repair					4.0	2,4,7,8,9	
		Adjust			1.0			1,4,6	h
0103	Xmt/Rcv Assy A1	Test			0.6		2.0	1,2,3,6	
		Repair					2.0	2,4,7,8,9	
010301	Housing Assy, Optics	Repair					3.0	9	
010302	Transmitter/Receiver Bd A1A1	Repair					6.0	2,4,6,7,8, 9	
02	Cable Assy, Adapter	Replace		0.1				10	
		Repair			1.0			3,4,13	
03	Combination Case	Repair			0.4		0.7	4	e
04	Alignment Bracket Assy	Repair		0.2				10	
05	Cable Assy, AC Power	Test		0.1				3	
		Replace		0.1				10	

SECTION III TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR

TM 11-6625-2684-12 TEST SET, LASER INFRARED OBSERVATION DEVICE TS-3620/GVS-5

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	F,D	Laser Infrared Observation Set AN/GVS-5	5860-01-062-3543	
2	F,D	Oscilloscope AN/USM-281A	6625-00-228-2201	
3	O,F,D	Multimeter AN/USM-223	6625-00-999-7465	
4	F,D	Tool Kit, Electronic Equipment TK-105/G	5180-00-610-8177	
5	F,D	Power Supply PP-3940A/G	6130-00-460-2148	
6	F,D	Voltmeter Digital AN/GSM-64B	6625-00-022-7394	
7	F,D	Dummy Load 50 OHM (50 Feedthrough Terminations)	5895-00-087-4954	011-0049-01-80009
8	D	*Special Test Fixtures consisting of:		
		Receiver Test Fixture		
		Transmitter Test Fixture		
9	D	Radiometer EG+G Model 580 System consisting of:		
		580-23A Detector Head		
		580-13 Indicator Unit		
		585-32 Optics		
		No. TBS Spanner Wrench		
10	O	Tool Kit, Electronic Equipment TK-101/G	5180-00-064-5178	
11	F,D	Tool Kit, Electronic Equipment TK-100/G	5180-00-605-0799	
12	F,D	Heater, Gun Type, Electrical	4940-00-785-1162	
13	F,D	Wrench: Torque; GGG-W-686	5120-00-720-1975	

Section IV. REMARKS

FOR

TEST SET, LASER INFRARED OBSERVATION DEVICE TS-3620/GVS-5

TM 11-6625-2684-12

REFERENCE CODE	REMARKS
a	Replacing indicator lamps, knobs.
b	Repair of the test set at the Direct Support Level by removing& replacing the failed units A2 and A3.
c	Repair of the test set at the Depot Level by removing and replacing the failed units Al, A2, A3 etc.
d	Consists of chassis assembly and mounted components.
e	Water Proofing Gasket.
f	Remove and replace failed Electronics Board out of the Test Set at Direct Support Level and send failed board to Depot.
g	Remove and replace failed Power Supply Board out of the Test Set at Direct Support and send failed board to Depot.
h	Adjust test set Power Supply Board Power Levels in accordance with the levels initially obtained during calibration and entered on the voltage label on the Test Set.

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ARNG: None

USAR: None

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

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